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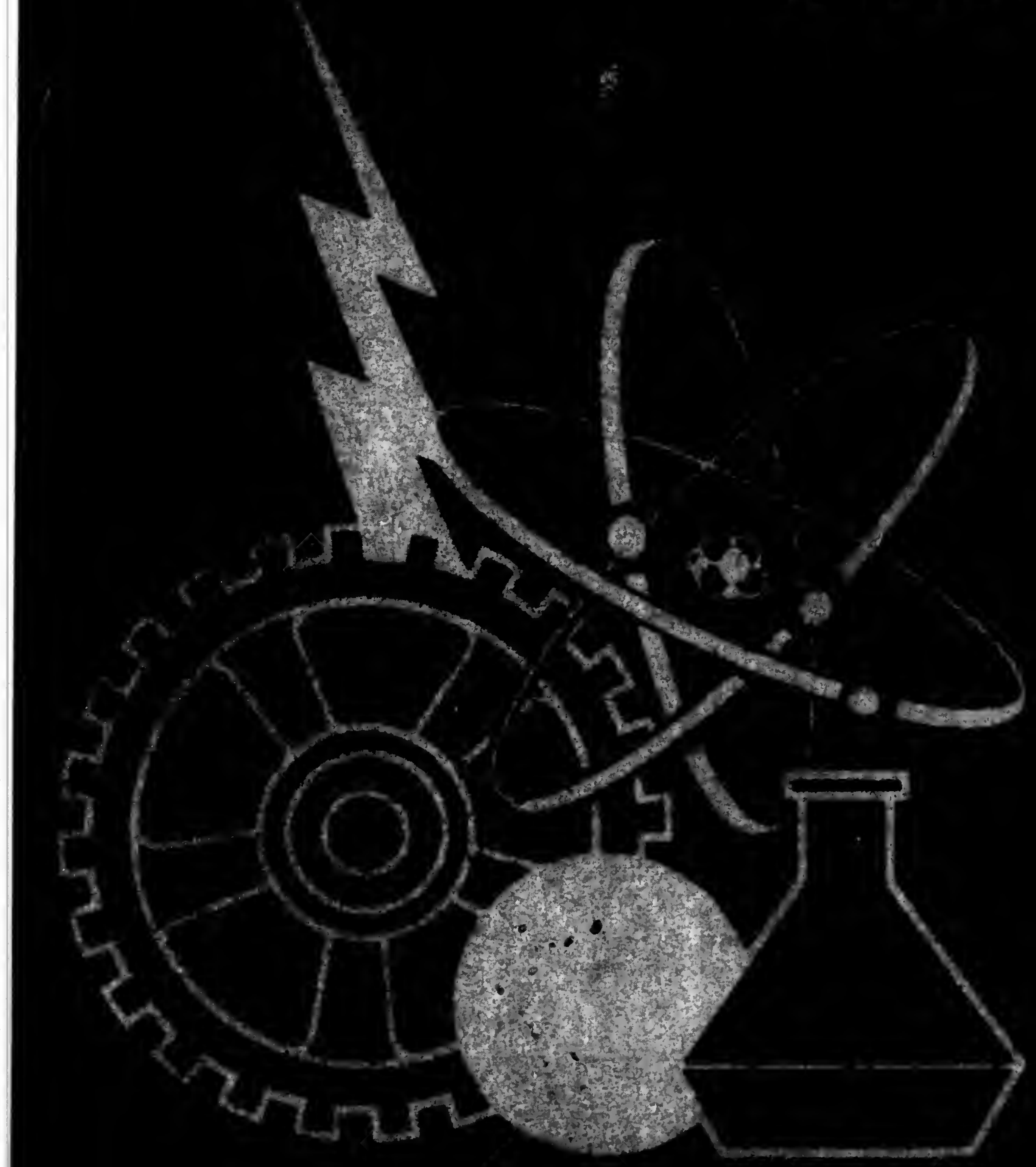
of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

April 3, 1984



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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

April 3, 1984 Volume 1041 Number 1

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1037 O.G. 12 on Dec. 13, 1983. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. International PCT fees were changed by the PCT Assembly effective Jan. 1, 1984 and were announced at 1037 O.G. 12 on Dec. 13, 1983. The search fee for the European Patent Office was changed as of Feb. 14, 1984 and was announced at 1039 O.G. 142 on Feb. 21, 1984.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Prior corresponding U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	620.00
International Fees	
Basic fee (first 30 pages)	295.00
Basic Supplemental fee (for each page over 30)	6.00
Designation fee (for each national or regional office)	70.00

GERALD J. MOSSINGHOFF,

Jan. 30, 1984. *Commissioner of Patents and Trademarks.*

Board of Appeals Decisions Rendered in the Month of Feb. 1984

Affirmed	194
Affirmed in Part	25
Reversed	71
Total	290

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,137,265, Re. S.N. 568,625, Filed Jan. 6, 1984, Cl. 546/388, WATER-INSOLUBLE NITROGEN-CONTAINING POLYOLS, Gayle D. Edwards, et al., Owner of Record: *Texaco Development Corp., White Plains, N.Y.*, Attorney or Agent: Robert A. Kulason, Ex. Gp.: 124

4,159,282, Re. S.N. 572,784, Filed Jan. 20, 1984, Cl. 585/481, XYLENE ISOMERIZATION, David H. Olson, et al., Owner of Record: *Mobil Oil Corp., New York, N.Y.*, Attorney or Agent: Alexander J. McKillop, et al., Ex. Gp.: 116

4,397,736, Re. S.N. 572,713, Filed Jan. 20, 1984, Cl. 208/11, HYDROTREATING SUPERCRITICAL SOLVENT EXTRACTS IN THE PRESENCE OF ALKANE EXTRACTANTS, Jim Y. Low, Owner of Record: *Phillips Petroleum Co., Bartlesville, Okla.*, Attorney or Agent: Louis N. French, et al., Ex. Gp.: 116

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,472,714, Reexam. No. 90/000,507, Requested: Feb. 22, 1984, Cl. 156/96, METHOD OF REBUILDING PREVIOUSLY USED TIRES, Bradley E. Ragan, Owner of Record: *Brad Ragan, Inc., Spruce Pine, N.C.*, Attorney or Agent: Bell, Seltzer, et al., Ex. Gp.: 163, Requester: Bandag, Inc., Muscatine, Iowa

3,527,969, Reexam. No. 90/000,522, Requested: Mar. 7, 1984, Cl. 406/197, SOUNDPROOFED HOUSING FOR ELECTRIC MOTORS, Hermann Papst, Owner of Record: *Requester,* Attorney or Agent: Theodore J. Koss, Jr., Ex. Gp.: 313, Requester: Papst-Motoren GmbH & Co., KG, Fed. Rep. of Germany

3,920,075, Reexam. No. 90/000,520, Requested: Mar. 2, 1984, Cl. 166/290, METHOD FOR POSITIONING A LINER ON A TUBULAR MEMBER IN A WELL BORE WITH A RETRIEVABLE PACK OFF BUSHING THEREBETWEEN, Britt O. Braddick, et al., Owner of Record: *Texas Iron Works, Inc., Houston, Tex.*, Attorney or Agent: Jack W. Hayden, Ex. Gp.: 356, Requester: Otis Engineering Corp., Dallas, Tex.

3,948,636, Reexam. No. 90/000,515, Requested: Mar. 2, 1984, Cl. 71/112, FLOWABLE AQUEOUS COMPOSITIONS OF WATER-INSOLUBLE PESTICIDES, Alfred F. Marks, Owner of Record: *SDS Biotech Corp., Painesville, Ohio,* Attorney or Agent: William A. Skinner, Ex. Gp.: 124, Requester: Peter L. Klempay, Arlington, Va.

3,968,256, Reexam. No: 90/000,510, Requested: Feb. 27, 1984, Cl. 426/38, PREPARATION OF COTTAGE CHEESE, Edmond L. Sing, Owner of Record: *Inventor,* Attorney or Agent: Woodward, Weikart, et al., Ex. Gp.: 174, Requester: Microlife Technics, Inc., Sarasota, Fla.

4,213,317, Reexam. No. 90/000,503, Requested: Feb. 14, 1984, Cl. 70/450, BLANK FILLER PLATE FOR LOCK EDGE CUT-OUT, Robert O. Ruff, Owner of Record: *American Standard, Inc., New York, N.Y.*, Attorney or Agent: Donald F. Frei, Ex. Gp.: 350, Requester: Owner

4,271,470, Reexam. No. 90/000,518, Requested: Mar. 2, 1984, Cl. 364/466, SERIAL DATA BUS FOR USE IN A MULTI-PROCESSOR PARCEL POSTAGE METERING SYSTEM, Daniel F. Dlugos, et al., Owner of Record: *Pitney-Bowes, Inc., Stamford, Conn., & Rockwell International Corp., Anaheim, Calif.*, Attorney or Agent: Albert W. Scribner, Ex. Gp.: 237, Requester: Pitney Bowes, Inc., Stamford, Conn.

4,281,711, Reexam. No. 90/000,517, Requested: Mar. 2, 1984, Cl. 166/118, APPARATUS FOR POSITIONING A LINER ON A TUBULAR MEMBER IN A WELL BORE WITH A RETRIEVABLE PACK OFF BUSHING THEREBETWEEN, Britt O. Braddick, et al., Owner of Record: *Texas Iron Works, Inc., Houston, Tex.*, Attorney or Agent: Jack W. Hayden, Ex. Gp.: 350, Requester: Otis Engineering Corp., Dallas, Tex.

4,330,503, Reexam. No. 90/000,509, Requested: Feb. 27, 1984, Cl. 422/177, WOOD BURNING STOVE, Roger A. Allaire, et al., Owner of Record: *Corning Glass Works, Corning, N.Y.*, Attorney or Agent: Richard N. Wardell, Ex. Gp.: 110, Requester: Peter L. Klempay, Arlington, Va.

4,336,075, Reexam. No. 90/000,516, Requested: Mar. 5, 1984, Cl. 148/2, ALUMINUM ALLOY PRODUCTS AND METHOD OF MAKING SAME, William E. Quist, et al., Owner of Record: *The Boeing Co., Seattle, Wash.*, Attorney or Agent: Christensen, O'Conner, et al., Ex. Gp.: 111, Requester: Pechiney Direction de la Propriete Industrielle Des Accords Techniques et de la Documentation, Lyon Cedex 3, France

4,345,528, Reexam. No. 90/000,512, Requested: Feb. 27, 1984, Cl. 110/203, WOOD BURNING STOVE, Roger A. Allaire, et al., Owner of Record: *Corning Glass Works, Corning, N.Y.*, Attorney or Agent: Richard N. Wardell, Ex. Gp.: 344, Requester: Peter L. Klempay, Arlington, Va.

COMMISSIONER ORDERED REEXAMINATIONS

Notice under 37 CFR 1.11(c). The orders for reexamination listed below are open to inspection by the general public in the indicated Examining Group. Copies of the Orders and other related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed. 37 CFR 1.248(a)(5) and 1.525(b).

4,088,624, Reexam. No. 90/000,514, Requested: Mar. 22. 1984. Cl. 24/68. LINE TENSIONER. Steven T. Gol- COMPOSITIONS, Asita Bhattacharyya, et al., Owner of Record: *Societe D'Applications de Procedes Industriels et Chimiques S.A.P.I.C., Asnieres, France,* Attorney or Agent: Richard Leiter Johnston, Ex. Gp.: 142, Requester: Commissioner

4,377,886, Reexam. No. 90/000,513, Requested: Mar. 5, 1984, Cl. 24/68, LINE TENSIONER, Steven T. Golden, Owner of Record: *Steven T. Golden, Santa Paula, Calif.*, Attorney or Agent: William W. Glenny, Ex. Gp.: 350, Requester: Commissioner

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U.S. GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverage for U.S. companies and may also be available for licensing.

Technical and licensing information on specific inventions may be obtained by writing to:

Office of Government Inventions and Patents
U.S. Department of Commerce
P.O. Box 1423
Springfield, Va. 22151

Please cite the number and title of inventions of interest.

DOUGLAS J. CAMPION,
Patent Licensing,
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

DEPARTMENT OF AGRICULTURE

SN 6–539,907. CONTROL OF BEAN RUST WITH BACILLUS SUBTILIS.

DEPARTMENT OF COMMERCE

SN 6–567,451. PROCESS AND BATH FOR ELECTROPLATING NICKEL-CHROMIUM ALLOYS.

DEPARTMENT OF HEALTH AND HUMAN SERVICES

SN 6–283,376 (4,428,943). (N-PHOSPHONACETLY-L-ASPARTATO) (1,2-DIAMINOCYCLOHEXANE) PLATINUM-(II) OR ALAKI METAL SALT.
SN 6–408,942 (4,427,664). 2'HALO DEVRIVATIVES OF DAUNOMYCIN, DESMETHOXY DAUNOMYCIN, ADRIAMYCIN AND CARMINOMYCIN.
SN 6–550,040. INTRA-URETHRAL PROSTHETIC SPHINCTER VALVE.
SN 6–565,212. DENTAL COMPOSITE FORMULATIONS AND METHOD.
SN 6–661,114 (4,425,112). FLOW-THROUGH CENTRIFUGE.

DEPARTMENT OF THE AIR FORCE

SN 6–237,021 (4,421,408). HALOGEN MASS FLOW RATE DETECTION SYSTEM.
SN 6–272,441 (4,420,834). FLOW ATTENUATOR FOR USE WITH LIQUID COOLED LASER MIRRORS.
SN 6–281,148 (4,422,344). LOAD PROPORTIONAL ANTIBACKLASH GEAR DRIVE SYSTEM.
SN 6–291,863 (4,418,716). TWO-WAY FLOW VALVE.
SN 6–295,034 (4,420,755). TELEMETRY LOAD LINK ASSEMBLY.
SN 6–311,378 (4,419,595). ANALOG OR GATE CIRCUIT.
SN 6–318,652 (4,418,531). FLAMEHOLDER STABILIZATION PLATE FOR AN AIRCRAFT ENGINE AFTERBURNER SYSTEM.
SN 6–324,342 (4,420,914). SPHERICAL SEGMENT EDGE ATTACHMENT.
SN 6–343,033 (4,423,260). METHOD FOR INTRODUCING FLUORINE INTO AN AROMATIC RING.
SN 6–350,494 (4,419,285). AZIDO FLUORODINITRO AMINES.
SN 6–353,984 (4,420,932). PRESSURE CONTROL SYSTEM FOR CONVERGENT-DIVERGENT EXHAUST NOZZLE.
SN 6–356,573 (4,420,650). WEDGED CHANNEL VERTICAL JUNCTION SILICON SOLAR CELL.
SN 6–370,235 (4,419,286). AZIDO ESTERS.
SN 6–413,295. FIBER OPTIC CABLE CONNECTOR.
SN 6–511,592. OPTICAL ELECTROMAGNETIC RADIATION DETECTOR.
SN 6–547,608. SEMI- TWO-DIMENSIONAL DECOYS.
SN 6–549,532. HIGH VOLTAGE GROUNDING DEVICE FOR PRESSURIZED EQUIPMENT.
SN 6–552,552. POLYARAMATIC ETHER-SULFONE-KEYTONES WITH FLURO-SUBSTITUTED-P-CYCLOPHANE UNITS AS CROSS-LINKING SITES.
SN 6–556,861. DYNAMIC BAR PATTERN APPARATUS AND METHOD.
SN 6–559,168. HAND OFF INTEGRATOR APPARATUS FOR SIGNAL DETECTION.
SN 6–559,169. SOLAR ROCKET ABSORBER.
SN 6–559,170. LOW SHEAR NICKEL ELECTRODE.
SN 6–559,561. NARROW PULSEWIDTH PULSE GENERATOR CIRCUIT UTILIZING NPN MICROWAVE TRANSISTORS.
SN 6–559,611. MULTIPLEXED DATA STREAM MONITOR.
SN 6–559,613. PHASE-CONJUGATE RESONATOR WITH A DOUBLE SBS MIRROR.

DEPARTMENT OF THE ARMY

SN 6–246,984 (4,415,565). SILVER METACHLORIDINE IN TREATMENT OF INFECTIONS.

SN 6–359,012 (4,416,872). TREATMENT OF MALARIA WITH LIPOSOMES CONTAINING 8-AMINOQUINOLINE DERIVATIVES AND GLYCOCONJUGATES.

SN 6–571,301. DIGITAL PULSE POSITION MODULATION COMMUNICATIONS SYSTEM WITH THRESHOLD EXTENSION.

SN 6–572,350. DIELECTRIC WAVEGUIDE BANDPASS APPARATUS.

SN 6–573,546. ELECTRON BEAM PERIPHERAL PATTERNING OF INTEGRATED CIRCUITS.

SN 6–573,547. MEASUREMENT OF PROXIMITY EFFECTS IN ELECTRON BEAM LITHOGRAPHY.

SN 6–575,245. PROTECTION OF RADIATION DETECTORS FROM FAST NEUTRON DAMAGE.

SN 6–575,973. WHIP ANTENNA HIGH VOLTAGE PROTECTION DEVICE.

NATIONAL SECURITY AGENCY

SN 6–153,984 (4,429,180). APPARATUS FOR SIMULTANEOUS GENERATION OF KEY AT TWO LOCATIONS.

PATENT NOTICES

Certificates of Correction for the Week of Apr. 3, 1984

D. 271,615
4,108,507
4,302,483
4,305,249
4,320,970
4,343,797
4,345,368
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4,422,222
4,422,436
4,422,520
4,422,864
4,423,387
4,423,881
4,424,210
4,428,012

Disclaimers

4,111,272.—*Ronald J. Ricciardi,* Garfield; *Angelo Ferrara,* Fairfield; *Joseph L. Hartmann,* West Caldwell and *Gary R. Lauterbach,* Livingston, N.J. WEIGH FEEDING APPARATUS. Patent dated Sept. 5, 1978. Disclaimer filed Jan. 16, 1984, by the assignee, *Acrison, Inc.*

The term of this patent subsequent to Oct. 18, 1994 has been disclaimed.

4,210,963.—*Ronald J. Ricciardi,* Garfield; *Angelo Ferrara,* Fairfield and *Joseph L. Hartmann,* West Caldwell, N.J. WEIGH FEEDER SYSTEM. Patent dated July 1, 1980. Disclaimer filed Jan. 16, 1984, by the assignee, *Acrison, Inc.*

The term of this patent subsequent to Oct. 18, 1994 has been disclaimed.

4,301,510.—*Ronald J. Ricciardi,* Garfield; *Angelo Ferrara,* Fairfield and *Joseph L. Hartmann,* West Caldwell, N.J. WEIGH FEEDER SYSTEM. Patent dated Nov. 17, 1981. Disclaimer filed Jan. 16, 1984, by the assignee, *Acrison, Inc.*

The term of this patent subsequent to Oct. 18, 1994 has been disclaimed.

4,320,855.—*Ronald J. Ricciardi,* Garfield; *Angelo Ferrara,* Fairfield; *Joseph L. Hartmann,* West Caldwell and *Gary R. Lauterbach,* Livingston, N.J. WEIGH FEEDING APPARATUS. Patent dated Mar. 23, 1982. Disclaimer filed Jan. 16, 1984, by the assignee, *Acrison, Inc.*

The term of this patent subsequent to Oct. 18, 1994 has been disclaimed.

4,390,582.—*Robert C. Pickens, Jr.,* Gurnee; *Reese R. Thomas,* Libertyville and *John W. Ellicson,* McHenry, Ill. CUT PILE FABRIC WITH CARRIER AND TEXTURIZED LOOPS. Patent dated June 28, 1983. Disclaimer filed Feb. 2, 1984, by the assignee, *Ozite Corp.*

The term of this patent subsequent to June 21, 2000 has been disclaimed.

Disclaimer and Dedication

4,352,599.—*Riley Goldsmith,* Houston, Tex. PERMANENT MOORING OF TENSION LEG PLATFORMS. Patent dated Oct. 5, 1982. Disclaimer and Dedication filed Jan. 9, 1984, by the assignee, *Conoco Inc.*

Hereby disclaims and dedicates to the Public the entire remaining term of said patent.

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The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

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Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

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California	Los Angeles Public L ibrary	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
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Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 704-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390, Ext. 391
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
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	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
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South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
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	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
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Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

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*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF March 3, 1984

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-28-82
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	5-12-76
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	1-05-83
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	7-26-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-16-76
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	3-22-82
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	6-01-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	7-06-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	6-18-82
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	9-30-80
DESIGN, GROUP 290—KENNETH L. CAGE, Director Industrial Arts; Household, Personal and Fine Arts.	1-14-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	3-16-82
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—STEPHEN G. KUNIN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	6-30-82
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	11-04-76
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-20-81
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	7-23-81

Expiration of patents: The patents within the range of numbers indicated below expire during March 1984, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents .... Numbers 3,307,200 to 3,311,920, inclusive
Plant Patents .... Numbers 2,723 to 2,729 inclusive

REEXAMINATIONS

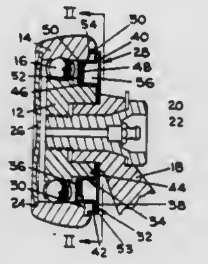
APRIL 3, 1984

Matter enclosed in heavy brackets **[ ]** appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,537,725 (187th)

TROUGH-LIKE SEAL FOR ROLLER ASSEMBLY

Ruben E. Frost, Grand Rapids, Mich., assignor to C. L. Frost & Son, Inc., Grand Rapids, Mich.
Reexamination Request No. 90/000,341, Mar. 10, 1983.
Reexamination Certificate for Patent No. 3,537,725, issued Nov. 3, 1970, Ser. No. 773,490, Nov. 5, 1968.
Filed Mar. 10, 1983, Ser. No. 773,490
Int. Cl.^{3} F16C *33/80*
U.S. Cl. 308—187.2



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–13** is confirmed.

1. In a roller bearing assembly comprising an outer race, an inner race, bearing means between said outer and inner race, and means axially sealing said bearing means between said outer and inner race to retain lubrication at said bearings between said outer and inner race and to exclude dirt and moisture from said bearings, the improvement in said axial sealing means comprising:

an outer radial sealing ring fixed to said inner race and having an outer radial edge extending in close proximity to said outer race;

an intermediate sealing ring fixed to said inner race and axially spaced from said outer sealing ring so as to form a first trough therebetween for collection of water and dirt;

said intermediate sealing ring having a radial outer edge just short of an inner diameter of said outer race;

an inner sealing ring fixed to said outer race and having a depending annular flange extending toward said inner race and spaced axially inwardly of said intermediate sealing ring in substantial overlapping relationship with said intermediate sealing ring, said inner sealing ring having an axial ring portion in engagement with said outer race extending axially outwardly of said depending annular flange and axially outwardly of said intermediate sealing ring short of said outer radial sealing ring, an outer portion of said axial ring extending from said outer race to repel foreign matter outwardly of said bearings.

B1 4,048,780 (188th)

METHOD AND APPARATUS FOR PLACING OBJECTS INTO BOXES

Alexis Chenevard, Morges, Switzerland, assignor to SAPAL Societe Anonyme des Plieuses Automatiques, Switzerland
Reexamination Request No. 90/000,317, Jan. 17, 1983.
Reexamination Certificate for Patent No. 4,048,780, issued Sep. 20, 1977, Ser. No. 718,563, Aug. 30, 1976.
Filed Jan. 17, 1983, Ser. No. 718,563
Claims priority, application Switzerland, Oct. 27, 1975, 13901/75
Int. Cl.^{3} B65B *5/08, 35/38*
U.S. Cl. 53—448

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

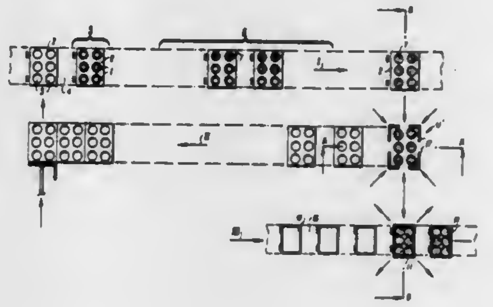
Claims **1**, **3**, **5** and **7**, having been finally determined to be unpatentable, are cancelled.

Claims **4**, **6**, and **8** are determined to be patentable as amended:

Claims **9–11**, dependent on amended claims, are determined to be patentable.

New claims **12–18** are added and determined to be patentable.

14. A method of placing sets of objects, such as assortments of chocolates, in boxes, comprising disposing a set of objects in a template, conveying the objects disposed in the template to a table, holding the objects on the table by suction, removing the template, bringing separated mobile wall sections about the objects held on the table, moving the wall sections together against the objects to form a frame around the objects and to bring the objects together into a pattern having a perimeter that defines an area slightly smaller than the surface area of the bottom of a box which is to receive the objects, and gripping and conveying the thus assembled set of objects and depositing the set of objects in the box; said gripping, conveying and depositing step comprising applying suction to the objects from above simultaneously with the movement of the wall sections, moving the assembly of wall sections and objects held by suction above a box arriving at a filling station of a conveyor, and discharging the set of objects into the box by opening the frame and interrupting the suction.



16. Apparatus for placing sets of objects, such as assortments of chocolates, in boxes, comprising templates each adapted to receive a set of objects to be placed in a box, pneumatic means for holding the objects by suction on a table, means for cyclically moving the templates to each deposit a set of objects on the table and remove the template from the deposited objects, separate mobile wall sections adapted to be brought about a set of objects held on the table and moved against the objects to form a frame around the objects and to bring the objects together into a pattern having a perimeter that defines an area slightly smaller than the surface area of the bottom of a box which is to receive the objects, means for conveying the walls together to form a frame around the set of objects, and means for gripping and conveying the assembled set of objects and the walls as one assembly and depositing the set of objects in one operation in a box; said means for gripping, conveying and depositing comprising a suction head cooperating with the mobile wall sections when they are brought together into a closed frame to form a suction bell which lifts up the set of objects in the frame.

DEFENSIVE PUBLICATIONS

PUBLISHED APRIL 3, 1984

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

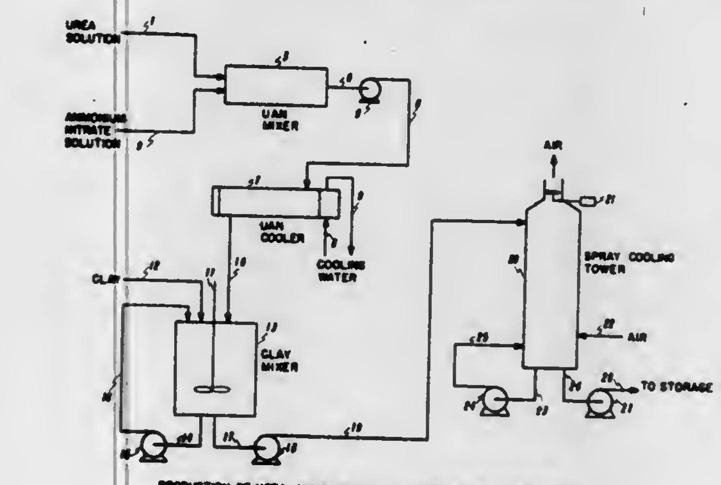
Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T104,101

PRODUCTION OF UREA-AMMONIUM NITRATE SUSPENSION FERTILIZER

Jeffrey L. Boles, 3550 Helton Dr., A-3, Florence. Ala. 35630, and Thomas M. Jones, 208 Stephenson Ct., Sheffield, Ala. 35660

Filed Dec. 10, 1982, Ser. No. 448,568
Int. Cl.³ C05C *9/00*
U.S. Cl. 71—30
5 Sheets Drawing. 29 Pages Specification



PRODUCTION OF UREA-AMMONIUM NITRATE SUSPENSION FERTILIZER

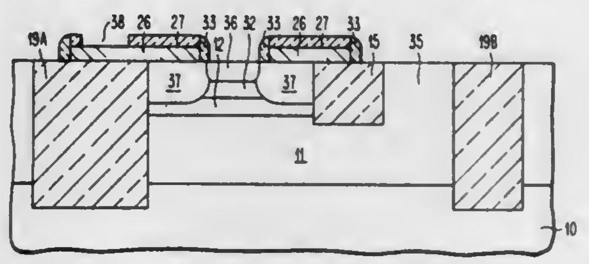
Highly concentrated nitrogen suspension fertilizers which have excellent long-term storage and handling properties in both warm and severely cold weather are produced from urea, ammonium nitrate, water, and attapulgite clay and contain urea crystals suspended in a saturated solution containing urea and ammonium nitrate. The compositions must be maintained within a very narrow range to produce suspensions satisfactory for commercial use. This narrow composition range is such that the saturation temperatures and nitrogen contents of the products fall within specific ranges. Deviation from these ranges results in poor quality, commercially unusable products. If the saturation temperature or nitrogen content is too high, the product is too viscous to be pumped or applied to the soil. If the saturation temperature is too low, the product contains excessively large crystals which settle to the bottom of storage and shipping tanks and clog spray nozzles in suspension application equipment. The process consists of first heating the urea, ammonium nitrate, and water to an all solution state or combining hot urea and ammonium nitrate solutions from production. Then the solution is cooled in two or more stages with gelling-type clay added prior to crystallization and air cooling used in the crystallization stage(s).

T104,102

POLYSILICON-BASE SELF-ALIGNED BIPOLAR TRANSISTOR PROCESS AND STRUCTURE

Allen P. Ho, 2 High Point Dr., Poughkeepsie, N.Y. 12603, and Cheng T. Horng, 6396 Gondola Way, San Jose, Calif. 95120

Continuation of Ser. No. 133,155, Mar. 24, 1980, abandoned. This application Apr. 22, 1982, Ser. No. 370,897
Int. Cl.³ H01L *27/04*
U.S. Cl. 357—50
5 Sheets Drawing. 33 Pages Specification



A bipolar transistor isolated by deep recessed oxide **19**, with shallow recessed oxide **15** separating the base **32, 37** from collector contact **35**, with polysilicon contact **26** to base extrinsic region **37**, the polysilicon being self-aligned with the emitter **36** and the emitter contact.

REISSUES

APRIL 3, 1984

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,546

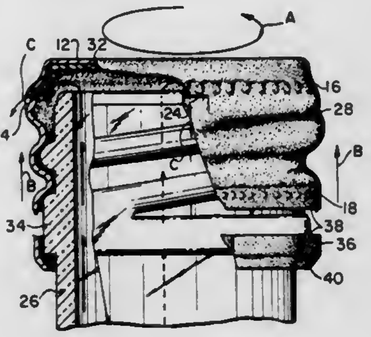
ANTI-MISSILING BOTTLE CLOSURE

Rocco D. Walker, Hazelton, Pa., assignor to Zapata Industries, Inc., Frackville, Pa.

Original No. 4,007,851, dated Feb. 15, 1977, Ser. No. 576,206, May 9, 1975. Application for reissue Jan. 26, 1983, Ser. No. 461,170

Int. Cl.³ B65D *51/16*

U.S. Cl. 215—307 **29 Claims**



1. An improved closure of the type having a shell with integral top and side walls, a knurl region adjacent to the top wall, and with rolled-on threads provided on the side wall for engagement with the threaded neck of a bottle to contain pressurized fluids, the threads being limited to about 1¾ turns, the improvement comprising means including venting openings in said side wall contiguous to the knurl region *and above the area of the rolled-on thread* for releasing the pressure within said closure sufficiently to prevent missiling of the closure when the closure is initially turned to unthread it from the bottle.

Re. 31,547

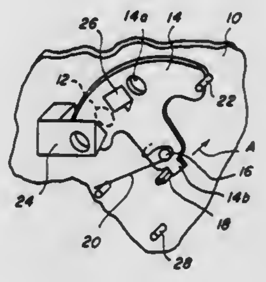
EXPOSURE CONTROL MECHANISM FOR USE WITH CHEMICAL FLASH

James W. Meyer, Fairport, and John E. Mooney, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Original No. 4,349,259, dated Sep. 14, 1982, Ser. No. 300,362, Sep. 8, 1981. Application for reissue Jun. 10, 1983, Ser. No. 502,910

Int. Cl.³ G03B *15/03, 9/26*

U.S. Cl. 354—135 **6 Claims**



5. In a photographic camera of the type adapted for use with chemical flash lamps, an exposure control mechanism for effecting an exposure in synchronism with the peak intensity of a flashlamp, comprising:

(a) means for defining an exposure aperture;

(b) shutter release means actuatable by a camera operator for initiating an exposure;

(c) flash firing means for igniting a chemical flash lamp in response to actuation of said shutter release means; and

(*d*) shutter means responsive to actuation of said shutter release means for moving in a first direction with respect to said exposure aperture, while covering said aperture to effect a delay following flash ignition, and for moving in a second direction opposite to said first direction to uncover and cover said exposure aperture to effect an exposure in synchronism with said peak flash output.

Re. 31,548

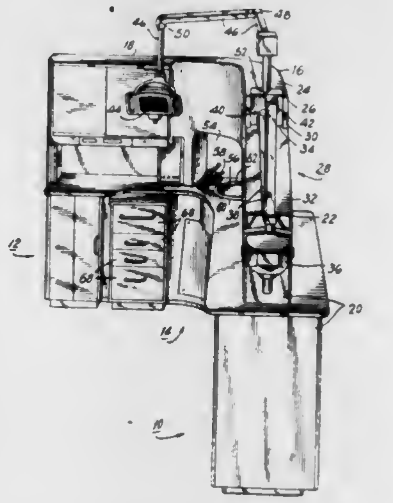
DENTAL OPERATORY SYSTEM

Tony Watanabe, Redondo Beach, Calif., assignor to Takara Company, New York, Inc., Somerset, N.J.

Original No. 4,332,557, dated Jun. 1, 1982, Ser. No. 199,516, Oct. 22, 1980. Continuation-in-part of Ser. No. 122,565, Feb. 19, 1980, abandoned. Application for reissue Feb. 7, 1983, Ser. No. 465,433

Int. Cl.³ A61C *1/14*

U.S. Cl. 433—77 **35 Claims**



1. A dental operatory system comprising:

a generally L-shaped first dental operatory unit, wherein the inside of the L defines an operatory work space for a first dental operator, and wherein the outside of one leg of the L provides an operatory work space for a second dental operator, said L leg outside comprising dental operatory implements for dental operations, and means to mount said implements for accessing into said second operatory work space for use by said second dental operator, said unit further comprising dental operatory means said dental operatory means comprising an X-ray unit, and means to mount said X-ray unit on said one leg of the L-shaped unit, and means to permit alternative use of said X-ray unit by said operators in the respective operatory work spaces, and further comprising an X-ray operatory control unit, and means to mount said X-ray operatory control unit on the outside of the other leg of the L-shaped unit for use by the operators, and whereby a generally L-shaped second dental operatory unit, is spacedly positionable from and in registration with and performing the dental operatory functions as in said first unit with said one leg of said second L-shaped unit being substantially parallel to one leg of said first L-shaped unit, and the other leg of said second L-shaped unit being aligned substantially along a common rectilinear axis and in tandem with the other leg of said first L-shaped unit, so that L-shaped units may be incrementally added in registration with one another.

PLANT PATENTS

GRANTED APRIL 3, 1984

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,213
ROSE CV. CLIMBING OLE'

George S. Haight, San Jose, and Herbert C. Swim, Ontario, both of Calif., assignors to Armstrong Nurseries, Inc., Ontario, Calif.

Filed Jul. 13, 1982, Ser. No. 397,923
Int. Cl.^{3} A01H *5/00*

U.S. Cl. Plt.—6 **1 Claim**

1. A new and distinct variety of rose as a sport of the rose cv. Olé (U.S. Plant Pat. No. 2,474) characterized in that it is a climber and flowers on second season's wood, with a large flowering flush in the spring followed by intermittent flowering during the remainder of the growing season and otherwise having the characteristics of the parent rose cv. Olé.

5,214
CUPHEA PLANT TABLE TOP BONSAI

Clifton F. Pottberg, P.O. Box 5130, Hudson, Fla. 33567

Filed Sep. 28, 1982, Ser. No. 425,932
Int. Cl.^{3} A01H *5/00*

U.S. Cl. Plt.—54 **1 Claim**

1. A new and distinct variety of Cuphea plant substantially as herein described, characterized particularly as to novelty by its compact size, internodal dwarfing, and spreading growth form.

5,215
RAPHIOLEPIS INDICA CV. MONREY

William B. Usrey, Glendora, Calif., assignor to Monrovia Nursery Company, Azusa, Calif.

Filed Aug. 17, 1982, Ser. No. 408,938
Int. Cl.^{3} A01H *5/03*

U.S. Cl. Plt.—54 **1 Claim**

1. A new and distinct selection of *Raphiolepis indica* referred to as *Raphiolepis indica* cv. Monrey as substantially shown and described herein, which is characterized by a loose open habit; a larger, looser and broader inflorescence; single flowers; and rich dark pink flowers.

PATENTS

GRANTED APR. 3, 1984

ERRATA

For CLASS	See PATENT NO.
162–086	4,439,888
171–001	4,439,891
175–002	4,439,892
177–002	4,439,893
128–079	4,440,183
502–053	4,440,667
502–331	4,440,668
524–177	4,440,674
549–292	4,440,927
585–260	4,440,956
585–323	4,440,957
560–247	4,440,958
524–177	4,440,974

PATENTS

GRANTED APRIL 3, 1984

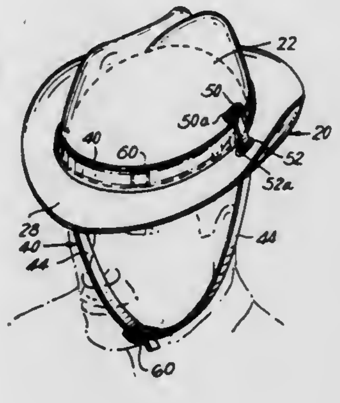
GENERAL AND MECHANICAL

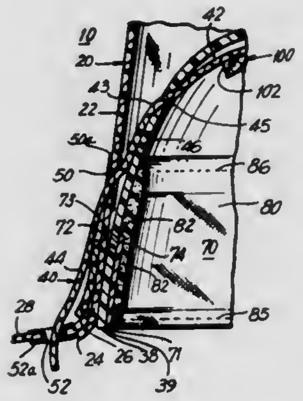
4,439,871

HEAD PROTECTING HEADWEAR

Mario A. Plastino, 659 Mastic Rd., Mastic, Long Island, N.Y. 11950

Filed Apr. 19, 1982, Ser. No. 369,646
Int. Cl.^{3} A42B *3/00*
U.S. Cl. 2—422 **16 Claims**





1. Headwear for protecting the head of a wearer comprising an outer head covering having a crown portion, an integral bottom peripheral edge defining a shell receiving opening, and a brim extending outwardly and peripherally from the crown portion, a protective rigid impact resistant shell removably disposed within said head covering, said protective shell having a protective crowh portion with interior and exterior surfaces, and an integral bottom rim defining a generally circular head receiving opening, and means for removably securing said protective shell in conforming engagement with said outer head covering, said securing means including a strap having exterior sections which extend from the exterior surface of said protective shell, and strap receiving openings in the crown portion of the outer head covering and in said peripherally extending brim of said outer head covering, said exterior strap sections extending through said strap receiving openings of said outer head covering to secure said protective shell in engagement with said head covering.

4,439,872

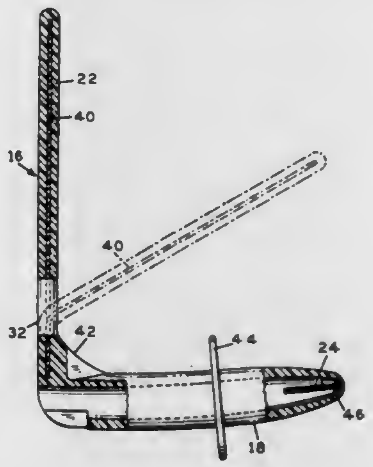
APPARATUS TO ASSIST ESOPHAGEAL SPEECH

Julian L. Henley-Cohn, New Haven, Conn., and Eugene R. Jakubczak, Bay City, Mich., assignors to Wright Manufacturing Company, Arlington, Tenn.

Filed Oct. 6, 1981, Ser. No. 309,097
Int. Cl.^{3} A61F *1/20*
U.S. Cl. 3—1.3 **6 Claims**

1. A prosthesis to assist esophageal speech in a laryngectomee having a tracheostome and a tracheal-esophageal fistula comprising:

(a) an elastomeric bio-compatible silicone rubber air tube with an open tracheal end and a normally closed esophageal end having an elliptical cross section with major and minor axes and a one-way slit valve located along the plane of said major axis at the esophageal end of said tube, the elliptical cross section of that portion of the tube containing the slit valve being progressively tapered downwardly in size between the section containing the end of the slit valve nearest the tracheal end and the section containing the end of the slit valve at the esophageal end of said tube, and the ratio of the lengths of the major and minor axes of said elliptical cross section being between 1.5 to 1 and 3 to 1;



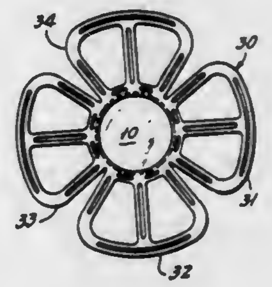
(b) a flange formed in a plane extending generally perpendicularly from said air tube adapted to occupy a sufficiently small portion of said plane so as to have a surface which lies on an external portion of the neck without covering the portion of the neck having the tracheostome.

4,439,873

INTRA-OCULAR LENS CONSTRUCTION

Stanley Poler, 78 E. Second St., New York, N.Y. 10003

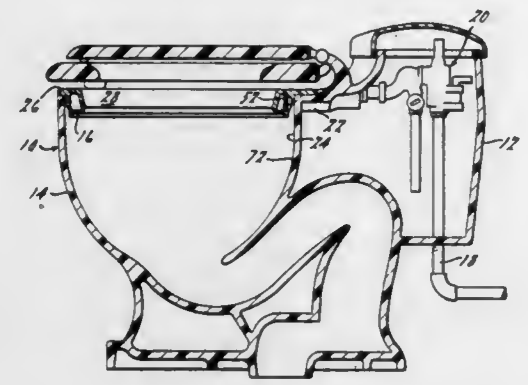
Division of Ser. No. 124,941, Feb. 26, 1980, Pat. No. 4,377,329. This application Sep. 20, 1982, Ser. No. 420,106
Int. Cl.^{3} A61F *1/16, 1/24*
U.S. Cl. 3—13 **3 Claims**



1. An intra-ocular lens assembly, comprising an optically finished glass lens element and haptic structure engaged to and surrounding said lens element, said haptic structure comprising two sheet-like elements of plastic material having at least peripherally continuous engagement with the respective anterior and posterior sides of the rim of said lens element, said sheet-like elements being in circumferentially continuous bonded lamination to each other radially outside said lens element, said bonded lamination being permanent and resistant to separation and establishing a circumferentially continuous region of lens-rim support, and said haptic structure being fenestrated radially outside said region and including anterior-chamber engageable formations radially outside said lens element.

4,439,874
WATER CLOSET RIM AND VENTING PROCESS THEREFOR

Donald C. Schrock, Carmel, Ind., assignor to Masco Corporation of Indiana, Taylor, Mich.
Filed Sep. 7, 1982, Ser. No. 415,355
Int. Cl.^{3} E03D *3/00*
U.S. Cl. 4—300 **19 Claims**



1. A rim for a water closet having a bowl and flush means selectively operable to supply pressurized water to a rim, said rim comprising an annular main body adapted for interconnection in a horizontal orientation with said bowl, an annular cavity extending through said main body and having a downstream portion and an upstream portion, said flush means supplying pressurized water to said upstream portion of said annular cavity and directing the water towards said downstream portion of said annular cavity, a series of perforations in said rim in communication with said annular cavity whereby pressurized water supplied by said flush means to said annular cavity may exit said annular cavity and enter said bowl, and a venting passageway located in said downstream portion of said annular cavity and provided with an inlet and an outlet, said inlet being open to an upper portion of said annular cavity and said outlet being open to the ambient atmosphere at a location below the inlet, said vent passageway having a cross-sectional area substantially larger than the area of each said perforations;

whereby, as pressurized water is selectively supplied to said annular cavity and forces air through said cavity from said upstream portion to said downstream portion, a portion of said air is vented from said cavity through said vent passageway.

4,439,875
TOILET

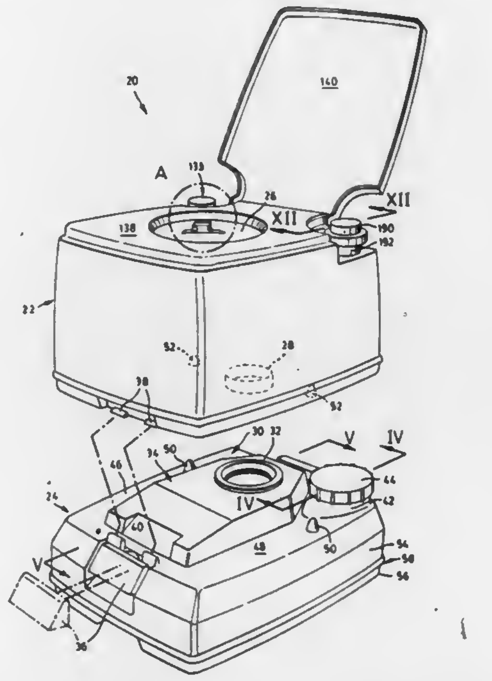
John M. Stewart, River Drive Park, and Clifford B. Hewson, West Vancouver, both of Canada, assignors to Sanitation Equipment Limited, Downsview, Canada
Filed Jun. 2, 1981, Ser. No. 269,434
Int. Cl.^{3} E03D *5/012*
U.S. Cl. 4—321 **16 Claims**

1. A toilet of the type having a holding tank for waste material, a bowl communicating with a waste material inlet of said tank, and valve means normally closing said inlet and adapted to be opened to permit waste material to enter the tank from said bowl, wherein said holding tank inlet is provided with a seal defining an annular sealing surface disposed in a sealing plane within said tank, and wherein said valve means comprises:

a valve member which is movable between open and closed positions, the valve member being disposed laterally of said inlet in said open position and having a sealing surface adapted to cooperate with said seal in said plane when the valve member is in said closed

means supporting said valve member for movement (a) between said open position and an intermediate position in which the valve member is disposed below said inlet preparatory to sealing the same while remaining below said sealing plane, and (b) generally normal to said sealing plane between said intermediate position and said closed position;

actuating means coupled to said valve member and operable from externally of the toilet to move the valve member between said open position and said intermediate position and between said intermediate position and said closed position;

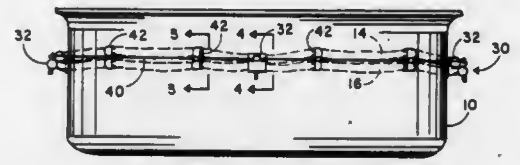


whereby the valve member moves with respect to said annular sealing surface in directions generally normal to said sealing plane for minimizing abrasion of said seal;

and wherein the toilet further comprises a wiper element disposed adjacent said holding tank inlet and positioned to exert a wiping action on said sealing surface of the valve member as the member moves between said open position and said intermediate position.

4,439,876
CLAMP ASSEMBLY FOR FLEXIBLE PIPE INSTALLATIONS PRIMARILY FOR THERAPY BATHS

Philip E. Chalberg, 119 Maple Ave., Orange, Calif. 92668
Filed Jan. 4, 1982, Ser. No. 336,760
Int. Cl.^{3} A61H *33/02*
U.S. Cl. 4—542 **5 Claims**



1. An improved whirlpool jet assembly, the assembly of the type having a plurality of Venturi jets, each such jet having a flange for compressive engagement with the outside surface of a tub wall coaxially with an aperture through the tub wall, a Venturi mixing chamber terminating in the flange and configured for generating an aerated jet of water into the tub, and parallel water and air inlets communicating with the mixing chamber for providing the water and air; the improvement comprising:

a plurality of retainer brackets, one such bracket integrally affixed to each of said jets, each of said brackets having a C-shaped member for receiving an elongated rod,

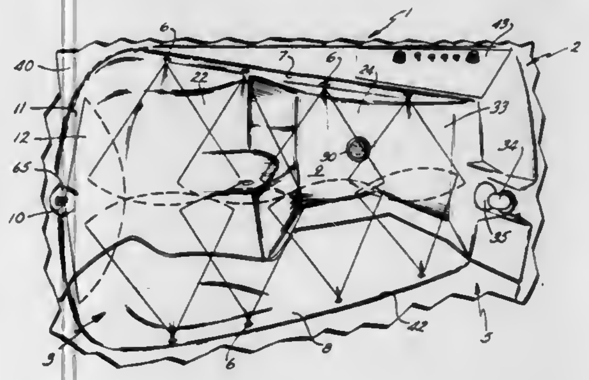
at least one elongated rod shaped to substantially conform to the outer peripheral surface of said tub wall along at least a portion thereof, and

a plurality of primary pipe support brackets each having an outwardly facing C-shaped member for attachment to said rod and a pair of inwardly facing C-shaped members for receiving a pair of parallel flexible pipes, one such pipe for interconnecting the air inlets of respective jets and the other such pipe for interconnecting the water inlets of respective jets,

at least one such primary support bracket being located between each two of said jets whereby to support said flexible pipes around the periphery of said tub wall intermediate of said jets and adjacent said tub wall.

4,439,877
SHOWER ARRANGEMENT FOR BATHING UNITS

Raymond T. Houle, Traverse, Mich., assignor to Silchor, Traverse, Mich.
Filed Mar. 26, 1982, Ser. No. 362,485
Int. Cl.^{3} A47K *3/22*
U.S. Cl. 4—596 **33 Claims**



1. A bathing apparatus, comprising:

a bathtub having opposite side and end walls, a raised seat portion, a back portion, and a foot portion; said seat, back and foot portions having an anatomical contour which forms a chair shape for supporting an invalid in a seated position in the bathtub, said bathtub having a lateral opening in one of said sidewalls with sufficient size to permit ingress and egress therethrough;

a door selectively closing said bathtub opening;

a plurality of nozzles mounted on the sidewalls of said bathtub, and being spaced apart and mutually oriented to cover the seated invalid;

at least one of said nozzles being mounted in said door; and

means for communicating said one nozzle with a source of pressurized water when said door is in a closed position, comprising:

a first fitting connected with said bathtub, and communicating with one of said one nozzle and said source of pressurized water; and

a second fitting shaped for mating engagement with said first fitting, and communicating with the other of said one nozzle and said source of pressurized water; said second fitting being mounted on said door and translating therewith, and being positioned in alignment with said first fitting in the closed door position;

means for converging said first and second fittings into sealing engagement during the closed door position to selectively communicate said source of pressurized water with said one nozzle.

4,439,878
SOFA SLEEPER WITH SEAT ADJUSTMENT MECHANISM

John E. Stevens, Carthage, Mo., assignor to Leggett & Platt, Incorporated, Carthage, Mo.
Filed Apr. 22, 1982, Ser. No. 370,976
Int. Cl.^{3} A17C *17/04*
U.S. Cl. 5—29 **8 Claims**

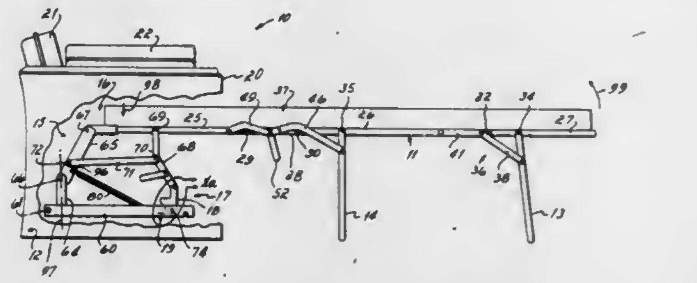
1. A sofa sleeper comprising

a sofa frame,

a bed frame having at least a head frame section and a foot frame section, said sections being foldable relative one to the other between an extended bed position and a folded up sofa position,

a base plate fixedly connected to said sofa frame,

a collapsible frame support linkage, said support linkage being connected to said bed frame and to said sofa frame, said linkage functioning to extend said bed frame from sofa position, and to retract said bed frame into sofa position, with said sofa frame,

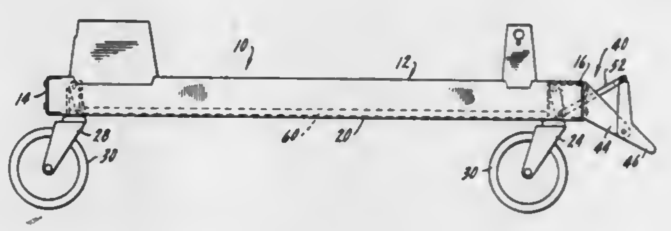


said support linkage including a styling link and

a styling bolt threadedly mounted on said base plate and engageable with said styling link, said styling bolt being adjustable between plural styling positions, the pitch of the seat plane defined by the folded up bed frame when in the sofa position being increased or decreased in response to adjustment of said styling bolt.

4,439,879
ADJUSTABLE BED WITH IMPROVED CASTOR CONTROL ASSEMBLY

Lester W. Werner, St. Louis, Mo., assignor to B-W Health Products, Inc., Maryland Heights, Mo.
Filed Dec. 1, 1980, Ser. No. 211,542
Int. Cl.^{3} A61G *7/00*
U.S. Cl. 5—60 **3 Claims**



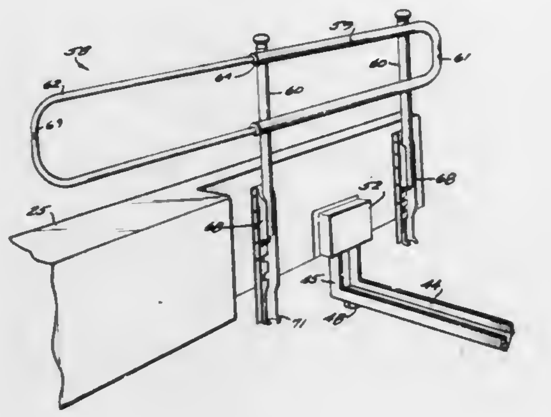
1. In an adjustable hospital bed having head, foot and side members, a plurality of cam-operated castors supporting said members, and an assembly for controlling operation of said castors; the improvement wherein said assembly comprises an actuator movable selectively to swivel, locking and steering positions, said actuator being a pedal pivotably supported adjacent said foot member, whereby the castors may be selectively actuated from a control station at the foot of the bed, a linkage mechanism having rigid elements operatively engaged with said actuator and at least two of said castors and including a series of links, connecting rods and rotatable shafts, at least one of said castors including a first cam for operation thereof selectively by a first rotatable shaft to swivel, locking and steering modes in response to movement of said actuator to its swivel, locking and steering positions, and at least one other of said castors including a second cam for operation thereof selectively by a second rotatable shaft to swivel and locking modes in response to movement of said actuator to its swivel and locking positions and retention thereof in said swivel mode in response to movement of said actuator to its steering position, said one castor supporting a corner of the bed formed by said foot member and a side member, and said other castor supporting a corner of the bed formed by said head member and a side member, said corners being diagonally opposed.

4,439,880
GERIATRIC BED CONSTRUCTION WITH SIDEGUARDS

Joseph A. Koncelik, Worthington; David B. Chaney, Powell, both of Ohio; Walter G. Lockard, and Thomas D. Hontz, both of Quakertown, Pa., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed Sep. 18, 1980, Ser. No. 188,472
Int. Cl.^{3} A47C ***21/08***

U.S. Cl. 5—429 **10 Claims**



1. An assembly for use with a mattress having a frame for supporting it above the ground so that it is generally horizontal; said assembly comprising:

rail means for preventing one on the mattress from rolling off the mattress, said rail means comprising a rail structure extending along at least one side of the mattress, and said rail structure including a first portion extending a first distance along the length of the mattress; a second portion; means for mounting said second portion on said first portion so that said second portion may be moved relative to said first portion from a first position wherein said first and second portions are substantially coextensive along the length of the mattress, to a second position wherein said second portion extends outwardly from said first portion a second distance along the length of said mattress, said second distance being less than the length of said mattress; and means for mounting said first portion at the head of the mattress so that said second portion moves from the head of the mattress towards the foot of the mattress, said second portion being solely supported by said first portion irrespective of the position of said second portion with respect to said mattress;

means for mounting said rail means first portion for vertical movement with respect to the mattress so that it can move from a position above the mattress, performing its roll-off preventing function, to a position below the top of the mattress wherin it does not restrict entry to and exit from the mattress; and

said rail mounting means comprising a pair of vertically extending supports stationarily mounted with respect to said frame; a pair of vertically elongated rods, one received by each of said supports; cooperating locking means formed on said rods and said supports for providing interlocking of a said rod with a said support in at least one position wherein said rail means first portion extends above said mattress; and actuator means for effecting relative movement between said rods and said supports so that said rods do not interlock with said supports so that said rods may be vertically moved with respect to said supports.

4,439,881
PROCESS FOR THE CONTINUOUS UNIFORM APPLICATION OF DYE LIQUORS TO WET TEXTILE FABRIC WEBS

Hans-Ulrich von der Eltz, Frankfurt am Main, and Peter Oppitz, Kelkheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 29, 1981, Ser. No. 306,876
Claims priority, application Fed. Rep. of Germany, Oct. 1, 1980, 3037156
Int. Cl.^{3} D06B ***23/26***

U.S. Cl. 8—151 **12 Claims**

1. A process for continuous uniform application of aqueous dye liquor to a water-wet textile fabric web, whose moisture content is measured, in the longitudinal and in the transverse direction with respect to the passage of the fabric, by microwave absorption before the application of the liquor, with an apparatus having more than two measuring positions across the width of the web, and by microwave absorption with the same apparatus after the application of the liquor, such measurement being continuous and contactfree, which process comprises

partially dewatering a fabric web which is wet from a preceding wet treatment so as to give a residual moisture content,

continuously measuring the achieved residual moisture content along and across the fabric web,

with the aid of such measurement adjusting the dewatering operation to compensate for deviation from the uniformity of that dewatering,

applying an aqueous dye liquor to the partially dewatered fabric web without intermediate drying, the amount of said liquor to be applied uniformly as a function of the measured values of the residual moisture content obtained in connection with dewatering,

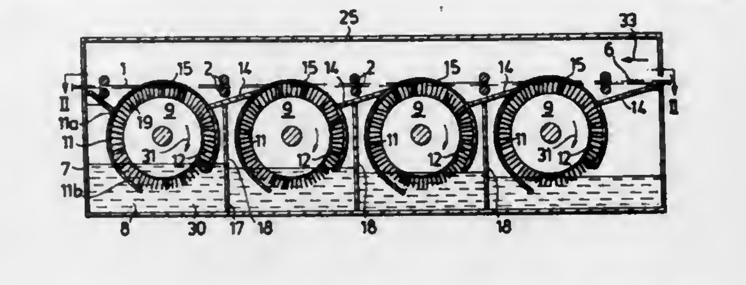
measuring the moisture content of the liquorcarrying fabric web by microwave absorption as defined above, and based on such measurement of the total moisture content, and on the measurement of the residual moisture content made in connection with dewatering, adjusting liquor application to compensate for deviation from uniformity in said application.

4,439,882
DEVICE FOR CLEANING OBJECTS BY SCRUBBING IN THE PRESENCE OF SOLVENT

Kurt A. Holm, Skoghall, Sweden, assignor to Bycasin AB, Karlstad, Sweden

Filed May 17, 1982, Ser. No. 379,031
Int. Cl.^{3} B08B ***1/02***

U.S. Cl. 15—77 **7 Claims**



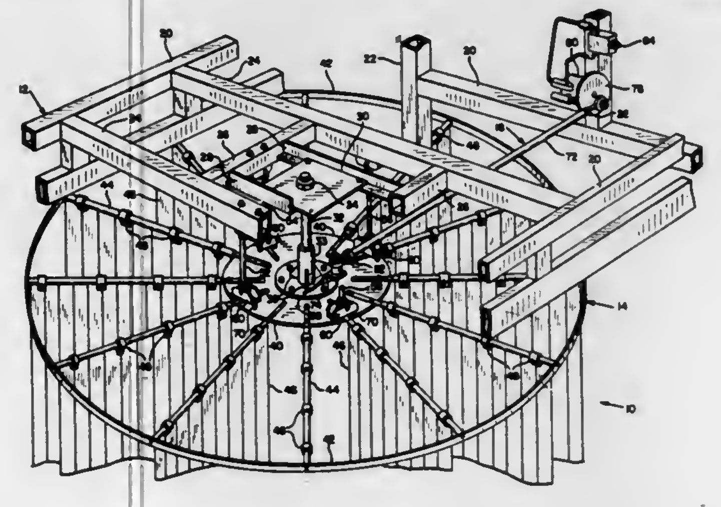
1. Device for cleaning objects by scrubbing in the presence of solvent, comprising: a conveyor path (1) for the objects; means (2–5) for driving the objects along the conveyor path; a vessel (7) containing solvent; at least two roller brushes (9), rotatably mounted in the vessel, which are arranged essentially horizontally with their axes transverse to the direction of the conveyor path (1) and which are partially immersed in the solvent, the conveyor path being in contact with the upper peripheral portion of each brush; means (20–22) for rotating the brushes; and a first plate which is conjoined to the contour of the upwardly moving peripheral portion of each rotating brush (9); the lower portion (11*b*) of the first plate (11) extending down into the solvent so that a brush, in cooperation with the first plate (11), during rotation pumps up solvent to the area of contact between the conveyor path and the brush, characterized in that a cover (14–16) is sealingly joined to the walls of the vessel (7); that the cover has an opening for each brush (9); and that the edge of each opening is in sealing association with the first plate, the downwardly moving peripheral portion of the rotating brush (9) and the end portions of the brush, whereby each brush forms a seal for its opening in the cover.

4,439,883
VEHICLE WASHING APPARATUS

Daniel C. Hanna, 1133 SW. Rivington Dr., Portland, Oreg. 97201

Filed Oct. 28, 1982, Ser. No. 437,454
Int. Cl.^{3} B60S ***3/04***

U.S. Cl. 15—97 B **7 Claims**



1. An apparatus for mounting downwardly depending vehicle washing means, comprising:

an elevated frame;

horizontally disposed support means for supporting the vehicle washing means, said support means being rotatably mounted to said frame about a vertical axis to permit rotational oscillation thereof;

fixed length suspension means radially offset from said axis and extending from said frame to said support means; and

means for rotatably oscillating said support means about said axis, whereby said suspension means causes said support means to vertically oscillate as said support means is being rotationally oscillated.

4,439,884
CONTAINER WITH BRISTLES FOR CLEANING INSTRUMENTS

Gastone Giorni, Via L. Fatti 23, Sansepolcro/Arezzo, Italy

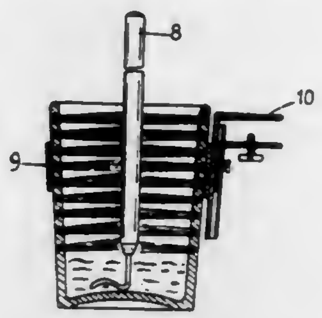
Filed Mar. 18, 1982, Ser. No. 359,602
Claims priority, application Italy, Apr. 7, 1981, 1211 A/81; Dec. 21, 1981, 1229 A/81
Int. Cl.^{3} B08B ***1/00;*** **A46B** ***11/00***

U.S. Cl. 15—104.92 **12 Claims**

1. A container for cleaning slender instruments comprising:

a container housing having a substantially cylindrically shaped side wall defining an internal chamber; and

a plurality of bristle bunches removably mounted in said side wall and radially extending therefrom to converge generally toward the center of said internal chamber of said container housing, said bunches of bristles being longitudinally positioned in said side wall so as to brush against instruments inserted into said container and to maintain said instruments in an upright position, said bunches of bristles having a length approximately one-half of the diameter of the container housing.

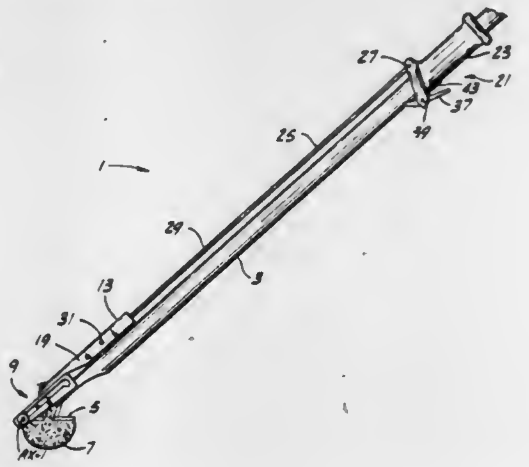


4,439,885
SPONGE MOP WITH WRINGER

Warren C. Klotz, 29 Huntington Dr., Belleville, Ill. 62223

Continuation-in-part of Ser. No. 253,774, Nov. 2, 1982, Pat No. 4,356,586. This application Jun. 21, 1982, Ser. No. 390,357
Int. Cl.^{3} A47L ***13/146***

U.S. Cl. 15—119 A **12 Claims**



1. A mop comprising a handle, a mop head mounted at one end constituting the front end of the handle for holding a sponge or the like, a wringer for wringing the sponge comprising squeeze means mounted on the mop head for sliding movement from a retracted position in which it is disposed to permit mopping to an extended position, and for pivotal movement about a pivot axis extending in side-to-side direction with respect to the mop head from said extended position to a wringing position in which it squeezes the sponge to wring it, and actuating means comprising a hand piece mounted on the handle for movement along the handle for effecting said sliding and pivotal movement of the squeeze means.

4,439,886
WIPER DEVICE

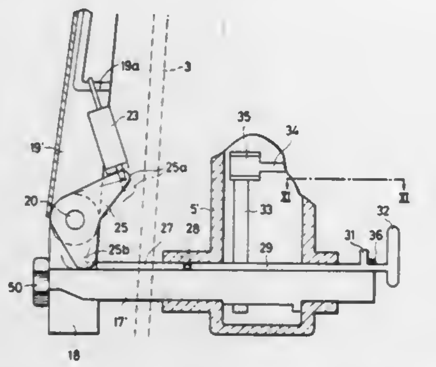
Akio Yagasaki, Tokyo, and Masaki Watanabe, Saitama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 10, 1982, Ser. No. 356,692
Claims priority, application Japan, Mar. 30, 1981, 56-45419; Mar. 30, 1981, 56-45420
Int. Cl.^{3} B60S ***1/34***

U.S. Cl. 15—250.2 **13 Claims**

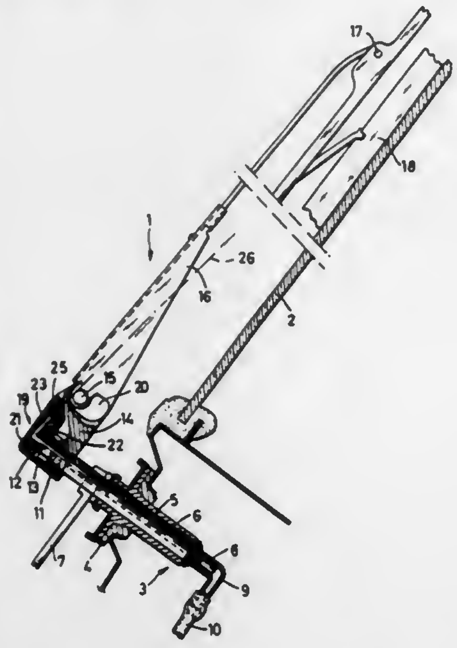
1. In a wiper device for a land vehicle windshield having an operation zone over which a wiper blade is adapted to oscillate and a rest zone engageable by a wiper blade in the rest position including a wiper blade adapted to wipe said operation zone of said windshield, a wiper arm having one end pivotally supporting said wiper blade and drive means for providing oscillating

movement to said wiper arm, the improvement comprising means for selectively varying the urging force of said wiper blade against said windshield including at least one coil spring having one end connected to said wiper arm and a moveable member connected to the other end of said coil spring, said moveable member being moveable to a first position upon energization of said drive means to increase the urging force of said spring when said wiper blade is operating in the operation zone regardless of the speed of the vehicle and being moveable to a second position upon deenergization of said drive means to decrease the urging force of said spring when said wiper blade is in the rest position in said rest zone.



4,439,887
WIPER ARM WITH WASHER NOZZLE FOR MOTOR VEHICLE WINDOWS

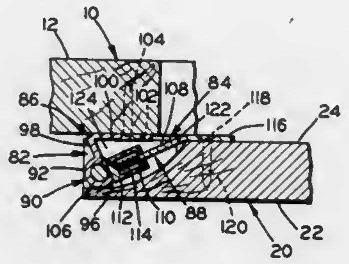
Peter Fischer, Langenfeld; Axel Rauthmann, Pulheim, and Erwin Pietryk, Cologne, all of Fed. Rep. of Germany, assignors to Ford Motor Company, Dearborn, Mich.
Filed Jan. 15, 1982, Ser. No. 339,523
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1981, 3102538
Int. Cl.^{3} B60S *1/46*
U.S. Cl. 15—250.04 **4 Claims**



1. Windscreen wiper arm with washer nozzle for vehicle windows with a fastening piece connected torsionally rigid to a hollow wiper shaft extending outwardly with respect to the window through a wiper bearing and a wiper arm connected with the wiper shaft around a swivelling axle running transverse to the wiper shaft and whereby, in a flexible plastic part covering the fastening piece, there is disposed a washer nozzle connected to the hollow wiper shaft, characterized in that the flexible plastic part is in the form of a cover (19) receiving the swivelling axle (15) of the wiper arm (16) and the flexible plastic part includes an internal ball cup (21) for receiving the outer end of the hollow wiper shaft (6) in close fit relationship the outer end being formed as a ball nipple (22).

4,439,888
SUBSTANTIALLY CONCEALED HINGE FOR DOOR WITH RECESS

Orville D. Merillat, Adrian, Mich., assignor to Merillat Industries, Inc., Adrian, Mich.
Filed Dec. 17, 1981, Ser. No. 331,453
Int. Cl.^{3} E05F *1/12*
U.S. Cl. 16—286 **7 Claims**



1. In combination, a hinge, a frame, and a door, said hinge being substantially concealed by said door and pivotally mounting said door on said frame, said hinge comprising a first hinge wing, a second hinge wing, and a knuckle, said first hinge wing comprising a first portion extending outwardly from said knuckle and a second portion extending at an angle to said first portion and substantially parallel to a surface of said frame, said second portion having means for receiving fasteners for attaching said second portion to said frame, said second wing comprising a third portion extending outwardly from said knuckle and forming a narrow included angle with the plane of the door and with the plane of said frame when said door is in a closed position, and a fourth portion extending outwardly from said third portion and being parallel to the inner surface of said door, said fourth portion having means for receiving fasteners for attaching said fourth portion to said door, said door having a recess in a hinge edge thereof in which at least a substantial portion of said knuckle, said first portion of said first hinge wing, and said third portion of said second hinge wing are located, said recess being of generally triangular shape as viewed in a plane perpendicular to the hinge edge of the door and transverse to the plane of the door, the bottom of said recess being concave and slanting in the same direction as said third portion of said second hinge wing, said third portion of said second hinge wing carrying a spring-load plunger urged toward said knuckle, said plunger having a hollow portion that straddles part of said third portion and having a coil spring inside the hollow portion, and said knuckle comprising a sleeve structurally integral with said first portion of said hinge wing and having a shoulder aligned with said plunger to urge the door toward a closed position when engaged by said plunger, said concave bottom of said recess being spaced from the plunger to allow movement of the plunger toward and away from said sleeve, said third portion forming a narrow included angle of ten to thirty-five degrees with the second portion of said first wing when the hinge is in the closed position.

4,439,889
STUNNING GUN

Ralph Karubian, 7100 S. Avalon Blvd., Los Angeles, Calif. 90003
Filed Jul. 19, 1982, Ser. No. 399,489
Int. Cl.^{3} A22B *3/02*
U.S. Cl. 17—1 B **10 Claims**

1. A stunning gun having:

a barrel with an inner wall having a first inside diameter and with first and second ends;

a piston having a first maximum outside diameter supported coaxially within said barrel for movement therein;

said first maximum outside diameter having a magnitude such that said piston forms a slip fit with said first inside diameter of said inner wall of said barrel;

a probe fixedly and coaxially supported at the end of said piston corresponding to said second end of said barrel and moveable with said piston;

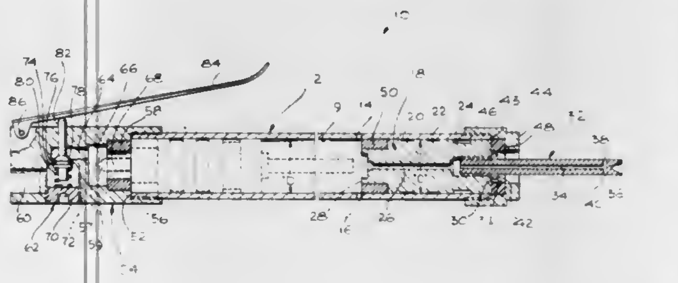
said piston and said probe each having inter-communicating air passages therethrough;

said air passage in said probe having a coaxial portion and a communicating exhaust portion at right angles thereto;

said piston having annular recesses in the outer surface thereof and carrying on its end corresponding to said first end of said barrel a region of magnetic material;

a handle portion carried by said barrel at said first end thereof and having an air inlet aperture and intermediate and outlet chambers therein,

said intermediate chamber and said outlet chamber being intercoupled for air passage therethrough; said outlet chamber being coupled, for air passage, to said barrel;



a valve assembly carried in said handle and interposed between said air inlet aperture and said intermediate chamber for control of air flow between said inlet aperture and said intermediate chamber and, consequently, for control of air into said barrel;

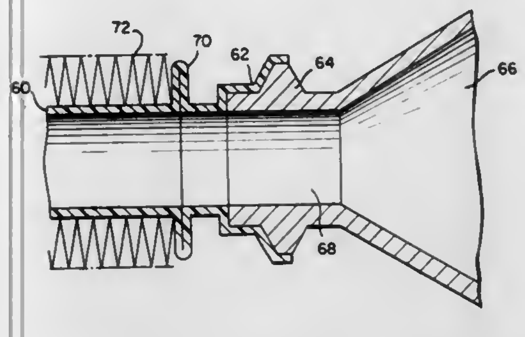
a magnet carried within said handle adjacent said first end of said barrel for magnetically attracting and releasably retaining said magnetic material and the piston in which it is carried in a position adjacent said first end of said barrel prior to the firing of said gun;

said inlet aperture being adapted for coupling to a source of compressed air; and,

a trigger carried by said handle and positioned to engage and actuate said valve assembly for permitting the passage of compressed air from said inlet aperture to said piston to cause motion of said piston and the probe carried thereby.

4,439,890
SYNTHETIC FOOD CASING ARTICLE EMPLOYING A RIGID HOLLOW TUBULAR CORE MEMBER WITH INTEGRAL CASING RETENTION ELEMENT

Michael P. Kazaitis, Chicago, Ill., assignor to Union Carbide Corporation, Danbury, Conn.
Filed Dec. 30, 1982, Ser. No. 454,677
Int. Cl.^{3} A22C *13/00;* F16L *11/00*
U.S. Cl. 17—1 R **8 Claims**



1. A casing article comprising, in combination:

a substantially rigid, thin wall, thermoplastic, hollow tubular core member serving as a casing carrier;

means at one end of said hollow tubular core member for operably connecting said tubular core member to a stuffing apparatus;

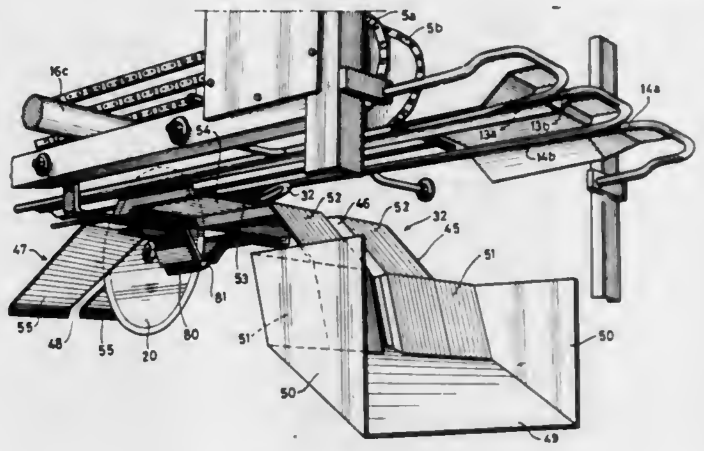
a cellulosic food casing length shirred and compacted onto said hollow tubular core member with an end of said casing being located in controlled close proximity to said connection means; and

a casing retention element for holding said casing length a predetermined distance from said connection means, said retention element consisting of an annular, double-walled, flange extending outwardly from around the side walls of said hollow tubular core member, said flange being integral with adjacent sections of said hollow tubular core member, said adjacent sections being of substantially equal diameter and being substantially axially aligned longitudinally with one another such that each section reinforces the other against longitudinal stress applied to said hollow tubular core member when said casing length is forcibly compacted thereon.

3. A casing article according to claim 1 wherein the hollow tubular core member is utilized as a stuffing horn and wherein the means for operably connecting said hollow tubular core member comprises a bell shaped shoulder and flange formed at the end of said tubular core member for attachment to the outlet nozzle of a stuffing apparatus.

4,439,891
DEVICE FOR DIVIDING SLAUGHTERED POULTRY

Martinus P. G. van Mil, Boxmeer, Netherlands, assignor to Stork PMT B.V., Netherlands
Filed May 24, 1982, Ser. No. 381,422
Claims priority, application Netherlands, Jun. 17, 1981, 8102919
Int. Cl.^{3} A22C *21/00*
U.S. Cl. 17—11 **8 Claims**



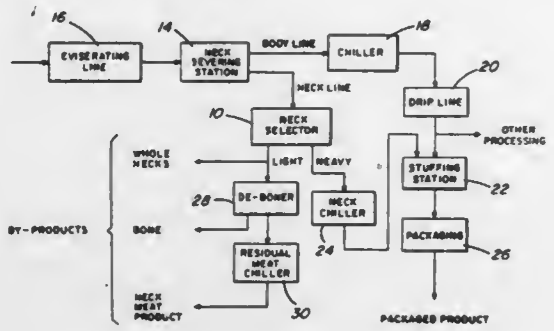
1. A device for longitudinally slaughtered poultry, comprising a conveyor means for the poultry for bringing it on to a stationary elongate positioning member co-operating with a guide member and a cutting member, characterized in that the conveyor member situated above the positioning member transports the bird suspended by its legs, and the guide member is formed by a guide surface situated beneath the positioning member and symmetrical with respect thereto, said guide surface having an upwardly sloping part which is situated in front of the positioning member and which is provided with a central wedge-shaped positioning groove for the bird's breast, and a substantially flat part situated beneath the positioning member and having the cutting means extending therethrough, said substantially flat part being followed by a downwardly sloping part.

4,439,892
SEVERED POULTRY NECK SELECTION SYSTEM

Paul J. Altenpohl, High Point, N.C., assignor to W. F. Altenpohl, Inc., High Point, N.C.
Filed Feb. 23, 1982, Ser. No. 351,351
Int. Cl.^{3} A22C *21/00*
U.S. Cl. 17—52 **7 Claims**

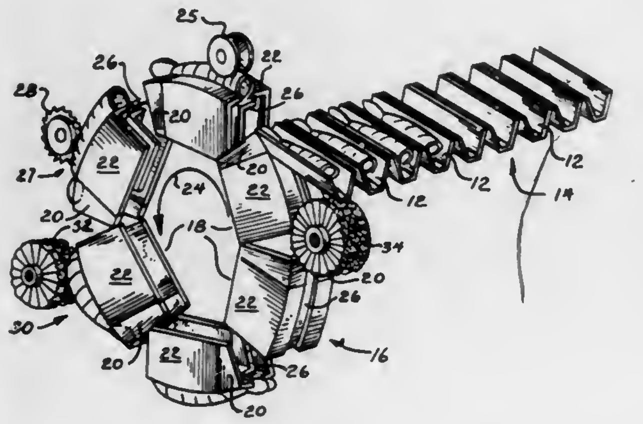
1. In a product processing and packaging system having means for severing portions of objects during travel and sort-

ing means for separation of selected ones of the severed portions of the objects substantially deviating in one direction from a predetermined weight limit, the improvement comprising means responsive to said separation of the selected severed portions for reassembly thereof with some of the objects prior to packaging, and means for processing the other of the severed portions separately from the reassembled severed portions.



4,439,893
SPRING CAM FOR SHRIMP CLAMP
Edmund D. Betts, Libertyville, Ill., assignor to Gregor Jonsson Associates, Inc., Highland Park, Ill.

Filed Aug. 26, 1981, Ser. No. 296,529
Int. Cl.^{3} A22C *29/02*
U.S. Cl. 17—72 **18 Claims**



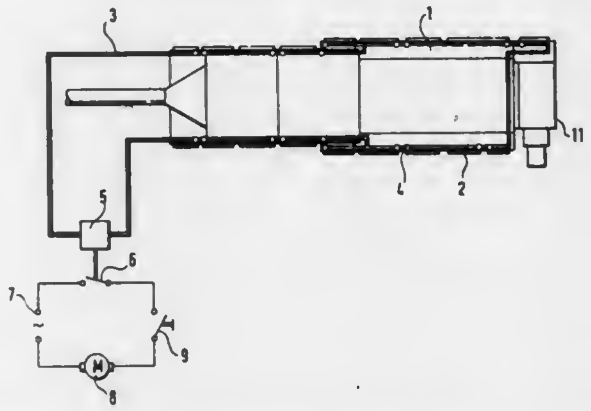
1. A shrimp processing machine comprising: a plurality of processing stations including a cutting station for cutting the shrimp lengthwise through the shrimp shells along the shrimp sand veins, and an adjacent deveining station for removing the sand vein of the shrimp; carrier means for transferring the shrimp through the processing stations, said carrier means including cam actuated clamps means for gripping the shrimp shells; and cam means between said cutting and said deveining stations arranged to controllably act upon said clamp means to cause an increase in pressure on the shrimp by said clamp means between said cutting and deveining stations for splitting the shrimp shells open to thereby expose the sand vein of the shrimp to the deveining station.

4,439,894
DOOR-OPERATED SAFETY SHUTOFF SYSTEM
Friedrich-Wilhelm Schwiers, and Trützschler, both of Monchen-Gladbach, Fed. Rep. of Germany, assignors to Trützschler GmbH & Co. KG, Monchen-Gladbach, Fed. Rep. of Germany

Filed Sep. 11, 1981, Ser. No. 301,323
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1980, 3034589
Int. Cl.^{3} F16P *3/08;* D01G *31/00*
U.S. Cl. 19—0.2 **3 Claims**

1. A safety system for a textile machine, said textile machine having a housing, a door mounted on the housing and having open and closed positions; a drive motor for operating components of said textile machine, an electric power circuit connected to said motor for supplying electric current thereto; said safety system being operatively connected with said door for presenting different output indications for said open position and said closed position; the improvement in said safety system comprising

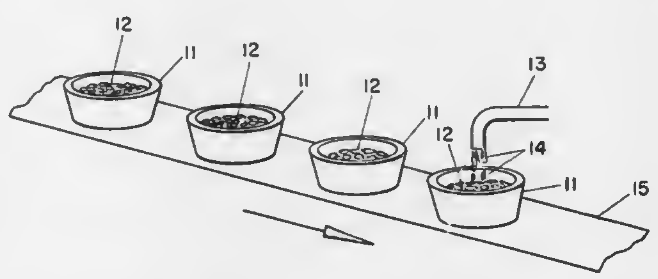
(a) an air line;
(b) a pressure difference generator communicating with said air line and operatively connected with said door for altering the pressure of air in said air line when said door moves from said closed position to said open position;



(c) a pressure-responsive switch operatively connected with said air line for presenting an output indication in response to the alteration of air pressure in said air line;
(d) a source of pressurized air connected to said air line; and
(e) a solenoid valve connected between said source of pressurized air and said air line for controlling admission of air from said source to said air line; and
(f) pressure drop responsive means coupled to said air line and said solenoid valve for shutting off said solenoid valve upon predetermined pressure drop in said air line.

4,439,895
OXIDE REFRACTORY MATERIAL HAVING FINE CRYSTAL STRUCTURE; AND PROCESS AND APPARATUS FOR MAKING SAME
Wesley Q. Richmond, Stevensville, Canada, assignor to Kennecott Corporation, Cleveland, Ohio

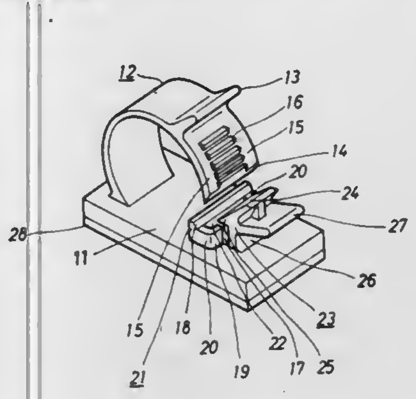
Continuation of Ser. No. 920,577, Jun. 29, 1978, abandoned, which is a continuation of Ser. No. 565,978, Apr. 7, 1975, abandoned, which is a continuation of Ser. No. 452,226, Mar. 18, 1974, abandoned, which is a continuation of Ser. No. 153,302, Jun. 15, 1971, abandoned. This application Aug. 2, 1982, Ser. No. 403,987
Int. Cl.^{3} B01D *9/00;* C09C *1/68*
U.S. Cl. 23—305 A **5 Claims**



1. Apparatus for rapidly cooling and solidifying an oxide refractory melt, comprising:
(1) a solidification chamber having a closed bottom;
(2) a static bed of non-reactive, non-melting particulate solid steel sphere cooling media, said cooling media having a size ranging from about 5 to about 60 mm, packed within and filling the solidification chamber to a depth of at least about 15 cm;
(3) means for casting the oxide refractory melt into the solidification chamber, over the steel sphere cooling media, after the steel sphere cooling media are packed within the solidification chamber, said size, the composition of said steel and sizing of said means, being preselected to provide a grain having at least about 80% by numerical count of discontinous crystals having a size smaller than about 15 microns and the remainder of the discontinuous crystals having a size ranging from about 15 to 40 microns; and
(4) a magnet for recovering the cooling media from the solidified melt.

4,439,896
CLAMP FOR A BUNDLE OF CABLES
Kazuhiro Matsui, Toyoake, Japan, assignor to Kitagawa Industries, Co., Ltd., Aichi, Japan
PCT No. PCT/JP81/00249, § 371 Date May 20, 1982, § 102(e) Date May 20, 1982, PCT Pub. No. WO82/01459, PCT Pub. Date Apr. 29, 1982

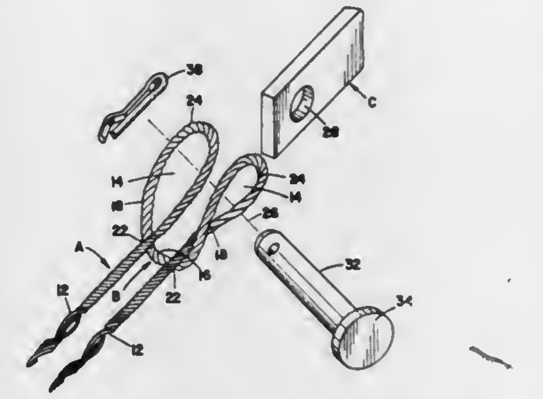
PCT Filed Sep. 21, 1981, Ser. No. 385,397
Claims priority, application Japan, Oct. 9, 1980, 55-141398
Int. Cl.^{3} B65D *67/02;* F16L *3/08*
U.S. Cl. 24—16 PB **4 Claims**



1. A clamp for a bundle of cables, comprising:
a resilient plastic base;
an escape hole formed in said base;
a guide portion extending from said base adjacent said escape hole, said guide portion having a first upstanding inclined wall at one side of said escape hole, a pair of second upstanding walls at a side of said escape hole opposite said one side and a pair of upstanding third side walls connecting said first and second walls, whereby said guide portion surrounds said escape hole and defines a portion of an inserting groove leading to said escape hole;
an engaging portion fixed to said base, said engaging portion including a support wall connected to said base, a claw connected to said support wall and being positioned between said second walls of said guide portion so as to define the remainder of said support groove, an inclined surface connected to said claw, and a release operating portion projecting from said support wall;
a C-shaped resilient arm having a first end integrally formed with said base and a free end constructed so as to be insertable in said inserting groove and said escape hole, said free end including a plurality of ratchet shaped projections formed on a central portion thereof, said projections being mutually spaced along a line connecting said ends of said resilient arm,
whereby said inclined wall of said guide portion and said inclined surface of said engaging portion guide said free end of said resilient arm into said inserting groove, whereby engagement of said claw with said projections retains said resilient arm in said escape hole, whereby said second walls of said guide portion abut portions of said free end not including said projections so as to support and secure said free end in said escape hole, and whereby said third walls laterally retain said free end of said resilient arm.

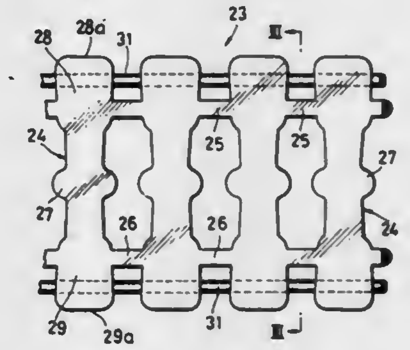
4,439,897
DEAD-END APPLIANCE FOR LINEAR BODIES
Robert S. Kindel, Cleveland, Ohio, assignor to Preformed Line Products Company, Mayfield Village, Ohio

Filed Dec. 22, 1981, Ser. No. 333,406
Int. Cl.^{3} F16G *11/12*
U.S. Cl. 24—115 N **11 Claims**



8. A dead-end appliance constructed primarily of relatively rigid linear elements for linear bodies comprising: a pair of elongated legs including gripping means for grippingly engaging a portion of a linear body; an integral connecting portion connecting said legs at one end thereof; said connecting portion including integral pin receiving eyes and a bight portion; said pin receiving eyes being interposed between said legs and bight portion along the length of said elements; and, said bight portion being located on the same side of said eyes as said legs.

4,439,898
SLIDE FASTENER STRINGER
Kiyoshi Takeshima, Namerikawa, and Akira Hasegawa, Kurobe, both of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan
Continuation of Ser. No. 331,269, Dec. 16, 1981. This application Jun. 1, 1983, Ser. No. 498,721
Claims priority, application Japan, Dec. 26, 1980, 55-188386
Int. Cl.^{3} A44B *19/30*
U.S. Cl. 24—401 **3 Claims**



1. A slide fastener stringer comprising:
(a) a stringer tape;
(b) a molded coupling element strip of continuous thermoplastic disposed on and along one longitudinal edge of such stringer tape, said tape including a succession of laterally spaced coupling elements each having a head and a pair of first and second legs extending from said head in a common direction, and said strip including a molded single pair of series of first and second thread-free connecting portions, each of said first connecting portions extending integrally with and between an adjacent pair of said first legs, each of said second connecting portion extending integrally with and between an adjacent pair of said second legs; and (c) a pair of connector threads extending transversely of said coupling elements along the full length of said strip and lying at confronting surfaces of

said first and second legs, of each said coupling element and being exposed therebetween, each of said exposed connector threads being normally parallel and spaced from a respecitve one of said pair of series of said thread-free first and second connecting portions toward the respective heel side of said first and second legs.

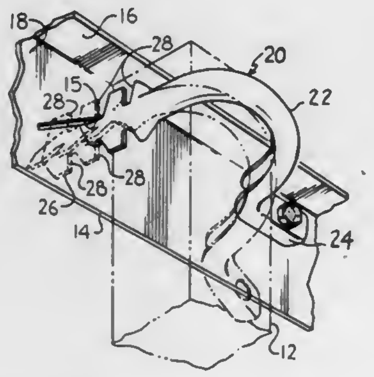
4,439,899
CLAMPING APPARATUS

Rudolph ReuBoiu, 597 Calle Hidalgo, San Clemente, Calif. 92672, and Kenneth L. Fiebelkorn, Monterey Park, Calif., assignors to Rudolph ReuBoiu, San Clemente, Calif.

Filed Nov. 12, 1981, Ser. No. 320,422

Int. Cl.^{3} A44B *21/00*

U.S. Cl. 24—458 **7 Claims**



1. Clamping apparatus comprising:

a first member having edge means defining a slot aperture with an enlarged wider portion and a narrower portion, and

a second member having a generally arcuate portion configured for extension about an object to be clamped between the first and second members,

said second member having a first end portion defining a plurality of pairs of notches, the respective notches of each pair being defined in opposite side edges of the end portion and being sized and configured to engage said first member slot edge means upon insertion of the first end portion in the wider portion of said slot and rotation thereof relative to the first member to attach the second member first end portion to the first member, and

fastener means adapted for adjustable securement on the second end portion of the second member, said fastener means being adjustable in position relative to the first member to retain and space the second member second end portion from the first member to a selected distance to clamp an object of particular size between the first and second members in cooperation with the engagement of a selected pair of said notches of a second end portion in the slot edge means of the first member.

4,439,900
SCAFFOLDING DEVICES

Jack G. Lowe, Belbroughton, near Stourbridge, England, assignor to Burton Delingpole & Company Limited, Warley, England

Filed Jul. 13, 1981, Ser. No. 282,582

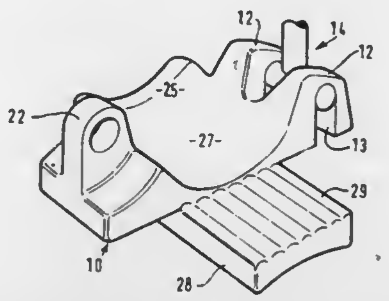
Claims priority, application United Kingdom, Jul. 16, 1980, 8023169

Int. Cl.^{3} F16L *3/04, 3/10, 3/24*

U.S. Cl. 24—514 **8 Claims**

1. A device for clamping together a scaffolding pole and a flange of a construction member, the device comprising first and second body members each having an arcuate seat to engage a surface portion of the scaffolding pole, and having cooperable therebetween screw threaded clamping means,

wherein the seat of the second body member is curved in a plane extending at right angles to the longitudinal axis of the pole and in a plane extending longitudinally of the pole, said second body member comprising an integral clamping portion which projects away from said seat and has a flange engaging surface, the clamping means being connected to the second body member between the clamping portion and the arcuate seat and comprising a single operating member, rotation of which causing the seat of the second body member to roll around the scaffolding pole and the flange-engaging surface of the clamping portion to move towards the scaffolding pole to bear against and make essentially area contact with the one side of the flange to press the other side thereof against the scaffolding pole to effect a rigid connection therebetween, and causing the body members to clamp around the scaffolding pole.



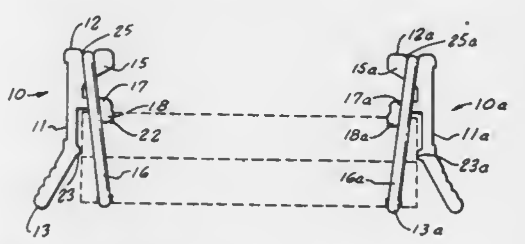
4,439,901
CLAMP

Roy T. Eddleman, Los Angeles, Calif., assignor to Spectrum Medical Industries, Inc., Los Angeles, Calif.

Filed Mar. 28, 1983, Ser. No. 479,335

Int. Cl.^{3} B65D *63/00*

U.S. Cl. 24—530 **7 Claims**



1. A multi-part assembly held by at least one clamp, said assembly comprising:

a clampable member having at least two parts;

a first interlocking area formed in the outer surface of one of said parts;

a second interlocking area formed in the outer surface of a second of said parts;

a clamp member comprising:

a base member;

a bail support arm extending inwardly with respect to said base member;

bail means having a pivot end and a clamp end, said bail means being held at the pivot end thereof by said bail support arm at a bail pivot point, said bail means having its clamp end shaped to be held by said second interlocking area formed in the outer surface of one of said parts, and said bail means being further adapted to pivot with respect to the base member; and

a flexible arm affixed to the base member, said arm having a contact area being shaped to mate with the first interlocking area in the outer surface of one of said parts and said contact area being located at a point within an arc formed by the movement of the bail means from its unclamped to its clamped configuration and being further located at a point so that it is flexed in a direction toward said bail pivot point when said clamp is affixed about the clampable member.

4,439,902
CLIP FOR SECURING AROUND A MEMBER SUCH AS A PIPE

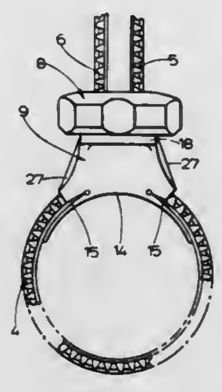
Peter J. Huxtable, Merritts, Great Witley, Worcestershire, England

Filed May 28, 1981, Ser. No. 268,064

Claims priority, application United Kingdom, Jun. 5, 1980, 8018469; Jan. 6, 1981, 8100256

Int. Cl.^{3} B65D *63/00*

U.S. Cl. 24—278 **4 Claims**



1. A clip for securing around a member comprising a flexible plastics strap of width substantially greater than the thickness thereof, opposite ends of said strap being formed on one side thereof with external screw thread portions, a body having a base for engagement with said member and an opposed abutment surface, a nut abutting with said abutment surface and having a bore provided with internal screw threads of complementary form to said external thread portions for meshing therewith, a peg depending from said body and upstanding from said abutment surface within said bore of said nut, said peg having opposed side faces which are spaced from said internal screw threads, said body being provided with a first pair of openings spaced a first distance apart in said abutment surface each opening being respectively adjacent to an opposed side face of said peg, with a second pair of openings respectively adjacent to opposite ends of said base and spaced a second distance apart greater than said first distance, and with a pair of guide passages each of which connects a respective one of said first pair of openings with a respective one of said second pair of openings for guiding said opposite ends of said strap into position in said nut in engagement respectively with said opposed side faces of said peg, each of said passages being arcuate along its entire length between said respective openings, whereby when said screw thread portions are meshed with said internal screw threads and said nut is rotated relative to said body both said strap ends are drawn through said nut to tighten said strap around said member, said body being formed of plastics material.

4,439,903
METHOD FOR PRODUCING AN INTERLACED MULTI-FILAMENT YARN

Tadayuki Matsumoto, Mishima; Kozo Imaeda, Sunto; Masatoshi Mineo, and Kiyoshi Nakagawa, both of Mishima, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation of Ser. No. 22,934, Mar. 22, 1979, Pat. No. 4,365,394, which is a division of Ser. No. 865,667, Dec. 29, 1977, abandoned, which is a division of Ser. No. 705,145, Jul. 14, 1976, Pat. No. 4,115,988. This application Sep. 21, 1981, Ser. No. 304,322

Claims priority, application Japan, Jul. 18, 1975, 50-87372

The portion of the term of this patent subsequent to Dec. 28, 1999, has been disclaimed.

Int. Cl.^{3} D02G *1/20, 1/16;* D02J *1/08, 1/16*

U.S. Cl. 28—258 **10 Claims**

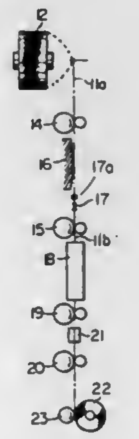
1. Method for producing an interlaced multifilament yarn having filaments which are not substantially broken comprising, in combination;

previously rubbing and scratching a material multifilament yarn with such intensity that individual filaments constituting said filament yarn are not substantially broken by a rotary rough surface member having sharp projections which are smaller than the cross-sectional diameter of the individual filaments of said material yarn to thereby increase the interlacing ability of the yarns;

then diffusing at least one jetted fluid, jetted in the yarn running direction along a predetermined yarn passage from a jetting aperture of a supply conduit through a nozzle formed with a rectifying and diffusing portion having a substantially uniform cross-section, said supply conduit being fixed with respect to members defining said yarn passage, said fluid being diffused along a direction parallel to said yarn passage in said rectifying and diffusing portion, said smaller sharp projections being at an upstream portion to the working portion of said jetted fluid;

said rectifying and diffusing portion having a height h, a slit provided for threading of the yarn, and wherein the minimum distance R from the top edge of the opening of said slit in the diffusing portion to the point where the yarn passage encounters the diffusing portion is at least 0.2×h and the slit width R at the opening in the diffusing portion is smaller than 0.4×h so that the yarn does not escape; and

impinging said diffused jetted fluid against said running material multifilament yarn so that said individual filaments of said multifilament yarn mostly vibrate in a direction substantially parallel to a plane defined by the yarn running direction and the fluid jetting direction, the vibration taking place in a section of said yarn passage facing said rectifying and diffusing portion.



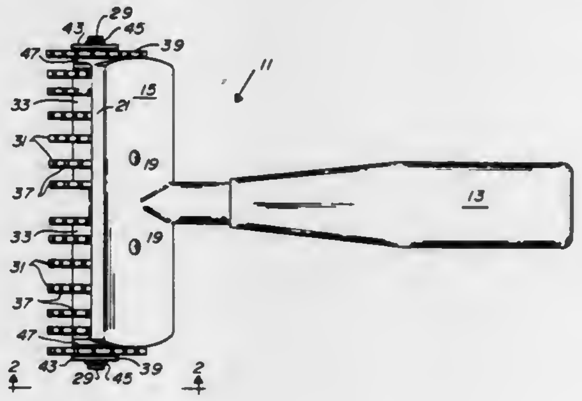
4,439,904
CARPET SEAMING ROLLER TOOL

Merle C. Hoopengardner, Lafayette, and William B. Wenzel, Alameda, both of Calif., assignors to Orcon Corporation, Union City, Calif.

Filed Aug. 10, 1981, Ser. No. 291,192

Int. Cl.^{3} B30B *3/00;* B22F *3/18*

U.S. Cl. 29—110.5 **6 Claims**



1. A bi-directional carpet seaming roller tool for drawing

two sections of carpet together at a seam during a hot melt seaming operation in which a hot melt adhesive on a carpet seaming tape has been heated to a molten state by a heated iron, said roller tool being constructed to continuously press the edges of the carpet sections down into the hot melt adhesive during both pushing and pulling movement of the roller tool forward and backward along the seam and to thereby permit the carpet installer to work quickly to get the carpet backing properly pressed down into the hot melt adhesive during the relatively short period of time that the hot melt adhesive remains in the open phase after the heating by the iron and before the hot melt adhesive cools down to a condition in which the carpet backing cannot be properly pressed into the rapidly solidfying hot melt adhesive, said roller tool comprising,

a main frame,
a handle connected to the main frame,
first and second rollers disposed side-by-side so that one roller grips one section of carpet and the other roller grips the other section of carpet as the roller tool is rolled back and forth along the seam, and
mounting means mounting each roller for swinging movement of the outer end of the roller backward and forward with respect to the inner end of the roller and effective to cause the rollers to automatically swing to positions which draw the two sections of carpet together at the seam during movement of the tool along the seam in both the pushing direction and the pulling direction, said mounting means including pivot means for each roller located inwardly of the mid point of the roller and providing a generally vertical axis for said swinging movement of the roller so that the outer end of the roller can swing back and forth in forward and rearward directions with pulling and pushing movement of the roller tool backward and forward along the seam.

4,439,905

INSTALLATION FOR REPLACING A CONTAMINATED FLUID CIRCUIT AND PROCESS FOR REPLACING THIS MEMBER

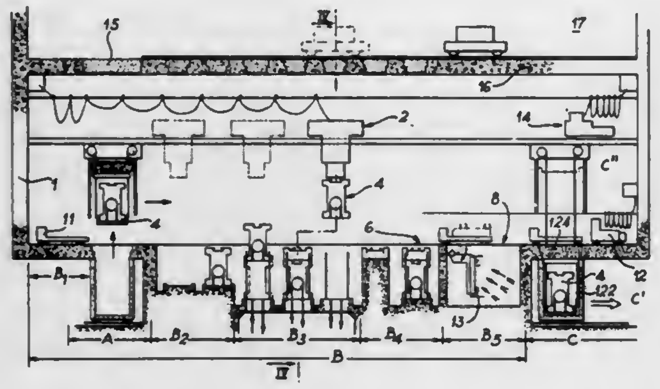
Pierre Gourdon, Paris; Rene Goutard, Verriers le Buisson, and Pierre Piry, Briis sous Forges, all of France, assignors to Commissariat a l'Energie Atomique, France

Filed Jul. 13, 1981, Ser. No. 282,602

Claims priority, application France, Jul. 15, 1980, 80 15606

Int. Cl.³ B22D *19/10*

U.S. Cl. 29—402.04 **9 Claims**



1. Installation for replacing a member in a contaminated fluid circuit, characterized in that it comprises a tight container **(44)** having internally a base **(52)** and supports **(54)** for said base supported on a framework **(56)**; a module **(18)** which can be introduced into the tight container, said module comprising a horizontal base **(20)**, a member **(19)** to be replaced fixed to said base, a ceiling **(42)** which is tightly fitted to the walls of the container, and a gripping head **(40)** making it possible to lift the module by means of a travelling crane **(2)**; means centering the module relative to the tight container comprising vertical columns **(58)** integral with the base **(52)** of the container, and tubular spacers **(70)** integral with the module, each column comprising a lower centering part **(60)**, an intermediate part **(62)** of smaller diameter, an upper centering part **(64)** and a truncated cylindrical head **(66)** connected to the upper centering part **(64)** by a smaller diameter collar **(68)**; means tightly connecting the member **(19)** to the contaminated fluid circuit when the module is placed in said container **(44)** comprising vertical ducts **(32)** traversing the far end **(48)** and base **(52)** of the tight container, said ducts having ends facing feed **(22)** and discharge **(24)** pipes of the member **(19)**, joints **(36)** placed between the ducts and the feed and discharge pipes, and means flanging or clamping themodule to the tight container so as to tighly seal the joints; and means driving the member **(19)**.

4,439,906

METHOD OF PRODUCING TWICE THE NUMBER OF SINGLE OR RIBBON CONDUCTORS IN A PROCESSING MACHINE AND APPARATUS THEREFOR

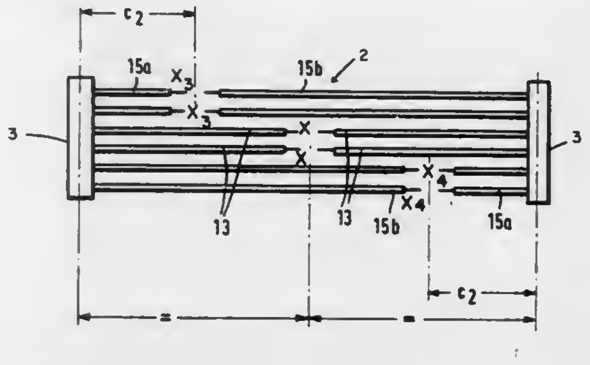
Manigel Heinz, and Ströter Hermann, both of Wuppertal, Fed. Rep. of Germany, assignors to Stocko Metallwarenfabriken Henkels und Sohn GmbH & Co.

Filed Nov. 18, 1981, Ser. No. 322,340

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1980, 3044319

Int. Cl.³ B23P *17/00*

U.S. Cl. 29—412 **6 Claims**



1. In a method for producing in the same processing machine individual lengths of conductors, which are equipped at one end with plugs or connector shells and at the other end are stripped of insulation, starting out from single or ribbon conductors, transported by a transport system in the processing machine, the conductors being equipped on both ends in an equipping station, the improvement comprising the step of

simultaneously cutting and stripping the insulation of the conductors by a cutting and insulation-stripping device following the equipping station in the processing machine, including
positioning the cutting and insulation-stripping device to be spaced from first longitudinal axes of the transport system, said first longitudinal axes being transverse to said conductors and adjacent to free ends of said conductors.

4,439,907

METHOD OF MAKING AN ABRASIVE DISC

Aleck Block, Los Angeles, and Arthur F. Carlson, South Gate, both of Calif., assignors to Merit Abrasive Products, Inc., Compton, Calif.

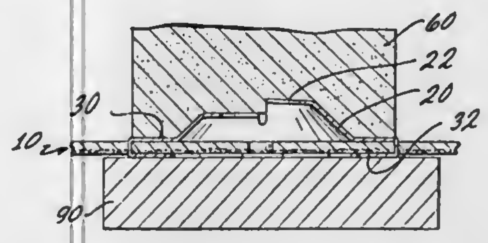
Division of Ser. No. 223,167, Jan. 7, 1981, which is a continuation-in-part of Ser. No. 55,630, Jul. 9, 1979, abandoned. This application Mar. 29, 1982, Ser. No. 363,248

Int. Cl.³ B23P *11/00*

U.S. Cl. 29—432.1 **8 Claims**

1. A method of producing an abrasive disc, including the steps of:

providing a backing member having first and second opposite surfaces and abrasive particles adhered to the first surface,
forming from a metallic sheet material a drive member having at a central position a boss with a single-turn internal thread, a flange extending from the periphery of the boss and fingers extending from the periphery of the flange and having blunted outer ends,
folding the fingers to extend in a direction opposite to the boss and transverse to the flange,
directing the fingers through the second surface of the backing member and the first surface of the backing member at a high speed to a position displaced from the first surface of the backing member to remove slugs from the backing member without the formation of burrs in the backing member, and
bending against the first surface of the backing member the portions of the fingers displaced from the first surface of the backing member to dispose such portions of the fingers in abutting and flush relationship with the backing member.



4,439,908

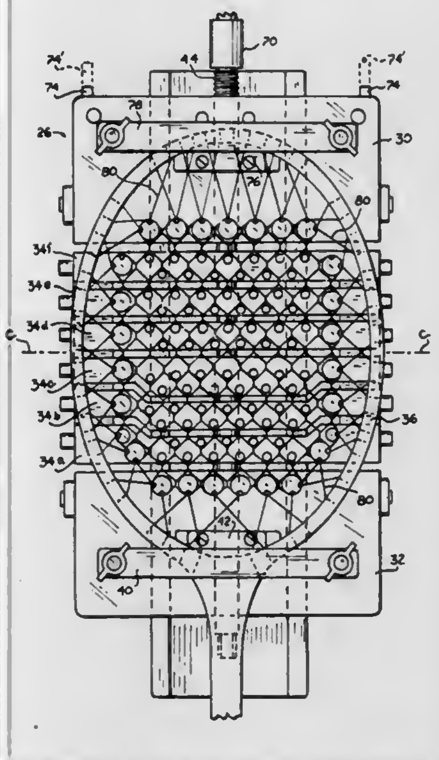
METHOD FOR STRINGING A RACQUET

Ernest McDonald, 5380 Poppy Blossum Ct., San Jose, Calif. 95123

Filed Sep. 30, 1982, Ser. No. 428,814

Int. Cl.³ A63B *51/00*; B23P *11/02*

U.S. Cl. 29—446 **2 Claims**



1. A method for stringing a racquet comprising the steps of:

(a) preparing a pre-strung web having a linear axis of expansion and a central axis substantially perpendicular to said axis of expansion, said web comprising string means woven into a number of parallel, interlocking, zig-zag rows such that interstices of said web are substantially diamond shaped having a longitudinal axis parallel to said linear axis of expansion and a transverse axis parallel to said central axis;
(b) successively spreading said zig-zag rows apart along said axis of expansion, said spreading beginning with the zig-zag rows most proximate said central axis and proceeding outwardly to the zig-zag rows most distal from said central axis; and
(c) attaching a perimeter portion of said pre-strung web to the head of a racquet.

4,439,909

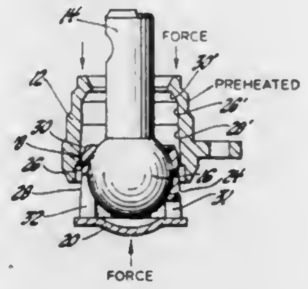
BALL JOINT MANUFACTURE

Robert H. Borgen, Winona, Minn.; Harold J. Reindl, and Vernon L. Pickering, both of Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 8, 1982, Ser. No. 396,347

Int. Cl.³ B23P *11/02*

U.S. Cl. 29—453 **3 Claims**



1. A method of forming a ball joint having a plastic liner disposed between a metal ball and a substantially cylindrical, metal socket wherein a tight fit is required therebetween comprising the steps of: (1) forming the liner so as to have a predetermined sliding fit with the ball and a predetermined oversize fit with the socket, (2) forcing the liner onto the ball, (3) heating the socket to a predetermined temperature which will melt the surface of the liner on contact therewith, (4) forcing the liner with the ball contained therein into the heated socket whereby the heat of the latter effects surface melting of the liner so as to conform with and seat on a prescribed surface of the socket, and (5) quenching at least the socket to solidify the liner whereby there is effected a tight assembled fit between the liner and the ball and also between the liner and the socket such that the tight fit between the ball and liner permits relative motion therebetween and the tight fit between the liner and the socket prevents relative motion therebetween.

4,439,910

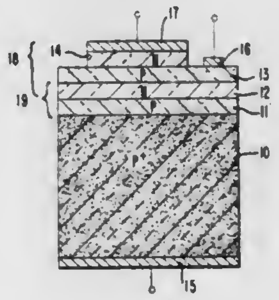
PROCESS FOR FABRICATION OF MONOLITHIC TRANSISTOR COUPLED ELECTROLUMINESCENT DIODE

Prahalad K. Vasudev, Santa Monica, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Division of Ser. No. 191,558, Sep. 29, 1980, Pat. No. 4,388,633. This application May 20, 1982, Ser. No. 470,101

Int. Cl.³ H01L *21/20*

U.S. Cl. 29—569 L **9 Claims**



1. A process for fabricating an amplifier for amplifying optical radiation which comprises:

(a) providing a highly doped substrate of a compound semiconductor material having a first conductivity;
(b) forming on at least a portion of said substrate a first epitaxial layer of a compound semiconductor material having the same conductivity as said substrate;
(c) forming on at least a portion of said first layer a second epitaxial layer of a compound semiconductor material

having a conductivity opposite to that of said first layer and being essentially undoped;

(d) forming on at least a portion of said second layer a third epitaxial layer of a compound semiconductor material having a conductivity the same as said first layer, said third layer having a thickness sufficient to provide the amplifier with a high emitter injection efficiency;

(e) forming on a portion of said third layer a fourth epitaxial layer of a mixed compound semiconductor having a conductivity the same as said second layer;

(f) forming an ohmic contact to said fourth layer; and

(g) forming an ohmic contact to said substrate.

4,439,911

METHOD OF MAKING AN OXYGEN SENSOR

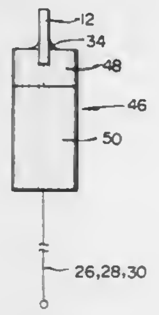
Kenji Ikezawa, Yokohama; Hiroshi Takao, Kamakura; Satoshi Ambe, Yokosuka, and Masaaki Uchida, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Division of Ser. No. 220,153, Dec. 23, 1980, abandoned. This application Nov. 16, 1982, Ser. No. 442,231

Claims priority, application Japan, Dec. 28, 1979, 54-170445

Int. Cl.^{3} G01N *27/58*

U.S. Cl. 29—570 **13 Claims**



1. A method of maintaining a solid electrolytic oxygen sensor element of an oxygen sensor unit having a support member at an effective operating temperature, comprising:

forming a first green conditioned body of a heat insulating material;

forming a second green conditioned body of a ceramic material;

forming a groove on a surface of said first body;

aligning said first and second bodies to form said support members;

sintering the aligned first and second bodies to intimately bond them together;

mounting said solid electrolytic oxygen sensor element in said groove to form said oxygen sensor unit;

wherein said heat insulating material has a lower thermal conductivity than said ceramic material, the thermal conductivity of said heat insulating material being less than on the order of about 0.01 cal.cm/cm^2·sec.C.°.

4,439,912

INFRARED DETECTOR AND METHOD OF MAKING SAME

John H. Pollard, and John B. Ramsey, Jr., both of Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 19, 1982, Ser. No. 369,774

Int. Cl.^{3} H01L *31/18*

U.S. Cl. 29—572 **2 Claims**

1. A method of making an infrared detector including the following steps:

prepare a semiinsulating substrate with an epitaxial layer atop;

remove portions of said layer to define at least one detector region;

chemically etch said region to round the corners thereof;

form conductive leads on said substrate and said layer thusly:

mask said substrate and said layer;

ion clean the unmasked portions of said substrate and said layer;

while continuing to ion clean, start depositing a molybdenum layer on mask, substrate, and layer;

stop ion cleaning;

stop depositing molybedenum when the desired thickness is reached;

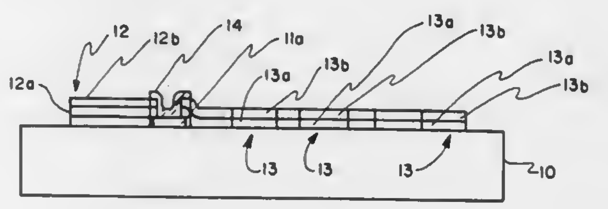
ion clean the molybdenum;

while continuing to ion clean, start depositing gold-germanium alloy;

stop ion cleaning;

stop depositing gold-germanium alloy when the desired thickness is reached;

lift off mask and overlying molybdenum and gold-germanium alloy;



passivate the detector region thusly:

mask all regions of the substrate, the epitaxial layer, and the gold-germanium depositation except for the desired detector active region;

place the substrate in a gas-tight enclosure and pump a vacuum therein;

while continuing to vacuum pump, bleed oxygen into the enclosure;

ion clean the region exposed through the mask;

while continuing to ion clean, start depositing zinc sulfide;

stop cleaning, stop oxygen flow;

stop depositing zinc sulfide when the desired thickness is reached;

remove from gas-tight enclousre;

remove mask;

bond on output leads.

4,439,913

METHOD AND MEANS FOR MANUFACTURING FRONTAL COMMUTATORS OF ELECTRIC MOTORS, MORE PARTICULARLY OF THE TYPE HAVING AN INSULATION BETWEEN THE COMMUTATOR BARS

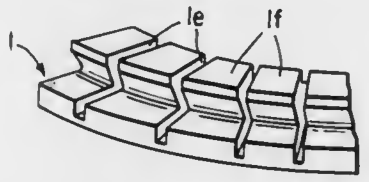
Michel Coquillart, St. Etienne Terrenoire, France, assignor to Mavilor Systemes, Switzerland

Filed May 8, 1981, Ser. No. 261,697

Claims priority, application France, May 9, 1980, 80 11151

Int. Cl.^{3} H01R *43/08*

U.S. Cl. 29—597 **7 Claims**



1. Method for manufacturing frontal commutators of electric motors, more particularly of the type having insulation between the commutator bars, characterized in that the commutator (1) is cut to length, the various necessary diameters are machined, a plurality of radial grooves (1*e*) are made on a face of a crown thus obtained and in which grooves insulating sheets (2) the profiles of which correspond to the sectional profile of the commutator but with slightly different dimensions, are inserted, the commutator is forced through a bore (3*a*) of slight taper of a tooling (3) to retain securely the sheets (2) within the grooves (1*e*) by diametral contraction of the commutator, thin portions (1*g*) of the commutator which are situated between the radial grooves and the face of the commutator opposite to the grooves are removed by machining within a second tooling (5), the commutator thus prepared is placed between two parts (7-8) of a mold in which resin (10) for encasing the commutator equipped with its windings and the inner socket (9) is cast.

4,439,914

ADHESIVE OIL RESISTANT INSULATED WIRE CONSISTING OF TWO LAYERS INCLUDING AN UNCATALYZED EPOXY-PHENOXY RESIN OUTER LAYER

Daniel R. Sassano, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 24, 1982, Ser. No. 361,212

Int. Cl.^{3} B05D *5/12;* B32B *15/08*

U.S. Cl. 29—605 **8 Claims**

1. A method of making an insulated, bondable electrical conductor comprising the steps of:

(1) continuously passing an electrical conductor, at least once, at a first rate of speed, through first resin application means, to provide a first insulating layer deposited about the conductor, and then

(2) continuously passing the insulated conductor, at the first rate of speed, through an adhesive resinous solution, and then a heating means at a temperature sufficient to drive off solvent, to provide a fusible adhesive layer coated directly over and contacting the first layer, where the adhesive solution consists essentially of the uncatalyzed solution mixture of an epoxy resin having an epoxy equivalent weight range of from about 250 to about 750 and a solid phenoxy resin, where the weight ratio of (epoxy resin):(phenoxy resin) in the mixture is from (1):(0.5 to 2.5).

4,439,915

HEATER INSTALLATION IN MOLDING MEMBERS

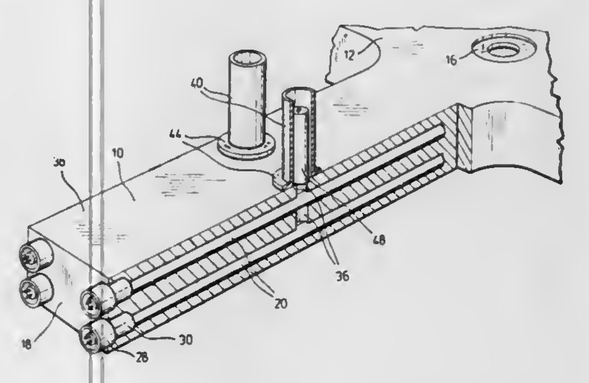
Jobst U. Gellert, 7A Prince St., Glen Williams, Canada

Filed Apr. 16, 1982, Ser. No. 369,193

Claims priority, application Canada, Mar. 31, 1982, 400058

Int. Cl.^{3} H05B *3/06*

U.S. Cl. 29—611 **2 Claims**



1. A method of integrally installing an elongated electric cartridge heater in a steel injection molding member, the heater having a generally uniform cross section with a terminal portion at at least one end, the molding member having at least one end and a top, comprising the steps of:

(a) drilling a longitudinal bore in the molding member, the bore being slightly larger in diameter than the cartridge heater;

(b) drilling a filler duct in the molding member to extend from an upper end at said top of the molding member to intersect the elongated bore along its length;

(c) inserting the cartridge heater into a position in the elongated bore with a terminal portion extending at said at least one end, a small air space being formed around the heater in the bore;

(d) locating an open ended filler tube on the top of the molding member around the upper end of the filler duct, applying brazing material around the joint between it and the molding member as well as around the terminal portion of the cartridge heater at said at least one end and brazing the assembly in a vacuum furnace to fix the filler tube in position on the molding member and seal the bore around the heater;

(e) inserting a predetermined quantity of highly conductive material into the filler tube fixed to the molding member;

(f) vacuum casting the assembly in a vacuum furnace to melt the highly conductive material which flows down through the duct to fill the space around the heater, to provide an integral structure with the molding member; and

(g) machining off the filler tube after removal from the vacuum furnace.

4,439,916

METHOD OF MAKING A COMPOSITE ELECTRODE

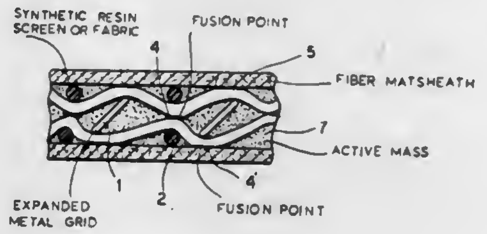
Peter Faber, Karlstein, Fed. Rep. of Germany, assignor to Rheinisch-Westfalisches Elektrizitätswerk Aktiengesellschaft, Essen, Fed. Rep. of Germany

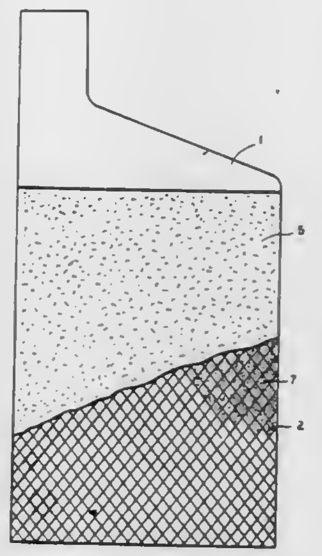
Continuation of Ser. No. 118,793, Feb. 5, 1980, abandoned, and a continuation-in-part of Ser. No. 885,180, Mar. 10, 1978, abandoned. This application Jul. 23, 1982, Ser. No. 401,244

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1977, 2710908

Int. Cl.^{3} H01M *4/22*

U.S. Cl. 29—623.4 **4 Claims**





1. A method of making a composite electrode for a storage battery or the like which comprises the steps of:

applying to opposite sides of a metal support, formed with a surface distribution of throughgoing openings, respective flexible screen-like synthetic-resin openworks of filamentary material to form a resulting three-layered assembly;

sandwiching the entire resulting assembly between a pair of rigid ultrasonic welding plates having juxtaposed surfaces substantially coextensive with said openworks;

applying a mechanical pressure of substantially 2 to 20 g/cm^2 to said assembly by pressing said plates toward one another to deflect said openworks and simultaneously subjecting same to ultrasonic welding by applying ultrasonic energy at a frequency of about 20,000 Hz across said plates for a period of about 1 to 2 seconds and only long enough to bond the filaments thereof together through said openings without bonding said filaments to the metal support, said openworks forming interstices on opposite sides of said support;

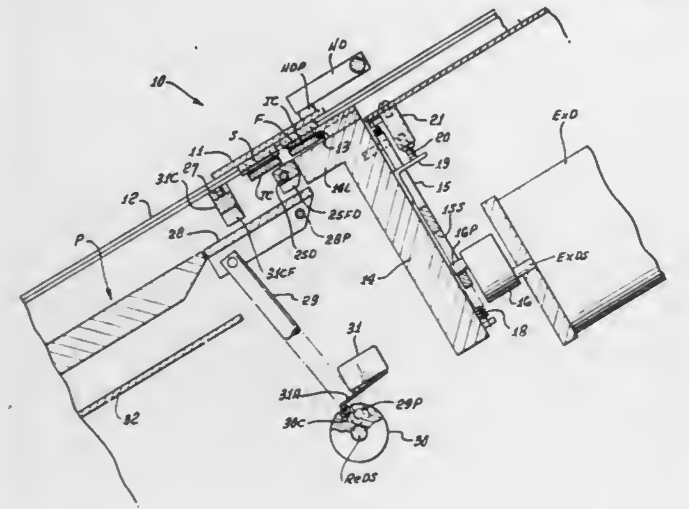
thereafter placing an active mass in said interstices and in contact with said support; and

fusing, by the application of heat and pressure, respective fine-porous flexible cover layers of synthetic resin to said openworks, the active mass being deposited in said interstices before said cover layers are emplaced thereon whereby the active mass is densified by the pressure subsequently applied to said cover layers.

4,439,917

METHOD AND APPARATUS FOR AUTOMATICALLY EXTRACTING INTEGRATED CIRCUIT PACKAGES FROM ELECTRICAL SOCKETS

Rune S. Pearson, 2808 Oregon Ct. L-12, Torrance, Calif. 90503
Continuation-in-part of Ser. No. 142,367, Apr. 21, 1980, abandoned. This application Nov. 20, 1981, Ser. No. 323,268
Int. Cl.³ H01R *43/00;* **B23P** *19/00*
U.S. Cl. 29—825 **24 Claims**



1. A method of extracting integrated circuit packages from integrated circuit sockets including the steps of

providing extraction apparatus having a plurality of extraction elements aligned transversely of the apparatus in a preselected location thereon,

positioning a printed circuit board having integrated circuit packages mouned on individual sockets on the board on the extraction apparatus with the integrated circuit packages extending downwardly from said board to permit relative movement between the board and the extraction elements to permit the extraction elements to be positioned a substantial distance between the integrated circuit packages and the electrical sockets therefor,

causing the apparatus to automatically and substantially simultaneously pull the integrated circuit packages from the electrical sockets in a direction substantially perpendicular to the plane of the electrical sockets to thereby remove the packages therefrom.

14. Apparatus for automatically extracting integrated circuit packages having their leads mechanically mounted in individual electrical sockets therefrom comprising,

extraction means having a plurality of extraction elements arranged in parallel alignment thereon and constructed and defined to receive a printed circuit board in alignment with the extraction element;

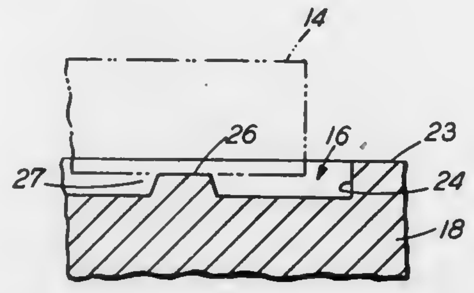
means for positioning a printed circuit board, having integrated circuit packages mounted on an individual electrical socket on said printed circuit board, on said extraction means in longitudinal alignment with the extraction elements to permit the extraction elements to be positioned between the circuit packages and the electrical sockets therefor upon the production of relative movement between said board and said extraction elements; and

means operatively mounted with said extraction means and operable for automatically extracting the integrated circuit packages from their mounted sockets in response to the preselected positioning of the extraction elements between the integrated circuit packages of said sockets to pull the extraction elements and thereby the integrated circuit packages away from their individual sockets in a direction substantially perpendicular to the plane of the electrical sockets to thereby remove the packages from the sockets without bending the leads thereof.

4,439,918

METHODS OF PACKAGING AN ELECTRONIC DEVICE

Arthur E. Carroll, II, Raytown, Mo.; Basil C. Lewis, Jr., Reading, Pa., and Howard T. Yeazel, Leawood, Kans., assignors to Western Electric Co., Inc. and Bell Telephone Laboratories, Inc., both of New York, N.Y.
Division of Ser. No. 19,543, Mar. 12, 1979, Pat. No. 4,346,396. This application May 7, 1982, Ser. No. 375,943
Int. Cl.³ H05K *3/34*
U.S. Cl. 29—840 **4 Claims**



4. A method of packaging an electronic device comprising:

spacing an electronic device by a predetermined distance from a substrate to form a gap between the device and the substrate;

providing solder for forming a substantially continuous layer of solder in the gap between the device and the substrate to bond the device to the substrate in a first solder-bonding operation and providing an excess of said solder;

retaining said excess of solder in a moat peripherally about the device in communication with the layer of solder in the gap; solder-bonding the electronic device to the substrate, the solder retaining the capacity to shift between the moat and the gap during said bonding and

attaching at least one lead to an upper surface of the device in a second solder-bonding operation while retaining the device in a spaced position in relationship to the substrate under an urging force exerted through the lead against the device.

4,439,919

AUTOMATIC LEAD MAKING APPARATUS

Ernest Cheh, W. Norwalk, and William Allen, Stratford, both of Conn., assignors to Burndy Corporation, Norwalk, Conn.
Filed Nov. 14, 1980, Ser. No. 207,046
Int. Cl.³ H01R *43/04*
U.S. Cl. 29—861 **11 Claims**

1. A method for manufacturing an electrical wire lead comprising the steps of:

securing a first electrical connector to the leading end portion of at least one electrical wire at a work location which the leading end portion is being held by displaceable guide means;

feeding a pre-determined length of said wire axially in a given direction, said guide means guiding said wire as it is being fed;

gripping a portion of said wire;

cutting said wire at said work location;

displacing the guide means by pivoting it away from said work location before securing a second electrical connector to the

trailing end portion of said wire; and

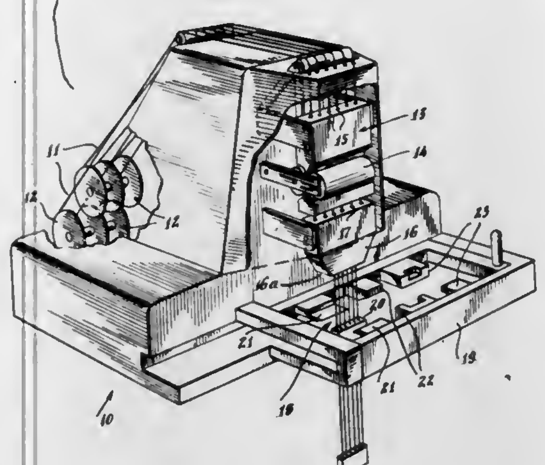
securing a second electrical connector to the trailing end portion of said wire at said work location.

2. An apparatus for withdrawing a pre-determined length of electrical wire from a supply, severing said pre-determined length from said supply, and installing an electrical connector on at least one end of said length, comprising:

feed means mounted on support means for advancing a pre-determined length of wire axially in a given direction;

guide means mounted on said support means having an entry for receiving wire from said feed means, and an exit for positioning wire at a work location;

gripper means mounted on said support means and spaced from the exit of said guide means along the given direction of motion of a wire, for gripping a portion of wire which has exited from said guide means;



cutter means positioned on connector carrying means and movable along a path transverse to said direction of motion of a wire intermediate said exit of said guide means and said gripper means for severing a wire which has exited from said guide means;

said connector carrying means movably mounted on said support means and movable along a path transverse to said given direction of motion of a wire, said path being positioned intermediate said exit of said guide means and said gripper means, for advancing a connector into position for an attachment to a wire which has exited from said guide means;

said guide means being movable mounted relative the path of said connector carrying means so that the exit of said guide means may be selectively and pivotably displaced away from the path of said connector carrying means to permit carrying a connector into position for attachment to a wire gripped in said gripper means; and

release means mounted on said connector carrying means for separating a severed, pre-determined length of wire from said gripper means.

4,439,920

DISPOSABLE RAZOR

Vincent J. Nauheimer, 121 Oneida Ave., Croton, N.Y.
Filed Apr. 22, 1982, Ser. No. 370,610
Int. Cl.³ B26B *21/00*
U.S. Cl. 30—47 **4 Claims**

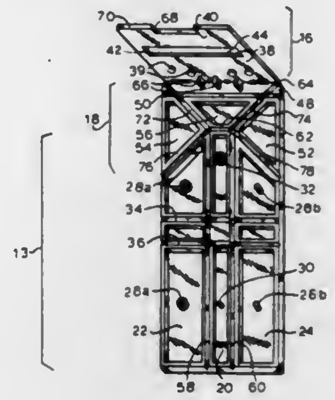
1. A disposable, foldable razor comprising:

a handle section, a blade, a blade holder section supporting said blade and a blade holder support section integral with said handle at its lower edges and integral with said blade holder at its upper edge;

said blade holder comprising upper and lower folded-together surfaces including said blade therebetween and an intermediate cut-out portion exposing the edge of said blade, and a back wall integral with said upper surface and maintained at a right angle thereto, said back wall at its lower edge being in integral, folding relation with the upper edge of said blade holder support section;

said handle and blade holder support sections together comprising in the flat position a rectangular section in integral folding relation at its upper edge with the lower edge of said blade holder section;

said handle section including (1) a pair of intermediate spaced, parallel, transverse score lines whereby the lower portion of said handle may be folded up so that its lower edge is in spaced, parallel relation with the line joining said blade holder and blade holder support sections, (2) a pair of spaced, parallel longitudinal score lines and an



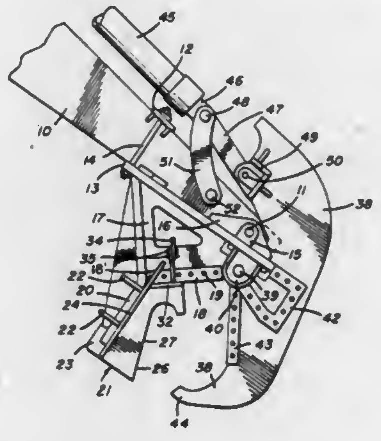
upper transverse score line between the upper ends thereof integral with said blade holder support section, whereby said handle may be folded along same into a general "U" shape, and (3) retainer means for holding said lower portion in a folded position defined in (1) and in the "U" shape defined in (2); and

said blade holder support section including a first pair of score lines extending from the ends of said upper transverse score line upwardly and outwardly across said back wall to the distal edges of said right angle, a second pair of score lines extending from the ends of said upper transverse score line downwardly and outwardly to the edges of said rectangle, and defining with said upper transverse score line the integral, foldable boundaries of said handle and blade holder support sections.

4,439,921

RAIL BREAKING ATTACHMENT FOR BACKHOES

Michael Ramun, and John Ramun, both of Youngstown, Ohio, assignors to Allied Gator, Inc., Youngstown, Ohio
Filed Feb. 24, 1982, Ser. No. 361,460
Int. Cl.³ F02F *3/28*
U.S. Cl. 30—134 **10 Claims**

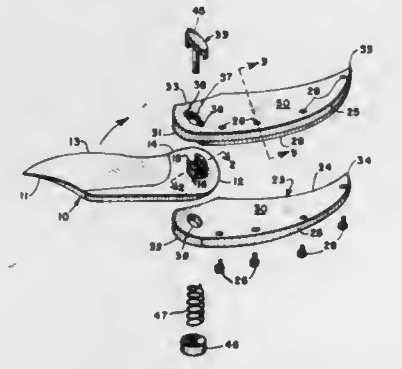


5. A cutting and manipulating attachment for a backhoe, the bucket of which has been removed, and having a boom with controlled piston and cylinder connected thereto, comprising:

a mounting body and means for attaching the same to the boom of the backhoe;
means positioning a fixed cutting blade on said mounting body and means located at a first end of said fixed cutting blade pivotally mounting a movable cutting blade on said mounting body in pivotal relation to said fixed cutting blade; and
a rail breaking attachment operatively connected to said body and distinct from said fixed blade, said rail breaking attachment including: a pair of rail engagement members straddling said fixed blade, and straddling said movable blade; each of said rail engagement members comprising a rail supporting surface having a substantially inverted J configuration including a leg portion and a radiused portion, said radiused portion disposed adjacent said fixed blade, and said entire rail breaking attachment extending outwardly from said fixed blade toward said movable blade.

4,439,922
TAKE-DOWN FOLDING KNIFE

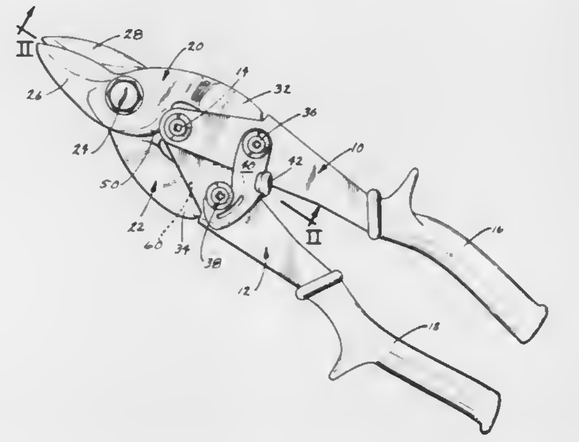
Salvatore Sassano, 1011 E. Harrison, Fruita, Colo. 81521
Filed Aug. 2, 1982, Ser. No. 404,320
Int. Cl.^{3} B26B *3/06*
U.S. Cl. 30—161 **5 Claims**



1. A take-down folding knife comprising:
(a) a blade having a free extremity and an opposed pivoted extremity, a cutting portion adjacent said free extremity and a tang portion defined by two flat, uniformly spaced faces adjacent said pivoted extremity,
(b) a pivot post fixedly attached to said tang portion and extending substantially equidistantly from each face thereof, said pivot post having a generally circular cylindrical outer surface the longitudinal axis of which is perpendicular to said tang portion, and an interior having a cylindrical recess in one extremity, a slotted recess in the opposite extremity, and a cylindrical channel communicating between said recesses,
(c) two elongated handle panels of substantially indentical outer perimeter configuration, each comprised of a blade-engaging extremity and an opposed free extremity, oppositely disposed receiving and back edges, and inner and outer faces, said blade engaging extremities being provided with apertures by which said panels pivotably engage said pivot post, said panels being interconnected by threaded fasteners adjacent said back edges to form an enclosure of uniform spacing between said inner faces,
(d) the aperture of at least one of said handle panels having two diametrically opposed locking recesses, said handle panel engaging the extremity of said pivot post having said slotted recess,
(e) a locking key disposed within said pivot post, said locking key having a generally T-shaped configuration comprising a leg portion, and a head portion having pendant shoulders extending in the direction of said leg portion, being adapted to slideably fit within said cylindrical channel and having a threaded extremity, said head portion being adapted to fit at least partially within said slotted recess while said shoulders enter said locking recesses,
(f) retainer means adapted to engage the threaded extremity of said leg portion and fit at least partially within said cylindrical recess, and
(g) a coil spring disposed about said leg portion and in abutment with said retainer means and said pivot post in a manner to draw said locking key into said pivot post, whereby
(h) the head portion of said locking key, when drawn into said pivot post by said spring, locks the position of the blade by engagement with said slotted recess and the locking recesses of one of said handle panels when the blade is either in its deployed mode or in its sheathed mode between said handle panels, and
(i) rotation of said blade to either of its two locked modes is permitted by forcing said locking key from said pivot post against the action of said spring.

4,439,923
SNIP RIDE

Joseph A. Scranton, Fremont, Ohio, assignor to The Clauss Cutlery Company, a Division of Alco Standard Corporation, Fremont, Ohio
Filed May 5, 1982, Ser. No. 375,081
Int. Cl.^{3} B26B *13/26*
U.S. Cl. 30—252 **14 Claims**



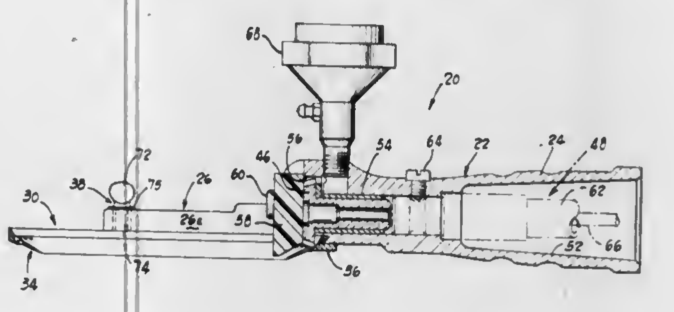
1. In a snip comprising a pair of handle levers pivoted together at one end of each lever, a pair of cutting blade levers centrally cross-pivoted together and pivoted at their ends away from their blades to said handle levers near the pivot of said handle levers, the improvement comprising:
projections on said blade levers integral with said levers and extending radially outwardly and aligned diametrically opposite the blades from their cross-pivot, said projections providing rides which extend outwardly substantially more than the radial width of said blade levers orthogonally of said blade edges at their cross-pivot and which rides are in substantially the same plane as the contacting edges of said blades to be in contact with each other when said blades are cooperating for cutting to restrict spreading of said blades in a direction parallel to the axis of their cross-pivot.

4,439,924
ROTARY HAND KNIFE

Louis A. Bettcher, Amherst, Ohio, assignor to Bettcher Industries, Inc., Birmingham, Ohio
Filed Nov. 5, 1981, Ser. No. 318,386
Int. Cl.^{3} A22C *17/04*
U.S. Cl. 30—276 **19 Claims**

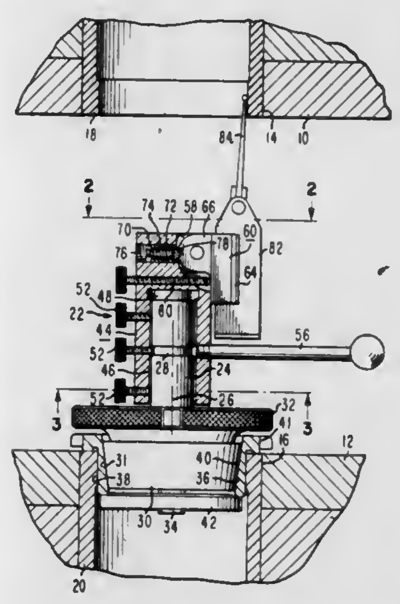
1. A hand knife for cutting meat and the like comprising a handle, a ring-like blade housing at one end of the handle, a continuous ring blade supported and guided for rotation by said housing, a blade retainer secured to the handle and located to engage an outer surface of the blade, and means to locate the retainer against the blade, said housing having an annular radial face and said blade having one axial end that is located

and guided by said face and a portion that extends from the face and terminates in a circular cutting edge, and said housing having an arcuate wall that extends axially from the radial face in the direction said blade portion extends and peripherally about said radial face no more than 180 angular degrees and located peripherally remote from the blade retainer, said arcuate wall including a lip directed radially inward of the housing that restrains axial movement of the blade relative to said radial face.



4,439,925
CONCENTRICITY MEASURING INSTRUMENT

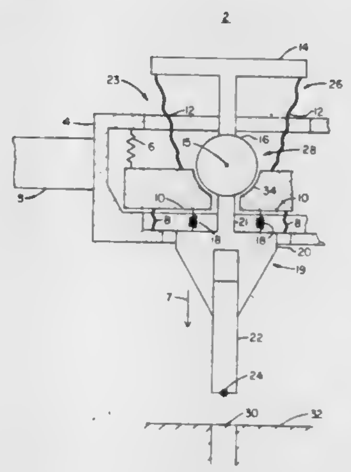
Brian E. Lock, Oakland, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Mar. 3, 1982, Ser. No. 354,205
Int. Cl.^{3} G01B *5/25*
U.S. Cl. 33—172 D **7 Claims**



1. Apparatus for measuring the alignment between two objects comprising:
a support including a cylindrical body having a longitudinal axis;
means for mounting said support on one of the objects with the longitudinal axis of said cylindrical body being along an alignment axis of the one object;
an elongated finger;
a housing having a cylindrical recess extending from one end, said cylindrical body fitting in said recess and supporting said housing for rotation about said longitudinal axis and said finger being mounted on said housing for pivotation toward and away from said longitudinal axis;
said finger being adapted to engage the other of said objects to determine the alignment of the other object with respect to the alignment axis of the one object.

4,439,926
TRANSFERRABLE-CENTER COMPLIANCE SYSTEM

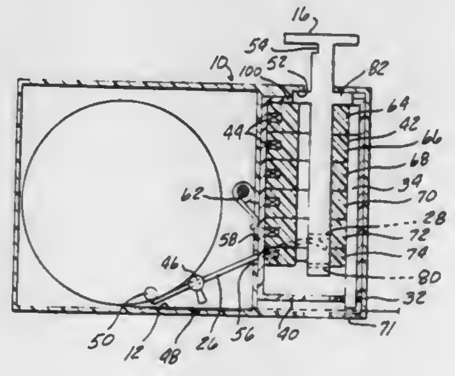
Daniel E. Whitney, Arlington, and Thomas L. De Fazio, Watertown, both of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.
Filed Apr. 6, 1982, Ser. No. 366,093
Int. Cl.^{3} G01B *5/25*
U.S. Cl. 33—185 R **42 Claims**



1. A transferrable-center compliance system comprising:
an operator member;
a first remote center compliance (RCC) device including a frame and a plurality of radial members which are mounted and collapsible relative to said frame and which, in an erect condition relative to said frame, extend radially from a focus, for establishing a first remote center of compliance at, near, or beyond the free end of said operator member;
pliant support means for supporting said first RCC device when said radial members are collapsed relative to said frame and yielding to said first RCC device when said radial members are erected relative to said frame with said first remote center of compliance at, near or beyond the free end of an operator member; and
means for selectively erecting and collapsing said radial members relative to said frame, and thereby said first RCC device to shift the center of motion of the system between the first remote center of compliance at, near, or beyond the free end of an operator member when said first RCC device is erected and one or more other centers when said first RCC device is collapsed.

4,439,927
TAPE MEASURE

Larry E. Elliott, W. 10 Mile Rd., Apt. 9, Southfield, Mich. 48034
Filed Jan. 13, 1983, Ser. No. 457,620
Int. Cl.^{3} G01B *3/12;* **B43L** *9/04*
U.S. Cl. 33—189 **11 Claims**



1. A tape measuring device comprising:
a casing;

a coiled metal tape disposed within the casing, said coiled tape bearing indicia for ascertaining the length thereof;

a slot in the casing from which said coiled tape may be withdrawn and retracted;

marking means disposed within the casing for marking an article being measured;

braking means disposed within the casing and above the tape, said braking means including a member pivotally mounted within the casing and having a brake portion adapted to press downwardly on an upper surface of the tape for maintaining said coiled tape in a fixed position relative to the casing; and

actuating means adapted to contact the marking means and an end portion of the member spaced from the brake portion, for simultaneously positioning the marking means and pivoting the brake member so as to bring the brake portion into contact with the upper tape surface to secure the metal tape at a preselected position.

6. A tape measuring device comprising:

a casing;

a coiled metal tape disposed within the casing, said tape bearing indicia for ascertaining the length thereof;

a slot in said casing from which said coiled tape may be withdrawn and retracted;

braking means disposed within the casing for maintaining said coiled tape in a fixed position relative to the casing;

a carrier unit disposed within the casing;

consumable marking means located within the carrier unit for marking an article being measured;

actuating means for movably positioning the consumable marking means in order to mark an article and simultaneously activating said braking means to secure the metal tape at a preselected position;

space supplanting means for filling the space created in the carrier above the consumable marking means as the consumable marking means is consumed;

securing means for maintaining the consumable marking means in a fixed position relative to the carrier;

whereby, as the consumable marking means is diminished in length, the space supplanting means will transmit the positioning force applied to the actuating means to the consumable marking means.

4,439,928

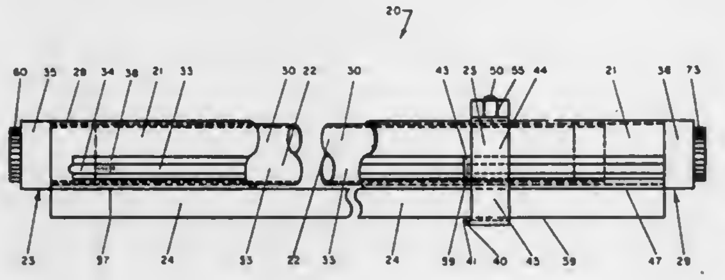
DRAFTING INSTRUMENT

Dwight E. Shoemaker, Jr., 6003 Autumn Forest Dr., Houston, Tex. 77078

Continuation-in-part of Ser. No. 97,128, Nov. 26, 1979, Pat. No. 4,314,408. This application Feb. 8, 1982, Ser. No. 346,960

Int. Cl.^{3} B43L *7/08*

U.S. Cl. 33—494 **11 Claims**



1. A drafting instrument having a large number of independently viewable scales, comprising:

a hollow housing, the housing having a viewing slot;

a resilient graphics guide, the resilient graphics guide being fixedly attached to the housing;

a rear rotatable shaft, the rear rotatable shaft being adapted to fit within the housing;

a forward rotatable shaft, the forward rotatable shaft being adapted to fit within the housing;

a flexible graphics sheet, the flexible graphics sheet having a plurality of scales thereon, the flexible graphics sheet having a first end attached to the rear rotatable shaft, the flexible graphics sheet having a second end attached to the forward rotatable shaft, the flexible graphics sheet being adapted to be wound around the rear rotatable shaft or the forward rotatable shaft, the flexible graphics sheet being adapted to slide over the resilient graphics guide, the resilient graphics guide being adapted to urge the flexible graphics sheet into engagement with the viewing slot;

a right end piece and a left end piece adapted to rotatably hold the front rotatable shaft and the rear rotatable shaft; and,

a cursor assembly, the cursor assembly being slidably engageable upon the housing, the cursor assembly having a rib adapted to correspond with the viewing slot, the rib having hairline means thereon, the rib being adapted to engage the flexible graphics sheet and bring the hairline means into engagement with the scales to reduce parallax problems when the hairline means is viewed from different viewing angles.

4,439,929

APPARATUS FOR DRYING A CERAMIC GREEN HONEYCOMB BODY

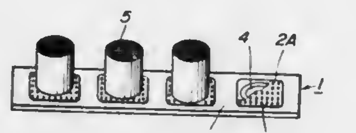
Jiro Kitagawa, Kasugai, and Isao Mizutani, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

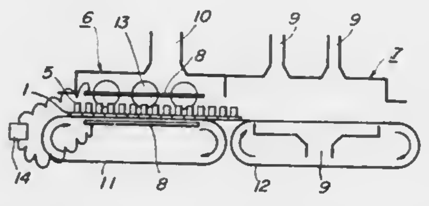
Filed Feb. 17, 1982, Ser. No. 349,476

Claims priority, application Japan, Feb. 23, 1981, 56-25121

Int. Cl.^{3} F26B *23/08*

U.S. Cl. 34—1 **18 Claims**





1. An apparatus for drying a ceramic green honeycomb body, comprising two electrodes facing toward each other with a spacing therebetween, one of the electrodes is grounded; a dielectric heating energy source is connected to the electrodes; and a support board is provided adjacent to the grounded electrode, between the two electrodes facing each other, the support board comprises a tray-like metallic first part designed to support the ceramic green honeycomb body and a plate-like non-metallic second part designed to hold the metallic first part, the tray-like metallic first part covering only a portion of the plate-like non-metallic second part, with the surface of the metallic first part being larger than that section of the ceramic green honeycomb body which is in contact with the metallic first part, the tray-like metallic first part is arranged so that it is isolated from any other tray-like metallic first parts by free areas on the support board so that during a drying operation a higher density of electric lines of force pass through the plate-like metallic first part than through the free areas.

4,439,930

CONVEYOR DRYER AND METHOD OF OPERATION

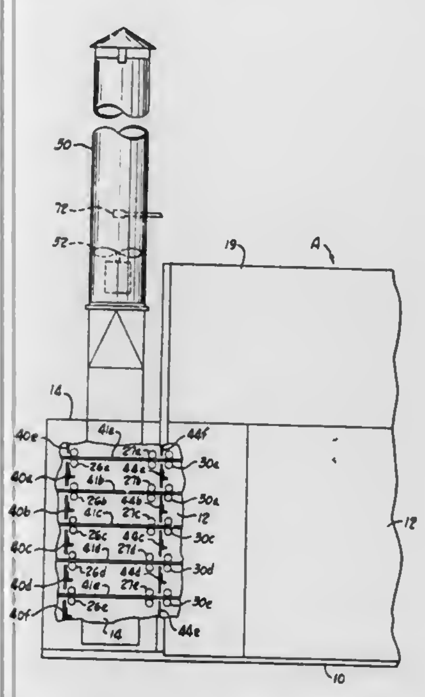
Irven J. McMahon, Jr., Painesville, Ohio, assignor to The Coe Manufacturing Company, Painesville, Ohio

Continuation-in-part of Ser. No. 231,274, Feb. 4, 1981, abandoned. This application Aug. 10, 1981, Ser. No. 291,485

The portion of the term of this patent subsequent to Aug. 5, 1997, has been disclaimed.

Int. Cl.^{3} F26B *21/10*

U.S. Cl. 34—15 **11 Claims**



1. In a dryer for reducing the moisture content of material in sheet form comprising an elongated generally horizontal stationary housing having material entrance and discharge ends, a continuous conveyor extending through said housing which includes a material drying chamber intermediate its ends and through which said conveyor extends, means externally of said drying chamber for recirculating gas lengthwise through said drying chamber in the direction in which the material is conveyed through said drying chamber and maintaining a gas pressure less than atmospheric in the material exit end of said chamber, means for heating the gas, a supplemental gas chamber at the material exit end of said drying chamber, means restricting entrance of air into the material exit end of said supplemental chamber, power actuated means connected to said supplemental chamber for exhausting gas therefrom, and means responsive to a condition in the dryer at the material feed end of said drying chamber for controlling the amount of gas exhausted from said supplemental chamber whereby a predetermined condition is maintainable in the dryer at the material feed end of said drying chamber and the gas pressure in said supplemental chamber may be maintained at a pressure less than that of the subatmospheric gas pressure in the material exit end of said drying chamber.

4,439,931

CONTROL MEANS FOR A DRIER

Masaji Mizuta, Uji, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed Mar. 12, 1982, Ser. No. 357,625

Claims priority, application Japan, May 7, 1981, 56-65056[U]

Int. Cl.^{3} F26B *21/10, 21/12*

U.S. Cl. 34—44 **3 Claims**

1. A control means for an electric drier receiving power from an alternating-current power supply and having an electric heater for heating air and an electric blower for moving the heated air over an object to be dried, comprising in combination:

(a) a semiconductor switch connected in series between the alternating-current power supply and the heater;

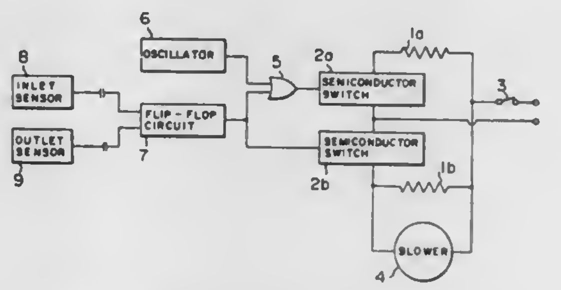
(b) an OR gate having two input terminals and one output terminal, the output terminal connected to the turn-on terminal of the semiconductor switch;

(c) an oscillator connected to one of the two input terminals of the OR gate which outputs a pulse for turning on the semiconductor switch in synchronization with a certain phase angle of the wave form of the alternating current from the power supply to operate the heater in a preheat mode at a percentage of the rated value;

(d) a flip-flop circuit having two input terminals and an output terminal connected to the other of the two input terminals of the OR gate;

(e) an entrance sensor connected to one of the input terminals of the flip-flop circuit and the blower for sensing the presence of the object entering the dryer, and

(f) an exit sensor connected to the other of the two input terminals of the flip-flop circuit and the blower for sensing the presence of the object leaving the dryer;



whereby, when the entrance sensor detects the entrance of an object into the drier and outputs a starting signal to the blower and the flip-flop circuit, the blower starts, the flip-flop circuit turns over and outputs a high level signal to the OR gate, the OR gate passes the high-level signal to the semiconductor switch, the semiconductor switch turns on the full rated power of the alternating voltage, and the second semiconductor switch turns on the blower; and, when the exit sensor detects the exit of an object out of the drier and outputs a stopping signal to the blower and the flip-flop circuit, the blower stops, the flip-flop circuit turns over and outputs a low level signal to the OR gate, the OR gate allows the pulse from the oscillator to pass to the semiconductor switch returning the heater to the preheat mode.

4,439,932

METHOD AND APPARATUS FOR THERMAL TREATMENT, ESPECIALLY DRYING, OF FINELY COMMINUTED BULK MATERIAL

Günther Gappa, Gelsenkirchen-Buer; Josef Degel, Hattingen, and Harald Jüntgen, Essen, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Continuation of Ser. No. 257,408, Apr. 24, 1981, abandoned. This application Mar. 28, 1983, Ser. No. 479,110

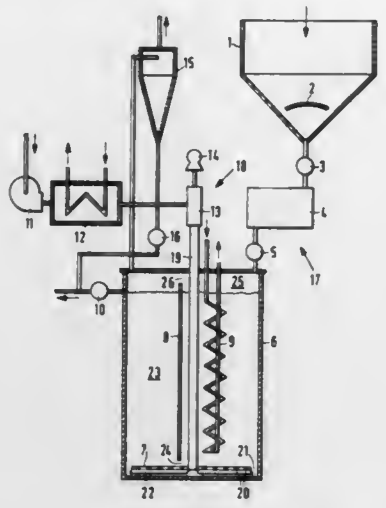
Claims priority, application Fed. Rep. of Germany, Apr. 29, 1980, 3016448

Int. Cl.^{3} F26B *17/10*

U.S. Cl. 34—57 D **7 Claims**

1. Apparatus for thermal treatment, especially drying, of finely particulated bulk material, comprising a reactor; means communicating with the interior of the reactor for feeding the material into the latter; a source of gas under pressure; a heat source; stirring means in the reactor having at least one hollow stirring arm connected to said source of gas and provided with openings for discharge of the gas into the material introduced into the reactor so as to form a whirling fluidized bed from the material in the reactor; heat-exchanger means connected to said heat source and extending into the whirling fluidized bed; means communicating with said reactor at a location spaced from said feeding means for discharging the material and the gas therefrom, said at least one stirring arm being located in a lowermost region of said reactor; means extending into the

whirling fluidized bed in the reactor for retarding flow of the material from said feeding means to said discharge means, said reactor being constructed so that the material passes in cascades therethrough, said reactor being an upright reactor, said feeding means and said discharge means being located in the region of the upper end of said reactor; and a height-adjustable overflow device for adjusting the height of the material and communicating with the interior of said reactor.



4,439,933

APPARATUS FOR DRYING AND HEATING NYLON GRANULES

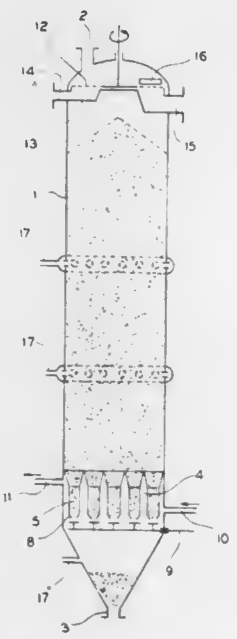
Ernst Dietrich, Worms; Ernst Guenther; Werner Hoerauf, both of Ludwigshafen; Ernst Kissel, deceased, late of Ludwigshafen (Gerd Kissel, legal representative); Hermann Linge, Carlsberg; Eckart Neumann, Frankenthal, and Eberhard Schaefer, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 789,855, Apr. 22, 1977, abandoned, which is a division of Ser. No. 698,855, Jun. 23, 1976, Pat. No. 4,092,784. This application Jun. 22, 1978, Ser. No. 917,871

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1975, 2530304

Int. Cl.³ F26B *17/14*

U.S. Cl. 34—65 **1 Claim**



1. An apparatus for drying and heating granules, in which the granules flow downward through the apparatus, uniformly over its entire cross-section, the said apparatus being in the form of a vertical cylinder with an inlet at the top and a conically tapering outlet at the bottom, and possessing

(a) a rotatable screening ring fitted horizontally in the upper part of the cylinder and concentrically therewith and located below the inlet, said inlet being directed to said screening ring,

(b) a ring-shaped chute which is open upwardly and is located under the screening ring, said open area having at least the same area as said screening ring, said chute being sealed towards said screening ring and being divided by bulkheads into a greater part having an outlet for water and a lesser part having an outlet for inert gases,

(c) a granule scraper located above the screening ring in close proximity to said screening ring and being arranged ahead of the inlet for the granules in the direction of rotation of said screening ring,

(d) inlets for external supplies of inert gases in the downward extending section of the cylinder,

(e) a shell and tube heat exchanger located coaxially to the cylinder in the bottom quarter thereof ending above the conical taper of the cylinder, the tubes of the heat exchanger being distributed over the cross-section of the cylinder, said tubes including inlet orifices, the walls of which facing the stream of granules being inclined and forming an angle β with the horizontal which is from 45° to 82°, said walls forming edges joining in a roof-like structure and the outlet orifices of said tubes being conically tapered,

(f) a horizontally movable grid as flow control device located below the heat exchanger and

(g) a discharge zone located below the horizontally movable grid.

4,439,934

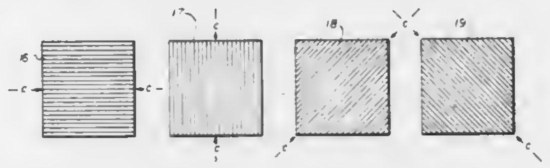
ORTHOTIC INSERT

Dennis N. Brown, 1091 Fir Ave., Blaine, Wash. 98230

Filed Feb. 26, 1982, Ser. No. 352,708

Int. Cl.³ A43B *13/38, 13/41*

U.S. Cl. 36—44 **17 Claims**



1. An insert removeably placed within a finished article of footwear comprising, in combination:

a full length first blank dimensioned to underlie the plantar surface of a person's foot and formed of flexible, resiliently deformable material along its entire extent,

a second blank extending from a cacaneal area of the person's plantar surface to a metatarsal head area bonded to a bottom face of said front blank and formed from alternating layers of fiberglass/resin and graphite,

two of said fiberglass/resin layers forming outer most surfaces of said second blank, said second blank molded and set to conform identically to the plantar surface of the person's foot along the areas of support therefor when the foot is beneficially oriented,

each said graphite layer formed from a bundle of graphite fibers directionally oriented along specific axes to provide controlled, preprogrammed deformation of said insert when used in a gait cycle,

whereby said insert nests within the inner portion of the finished footwear article and provides continuous control of weight distribution to the foot by insert distortion as the weight is shifted from the calcaneal area forward through the subtalar and midtarsal joint and thence to the metatarsal heads.

4,439,935

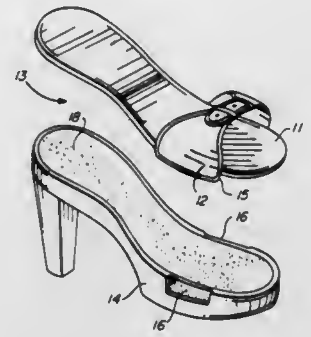
CONVERTIBLE HIGH STYLE FOOTWEAR

Celeste Kelly, 4302 W. Greenway, Glendale, Ariz. 85023

Filed Jun. 17, 1982, Ser. No. 389,419

Int. Cl.³ A43B *3/24, 3/12*

U.S. Cl. 36—101 **7 Claims**



1. A shoe with replaceable vamp and insole comprising:

shoe base means;

unit-construction shoe upper means adapted for removable coupling to said shoe base means including vamp means attached to an insole generally visible about the periphery of a wearer's foot;

coupling means for removably coupling said unit construction shoe upper means to said shoe base means; and

said vamp further comprises a vamp extension extending below said attached insole and overlapping said shoe base.

4,439,936

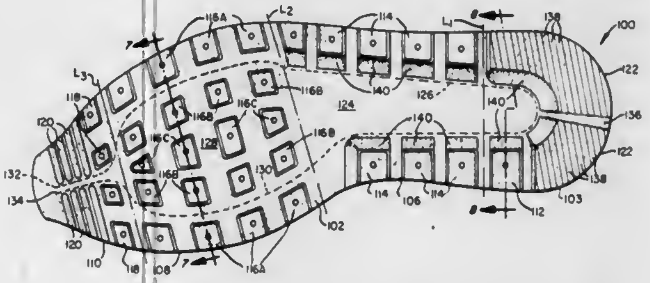
SHOCK ATTENUATING OUTER SOLE

Thomas E. Clarke, Exeter; William R. Peterson, Portsmouth, and Mark G. Parker, Exeter, all of N.H., assignors to Nike, Inc., Beaverton, Oreg.

Filed Jun. 3, 1982, Ser. No. 384,545

Int. Cl.³ A43B *5/00, 1/10, 13/18, 13/04*

U.S. Cl. 36—102 **30 Claims**



1. An outer sole for an athletic shoe comprising:

a base formed of a relatively thin resilient material and having a heel section, an arch section, a forefoot section, a toe section, an upper major surface and a lower major surface;

a plurality of discrete traction elements extending downward from said lower major surface of said base at spaced transverse and longitudinal locations including a plurality of discrete heel and arch traction elements located about longitudinally spaced locations adjacent the perimeter of said base in said heel and arch sections respectively;

a rear shock attenuating area extending generally along the central longitudinal portion of said heel and arch sections, said rear shock attenuating area being substantially devoid of traction elements so that the relatively thin resilient material of said base in said rear shock attenuating area depresses downwardly during foot strike to attenuate the force of foot strike.

4,439,937

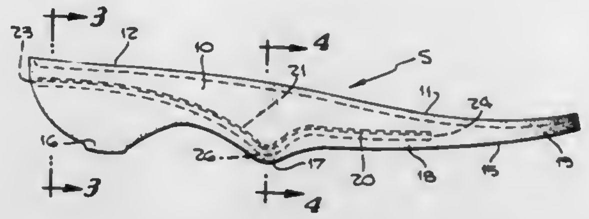
INTEGRALLY CAST SHOE SOLE CONTAINING STIFFENER MEMBER

Alexander C. Daswick, 700 Orange Grove #210, South Pasadena, Calif. 91030

Filed Jul. 26, 1982, Ser. No. 402,060

Int. Cl.³ A43B *13/04, 23/00*

U.S. Cl. 36—107 **11 Claims**



1. A shoe sole structure having an upper surface adapted to support the entire foot of the wearer and an under surface adapted to engage the ground, characterized by a rear pedestal extending downward beneath the heel of the shoe and a central pedestal being longitudinally rounded on its under side to provide a roller-like portion of said sole structure under surface, said rear pedestal being very resilient while said central pedestal has far less resiliency, and said sole structure being easily bendable at and forward of the metatarsal arch region but being resistant to bending rearwardly thereof; said shoe sole structure being formed from a stiffener member which extends from the heel to the metatarsal arch region and has a downward protrusion at the instep, and a solid casting of elastomeric material which surrounds and encloses said stiffening member.

4,439,938

COUPLING MECHANISM

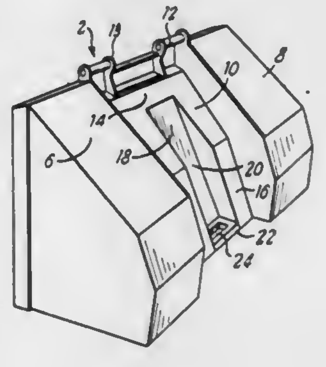
David Grant, Newcastle upon Tyne, England, assignor to Envirotech Corporation, Salt Lake City, Utah

Continuation of Ser. No. 321,785, Nov. 16, 1981, abandoned. This application Nov. 4, 1983, Ser. No. 549,213

Claims priority, application United Kingdom, Nov. 17, 1980, 8036826; Feb. 6, 1981, 8103779

Int. Cl.³ E02F *3/76*

U.S. Cl. 37—117.5 **8 Claims**



1. A coupling system for use with a service vehicle comprising:

a support device which is mounted upon the service vehicle and a readily separable operating device, said support and operating devices having complementary rear and forward portions, respectively, with said operating device having a central profiled portion to receive a complementary forward portion of said support device;

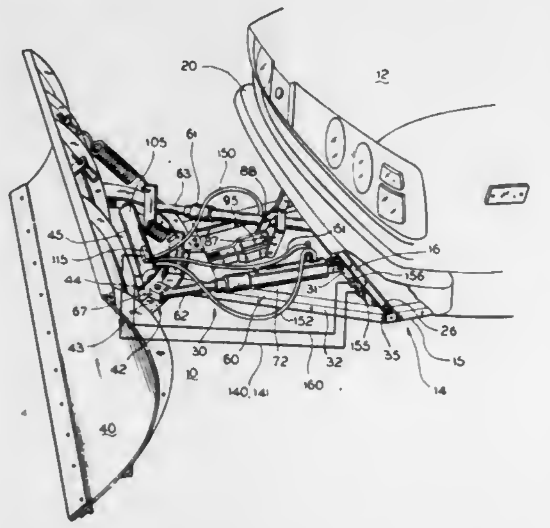
two transversely-spaced, upwardly-facing, outwardly divergently angled lifting forks fixed to the upper portion of said support device;

one or more transversely-disposed lifting pins mounted on the upper region of said operating device and positioned for location in said forks to enable said operating device to pivot about the axis of said lifting pins when elevated by said lifting forks to bring said complementary portions into engagement thereby inhibiting further relative movement of the two devices transverse to the axis of said lifting pins; and

a latch bar mounted to said support device having a free end, and said operating device having a receiving member having an upwardly open aperture formed therein mounted within said central profiled portion, means operable from a remote source to selectively move said latch bar into a latching position at which said free end enters said aperture in said receiving member to draw said operating and support devices towards one another to take up a latching condition to retain said connected devices with said complementary portions in engagement, or a release condition to allow detachment of the devices.

4,439,939
SNOW PLOW

James R. Blau, 13220 W. Burlawn Ct., Brookfield, Wis. 53003
Continuation-in-part of Ser. No. 884,690, Mar. 8, 1978, Pat. No. 4,187,624. This application Mar. 16, 1979, Ser. No. 21,220
Int. Cl.³ E01H *5/06*
U.S. Cl. 37—231 **1 Claim**



1. A snow plow assembly suitable for use with a wheeled vehicle comprising:

a plow support frame adapted for being coupled to a wheeled vehicle, said support frame including an arcuate segment and first cylinder means and second cylinder means for adjusting the horizontal angular orientation of a plow blade;

a plow blade coupled to said plow support frame and to said horizontal angular adjustment means;

vertical adjustment means coupled between the front of said vehicle and a forward portion of said plow support frame to permit vertical adjustment of said plow blade, said vertical adjustment means including a bell crank means and third cylinder means mounted to said plow support frame and having piston rod means coupled to said bell crank means;

a hydraulic system including hydraulic fluid reservoir, pump and valve means mounted to said arcuate segment and coupled by hose means to said horizontal angular adjustment means and to said vertical adjustment means; control means coupling said vehicle and said hydraulic system for actuating said horizontal angular adjustment means and said vertical adjustment means from the vehicle cab;

said plow support frame further includes a generally triangular frame having first, second and third sides, said first side being pivotally coupled to said vehicle whereby the plow support frame is vertically rotatable with respect to said first side, said plow blade being mounted to the corner of said plow support frame between said second and third sides, each of said cylinder means being pivotally mounted to said first side with said third cylinder means being intermediate said first and second cylinder means;

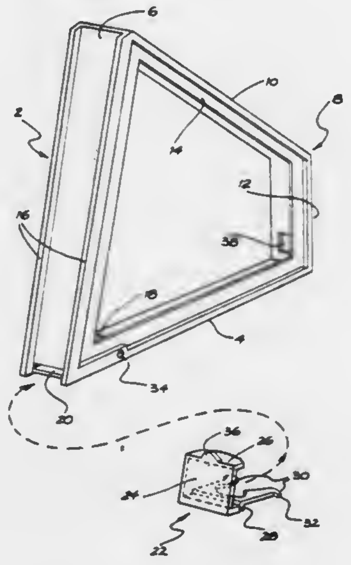
said snow plow assembly further includes a vehicle subframe rigidly coupled to the underside of said vehicle and including a front member extending across and beneath the front of said vehicle, a pair of spaced apart brackets being located on said front member and having axially aligned holes passing therethrough, said first side of said plow support frame including a pair of bracket plates adapted for being coupled to said spaced apart brackets by pin means;

said plow support frame further includes a bell crank receiving bracket at an area thereof generally adjacent said plow blade;

said bell crank means includes a first generally Y-shaped link member the base of which is pivotally coupled to the front of said vehicle and a second generally L-shaped link member having first and second sides, the end of said first side of said L-shaped link member being coupled between the free ends of said first link member and the end of said second side of said L-shaped link member being pivotally coupled to said piston rod of said first cylinder, the angular corner of said L-shaped link member being pivotally coupled to said bell crank receiving bracket.

4,439,940
DISPLAY BRACKET AND ATTACHMENT

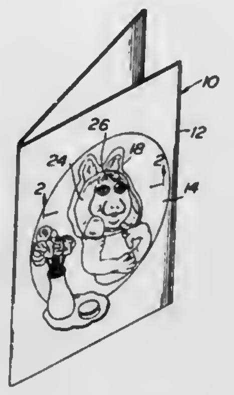
George Deryk, c/o Colour Screen Pty. Ltd., 74 Wentworth Ave., Sydney, New South Wales 2000, Australia
PCT No. PCT/AU81/00121, § 371 Date Apr. 22, 1982, § 102(e) Date Apr. 22, 1982, PCT Pub. No. WO82/00578, PCT Pub. Date Mar. 4, 1982
PCT Filed Aug. 25, 1981, Ser. No. 375,273
Claims priority, application Australia, Aug. 26, 1980, PE5237
Int. Cl.³ G09F *3/18*
U.S. Cl. 40—10 R **7 Claims**



1. A display bracket for holding a flat display article and having a substantially trapezoidal shape comprising a base side for resting on a horizontal surface, an upright inclined side for supporting said flat display article comprising a shallow channel section which faces forwardly, in combination with a clamp carried by the bracket adapted to clamp the flat display article to the inclined side, said clamp having a rearwardly projecting flexible lip which extends into the space defined by the channel section in order to impose a curve upon the cross-section of the flat displaying article rendering it sufficiently rigid to remain erect, a rearwardly facing side being adapted to engage an attachment mountable on a column.

4,439,941
CARD WITH REMOVABLE AND REUSABLE INSERT

Edward Halperin, Allentown, Pa., assignor to Greet 'N Wear, Inc., Virginville, Pa.
Filed May 24, 1982, Ser. No. 381,475
Int. Cl.³ G09F *1/00*
U.S. Cl. 40—124.1 **6 Claims**



1. A card, tag or the like, comprising:

a sheet member forming at least a part of said card, tag or the like;

a face of said sheet member having a pattern printed thereon;

a reduced adhesive bonding surface on said face of said sheet member;

a multicolored embroidered emblem releasably attached to said face with said multicolored embroidered emblem forming an integral part of the pattern printed on said face;

said face of said sheet member being provided with printing of the same pattern as contained on the multicolored embroidered emblem on the face of said sheet member at the location where said embroidered emblem is releasably attached to said face;

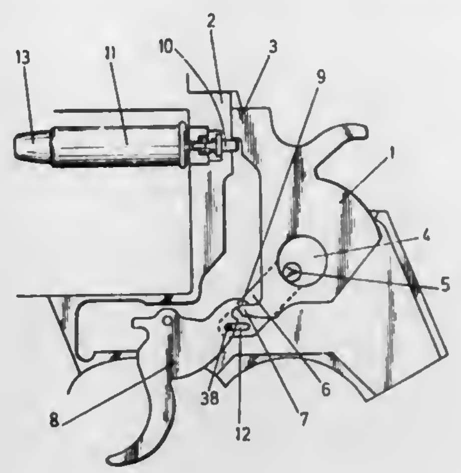
said multicolored embroidered emblem being constructed of embroidery threads of a single color to form a sculptured pattern on the face thereof created at least in part by varying the direction and number of embroidery thread stitches in various locations of the embroidered emblem, and said multicolored pattern being printed on the face thereof with at least two colors of dyestuff, said printing thereon being in registry with the sculptured pattern of said embroidered emblem wherein selected colors are printed on selected sculptured portions of the sculptured embroidery, and a layer of thermoplastic adhesive being provided on the backside of said embroidered emblem; and

whereby said sheet member may be transferred to a recipient, and whereby the recipient may remove said embroidered emblem and apply said emblem to an article of clothing or the like by means of a layer of thermoplastic adhesive by application of heat and pressure.

4,439,942
REVOLVER TYPE FIREARMS

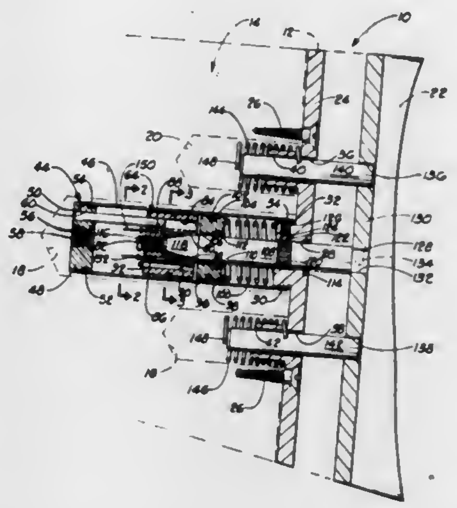
Jose Mª Gabilondo, Vitoria, Spain, assignor to DLlama-Gabilondo y Cia, S.A., Vitoria, Spain
Filed Jul. 30, 1980, Ser. No. 173,584
Claims priority, application Spain, Jul. 30, 1979, 482.947
Int. Cl.³ F41C *17/08, 1/00*
U.S. Cl. 42—66 **1 Claim**

1. Improvements in revolver type firearms, characterized in that a trigger (8) is connected to the end of a pawl (6) by a projection (38) of said trigger (8) which is housed in an opening (12) of said pawl (6), pawl (6) which in turn is connected eccentrically to a circular part (4) on which a hammer (1) turns so that upper end (3) of said hammer (1) rests directly on a frame (2) when said trigger (8) is in rest position, in which a tooth (9) of said trigger (8) comes in contact with another tooth (7) of said hammer (1), and so that, when said trigger (8) is pulled, said hammer (1) rotates on said pawl (6) and at the same time said hammer (1) describes a downward movement to a point at which said hammer (1) and said trigger (8) are disconnected, said hammer (1) being thrown forward, an end (3) of said hammer (1) occupying the lowest position or fire position against a firing pin (10), and said pawl (6) the nearest position to the horizontal position, while when pressure is let up on said trigger (8) it returns to the rest position and said pawl (6) turns towards a vertical position making said hammer (1) describe an elevation movement resting as at the beginning on said frame (2) of the firearm.



4,439,943
RECOIL REDUCER

Rodney D. Brakhage, P.O. Box 245A, Rural Rte. 2, Perkins, Okla. 74059
Filed Mar. 9, 1982, Ser. No. 356,416
Int. Cl.³ F41C *23/00*
U.S. Cl. 42—74 **11 Claims**



11. A recoil reducer for a shoulder firearm, comprising:

a butt plate adapted for mounting on the butt of the firearm and having a butt plate aperture formed therethrough;

a hydraulic cylinder mounted on one side of the butt plate about said aperture and extending therefrom into a cavity formed in the stock of the firearm,

a main piston slidably disposed in the cylinder, the main piston having a peripheral surface slidingly sealed to the inner surface of the hydraulic cylinder and opposed sides intersecting the peripheral surface of the main piston and extending across the hydraulic cylinder;

a piston rod connected to the main piston and extending therefrom through the butt plate aperture;

a follower piston disposed between the main piston and the butt plate, the follower piston having a bore formed therethrough through which the piston rod extends;

means for urging the follower piston toward the main piston;

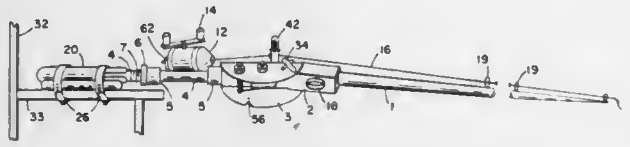
an auxiliary plate positioned rearwardly of the butt plate with respect to the butt of the firearm and spaced a distance from the butt plate; and

means for securing the end of the piston rod remote from the main piston to the auxiliary plate;

wherein the recoil reducer is characterized as having means formed in part on the main piston for providing a fluid flow path of selectively variable resistance between the sides of the main piston; wherein a return port is formed through the main piston to intersect the sides thereof; and wherein the recoil reducer further comprises a leaf secured at one end thereof to the side of the piston remote from the butt plate, the other end of the leaf overlaying the opening of said remote side of the main piston into the return port to provide a unidirectional path for fluid flow through the main piston toward said remote side thereof.

4,439,944
FISHING ROD CASTING DEVICE FOR A DISABLED PERSON

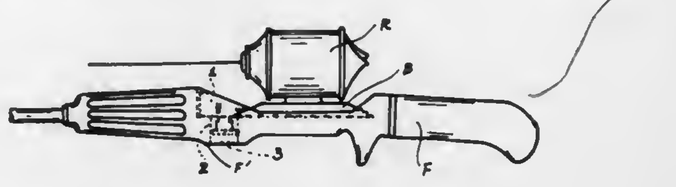
Van W. Johnson, Rte. 1, Box 86, Leoma, Tenn. 38468
Filed Nov. 13, 1981, Ser. No. 320,928
Int. Cl.³ A01K *91/02*
U.S. Cl. 43—19 **10 Claims**



1. A fishing rod casting device comprising, in combination:
- a handle holder having clamping means to fixedly secure the same to a wheelchair;
- means on said handle holder to receive and retain the handle of said rod;
- a rod holder housing having at its proximal end adjustable mounting means in connection with said rod handle rotatably mounting the same;
- said rod holder housing, having a pivotal connection for a rod holder, positioning selectively a rod holder in an extended cast position arcuately reciprocal in a withdrawn cocked position;
- retaining means on said rod holder adjustably securing a casting rod thereto in a casting mode;
- a crank reel affixed to the rod handle having a casting line threaded along said casting rod to a lure to be cast;
- clamping means on said rod holder housing automatically reactive to the arcuate position of said rod holder to adjustably clamp said casting line releasable at the critical cast point;
- an operating lever on said rod holder, with means for engaging an operating member manipulated by a fisherman, said lever reciprocally movable by the operator to alternately actuate said rod in an arcuate casting motion and in a withdrawn cocked position;
- adjustable spring biasing means on said rod holder housing adjustably urging said rod holder in minimal resistance assisting in actuation of the rod holder in casting mode and providing minimal resistance to actuation of the rod holder in cocking mode;
- locking means on said rod holder housing and rod holder minimally resistant to actuation by an operating member to lock said rod holder in cast or withdrawn mode;
- an operating support member having a shank preformed and shaped to affixation to the movable functioning body portion of a disabled person, and a distal end configurated to engage the operating lever of said rod holder, locking means and reel actuation crank.

4,439,945
INSTANT PUSH-BUTTON FASTENER FOR FISHING REEL SEAT

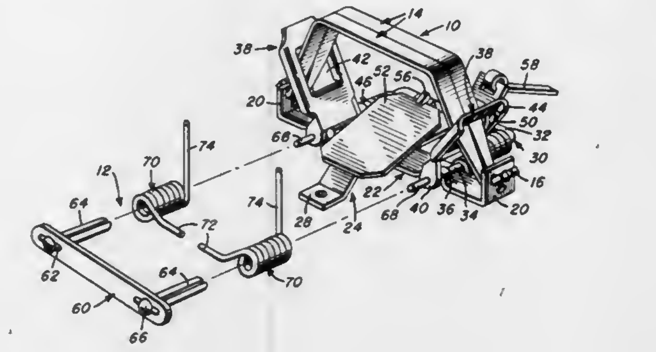
Paul P. H. Chang, and Cheng-hsiang Chu, both of Room 3, 7 Fl., No. 603, Tung-Hwa S. Rd., Taipei, Taiwan
Filed Aug. 25, 1981, Ser. No. 296,011
Int. Cl.³ A01K *87/06*
U.S. Cl. 43—22 **9 Claims**



1. An instant push-button fastener for fastening a fishing reel seat to a handle of a fishing rod comprising:
- a coupling sleeve disposed in said handle of said fishing rod;
- a depressable clamping button comprising:
  - an engaging head for insertion into and fixed retention by said coupling sleeve,
  - a clamping hood for securing said fishing reel seat to said handle, and
  - first biasing means associated with clamping hood for urging said fishing reel seat toward said handle; and
  - a releasing button disposed in said coupling sleeve for releasing said engaging head from said coupling sleeve.

4,439,946
BOOSTER SPRINGS FOR COIL SPRING TRAP

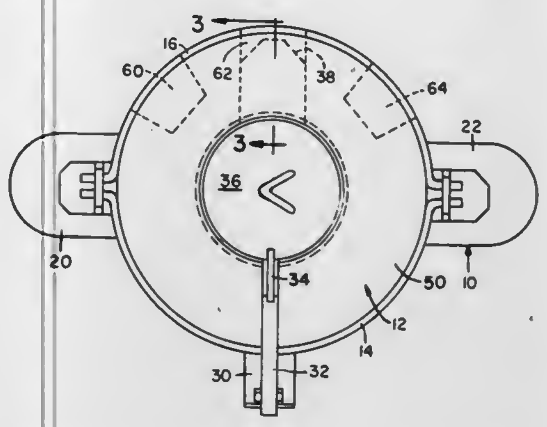
Anthony L. Altier, Rte. 6, P.O. Box 286, Honesdale, Pa. 18431
Filed Jul. 12, 1982, Ser. No. 397,231
Int. Cl.³ A01M *23/30*
U.S. Cl. 43—81 **6 Claims**



1. In a two-spring trap having a pair of jaws, a U-shaped spring frame with a bight portion to one side of the jaws and a pair of opposed legs extending from the bight portion laterally toward the jaws, a follower plate pivotally mounted on each leg and engaged with the jaws, a single coil spring mounted on each leg between the follower plate and the bight portion and engaging the follower plate with a resilient biasing force, each leg including a portion extending beyond the follower plate a length substantially less than the length of leg receiving the coil spring; the improvement comprising means for increasing extension of said legs beyond the follower plates, said means comprising a pair of spring mounting members, each spring mounting member being elongated and including a tubular open end portion telescopically receivable over the extending portion of one of said legs of the spring frame, and a pair of second coil springs, each mountable on one of the spring mounting members for biasing engagement with a follower plate, each second coil spring including a first laterally extending tensioning leg engageable with a follower plate for enhancing the biasing force thereon, and a second laterally extending spring stabilizing leg engageable with a fixed portion of the trap.

4,439,947
TRAP INSERT

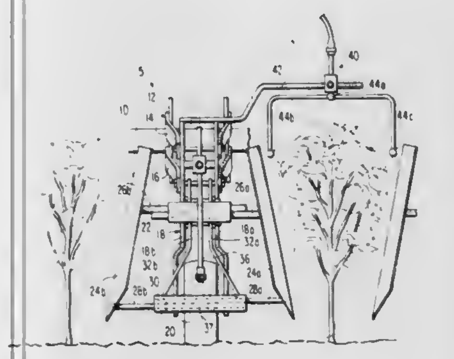
John D. Smagner, 282 W. 12th St., Elmira, N.Y. 14903
Filed Sep. 27, 1982, Ser. No. 424,739
Int. Cl.³ A01M *23/26*
U.S. Cl. 43—96 **7 Claims**



1. An insert for use in combination with an animal trap having a frame, a pair of jaws rotatably mounted on said frame, a pan located between said jaws when said jaws are in the set position, spring means on said frame to urge said jaws toward each other from a set position, means pivotally mounting said pan on said frame, and a dog adapted to contact said pan and hold said jaws in the set position, said insert comprising a disc-shaped device of resilient material having a flat top surface parallel to the top surface of said pan and substantially filling the area between said pan and said jaws when in their set position, said insert having a centrally located aperture which is of the same shape as said pan and slightly larger than said pan, said insert having a slot extending through its entire thickness between said aperture and the outer periphery thereof for receiving said dog, and support means for maintaining the flat, top surface of said insert at a level that is at or near the topmost surface of said jaws when in the set position.

4,439,948
AGRICULTURAL SPRAYING APPARATUS AND METHOD

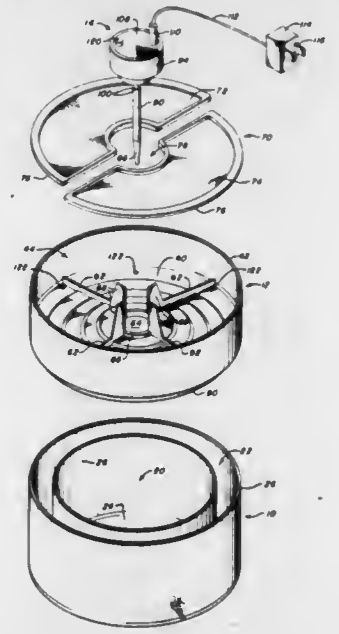
William P. Brown, Ozark, and Jerrell W. Harden, Banks, both of Ala., assignors to Brown Manufacturing Company, Ozark, Ala.
Filed Feb. 4, 1982, Ser. No. 345,758
Int. Cl.³ A01M *21/00*
U.S. Cl. 47—1.7 **11 Claims**



1. A crop spraying apparatus, comprising:
- main mounting means for mounting the apparatus to a motive source;
- spray nozzle means coupled to said main mounting means and adapted to be disposed in the row middle between two adjacent crop rows of a field during operation of the spraying apparatus for spraying liquid material in and around the row middle and bases of plants being sprayed; and
- knock down means coupled to said mounting means to be spaced above the ground and to extend substantially across said row middle between but not including said adjacent crop rows during operation of the spraying apparatus for contacting weeds during operation of said apparatus and for pushing down on said weeds in said row middle, said knockdown means being located sufficiently close to said nozzle means to permit said nozzle means to spray said liquid material onto said weeds from the bases to the tips thereof and to permit said liquid material to be applied in a substantially uniform pattern to the soil and around the crop bases.

4,439,949
BEAN SPROUTER

Stephen Ocko, Brookline, Mass., assignor to Data Packaging Corporation, Cambridge, Mass.
Filed Jul. 6, 1982, Ser. No. 395,801
Int. Cl.³ A01G *31/00*
U.S. Cl. 47—61 **12 Claims**



1. A seed sprout grower comprising:
- a base having a reservoir storing water for feeding and washing the sprouts and a waste water chamber for receiving used water after it has been supplied to the sprouts,
- a container supported by the base above the reservoir and waste water chamber in which the seeds are deposited and the sprouts are grown,
- a number of passages through the container communicating with the waste water chamber for allowing water in the container to drain into said chamber,
- a pump including an inlet communicating with the water in the reservoir and having an outlet extending to the container, said outlet enabling the pump to spray water about the seeds, a portion of said water washing the seeds and flowing through the passages to the waste water chamber,
- a timer-motor connected to the pump causing water to flow from the reservoir to the container for selected periods at selected intervals,

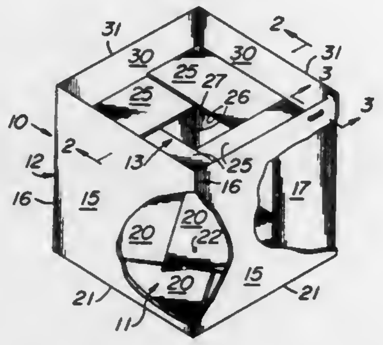
and a cover enclosing the container.

4,439,950
INTEGRAL PLANT CONTAINER AND COVER

Albert W. Kelley, Rt. No. 1, Box 28, Creamridge, N.J. 08514
Continuation-in-part of Ser. No. 216,192, Dec. 15, 1980, Pat. No. 4,155,198, which is a continuation of Ser. No. 128,821, Mar. 10, 1980, abandoned. This application Nov. 23, 1981, Ser. No. 323,914
Int. Cl.³ A01G *9/02*
U.S. Cl. 47—85 **9 Claims**

1. A plant container fabricated of waterproof plastic sheet material and using no adhesive, said container comprising a

generally rectangular bottom wall, a side wall of four rectangular outer walls upstanding equally from and peripherally about said bottom wall and combining therewith to contain plant growing medium, a rectangular inner wall depending from the upper extremity of each outer wall on the inner side thereof to a predetermined elevation and a flap extending laterally inwardly from the lower edge of each inner wall with opposed flaps terminating in free edges proximate to and spaced from each other to define a central passageway between said flap edges for the stem of a plant with its roots in the growing medium, said flaps being generally coplanar with each other spaced over said bottom wall and each having its opposite ends respectively under and over adjacent flaps to define an upper wall spaced a predetermined distance below the top of said side wall for receiving water to a depth of said distance with flow of excess water over said side wall to prevent overwatering.



4,439,951
GRINDING MACHINE

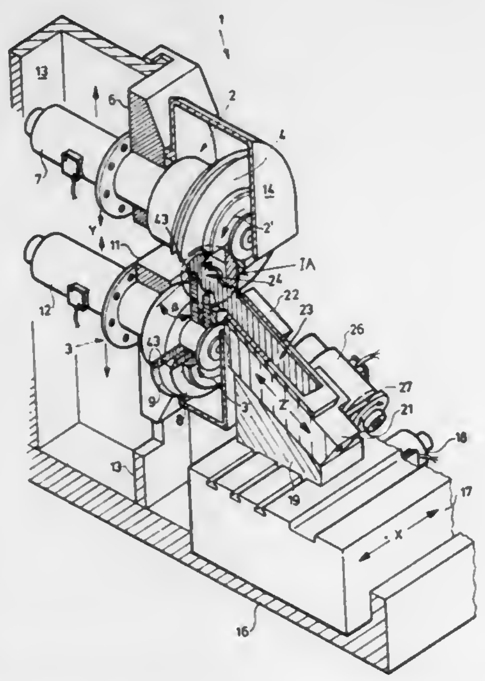
Peter Oppelt, Hamburg; Uwe Uhlig, Buchholz; Werner Redeker, Börnsen, and Werner Peschik, Neu-Börnsen, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

Filed Jul. 15, 1981, Ser. No. 283,385

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1980, 3027504

Int. Cl.³ B24B *7/00*

U.S. Cl. 51—80 R **13 Claims**



1. In a grinding machine for the formation and/or treatment of concave and convex flanking surfaces in grooves in regions other than the bottoms of the grooves of turbine blades or analogous workpieces, the combination of a rotary spindle; a grinding wheel having a grinding periphery coaxial with and driven by said spindle; a base; a movable support on said base; first prime mover means operable to move said support in the course of a grinding operation in a first direction substantially at right angles to the axis of said spindle; a movable work holder on said support; second prime mover means operable to move said work holder in the course of a grinding operation in a second direction at right angles to said first direction, toward and away from the periphery of said grinding wheel, and at an acute angle to the axis of said spindle; and control means for operating said prime mover means to effect a composite movement of said work holder in a plane which makes said acute angle with said spindle for grinding said concave or convex surfaces, such composite movement having components in said first and second directions.

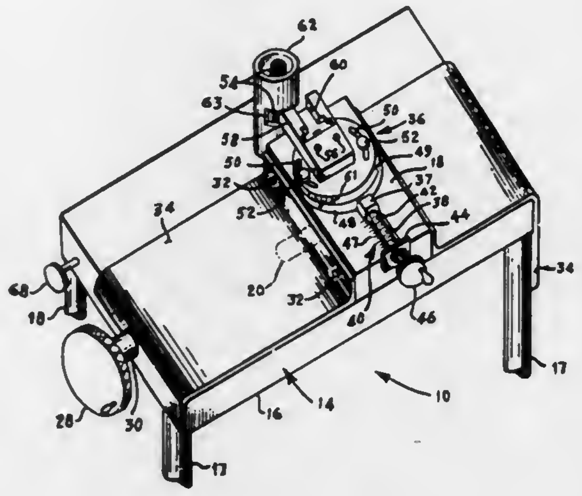
4,439,952
PORTABLE GRINDER ASSEMBLY

Gary G. Roberts, 1412 Bryant, Newport, Ark. 72112, and Calvin M. Swesey, 149 Glasgow Way, Vacaville, Calif. 95688

Filed Oct. 22, 1981, Ser. No. 313,863

Int. Cl.³ B24B *19/14*

U.S. Cl. 51—93 **2 Claims**



1. A portable grinder assembly for use in grinding a component to a preselected size, said grinder assembly comprising:
a main support;
means operably connected to said main support for grinding said component, said grinding means including a vertically upstanding grinding element and air powered means for rotating said grinding element about is vertical axis;
means slidably mounted on said main support for positioning said component adjacent said grinding element and for permitting said component to be moved in three predetermined directions, said component positioning means including a fixture, said fixture containing a cut-out portion therein configured to accept an end of said component and for removably securing said component therein, first means connected to said fixture for permitting movement of said component to take place in a first predetermined direction and a second predetermined direction, and second means connected to said first movement permitting means for permitting movement of said component to take place in a third predetermined direction;
said first movement permitting means including a pair of elements, one of said elements being slidably mounted upon said second movement permitting means for permitting movement of said component to take place in said first predetermined direction and the other of said elements being slidably mounted upon said one element for permitting movement of said component to take place in said second predetermined direction;
said second movement permitting means being slidably mounted upon said main support for permitting movement of said component to take place in said third perdetermined direction and means operably connected to said second movement permitting means for moving said second movement permitting means a preselected distance;

said main support having an elongated, longitudinally extending slot formed therein adjacent said second movement permitting means, said means for moving said second movement permitting means having a portion thereof extending through said slot;
said second movement permitting means having means operably connected therewith for completely covering said slot in order to prevent grinding dust from entering said slot, said slot covering means including a pair of thin elastic sheets, each of said sheets being attached at one end thereof to said second movement permitting means, and each of said sheets simultaneously, continuously, completely covering said slot;
means encompassing said grinding element for cooling said component and said grinding element and protecting an operator of said grinder assembly from injury during operation thereof, said cooling and protecting means including an upstanding, cylindrically-shaped tube surrounding said vertically upstanding grinding element, said tube having a slot therein permitting said component to pass therethrough adjacent said grinding element; and
wherein said first predetermined direction is along a line transverse to said longitudinally extending slot, said second predetermined direction is about an axis perpendicular to the surface of said main support, and said third predetermined direction is along a line coincidential with said longitudinally extending slot.

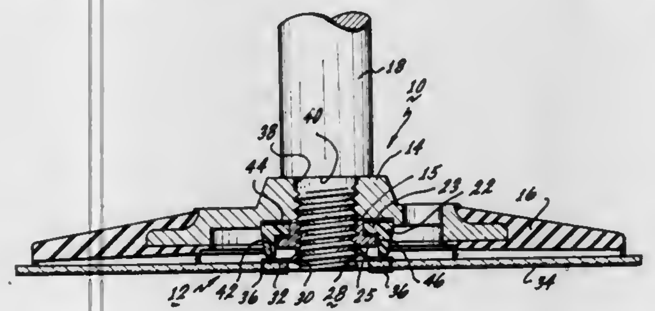
4,439,953
ABRASIVE DISC HOLDER

Aleck Block, Los Angeles, and Hiroshi Hasegawa, Whittier, both of Calif., assignors to Merit Abrasive Products, Inc., Compton, Calif.

Filed Nov. 16, 1981, Ser. No. 321,583

Int. Cl.³ B24D *9/08*

U.S. Cl. 51—389 **10 Claims**



1. A holder for supporting an abrasive disc having a centrally located nut member and with the nut member including a flange portion located adjacent the disc and a thread portion extending from the flange portion, the holder including
a central metallic member,
a stud member extending through the central metallic member and including a threaded end portion,
a flexible pad portion supported by and extending radially outwardly from the central metallic member to support the abrasive disc,
a stop member composed of a low friction plastic material and with a first portion of the stop member disposed around and spaced from the threaded end portion of the stud member and spaced from the central metallic member and with a second portion of the stop member located adjacent to and spaced from the central metallic member and with the stop member captured in position for free rotation relative to the central metallic member and the stud member when the holder is non-supporting the abrasive disc, and
the threaded end portion of the stud member for receiving the thread portion of the nut member of the abrasive disc to thread the abrasive disc onto the holder and with the first portion of the stop member for abuting the flange portion of the nut member to compress the stop member to abut the central metallic member as the abrasive disc is threaded onto the holder.

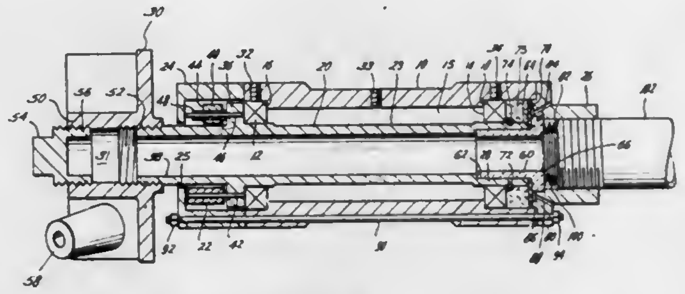
4,439,954
SPIN BLAST TOOL

Percy J. Bennett, Houston, Tex., assignor to Clemtex, Inc., Houston, Tex.

Filed Dec. 31, 1981, Ser. No. 336,269

Int. Cl.³ B24C *3/32;* **B05B** *3/06*

U.S. Cl. 51—411 **11 Claims**



1. A sand blast tool comprising:
a body member having an aperture therethrough;
a conduit rotatably mounted within said aperture and having a bore therethrough;
a nozzle mounted on one end of said conduit;
said body member having connection means adapted for connecting said body member to a source of pressurized air and sand;
said conduit having its other end adjacent said connection means for receiving the pressurized air and sand;
a wear insert having a tubular body and a radial flange;
said other end of said conduit having a counterbore;
said tubular body received within said counterbore of said other end of said conduit and in rotating engagement therewith;
said radial flange extending around said other end;
sealing means disposed between said radial flange and said other end of said conduit;
said tubular body having an inner diameter smaller than the inner diameter of said conduit and being made of a material more wear-resistant than the material of said conduit whereby said wear insert directs the stream of pressurized air and sand away from the internal surface of said bore and encounters the initial entry of said pressurized air and sand into said conduit.

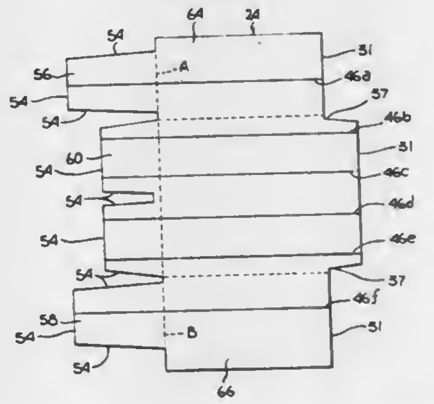
4,439,955
ASPHALT COMPOSITION HIP AND RIDGE COVER

Bennie Freiborg, 4536 Indiana Ave., La Canada, Calif. 91011

Continuation-in-part of Ser. No. 188,876, Sep. 19, 1980. This application Sep. 8, 1981, Ser. No. 300,106

Int. Cl.³ E04D *1/20*

U.S. Cl. 52—57 **14 Claims**



1. An asphalt composition ridge cover comprising a unitary sheet of asphalt composition roofing material characterized by

a substrate of asphalt saturated felt and a layer of granules on the top surface thereof bonded to the saturated felt by a layer of asphalt, said ridge cover further comprising:

a generally rectangular central body portion having a first end, a second end, a first edge, a second edge and a longitudinal centerline;

a first pair of tabs integrally formed with said first end;

a first edge tab integrally formed with said first edge and a second edge tab integrally formed with said second edge;

a second pair of tabs coupled to said first edge tab and second edge tab respectively, proximate said first end, said second pair of tabs being shorter than said first pair of tabs;

said first edge tab and said means for increasing the thickness of said first edge tab being folded into contact with a first portion of said central body portion;

said second edge tab and said means for increasing the thickness of said second edge tab being folded into contact with a second portion of said central body portion;

said first pair of tabs being folded about said first end and folded over said first edge tab and said second edge tab;

whereby one end of the ridge cover is provided with increased thickness and a smooth rounded appearance.

4,439,956

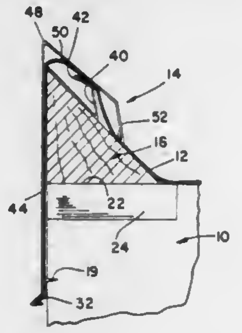
PRESS LOCK FASCIA-CANT SYSTEM

David C. House, Omaha, Nebr., assignor to Prawl Engineering Corporation, Omaha, Nebr.

Filed Aug. 2, 1982, Ser. No. 404,411

Int. Cl.³ E04D *3/38;* E04B *7/00*

U.S. Cl. 52—60 **1 Claim**



1. A press lock fascia-cant system for installation on a building roof adjacent a wall, comprising,

a cant member secured to the roof adjacent the wall and having a right triangle section, said cant member including a flat bottom portion mounted on the roof and having inner and outer edges, said outer edge positioned in substantially the same plane as the wall, an outer wall portion extending upwardly from said outer edge, and an inclined wall portion extending downwardly and inwardly to the inner edge of said bottom portion,

a spring clip member secured to said cant member and comprising an outer wall member positioned outwardly of the outer wall portion of said cant member and having an upper end positioned at the upper end of said outer wall portion of said cant member, an inclined wall member extending downwardly from the upper end of said outer wall member over the upper end of said inclined wall portion of said cant member and terminating above the inner end of said bottom portion of said cant member, a spring portion extending upwardly from the lower end of said inclined wall member of said spring clip member and having an upper end portion which extends upwardly and outwardly from the upper end of said spring portion,

said outer wall member of said spring clip member having a lower end portion which is positioned below the bottom portion of said cant member and which extends downwardly and outwardly with respect to said cant member,

a fascia member detachably mounted on said spring clip member for maintaining a roof membrane therebetween,

said fascia member comprising an outer wall portion positioned adjacent the outer wall member of said spring clip member to maintain the roof membrane therebetween,

said outer wall portion of said fascia member having a substantially V-shaped lower end portion which receives the lower end portion of said outer wall member of said spring clip member,

said outwardly portion of said fascia member having an upper end which is positioned above the upper end of the outer wall member of said spring clip member,

said fascia member having a first inclined wall portion which extends downwardly and inwardly from the upper end of its said outer wall member over said spring portion whereby the roof membrane will be maintained therebetween,

said fascia member having a second inclined wall portion which extends downwardly from the lower end of the first inclined wall portion for pressing the roof membrane into engagement with the cant member.

4,439,957

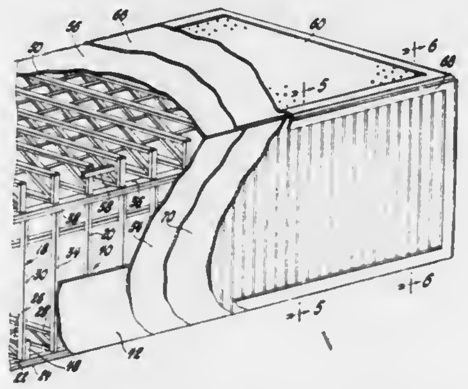
BUILDING STRUCTURE AND METHODS OF CONSTRUCTING AND UTILIZING SAME

Benny O. Raasakka, 362 Wekiva Cove Rd., Longwood, Fla. 32779, and Alfred Evans, 6176 Miller Rd., Swartz Creek, Mich. 48473

Filed May 20, 1981, Ser. No. 265,685

Int. Cl.³ E06B *1/04*

U.S. Cl. 52—79.1 **14 Claims**



1. A box building module comprising a series of U-shaped stress memb[illegible] arranged in spaced serial order lengthwise of said module;

each stress member comprising a horizontally positioned truss and a pair of vertically extending elements;

said elements being positioned respectively at spaced locations along said truss and extending vertically along said truss and then above said truss a substantial distance;

the portion of each of said elements positioned along one of said trusses being secured thereto in load transmitting manner;

a horizontally extending vertically positioned sheath-like stress band extending along the full length of said series of stress members and secured in stress transmitting manner to said vertically extending elements thereof for a substantial portion of their vertical extent to form a rigid stress absorbing unitary side structure;

said horizontally positioned sheath-like stress band being received within notched portions of said vertically extending elements of said stress members;

said horizontally positioned stress band also being secured to the full height of said truss members at the connection thereto of said vertically extending elements of each of said U-shaped stress members;

a sheath member extending vertically along the full length of said U-shaped stress members and being affixed to said horizontally extending sheath-like stress band for the full extent thereof and to said vertically extending element for the full extent thereof above said horizontally disposed sheath-like stress band; and

an upper member joining said U-shaped stress members to form a roof means integrally connected to the upper ends of said U-shaped stress members and to form therewith a substantially rigid box-beam housing unit capable of spanning a substantial distance between supports.

4,439,958

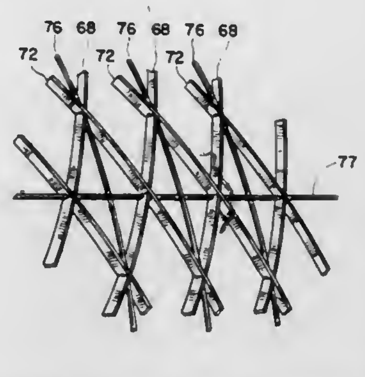
PRESTRESSED SELF-INTERLOCKING GRILLE STRUCTURE

Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005

Continuation-in-part of Ser. No. 58,556, Jul. 18, 1979, Pat. No. 4,282,695, and a continuation-in-part of Ser. No. 206,303, Nov. 12, 1980. This application Jun. 24, 1981, Ser. No. 276,956

Int. Cl.³ E04B *1/32*

U.S. Cl. 52—86 **5 Claims**



1. The curved shelter comprising in combination:

(a) a plurality of first kind of bars having first and second edges, each of which bars including a plurality of cutouts disposed along said first edge of said bars and further including one or more holes disposed intermediate each of two adjacent said cutouts, said bars curved to conform with a required surface geometry and disposed in a first direction;

(b) a plurality of second kind of bars having first and second edges, each of which bars including a plurality of cutouts disposed along the said second edge of said bars and further including one or more holes disposed intermediate each of two adjacent said cutouts, said bars curved to conform with a required surface geometry and disposed in a second direction criss-crossing said plurality of first kind of bars wherein each of said cutouts on said first kind of bars engages each of said cutouts on said second kind of bars; whereby, said pluralities of first and second kind of bars are assembled into a network of bars providing a plurality of series of said holes on said first and second kind of bars lined up in said first and second directions;

(c) a plurality of rods threaded through said plurality of series of holes lined up in said first and second directions;

(d) a flexible covering stretched over said network of bars; and

(e) a plurality of clips of U-shaped cross section clipped onto the edges of said first and second kind of bars holding down said flexible covering to said network of bars by the squeezing action.

4,439,959

RESIDENTIAL BUILDING CONSTRUCTION

Robert Helfman, 6682 Edgewood, Brighton, Mich. 48116

Filed Apr. 15, 1981, Ser. No. 254,535

Int. Cl.³ E04H *1/00*

U.S. Cl. 52—90 **6 Claims**

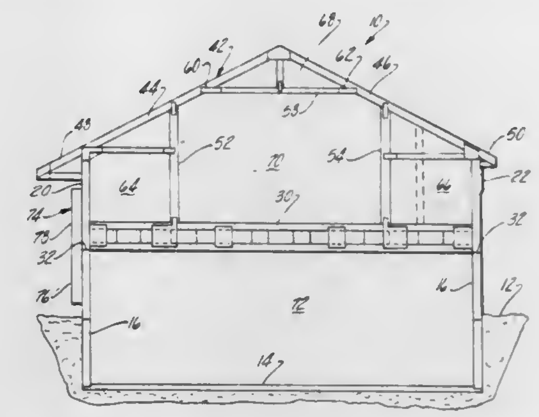
1. A residental building construction erected on a ground surface comprising:

four interconnected and generally vertically extending foundation walls, said foundation walls having a vertical length equal to the height of a conventional home living space and extending downwardly below the ground surface for substantially one-half of said height, said interconnected foundation walls being substantially rectangular in shape,

a floor disposed across and supported by said foundation walls so that said floor is spaced upwardly from the ground surface by substantially one-half of said length,

two side walls supported by and extending vertically upwardly from the opposed foundation walls and a front wall and a back wall supported by and extending vertically upwardly from the other two foundation walls, said side walls, back wall and front wall being interconnected together, said front and back wall having a height substantially equal to one-half said length,

a roof having two substantially rectangular halves disposed across and supported by said side walls, back wall and front wall, so that said rectangular halves abut together along one edge and form a roof peak, said roof halves declining downwardly from said roof peak at an angle so that the vertical height of said building construction is substantially the same as a conventional one story house,



at least one window secured to said front wall, said window having a bottom spaced below the floor and a top spaced above the floor so that said window spans across the floor and provides an outward appearance of a conventional one-story ranch for the building construction, said window comprising light transmissive panes extending continuously from its top and to its bottom,

two interior walls extending vertically between said floor and said roof, one interior wall being spaced inwardly from but parallel to said front wall and the other interior wall being spaced inwardly from but parallel to said back wall, said interior walls and side walls together forming a living space of conventional height.

4,439,960

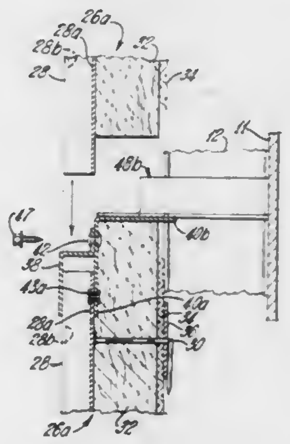
COMPOSITE INSULATION PANEL

Richard C. Jenkins, Overland Park, Kans., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 95,172, Nov. 19, 1979, abandoned. This application Oct. 30, 1981, Ser. No. 316,705

Int. Cl.³ E04B *1/00*

U.S. Cl. 52—99 **3 Claims**



1. A prefabricated composite insulation panel useful in a plurality to cover the exterior of ductwork, precipitators, baghouses, hoppers, and other such components of coal-fired

electric power generating plants, the panel comprising a generally rectangular corrugated sheet having a blanket of fibrous glass insulation secured thereto in engagement with inner corrugation extremities thereof, the blanket projecting upwardly beyond a normally upper edge of the corrugated sheet, an upper cap mounted on said corrugated sheet and including a generally Z-shaped flashing and an L-shaped fastening strip, the L-shaped fastening strip having a normally horizontal leg portion adjacent an upper edge of the blanket and a normally vertical leg portion extending downwardly from the horizontal leg portion on an outer side of the blanket and extending below the upper edge of the corrugated sheet into engagement with the inner corrugation extremities thereof, the generally Z-shaped flashing having a normally vertical inner upper leg portion secured to an upper portion of the vertical leg portion of the L-shaped fastening strip above the upper edge of the corrugated sheet, a normally horizontal body portion covering but spaced from the upper edge of the corrugated sheet, and a normally vertical outer lower leg portion extending downwardly from the horizontal body portion and below the upper edge of the corrugated sheet into engagement with outer corrugation extremities thereof, and a plurality of frangible temporary fasteners each extending through a lower portion of the vertical leg portion of the L-shaped fastening strip and through an upper portion of a respective one of the inner corrugation extremities of the corrugated sheet, the fasteners having sufficiently high shear and tensile strengths to fixedly secure the L-shaped fastening strip and the upper portion of the corrugated sheet to each other during normal handling of the panel before installation, yet having sufficiently low shear strength to fail by sheating due to thermal expansion of the corrugated sheet after installation of the panel in a manner fixedly securing the L-shaped fastening strip and the lower end portion of the corrugated sheet with respect to each other.

4,439,961

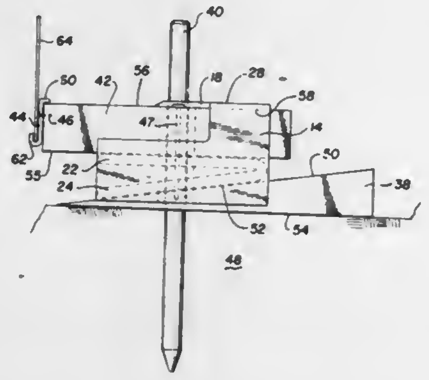
LEVELING AND LOCATING DEVICE AND METHOD OF USING

Donald H. Witte, 7331 Oakbluff, Dallas, Tex. 75240

Filed Nov. 3, 1981, Ser. No. 317,600

Int. Cl.^{3} E04D *15/00;* **E04G** *21/00*

U.S. Cl. 52—126.1 **10 Claims**



1. In a leveling and locating apparatus for vertically and horizontally positioning a member with respect to the earth, a force-bearing structure comprising:

a first wall means extending in a first plane;

a second wall means extending in a second plane, said second plane being substantially parallel to said first plane;

a first floor means operatively extending between said first and second wall means, said first floor means extending in a third plane which is at substantially right angles to said first and second planes;

a second floor means operatively extending between said first and second walls means, said second floor means extending in a fourth plane which is at substantially right angles to said first and second planes and is at a predetermined angle θ to said third plane, said predetermined angle θ being other than zero degrees, said second floor means being positioned on a first side of said first floor means;

a ceiling means operatively extending between said first and second wall means, said ceiling means extending in a fifth plane which is at substantially right angles to said first and second planes and is substantially parallel to said third plane, said ceiling means being positioned on a second side of said first floor means;

a first housing means, with opposed open ends, operatively attached to a first side of said second wall means and operatively positioned such that a centerline thereof is at substantially right angles to said first floor means,

whereby said force bearing structure may be moved vertically along a vertical reference, by a force applied in a vertical direction to said second floor means.

4,439,962

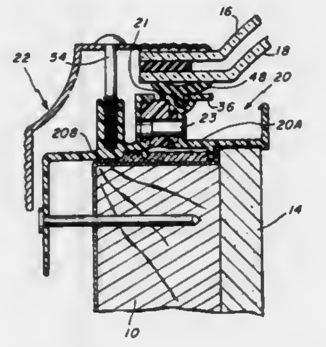
SKYLIGHT CONSTRUCTION

Arthur P. Jentoft, Kennebunkport, and Paul A. Couture, Emery Mills, both of Me., assignors to Wasco Products, Inc., Sanford, Me.

Continuation-in-part of Ser. No. 923,245, Jul. 10, 1978, abandoned. This application Aug. 4, 1980, Ser. No. 175,306

Int. Cl.^{3} E04B *7/18*

U.S. Cl. 52—200 **15 Claims**



1. A skylight construction for an opening in a building comprising:

a curb frame extending about the opening and having means for securing the frame in a fixed position about the opening, said curb frame being of heat conductive material and having an inner section and an outer section,

transparent or translucent means covering the opening and extending at its edges to the curb frame,

means over the frame for retaining the covering means to the curb frame,

gasket means carried by said inner section of said curb frame,

means for securing said retaining means to said outer section of said curb frame to sandwich said transparent or translucent means between a portion of said retaining means and said gasket means, and

a low heat conductive plastic bridge disposed between said outer section and said inner section of said curb frame for impeding heat transfer through the curb frame,

said curb frame inner section and said curb frame outer section including respective facing walls, each having interlocking surfaces adapted to hold said plastic bridge in a position adjacent said gasket means and underlying said transparent or translucent means,

said curb frame having means supporting said gasket means by and over one of said facing walls.

4,439,963

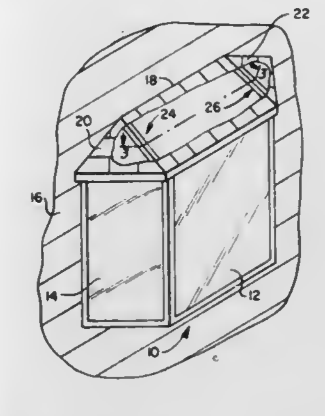
BAY WINDOW PANEL JOINT

Stephen W. Feiss, Baltimore, Md., assignor to Fypon Inc., Stewartstown, Pa.

Filed Aug. 14, 1981, Ser. No. 293,008

Int. Cl.^{3} E06B *1/38*

U.S. Cl. 52—201 **7 Claims**



1. A bay window roof comprising a substantially planar center section panel and a pair of substantially planar flanker section panels, each of said panels being formed of unitary molded plastic material, and means for locating each one of said pair of flanker section panels with a side edge thereof abutting a corresponding side edge of said center section panel with said panels disposed at one of two predetermined obtuse angular positions witn respect to each other, said locating means comprising a crescent shaped slot along the edge of one of said flanker and center section panels opening in the direction of the edge of the other of said panels, said slot having an inner wall having opposed edges and first and second spaced opposed side walls, the first of said walls extending from one of said edges of said inner wall at a first predetermined obtuse angle relative to the plane of said one panel and the second of said side walls extending from the otherof said edges of said inner wall and having at least a portion thereof at a second predetermined obtuse angle greater than said first obtuse angle relative to the plane of said one panel, the first wall of said slot being selectively abuttingly engageable in parallel relationship by one side part of the edge of said other panel to locate said other panel at said first predetermined obtuse angle relative to said one panel, and the second side wall of said slot which is at a greater obtuse angle from the plane of said one panel being selectively abuttingly engageable in parallel relationship by the opposite side part of the edge of said other panel to locate said other panel at said second predetermined obtuse angle relative to the plane of said one panel.

4,439,964

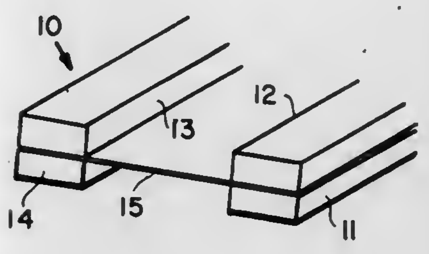
INTERIOR STORM WINDOW

Young Y. Chu, 59-28 Forty-first Ave., Woodside, N.Y. 11377

Filed Jan. 14, 1983, Ser. No. 458,219

Int. Cl.^{3} E06B *3/64, 3/28*

U.S. Cl. 52—202 **18 Claims**



1. An insulating structure comprising:

a mounting frame for attachment to a stable structure adjacent a thermal opening, and

an insulating sheet for mounting on said mounting frame, said mounting frame comprising first and second mounting strips each having two oppositely disposed adhesive surfaces,

said first mounting strip having a first adhesive surface for adhering said mounting frame to said stable structure and an oppositely disposed adhesive surface for connecting to said second mounting strip,

said second mounting strip having first and second adhesive mounting means for attachably mounting a portion of one surface of said insulating sheet to said stable structure.

4,439,965

FIRECODE DOOR-CASING ELEMENT

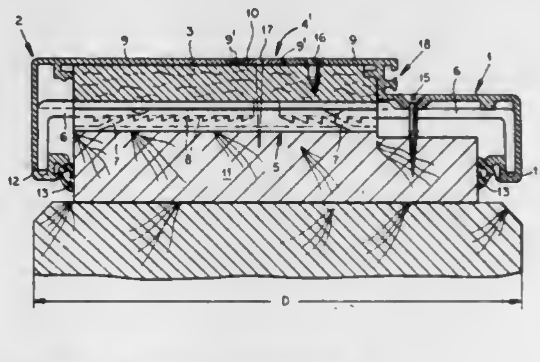
Günter Langenhorst, Bad Sassendorf. Fed. Rep. of Germany, assignor to top-element Bauelemente für Innenausbau + Raumgestaltung GmbH & Co. KG, Hamm, Fed. Rep. of Germany

Filed Jan. 19, 1982, Ser. No. 340,798

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1981, 3101551

Int. Cl.^{3} E06B *1/12*

U.S. Cl. 52—211 **9 Claims**



1. A door-casing element comprising:

an elongated inner metallic profile;

an elongated outer metallic profile parallel to and spaced outward from said inner profile;

an elongated thermally relatively nonconductive connector between and engaging both of said profiles, said connector being formed with recesses open toward said profiles; and

means including respective tongues projecting transversely from said profiles and engaged in said recesses for securing said profiles in spaced-apart relationship to said connector with each of said profiles being securable to said connector at any of a plurality of transversely offset positions.

4,439,966

BUILDING MODULE HAVING INTERNAL TUBES FOR CARRYING ELECTRICAL WIRES

Alfred H. Alles, 260 Bridgeport Dr., El Granada, Calif. 94018

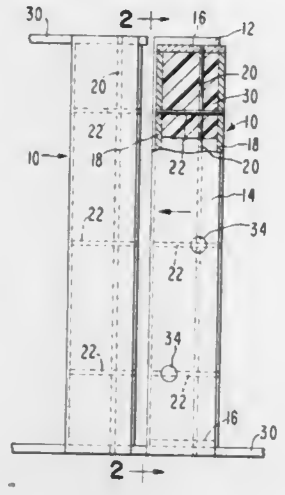
Continuation of Ser. No. 819,015, Jul. 25, 1977, abandoned, which is a continuation of Ser. No. 631,762, Oct. 13, 1975, abandoned. This application Apr. 27, 1981, Ser. No. 258,147

Int. Cl.^{3} E04B *5/48*

U.S. Cl. 52—221 **1 Claim**

1. A building unit comprising: a pair of spaced, non-metallic side panels; a first pair of spaced end walls and a second pair of spaced end walls, the first and second pairs of end walls interconnecting and spanning the distance between the side panels at the outer peripheral margins thereof so that the side panels and the end walls present a hollow space between the side panels and form a building unit capable of being used with other such units to present a building construction, each end wall having a tube-receiving hole therethrough; a pair of generally perpendicular, paperbased tubes in the space between the side panels, one tube spanning the distance between and frictionally received at the ends thereof in respective holes of the first pair of end walls, the other tube spanning the distance between and frictionally received at the ends thereof in respective holes of the second pair of end walls, the tubes being in

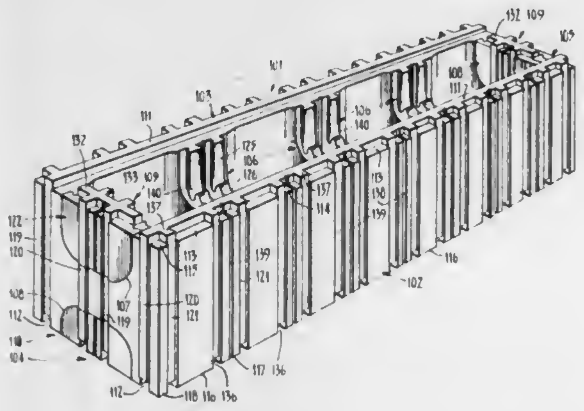
generally parallel planes adjacent to each other at a location between the side panels, the ends of the tubes being open and substantially flush with outer surfaces of respective end walls to allow wiring to be directed into either end of each tube; and a mass of insulation material in said space and bonded to the inner surfaces of said side panels and end walls and to the outer surfaces of the tube, the tubes, the side panels and said insulation material mass being of materials capable of being cut when the tubes are in said space to permit access to the tubes intermediate their ends, whereby electrical fixtures can be mounted on said one side panel and electrically coupled to wires running through the tubes.



4,439,967
APPARATUS IN AND RELATING TO BUILDING FORMWORK

Olif F. Dielenberg, Victoria, Australia, assignor to Isorast Thermacell (U.S.A.), Inc., City of Industry, Calif.

Filed Mar. 15, 1982, Ser. No. 358,024
Int. Cl.^{3} E04C *2/04*
U.S. Cl. 52—309.12 **5 Claims**



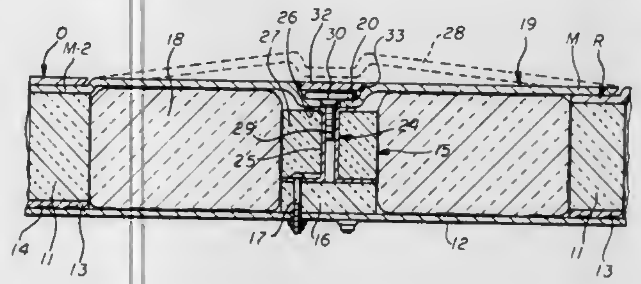
1. A building block formwork element to be used in building a structure, comprising:

a. a hollow rectangular shaped block member having first and second oppositely disposed parallel side walls and first and second oppositely disposed parallel end walls;
b. said first side wall containing a multiplicity of mating grooves and ribs which extend along the height of the wall;
c. said second side wall containing a multiplicity of mating grooves and ribs which extend along the height of the wall;
d. said first end wall containing a multiplicity of mating grooves which extend along the height of the wall;
e. said second end wall containing a multiplicity of ribs which extend along the height of the wall and correspond to the multiplicity of mating grooves in the first end wall;
f. said second end wall containing a multiplicity of mating grooves which extend along the height of the wall;
g. said first end wall containing a multiplicity of ribs which extend along the height of the wall and correspond to the multiplicity of mating grooves in the second end wall;
h. the ribs and grooves in said first and second end wall also corresponding to selected grooves and ribs in said first and second side walls;
i. said first end wall containing an upper arcuate cut-out portion extending downwardly from its top and a lower arcuate cut-out portion extending upwardly form its bottom;
j. said second end wall containing an upper arcuate cut-out portion extending downwardly from its top and a lower arcuate cut-out portion extending upwardly from its bottom;
k. a first upper removable insert member corresponding to the upper arcuate cut-out portion of said first end wall and removably inserted therein;
l. a first lower removable insert member corresponding to the lower arcuate cut-out portion of said first end wall and removably inserted therein;
m. a second upper removable insert member corresponding to the upper arcuate cut-out portion of said second end wall and removably inserted therein;
n. a second lower removable insert member corresponding to the lower arcuate cut-out portion of said second end wall and removably inserted therein;
o. the top of said first side wall containing a longitudinal ridge extending the length of the wall;
p. the bottom of said first side wall containing a longitudinal groove extending the length of the wall and corresponding to the ridge on the top of the wall;
q. the top of said second side wall containing a longitudinal ridge extending the length of the wall;
r. the bottom of said second side wall containing a longitudinal groove extending the length of the wall and corresponding to the ridge on the top of the wall;
s. the top of said first side wall containing a multiplicity of slots adjacent its exterior surface;
t. the bottom of said first side wall containing a multiplicity of tongues adjacent its exterior surface and corresponding to the slots at the top of the wall;
u. the top of said second side wall containing a multiplicity of slots adjacent its exterior surface;
v. the bottom of said second side wall containing a multiplicity of tongues adjacent its exterior surface and corresponding to the slots at the top of the wall;
w. the outwardly facing wall of said first upper removable insert member containing ribs and grooves in alignment with the ribs and grooves in said first end wall;
x. the outwardly facing wall of said first lower removable insert member containing ribs and grooves in alignment with the ribs and grooves in said first end wall;
y. The outwardly facing wall of said second upper removable insert member containing ribs and grooves in alignment with the ribs and grooves in said second end wall;
z. the outwardly facing wall of said second lower removable insert member containing ribs and grooves in alignment with the ribs and grooves in said second end wall;
aa. the top of said first upper removable insert member containing ribs extending along the width of the top and along the thickness of the top;
bb. the bottom of said first lower removable insert member containing grooves along the width of the bottom and along the thickness of the bottom to correspond with the ribs at the top of the first upper insert member;
cc. the top of said second uper removable insert member containing ribs extending along the width of the top and along the thickness of the top;
dd. the bottom of said second lower removable insert member containing grooves along the width of the bottom and along the thickness of the bottom to correspond with the ribs at the top of the second upper insert member;
ee. the arrangement of ribs and grooves in the first and second side walls, first and second end walls, first and second upper removable insert members, and the first and second lower removable insert members being arranged so that adjacent blocks can be interlocked end to end, end to side, in complete alignment with top to bottom or offset in alignment with a portion of the bottom interlocked with each of two adjacent tops;
ff. said hollow rectangular shaped block further comprising a multiplicity of transverse walls disposed between said first and said second side walls to thereby form a multiplicity of chambers within the block;
gg. each of said transverse walls containing an upper arcuate recess corresponding to the upper arcuate recess in the first and second end walls;
hh. each of said transverse walls containing a lower arcuate recess corresponding to the lower arcuate recess in the first and second end walls; and
ii. said first and second end walls and said transverse walls containing aligned grooves in their upper arcuate recess portions.

4,439,968
PRE-STRESSED THERMAL PROTECTION SYSTEMS

Thomas J. Dunn, Pasadena, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Sep. 15, 1982, Ser. No. 418,137
Int. Cl.^{3} E04B *1/74;* B32B *9/04*
U.S. Cl. 52—404 **9 Claims**



1. A reusable high temperature, thermal protection system for a vehicle substructure comprising a plurality of spacer bars secured in pocket forming groups on the vehicle substructure, packing of low density insulation in each pocket, an outwardly dished protective panel of high temperature resistant, resilient material surmounting each pocket, and means flexing the central portion of each panel toward said substructure for prestressing each panel and pressing the periphery thereof firmly against the surrounding spacer bars.

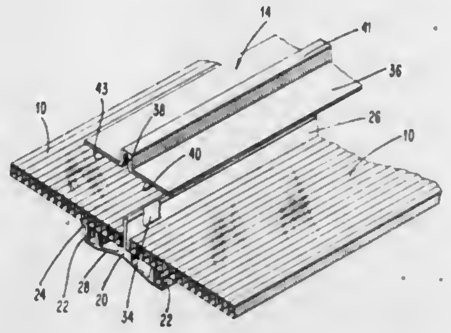
4,439,969
DEVICE FOR AFFIXING PANELS IN ABUTTING RELATIONSHIP TO A SUPPORT STRUCTURE

Gary F. Bartlett, G. F. Bartlett & Associates, Rose Hill Rd., R.D. #3, Muncy, Pa. 17756

Filed Oct. 28, 1981, Ser. No. 315,910
Int. Cl.^{3} E04C *1/34*
U.S. Cl. 52—461 **4 Claims**

1. A device for affixing two adjacent panels to a support structure, said device comprising:

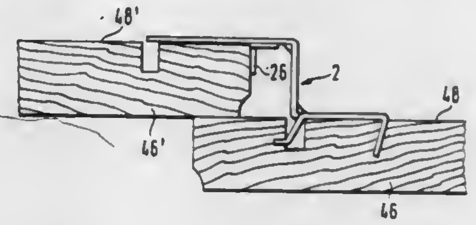
(a) an elongated, extruded metal base member having an axial length and transverse width, said base member including means for engaging the under side of each of said panels, said engaging means contacting each of said panels at at least two transversely spaced, axially elongated contacting areas, said contacting areas being arranged in two groups, each of said groups of contacting areas defining a generally planar surface, said base member further including an integral, axially elongated locking projection having a height in excess of the thickness of said panels, the distal edge of said locking projection having an elongated bead, said base member further including means for affixing said base member to said support structure, said affixing means comprising means for receiving headed fasteners between said contacting areas;
(b) an elongated, substantially rigid extruded metal cap member having an axial length and transverse width, said cap member including an integral, axially elongated slot for engaging said locking projection, said cap member further including axially elongated co-planar panel contacting areas on each side of said slot disposed to contact the upper surface of said panels and adapted to retain the panels on the base members while enabling differential thermal expansion and contraction of the panel, base member and cap, said panel contacting areas overlying said axially elongated contacting areas of the base member; and
(c) a plurality of U-shaped metal clip fasteners engaged and held on the bead on the distal edge of said locking projection in spaced-apart relation for securing said locking projection into said slot.



4,439,970
RETAINER FOR THE ATTACHMENT OF PANELING ELEMENTS, PANELING STRUCTURE PRODUCED BY USING THE RETAINER AND PANELING STRIP SUITABLE FOR USE OF THE RETAINER

Wolfgang Rosner, Josephsburgstr. 73a, D-8000 München 80, Fed. Rep. of Germany

Filed Jan. 12, 1981, Ser. No. 224,038
Claims priority, application Fed. Rep. of Germany, Jan. 16, 1980, 3001446
Int. Cl.^{3} E04B *1/38;* E04D *1/34, 3/36*
U.S. Cl. 52—511 **7 Claims**



1. A paneling structure, including paneling elements of wood, plastic or the like, of the overlapping arrangement type, comprising elongated first paneling elements spaced farther away from the surface to be paneled and elongated second paneling elements closer to the surface to be paneled, said paneling elements having first and opposite second edge regions and being supported by a supporting structure in such a manner that first edge regions of said second paneling elements are adjacent to second edge regions of said first paneling elements and that second edge regions of said second paneling elements are adjacent to first edge regions of said first paneling elements, wherein:

(a) at least said first paneling elements comprising at their rear surfaces at least first and second longitudinally extending grooves having two walls, each of said first grooves being provided at a respective said first edge region and each of said second grooves being provided at a respective said second edge region;

(b) a plurality of substantially Z-shaped retainers, each having a first shank, a second shank and a central bar connecting said first and said second shank, are attached in spaced relationship along said first and second edge regions to the said rear surfaces of said first paneling elements such that said second shanks are directed towards adjacent said second paneling elements;

(c) said retainers comprise at their respective said first shank at least one engagement projection having an engagement end which is penetrated into one of said walls of one of the said grooves, as well as at least one press-in projection, which is pressed to the respective said rear surface at a distance from the said one of said grooves;

(d) pairs of one of said first paneling elements and of an adjacent one of said second paneling elements, which is fitted with its said second edge region into the space between said rear surface of said one of said first paneling elements and said second shanks of those of said retainers attached to the said first edge region of said one of said first paneling elements, are secured to said supporting structure by fitting said one of said second paneling elements with its first edge region into the space between said rear surface of an oppositely adjacent one of said first paneling elements and said second shanks of those of said retainers attached to the said second edge region of said oppositely adjacent one of said paneling elements and by securing said second edge region of said one of said first paneling elements to said supporting structure by means of those of said retainers attached thereto.

4,439,971

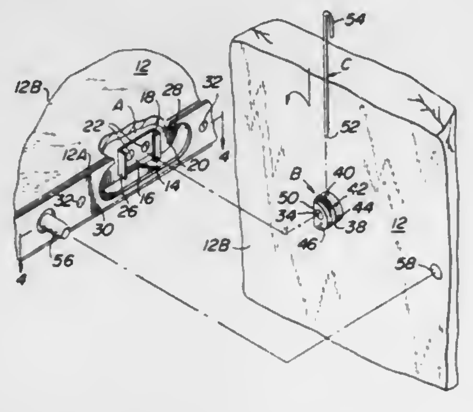
PANEL CONNECTOR

John S. Rutherford, Chalfont, Pa., assignor to Woodrite, Inc., Willow Grove, Pa.

Filed Mar. 24, 1982, Ser. No. 361,345

Int. Cl.^{3} E04C *1/10*

U.S. Cl. 52—584 **13 Claims**



1. A concealed connector for coupling two panel sections together comprising a first member mounted within a recess within an edge of one panel section and including a lip extending partially into the recess, and a second member outwardly projecting from a surface of the second panel section and being rotatably coupled with respect thereto on an axis substantially normal to the surface thereof, said second member including an externally threaded cam portion adapted to protrude within the recess of the first panel section when the two panel sections are abutted, and means for rotating said second member at the periphery thereof adjacent the surface of the second panel section so that a segment of said threaded cam portion will engage said lip and draw the abutting surfaces of the two panel sections in tight locked disposition with the connector retained invisibly therebetween.

4,439,972

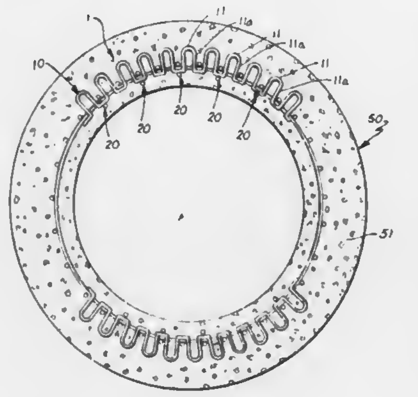
CIRCUMFERENTIAL STIRRUP PANEL

Wilbur E. Tolliver, 364 Hamilton Dr., Holland, Mich. 49423

Division of Ser. No. 265,443, May 20, 1981, Pat. No. 4,345,626, which is a continuation of Ser. No. 36,171, May 4, 1979. This application Mar. 8, 1982, Ser. No. 356,048

Int. Cl.^{3} E04H *12/00*

U.S. Cl. 52—651 **10 Claims**



1. A concrete pipe reinforcing cage and stirrup reinforcement assembly comprising: a generally cylindrical reinforcing cage including circumferential wires extending around said cage and generally longitudinal wires extending longitudinally with respect to said cage and being joined to said circumferential wires; a mat joined to said cage which is comprised of a plurality of generally sinusoidal shaped stirrup members, each comprised of nodes and antenodes, said stirrup members being oriented generally parallel to one another and being oriented circumferentially with respect to said cage with said nodes projecting generally radially from said cage, said mat further including a plurality of tie wires oriented generally longitudinally with respect to said cage and being secured to said stirrup members to join them together each of said sinusoidal stirrup members being manually bendable and each of said nodes being open at the bottom and being open between one another in a given stirrup member, except where joined by said antenodes, whereby said mat can be manually, arcuately shaped along the length of said sinusoidal stirrup members to conform to the circumference of said cage.

4,439,973

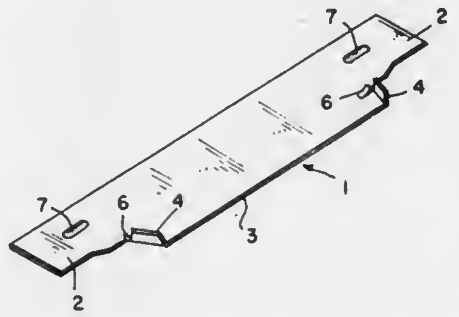
CLIP FOR METAL PLANKS

Martin Nassof, Cliffside Park, N.J., assignor to Simplex Ceiling Corp., Hoboken, N.J.

Filed Jul. 10, 1981, Ser. No. 282,064

Int. Cl.^{3} F04B *1/38, 5/52*

U.S. Cl. 52—714 **4 Claims**



1. A clip for attachment of metal planking to a T-bar, which comprises an elongated main body having parallel sides, a generally trapezoidal projecting portion, and an intermediate portion integral with and joining the longer base of said trapezoidal portion to a side of said main body portion, all of said portions being coplanar and the bases of said trapezoidal portion being parallel to said main body sides, said intermediate portion being shorter than said longer base to define a pair of opposed open slots between said projecting portion and said main body portion for receiving the edges of a metal plank; said intermediate portion having opposed, integral movable tab means at each end thereof, said tabs being bent away from the plane of said coplanar portions and operable to be manually bent towards or away from said plane to shorten or lengthen, respectively, its associated slot; and an elongated ear normal to and integral with said trapezoidal portion at each inclined side thereof and extending from the longer base to the shorter base thereof, each said ear being operable, when one edge of a plank is secured in a slot and the free edge of the plank is manually pushed against said ear, to cam the free edge of a plank across said ear and into said slot.

4,439,974

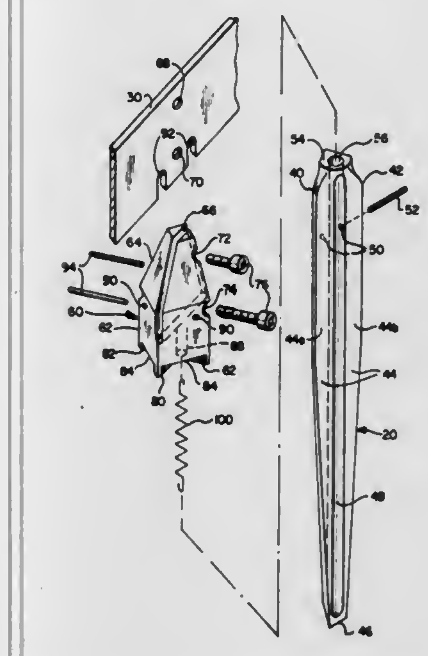
GUIDE MECHANISM AND FINGER

John A. Wiseman, Lynchburg, Va., assignor to Simplimatic Engineering Co., Lynchburg, Va.

Continuation-in-part of Ser. No. 278,000, Jun. 26, 1981, and Ser. No. 309,671, Oct. 8, 1981, abandoned. This application Jan. 27, 1982, Ser. No. 343,371

Int. Cl.^{3} B65B *32/02, 5/08*

U.S. Cl. 53—248 **46 Claims**



1. In a guide mechanism for use in an article-loading machine having means for positioning articles in predetermined juxtaposition above said guide mechanism and means for positioning an article-receiving receptacle below said guide mechanism, said guide mechanism comprising a plurality of elongated support members defining a generally horizontal grid, and a plurality of mounting members spaced along said support members to define passages through which the articles pass downwardly into the receptacle; the improvement wherein said mounting members have bottom surfaces and said guide mechanism further comprises elongated downwardly-extending guide member fingers having top surfaces defining a fulcrum and spring means acting substantially vertically in tension to resiliently contact each finger with a respective mounting member to force pivotal engagement of the fulcrums on the top surfaces of said fingers against the bottom surfaces of said mounting members and to simultaneously hold said fingers in position below said mounting members; said finger top surfaces and fulcrums defined thereon, said bottom surfaces of the mounting members and said spring means cooperating so that the lower ends of said fingers normally are urged by said spring means to extend inwardly towards the centers of said passages for engaging articles before the articles are dropped through said passages and pivot outwardly towards the periphery of said passages against the action of said spring means as the articles pass through said passages into the receptacle.

4,439,975

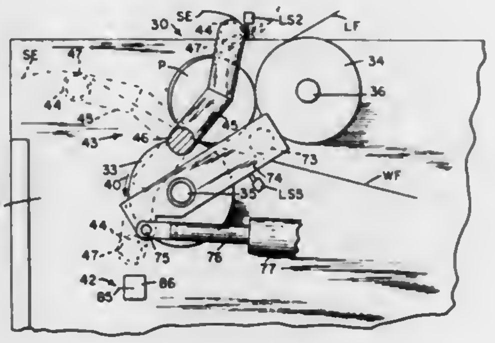
METHOD OF AND APPARATUS FOR WRAPPING PRODUCTS

Robert Laing, Sutton, Mass., assignor to Curtis & Marble Corp., Worcester, Mass.

Division of Ser. No. 937,055, Aug. 28, 1978, Pat. No. 4,189,894. This application Dec. 10, 1979, Ser. No. 101,737

Int. Cl.^{3} B65B *11/04, 11/58*

U.S. Cl. 53—399 **6 Claims**



1. Method of wrapping a generally cylindrical product with plastic film having sufficient softness and frictional characteristics for enabling the film to adhere to the surface of the product upon contact therewith, the product being wrapped on a pair of spaced elongated support rolls forming an upper supporting nip for supporting the product in a generally horizontal position, the method comprising the following steps:

(a) extending the free end of a wrapping film upwardly from a first supply roll between the support rolls and over one of the support rolls to a cut-off line spaced from said one support roll,

(b) extending the free end of a relatively narrow starter film from a supply roll, first over the other of said pair of support rolls then over said wrapping film covering said one support roll to the cut-off line,

(c) placing the product on the wrapping and starter films covering the pair of support rolls within said supporting nip,

(d) transferring the free ends of the wrapping and starting films to the product, and

(e) rotating the product in one direction within the nip about its central longitudinal axis while guiding the free leading ends of the wrapping and starter films into the nip between the product and said other roll by the portion of the starter film extending between and over the support roll to wrap the wrapping and starter films around the product.

4,439,976

METHOD FOR FILLING GAS INTO A METAL CONTAINER

Soeda Yuji, and Akio Goto, both of Kanagawa, Japan, assignors to Tokico Ltd., Kanagawa, Japan

Division of Ser. No. 148,490, May 9, 1980, Pat. No. 4,361,248. This application Aug. 31, 1982, Ser. No. 413,433

Claims priority, application Japan, May 21, 1979, 54-62515

Int. Cl.^{3} B65B *31/04*

U.S. Cl. 53—403 **4 Claims**

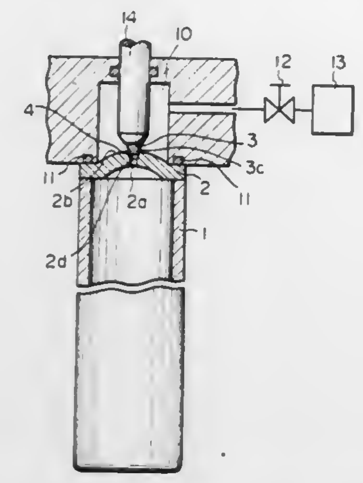
1. A method of filling pressurized gas into a metal container, said method comprising:

deforming outwardly a portion of a wall of the metal container and thereby causing fracture of said wall along two fractured surfaces while projecting said portion outwardly from the remainder of said wall between said two fractured surfaces with said portion being integrally connected to said remainder of said wall at opposite ends of said two fractured surfaces, and thereby forming gas introducing passages between said two fractured surfaces and respective fractured side surfaces of said projecting portion, said deforming comprising the forming of said projecting portion with increasing thickness in a direction transverse to said side surfaces thereof in a direction outwardly of said container;

supplying pressurized gas into the interior of said container through said gas introducing passages;

deforming inwardly said projecting portion by applying thereto a pressing force to return said projection into the wall opening created by said outward deformation and re-engage said fractured surfaces and said respective side surfaces, thereby closing said gas introducing passages; and

permanently securing the thus inwardly deformed projecting portion to said remainder of said wall.



4,439,977

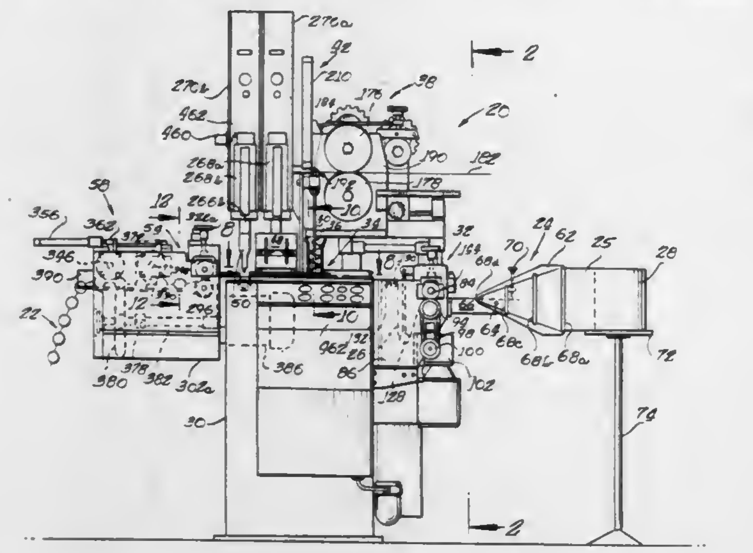
METHOD AND APPARATUS FOR MAKING A SERIES OF POCKETED COIL SPRINGS

Walter Stumpf, Munster, Ind., assignor to Simmons U.S.A. Corporation, Atlanta, Ga.

Continuation of Ser. No. 793,949, May 5, 1977, abandoned. This application Jul. 16, 1981, Ser. No. 284,240

Int. Cl.³ B29C *27/08;* **B32B** *31/20;* **B65B** *35/56*

U.S. Cl. 53—428 **20 Claims**



1. Apparatus for making a series of coil springs pocketed within an elongate stretchable fabric strip comprised of at least two overlying plies capable of being thermally welded together, said apparatus comprising, in combination, means defining a guide path adapted to receive said fabric strip for longitudinal movement therealong, indexing drive means operative to engage and to advance said fabric strip intermittently along said guide path, inserter means adjacent said guide path means and operative to deposit a compressed coil spring between said plies, first thermal weld head means operatively associated with said guide path means and operative to thermally weld said two plies together along at least one weld line longitudinally of said strip adjacent to the edge thereof into which the spring is inserted, second thermal weld head means operatively associated with said guide path means and adapted to thermally weld said two plies together along weld lines transversely of said strip between successive springs, said weld lines defining an individual spring retaining pocket about each of said inserted springs, both of said thermal weld head means being positioned adjacent to said inserter means along said guide path in the direction of movement of said fabric strip to hold the stretchable fabric strip during the insertion of spring between the plies, said first and second weld heads being disposed adjacent to each other and being operated simultaneously to complete the spring retaining pocket at a location immediately adjacent and downstream of said inserter means, means associated with said guide path to maintain said springs in compression between said two plies until after the operation of said weld head means, and control means operatively associated with said indexing drive means, said inserter means, and said first and second weld head means operable to effect operation of said inserter means and said weld head means in unison and in alternate relation with said indexing drive means so as to insert the springs and to form the pockets while said fabric strip is intermittently at rest.

14. A method for making a series of connected pocketed coil springs comprising the steps of intermittently advancing two overlying plies of thermally weldable fabric strip along a predetermined guide path, successively inserting a plurality of compressed coil springs between said two overlying plies of thermally weldable fabric strip when said strip is at rest so that said springs are spaced longitudinally along said strip, maintaining the compression of said springs and thermally welding said fabric plies together with contact pressure simultaneously along weld lines transversely of said strip between successive inserted springs and longitudinally of said strip along the edge thereof into which the springs are inserted when said strip is at rest so as to form a retaining pocket about each of said springs while the springs are compressed and at a location immediately adjacent to and downstream of the insertion of the compressed spring between the plies, said contact pressure holding said edge in place at a location downstream in the advancing direction and closely adjacent to the path of movement of the compressed spring during its insertion.

4,439,978

APPARATUS FOR SPLICING SPUN YARNS

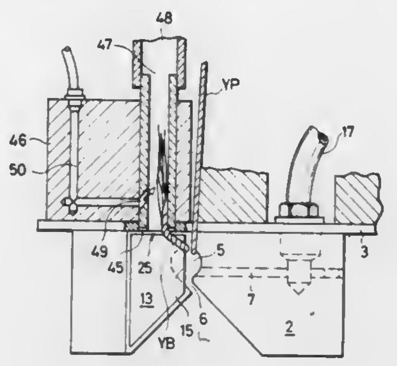
Hiroshi Mima, Kyoto, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Sep. 2, 1982, Ser. No. 414,306

Claims priority, application Japan, Sep. 3, 1981, 56-139099

Int. Cl.³ D01H *15/00*

U.S. Cl. 57—22 **3 Claims**



1. An apparatus for splicing spun yarns, which comprises a splicing member having a splicing hole and a jet nozzle for jetting a compressed fluid into said splicing hole, and control nozzles arranged on both the outer sides of said splicing hole to suck yarn ends to be spliced, said splicing apparatus being characterized in that a cylindrical sleeve having an inclined jet hole formed on the tubular wall thereof to extend to the interior of the cylinder and to be communicated with an air introducing hole is fitted in a nozzle hole of said control nozzle slidably in the axial direction thereof so that the position of the jet hole relative to the yarn ends can appropriately be changed.

4,439,979

DOUBLE TWIST SPINDLE ASSEMBLY

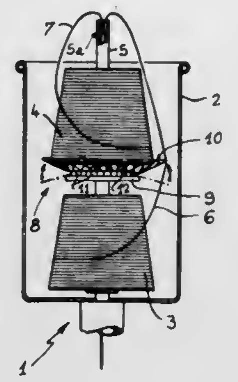
Roland Winkelmann, Caluire, France, assignor to Verdol S.A., Caluire, France

Filed Apr. 28, 1982, Ser. No. 372,863

Claims priority, application France, Apr. 30, 1981, 81 08833

Int. Cl.³ D01H *7/86, 13/10, 13/12*

U.S. Cl. 57—58.86 **8 Claims**



1. In a double twist spindle assembly of the type including a central spindle having a bore therethrough and extending through a can and the spindle supporting within the can a lower yarn package and an upper yarn package each feeding yarn into the bore of the spindle above the packages, an improved device for guiding the yarn which is unwinding from the lower package to prevent its contacting the upper package, the improved device comprising:

(a) a disc supported on the spindle radially disposed between the packages;

(b) multiple leaf means pivotally supported on the disc and including outer peripheries extending from the disc and operative to contact the yarn as it unwinds from the lower package and guide it outwardly away from the periphery of the upper package; and

(c) the leaf means having means maintaining contact with the outer periphery of the upper package and operative to close the leaf means to decrease the diameter of its periphery independently of the tension of the yarn as the diameter of the outer yarn layer of the upper package decreases.

4,439,980

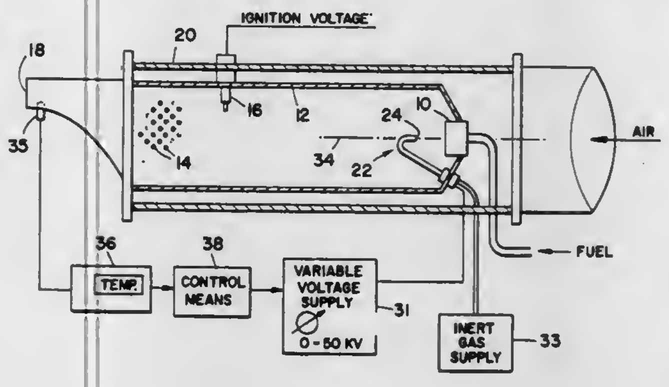
ELECTROHYDRODYNAMIC (EHD) CONTROL OF FUEL INJECTION IN GAS TURBINES

Oscar Biblarz; James A. Miller, both of Carmel, and Ronald J. Laib, Bonita, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 16, 1981, Ser. No. 321,955

Int. Cl.³ F02C *7/22*

U.S. Cl. 60—39.06 **10 Claims**



1. In a gas turbine engine wherein the fuel is injected through a spray injection nozzle into a combustion chamber, the improvement being apparatus for modifying the normal spray characteristics of the injected fuel so that fuels of higher aromatic content can be efficiently used in said engine, which comprises means for providing a variable electrostatic field within said combustion chamber in the vicinity of said injection nozzle, the fuel emerging from said nozzle being charged by said electrostatic field, whereby the spray characteristics of said fuel spray may be modified by adjusting the strength of the electrostatic field, said means for providing an electrostatic field including:

(a) an electrical conductor disposed in the pathh of said injected fuel spray;

(b) means for supplying a variable high voltage to said conductor;

(c) a first layer of high density insulating material covering said conductor for protecting said conductor from damage due to the high temperatures in the combustion unit and electrically insulating said conductor from the ground plane of the combustion chamber, a portion of the surface of said conductor being uncovered to provide an exposed high voltage surface for providing said electrostatic field;

(d) a second layer of high density insulating material disposed over said first layer of high density insulating material and separated from said layer of high density insulating material so that a passage is formed between the two layers; and

(e) a source of inert gas coupled to said passage to provide a protective layer to insulate the exposed surface of the conductor from the flame.

4,439,981

ARRANGEMENT FOR MAINTAINING CLEARANCES BETWEEN A TURBINE ROTOR AND CASING

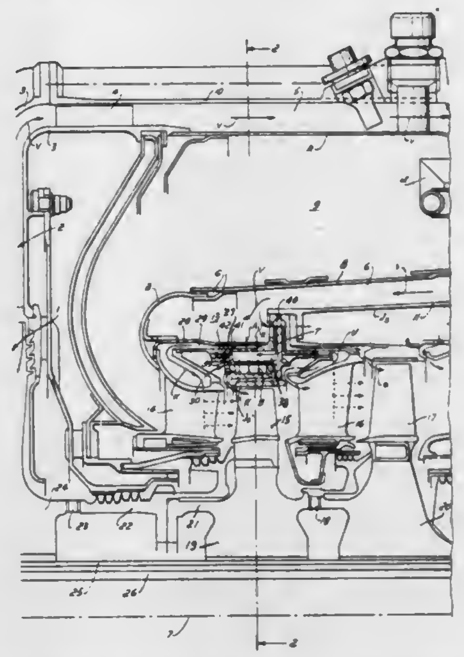
Wolfgang Weiler, and Klaus Trappmann, both of Dachau, Fed. Rep. of Germany, assignors to MTU Motoren-und Turbinen-Union Munchen GmbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 122,086, Feb. 19, 1980, abandoned. This application Jun. 30, 1982, Ser. No. 393,919

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1979, 2907749

Int. Cl.³ F02C *7/18;* **F01D** *11/08, 25/12*

U.S. Cl. 60—39.32 **1 Claim**



1. In a gas turbine engine having a rotor, a casing surrounding the rotor, a combustion chamber within the casing, and a compressor, an arrangement for maintaining minimal clearances between the radially-outermost surfaces of the turbine rotor and the turbine casing surrounding the rotor, the arrangement comprising:

(a) an annular sleeve surrounding the turbine rotor and fixed with respect to the turbine casing, the sleeve being elastically deformable in a radial direction,

(b) a wear ring carried by the deformable sleeve, the wear ring being composed of segments arranged end-to-end circumferentially, the adjacent ends of the segments being spaced apart when the engine is cold or idling, the spaces between the segments closing and the segment ends engaging each other within one operating range of temperatures of the engine, and the sleeve expanding radially within a higher operating range of temperatures of the engine,

(c) duct means for conducting air from the outlet of the compressor, the deformable sleeve being mounted on the duct means and the duct means forming part of the combustion chamber of the engine, one wall of the duct means having a forked section,

(d) an annular perforated sleeve surrounding and connected to the deformable sleeeve, air from the duct flowing through the perforations in the perforated sleeve and thereby being directed against the deformable sleeve,

(e) means for directing air from the duct against the wear ring,

(f) an annular deflector connected to the perforated sleeve, the deflector defining an end of the duct and being loosely retained within the forked section of the duct, and

(g) layers of thermal insulation on the duct means and on the surface of the wear ring facing the rotor blades, the insulation being of ceramic material.

4,439,982

ARRANGEMENT FOR MAINTAINING CLEARANCES BETWEEN A TURBINE ROTOR AND CASING

Wolfgang Weiler, and Klaus Trappmann, both of Dachau, Fed. Rep. of Germany, assignors to MTU Motoren-und Turbinen-Union Munchen GmbH, Munich, Fed. Rep. of Germany

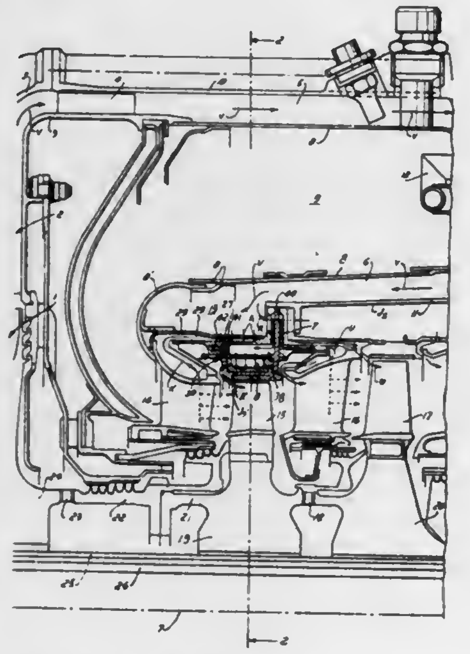
Continuation of Ser. No. 122,087, Feb. 19, 1980, abandoned.

This application Jun. 30, 1982, Ser. No. 393,920

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1979, 2907748

Int. Cl.³ F02C *7/18;* **F01D** *11/08, 25/12*

U.S. Cl. 60—39.32 **1 Claim**



1. In a gas turbine engine having a rotor, a casing surrounding the rotor, a combustion chamber within the casing, and a compressor, an arrangement for maintaining minimal clearances between the radially-outermost surfaces of the turbine rotor and the turbine casing surrounding the rotor, the arrangement comprising:

(a) an annular sleeve surrounding the turbine rotor and fixed with respect to the turbine casing, the sleeve being elastically deformable in a radial direction,

(b) a wear ring carried by the deformable sleeve, the wear ring being composed of segments arranged end-to-end circumferentially, the adjacent ends of the segments being spaced apart at all operating conditions of the turbine,

(c) duct means for conducting air from the outlet of the compressor, the deformable sleeve being mounted on the duct means and the duct means forming part of the combustion chamber of the engine, one wall of the duct means having a forked section,

(d) an annular perforated sleeve surrounding and connected to the deformable sleeve, air from the duct flowing through the perforations in the perforated sleeve and thereby being directed against the deformable sleeve,

(e) means for directing air from the duct against the wear ring,

(f) an annular deflector connected to the perforated sleeve, the deflector defining an end of the duct and being loosely retained within the forked section of the duct, and

(g) layers of thermal insulation on the duct means and on the surface of the wear ring facing the rotor blades, the insulation being of ceramic material.

4,439,983

INLET TURBINE POWERED EXHAUST EXTRACTOR FOR INTERNAL COMBUSTION ENGINES

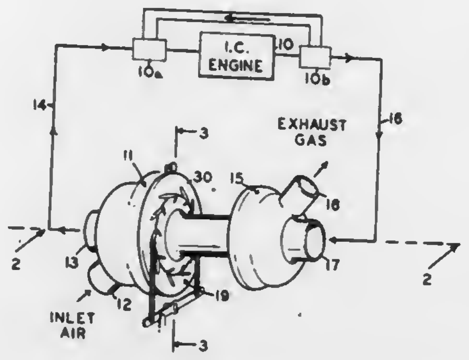
David C. Gertz, 7523 Quailwood Way, Citrus Heights, Calif. 95610

Continuation of Ser. No. 959,788, Nov. 13, 1978, abandoned.

This application Nov. 9, 1981, Ser. No. 319,449

Int. Cl.³ F02B *35/02*

U.S. Cl. 60—273 **3 Claims**



1. A method of improving the efficiency of a four-cycle internal combustion engine, including, in combination, the steps of:

(a) isentropically expanding inlet air to said engine by passing the air through an inlet turbine having an inlet annulus of larger diameter than the diameter of its outlet annulus such that power is extracted from the inlet air to drive the turbine;

(b) decreasing the exhaust gas back pressure from said engine by passing the exhaust gas through a driven outlet compressor having an inlet annulus of smaller diameter than the diameter of its outlet annulus; and

(c) driving said outlet compressor directly by said turbine whereby the overall temperature of the internal combustion cycle is lower than in the absence of said turbine and compressor to thereby increase the thermodynamic efficiency by increasing the power delivered for a given quantity of fuel.

4,439,984

COAXIAL BIDIRECTIONAL SPOOL VALVE

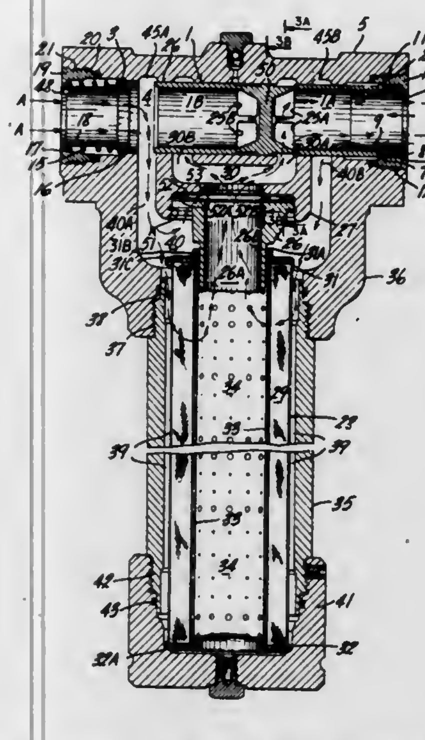
Francis Martin, Huntington, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.

Filed Jul. 20, 1981, Ser. No. 284,908

Int. Cl.³ B01D *27/10;* **F16K** *17/26*

U.S. Cl. 60—454 **25 Claims**

1. A coaxial bidirectional flow control spool valve comprising a valve housing; a valve seat in the housing; and a plurality of fluid flow passages in the housing; the valve comprising, as valve elements, a spool valve and first and second bungee followers, each reciprocating between two limiting positions along a longitudinal axis, the spool valve moving into and away from actuating contact with a bungee follower in each of its two limiting positions, the spool valve and one of each of the bungee followers being linked in each of the limiting positions in their response to fluid flow, so that when the spool valve is in one position, it together with one bungee follower accepts flow from one direction in a fluid line and directs it through one path to a unidirectional function and through one path from the unidirectional function, receiving and returning the flow to the fluid line continuing in the same direction, and when the spool valve is in actuating contact with the other bungee follower, in the other limiting position, the valve and bungee follower accept flow through the fluid line from the opposite direction, and direct it through the same fluid path to the unidirectional function and also accept flow from the same path from the unidirectional function and direct this flow back into the fluid line continuing in the same opposite direction; the reciprocable spool valve having side sealing surfaces, and being reciprocable in the housing between first and second limiting positions, respectively, along the valve seat; a fluid pressure-receiving surface operatively connected to one side of the reciprocable spool valve; and a second fluid pressure-receiving surface operatively connected to the opposed side of the spool valve; differential fluid pressure arising from fluid flow in either direction in the fluid line applied to the first and second pressure-receiving surfaces urging the valve in opposite directions, towards or away from one of its limiting positions; the first and second bungee followers each being disposed in the housing to be actuated in one of the limiting positions of the reciprocating spool valve, the first bungee follower being actuated by the spool valve in its first position, and the second bungee follower being actuated by the spool valve in its second position; first and second bias means urging the first and second bungee followers, respectively, in one direction, and the spool valve urging the bungee followers in the opposite direction; first and second flow passages in the valve housing for connection in series to opposite sides of a function and in fluid flow connection with each other via the function; third and fourth fluid flow passages in the housing for connection in series to a fluid line, accepting fluid flow therethrough in either direction; fluid flow connections controlled by the spool valve and bungee followers between the first fluid flow passage and each of the third and fourth flow passages; and between the second flow passage and each of the third and fourth fluid flow passages; one of the bungee followers and the reciprocating spool valve in one limiting position of the spool valve permitting flow through one of the fluid connections only between the third fluid flow passage and the first fluid flow passage; and between the fourth fluid flow passage and the second fluid flow passage, and the other of the bungee followers and the reciprocating spool valve in the other of its limiting positions permitting flow through one of the fluid flow connections only between the third fluid flow passage and the second fluid flow passage, and between the first fluid flow passage and the fourth fluid flow passage, so that fluid flow in either direction through the third and fourth fluid flow passages is directed in the same direction through the first and second fluid flow passages of the housing.



4,439,985

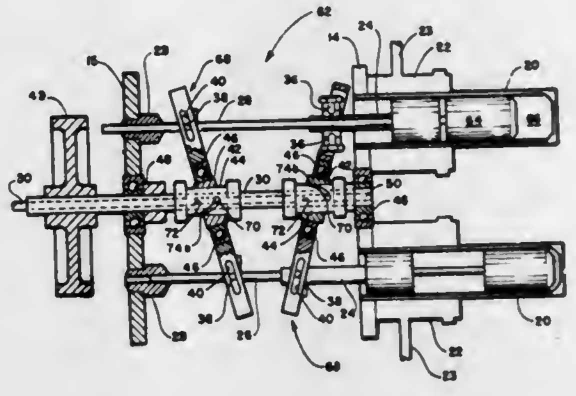
POWER TRANSMISSION FOR A STIRLING HOT GAS ENGINE

Gerald P. Lamb, 2648 Hartford St., San Diego, Calif. 92110

Filed Sep. 23, 1982, Ser. No. 421,902

Int. Cl.³ F02G *1/04*

U.S. Cl. 60—518 **12 Claims**



1. Improved linear to rotary power transmission for a Stirling type heat engine having at least one common cylinder with a power piston and displacement piston operating therein, said power piston connected to a power piston shaft and said displacement piston connected to a displacement piston shaft, said displacement piston shaft linearly translatable within said power piston shaft with its distal end extending beyond the distal end of said power piston shaft and a common rotary drive shaft with a flywheel connected to one end thereof comprising:

a pair of connecting arms, one connected between said displacement piston shaft and said common drive shaft and the other connected between said power piston shaft and said common drive shaft, said connections to said piston shafts comprise universal joint means and said connections to said common drive shaft comprises a rotatable connection through axial eccentrics fixed in position on said common drive shaft, said axial eccentrics having a selected angular displacement from the longitudinal center line of said common drive shaft whereby said pistons operably translate within said cylinder while maintaining a preselected relative displacement between said pistons.

4,439,986

HYDRAULIC POWER UNIT

Joseph D. Snitgen, 18828 Hillcrest, Birmingham, Mich. 48009

Filed Jan. 23, 1981, Ser. No. 228,156

Int. Cl.³ B60T *13/00*

U.S. Cl. 60—547.1 **10 Claims**

1. An air operated demand only hydraulic power unit for supplying hydraulic fluid under pressure to one or more hydraulic working cylinders, each having a working piston thereof, comprising:

a pneumatic first extensible fluid motor means having a first power transmitting means therein;

a solenoid operated air supply valve actuatable to a first position to place one side of said first power transmitting means in fluid communication with a pressurized source of air and the opposite side thereof in fluid communication with atmosphere, and to a second position to place said one side of said first power transmitting means in fluid communication with atmosphere and said opposite side in fluid communication with a pressurized source of air;

a hydraulic second slave extensible fluid motor means having a second power transmitting means therein, said second power transmitting means being operatively connected to and powered by said first power transmitting means;

said second extensible fluid motor means being connected via an advance oil conduit and a retract oil conduit to each said working cylinder so that movement of said second power transmitting means in a first direction will cause oil to be pumped out of said second extensible fluid motor means through said advance conduit to advance each said working piston, and movement of said second power transmitting means in the opposite direction will cause oil to flow through said retract conduit to retract each said working piston;

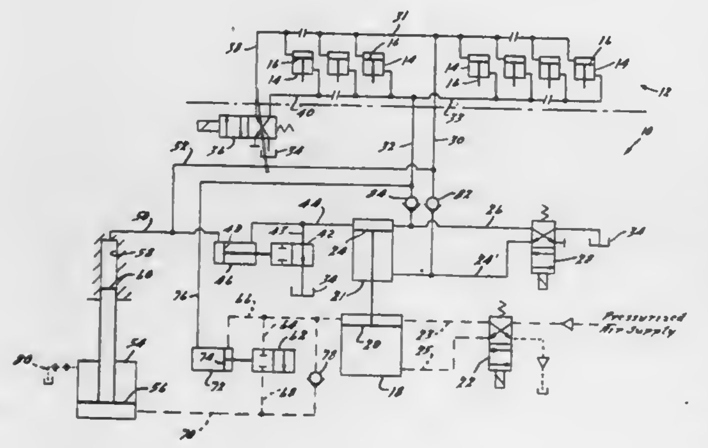
an oil supply valve actuatable by said solenoid operated air supply valve to a first position when said air supply valve is in said first position to place one side of said second power transmitting means in fluid communication with an oil reservoir and to block fluid communication between the opposite side thereof and said reservoir, and to a second position to block fluid communication between said one side of said second power transmitting means and said reservoir;

reset means for insuring full cycling of said second power transmitting means in said second extensible fluid motor, said reset means disposed between said advance oil conduit and said retract oil conduit, comprising a flow control check valve and a bypass flow control around said check valve, said check valve being closed when oil in said retract oil conduit is at a higher pressure than oil in said advance oil conduit, said bypass flow control being operable to feed oil to said advance oil conduit from said retract oil conduit when said check valve is in a closed position;

an advance intensifier comprising a first oil cylinder having a first piston therein and a second oil cylinder having an intensifying piston therein powered by said first oil cylinder piston, said second oil cylinder being in fluid communication with said advance oil conduit and one end of said first piston being in fluid communication with said retract oil conduit;

a two-position sequencing valve for controlling said intensifier, said sequencing valve being operable in its second position to place the other end of said first piston in fluid communication with said hydraulic second slave extensible fluid motor means and in its first position to block fluid communication between said other end of said first piston and said hydraulic second slave extensible fluid motor means; and

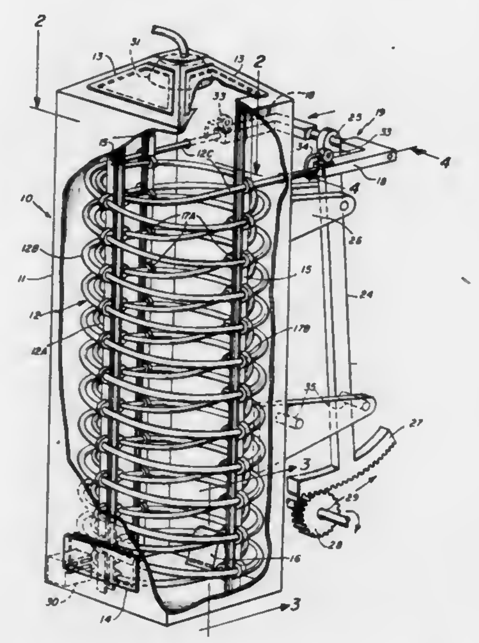
a retract intensifier, comprising hydraulic cylinder means communicating with said retract oil conduit, having piston means and means for coupling the movement of said hydraulic second slave extensible fluid motor means with said piston means in the retract stroke of said hydraulic second slave extensible fluid motor means.



4,439,987

PRIME MOVER OPERATED BY THE EXPANSION AND CONTRACTION OF A TUBULAR METAL MEMBER OF SUBSTANTIAL LENGTH

Merle C. Rideout, Jr., 415 Congress St., Portland, Me. 04101
Filed Sep. 14, 1981, Ser. No. 301,589
Int. Cl.³ F03G *7/02*
U.S. Cl. 60—641.11 **7 Claims**

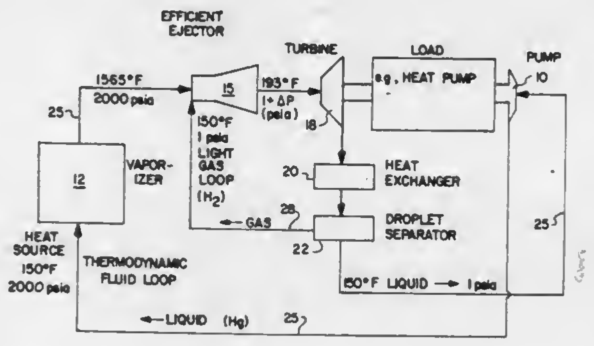


1. A prime mover for operating a mechanism capable of producing energy that may be stored and released at a controlled rate, said prime mover including a tower constructed to be solar heated and cooled at night, a tubular metal member of substantial length and in the form of a vertical coil within the tower, means operable to subject the exterior surfaces of said member to heating and cooling intervals, means to effect the flow of ambient atmosphere through said coil during both intervals, said heating and cooling intervals and the length and wall thickness of said member such that the expansion and contraction of said member produces work strokes having a substantial force but too short for use in operating said mechanism directly, and means connected to at least one end of said member and operable to convert the work strokes into second work strokes of increased length but having a decreased force, the length and force of the second work strokes adequate to operate said mechanism.

4,439,988

RANKINE CYCLE EJECTOR AUGMENTED TURBINE ENGINE

John E. Minardi; Maurice O. Lawson; Hans P. von Ohain, and Ival O. Salyer, all of Dayton, Ohio, assignors to University of Dayton, Dayton, Ohio
Filed Nov. 6, 1980, Ser. No. 204,413
Int. Cl.³ F01K *25/06*
U.S. Cl. 60—649 **13 Claims**



1. The process of extracting energy from a high-temperature high-pressure working fluid, comprising

augmenting flow of the working fluid with a flow of gas from a source separate from the working fluid,

utilizing some of the energy from the working fluid to induce addition and mixture of the gas thereinto and thereby to create a flow of the mixed fluids having a greater mass and lower temperature than the initial flow of working fluid,

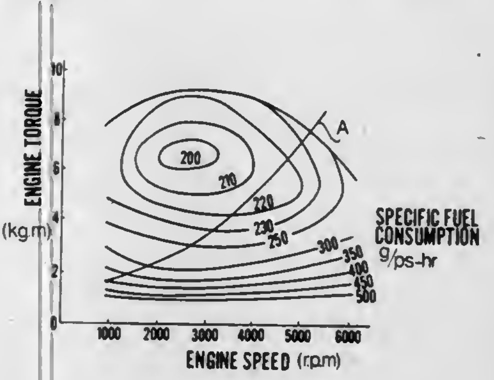
supplying the mixed fluids to a turbine for converting the energy in the mixed fluids into mechanical energy, and

separating and recycling at least the augmenting gas from the fluid flow exhausted from the turbine.

4,439,989

INTERNAL COMBUSTION ENGINE PROVIDED WITH A PLURALITY OF POWER UNITS

Toru Yamakawa, Hachioji, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan
PCT No. PCT/JP81/00362, § 371 Date Jul. 29, 1982, § 102(e) Date Jul. 29, 1982, PCT Pub. No. WO82/01916, PCT Pub. Date Jun. 10, 1982
PCT Filed Nov. 30, 1981, Ser. No. 403,738
Int. Cl.³ F02D *25/00, 17/02, 35/00;* **F02B** *73/00*
U.S. Cl. 60—718 **3 Claims**

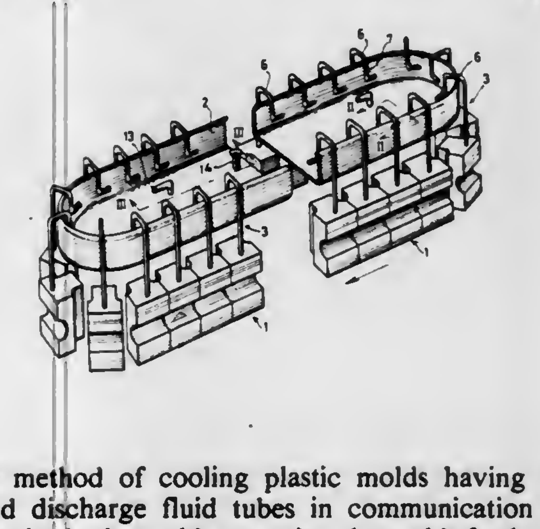


1. An internal combustion engine for a vehicle, which comprises a plurality of independent engine units including a primary engine unit and an auxiliary engine unit, and an output shaft, characterized in that the primary engine is connected to the output shaft and the auxiliary engine unit is connected to the output shaft through a clutch, that a control system is provided with means for detecting phase difference between both engine units and for engaging the clutch at a proper phase difference.

4,439,990

METHOD AND DEVICE FOR COOLING MOLDS

Arnoldus W. Leloux, Dedemsvaart, Netherlands, assignor to Wavin B.V., Zwolle, Netherlands
Filed Jun. 8, 1982, Ser. No. 386,279
Int. Cl.³ F25D *13/06*
U.S. Cl. 62—63 **4 Claims**

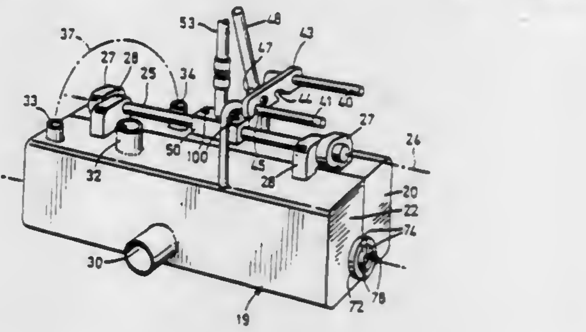


1. The method of cooling plastic molds having vertical intake and discharge fluid tubes in communication with a coolant cavity in the mold, arranging the molds for horizontal travel in a closed loop, positioning a static coolant reservoir above the molds and placing the fluid intake tube of each mold in communication with the coolant in the static reservoir, positioning a static coolant collector below the molds and in communication with the mold fluid discharge tubes, and siphoning coolant from the static coolant reservoir through the intake and discharge tubes passing coolant through the molds and discharging it in the static coolant collector.

4,439,991

METHOD AND APPARATUS FOR TREATING ELONGATE MATERIALS

Nicholas Muzak, Hamilton, Canada, assignor to Stelco Inc., Hamilton, Canada
Filed Jun. 11, 1982, Ser. No. 387,421
Int. Cl.³ F25D *13/06, 17/02;* **F25B** *19/00*
U.S. Cl. 62—63 **13 Claims**



1. A method for treating wire, comprising the steps:

(a) providing a housing defining a chamber having an inlet for the wire and an outlet for the wire, both the inlet and the outlet being larger in are a than the maximum cross-sectional area of the wire,

(b) passing the wire through the chamber from the inlet to the outlet,

(c) within said chamber spraying liquid against the wire, and

(d) using suction means to withdraw air and liquid from said chamber at a rate which results in an air-wiping effect on the wire due to the entry of ambient air through the inlet and outlet of said chamber.

4,439,992

OPEN TOP REFRIGERATED CASE WITH DEFROST AIR INTAKE AND COLLIDING BAND AIR DEFROST

Fayez F. Ibrahim, Niles, Mich., assignor to Tyler Refrigeration Corporation, Niles, Mich.
Continuation-in-part of Ser. No. 226,768, Jan. 21, 1981, Pat. No. 4,337,626, which is a continuation-in-part of Ser. No. 145,859, May 1, 1980, Pat. No. 4,314,457, which is a continnation-in-part of Ser. No. 107,261, Dec. 26, 1979, Pat. No. 4,265,092, Ser. No. 76,669, Sep. 18, 1979, Pat. No. 4,314,453, and Ser. No. 60,459, Jul. 25, 1979, Pat. No. 4,295,340, and a continuation-in-part of Ser. No. 295,542, Aug. 24, 1981, which is a continuation-in-part of Ser. No. 11,804, Feb. 14, 1979, abandoned. This application Jul. 6, 1982, Ser. No. 395,480
The portion of the term of this patent subsequent to Jul. 6, 1999, has been disclaimed.
Int. Cl.³ A47F *3/04*
U.S. Cl. 62—82 **24 Claims**

1. A refrigerated display case, comprising:

an open top cabinet containing at least one well type display space;

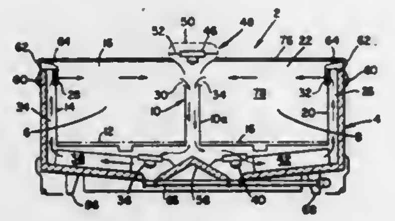
primary air conduit means in said cabinet extending around said display space, said primary conduit means containing refrigeration coil means;

defrost ambient air intake means in air flow communication with said primary conduit means;

first air opening means and second air opening means formed in said primary conduit means and located on opposite sides of said display space;

main air circulating means for circulating air through said primary conduit means and across the open top of said

display space during refrigeration cycle between said first and second air opening means in the form of an air curtain;
defrost air circulating means located in said ambient air intake means;
defrost control means for energizing said defrost air circulating means at the start of a defrost cycle to move ambient air into said defrost ambient air intake means, a first portion of said ambient air being directed out of said intake means and out of one of said air opening means substantially in the opposite direction to the flow of the air curtain to collide with said air curtain, at least a portion of said air curtain being thereby reversed and caused to flow over the top of and outside the display case, and a further portion of said ambient air being drawn into said primary conduit means by said main air circulating means to flow through said primary conduit means and over said refrigeration coil means and to be discharged through the other of said air openings.



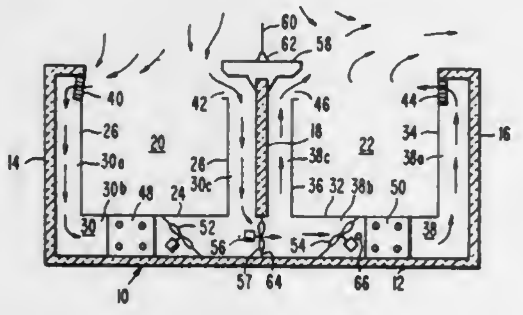
4,439,993
WIDE ISLAND AIR DEFROST CASE UTILIZING AIR TRANSFER CIRCULATING MEANS

George E. Wallace, Levittown, Pa., assignor to Emhart Industries, Inc., Farmington, Conn.

Filed Feb. 2, 1983, Ser. No. 463,082

Int. Cl.³ A47F *3/04*

U.S. Cl. 62—82 **25 Claims**



20. A method of defrosting a wide island refrigerated display case of the type through which air is circulated during both refrigeration and defrost, said case having side-by-side, upwardly opening product wells separated by a central partition, said wells including primary conduits each having an inlet and an outlet for directing air across the open tops of the wells, evaporators within the conduits, and primary fans in the conduits for circulating air therethrough, comprising the steps of:
a. drawing ambient air into one of the conduits for passage therethrough; and
b. exhausting said air from the other conduit, wherein the steps of drawing ambient air into the case and exhausting the air therefrom comprise drawing the incoming air through both the inlet and the outlet of said one conduit, and exhausting the outgoing air through both the inlet and the outlet of the other conduit.

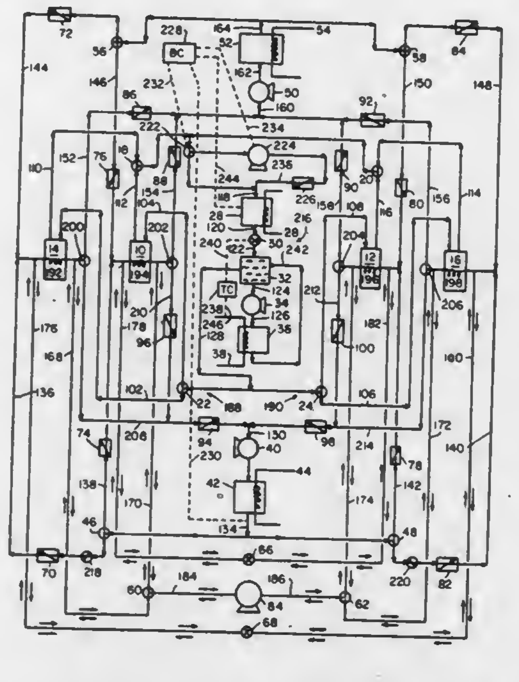
4,439,994
THREE PHASE ABSORPTION SYSTEMS AND METHODS FOR REFRIGERATION AND HEAT PUMP CYCLES

Patrick B. Briley, Lawton, Okla., assignor to Hybrid Energy Systems, Inc., Stillwater, Okla.

Filed Jul. 6, 1982, Ser. No. 395,357

Int. Cl.³ F25B *15/00*

U.S. Cl. 62—101 **34 Claims**



26. A method for providing heating and cooling from an absorption system which includes two subsystems each containing at least two absorption-desorption reactors which method comprises the steps of:
desorbing a refrigerant gas from a first absorbing material in a first reactor in said first subsystem at a pressure P, and a temperature T, with the heat to desorb the said refrigerant gas being provided by a primary heat source;
condensing at least some liquid refrigerant out of said desorbed refrigerant gas wherein cooling for said condensing is provided by a primary heat sink;
expanding refrigerant fluid from said condensing step to obtain a lower temperature refrigerant fluid at a lower pressure;
evaporating at least some of said liquid refrigerant after said expanding step;
absorbing the fluid from said evaporating step in a second absorbing material in a first reactor of said second subsystem at a temperature T_2 and a pressure P_2 less than P, with the cooling needed to remove heat from said second absorbing material and thereby maintain pressure P_2 less than pressure P being provided by a heat sink when operating in a cooling mode and by a heat load when operating in a heating mode;
terminating said desorbing in said first reactor of said first subsystem and said absorbing in said first reactor of said second subsystem;
initiating second desorbing steps and second absorbing steps approximately concurrent with said terminating step, said second desorbing steps and said second absorbing steps comprising the steps of:
desorbing at said pressure P and said temperature T a second absorbing material in a second reactor of said first subsystem; and
absorbing at said pressure P_2 and said temperature T_2 in a first absorbing material in a second reactor of said second subsystem;
heating contents of first reactor in said second subsystem at a constant volume from temperature T_2 to a higher temperature T_3 sufficient to increase pressure in said first reactor to pressure P;
cooling contents of first reactor in said first subsystem at constant volume from temperature T to a temperature T_4 sufficient to decrease pressure in said reactor to pressure P_2;
terminating said desorbing in said second reactor of said first subsystem and said absorbing in said second reactor of said second subsystem; and
cyclically repeating the foregoing steps.

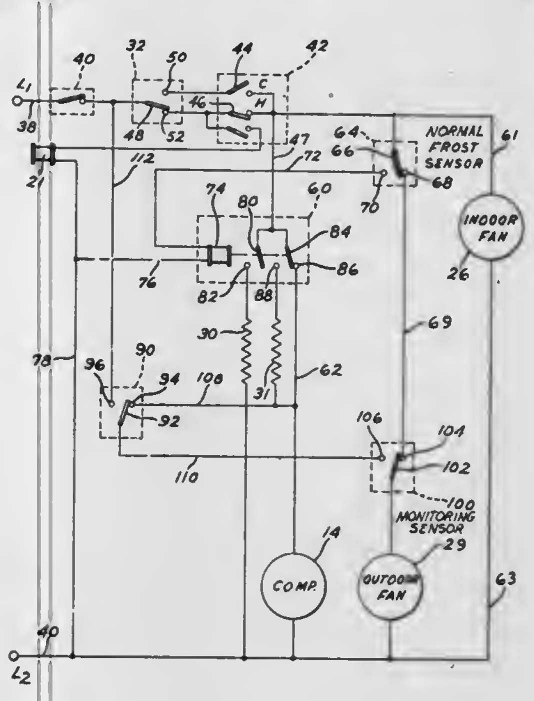
4,439,995
AIR CONDITIONING HEAT PUMP SYSTEM HAVING AN INITIAL FROST MONITORING CONTROL MEANS

William J. McCarty, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Apr. 5, 1982, Ser. No. 365,419

Int. Cl.³ F25D *21/10*

U.S. Cl. 62—156 **6 Claims**



1. In a self-contained air conditioning unit for heating and cooling an enclosure, a refrigerant circuit including an outdoor heat exchanger and an indoor heat exchanger, a compressor, a reversing valve for selectively connecting said compressor to said heat exchangers whereby said outdoor heat exchanger functions as an evaporator during operation of said unit in the heating cycle and said indoor heat exchanger functions as an evaporator during operation of said unit in the cooling cycle, fan means for moving enclosure air through said indoor heat exchanger, fan means for moving outdoor ambient air through said outdoor heat exchanger, an air conditioner heating cycle control system, comprising:
an enclosure temperature selecting thermostat having switch means operable for controlling operation of said compressor for maintaining the temperature of said enclosure within a selected temperature range;
a normal frost control means including a sensing element for detecting a layer of frost on said outdoor heat exchanger, means under control of said frost control means including a first switch means operable for energizing said compressor in the heating cycle when the temperature sensed by said sensing element is above a preselected frost accumulation level and for deenergizing said compressor and said outdoor fan means when the temperature sensed by said sensing element is below a preselected frost accumulation level;
a frost monitoring control means including a sensing element for sensing outdoor temperature and the temperature of said outdoor heat exchanger including means for insuring continuous operation of said outdoor fan when the Δt of the (outdoor air—outdoor heat exchanger temp) is a predetermined amount and said compressor is deenergized through said normal frost control means or cycling through said enclosure temperature selecting thermostat so that outdoor air circulates continuously through said outdoor heat exchanger to remove frost during compressor off period during normal cycling operation of the unit in the heating mode.

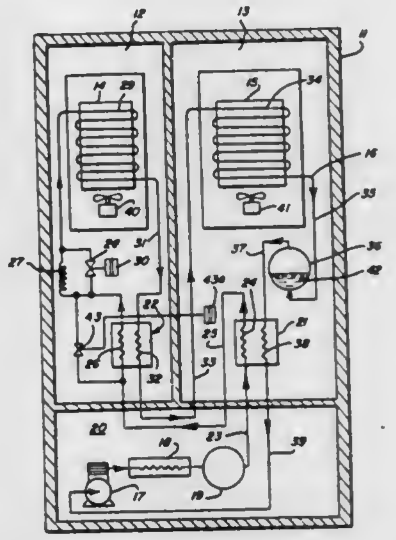
4,439,996
BINARY REFRIGERANT SYSTEM WITH EXPANSION VALVE CONTROL

Edwin H. Frohbieter, Lincoln Township, Berrien County, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jan. 8, 1982, Ser. No. 338,580

Int. Cl.³ F25B *41/00*

U.S. Cl. 62—174 **11 Claims**



1. In a variable capacity refrigerator-freezer including means forming a fresh food storage compartment, means forming a frozen food storage compartment, and a sealed refrigeration system including a fresh food evaporator, a freezer evaporator, a compressor, a condenser, refrigerant expansion means for modulating the capacity of said refrigeration system, a series of refrigerant conduits connecting said evaporators, compressor, expansion means, and condenser into a sealed system, and within said sealed system a refrigerant mixture of two nonazeotropic refrigerants having substantially different boiling points, the improvement comprising:
a first accumulator connected between said condenser and said expansion means to receive the condensate leaving the condenser;
a second refrigerant accumulator connected between said fresh food evaporator and said compressor, said refrigerant expansion means for modulating the capacity of said refrigeration system comprising an air sensing thermostatically controlled expansion valve in said frozen food storage compartment for controlling flow of refrigerant to said freezer evaporator, and a capillary tube connected to said conduits so as to bypass said expansion valve, said capillary tube being sized to provide at least a minimum capacity flow for said system at all times, said capillary tube comprising means for metering the flow of refrigerant so that only superheated refrigerant vapors leave said fresh food evaporator and said second accumulator tends to become free of liquid refrigerant as a result of said expansion valve closing, whereby said system is operating at its lowest capacity since all of the higher boiling point refrigerant in the system is in the active refrigerant stream, whereby the refrigeration system comprises automatically a modulated binary refrigerant system, said condensate leaving the condenser having the same refrigerant composition as the gas from said second accumulator, and as the freezer evaporator continues to flood more of the total refrigerant in said sealed system leaves said first accumulator and is stored in said second accumulator until substantially only the lower boiling point refrigerant is circulating

in said sealed system with a pool of the higher boiling point refrigerant accumulating in said second accumulator, and with the lower boiling point refrigerant at saturation supplying the compressor whereby said system is operating at maximum capacity;

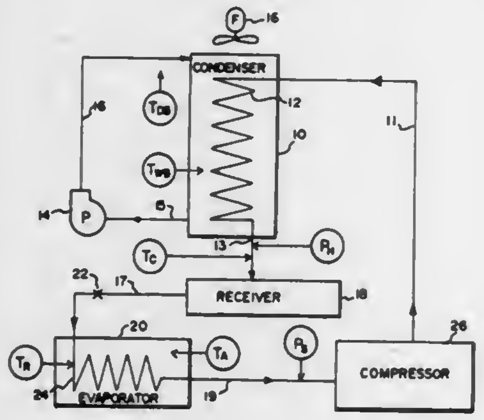
a heat exchanger interposed between said first accumulator and said expansion means; and

means to shift refrigeration effect from the freezer compartment to the fresh food compartment comprising a bypass conduit around a heat-giving portion of said heat exchanger, said conduit having a valve controlled by air temperature in said fresh food storage compartment to shunt refrigerant around said heat exchanger, thereby causing the refrigerant leaving the heat exchanger to become colder before its entry to the fresh food compartment evaporator.

4,439,997

ENERGY MANAGEMENT SYSTEM FOR MULTI STAGE REFRIGERATION SYSTEMS

Robert J. Cantley, 905 Versailles Ct., Maitland, Fla. 32751
Division of Ser. No. 244,161, Mar. 16, 1981, Pat. No. 4,325,223.
This application Jan. 11, 1982, Ser. No. 338,673
Int. Cl.³ F25B *7/00;* F04B *41/06*
U.S. Cl. 62—175 **5 Claims**



1. An energy management system for a two-stage refrigeration system or the like having evaporative condensers, booster compressors, and main compressors, comprising:

first pressure transducer connected in said refrigeration system to produce a first electrical signal representative of the head pressure;

second pressure transducer means connected into said refrigeration system to produce a second electrical signal representative of the intermediate suction pressure;

third pressure transducer means connected in said refrigeration system to produce a third electrical signal proportional to the booster suction;

memory means for storing electrical signals representative of the preselected design value of booster suction pressure; and

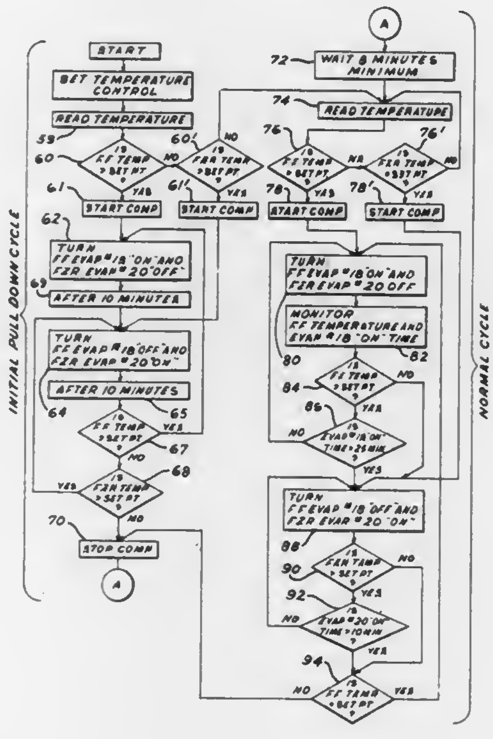
calculation and control means connected to said first, second, and third pressure transducers for receiving said first, second, and third electrical signals and to said memory, said calculation and control means for comparing said booster suction pressure signal to said stored design booster suction pressure signal, said calculation and control means controlling loading and unloading of said booster compressor to achieve said design booster suction pressure; and

said calculation and control means calculating an optimum intermediate suction pressure from said first and third electrical signals from said first and third pressure transducers, said calculation and control means controlling said main compressors to achieve said optimum intermediate suction pressure.

4,439,998

APPARATUS AND METHOD OF CONTROLLING AIR TEMPERATURE OF A TWO-EVAPORATOR REFRIGERATION SYSTEM

Julius B. Horvay, and Luis E. Prada, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.
Continuation-in-part of Ser. No. 183,863, Sep. 4, 1980, abandoned. This application Apr. 16, 1982, Ser. No. 369,316
Int. Cl.³ F25B *41/00*
U.S. Cl. 62—199 **6 Claims**



1. In a refrigerating apparatus including a cabinet containing an above freezing compartment and a below freezing compartment, a refrigeration system including a compressor, a condenser, a first evaporator arranged in said above freezing compartment, a second evaporator arranged in said below freezing compartment, valve means operable for delivering refrigerant to either one of said evaporators, temperature selecting means in each of said compartments for selecting a set temperature in said compartment, a first temperature responsive means in said above freezing compartment, a second temperature responsive means in said below freezing compartment, the combination including a normal operating cycle operable when the temperature of both of said compartments is within a set temperature and an initial pull down cycle operable when the temperature of said fresh food compartment is substantially above said set temperature comprising:

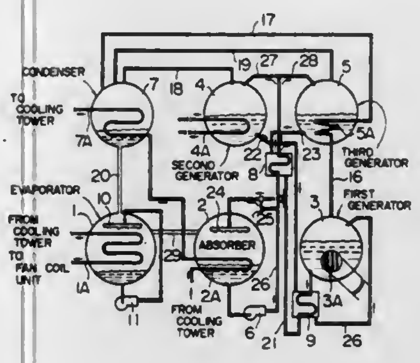
control means for causing said valve means to deliver refrigerant to said first evaporator in preference to said second evaporator when both of said temperature responsive means sense a temperature above a predetermined value;

decision means for causing said valve means to terminate the flow of refrigerant to said first evaporator when said above freezing compartment is at said predetermined temperature or after a predetermined amount of time independent of said first temperature responsive means and to cause said second valve means to deliver refrigerant to said second evaporator and for proceeding under said normal operating cycle when the temperature of both of said compartments is below said set temperature.

4,439,999

ABSORPTION TYPE REFRIGERATION SYSTEM

Akio Mori; Shozo Watanabe; Mitsunobu Matsunaga, all of Toyota; Kenzi Machizawa, and Ryohei Minowa, both of Ibaraki, all of Japan, assignors to Hitachi, Ltd. and Toyota Jidosha Kabushiki Kaisha, both of Tokyo, Japan
Filed Dec. 8, 1982, Ser. No. 448,036
Claims priority, application Japan, Dec. 9, 1981, 56-196764
Int. Cl.³ F25B *27/02*
U.S. Cl. 62—238.3 **6 Claims**

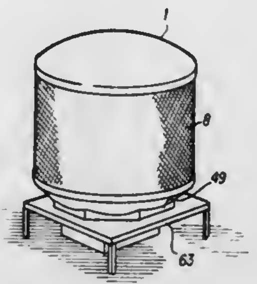


1. A combination of an absorption type refrigeration system and an internal combustion engine, said absorption type refrigeration system including an evaporator for generating cooled water, an absorber in which a gaseous refrigerant is absorbed into a solution to generate a thin solution of a low concentration, at least two generators adapted for heating a solution thereby to generate a gaseous refrigerant, a condenser for condensing the gaseous refrigerant generated in said generators into a liquid refrigerant, a pump for delivering said thin solution generated in said absorber into said generators, and at least one heat exchanger for effecting a heat exchange between the solution flowing into said generators and the solution flowing out of said generators, said internal combustion engine including an exhaust gas passage and an engine cooling water passage, wherein said exhaust gas passage of said engine is connected to a first generator which operates at the highest temperature in said absorption type refrigeration system, while said engine cooling water passage is connected to a heating tube of a second generator which operates at a temperature lower than the operating temperature of said first generator, whereby both of the exhaust gas discharged from said engine and the heated engine cooling water circulated through said engine are simultaneously used as the heat sources of said absorption type refrigeration system.

4,440,000

EVAPORATIVE COOLER

Rockney D. Bacchus; Richard E. Bacchus, and Ronald A. Bacchus, all of 1401 Hawthorne, El Paso, Tex. 79902
Continuation of Ser. No. 107,520, Dec. 27, 1979, abandoned.
This application Mar. 4, 1982, Ser. No. 354,607
Int. Cl.³ F28D *5/00*
U.S. Cl. 62—310 **9 Claims**



1. In an evaporative cooler including horizontal, dish-like, generally circular base and cover members; a vertical evaporative pad substantially enclosing, with said cover members, an interior volume of the cooler; air inlet and outlet openings communicating with the interior of the cooler; a blower means, including a drive motor, within the cooler for circulating air through the inlet and outlet openings; and means for continuously supplying water to the upper end of the evaporative pad during cooler operation; the improvement comprising:

a rigid self-supportive, generally cylindrically curved evaporative pad and cover member having air flow openings therethrough, said pad and cover support member extending between said base and cover members, and comprising the sole means for structurally supporting the cover member above the base member; said airflow openings being separated by narrow, elongated rod-like elements;

a flexible elongated, fibrous, saturable evaporative pad wrapped around the outer periphery of said pad and cover support member and in engagement with the pad and the cover support member;

an elongated, continuous flexible foraminous pad retainer having free ends wrapped around the evaporative pad and the pad and cover support member, said free ends being secured under tension by means of a releasable connector means;

said pad and cover support member comprising the sole means for structurally supporting the cover member above the base member, and comprising a one-piece, curved, semi-rigid element formed of an open mesh network of narrow, rod-like elements;

said base member including said air outlet opening which extends downwardly therethrough;

an inwardly and upwardly tapered flange surrounding said outlet opening;

an upstanding rim defining the periphery of said base member;

said flange terminating above the upper edge of said rim;

said blower and blower motor secured to said flange and extending upwardly therefrom;

said base member adapted to retain a layer of water between said rim and said flange;

said blower having an air discharge opening in communication with said air outlet opening and an air intake opening communicating with the interior of the cooler;

said blower comprising a centrifugal blower including a cylindrical, cage-like rotatable impeller having an imperforate central baffle extending radially across the interior of the impeller to divide the blower into two opposed sections.

4,440,001

CHILLERS

Isaih Vardi, Rehovot; Yigal Kimchi, Ramat Gan, and Jonathan Ben-Dror, Hadar Am, all of Israel, assignors to Eshel Residual Energy for Cooling and Heating Ltd., Azor, Israel
Continuation-in-part of Ser. No. 150,044, May 15, 1980, abandoned. This application Mar. 12, 1982, Ser. No. 357,593
Claims priority, application Israel, May 16, 1979, 57308
Int. Cl.³ F25B *43/04*
U.S. Cl. 62—475 **1 Claim**

1. An absorption type refrigeration system based on lithium bromide solution and water, comprising:

a first vessel housing a condenser and a generator;

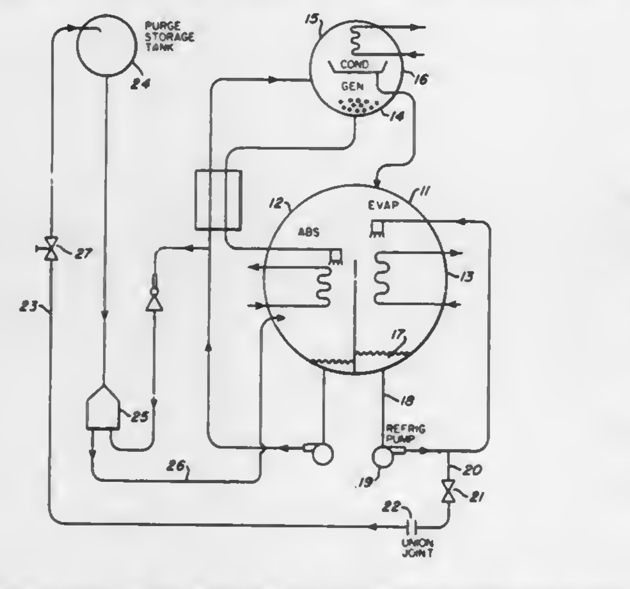
a second vessel housing an absorber and an evaporator;

a purge storage tank;

conduit means for interconnecting said first vessel, said second vessel and said purge storage tank;

a refrigeration pump for puming water containing lithium bromide from the bottom of the evaporator to nozzles spraying same into said evaporator, which water gradually becomes contaminated by additional lithium bromide carried over from the absorber; and

an auxiliary system for removing a solution of aqueous lithium bromide from said evaporator when its concentration exceeds a certain predetermined value, said auxiliary system comprising a disconnectable conduit leading from said refrigeration pump and a valve and an union joint for connecting said disconnectable conduit to said purge storage tank, the solution being fed from said purge storage tank to the absorber after purging non-condensibles from the solution in the purge storage tank, water being



introduced into said evaporator to replace the removed solution of aqueous lithium bromide, said conduit of said auxiliary system being disconnected from said purge storage tank during normal operation of said refrigeration system.

4,440,002

VARIABLE DRAW MECHANISM FOR STRAIGHT BAR KNITTING MACHINES

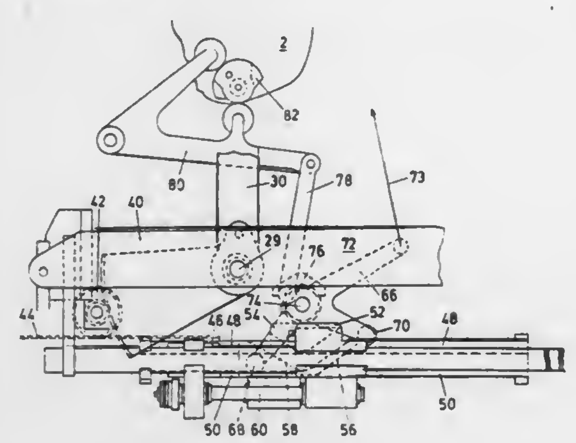
Barry C. Strong, Syston, and Herbert Brain, Wymeswold, both of England, assignors to William Cotton Limited, Leicestershire, England

Filed Aug. 12, 1982, Ser. No. 407,507

Claims priority, application United Kingdom, Aug. 14, 1981, 8124681

Int. Cl.^{3} D04B *15/52*

U.S. Cl. 66—126 R **7 Claims**



1. Straight bar knitting machine having a variable draw mechanism and a slurcock and yarn carrier movable to and fro by the draw mechanism, said draw mechanism including:

- a gear arrangement having a differential drivingly connected to the slurcock and the carrier, a draw cam, draw cam follower means, a first input member drivingly connected to the gear arrangement, means for varying the ratio of transmission of the draw cam follower movement to the first input member to thereby vary draw width and transmission ratio control means therefor;
- a second input member drivingly connected to the gear arrangement, said differential combining inputs of the first and second input member to differentiate slurcock and yarn carrier movement;
- control means for the second input member having a cam mounting, means for moving said mounting conjointly with the first input member, lead control cam means on the mounting for bodily movement therewith, means for moving said lead control cam means individually with respect to said mounting conjointly with operation of said transmission ratio control means and lead control cam follower means drivingly connected to the second input member to retard the carrier and establish a desired carrier lead for a subsequent draw movement at varying draw widths.

4,440,003

APPARATUS FOR WET TREATMENT OF A LENGTH OF TEXTILE MATERIAL IN HANK FORM

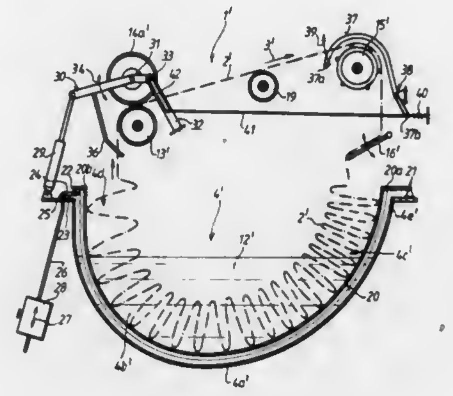
Werner Koch, Wald-Michelbach, Fed. Rep. of Germany, assignor to Bruckner Apparatebau GmbH, Fed. Rep. of Germany

Filed Aug. 27, 1982, Ser. No. 412,072

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1981, 3138672

Int. Cl.^{3} D06B *3/26, 23/02*

U.S. Cl. 68—22 R **13 Claims**



1. Apparatus for controlling the rate of movement of a length of textile material through a series of treatment chambers in each of which is monitoring means for monitoring a predetermined change in the quantity of material therein, said apparatus comprising, for each chamber, rotary guide means for introducing said material into such chamber; a pair of rotary squeeze rolls between which said material may be gripped in being withdrawn from such chamber, one of said squeeze rolls being driven; shift means connected to one of said squeeze rolls and responsive to operation of the monitoring means in such chamber to move such squeeze roll toward and away from the other whereby said squeeze rolls are enabled and disabled to grip said material and withdraw it from such chamber; first material support means adjacent said rotary guide means; second material support means adjacent said squeeze rolls, said first and second support means being operable to support said material when said squeeze rolls are so disabled; and means coupling said first and second material support means to one another and to said shift means for moving said support means into and out of material supporting positions in response to movements of said shift means.

4,440,004

WOBBLE WASHER

John Bochan, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

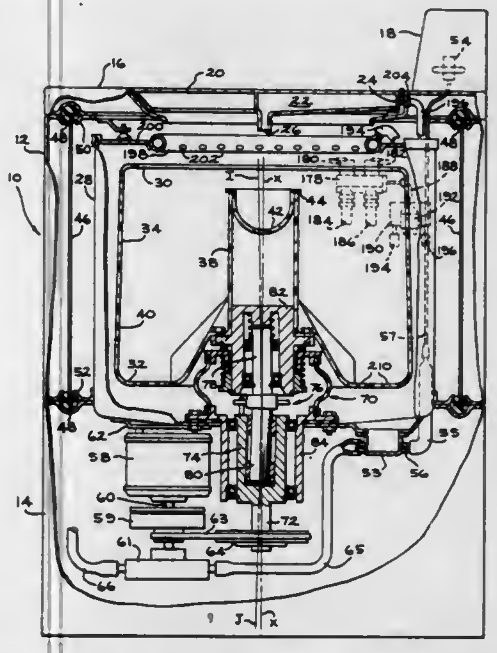
Filed Jul. 31, 1981, Ser. No. 288,958

Int. Cl.^{3} D06F *23/04*

U.S. Cl. 68—23 R **9 Claims**

1. A washing appliance for fabric articles of the type utilizing a wobbling action to wash the fabric articles, said washing appliance comprising:

- a generally upright basket for receiving washing liquid and a fabric article load to be washed in the liquid, said basket having a longitudinal central axis;
- mounting means connected to said basket for movably supporting and selectively driving said basket; said mounting means including input drive shaft means, the longitudinal axis of said input drive shaft means defining a substantially vertical reference axis for said mounting means;
- driving means for selectively rotating said input drive shaft means in a first direction to provide a wash periods of operation and a second direction to provide a spin period of operation;
- said mounting means being constructed and arranged to cant the central axis of said basket relative to the reference axis when said input shaft is rotated in its first direction and to move the central axis to substantially vertically coalign the central axis of said basket and the reference axis thereby eliminating said cant when said input shaft rotates in its second direction whereby said basket is canted relative to the vertical during wash periods to provide wobbling motion of said basket and substantially vertically aligned during spin periods to permit said basket to rotate on center during spin.



4,440,005

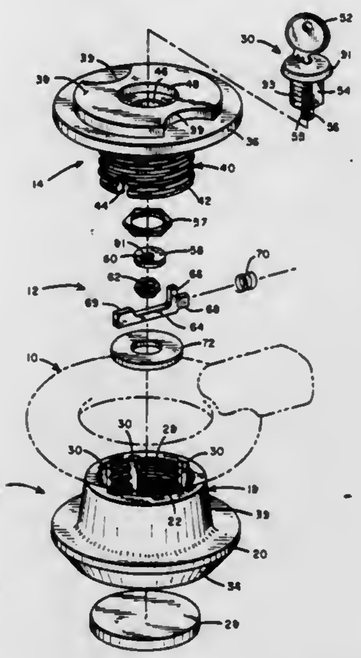
TRAILER HITCH RING LOCK

Marshall Bulle, R.R. 1, P.O. Box 98, Farmington, Minn. 55024

Filed Jun. 8, 1982, Ser. No. 386,243

Int. Cl.^{3} B60R *25/00;* **E05B** *27/36*

U.S. Cl. 70—14 **7 Claims**



1. For use with a trailer type vehicle having a generally toroidal shaped coupling hook locking apparatus for inhibiting the unauthorized use of said trailer comprising

(a) a first plate having an aperture therethrough and a tubular cylinder projecting from a first side surface thereof, said tubular cylinder being threaded over a predetermined portion thereof and having a pair of opposing open slots formed through the side walls thereof extending a predetermined distance from the end of said cylinder opposite said plate towards said plate;

(b) a generally elongated latch member slideably mounted within said slots;

(c) a key operated lock assembly secured in said aperture and having a cam member affixed thereto for rotation when a key is inserted in said lock and turned, said cam member cooperating with said latch member for extending at least a portion of said latch member out of one of said slots of said cylinder; and

(d) a second plate having a tubular cylinder projecting from a first side, said cylinder having internal threads along a portion thereof of the proper size and shape that they may be engaged with the threads of said threaded tubular cylinder projecting from said first plate, said tubular cylinder projecting from said second plate having at least one longitudinal groove formed within said cylinder, said groove having a depth greater than said threads therein, the arrangement being such that when the key operated lock is in a first condition, said threaded portion of said cylinder projecting from said first plate may be engaged with the threaded portion of said cylinder projecting from said second plate, by rotating said first plate relative to said second plate, but when said key operated lock is in a second condition, said latch will extend outward from said cylinder of said first plate through one of said slots in said cylinder, and into said longitudinal groove formed in the interior wall of said cylinder projecting from said second plate to prevent relative rotation of said first and second plates.

4,440,006

ANTITHEFT CENTRAL LOCK SYSTEM FOR A MOTOR VEHICLE

Frank Kleefeldt, Heiligenhaus, Fed. Rep. of Germany, assignor to Kiekert GmbH & Co. Kommanditgesellschaft, Heiligenhaus, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 132,977, Mar. 24, 1980, Pat. No. 4,342,209, and a continuation-in-part of Ser. No. 132,978, Mar. 24, 1980, Pat. No. 4,364,249. This application Aug. 14, 1981, Ser. No. 292,792

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1979, 2911680; Mar. 24, 1979, 2911681; Aug. 16, 1980, 3031066

The portion of the term of this patent subsequent to Aug. 3, 1999, has been disclaimed.

Int. Cl.^{3} E05B *53/00*

U.S. Cl. 70—264 **10 Claims**

1. A central door-lock system comprising:

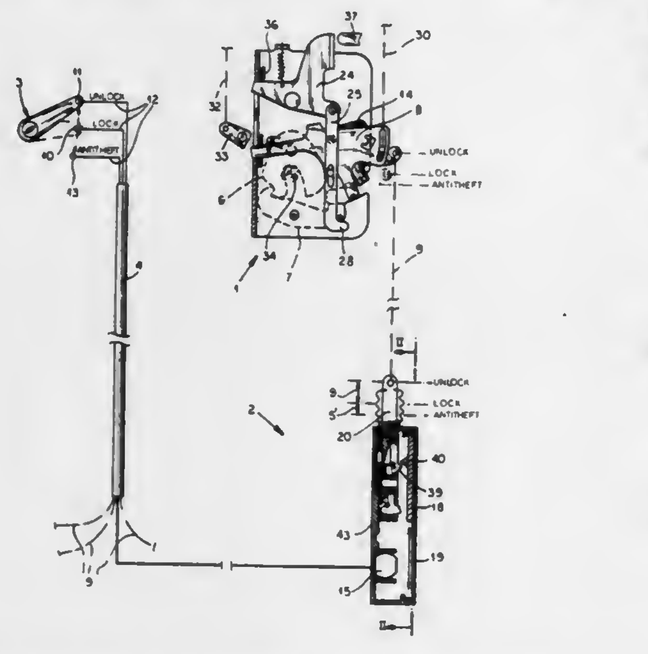
- a plurality of door latches each including
  - a detent displaceable between an open position securing the respective door to the respective doorpost and a closed position permitting the respective door to separate from the respective doorpost,
  - a manual door-opening handle,
  - mechanism including a primary latch member connected to said handle and connectable to said detent and movable between a lock position preventing said handle from displacing said detent between said open and closed positions and an unlock position permitting said handle to displace said detent between said open and closed positions, and
  - means connected to said mechanism and including a secondary latch member displaceable between a lock position urging said primary latch member into the respective lock position while permitting said primary latch member to move into the respective unlock position, an unlock position permitting said primary latch member to move freely between the respective lock and unlock

positions, and an antitheft position positively holding said primary member in the respective lock position;

respective servoactuators for said latches each including

an operator linearly displaceable between lock, unlock, and antitheft positions,

an actuator element entrainable by the respective operator, connected to the respective secondary latch member, and jointly displaceable therewith between the respective positions, and



means including a reversible electric servomotor and a rack-and-pinion gear train connected between said motor and the respective operator for displacing the respective secondary latch member via the respective actuator element and operator between the respective lock, unlock, and antitheft positions; and

means including a central switch connected to said servomotors for operating same jointly and thereby jointly displacing said secondary latch members between the respective positions.

4,440,007
CONTROL DEVICE FOR CYLINDER LOCKS

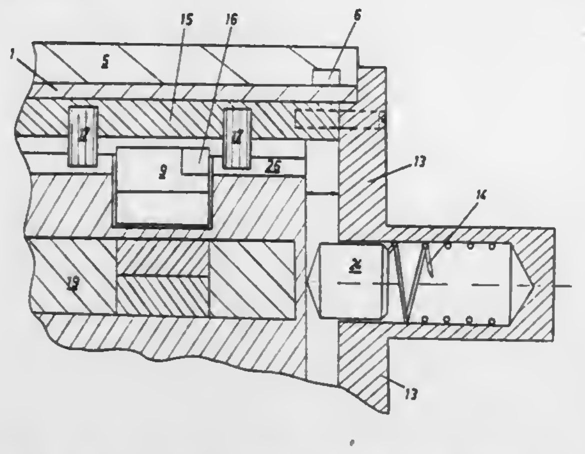
Kurt Prunbauer, Herzogenburg, Austria, assignor to EVVA-Werk Specialerzeugung von Zylinder-und-Sicherheitsschlössern GmbH & Co. KG, Vienna, Austria

Division of Ser. No. 12,895, Feb. 16, 1979. This application Mar. 2, 1981, Ser. No. 239,488

Claims priority, application Austria, Feb. 20, 1978, 1222/78

Int. Cl.^{3} E05B *9/04, 47/00*

U.S. Cl. 70—276 **1 Claim**



1. A control device, particularly for use in a magnetic cylinder lock, comprising, a housing defining a cylindrical passage, a cylindrical plug disposed in said passage for a rotational and axial movement relative to said housing; and means arranged between said plug and said housing for blocking the rotational movement in one axial position of said plug and for unblocking the rotational movement in another axial position thereof, a rotary sleeve disposed between said plug and said housing, a rear cover plate closing the rear end of said sleeve, a front cover plate closing but for a keyhole therethrough the front end of said sleeve, said plug having at least one longitudinal groove and a plurality of rotary members each supported for rotation about an axis transverse to said longitudinal groove; arresting beams extending in longitudinal direction between said plug and said sleeve and being secured to said rear cover plate, a plurality of arresting pins projecting inwardly from said arresting beams into said longitudinal groove, and said rotary members having recesses for engaging said arresting pins when said plug is in said another axial position in said passage.

4,440,008
TUMBLER LOCK

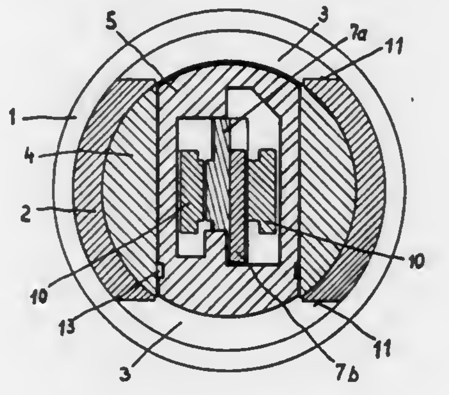
Edmond Uher, Hasenlohweg 16, CH-6315 Oberägeri, Switzerland

Filed Feb. 17, 1982, Ser. No. 349,667

Claims priority, application Austria, Mar. 3, 1981, 14979/81

Int. Cl.^{3} E05B *15/08, 15/14, 29/06*

U.S. Cl. 70—364 R **8 Claims**



1. A tumbler lock comprising:

an outer cylinder having two longitudinal recesses staggered by 180°,

an inner cylinder having guide slots and mounted in said outer cylinder,

at least two springless plate-type tumblers associated with said inner cylinder, freely movable in said guide slots and engaging, in the locked state, in one of said longitudinal recesses of said outer cylinder, whereby said inner cylinder is prevented from rotating relative to said outer cylinder,

said tumblers being provided with windows for a key and which, during insertion of the key, move in both directions of motion through the key profile from the area of said longitudinal recess to the area of said inner cylinder, the open position, so that said inner cylinder can rotate, and

protective strips connected to said inner cylinder, and covering in the area of the key guide the side flanks of said windows which are parallel to the direction of motion of said tumblers,

said inner cylinder including a guide profile into which, after insertion of said tumblers, said protective strips can be pushed into said guide slots to cover all the side of flanks of said windows provided in said tumblers and located in the area of the key guide, and

said protective strips, in conjunction with a matched window size serving as stops for said tumblers in the locked state, so that the plunging depths of said individual tumblers into said longitudinal recess on said outer cylinder are determined.

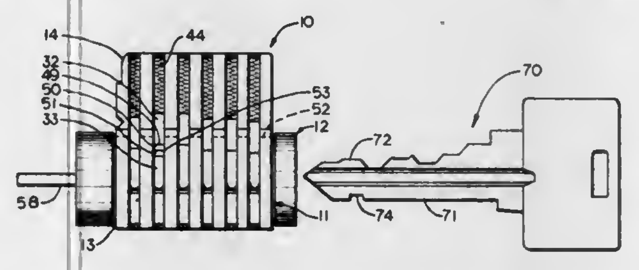
4,440,009
REKEYABLE LOCK METHOD AND APPARATUS

Jerry R. Smith, Littleton, Colo., assignor to Innovative Research Corporation, Littleton, Colo.

Filed Dec. 7, 1981, Ser. No. 327,787

Int. Cl.^{3} E05B *25/00*

U.S. Cl. 70—385 **8 Claims**



1. In rekeyable lock apparatus, including a lock cylinder housing with a cylindrical bore extending longitudinally therethrough and an elongated top pin chamber in said housing perpendicular to and extending radially outward from said cylindrical bore, a cylindrical core positioned rotatably in said bore, said core having a longitudinal keyway therein for receiving a key bit and a bottom pin chamber extending radially inward from the peripheral surface thereof into said keyway, said bottom pin chamber being adapted to axially align with said top pin chamber when said core is positioned in said cylindrical bore in such a manner that said top and bottom pin chambers form a common pin chamber, a top tumbler pin slideably positioned in said top pin chamber and a bottom tumber pin slideably positioned in said bottom pin chamber, said core being rotatable when the interface between said top and bottom pins is aligned with the shear plane between the core and the cylinder housing and not being rotatable when a pin is positioned through said shear plane, the improvement comprising:

spacer means positioned in said bottom pin chamber between said top pin and said bottom pin for providing an additional interface between said top and bottom pins adapted for alignment with the shear plane between said core and said cylinder housing, one interface being on the top of said spacer means and a second interface being on the bottom of said spacer means;

removal means for removing said spacer means from said pin chamber and ejecting it out of said lock apparatus; and

insertion means for inserting said spacer means into said pin chamber.

4,440,010
LOCK AND KEY DEVICE

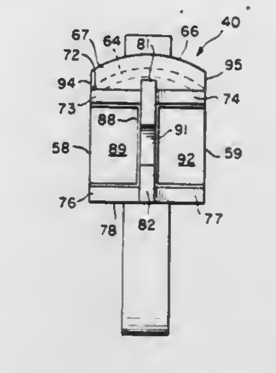
Francois Guiraud, Chambourcy, France, assignor to Fichet-Bauche, Velizy, France

Continuation of Ser. No. 285,778, Jul. 22, 1981, abandoned, which is a continuation of Ser. No. 974,557, Dec. 29, 1978, Pat. No. 4,296,618. This application Sep. 29, 1982, Ser. No. 428,292

Claims priority, application France, Dec. 30, 1977, 77 39747

Int. Cl.^{3} E05B *19/06*

U.S. Cl. 70—409 **4 Claims**



1. A key comprising: an operational means for insertion into a lock having two pairs of slotted wings, a median longitudinal rib extending along the operational means of the key between the wings of one of said pairs and adapted to distinguish this pair of wings from the other pair, and a transversal rib projecting from a rear end of the longitudinal rib.

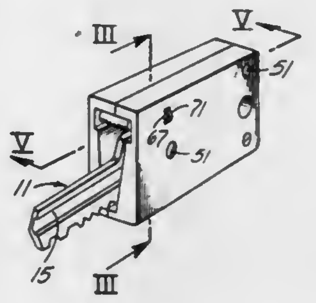
4,440,011
LOCK POSITION INDICATOR

Martin Klein, 18542 Cylmer St., Northridge, Calif. 91326

Filed Jun. 4, 1981, Ser. No. 270,264

Int. Cl.^{3} A47G *29/10;* E05B *41/00*

U.S. Cl. 70—438 **15 Claims**



1. A device for indicating whether the user of a key left a lock in its locked or unlocked condition comprising:

a key having
  a shank and
  a handle, the handle having
    a first edge;
    a second edge; and
    a pair of faces between the first and second edges;
  a key-holding compartment extending inwardly from one edge of a housing and having
    a first wall which is relatively narrow for pivotably seating the first edge of the key handle,
    a second wall which is relatively wide and distal from the first edge within the housing,
    a pair of side walls interconnecting the first and second walls, the faces of the key handle being selectively locatable adjacent the side walls;

means for positioning the key in the compartment such that the shank extends out of the housing and the key may be pivoted about an axis extending parallel to and along its first edge; and

means for releasably holding the key in the pivoted position extremities thereof such that one of the faces of the key handle is in facial abutment with a side wall at times when a lock is not being actuated by the key.

4,440,012
ROLLING STAND WITH NONCYLINDRICAL ROLLS

Hugo Feldmann, Alsdorf; Friedrich Hollmann, Grevenbroich; Gerd Beisemann, Düsseldorf, and Horst Gärtner, Neuss, all of Fed. Rep. of Germany, assignors to SMS Schloemann-Siemag AG, Düsseldorf, Fed. Rep. of Germany

Filed Oct. 14, 1981, Ser. No. 311,449

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1980, 3038865

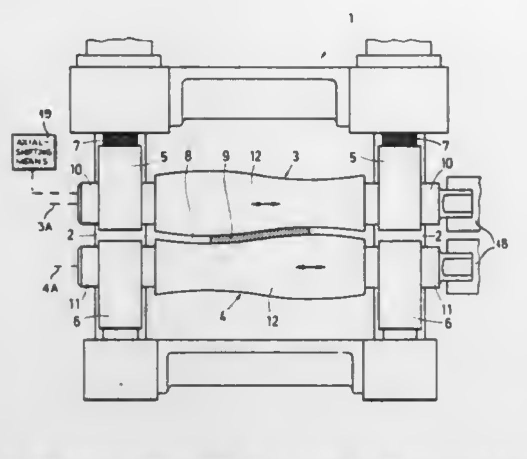
Int. Cl.^{3} B21B *27/02, 31/18*

U.S. Cl. 72—201 **10 Claims**

1. A rolling stand comprising:

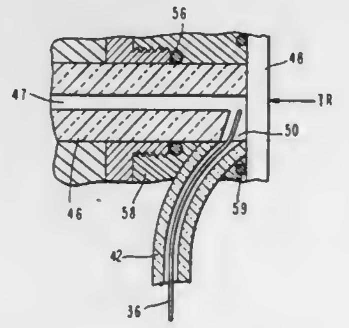
a housing defining a pair of parallel and spaced axes defining a plane;

respective rolls having roll ends journaled in said housing at said axes and roll bodies axially symmetrical about the respective axes and having centered on the respective axes complementary roll-body surfaces of noncylindrical shape and each formed by rotation of a continuously curved generatrix about the respective axis, one of said rolls being displaceable axially relative to the other roll from an end position to another position, said surfaces forming at said plane only in said other position a uniform nip and at said plane in said end position a nonuniform nip; and means for displacing one of said rolls axially relative to the other of said rolls between said end position and said other position and for retaining said rolls in either of these positions.



4,440,013
GAS CHROMATOGRAPH, FOURIER TRANSFORM, INFRARED SPECTROSCOPY SYSTEM

Gary E. Adams, Danbury, Conn., assignor to International Business Machines Corp., Armonk, N.Y.
Filed Mar. 3, 1982, Ser. No. 354,555
Int. Cl.³ G01N *21/01, 31/08*
U.S. Cl. 73—23.1 **12 Claims**



1. In a GC-IR system for analyzing the constituents of a sample, which system comprises a gas chromatograph including an injector and an oven, and an IR spectrometer for irradiating said constituents, with IR energy, the combination comprising:

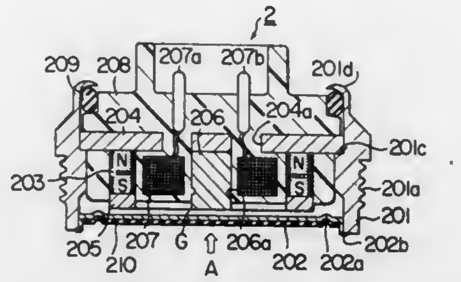
a light pipe having an elongated bore coated to direct IR energy from said spectrometer along said bore and through any constituents therein,

and a high-resolution capillary narrow-bore GC column for separating said sample into constituents, said column being at least substantially disposed in said oven and having one end connected to said injector and another end disposed at one end of said bore for discharging effluent from said column directly into said bore into the path of said IR energy, whereby constituents are continuously separated by said column up to the point of discharge whereupon such constituents are immediately irradiated with said IR energy.

4,440,014
KNOCKING DETECTION DEVICE

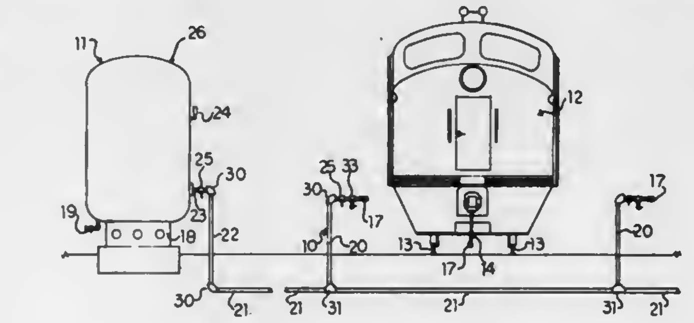
Tadashi Hattori, Okazaki; Tadashi Ozaki, Gamagori; Yoshinori Ootsuka; Kazuhiko Miura, both of Okazaki; Masanori Hanaoka, and Yukihide Hashiguchi, both of Toyota, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan
Filed Apr. 13, 1982, Ser. No. 368,090
Int. Cl.³ G01L *23/22*
U.S. Cl. 73—35 **4 Claims**

1. A knocking detection device for an internal combustion engine, comprising a diaphragm having one surface adapted to be faced to the engine cooling water and being operative to vibrate in response to pulsation of the pressure of said engine cooling water caused by an engine knocking, and means responsive to the vibration of said diaphragm to produce an electrical output, wherein said one surface of said diaphragm is coated with a layer of a hydrophilic material to be disposed in direct contact with said engine cooling water.



4,440,015
LOCOMOTIVE AIR BRAKE SYSTEM TESTING DEVICE

Dallas D. Hann, 818 Princeton St., Elkhart, Ind. 46514
Filed Dec. 2, 1981, Ser. No. 326,595
Int. Cl.³ G01M *3/02*
U.S. Cl. 73—39 **10 Claims**



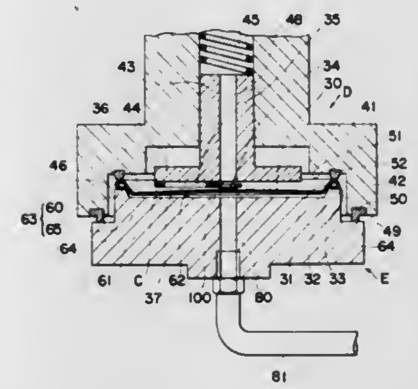
1. An air brake testing device for a locomotive air brake system, the air brake system having a compressed air source, a conduit connectable to rail cars for the ingress and egress of compressed air and a brake valve which is communicatively connected to both the compressed air source and to the ingress and egress conduit of the air brake system, said testing device being primarily for testing the functionality of the brake valve of the brake system, said device comprising:

a. a storage reservoir essentially for holding compressed air and having a volume which is generally equal to a volume of a braking system for a predetermined number of rail cars, said storage reservoir additionally having a pressure gauge, an air pressure safety valve and a bleeder valve, and, ,

b. a trackside stand having a conduit with opposing ends, one said end being communicatively connected to said storage reservoir and said opposite end having connecting means and being communicatively connectable to the ingress and egress conduit of the locomotive air brake system, said stand further having a flexible testing conduit with connecting means at opposing ends to communicatively attach said flexible conduit between said trackside stand conduit and the ingress and egress conduit of a locomotive, whereby, the communicative connection of said connecting means of said trackside stand conduit and said flexible testing conduit to the ingress and egress conduit of the locomotive air brake system permits the operability and functionality of the locomotive air brake system to be tested by said testing device at said trackside stand by causing the flow of compressed air of the locomotive air brake system to and from said storage reservoir without the requirement of having to actually communicate the locomotive air brake system to a number of rail cars of a predetermined number.

4,440,016
METHOD FOR HIGH SPEED LEAK TEST FOR METALLIC COVER WITH A PULL TAB

Takeshi Konagaya, Yaizu, and Yukinao Yagi, Fujieda, both of Japan, assignors to Daiwa Can Company, Limited, Tokyo, Japan
Filed Dec. 30, 1981, Ser. No. 335,664
Claims priority, application Japan, Oct. 12, 1981, 56-162509
Int. Cl.³ G01M *3/04*
U.S. Cl. 73—40 **3 Claims**



1. A method for performing a high speed leak test for a metallic cover with a pull tab characterized by holding a metallic cover having a central plate portion, a countersink portion, a flange portion and a curled portion which are arranged from the center to the periphery in said order, where an opening-defining score line is coined in said central plate portion and a pull tab is fixed to the upper surface side of said central plate portion, between facing upper and lower parts which define one closed chamber cooperatively, with a very small gap between the lower surface of the central plate portion, the countersink portion and the flange portion of said metallic cover and said lower part dividing said closed chamber into an upper closed portion in which said pull tab is present and a lower closed portion in which said tab is absent making said metallic cover the boundary; comprising the steps of:

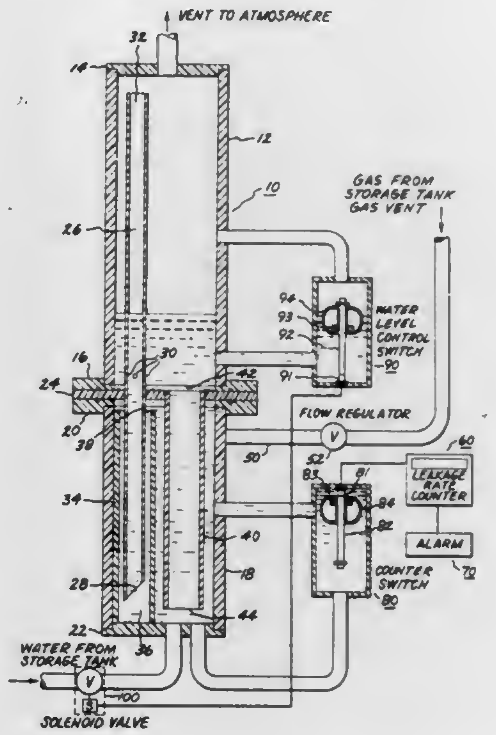
injecting pressurized air into said upper closed portion; and

detecting the change in the air pressure within said lower closed portion so as to determine whether the metallic cover has a leak;

wherein said metallic cover is held between an elastic material attached to said upper part and contacting with the upper surface of the flange portion of the metallic cover and another elastic material attached to said lower part and contacting with the lower surface of the periphery of the central plate portion of the metallic cover to define the upper and the lower closed portions and, said lower closed portion is divided into a closed zone facing the central plate portion of the metallic cover and another closed zone facing the peripheral portion of the metallic cover wherein, in said closed zone facing the central plate portion, the change in the air pressure is detected within the very small gap between the lower surface of said central plate portion and said lower part and within a passage which communicates with said very small gap and leads to a detector, while, in the closed zone facing said peripheral portion, the change in the air pressure is detected within the very small gap between the lower surface of the peripheral portion of the cover comprising said countersink portion, flange portion and curled portion and said lower part and within a passage which communicates with said very small gap and leads to a detector.

4,440,017
HYDROGEN LEAK MONITOR FOR A TURBINE-GENERATOR

Sterling C. Barton, and Joseph E. Pitoniak, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Feb. 8, 1982, Ser. No. 346,805
Int. Cl.³ G01M *3/30*
U.S. Cl. 73—40.5 R **9 Claims**



1. In a dynamoelectric machine, a device for monitoring the leakage of cooling gas into the stator water cooling system, wherein said cooling gas accumulates in a water storage tank of said system, said device comprising: an upper chamber having opposed upper and lower ends;

a lower chamber having opposed upper and lower ends;

the lower end of the upper chamber being affixed to the upper end of the lower chamber and sealed thereto;

a first tubular member having opposed open ends, disposed in the lower chamber and extending upwardly through said seal between said upper and lower chambers and into said upper chamber;

a second tubular member disposed in said lower chamber and having a greater diameter than said first tubular member, one end thereof being affixed to the lower end of said lower chamber and the other end being open to the lower chamber, said second tubular member being spaced from and encompassing a substantial portion of said first tubular member in said lower chamber;

a third tubular member having opposed open ends, the upward open end disposed in the lower chamber and extending upwardly therefrom through said seal and opening into said upper chamber;

the lower end of said third tubular member being open and disposed closer to the lower end of said lower chamber than the lower end of said first tubular member;

the upper end of said first tubular member being disposed further from the lower end of the upper chamber than the upper end of said third tubular member;

a water level control means connected to the upper chamber for maintaining, under normal operating conditions, a volume of water sufficient to cover the upper end of said third tubular member and insufficient to cover the open end of said first tubular member; and

means for introducing the accumulated cooling gas from said storage tank into the lower chamber near the upper end thereof; and

means for venting the gas from the upper chamber.

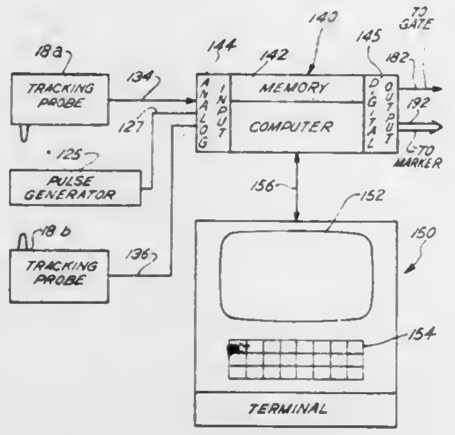
4,440,018
TIRE SIDEWALL DEFORMATION DETECTION TECHNIQUES

William C. Christie, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jan. 18, 1982, Ser. No. 339,990

Int. Cl.^{3} G01M *17/02*

U.S. Cl. 73—146 **28 Claims**



1. In a tire manufacturing system including means for assembling and curing components of the tire and for testing the cured tire by detecting lateral runout values for at least one sidewall of the tire, improved apparatus for determining the degree of side wall deformation resulting from the assembling and curing, said apparatus comprising:

storage means for storing a plurality of the lateral runout values;

processing means for segregating the lateral runout values into a plurality of groups, each group representing a portion of the sidewall, for calculating a reference value for each group based on at least a portion of the runout values within the group, for comparing the reference values to at least one of the laterial runout values in the group in order to generate a group deformation value indicative of the degree of deformation in the portion of the sidewall represented by the group, and for generating a deformation flag signal if any of the group deformation values generated for the various groups have a predetermined relationship with respect to a predetermined limit; and

means for indicating the condition of the tire in response to the deformation flag signal.

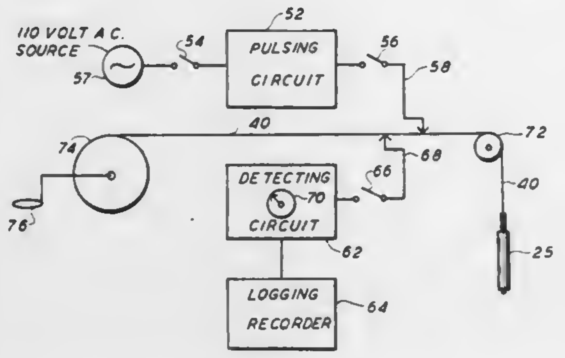
4,440,019
FREE POINT INDICATOR

W. Ray Marshall, 12702 Crow Valley St., Houston, Tex. 77099

Filed May 28, 1982, Ser. No. 383,178

Int. Cl.^{3} E21B *47/00*

U.S. Cl. 73—151 **10 Claims**



1. A free point indicator for a tubular well string, said indictor comprising a running tool, surface marking apparatus and detection apparatus, and connecting means for both running the tool downhole and selectively and alternately connecting it electrically with the surface apparatuses,

said running tool being adapted for running inside the tubular well string and including a sensitive coil,

said marking apparatus including an electrical capacitor and switching means for connecting the capacitor to discharge its stored energy through the conecting means to pulse said coil, whereby a magnetic spot is induced at a known depth on the inner wall of the tubular string, and

said detection apparatus including sensitive meter means to detect an induced voltage when said coil moves through the field of said magnetic spot.

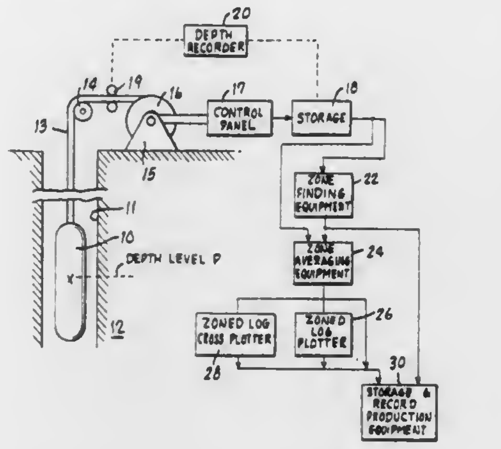
4,440,020
WELL LOG DEPTH ZONING

Yves L. Boutemy, Houston, Tex., and Henry N. Edmundson, West Reddington, Conn., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Apr. 1, 1982, Ser. No. 364,201

Int. Cl.^{3} E21B *49/00*

U.S. Cl. 73—152 **25 Claims**



1. A well logging method comprising:

generating a number of well logs for a common subsurface depth interval;

selecting mutually depth-matched portions of the logs and processing them to find subsurface depth zones within each of which the logs have a respective selected mutual consistency; and

producing a tangible record of selected parameters of said zones.

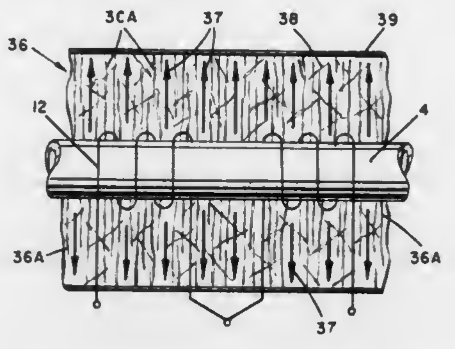
4,440,021
MASS FLOW METER WITH REDUCED ATTITUDE SENSITIVITY

John W. Abouchar, 18881 Patrician Dr., Villa Park, Calif. 92667, and Michael J. Doyle, 2705 Calle Loma Roja, Riverside, Calif. 92805

Filed Jul. 29, 1980, Ser. No. 173,282

Int. Cl.^{3} G01F *1/68*

U.S. Cl. 73—204 **12 Claims**



1. A mass flow measuring system for accurately measuring the flow rate of a fluid through a tube comprising,

a plurality of self-heating sensing elements positioned along the flow path of said fluid,

means for detecting a temperature differential between said sensing elements, and

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a fibrous material encasing said sensor elements wherein said fibrous material includes a substantial number of fibers arranged therein so as to be perpendicular to the axis of the sensing elements in order to conduct heat from said sensing elements in a laminar flow arrangement and to prevent heat flow from being returned to said sensing elements through said fibrous material.

4,440,022
LIQUID-LEVEL DETECTION

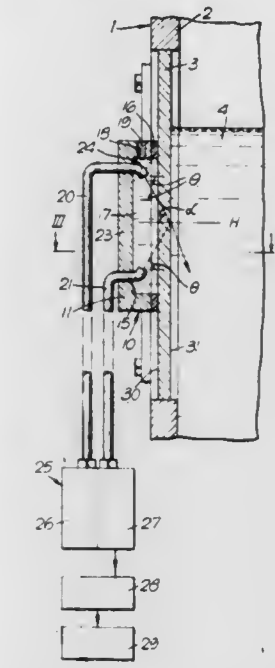
Ronald A. Masom, Bitterne, England, assignor to Smiths Industries Public Limited Company, London, England

Filed Sep. 16, 1982, Ser. No. 419,103

Claims priority, application United Kingdom, Oct. 14, 1981, 8131009

Int. Cl.^{3} G01F *23/08*

U.S. Cl. 73—293 **8 Claims**



1. A liquid reservoir of the kind having a wall, a window of transparent material mounted in said wall, and a liquid-level detector mounted on said reservoir, the improvement wherein the detector comprises: a mounting assembly shaped to define a cavity facing said window; means sealing said mounting assembly with said window; a transparent liquid or gel in said cavity, said liquid or gel having a refractive index substantially the same as that of said window; transmitting means for transmitting a beam of light through said cavity towards said window at an angle greater than the critical angle of said transparent material with air and less than the critical angle of said transparent material with the liquid in said reservoir, such that said beam of light is refracted into said reservoir when the liquid in the reservoir covers the location at which said beam is incident on the internal face of said window, and is reflected by said internal face when said location is uncovered by the liquid in said reservoir; and receiving means for receiving said beam of light when it is reflected from the internal face of said window, said receiving means providing an output which changes as the level of liquid in said reservoir moves over said location.

4,440,023
CHAIN MOTION MEASURING DEVICE

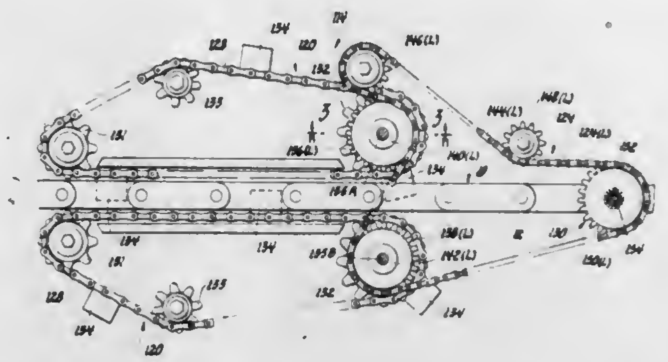
Ulric Landenberger, Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 358,345, Mar. 15, 1982, Pat. No. 4,407,162. This application Nov. 12, 1982, Ser. No. 440,818

Int. Cl.^{3} G01P *3/00*

U.S. Cl. 73—490 **2 Claims**

1. A chain motion measuring device for maintaining precise measurement of the motion of a chain formed of interconnected links when the chain is temporarily reversed and then resumes travel in a forward direction, said device comprising a pair of closed-loop forward-reverse primary drive means adapted to be engaged in staggered fashion and driven by the chain links whereby one of said primary drive means is always fully engaged and driven by the chain and in a direction dependent on that of the chain, closed-loop forward secondary drive means, separate forward overrunning drive means for separately drivingly connecting each of said primary drive means to said forward secondary drive means only when the chain is traveling forward whereby said forward secondary drive means is driven in a forward measuring direction without interruption by one of said foward overrunning drive means overrunning the other, closed-loop reverse secondary drive means, separate reverse overrunning drive means for separately drivingly connecting each of said primary drive means to said reverse secondary drive means only when the chain is traveling in reverse whereby said reverse secondary drive means is driVen in a reverse measuring direction without interruption by one of said reverse overrunning drive means overrunning the other, and differential drive means for drivingly connecting said forward secondary drive means and said reverse secondary drive means to said measuring means without lost motion whereby said measuring means is caused to give a true reading of actual chain motion in both the forward and reverse directions by the drive of said forward secondary drive means while said reverse secondary drive means remains stationary and vice versa respectively.



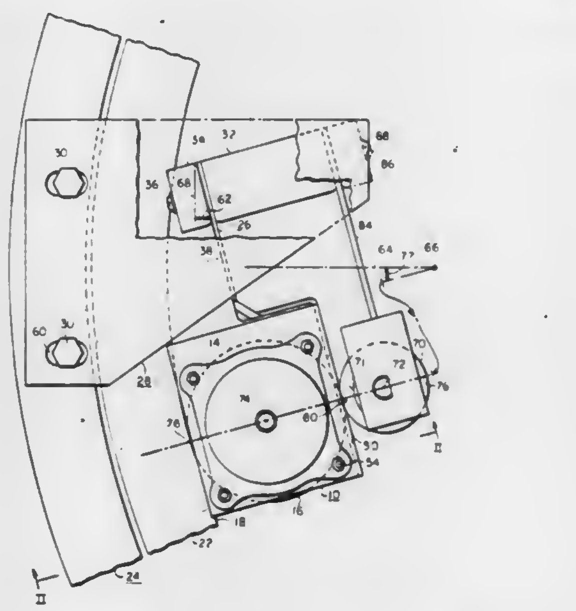
4,440,024
TACHOGENERATOR

William R. Caputo, Wyckoff, and Jitendra K. Trivedi, West Milford, both of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 26, 1982, Ser. No. 411,791

Int. Cl.^{3} G01P *1/04, 3/24*

U.S. Cl. 73—529 **7 Claims**



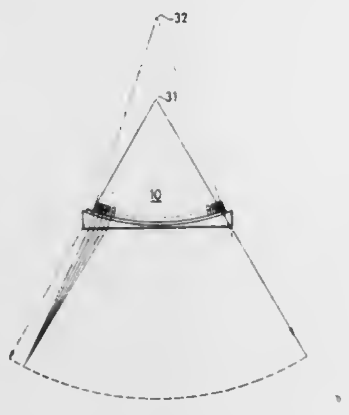
1. In a tachogenerator having a bearing mounted drive shaft,

and a friction drive wheel on the drive shaft driven by a movable surface, the improvement comprising:
- means compliantly and frictionlessly mounting the tachogenerator,
- at least one pressure roller means, said pressure roller means including a pressure roller in tangential, rolling contact with the friction wheel,
- and means biasing said at least one pressure roller against the friction wheel, and the friction wheel against the movable drive surface, to provide the desired friction wheel contact pressure against the movable surface without excessively loading the shaft and bearings of the tachogenerator.

4,440,025
ARC SCAN TRANSDUCER ARRAY HAVING A DIVERGING LENS

Yoshihiro Hayakawa, Sagamihara; Tsutomu Yano; Ryobun Tachita, both of Kawasaki; Hiroshi Fukukita, Tokyo; Kazuyoshi Irioka, Sagamihara, and Akira Fukumoto, Machida, all of Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Jun. 26, 1981, Ser. No. 277,816
Claims priority, application Japan, Jun. 27, 1980, 55-88129
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—642 14 Claims

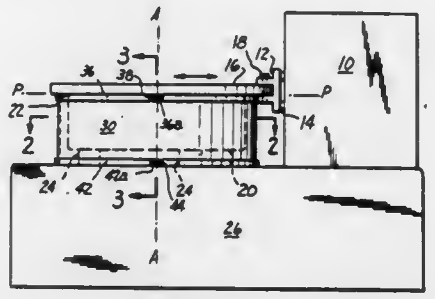


1. An ultrasonic transducer array for transmitting a diverging acoustic beam, comprising:
- a plurality of successively arranged, elongated piezoelectric transducers for generating an acoustic beam from different locations of said array;
- means for supporting said transducers on a generally convex surface so that said beam diverges from a first point located behing the array; and
- an acoustic diverging lens having a first curved surface that is complementary to said convex surface and a second, opposite surface that is generally flat and adapted to contact a body, said complementary curved surface of said lens being attached to said convex surface for diverging said acoustic beam outwardly to cause the acoustic energy transmitted from said transducers to emanate from a second point closer to said array than said first point enabling the array to scan a shallower region of the body than is achieved without said diverging lens.

4,440,026
VIBRATION APPARATUS WITH FLEXURE MEANS

David V. Kimball, 132 W. Chestnut, Monrovia, Calif. 91016
PCT No. PCT/US82/00349, § 371 Date May 4, 1982, § 102(e) Date May 4, 1982, PCT Pub. No. WO83/03370, PCT Pub. Date Oct. 13, 1983
PCT Filed Mar. 23, 1982, Ser. No. 422,972
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—663 16 Claims

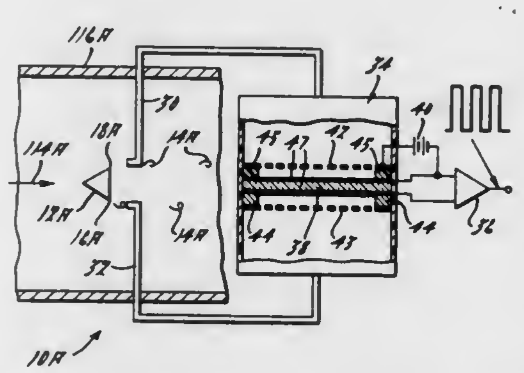
1. In vibration apparatus in which a shaker is coupled to a rigid slip plate carrying a test piece to be universally movable in a single plane and drives said slip plate in axially predetermined sliding engagement with a slip plate support block, flexure means blocking pivoting movement of said slip plate about its center axis normal to said plane, said flexure means being longitudinally bendable responsive to slip plate movement while blocking said pivoting movement, to permit said predetermined axial movement.



16. Method for effecting vibration testing of a test piece carried on a rigid slip plate, which includes vibrating said slip plate in a predetermined axial direction while constraining said slip plate for linear movement only by securement to a longitudinally bendable, torsionally stiff flexure.

4,440,027
VELOCITY AND MASS AIR FLOW SENSOR

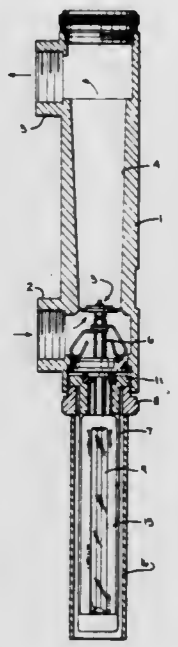
Louis R. Focht, Farmington Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.
PCT No. PCT/US82/00733, § 371 Date May 26, 1982, § 102(e) Date May 26, 1982
PCT Filed May 26, 1982, Ser. No. 403,748
Int. Cl.³ G01F *1/32*
U.S. Cl. 73—861.24 2 Claims



1. A device for measuring the velocity of a fluid comprising:
- a vortex generating means positioned in a fluid stream so that a first stream and a second stream of vortices are formed in the wake of said generating means;
- a first pitot tube pressure sensor means positioned in said first stream of vortices for sensing and conducting a pressure variation caused by the passage of the vortices;
- a second pitot tube pressure sensor means positioned in said second stream of vortices for sensing and conducting a pressure variation caused by the passage of the vortices;
- said first pressure sensor means and said second pressure sensor means being positioned substantially the same distance downstream of said vortex generating means;
- a differential processing means coupled to said first and second pressure sensor means for inverting the input from one of said first and second pressure sensor means thereby increasing pressure variations between the two and cancelling out pressure variations common to said first and second pressure sensor means;
- said differential processing means including a differential microphone having a diaphragm, a first chamber on one side of said diaphragm being coupled to said first pressure sensor means, and a second chamber on the other side of said diaphragm being coupled to said second pressure sensor means;
- a threshold detector with an inverting and a non-inverting input coupled to the output of said differential microphone;
- said differential microphone being formed of a generally planar piezoelectric material, each side having a conducting means, one conducting means being connected to said inverting input and the other conducting means being connected to said non-inverting input of said threshold detector; and
- a polarizing screen adjacennt to and insulated from said diaphragm and a polarizing voltage being applied between said polarizing screen and the adjacent one of said conducting means thereby bowing said diaphragm and producing a bias voltage.

4,440,028
PROTECTIVE SHIELD FOR FLOW METER SIGHT GLASS

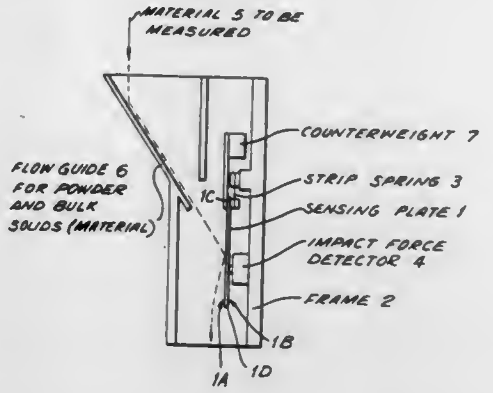
Ralph W. Ramlow, East Troy, Wis., assignor to Waukee Engineering Company Inc., Milwaukee, Wis.
Filed Mar. 1, 1982, Ser. No. 353,180
Int. Cl.³ G01F *1/22*
U.S. Cl. 73—861.55 7 Claims



1. A flow meter, comprising a body having a fluid inlet and fluid outlet and having a passage connecting said inlet and outlet, a float assembly disposed within said passage and adapted to move within the passage in accordance with the rate of flow of fluid therethrough, a guard connected to the body and having an elongated recess, a transparent sight glass disposed within the recess, a rod connected to the float assembly and extending within the sight glass, an indicator connected to the rod, a scale mounted adjacent said recess, movement of the indicator within the sight glass indicating the rate of flow on the scale, a tubular shield disposed around the guard and having a transparent portion disposed in alignment with said sight glass and said scale, an abutment on said guard, and spring clip means mounted on the shield and engaged with the abutment to prevent longitudinal movement of the shield with respect to said guard, an outer surface of the guard being generally flat and said abutment being spaced circumferentially from said surface, said shield being installed on said guard with said spring clip means being disposed generally parallel to said surface, rotation of said shield causing said spring clip means to deform outwardly and to seat against said abutment.

4,440,029
IMPACT FLOW METER

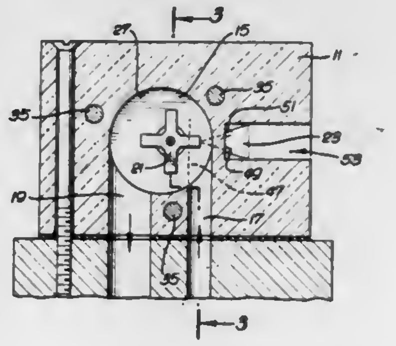
Hiroshi Tomiyasu, Yokohamashi, and Hiroaki Tanaka, Kawasakishi, both of Japan, assignors to Sankyo Dengyo Co., Ltd., Japan
Filed May 13, 1982, Ser. No. 377,966
Claims priority, application Japan, May 16, 1981, 56-073833
Int. Cl.³ G01F *1/30*
U.S. Cl. 73—861.73 10 Claims



1. An impact flow meter for measuring a horizontal impact force produced by falling material, said flow meter comprising:
- a frame;
- a sensing plate having a front surface and a spaced opposite back surface;
- hanging means hanging said plate substantially vertically on said frame thereby preventing material from adhering to said plate;
- a flow guide mounted in the frame in front of the front surface of said plate at an inclination with the vertical for directing the falling material to said front surface of said plate whereby said plate is struck by said material; and
- an impact force detector coupling the back surface of said plate to said frame for measuring the horizontal impact force of said material.

4,440,030
FLUID FLOW METER

Edwin Pounder, LaCanada; Alan J. Arena; Michael Pawlowski, both of Chino, and Adrian M. Totten, El Monte, all of Calif., assignors to Signet Scientific Co., El Monte, Calif.
Filed Feb. 26, 1982, Ser. No. 352,534
Int. Cl.³ G01F *1/6*
U.S. Cl. 73—861.87 15 Claims



1. A fluid flow meter comprising:
- a housing having means defining a substantially cylindrical cavity;
- inlet and outlet conduit means closely spaced to each other and aligned substantially tangentially with the periphery of the cavity, for directing a fluid to flow through a major portion of the cavity, from the inlet conduit means to the outlet conduit means;
- paddle wheel means mounted in the cavity for rotation in accordance with the fluid flow, the paddle wheel means

including a plurality of substantially flat, evenly-spaced paddles; and

means for sensing the angular velocity of the paddle wheel means and producing a corresponding signal;

wherein the paddle wheel means is mounted for rotation about an axis displaced from but parallel to the longitudinal axis of the cavity such that the fluid flow rotates the paddle wheel means in a prescribed direction over an extended range of Reynolds numbers, spanning both turbulent and laminar flow regimes.

4,440,031

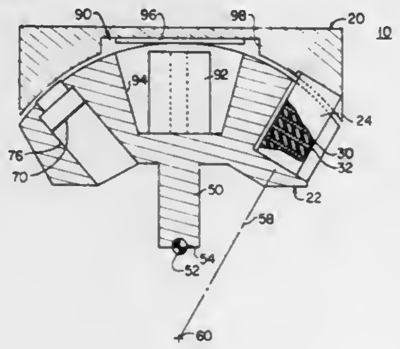
FORCE DETECTING SYSTEM FOR REMOTE CENTER COMPLIANCE DEVICE

Thomas L. De Fazio, Watertown, Mass., assignor to The Charles Stark Draper Laboratory, Cambridge, Mass.

Filed Jul. 31, 1981, Ser. No. 288,979

Int. Cl.³ G01L *5/16*

U.S. Cl. 73—862.04 **18 Claims**



1. A force detecting system for an RCC device comprising:

a first rigid, monolithic part;

a second rigid, monolithic part spaced from said first part;

compressible, shear deformable means interconnecting said first and second parts; and

at least one axial proximity displacement sensor for detecting the distance between said parts; each said axial proximity detector being disposed along conically-disposed radii from a center.

4,440,032

SAMPLER INCORPORATING A PURGE SYSTEM

Robert H. Welker, Sugar Land, Tex., assignor to Welker Engineering Company, Sugar Land, Tex.

Filed Apr. 9, 1982, Ser. No. 366,846

Int. Cl.³ G01N *1/14*

U.S. Cl. 73—863.84 **7 Claims**

1. Sample collecting apparatus comprising:

(a) an elongate hollow body having the form of a rod and which body is adapted to have one end extended into a container having a volume of fluid therein to be sampled, said body having a second end remote from said one end;

(b) sample gathering means at the one end of said body for insertion into the fluid to be sampled;

(c) sample outlet passage means connected to said sample gathering means and extending therefrom along said rod to a sample outlet port for delivery of a sample;

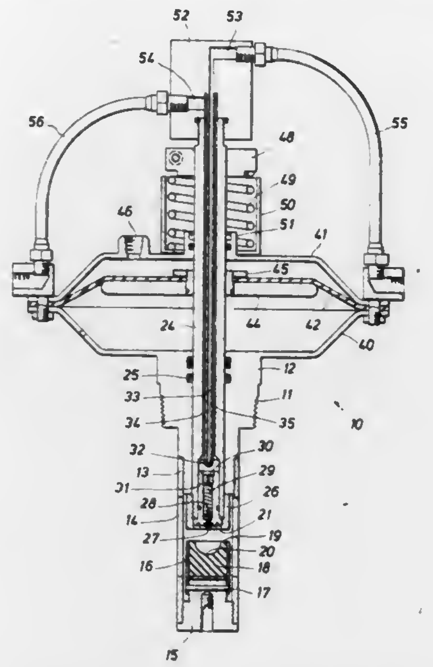
(d) purge line means extending from an inlet near the second end toward said sample gathering means for introduction of a purge fluid into said sample outlet passage means;

(e) selectively operable valve means for controlling operation of said purge line means into said sample outlet passage means to control flow of a purge fluid into said sample outlet passage means;

(f) wherein said purge line means extends along said elongate hollow body and terminates at a check valve means comprising said selectively operable valve means;

(g) wherein said sample outlet passage means and purge line means are coterminous at said one end connected together through said selectively operable valve means; and

(h) wherein said sample outlet passage means and said purge line means comprise first and second elongate hollow conduits, the second within the first, the second being the purge line conduit and of thin wall construction and having a closed end with a passage through the wall thereof, and said selectively operable valve means comprises a means selectively closing said passage through said wall.



4,440,033

STARTING MOTOR DEVICE

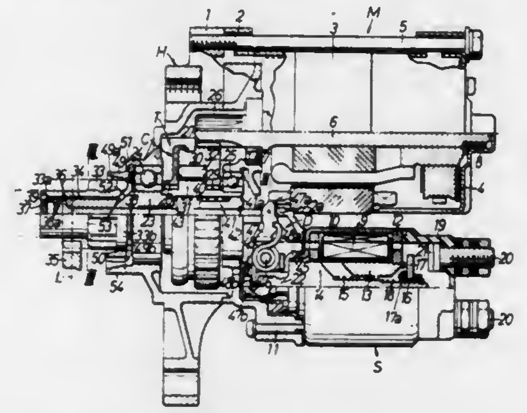
Norimitsu Kurihara, Wako; Katsuharu Kinoshita, Hanno; Masao Watanabe, Niiza; Toyohiro Sato, Nitta, and Takashi Kawazoe, Kiryu, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 11, 1981, Ser. No. 301,115

Claims priority, application Japan, Sep. 13, 1980, 55-126653; Mar. 7, 1981, 56-32918; Mar. 10, 1981, 56-34416

Int. Cl.³ F02N *15/06*

U.S. Cl. 74—7 A **32 Claims**



1. A starting motor device for an engine having a driven gear, comprising, in combination: an electric motor, an output shaft mounted for rotation but held against axial movement, one-way clutch means through which said electric motor may drive said output shaft in one direction, a pinion gear slidably mounted on said output shaft for axial movement but restrained from relative rotation, a rod slidably mounted coaxially within said output shaft for moving said pinion gear axially to engage and disengage said driven gear of said engine, shifting means including an electromagnetic device acting through resilient means for shifting said rod axially to engage and disengage said pinion gear with respect to said driven gear.

4,440,034

ECCENTRIC VIBRATOR WITH SHIFTING COUPLING

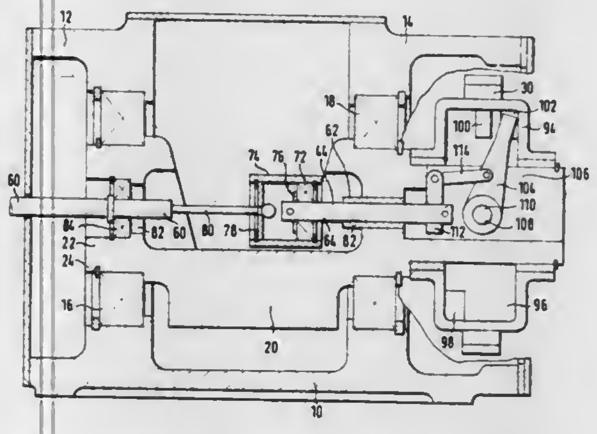
Hans-Georg Waschulewski, Mettmann, Fed. Rep. of Germany, assignor to Losenhausen Maschinenbau AG, Fed. Rep. of Germany

Filed Mar. 2, 1981, Ser. No. 239,698

Claims priority, application European Pat. Off., Apr. 5, 1980, 80101838.3

Int. Cl.³ B06B *1/16*

U.S. Cl. 74—61 **7 Claims**



1. An eccentric vibrating machine comprising:

an unbalanced, rotatable first shaft carrying a first eccentric mass offset from the first shaft axis of rotation;

an unbalanced rotatable second shaft carrying a second eccentric mass offset from the axis of rotation;

a first gear fixed to the first shaft for rotation therewith;

a second gear meshing with the first gear and rotatably positioned on the second shaft, said second gear including an end face; and

coupling means for selectively coupling the second gear to the second shaft for rotation therewith and in a selected rotational phase relationship to said first shaft as both shafts are rotated and drivingly connected through said gears and coupling means, said coupling means comprising:

- stop means associated with said second gear;
- an entrainment device connected to the second shaft for rotation therewith and shiftable between at least two positions to selectively engage said stop means to variably establish driving connection between the second gear and second shaft at at least two different angular positional relationships therebetween, said entrainment device comprising:
  - a torque-transmitting lever pivotally mounted on the second shaft for pivotation about an axis extending transversely to the axis of rotation of said second shaft and for selective engagement by said lever with said stop means, whereby said lever transmits torque from said second gear to said second shaft; and
- shifting means for shifting the entrainment device between said positions for selective engagement of said lever with said stop means.

4,440,035

SLIP CLUTCH SPEED CHANGE MECHANISM

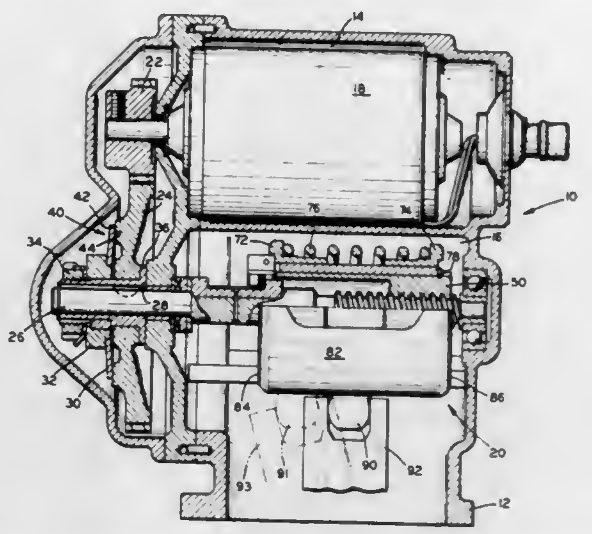
Donald H. Foulk, Toledo, Ohio, assignor to Dana Corporation, Toledo, Ohio

Filed May 18, 1981, Ser. No. 264,505

Int. Cl.³ F16H *29/20, 29/22*

U.S. Cl. 74—89.15 **7 Claims**

1. In a speed change mechanism comprising a travelling nut and a screw shaft drivably supporting said nut, a driven member rotatably journaled on said shaft, and a slip clutch mounted on said shaft, said clutch in axially thrusting frictional engagement with said driven member; an improvement comprising a pair of opposed annular slide members, a spring under constant compression interposed between said slide members, and retention means on said nut for axially restraining said slide members over said nut under force of said spring.



4,440,036

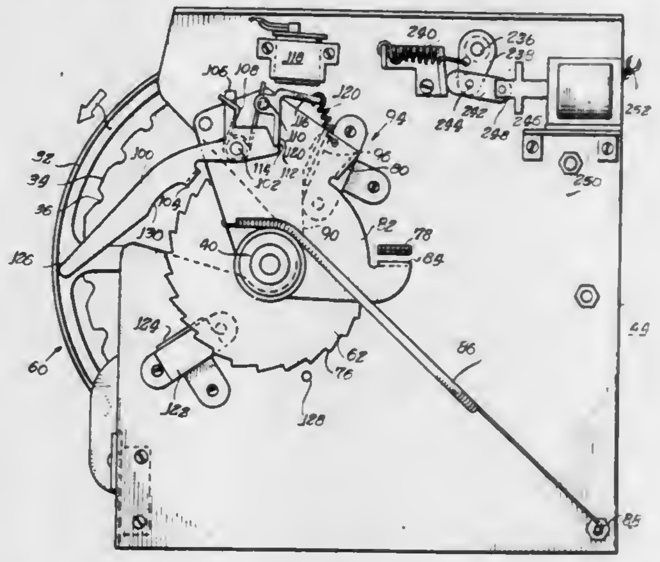
GAMING APPARATUS HAVING MANUALLY CONTROLLABLE OPERATING SPEED

Donald E. Hooker, Wilmette, and Roman A. Tojza, Chicago, both of Ill., assignors to Bally Manufacturing Corporation, Chicago, Ill.

Division of Ser. No. 119,217, Feb. 7, 1980, abandoned. This application Sep. 25, 1981, Ser. No. 305,407

Int. Cl.³ F16D *41/12;* A63B *71/00*

U.S. Cl. 74—153 **24 Claims**



1. In an apparatus of the type wherein a rotatable shaft is journaled at opposite ends in a frame structure and has a ratchet wheel attached to one end portion of the shaft, a mechanism for driving a shaft to impart an initial speed of rotation that is directy proportional to the force that is applied to an operating handle by operator manipulation, said mechanism including a latch means which, when actuated, releases said mechanism for movement from a rest position in a first direction into engagement with said ratchet wheel for contacting and rotating said wheel and shaft through a first predetermined arc, an actuating means for actuating said latch means comprising an electrically energizable coil attached to said frame structure and adjacent said latch means when said mechanism is in its rest position, said frame structure including a protrusion for contacting a cam surface of said mechanism before said arc is completed and disengaging the same from said ratchet wheel, said shaft thereafter rotating at a speed proportional to the speed imparted to said wheel and shaft before disengagement.

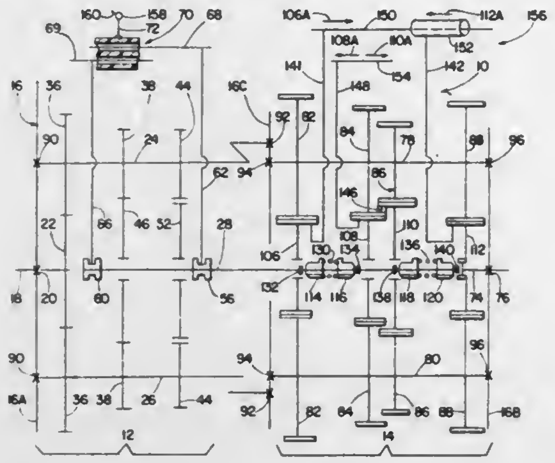
4,440,037
SHIFT CONTROL

Robert J. Foxton, Livonia; David A. Kappheim, Southfield, and Russell C. Holmes, Troy, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Nov. 4, 1981, Ser. No. 318,168

Int. Cl.³ F16H *3/08, 3/02;* **B60K** *20/00;* **G05G** *5/10*

U.S. Cl. 74—331 **7 Claims**



1. A shift rod housing assembly comprising:

a housing defining a first and a second generally parallel axially extending bores;

a first shift fork movable from a nondisplaced position, in a first axial direction only, a predetermined axial distance to a predetermined displaced postion, said first shift fork carried by a first shift rod for axial movement therewith, said first shift rod slidably received in said first bore and having an axially extending third bore therethrough;

a second shift fork movable from a nondisplaced position, in a second axial direction only, said predetermined axial distance to a predetermined displaced position, said second shift fork carried by a second shift rod for axial movement therewith, a portion of said second shift rod slidably received in said third bore in said first shift rod and another portion of said second shift rod extending in said first axial direction from said third bore in said first shift rod and carrying an abutment surface having a larger outer dimension than the inner diameter of said third bore, said abutment surface, in the axial positions of said first and second shift rods corresponding to the nondisplaced position of said first and second shift fork, being spaced from the opening to said third bore by an axial distance generally equal to said predetermined axial distance whereby axial displacement of either one of said first and second shift rods to an axial position corresponding to the predetermined displaced position of the shift fork carried thereby will result in said abutment surface being adjacent to or engaging the opening to said third bore thereby positively preventing simultaneous displacement of said first and second shift forks to the predetermined displaced positions thereof;

a third shift fork movable from a nondisplaced position in either one of the first or second axial directions to either of two predetermined displaced positions, said third shift fork carried by a third shift rod for axial movement therewith, said third shift rod slidably received in said second bore;

means associated with said housing for selectively displacing any selected one of said first, second and third shift rods from the nondisplaced position thereof to the predetermined displaced positions thereof independently of displacement of the other two of said first, second and third shift rods; and

positive mechanical interlock means operable in combination with said abutment surface for positively preventing movement of any one of said first, second and third shift rods to the predetermined displaced positions thereof unless the other two of said first, second and third shift rods are in the nondisplaced positions thereof.

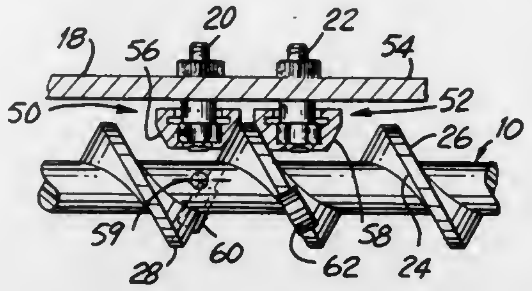
4,440,038
LEAD SCREW AND FOLLOWER ASSEMBLY

John T. Potter, Locust Valley, N.Y., assignor to Iquad Company Incorporated, Locust Valley, N.Y.

Filed Oct. 9, 1981, Ser. No. 310,189

Int. Cl.³ F16H *1/18, 27/02, 1/20*

U.S. Cl. 74—424.8 R **3 Claims**



1. Screw and follower apparaus, comprising:

a shaft radially flexible along the length thereof and having a helical ridge formed of three continuous surfaces uniformly longitudinally arranged on the surface of said shaft for forming a lead screw;

said surfaces comprising a flat outer helical surface and two slanted sides extending outwardly from said outer helical surface to the root of said shaft;

follower means including a frame member substantially coaxially arranged with said shaft and a plurality of bearing means mounted on said frame member and in contact with said three surfaces of said helical ridge for linearly translating said follower upon rotation of said shaft and for stabilizing said shaft against flexing;

said plurality of bearing means comprising a pair of conical roller bearings having tapered outer race surface means for rolling line contact against said slanted sides of said helical ridge;

means mounting said pair of conical roller bearings to said frame member with their axes normal to the axis of said shaft and in a common plane, longitudinal spaced relation for stradling a single raised portion of said ridge and for bearing in a direction substantially normal to the axis of said shaft in rolling line contact against opposite slanted sides extending from a common portion of said flat outer helical surface of said ridge substantially along the length of said ridge as said shaft is rotated;

said bearing means further comprising a pair of cylindrical roller bearings having outer circular race surface means for rolling line contact against said flat outer helical surface of said ridge;

means mounting said pair of cylindrical roller bearings to said frame member with their axes angled for bearing in a direction opposite to the bearing direction of said conical roller bearings in rolling line contact against said flat outer helical surface on opposite sides of the axis of said shaft for substantially the length thereof as said shaft is rotated;

said bearing means constituting opposing bearing means preventing flexure of said shaft within said frame.

4,440,039
REMOTE CONTROL MIRROR

Charles Bramer, North Shores, Mich., assignor to Lacks Industries, Inc., Grand Rapids, Mich.

Filed Aug. 7, 1981, Ser. No. 290,979

Int. Cl.³ F16C *1/10*

U.S. Cl. 74—501 M **6 Claims**

1. A remote control rear view mirror for vehicle use and comprising;

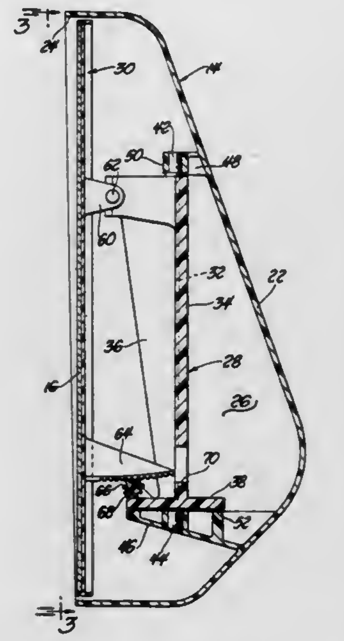
a housing having a mirror member and its operating mechanism mounted therewithin and means for mounting the housing itself externally on a vehicle,

control means adapted to be mounted within the vehicle and including cable means responsive to push-pull and rotary movement for operative control of the mirror member mounted within the housing,

a mirror supporting member provided in said housing as part of said operating mechanism and having the mirror member mounted thereon and pivotal about a relatively fixed horizontal axis for vertical viewing adjustment,

means for mounting said supporting member within said housing and for pivotal movement about a relatively fixed vertical axis to obtain lateral viewing adjustment of the mirror member,

a small pinion gear and means for mounting said pinion gear on said mirror supporting member at a location relatively spaced from one of said vertical and horizontal axes that afford viewing adjustment for the mirror member and to turn about an axis relatively spaced from the other of said viewing adjustment axes,



a gear toothed arcuate segment provided on the back side of the mirror member and projecting outwardly and normal thereto,

said gear segment being formed and disposed for operative engagement with said pinion gear,

and said cable means including a sheathed cable operatively connected to said pinion gear for turning it to effect adjustment of the mirror member about one of said axes via said gear segment and for exerting axial force thereon to effect rotational movement of the supporting member and thereby adjustment of the mirror member mounted thereon about the other of said axes.

4,440,040
MULTIPLE MODE CONTROL LEVER ASSEMBLY

Carl E. Kittle, and James E. Roach, both of Cedar Falls, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Dec. 23, 1981, Ser. No. 333,602

Int. Cl.³ G05G *5/06*

U.S. Cl. 74—527 **22 Claims**

1. A multiple mode control lever assembly comprising:

a housing;

a control lever rotatably mounted in the housing;

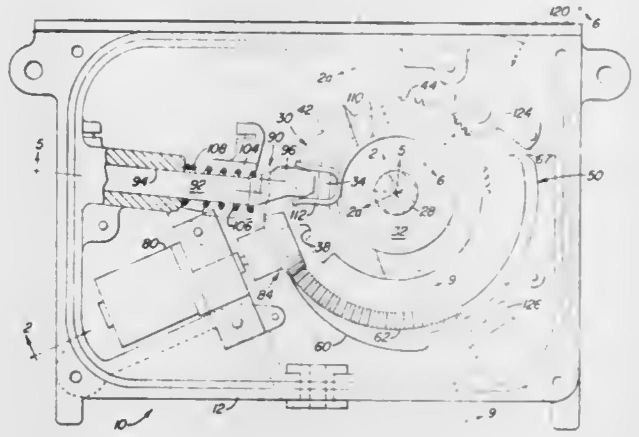
friction means for releasably coupling with the control lever to resist the rotation thereof;

an arm movable in the housing;

resilient means for releasably coupling between the arm and the control lever to urge the control lever from a displaced position to a neutral position;

detent means for releasably coupling with the control lever to hold the control lever in the displaced position against the bias of the resilient means; and

a unitary index member operatively engaging the friction means, the arm and the detent means, the index member being rotatable in the housing to couple and uncouple the friction means from the control lever, to couple and uncouple the arm from the resilient means and to couple and uncouple the detent means from the control lever.



4,440,041
WINCH APPARATUS

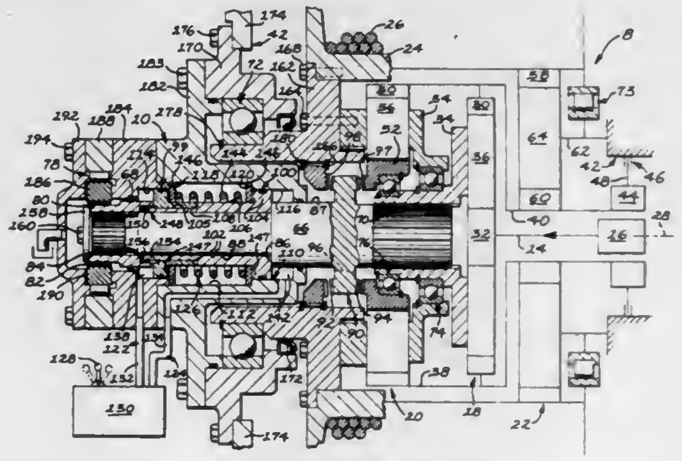
Randall R. Bendtsen, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US81/01252, § 371 Date Sep. 17, 1981, § 102(e) Date Sep. 17, 1981, PCT Pub. No. WO83/01089, PCT Pub. Date Mar. 31, 1983

PCT Filed Sep. 17, 1981, Ser. No. 309,341

Int. Cl.³ F16H *3/44;* **F16D** *25/10*

U.S. Cl. 74—753 **14 Claims**



1. In a winch apparatus (8) having a shift control mechanism (10) including a shaft (66) rotatably supported within a housing (42) on a central axis (28), the improvement comprising:

first and second piston members (99,100) fixedly mounted on the shaft (66), axially slideably disposed within the housing (42), and at least in part defining with the housing (42) first and second annular chambers (138,142) having substantially equal operating volumes;

first means (122) for fluidically urging the first piston member (99) and the shaft (66) in a first direction toward a first piston by pressurizing the first chamber (138);

second means (124) for fluidically urging the second piston member (100) and the shaft (66) in a direction opposite the first direction toward a second position by pressurizing the second chamber (142); and

centering means (126) for mechanically centering the shaft (66) between the first and second positions in response to abutment with the piston members (99,100) and the housing (42).

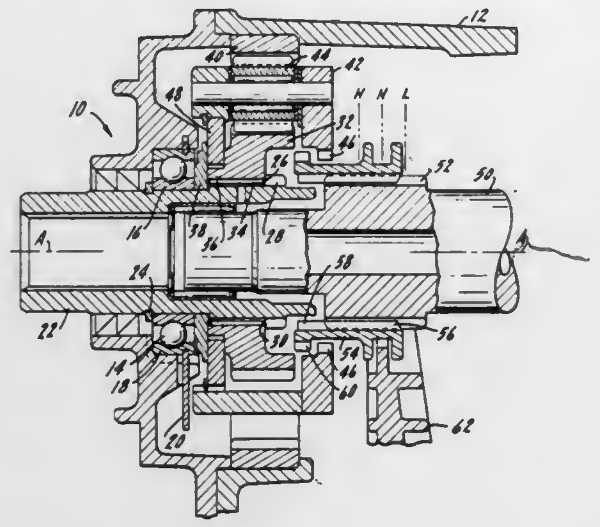
4,440,042
HELICAL PLANETARY GEAR ASSEMBLY

John W. Holdeman, Muncie, Ind., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Jul. 29, 1981, Ser. No. 287,962

Int. Cl.³ F16H *3/44*

U.S. Cl. 74—785 **9 Claims**



7. A helical planetary gear assembly comprising a housing, a bearing having inner and outer races, one of said races secured to said housing, a first member journalled by the other of said races and restrained axially in one direction and radially thereby, a second member journalled in said housing, a sun gear secured to said first member and restrained axially in said one direction thereby, a thrust washer contiguous to said other bearing range and said sun gear, said sun gear bearing restrained axially in the other direction by said thrust washer, and said other bearing race a ring gear secured to said housing, a planet carrier free to float radially, a plurality of planet gears supported by said carrier in meshing relationship with said sun and ring gears, said gears having helical gear teeth, and a collar engaged with said second member for rotation therewith and axial movement relative thereto, said collar being movable to a high-range position wherein it is engaged with said first member for transferring torque from said first member directly to said second member, and being movable to a low-range position wherein it is engaged with said carrier for transferring torque from said first member through said gears, carrier and collar to said second member, whereby when said collar is in its low-range position thrust loads on said ring gear are absorbed directly by said housing, thrust loads on said sun gear are transferred either through said thrust washer and said other bearing race or through said first member and said other bearing race to said housing for absorbtion thereby, and torque loads on said gears are balanced.

4,440,043
FIXED RATIO TRACTION ROLLER TRANSMISSION WITH TAPERED LOADING MEANS

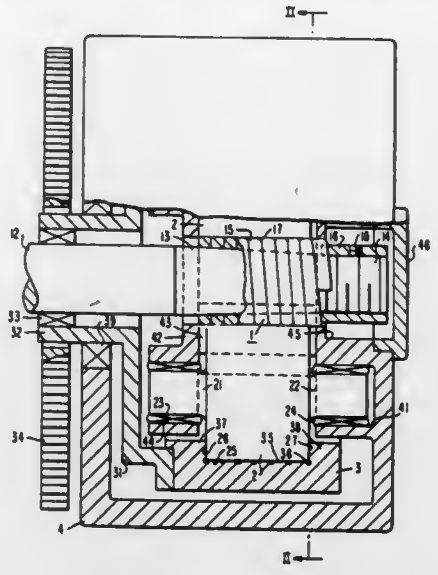
Charles E. Kraus, Austin, Tex., assignor to Excelermatic Inc., Austin, Tex.

Filed Mar. 3, 1982, Ser. No. 354,371

Int. Cl.³ F16H *13/06, 15/00, 13/02, 13/00*

U.S. Cl. 74—798 **6 Claims**

1. A traction roller transmission comprising: a traction ring structure having an inner traction surface; a sun roller structure centrally disposed within said traction ring structure and having a circumferential traction surface spaced from the inner surface of said traction ring structure; planetary traction rollers supported in the space between, and in engagement with, the sun roller structure and the traction ring structure, at least one of said sun roller and said traction ring structures having a tapered support surface; a tightly coiled spring having a cylindrical traction surface and a tapered opposite surface disposed on said tapered support surface; and adjustment means for forcing said coiled cylindrical spring onto said tapered support surface to thereby force said coiled cylindrical spring against said traction rollers to cause firm engagement of said traction rollers with said sun roller and traction ring structures.



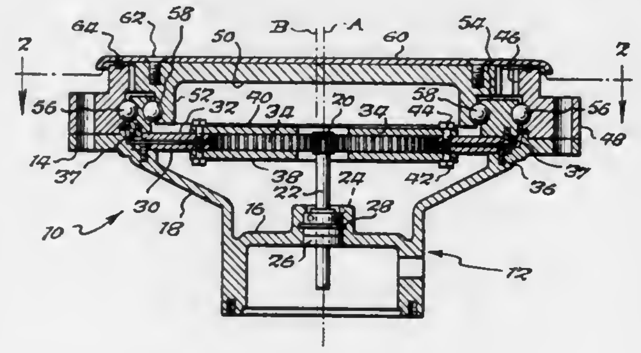
4,440,044
TWO STAGE SPEED REDUCER

Werner H. Heller, West Valley, N.Y., assignor to UMC Industries, Inc., Stamford, Conn.

Filed Jun. 22, 1981, Ser. No. 275,499

Int. Cl.³ F16H *1/28*

U.S. Cl. 74—804 **8 Claims**



1. A speed reducer, comprising:
a casing;
a primary speed reduction stage including an output element;
an output stage ring gear fixed to said casing;
means for mounting said output element for rotation with respect to said casing;
an output stage planetary gear in mating engagement with said ring gear and mounted for orbital movement therewithin by said first mentioned means;
said first mentioned means including an eccentric rigidly fixed to said output element, outer bearings between said eccentric and said casing, and inner bearings between said eccentric and said output stage planetary gear;
said eccentric contains the inner and outer races for said outer and inner bearings, respectively; and
said casing and said output stage planetary gear contain the outer and inner races for said outer and inner bearings, respectively.

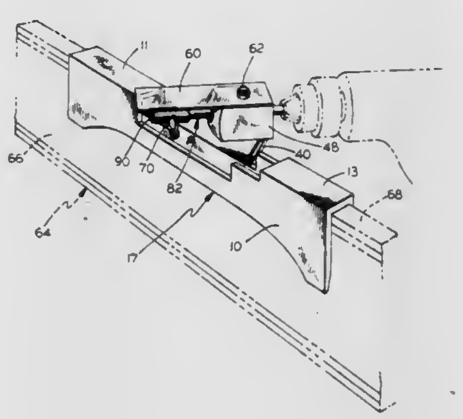
4,440,045
CHAIN SAW SHARPENER

Frank J. Aksamit, 12605 Blackberry Row, Bayonet Point, Fla. 33567

Filed Jun. 1, 1982, Ser. No. 383,751

Int. Cl.³ B23D *63/16*

U.S. Cl. 76—25 A **22 Claims**



1. A chain saw sharpener fixture comprising:
a. A frame of substantially inverted U-shaped cross section defining a channel for receiving the cutter bar of a chain saw and comprising:
  (1) a web having a front web portion and a rear web portion, both having a lower surface and further having a sharpening opening and a depth gauge opening disposed therein between said front and rear web portions and communicating with said channel; and
  (2) two sidewalls depending from opposite sides of said web and structurally connecting said front and rear web portions;
b. A support bracket extending laterally from one of said sidewalls having an elongated hole disposed therein, with the axis of said elongated hole lying parallel to said sidewall, and further having:
  (1) a flat, horizontal upper surface having front and rear edges tapering toward each other as distance from said sidewall increases and forming interior angles of 35° with said sidewall; and
  (2) front and rear lines marked on said upper surface, adjacent to said front and rear edges, respectively, tapering toward each other as distance from said sidewall increases and forming interior angles of 30° with said sidewall;
c. A means for guiding a sharpening tool, comprising a body having a flat lower surface with parallel front and rear edges and a transverse hole extending horizontally through said body, the axis of said transverse hole being parallel to said front and rear edges of said lower surface, which guide means is supported by said support bracket and is positionable thereon with said front edge of said lower surface aligned with either said front edge of said support bracket or said front line marked on said support bracket or with said rear edge of said lower surface aligned with either said rear edge of said support bracket or said rear line marked on said support bracket; and
d. Means inserted through said hole in said support bracket for attaching said guide means to said support bracket in said multiplicity of positions.

4,440,046
POWER WRENCH

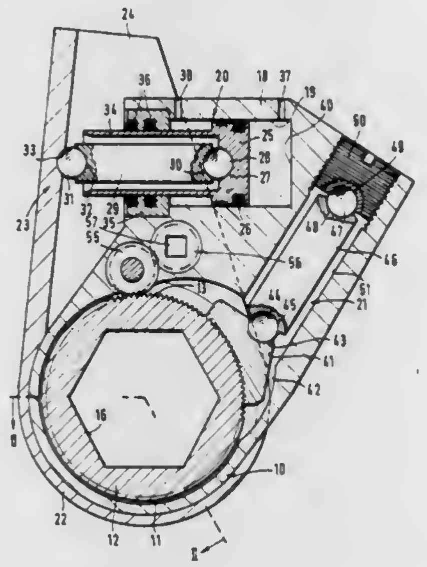
Karl-Richard Hirtsiefer, Neunkirchen; Johann Müller, Much-Nesshoven; Kurt Walterscheid, Ruppichteroth, and Paul-Heinz Wagner, c/o Maschinenfabrik Wagner GmbH & Co. KG, D-5203 Much-Birrenbachshöhe Nr., Fed. Rep. of Germany, assignors to Paul-Heinz Wagner, Much-Birrenbachshöhe, Fed. Rep. of Germany

Filed Feb. 25, 1981, Ser. No. 238,079

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1980, 3008332; Mar. 5, 1980, 3008381

Int. Cl.³ B25B *13/46*

U.S. Cl. 81—57.39 **16 Claims**



1. A power wrench comprising:
a wrench head in which a ring containing a non-circular internal profile is supported;
a ratchet device moving said ring only in one direction of rotation of said wrench head;
a solid extension of said wrench head;
a support element pivoted at said wrench head;
a piston-cylinder unit including a piston rod and a cylinder, said cylinder being integral with said solid extension of said wrench head,
the first end of said piston-cylinder unit in contact with said solid extension of said wrench head and the second end of said unit in contact with said support element;
wherein the distance between the center of said wrench head and said first end is substantially equal to the distance between the center of said wrench head and said second end;
whereby said piston moves directly out of said solid extension of said wrench head to press against said support element and impart a turning motion to said wrench head, and
wherein the cylinder of said piston-cylinder unit is rigidly connected to said wrench head extension and the rod of said piston-cylinder unit flexibly engages said support element and also flexibly engages the rear side of the piston of said piston-cylinder unit.

4,440,047
UNI-DIRECTIONAL DRIVE WRENCH

Christopher B. Robbins, 2719 N. Pollard, Arlington, Va. 22207

Filed Dec. 31, 1981, Ser. No. 336,335

Int. Cl.³ B25B *13/12*

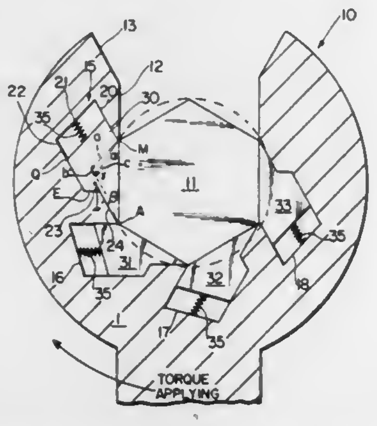
U.S. Cl. 81—179 **10 Claims**

1. A wrench for turning a nut of the type having an even number of flat sides, comprising:
at least two drive means positioned to apply turning torque simultaneously to opposing sides of a nut upon rotation of the wrench in a drive direction, and to slip about the nut upon turning of the wrench in the opposite direction while

the center of the nut and the center of the wrench remains substantially coincident,

each drive means including a guideway open toward the wrench interior and having essentially parallel first and second sides, as viewed in the axial direction, a drive insert in each guideway slidable into and out of the guideway and urged outwardly by a spring means, said drive insert having first and second parallel sides parallel to the slidable along said first and second parallel sides of the guideway, said drive insert also having an end face which engages a flat side of the nut,

the width of each insert, between said first and second sides, being large enough for the said end face of the drive insert to engage the corresponding flat side of a nut across its full face, taken in the circumferential direction,



means for limiting outward movement of the drive insert, and

an acute angle between a line extending through the guideway parallel to its sides and the plane of said end face being greater than an acute angle between said end face and a tangent to a circle through the corners of the nut, so that upon reverse turning of the wrench, relative to the nut, each drive inert can move into its respective guideway, to allow the nut to slip past that drive insert, and said acute angle being sufficiently small that upon turning the wrench in the driving direction, the drive insert will exert a driving force on the nut, and not be forced into the guideway.

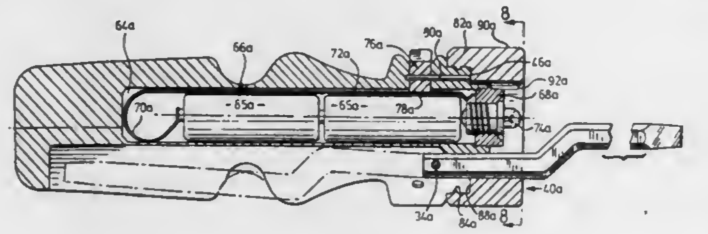
4,440,048
FASTENER DRIVING DEVICE WITH MULTIPLE BITS

Larry G. H. Stevens, Georgetown; Edmund G. F. Sweet, Oakville, and Franklin V. Vresk, Kitchener, all of Canada, assignors to MIC Manufacturing and Machine Works Ltd., Waterloo, Canada

Continuation-in-part of Ser. No. 165,707, Jul. 3, 1980, Pat. No. 4,327,790. This application Jul. 9, 1981, Ser. No. 281,785

Int. Cl.^{3} B25G *1/00*

U.S. Cl. 81—440 **28 Claims**



1. A driving device for driving rotatable fasteners, said driving device comprising a handle, a plurality of driving bits spaced about said handle, pivot means pivotally connecting each of said bits to said handle adjacent to one end thereof for movement of each of said bits from a stored position in which said bit lies alongside said handle to an operative position in which said bit extends beyond said one end of said handle and lock means rotatably supported on said handle and operable between said bit and said handle to lock said bit in said operative position, said lock means including a passageway selectively alignable with each of said bits by rotation of said lock means relative to said handle, said bit passing through said passageway in moving from said stored to said operative position said lock means having an abutment surface adjacent said passageway, rotation of said lock means relative to said handle moving said abutment surface into alignment with said bit to prevent pivotal movement thereof about said pivot means, said pivot means being located on said handle relative to said lock means for movement of said bits from said stored position toward said operative position regardless of the position of said lock means.

4,440,049
FAIL-SAFE ELECTRICAL CONNECTION TERMINAL AND TIGHTENING TOOL

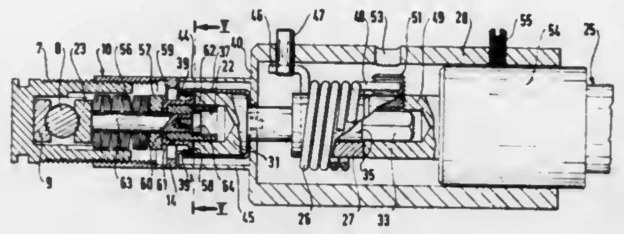
Andre Borne, Villeurbanne; Joseph Vallod, Caluire et Cuire, and Rene Curvat, Rillieux la Pape, all of France, assignors to CGEE Alsthom, Levallois-Perret, France

Division of Ser. No. 307,552, Oct. 1, 1981, Pat. No. 4,413,876. This application Jun. 20, 1983, Ser. No. 506,089

Claims priority, application France, Oct. 2, 1980, 80 21114

Int. Cl.^{3} B25B *23/14*

U.S. Cl. 81—467 **2 Claims**



1. A tool for tightening a fail-safe electrical connection terminal, said terminal comprising a slotted bolt for receiving an electrical conductor, a tapped cylindrical cap screwed onto the bolt to clamp the conductor therein, said cap being closed at one end by a plate having a central hole, a shoe for applying the clamping force to the conductor, a rod having one end integral with the shoe and being slidably mounted in said hole in the plate, and a compression spring interposed between the shoe and the palte of the cap, said shoe and spring being housed inside the cap, said tool comprising:

a torque limiter,

a hollow casing and a drive member passing through the casing and made fast to the torque limiter,

the drive member comprising a sleeve having a polygonal socket of the same shape as the polygonal end of the central boss of the cap, the casing being made fast to a fixed portion of the torque limiter, and having an end equipped with two lugs surrounding the sleeve, and

the drive member further comprising a lock having two locking blades each of which ends in a hook,

said lugs on the casing fitting in between the lugs on the cap and the hooks of the lock engaging the hooks of the cap.

4,440,050
DRIVE MECHANISM FOR A FEED SCREW

Franz Kagerer, Munich, Fed. Rep. of Germany, assignor to Friedrich Deckel Aktiengesellschaft, Munich, Fed. Rep. of Germany

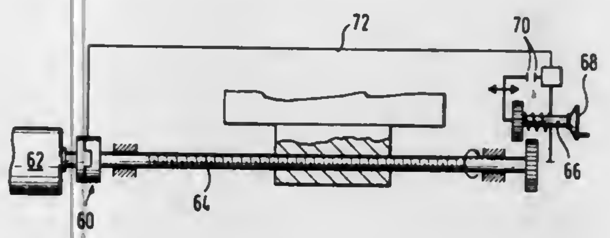
Filed May 6, 1981, Ser. No. 260,858

Claims priority, application Fed. Rep. of Germany, May 14, 1980, 3018520

Int. Cl.^{3} B23B *21/00*

U.S. Cl. 82—21 B **3 Claims**

1. A drive mechanism, comprising a drive motor; an elongate threaded spindle supported for rotation about a first axis and having a first gear provided at a first location thereon coaxial with said first axis; electromagnetic coupling means cooperable with said motor and said spindle for selectively drivingly coupling said motor to said spindle; a carriage supported for movement axially of said spindle and having means thereon defining a nut which threadedly engages said spindle, rotation of said spindle effecting axial movement of said carriage; a handwheel and a second gear supported for rotation about a second axis substantially parallel to said first axis and supported for axial movement between first and second positions, said second gear being fixed against rotational and axial movement relative to said handwheel and being respectively drivingly engaged with and free of engagement with said first gear in said first and second positions; and including control means responsive to axial movement of said handwheel and cooperable with said electromagnetic coupling means for causing said electromagnetic coupling means to drivingly couple and uncouple said motor and said spindle when said handwheel and said second gear are in said second and first positions, respectively.



4,440,051
APPARATUS FOR CUTTING AND TRANSPORTING SHEETS OF PAPER OR THE LIKE

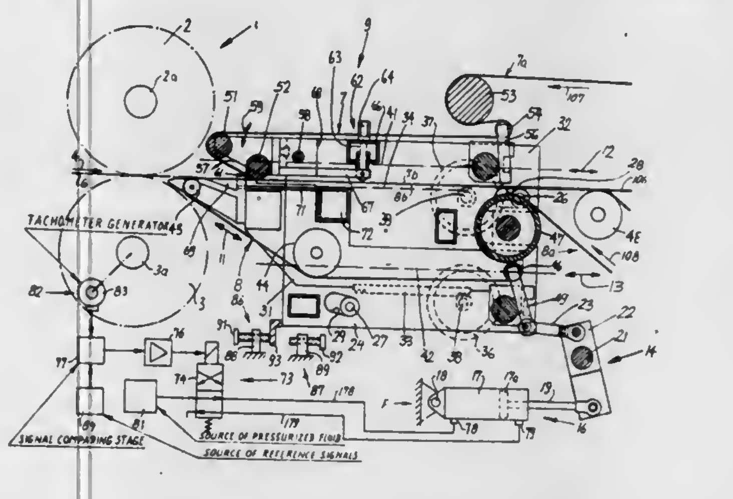
Kurt Aykut, Hamburg, Fed. Rep. of Germany, assignor to E.C.H. Will (GmbH & Co.), Hamburg, Fed. Rep. of Germany

Filed Jun. 23, 1982, Ser. No. 391,469

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1981, 3130025

Int. Cl.^{3} B26D *1/62;* **B65H** *35/08*

U.S. Cl. 83—72 **19 Claims**



1. Apparatus for manipulating webs consisting of paper or other flexible material, comprising severing means for subdividing a running web of paper or the like into a series of discrete sheets each of which has a leader normally advancing along a first path, said severing means including at least one mobile component and means for moving said component at a plurality of speeds; a sheet intercepting device adjacent to said first path and including a pair of sections defining a second path wherein successive sheets of said series are transported in a predetermined direction; shifting means actuatable to adjust said intercepting device with reference to said severing means so as to change the position of said second path relative to said first path; and means for actuating said shifting means in response to changes in the speed of said component.

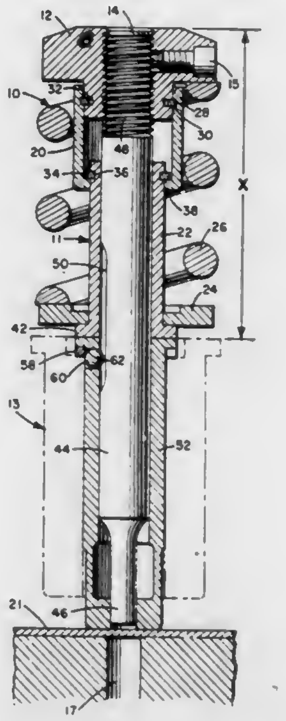
4,440,052
PUNCH ASSEMBLY WITH UNITARY STRIPPER SPRING ASSEMBLY

Ralph L. Weisbeck, Williamsville, N.Y., assignor to Unipunch Products, Inc., Buffalo, N.Y.

Filed Sep. 12, 1980, Ser. No. 186,430

Int. Cl.^{3} B21D *45/04;* **B26F** *1/14*

U.S. Cl. 83—140 **21 Claims**



1. A punch assembly for punching a workpiece comprising:

a punch having a punching end, a fastening end, and a detent intermediate said punching and fastening ends;

a unitary stripper spring assembly fastenable to said fastening end of said punch to remove said punch from said workpiece, said unitary stripper spring assembly including a stripper spring, a head adjustably fastenable to said fastening end of said punch, a washer, said stripper spring being mounted between said head and said washer, and a telescopic retainer having an upper retainer and a lower retainer in reciprocal slidable relationship to one another, said telescopic retainer interlinking said head and said washer and responsive to a force exerted on said head for allowing said unitary stripper spring assembly to contract, and fastening means for adjustably fastening said unitary stripper assembly on said fastening end of said punch, said stripper spring and said fastening means being coupled together so that said stripper spring and said fastening means are separable from said punch as a unit; and

punch guide means encircling said punching end of said punch for guiding said punch toward said workpiece, said punch guide means including retaining means coactive with said detent on said punch for retaining said punch guide means on said punch.

4,440,053
WIRE-LAYING HEAD

Yoshitsugu Suzuki, Mishima; Syogo Iizuka, Gotenba; Shigeo Kajiyama, Shizuoka; Kenji Usui, Gotenba, and Masahiro Kobayashi, Susono, all of Japan, assignors to Yazaki Corp., Tokyo, Japan

Division of Ser. No. 223,233, Jan. 8, 1981, Pat. No. 4,363,165, which is a division of Ser. No. 80,682, Oct. 1, 1979. This application Jun. 18, 1982, Ser. No. 389,915

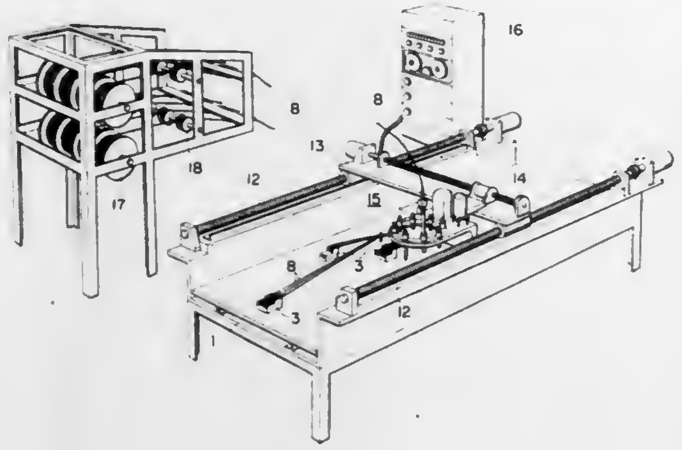
Claims priority, application Japan, Sep. 29, 1978, 53-120280; Nov. 20, 1978, 53-142212; Nov. 20, 1978, 53-142213

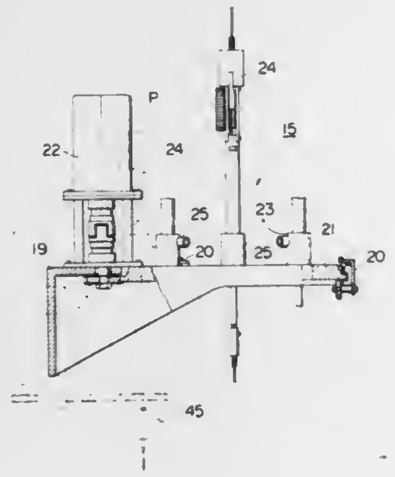
Int. Cl.^{3} B26D *5/20*

U.S. Cl. 83—282 **3 Claims**

1. A wire-laying head adapted to travel over a worktable for use in the manufacture of a wire harness comprising: a frame; wiring jig mount rotatably mounted on said frame; a plurality

of equally spaced wiring jigs located on top of said of jig mount; a clamping jig movably mounted on the bottom side of said frame for contacting a wire; guide pipes disposed on said wiring jig mount for guiding wires inserted through said wiring jig; and means selectively connectable to said wiring jigs for lowering and raising said wiring jigs at a predetermined position.





4,440,054
TRAVELING SAW WITH A SOUND PROTECTION HOOD

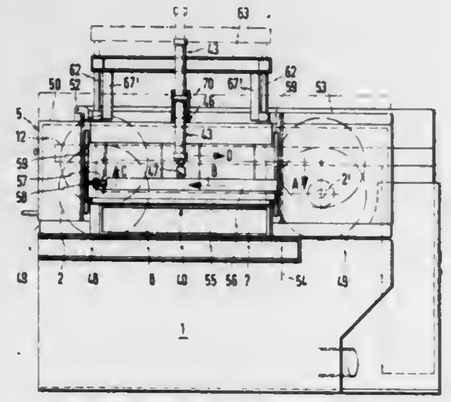
Friedrich W. Elhaus, Dorfstrasse 21, 7761 Moos, Fed. Rep. of Germany

Filed Sep. 28, 1981, Ser. No. 306,225

Claims priority, application Fed. Rep. of Germany, May 5, 1981, 3117684

Int. Cl.³ B23Q *11/08*; B23D *47/10*

U.S. Cl. 83—390 **11 Claims**



1. An improved circular saw for sawing sectional material, particularly of light metal, of the type wherein the saw blade is adapted to be moved horizontally above a table upon a carriage and to be lifted during each sawing cycle into a position above the material to be sawed for return of the saw blade, the carriage being displaceable along a horizontal guide means upon a cantilever beam which is guided for lifting movement upon a vertical column, the improvement comprising:

a sound protection hood mounted on the cantilever beam, and substantially covering the saw blade during the horizontal and vertical movements of the saw blade, said hood having at least one cut-out for the material to be sawed and being lowered against the table for sound dampening in the sawing position; and

upwardly displaceable hold down devices arranged upon the sound protection hood, said hold down devices being designed so as to be sound absorbing and resiliently engageable with the material to be sawed.

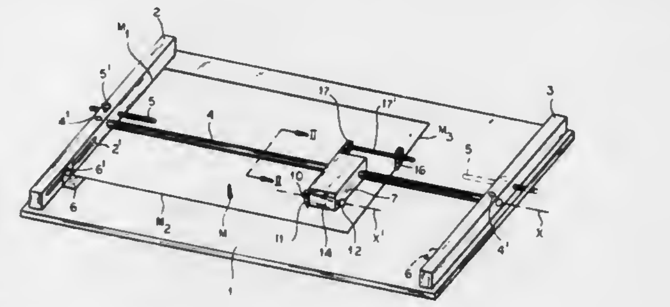
4,440,055
MAT CUTTING DEVICE

Daniel Gelfand, 200 Winston Dr., Cliffside Park, N.J. 07010

Filed Dec. 31, 1981, Ser. No. 336,086

Int. Cl.³ B26D *5/08*

U.S. Cl. 83—525 **10 Claims**



1. A mat cutting device comprising:

a planar base for supporting a mat to be cut;

a first support at one side of said base;

a second support at an opposite side of said base;

a guide rod mounted between said first and second supports, said guide rod having a longitudinal axis parallel to said base;

an elongated cutting head having a blade at one end thereof and mounted at the other end opposite said blade on said guide rod, said cutting head being provided with means for the longitudinal along displacement and the pivotal displacement of said head about said axis;

a movable stop mounted on said first support, said stop being axially adjustable and engageable with said cutting head for stopping same at a predetermined distance from said first support, said stop having means for keeping said cutting head with said blade thereof tilted upwardly for allowing the insertion and removal of said mat therebeneath;

means on said cutting head for adjusting a cutting angle of said blade with respect to said base; and

means on said cutting head for adjusting a depth of cut of said blade in said mat.

4,440,056
ENVELOPE WAVE SHAPE SIGNAL GENERATOR FOR AN ELECTRONIC MUSICAL INSTRUMENT

Koichi Kozuki; Akira Nakada, and Shigeru Yamada, all of Shizuoka, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Continuation of Ser. No. 158,917, Jun. 12, 1980. This application Mar. 17, 1982, Ser. No. 359,117

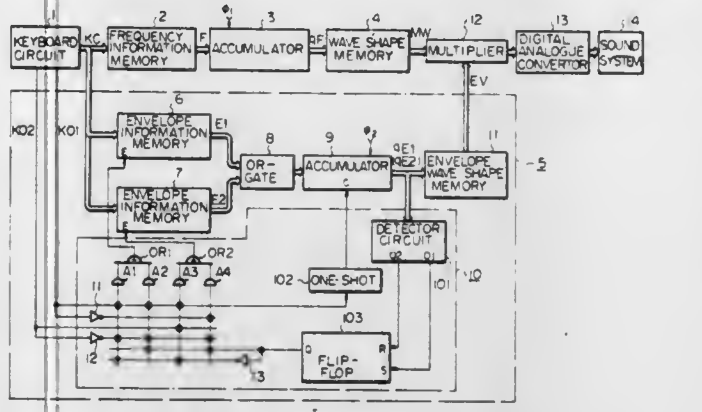
Claims priority, application Japan, Jun. 15, 1979, 54-76172

Int. Cl.³ G10H *1/02*

U.S. Cl. 84—1.26 **11 Claims**

1. An envelope waveshape generator for an electronic musical instrument having a keyboard including a plurality of keys comprising:

control means for generating a control signal responsive to the speed of depression or release of a key operation; and envelope waveshape address generating means connected to said control means for receipt of said control signal for generating an envelope waveshape address having at least two linear portions of different slopes in which an amplitude value of said envelope waveshape address progresses timewise from a first value to a second value without reverse progression, and for changing the slope of one of said portions relative to the other of said portions at least once in response to said control signal, said amplitude value of said envelope waveshape address at a point where said slope changes being different from said second value.



4,440,057
ELECTRONIC MUSICAL INSTRUMENT WITH IMPROVED INPUT DEVICE

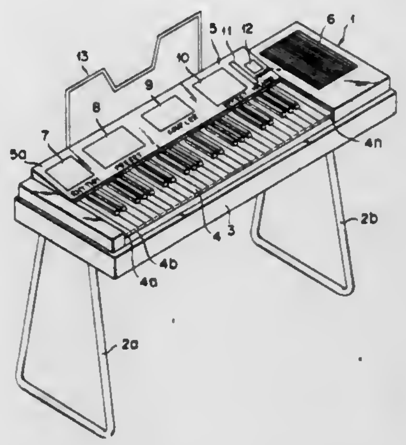
Masanori Ishibashi, Ome, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 210,410, Nov. 25, 1980, abandoned. This application Aug. 18, 1982, Ser. No. 409,282

Claims priority, application Japan, Nov. 30, 1979, 54-155288

Int. Cl.³ G10H *1/00*

U.S. Cl. 84—1.01 **8 Claims**



1. An electronic musical instrument comprising;

a plurality of performance keys selectively operable to cause the production of sounds corresponding to respective notes,

detecting means coupled to said performance keys for detecting the operation of said performance keys,

musical tone generating means coupled to said detecting means for generating musical tones designated by operated performance keys, and

an input device coupled to said musical tone generating means for inputting tone information such as volume and timbre of tones selectively generated by said musical tone generating means upon operation of said performance keys, and

wherein said input device further comprises:

a plurality of display devices, each having a plurality of display elements for displaying tone status of the musical tones generated by said musical tone generating means,

a plurality of transparent touch switches located over said display devices for selectively inputting tone information,

drive means coupled to said display devices and to said touch switches, and being responsive to operation of respective touch switches to cause said display elements respectively corresponding to the operated touch switches to visually display tone information input by the operated touch switches, and

means coupled to said touch switches and to said musical tone generating means for transferring said tone information inputted by said touch switches to said musical tone generating means, whereby said musical tone generating means generates musical tones according to the tone information inputted by said touch switches.

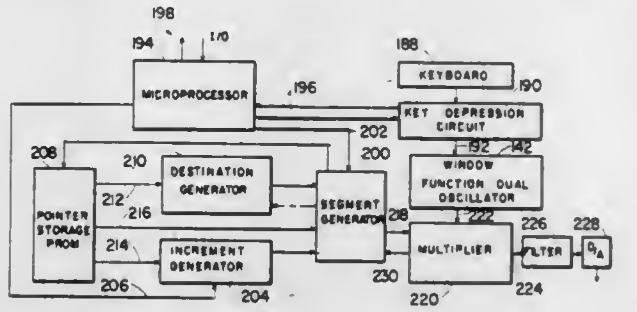
4,440,058
DIGITAL TONE GENERATION SYSTEM WITH SLOT WEIGHTING OF FIXED WIDTH WINDOW FUNCTIONS

Steven C. Bass, Stockwell, and Thomas W. Goeddel, West Lafayette, both of Ind., assignors to Kimball International, Inc., Jasper, Ind.

Continuation of Ser. No. 369,976, Apr. 19, 1982, abandoned. This application Jun. 2, 1983, Ser. No. 500,552

Int. Cl.³ G10H *1/02*

U.S. Cl. 84—1.26 **46 Claims**



1. An electronic musical instrument comprising:

player operated tone selection means including a keyboard with playing keys for selecting a tone to be played by the instrument,

a tone generator responsive to said tone selection means comprising a first memory in which one cycle of a waveform is stored and means repetitively for reading the stored waveform out of the memory at fixed rate regardless of which key of the keyboard is actuated but selectively adjusting the period of time between successive readings depending upon the frequency of the tone selected to thereby produce a cyclically recurring series, each series comprising a limited number of said waveforms,

means for generating a time varying amplitude envelope for the waveforms having generally an attack portion, a sustain portion, and a decay portion in response to the actuation and subsequent release of a key of the keyboard,

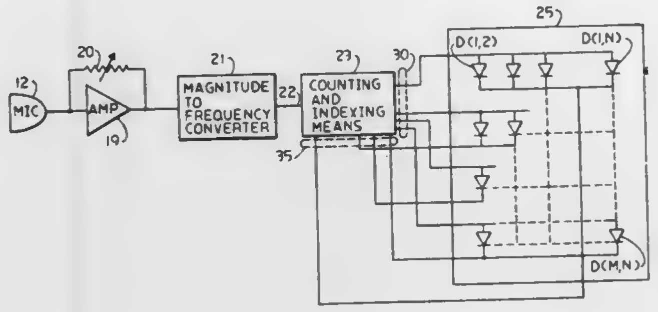
harmonic content control means for reading a second memory and adjusting the amplitude levels of the waveforms in the series independently of each other and varying with time the amplitudes of at least some of the waveforms in the series relative to others of the waveforms therein for different portions of the amplitude envelope based on data read out of the second memory to thereby produce a wavetrain of time varying harmonic content.

4,440,059

SOUND RESPONSIVE LIGHTING DEVICE WITH VCO DRIVEN INDEXING

Gray H. Hunter, Atlanta, Ga., assignor to Daniel Lee Egolf, San Francisco, Calif., a part interest

Filed Dec. 18, 1981, Ser. No. 332,223
Int. Cl.^{3} A63J *17/00*
U.S. Cl. 84—464 R **4 Claims**



1. A light organ comprising:

an M×N array, M and N being integers greater than one, of light-emitting devices mounted in an arrangement wherein each light-emitting device occupies a unique position on each of a pair of orthogonal axes characterized by a coordinate pair (k,l), wherein k is equal to integer between 1 and M and 1 is equal to an integer between 1 and N;

each of said light-emitting devices being characterized by a first terminal and a second terminal and further characterized by said light-emitting device being activated to a light-emitting condition in response to a concurrent presence of a first terminal activation signal at said first terminal and a second terminal activation signal at said second terminal;

a sound trandsucer for providing a sound output signal having a value proportional to the intensity of a sound field in which said transducer is located;

connection means for providing M first common connection points of said first terminals, each of said first common connection points connecting all of said first terminals for said light-emitting devices at point (k,l) for which k is identical and for providing N second common connection points of said second terminals, each of said second common connection points connecting all of said second terminals for said light-emitting devices at said point (k,l) for which **1** is identical;

a first indexing means including a first counter means for sequentially providing said first activation signal to each of said M first common connection points, one at a time, in response to a first clock signal;

a second indexing means including a second counter means for sequentially providing said second activation signal to each of said N second common connection points, one at a time, in response to a second clock signal;

a first magnitude to frequency conversion means connected to said sound transducer and said first counter means for providing said first clock signal characterized by a frequency proportional to the magnitude of said sound output signal;

a second magnitude to frequency conversion means connected to said sound transducer and said second counter means for providing said second clock signal characterized by a frequency proportional to the magnitude of said sound output signal;

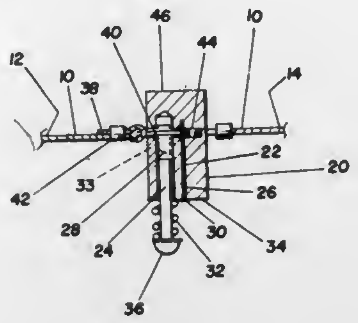
means for independently adjusting the quiescent frequencies of said first and second clock signals in response to a predetermined magnitude of said sound output signal.

4,440,060

ACCELERATION ACTUATED LANYARD DEVICE

George A. Berkley, Brigham City, Utah, assignor to Thiokol Corporation, Chicago, Ill.

Filed Jul. 23, 1982, Ser. No. 401,182
Int. Cl.^{3} F41F *5/02*
U.S. Cl. 89—1.5 D **7 Claims**



1. A safety coupling for coupling first and second members comprising,

a housing having formed therein first and second bores and a slot, said slot being transverse to said bores, said housing having a connection to said first member; an attachment ring having a connection to said second member and normally disposed in said slot in encircling relation to both of said bores;

a first pin in one of said bores normally encircled by and retaining said attachment ring in said slot, said first pin being a shear pin;

acceleration responsive means including a second pin in the second one of said bores and a biasing means for exerting a biasing force on said second pin, said second pin being stronger than said first pin and normally biased by said biasing means to a position partially withdrawn from said second bore, in which position said second pin is ineffective to retain said attachment ring in said slot when force is applied to said first and second members to pull them apart, said first pin shearing upon the application of such force pulling said members apart whereby said safety coupling is unable to retain said members coupled, said second pin being moved against the force of said biasing means further into the second one of said bores to be encircled by and to retain said attachment ring in said slot notwithstanding the application of force to said first and second members to pull them apart when said acceleration responsive means is subjected to accelerations that produce a force of acceleration strong enough to overcome the force of said biasing means.

4,440,061

GUN TRAVERSE APPARATUS

Roland A. Magnuson, Seattle, Wash., assignor to PACCAR Inc., Bellevue, Wash.

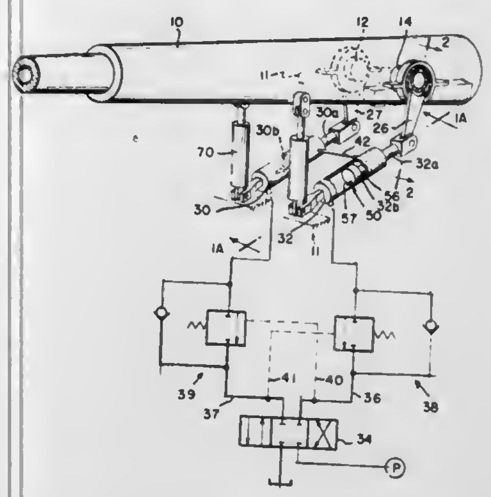
Filed Apr. 20, 1981, Ser. No. 255,359
Int. Cl.^{3} F41G *5/04*
U.S. Cl. 89—41 H **8 Claims**

5. Gun traverse apparatus for a weapon of the type having a carrier and a gun mounted for elevation and traverse on said carrier, comprising:

said gun having opposed trunnions supported on said carrier for elevation positioning about a horizontal gun pivot axis,

said trunnions being mounted in laterally spaced eccentrics which rotate about horizontal eccentric pivot axes offset from said gun pivot axis, and

gun traverse control means for simultaneously rotating said eccentrics in equal and opposite directions for pivoting said gun in traverse relative to said carrier about a vertical pivot axis, said carrier being a mobile carrier and including means for controlling the direction of movement of said carrier, including secondary control means responsive to traverse movement of the gun relative to the carrier for operating the carrier directional control means when a predetermined limit of traverse is reached by said gun.

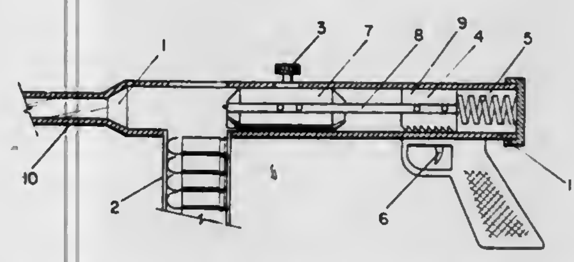


4,440,062

REVERSIBLE BOLT FOR FIREARMS

Sidney J. McQueen, 414 Coors, S.W., Albuquerque, N. Mex. 87105

Filed Aug. 7, 1981, Ser. No. 290,857
Int. Cl.^{3} F41C *5/06, 11/00*
U.S. Cl. 89—128 **3 Claims**



1. A bolt for use in firearms of the automatic or semiautomatic type, the bolt comprising a front bolt, a rear bolt and two side rails, wherein the front bolt is removeably but rigidly connected to the rear bolt by means of assembly pins and the side rails; and wherein the front bolt is cantilevered from the rear bolt by the side rails; and wherein the front bolt has a cylindrical center section, a first caliber section and a second caliber section; and wherein an ejector groove runs the length of the front bolt; and wherein a cocking lever is installed in the center section; and wherein the first caliber section has a firing face with a fixed firing pin, and the first caliber section has an extractor mechanism; and wherein the second caliber section has a firing face, and wherein the second caliber section has a fixed firing pin and an extractor mechanism; and wherein the front bolt may be dissassembled from the side rails, and the front bolt reversed end for end, and reassembled to the side rails.

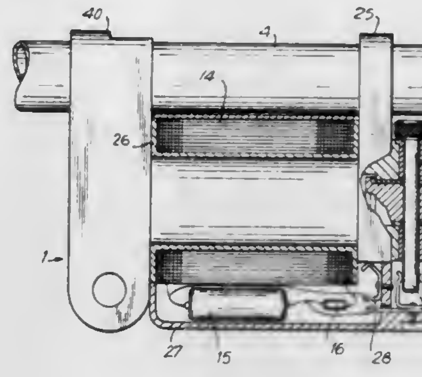
4,440,063

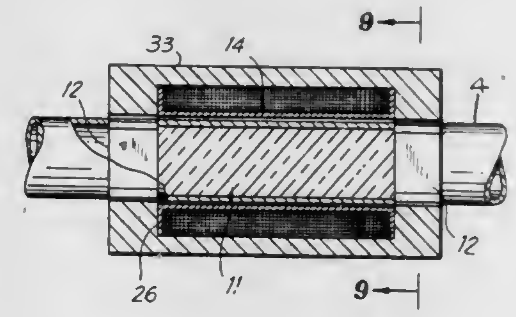
GUN OPERATED ELECTRICAL FIRING DEVICE

Roy A. Zangrando, Boonton, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 13, 1982, Ser. No. 339,244
Int. Cl.^{3} F41D *11/04*
U.S. Cl. 89—135 **6 Claims**

1. A gun operated firing device which generates power to fire electrically primed ammunition in a gas-operated gun having a sliding bolt carrier comprised of a bolt, a firing pin and a retaining pin to fix the firing pin to the bolt carrier, wherein said bolt carrier slides on a receiver tube; comprising an electric circuit, which includes a magnet fixed in said receiver tube wherein said receiver tube is non-magnetic, and a magnetically permeable yoke affixed to said bolt carrier in freely sliding relationship with said non-magnetic receiver tube; a coil of insulated electric wire mounted in said yoke exterior to said receiver tube, a capacitor across the output of said coil; a diode between the capacitor and the coil; and a primer, wherein said firing pin connects said circuit to said primer and is electrically insulated from said bolt carrier, and wherein said yoke is initially displaced from said magnet and is moved into alignment with said magnet upon forward movement of said bolt carrier, thereby inducing a voltage pulse in said coil by a flux change, said voltage pulse charging the capacitor with a charge sufficient to initiate said primer when said firing pin contacts said primer.



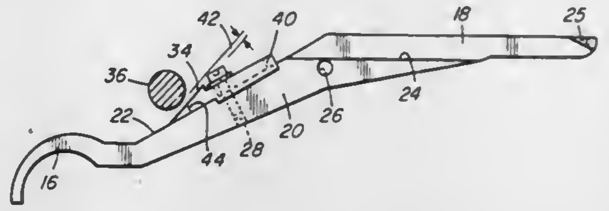


4,440,064

TIMING METHOD FOR MACHINE GUN

Miroslva J. Stehlik, Kitchener, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Feb. 16, 1982, Ser. No. 348,664
Claims priority, application Canada, Mar. 23, 1981, 373590
Int. Cl.^{3} F41D *11/02*
U.S. Cl. 89—136 **5 Claims**



1. A timing attachment for use in conjunction with a trigger and firing mechanism of an automatic firearm having a stationary cross piece against which said trigger abuts, said attachment, when mounted, being positioned, to enable adjustment of timing action of said mechanism and comprising a saddle section shaped to embrace a portion of the trigger adjacent said cross piece, the saddle section including slot and fastner means for adjustably securing the timing attachment to said trigger; and a ramp section connected to the saddle section, the ramp section being positioned to abut said cross piece such that adjustably positioning the saddle section on the trigger

changes abutment of the ramp against the cross piece so as to cause adjustment of said timing action.

4,440,065

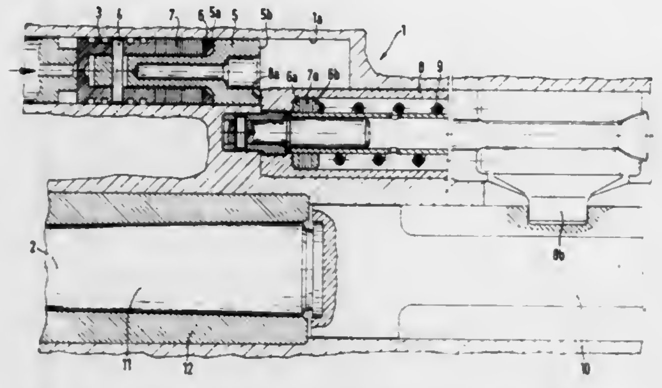
BREECH MECHANISM FOR AUTOMATIC FIREARMS

Gerhard Hupp, Oberndorf, Fed. Rep. of Germany, assignor to Mauser-Werke Oberndorf GmbH, Oberndorf, Fed. Rep. of Germany

Filed Dec. 15, 1981, Ser. No. 330,829

Int. Cl.³ F41D *5/04*

U.S. Cl. 89—191 R **4 Claims**



1. In a breech mechanism for automatic firearms having a high cadence, particularly a rigidly closing breech mechanism, including a gas piston effecting the opening of said mechanism; a sleeve in communication with said gas piston; a coil spring concentrically arranged in said sleeve and being stressed upon opening of said breech mechanism, and a latching and unlatching component being conducted into closing position upon release of the energy stored in said spring; the improvement comprising shock absorber means being associated with, respectively, said gas piston and with said closure coil spring, each of said shock absorber means essentially comprising a plurality of loose, stacked discs or plates of high ductility and toughness, the surfaces of said discs or plates having unevenesses formed therein which are permitted to remain unsmoothed and unfinished during the formation thereof.

4,440,066

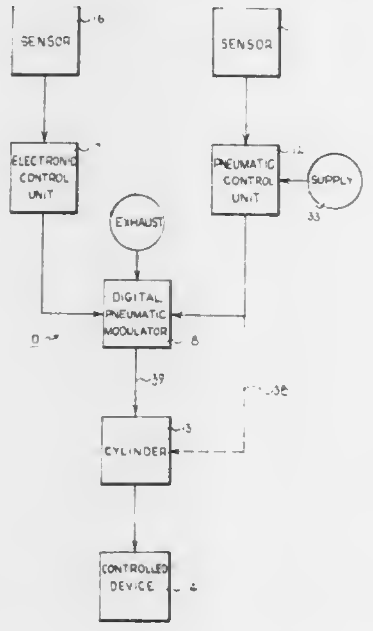
DIGITAL PNEUMATIC MODULATOR

Terry M. Anderson, Minnetonka, Minn., assignor to The Anderson Cornelius Company, Eden Prairie, Minn.

Filed Apr. 13, 1981, Ser. No. 253,540

Int. Cl.³ F15B *13/044;* G05D *23/00*

U.S. Cl. 91—459 **3 Claims**



1. In a facility management system having first sensor means for sensing a preselected facility parameter and for providing a signal in response to such sensing, pneumatic control means operably connected to said sensor means for providing a pneumatic control signal in response to the signal provided by said sensor means, controlled device means for selectively affecting the prselected facility parameter, and pneumatic cylinder means operably connected to said controlled device means whereby the selective introduction and exhaust of pressurized air to and from said pneumatic cylinder means will control the extent to which said controlled device means will affect the preselected facility parameter; an improvement comprising a parallel control system that utilizes said first sensor means and said pneumatic control means as a backup system, the improvement including:

a. second sensor means for sensing the same preselected facility parameter as said first sensor means and for providing a signal in response to such sensing;

b. electronic control means operably connected to said second sensor means for electronically comparing the signal provided by said second sensor means with a predetermined signal that relates to a desired status for the sensed parameter and for providing an electronic control signal in response thereto;

c. a digital pneumatic modulator including:

   i. first and second solenoid valves, each such valve having a pneumatic pathway formed completely therethrough that may be selectively blocked and unblocked by appropriate energization and de-energization of said solenoid valves, and means pneumatically connecting the first solenoid valve to the pneumatic control means to receive pressurized air therefrom;

   ii. a pneumatic T intersection unit having a first and second pneumatic pathway formed therethrough, one end of said first pneumatic pathway being pneumatically connected to the pneumatic pathway of said first solenoid valve and the other end of said first pneumatic pathway being pneumatically connected to the pneumatic pathway of said second solenoid valve, the latter valve including an exhaust port, and the second pneumatic pathway being formed to have one end pneumatically intersect said first pneumatic pathway, and to have the other end serve as an output port;

   iii. a flow control unit having a pneumatic pathway formed therethrough with a selectively variable obstacle disposable therein, one end of said pneumatic pathway being pneumatically connected to the output port of said second pneumatic pathway of said pneumatic T intersection unit and the other end of said pneumatic pathway being operably connectable to said pneumatic cylinder means;

   wherein said first and second solenoid valves are operably connected to said electronic control means such that said solenoid valves may be selectively energized and de-energized thereby, said pneumatic cylinder means is pneumatically connected to the pneumatic pathway of said flow control unit, and a supply of pressurized air is pneumatically connected to the pneumatic pathway of said first solenoid valve; whereby said electronic control means will control said controlled device via said pneumatic cylinder means by transmitting electronic control signals to said digital pneumatic modulator which signals control the solenoid valves of said modulator to thereby selectively introduce and exhaust pressurized air to and from said pneumatic cylinder means.

4,440,067

HYDROSTATIC ACTUATOR

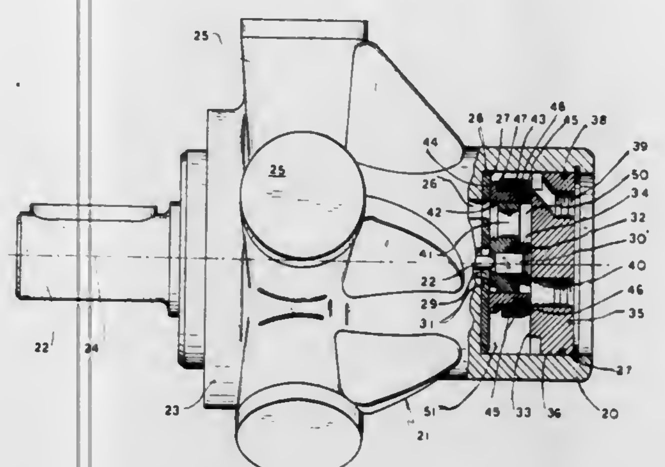
Jürgen Klie, Sprockhövel, and Hans-Wolfgang Stoll, Wetter, both of Fed. Rep. of Germany, assignors to G. Düsterloh GmbH, Sprockhoevel, Fed. Rep. of Germany

Filed Dec. 18, 1979, Ser. No. 104,906

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1978, 2855566

Int. Cl.³ F01B *1/06*

U.S. Cl. 91—491 **14 Claims**



1. A hydrostatic actuator for use with a hydraulic motor or pump having a high pressure port and a low pressure port, said actuator comprising two component parts separating a high pressure side connected to said high pressure port from a low pressure side connected to said low pressure port, said parts being movable relative to each other and defining a variable gap therebetween, hydrostatic means for adjusting the width of said gap between an open position and a sealing position in which said high pressure side is sealed off from said low pressure side, said adjusting means including a pressure space communicating with said high pressure side via a flow restrictor and with said low pressure side via a pressure limiting valve, and a piston-like member constituted by at least one of said component parts and cooperating with said pressure space to move said one component part relative to the other component part in response to the pressure in said pressure space, said hydrostatic actuator further including a stationary cylinder block with an end face in the form of a control plate provided with openings communicating via passages to respective cylinders of the block, a rotary shaft arranged in the block and passing through the control plate, an eccentric secured to the end portion of the shaft behind the control plate, said adjusting means including a housing surrounding said control plate and defining a counteracting face juxtaposed to said control plate, said two component parts being in the form of two control rings mounted on said eccentric for joint rotation therewith, said rings being telescopically arranged relative to each other and defining said pressure space therebetween, one of said rings slidably engaging on said control plate and the other control ring slidably engaging the juxtaposed face of said housing, the contact surfaces of said rings with the control plate and said housing face defining variable gaps, said high pressure side being formed in the annular space between said housing and the outer walls of said rings and said low pressure side being formed in the interior of said two control rings, said two control rings being spring biased into a gap sealing position, said one control ring being formed with a change-over valve and with a restrictor connecting said change-over valve to said pressure space and with a pair of interconnected check valves, and said pressure limiting valve being coupled between the common point of said check valves and said pressure space.

4,440,068

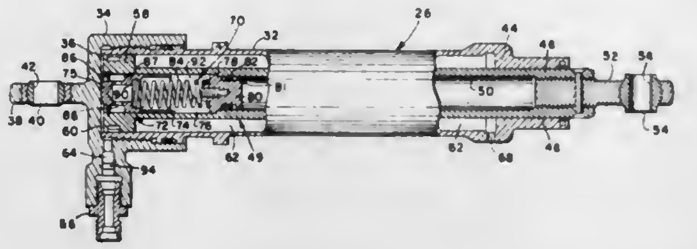
HYDRAULIC COWL DOOR ACTUATOR WITH ANTI-VIBRATION LOADING DEVICE, AND ASSEMBLY EMPLOYING SAME

James N. Tootle, Kalamazoo, Mich., assignor to Pneumo Corporation, Boston, Mass.

Filed Mar. 19, 1981, Ser. No. 245,446

Int. Cl.³ F01B *11/02*

U.S. Cl. 92—85 A **8 Claims**



1. A single acting actuator for use in an aircraft jet engine cowl door assembly including a cowl door mounted on an engine housing for movement between opened and closed positions, said actuator comprising a cylinder containing a piston-rod assembly, respective bearing means for connecting said cylinder to one of said door and housing and said piston-rod assembly to the other of said door and housing, said piston-rod assembly being extendable under fluid pressure to open said door, spring means carried by said piston-rod assembly, and means for preloading said spring means when the fluid pressure is released from said cylinder and said piston-rod assembly is retracted, said spring means, when preloaded while said piston-rod assembly is in the retracted position as aforesaid and in the absence of fluid pressure in said cylinder, producing an actuator extend force to preload said actuator and bearings, said cylinder having an end wall, and said means for preloading said spring means including pusher means in said piston-rod assembly operative to engage said end wall as said actuator near its retracted position to preload said spring means which produces such actuator extend force, said pusher means comprising a pusher telescoped in an axial bore in said piston-rod assembly and biased towards said end wall by said spring means, said pusher engaging said end wall and being telescoped into said axial bore against said spring means to produce such actuator extend force as said actuator nears its retracted position, said piston-rod assembly including retainer means for retaining said pusher in said bore for limited telescoping movement, said retainer means having a central opening, and said pusher having a reduced diameter axial extension projecting through said opening and an enlarged diameter guide skirt portion slidably engaging the wall of said bore and engageable with said retainer means to prevent said pusher from being urged from said bore by said spring means.

4,440,069

COMPOSITE PISTON AND PROCESS

Matthew W. Holtzberg, Ringwood, N.J.; Steven J. Henke, Woodridge, Ill.; Lawrence D. Spaulding, Naperville, Ill., and James C. Oakley, Montgomery, Ill., assignors to Standard Oil Corporation (Indiana), Chicago, Ill.

Filed Jun. 11, 1982, Ser. No. 387,323

Int. Cl.³ F16J *1/01*

U.S. Cl. 92—224 **40 Claims**

1. A composite piston, comprising:

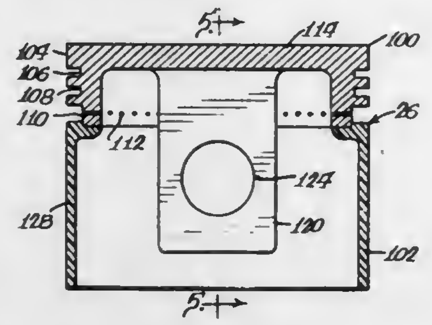
a metal head having an annular wall defining a set of piston ring-receiving grooves, a transverse disc extending laterally between and connecting said annular wall for compressing an air fuel mixture, and a pair of legs extending longitudinally from said disc and spaced radially inwardly from said annular wall and defining a pair of diametrically opposed leg holes; and

a thermoplastic, amide-imide resinous polymeric skirt having an elongated annular wall portion and a pair of bosses extending radially inwardly from said wall portion, said wall portion positioned in general longitudinal alignment with and cooperating with said annular wall of said head to define a composite piston wall for reciprocatingly sliding against a cylinder wall, said wall portion annularly surrounding said legs, said bosses connected to said legs and defining a pair of diametrically opposed skirt holes, and said skirt holes and said leg holes being transversely aligned in registration with each other and being of a sufficient size for pivotally receiving a wrist pin; and

said amide-imide skirt and said metal head maintaining their structural relationship, shape and integrity at engine operating conditions.

27. A process for forming a composite piston, comprising the steps of:

injection molding a thermoplastic, amide-imide resinous polymer to form an amide-imide skirt having a pair of inwardly extending bosses defining a pair of skirt holes;



allowing said amide-imide resinous polymeric skirt to cool below its plastic deformation temperature;

post curing said amide-imide skirt by solid state polymerization to enhance the strength and integrity of said amide-imide skirt;

turning a metal head on a lathe to form an annular wall defining a set of piston ring-receiving grooves and a substantially circular disc extending across said annular wall, cutting a pair of metal legs extending axially from said disc on a milling machine, and drilling a pair of aligned holes in said metal legs;

connecting said amide-imide skirt to said head by press fitting said bosses against said metal legs until said amide-imide skirt abuts against said annular wall said amide-imide skirt abuts against said annular wall of said metal head; and

honing said holes in said amide-imide skirt and said metal legs to a sufficient size to pivotally receive a wrist pin.

4,440,070

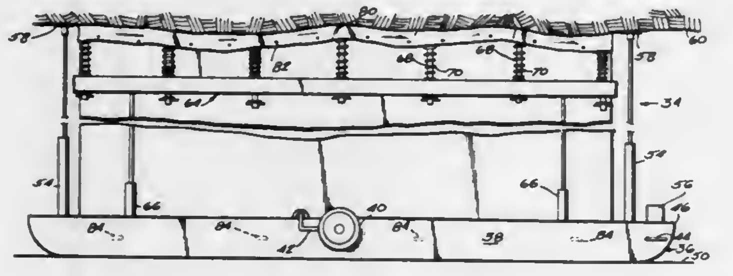
MOBILE ADJUSTABLE CURTAIN APPARATUS FOR USE IN ROOM AND PILLAR COAL MINING VENTILATION SYSTEM

Paul V. Baker, 839 Chestnut St., Indiana, Pa. 15701, and David Vehovic, R.D. 2, Box 144D, Clymer, Pa. 15728

Filed Jan. 5, 1982, Ser. No. 337,268

Int. Cl.³ F24F *7/00*

U.S. Cl. 98—50 **14 Claims**



12. A method for providing a temporary forward extension of a regular brattice in a room and pillar coal mining ventilation system, comprising:

(a) manually rolling forward of the leading edge of the regular brattice, towards the face which is being mined, a handcart having a section of brattice curtain longitudinally, vertically extending height-adjustably mounted thereon, until the cart is partially exposed;

(b) immobilizing the cart;

(c) bracing the cart against tipping over sideways, by erecting jacking posts between the cart and the mine roof; and

(d) raising the section of brattice curtain vertically into engagement with the mine roof, while said section of brattice curtain hangs to adjacency with the floor of the mine.

4,440,071

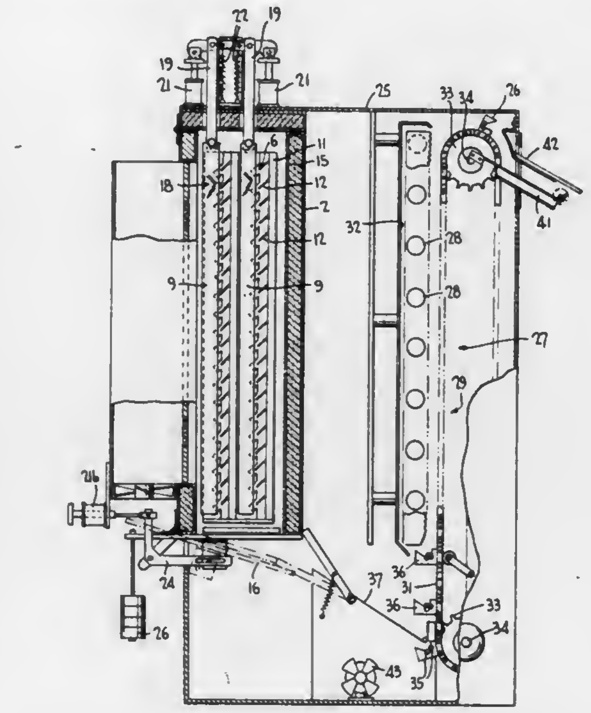
CONVEYOR SYSTEM FOR SKEWERED FOODS

Michael G. Boosalis, deceased, late of Fayetteville, N.C. (by Frieda Boosalis, administratrix); George M. Boosalis, Fayetteville, and Wayne Ferrin, Sanford, both of N.C., assignors to Frieda Boosalis, Fayetteville, N.C.

Filed May 21, 1982, Ser. No. 380,767

Int. Cl.³ A47J *37/04*

U.S. Cl. 99—339 **6 Claims**



1. Apparatus for heating and dispensing food articles supported on elongated skewers, said apparatus comprising:

conveyor means defining an elongated path of travel between skewer receiving and discharging stations, said conveyor means including a pair of endless conveyors spaced transversely from each other relative to the length dimension of said path;

driving means operatively associated with said conveyor means for moving said endless conveyor along said path;

heating means disposed adjacent said path;

a plurality of skewer support means secured on and spaced longitudinally along each endless conveyor, each skewer support means on one of said conveyors being paired and transversely aligned with a skewer support means on the other of said conveyors, each skewer support means comprising a bracket member having a closed end for loosely carrying a skewer portion while travelling along said path and an open end which is sufficiently wider than the thickness dimension of said skewer portion to freely receive said skewer portion when the skewer portion is dropped into said bracket member at said receiving station and to permit the received skewer portion to drop freely of its own weight from the bracket member at said discharging station;

wherein said bracket members are oriented on said conveyors such that said open end is directed generally upward when passing said receiving station and generally downward when passing said discharging station; and

means for continuously rotating said skewers in said bracket members as said skewers travel along said path, said means for continuously rotating comprising an elongated gear track disposed adjacent said path in direct contact with skewers location intermediate said endless conveyors;

wherein said means for continuously rotating further comprises at least two spaced roller bearings in each bracket member for rotatably supporting the skewer portion received in the bracket member, and means continuously urging said bracket members in said path toward said elongated gear track to positively engage supported skewers with said gear track.

4,440,072

APPARATUS FOR MAKING MULTI-LAYER CREAM-FILLED WAFER BLOCKS

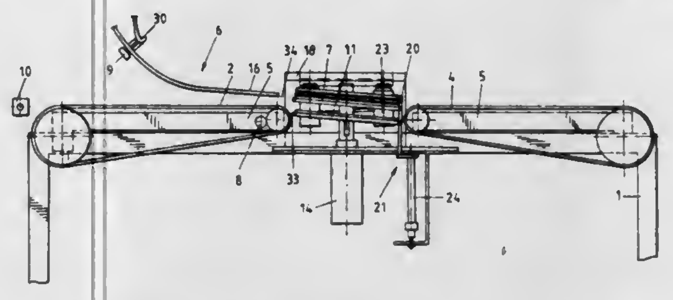
Franz Haas, Sr., Gerstlgasse 25, A-1210 Wien; Franz Haas, Jr., Castellezgasse 32, A-1020 Wien, and Johaan Haas, Wiener Strasse 209-215, A-2104 Spillern/N.Ö., all of Austria

Division of Ser. No. 274,247, Jun. 16, 1981, Pat. No. 4,391,832. This application Feb. 18, 1983, Ser. No. 467,663

Claims priority, application Austria, Jun. 18, 1980, 3219/80

Int. Cl.³ A21D *13/00;* **A23G** *3/00*

U.S. Cl. 99—450.4 **10 Claims**



1. An apparatus for manufacturing wafer blocks having layers of wafer sheets, the wafer sheets having upper and lower sides, the apparatus comprising:

a feeder conveyor for moving cream-coated wafer sheets in a downstream direction in a first plane;

a stacking device disposed adjacent to and generally downstream of said feeder conveyor for receiving cream-coated wafer sheets from said feeder conveyor and for stacking the wafer sheets vertically one under the other to form a wafer block, said stacking device having an upstream and downstream side;

a run-off conveyor disposed downstream of said stacking device for receiving completed wafer blocks discharged from the stacking device and for transporting such wafer blocks away from the stacking device;

said stacking device including means for: vertically lifting a cream-coated wafer sheet received from said feeder conveyor above said feeder conveyor and into a second plane which is above said first plane and for attaching the lifted cream-coated wafer sheet to the lower side of a wafer sheet in said second plane to form a wafer block which is in a raised position with respect to the feeder conveyor, said attaching being effected by the contact of the cream coating of the wafer sheet being raised with the lower side of an immediately adjoining sheet in the second plane;

means for controlling discharge of the completed waffle blocks from the stacking device;

means for separately supplying an uncoated covering wafer sheet for each wafer block by delivering the covering sheet directly into said stacking device in said second plane so that a cream-coated wafer sheet is attached to the lower slide of the covering sheet by raising of the coated sheet into a position in which its cream coating contacts the lower side of the covering sheet, said separate supplying means including a covering sheet conveyor for conveying the uncoated covering wafer sheet in a downstream direction, said covering sheet conveyor having ends, one of which is a terminal end, the terminal end being that end past which the covering sheet moves when the covering sheet has traveled along the length of the covering sheet conveyor, said covering sheet conveyor having a terminal end region adjacent said terminal end, said covering sheet conveyor being disposed above said feeder conveyor with its terminal end region ending in said second plane at said upstream side of said stacking device.

4,440,073

PRESSING PLATE FOR USE IN CHEESE MAKING

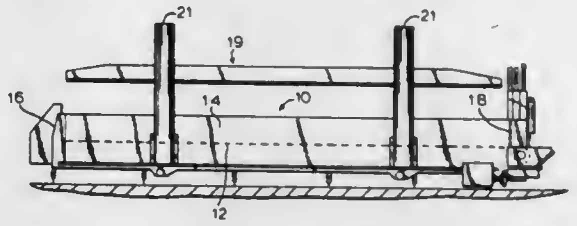
Guy Quilliou, Niort, France, assignor to Pierre Guerin S.A., Mauze-Sur-Le-Mignon, France

Filed Dec. 30, 1981, Ser. No. 335,762

Claims priority, application France, Jan. 15, 1981, 81 00610

Int. Cl.³ A01J *25/10, 25/12, 25/13;* **A23C** *19/00*

U.S. Cl. 99—458 **10 Claims**



1. A pressing plate for use in a cheese-making vat for draining the whey from the curds, the plate being constituted by a case having an inner surface and a series of rigid filter panels disposed to cover substantially the entire inner surface, each filter panel being constituted by a filtering surface extending substantially parallel to the inner case surface in an operating position and a plurality of ribs extending between the filtering surface and supporting the inner surface of the case, the filtering surface and the inner case surface defining therebetween a space enabling the whey to flow therethrough towards an end of the pressing plate upon application of the filtering surface of the pressing plate to the curds, and the ribs defining ports enabling the whey to flow through the space; and means for selectively maintaining the panels in the operating position and for permitting movement of the panels into an open position remote from the inner case surface.

4,440,074

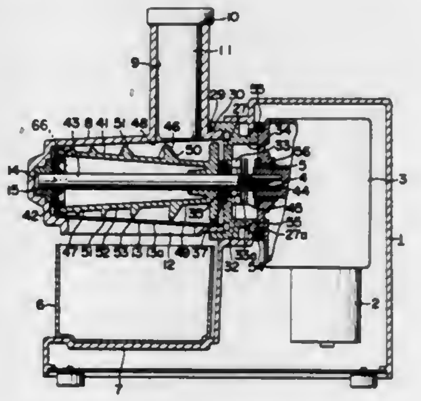
JUICE EXTRACTOR

Keisuke Ihara, Kasukabe; Shozi Hoshino, Sagamihara, and Susumu Tanioka, Yokohama, all of Japan, assignors to Tokyo Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 25, 1982, Ser. No. 342,208

Int. Cl.³ A23N *1/02*

U.S. Cl. 99—510 **5 Claims**



1. A juice extractor comprising an elongated substantially cylindrical extractor body which is adapted to have its axis horizontal and which has a closed front end, an open rear end, an inlet port in its top near its rear end, and a juice outlet in its bottom, a cover for closing the rear end of the extractor body

having a screw-threaded connection with the extractor body and in which there is a coaxial bore, and a substantially cylindrical rotor body coaxially rotatable in the extractor body and cooperating with the latter to define an annular chamber with forwardly convergent circumferential surfaces, said rotor body having a spiral fin whereby material fed into said inlet port is driven forwardly in said chamber during rotation of the rotor body in one direction and having a coaxial shaft extending therethrough and anchored thereto, a front end portion of said shaft being receivable in a coaxial front bearing in the front end of the extractor body and a rear end portion of said shaft being axially slidable and rotatable in said bore in the cover to project rearwardly therefrom for readily detachably connection with a drive mechanism, said juice extractor being characterized by:

cooperating abutment means on said cover and on the rotor body, disposed eccentrically to said axis but symmetrically thereto, engageable when the shaft extends through said bore and whereby the rotor body is constrained to rotate with the cover in the opposite direction, so that the cover can be used to loosen material wedged between the extractor body and the rotor body and thus free the latter for easy axial withdrawal from the extractor body.

4,440,075

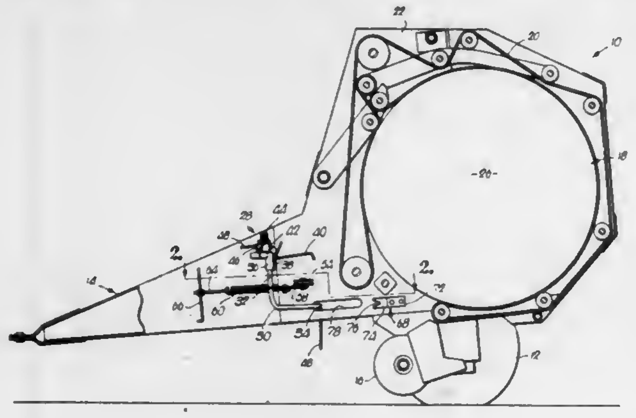
ROUND BALER HAVING WRAPPING TWINE CUTTER

Melvin V. Gaeddert, Newton, Kans., assignor to Hesston Corporation, Hesston, Kans.

Filed Dec. 17, 1982, Ser. No. 450,536

Int. Cl.^{3} B65B *13/18*

U.S. Cl. 100—5 **5 Claims**



1. In a round baler having a baling chamber for spinning a cylindrical bale of material about its longitudinal axis during and after formation thereof, said chamber defined in part by a pair of spaced apart generally planar sidewalls and said axis extending generally between said sidewalls, and including means for wrapping said bale with twine prior to discharge of said bale from said chamber, improved means for applying said twine to said bale comprising:

a twine dispenser having a dispensing end shiftable between a standby position proximal one of said sidewalls and a shifted position proximal said sidewall opposite said one sidewall for dispensing twine along the longitudinal length of said bale; and

twine severing means interposed between said bale chamber and the location of said dispensing end when said dispensing end is in said standby position,

said dispensing end being disposed outwardly beyond the plane defined by said one sidewall when said dispenser is in said standby position, for drawing said twine across said severing means from the corresponding end of the bale and thereby severing said twine after said twine has been dispensed along the length of said bale.

4,440,076

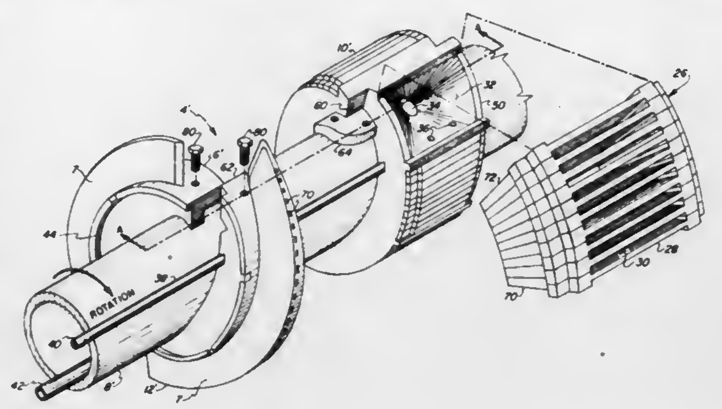
SYSTEM FOR IMPROVING EFFICIENCY OF SCREW PRESSES

Pete W. Mansfield, 1861 Meadow Ct., West Palm Beach, Fla. 33406

Filed Feb. 8, 1982, Ser. No. 346,495

Int. Cl.^{3} B30B *9/14*

U.S. Cl. 100—117 **9 Claims**



1. High pressure mechanical screw press system for removal of fluids from organic materials such as sugar cane, meal, nuts, bagasse, and other materials including a hollow main shaft, at least one pressure chamber, feed worm with a plurality of worms and collars arranged on the hollow main shaft, said worms having flights thereon, securing means for securing the worms and collars on the hollow main shaft, the worm flights, rotationally driven by the hollow main shaft to press fluids from the material within at least one pressure chamber, said system comprising:

said hollow main shaft having a relatively large conduit therethrough and a relatively thin wall thickness, said hollow main shaft having a plurality of conduit means through said thin wall;

an inwardly directed means for removing at least some of the pressed fluids out of the pressure chamber;

said collars including said inwardly directed means;

said collars and said inwardly directed means aligned with said conduit means to provide direct fluid drainage into said hollow main shaft;

said collars connected directly onto and about said hollow main shaft to provide structural support for said hollow main shaft with the relative large conduit.

4,440,077

PRESS ROLLER WITH ADJUSTABLE BENDING CHARACTERISTICS

Christian Schiel, Heidenheim, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Fed. Rep. of Germany

Filed May 5, 1982, Ser. No. 375,048

Claims priority, application Fed. Rep. of Germany, May 7, 1981, 3118063

Int. Cl.^{3} B30B *3/04*

U.S. Cl. 100—162 B **32 Claims**

1. A press roller with adjustable bend characteristics, comprising:

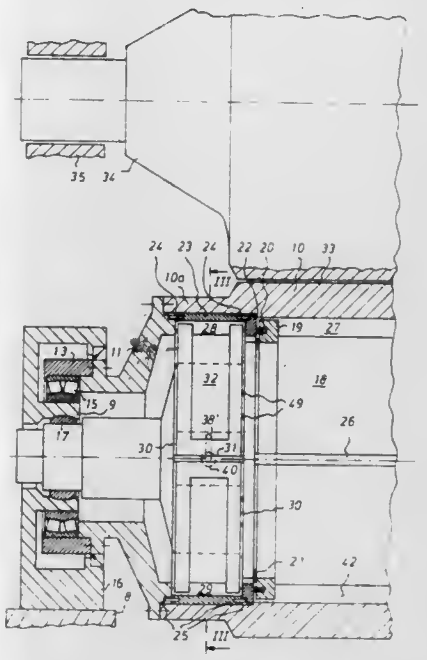
a stationary support device;

a hollow roller shell rotatable about a rotation axis about the stationary support device and being adapted to cooperate with a counter roller to define a pressure nip for a web of paper, or the like, to pass through; the nip and the shell axis lying on a pressure plane; a respective bearing at each end of the roller shell and located axially outside the nip for supporting the shell for rotation around the shell axis;

shell support means for supporting the shell on the stationary support device for transmitting supporting forces from the stationary support device to the shell for causing the shell to apply pressure to the counter roller at the nip;

a force correcting device for altering the supporting forces on the shell; the correcting device being positioned between the shell support means and at least one of the shell bearings, and that device comprising a curvedly shaped pressure chamber curving partially around the shell at the side of the shell facing toward the counter roller; means for pressurizing the pressure chamber;

axially extending, circumferentially spaced apart, axial seals defining the curved shape and circumferential limits of the pressure chamber and axially spaced apart circumferentially extending seals defining the axial limits of the pressure chamber;



a curvedly shaped seal support in the presure chamber and being spaced radially in from the shell to define the pressure chamber; the seal support supporting the circumferential seals and the axial seals of the pressure chamber thereon; means for supporting the seal support in the pressure plane, while permitting the seal support to otherwise move with respect to the stationary support device while the circumferential and the axial seals retain their seal of the pressure chamber.

4,440,078

ADJUSTABLE ELECTRICALLY CONTROLLED LIVESTOCK MARKING APPARATUS

David N. McCrery, Jr., R.R. 1, Monmouth, Ill. 61462; Harry J. Hoerner, P.O. Box 16, Good Hope, Ill. 61438, and John W. Purlee, R.R. 1, Monmouth, Ill. 61462

Filed Dec. 8, 1981, Ser. No. 328,794

Int. Cl.^{3} B31F *1/07*; B44B *5/00*

U.S. Cl. 101—4 **9 Claims**

1. Apparatus for marking articles comprising:

a first arm pivotally mounted for rotation about a first axis and having a marking means thereon;

a second arm pivotally mounted for rotation about a second axis for contacting said first arm and causing said first arm to pivot about said first axis;

first power means for causing rotation of said second arm about said second axis;

sensing means for detecting the presence of said article and activating said first power means in response to said presence; and

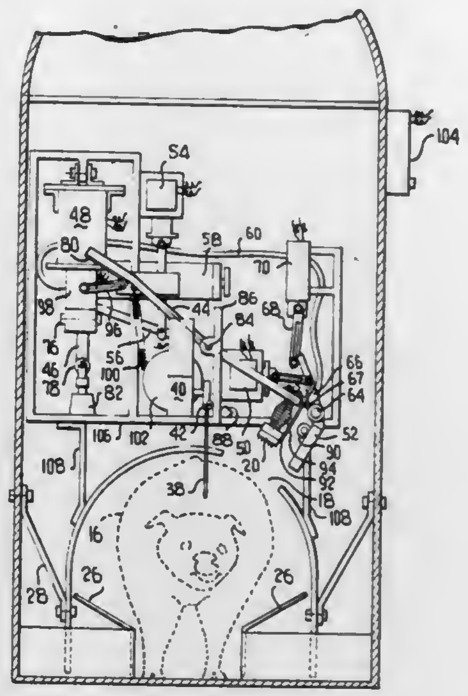
receiving means for directing one of said articles to a position such that said marking means may contact said article;

said sensing means comprising

first switch means responsive to the presence of said article;

second power means responsive to said first switch means for rotating an ink pad means from a position in contact with said marking means to a position not in contact with said marking means;

inking means responsive to the position of said ink pad means for supplying ink to said ink pad means when said ink pad means is not in contact with said marking means;



wherein said first power means is responsive to the position of said ink pad means and is activated when said ink pad means is not in contact with said marking means.

4,440,079

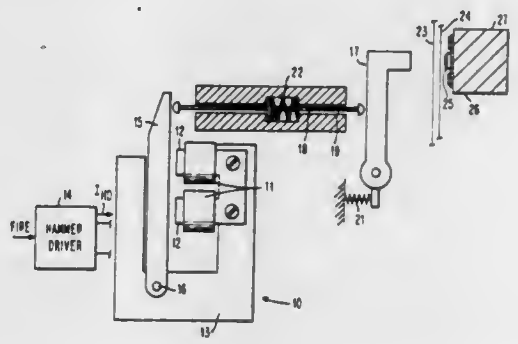
CONTROL SYSTEM FOR TIMING HAMMERS OF IMPACT PRINTERS

Douglas A. Dayger, Binghamton; Michael D. Hryck, Endwell; Dean W. Skinner, Binghamton, and Gerald R. Westcott, Endicott, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 11, 1982, Ser. No. 338,709

Int. Cl.^{3} B41J *9/00*

U.S. Cl. 101—93.03 **7 Claims**



1. A system for timing the impact of a set of hammers in an on-the-fly speed line printer with the alignment of type of a moving type carrier with said hammers, said hammers each being driven by actuating means energizable by firing pulses, said hammers having inherent flight times which may differ relative to a predetermined flight time, the combination comprising,

pulse generating means for selectively supplying initiate fire pulses at a fixed predetermined time preceding impact for selectively driving said print hammers, and

flight time control means including means responsive to said initiate fire pulses for delaying the energization of said actuating means to compensate for the difference in said inherent flight times of said print hammers including

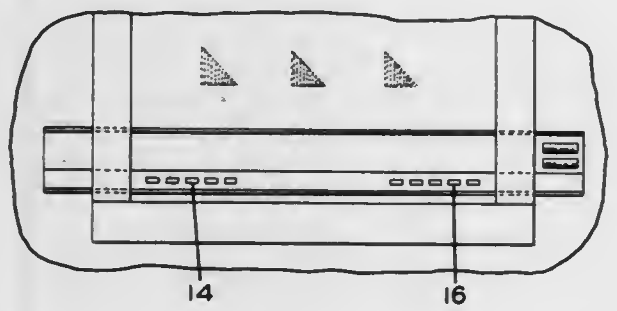
a source of regularly recurring timing pulses,

bi-directional counter means connected to said pulse generation means and said source,

said counter means being operable in response to said initiate

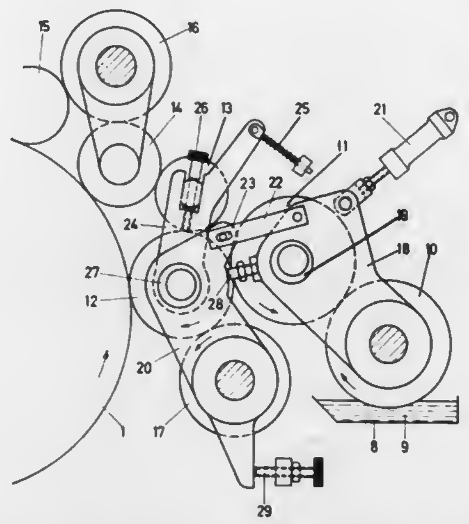
fire pulses for counting said timing pulses in one direction for supplying a first count and in a second direction for supplying a second count,
register means for storing variable delay values representing a predetermined number of said timing pulses related to said inherent flight times of corresponding print hammers,
comparsion circuit means connected to said register means and said means for comparing said delay value in said register means with the timing pulse count in said counter means and for generating an equal compare signal when said delay value and said first count are equal,
switch means connected to said comparison means and said counter means,
said switch means being operable to generate a delayed fire pulse in response to said equal compare signal from said comparison means and to terminate said fire pulse in response to said second count from said counter means,
operating circuit means connected to said switch means for operating said actuating means,
said switch means being turned on by said delayed fire pulse from said switch means and turned off by the termination of said delayed fire pulse by said switch means.

4,440,080
SCREEN REGISTRATION DEVICE
Joseph G. Lyall, Lancaster, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.
Filed Dec. 21, 1981, Ser. No. 332,750
Int. Cl.^{3} B41M *1/12*
U.S. Cl. 101—129 **3 Claims**



2. A method of carrying out registration of a series of printing screens in a conventional flatbed printer which has a means of conveying material to be printed through the printer underneath the series of screens, there being a number of screens positioned sequentially on the printer, all positioned a set distance apart which is equal to the length of the path of movement of the material to be printed as it moves sequentially through the printer, the method comprising the steps of:
(a) placing a registration device on the printer so that it may be moved sequentially under the series of screens, the registration device having a patterned array of lights,
(b) securing a proper positioning of the registration device on the printer so that the registration device is moving in a path parallel with the axis of movement of the material being moved on the printer,
(c) moving said device through the normal sequential path of movement of the screen printer to place the registration device under a printing screen,
(d) observing the light pattern on the registration device through a pattern of openings on the screen,
(e) adjusting the screen to center the pattern of light on the registration device in the pattern of openings on the screen to secure a registration of the pattern of lights and the pattern of openings,
(f) then sequentially moving the registration device to the next screen and then adjusting the second screen to secure registration of its pattern of openings to the pattern of lights on the registration device, and
(g) continuing such movement of the registration device until it is placed in registration with all the screens of the printer.

4,440,081
DAMPENING-INKING UNIT FOR OFFSET PRINTING MACHINES
Hermann Beisel, Walldorf, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen, Heidelberg, Fed. Rep. of Germany
Filed Nov. 19, 1982, Ser. No. 442,901
Claims priority, application Fed. Rep. of Germany, Nov. 21, 1981, 3146223
Int. Cl.^{3} B41F *7/36, 7/40;* B41L *25/14*
U.S. Cl. 101—148 **11 Claims**

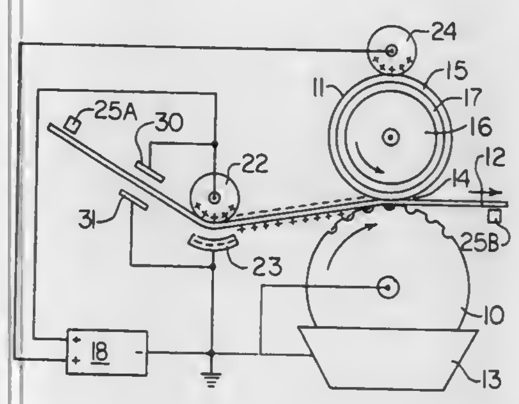


1. Dampening-inking unit for offset printing machines for forming and feeding an ink-water emulsion to a plate cylinder, comprising a first and a second distributor roller, two inking rollers disposed between said first and second distributor rollers and connected to one another by an intermediate roller, said first distributor roller being a dampening-medium distributor roller in contact with one of said two inking rollers at a given contact location, means for driving said dampening-medium distributor roller, a fountain roller dipping into a dampening-medium tank, and a metering roller engageable with the fountain roller, said metering roller being also engageable with said one of said two inking rollers at a given contact location, said contact location of said metering roller and said one inking roller being upstream of said contact location of said dampening-medium distributor roller and said one inking roller, as viewed in direction of rotation of said one inking roller, said dampening-medium distributor roller having a rough chromium outer cylindrical surface for driving said first inking roller and for intensively working-in dampening medium applied to said one inking roller into an ink film disposed therebeneath on said one inking roller.

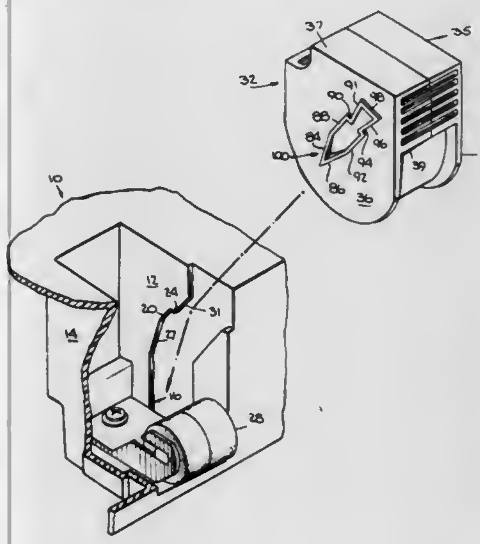
4,440,082
ELECTROSTATICALLY ASSISTED PRINTING SYSTEM
Richard D. Carey, and Bruce E. Berlin, both of Waynesville, N.C., assignors to Dayco Corporation, Dayton, Ohio
Filed Nov. 13, 1978, Ser. No. 960,141
Int. Cl.^{3} B41F *9/00, 13/18*
U.S. Cl. 101—170 **5 Claims**

1. In a process for printing upon a web of printable substrate wherein said web is passed between a printing cylinder and an impression roller and a high voltage electrostatic field is produced between said printing cylinder and said impression roller to assist the transfer of ink from said printing cylinder to said web, the improvement consisting of producing said high voltage electrostatic field only between said web and said printing cylinder prior to the entry of said web into the nip between said printing cylinder and said impression roller, thereby inducing said high voltage electrostatic charge only onto said web, and impressing a low voltage between said

impression roller and said printing cylinder, said low voltage ranging from about 1 to about 10 percent of said high voltage electrostatic field, thereby preventing a net buildup of spurious charges on said impression roller.

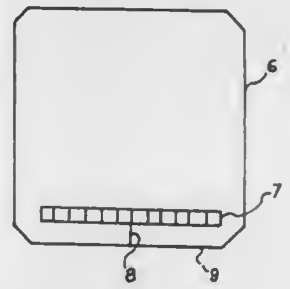


4,440,083
DISPOSABLE INKING CARTRIDGE
Clinton E. Hooper, Brookfield, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.
Filed Jan. 17, 1983, Ser. No. 458,246
Int. Cl.^{3} B41F *31/00*
U.S. Cl. 101—348 **6 Claims**



1. A disposable inking cartridge in combination with said housing for transferring ink to a secondary surface, comprising:
a housing having a pair of sidewalls, each of said sidewalls having a locating guide, wherein the locating guide includes at its trailing end a leg forming an angle no greater than 90 degrees therewith;
an applicator roller rotatably mounted in said housing for transferring ink to said secondary surface; and
said disposable inking cartridge lockingly mountable in the sidewalls of said housing, said cartridge having:
  a floating spindle translatable in a direction perpendicular to the locating guides in said housing sidewalls,
  an inking roller rotatably mounted on said spindle and engagable with said applicator roller, and
  a pair of sidewalls, each of said sidewalls having a locating guide, wherein the cartridge locating guide includes at its trailing end a leg forming an angle no greater than 90 degrees therewith, and wherein the cartridge locating guide slidingly engages the housing locating guide, and means for biasing the floating spindle towards the applicator roller and for urging the legs of the cartridge guide into locking engagement with the legs of the housing guide when the cartridge is inserted into locking engagement with the housing sidewalls.

4,440,084
METHOD OF ADJUSTMENT OF PRINTING MACHINE INKING DEVICE
Boris Pozin, 35-33 83rd St., Jackson Heights, N.Y. 11510
Filed May 17, 1982, Ser. No. 379,099
Int. Cl.^{3} B41F *31/02*
U.S. Cl. 101—365 **4 Claims**

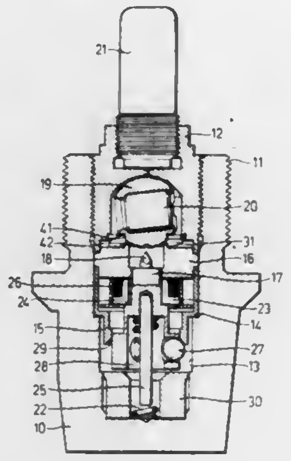


4. A method of adjusting of a multi-color printing machine with an ink supply gap formed between an inking roller and an inking blade and changeable at a plurality of locations by a plurality of adjusting members acting upon the inking blade at these locations, the method comprising the steps of
forming a supply gap between an inking roller and an inking blade so that the supply gap is identical at all these locations:
providing a printing plate with a prospective image to be printed;
attaching a colorless pattern of a prospective color bar on a portion of the printing plate, the portion spaced from the image;
applying ink by inking means of a printing machine successively first on the prospective image and then onto the colorless bar pattern attached to the printing plate, by displacing the printing plate relative to the inking means;
removing the thus-produced color bar from the printing plate;
measuring color densities of the color bar thus-produced on and removed from the printing plate, at a plurality of color bar locations corresponding to the locations of the adjusting members;
determining deviations of the thus-measured color densities of the color bar produced on and removed from the printing plate, from the standard values at the respective locations of the color bar; and
actuating the respective adjusting members so as to displace the inking blade at the respective locations in correspondence with the thus-determined color densities deviations of the color bar produced on and removed from the printing plate, so as to adjust the ink supply at the respective locations.

4,440,085
SAFETY APPARATUS FOR SPINNING PROJECTILE FUZES
Rudolf Rossmann, Zurich, and Paul Cahannes, Embrach, both of Switzerland, assignors to Werkeugmaschinenfabrik Oerlikon-Bührle AG, Zurich, Switzerland
Filed Jun. 8, 1982, Ser. No. 386,354
Claims priority, application Switzerland, Jun. 30, 1981, 4287/81
Int. Cl.^{3} F42C *15/26*
U.S. Cl. 102—235 **6 Claims**

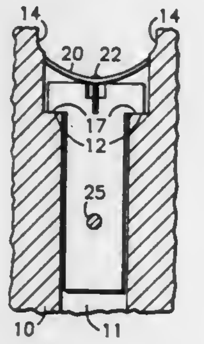
1. A safety apparatus for a spinning projectile fuze for a projectile having a lengthwise axis, comprising:
a substantially ball-shaped rotor which can rotate out of a safety position into an armed position;
a closure body member;
a support member;
said rotor being rotatably mounted between said closure body member and said support member;

a first substantially ring-shaped groove provided in said closure body member;
said first ring-shaped groove being located in a plane which is disposed essentially perpendicular to the lengthwise axis of the projectile;
a second substantially ring-shaped groove provided in said ball-shaped rotor;
said second ring-shaped groove being located, in the safety position of the rotor, in a plane which is substantially perpendicular with respect to the lengthwise axis of the projectile;



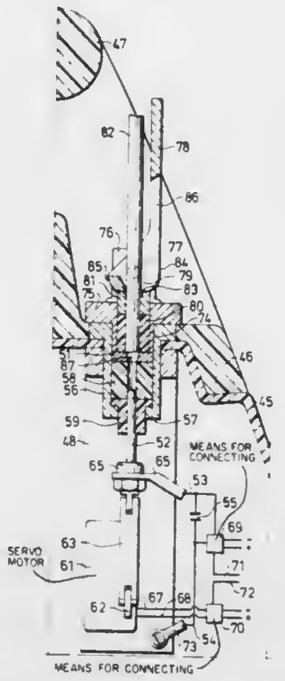
a safety spring in the form of a substantially ring-shaped disk member which protrudes both into the first ring-shaped groove and into the second ring-shaped groove for securing the rotor in its safety position;
said safety spring being deformable by the firing acceleration and by the projectile spin for releasing the rotor for movement into its armed position;
the ring-shaped disk member being subdivided by cut-outs into segments located in succession; and
the successive segments being alternately directed in a substantially wave-shaped configuration upwardly and downwardly.

4,440,086
IMPACT ARMING DEVICE FOR A FUZE
Carl R. Brotherton, Tempe, and Peter M. Rendek, Chandler, both of Ariz., assignors to Motorola Inc., Schaumburg, Ill.
Filed May 27, 1983, Ser. No. 499,007
Int. Cl.^{3} F42C *15/34*
U.S. Cl. 102—254 **14 Claims**



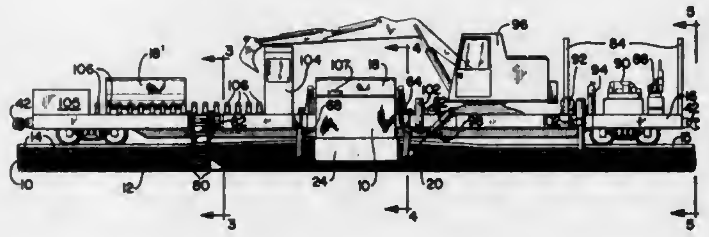
1. An impact arming device for a fuze containing a detonating train, said device comprising:
a housing;
an interrupter mounted in said housing for slideable movement between a first, unarmed, position and a second, armed, position;
said interrupter being formed to complete the detonating train in the second position and break the detonating train in the first position;
means affixed to one of said interrupter and said housing for normally maintaining said interrupter in the first position until the application of at least a predetermined amplitude of impact force thereto whereupon said interrupter is moved to the second position.

4,440,087
FIRING INITIATING DEVICE
Ingemar B. Haglund, Gyttorp, and Nils A. L. Westerlund, Fjärås, both of Sweden, assignors to Nitro Nobel Aktiebolag, Gyttorp, Sweden
Filed Oct. 29, 1981, Ser. No. 316,528
Claims priority, application Sweden, Oct. 31, 1980, 8007673
Int. Cl.^{3} F42C *19/08*
U.S. Cl. 102—275.11 **6 Claims**



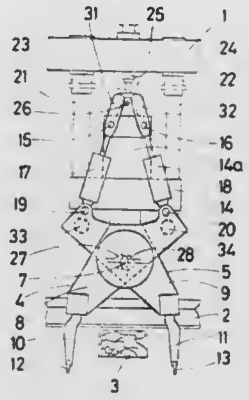
1. A device for initiating a pressure-impulse initiatable fuse, said device including
a holder for holding a fuse in a given position, and
a pair of electrodes arranged in a chamber having an open side facing a fuse placed in the holder,
wherein said electrodes form part of an electric circuit arranged to generate a pressure impulse required for initiating said fuse, by creating an electric discharge in a spark gap between the electrodes,
and wherein said electrodes are movable relative to one another between positions in which they are located at a distance apart which is too great for a discharge therebetween to take place and positions where the distance between said electrodes is such as to permit a discharge to take place.

4,440,088
FABRIC INSERTION SYSTEM
John A. Wallace, Everett, and Bernard R. Bader, Bothell, both of Wash., assignors to Black Clawson, Inc., Everett, Wash.
Filed Oct. 11, 1979, Ser. No. 83,891
Int. Cl.^{3} E01B *1/00, 37/00*
U.S. Cl. 104—7 A **11 Claims**



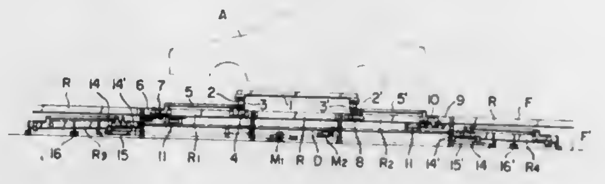
1. A fabric insertion system for placing fabric in the rock ballast road bed of a railroad track at a predetermined depth in said ballast, comprising:
a car for supporting fabric to be inserted into the ballast, and
a fabric insertion sled secured to said car and positionable beneath said car in said ballast at said predetermined depth, said sled having a fabric inlet opening to one side thereof and a fabric outlet opening which extends across the upper surface of said sled at an angle of approximately 45° with respect to the direction of movement of said sled through said ballast, said sled receiving the fabric through said inlet opening such that said fabric emerges from said sled through said outlet opening and slides across said upper surface of said sled passing rearwardly from said outlet opening, and is positioned at said predetermined depth.

4,440,089
RAILWAY TRACK BALLAST TAMPING DEVICE
Yvo Cicin-Sain, Bussigny, and Yvan Deliyski, Lausanne, both of Switzerland, assignors to Canron Inc., Crissier, Switzerland
Filed Oct. 14, 1981, Ser. No. 311,246
Claims priority, application Switzerland, Oct. 29, 1980, 8037/80
Int. Cl.^{3} E01B *27/16*
U.S. Cl. 104—12 **4 Claims**



1. A railway track ballast tamping device comprising a frame structure movable on the track rails and at least one tamping unit disposed on a support mounted on said frame structure, said tamping unit comprising in turn at least one pair of opposite and jointly operating tamping tools each consisting of an arm and of at least one pick fastened thereto, a driven eccentric shaft rotatably mounted on said support and provided with at least one flywheel having an out-of-balance weight affixed thereto and at least one pair of cranks coupled to the arms of said one pair of tamping tools in order to transmit a vibratory motion thereto, said arms being connected to said support by means of coupling members pivotally connected on the one hand to pivot means carried by said support and located above the upper ends of said arms, and on the other hand to the corresponding arm, said coupling members being so oriented as to cause said arms to oscillate about their pivot region on said eccentric shaft, wherein:
said arms of said one pair of tamping tools have each substantially the configuration of a substantially rectilinear two-armed lever and cross each other in the region of said eccentric shaft,
the pivot centers between the arms and the coupling members lie on the eccentric shaft side opposite the picks, and
for balancing at least partially the dynamic forces and torques exerted on said support during the rotation of said eccentric shaft, in addition to said out-of-balance weight affixed to said flywheel other balance weights are secured to said coupling members at locations overlying the pivotal connections between said coupling members and said support.

4,440,090
STORAGE ARRANGEMENT FOR TRUCK CONVEYOR TROLLEYS
Masasumi Murai; Hirokazu Kondo, both of Tokorozawa, and Shigekatzu Takino, Hanno, all of Japan, assignors to Tsubakimoto Chain Company, Osaka, Japan
Filed Feb. 16, 1982, Ser. No. 348,777
Claims priority, application Japan, Nov. 27, 1981,
Int. Cl.^{3} B61B *10/00;* **B65G** *63/00;* **E04H** *6/20*
U.S. Cl. 104—127 **12 Claims**

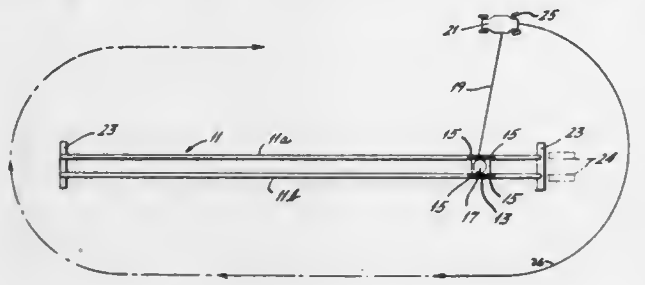


1. A storage arrangement for conveyor trolleys, comprising:
(a) a front trolley unit;
(b) a rear trolley unit;
(c) an article carrier for receiving an article for conveyance having trolley-engagement means detachably engageable with said front and rear trolley units;
(d) a running rail means for guiding said front and rear trolley units along a selected conveyance path, said front and rear trolley units having rail-engagement means for engaging said rail means;
(e) storage rail means at a selected storage location along said conveyance path for storing said front and rear trolley units;
(f) transfer rail means at said storage location, said transfer rail means in a first position cooperating with said running rail means to enable transfer of said front and rear trolley units between said running and said transfer rail means, and in a second position cooperating with said storage rail means to enable transfer of said front and rear trolley units between said transfer and said storage rail means;
(g) transfer-rail displacement means for displacing said transfer rail means between said first and second positions; and
(h) transfer drive means at said storage location for transferring said front and rear trolley units between said storage rails and said transfer rails.

8. A storage arrangement for conveyor trolleys, comprising:
(a) a front trolley unit;
(b) a rear trolley unit;
(c) an article carrier for receiving an article for conveyance having trolley-engagement means detachably engageable with said front and rear trolley units at the respective front and rear of said article carrier;
(d) a running rail for guiding said front and rear trolley units along a selected conveyance path, said front and rear trolley units having rail-engagement means for engaging said running rail;
(e) a plurality of storage rails provided at a selected storage location along said conveyance path for storing said front and rear trolley units, each trolley-storage rail having an operative position in operable communication with said running rail to enable transfer of said front and rear trolley units between said running and storage rails, and an inoperative position out of communication with said running rail, said trolley-engagement means of said article carrier being engageable with said front and rear trolley units in said operative position and disengaged in said inoperative position to enable storage of said front and rear trolley units independently of said article carrier; and
(f) rail displacement means for displacing each of said storage rails between said operative position and inoperative positions.

4,440,091
GUIDEWAY CONTROL APPARATUS

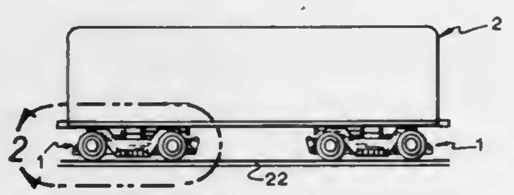
John A. Burgess, 232 S. Chancellor St., Newtown, Pa. 18940
Filed Aug. 6, 1982, Ser. No. 405,787
Int. Cl.³ A01B *69/00;* **B61B** *12/02;* **G05D** *1/00*
U.S. Cl. 104—139 **10 Claims**



1. A control apparatus for guiding a self-propelled tractor, comprising:
- a longitudinal guideway positioned on the ground;
- a tether cable connected to said self-propelled tractor;
- means for feeding cable by gathering and paying out said tether cable, said cable feeding means being connected to said tether cable;
- means for holding said cable feeding means for traveling along said guideway; and
- means for stopping said holding means at each end of said guideway for initiating a reversal in direction.

4,440,092
RAILWAY STEERING TRUCK LINEAR INDUCTION MOTOR ASSEMBLY

George Sobolewski, Laval West, Canada, assignor to Urban Transportation Development Corporation Ltd., Toronto, Canada
Continuation of Ser. No. 890,319, Mar. 27, 1978, abandoned.
This application Jan. 28, 1981, Ser. No. 229,718
Claims priority, application Canada, Nov. 30, 1977, 292092
Int. Cl.³ B61B *13/12;* **B61C** *5/00;* **H02K** *41/02*
U.S. Cl. 104—291 **21 Claims**

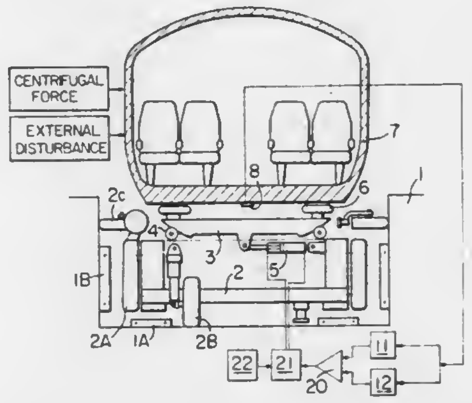


1. A steerable truck comprising a main frame for connection to a vehicle body, a pair of axle assemblies supporting said main frame and connected thereto at locations spaced apart along a longitudinal axis of said truck for steering movement about respective spaced generally vertical steering axes, a linear induction motor extending between said axle assemblies for cooperation with a reaction rail to propel said truck, and suspension means extending between said motor and said axle assemblies to locate vertically said motor, said suspension means comprising first link means connecting said motor to one of said axle assemblies to inhibit relative pivotal movement between said motor and said assembly about the longitudinal axis of said truck while permitting relative pivotal movement between said motor and said one axle assembly about its steering axis, and second link means connecting said motor to the other of said axle assemblies to permit relative pivotal movement therebetween about said longitudinal axis and about the steering axis of said other axle assembly, said suspension means thereby permitting steering motion and torsional flexibility between said axle assemblies while inhibiting the application of torsional loads to said motor.

17. A steerable truck comprising a pair of wheelsets spaced apart along a longitudinal axis of said truck, a pair of yokes each associated with a respective one of said wheelsets, a main frame supported by said yokes and connected thereto to permit rotation of said yokes relative to said main frame about respective spaced vertical steering axes, a linear induction motor located beneath said yokes for cooperation with a reaction rail, suspension means to suspend said motor from said yokes to maintain said motor in a fixed vertical orientation relative to said truck, thrust means to transmit longitudinal forces from said motor to said yokes and centering means to inhibit lateral displacement of said motor relative to said yokes, said suspension means comprising three links each having universal connections at each end for connection to said motor and a respective one of said axle assemblies, two of said links being connected at spaced locations between one of said axle assemblies and said motor and the other of said links being connected between the other of said axle assemblies and said motor, said links thereby permitting steering and torsional deflection between said axle assemblies while being vertically supported thereby.

4,440,093
VEHICLE TILT CONTROL APPARATUS

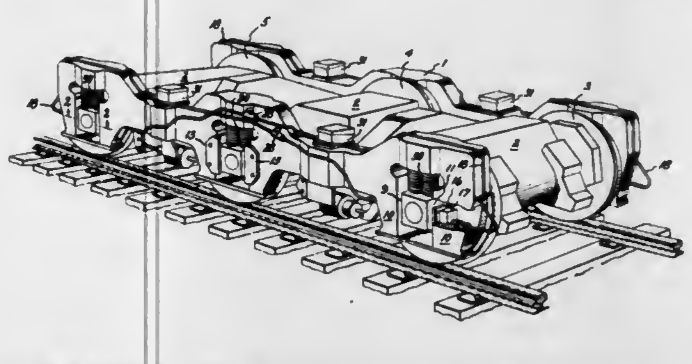
Yutaka Kakehi; Katsuyuki Terada; Kenjiro Kasai, and Fumio Iwasaki, all of Kudamatsu, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jun. 23, 1981, Ser. No. 276,477
Claims priority, application Japan, Jun. 23, 1980, 55-84010; Jul. 23, 1980, 55-103236[U]
Int. Cl.³ B61B *12/02;* **B61F** *5/16, 5/24*
U.S. Cl. 105—164 **9 Claims**



1. A vehicle tilt control apparatus provided between a car body and a truck for tiltably supporting the car body on the truck, comprising:
- a fluidically operating mechanism disposed between said car body and said truck for controlling the degree of tilting of said car body relative to said truck;
- an acceleration detector mounted on said car body for detecting centrifugal and vibration acceleration forces to which said car body is subjected and for producing an output indicative of the level of the forces detected;
- a centrifugal force compensation circuit connected to said acceleration detector and producing a control signal for suppressing centrifugal acceleration forces acting on said car body due to the passage of the car body through a curve, in response to a centrifugal force component of the output of said acceleration detector;
- a jolting compensation circuit connected to said acceleration detector and producing a control signal for suppressing vibration forces acting on the car body due to jolting of the car body, in response to a vibration component of the output of said acceleration detector;
- an adder circuit means, connected to said centrifugal force compensation circuit and said jolting compensation circuit, for adding the outputs of said compensation circuits and producing an output control signal; and
- a control valve arranged between said fluidically operating mechanism and a fluid source for controlling the flow of fluid between said fluid source and said fluidically operating mechanism in direct response to the output control signal of said adder circuit.

4,440,094
FLUID SELF-STEERING RAILWAY VEHICLE TRUCK

Samuel Levy, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Continuation of Ser. No. 125,508, Feb. 28, 1980, abandoned.
This application Jun. 18, 1982, Ser. No. 389,726
Int. Cl.³ B61C *3/00, 9/50;* **B61F** *5/38*
U.S. Cl. 105—166 **6 Claims**



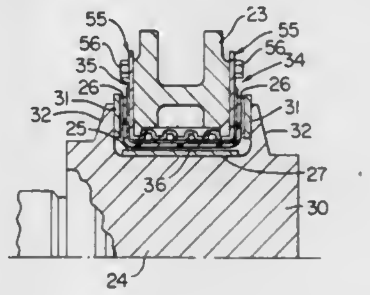
1. In a railway vehicle truck having a longitudinal axis in its direction of travel and comprising a rigid truck frame, multiple wheel set assemblies including a leading wheel set assembly and a trailing wheel set assembly disposed aft of said leading wheel set assembly along said longitudinal truck axis, said wheel set assemblies each comprising an axle, a pair of flanged wheels having wheel tread conicity and mounted on said axle, and two journal boxes mounted adjacent opposite ends of said axle and operatively disposed in said truck frame so that each corresponding wheel set assembly is operatively positioned in said truck, each of said journal boxes including:
- a bearing mounted about a section of said axle, said bearing supporting said axle and providing a means of rotation of said axle relative to said journal box,
- longitudinal load bearing surfaces disposed in planes substantially perpendicular to said longitudinal axis, said planes being disposed forward and aft of said axle along a line parallel to said longitudinal axis, and
- lateral load bearing surfaces disposed substantially orthogonal to said longitudinal load bearing surfaces, the improvement comprising:
- means for repositioning said journal boxes of said leading and trailing wheel set assemblies with respect to said truck frame, said means including a plurality of fluid containing force transmitting means each positioned on said truck frame adjacent and movable relative to at least one of said longitudinal load bearing surfaces of at least one of said journal boxes of said leading and trailing wheel set assemblies, each of said force transmitting means including a rub plate portion adjacent and engageable with one of said longitudinal load bearing surfaces, with at least two of said force transmitting means defining a set; and
- conduits interconnecting said force transmitting means in each of said sets in flow communication.

4,440,095
WEAR MEMBER FOR RAILWAY VEHICLE

Julien C. Mathieu, Waynesville, N.C., assignor to Dayco Corporation, Dayton, Ohio
Filed Feb. 19, 1981, Ser. No. 235,498
Int. Cl.³ B61F *5/32;* **F16C** *27/20, 33/20, 33/28*
U.S. Cl. 105—225 **16 Claims**

1. In a wear member for a railway vehicle wherein said vehicle comprises a pair of relatively movable components and said wear member is adapted to be supported by one of said components and protects said components from wear during relative movement thereof, said wear member comprising a support adapted to be supported by said one component and a polymeric material carried by said support and having a smooth antifriction outer wear surface which is adapted to engage said other component, said polymeric material comprising an ultra high molecular weight material, the improvement in which, said support is made of a structural material of substantially uniform thickness throughout, said structural material having a plurality of corrugations comprising at least a portion thereof with each corrugation having said uniform thickness throughout substantially its entire configuration and having an end surface spaced from and coplanar with the end surfaces of the corrugations adjacent thereto, said corrugations providing structural strength for said portion, said polymeric material being supported by certain of said corrugations at just the adjacent and coplanar end surfaces thereof; said wear member further comprising an intermediate member disposed between said polymeric material and said support; a first means comprising a metal structure fixing said polymeric material to said intermediate member, said metal structure being embedded between opposed surfaces of said polymeric material which serves as a matrix for and substantially completely surrounds said metal structure, said metal structure having openings therein which receive said polymeric material therethrough to provide better embedment of said metal structure, said metal structure serving the multiple purpose of providing reinforcement for and preventing cold flow of said polymeric material; and second means fixing said intermediate member to said support.

9. In a pedestal liner for a railway vehicle wherein said vehicle comprises, pedestal trucks comprising pairs of pedestal legs, a journal box disposed between each associated pair of pedestal legs, each journal box having a vertically disposed planar guide surface and a pair of spaced vertically disposed parallel side surfaces disposed on opposite sides of said guide surface, said pedestal liner being roughly U-shaped and comprising, a bight and a pair of parallel legs and being adapted to be disposed between an associated pedestal leg and journal box and fastened to the associated pedestal leg, a roughly U-shaped support comprising the main structural portion of said liner, said support also having a bight and a pair of parallel legs, antifriction polymeric material for said parallel legs of said liner supported by said support and adapted to engage said side surfaces, and antifriction polymeric material for said bight of said liner supported by said support and adapted to engage said guide surface, said antifriction polymeric material being ultra high molecular weight polymeric material, the improvement in which, said support is made of a structural material of substantially uniform thickness throughout, said structural material having a plurality of corrugations comprising said bight of said support with each corrugation having said uniform thickness throughout substantially its entire configuration and having an end surface spaced from and coplanar with the end surfaces of the corrugations adjacent thereto, said corrugations providing structural strength for said bight of said support, said polymeric material for said bight of said support being supported by certain of said corrugations at just the adjacent and coplanar end surfaces thereof; said wear member further comprising an intermediate member disposed between said polymeric material and said support, said intermediate member having a roughly U-shaped configuration defined by a flat planar bight and a pair of parallel legs having less extension than the parallel legs of said support, said polymeric material being a single piece of material covering all of said flat planar bight and the major area of each of said parallel legs of said intermediate

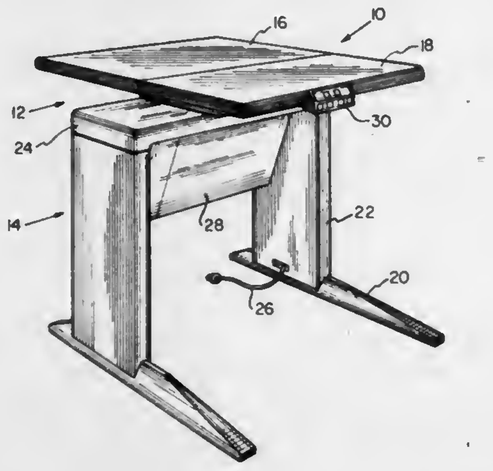


member; a first means comprising a metal structure fixed to said intermediate member, said metal structure fixing said intermediate member to said polymeric material, said metal structure being substantially equal in developed area to the developed area of said polymeric material and being embedded between opposed surfaces of said polymeric material which serves as a matrix for and substantially completely surrounds said metal structure, said metal structure having openings therein which receive said polymeric material completely therethrough to provide better embedment of said metal structure, said metal structure serving the multiple purpose of fixing said polymeric material against said intermediate member while also providing reinforcement for and preventing cold flow of said polymeric material; and second means fixing said intermediate member to said support.

4,440,096

ADJUSTABLE WORD PROCESSING TABLE AND THE LIKE

Thomas E. Rice, Cheswick, and Peter T. Young, Oakmont, both of Pa., assignors to Haskell of Pittsburgh, Inc., Verona, Pa.
Filed Dec. 15, 1981, Ser. No. 330,894
Int. Cl.³ A47F *5/12*
U.S. Cl. 108—3 9 Claims

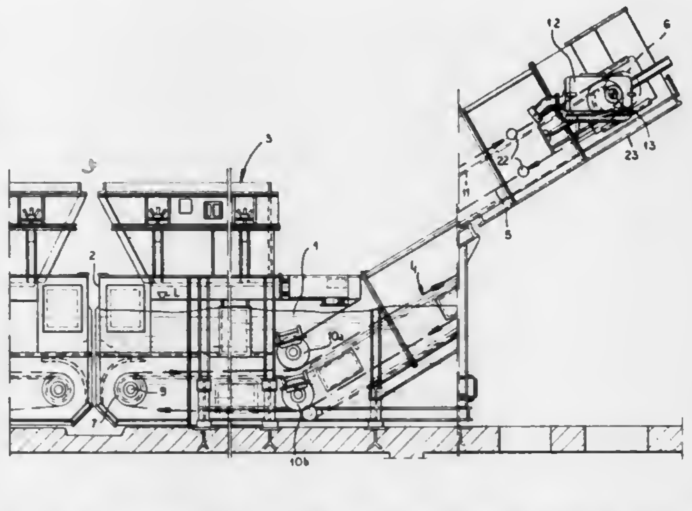


1. An adjustable split top table for accommodating word processing equipment and the like comprising:
   A. a base support for resting on the floor;
   B. a main frame connected to the base support, said main frame including a pair of parallel and spaced members positioned along a longitudinal central axis of the table;
   C. a first lead screw operably mounted to said main frame and positioned between said members and inclined forward at an angle on the order of 25° to the vertical;
   D. a second lead screw operably mounted to said main frame and between said members and parallel to said first lead screw;
   E. a third lead screw pivotally mounted to said main frame and positioned between said members;
   F. a traveling block movably secured to each lead screw and a pair of arms upstanding therefrom;
   G. table supporting means connected to each pair of arms, said supporting means including a pair of depending legs, each leg positioned in sliding engagement within a support bracket operably connected to the main frame and spaced outward from said spaced members;
   H. a front table top mounted to a front bracket, said front bracket slidably mounted on horizontal leg extensions of the depending legs interconnected with the first lead screw;
   I. a rear table top mounted to said supporting means interconnected with the second and third lead screws, respectively; and
   J. drive means for driving said lead screws, said means capable of driving said first lead screw to raise and lower the first table top, of driving said third lead screw to tilt said rear table top and of driving said second and third lead screws to raise and lower said rear table top.

4,440,097

ASH-REMOVAL CONVEYOR FOR A COAL-FIRED BOILER

Lothar Teske, Hegelstr. 15, 5000 Köln 90, Fed. Rep. of Germany
Filed Aug. 17, 1982, Ser. No. 409,018
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1981, 3132698
Int. Cl.³ F23J *1/02;* B65G *23/44*
U.S. Cl. 110—167 10 Claims

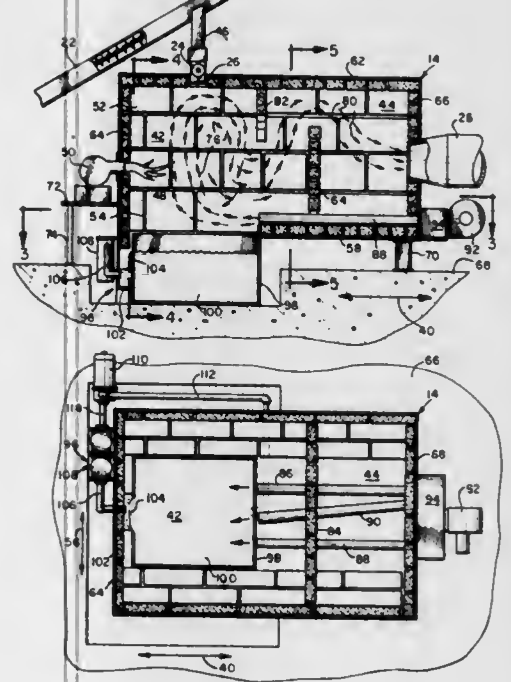


1. In combination with an ash-quenching trough, an ash-removal conveyor comprising:
- a drive wheel above and spaced from the trough;
- horizontally spaced reversing and guide wheels in the trough below the liquid level therein;
- an endless conveyor chain spanned over the wheels and having a horizontal lower stretch extending between the reversing and guide wheels, an inclined lower stretch extending between the guide and drive wheels, and an at least partially inclined upper stretch extending between the reversing and drive wheel;
- drive means connected to the drive wheel for moving the chain and thereby picking ash up in the trough and conducting the picked-up ash from the trough, the drive means including
  - a hydraulic motor operatively connected to the drive wheel, and
  - pump means including a positive-displacement pump connected to the drive motor for supplying hydraulic liquid to the motor for operating same; and
- means for urging the drive wheel away from the other wheels and thereby tensioning the belt, the urging means including
  - at least one hydraulic cylinder connected to the drive wheel and pressurizable to tension the chain,
  - means connecting the cylinder to the pump means for pressurization of the cylinder with substantially the same pressure in the hydraulic means,
  - sensor means for detecting the pressure in the cylinder and motor; and
  - control means connected to the pump means for varying the mass flow rate of same in accordance with the detected pressure and for decreasing pump mass flow rate as detected pressure increases above a predetermined limit.

4,440,098

WASTE MATERIAL INCINERATION SYSTEM AND METHOD

Jack C. Adams, Boca Raton, Fla., assignor to Energy Recovery Group, Inc., Boca Raton, Fla.
Filed Dec. 10, 1982, Ser. No. 448,425
Int. Cl.³ F23G *5/12*
U.S. Cl. 110—215 48 Claims



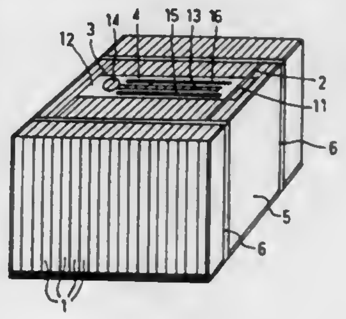
1. A waste material incineration system comprising:
(a) a longitudinally directed furnace having a first combustion zone and a second combustion zone, said waste material being inserted into said first combustion zone;
(b) means for helically vortexing said waste material about an axis line substantially normal said longitudinal direction within said first combustion zone, said helical vortexing means including means for inserting preheated air into said first combustion zone, said preheating air means extending adjacent said second combustion zone for discharging at least a portion of said preheated air into a lower section of said first combustion zone at an inclined angle with respect to said longitudinal direction; and,
(c) means for removing particulate material from said first combustion zone.

38. A waste material incineration system comprising:
(a) a longitudinally directed furnace having a first combustion zone and a second combustion zone, said waste material being inserted into said first combustion zone;
(b) means for helically vortexing said waste material about an axis line substantially normal said longitudinal direction within said first combustion zone, said helical vortexing means including means for including preheated air into said first combustion zone for discharging at least a portion of said preheated air into a lower section of said first combustion zone at an inclined angle with respect to said longitudinal direction, said waste material being at least partially combusted in said first combustion zone and passed to said second combustion zone; and,
(c) scrubber means for removing contaminants and particulate material from exhaust gas products subsequent to passage of said exhaust gas products through said second combustion zone.

4,440,099

CERAMIC FIBER MODULAR ASSEMBLIES FOR LINING FURNACE WALLS

Pierre Brachet, Versailles, and Gilbert Leduc, Mennecy, both of France, assignors to La Farge Refractaires, Aristide-Briand, France
Filed May 3, 1982, Ser. No. 374,322
Claims priority, application France, Jun. 12, 1981, 81 11675
Int. Cl.³ F23M *5/00*
U.S. Cl. 110—336 19 Claims

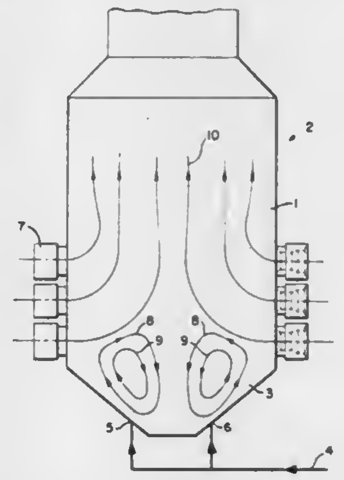


1. In a ceramic fiber modular assembly for lining walls of furnaces or other high temperature chambers, said modular assembly comprising stacked ceramic fiber strips in generally parallelepiped configuration and a refractory steel anchoring system for holding said strips and securing said modular assembly to the wall to be lined, the improvement consisting of providing an anchoring system comprising: at least two lateral members engaged in a face of said modular assembly, each of said lateral members defining a plate oriented parallel to said fiber strips and including perpendicular protrusions attached to the interior of said modular assembly by perpendicularly projecting into said strips adjacent said lateral members; a central member disposed perpendicular to said lateral members and attached therewith, said central member also defining a plate bearing flatwise against said one face of said modular assembly having an aperture for securement to the wall to be lined wherein said protrusions project parallel to said central member.

4,440,100

METHOD OF INTRODUCING ADDITIVE INTO A REACTION GAS FLOW

Sigfrid Michelfelder, and M. Yaqub Chughtai, both of Gummersbach, Fed. Rep. of Germany, assignors to L. & C. Steinmüller GmbH, Gummersbach, Fed. Rep. of Germany
Filed Jul. 21, 1982, Ser. No. 400,377
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1981, 3128903
Int. Cl.³ F23B *7/00;* F23J *11/00*
U.S. Cl. 110—343 8 Claims



1. A method for removing environmentally harmful gaseous material in the form of sulfur, chlorine and fluorine compounds contained in a hot reaction gas flow in the combustion chamber

of a steam generator, wherein the combustion chamber has a side wall area in which a plurality of fuel inlets are positioned and a funnel-shaped portion which converges for dry ash removal, and wherein the combustion chamber further includes at least one inlet through the funnel-shaped portion which inlet is adjacent to a closed recirculation flow within the funnel portion, the method comprising the steps of:

during burning in the combustion chamber, introducing through the inlet a pulverous additive selected from the group consisting of calcium carbonate, magnesium carbonate, dolomite and reactive metal oxide and metal hydroxide compounds;

entraining the additive in the recirculation flow to intermix with and contact fuel burning in the combustion chamber to thereby interact with the burning fuel and combine sulfur, chlorine and fluorine compounds in the burning fuel with the pulverous additive to thereby remove the sulfur, chlorine and fluorine compounds from the burning fuel as ash, and

removing the sulfur, chlorine and fluorine compounds from the combustion chamber in solid form upon removing the ash therefrom.

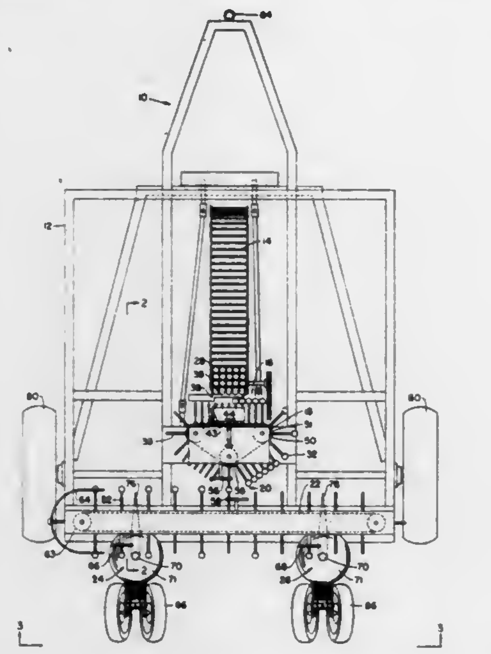
4,440,101
PLANT TRANSFER MECHANISM

Bryant Edwards, Clarendon Hills; Stanley R. Krogman, Bartlett, and Edward J. McArdle, Morton Grove, all of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Continuation of Ser. No. 104,940, Dec. 18, 1979, abandoned. This application Sep. 3, 1981, Ser. No. 298,859

Int. Cl.^{3} A01C *11/00*

U.S. Cl. 111—2 **2 Claims**



2. An apparatus for transferring plants along a predetermined path from an array of such plants arranged in ranks and rows to predetermined locations spaced from said array, means for moving said array so that each successive rank of individual plants is adjacent a first transfer station in said apparatus, means at said first transfer station to, at least partially, separate each successive rank of individual plants, as a group, from said array, a first conveyor means for moving individual plants along a portion of said path, the first conveyor means including a plurality of individual, spaced grasping means having grasping extremities thereon, the first conveyor means further being configured and located to include a first predetermined segment thereof as part of the first transfer station which segment is generally parallel to each successive rank of individual plants in the array, the spacing between the grasping extremities of adjacent grasping means in said predetermined segment being generally equal to the centerline spacing between adjacent individual plants in ranks in the array, a second transfer station including part of said first conveyor means and part of a first predetermined segment of a second, adjacent, conveyor means, the second transfer station including means including a curved path region on the first conveyor means to change the spacing between individual plants from the spacing between rows to a greater spacing, the second conveyor means including a plurality of individual spaced grasping means spaced a greater distance from one another than the spacing of the grasping means on the first segment of the first conveyor and means to release the individual plants from successive grasping extremities of the second conveyor means at a predetermined location relative to the apparatus wherein each individual plants is positively retained and controlled throughout the transfer process to insure reliable transfer from the array to the setting of each plant in a predetermined location, wherein the grasping means are spring biased clips with upper and lower jaw sections adapted to resiliently grip the plants, the means to release the individual plants including a cam means adjacent the path of the second conveyor and adapted to engage a lever associated with one of said jaw sections to move the jaw sections apart, thus releasing the plant carried thereby, including a further cam means adjacent the path of the second conveyor at a position prior to that of the first mentioned cam means, said further cam means being rotatably driven at the speed of the second conveyor and including a notch in the periphery of the cam means permitting alternating successive grasping means to move past said further cam means for releasing association with said first mentioned cam means.

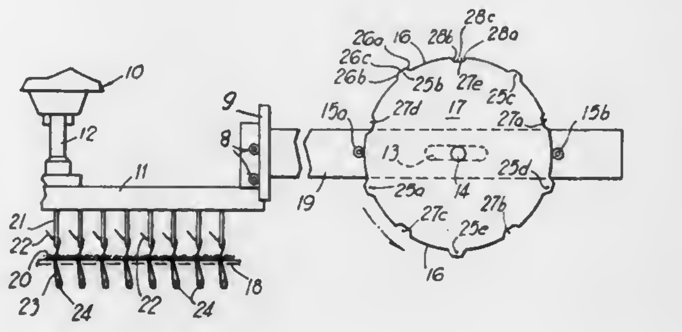
4,440,102
TUFTING MACHINE AND METHOD OF TUFTING FOR PRODUCING MULTIPLE ROWS OF TUFTS WITH SINGLE LENGTHS OF YARN

Roy T. Card, 4012 Creekwood Ter., Chattanooga, Tenn. 37421, and Joseph L. Card, 1515 Edgewood Cir., Chattanooga, Tenn. 37405

Filed May 19, 1983, Ser. No. 496,010

Int. Cl.^{3} D05C *15/30*

U.S. Cl. 112—266.2 **12 Claims**



4. Method of producing a tufted product wherein a needle bar, carrying a plurality of spaced parallel needles, is reciprocated toward and away from a plurality of loopers corresponding in number to the number of needles, yarns are respectively supplied to the needles, a backing material is pased between said needle bar and the loopers so that loops of yarn are inserted through the backing material and are respectively caught, held and subsequently released, the needles being withdrawn from the backing material when the needle bar is moved away from the loopers, the improvement comprising:

(a) shifting the needle bar laterally in one direction during a cycle of the needles while the needles are retracted from the backing material;

(b) inserting the needles through the backing material while the needle bar is in its shifted condition;

(c) shifting the needle bar laterally in an opposite direction after the needles have penetrated the backing material and prior to the time the loopers engage the loops formed in the penetrated portions of the backing material for laterally shifting the increment of the backing material which has been penetrated as the needles are moved laterally, whereby tufts are created in the backing material laterally of the loopers when the needles are withdrawn from the penetrated portions of the backing material.

7. A tufting machine having a reciprocating needle bar, a plurality of spaced parallel needles carried by the needle bar for reciprocation by the needle bar in a linear path of travel toward and away from loopers respectively associated with and individual to the needles and wherein backing material is passed between the needles and the loopers so that successive lengths of yarn carried by the respective needles are inserted from one side through successive transverse increments of the backing material to form tufts protruding from the other side of the backing material and wherein the loops when inserted by the needles are respectively caught and held and subsequently released by the loopers, the needles being withdrawn from the backing material as they are moved by the needle bar away from the loopers, the improvement comprising:

(a) means for shifting the needle bar laterally in one direction out of their normal path of travel while the needles are withdrawn from the backing material; and

(b) means for moving the needle bar in an opposite direction to said one direction, after the needles have penetrated the backing material and prior to the time the loopers engage and hold the yarns, whereby the needles move the increment of backing material, through which the needles project laterally and the needles release this increment of backing material when the needles are withdrawn therefrom.

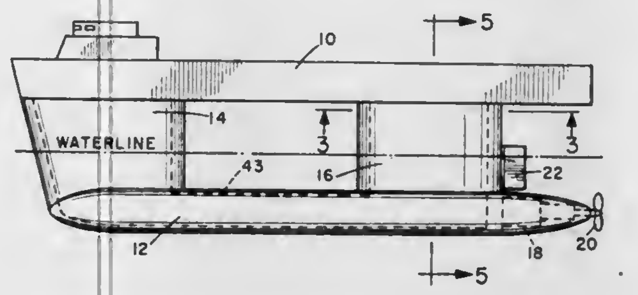
4,440,103
SEMI-SUBMERGED SHIP CONSTRUCTION

Thomas G. Lang, 417 Loma Larga Dr., Solana Beach, Calif. 92075

Continuation of Ser. No. 73,183, Sep. 7, 1979, abandoned. This application Aug. 14, 1981, Ser. No. 293,083

Int. Cl.^{3} B63B *25/00*

U.S. Cl. 114—61 **24 Claims**



1. A semi-submerged ship, comprising:

a superstructure;

a pair of longitudinally extending streamlined submersible hulls;

a plurality of submersible struts each having a lower end connected to and extending upwardly from a corresponding one of the hulls, the struts being streamlined in longitudinal cross section to minimize hydrodynamic drag and including a front strut and a rear strut longitudinally spaced on each hull;

means for defining a vertical cargo passage which extends substantially unobstructed through each strut;

means for defining a horizontal cargo passage which extends substantially unobstructed through each hull, the horizontal cargo passage extending between and connecting the vertical cargo passages in the struts connected to the hull in a continuous path;

first joint means for connecting the lower end of each strut to a corresponding one of the hulls to permit cargo to be moved between the vertical and horizontal cargo passages therein;

second joint means for connecting the upper end of each strut to the superstructure so that the hulls are transversely spaced apart and transverse loads on the struts are resisted without any connecting members extending transversely between the hulls while permitting the passage of cargo through the struts;

at least portions of the struts and hulls having a double walled construction, with load bearing structure contained between the walls to minimize obstruction of the cargo passages; and

the hulls and struts having displacement buoyancy such that when the ship is in the water the hulls will be submerged and the superstructure will be above the water.

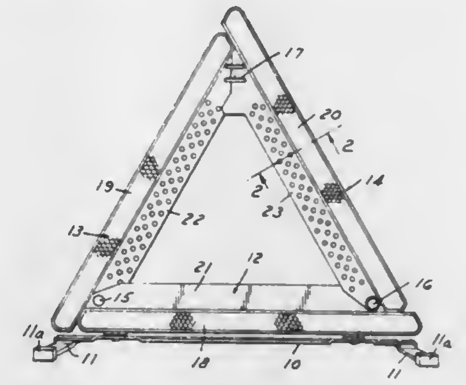
4,440,104
EMERGENCY WARNING DEVICE

Arthur F. Bleiweiss, Toronto, and Terence E. Base, London, both of Canada, assignors to Dominion Auto Accessories Limited, Toronto, Canada

Filed Mar. 11, 1981, Ser. No. 242,629

Int. Cl.^{3} G08B *5/00*

U.S. Cl. 116—63 T **2 Claims**



1. An emergency warning device comprising

a base,

three arms extending upwardly from the base to define a triangle,

one of said arms extending horizontally on said base and said other two arms extending upwardly and inwardly,

each arm having passive signal means on at least one surface thereof,

at least a portion of one of said arms comprising spaced walls,

each said wall having at least one opening therethrough,

the opening in one wall being staggered with respect to the opening in the other wall such that portions of one wall overlie the opening in the other wall and such that air striking the device flows in a sinuous path through the device reducing the drag on the device,

each opening comprising a slot extending along the length of said one arm,

said slots being formed in said upwardly extending arms,

each of said slots extending along the length of said arm, the slots and the space between the spaced walls forming an air flow passage that is sinuous in cross section,

one said slot including a concave forwardly facing surface and the other said slot including a concave rearwardly facing surface such that air first strikes a forwardly facing concave surface and then a rearwardly facing concave surface such that the direction of the air is changed twice before it passes through the slots.

4,440,105
PAPER COATING APPARATUS HAVING A REPLACEABLE ORIFICE PLATE

Paul A. Jeltema, Wisconsin Rapids, Wis., assignor to Consolidated Papers, Inc., Wisconsin Rapids, Wis.

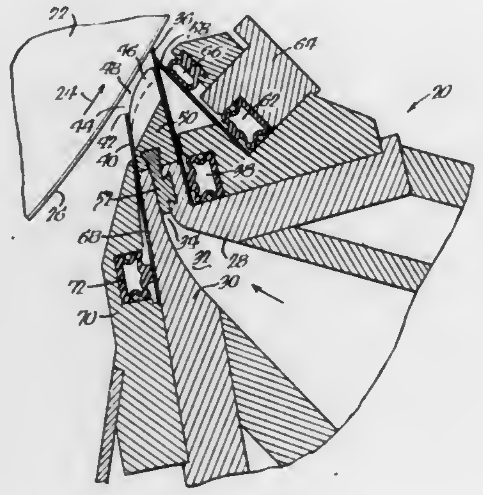
Filed Jan. 17, 1983, Ser. No. 458,437

Int. Cl.^{3} B05C *3/18*

U.S. Cl. 118—410 **6 Claims**

1. An improved applicator for applying a coating liquid to a moving web of paper carried through an application zone, wherein said applicator is of the type comprising a body por-

tion defining a chamber therein having an elongate opening thereto extending substantially across and parallel to the web, said chamber for receiving coating liquid and directing the same through said opening into an application zone and onto the web; a doctor blade extending from a rear side of said chamber opening substantially across and against the web for metering and leveling coating liquid on the web; an orifice plate extending from a front side of said chamber opening substantially across and toward but spaced from the web to define a gap between an upper edge thereof and the web; seal means at each opposite side end of said doctor blade and orifice plate for sealing the end spaces therebetween, said application zone being defined between said doctor blade, orifice plate and seal means; and means for introducing a copious excess of coating liquid under pressure through said opening and into said application zone to completely fill said zone with coating liquid and to continuously flow coating liquid through said gap to substantially completely and continuously fill said gap with coating liquid to form a liquid seal therein for sealing off the front edge of said application zone, wherein the spacing of said orifice plate upper edge from the web may be controlled to adjust the size of said gap to a selected value, the improvement comprising means for mounting said orifice plate on said applicator for replacement thereof without disassembly of said applicator, said orifice plate being relatively thin and planar, having a length to extend substantially across the web and a selected height between said upper and a lower edge thereof, said mounting means including a front wall on said body portion extending substantially across the web, said front wall having a slot or channel therein extending substantially across the opening toward the web, said orifice plate being transversely extendable into and along said slot from a side end thereof to extend said upper edge thereof out of said slot and toward but spaced from the web to define said gap therewith, and means for releasably securing said orifice plate in said slot, so that to adjust the size of said gap one orifice plate of a first height in said slot may be removed therefrom and another orifice plate of a second and different height may be extended into and releasably secured in said slot, whereby said mounting means permits mounting of orifice blades of selected heights on said applicator to control the size of said gap.



4,440,106
MAGNETIC ORIENTATION SYSTEM

Joachim Greiner, Ebenhausen, and Eberhard Gärtner, Munich, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 8, 1982, Ser. No. 386,400

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1981, 3123746

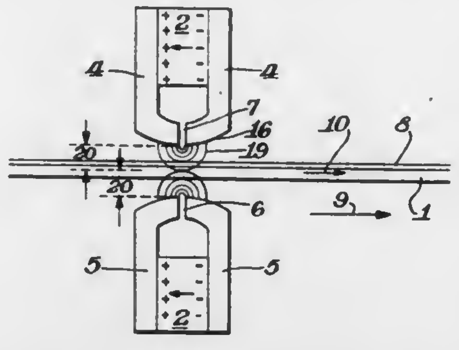
Int. Cl.^{3} H01F ***13/00***

U.S. Cl. 118—640 **8 Claims**

1. In a magnetic system for the orientation of the magnetic primary axes of pigment particles in a magnetic, binder-containing dispersion applied to a substrate in the direction of tape travel by casting machines, comprising permanent magnets and low-retentivity elements for conducting the magnetic flux with two permanent magnets which are arranged in mirror image fashion relative to the direction of tape travel,

the novel combination comprises

two partial systems wherein the field of the first orientation system having a magnetic slit in the vicinity of the cast dispersion has an intensity between 1600 and 16,000 A/cm and is concentrated over a maximum cross-section of 5×5 mm^2, wherein the field lines have a markedly curved configuration and a strong field gradient, and



means of said first system producing a main direction of the magnetization vectors of the particles which is oriented obliquely to the direction of tape travel,

and the field of the following second partial system has an intensity between 400 and 2400 A/cm and a size of at least 0.5 cm in the longitudinal direction and essentially one longitudinal component which is oriented parallel to the direction of film travel, and the magnets which are arranged in mirror image fashion to the direction of tape travel are so constructed and arranged as to leave a distance of at least 3 mm between the slits and the substrate with dispersion.

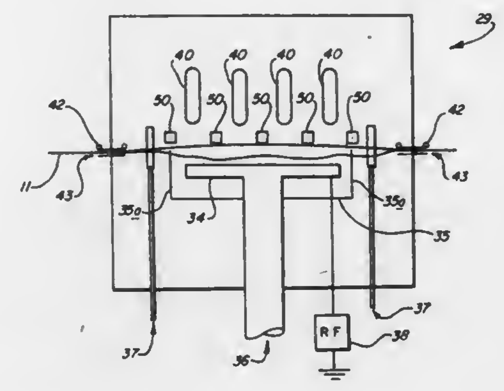
4,440,107
MAGNETIC APPARATUS FOR REDUCING SUBSTRATE WARPAGE

Joachim Doehler, Union Lake; Vincent Cannella, Detroit, both of Mich., and Richard O. Gray, Jr., Glen Ellyn, Ill., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Jul. 12, 1982, Ser. No. 397,190

Int. Cl.^{3} C23C ***13/10***

U.S. Cl. 118—718 **9 Claims**



1. Apparatus for producing improved semiconductor devices by substantially reducing warpage of a relatively wide, elongated, relatively thin web of electrically conductive, magnetically attractable substrate material adapted to follow a normal elongaed path of travel through at least one isolated deposition chamber wherein a semiconductor alloy layer is deposited onto one surface of the substrate; the apparatus including, in combination:

a plurality of spaced magnets operatively disposed within the at least one deposition chamber for flattening the magnetically attractable web of substrate material, the magnets extending transversely across substantially the entire unlayered surface of the web to thereby create an attractive force which urges the web out of its normal path of travel and into a substantially planar path of travel through said at least one deposition chamber, whereby warpage of the web of substrate material is substantially reduced so that a uniform semiconductor alloy layer may be deposited onto the one surface of the web.

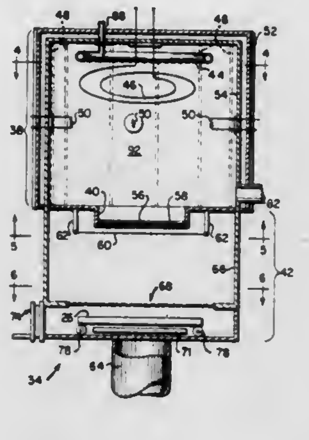
4,440,108
ION BEAM COATING APPARATUS

Roger G. Little, Bedford, Mass., and Stanley R. Shanfield, West Newton, Mass., assignors to Spire Corporation, Bedford, Mass.

Filed Sep. 24, 1982, Ser. No. 423,454

Int. Cl.^{3} C23C ***13/08***

U.S. Cl. 118—719 **14 Claims**



1. Apparatus for coating parts by means of a plasma supported ion beam comprising:

(a) a plasma source chamber provided with an anode and having rf means for exiting a plasma therein, a gas feed ring at one end and a neck portion at the other end thereof;

(b) a coating chamber mounted adjacent and contiguous with said plasma source chamber via said neck portion;

(c) a plurality of permanent magnets and a plurality of electron supply filaments both arranged circumferentially about said source chamber, with adjacent magnets of said plurality of permanent magnets having opposed polarity, the relative positions of said anode, said electron supply filaments and said magnets being such that the permanent magnets will be capable of increasing the path lengths of electrons between said filaments and said anode;

(d) vacuum pump means operatively connected to both said chambers; and

(e) a vacuum interlock provided in said coating chamber so as to admit said parts to be coated into said coating chamber.

4,440,109
METHOD AND APPARATUS FOR REARING POST-LARVAE SHRIMP

Charles Dugan, Goulds, and Timothy Dugan, Homestead, both of Fla., assignors to Farm Fresh Shrimp Corporation, Fort Lauderdale, Fla.

Division of Ser. No. 952,664, Oct. 19, 1978, Pat. No. 4,285,298. This application May 14, 1981, Ser. No. 263,499

Int. Cl.^{3} A01K ***61/00***

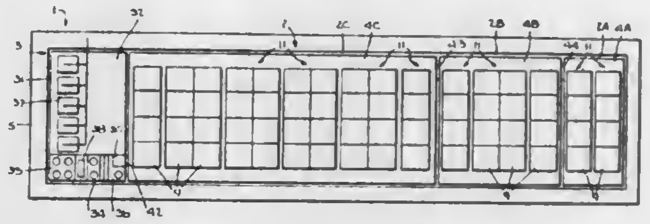
U.S. Cl. 119—2 **5 Claims**

1. A particulate filter for filtering the particulate matter contained in a medium of a rearing means for rearing post-larvae shrimp comprising:

a rotatably mounted hollow body having a pair of end walls which are impermeable to said medium and sidewalls which are substantially permeable to said medium and substantially impermeable to said particulate matter, whereby particulate matter is collected on the inner surfaces of said sidewalls when said medium is passed therethrough;

means for introducing said medium into said body;

means disposed within said body at a level above the level at which said medium is introduced for receiving particulate matter dislodged from said sidewalls and for carrying said received particulate matter out of said body;



means for directing fluid at the outer surfaces of said sidewalls which are at a level above the level of said means for receiving dislodged particulate matter from said sidewalls;

means for rotating said body;

and means responsive to the medium level in said body for actuating said means for directing fluid and said means for rotating.

4,440,110
FLUID FLOW SENSOR AND CONTROL DEVICES AND APPARATUS

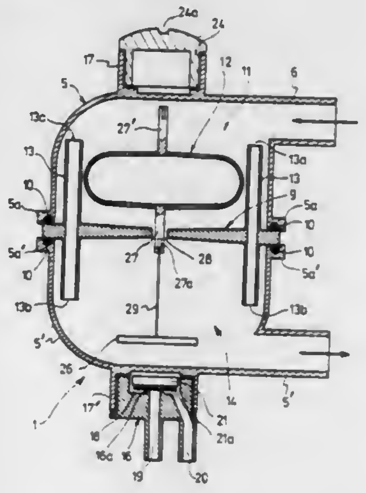
Mervyn L. Hicks, Eltham, New Zealand, assignor to Turn-Styles Limited, Mangatoki, New Zealand

Filed Feb. 24, 1982, Ser. No. 351,955

Claims priority, application Australia, Oct. 9, 1981, 76219/81

Int. Cl.^{3} A01J ***7/00***

U.S. Cl. 119—14.08 **27 Claims**



1. A milk flow sensor and control device constructed and arranged for use in dairy equipment for sensing the flow of milk from an animal and controlling the actuation of fluid pressure/vacuum operated teat cup support and retraction apparatus and removing and retracting the teat cups from the animal on cessation or substantial reduction of milk flow from the animal; said sensor and control device comprising a hollow body defining a float chamber and containing a float member and defining a separated outlet area, a milk inlet to the float chamber at the upper part of the body, at least one main milk outlet from the float chamber opening to an upper part thereof separate from said inlet and communicating with the outlet area, a minor or bleed outlet at or near the base of the float chamber for drainage of milk from the float chamber, said body also defining or being provided with a secondary chamber or duct sealed from the float chamber and outlet area and having a first port and a second port for the passage of fluid under pressure or vacuum and independent of milk passing into or out of the float chamber and outlet area, there being a valve means within the secondary chamber or duct and normally

biassed to a first position but being movable against said bias to a second position, one of said first and second positions being a closed position preventing communication between the first and second ports of the secondary chamber or duct and the other of said first and second positions being an open position permitting communication between said secondary chamber first and second ports for the passage of said fluid under pressure or vacuum to effect actuation of the teat cup support and retraction apparatus and removal of the teat cups from an aminal; movement of said valve means being by way of an actuating member located in the outlet area of the body having a portion engaged or arranged for engagement with the float member and movement by said float member on flow of milk into the float chamber, and said bias being sufficient to cause return of the valve means to the first position on milk within the float chamber reaching a prescribed level.

4,440,111

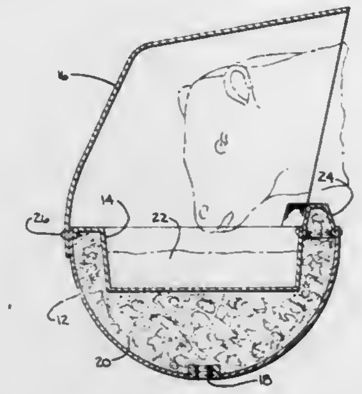
MINERAL SUPPLEMENT DISTRIBUTOR

Donald A. Meyer, Dorchester, Wis., assignor to Meyer's Manufacturing Corp., Dorchester, Wis.

Filed Dec. 9, 1982, Ser. No. 448,392

Int. Cl.^{3} A01K *5/00*

U.S. Cl. 119—61 **3 Claims**



1. A distributor for supplying mineral supplements to livestock comprising:

a hemispherical base suitable for resting on the ground, said base having a weight, at least in the lower portion thereof, for biasing said distributor into an upright position and for restoring same to said position when said distributor has been tipped;

a pan attached to and extending across the upper portion of the hemispheric base terminating and closing the upper portion thereof, said pan having a depression in the central portion thereof extending into the hemispherical base for receiving the mineral supplement;

a hood affixed to said base and extending over said pan for protecting the contents of same, said hood having an opening through which the head of livestock may extend to gain access to the mineral supplement in the pan, said hood lying continuously on the base along a portion of the perimeter of the hemispherical base; and

said base including a lip extending above said pan and hemispherical base along the remaining portion of the perimeter of said hemispherical base for retaining the mineral supplement in the distributor when the distributor is tipped.

4,440,112

FREEZE-PROOF LIVESTOCK WATERING DEVICE AND METHOD

J. R. Lilyerd, Rte. #4, Mora, Minn. 55051

Filed May 10, 1982, Ser. No. 376,422

Int. Cl.^{3} A01K *7/04*

U.S. Cl. 119—73 **11 Claims**

1. A freeze-proof livestock watering device comprising,

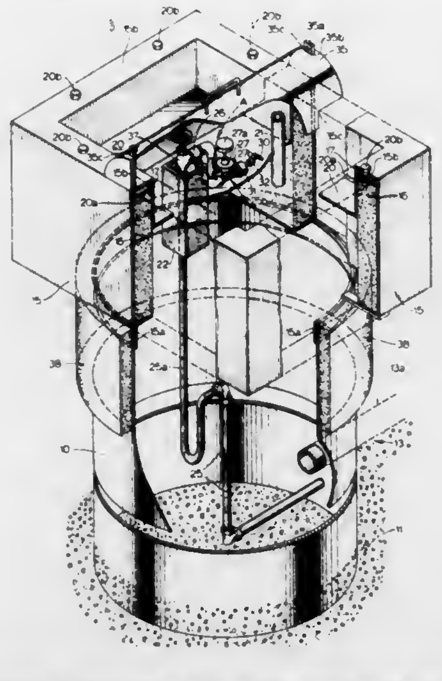
a. a reservoir pan having an open top, insulated side walls and a heat conductive bottom panel,

b. means supporting the pan in operative position above the ground surface and affording communication between the heat conductive pan bottom and above-freezing ground temperatures,

c. a water supply conduit extending into the pan reservoir,

d. a float valve connected to said conduit and mounted in said pan reservoir to prevent the water within the pan from falling below a predetermined minimum level,

e. turbulence-producing means for agitating the water in said reservoir for preventing freezing thereof,



f. an upstanding hollow stand pipe member extending upwardly through the bottom of the pan and affording communication between above-freezing ground temperatures below the pan bottom and the upper end of the stand pipe, the upper end of said stand pipe forming an overflow drain positioned to prevent the water in the pan from rising above a predetermined maximum level above the minimum level maintained by the float valve, and

g. a protective hollow hood member for enclosing the float and the upper end of said drain stand pipe whereby the above-freezing air in the drain stand pipe is confined within the area surrounding said float to prevent freezing thereof.

4,440,113

CONNECTING SYSTEM FOR CERAMIC COMPONENTS OF A BURNER AND/OR HEATING DEVICE

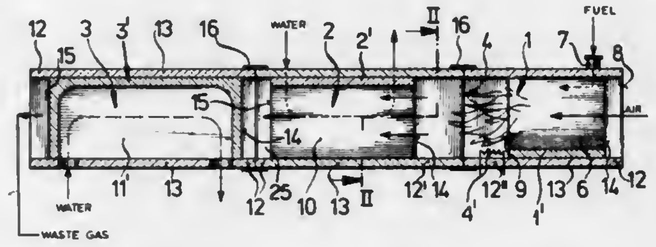
Siegfried Förster, Alsdorf; Stefan R. Schindler, and Hans-Jürgen Pohlmann, both of Selb, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich GmbH, Jülich and Rosenthal Technik AG, Selb, both of, Fed. Rep. of Germany

Filed Dec. 22, 1981, Ser. No. 333,259

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1980, 3049163

Int. Cl.^{3} F22B *5/00*

U.S. Cl. 122—16 **5 Claims**



1. A burner and heating device which comprises:

a burner component including a first ceramic body formed with passages for a fuel and combustion air whereby said fuel and combustion air is mixed at an end of said body to form a combustible mixture which is burned to form hot combustion gas, and ceramic walls, surrounding said body and forming a duct-like extension of said burner component projecting beyond said end of said body;

a recuperator component including a second ceramic body formed at the respective passages for said combustion gas and a medium to be heated, and with walls defining a duct-like extension of said recuperator component projecting beyond said second body, said duct-like extensions being aligned; and

means for securing said duct-like extensions together.

4,440,114

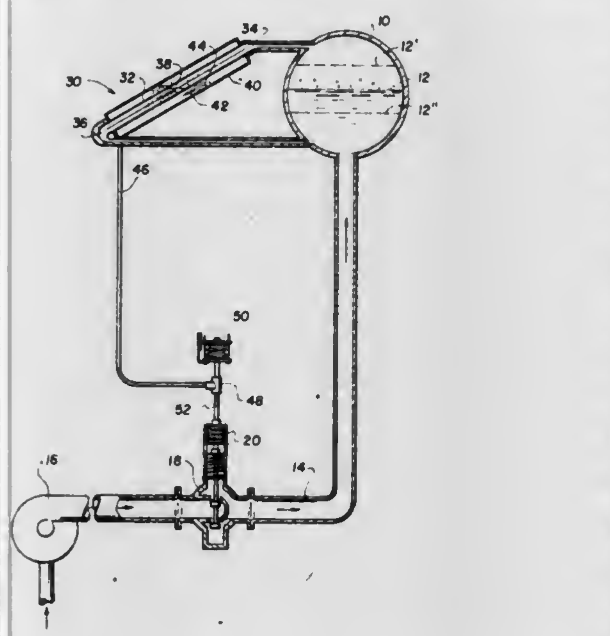
BIAS BELLOWS FOR THERMOHYDRAULIC FEEDWATER REGULATOR

Douglas J. Tuttle, Marblehead, Mass., assignor to Babcock & Wilcox Company, New Orleans, La.

Filed Apr. 18, 1983, Ser. No. 485,772

Int. Cl.^{3} F22D *5/26*

U.S. Cl. 122—451.2 **14 Claims**



1. A water level regulator for a steam drum having a steam space, a water space, a feed water line and a feed water regulating valve in the feed water line with a movable control element, comprising:

an inclined inner tube having an upper end adapted for connection to the steam space and a lower end adapted for connection to the water space;

an inclined outer tube connected around said inner tube and defining a control space therewith extending across upper and lower limits of water level in the steam drum, said control space adapted to receive a volume of fluid which is pressurizable upon an increase of water level in the drum;

a connecting tube connected to said control space adapted to connect said control space to the regulating valve control element for passing fluid to move the control element;

a bias bellows defining a variable space connected to said connecting tube; and

biasing means connected to said bias bellows for changing the volume of said variable space to change an overall setting relationship between the regulating valve control element and the steam drum water level.

4,440,115

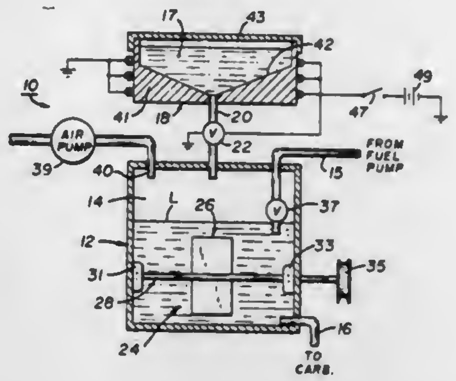
FUEL TREATING APPARATUS FOR INTERNAL COMBUSTION ENGINES AND METHOD OF OPERATING SAME

James O. Allen, 1600 W. 7th St., Peoria, Ill. 61605

Filed Dec. 27, 1981, Ser. No. 334,315

Int. Cl.^{3} F02B *75/12*

U.S. Cl. 123—1 A **8 Claims**



1. Apparatus for treating fuel continuously being supplied to an internal combustion engine, having a fuel line through which fuel is pumped, comprising; reservoir means for storing a quantity of a liquid fuel additive, said reservoir means having an outlet; mixing means having an additive inlet and a mixing chamber connected in fluid communication with the engine fuel line, said additive inlet communicating with said mixing chamber and communicating with the reservoir outlet; agitating means mounted in said mixing chamber for dispersing small quantities of additive supplied from said reservoir means through said additive inlet with fuel flowing under pressure from the fuel line through said mixing chamber to form a fuel mixture for use in the engine; means connected in fluid communication between said reservoir outlet and said additive inlet for conveying said fuel additive to said mixing chamber; outlet means connected in fluid communication with said mixing chamber for supplying continuously said fuel mixture to the engine; wherein said mixing means includes a pressurizing fluid inlet, further including fluid pumping means for supplying fluid under pressure to said fluid inlet in sufficient quantity to force said fuel mixture from said mixing chamber to said outlet means; further including said additive stored in said reservoir means, said additive being a combustible oil or grease, which is added to fuel, flowing through said mixing chamber, in a minor proportion of the weight of said fuel; further including means mounted on said reservoir means for heating said additive in said reservoir means to maintain said additive in a flowable state; and wherein said additive conveying means includes valve means connected in fluid communication between said reservoir outlet and said additive inlet for controlling the flow of said additive from said reservoir means to said mixing means.

4,440,116

COOLANT INJECTOR

David L. Stevenson, Corunna, and Frank M. Seleno, Haslett, both of Mich., assignors to Schmelzer Corporation, Flint, Mich.

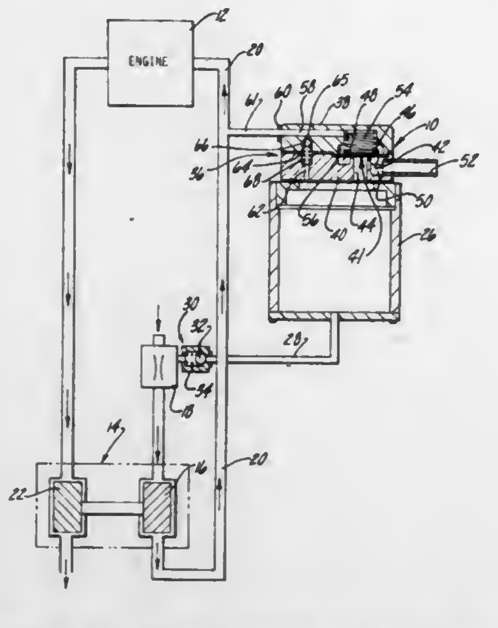
Filed Jul. 12, 1982, Ser. No. 397,558

Int. Cl.^{3} F02M *25/02*

U.S. Cl. 123—25 J **8 Claims**

1. Apparatus for injecting coolant in the fuel-air mixture supplied to a compressor of a turbocharged engine comprising: a reservoir for storing liquid coolant, passage means connecting said reservoir to the outlet side of a turbocharger compressor, valve means in said passage means operable in response to a positive pressure at the outlet side of said compressor to pressurize said reservoir for propelling liquid coolant therefrom, a delivery passage between said reservoir and the outlet side of said compressor to deliver liquid coolant from said reservoir, and control means responsive to a predetermined

level of pressure at said outlet side of said compressor to place said reservoir in liquid communication with said inlet side of said compressor and responsive to a pressure below said predetermined pressure to relieve pressure in said reservoir and interrupt delivery of coolant from said reservoir to said inlet side of said compressor.



4,440,117

ENGINE BLOCK FOR A WATER-COOLED INTERNAL COMBUSTION ENGINE

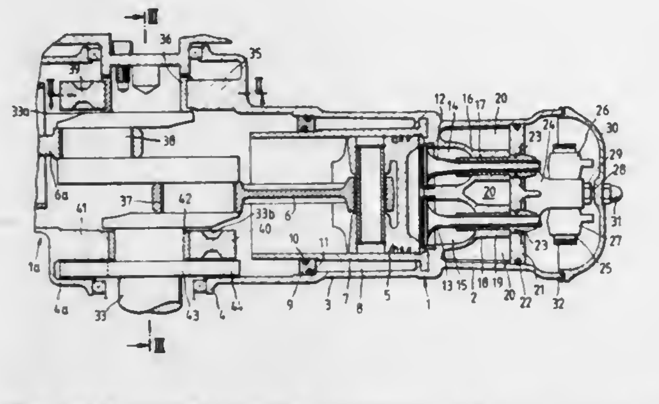
Günter Buchmüller, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk AG, Wolfsburg, Fed. Rep. of Germany

Filed Mar. 30, 1982, Ser. No. 363,552

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1981, 3115671

Int. Cl.^{3} F01P *3/02*

U.S. Cl. 123—41.72 **9 Claims**



1. In a water-cooled internal combustion engine including a single-piece, die-cast engine block encompassing a cylinder head, a cylinder block and one part of a crankcase and means defining coolant passages in said cylinder head and said cylinder block, the improvement wherein said coolant passages are constituted by spaces open outwardly toward respective adjacent ends of the said engine block as cast, further comprising closure means fitted in said engine block for sealing said coolant passages fluidtight towards the outside.

4,440,118

OIL COOLED INTERNAL COMBUSTION ENGINE

John H. Stang, Columbus, Ind., and Steven M. Cusick, Pittsburgh, Pa., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Continuation-in-part of Ser. No. 149,332, May 13, 1980, Pat. No. 4,413,597. This application Apr. 7, 1981, Ser. No. 251,932

Int. Cl.^{3} F02F *1/16*

U.S. Cl. 123—41.84 **7 Claims**

1. An oil cooled cylinder liner for use in an internal combustion engine containing a cylinder bore extending inwardly from a surface for engaging an engine head toward a crankshaft to which is connected a piston for reciprocating travel within the cylinder bore and having a radially oriented liner support surface positioned inwardly from the head engaging surface and further having a lubrication oil circuit including an oil inlet for supplying oil to an exterior surface of the cylinder liner at a point axially adjacent the head engaging surface and still further having a cylindrical outside flow control surface formed on the interior of the cylinder bore having a fixed radius starting adjacent the oil inlet and extending inwardly, said cylinder liner comprising:

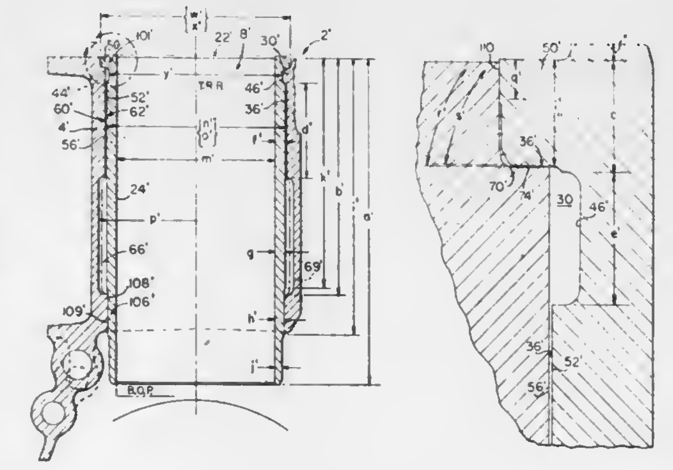
(a) a generally hollow cylindrical body having an interior cylindrical surface for guiding the piston during reciprocating movement and having an exterior surface one portion of which includes an oil flow passage forming means for cooperating with the outside flow control surface when the cylinder liner is mounted within the cylinder bore for forming a circumferential flow passage through which a very thin film of lubrication oil of uniform radial thickness may pass under laminar flow conditions having no circumferential component and having a linear component in a direction parallel to the central axis of said hollow cylindrical body and extending inwardly from the oil inlet when the liner is mounted within the cylinder bore, said oil flow passage forming means including an inside flow control surface having a fixed radius along its entire length which is 0.006 to 0.016 inches less than the radius of the outside flow control surface; and

(b) liner positioning means for positioning said inside flow control surface concentrically within the outside flow control surface when said hollow cylindrical body is positioned within the cylinder bore to form the oil flow passage between said inside flow control surface and the outside flow control surface with a constant radial dimension between 0.006 and 0.016 inches throughout the axial and circumferential extent of the oil flow passage, said liner positioning means including:

(1) outer locating means adjacent the outer end of said hollow cylindrical body for forming a precise radial fit with the outermost portion of the cylinder bore, said outer locating means including a radial flange positioned outwardly from said inside flow control surface,

(2) inner locating means positioned inwardly from said inside flow control surface for forming a precise radial fit with a corresponding portion of the cylinder bore when the cylinder liner is mounted within the cylinder bore, and

(3) stop means for holding said cylindrical body in a generally fixed axial position, said stop means including a radially oriented stop surface positioned outwardly from said inside flow control surface to engage the liner support surface.



4,440,119

ELECTRONIC FUEL INJECTING METHOD AND DEVICE FOR INTERNAL COMBUSTION ENGINE

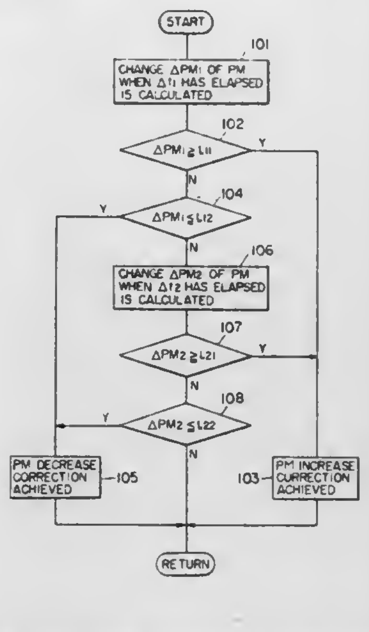
Nobuyuki Kobayashi, Toyota, and Toshiaki Isobe, Nagoya, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jun. 23, 1982, Ser. No. 391,432

Claims priority, application Japan, Feb. 2, 1982, 57-15097

Int. Cl.^{3} F02D *5/02*

U.S. Cl. 123—492 **9 Claims**


START
101
CHANGE ΔPM1 OF PM WHEN Δt1 HAS ELAPSED IS CALCULATED
102
ΔPM1 ≧ L11
Y
N
104
ΔPM1 ≦ L12
Y
N
106
CHANGE ΔPM2 OF PM WHEN Δt2 HAS ELAPSED IS CALCULATED
107
ΔPM2 ≧ L21
Y
N
108
ΔPM2 ≦ L22
Y
N
PM DECREASE CORRECTION ACHIEVED
105
103
PM INCREASE CORRECTION ACHIEVED
RETURN

1. Electronic fuel injecting method for an internal combustion engine, wherein a basic injection time is obtained in accordance with an intake pressure of the engine and an engine rotational speed, and, during transition, said basic injection time is corrected in accordance with the operating conditions of said engine so as to determine a fuel injection time, characterized in that, when a change in value of the intake pressure in every first predetermined time period exceeds a first criterion value, an increase correction for acceleration or a decrease correction for deceleration is effected, in case said change in value of the intake pressure in every first predetermined time period does not exceed said first criterion value, if a change in value of the intake pressure in every second predetermined time period being longer than said first predetermined time period exceeds a second criterion value, at least an increase correction for acceleration is effected, and if said change in value of the intake pressure does not exceed said second criterion value, neither an increase correction for acceleration nor a decrease correction for deceleration is effected.

4,440,120

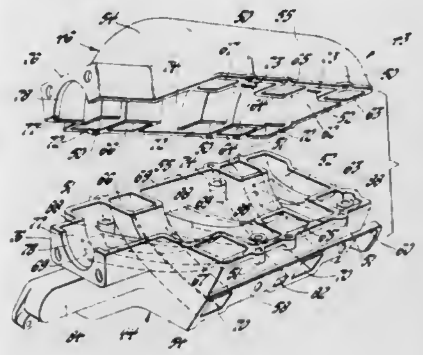
COMPACT RAM TUBE ENGINE AIR INTAKE MANIFOLD

Paul E. Butler, Lansing, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 24, 1982, Ser. No. 381,076

Int. Cl.^{3} F02B *75/22*

U.S. Cl. 123—52 MV **5 Claims**



2. A compact ram tube plenum type intake manifold for an internal combustion engine having V-arranged cylinder banks with opposed inner side walls and spaced cylinder intake ports opening through said walls, said manifold comprising

outer walls of curved elongated partially cylindrical configuration and compact construction sized to be disposed between such engine cylinder banks, said outer walls internally defining the periphery of a barrel like space having a bottom, opposite sides and an upper periphery,

two laterally spaced longitudinally extending external mounting surfaces formed on said outer walls along opposite sides of the manifold and adapted to engage the opposed side walls of such engine cylinder banks, said outer walls having outlet openings through the mounting surfaces from adjacent sides of the barrel like space and spaced to be aligned and connect with the cylinder intake ports upon assembly of the manifold to the engine,

internal walls within said outer walls and defining in said barrel like space a plenum and individual ram intake passages, said passages being located immediately inboard the outer walls and each extending in coiled fashion peripherally within said space, one from each outlet opening, across the bottom of the space, up the opposite side, across the upper periphery and down to an inlet opening from the space, each said inlet opening being located on the same side of the manifold as the outlet opening of its respective ram intake passage, those of said ram intake passages which open through diverse ones of said mounting surfaces being oppositely curved and interdigitated with each other around a central portion of said plenum to direct flows from the plenum in curving paths of opposite sense through their respective outlet openings to the cylinder intake ports of the opposed cylinder bank walls, and

an intake conduit supported on the outer walls and extending longitudinally from one end of the plenum to define an inlet passage connectable with associated induction means for providing induction air to the plenum for delivery to the ram intake passages.

4,440,121

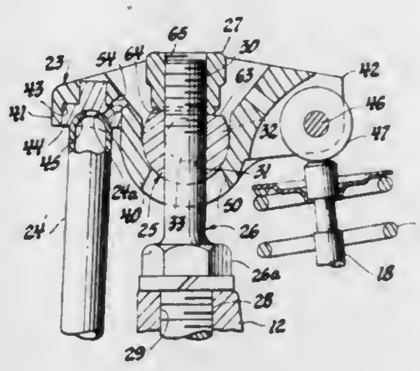
LOCKNUT DEVICE FOR ENGINE ROCKER ARM ADJUSTMENT

Terence J. Clancy, Lake Orion, and David G. Kokochak, Royal Oak, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 30, 1982, Ser. No. 373,658

Int. Cl.^{3} F01L *1/18*

U.S. Cl. 123—90.39 **3 Claims**



1. A reciprocating internal combustion engine of the type having an engine housing defining at least one cylinder with a port, a valve reciprocably mounted to open and close the port and normally spring biased to a port closing position, a valve actuator means, including a self-adjusting lifter, spaced from the valve and movable in the opposite sense to reciprocate the valve, a support stud fixed at one end to the engine housing and having external threads at its opposite free end, a nut threaded onto the support stud, a fulcrum means encircling the support stud and having a reaction surface on one side thereof for abutment against the bearing surface of the nut, an apertured rocker arm positioned by the support stud for engagement by

the valve and the valve actuator means and adapted to be actuated in rocking movement about the fulcrum means to reciprocate the valve against the spring bias to open and close the port during engine operation, and a retainer means operatively associated with the fulcrum means to prevent its rotation about the axis of the support stud, the improvement wherein: said reaction surface and said bearing surface of said fulcrum means and said nut, respectively, are each inclined in complement to each other, at an angle of at least five degrees relative to a plane perpendicular to the axis of the support stud whereby to define a cam lock means to prevent rotation of said nut relative to said support stud as a result of engine vibration.

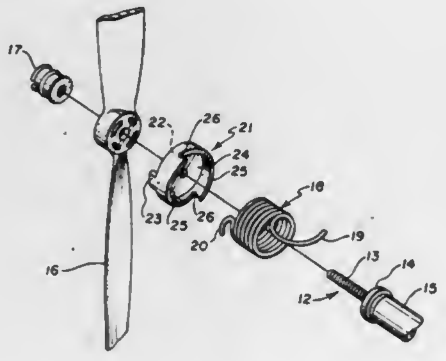
4,440,122
MODEL AIRPLANE ENGINE STARTER

Roger D. Theobald, Mission Veijo, Calif., assignor to Cox Hobbies Inc., Santa Ana, Calif.

Continuation of Ser. No. 114,247, Jan. 22, 1980, abandoned. This application Feb. 16, 1982, Ser. No. 349,054

Int. Cl.³ F02N *5/02*

U.S. Cl. 123—185 D **2 Claims**



1. A self-starter for a model internal-combustion engine of the type having a source of power, a rotatable shaft operated by said source, and a propeller secured to said shaft, said starter comprising

- a coiled spring for mounting over said shaft in surrounding relation, and
- a connector constructed and arranged to be carried by said shaft in interconnecting driving relation between said spring and the propeller and in surrounding relation with at least one convolution of said spring,
- said connector having opposite ends and a propeller-engaging drive element extending outwardly from one of its ends to engage the propeller and be driven thereby therewith,
- said connector having a spring-engaging element at its opposite end constructed and arranged to be automatically engaged by said spring in biased relation whenever said connector is rotated in contra-normal direction by the propeller,
- said spring having a stationary end formed for attachment to the engine and having a free end formed for attachment to said connector, said free end being constructed and arranged to engage said spring-engaging element in biasing relation when said connector is rotated in a contra-normal direction and to bear against and ride upon one end of said connector in non-engaging relation to said element when said connector is rotated by the propeller in a normal direction.

4,440,123
HALF SPEED BALANCER

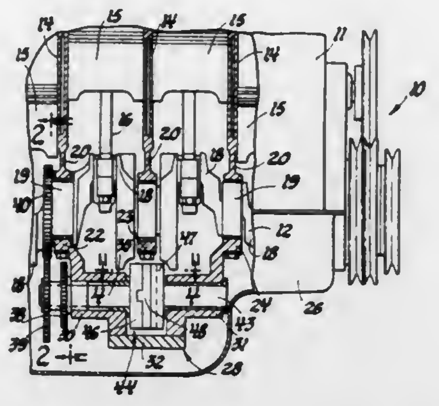
Lung-Wen Tsai, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 28, 1982, Ser. No. 343,450

Int. Cl.³ F16F *15/26*

U.S. Cl. 123—192 B **5 Claims**

1. In combination, support means carrying an operable mechanism having in operation a repetitious unbalance occurring in a predetermined cycle and a half speed balancer comprising at least one Oldham coupling device having a pair of end members rotatably connected by a coupler between the end members, said end members being mounted to said support means for rotation on offset parallel axes and at least one of said end members being connected for driving in timed relation with said mechanism at a rotational speed equal to one half the cyclic speed of said repetitious unbalance, said coupler being connected to said end members by abutments contacting along laterally and longitudinally extending surfaces, the surfaces associated with the diverse end members lying at substantial rotational angles to one another such that said coupler is rotatably driven by said end members at a speed equal to the rotational speed of the end members while being eccentrically displaced such that the center of gravity of the coupler travels in a closed curving path at a rotational speed equal to the cyclic speed of the repetitious unbalance, said Oldham coupling device being so oriented as to effect the displacement of said coupler in a manner to oppose at least a portion of said mechanism cyclic unbalance and the mass of said coupler being chosen to offset a predetermined part of. said opposed portion of mechanism unbalance.



4,440,124
INTERNAL COMBUSTION ENGINE

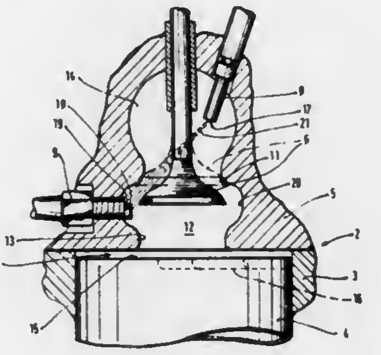
Konrad Eckert, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 23, 1982, Ser. No. 410,822

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1982, 3207179

Int. Cl.³ F02B *19/12*

U.S. Cl. 123—261 **7 Claims**



1. An internal combustion engine, comprising at least one cylinder; a piston movable in said cylinder; a cylinder head connected with said cylinder; an aspiration passage; an inlet valve movable between open and closed positions; a combustion chamber formed on said piston at a side of said cylinder head; an additional combustion chamber form in said cylinder head between said first mentioned combustion chamber and said inlet valve and having an axis and a circular periphery; means for producing a twisted stream rotating about said axis; an injecting nozzle which opens in said aspirating passage and is arranged to inject fuel into said additional combustion chamber via said inlet valve in its open position; and external igniting means arranged in the region of said periphery of said additional combustion chamber, said injecting nozzle being formed as a single-hole nozzle and having an injection hole which is directed substantially against said igniting means.

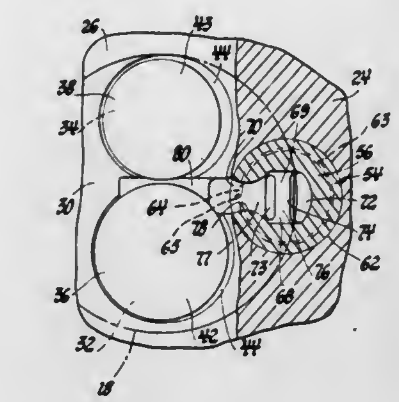
4,440,125
DIESEL ENGINE COMBUSTION CHAMBER

James L. Case, Okemos, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 18, 1981, Ser. No. 264,472

Int. Cl.³ F02B *19/08*

U.S. Cl. 123—293 **8 Claims**



1. In combination in a diesel engine, means defining a closed end cylinder, a piston reciprocably carried in the cylinder and defining a main combustion chamber at the closed end of the cylinder, a precombustion chamber formed in the cylinder defining means and closed by a bottom wall, said main combustion chamber being connected with said precombustion chamber by a gas passage through said bottom wall, said passage including main and branch portions, said main portion being of substantially constant depth and having a base section of relatively great width and large cross-sectional area opening into the precombustion chamber to provide controlled swirl and turbulence therein of gas delivered from the main combustion chamber, said branch portion connecting an intermediate point of the main passage portion to an interior zone of the precombustion chamber from which to receive an initial outflow of combustion gases into the gas passage and a venturi section in the main passage portion and extending from the base section, said venturi section being disposed substantially between said intermediate point and an opening to the main combustion chamber, said opening being of lesser width than said base section, and said venturi section having a throat narrower than said opening and smoothly extending to the wider opening and base section to moderately restrict outflow of gases from the precombustion chamber and thereby cause increased combustion in the passage base section and greater penetration of outflowing gases into the main combustion chamber while avoiding excessive restriction to flow in either direction between the main and precombustion chambers.

4,440,126
BRAKING DEVICE FOR A VALVE CONTROLLED INTERNAL COMBUSTION ENGINE

Hubert Abermeth; Andreas Deckert, both of Cologne; Helmut Müller, Bensberg, and Jurgen Wahnschaffe, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

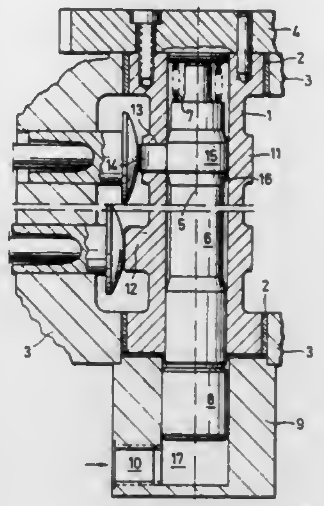
Division of Ser. No. 229,124, Jan. 28, 1981, Pat. No. 4,378,765. This application Jan. 14, 1983, Ser. No. 458,141

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1980, 3003566

Int. Cl.³ F02D *13/04*

U.S. Cl. 123—321 **5 Claims**

1. A braking device for a valve controlled internal combustion engine for motor vehicles, with each cylinder having at least one exhaust valve, said braking device comprising a camshaft for controlling said at least one exhaust valve for opening thereof, said camshaft having a main cam for moving operation, and a supplementary cam which additionally becomes effective during braking operation, said supplementary cam being arranged in the plane of said main cam and being capable of being selectively lowered in said camshaft, a control shaft arranged in the rotational axis of said camshaft, said control shaft serving for actuation of said supplementary cam, said control shaft being axially displaceable in said camshaft, and including a section with conical sides in the region of said supplementary cam, a pressure spring arranged on one end face of said control shaft, said pressure spring being effective counter to the direction of shift of said control shaft, said control shaft including two abutments, and an angle lever, said angle lever being connected to said control shaft between said two abutments by means of a sliding piece, and said angle lever being rotatable against the force of said pressure spring for displacing said control shaft in the operating position.



4,440,127
ELECTRONIC CONTROL DEVICE FOR THE FUEL METERING SYSTEM OF AN INTERNAL COMBUSTION ENGINE

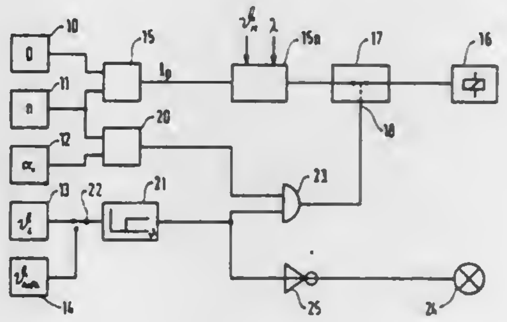
Gustav Virgilio, Winnenden, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 16, 1982, Ser. No. 408,556

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1982, 3210512

Int. Cl.³ F02D *5/00*

U.S. Cl. 123—325 **8 Claims**



1. An electronic control device for the fuel metering system of an internal combustion engine for use with a vehicle comprising, a switching means for suppressing the fuel supply during overrun operations of said engine, a processed temperature signal means responsive to at least one of an intake air temperature sensor means for said engine and to the output signal of an ambient air temperature sensor means located in the body of said vehicle for detecting the formation of ice

exterior to said vehicle, and said switching means being responsive to said temperature signal means.

7. A method for fuel metering in an internal combustion engine comprising the steps of, sensing the temperature of the intake air for said engine as part of a processed temperature signal, sensing the temperature of the ambient air as another part of a processed temperature signal, providing fuel metering signals for suppressing the fuel supply to said engine, and inhibiting said fuel metering signals in response to at least one of said parts of said processed temperature signal during overrun operation of said engine.

4,440,128

METHOD AND APPARATUS FOR CONTROLLING THE IDLING ROTATIONAL SPEED OF AN INTERNAL COMBUSTION ENGINE

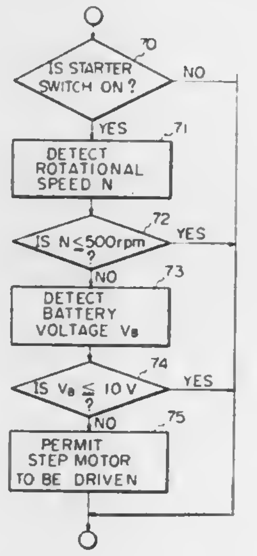
Jiro Nakano, Okazaki, and Yohei Watanabe, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jan. 18, 1982, Ser. No. 340,253

Claims priority, application Japan, Jan. 19, 1981, 56-5128

Int. Cl.^{3} F02D *33/02*

U.S. Cl. 123—339 **16 Claims**



IS STARTER SWITCH ON?
70
NO
YES
71
DETECT ROTATIONAL SPEED N
72
IS N≤500rpm?
YES
NO
73
DETECT BATTERY VOLTAGE VB
74
IS VB ≤ 10V?
YES
NO
75
PERMIT STEP MOTOR TO BE DRIVEN

1. A method for controlling the idling rotational speed of an internal combustion engine having a step motor for adjusting the idle air flow to the engine when a drive signal, which is determined depending upon the operating condition of the engine, is applied thereto, said method comprising the steps of:

generating a cranking signal which indicates the engine is cranking;

generating at least one engine parameter signal which indicates the operating condition of the engine;

judging, in response to the engine parameter signal and the cranking signal, whether or not the engine is under a certain operating condition, during cranking, wherein the step motor cannot be normally actuated; and

when the engine is under said certain operating condition during cranking, inhibiting said drive signal from being applied to the step motor.

4,440,129

IGNITION TIMING CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

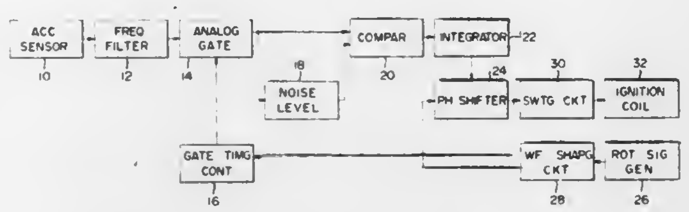
Toshio Iwata, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 370,996, Apr. 22, 1982, abandoned, which is a continuation of Ser. No. 147,542, May 7, 1980, abandoned. This application Aug. 17, 1983, Ser. No. 523,902

Int. Cl.^{3} F02P *5/14*

U.S. Cl. 123—425 **2 Claims**

1. An ignition timing control system for an internal combustion engine comprising an acceleration sensor for sensing an acceleration of a vibration of an internal combustion engine, a discrimination means for removing noise signal components from an output from said acceleration sensor and for selecting a knock signal component, said discrimination means including at least an analog gate for interrupting and controlling the passage of said output from said acceleration sensor therethrough and a gate timing controller for closing said analog gate for predetermined time intervals, each of said intervals commencing with each time point at which said engine is ignited and arranged so as to eliminate ignition noise components from said sensor output, a reference ignition timing generator means for generating a reference ignition timing signal, a phase shifting means responsive to an output from said discrimination means to shift a phase of said reference ignition timing signal, an ignition coil, and switching means for interrupting the flow of current to said ignition coil in synchronism with an output from said phase shifting means;



wherein said discrimination means further comprises a noise level circuit means and a comparator means and an integrator means operatively serially connected between said analog gate and said phase shifter, wherein said noise level circuit means generates a DC voltage having a value which is higher than a peak value of mechanical noise components of said output of said acceleration sensor, and wherein said comparator means compares said output from said analog gate with an output from said noise level circuit means so as to eliminate said mechanical noise components from said output of said acceleration sensor means, and wherein said integrator means integrates an output from said comparator so as to provide an integrated voltage which is dependent upon an intensity of detected knocking of said internal combustion engine.

4,440,130

IGNITION CONTROL DEVICE

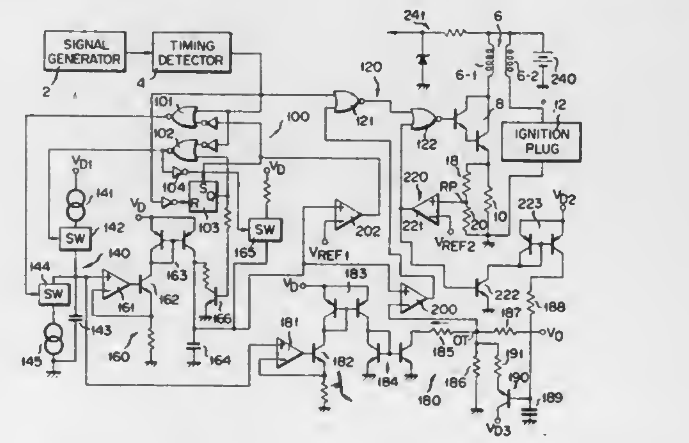
Yasuo Taguchi, Yokohama, and Satoshi Nakao, Tokyo, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jul. 14, 1981, Ser. No. 283,347

Claims priority, application Japan, Jul. 15, 1980, 55-96750; Jul. 15, 1980, 55-96757

Int. Cl.^{3} F02P *5/08*

U.S. Cl. 123—427 **22 Claims**



1. An ignition control device for an internal combustion engine comprising:

signal generating means for generating an output signal having a frequency which corresponds to the rotation speed of said internal combustion engine;

voltage storing means for storing a voltage having a level which corresponds to the rotation speed of said engine;

saw-tooth wave generating means for generating, in response to said signal generating means output signal, a saw-tooth wave signal having a frequency which corresponds to that of the output signal generated from said signal generating means and having a slope corresponding to the output voltage applied from said voltage storing means, said saw-tooth wave signal of each engine rotation starting from a predetermined voltage level at a timing signal synchronized with the output signal from said signal generating means;

first and second reference voltage generating circuits for generating first and second reference voltages;

first control means for comparing the first reference voltage with the saw-tooth wave signal generated from the saw-tooth wave generating means at a timing synchronized with the output signal applied from said signal generating means, and for controlling the voltage stored in said voltage storing means according to the difference between the levels of said first reference voltage and said saw-tooth wave signal; and

second control means for generating an ignition control signal when the saw-tooth wave signal generated from the saw-tooth wave generating means has reached the second reference voltage level.

4,440,131

REGULATING DEVICE FOR A FUEL METERING SYSTEM

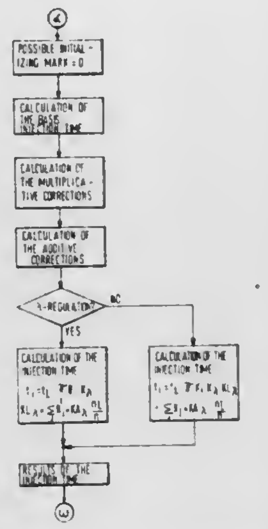
Günter Felger, Leonberg; Otto Glöckler, Renningen; Helmut Kauff, Schwieberdingen; Uwe Kiencke, Ludwigsburg; Heinrich Knapp, and Herbert Stocker, both of Leonberg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 21, 1981, Ser. No. 294,877

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1980, 3036107

Int. Cl.^{3} F02D *5/00;* F02M *7/12*

U.S. Cl. 123—440 **7 Claims**



POSSIBLE INITIALIZING MARK = 0
CALCULATION OF
CALCULATION OF THE MULTIPLICATIVE CORRECTIONS
CALCULATION OF THE ADDITIVE CORRECTIONS
YES
CALCULATION OF THE INJECTION TIME
CALCULATION OF THE INJECTION TIME

1. A regulating device for a fuel metering system in an internal combustion engine comprising,

a signal generator circuit for generating a fuel metering signal,

an O_2 sensor coupled with a regulator for exerting a supplementary influence upon said metering signal, said regulator producing a regulating corrective signal,

at least one means for smoothing said corrective signal,

memory means for storing the output of one of said at least one smoothing means in dependence upon operating parameters of the engine, and

subsequent regulator means responsive to said at least one smoothing means receiving said corrective signal, and means for influencing said metering signal additively and multiplicatively in dependence on engine parameters, wherein

(a) said means for additively influencing said metering signal is controlled via said subsequent regulator means by one of said at least one smoothing means and by said memory means, and

(b) said means for multiplicatively influencing said metering signal is controlled via said subsequent regulator means by one of said at least one smoothing means.

4,440,132

FUEL INJECTION SYSTEM

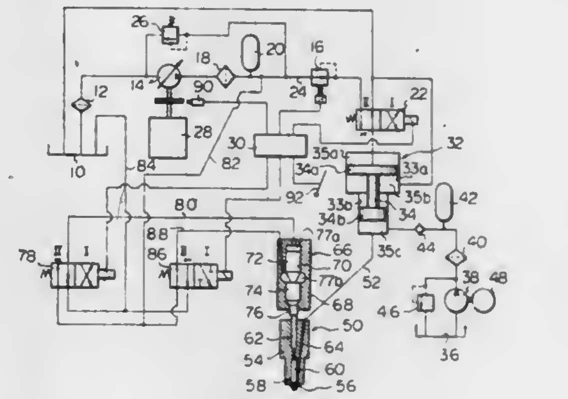
Tomohiko Terada, and Hideaki Komada, both of Higashi Matsuyama, Japan, assignors to Diesel Kiki Company, Ltd., Tokyo, Japan

Filed Jan. 19, 1982, Ser. No. 341,041

Claims priority, application Japan, Jan. 24, 1981, 56-9168

Int. Cl.^{3} F02M *57/02, 39/00*

U.S. Cl. 123—446 **6 Claims**



1. A fuel injection system comprising:

a source of fuel supply;

a booster operated by a pressure differential between opposite ends thereof to compress fuel fed from the source of fuel supply to one end thereof, the fuel developing a first hydraulic fluid pressure;

a fuel injector for injecting a supply of compressed fuel from the booster;

a nozzle needle actuator operatively associated with the fuel injector and operated by a pressure differential between opposite ends thereof to start and terminate a fuel injection from the fuel injector;

a source of hydraulic fluid supply;

first hydraulic circuit means for producing a predetermined level of hydraulic fluid pressure and communicated with the source of hydraulic fluid supply;

a pressure control means for controlling the predetermined hydraulic fluid pressure in the first hydraulic circuit means and supplying the controlled pressure to the other end of the booster through a first direction control means as a second hydraulic fluid pressure;

second hydraulic circuit means for selectively communicating through a second direction control means one end of the nozzle needle actuator to the first hydraulic circuit means and the source of hydraulic fluid supply;

a third hydraulic circuit means for selectively communicating through a third direction control means the other end of the nozzle needle actuator to the source of hydraulic fluid supply when said one end is communicated to the first hydraulic circuit means and to the first hydraulic circuit means when said one end is communicated to the source of hydraulic fluid supply; and

a control means for controlling the output pressure of the pressure control means and the states of the first to third direction control means.

4,440,133

DEVICE FOR PREMETERED PRESSURE-TIME INJECTION

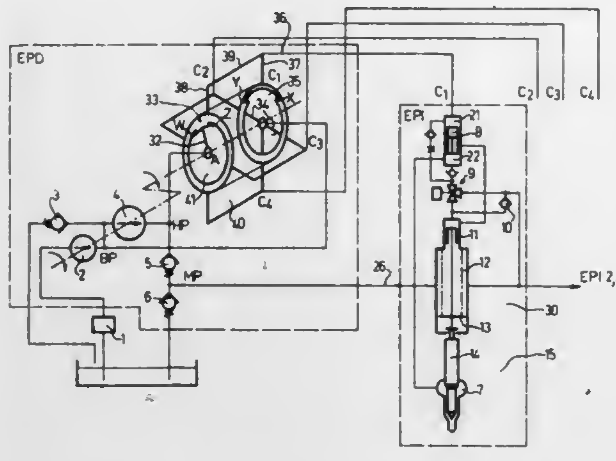
Jean-Pierre Jourde, Lyons, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Sep. 27, 1982, Ser. No. 424,916

Claims priority, application France, Oct. 15, 1981, 81 19395

Int. Cl.³ F02M *39/00*

U.S. Cl. 123—446 **5 Claims**



1. An electronically controlled device for premetered pressure-time injection of a motor using a predetermined high injection pressure and low feed pressure, comprising:
- means for supplying a predetermined medium pressure of a value which is intermediate said high and low pressures;
- a plurality of cylinders mounted in said motor and operatively connected to said means for supplying said medium pressure;
- a single piping system connected to each of said cylinders;
- two stage, rotary distributor means for cyclically distributing the high and low pressure as a function of the number of said cylinders into said single piping system for each of said cyclinders, without overlapping of high pressure and low pressure communication time periods;
- a plurality of injector nozzle units which are each respectively operatively associated with each of said cylinders and wherein each of said injector nozzle units further comprise;
- an injector having a needle chamber formed therein;
- an injector nozzle;
- a metering piston mounted in said injector nozzle wherein a delivery chamber, injector chamber and control chamber are formed in said injector nozzle and connected to said single piping system of a corresponding cylinder and wherein the injector chamber is connected to the needle chamber of the injector;
- a first unidirectional flow valve;
- a medium pressure channel formed in said injector nozzle unit;
- a second channel formed in said injector nozzle unit;
- a three-channel electrovalve; and
- an injector control piston wherein the control chamber is connected, on the one hand, to the means for supplying a medium pressure through said unidirectional flow valve and wherein said unidirectional control valve is positioned in a direction for allowing said control chamber to be fueled, and, on the other hand, via three-channel electrovalve, through said medium pressure channel, for initiating injection, and through the second channel, to the injection chamber for initiating metering; and
- electronic means synchronized with the rotation of the distributor and of the motor for triggering initiation of injection and initiation of metering by means of the electrovalve.

4,440,134

FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINES

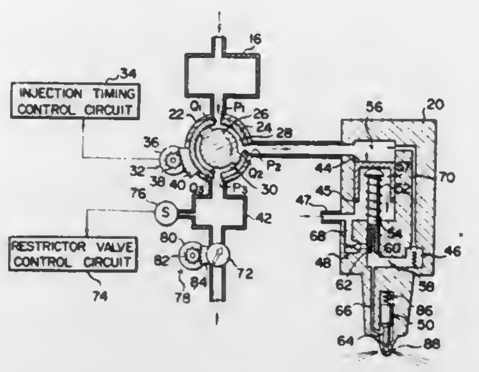
Kiyoharu Nakao, Isehara, and Fumihide Sato, Yokohama, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed May 14, 1982, Ser. No. 378,180

Claims priority, application Japan, May 15, 1981, 56-73114; Jun. 17, 1981, 56-87919; Jun. 17, 1981, 56-87923; Jun. 22, 1981, 56-90811

Int. Cl.³ F02M *47/02*

U.S. Cl. 123—447 **10 Claims**


INJECTION TIMING CONTROL CIRCUIT
RESTRICTOR VALVE CONTROL CIRCUIT

1. A fuel injection system for an internal combustion engine having at least one cylinder and a cam shaft operatively associated therewith, comprising:
- a fuel pump driven by said engine for delivering fuel;
- first accumulator means for receiving and storing the fuel from said fuel pump;
- rotary valve means having an inlet port connected with said first accumulator means, at least one outlet port and a drain port, said rotary valve means comprising a housing, a sleeve mounted for rotation within said housing, said sleeve having at least one opening formed therein and rotary shaft means mounted for rotation within said sleeve, said rotary shaft means being rotated in synchronism with said cam shaft and having means for selectively connecting the outlet port with the inlet port and the drain port;
- means for automatically controlling position of said sleeve relative to said housing in response to number of revolutions of the engine;
- second accumulator means connected at one end with the drain port of said rotary valve means and at the other end with a tank;
- variable restrictor valve means disposed between said second accumulator means and said tank;
- means for automatically controlling degree of opening of said variable restrictor valve means in response to fluid pressure in said second accumulator means; and
- at least one injector means connected with the outlet port of said rotary valve means for injecting the fuel into said cylinder.

4,440,135

FUEL INJECTION SYSTEM PROVIDED WITH FUEL INJECTION VALVES HAVING CONTROLLABLE VALVE OPENING PRESSURE

Toshiaki Asami, Matsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Apr. 12, 1982, Ser. No. 367,681

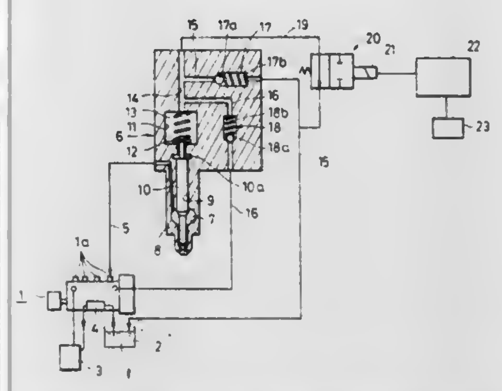
Claims priority, application Japan, Apr. 16, 1981, 56-55048[U]

Int. Cl.³ F02M *47/02, 51/00*

U.S. Cl. 123—467 **14 Claims**

1. A fuel injection system for combination with an internal combustion engine, comprising:
- a fuel injection pump;
- pump means for feeding fuel under pressure to said fuel injection pump;

- at least one fuel injection valve arranged to be supplied with fuel pumped by said fuel injection pump, said fuel injection valve including a nozzle needle arranged to be lifted by the pressure of said pumped fuel to cause injection of said pumped fuel into said engine, and means elastically urging said nozzle needle against a lifting motion thereof;
- first supplementary back pressure applying means for causing the pressure of leaked fuel produced by a lifting motion of said nozzle needle to act upon said nozzle needle against said lifting motion thereof; and
- second supplementary back pressure applying means responsive to at least one operating condition of said engine for causing the pressure of pressurized fuel suppled from said pump means for supplying said fuel under pressure to act upon said nozzle needle against a lifting motion thereof;
- said second supplementary back pressure applying means including:



- a first passageway connecting said pump means to said fuel injection valve for feeding pressurized fuel suppled from said pump means and being applied to said nozzle needle;
- a second passageway connecting said fuel injection valve to a lower pressure zone for guiding said leaked fuel and said pressurized fuel to said lower pressure zone;
- a first valve arranged for opening and closing said second passageway;
- a further valve arranged for closing said first passageway when the pressure of fuel acting upon said nozzle needle against said lifting motion thereof is higher than the pressure of pressurized fuel supplied from said pump means for feeding said fuel under pressure; and
- valve controlling means responsive to at least one operating condition of said engine for controlling said first valve.

4,440,136

ELECTRONICALLY CONTROLLED FUEL METERING SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Helmut Denz, and Hans Barho, both of Stuttgart, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

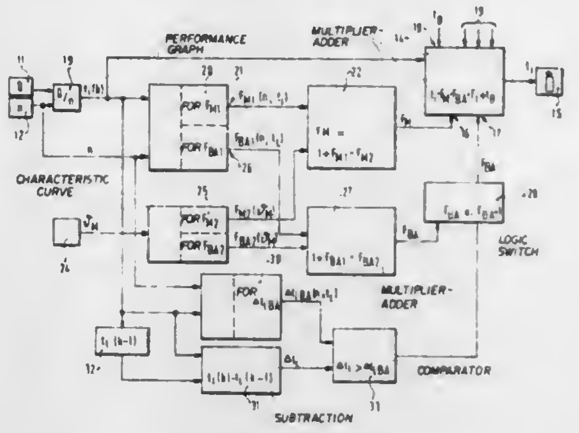
Filed Oct. 22, 1981, Ser. No. 314,144

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1980, 3042246

Int. Cl.³ F02B *3/00*

U.S. Cl. 123—491 **5 Claims**

1. An electronically controlled fuel metering system for an internal combustion engine, which comprises;
- speed sensing means for determining engine rpm values;
- temperature sensing means for determining engine temperature values;
- basic metering signal generating means for generating a basic metering signal;
- signal correction means, connected to receive said basic metering signal, for correcting said basic metering signal to provide an enriched fuel-air mixture, said signal correction means determining at least one correction value K in accordance with the formula $K = 1 + K1 \times K2$, wherein K1 is a first corrective value dependent on at least said basic metering signal and said rpm values, and K2 is a second corrective value which is dependent on at least said engine temperature values, said signal correction means including memory means for storing engine performance graph data including first corrective factors **K1** as a function of said basic metering signal and rpm and storing engine characteristic curve data including second corrective factors **K2** as a function of engine temperature.



4,440,137

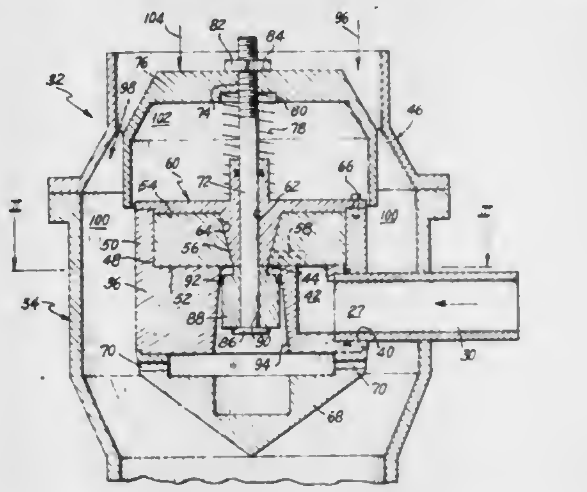
SUPPLEMENTAL FUEL SUPPLY DEVICE FOR I.C. ENGINE

Thomas Lagano, Juno Beach, and William H. Batchelor, Jenson Beach, both of Fla., assignors to Propane Carburetion Systems, Inc., Stuart, Fla.

Filed Jul. 12, 1982, Ser. No. 397,168

Int. Cl.³ F02M *21/02*

U.S. Cl. 123—525 **12 Claims**



1. A control valve for a gas fuel supply to an internal combustion engine including an air intake conduit means comprising:
- a valve housing including an air duct extending through the housing and having inlet and outlet ends, the housing arranged to be connected to said air intake conduit means so that the outlet end of said air duct is in communication with said conduit;
- a movable air flow responsive member in said duct arranged to be deflected in a first direction by forces resulting from air flowing through said duct towards the outlet end thereof;
- means for resiliently biasing said air flow responsive member in a direction opposite to said first direction of deflection towards a nondeflected position;
- a gas fuel inlet into the housing;
- a gas fuel passageway in the housing providing communication between said gas fuel inlet and said air duct at a point between said air flow responsive member and the outlet end of said duct;

a valve element for controlling gas fuel flow through said passageway, said valve element movable between closed and open positions in response to the movement of said air flow responsive member between undeflected and deflected positions, respectively; and

valve element control means for moving said valve element towards and maintaining same at a closed position independently from said biasing means; movement of said air flow responsive member being unrestricted by said valve element control means.

4,440,138

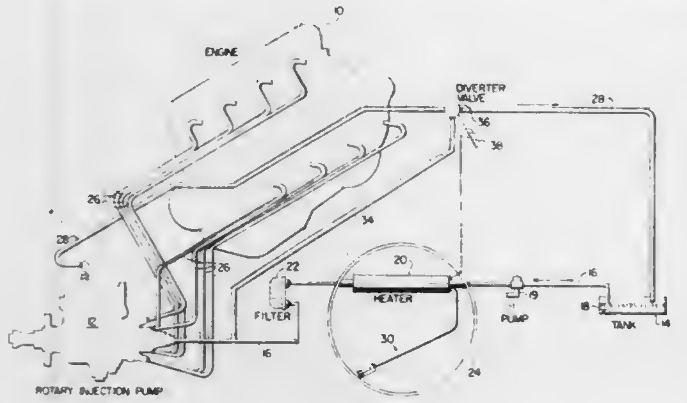
DIESEL ENGINE FUEL SYSTEM

Arthur W. Smith, Glastonbury, Conn., assignor to Stanadyne, Inc., Windsor, Conn.

Filed Feb. 16, 1982, Ser. No. 349,060

Int. Cl.^{3} F02M ***31/00***

U.S. Cl. 123—557 **5 Claims**



1. In a diesel engine fuel system including a tank, an injector for introducing fuel to the engine and having a connection with a line for returning fuel to the tank, the system also including a delivery line from the tank to the injector wherein a temperature responsive fuel heater and a fuel filter are connected, the filter being downstream from the heater, the improvement comprising a diverter line connected to the return line and also connected to the delivery line downstream of the heater, and a valve controlling flow in the diverter line and the return line and operable to permit complete flow through the return line only when the said heater is not operating and to permit flow through the diverter line and simultaneous limited flow through the return line to the tank only when the heater is operating.

4,440,139

VACUUM CONTROL VALVE

Mitikatu Naito, Nagoya; Kiyotosi Yano; Kazuo Itou, both of Kariya, and Kunihiro Tsuzuki, Ohbu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 15, 1982, Ser. No. 398,711

Claims priority, application Japan, Jul. 20, 1981, 56-107366[U]

Int. Cl.^{3} F02M ***25/06***

U.S. Cl. 123—569 **3 Claims**

1. A vacuum control valve for controlling an amount of exhaust gas to be recirculated into combustion chambers of an engine comprising:

a cover and a housing;

a vacuum port formed on said cover and to be connected with a vacuum source;

an output port formed on said cover and to be connected with a diaphragm chamber of a EGR valve of said engine;

a vacuum modulating chamber formed in said cover and communicated with said output port and having diaphragm;

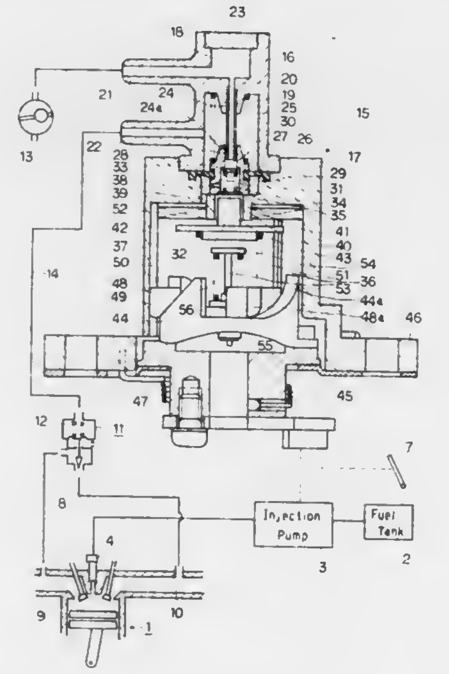
a movable member coupled with an opening of said diaphragm so as to be moved with said diaphragm, said movable member having therein a valve chamber and a valve port opening to said vacuum modulating chamber, said movable member further having a hole for communicating said valve chamber with the atmosphere;

a valve member disposed in said valve chamber and facing to said valve port;

a first spring disposed in said valve chamber for biasing said valve member towards said valve port;

a pipe disposed in said vacuum modulating chamber, one end thereof being communicated with said vacuum port and the other end projecting into said valve port for introducing a negative pressure from said vacuum source into said vacuum modulating chamber;

a second spring disposed in said vacuum modulating chamber and biasing said movable member in such a direction that said movable member is moved away from said pipe, whereby when the negative pressure in said vacuum modulating chamber exceeds a preset load determined by the biasing force of said second spring said valve member seats on said other end of said pipe for cutting off the communication between said vacuum port and said vacuum modulating chamber and said vacuum modulating chamber is communicated with said valve chamber for introducing the atmospheric pressure into said vacuum modulating chamber through said valve port, thereby to modulate the pressure in said vacuum modulating chamber at a predetermined value in accordance with said preset load;



a cam chamber formed in said housing;

a cam member rotatably disposed in said cam chamber and being linked with an acceleration pedal;

a cam follower means disposed in said cam chamber and having a cam follower being in contact with a cam surface of said cam member;

a spring holder disposed in said cam chamber;

a guide hole formed in a wall of said housing into which a guide portion of said spring holder is inserted and by which said spring holder is guided, so that the end of said guide portion is in contact with said movable member; and,

a third spring disposed in said cam chamber and between said cam follower means and said spring holder for urging said spring holder in a direction opposite to the biasing direction of said second spring, whereby when said cam member is rotated the urging force of said third spring becomes larger and thereby said preset load of said second spring is changed so as to change the predetermined value at which the pressure in said vacuum modulating chamber is controlled;

wherein the improvement comprises:

a push rod axially movably held in said cam follower means; and

a fourth spring for urging said push rod in a direction towards said spring holder,

said push rod coming into contact with said spring holder when a rotational angle of said cam member exceeds a predetermined angle for applying the spring force of said fourth spring to said spring holder.

4,440,140

DIESEL ENGINE EXHAUST GAS RECIRCULATION CONTROL SYSTEM

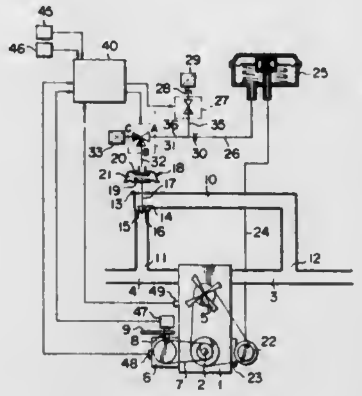
Michio Kawagoe, and Masaaki Tanaka, both of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jul. 14, 1982, Ser. No. 398,446

Claims priority, application Japan, Aug. 27, 1981, 56-134511

Int. Cl.^{3} F02M ***25/06***

U.S. Cl. 123—571 **3 Claims**



1. For a diesel engine for a vehicle, comprising an air intake passage, an exhaust passage, and an exhaust gas recirculation passage whose upstream end is communicated to an intermediate point of said exhaust passage and whose downstream end is communicated to an intermediate point of said air intake passage.

an exhaust gas recirculation control system, comprising:

(a) a fluid pressure operated exhaust gas recirculation control valve which controls the flow resistance of said exhaust gas recirculation passage according to a control fluid pressure supplied thereto so as to increase the flow resistance to a maximum substantially infinite valve as the control fluid pressure approaches atmospheric pressure;

(b) an electrically operated switching over valve which, when actuated, changes over said control fluid pressure supplied to said exhaust gas recirculation control valve to atmospheric pressure; and

(c) an exhaust gas recirculation control signal generating system, including a means for detecting engine load and jerk, which outputs a first fluid pressure control signal which is supplied to said exhaust gas recirculation control valve as said control fluid pressure so as to provide an appropriate amount of exhaust gas recirculation according to engine load, and a second electric control signal which actuates said switching over valve when the rate of change of engine load is greater than a certain predetermined value.

4,440,141

METHOD AND APPARATUS FOR CONTROLLING ENERGIZING INTERVAL OF IGNITION COIL OF AN INTERNAL COMBUSTION ENGINE

Masakuni Tsujimura, Anjyo; Hideo Miyagi, Okazaki; Mamoru Kohashi, Aichi, and Masaaki Kurii, Toyoake, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Mar. 25, 1981, Ser. No. 247,553

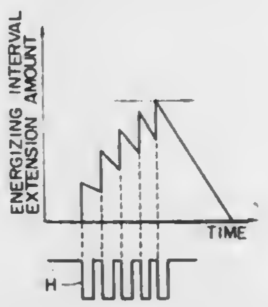
Claims priority, application Japan, Mar. 26, 1980, 55-39540

Int. Cl.^{3} F02P ***9/00***

U.S. Cl. 123—609 **11 Claims**

1. A method for controlling the energizing interval of an ignition coil of an internal combustion engine equipped with an electronic control device for energizing said ignition coil, said energizing interval being determined basically on the basis of the rotational speed of said engine, said method comprising the steps of:

generating a pulse train signal indicative of the acceleration of said engine by detecting the opening degree of a throttle valve associated with said engine such that the pulse period changes in accordance with the accelerating rate; and



correcting said energizing interval by adding thereto an extension amount which is either a function of said rotational speed of said engine or a given upper limit value at said rotational speed of said engine in response to each pulse of said pulse train signal such that said extension amount is increased by a predetermined value in esponse to each pulse of said pulse train signal, while said extension amount is decreased in accordance with lapse of time at an interval between two consecutive pulses of said pulse train signal.

4,440,142

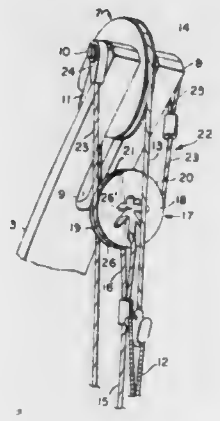
COMPOUND BOW CABLE TENSION ADJUSTER

Gary Simonds, Gainesville, Fla., assignor to Kidde Recreation Products, Inc., Northbrook, Ill.

Filed Sep. 28, 1982, Ser. No. 425,682

Int. Cl.^{3} F41B ***5/00***

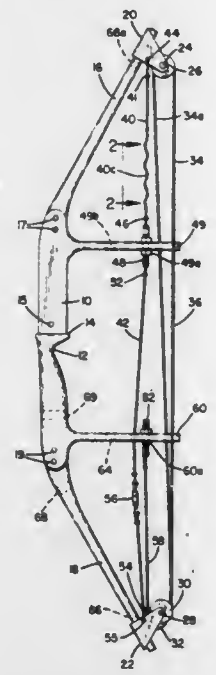
U.S. Cl. 124—23 R **13 Claims**



1. A compound bow including, a center handle section supporting upper and lower limbs having tips, a cam element pivotally attached respective each said limb, a tension cable extending from each said cam element of one said limbs, in a cable end attachment adjacent the opposite one of said limbs, said tension cable terminating in said cable end attachment means adjustably anchoring each said cable end attachment relative its respective said limb, said adjustable anchoring means each including a bridle cable having side portions carried by one said limb and an intermediate portion, a disc engaged and supported by said bridle cable intermediate portion, a plurality of attachment portions formed in said disc disposed varying distances from the center of said disc, and said cable end attachment anchored to said disc by engagement with one of said disc attachment portions whereby, each said cable end attachment is selectively engageable in alternate ones of said disc attachment portions to vary the tuning of said bow.

4,440,143
ARCHERY BOW

Jim Z. Nishioka, 1268 Hemlock NW., Salem, Oreg. 97304
Filed Apr. 28, 1982, Ser. No. 372,733
Int. Cl.³ F41B *5/00*
U.S. Cl. 124—24 R **2 Claims**

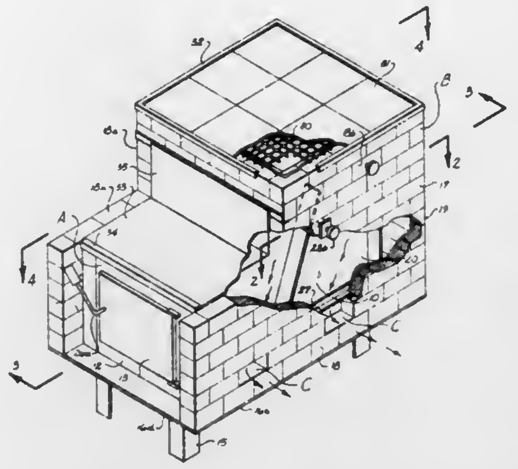


1. An archery bow comprising
(a) a bow frame,
(b) a grip on said frame for gripping said bow,
(c) a pair of flexible oppositely extending bow arms with tip ends on said frame and at least one of said arms flexing to provide a tension force in the bow, said arms comprising first and second arms with first and second tip ends respectively,
(d) a bowstring extending between said arm tip ends, said bow having a rest condition and a drawn condition, the bow in said rest condition being the condition of the bow prior to an application of a drawing force on the bowstring and the bow in said drawn condition being the condition of the bow after a drawing force has been applied to the bowstring,
(e) eccentric means on said first tip end for providing a breakover for the bowstring,
(f) a rotatable non-eccentric bowstring guide member supported by a shaft on said second tip end for guiding said bowstring,
(g) link means positioned between said arms for tensioning said second arm, said link means being in addition to said bowstring,
(h) anchor means on said bow for anchoring said link means to said bow,
(i) and connecting means on said link means operatively connecting said link means to said second arm and to said anchor means so that when the bowstring is drawn said link means will restrict flexing movements of said second arm during a breakover of said eccentric means while allowing said first arm to flex to provide tension force for said bow.

4,440,144
HEATER APPARATUS AND METHOD

William E. Masters, 138 Norris Ave., Liberty, S.C. 29657
Filed Aug. 25, 1980, Ser. No. 181,078
Int. Cl.³ F24C *1/14*
U.S. Cl. 126—61 **8 Claims**

1. Fuel burning heater apparatus for heating an interior room space of a building of the type having a metal firebox defined by spaced sidewalls, top and bottom walls, and spaced front and rear walls, said walls being integrally joined and said front wall having a closable opening through which fuel may be loaded, wherein said heater apparatus comprises:
a ceramic enclosure enclosing at least said side and back metal walls;
said ceramic enclosure having ceramic mass walls spaced from said metal walls defining heat transfer air passages therebetween into which heat from said metal walls is transferred and which may thereafter be transferred into said interior room space by forced air flow convection;
said ceramic mass walls being in sufficient close proximity to said metal walls to absorb the heat from said metal walls when air flow is not established in said air passages for effective radiation of said absorbed heat into said interior space;
air outlets communicating with said air passages for delivering air outwardly into said interior space;
blower means communicating with said air passages for delivering air through said air passages and said air outlets;

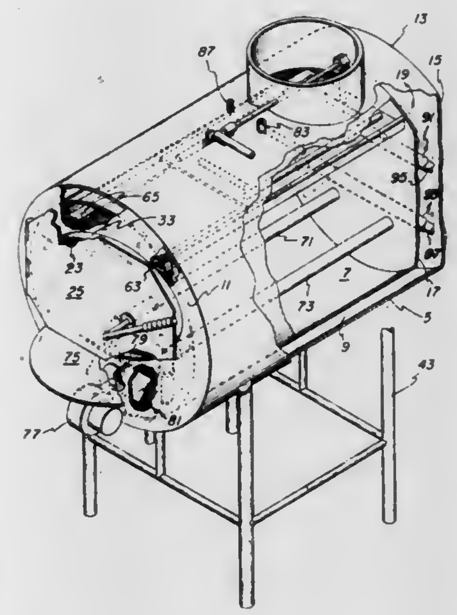


heat transfer control means for controlling operation of said blower and for controlling transfer of heat into said interior space by either said convection or radiation;
said metal walls for conducting heat quickly into said air passages;
said ceramic mass walls for radiating heat in said air passages gradually and directly into said interior room space at a much slower rate than said metal walls;
said heat transfer control means for controlling said blower means having an on mode for delivering air into said interior room space and rapidly distributing and transferring said heat in said air passages by forced convection to quickly elevate the temperature of said interior space to a desired temperature; and
said heat transfer control means having an off mode wherein air flow through said heat transfer air passages is terminated and heat is released and transferred directly into said interior room space by said gradual radiation of heat from said ceramic mass walls to maintan said desired temperature in said interior space in a constant and uniform manner generally without large temperature fluctuations.

4,440,145
WET-BASED, WOOD-BURNING BOILER

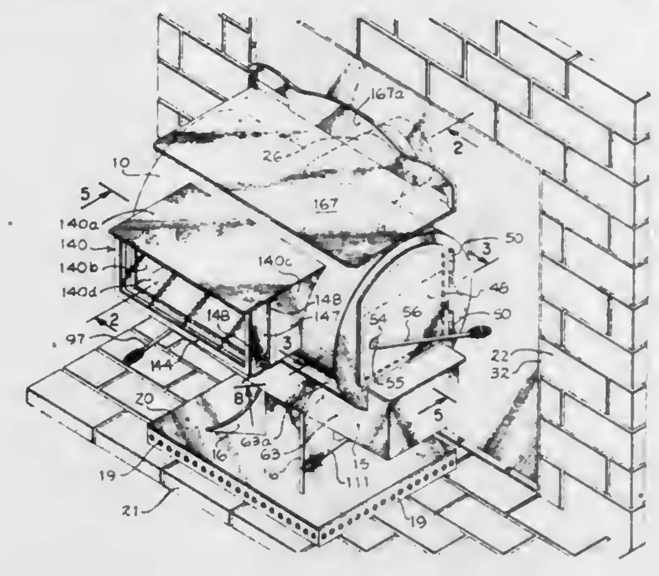
Peter A. Neyenhouse, Rte. 2, Box 322B, Morrisonville, N.Y. 12962
Filed Apr. 7, 1983, Ser. No. 482,878
Int. Cl.³ F24C *1/14*
U.S. Cl. 126—61 **8 Claims**

1. A wood-burning device comprising a combustion chamber, flue means and secondary damper system means; said combustion chamber having a main body cylindrical wall, a front wall and a rear wall, said combustion chamber burning wood therein, said flue means being in the top portion of said main body cylindrical wall and adjacent said rear wall, said secondary damper system means being reciprocable to an open position and a closed position, said secondary damper system means in its said open position non-interferingly allowing smoke, flue gases and products of combustion to exhaust directly through said flue means, said flue means being of sufficient size to provide draft to exhaust non-interferingly and directly from said combustion chamber the smoke, flue gases and products of combustion when said secondary damper system means is in its said open position, said secondary damper system means in its said closed position indirectly exhausting to said flue means the smoke, flue gases and products of combustion, said secondary damper system means having a damper plate and two angle irons, said damper plate being flat and of rectangular configuration, said damper plate having a top side, a bottom side, a front edge, a rear edge and lateral sides, said main body cylindrical wall having an inner wall fixedly carrying said two angle irons the full length of said inner cylindrical wall, said two angle irons being horizontally disposed and in parallel relationship with each other, said two angle irons freely carrying and tracking thereon said lateral sides of said damper plate in sealing relationship therewith, in said open position of said secondary damper system means said front edge of said damper plate being engaged in sealing relationship with said inner front wall of said combustion chamber, in said closed position of said secondary damper system means said rear edge of said damper plate being engaged in sealing relationship with said inner rear wall of said combustion chamber, said open position of said secondary damper system means providing a draft area defined by said rear edge of said damper plate, said inner rear wall of said combustion chamber and said angle irons, said closed position of said secondary damper system means providing a draft area defined by said front edge of said damper plate, said inner front wall of said combustion chamber and said angle irons, said draft areas in said open and closed positions of said secondary damper system means being equal, said draft area in said closed position of said secondary damper system means being greater than, and thereby more effective than, the draft area of said flue means, said secondary damper system means in its said closed position forcing the heat, smoke, flue gases and products of combustion to take a serpentine path first beneath said damper plate towards the front of said heating device and then a 180° curved path in a reverse direction over said top side of said damper plate and then out said flue means with said damper plate and angle irons thereby serving to trap and transfer the greatest amount of heat while maintaining the temperature of the exhausting flue gases above the critical creosote deposition temperature.



4,440,146
STOVE

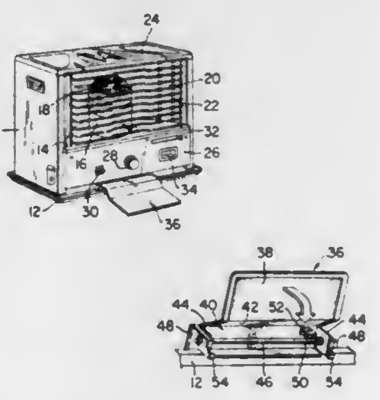
Vincent Audino, Jr., and William P. Russ, both of P.O. Box 18668, San Jose, Calif. 95158
Filed Feb. 23, 1981, Ser. No. 237,490
Int. Cl.³ F24C *1/14*
U.S. Cl. 126—77 **10 Claims**



1. In a stove having a housing defining a combustion chamber in which fuel is burned, means for supplying combustion air, and air distribution means for receiving air from said supply means and directing it into the combustion chamber, said air supply means including a plenum chamber having two separate non-communicative compartments and said air distribution means includes a plurality of elongated distribution headers disposed longitudinally in the combustion chamber, each header being divided into two non-communicating sections, and means for directing the air from each of said plenum compartments into a separate one of the sections of a particular header for guidance into the combustion chamber independently of the passage of air from said plenum chamber into the other section of that header.

4,440,147
ROOM-HEATING STOVE WITH A RETRACTABLE FIRE-PREVENTION SPACER

Kazunori Amano; Bunji Aizawa; Akio Ibe, and Yoichi Sekikawa, all of Niigata, Japan, assignors to Toshiba Netsukigu Kabushiki Kaisha, Nigata and Shin Toa Koeki Kabushiki Kaisha, Tokyo, both of, Japan
Filed Jul. 6, 1982, Ser. No. 395,713
Claims priority, application Japan, Jul. 10, 1981, 56-102491[U]
Int. Cl.³ F24C *15/36*
U.S. Cl. 126—201 **6 Claims**



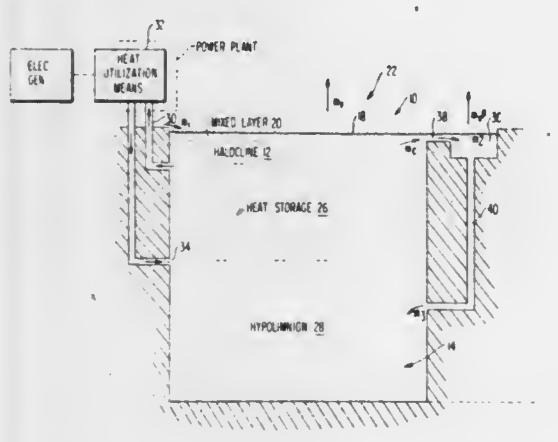
1. A room-heating stove comprising:
(a) a body adapted to stand on a floor;
(b) means in the body for producing heat directed forwardly of the body;
(c) a safety spacer mounted on the bottom end of the body,

on its front side, for pivotal motion between a recumbent working position, for holding any external object a safe distance away from the body so as not to be burnt by the heat-producing means, and an upstanding retracted position for saving space when the stove is packaged, the safety spacer being largely in the shape of a flat plate so as to be held flat against the floor when in the working position; and
(d) means for urging the safety spacer from the retracted position toward the working position.

4,440,148
METHOD OF AND MEANS FOR MAINTAINING A HALOCLINE IN AN OPEN BODY OF SALT WATER

Gad Assaf, Rehovot, Israel, assignor to Solmat Systems Ltd., Yavne, Israel

Filed Mar. 27, 1980, Ser. No. 134,658
Int. Cl.^{3} F24J *3/02*
U.S. Cl. 126—415 **36 Claims**



1. A method for maintaining a halocline in an open body of salt water at a depth to which a significant amount of solar radiation penetrates, said method comprising the step of inducing an upward vertical flow across the halocline to counter the effects of wind-mixing and molecular diffusion.

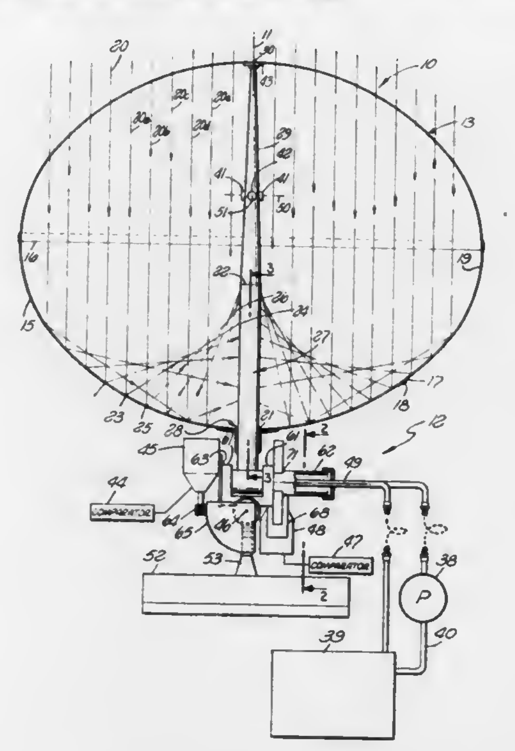
14. Apparatus comprising:
(a) a halocline adjacent to the surface of a solar pond for absorbing solar radiations;
(b) a heat storage layer below the halocline for absorbing heat produced in the halocline;
(c) means for automatically stabilizing the halocline including means for inducing an upward vertical flow across the halocline.

4,440,149
RADIATION COLLECTORS

Mark Hattan, Orange, Calif., assignor to William P. Green, Pasadena, Calif., a part interest

Filed Dec. 1, 1980, Ser. No. 211,514
Int. Cl.^{3} F24J *3/02*
U.S. Cl. 126—425 **6 Claims**

1. A collector for receiving radiation from a source, comprising:
an inflatable flexible bag extending generally circularly about an axis to be directed toward said source, and having a front wall of radiation passing flexible sheet material curved essentially annularly about said axis and convexly toward said source through which said radiation may pass to the interior of the bag, said bag having a rear wall of flexible sheet material curved generally annularly about said axis and concavely with respect to said source with a specularly radiation reflective concave forward surface acting to reflect radiation in concentrated form generally toward said axis; and
a structure extending generally along said axis within said flexible bag and connected at opposite ends to central portions of said front and rear walls respectively to assist in maintaining the relative orientation of said walls and the shape of the inflated flexible bag;

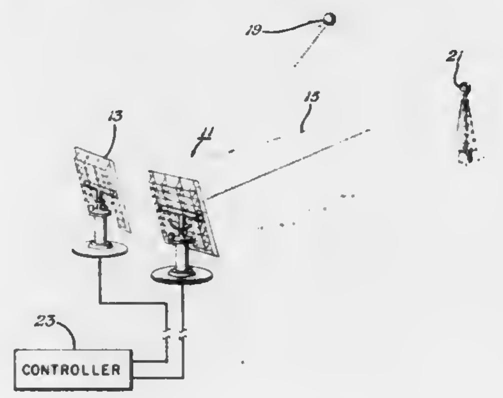


said structure having a collector portion within said bag and between said flexible front and rear walls for receiving radiation concentrated by said reflective rear wall.

4,440,150
HELIOSTAT CONTROL

James A. Kaehler, Littleton, Colo., assignor to Atlantic Richfield Company, Inc., Dallas, Tex.

Filed Jan. 25, 1982, Ser. No. 342,155
Int. Cl.^{3} F24J *3/02*
U.S. Cl. 126—425 **2 Claims**



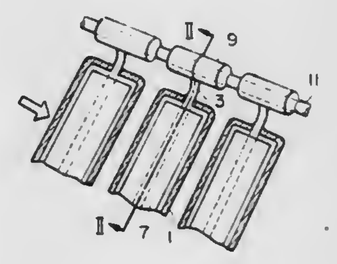
1. In a heliostat control system including:
a. a target collector for collecting solar energy and converting it into usable energy;
b. at least one supported heliostat, each said heliostat being movable by respective motors in azimuth and elevation for reflecting the solar energy onto said collector;
the improvement comprising a central computer handling external data processing, communication and control, and a plurality of respective heliostats and a plurality of respective heliostat microprocessors, one at each heliostat, each being connected to said central computer and handling for its respective heliostat internal data processing, communication, and direct control of its respective azimuth and elevation stepper motor of elements f and g hereinafter; said central computer and each respective microprocessor at each respective heliostat including respective routines that effect communicating and coaction such that there are provided the following system elements;
c. monitor means for monitoring a current position of a respective said heliostat;

d. computer means for computing a commanded position for a respective said heliostat to be at a particular time of day;
e. cumulating means for determining commanded number of steps for respective stepper motors in each of azimuth and elevation to reach the commanded position;
f. respective azimuth stepper motors connectable with a source of power;
g. respective elevation stepper motors connectable with a source of power;
h. energizer means for energizing respective said stepper motors; said energizer means being connected with said cumulating means and said stepper motors and adapted to operate selectively both and thereafter either of said stepper motors for a given heliostat; and
i. comparison means for comparing accumulated steps to commanded steps; said comparison means being connected with elements c, d, e, and h and being adapted to stop both said motors a predetermined number of steps away from said commanded number of steps to allow deceleration from slewing speeds such that the closest motor reaches its commanded position, and thereafter energizing the remaining motor to attain its commanded position and stop at a predetermined number of steps away from its said commanded position.

4,440,151
SOLAR HEAT COLLECTOR

Takanobu Yamamoto, Katsuta; Isao Sumida; Moriaki Tsukamoto, both of Tohkai; Kazutake Imani, Katsuta, and Naohisa Watahiki, Mito, all of Japan, assignors to Hitachi, Ltd. and Hitachi Chemical Co., Ltd., both of Tokyo, Japan

Filed Dec. 29, 1981, Ser. No. 335,542
Claims priority, application Japan, Dec. 29, 1980, 55-188491
Int. Cl.^{3} F24J *3/02*
U.S. Cl. 126—433 **16 Claims**

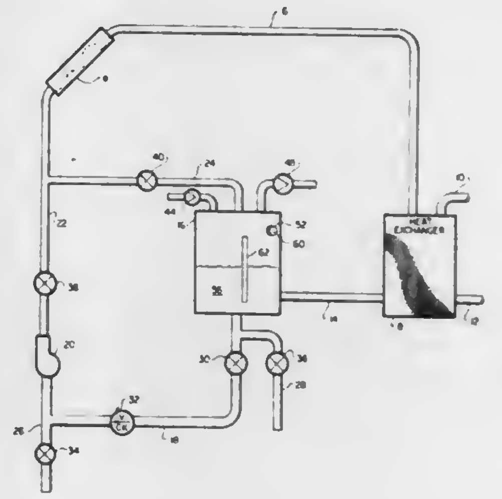


1. A solar heat collector comprising:
a solar heat collection section having an evacuated transparent housing,
a heat collection plate, disposed in said evacuated transparent housing, for receiving solar heat, and
a heat pipe disposed in said housing to receive heat from said heat collection plate and containing an evaporative working liquid therein to be evaporated by the solar heat
a condensation section having
an axially extending heat medium pipe for containing heat medium pipe for containing heat fluid medium to be heated,
heat releasing means of heat-conductive material provided in said heat medium pipe, said heat releasing means extending in the axial direction of said heat medium pipe and having a plurality of thin fin portions, each extending radially from contact with the inner face of said heat medium pipe to about the axis of said heat medium pipe and each extending in the axial direction of said heat medium pipe to form a plurality of peripherally spaced axially extending compartments along the heat medium tube for unobstructed axial passage of said heat fluid medium, and
a casing communicating with said heat pipe and surrounding coaxially said heat medium pipe with an annular space therebetween containing the vapor and condensate of said working liquid in contact with the outer face of said heat medium pipe, so that heat exchange between the vapor and condensate of said working liquid in said casing and the heat fluid medium in said heat medium pipe is effected through said heat medium pipe and said heat realeasing means.

4,440,152
ZERO GAUGE SOLAR SYSTEM

James A. Leflar, and Phillip C. Stanwood, both of Fort Collins, Colo., assignors to Western Solar Products, Inc., Fort Collins, Colo.

Filed Oct. 26, 1981, Ser. No. 314,953
Int. Cl.^{3} F24J *3/02*
U.S. Cl. 126—435 **6 Claims**



1. A nonpressurized solar heating system comprising
solar collector means for heating a heat transfer fluid flowing therethrough,
means for delivering fluid heated by the solar collector means to a heat exchanger,
a fluid expansion tank for receiving fluid through an inlet from a heat exchanger, said inlet being located near the bottom of the tank, and for delivering fluid through an outlet, said outlet being located near the bottom of the tank, said tank including a closable opening through which fluid may be initially introduced into the tank, said opening being located near the top of the tank,
pump means located generally below the level of the tank for pumping fluid received thereby,
first conduit means for supplying fluid from the outlet of the tank to the pump means,
second conduit means for conveying fluid from the pump means to the solar collector means,
a heat transfer fluid disposed in the solar collector means, in the delivery means, in the tank above the inlet and outlet, in the pump means, and in the first and second conduit means, said fluid being placed in said tank under substantially no pressure and having a boiling point of about 550° F. at atmospheric pressure, a boiling point exceeding about 400° F. at about 30 feet of liquid vacuum, and a freezing point below −100° F.,
first valve means disposed in the second conduit means which may be selectively closed to prevent the flow of fluid or open to allow the flow of fluid,
outlet conduit means coupled to the first conduit means and through which fluid may flow to drain or fill the system,
second valve means disposed in the outlet conduit means which may be selectively opened to allow the flow of fluid or closed to prevent the flow of fluid,
third conduit means coupled to the tank at or near the top thereof and to the second conduit means to allow the flow of air therebetween,
third valve means disposed in the third conduit means which may be selectively closed to prevent the flow of air in the

third conduit means, or opened to allow the flow of air, and

fourth valve means disposed in the first conduit means between the connection of the conduit means and the tank, said fourth valve means being selectively closable to prevent the flow of fluid or openable to allow the flow of fluid.

4,440,153
SOLAR CONCENTRATOR

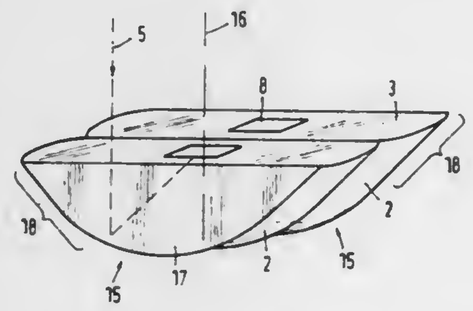
Bernd Melchior, Remscheid, Fed. Rep. of Germany, assignor to Imchemie Kunststoff GmbH, Wermelskirchen, Fed. Rep. of Germany

Filed Mar. 1, 1982, Ser. No. 353,387

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1981, 3107888

Int. Cl.^{3} F24J *3/02*

U.S. Cl. 126—438 **12 Claims**



1. A solar concentrator comprising at least one solid block of a transparent material having a planar incident surface and a curved reflective surface opposite said incident surface with said material completely filling the space between said surfaces whereby said surfaces bound said block, and an absorber in contact with said block at said incident surface, said absorber obstructing only a portion thereof, such that said incident surface intercepts solar rays which traverse said block, and said reflective surface being at least partly parabolical to reflect rays traversing said block to said absorber whereby said solar rays traverse only material of said block between said incident surface and said absorber.

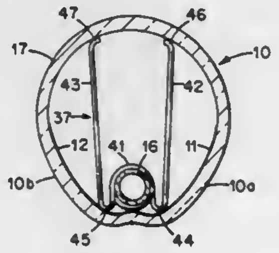
4,440,154
SOLAR ENERGY COLLECTING APPARATUS

Alfred H. Bellows, Wayland, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jun. 25, 1982, Ser. No. 392,109

Int. Cl.^{3} F24J *3/02*

U.S. Cl. 126—438 **3 Claims**



1. Solar energy collecting apparatus comprising an elongated sealed envelope having side walls extending longitudinally parallel to the principal axis of the envelope;

an elongated energy absorber disposed within said envelope parallel to said principal axis;

a longitudinally extending radiant energy entrance aperture in said envelope for permitting the passage of radiant energy therethrough into said envelope;

reflective surfaces extending longitudinally within said envelope for accepting radiant energy passing through said entrance aperture and reflecting it so as to impinge on said energy absorber;

said reflective surfaces being formed by a reflective coating on the inner surfaces of portions of the side walls of the envelope, and said reflective surfaces having a compound parabolic contour in a plane transverse to said principal axis;

locating means for supporting the energy absorber within the envelope substantially at the focus of the parabolas including a resilient support member of thin wire of uniform diameter;

the support member having a coil closely encircling said energy absorber the internal diameter of the coil in a relaxed state tending to be smaller than the external diameter of the energy absorber, a first arm extending from the coil and bearing against the inner surfaces of the side walls of the envelope at first and second spaced apart contact regions, and a second arm extending from the coil and bearing against the inner surfaces of the side walls of the envelope at third and fourth spaced apart contact regions;

said first arm of said support member including a first reverse bend portion at one end thereof adjoining said coil at one side thereof; and

said second arm of said support member includes a second reverse bend portion at one end thereof adjoining said coil at the opposite side thereof;

the outer surface of said first reverse bend portion bearing against the inner surface of the side walls of the envelope at said first contact region;

the outer surface of said second reverse bend portion bearing against the inner surface of the side walls of the envelope at said third contact region;

said outer surfaces of the first and second reverse bend portions bearing against the first and third contact regions, respectively, at said reflective surfaces adjacent to the low points of the parabolas;

said first arm being generally straight along the major portions of its length from said reverse bend portion at said one end to the other end thereof;

said second arm being generally straight along the major portion of its length from said reverse bend portion at said one end to the other end thereof,

said other ends of said first and second arms being biased apart thereby urging said other ends of the first and second arms against the inner surfaces of the side walls of the envelope at said second and fourth contact regions, respectively, at said radiant energy entrance aperture and urging said outer surfaces of said first and second reverse bend portion against said first and third contact regions, respectively, at said reflective surfaces.

4,440,155
SOLAR CONCENTRATING LENS AND RECEIVER

Ralph P. Maloof, Calabasa, and Roger R. Reynolds, Jr., Costa Mesa, both of Calif., assignors to Reynolds & Taylor, Inc., Santa Ana, Calif.

Filed Jul. 17, 1981, Ser. No. 284,514

Int. Cl.^{3} F24J *3/02*

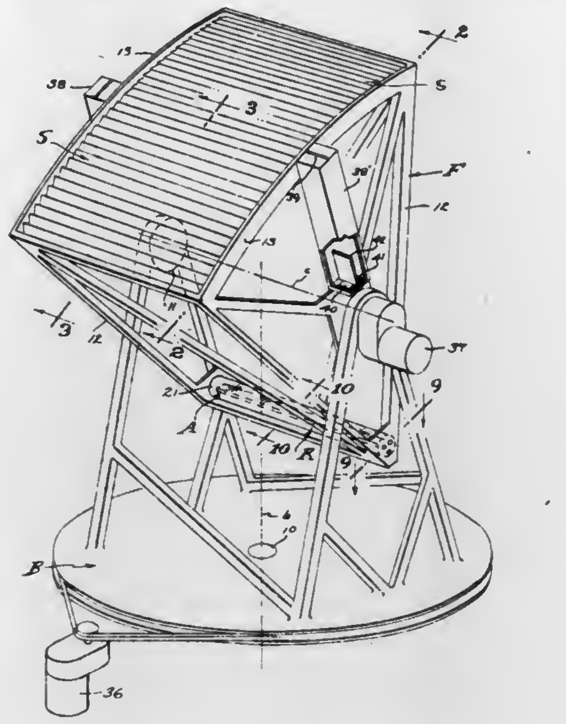
U.S. Cl. 126—440 **22 Claims**

1. A solar concentrating lens and receiver operable in alignment with incoming sunlight, and including;

a multiplicity of parallel transparent elongated slats spaced apart in an array for the passage of light and to ventilate therebetween for reducing wind resistance, and each slat being of basic prism cross section with its apex disposed outwardly from a projection plane aligned with the incoming sunlight,

an elongated receiver longitudinally coextensive with and spaced from the array and on said projection plane in parallel relation to each of the slats,

and each of the slats having upper and lower sides inwardly divergent from its apex and angularly related for projection of the incoming sunlight through the slats and into the receiver, and having a base faced toward the projection plane and angularly disposed for reflection of the incoming sunlight through the spaces between the slats and into the receiver.



4,440,156
SOLAR HEAT COLLECTOR

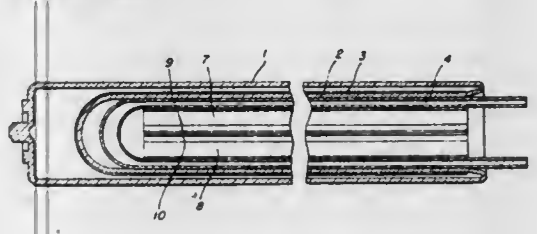
Hirosato Takeuchi, and Toshio Mikiya, both of Tokyo, Japan, assignors to Nitto Kohki Co., Ltd., Tokyo, Japan

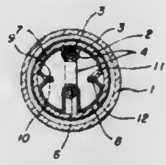
Filed Jul. 6, 1982, Ser. No. 395,467

Claims priority, application Japan, Jul. 6, 1981, 56-100331[U]

Int. Cl.^{3} F24J *3/02*

U.S. Cl. 126—443 **7 Claims**





1. A solar heat collector of the evacuated double-tubing type comprising:

an outer substantially straight tube being closed at one end and open at the other end;

an inner substantially straight tube of a lesser diameter relative to said outer tube, being closed at one end and open at the other end;

said inner and outer tubes being hermetically sealed at their open ends with the space therebetween being evacuated to a predetermined degree of vacuum;

a solar heat-absorbing film disposed over the outer surface of said inner tube;

a substantially U-shaped hairpin pipe for circulation of fluid media and including substantially straight pipe portions being positioned inside said inner tube with both opposing substantially straight pipe portions being in contact with the inner surface of said inner tube; and

a pair of heat-conducting members inserted in said inner tube and being brought into surface contact with the inner surface thereof;

said pair of heat-conducting members being of a generally semicircular shape in cross section and each including a groove disposed substantially in a central portion thereof designed to come in surface contact with said straight pipe sections of said hairpin pipe;

said pair of heat-conducting members having their both lateral sides comprised of inclined portions for bringing their outer surfaces into resilient surface contact with the inner surface of said inner tube and flat portions designed to be in surface contact with each other.

4,440,157
HARD ENDOSCOPE

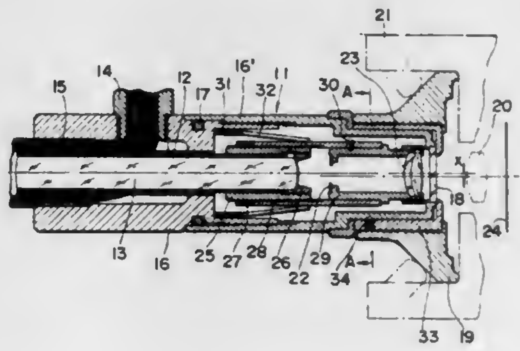
Yoshio Shishido, Sagamihara, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 2, 1982, Ser. No. 344,952

Claims priority, application Japan, Feb. 3, 1981, 56-14545

Int. Cl.^{3} A61B *1/04*

U.S. Cl. 128—6 **5 Claims**



1. In a hard endoscope having an outer tube and an observing optical system fixed therein through which an image may be observed, said optical system defining an observing optical axis, and an eyepiece frame having an inner surface and an outer periphery, said eyepiece frame mounted on said outer tube substantially concentric with said observing optical axis for removably supports a photographing device having a photographing optical axis for photographing through said observing optical system, wherein eccentricity may occur between said photographing optical axis and said observing optical axis, the improvement comprising eccentricity controlling means forming a part of said eyepiece frame for adjustably positioning said photographing optical axis with respect to said observing optical axis.

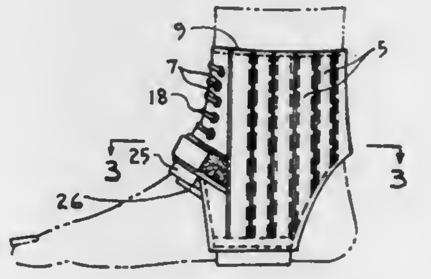
4,440,158
ANKLE SUPPORTER

Martin Shapiro, Park City West Apts., Apt. 2-0, 3900 Ford Rd., Philadelphia, Pa. 19131

Filed Jun. 8, 1982, Ser. No. 386,248

Int. Cl.^{3} A61F *3/00*

U.S. Cl. 128—80 H **1 Claim**

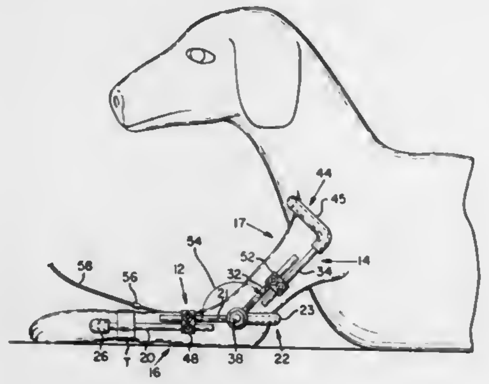


1. An ankle supporter comprising substantially coextensive inner and outer plies of inelastic flexible material having parallel slits forming mutually registering flaps extending in the plies

from the upper edges thereof substantially to portions adapted to underlie the instep of the wearer's foot, a unitary body of flexible elastic sheet material interposed between the plies and stitching securing the flaps of the inner ply respectively to the flaps of the outer ply in embracing relation to said elastic material, and stitching being inwardly spaced from the edges of the slits and the elastic material bridging the slits when in unstretched condition maintaining adjacent slit edges in mutual engagement and extending between spaced opposed rear edges of the plies, each of the latter having a series of holes adjacent its front edge for reception of lacing for holding said edges in predetermined relation, an adjustable strap comprising separable parts respectively secured to the supporter adjacent each said series of holes adapted to overlie that portion of the supporter proximate the upper front region of the wearer's instep and malleolus ligament supporting means comprising elastic straps secured to the plies extending angularly forward from said opposed rear edges and adapted to overlie said malleolus ligaments when the supporter is being worn and cooperative means carried respectively by said straps for adjustably and releasably securing to each other the free ends of the straps to apply inward pressure against said ligaments to inhibit dislocation of the malleolus joints or the wearer's ankle.

4,440,159
VETERINARY APPLIANCE FOR USE ON A FRONT LEG OF A SMALL ANIMAL

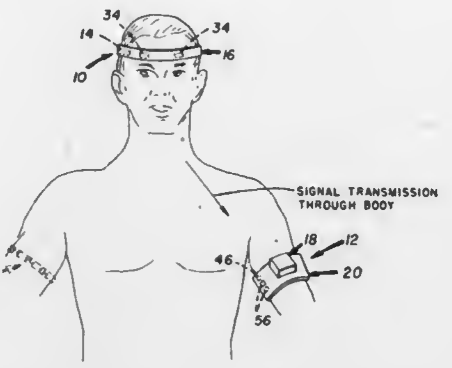
Phillip E. Cochran, 4965 Barger Dr., Eugene, Oreg. 97402
Filed Jun. 29, 1981, Ser. No. 278,982
Int. Cl.³ A61F *5/04*
U.S. Cl. 128—84 R **9 Claims**



1. A veterinary appliance for use on a selected front leg of a small animal, such as a canine or feline, comprising:
brace means adapted to be detachably mountable on the leg for limiting the extent to which the ulnar portion of the leg may be bent towards its associated humeral portion and for permitting substantially unconstrained movement of the leg to an extended position,
said brace means including a first section mountable on the ulnar portion and a second section connected thereto configured to engage the humeral portion and transfer a reactive force to said first section and correspondingly to the ulnar portion to prevent further bending of the ulnar portion toward the humeral portion after bending to a predetermined angular position,
said first section further including elongate means affixed to the ulnar portion including retaining means provided thereon for positioning around a posterior part of the humeral portion above the olecranon of the leg, and
said second section including engagement means configured for abutting against an anterior part of the humeral portion when the ulnar portion has been bent, relative to the humeral portion, to said predetermined angular position.

4,440,160
SELF-INJURIOUS BEHAVIOR INHIBITING SYSTEM

Robert E. Fischell; Glen H. Fountain, and Charles M. Blackburn, all of Silver Spring, Md., assignors to The Johns Hopkins University, Baltimore, Md.
Filed Jan. 19, 1982, Ser. No. 340,753
Int. Cl.³ A61N *1/38*
U.S. Cl. 128—132 R **8 Claims**



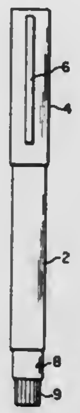
1. An apparatus for inhibiting self-injurious behavior, comprising:
at least one sensor module, adapted to be mounted on any of patient's body members, each of said at least one sensor module being mounted on a different body member, and each of said at least one sensor module including,
(a) an accelerometer which detects an acceleration due to a physical impact of said body member,
(b) a "one-shot" circuit connected to and activated by said accelerometer to produce a constant signal for a set period of time,
(c) a clock which provides timing pulses,
(d) a transmitter, connected to and activated by said "one-shot" circuit, which receives timing pulses from said clock and produces an electromagnetic signal,
(e) an interrogatable event counter, connected to said clock and said "one-shot" circuit, to count and record the number of physical impacts; and,
a stimulation module, adapted to be mounted on said patient's body at a location remote from said at least one sensor module, communicating by a wireless link to said at least one sensor module, said stimulation module including,
(a) a signal detecting and demodulating circuit, which provides a triggering signal after detecting and identifying said electromagnetic signal,
(b) a "set-on time" circuit, connected to and actuated by said signal detecting and demodulating circuit, which sets the time period of stimulation,
(c) a means connected to and activated by said "set-on time" circuit, for generating an aversive electric current,
(d) stimulation electrodes, connected to said means for generating an aversive electric current, which conduct said aversive electric current to the skin of said patient's body,
(e) a clock to provide timing pulses, and
(f) an interrogatable event counter, connected to said clock and said means for generating an aversive electric current, to count and record the number of times said aversive electric current is generated.

4,440,161
MULTIPURPOSE NASAL AIRWAY

Rajinder K. Wadhwa, 2482 Mt. Royal Rd., Pittsburgh, Pa. 15217
Filed Sep. 1, 1981, Ser. No. 298,501
Int. Cl.³ A61M *25/00, 15/06, 15/08;* A61B *17/32*
U.S. Cl. 128—202.13 **13 Claims**

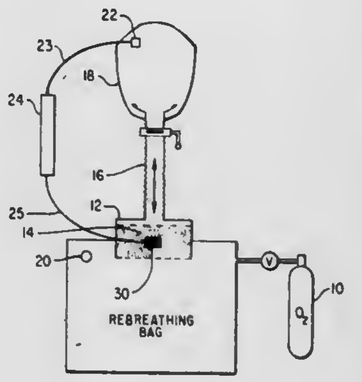
1. A nasal airway comprising a tubular housing having a first threaded portion adjacent a first end thereof,

an airway tube having a threaded end and a free end insertable into a patient's nostril,
said airway tube received within said tubular housing in a storage position,
said airway tube, when in said storage position, having said free end within said tubular housing and said threaded end being threadedly secured to said first threaded portion of said tubular housing,
first closure means removably covering said first end,
said tubular housing having a second end,
second closure means removably covering said second end,
tracheotomy blade means operably connected to said second closure so as to be disposed within said second end of said housing whereby removal of said second closure from the second end of said housing will permit separation of said tracheotomy blade, means from said housing for use,
writing means having a supply of material to be deposited during writing extending into said airway tube and being removably secured to the threaded end of said airway tube and having a material discharge end underlying said first closure means, whereby removal of said first closure means, said second closure means and said writing means from said tubular housing will permit separation of said airway tube from said housing and threaded attachment of said airway tube threaded end to said housing first threaded end with said airway tube free end disposed exteriorly of said housing to create a nasal airway consisting of said housing and said airway tube.



4,440,162
SODA LIME HALF LIFE INDICATOR

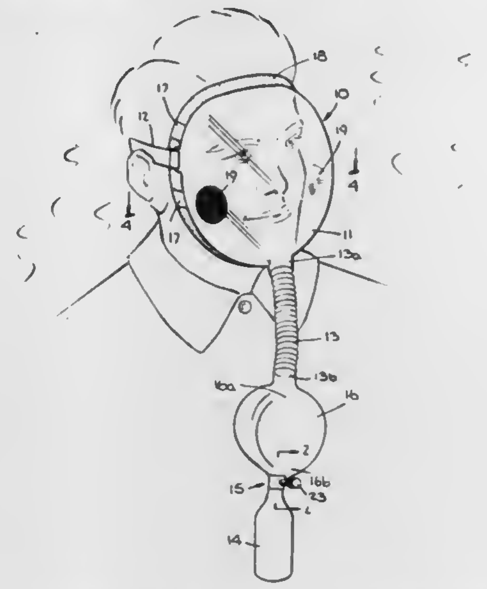
Richard B. H. Sewell, Victoria; Lannie K. Yee, Saanichton, and Robert W. Chappell, Victoria, all of Canada, assignors to Her Majesty the Queen in right of Canada, Canada
Filed Jun. 23, 1981, Ser. No. 276,519
Int. Cl.³ A62B *7/08*
U.S. Cl. 128—202.22 **15 Claims**



7. In a closed circuit underwater breathing apparatus, comprising
a breathing tube through which a diver may inhale and exhale breathing gas;
a re-breathing bag;
a canister containing a CO_2 absorbent selected from the group consisting of soda lime and other suitable non-toxic alkali and alkaline earth metal hydroxides, disposed between said breathing tube and said re-breathing bag, such that fluid communication from said re-breathing bag to said breathing tube is achieved through said cannister wherein an exothermic reaction occurs when exhaled gas is passed therethrough;
inlet means in said re-breathing bag;
a breathing gas reservoir;
gas conduit means for fluid communication between said inlet means and said breathing gas reservoir;
one-way valve means in said gas conduit means to permit breathing as flow from said breathing gas reservoir to said re-breathing bag;
blow-off valve means connected with said re-breathing bag to permit pressure equalization, the improvement comprising providing an indicator comprising;
temperature sensing means immersed in said absorbent for sensing the temperature of the temperature cycle of the heat generated by the chemical reaction of the hydroxide and CO_2, said temperature cycle including a rise, a levelling off and a fall in temperature;
temperature to voltage converter means for converting said sensed temperature to an electrical voltage signal;
temperature trend processing means for processing said electrical voltage signal into a selected electrical output signal characteristic of said rising, levelling off and falling temperature trend and indicative of the present effectiveness of the CO_2 absorbent; and
display means for converting said selected electrical output signal to a predetermined visual display indicative of a first indication of said rising, a second indication of said levelling off and a third indication of said falling temperature and wherein each said first, second and third indications being visually unique and materially different from one another and thereby indicating the capacity of the CO_2 absorbent to absorb CO_2.

4,440,163
EMERGENCY ESCAPE BREATHING APPARATUS

Gabriel Spergel, 1806 Ditmas Ave., Brooklyn, N.Y. 11226
Filed Jul. 30, 1982, Ser. No. 403,713
Int. Cl.³ A62B *7/02*
U.S. Cl. 128—205.13 **5 Claims**



1. In an emergency escape and throw-away breathing apparatus adapted to be supported by and freely depend from the head of the wearer, the improvement comprising in combination:
(a) a convexly-curved mask having head band means for attachment around the head of the wearer and of relatively rigid and transparent plastic to form a sealed chamber with the face of the wearer and being adapted to receive a breathable atmosphere containing elemental

oxygen and having pressure-relieving valve means in the mask communicating with the ambient atmosphere;

(b) a breathable atmospheric source comprising a pressurized container of an elemental oxygen-containing gas;

(c) a gas flow control assembly connected thereto and in axial alignment therewith and including a pressure-reducing, stress-resisting and regulating gas reservoir bag having an inlet at the lower axial end and an outlet at the axial top, and further including a valve structure at the lower axial end affixed to and normally closing gas flow from the mouth of said pressurized container and at the upper axial end affixed and for gas flow to the inlet of said reservoir bag so as with said container to present a fixed, permanently open and straight gas flow path, said valve structure including rupturable valve closure means therewithin and external and visible finger-accessible and finger-engagable operating means intermediate the gas container and said reservoir bag and adapted to serve as the operative element for rupture of said valve closure means for valve opening and gas feed to said inlet of the reservoir bag; and

(d) a flexible and kink-proof hose section connecting said face mask adjacent the lower axial end thereof to said reservoir bag at the outlet thereof and adapted to feed gas into the said gas mask chamber, said kink-proof hose section serving to act as a yieldable folding area when the apparatus is in inoperative and folded and stored position whereby the gas flow-path retains its open and unrestricted condition, said kink-proof hose section further serving to act when the apparatus is operational so as to render the gas flow path yieldable to override ensnaring obstacles during wear and also to contribute to the unidirectional and substantially straight-line gas flow-path to the mask and to the substantially incompressible structure of said flow path.

4,440,164

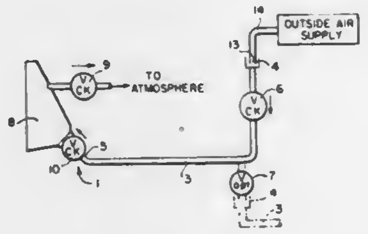
LIFE SUPPORT SYSTEM AND METHOD OF PROVIDING FRESH AIR TO ENCLOSED AREAS

Bertil Werjefelt, 277 Kaha St., Kailua, Hi. 96734

Continuation-in-part of Ser. No. 73,612, Sep. 10, 1979, and a continuation-in-part of Ser. No. 185,962, Sep. 10, 1980. This application Jan. 27, 1981, Ser. No. 228,940

Int. Cl.³ A62B *7/00*

U.S. Cl. 128—205.25 **18 Claims**



1. A life support system adapted for use in an aircraft having a pressurized cabin and an air supply system for conducting air from the exterior of said aircraft to the cabin within said aircraft, and wherein said air supply system includes at least one gasper outlet fluidically communicating with said cabin, said life support system comprising:

(a) a mask adapted to be placed over at least one breathing cavity of a user, said mask comprising a temperature-resistant and fire-resistant material adapted to prevent noxious cabin fumes from entering said mask; and

(b) connecting means including a first hose having one end attached to said mask, and another end comprising means adapted to be fluidically connected to a gasper outlet, said system comprising a supplemental air container attached to said hose, said container comprising means for receiving air from a gasper outlet and for retaining said air when said hose is separated from a gasper outlet in order to form a portable air source for a user, said mask and connecting means comprising means for directing said exterior air to said breathing cavity and for preventing the introduction of ambient air from said cabin into said cavity.

4,440,165

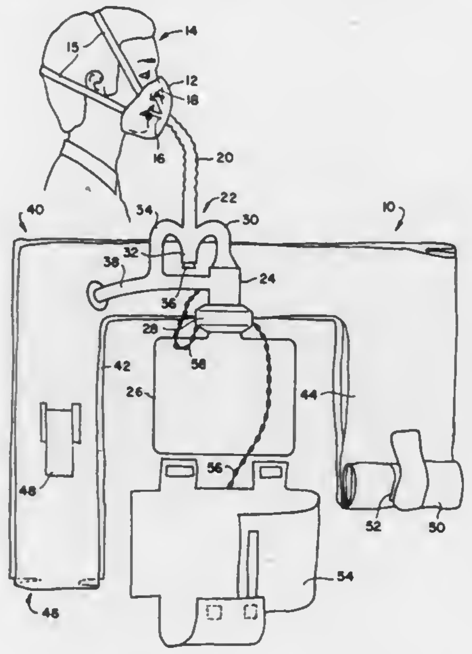
CLOSED-CIRCUIT BREATHING APPARATUS

Thomas M. Holzel, 52 Lang St., Concord, Mass. 01742

Filed Mar. 1, 1982, Ser. No. 353,838

Int. Cl.³ A62B *7/00*

U.S. Cl. 128—205.28 **16 Claims**



1. A closed-circuit breathing apparatus comprising

A. an air-purification element, having an inlet and an outlet, for permitting the flow of air through it from its inlet to its outlet and for reducing the carbon dioxide content and increasing the oxygen content of the air passing through it;

B. reservoir means for storing oxygen-enriched air, said reservoir means being adapted to be opened from a closed state, in which it stores oxygen-enriched air, to an open state, in which it provides an opening large enough to permit a user to insert his hand into the interior of the reservoir means;

C. means for providing fluid communication between the outlet of said air-purification element and the interior of said reservoir means and thereby permitting air to flow from said air-purification element into said reservoir means;

D. facemask means adapted to fit over the nose and/or mouth of a user; and

E. conduit means separately connected to said facemask means, to said inlet of said air-purification element, and to the interior of said reservoir means, said conduit means including:

(1) an exhaust flow passage for providing fluid communication between said facemask means and said inlet of said air-purification element; and

(2) an intake flow passage for providing fluid communication between the interior of said reservoir and said facemask means, said intake flow passage including at least a portion thereof that is separate from said exhaust flow passage, said separate portion including an intake check valve therein for permitting the flow of air from said reservoir to said facemask but not from said facemask to said reservoir.

4,440,166

ELECTRICALLY AND MECHANICALLY CONTROLLABLE CLOSED CIRCUIT RESPIRATOR

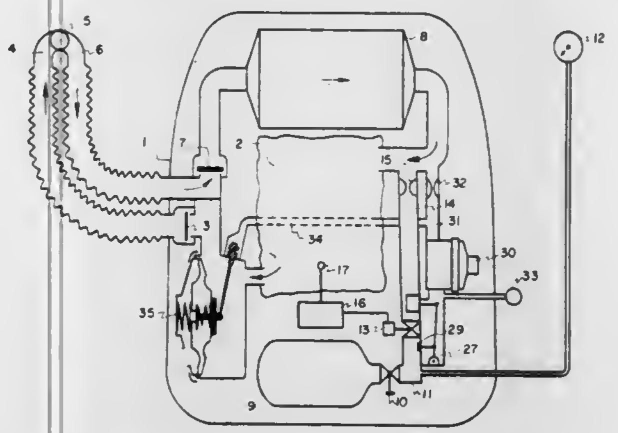
Jörg Winkler, Stockelsdorf; Hans Matthiessen, Gross Parin; Ernst Warncke, Lübeck, and Adalbert Pasternack, Bad Schwartau, all of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 11, 1982, Ser. No. 357,335

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1981, 3109660

Int. Cl.³ A62B *7/10*

U.S. Cl. 128—204.22 **8 Claims**



1. A closed circuit respirator comprising:

a breathing bag having an inlet and an outlet, a carbon dioxide absorber having an inlet and an outlet, a junction adapted for engagement by a user having an inlet and an outlet, conduit means connecting the outlet of said junction to the inlet of said carbon dioxide absorber, the outlet of said carbon dioxide absorber to the inlet of said breathing bag and the outlet of said breathing bag to the inlet of said junction to define a closed respiration air circuit;

a pressurized oxygen supply container connected to said air circuit for supplying oxygen to said air circuit;

a normally closed controllable valve connected between said oxygen supply container and said air circuit with sensing and control means for sensing oxygen in said breathing bag and opening said controllable valve with reduced oxygen in said bag;

means defining a high-pressure pressure chamber connected between said container and said controllable valve upstream of said controllable valve and a medium pressure chamber connected between said air circuit and said controllable valve downstream of said controllable valve;

means defining a pre-pressure chamber connected between said high-pressure chamber and said air circuit;

a further valve having a valve member connected between said pre-pressure chamber and said high-pressure chamber and movable for opening said pre-pressure chamber to said high-pressure chamber;

a cylinder connected to said medium pressure chamber;

a biased piston movable in said cylinder and dividing said cylinder into first and second compartments, said first compartment communicating with said medium-pressure chamber, said second compartment communicating to atmosphere, biasing means for moving said piston toward said first compartment with the occurrence of a reduced pressure in said medium pressure chamber due to a failure of said sensing and control means which closes said controllable valve; and

lever means connected between said piston and said valve member to move said valve member to open the connection between said high-pressure chamber and said pre-pressure chamber when said piston moves toward said first compartment caused by said reduction in pressure in said medium-pressure chamber and to close when said piston moves toward said second compartment caused by an increased pressure in said medium-pressure chamber.

4,440,167

ANESTHETIZER FOR DENTAL TREATMENT

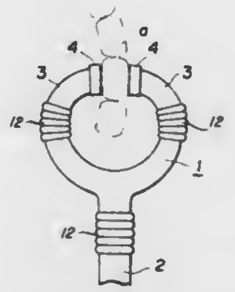
Shigeru Takehisa, Tokyo, Japan, assignor to Kabushikikaisha Yoshida, Tokyo, Japan

Filed Dec. 4, 1981, Ser. No. 327,472

Claims priority, application Japan, Dec. 26, 1980, 55-186503[U]

Int. Cl.³ A61B *17/36*

U.S. Cl. 128—303.1 **4 Claims**



1. An anesthetizer for dental treatment comprising:

a hollow tubular anesthetizer body consisting of a tube branched into a pair of branch tubes having ends opposing to each other;

a gap of a predetermined distance being positioned therebetween for placing said pair of branch tubes on each side of a single tooth, gum area;

caps detachably fitted on opposing ends of the branch tubes;

plate-type thermoelectric elements secured to free ends of the caps so as to form the top surfaces of respective caps, each thermoelectric element having a colder surface directed outwardly toward said gap with a warmer surface being confined with said caps;

connecting terminals projected from the branch tubes and being operatively connected to each of said thermoelectric elements; and

fluid conduits for cooling the hotter surfaces of the thermoelectric elements, said fluid conduits extending through said hollow tubular anthetizer body via the branch tubes.

4,440,168

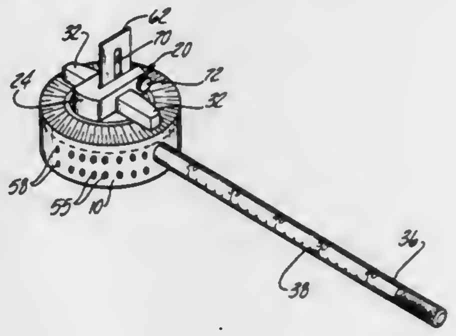
SURGICAL DEVICE

Mark G. Warren, 6584 Cranberry Lake, Clarkston, Mich. 48016

Filed Aug. 31, 1981, Ser. No. 297,870

Int. Cl.³ A61B *17/00*

U.S. Cl. 128—303 B **8 Claims**



1. A bone marking device comprising:

an annular body member having a top, bottom and side surface, said top surface having indicia means thereon,

an elongated handle having a longitudinal axis and extending outwardly from one side of the body,

a member having a slot and rotatably mounted in said body around an axis substantially perpendicular to the longitudinal axis of said handle, said member having a first axial end and a second axial end,

a marking means slidably mounted in said slot in said rotatable member, said marking means having a curvilinear marking edge, and

means for retaining said marking means in said slot so that said marking means is axially slidably movable within said slot between predetermined limits.

4,440,169

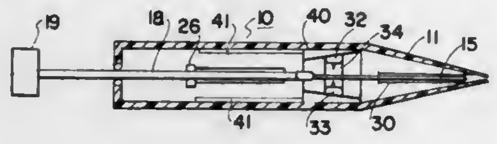
OPHTHALMIC SURGICAL INSTRUMENT

Melvin L. Schulman, #B1 Cornwall Ct. (Off Cranbury Rd.), East Brunswick, N.J. 08816

Filed Apr. 26, 1982, Ser. No. 371,552

Int. Cl.³ A61B ***17/32***

U.S. Cl. 128—305 **10 Claims**



1. A surgical instrument particularly adaptable for performing a peripheral iridectomy comprising:

a hollow tubular member having a pointed end portion adapted to pierce solid tissue with a front opening in said pointed end portion,

movable tissue grasping means located in the hollow of said tubular member and operative when moved in a first direction to pass through said opening to grasp tissue and when moved in a second direction to draw said grasped tissue through said opening into said hollow of said tubular member, and cutting means located in the hollow of said tubular member and selectively operative to cut said tissue as drawn into said hollow, with said cutting means when selectively operated capable of forming an aperture in said tissue of a diameter according to the distance moved by said tissue grasping means in said second direction, with said cut tissue remaining in said hollow.

4,440,170

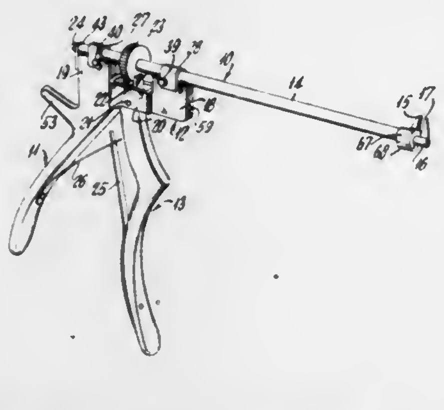
SURGICAL CLIP APPLYING INSTRUMENT

Donald Golden, Cherry Hill, and Robert B. Duncan, Bridgewater, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Mar. 6, 1979, Ser. No. 18,073

Int. Cl.³ A61B ***17/12***

U.S. Cl. 128—325 **25 Claims**



1. A surgical clip applicator comprising

a handle member;

a pair of spaced-apart cradles integral with said handle member at one end thereof;

a trigger member pivotally connected to said handle member and extending into the space between said cradles;

an elongated tubular jaw assembly rotatably mounted on said cradles, said jaw assembly comprising an axially movable tube member having a forward facing jaw on the distal end thereof and a rod member extending through said tube member and having a rearward facing jaw on the distal end thereof;

means on said tube member intermediate said cradles engaging said trigger member;

means on the proximal end of said rod member restraining said rod member from movement in an axial direction while permitting rotation thereof;

means aligning said forward facing and rearward facing jaws, said jaws being axially movable but nonrotatable with respect to each other; and

means for rotating said mounted tubular jaw assembly with said jaws in alignment.

4,440,171

SUTURING INSTRUMENT AND A METHOD OF HOLDING A SHUTTLE

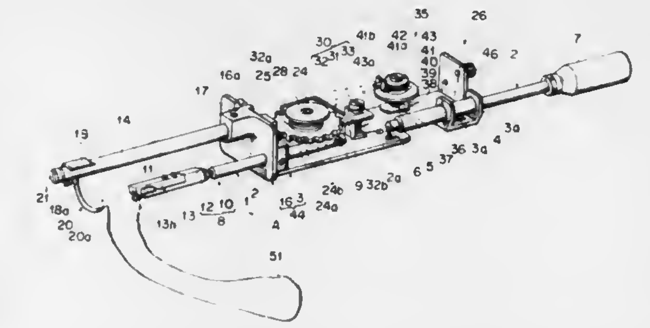
Reishi Nomoto; Masayoshi Takahashi, both of Kanagawa, and Yoshikazu Ebata, Tokyo, all of Japan, assignors to Janome Sewing Machine Co., Ltd., Kyobashi, Japan

Filed Feb. 1, 1982, Ser. No. 344,781

Claims priority, application Japan, Apr. 13, 1981, 56-54436

Int. Cl.³ A61B ***17/04***

U.S. Cl. 128—335.5 **5 Claims**



1. In a surgical suturing instrument having a curved needle carrying a suturing thread and mounted on a needle supporting means and a reciprocally movable shuttle holding means carrying a shuttle to which the suturing thread is connected to form a shuttle thread, the suturing thread being formed into a thread loop through which said shuttle is passed to form in cooperation with said needle, suturing stitches in two parts being sutured up, a combination comprising a shuttle having a said longitudinal center line and being symmetrical relative to said center line, said shuttle including a main body having an upper face and formed with a front end and a rear end, and a front end portion outwardly extending from said front end of the main body, said front end portion being formed with a thread passing hole and having a sharp end catching the thread loop, said front end portion having an upper sloped surface extending between said sharp end and said front end of the main body, and a lower sloped surface extending between said bottom surface and said front end of said main body; and said shuttle holding means including a shuttle holder and a shuttle claw secured to the shuttle holder so as to accommodate said shuttle therebetween, said shuttle holder being formed with a first guide groove engaging to engage and guiding said front end portion of said shuttle, said shuttle claw having a front part and a rear part, said front part having a second guide groove engaging guiding and guide said front end portion of the shuttle, said rear part of said shuttle claw being formed with a pair of opposite shuttle guide pieces which define an inner face of the shuttle claw, said guide pieces and said main body of the shuttle being so dimensioned that clearances are made between the upper face of said main body and the inner face of the shuttle claw, and between the rear end of said main body and said inner face to allow the suturing thread to pass through said clearances, said front end portion moving from said first guide groove to said second guide groove and vice versa, whereby the shuttle carrying the thread is prevented from being slipped out from said shuttle holding means during the suturing operation.

4,440,172

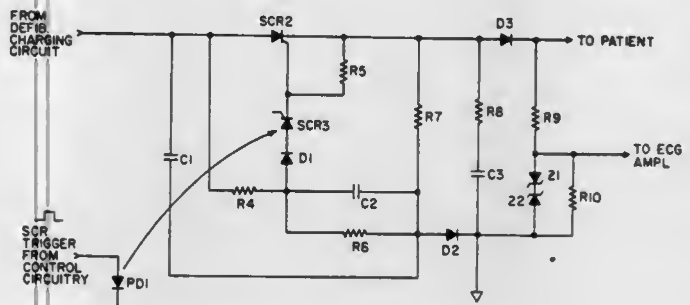
APPARATUS FOR COMBINING PACING AND CARDIOVERTING FUNCTIONS IN A SINGLE IMPLANTED DEVICE

Alois A. Langer, Pittsburgh, Pa., assignor to Mieczyslaw Mirowski, Owings Mills, Md.

Continuation-in-part of Ser. No. 193,027, Oct. 2, 1980, abandoned. This application Dec. 11, 1980, Ser. No. 215,520

Int. Cl.³ A61N ***1/36***

U.S. Cl. 128—419 D **45 Claims**



1. An implantable defibrillation system for implantation in a patient comprising a ground reference, defibrillating means for generating high-voltage defibrillating pulses, an ECG amplifier for sensing cardiac signals, common conductor means electrically connected to both said defibrillating means and said ECG amplifier for transferring both defibrillating pulses and cardiac signals respectively to and from said patient through said ground reference, said defibrillating means being connected to said common conductor means, and interface means being electrically connected to said amplifier and said common conductor means for limiting the voltage applied to said amplifier during the presence of a defibrillating pulse and for transferring a substantial portion of said cardiac signal to said amplifier during the absence of a defibrillating pulse.

4,440,173

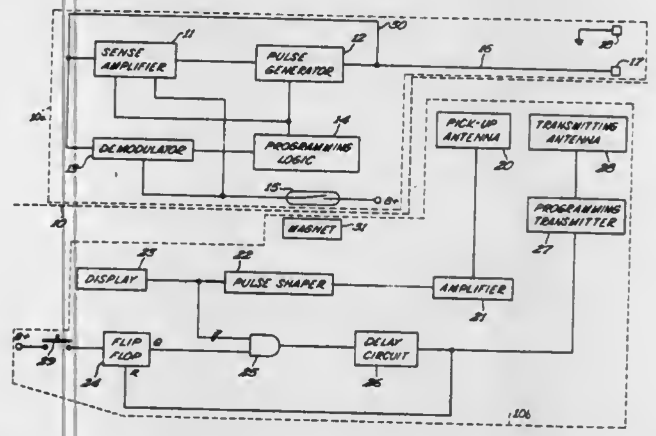
PROGRAMMABLE BODY STIMULATION SYSTEM

Lawrence C. Hudziak, White Bear Lake, and Jerome T. Hartlaub, New Brighton, both of Minn., assignors to Medtronic, Minneapolis, Minn.

Continuation of Ser. No. 92,354, Nov. 8, 1979, abandoned. This application Jul. 6, 1981, Ser. No. 280,222

Int. Cl.³ A61N ***1/36***

U.S. Cl. 128—419 PG **11 Claims**



1. In a body stimulation system of the type having external means for generating and transmitting radio frequency programming signals and implantable means, the implantable means including signal generator means with at least one programmable operating characteristic and means responsive to received programming signals for establishing said programmable operating characteristic in predetermined correspondence therewith; a housing enclosing said signal generator; and output means for delivering stimulation signals to a desired body site including stimulation delivering lead means extending from said housing, the improvement wherein said lead means comprises means connected to said operating characteristic establishing means for receiving said programming signals.

4,440,174

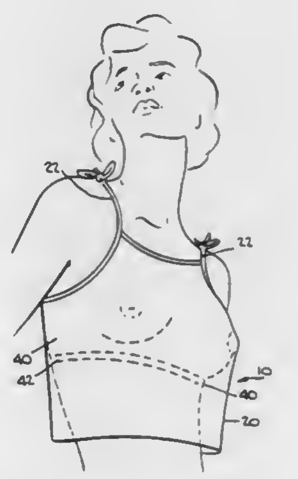
WOMAN'S GARMENT

Robert A. Cordova, Laguna Hills, Calif., assignor to Kayser-Roth Corporation, New York, N.Y.

Filed Jun. 18, 1981, Ser. No. 274,896

Int. Cl.³ A41B ***1/12;*** **A41C** ***3/08***

U.S. Cl. 128—455 **10 Claims**



1. A woman's tank top outer garment having an outer shell with a top edge shaped to form a concave neckline, and a plurality of straps for suspending said outer shell from the shoulders of a wearer, said tank top outer garment including an independently suspended shelf bra formed separately from said outer shell for supporting a wearer's bust, said separate shelf bra having a bottom edge and an upper edge, said upper edge being shaped to conform to the concave neckline of said outer shell and affixed to said outer shell along said outer shell top edge only and including two shirred pockets for positioning over the bust of a wearer, said tank top further comprising an elastic band attached at said shelf bra bottom edge so that said shirred pockets and said elastic band act in combination to support the bust of a wearer independent of said tank top outer shell.

4,440,175

MEMBRANE ELECTRODE FOR NON-IONIC SPECIES

Ebtissam Wilkins, Albuquerque, N. Mex., assignor to University Patents, Inc., Norwalk, Conn.

Filed Aug. 10, 1981, Ser. No. 291,737

Int. Cl.³ A61B ***5/00***

U.S. Cl. 128—635 **13 Claims**

1. A membrane electrode for use in measuring the concentration of a non-ionic species in an aqueous medium as a function of potentiometric or polarographic response comprising a conductive substrate component and a membrane component layered or coated on said substrate component, said membrane being compatible and non-reactive with the aqueous medium and comprising

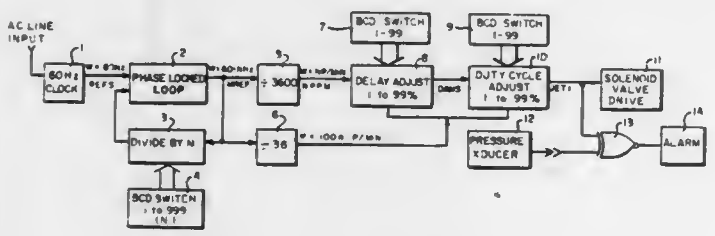
(a) a polymeric material;

(b) an anion exchange material; and

(c) a water-insoluble salt of said non-ionic species to be measured.

4,440,176
DIGITALLY PROGRAMMABLE CARDIAC SYNCHRONIZED HIGH FREQUENCY JET VENTILATOR CONTROL SYSTEM

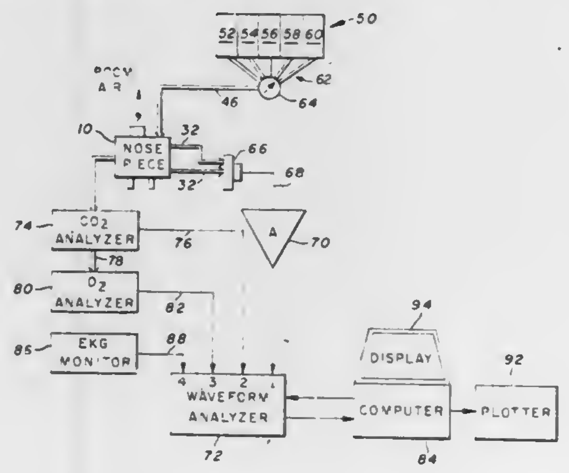
Saul Miodownik, New York, N.Y., assignor to Memorial Hospital for Cancer and Allied Diseases, New York, N.Y.
Division of Ser. No. 233,244, Feb. 10, 1981. This application Aug. 9, 1982, Ser. No. 406,600
Int. Cl.^{3} A61B *5/04*
U.S. Cl. 128—708 **3 Claims**



1. A device for detecting the QRS component of an EKG signal comprising:
a delta modulator receiving the EKG signal and having a slope overload condition defined by the step size and sampling rate thereof such that it goes into the slope overload condition only in response to the QRS component of the EKG signal for detecting the same.

4,440,177
RESPIRATORY ANALYZER SYSTEM

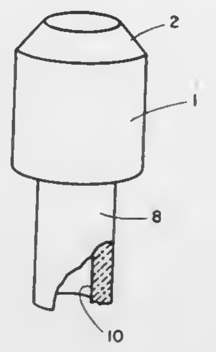
Stephen T. Anderson, and Catherine A. Anderson, both of Stillwater, Minn., assignors to Medical Graphics Corporation, Shoreview, Minn.
Continuation-in-part of Ser. No. 165,949, Jul. 3, 1980, abandoned. This application Dec. 16, 1981, Ser. No. 331,247
Int. Cl.^{3} A61B *5/08*
U.S. Cl. 128—719 **7 Claims**



1. Apparatus for diagnosing possible brain stem disfunction relating to respiration in a patient comprising:
(a) means for selectively introducing a plurality of known percentages of a test gas into air being inspired by said patient;
(b) means for measuring the inspiratory and expiratory flow of air to and from said patient during time periods related to introduction of each such gas percentage and for developing first electrical signals proportional thereto;
(c) means for measuring the percentage concentration of said test gas in the air expired by said patient during time periods related to introduction of each such gas percentage and for producing second electrical signals proportional thereto;
(d) analyzer means, including a programmable computing means, connected to receive said first and second electrical signals for integrating said first signals over respective predetermined time intervals and for computing from said second signals the respective alveolar partial pressure of carbon dioxide gas in the expiratory air flow from the lungs of said patient, said analyzer means further including means for determining the change in said integrated first signals relative to said respective alveolar partial pressures; and
(e) display means connected to said analyzer means for displaying said relative change, whereby normal and abnormal ventilatory responses may be distinguished.

4,440,178
IMPLANTABLE ELECTRODE

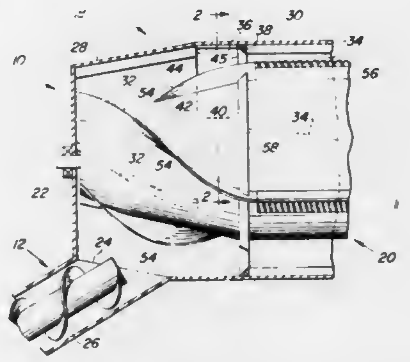
Adrien Bussard, Meierskappel, Switzerland; Fritz Aldinger, Rodenbach, and Franz Sperner, Hanau, both of Fed. Rep. of Germany, assignors to Kontron AG, Zurich, Switzerland and W. C. Heraeus GmbH, Hanau, Fed. Rep. of Germany
Filed Dec. 23, 1981, Ser. No. 333,944
Claims priority, application Switzerland, Dec. 23, 1980, 9523/80
Int. Cl.^{3} A61N *1/04*
U.S. Cl. 128—784 **13 Claims**



1. A porous electrode for implanting in organic tissue, comprising a sintered member of electrically conductive particles, said member having
(i) a first surface portion of said sintered particles which is anodized at least at the non-interconnected area of the particles so as to form a relatively thin metal oxide coating on said surface portion and
(ii) a second surface portion coated with an electrically conductive metal inert to body fluids, said two surface portions being configured and adapted for intimate contact with the tissue.

4,440,179
STONE TRAP FOR AN AXIAL FLOW ROTARY SEPARATOR

James H. Bassett, Davenport, Iowa; Timothy F. Christensen, East Moline, and Mark L. Pearson, Moline, both of Ill., assignors to Deere & Company, Moline, Ill.
Filed Oct. 18, 1982, Ser. No. 434,820
Int. Cl.^{3} A01F *7/00, 12/20, 12/28*
U.S. Cl. 130—27 JT **40 Claims**

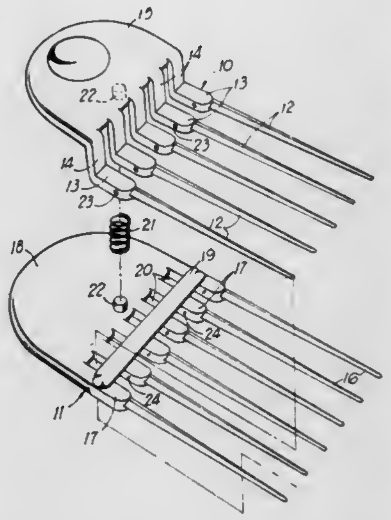


1. In an axial flow rotary crop material separator in which a rotor rotates within a casing so as to define an annular space,

the space having an upstream inlet end for receiving harvested crop material, which material may include nonfrangible bodies, and a downstream outlet end for discharging at least a portion of the received material and in which rotor and casing cooperate to propel the received material downstream as a mat in a generally spiral path, the speed of the rotor being sufficient to maintain the mat generally in contact with the casing, a rock control arrangement comprising:
means disposed in the annular space between the inlet and the outlet for arresting the downstream progress of nonfrangible bodies having dimensions greater than a predetermined minimum;
an aperture in the casing adjacent to and at least partially upstream of the means for arresting, for passing said bodies larger than the predetermined minimum; and
means carried by the rotor for propelling the bodies within the casing to bring them into register with the aperture and release them to pass through the aperture under the action of centrifugal force.

4,440,180
CURL LIFTING COMB OR PICK

Rodney E. Thomas, 3271 Desert Cir., Apt. #1, East Point, Fulton County, Ga. 30344
Filed Aug. 6, 1982, Ser. No. 406,084
Int. Cl.^{3} A45D *24/00*
U.S. Cl. 132—11 R **7 Claims**

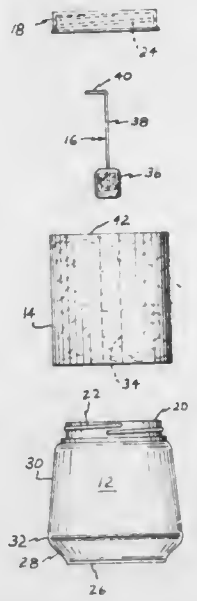


1. A curl treating comb or the like comprising coacting comb sections pivotally connected about an axis, said comb sections having substantially parallel closely interfitting tines on one side of the pivot axis and handle extensions on the other side of said pivot axis, and means resiliently biasing the comb sections to a position where the tines of the comb sections are in an interleaved side-by-side relationship in a common plane, whereby the tines may then penetrate curls and may then be separated to expand the curls by exerting pressure on the handle extension, and a stop element on one comb section to limit relative pivotal movement of the comb sections under influence of the biasing means.

4,440,181
NAIL POLISH REMOVER KIT

John S. Scherer, 1123 Kings Cove Dr., Rochester, Mich. 48063
Continuation-in-part of Ser. No. 222,357, Jan. 5, 1981, abandoned. This application Jun. 18, 1981, Ser. No. 275,114
Int. Cl.^{3} A45D *29/18*
U.S. Cl. 132—73.5 **18 Claims**

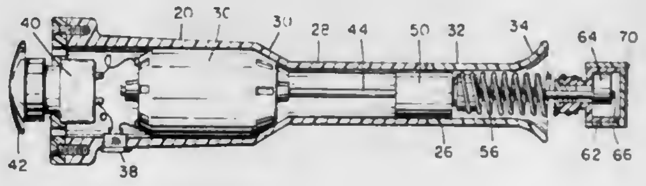
1. A nail polish remover kit comprising, in combination:
a jar having walls which rise from a lower portion to an upper portion said upper portion having an upwardly opening constricted mouth;
a lid for removably sealingly closing the mouth;
a sponge-like filler for insertion in the jar having an upper end which prior to insertion is of greater horizontal cross-sectional area than the corresponding upper portion of the jar and after insertion is compressed inwardly by said upper portion of the jar, said filler having a horizontal cross-section below said upper end which, moving from the lower end, and prior to insertion in the jar, progressively increases relative to the corresponding cross-section of the jar, whereby the



upper end of the filler is more highly compacted than the lower end of the filler;
said filler having a centrally arranged finger receiving opening at said upper end extending downwardly through the more densely compacted area and sized to wipe a finger inserted therein; and
a nail polish remover solution in the jar saturating the filler to wet the nail of a finger inserted in said opening.

4,440,182
SANDER FOR ARTIFICIAL NAILS

Harold K. Holm, 410 W. Harvey, Santa Ana, Calif. 92707
Filed Mar. 21, 1983, Ser. No. 477,145
Int. Cl.^{3} A45D *29/04*
U.S. Cl. 132—75.6 **19 Claims**



1. A fingernail shaping instrument comprising:
a sanding head;
a head driving unit;
resilient means for mounting the sanding head on the head driving unit such that the head is movable with the head driving unit and is capable of being tilted relative to a line extending between the head and head driving unit; and
means for moving said head orbitally about said line.

4,440,183
ANATOMICAL DEVICE

Jess Miller, Rte. 13, P.O. Box 183B, Fort Worth, Tex. 76119
Continuation-in-part of Ser. No. 110,354, Jan. 7, 1980, abandoned. This application Sep. 16, 1980, Ser. No. 187,486
Int. Cl.^{3} A61F *5/00*
U.S. Cl. 128—79 **9 Claims**

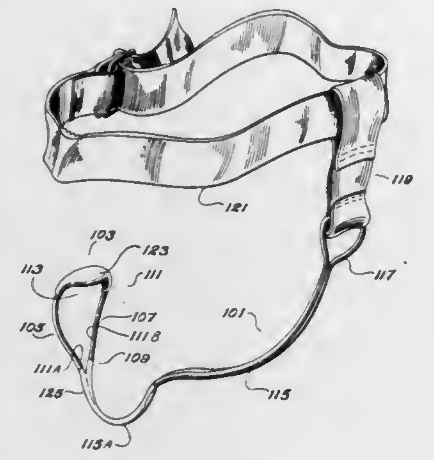
1. A device for facilitating and maintaining the erection of the penis of a human male, comprising:
a wire-like closed loop-shaped member adapted to be fitted around and engage at least the dorsal part of the base of

the penis for restricting the flow of blood from the penis to achieve and maintain an erection,

a central portion having a first end coupled to said closed loop-shaped member and extending rearward and upward therefrom to an opposite end,

said central portion constructed from a wire-like material and defining a given non-linear configuration,

said central portion being adapted to be located between the legs of a human male, and



means coupled to said opposite end of said central portion for engaging the hips, waist, or the like for holding said central portion between the legs of a human male and said closed loop-shaped member in place around the penis next to the body,

said central portion being formed of a material sufficient to maintain said central portion in said given non-linear configuration when said central portion is supported at said opposite end.

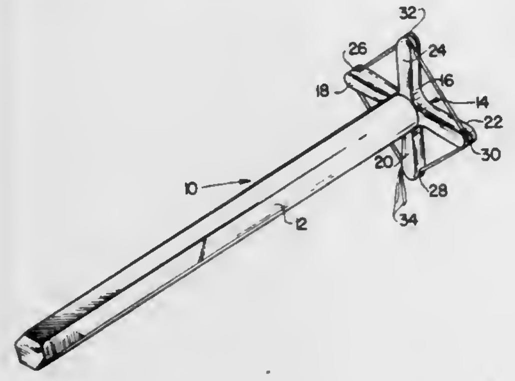
4,440,184
DENTAL FLOSSING DEVICE

Eric L. Smith, 638 Potomac Ave., Hagerstown, Md. 21740

Filed Jun. 25, 1982, Ser. No. 392,136

Int. Cl.^{3} A61C *15/00*

U.S. Cl. 132—91 **10 Claims**



5. A dental flossing instrument comprising, in combination, an elongated handle,

a generally star wheel shaped floss support head on one end of the handle

said floss support head including a central hub portion and more than two support fingers extending generally radially from said central hub portion and from said handle and being located in substantially equally spaced relation to one another around said hub portion, said fingers each terminating in a free end having a floss retaining groove therein, said floss retaining grooves being disposed in a common plane extending substantially perpendicular to said elongated handle, and a closed loop of dental floss extending around the support head and engaging each said finger within said groove formed in the end thereof, the length of the dental floss in said closed loop in an unstressed condition being slightly less than the distance around said floss support head whereby the closed loop is elastically extended when installed on the floss support head and whereby the portion of the closed loop extending between each adjacent pair of said fingers is supported in position for use in flossing the teeth and is maintained under tension to facilitate such use.

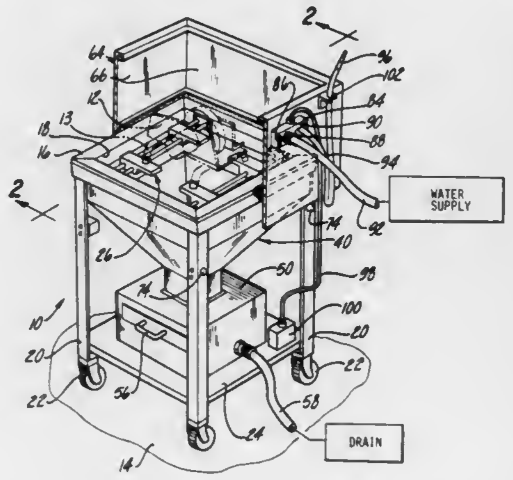
4,440,185
SUPPORT STAND FOR A FOOD SLICER

Dean P. Wiltse, P.O. Box 215, Oscoda, Mich. 48750

Filed Aug. 18, 1982, Ser. No. 409,322

Int. Cl.^{3} B08B *3/02*

U.S. Cl. 134—104 **9 Claims**



1. A support stand for a food processing apparatus comprising:

a perimeter frame comprising framing members defining a central opening, and having a plurality of support legs secured to said frame so that said perimeter frame is substantially horizontally supported on top of said legs;

means for supporting a food processing apparatus over said opening;

a tubular, open-ended housing and means for slidably entraining said housing about said frame so that said housing is slidable between an upper position in which it substantially encloses the food processing apparatus therein and a lower position in which said housing is positioned below the food processing apparatus;

means for releasably maintaining said housing in said upper position;

means for releasably maintaining said housing in said lower position;

sealing means for providing a watertight seal between said housing and said frame when said housing is in said upper position; and

a drain receptacle having an open top secured below said central opening and means for draining said receptacle.

4,440,186
NONSKID ASSEMBLY FOR PREVENTING THE SLIDING OF AN ITEM

Josef Löttner, Eburonenstrasse 9-11,, D-5000 Koln 1, Fed. Rep. of Germany

Filed Jan. 29, 1982, Ser. No. 344,153

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1981, 3102868; May 5, 1981, 3117614

Int. Cl.^{3} A61H *3/02*

U.S. Cl. 135—84 **38 Claims**

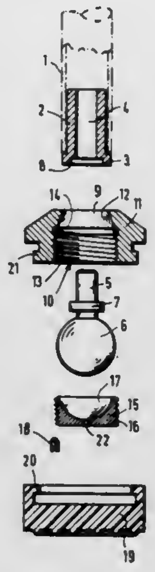
1. A nonskid assembly comprising:

(a) a ring element having an upper portion and a lower undersurface with central opening passage extending from the undersurface completely through the ring element,

(b) coupling means partially disposed within said central opening passage and projecting outwardly from said central opening,

(c) retainer means disposed within the central opening passage through said lower undersurface,

(d) said retainer means being effective to support said coupling means against downward displacement within the central opening passage,



(e) tread carrier means having treads on a bottom surface thereon being connected to the ring element over the lower undersurface of said ring element, and

(f) the retainer means has a plane underside against which the tread carrier means is disposed.

4,440,187
PORTABLE SUN SHELTER

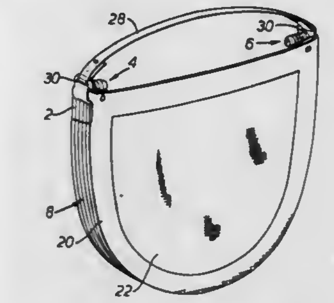
Maurice K. Fiddler, 31 Hygeia Parade, Ringwood, Victoria, Australia

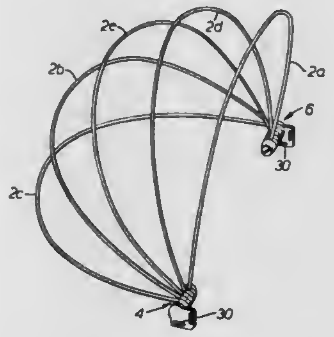
Division of Ser. No. 142,392, Apr. 21, 1980. This application May 10, 1982, Ser. No. 376,488

Claims priority, application Australia, Apr. 23, 1979, PD8509

Int. Cl.^{3} E04F *10/04*

U.S. Cl. 135—117 **10 Claims**





7. A foldable shelter comprising a framework having two joints, first rib, second rib, and a plurality of intermediate ribs each of generally U-shaped configuration, a flexible cover connected to said ribs one end of the cover being connected to the first rib and the other end of the cover being connected to the second rib, one of the ends of each rib being connected at one of said joints and the other of the ends of each rib being connected at the other of said joints, said joints permitting the ribs to be rotatable relative to one another characterized in that at least one of said joints includes a number of rotatable carrier elements in which the ends of the ribs are mounted, said carrier elements being disc shaped and formed from synthetic plastic material and said at least one joint includes spring means to apply resilient axial compressive forces to said rotatable carrier elements whereby said elements function as friction clutch members.

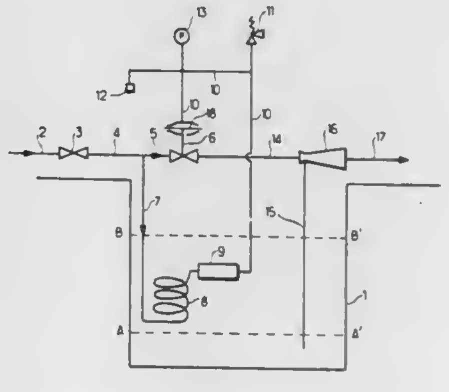
4,440,188
PROCESS AND DEVICES FOR CONTROLLING THE LEVEL OF A LIQUID

Joseph Le Carrou, 7, rue de la Victoire, 76290 Montivilliers, France

Continuation of Ser. No. 138,732, Jul. 27, 1979, abandoned. This application Sep. 2, 1981, Ser. No. 298,643

Int. Cl.^{3} F17D *1/12*

U.S. Cl. 137—2 **25 Claims**



1. A process for controlling the level of a liquid at a temperature t_2 contained in an enclosure, comprising (a) continuously supplying a condenser placed in said enclosure with a fluid which is in a gaseous state under pressure p and at a temperature t_1, greater than the temperature t_2 of said liquid, which will condense to a liquid at said pressure p and at said temperature t_2, such that the fluid in said condenser condenses when the level of the liquid in the enclosure immerses the condenser in the liquid to cause said fluid to approach the temperature t_2, (b) discharging said condensed fluid outside the condenser, (c) sensing said discharge, (d) drawing off the level of the liquid in said enclosure in response to said sensed discharge, (e) sensing when the fluid in said condenser does not condense because the liquid level in the enclosure does not immerse the condenser in the liquid, and (f) increasing the level in said enclosure responsive to said second step of sensing.

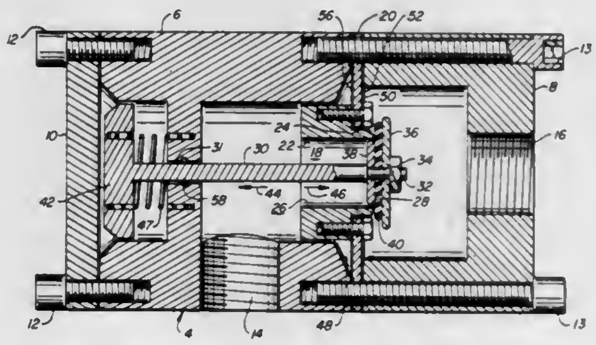
4,440,189
CORROSIVE FLUID TWO WAY CHECK RELIEF VALVE

John M. Graham, 921 Sequoia Ave., Millbrae, Calif. 94030

Filed Sep. 4, 1981, Ser. No. 299,365

Int. Cl.^{3} F16K *17/18*

U.S. Cl. 137—116 **6 Claims**



1. A check relief valve useable with corrosive fluids comprising:

a body;

an input port formed in said body;

an output port formed in said body;

a fluid passageway connecting said input and output ports; and a flow control means for controlling fluid flow along said fluid passageway, said flow control means adapted to permit substantially free flow of fluid in a forward flow direction, from said input port to said output port, along a control portion of said passageway and for blocking flow of fluid in a reverse flow direction, from said output port to said input port, along said control portion of said passageway, until a first predetermined pressure is reached at said output port, said flow control means comprising:

a ring spring;

means for mounting said ring spring to said body at said control portion of said passageway for axial flection generally parallel to said central portion of said fluid passageway;

a hollow member defining said central portion of said fluid passageway, said hollow member including a sealing surface circumscribing said central portion;

means for mounting said hollow member to said ring spring for limited movement within said body;

a movable seal configured to engage said sealing surface to block fluid passage from said output port to said inlet port;

means for urging said movable seal in said reverse flow direction towards said sealing surface, said urging means including a connection member having first and second ends, said second end connected to said movable seal;

said movable seal urging means including a spring, engaging said first end of said connection member, biasing said connection member in said reverse direction, said spring mounted to said body external of said passageway; and

means for halting movement of said connection member in said reverse flow direction when said first predetermined pressure is reached at said output port thereby permitting fluid flow in said reverse flow direction.

4,440,190

CONTROL MECHANISM FOR A FIRE HYDRANT

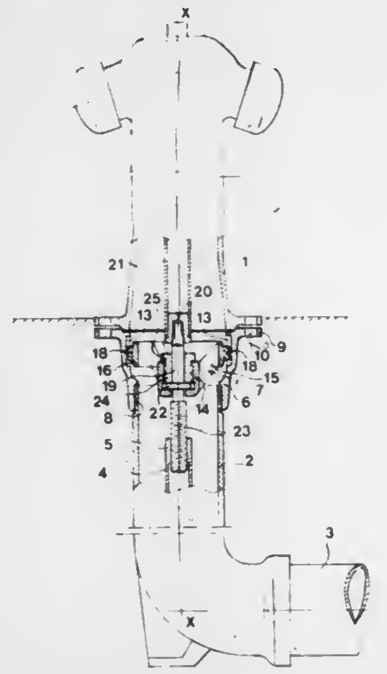
Pierre L. Barbe, Toul, France, assignor to Pont-a-Mousson S.A., Nancy, France

Filed Feb. 9, 1982, Ser. No. 347,208

Claims priority, application France, Feb. 12, 1981, 81 02948

Int. Cl.^{3} E03B *9/02*

U.S. Cl. 137—272 7 Claims



1. A control mechanism for a fire hydrant having an upper outer body (1) connected to a lower elongated pipe (2) containing a valve translationally engaging a valve seat, comprising:

a control rod (19) controlling the translation of said valve and extending above said elongated pipe;

a support holder (6) fixed on a lower end to the upper end of said elongated pipe, said support having housings (11-13) formed in its interior surface between its upper and lower ends, at least one housing being a vertical housing parallel to the vertical axis (X—X) of the fire hydrant; and

a support member (7) comprising a central sleeve (14) engagable with said control rod, radial arms (15) extending outward from said sleeve, and a one-piece cast circular rim (16) further comprising on its outer circumferential surface at least one lug (18) engaging one of said vertical housings and two cylindrical diametrically opposed bosses (17) engaging two of said housings on a horizontal axis (Y—Y) for rotating said support member about said horizontal axis during installation, said lugs and bosses upon installation locking said support member to said support holder, thereby preventing the expulsion of said valve.

4,440,191

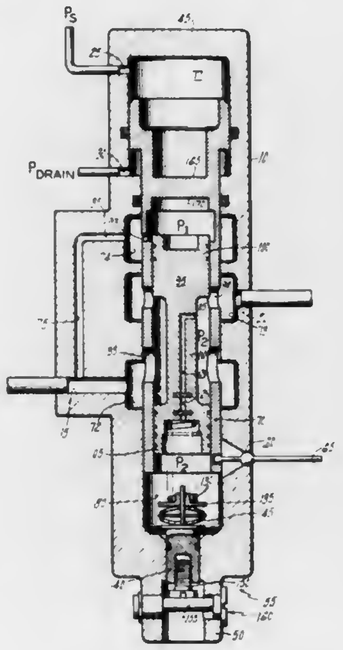
FLOW CONTROL DEVICE

Kenneth P. Hansen, Enfield, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sep. 23, 1982, Ser. No. 421,760

Int. Cl.^{3} G05D *7/01*

U.S. Cl. 137—468 9 Claims



1. A flow control device comprising a housing having fluid inlet and fluid outlet passages therein, a first valve element disposed within said housing, a second valve element disposed within said first valve element, said first and second valve elements being disposed in selective communication with said inlet and outlet passages, said flow control device being characterized by:

said first valve element comprising a metering element having inlet and outlet windows therein corresponding to, and communicating with said fluid inlet and outlet passages, respectively, said metering valve element being selectively positionable within said housing such that one of said windows is disposed in selectively variable registry with the corresponding passage for adjusting the effective flow area therebetween;

said second valve element comprising a pressure regulating element having first and second ends thereof and including a first portion in variable registry with the other of said windows in said metering element for adjusting the flow therethrough; said pressure regulating valve element being grounded to said housing for movement independent of that of said metering element for enhanced accuracy in the maintenance of a constant pressure drop across said one metering valve window;

means providing fluid communication between said corresponding passage and said second end of said pressure regulating element;

means providing fluid communication between said one window on a side thereof opposite said corresponding passage and said first end of said pressure regulating element; and

means for balancing said pressure regulating element against fluid pressure on said first and second ends thereof for establishing a registry between said other window and said first portion of said pressure regulating valve element necessary to maintain a relatively constant pressure drop across said one window.

4,440,192

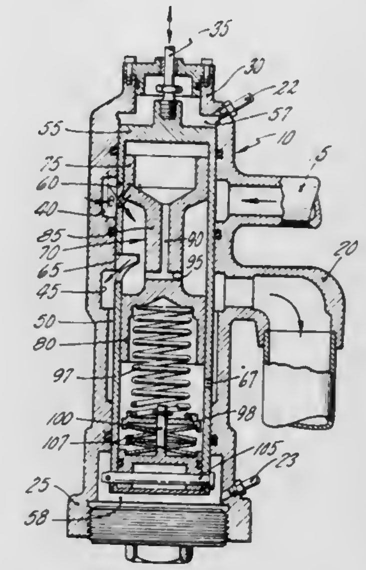
MINIMIZATION OF PRESSURE DROP VARIATION IN FLOW CONTROLLERS

Brian G. Donnelly, West Suffield, Conn., and Charles F. Stearns, East Longmeadow, Mass., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sep. 23, 1982, Ser. No. 421,759

Int. Cl.^{3} G05D *7/01*

U.S. Cl. 137—501 2 Claims



1. A flow controller comprising a housing having fluid inlet and outlet passages therein,

a metering valve element having inlet and outlet windows therein corresponding to said inlet and outlet passages, said metering valve element being disposed in said housing such that at least one of said metering valve windows is in variable registry with a corresponding passage for adjusting the effective flow area therebetween,

a pressure regulating valve element disposed within said metering valve element, a first portion of said pressure regulating valve element being in variable registry with the other of said metering valve windows, an unobstructed portion of said other window allowing flow therethrough, said pressure regulating valve element being pressurized on opposite ends thereof with fluid pressure on opposite sides of said one metering valve window and biased by a spring which balances the net force on said pressure regulating valve element due to any difference in pressure on the opposite ends thereof,

said flow control device being characterized by the spring having a spring rate substantially equal to the product

$$2A/X \cos\theta \, \Delta P_{cont}$$

wherein:

A is the flow area of said other window at a maximum required flow through the controller;

X is the maximum stroke of said pressure regulating valve element at said maximum required flow through said controller;

θ is the angle through which the flow through the controller is turned by the pressure regulating valve element; and

ΔP_{cont} is the maximum required pressure drop across said flow controller.

4,440,193

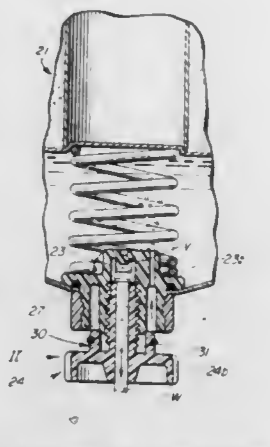
VALVE ASSEMBLY

Charles L. Matheson, Cookeville, Tenn., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Nov. 23, 1981, Ser. No. 323,940

Int. Cl.^{3} F16K *37/00, 24/02*

U.S. Cl. 137—558 8 Claims



1. A valve assembly for use in controlling flow of liquid accumulated in a closed vessel through a drain port formed therein, said assembly comprising a body member for fixedly mounting on the vessel and aligned with the drain port, and a valve piece mounted on said body member for selective adjustment relative thereto between open and closed positions; said body member including a first section for extending through the drain port and into the vessel interior and the liquid accumulated therein, a second section for securing to the vessel and from which said first section extends in one direction into the vessel interior, and an exposed third section extending in an opposite direction from said second section and being adapted to project outwardly from the exterior of the vessel, said first, second, and third sections being provided with a common primary passage and a common secondary passage independent of said primary passage, one end of each passage being concealed in the vessel interior and terminating within the accumulated liquid and the opposite end of each passage being exposed and terminating externally of the vessel, said first section having a valve seat fixedly mounted in spaced relation with respect to said one end of the primary passage; said valve piece including an elongated first element mounted for sealing endwise adjustment within the primary passage of said body member and having a longitudinally extending bore formed therein and open at opposite ends, one end of said bore being concealed within said body member and the opposite end being exposed and disposed externally of the vessel, said bore one end being closed off by said valve seat when said valve piece is in said closed position, an exposed flange element disposed externally of the vessel and outwardly of the body member third section, said exposed flange encompassing an exterior portion of said first element, and an exposed, annular seal element carried by and extending from said flange element and sealingly engaging and closing off the exposed end of the secondary passage when said valve piece is in said closed position, said seal element assuming a non-sealing engagement with the end of the secondary passage subsequent to the bore end of said first element having moved a predetermined distance away from said valve seat.

4,440,194

MOVING BODY AND METHOD OF PERFORMING WORK WITHIN PIPES WITH USE OF SAME

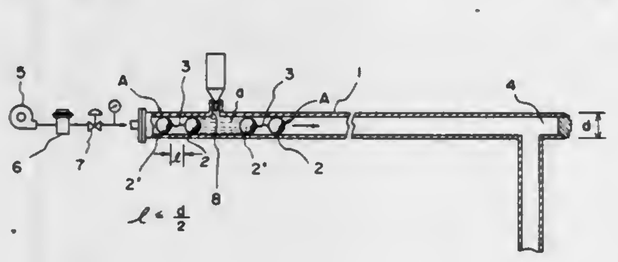
Namio Kinumoto, Osaka; Takashi Nakao, Katano; Hiroshi Murase, Sakai; Shigemitsu Okada, Takarazuka, and Shinichi Kawadoko, Osaka, all of Japan, assignors to Osaka Gas Company, Limited, Osaka, Japan

Filed Feb. 2, 1982, Ser. No. 344,967

Claims priority, application Japan, Feb. 29, 1980, 55-26683

Int. Cl.³ F16L *55/10*

U.S. Cl. 138—89 8 Claims



1. In combination, a pipe and a moving body for performing work within said pipe by applying a fluid back pressure on the body as placed in the pipe to thereby move the body through the interior of the pipe, comprising two spherical members made of an elastic material, and a flexible linear member interconnecting the two spherical members, wherein the flexible linear member extending between opposed faces of the two spherical members is no greater in length than half of the diameter of the pipe.

5. A method of performing work within a pipe comprising the steps of placing in the pipe a moving body comprising two spherical members made of an elastic material and interconnected by a flexible linear member, the length of the flexible linear member extending between the two spherical members being no greater than half the diameter of the pipe, and applying a fluid pressure to the back side of the moving body to thereby move the body along the line of flow through the pipe.

4,440,195

PLASTIC TUBE WITH LONGITUDINAL CHANNELS IN THE WALL

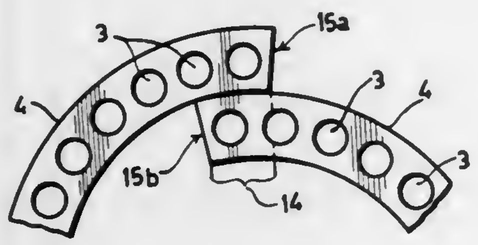
Jan P. van Dongeren, Bergentheim, Netherlands, assignor to Wavin B.V., Netherlands

Continuation of Ser. No. 304,159, Sep. 21, 1981, abandoned, which is a continuation of Ser. No. 73,613, Sep. 10, 1979, which is a continuation of Ser. No. 893,826, Apr. 6, 1978. This application Dec. 20, 1982, Ser. No. 451,172

Claims priority, application Netherlands, Apr. 6, 1977, 7703820

Int. Cl.³ F16L *9/18*

U.S. Cl. 138—115 5 Claims



1. A tube having
an inner wall;
an outer wall;
a central channel, relatively large in comparison to the outer diameter of the tube, said central channel passing substantially through the center of the tube;
partition means for interconnecting said inner and outer walls;
a plurality of longitudinal channels formed by said partition means with said inner and outer walls;
said longitudinal channels being relatively small in comparison to the central channel and being interspaced along the circumference of said tube;
said central channel and each of said longitudinal channels having substantially rounded cross sections;
said inner wall having a structure substantially free of internal stresses, said tube manufactured according to a process comprising the steps of:
extruding a thermo-plastic material;
sizing and cooling the tube to a temperature distribution whereby the tube is form-stable; and thereafter
re-supplying heat quickly in a period of about five minutes or less to the outer side of the outer wall of the tube to a temperature over 50° C. such that the tube is not form-destabilized;
determining the internal stresses of the inner wall by cutting off an end of the tube and making a cut edge from the center to the outer side of the outer wall longitudinally along the end of the tube, such that edge parts of the cut end have an overlap with each other amounting to less than 5% of the circumference of the tube.

4,440,196

DOUBLE OPEN-SHED JACQUARD MACHINE FOR THE LIFTING OF WARP YARNS OF A LOOM

Tibor Arvai, Monte-Carlo, Monaco, assignor to Verdol S.A., Caluire, France

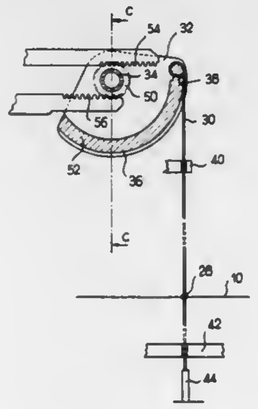
PCT No. PCT/FR81/00018, § 371 Date Oct. 5, 1981, § 102(e) Date Oct. 5, 1981, PCT Pub. No. WO81/02312, PCT Pub. Date Aug. 20, 1981

PCT Filed Feb. 17, 1981, Ser. No. 309,969

Claims priority, application Monaco, Feb. 18, 1980, 1432

Int. Cl.³ D03C *3/00, 13/00*

U.S. Cl. 139—59 13 Claims



1. An open-shed jacquard machine having programming means for controlling in cycle with a loom a plurality of harness cords on either side of a layer of warp yarns, and each cord being provided with an eyelet through which a corresponding warp yarn passes, comprising:
(a) shaft means supporting a plurality of modules having pulleys and each pulley having a groove receiving a corresponding one of the harness cords which is fixed thereto;
(b) individual harness cord displacing means controlled by said programming means and associated with each pulley and operative when actuated to rotate the pulley through an angle corresponding with the desired lift of the harness cord;
(c) each harness cord displacing means being located on the opposite side of the shaft means from the side where the pulley receives the harness cord;
(d) said modules being disposed in rows which are tiered above the layer of warp yarns, the successive rows being offset progressively from one tier to the next in a direction parallel to the warp yarns; and
(e) the machine having two series of rows of modules disposed opposite to each other, said pulleys and the displacement means of the two opposed series being oriented in opposite directions extending parallel to the direction of the warp yarns, the harness-cord receiving sides of the pulleys facing toward each other and the offsets of the rows of modules progressing symetrically and oppositely in directions parallel to the warp threads.

4,440,197

SHUTTLELESS LOOM

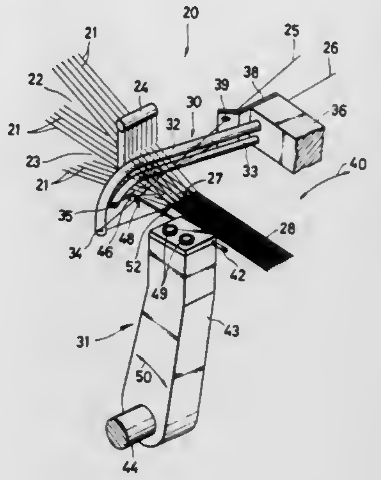
Yoshinori Masuda, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Continuation of Ser. No. 160,166, Jun. 17, 1980. This application Aug. 9, 1982, Ser. No. 406,547

Claims priority, application Japan, Jun. 22, 1979, 54-79502

Int. Cl.³ D03D *47/42*

U.S. Cl. 139—431 3 Claims



1. A shuttleless loom for weaving a fabric, comprising:
(a) means for inserting a pair of successive loops of weft yarns simultaneously through respective superimposed warp sheds from a first side thereof, said inserting means comprising a pair of spaced upper and lower arcuate fingers arranged one above the other in superposed relation with each other and reciproable respectively through a corresponding one of said superposed sheds along a first arcuate path in a first plane extending substantially parallel to the plane of the fabric being woven, each of said fingers having at its free end an eye for passage therethrough of one of said weft yarns supplied to the fell of the fabric, means for reciprocating said fingers between a first position in which both of said eyes are on said first side of said warp sheds at a first side of the fabric and a second position in which both of said eyes are beyond a second side of both of said warp sheds at a second side of the fabric, one of said fingers being sufficiently longer than the other so that when said fingers are in said second position said weft yarns supplied through said eyes to said fell jointly define therebetween an angular space in the general plane of the fabric being woven; and
(b) means arranged along the second side of said warp sheds for forming a knitted selvedge at one edge of the fabric being woven, said selvedge-forming means including a single knitting needle having at its free end a hook reciprocable in timed relation with said arcuate fingers along a second arcuate path in a second plane extending substantially perpendicularly to said first plane in such a manner that said hook reciprocates within said angular space to pass through a single loop of the weft yarn inserted by said longer finger and to catch and knit only the weft yarn extending freely between the fell of the fabric and the eye of said shorter finger.

4,440,198

APPARATUS FOR GUIDING WEFT YARNS IN A JET LOOM

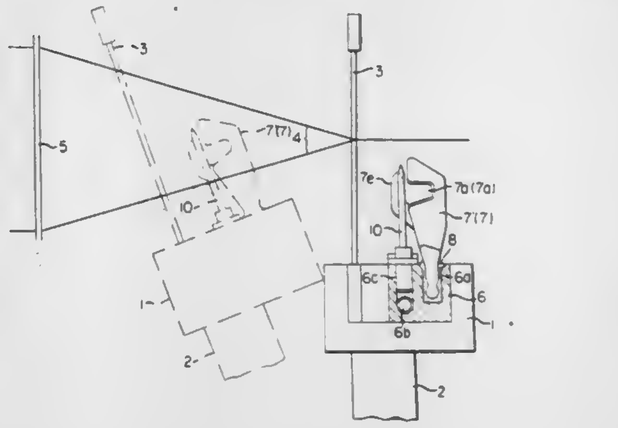
Hajime Suzuki, Anjyo, and Hiroshi Arakawa, Kariya, both of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Continuation of Ser. No. 129,411, Mar. 11, 1980, abandoned. This application Mar. 9, 1982, Ser. No. 356,360

Claims priority, application Japan, Mar. 17, 1979, 54-31340; Jun. 25, 1979, 54-79102

Int. Cl.³ D03D *47/30*

U.S. Cl. 139—435 11 Claims



1. An apparatus for guiding a weft yarn inserted into a shed, formed between lower and upper warp yarns, by a jet of fluid discharged from a main nozzle positioned beside a jet loom, said apparatus comprising:
a number of weft guiding members arranged in spaced relationship with each other and in parallel to a reed of the jet loom, said weft guiding members each having an aperture with an opening allowing the weft yarn to exit out of the apertures after it has been inserted into the shed, said apertures providing a continuous weft guiding channel;
said weft guiding members being formed of a first group of weft guiding members of which the openings are of a relatively narrow width less than the size of said apertures and are formed in upper parts of said first group of weft guiding members;
sub-nozzles each having at least one fluid outlet discharging a jet of fluid to assist the fluid jet produced by the main nozzle in inserting the weft yarn into the shed, each of said sub-nozzles being positioned between the reed and said guide members with an axis of said at least one fluid outlet inclined at a predetermined angle with respect to the direction of the weft yarn insertion, so that the fluid jet produced by the respective sub-nozzle is obliquely directed toward surfaces of the apertures in said first group of weft guiding members downstream of said respective sub-nozzle with respect to said direction of the weft yarn insertion, which surfaces are positioned away from the reed; and
said surfaces of the apertures in said first group of weft guiding members, toward which the fluid jets produced by said sub-nozzles are directed, each extending in a substantially straight direction and substantially vertically in a beat-up position of said weft guiding members.

4,440,199

METHOD OF FORMING WIRING FOR BOTTLE STOPPERS

Bernard Montoriol, Germaine, France, assignor to Etablissements F. Valentin, Epernay, France

Filed Jul. 21, 1981, Ser. No. 285,660

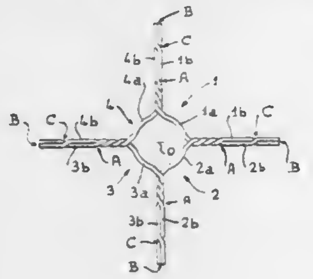
Claims priority, application France, Jul. 23, 1980, 80 16404

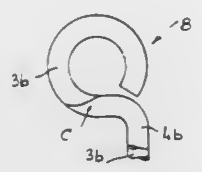
Int. Cl.³ B21F *45/00*

U.S. Cl. 140—71 R 1 Claim

1. The method of manufacturing wiring for securing a stopper in a bottle of sparkling liquid, comprising the steps of:

- (a) shaping multiple wires to provide multiple separate components, each having a central arcuate portion with two straight branches comprising the ends of the wire lying in the same plane as the arcuate portion and extending outwardly substantially radially therefrom;
- (b) supporting said components substantially in a common plane with their arcuate portions forming a circle about a central point in the plane and their straight branches extending in pairs away from said point to provide multiple double branches;
- (c) twisting the straight branches of each double branch along a first portion of their lengths which extends from their arcuate portions part-way toward their outer ends, and stopping the twisting to leave an intermediate straight portion of the double branches wherein the branches extend mutually parallel;

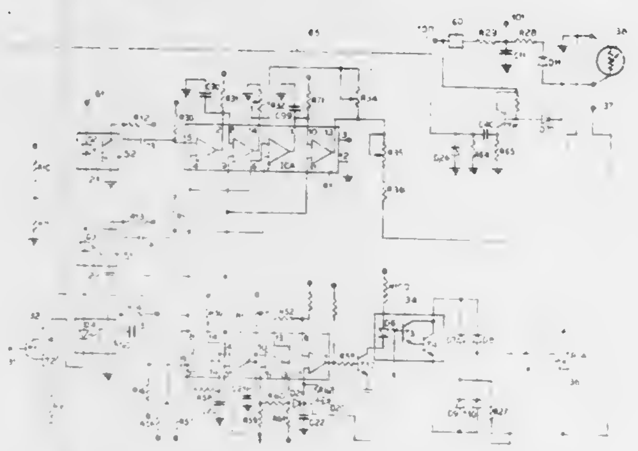




- (d) further twisting the branches of each double branch to form a second twisted portion located beyond said intermediate straight portion and near said outer ends; and
- (e) rolling each double branch near its outer ends to form a loop terminating the double branch, each loop lying substantially normal to said common plane and each loop including the second twisted portion of the associated double branch.

4,440,200
LIQUID DISPENSER WITH TIMING CIRCUIT

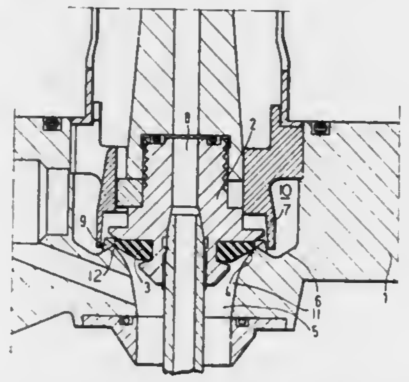
Donald P. DeVale, Sycamore, and Joseph Wieser, Lake Villa, both of Ill., assignors to Everpure, Inc., Westmont, Ill.
Filed May 12, 1981, Ser. No. 262,923
Int. Cl.^{3} B65B *1/42*
U.S. Cl. 141—95 **1 Claim**



1. A beverage dispenser for automatically filling cups of different sizes comprising, a stand on which cups of various sizes can be placed, small, medium and large cup sensors for small, medium and large cups mounted on said stand and positioned to sense the cups of different sizes, a fluid dispensing valve and nozzle mounted on the stand for filling said cups, an a.c. voltage source, said small, medium and large cup sensors connected to said a.c. voltage source and passing pulses to their outputs when cups of various sizes are present on said stand, an on delay circuit connected to the output of the small cup sensor and producing an output signal only if said small cup dispenser is energized for a finite time, a beverage dispensing switch means connected to said fluid dispensing valve to control it and receiving the output of said on delay circuit, and small, medium and large cup timing circuits connected to said small, medium and large cup sensors and supplying an input to said beverage dispensing switch means, wherein said small cup timing circuit comprises a capacitor and a first resistor, wherein said medium cup timing circuit includes a second resistor which is placed in series with said first resistor when said medium cup sensor is energized, including a third resistor which is placed in series with said first and second resistors when said large cup sensor is energized, and wherein said on delay circuit comprises a fourth resistor and a second capacitor, including a feedback means connected to said on delay circuit and said beverage dispensing switch means to prevent it from chattering, and wherein said feedback means comprises a fifth resistor and an unilateral current means.

4,440,201
LIQUID DISCHARGE NOZZLE FOR CONTAINER FILLING VALVES

Uwe Knabe, Holzwickede, Fed. Rep. of Germany, assignor to Holstein & Kappert GmbH, Dortmund, Fed. Rep. of Germany
Filed Nov. 12, 1981, Ser. No. 320,715
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1980, 3045854
Int. Cl.^{3} B67C *3/06*
U.S. Cl. 141—286 **7 Claims**



1. A liquid discharge nozzle for a container filling valve, comprising an inner member centered on a substantially vertical axis and having a lower end; a hollow outer member surrounding and bounding a passage for downward flow of liquid with said inner member and having a valve seat and a ridge which delimits an annular groove which partially receives said lower end of said inner member upstream of said valve seat in said passage and therefore prevents escape of a gas through the liquid, but at the same time tends to cause turbulence of the liquid; and means defining at least one opening which extends through said ridge from said groove to slightly upwardly of said valve seat and eliminates the turbulence of the liquid.

4,440,202
TREE DELIMBER

Colvin K. Everett, 701 Terral Island Rd., Farmerville, La. 71241
Filed Feb. 14, 1983, Ser. No. 466,129
Int. Cl.^{3} A01G *23/08;* B27L *1/00*
U.S. Cl. 144—2 Z **6 Claims**

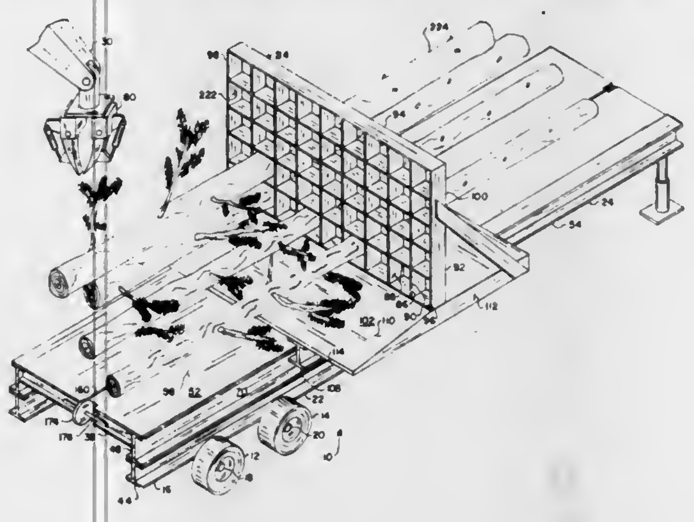
1. A log processor comprising:

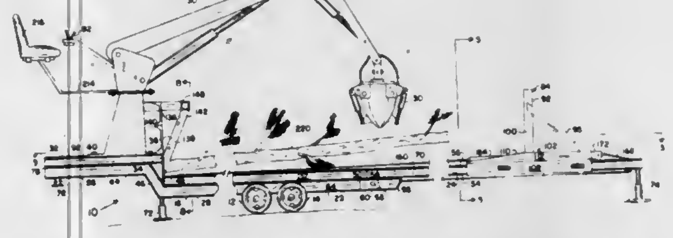
an elongated platform, including an elongated track;

stop means, including a support attached to said platform and having a rigidly supported area region extending across said platform, for providing a stationary support against which cut logs generally lying horizontally and longitudinally on said platform are generally blocked from horizontal movement in one longitudinal direction;

cutting means, including a base movable on said track and a grid of crossed blades supported on said base and facing said area of said stop means, for receiving ends of logs between said blades and, upon relative movement between said blades and logs, for cutting limbs from the logs; and

motive means coupled between said platform and said cutting means for moving said cutting means on said track toward and away from said stop means, whereby logs placed on said platform may be delimbed by said cutting means.





4,440,203
ARRANGEMENT FOR INSERTING BLOCKS OF TIMBER IN A TIMBER PROCESSING MACHINE

Sven E. Östberg, Söderhamn, Sweden, assignor to Kockums Industri AB, Soderhamn, Sweden
Filed Jun. 22, 1981, Ser. No. 275,904
Claims priority, application Sweden, Jul. 3, 1980, 8004918
Int. Cl.^{3} B27C *9/00*
U.S. Cl. 144—39 **12 Claims**

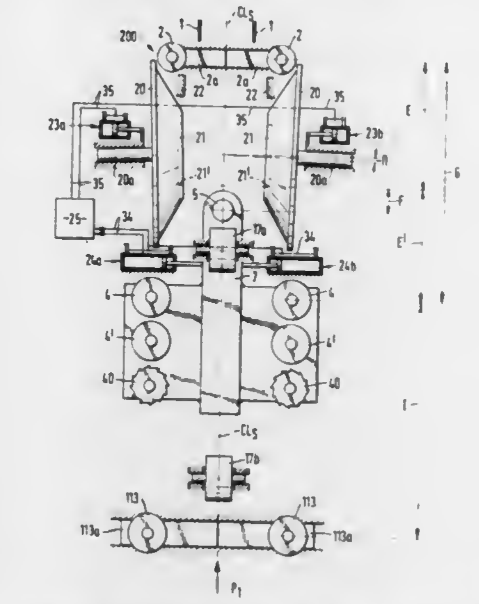
1. An apparatus for feeding a block of timber along a feed path into a timber processing machine having at least one processing tool operating along a fixed centre axis, said apparatus comprising:

first guide means for said block positioned directly in front of said processing machine, said guide means positioning the centre of said block substantially on said centre axis;

second guide means for said block positioned a first distance from said first guide means, said guide means being movable perpendicularly to said centre axis to position the centre of said block a second distance from said centre axis;

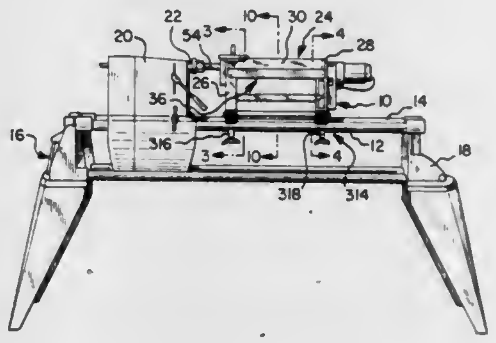
third guide means for said block positioned a third distance from said first guide means, with said second guide means positioned therebetween, said third guide means being movable perpendicularly to said centre axis to position the centre of said block a fourth distance from said centre axis; and

control means for simultaneously moving said second and third guide means perencidularly to said centre axis in fixed relation to each other so that said second and fourth distances lie on an arcuate line which is tangent to said centre axis at said processing tool.



4,440,204
PLANER MOUNTING SYSTEM

Robert L. Bartlett, Dayton, Ohio, assignor to Shopsmith, Inc., Vandalia, Ohio
Filed Aug. 16, 1982, Ser. No. 408,531
Int. Cl.^{3} B27C *1/02*
U.S. Cl. 144—130 **4 Claims**

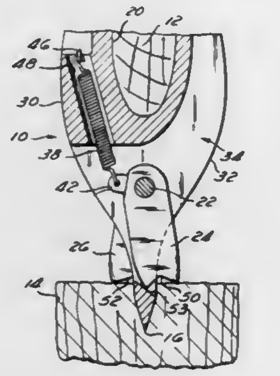


1. In combination with a wood working machine of the type having a head stock including an output shaft having a substantially horizontal axis of rotation, a pair of ways oriented parallel to each other and to said axis of rotation and supporting said head stock for slidable movement therealong, a frame supporting said ways at ends thereof, and a planer having a housing including a pair of opposing side walls, a blade member rotatably mounted to and extending between said side walls and having a coupling portion extending through one of said side walls and terminating exteriorly of said housing, a planer mounting system comprising:

- means attached to said planer housing for releasably mounting said planer to said ways;
- the vertical distance between said attaching means and said coupling portion being substantially equal to the vertical distance between said ways and said head stock output shaft, such that said blade member and said coupling portion are coaxial with said axis of rotation of said output shaft; and
- a coupling member coaxial with said output shaft and said coupling portion and extending there-between such that said coupling member transmits rotary power from said output shaft to said coupling portion along said axis.

4,440,205
WEDGE AND AXE HEAD

George Hillinger, Los Angeles, Calif., assignor to Alltrade, Inc., City of Commerce, Calif.
Continuation-in-part of Ser. No. 176,530, Aug. 8, 1980, abandoned. This application Mar. 8, 1982, Ser. No. 355,869
Int. Cl.^{3} B26B *23/00*
U.S. Cl. 145—2 R **7 Claims**



1. In a device having a head with a longitudinal cutting surface formed on one edge of said head so as to lie on the longitudinal plane of symmetry of the head, the combination of:

a longitudinal pivot aperture formed in said head and disposed so as to lie in the longitudinal plane of symmetry;

lever aperture means formed in the body between the pivot aperture and the cutting surface so as to extend transversely across the head and intersect the pivot aperture;

a first lever disposed in the lever aperture means and pivotally mounted to the head by means of the pivot aperture so as to extend towards the cutting surface;

first lever stop means formed in the lever aperture means and operable to engage the first lever to prevent the pivotal movement of the first lever through the lever aperture means, whereby the first lever is laterally offset at its end adjacent the cutting surface to a first side of the head;

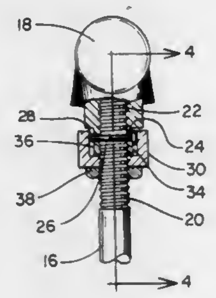
a second lever disposed in the lever aperture means and pivotally mounted to the head by means of the pivot aperture so as to extend toward the cutting surface;

second lever stop means formed in the lever aperture means and operable to engage the second lever to prevent the pivotal movement of the second lever through the lever aperture means, whereby the second lever is laterally offset at its end adjacent the cutting surface to a second side of the head opposite said first side;

spring means for normally holding said first and second lever remote ends against the first and second lever stop means.

4,440,206
UNIVERSAL HAMMER HAVING INTERCHANGEABLE HEADS

John R. Dart, 998 Racine Ave., Columbus, Ohio 43204
Filed Mar. 10, 1983, Ser. No. 474,154
Int. Cl.^{3} B25C *1/00*
U.S. Cl. 145—29 R **6 Claims**



1. A universal hammer having a quick release, detachable handle and head portions to permit interchange of the head with another head, said hammer comprising:

(a) at least one head having a bore formed as a part of a coupling means to receive a universal handle and having a cross hole formed transversely through said bore;

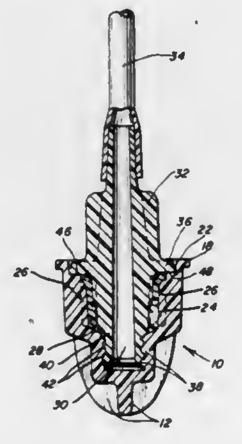
(b) a universal handle having a shank formed as a mating coupling means to extend into and engage said bore to connect said head to said handle, said handle having a cross hole formed transversely through said shank and positioned in alignment with the cross hole of said head when the two are engaged;

(c) a slideable pin extending through said cross holes, a cross sectional tolerance of said pin permitting low resistance insertion and removal of said pin through said cross holes; and

(d) a collar removably attached around said cross holes to prevent withdrawal of said pin.

4,440,207
ANTIBACTERIAL PROTECTIVE CAP FOR CONNECTORS

Vince Genatempo, Lake Geneva, Wis., and Frank Karrasch, Wadsworth, Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
Filed May 14, 1982, Ser. No. 378,315
Int. Cl.^{3} A61M *5/14*
U.S. Cl. 150—52 R **15 Claims**



1. A protective cap for a connector which securely receives and provides antibacterial effect to the connector, said cap comprising:

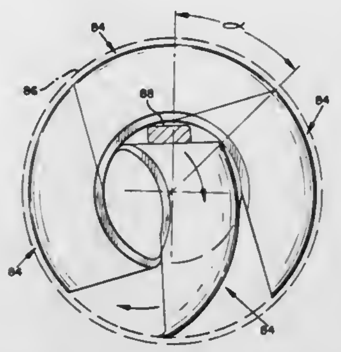
a first outer chamber having an external opening fixedly lined with absorbent material, said absorbent material retaining an antiseptic, said first outer chamber being defined by a skirt proportioned for sealing engagement with the connector; and

a second, inner chamber having a closed inner end, smaller than said first chamber, adjacent and open to said first chamber, having connecting means for receiving connecting means from said connector.

4,440,208
COMPOSITE, SOLID, VEHICLE TIRE

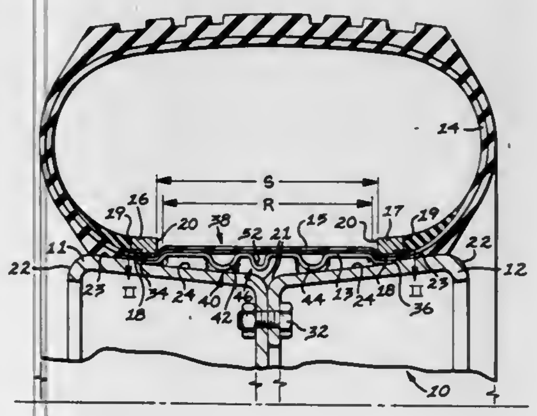
Lorn L. Trickel, and William H. Stultz, both of Portland, Oreg., assignors to Precured RDF Tirefill, Inc., Portland, Oreg.
Continuation of Ser. No. 188,295, Sep. 18, 1980, abandoned, and a continuation-in-part of Ser. No. 141,067, Apr. 17, 1980, abandoned. This application Apr. 26, 1982, Ser. No. 371,713
Int. Cl.^{3} B60C *7/00*
U.S. Cl. 152—314 **1 Claim**

1. A composite vehicle tire comprising a tire casing and within the casing four substantially identical filler segments arranged end to end, each segment comprising a mass heat and pressure-consolidated from resilient particulate rubber material and having an arcuate contour and a cross section substantially similar to the cross section of the inside of the casing but larger by an increment predetermined for a pressure fit, the opposite end faces of each segment being substantially planar and disposed in intersecting planes which extend substantially perpendicular to each other and substantially tangent to the inner circumference of the arcuate contour.



4,440,209
SPLIT RIM WITH AXIALLY LOCATED SPLIT BAND

Robert J. Grob, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Jul. 19, 1982, Ser. No. 399,627
Int. Cl.^{3} B60C *5/12*
U.S. Cl. 152—397 **9 Claims**



1. A split rim arrangement (10) for use with a closed torus tire (14) having a substantially flat tire rimwall portion (15) at its inner diameter and first and second inextensible roll hoops (16,17) mounted about the tire rimwall portion (15) and having a spaced (S) apart relationship, comprising:

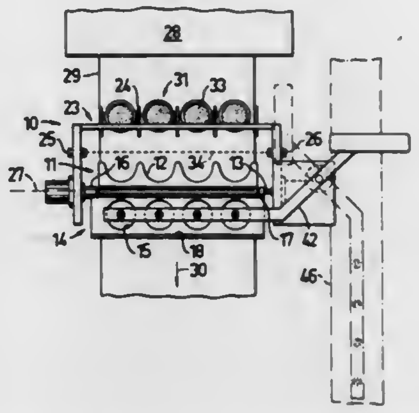
a transversely split band (13) having first and second edges (34,36) and a radially outwardly extending center portion (38) having a width (R) less than the space (S) between the roll hoops (16,17), the split band (13) has a width (W) greater than the space (S) between the roll hoops (16,17) of the closed torus tire (14);

first and second rim halves (11,12) each having inner and outer edges (21,22), a first tapered diameter (23) adjacent the outer edge (22), a second smaller tapered diameter (24) adjacent the first tapered diameter (23), the first and second tapered diameters (23,24) being tapered inwardly from the outer edge (22) toward the inner edge (21), shoulders (28) being defined at the juncture of the first and second tapered diameters (23,24), the total width of both of the second tapered diameters (24) being substantially equal to the width (W) of the split band (13), the first and second edges (34,36) of the split band being located on the second tapered diameter (24) of the first and second rim halves (11,12) and located under the roll hoops (16,17) of the closed torus tire (14); and

a plurality of bolts (32) connecting the first and second rim halves (11,12).

4,440,210
MOLD STRIPPER

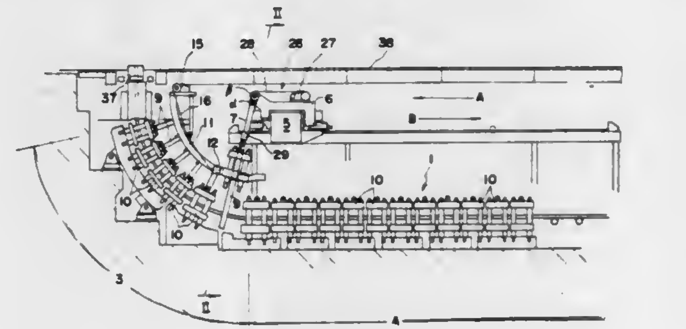
Rune Lohman, 16 Smedjevägen, S-131 00 Nacka, Sweden
Filed Nov. 4, 1981, Ser. No. 318,193
Claims priority, application Sweden, Nov. 5, 1980, 8007751
Int. Cl.^{3} B22C *17/08*
U.S. Cl. 164—409 **9 Claims**



1. An apparatus for automatically stripping upwardly open molds advanced on a conveying surface from their content, comprising mold turn-over means pivotal about a horizontal axis located above the conveying surface for swinging movement between first and second end positions in each of which said turn-over means is substantially in parallel with the conveying surface, said turn-over means having mold-engaging surfaces for receiving in said first end position at least one mold approaching on the conveying surface to the mold turn-over means, and mold receiving means also pivotal about said axis, said receiving means being swingable toward said turn-over means to a first position for retaining a mold against said turn-over means when said turn-over means is in its first end position, and said turn-over means and said receiving means being swingable together to said second end position whereby a mold held between said turn-over means and said receiving means becomes inverted, said receiving means having at least one opening which in said second position permits the content of a mold to fall through the mold receiving means and down onto the conveying surface.

4,440,211
APPARATUS FOR HOISTING ROLL SEGMENTS IN CONTINUOUS CASTING EQUIPMENT

Kuniaki Ono, Nara, Japan, assignor to Hitachi Shipbuilding & Engineering Company Limited, Osaka, Japan
Filed Apr. 2, 1982, Ser. No. 364,687
Int. Cl.^{3} B22D *11/128*
U.S. Cl. 164—442 **5 Claims**



1. In continuous casting equipment having a path of transport of castings which is defined by a plurality of roll segments and has a curved section and a horizontal section, an apparatus for hoisting an optional roll segment comprising:

a trolley provided movably above the horizontal section,

a pair of pivotal guide rods pivotally supported by the trolley, a pair of fixed guide rods arranged on the opposite sides of each of the roll segments defining the curved section,

a pair of fixed circular arc rails extending along the paths of movement of the free ends of the pivotal guide rods,

a truck having a pair of front wheels and pair of rear wheels movable on the rails;

means for engaging the truck with the pivotal guide rods,

means for reciprocating the truck along the rails together with the pivotal guide rods in engagement with the truck,

means for locking the pivotal guide rods in a position where the pivotal guide rods are continuous with a selected pair of fixed guide rods, and

means for hoisting a corresponding roll segment along said selected pair of fixed guide rods to the pivotal guide rods when the pivotal guide rods are made continuous with the fixed guide rods, wherein:

the locking means is provided in the form of pairs of recesses formed in the circular arc rails in corresponding relation to the pairs of fixed guide rods, the rear wheels of the truck being positionable in each pair of recesses to lock the truck to the rails so that the pivotal guide rods, when in engagement with the truck, are indirectly locked to the rails in alignment with a corresponding pair of fixed guide rods, and

the engaging means comprises a pair of rollers mounted on the free ends of the pivotal guide rods individually, a pair of passage cutouts formed in the rear end of the truck for permitting the rollers to pass therethrough individually, and a pair of elongated engaging grooves formed in the rear end of the truck in communication with the respective cutouts for the rollers to fit in slightly when the truck is in a state for movement but deeply when the truck is locked to the rails.

4,440,212

AIR-CONDITIONER FOR AN AUTOMOTIVE VEHICLE

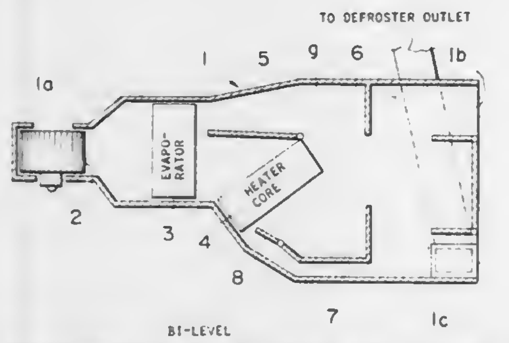
Mikio Tanino, and Yukio Shimada, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jun. 22, 1981, Ser. No. 275,742

Claims priority, application Japan, Jul. 7, 1980, 55-92562

Int. Cl.³ F25B *29/00*

U.S. Cl. 165—12 **14 Claims**



1. An air-conditioner for an automotive vehicle comprising:

(a) a duct having an air inlet at one end thereof and a ventilation outlet at the upper part of the other end thereof and a floor outlet linked to a defroster outlet at the lower part of the other end thereof;

(b) a blower disposed at the air inlet for introducing air into said duct;

(c) an evaporator disposed downstream of said duct for cooling the air introduced by said blower;

(d) a heater core disposed downstream of said evaporator whose upper side is provided with a first bypass for bypassing the cooled air from said evaporator;

(e) an air mixing door disposed upstream of the heater core for adjusting the amount of air passing through the heater core;

(f) an air mixing chamber disposed downstream of the heater core and the first bypass for mixing the air from the first bypass and heater core, the ratio of the two types of air depending on the angle of said air mixing door;

(g) a second bypass disposed between said heater core and said air mixing chamber for introducing part of the heated air from said heater core directly into the floor outlet; and

(h) a smaller door located at said heater core for adjusting the amount of heated air passing through said second bypass.

4,440,213

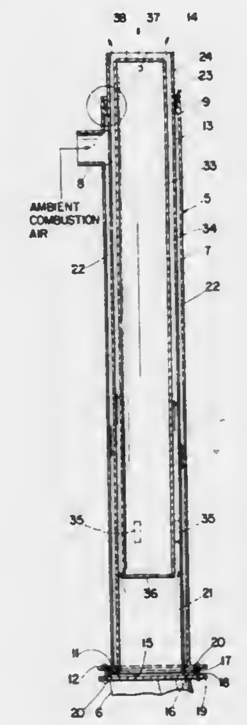
RECUPERATOR WITH FLOATING INTERIOR HOUSING

Robert E. Sarvis, Toledo, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Sep. 11, 1981, Ser. No. 301,314

Int. Cl.³ F24H *3/00*

U.S. Cl. 165—47 **3 Claims**



2. A simplified, unwelded recuperator in which the components which are subject to higher temperatures and greater wear are easily removed and replaced with a minimum of down time and without breaking welds, the recuperator comprising:

(a) a hollow, outer casing having opposed lower and upper open ends and including peripherally facing fluid inlet and outlet openings therethrough, the casing lower end having an outwardly extending peripheral flange, the casing upper end being rigidly connected with an annular stationary member which extends peripherally therearound, the stationary member having an L-shaped transverse cross section with a major leg extending peripherally around, parallel to and upwardly above the outer casing, the stationary member further having a minor leg extending radially inward from the major leg;

(b) a hollow, heat conductive housing having opposed upper and lower open ends, the housing being disposed interiorly of the outer casing and extending longitudinally thereof slidably through the stationary member minor leg, the housing lower end extending beyond the casing lower end flange and having a radially outward extending rim disposed longitudinally spaced from the casing lower end flange, the housing upper end extending upwardly beyond the outer casing upper end and defining a fluid discharge opening therethrough, the housing and outer casing defining an outer fluid passage therebetween for receiving air to be heated;

(c) a cylindrical core with closed ends disposed longitudinally within the housing and radially displaced therefrom such that an inner fluid passage is defined therebetween for passing exhaust gases therethrough;

(d) lower mounting means for mounting the housing and outer casing with a flue pipe in a spaced relationship to each other, the lower mounting means including a first compressible annular sealing ring sandwiched between the housing annular rim and casing flange, a second compressible annular sealing ring sandwiched between the housing rim and the flue pipe, a plurality of threaded fasteners which releasably compress the flange, rim, flue pipe, and sealing rings together such that the outer fluid passage is sealed at the lower end of the outer casing and the housing with the flue pipe disposed in fluid communication with the inner fluid passage, the casing and housing to be selectively removed from a mounted relationship relative to the flue pipe;

(e) an upper mounting means for sealing the outer fluid passage adjacent the outer casing upper end, the upper mounting means including a plurality of annular sealing rings stacked on the stationary minor leg and extending radially betweeen the housing and the stationary major leg, a movable annular member which is L-shaped in transverse cross section slidably received around the housing, the movable member having a major leg received between the housing and the stationary member major leg and a minor leg extending radially outward therefrom above the stationary member major leg, and plurality of threaded fasteners extending between the movable minor leg and the stationary member major leg for selectively causing the movable member to be moved against the stacked sealing rings for compressing them into engagement with the housing and stationary member, whereby the housing and casing are sealingly connected but movable relative to each other to allow for uneven expansion and contraction when the housing temperature fluctuates over a wider range of tempertures than the casing; and,

(f) unwelded core mounting means for mounting the cylindrical core centrally within the housing for ready removal and replacement without breaking welds, the core mounting means including a plurality of spacer bars disposed peripherally around a lower end of the cylindrical core to space the core generally centrally within the housing without impeding the flow of exhaust gases therebetween, and a spacer member extending through an upper end of the cylindrical core and housing above the upper end of the outer casing, remote from the flue stack and hot exhaust gases discharging therefrom, for supporting the core and for spacing the core generally centrally within the housing with the core lowermost end being displaced longitudinally inward from the housing and casing lower ends to define a region for receiving hot exhaust gases from the flue stack, whereby wear from the turbulence as the hot exhaust gases are channeled into the inner fluid passage tends to cause wear of the readily replaceable housing and cylindrical core rather than the flue pipe, the spacer member being readily removable for allowing the core to be withdrawn from the housing.

4,440,214

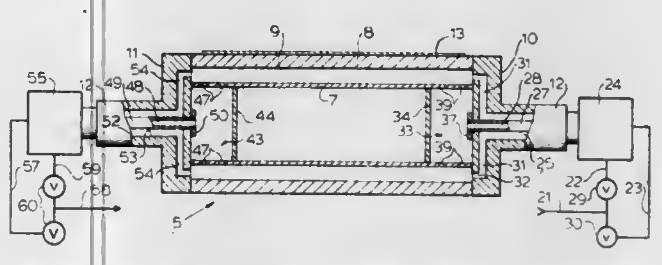
HEAT TRANSFER ROLL AND METHOD

Gregory L. Wedel, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed May 30, 1980, Ser. No. 154,946

Int. Cl.³ F28F *5/02*

U.S. Cl. 165—90 **26 Claims**



1. In combination in a rotary heat transfer roll having concentric inner and outer differential diameter tubular shells defining an annular passage therebetween, roll heads closing opposite first and second ends of said passage, and means at said roll heads for mounting the roll rotatably for running on the perimeter of said outer shell of a travelling web to be temperature conditioned:

means for introducing and distributing temperature conditioning fluid through said first end roll head, in part directly into said first end of said annular passage and in part through said inner shell into said annular passage adjacently downstream relative to said first end to join said directly introduced conditioning fluid and then to circulate through said annular passage towards said second end; and

means for evacuating spent conditioning fluid from said second end through said second end roll head, in part directly from said second end of said annular passage and in part through said inner shell adjacently upstream relative to said second end.

4,440,215

HEAT PIPE

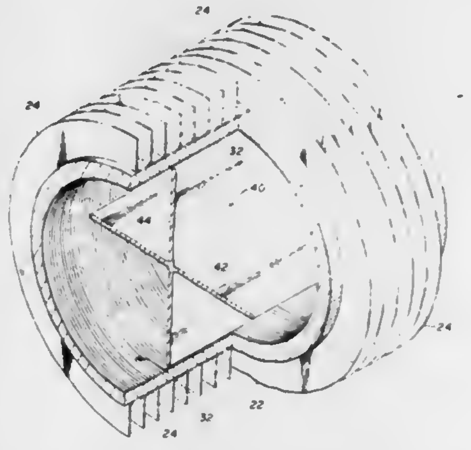
George M. Grover, Los Alamos, and James E. Runyan, Santa Fe, both of N. Mex., assignors to Q-dot Corporation, Garland, Tex.

Continuation of Ser. No. 547,955, Feb. 7, 1975, abandoned, which is a continuation of Ser. No. 350,799, Apr. 13, 1973, Pat. No. 3,865,184, which is a continuation of Ser. No. 113,571, Feb. 8, 1971, abandoned. This application Jun. 17, 1981, Ser. No. 274,674

The portion of the term of this patent subsequent to Feb. 11, 1992, has been disclaimed.

Int. Cl.³ F28D *15/00*

U.S. Cl. 165—104.21 **17 Claims**



1. The thermal transfer device comprising:

an elongated, substantially straight, sealed tubular envelope having at least an evaporating section and a condensing section between which thermal energy is to be transferred at an operating temperature;

a working fluid having a liquid phase and a vapor phase at the operating temperature, the liquid phase standing along the bottom of the envelope only to a level less than the height of the portion of the envelope forming the section and flowing only by gravity from the condenser section to the evaporator section, and

a plurality of circumferentially extending capillary grooves extending along both the evaporating and condensing sections for transporting the liquid phase circumferentially of the envelope and upwardly from the liquid standing along the bottom of the envelope.

2. The thermal energy transfer device comprising:

a sealed enveloped comprising a generally horizontally disposed cylindrical tubular member having sealed ends and having walls formed of a generally homogeneous metal and at least an evaporator section and a condenser section between which thermal energy is to be transferred,

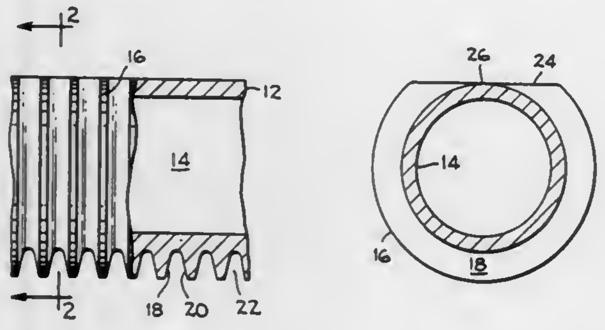
a working fluid having a liquid phase and a vapor phase at the operating temperature of the device, the liquid phase standing in at least one section to a level less than the height of the portion of the envelope forming said one section and flowing by gravity from the condenser section to the evaporator section,

a plurality of capillary grooves extending circumferentially around the interior surface of said tubular member in at least said one section for transporting the liquid phase upwardly above the level of the liquid phase in said one section by capillary action, and

means for partitioning said tubular member to at least partially separate the longitudinal flow of vapor phase fluid in the upper portion of said tubular member from the liquid phase fluid in the lower portion, said partitioning means including a generally horizontally disposed plate and a generally vertically disposed plate each extending substantial across a diameter of said tubular member and along a substantially portion of the length of said tubular member, at least one of said plate members extending into contact with the sidewalls of said tubular member to support said partitioning means.

4,440,216
FINNED HEAT EXCHANGER TUBE

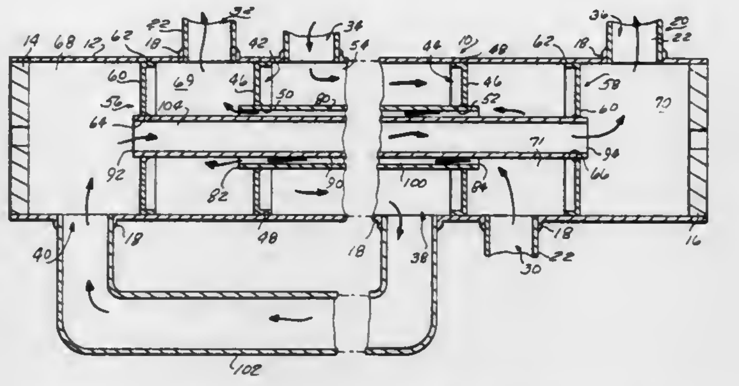
Raul J. Conti, Palo Alto, Calif., assignor to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.
Continuation of Ser. No. 121,734, Feb. 18, 1980, abandoned. This application Jul. 12, 1982, Ser. No. 397,579
Int. Cl.³ F28D *3/04*
U.S. Cl. 165—117 5 Claims



1. An article of manufacture for affording heat transfer between a fluid and a liquid comprising a wall defining a closed smooth internal fluid passage, a plurality of substantially parallel fins projecting substantially radially from said wall externally of said passage and being integral with said wall, said fins being spaced from one another to form a plurality of substantially parallel interfin spaces, said interfin spaces being dimensioned to avoid substantial liquid retention therein, said fins each having a radially foreshortened portion at a circumferentially limited region to form a continuous noncapillary liquid flow path that extends along an imaginary longitudinal line on the external surfaces of said wall and parallel to said passage thereby to establish free gravity induced liquid communication between said interfin spaces when said article is oriented so that said passage is substantially horizontal, each said foreshortened portion being defined by a surface wherein said surfaces of all said fins are coplanar and extend substantially tangentially of the external surface of said wall and transversely of said imaginary line, said article being oriented with said liquid flow path at the top so that liquid can flow axially thereof on to said fin surfaces and between said fins.

4,440,217
COUNTERFLOW HEAT EXCHANGER

Scott M. Stieler, 3114 Fenner #10, Marlette, Mich. 48453
Filed Jun. 10, 1982, Ser. No. 386,936
Int. Cl.³ F28D *7/10;* F28F *9/22*
U.S. Cl. 165—155 5 Claims



1. A heat exchanger for exchanging heat between first and second fluids having different temperatures comprising:

a sealed housing;

a first inlet and a first outlet formed in the housing;

a first conduit disposed within the housing;

a second conduit concentrically disposed within and spaced from the first conduit to define a first flow path between the wall surfaces of the first and second conduits, the first flow path being disposed in fluid flow communication with the first inlet and the first outlet for flow of the first fluid in a first direction through the housing between the first inlet and the first outlet;

a second inlet and second outlet formed in the housing; and means, including first and second serially connected portions, for forming a second flow path between the second inlet and the second outlet for flow of the second fluid through the housing in a second direction opposed to the first flow direction of the first fluid, the first portion of the second flow path being across the exterior surface of the first conduit and the second portion of the second flow path being through the second conduit, the means for forming the second flow path including:

first means, disposed in the housing, for directing flow of the second fluid across the exterior wall surface of the first conduit in the second direction; and

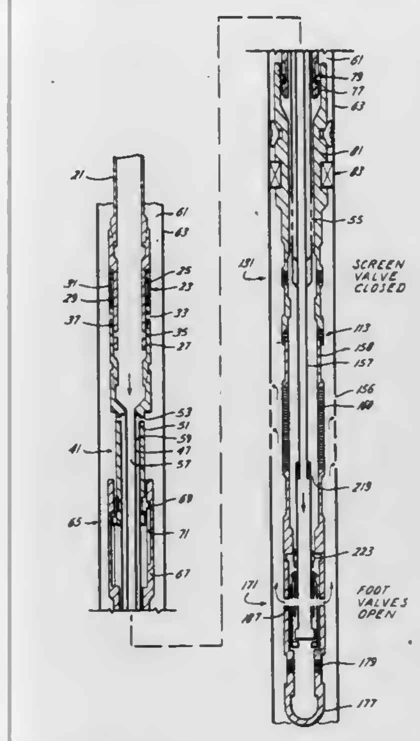
a third conduit disposed externally from the housing,

the third conduit having a third inlet disposed in fluid flow communication with the first means for directing the second fluid flow and a third outlet disposed in fluid flow communication with one end of the second conduit for directing flow of the second fluid from the first means for directing second fluid flow to the one end of the second conduit.

4,440,218
SLURRY UP PARTICULATE PLACEMENT TOOL

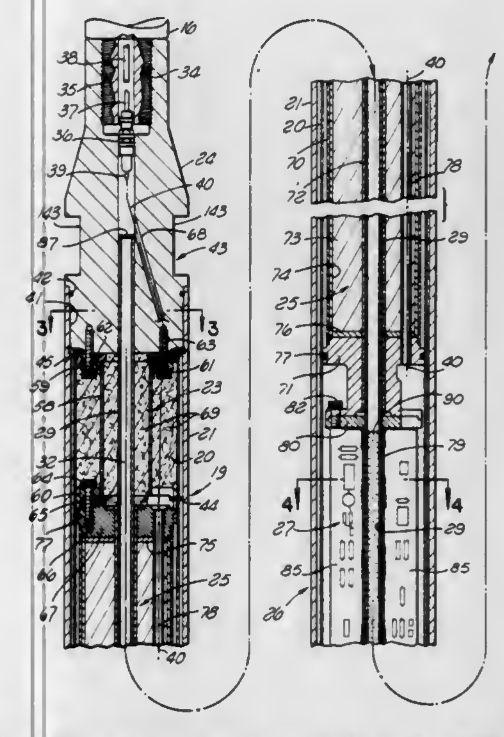
David L. Farley, Lafayette, La., assignor to Completion Services, Inc., Lafayette, La.
Filed May 11, 1981, Ser. No. 262,714
Int. Cl.³ E21B *43/04*
U.S. Cl. 166—51 31 Claims

1. Well completion apparatus for use in a well including a well casing, said apparatus comprising a liner including a foraminous portion, support means for supporting said liner within the casing, packing means for sealing between the liner and casing above said foraminous portion, first passage means for conducting fluid from above said packing means down through the inside of said liner out of contact therewith to below said foraminous portion and thence outwardly to the exterior of the liner, second passage means for conducting fluid from below said packing means to above said packing means, and third passage means above said foraminous means for conducting fluid from outside said liner to said second passage means, said third passage means including flow control valve means, whereby with said flow control valve means closed fluid can be conducted via said first passage means to the exterior of said liner and injected into the surrounding earth formation under pressure.



4,440,219
THERMALLY ISOLATED WELL INSTRUMENTS

Paul D. Engelder, Rancho Palos Verdes, Calif., assignor to AMF Inc., White Plains, N.Y.
Filed Jan. 10, 1983, Ser. No. 457,059
Int. Cl.³ E21B *36/00*
U.S. Cl. 166—57 20 Claims



1. A thermally protected well device comprising:

a vertically elongated heat insulating jacket structure adapted to be lowered into a well;

an instrument within said jacket structure and insulated thereby from the heat of the surrounding earth formation;

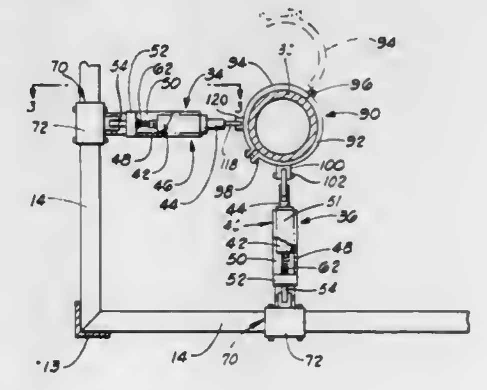
a heat sink within and insulated by said jacket structure and located above said instrument;

a heat pipe having a portion extending upwardly within the jacket structure from the instrument to the heat sink and containing a liquid which only partially fills the heat pipe and acts by evaporation at a lower level and condensation at a higher level to transmit heat upwardly from said instrument to the heat sink but not downwardly therebetween;

said jacket structure including heat insulating top and bottom portions thereof located above the heat sink and beneath the instrument respectively and acting to resist conduction of heat downwardly from the exterior of the jacket structure through said top portion to said heat sink and instrument or upwardly thereto through said bottom portion; and including a heat insulating side wall structure extending about said heat sink and instrument between said top and bottom portions and resisting conduction of heat radially inwardly from the exterior of the jacket structure to the heat sink and instrument and said portion of the heat pipe extending therebetween.

4,440,220
SYSTEM FOR STABBING WELL CASING

James R. McArthur, Rte. 1, Box 50, Tishomingo, Okla. 73460
Filed Jun. 4, 1982, Ser. No. 385,035
Int. Cl.³ E21B *19/00*
U.S. Cl. 166—85 13 Claims



1. A system for stabbing well casing comprising:

a drilling rig mast;

a first piston and cylinder subassembly pivotally connected to the mast for pivotation about a horizontal axis between a vertically extending, inoperative position and a horizontally extending, operative position;

a clamp subassembly connected to said first piston and cylinder subassembly and including a pair of hingedly interconnected clamp jaws adapted for clampingly engaging a section of casing;

a second piston and cylinder subassembly pivotally connected to the mast for pivotation about a horizontal axis between a vertically extending, inoperative position and a horizontally extending, operative position, said second piston and cylinder subassembly extending at a right angle to said first piston and cylinder subassembly when said piston and cylinder subassemblies are pivoted to their operative, horizontally extending positions;

means connected to said second piston and cylinder subassembly for quick detachably engaging said clamp subassembly when said clamp subassembly is clampingly engaged with a casing section; and

means associated with each of said piston and cylinder subassemblies for resiliently damping lateral movement of a casing section engaged by said clamp subassembly.

4,440,221
SUBMERGIBLE PUMP INSTALLATION

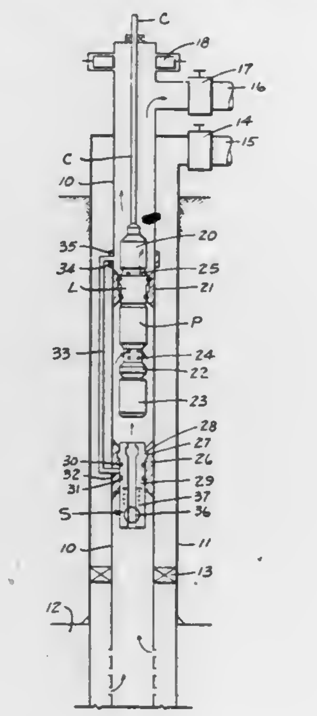
Donald F. Taylor, and William G. Boyle, both of Dallas, Tex., assignors to Otis Engineering Corporation, Dallas, Tex.
Filed Sep. 15, 1980, Ser. No. 186,980
Int. Cl.³ E21B *43/00*
U.S. Cl. 166—106 15 Claims

1. A submergible pump installation for a well having a tubing therein including a landing nipple comprising,

a submergible pump having a lower intake and an upper discharge, said pump run in said tubing on means providing communication with the surface,

means for mounting and sealing the pump within the tubing, said sealing means being located between the intake end and the discharge end of said pump whereby when the pump is operating, well fluid is pumped into said intake and is discharged from said discharge end,

a subsurface safety valve having hydraulically-actuated means for controlling operation thereof,



means for independently mounting and sealing said safety valve within the tubing at a point spaced below and having no direct physical connection with the submergible pump other than through the tubing, said valve controlling flow to the inlet of said pump, and

means for conducting pressure fluid to the hydraulically-actuated means of said valve to operate said means and maintain said valve in open position when the pump is operating, said valve remaining in the tubing to prevent flow therethrough when the pump is pulled.

4,440,222
SIDE POCKET MANDREL WITH IMPROVED ORIENTING MEANS

William H. Pullin, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

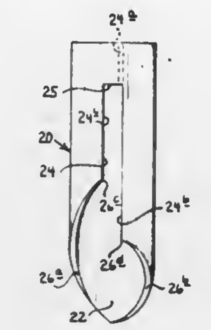
Filed Feb. 24, 1982, Ser. No. 351,628

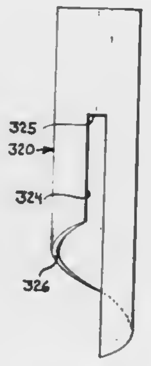
Int. Cl.³ E21B *23/03*

U.S. Cl. 166—117.5 **8 Claims**

1. An improved orienting-type side pocket mandrel, including:

a. elongate body means having a main passage therethrough;
b. connecting means on opposite ends of said body means for attachment to a string of well tubing;
c. receptacle bore means in said body means offset from and extending alongside said main passage for receiving a flow control device;
d. port means in said body means communicating said receptacle bore means with the exterior of said mandrel;
e. offset belly means in said body means above said receptacle bore means providing space for operation of a handling tool for installing a device in said receptacle bore means; and
f. an orienting sleeve in said body means for orienting said handling tool relative to said receptacle bore means, said orienting sleeve having:
    i. a longitudinally extending orienting slot therein, and
    ii. a pair of guide surfaces below said slot and directed upwardly toward the bottom of said slot, said pair of guide surfaces having their upper ends longitudinally spaced apart.





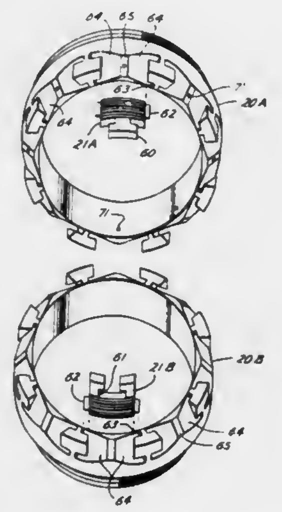
4,440,223
WELL SLIP ASSEMBLIES

Neil H. Akkerman, Kingwood, Tex., assignor to AVA International Corporation, Houston, Tex.

Division of Ser. No. 233,627, Feb. 17, 1981, Pat. No. 4,393,929. This application Oct. 22, 1982, Ser. No. 436,001

Int. Cl.³ E21B *33/128, 33/129*

U.S. Cl. 166—217 **3 Claims**



1. A slip assembly, comprising a pair of slip bowls arranged for movement axially toward and away from one another, said bowls having expander surfaces about their outer sides which taper inwardly toward intersection with their adjacent ends, slips each having an outer gripping surface and an inner expander surface for sliding axially along an expander surface of a slip bowl as the slip bowls move toward and away from one another, and means interconnecting each slip on one bowl with at least one slip on the other bowl for axial movement with one another while permitting radial movement with respect to one another, shearble pins on the surfaces of one bowl to engage with the slips thereon in order to delay movement of the slips toward gripping positions.

4,440,224
METHOD OF UNDERGROUND FUEL GASIFICATION

Efim V. Kreinin; Kirill N. Zvyagimtsev, and Nikolai A. Fedorov, all of Moscow, U.S.S.R., assignors to Vesojuzny Nauchno-Issledovatelsky Institut Ispolzovania Gaza V Narodnom Khozyaistve I Podzemnogo Khranenia Nefti, Nefteproduktov I Szhizhennykh Gazov (Vniipromgaz), U.S.S.R.

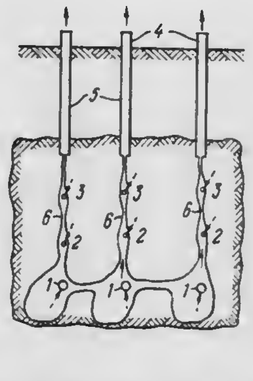
PCT No. PCT/SU78/00001, § 371 Date Jun. 21, 1979, § 102(e) Date Jun. 11, 1979, PCT Pub. No. WO79/00224, PCT Pub. Date May 3, 1979

PCT Filed Oct. 20, 1978, Ser. No. 262,071

Claims priority, application U.S.S.R., Oct. 21, 1977, 2535860

Int. Cl.³ E21B *43/243, 43/30*

U.S. Cl. 166—245 **7 Claims**



1. A process of underground fuel gasification, comprising the steps of

providing an underground gasification duct and a plurality of boreholes communicating with said gasification duct in material to be gasified,

igniting a portion of said material to be gasified in communication with said gasification duct so that gases resulting from the ignition pass into said gasification duct,

introducing a first oxygen-containing gas through a first of said boreholes to form generator gas and create a zone of oxygen-containing gas introduction within said gasification duct,

withdrawing said generator gas along said gasification duct away from said oxygen-containing gas introduction zone, to create a zone of generator gas withdrawal within said gasification duct, and

introducing a second gas comprising at least one of a carbon-containing gas and a hydrogen-containing gas through a second of said boreholes in said zone of generator gas withdrawal, away from said oxygen-containing gas introduction zone, to enrich said generator gas, said second gas being introduced simultaneously with said first gas,

whereby physical heat of said generator gas is substantially completely utilized and the ratio of gasified components within the generator gas is effectively controlled.

4,440,225
OIL RECOVERY USING MODIFIED HETEROPOLYSACCHARIDES IN BUFFERED BRINE

George M. Holzwarth, Linden, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Sep. 13, 1982, Ser. No. 417,439

Int. Cl.³ E21B *43/22*

U.S. Cl. 166—246 **9 Claims**

1. A process for recovering crude oil from a subterranean formation which comprises injecting an amount effective to provide mobility control of an aqueous solution containing heteropolysaccharides produced by the action of bacteria of the genus Xanthomonas, driving the displaced oil through the formation and recovering the displaced oil, wherein heteropolysaccharide has been prepared by a process comprising the steps of:

(a) preparing an aqueous solution which contains (i) from about 200 to about 30,000 parts per million by weight, of a heteropolysaccharide product produced by the bacterial fermentation of bacteria of the genux Xanthomonas, and (ii) at least about 0.5 weight percent of at least one inorganic salt to obtain a saline heteropolysaccharide solution;
(b) adding a buffer, said buffer being characterized by having a pH and a buffer capacity such that the saline heteropolysaccharide solution has an initial pH of about 6.5 to 10.0 and a pH of about 6.0 to 9.5 during heating;
(c) heating said saline heteropolysaccharide solution to a temperature of at least about 100° C;
(d) maintaining said saline heteropolysaccharide solution at a temperature of at least about 100° C. for a period of time sufficient to increase the injectivity and filterability characteristics of the heteropolysaccharide;
(e) maintaining said saline heteropolysaccharide solution at a pH of from 6.0 to 9.5 during the heat treatment; and
(f) removing or separating the proteinaceous materials and/or residual whole bacterial cells or other cell debris from the saline and heat-treated heteropolysaccharide product to thereby obtain a modified heteropolysaccharide capable of imparting a viscosity of at least 4.0 centipoises to an aqueous test solution containing 2 weight percent NaCl and 0.2 weight percent $CaCl_2$ when said modified heteropolysaccharides is added to said solution at a concentration of approximately 600 parts per million, by weight, as measured on a Brookfield viscosimeter with a UL adapter at 60 rpm at 25° C. and said modified heteropolysaccharide is further capable of imparting a filterability such that more than 1000 ml of a different aqueous test solution containing 8.8 weight percent salt comprised of NaCl and $CaCl_2$ on a 10:1 weight ratio and approximately 600 parts per million concentration, by weight, of said modified heteropolysaccharide will pass without plugging through a Millipore® filter having a diameter of 13 mm and a pore size of about 5 microns at a constant pressure drop of about 1.55 psig.

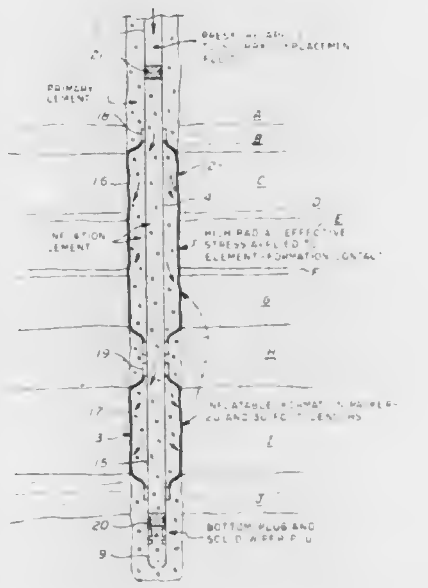
4,440,226
WELL COMPLETION METHOD

George O. Suman, Jr., 4200 Westheimer Rd., Suite 211, Houston, Tex. 77027

Filed Dec. 8, 1982, Ser. No. 447,873

Int. Cl.³ E21B *33/13, 33/127*

U.S. Cl. 166—250 **4 Claims**



4. A method for reducing or preventing migration of a formation fluid from a first earthen formation to a second earthen formation each of which is intersected by a drilled borehole comprising the steps of:

A. running an inflatable packer in a string of casing into the borehole to be opposite one of said formations; the packer having a mandrel connected as a part of the casing string, an outer elastic sleeve surrounding the mandrel and sealed thereto at its ends and having an unreinforced portion between its ends, and valve means for permitting flow of cement from the interior of the sleeve into the interior of the sleeve to expand the same against said one formation;

B. determining the pore pressure of said one formation;

C. determining the radial shrinkage of cement within said sleeve;

D. determining the maximum pressure which can be exerted by said sleeve on said one formation without fracturing same;

E. pumping cement down through said casing and mandrel into said sleeve at a pressure less than said maximum pressure but sufficient to resiliently strain said mandrel, sleeve and formation an amount sufficiently greater than the shrinkage of said cement during setting to provide a pressure of said sleeve against said one formation, after the cement has set, greater than the pore pressure of said one formation.

4,440,227

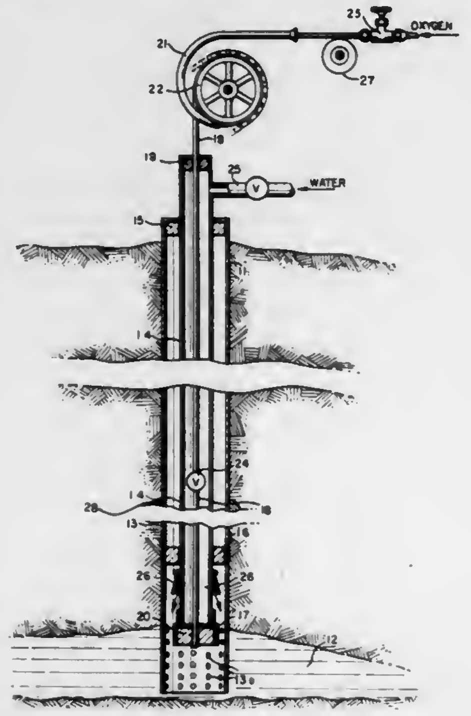
WELL COMPLETION FOR INJECTING HIGH PURITY OXYGEN IN A FIRE FLOODING PROCESS

Billy G. Holmes, Lancaster, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 8, 1982, Ser. No. 439,661

Int. Cl.³ E21B ***43/243***

U.S. Cl. 166—261 **18 Claims**



1. A well completion for an injection well in a field in which hydrocarbons are recovered by in-situ combustion in a subsurface formation comprising:

a casing extending the length of said well and containing passages to provide fluid communication with the formation;

a tubing string disposed within said casing;

means for seating said tubing string in said casing;

continuous tubing disposed within said tubing string;

means for seating said continuous tubing in said tubing string;

means for supplying water to said tubing string;

means for supplying oxygen to said continuous tubing; and

a check valve near the bottom of said continuous tubing to allow oxygen to enter said formation through said continuous tubing and to prevent unreacted oxygen in said formation from traveling up said continuous tubing.

13. The method of establishing a combustion zone from an injection well in a field in which hydrocarbons are recovered by in-situ combustion in a subsurface formation comprising:

disposing a tubing string within said well and into said formation;

seating continuous tubing within said tubing string so that the bottom of said continuous tubing is in proximity to said formation;

supplying water to said formation through said tubing string;

supplying oxygen to said formation through said continuous tubing;

supplying oxygen to said formation through a check valve in said continuous tubing to prevent unreacted oxygen in said formation from traveling up said continuous tubing.

4,440,228

GELLED COMPOSITIONS AND WELL TREATING

Billy L. Swanson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 175,811, Aug. 6, 1980, Pat. No. 4,323,123, which is a division of Ser. No. 925,357, Jan. 20, 1981, Pat. No. 4,246,124. This application Jan. 28, 1982, Ser. No. 343,638

Int. Cl.³ E21B ***43/22***

U.S. Cl. 166—274 **9 Claims**

1. A process for displacing oil within a subterranean formation penetrated by at least one well which comprises:

injecting into the formation a gel forming composition comprising

(a) water,

(b) a water-thickening amount of a water-dispersible polymer selected from the group consisting of cellulose ethers, polyacrylamides and biopolysaccharides or heteropolysaccharides produced by the action of bacteria of the genus Xanthomonas upon carbohydrates,

(c) a small, but effective amount in the range of 0.02 to 2 weight percent of at least one aldehyde component selected from the group consisting of aliphatic monoaldehydes having from 1 to about 10 carbon atoms per molecule, glyoxal, glutaraldehyde, and terephthaldehyde, and

(d) a small, but effective amount in the range of 0.005 to 2 weight percent of at least one phenolic compound selected from the group consisting of phenol, catechol, resorcinol, phloroglucinol, pyrogallol, 4,4′-diphenol, 1,3-dihydroxynaphthalene, 1,4-benzoquinone, hydroquinone, quinhydrone, and quebracho which amounts of aldehyde (c) and phenolic compound (d) are sufficient to cause gelation of an aqueous dispersion of polymer (b) and form said gelled composition,

at a pressure or rate insufficient to create cracks or fractures in the formation but sufficient to force said composition into the more permeable portions of the formation to reduce the permeability of same and

introducing into the formation a drive fluid at a pressure and rate sufficient to force oil from the less permeable oil-rich zones to the surface, thereby increasing oil production and/or reducing the water/oil ratio of the production well.

4,440,229

OIL WELL SERVICING PROCESSES

Julius G. Burch, 822 S. McGee, Borger, Tex.

Filed Jun. 22, 1982, Ser. No. 390,812

Int. Cl.³ E21B ***37/02***

U.S. Cl. 166—311 **3 Claims**

1. In the process of producing and maintaining a paraffin-producing oil well, the steps of:

(a) adding to a sucker rod string with a pump plunger at the end thereof, said rod string located in a tubing, an array of vertically extending cutting blades each with an upwardly directed sharp cutting edge, each said cutting edge extending circumferentially of said rod string for a sector of a circle and each of said upwardly directed cutting edges bevelled inwardly and downwardly adjacent and located close to the interior surface of said tubing and resiliently urged against said tubing wall, said blades longitudinally spaced apart from each other along the length of said rod string,

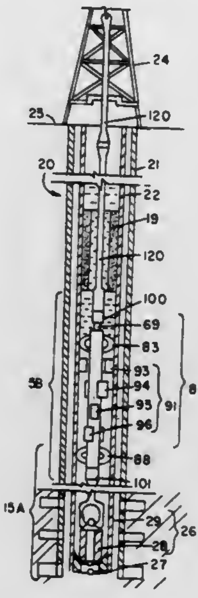
(b) locating said sucker rod string and array of cutting blades in an oil well tubing in said paraffin-producing well, with said pump plunger in a pump barrel therefor at the bottom of said tubing,

(c) producing said well and forming a paraffin deposit on the inner surface of said tubing,

(d) lifting said pump plunger and rod string from said well while concurrently and automatically locating said cutting edges adjacent the inner wall of said tubing with the side edges of each said blade overlapping the side edge of two other blades of said array of blades as seen in a plane transverse to the length of said rod string and the totality of such cutting edges forming at least a complete circle and thereby shaving said paraffin deposit inwardly and away from and off said inner surface of the tubing while the tubing is full of well fluid, and then

(e) replacing the pump plunger in said combination of said rod string and said array of cutting blades with a different pump plunger and locating said rod string and said array of blades in said tubing and said pump plunger in said pump barrel,

(f) and again producing said well and forming a paraffin deposit on the interior surface of said tubing.



4,440,230

FULL-BORE WELL TESTER WITH HYDROSTATIC BIAS

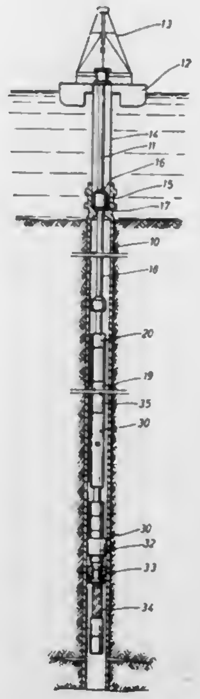
Howard L. McGill, Lufkin, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Dec. 23, 1980, Ser. No. 220,240

Int. Cl.³ E21B ***34/06***

U.S. Cl. 166—321 **4 Claims**

1. A fluid pressure controlled well tester apparatus comprising: housing means adapted for connection to a pipe string and having a flow passage extending therethrough for conducting formation fluids from an isolated formation interval; full-opening valve means for opening and closing said flow passage; a stepped-diameter mandrel that is longitudinally movable and sealingly slidable within said housing means; first seal means between a lesser diameter portion of said mandrel and said housing means and second seal means between a greater diameter portion of said mandrel and said housing means, said first and second seal means being arranged to define an atmospheric chamber for maintaining a quantity of gas at less than the annulus hydrostatic head pressure; and means subjecting a transverse cross-sectional area of said mandrel to changes in the pressure of fluids in the well annulus for moving said mandrel to shift said valve means between closed and open positions in such manner that movement of said mandrel to the valve open position will cause expansion of said atmospheric chamber to bias the mandrel in the valve closed position.



4,440,231

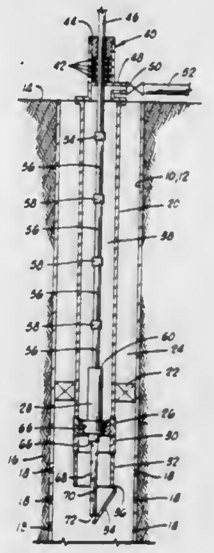
DOWNHOLE PUMP WITH SAFETY VALVE

Albert E. Martin, Ratliff City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Filed Jun. 4, 1981, Ser. No. 270,332

Int. Cl.³ E21B ***34/16***

U.S. Cl. 166—373 **9 Claims**



1. A downhole pump assembly, comprising:

a tubing string;

a seating means, connected to a lower end of said tubing string, for seating a downhole pump;

tubing extension means connected to said seating means and extending downward therefrom;

valve means connected to said tubing extension means for selectively opening and closing said tubing extension means to thereby communicate an interior of said tubing string with and isolate said interior of said tubing string from a well bore;

a pump adapted to seat in said seating means; and

valve actuating means, associated with said pump, for opening and holding open said valve means when said pump is seated in said seating means and for closing said valve means when said pump is unseated from said seating means.

8. A method of installing a rod pump in a well, said method comprising the steps of:

- providing a flapper valve means on a lower end of a tubing extension below a seating means connected to a production tubing string suspended in said well;
- attaching said rod pump to a lower end of a sucker rod string, said sucker rod string having a polished rod at an upper end thereof;
- attaching a dip tube to a lower end of said rod pump;
- lowering said sucker rod string, rod pump, and dip tube into said production tubing to a first position wherein a lower end of said dip tube is above said flapper valve;
- sealing said polished rod within a stuffing box attached to an upper end of said production tubing; and then
- further lowering said sucker rod string and thereby pushing said flapper valve open with said dip tube and then seating said rod pump in said seating means.

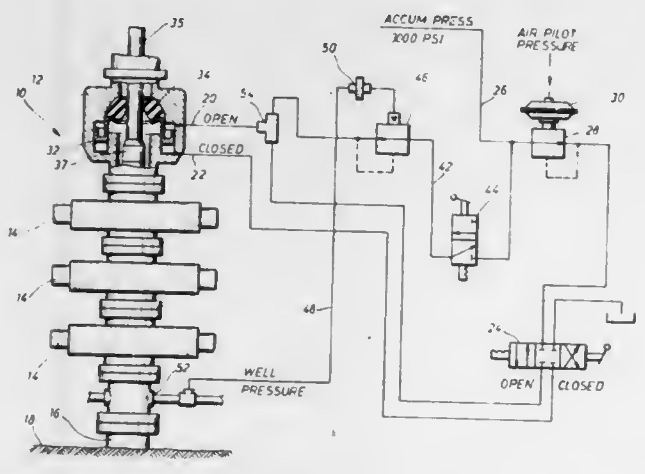
4,440,232
WELL PRESSURE COMPENSATION FOR BLOWOUT PREVENTERS

Joseph L. LeMoine, Houston, Tex., assignor to Koomey, Inc., Houston, Tex.

Filed Jul. 26, 1982, Ser. No. 401,808

Int. Cl.^{3} E21B *33/06*

U.S. Cl. 166—373 **6 Claims**



1. In a blowout preventer control system having an opening line and a closing line connected to a control valve which is connected to a fluid supply line, the improvement of compensation means for reducing the effects of well bore pressure comprising,

- a compensating line connected between the fluid supply line and the opening line,
- a control means in the compensating line for applying an opening force on the blowout preventer,
- a pilot control pressure regulator in the compensating line, and
- a pilot control line connected between the regulator and the well pressure in the blowout preventer whereby the output pressure of the regulator is proportional to the well pressure for compensating for the closing force on the blowout preventer caused by the well pressure.

4. The method of compensating for the closing force on a blowout preventer caused by well pressure when withdrawing a drill string through a closed blowout preventer comprising,

- when withdrawing a drill string through a closed blowout preventer applying a hydraulic closing force to the blowout preventer from an external fluid supply source for closing the blowout preventer on the drill string, and
- applying a hydraulic opening force to the blowout preventer actuated by and proportional to the well pressure for reducing wear on the blowout preventer.

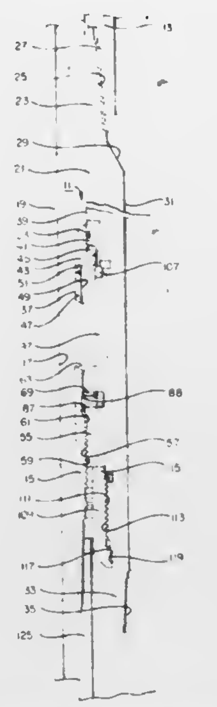
4,440,233
SETTING TOOL

John L. Baugh, and Melvin J. Hardy, both of Huntsville, Tex., assignors to Hughes Tool Company, Houston, Tex.

Filed Jul. 6, 1982, Ser. No. 395,211

Int. Cl.^{3} E21B *23/02*

U.S. Cl. 166—382 **9 Claims**



1. A setting tool of the type adapted to be made up in a pipe string for releasably engaging a setting sleeve in a well bore, comprising:

- a mandrel having an upper end adapted to be connected in the pipe stirng, a lower end, and an intermediate supporting shoulder formed on the exterior of said mandrel;
- a generally cylindrical setting nut carried on said mandrel, said nut having external connecting threads for engaging mating internal connecting theads on the interior of a setting sleeve disposed about the lower end of said mandrel and said setting nut having at least one axial groove in the interior thereof:
- said mandrel being slidably disposed within said setting nut when said nut is engaging said setting sleeve, said mandrel being slidable between an extended runnin-in position and a weight set-down position wherein said supporting shoulder contacts said setting sleeve;
- said setting nut having at least one opening in a sidewall thereof for receiving a dog and wherein said setting sleeve interior has a radial groove adapted to engage said dog for preventing relative movement between said connecting threads of said setting nut and said setting sleeve when said mandrel is in said extended running-in position and allowing relative movement between said connecting threads when said mandrel is in said weight set-down position; and
- at least one torque transmitting spline on said mandrel exterior adapted to be received within said setting nut axial groove whereby torque transmitted to said mandrel is transmitted to said setting nut.

4,440,234
SPRINKLER

Edward T. Shea, Huntington, N.Y., assignor to The Reliable Automatic Sprinkler Company, Inc., Mt. Vernon, N.Y.

Continuation of Ser. No. 585,966, Jun. 11, 1975, abandoned. This application Sep. 13, 1976, Ser. No. 722,766

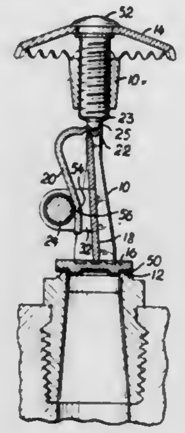
Int. Cl.^{3} A62C *37/08*

U.S. Cl. 169—39 **36 Claims**

1. In a sprinkler having a frame with first and second ends, an orifice for discharging fluid at the first end of the frame, and a cap over the orifice for normally preventing discharge of

fluid from the orifice, compression means at the second end of the frame, a structure positioned between the cap and the second end of the frame for releasably retaining the cap over the orifice, which structure comprises:

- a strut member engaging the cap,
- a lever member engaging the compression means at the second end of the frame,
- the strut and lever members being pivotally engaged and having adjacent portions tending to move away from each other in response to compressive force applied to the structure between the cap and the compression means at the second end of the frame,
- a pair of arms affixed to and extending in spaced relation away from the strut member in the direction of and straddling the adjacent portion of the lever member,



- a tubular retainer normally held between the pair of arms and engaging the straddled portion of the lever member,
- eutectic means within the tubular retainer, and
- arm-engaging means projecting from the tubular retainer and normally engaging one of the pair of arms to normally hold the tubular retainer in position to engage the straddled portion of the lever member but responsive to melting of the eutectic means to move inwardly in the tubular retainer, permitting the retainer to be released from the pair of arms and allowing the straddled portion of the lever member to move away from the adjacent portion of the strut member and release of the cap from its position over the orifice.

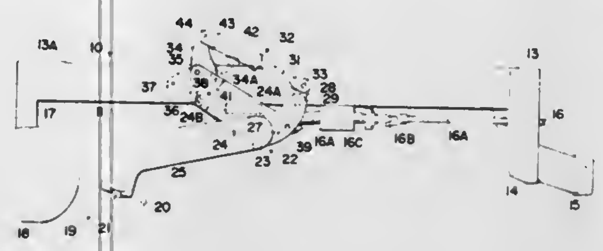
4,440,235
ROCK WINDROWER

Vincent Colistro, Humboldt, Canada, assignor to Schulte Industries Ltd., Englefeld, Canada

Filed Jul. 12, 1982, Ser. No. 397,078

Int. Cl.^{3} A07B *43/00*

U.S. Cl. 171—63 **9 Claims**



1. A rock windrower assembly comprising in combination a chassis, a hitch assembly on the front end thereof and adjustable ground engaging wheels mounted at the rear end thereof to support said chassis, a transversely situated rock windrower drum component, a transverse support mounted across said chassis for partial rotation therein, arms extending from adjacent each end thereof to support said drum component for rotation, said drum component moving freely in an arc around the axis of said transverse support, and means operatively connected between said chassis and said transverse support to raise said drum clear of the ground for transport purposes, said drum moving downwardly and engaging the ground by gravity, said last mentioned means also controlling the limit of the downward movement of said drum component, said means operatively connected between said chassis and said transverse support including at least one crank arm having ends and secured by one end thereof to said transverse support means and extending perpendicularly therefrom, a floating cylinder lug pivoted intermediate said ends thereof to said chassis and a hydraulic piston and cylinder assembly operatively extending between the other end of said crank arm and one end of said floating cylinder lug, stop means on said chassis restricting the movement of the other end of said floating cylinder lug rearwardly, extension of said piston and cylinder assembly raising said drum component to a transport position, retraction of said piston and cylinder assembly lowering said drum component to a field working position and limiting the working depth of said drum component, said piston and cylinder assembly acting as a rigid link when positioned whereby said drum component, said crank arm, said piston and cylinder assembly and said floating cylinder lug all pivot around said transverse support means as one unit whereby said drum component lifts if said drum component engages an obstruction within the ground and whereby the weight of said drum component and said arms returns said drum component to the preset working position, and means to detachably lock said floating cylinder lug to said chassis in a no-float relationship, whereby retraction of said piston and cylinder assembly engages said drum component with the ground and further retraction raises said chassis for chassis levelling.

4,440,236
HYDRAULIC CONTROL SYSTEM FOR A ROCK DRILL

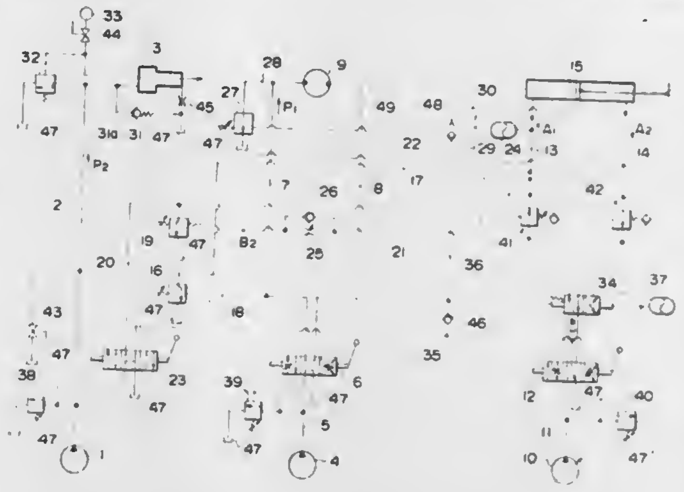
Takeo Shiihara; Toshihiro Niihara; Hidemi Iwata, and Noboru Ishii, all of Hiroshima, Japan, assignors to Toyo Kogyo Co. Ltd., Hiroshima, Japan

Continuation of Ser. No. 187,639, Sep. 16, 1980, abandoned. This application May 5, 1983, Ser. No. 489,608

Claims priority, application Japan, Sep. 20, 1979, 54-121527; Sep. 20, 1979, 54-121528

Int. Cl.^{3} B23Q *5/033;* E21C *5/16*

U.S. Cl. 173—8 **8 Claims**



1. A rock drill comprising drilling rod means, striking actuator means for applying striking movements to said drilling rod means, reversible rotary actuator means for rotating the drilling rod means, reversible feed actuator means for advancing and retreating said drilling rod means, first fluid pump means, first conduit means connecting said first fluid pump means with said striking actuator means for providing a supply of pressurized fluid to the striking actuator means to produce the striking movements of the striking actuator means, second fluid pump means, second conduit means connecting said second fluid pump means with said rotary actuator means for providing a supply of pressurized fluid so that a positive driving rotation is produced in the rotary actuator means, third fluid pump means, advancing conduit means connected with said third

fluid pump means and with said feed actuator means for providing a supply of pressurized fluid so that a rod advancing movement is produced in the feed actuator means, retreating conduit means connected with said third fluid pump means and with said feed actuator means for providing a supply of pressurized fluid so that a rod retreating movement is produced in the feed actuator means, first pressure relief means provided in said advancing conduit means and responsive to a pressure in the second conduit means to relieve the pressurized fluid in the advancing conduit means when the pressure in the second conduit means is increased beyond a first predetermined value, second pressure relief means provided in the first conduit means and responsive to a pressure difference between the advancing and retreating conduit means to relieve the pressurized fluid in the first conduit means when the pressure in the advancing conduit is not higher than that in the retreating conduit by a second predetermined value, pressure accumulating means connected through check valve means with said first conduit means for accumulating a pressure drawn from said first conduit means, switching valve means provided in said advancing and retreating conduit means and responsive to a pressure difference between said first conduit means and said accumulating means for changing the direction of movement of said feed actuator means when the pressure in the first conduit means is lower than that of said accumulating means by a third predetermined value.

8. A rock drill comprising drilling rod means, striking actuator means for applying striking movements to said drilling rod means, reversible rotary actuator means for rotating the drilling rod means, reversible feed actuator means for advancing and retreating said drilling rod means, first fluid pump means, first conduit means connecting said first fluid pump means with said striking actuator means for providing a supply of pressurized fluid to the striking actuator means to produce the striking movements of the striking actuator means, second fluid pump means, second conduit means connecting said second fluid pump means with said rotary actuator means for providing a supply of pressurized fluid so that a positive driving rotation is produced in the rotary actuator means, third fluid pump means, advancing conduit means connected with said third fluid pump means and with said feed actuator means for providing a supply of pressurized fluid so that a rod advancing movement is produced in the feed actuator means, retreating conduit means connected with said third fluid pump means and with said feed actuator means for providing a supply of pressurized fluid so that a rod retreating movement is produced in the feed actuator means, first pressure relief means provided in said advancing conduit means and responsive to a pressure in the second conduit means to relieve the pressurized fluid in the advancing conduit means when the pressure in the second conduit means is increased beyond a first predetermined valve, second pressure relief means provided in the first conduit means and responsive to the pressure for operating said feed actuator means to relieve the pressurized fluid in the first conduit means when the pressure in the feed actuator means is lower than a second predetermined value, so that advancing and striking forces on the drilling rod means are weakened when the pressure in the second conduit means is increased due to an increase in driving torque on the driving rod means, pressure accumulating means connected through check valve means with said first conduit means for accumulating a pressure drawn from said first conduit means, switching valve means provided in said advancing and retreating conduit means and responsive to a pressure difference between said first conduit means and said accumulating means for changing the direction of movement of said feed actuator means when the pressure in the first conduit means is lower than that of said accumulating means by a third predetermined value.

4,440,237

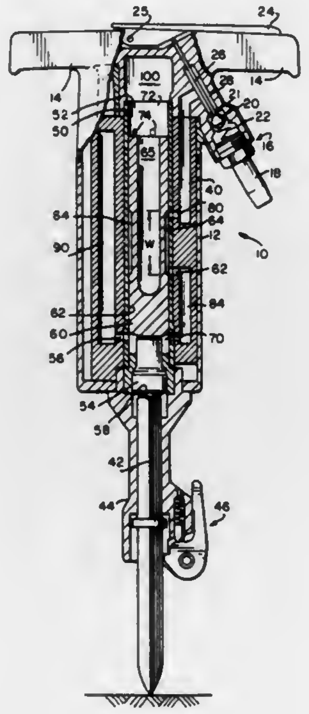
PAVEMENT BREAKER

John J. Casperovich, Bethlehem, Pa., assignor to Ingersoll-Rand Co., Woodcliff Lake, N.J.

Filed Jun. 11, 1982, Ser. No. 387,694

Int. Cl.^{3} F01L *25/02*

U.S. Cl. 173—134 **10 Claims**



1. A valveless pavement breaker comprising:
(a) a housing;
(b) an inlet means for introducing compressed gas into said housing;
(c) a piston chamber formed in said housing having a first section and a second section;
(d) a piston having a circumferential recess about the middle and arranged for longitudinal reciprocating movement within said piston chamber between said first and second sections;
(e) a first expansion chamber communicating with said first section of said piston chamber;
(f) a first vent port arranged for venting said first section of said piston chamber when said piston is positioned toward said second section of said piston chamber;
(g) a first passage communicating with said first section of said piston chamber and arranged so that when said piston is positioned toward said first section of said piston chamber said first passage is in communication with said circumferential recess whereby said compressed gas from said inlet means moves said piston toward said second section of said piston chamber;
(h) a second expansion chamber in said piston continuously communicating with said second section of said piston chamber;
(i) a second vent port arranged for venting said second section of said piston chamber when said piston is positioned toward said first section of said piston chamber;
(j) a second passage communicating with said second section of said piston chamber and arranged so that when said piston is positioned toward said second section of said piston chamber said second passage is in communication with said circumferential recess whereby said compressed gas from said inlet means moves said piston toward said first section of said piston chamber; and
(k) means for attaching a breaker tool to said housing.

4,440,238

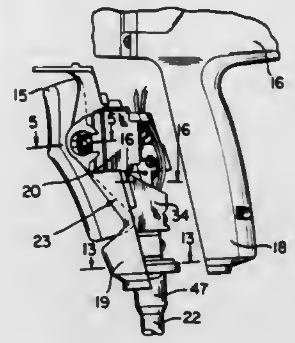
SWITCH AND HANDLE CONSTRUCTION FOR DOUBLE-INSULATED ELECTRIC TOOL

William D. Sauerwein, Westminster, and Lynn E. Lentino, Finksburg, both of Md., assignors to Black & Decker Inc., Newark, Del.

Filed Nov. 2, 1981, Ser. No. 317,061

Int. Cl.^{3} B23B *45/08*

U.S. Cl. 173—170 **6 Claims**



1. A double-insulated power tool, comprising:
(a) a field case formed of electrically insulating material and including an integral depending handle portion;
(b) an electric motor mounted in the field case;
(c) a replaceable switch having a switch body and an actuating member for controlling the motor;
(d) mounting means for connecting the switch to the tool;
(e) the mounting means including a subassembly having a switch cover, a trigger, and a mounting bracket, all being formed of electrically insulating material;
(f) the switch cover having a back and a front, and being removably secured to the handle portion forwardly thereof;
(g) the back of the switch cover defining a recess, and further defining an opening formed in the recess through the cover;
(h) the switch being located in the switch cover recess with the actuating member protruding through the opening;
(i) the trigger being coupled to the actuating member, and further being pivotally mounted on the switch cover adjacent the front thereof in overlying relation to the actuating member;
(j) the mounting bracket being connected in overlying relation to the switch;
(k) an electrical supply cable entering the tool adjacent the handle portion and including at least two electrical conductors;
(l) the mounting bracket including guiding means for orienting an unbroken electrical conductor from the cable entry to the field case, interior of the switch cover and the handle portion;
(m) the mounting bracket further including two transverse members joined by an elongated strap member; and
(n) the transverse members engaging the switch body.

4,440,239

METHOD AND APPARATUS FOR CONTROLLING THE FLOW OF DRILLING FLUID IN A WELLBORE

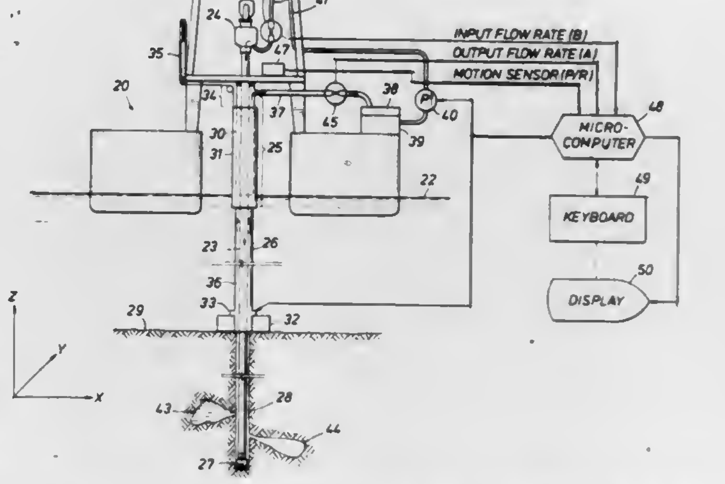
John L. Evans, Houston, Tex., assignor to Exxon Production Research Co., Houston, Tex.

Filed Sep. 28, 1981, Ser. No. 306,252

Int. Cl.^{3} E21B *47/10*

U.S. Cl. 175—5 **43 Claims**

42. A method for controlling the flow of drilling fluid through a subaqueous wellbore while drilling from a floating vessel, comprising the steps of:
measuring the output flow rate (A) of the drilling fluid from the wellbore and the input flow rate (B) of the drilling fluid to the wellbore;
calculating in a computer a delta flow rate (D) by subtracting the input flow rate (B) from the output flow rate (A);
comparing in a computer the absolute value of the delta flow rate (D) with an alarm limit (C) so as to generate a warning indicating that the flow of drilling fluid is out of control when the comparison indicates that the absolute value of the delta flow rate (D) exceeds the alarm limit (C); and
filtering in the computer the value of at least one of the parameters (A) and (D) to reduce or minimize the effect of the vessel's motion on the generation of said warning;



wherein at least a component of the pitch and roll (P/R) of the vessel is measured and the alarm limit (C) is set equal to a maximum alarm limit if the pitch and roll (P/R) measured value exceeds a pitch/roll limit, or equal to a roughness output (A_r) which varies proportionally with the roughness of the sea between a minimum alarm limit and the maximum alarm limit if the pitch and roll (P/R) measured value does not exceed the pitch/roll limit.

4,440,240

METHOD OF MAKING HOLES IN THE SOIL AND APPARATUS FOR PERFORMING THIS METHOD

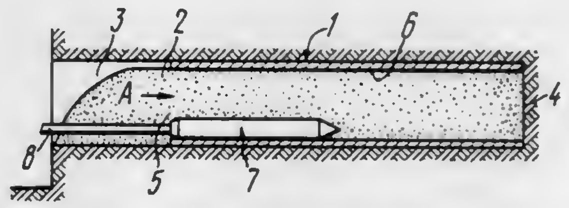
Alexandr D. Kostylev; Vladimir P. Gileta; Vladimir A. Grigoraschenko; Khaim B. Tkach, all of Novosibirsk; Vladimir A. Bakunin, Odessa; Valery Y. Frenkel, Moscow; Valery A. Kozlov, Novosibirsk; Jury B. Reifisov, Novosibirsk; Nikolai P. Chepurnoi, Novosibirsk; Mikhail J. Bondar, Odessa; Vladimir F. Drobyazko, Odessa; Stanislav B. Stazhevsky, Novosibirsk; Gerald I. Ratskevich, Novosibirsk; Alexandr A. Fedorov, Novosibirsk; Anatoly S. Polyakov, Moscow; Leonid M. Bobylev, Moscow; Evgeny N. Tsvetkov, Odessa, and Anatoly M. Petreev, Novosibirsk, all of U.S.S.R., assignors to Institut Gornogo Dela Sibirskogo Otdelenia Akademii Nauk SSSR, Novosibirsk, U.S.S.R.

Filed May 18, 1981, Ser. No. 264,684

Claims priority, application U.S.S.R., Jan. 4, 1979, 2706741

Int. Cl.^{3} E21B *7/26, 11/02*

U.S. Cl. 175—20 **32 Claims**



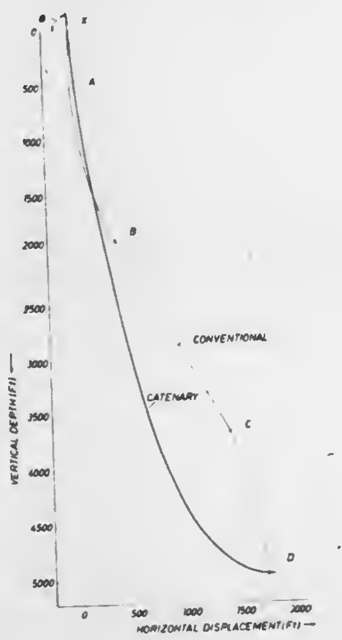
1. A method of making holes in soil, including the steps of:
driving a capsule into the soil by percussive action;
filling the capsule with the soil;
continuing driving said capsule into the soil by the percussive action, following its filling with the soil, while passing the soil therethrough;
withdrawing said capsule from the hole thus made, simulta-

neously with removing from the hole the soil that has passed through said capsule, and
removing the soil from said capsule itself.

3. An apparatus for making holes in soil, comprising: a capsule receiving the soil therein, and having a longitudinal axis, a first end face open in the soil intake direction, and a second end face opposite to said first end face and being at least partly open; and a percussion mechanism having a head portion and a tail portion and being attached to an inner surface of said capsule.

4,440,241
METHOD AND APPARATUS FOR DRILLING A WELL BORE

Edward O. Anders, 1502 Tallulah Ct., Houston, Tex. 77077
Continuation-in-part of Ser. No. 19,175, Mar. 9, 1979, abandoned. This application Aug. 24, 1981, Ser. No. 294,497
Int. Cl.^{3} E21B *7/04, 7/08*
U.S. Cl. 175—61 **13 Claims**

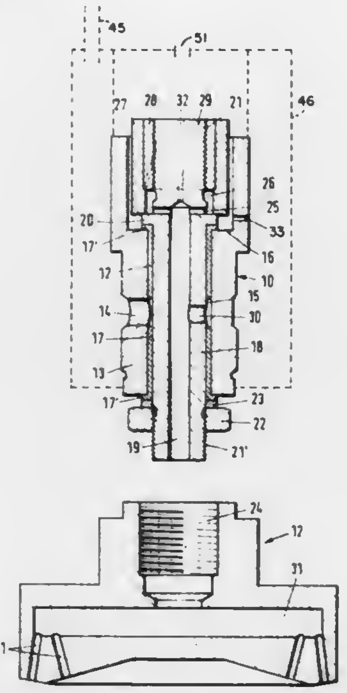


8. Apparatus for drilling between two points a well bore that is inclined from the vertical and has a substantially constantly increasing dip angle using a drill bit at the lower end of a drill string, comprising a bit stabilizer located in the drill string adjacent the drill bit, a string stabilizer located in the drill string a preselected distance above the bit stabilizer, a telescoping joint located in the string between the two stabilizers to allow the length of the drill string between the two stabilizers to increase as the bit continues to drill, and means in the telescoping joint to produce a pressure drop in the drilling mud pumped through the telescoping joint that produces a preselected compressive force in the drill string between the two stabilizers to provide the desired weight on the bit and to cause a preselected bending of the drill string between the stabilizers to cause the bit to tend to increase the dip angle of the well bore as the distance between the stabilizers increases and the bending increases.

10. A method of drilling a borehole into a subsurface earth formation, comprising: drilling a borehole into said formation from a location horizontally and vertically displaced from said formation and along a path at least a portion of which is defined by the curve of a catenary, and extending said borehole further through said formation along a substantially horizontal path of travel.

4,440,242
DEVICE FOR PRODUCING BOREHOLES IN COAL OR THE LIKE

Bruno H. Schmidt, Niederkasseler Kirchweg 34, 4000 Düsseldorf, and Helmut Becker, Grosser Schirmkamp 17, 4300 Essen, both of Fed. Rep. of Germany
Filed Nov. 24, 1981, Ser. No. 327,891
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1980, 3044263
Int. Cl.^{3} E21B *7/18*
U.S. Cl. 175—107 **16 Claims**



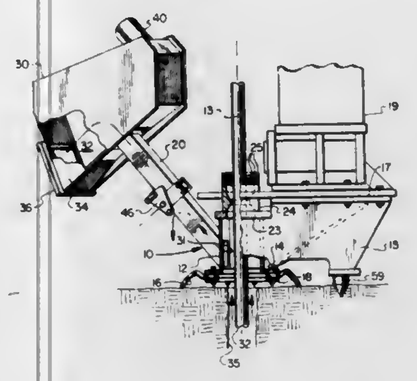
1. Hydraulic drilling apparatus comprising:
casing means, said stator means having an axis, said stator means defining at least a first fluid flow path;
means coupling said casing means to a source of pressurized fluid; and
rotor means positioned coaxially with respect to said casing means, said rotor means having a cutting head at a first end thereof, said cutting head defining a plurality of nozzles which discharge cutting jets from a face thereof, whereby fluid cutting of a medium impinged upon by said jets will be induced, said rotor means further defining a plurality of discharge ports at the end thereof disposed oppositely with respect to said cutting head, at least some of said ports being oriented to provide fluid streams having a component of motion which is angularly related to said axis whereby rotational force will be generated and said rotor means will be caused to rotate relative to said casing means, at least one of said ports being oriented to provide a fluid stream having an axial component of motion whereby an axial force in opposition to axial forces imposed on said rotor as a result of the discharge of said cutting jets will be generated, said generated axial force being substantially equal to said axial forces resulting from the discharge of said cutting jets, said rotor means additionally defining flow passages which establish fluid communication between said casing means defined flow path and said nozzles and ports.

4,440,243
DRILL CUTTINGS CONVEYING HEAD WITH WET CUTTINGS DIVERTER

D. Franklin Howeth, 233 Chuck Wagon Trail, Forth Worth, Tex. 76108
Continuation-in-part of Ser. No. 223,036, Jan. 7, 1981. This application Dec. 14, 1981, Ser. No. 330,134
Int. Cl.^{3} E21B *21/06;* **E21C** *7/02*
U.S. Cl. 175—209 **11 Claims**

1. Apparatus for conveying drill cuttings material entrained

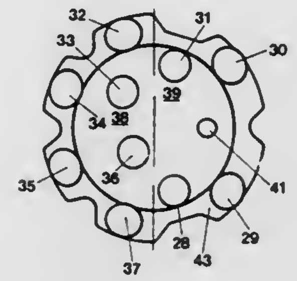
in a bailing air flowstream emanating from a drillhole comprising:
a head member defining a flow passage for receiving said flowstream from the mouth of said drillhole, said head member including a lower peripheral edge;
a duct portion of said head member extending substantially upward at an acute angle with respect to the longitudinal axis of said flow passage in said head member for conducting said flowstream to a drill cuttings separation chamber disposed remote from said drillhole;

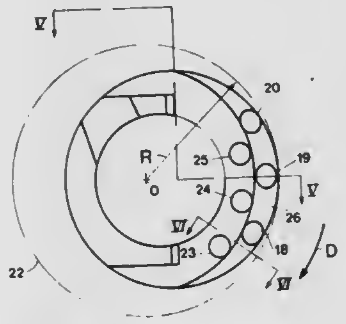


and
means operable for diverting at least a major portion of said flowstream from said duct portion and to the exterior of said head member to prevent clogging of said passage with said material, said means for diverting said flowstream including means for closing off said duct portion between said peripheral edge of said head member and said chamber.

4,440,244
DRILL TOOL

Harry A. I. Wiredal, Sandviken, Sweden, assignor to Santrade Ltd., Lucerne, Switzerland
Filed Feb. 25, 1981, Ser. No. 237,914
Claims priority, application Sweden, Mar. 26, 1980, 8002320
Int. Cl.^{3} E21B *10/30, 10/56*
U.S. Cl. 175—292 **11 Claims**





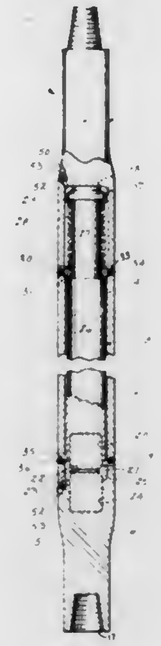
5. A drill tool for rotary and/or percussion drilling, said drill tool being mountable upon a drill rod for travel within a tubular casing, said drill tool comprising:
a centric cutting bit provided with inner cutting means, and
an eccentric reamer cutter provided with outer cutting means, said reamer cutter positioned longitudinally rearwardly of said cutting bit and being shiftable relative thereto between a drilling position in which said reamer cutter protrudes laterally beyond the tubular casing, and a retracted position in which said reamer cutter is retracted radially within the tubular casing as viewed longitudinally, said outer cutting means comprising first and second portions,
said first portion including a first button insert defining the leading cutter of said first portion, said first insert being inclined relative to the longitudinal axis of the drill tool and peripherally arranged to define the diameter of the hole to be drilled,
said second portion including a second button insert defining the leading cutter of said second portion, said second insert positioned radially inwardly of said first button insert so as to work an annular core which is formed between a pilot hole drilled by the cutting bit and said first insert, said second insert positioned ahead of said first button insert in the rotational direction of the drill tool.

10. A drill tool according to claim **5**, wherein a wear protection means in form of a button insert of hard material, such as cemented carbide, is arranged on the envelope surface of the reamer cutter in front of the first button insert when seen in the rotational direction of the drill tool during drilling and axially behind said first button insert.

11. A drill tool according to claim **10**, wherein the wear protection means is arranged circumferentially between the first and second button insert.

4,440,245
GRAVITY PERCUSSION DRILL WITH UPPER END COCKING SPRING AND METHOD OF ASSEMBLY

Allen E. Bardwell, P.O. Box 507, High Knob Estates, Front Royal, Va. 22630
Filed Jun. 17, 1982, Ser. No. 389,373
Int. Cl.^{3} E21B *4/08*
U.S. Cl. 175—293 **18 Claims**

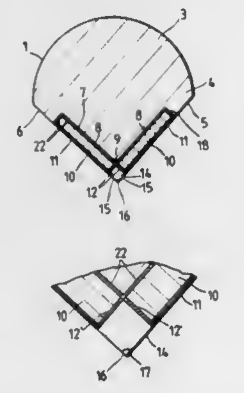


1. A multiple-blow gravity drill structure for carrying a drill bit, the drill structure comprising:
an elongated tubular casing wiht an enclosed longitudinal bore and with an anvil at the lower end of the bore;
a hammer disposed in the bore and of shorter length than the bore for reciprocating movement therein, the hammer having a lateral projection near its upper end and an anvil at its lower end;
a restriction within the bore towards the upper end of the hammer, the restriction allowing the hammer to slide by; and
a spring with one end supported by the restriction within the bore and with an opposite end supporting the hammer by its lateral projection in a position where the spring is cocked against the restriction by a portion of the casing

that is urged against the upper end of the hammer and where the anvil at the lower end of the hammer is spaced apart by a gap from the anvil at the lower end of the bore, the spring yielding upon the dropping of the drill structure to a point of initial impact to allow the hammer to close the gap between the anvils and provide a follow-up impact through the lower end of the drill structure.

4,440,246
CUTTING MEMBER FOR ROTARY DRILL BITS

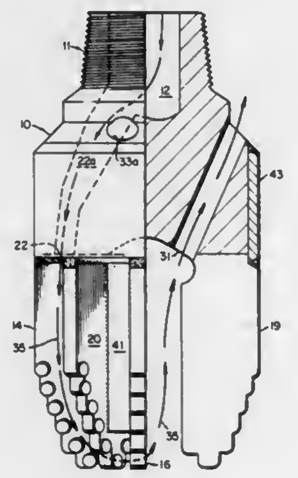
Rainer Jürgens, Altencelle, Fed. Rep. of Germany, assignor to Christensen, Inc., Salt Lake City, Utah
Filed Mar. 24, 1982, Ser. No. 361,305
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1981, 3114749
Int. Cl.³ E21B *10/46*
U.S. Cl. 175—329 6 Claims



1. A cutting member for rotary drill bits comprising a carrier member having a support face consisting of two component supporting faces adjoining one another in a wedge-shaped to form a front edge, each of the two component supporting faces mounting a supporting member occupying its full area and having on its front face a polycrystalline diamond cutting layer, and wherein the adjacent edges of the supporting members have marginal faces extending at right angles to their front and their back and a separate insert of hard material is disposed in a gusset remaining between these.

4,440,247
ROTARY EARTH DRILLING BIT

Raymond W. Sartor, 112 Hackberry, Red Oak, Tex. 75154
Filed Apr. 29, 1982, Ser. No. 372,898
Int. Cl.³ E21B *10/60*
U.S. Cl. 175—393 24 Claims



1. In a rotary earth drilling bit, the combination comprising:

a body portion adapted to be secured to a rotary drill member,

a first array of radially divergent blades depending from said body portion, said blades having outer edges which taper upwardly and outwardly from their tips to the periphery of said bit and inner edges which taper upwardly and inwardly and converge at the axis of said bit to define a conically shaped core volume at the bottom of said bit,

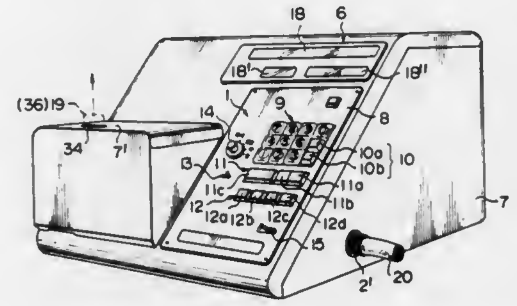
a plurality of cutting blanks having upset cutting surfaces spaced along the outer and inner edges of said blades and oriented at a side rake angle relative to said blades,

a second array of radially divergent blades depending from said body portion and interposed between the blades of said first array, the blades of said second array having outer edges which conform generally to the outer edges of said first array blades and having inner edges which terminate at locations radially spaced from the axis of said bit to define a core volume which is greater than the core volume defined by the first array of blades, and

a plurality of cutting blanks having upset cutting surfaces located along the outer edges and tips of said second array blades, at least some of said cutting blanks oriented at a side rake angle which is opposed with respect to the side rake angle of the corresponding cutting blanks on said first array blades.

4,440,248
BAR CODE PRINTER

Kazuharu Teraoka, Tokyo, Japan, assignor to Teraoka Seikosho Co., Ltd., Tokyo, Japan
Filed Feb. 3, 1981, Ser. No. 231,363
Claims priority, application Japan, Feb. 9, 1980, 55-15102; Feb. 9, 1980, 55-15103; Feb. 19, 1980, 55-19861; Feb. 20, 1980, 55-21729[U]; Jul. 18, 1980, 55-98880; Jul. 18, 1980, 55-98881; Oct. 4, 1980, 55-138891
Int. Cl.³ G01G *23/38;* **G06K** *7/10;* **G01D** *9/00*
U.S. Cl. 177—4 4 Claims



1. A bar code printer for producing bar code labels, comprising:

an input unit means for introducing required input data into said bar code printer, said input data including prescribed numerals, and developing an input signal of prescribed form in accordance therewith;

signal control system means responsive to said input signal for developing control signals in response thereto;

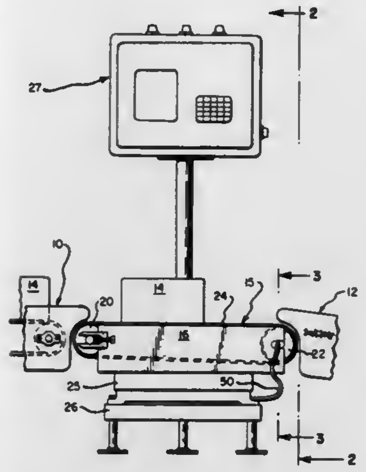
bar code printing system means responsive to said control signals for printing said bar code labels in a specified format in accordance with said control signals,

said bar code labels having columns designated as a fixed part and columns designated as a variable part,

selected ones of said prescribed numerals in said input data being associated with the columns for the fixed part, and other selected ones of said prescribed numerals in said input data being associated with the columns of the variable part in response to identification by said input data introduced via said input unit means and an indicating system operatively responsive to said signal control system with display means responsive to said control signals for displaying the identified column numbers of the columns of the variable part, as distinguished from the fixed part.

4,440,249
MOTORIZED WEIGHING CONVEYOR

Victor Del Rosso, Ithaca, N.Y., assignor to Hi-Speed Checkweigher Co., Inc., Ithaca, N.Y.
Filed Feb. 5, 1982, Ser. No. 346,257
Int. Cl.³ G01G *19/00;* **H02K** *3/50*
U.S. Cl. 177—145 2 Claims



1. In a commodity weighing conveyor system which includes a support base, a weight-sensing device on said support base, a frame carried by said weight-sensing device and an endless conveyor belt mounted on said frame, the improvement comprising means for substantially eliminating weighing errors incidental to operation of said conveyor belt wherein:

said frame includes upstanding side walls, a first roller journalled between said side walls and a drive roller in spaced parallelism to said first roller, said conveyor belt being trained over said rollers, said drive roller including a cylindrical shell closed at one end by an end bell having a transverse wall spaced from said one end of the shell to define and end pocket therewith, said transverse wall having a centrally disposed hub provided with a bore opening into said pocket and having at least one keyway, an electric motor disposed within said pocket and including a stator and a rotor, said stator having a hollow support post extending axially of said shell and through one of said upstanding side walls and secured thereto whereby to fix said stator to said frame, said rotor having an axially extending drive shaft fixed thereto and projecting into said bore in keyed relation thereto whereby to rotatably drive said end bell directly and in unison with said rotor, and electrical connector means projecting through said hollow support post for energizing said motor.

4,440,250
WEIGHING SCALE HAVING A HYDRAULIC DAMPER INTERCOUPLED BETWEEN THE LOAD RECEIVER AND THE MEASURING CELL

Max Sigg, Weisslingen, Switzerland, assignor to Mettler Instrumente AG, Greifensee, Switzerland
Filed Feb. 5, 1982, Ser. No. 346,179
Claims priority, application Switzerland, Oct. 16, 1981, 6616/81
Int. Cl.³ G01G *21/10*
U.S. Cl. 177—187 4 Claims

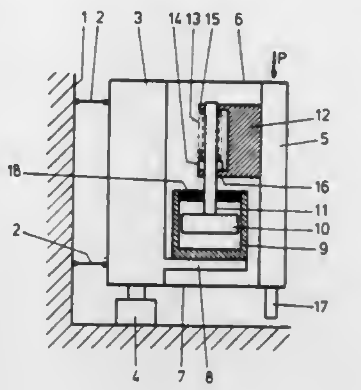
1. Weighing scale comprising

load receiving means;

force measuring means for furnishing an indication of the magnitude of force applied thereto, said force measuring means having a force receiving member, the force applied to said force measuring means being limited to a maximum allowable force;

damping means for suppressing oscillations of said load receiving means, said damping means comprising a hydraulic damper;

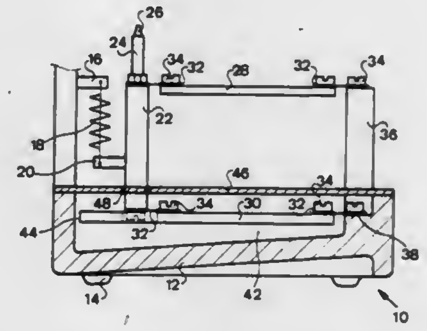
means for intercoupling said damping means between said load receiving means and said force receiving member; and



overload protection means coupled in series with said damping means in the path of force transmission between said load receiving means and said force receiving member.

4,440,251
SCALE WITH SIMPLIFIED GUIDANCE-DAMPER CONSTRUCTION

Peter Kunz, Gossau, Switzerland, assignor to Mettler Instrumente AG, Greifensee, Switzerland
Filed Apr. 29, 1982, Ser. No. 373,174
Claims priority, application Switzerland, Aug. 18, 1981, 5326/81
Int. Cl.³ G01G *23/08*
U.S. Cl. 177—187 3 Claims



1. In force measuring apparatus comprising force receiving means, the improvement comprising

combined guidance and damping means connected to said force receiving means, said combined means having one member operative both to guide said force receiving means along a predetermined path upon application of force thereto and to dampen the motion of said force receiving means along said path;

a housing for said force receiving and combined means;

means for mounting said combined means in said housing in such a manner that said one member and a predetermined part of said housing together constitute an air damper;

wherein said combined means comprises guidance means of parallel construction having an upper member and a stiff lower plate constituting said one member, said predetermined part of said housing being the lower part thereof; and

wherein said stiff lower plate is mounted within said lower part of said housing in such manner that a predetermined small air gap is created between the edges of said stiff lower plate and the walls of said housing opposite thereto.

4,440,252
TRUCK CAB HYDRAULIC TILTING MECHANISM

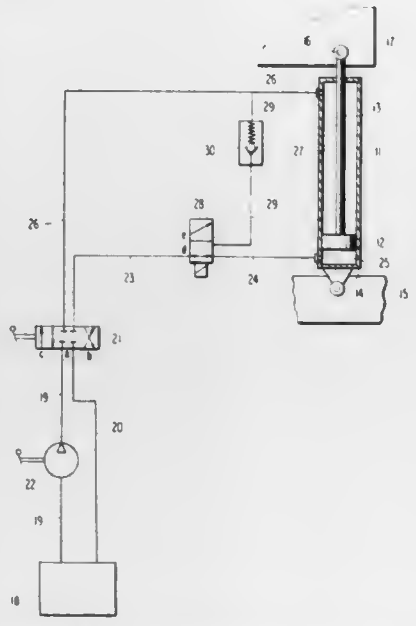
Rudolf Steinecke, Weinstadt, and Karl-Heinz Hensche, Leutenbach, both of Fed. Rep. of Germany, assignors to Daimler-Benz AG, Fed. Rep. of Germany

Filed Nov. 17, 1981, Ser. No. 322,209

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1980, 3043590

Int. Cl.³ B62D *27/00*

U.S. Cl. 180—89.15 **11 Claims**



1. A hydraulic tilting mechanism for a cab of a vehicle, the mechanism including double-acting working cylinder means arranged between the cab and frame of a vehicle, piston means displaceably mounted in the cylinder means, means for connecting the working cylinder means with a source of hydraulic fluid so as to enable displacement of the piston means in the working cylinder means by the hydraulic fluid, means for preventing unauthorized operation of the tilting mechanism including by-pass line means for by-passing the working cylinder means, valve means for selectively controlling a flow of the hydraulic fluid into the by-pass line means, manually operable switch means for controlling a positioning of the valve means for selectively controlling a flow of the hydraulic fluid into the by-pass line means, and check valve means for allowing unidirectional flow of the hydraulic fluid in the by-pass line means.

4,440,253
CRAWLER-TYPE TRANSPORT APPARATUS

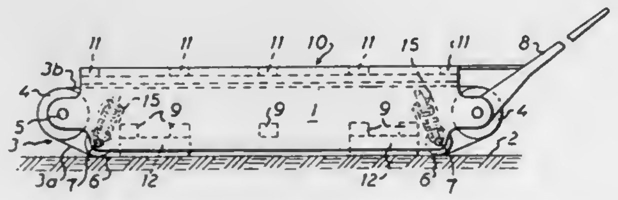
Bertil Pernum, Bernstorpsvägen 18, S-232 00 Arlöv, Sweden

Filed Feb. 22, 1982, Ser. No. 351,035

Claims priority, application Sweden, Jul. 6, 1981, 8104173

Int. Cl.³ B60V *3/04*

U.S. Cl. 180—116 **1 Claim**



1. A transport apparatus comprising at least one crawler vehicle having a chassis, at least one movable endless track having a ground-engaging part, a plurality of wheels which are supported by the chassis and over which the track travels, said wheels comprising a track guide wheel at either end of the chassis, air cushion-producing means supported by the chassis and disposed between the chassis and the lower ground-engaging track part, and a source of compressed air for supplying air to the air cushion-producing means in order to provide between the chassis and the ground-engaging track part an air film supporting the chassis relative to the ground via the ground engaging engaging track part, wherein the chassis, in the area between the guide wheels adjacent either end of the chassis, supports moveable track hold-down and tensioning wheels which engage the upper side of the ground-engaging part of the endless track, said track hold-down and tensioning wheels being mounted movably along a substantially vertical axis relative to the chassis, said air cushion-producing means being disposed in the area between said track hold-down and tensioning wheels; a biasing device for biasing said track hold-down and tensioning wheels in a downward direction, said track hold-down and tensioning wheel biased by said biasing device to stretch and straighten the track along the portion thereof acted upon by the air cushion and thus act against the tendency of said air cushion to bend said track portion downwardly when it raises and supports the chassis in relation to the ground.

4,440,254
COMPLIANCE STEER CONTROL SYSTEM

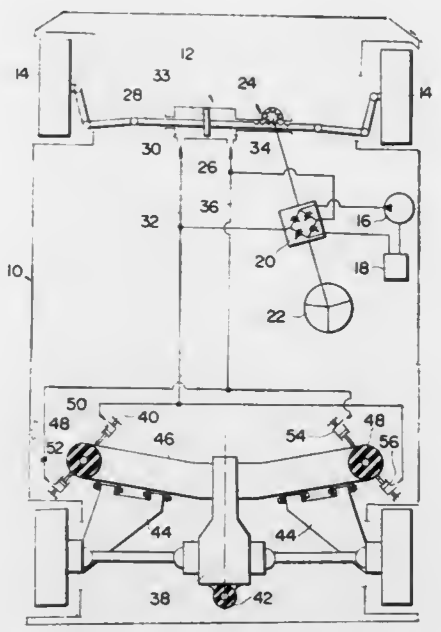
Yasuji Shibahata; Namio Irie; Kazuo Ikawa, and Yosuke Akatsu, all of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Nov. 9, 1981, Ser. No. 319,282

Claims priority, application Japan, Dec. 10, 1980, 55-176060[Uj; Dec. 11, 1980, 55-173867

Int. Cl.³ B62D *5/06, 9/00*

U.S. Cl. 180—140 **14 Claims**



1. In a vehicle having a pair of steerable front wheels mounted to said vehicle through a front suspension arrangement, a power steering system associated with said pair of front wheels through a linkage arrangement, which power steering includes a source of hydraulic pressure, a hydraulic servo having first and second chambers, a control valve responsive to the rotation of a steering wheel of the vehicle for selectively pressurizing said first and second chambers, and a pair of rear wheels mounted to said vehicle through a rear suspension arrangement which includes elastomeric mounting members;

a compliance steer control system responsive to the pressurization of said first and second chambers for producing a bias which tends to turn one of said pair of front wheels and said pair of rear wheels with respect to said vehicle in the same direction as said front pair of wheels are turned in response to the rotation of said steering wheel.

4,440,255
AIR CLEANER APPARATUS FOR MOTORIZED TWO-WHEELED VEHICLE

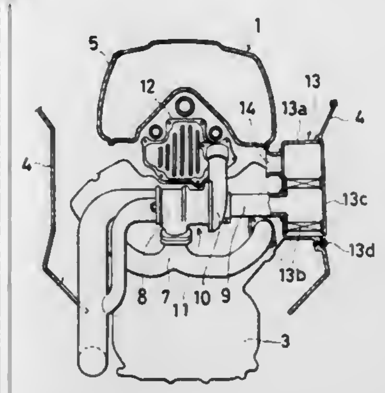
Takashi Shinozaki, Tokorozawa, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 22, 1981, Ser. No. 276,085

Claims priority, application Japan, Jun. 26, 1980, 55-85863

Int. Cl.³ B62K *11/08, 19/30*

U.S. Cl. 180—225 **5 Claims**



1. An air cleaner apparatus in a motorized two-wheeled vehicle including a vehicle body having front and rear wheels, an internal combustion engine at a middle portion between the wheels, and a fairing member in front of the engine extending forwards and rearwards, comprising an air cleaner located at an upstream end portion of an intake passage of the engine fixedly provided inside the fairing member, said air cleaner comprising a cleaner casing integrally formed in a side surface of said fairing member having an external air intake opening directed inwardly of said fairing member and a main opening facing outwardly of said fairing member, a removeable cleaner element in said casing, and a covering plate removeably covering and sealing said main opening.

4,440,256
BEARING AND UNIVERSAL JOINT ASSEMBLY

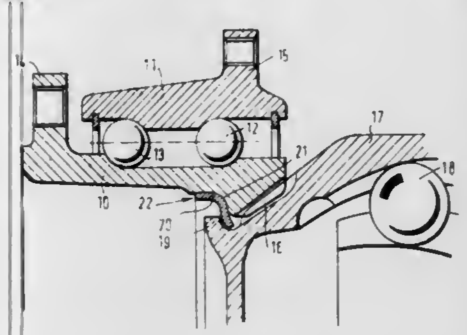
Bertram J. Palmer, Staffordshire, England, assignor to GKN Transmissions Limited, Birmingham, England

Filed Sep. 2, 1981, Ser. No. 298,899

Claims priority, application United Kingdom, Sep, 13, 1980, 8029666

Int. Cl.³ B60K *17/30*

U.S. Cl. 180—254 **3 Claims**



1. A wheel support assembly for a motor vehicle, comprising a bearing unit having an inner bearing member adapted to be secured to a vehicle wheel, an outer bearing member adapted to be secured to a suspension component of the vehicle, and a plurality of rolling elements disposed between said bearing members and rotatably mounting said inner bearing member relative to said outer bearing member; a universal joint member, interengaging formations on said universal joint member and inner bearing member for torque transmission therebetween, a retaining element comprising a separate annular component, permanently deformed to engage with formations in both said universal joint member and bearing inner member to hold said inner bearing member and universal joint member together, and at least one of said universal joint member and inner bearing member remaining undamaged by removal of said retaining element to dismantle the assembly.

4,440,257
VIBRATION-INSULATING BEARING ARRANGEMENT FOR A DRIVE UNIT

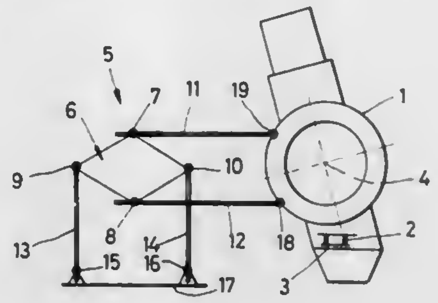
Hermann Danckert, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Continuation of Ser. No. 73,284, Sep. 7, 1979, abandoned. This application Jan. 28, 1982, Ser. No. 343,503

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1978, 2843185

Int. Cl.³ B60K *5/00*

U.S. Cl. 180—300 **9 Claims**



1. A vibration-insulating bearing arrangement for mounting a drive unit, having a drive axis, on a supporting framework of a vehicle comprising:

- a bearing means arranged between said drive unit and said framework for intercepting inertial forces of said drive unit; and
- a torque brace including:
- a torque transmitting element;
- a first torque transmission means connecting said drive unit and said torque transmitting element for transmitting a rotational force to said torque transmitting element in response to a torsional movement of said drive unit about said axis, and for imparting a translational force to said torque transmitting element in response to inertial force caused by movement of said drive unit;
- a second torque transmission means connecting said torque transmitting element and said framework for opposing said rotational force imparted to said torque transmitting element from said first transmission means, and for permitting the translational movement of said torque transmitting element in response to said inertial force;

said torque transmitting element transmitting said torsional forces to said framework, and yielding to movement of said drive unit so as substantially to prevent the transmission of said inertial force into said framework, characterized in that the transmission element is in a support means that is rigid between at least four force-introduction points, a first pair of said force-introduction points being articulated torque-transmitting connection with the drive unit by means of a first pair of elongated bar elements and, a second pair of said force-introduction points being articulately connected in a swiveling manner to the supporting framework, the second pair of said force-introduction points being movable essentially perpendicular to a connecting line between the first pair of force-introduction points.

4,440,258
TUNABLE STETHOSCOPE

Thomas J. Packard, Somerset, Wis., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed May 12, 1982, Ser. No. 377,395

Int. Cl.³ A61B *7/02;* **H04R** *25/00*

U.S. Cl. 181—137 **11 Claims**

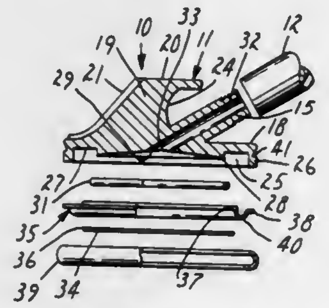
1. A stethoscope head comprising:

a body member having a first generally bell-shaped recess with an innermost central portion, an outer rim portion and a bore extending through said body member communicating with said central portion of said first recess;

a diaphragm having a peripheral edge portion and a predetermined surface contour overlying at least a portion of said first recess and moveably connected to said outer rim portion of said recess;

a suspension member located between said outer rim portion of said first recess and the peripheral edge portion of said diaphragm for connecting said peripheral edge portion of said diaphragm to said outer rim portion of said recess to provide a first acoustical stiffness for said diaphragm, and for affording movement of said diaphragm in a direction generally perpendicular to the plane of said diaphragm between a normal outer position to which said diaphragm is biased by said suspension member and an inner position more closely adjacent said central portion of said first recess without substantially changing the surface contour of or lateral tension in said diaphragm during said movement; and

immobilizing means situated on said body member and located within said first recess at about said central portion, said immobilizing means adapted to be contacted by at least one of said diaphragm and said suspension member and to substantially immobilize said diaphragm when said diaphragm is in said inner position so that said stethoscope head will pass low frequency sounds and attenuate high frequency sounds when said diaphragm is in said outer position and between said outer and inner positions, and when said diaphragm is in said inner position the acoustical stiffness of said diaphragm will be sufficiently higher than said first acoustical stiffness so that said head will pass high frequency sounds and attenuate low frequency sounds.



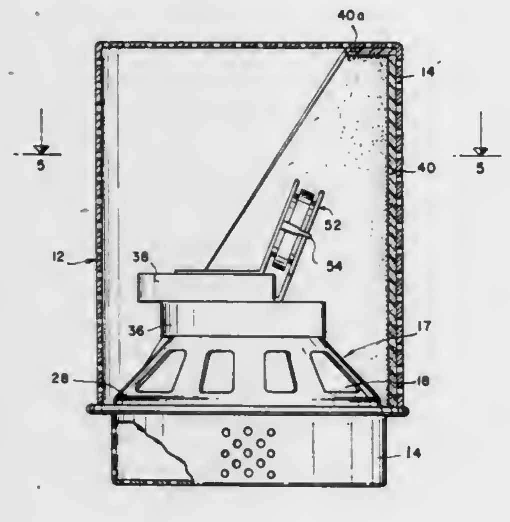
4,440,259
LOUDSPEAKER SYSTEM FOR PRODUCING COHERENT SOUND

John Strohbeen, 160 Bergen St., Brooklyn, N.Y. 11211

Filed Aug. 7, 1981, Ser. No. 290,956

Int. Cl.^{3} H04R *1/28*

U.S. Cl. 181—146 18 Claims



1. A loudspeaker for directing time and phase coherent sound wave fronts, substantially hemispherical in shape, into a listening area comprising:

a conical diaphragm having two coaxial ends defining an inner concave and an outer convex sound radiating surface therebetween and having the property that wave fronts propagate along the outer radiating surface at a speed greater than the speed of sound in the surrounding medium;

driving means coupled to a first end of said diaphragm for producing vibrating movement of the diaphragm;

first damping means disposed with respect to the diaphragm to absorb unwanted wave fronts, including the wave fronts produced at the inner concave radiating surface, such that wave fronts propagated into the surrounding medium are time and phase-coherent; and

second damping means disposed outwardly from and around a first portion of the outer surface to absorb the coherent wave fronts produced at said portion and propagating generally radially outward from the diaphragm in an undesired direction away from the listening area such that coherent wave fronts substantially hemispherical in shape propagate outwardly from a second portion of the outer surface into the listening area, said hemispherical wave fronts appearing in the listening area to be generated by a virtual source substantially on an axis positioned behind the axis of the diaphragm.

4,440,260
BASS-REFLEX LOUDSPEAKER SYSTEM

Preben Jacobsen, Glyngore, Denmark, assignor to Jamo Hi-Fi A/S, Glyngore, Denmark

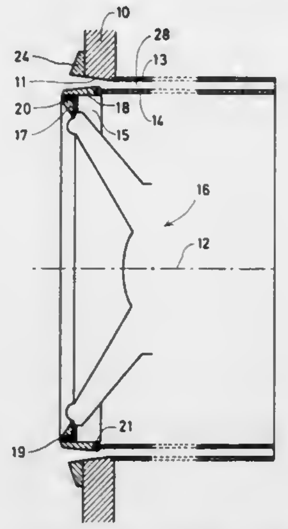
PCT No. PCT/DK82/00007, § 371 Date Sep. 28, 1982, § 102(e) Date Sep. 28, 1982, PCT Pub. No. WO82/02812, PCT Pub. Date Aug. 19, 1982

PCT Filed Feb. 2, 1982, Ser. No. 432,936

Claims priority, application Denmark, Feb. 3, 1981, 475/81

Int. Cl.^{3} H05K *5/60*

U.S. Cl. 181—172 2 Claims



1. A bass-reflex loudspeaker system comprising an enclosure or cabinet having a front plate, which is provided with a substantially circular aperture or hole for the mounting of a bass loudspeaker or woofer and with a bass-reflex port in the shape of an annular slot around said speaker, said bass-reflex port being formed of the intermediate space between a first tubular member fixedly mounted to said front plate and a second tubular member mounted inside of and coaxially with said first member, wherein said bass loudspeaker or woofer **(16)** is fixedly mounted to said second tubular member **(14)** in that end which is directed towards the open, and wherein said second tubular member **(14)** at said end is mounted on the front plate **(10)** by means of vibration absorbing mechanical mounting means **(22)** for the provision of an essentially vibrationless front plate.

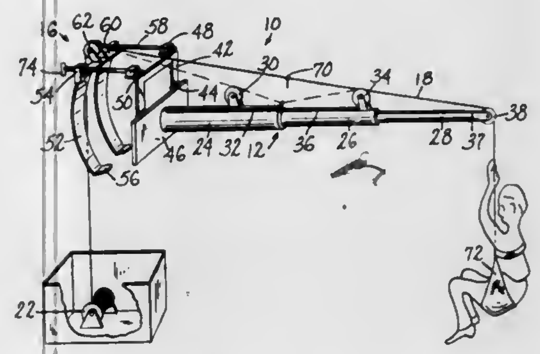
4,440,261
PORTABLE HIGH-RISE ESCAPE DEVICE

Mark J. Clark, 29 Brainerd Rd., Branford, Conn. 06405

Filed Nov. 21, 1980, Ser. No. 208,877

Int. Cl.^{3} A62B *1/02*

U.S. Cl. 182—3 7 Claims



1. A portable high-rise escape device comprising,

a telescoping length extendible boom,

actuable driver means for extending said boom comprising a cannister means connected to said boom to pneumatically extend said boom,

a detachable wall mounting bracket with said boom being connected to said bracket,

a length of cable having a harness at one end, actuator means responsive to a predetermined movement of said cable for actuating said cannister,

winch means to release said cable at a predetermined rate, said cable being partially contained on said winch means, and guide means to guide said cable from said winch means to the outer end of said boom, said guide means being mounted to said boom.

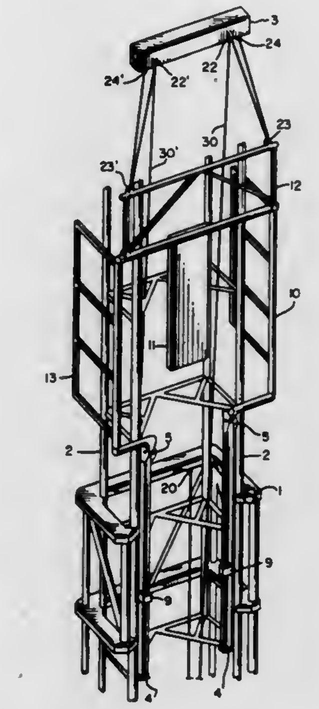
4,440,262
DELAYED DEPLOYMENT PLATFORM

Harlley L. Hunt, Midland, and Ansel T. Fletcher, Odessa, both of Tex., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Feb. 22, 1983, Ser. No. 468,041

Int. Cl.^{3} B66C *23/04, 23/62*

U.S. Cl. 182—114 6 Claims



1. An automatic delayed action platform deployment system for an extensible derrick comprising:

a platform attached to said derrick at an upper extensible section by means of at least one sliding hinge point disposed on said extensible section;

at least one slide guide for guiding said at least one hinge point and allowing relative movement of said at least one hinge point along said extensible section;

stop means disposed along said at least one slide guide for limiting said relative movement; and

means for suspending said platform in a vertical stored position; and

said means for suspending said platform further comprising means for lowering said platform relative to said extensible section to a point where said at least one hinge point coacts with said stop means to further prevent lowering of said platform relative to said extensible section and thereafter permit said platform to rotate about said at least one hinge point to a horizontal deployed position all in automatic response to raising of said extensible section.

4,440,263
ATTACHMENT TO A LADDER

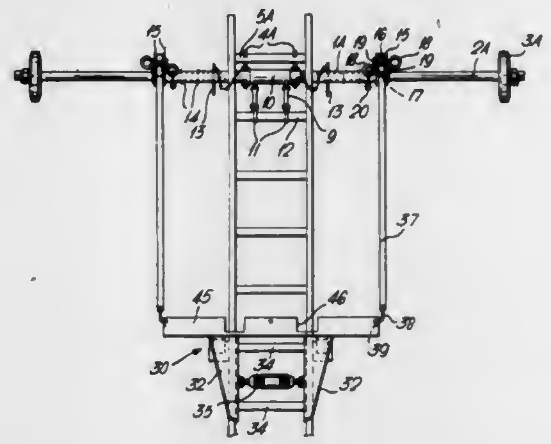
Samuel D. Smith, "Jamada", Newton of Pitcairns, Dunning, Perthshire, Scotland

Filed Jun. 26, 1981, Ser. No. 277,829

Claims priority, application United Kingdom, Jul. 30, 1980, 8024955; May 13, 1981, 8114650

Int. Cl.^{3} E06C *7/16, 7/48*

U.S. Cl. 182—121 7 Claims



1. A ladder attachment comprising an elongate cross-bar whose length is greater than the width of the ladder, attachment means mounted on the cross-bar for securing the cross-bar to at least two rungs of the ladder, a platform assembly which includes a framework having recesses for engagement with at least one other ladder rung extending below said two rungs and supporting a platform member, and support means connecting the platform assembly to the cross-bar.

4,440,264
LOCKING ASSEMBLY FOR A FOLDING SEAT

Silas J. Knoke, Seymour, and James F. Stamper, Nashville, both of Ind., assignors to Lear Siegler, Inc., Santa Monica, Calif.

Continuation of Ser. No. 73,578, Sep. 7, 1979, abandoned. This application May 7, 1981, Ser. No. 261,416

The portion of the term of this patent subsequent to Mar. 23, 1999, has been disclaimed.

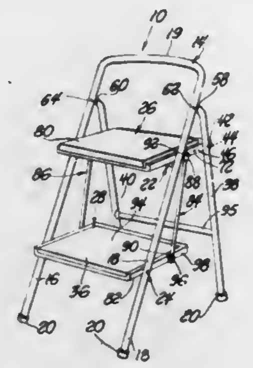
Int. Cl.^{3} A47C *4/00, 3/18, 9/00*

U.S. Cl. 182—126 4 Claims

1. A locking assembly in combination with a foldable seat movable between a folded position and a supporting position, the seat including a support member extending between two of said legs and also including a step having a portion that is moved toward and away from the support member during movement of the seat between the folded and supporting positions, and said portion of the step being supported on the support member in the supporting position, the assembly comprising:

a support plate fixedly mounted to the lower side of the step at said portion thereof, said support plate including a pair of spaced apertures and an integral flange downwardly depending from the support plate between the pair of apertures, and

a broad rigid hook having one end portion extending through said apertures and over said flange to pivotally connect the hook to the step, said hook having a second end portion for engaging the support member in a locked position of the hook to selectively secure the step to the support member and thereby prevent movement of the step with respect to the legs, said hook having a stop on the one end portion thereof for engaging the support plate to position the second end portion thereof for engagement with the support member upon movement toward the support member, said end portions of the hook each having a ribbed construction, and said hook being movable to disengage the support member to thereby permit movement of the seat to the folded position.



4,440,265

HYDRO-PNEUMATIC POSITIONER FOR REMOVAL/OR INSTALLATION OF WING ENGINES OF AIRCRAFTS AND THE LIKE

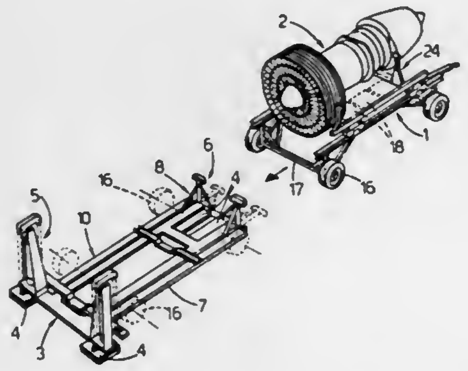
Giulio Spagnoli, Rome, Italy, assignor to Alitalia Linee Aeree Italiane S.p.A., Italy

Filed Mar. 9, 1982, Ser. No. 356,522

Claims priority, application Italy, May 22, 1981, 48524 A/81

Int. Cl.^{3} B25J *5/00*

U.S. Cl. 182—129 **7 Claims**



1. A hydro-pneumatic positioner for a wheeled trailer provided with a cradle for supporting or receiving a wing engine of an aircraft, to be used for the installation or removal of the engine of an aircraft, said positioner comprising: a basic structure underneath of which are fixed four air-cushion devices, and on which are mounted four hydraulic cylinders mounted on the corners thereof, said four cylinders including a front pair of cylinders and rear hydraulic cylinders, each being provided with a hoisting chain; and a frame suspended from said chains and adapted to receive and lift the trailer together with the cradle carrying the engine or without engine between a lowered and an elevated position, said lifting cylinders being designed to perform vertical operative strokes, the front pair of said cylinders being fixed to the basic structure, while the rear hydraulic cylinders are mounted on said structure so as to be able to be simultaneously brought and held in their vertical position, or be simultaneously tilted until they come into contact with the ground in substantial prosecution of the basic structure and vice versa, by a third pair of hydraulic cylinders; the central and rear portions of the positioner having a maximum width less than the inner facing surfaces of the wheels of the trailer, while the height of said central and rear portions of the positioner in the lowered position is less than the level of the distance between any lowermost part of the trailer placed between the wheels and the ground; said basic structure housing and/or supporting: a pneumatic circuitry and means for connecting said circuitry to an external source of compressed air, and for supplying said compressed air to the air cushion devices, as well as to an air driven motor driving a main oil rotary pump; an oil circuitry for supplying the oil to all the hydraulic cylinders, as well as to control, protection and adjusting means and to said main pump as well as to hand pumps for supplying the oil to the hydraulic cylinders and alternatively to the main pump.

4,440,266

RACK AND PINION LIFT SYSTEM

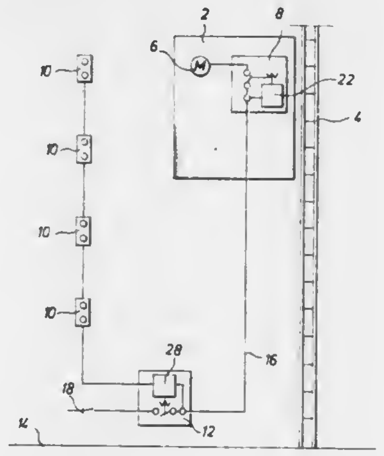
Ulf Köhler, Skellefteå, Sweden, assignor to Linden Alimak AB, Skellefteå, Sweden

Filed May 24, 1982, Ser. No. 381,408

Claims priority, application Sweden, May 26, 1981, 8103312

Int. Cl.^{3} B66B *1/06*

U.S. Cl. 187—29 R **8 Claims**



1. In a rack and pinion lift system, comprising a lift car, electro motor means for driving said car along a lift mast via rack and pinion means, a control unit in said car with a control buttons set including floor call buttons, call button units on landings along said mast, means connecting said call button units to said control unit via a ground level unit, the improvement comprising

(A) sensor means associated with said lift car having means for sensing passage of teeth of said rack and pinion means and producing corresponding position impulses representative of the position of said lift car along said mast

(B) a micro computer system comprising

(a) a programmable micro computer unit in said lift car with means for receiving said position impulses, register means for position impulse numbers based upon said position impulses and representative of the positions of landings, means for collecting and storing call impulses from said call button units and destination impulses from said control button set, and output and control means for controlling operation of the electric motor as determined by received call and destination impulses.

(b) a second micro computer unit associated with said ground level unit having means for scanning said call button units with respect to their state and sending corresponding call impulses to said programmable micro computer unit.

4,440,267

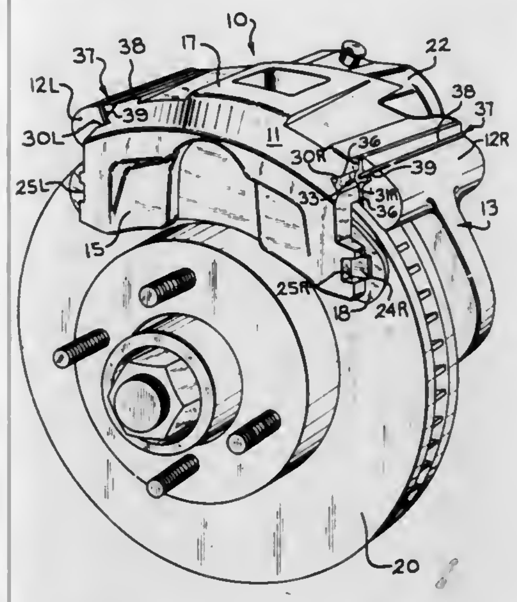
DISC BRAKE

Kamal El-Sheikh, Trenton, Mich., assignor to Kelsey Hayes Company, Romulus, Mich.

Filed Oct. 26, 1981, Ser. No. 314,637

Int. Cl.^{3} F16D *65/38*

U.S. Cl. 188—73.35 **2 Claims**



1. In a disc brake having a disc rotatable about an axis, inboard and outboard friction assemblies engageable with inboard and outboard friction surfaces on said disc, caliper means for forcing said inboard and outboard friction assemblies into frictional engagement with the inboard and outboard friction surfaces respectively, thereby activating said brake, at least two fixed torque receiving arms extending axially over the periphery of said disc straddling said caliper therebetween, said caliper and each of said arms having generally parallel planar opposed abutment surface portions, axially extending grooves intermediate respective planar surface portions, the improvement comprising a generally elongated load bearing pin having a pair of oppositely protruding planar blade portions, said pin being positioned within opposed grooves to slidably support said caliper between said torque receiving arms with said planar blade portions being positioned between and in load receiving relationship with said caliper and arm planar portions.

4,440,268

BRAKE LEVER FOR AN S-CAM AUTOMOTIVE DRUM BRAKE

Sven I. K. Karlsson, Lomma, Sweden, assignor to SAB Automotive AB, Landskrona, Sweden

PCT No. PCT/SE80/00307, § 371 Date Jul. 31, 1981, § 102(e) Date Jul. 31, 1981, PCT Pub. No. WO81/01732, PCT Pub. Date Jun. 25, 1981

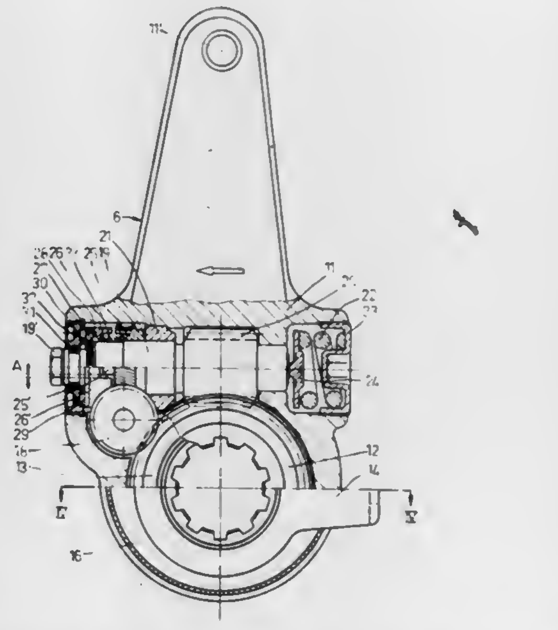
PCT Filed Dec. 1, 1980, Ser. No. 287,747

Claims priority, application Sweden, Dec. 13, 1979, 7910263

Int. Cl.^{3} F16D *65/56*

U.S. Cl. 188—79.5 K **4 Claims**

1. A brake lever adapted for angular movement for attachment to a splined S-cam shaft of an automotive drum brake and connection to a brake cylinder push rod for automatic brake adjustment in the clearance sensing mode comprising in combination, a worm wheel rotatably mounted in a housing of the brake lever and having internal splines for cooperation with the S-cam shaft, and an axially movable worm screw shaft rotatable in the housing perpendicular to the worm wheel and having a worm screw meshing with the worm wheel, and a mechanism establishing a reference point relative to the worm wheel rotation, a control arm carrying a control disc with peripheral gear teeth mounted coaxially with the worm wheel for transmitting a control movement from the reference point by means of a unit coupled between the control arm and axially movable shaft including an intermediate control gear wheel rotatable about an axis substantially perpendicular to the movable shaft meshing with the control disc gear teeth and teeth about a control ring gear wheel, which is thereby rotatable on the worm screw shaft as a function of the angular movement of the brake lever, a force transmitting path between the control ring and the worm screw shaft responsive to slack to automatically adjust the brakes including a one-way clutch with a sleeve and a clutch ring and torque limiting clutch means biased into engagement by spring means engaging and axially biassing the worm screw shaft, means permitting limiting movement of the control ring gear wheel on the worm gear shaft thereby introducing a control gap (A) permitting circumferential play between the control ring and the clutch sleeve as the brake lever moves from normal position which thereby prevents brake adjustment until the play is overcome, and spring means biasing the control ring and the clutch sleeve towards a predetermined initial relative circumferential position wherein the control ring is moved as said function of the brake lever movement by means of said unit coupled between the axially movable worm screw shaft the control ring gear wheel with said play in engagement with said intermediate control gear wheel rotatable about an axis substantially perpendicular to the movable shaft meshing therewith and with the control disc teeth.



4,440,269

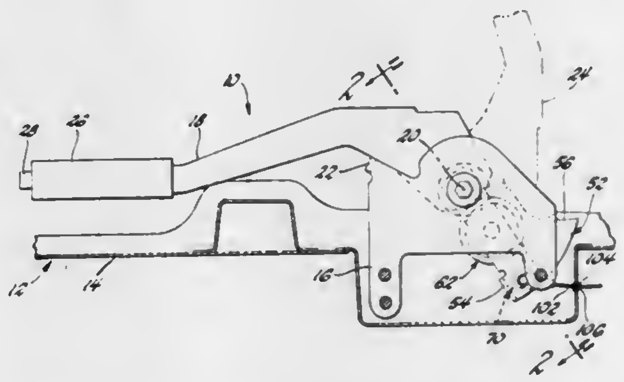
SELF ADJUSTING PARKING BRAKE

Paul J. Harriott, Ithaca, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 6, 1982, Ser. No. 395,144

Int. Cl.^{3} F16D *65/38, 51/04*

U.S. Cl. 188—196 F **5 Claims**



1. In a vehicle parking brake control mechanism for actuating a parking brake by force applied through a force transmitting member:

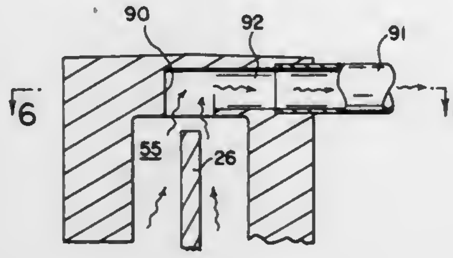
first means including a force storage and dispensing device, said first means being operable to store and maintain a predetermined minimum force in said device and through said device establish and maintain the same predetermined minimum force on said force transmitting member, said predetermined minimum force value being less than the minimum force required to be applied through said force transmitting member to initiate braking action by the parking brake but being sufficient to keep the parking brake in an adjusted but inactive braking condition, incipient to the initiation of braking action, as the parking brake is worn;

and second means including said first means other than said device, said second means when actuated acting to deliver additional force beyond said predetermined minimum force to said force transmitting member to initiate and increase braking action by the parking brake to the desired extent;

said device dispensing stored force as needed to maintain said predetermined minimum force on said force transmitting member after parking brake wear has occurred so as to require adjustment thereof, and having the dispensed force replaced in storage in said device when said first means is next operated in the brake actuating direction.

4,440,270
BRAKE APPARATUS

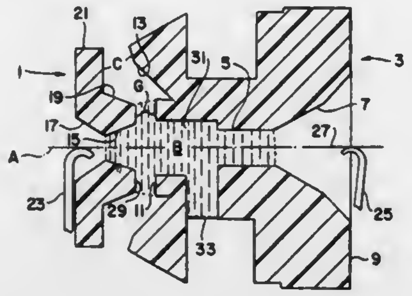
Roderick A. L. Ross, Troy, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
Filed Nov. 2, 1981, Ser. No. 317,703
Int. Cl.³ F16D *65/853*
U.S. Cl. 188—264 AA **8 Claims**



1. In a brake assembly for use in a vehicle having vehicle wheels and a fixed axle housing; certain ones of said wheels having a rotatable support rotated by an axle; said axle located within said axle housing; said rotatable support includes an annular flange; an annular brake disc secured to said flange for rotation with said flange and said rotatable support; said annular flange having an axially extending annular seal flange secured thereto for rotation with said flange; a U-shaped caliper member overlying a portion of the periphery of said brake disc; said caliper member having an inboard side and an outboard side, a plate member interconnects said inboard side of said caliper member to said axle housing; an annular plate secured to the outboard side of said caliper member; a seal secured to the inner periphery of said annular plate member and contacts said axially extending annular seal flange to define a closed chamber between said seal, said annular plate member, said caliper member, said plate member, said axle housing and said support, said annular seal flange; braking means located on said caliper member for movement toward and away from said brake disc; actuating means on said caliper member operative for actuating said braking means for movement into frictional and braking engagement with said brake disc; conduit means connected to said chamber for directing pressurized air to said chamber to effect a flow of air therethrough to cool said brake disc; filtering means connected to said conduit means to filter the flow of air to said chamber; and an exhaust opening in said plate member on said inboard side of said caliper member for connecting said chamber with atmosphere for exhausting air from said chamber.

4,440,271
VISCOUS DAMPENING ARRANGEMENT FOR TAUT-BAND SUSPENSION

Willem J. L. Boreas, Sayerville, N.J., assignor to Sangamo Weston, Inc., Norcross, Ga.
Filed Jun. 10, 1982, Ser. No. 387,102
Int. Cl.³ F16F *9/30;* F16D *57/00*
U.S. Cl. 188—268 **8 Claims**



1. An improved viscous dampening arrangement for a taut-band suspension system in an electrical indicating instrument, the instrument including stator means and rotor means and comprising:

a hub associated with the stator means, the hub having a central bore provided along its longitudinal axis;

a first tapered opening provided at least at one end of the central bore;

an annular lip formed at the other end of the central bore and surrounded by a second tapered opening;

a turret associated with the rotor means, the turret having a pair of tapered openings formed along its longitudinal axis and joined at their narrowest portions;

an exterior tapered portion surrounding one of the tapered openings formed in the turret;

the hub and turret being arranged to receive a taut-band of the taut-band suspension system along their longitudinal axes, the exterior tapered portion of the turret being arranged in a spaced-apart, facing relationship with respect to the annular lip and second tapered opening of the hub;

a viscous dampening fluid provided within the central bore of the hub and in contact with the annular lip thereof and the facing portion of the tapered opening provided in the turret; and

wherein the other tapered opening of the turret, the exterior tapered portion of the turret, and the first and second tapered openings of the hub are all provided with anti-wetting means.

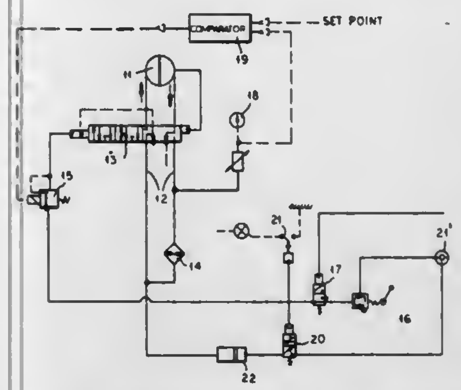
4,440,272
APPARATUS FOR CONTROLLING THE BRAKING EFFECT OF A HYDRAULIC RETARDER

Gerold Bleber, Langenargen, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Fed. Rep. of Germany
Filed Aug. 7, 1981, Ser. No. 290,962
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1980, 3030494
Int. Cl.³ F16D *57/00, 65/78;* B60K *41/26*
U.S. Cl. 188—290 **2 Claims**

1. In a hydraulic retarder system for a vehicle comprising a hydraulic retarder applying a braking force variable in response to hydraulic pressure in said retarder and connected in a hydraulic circulation path with a heat exchanger for dissipating heat from the hydraulic fluid of said retarder, and a control valve responsive to control pressure for varying said hydraulic pressure, said control pressure being a function of displacement of an operator-controlled element, the improvement which comprises the combination therewith of:

sensing means including a temperature sensor having an electrical output signal for detecting the temperature at said heat exchanger;

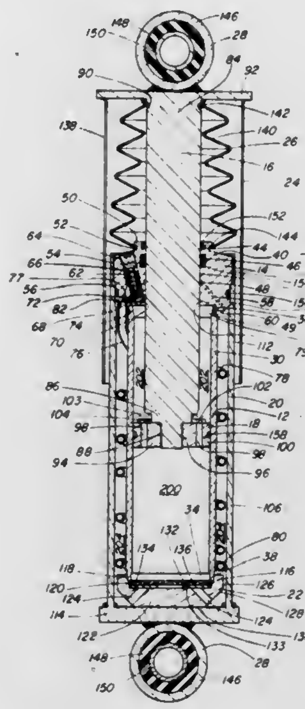
a regulator connected to said sensing means and including a pressure-limiting valve connected between said element and said control valve for limiting said control pressure and for reducing the hydraulic pressure in said retarder independently of the operation of said element to a maximum level determined by the sensed temperature; and



electronic circuit means for transforming said signal into an output controlling said regulator in dependance on the fading of a friction brake.

4,440,273
AERATION PREVENTING SHOCK ABSORBER

William S. Butler, Burleson, Tex., assignor to Halliburton Company, Duncan, Okla.
Filed Dec. 28, 1981, Ser. No. 335,120
Int. Cl.³ F16F *9/34*
U.S. Cl. 188—315 **8 Claims**



1. A shock absorber having fluid therein comprising:

cylinder means;

foot valve body means sealingly engaging one end of the cylinder means, the foot valve body means having apertures therethrough and foot valve plate means controlling the flow of said fluid through said foot body means;

outer case means having cover plate means on one end thereof, the cylinder means and foot valve body means disposed therein;

cylinder head means removably, sealingly engaging the other end of the cylinder means and outer case means, the cylinder head means having a central bore therethrough, annular seal means disposed within the central bore, relief check valve means disposed within a bore in the cylinder head means having an inlet and outlet thereto, and fixed orifice bore means having the inlet thereof communicating with the interior of the cylinder means and the outlet thereof communicating with the outlet of the relief check valve means, the relief valve means including:

annular valve spool means having first and second bores in the interior thereof;

relief valve ball means disposed within the annular valve spool means having a diameter larger than the diameter of the second bore of the annular valve spool means but smaller than the diameter of the first bore of the annular valve spool means;

spring support means disposed within the annular valve spool means, the spring support means comprising a cylindrical shaft having an enlarged head thereon adapted to engage the relief valve ball means;

valve spring means contained within the valve spool means having one end thereof abutting the enlarged head on the spring support means;

valve cap means having one end thereof adapted to abut the other end of the valve spring means; annular seal means located between the annular valve spool means and valve cap means; and

set screw means adapted to engage a portion of the bore within the cylinder head means and having one end thereof adapted to abut the valve cap means while the other end thereof contains a recess therein;

piston means having dust cover plate means secured to one end thereof and a reduced diameter portion on the other end thereof, the piston means slidingly, sealingly engaging the central bore of the cylinder head means;

piston head means secured to the other end of the piston means slidingly, sealingly engaging the cylinder means, the piston head means having a plurality of apertures therein and a piston head plate means slidably disposed on the reduced diameter portion of the piston means overlaying the plurality of apertures in the piston head means to control the flow of said fluid therethrough;

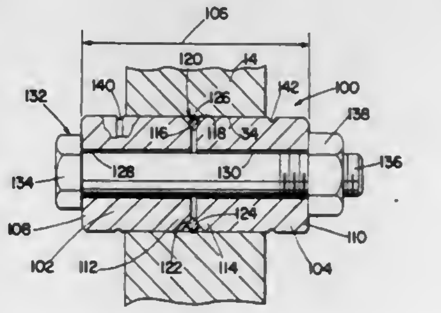
dust cover means having one end secured to the dust cover plate means of the piston means;

piston bellows means having one end secured to the cylinder head means and the other end secured to the end of the piston means having the dust cover plate means secured thereto; and

a plurality of attachment means secured to said shock absorber, one attachment means secured to the cover plate means of the outer case means and one attachment means secured to the dust cover plate means secured to the piston means.

4,440,274
DRUM BRAKE ANCHOR PIN ASSEMBLY

David R. Claydon, Brighton, Mich., assignor to Eaton Corporation, Cleveland, Ohio
Continuation of Ser. No. 218,318, Dec. 19, 1980, abandoned. This application Oct. 12, 1982, Ser. No. 433,575
Int. Cl.³ F16D *51/20;* F16B *2/14*
U.S. Cl. 188—328 **8 Claims**



1. A selectively removable anchor pin assembly for a drum brake having a spider and a pair of generally arcuate brake shoes pivotably mounted on said anchor pin assembly, each of said brake shoes having a pair of generally parallel webs straddling said spider and defining generally concave pivot cavities, said spider having an anchor pin bore therethrough of gener-

ally annular generally uniform inner diameter in which said anchor pin assembly is selectively removably fixedly mountable, said anchor pin assembly comprising:

substantially identical first and second generally cylindrical anchor pin pieces, each of said pieces provided with an axially extending through bore generally concentric with the outer diameter surfaces thereof, said pieces having an outer diameter generally equal to the inner diameter of said anchor pin receiving bore, the combined axial length of said anchor pin pieces exceeding the axial length of said receiving bore, each of said pieces having an outer end for extending beyond said anchor pin receiving bore for providing a fixed cylindrical pivot surfce on each side of said bore and an inner end, each of said inner ends having an axially and radially inwardly extending ramp formed thereon,

an expansion member interposed said inner ends of said pieces, said expansion member having a radially and axially inwardly inclined surface formed on each axial end thereof for sliding engagement with said ramps, said expansion member being radially inwardly resiliently deformable to an outer diameter less than the inner diameter of said anchor pin receiving bore, compression of said expansion member between said pieces effective to radially expand said expansion member to an outer diameter greater than the inner diameter of said anchor pin receiving bore, and

means received through said axially extending bores in said pieces for applying and maintaining an axialy inwardly compressive force on said pieces.

4,440,275

CHECK VALVE FOR AUTOMOTIVE BRAKING SYSTEM

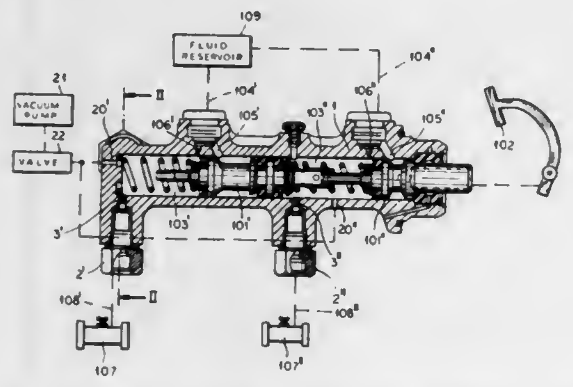
Herbert Sauer, Pfarrweisach, and Günter Gütlein, Ebern, both of Fed. Rep. of Germany, assignors to Fag Kugelfischer Georg Schäfer & Co., Schweinfurt, Fed. Rep. of Germany

Filed Oct. 2, 1981, Ser. No. 308,111

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1980, 3037569

Int. Cl.³ B60T *11/28*

U.S. Cl. 188—352 **10 Claims**



1. A check valve inserted between a master cylinder and a wheel cylinder in a hydraulic braking system in an automotive vehicle, said braking system including a brake pedal for enabling the pressurization of said master cylinder by an operator, said valve comprising:

a valve housing;

linkage means for connecting one end of said housing to said master cylinder and another end of said housing to said wheel cylinder;

flow-regulating means in said housing between said one end and said other end for permitting the flow of brake fluid from said master cylinder to said wheel cylinder during a braking stroke of said pedal and for partially blocking a return flow of fluid from said wheel cylinder to said master cylinder upon a release of said pedal; and

overriding means mounted in said housing and engageable with said flow-regulating means for deactuating same and opening said valve, thereby facilitating an evacuation of air from said system prior to charging same with brake fluid, said overriding means including a first member mounted in said housing for motion transverse thereto and a second member extending longitudinally in said housing from said flow-regulating means towards said first member, said first member being engageable with an end of said second member opposite said flow-regulating means to deactuate same and open communication between said master cylinder and said wheel cylinder.

4,440,276

TORQUE CONVERTER LOCK UP CLUTCH SHOCK ABSORBER WITH PRESSURE TRANSMITTING HOLE THROUGH DISK ELEMENT

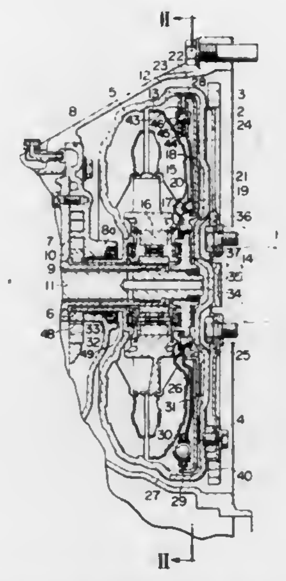
Seitoku Kubo, Toyota; Koujiro Kuramochi, Okazaki, and Tatsuo Kyushima, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jul. 10, 1981, Ser. No. 282,187

Claims priority, application Japan, Jul. 28, 1980, 55-106647

Int. Cl.³ F16D *39/00*

U.S. Cl. 192—3.29 **3 Claims**



1. A rotary power transmission device for transmitting rotary power rotating around a central rotational axis, comprising:

(a) coaxial power input and power output shafts;

(b) a fluid torque converter comprising a pump impeller rotationally connected to said power input shaft, a turbine member rotationally connected to said power output shaft, and a stator member;

(c) a substantially disk shaped clutch assembly coaxial with said torque converter, said clutch assembly comprising a first clutch plate element rotationally coupled to said power input shaft and having a cylindrical outer flange portion firmly connected with a radially outside peripheral portion of said pump impeller, thereby defining an annular space adjacent a radially outer peripheral portion of said turbine member, and a second clutch plate element axially opposing said first clutch plate element;

(d) a rotary shock absorber mounted between said torque converter and said clutch assembly so as to rotationally couple said second clutch plate element and said power output shaft with a certain amount of resilient rotational play therebetween, comprising:

(d1) three axially superposed shock absorber plate elements, one of said three shock absorber plate elements being shaped as a substantially flat disk and the other two of said three shock absorber plate elements being shaped as substantially flat rings axially superposed with an outer peripheral portion of said disk shaped plate element, at least one of said ring shaped plate elements being rotationally coupled to said second clutch plate element, and the two outer ones of said shock absorber plate elements being rotationally coupled together, said disk shaped plate element being formed with an opening therethrough at a radially intermediate portion thereof and located between said turbine member and said clutch assembly and directly rotationally connected at an inner peripheral portion thereof to said output shaft in parallel with and separately from said turbine member; and

(d2) a means for rotationally connecting together the combination of said two outer shock absorber plate elements and the middle shock absorber element with a certain amount of resiliently opposed rotational play being available therebetween; said two ring shaped plate elements, the outer peripheral portion of said disk shaped plate element, and said means for rotationally connecting together the combination of said two outer shock absorber plate elements and the middle shock absorber plate element being located in said annular space; and

(e) hydraulic pressure conducting means for selectively conducting hydraulic fluid pressure for hydraulically biasing said first and second clutch plate elements towards and away from one another, so as to engage to and disengage from one another.

4,440,277

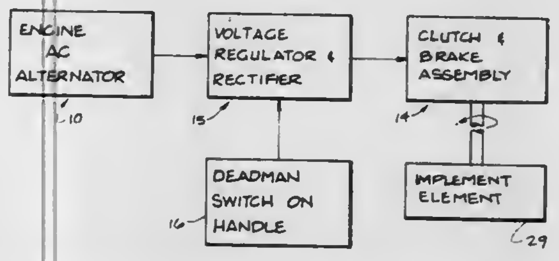
IMPLEMENT CLUTCH AND BRAKE CONTROL

Donald W. Thomson, Spokane, Wash., assignor to Claude W. Morris, Spokane, Wash., a part interest

Filed Oct. 13, 1981, Ser. No. 310,525

Int. Cl.³ B60K *41/24*

U.S. Cl. 192—12 D **3 Claims**



1. An engine operated implement having a clutch and brake control, comprising:

an internal combustion engine having a rotatable output shaft;

a movable implement tool;

an alternator operatively powered by the engine output shaft;

a direct current-operated clutch and brake assembly operatively connected to both the engine output shaft and the movable implement tool for alternate operation as a clutch coupling the implement tool to the engine output shaft or as a brake releasing the implement tool from the engine output shaft and preventing movement of the implement tool, said clutch and brake assembly being normally biased to a first condition where it operates as a brake and being electrically shiftable by direct current to a second condition wherein it operates as a clutch;

controlled rectifier means operably connected between the alternator and the clutch and brake assembly for selectively converting alternating current produced by the alternator in response to engine operation to direct current for operation of the clutch and brake assembly; and electronic switching means operably connected between the alternator and said controlled rectifier means for enabling current flow through said controlled rectifier means when the voltage at the alternator is at or above a predetermined threshold voltage which results from engine operation at the normal engine speed required to power the implement tool.

4,440,278

CLUTCH AND BRAKE DEVICE FOR PRESSES, PUNCHES AND THE LIKE

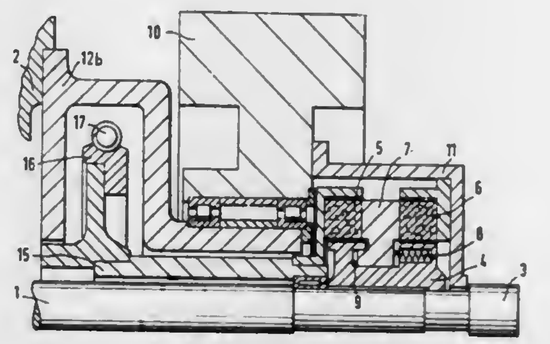
Heinz Weber, Wäschenbeuren, Fed. Rep. of Germany, assignor to L. Schuler GmbH, Fed. Rep. of Germany

Division of Ser. No. 247,739, Mar. 26, 1981, abandoned. This application Jun. 15, 1983, Ser. No. 503,085

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1980, 3011589

Int. Cl.³ B60K *41/24*

U.S. Cl. 192—18 R **4 Claims**



1. A clutch and brake for a press or punch having a flywheel means, and a drive shaft means having an end projecting beyond a support frame of the punch or press, the arrangement including

a friction clutch means for selectively connecting the drive shaft means to the flywheel means,

a friction brake means for selectively braking the drive shaft means,

a hollow support means extending through the flywheel means and surrounding the drive shaft means is provided for supporting the friction brake means,

an annular support means extends over the friction brake means and is attached to the flywheel means for enabling an engagement of the flywheel means with the drive shaft means by the friction clutch means,

a bearing means is provided for supporting the flywheel means on the hollow support means projecting beyond the support frame, the bearing means is arranged between the support frame and the friction clutch means and friction brake means, wherein

the hollow support means includes a hollow shaft having an end facing the support frame and an opposite end forming a support for the friction brake means,

a tubular extension is attached to the support frame and surrounds the hollow shaft for supporting the flywheel means,

a worm gear means is mounted on an end of the hollow shaft facing the support frame, and

a worm drive means adapted to be selectively driven and stopped is disposed in the tubular extension and is engageable with a worm gear means.

4,440,279

CONTROL SYSTEM OR METHOD FOR A FRICTION DEVICE SUCH AS A CLUTCH OR BRAKE

Friedrich Schreiner, Kehlen-Reute, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Fed. Rep. of Germany

Filed Aug. 26, 1981, Ser. No. 296,564

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1980, 3032558

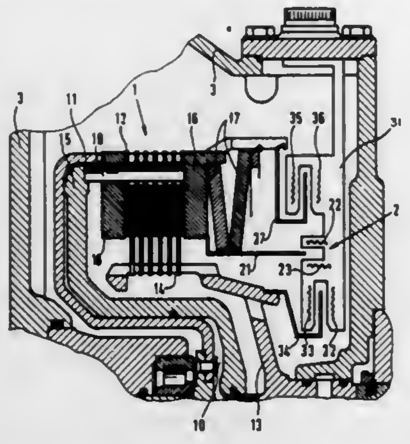
Int. Cl.³ F16D *13/75, 13/58*

U.S. Cl. 192—30 W **12 Claims**

6. A system for controlling a friction device, namely a clutch or brake having a pair of relatively rotatable members at least one of which is axially displaceable for frictional coupling of said members, said system comprising:

means for monitoring the degree of frictional coupling of said members;

signal-generating means responsive to said monitoring means for producing an electrical signal representing a reference point in the axial displacement of said one of said members upon maximum frictional coupling of said members for each actuation of said device;



means for electrically storing said signal representing said reference point for each actuation of said device; and

means for storing data representing a predetermined pattern of actuation of said device, and means for initiating said pattern of actuation of said device at a control point in the displacement of one of said members located at a predetermined distance ahead of the stored reference point of a predetermined actuation cycle.

4,440,280

SPRING CLUTCH MECHANISM

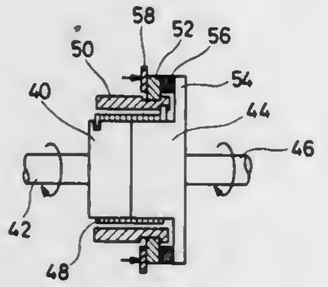
Hideaki Hagihara, Moriguchi, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 28, 1981, Ser. No. 287,799

Claims priority, application Japan, Aug. 1, 1980, 55-110559

Int. Cl.³ F16D *23/00*

U.S. Cl. 192—36 **5 Claims**



1. A spring clutch mechanism comprising:

a first boss secured to a driving shaft;

a second boss secured to a driven shaft;

a coil spring disposed around said first and second bosses, one end of said coil spring being fixed to said first boss;

a first sleeve disposed around said coil spring, the other end of said coil spring being fixed to said first sleeve;

a second sleeve slidably mounted around said first sleeve, said second sleeve being slidable with respect to said first sleeve but not rotatable with respect to said first sleeve;

a flange secured to said second boss and being operatively positioned adjacent to said second sleeve; and

a depression plate disposed adjacent said second sleeve for depressing said second sleeve toward said flange secured to said second boss.

4,440,281

FLYWHEEL CLUTCH ASSEMBLY

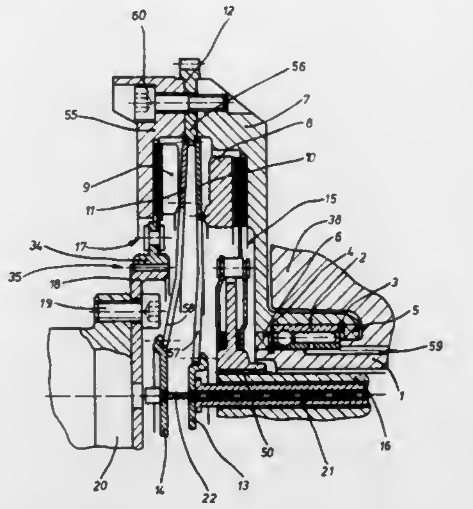
Hubert Hauguth, Steinberg, Fed. Rep. of Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Jun. 17, 1981, Ser. No. 274,394

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1980, 3023294

Int. Cl.³ F16D *21/08, 25/08, 13/44*

U.S. Cl. 192—48.8 **15 Claims**



1. In a flywheel clutch mechanism interposed between the internal combustion engine crankshaft and the transmission of a motor vehicle wherein said clutch mechanism includes a flywheel mass, a separating clutch interposed between said crankshaft and said flywheel mass and a starting and shifting clutch interposed between said flywheel mass and said transmission, the improvement comprising that in the assembly of said clutch mechanism said flywheel mass, said separating clutch and said starting and shifting clutch are all arranged to be initially mounted on the transmission side of said clutch mechanism and operatively supported at said transmission side, and that the clutch disc of said separating clutch and said crankshaft are joined together so as to be nonrotatable relative to each other by a rotatively interlocking connection during the assembly of said combustion engine and said transmission.

4,440,282

CLUTCH DRUM FOR AUTOMATIC AUTOMOTIVE TRANSMISSION

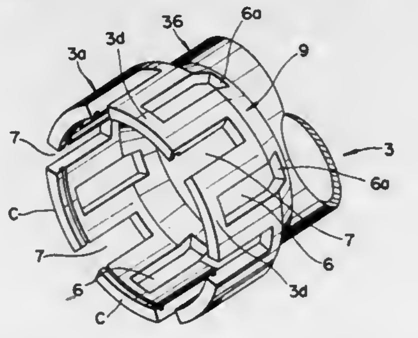
Wataru Ishimaru, Zushi, and Kazuyoshi Fujioka, Tokyo, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 28, 1981, Ser. No. 315,631

Claims priority, application Japan, Nov. 6, 1980, 55-156877

Int. Cl.³ F16D *13/68, 67/04;* **F16H** *57/10*

U.S. Cl. 192—70.2 **4 Claims**



1. In an automatic automotive transmission including a planetary gear train,

a clutch drum comprising:

a large diameter portion;

a small diameter portion;

an essentially frusto-conical section interconnecting said large and small diameter portions;

means defining a plurality of first slots in said large diameter portion which slots extend from one end thereof toward said small diameter portion and which terminate short of said frusto-conical portion, said first slots defining at one end of said drum a plurality of equidistantly spaced castle-like projections;

means defining a plurality of second slots in said drum which slots are each formed in a projection and which each lead from inboard of the end of a projection and terminate in said frusto-conical section.

4,440,283

FRICTION CLUTCH DRIVEN PLATE

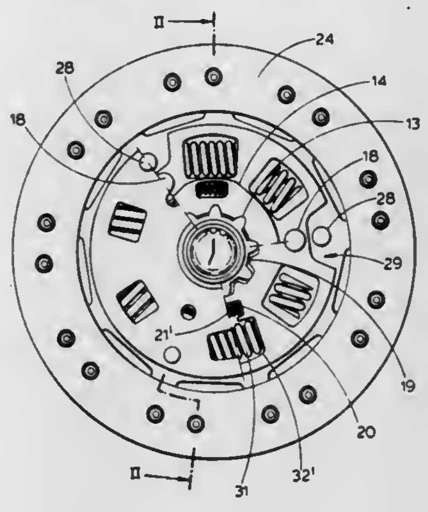
Raymond Nioloux, Saint Ouen, France, assignor to Automotive Products Limited, Warwickshire, England

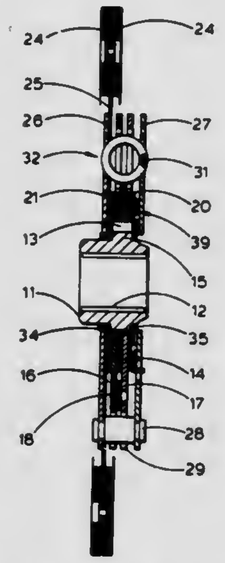
Filed Sep. 9, 1981, Ser. No. 300,648

Claims priority, application France, Sep. 10, 1980, 80 19499

Int. Cl.³ F16D *3/14, 3/66*

U.S. Cl. 192—106.2 **4 Claims**





1. A friction clutch driven plate comprising:

a hub having splines on the outer surface thereof and a hub flange rotationally fast therewith;

a friction facing carrier co-axially mounted on the hub and capable of limited angular rotation relative thereto, said carrier comprising a facing carrier plate and a counter plate which are arranged one on each side of the hub flange;

an intermediate drive means co-axially mounted on the hub and capable of limited angular rotation relative to both the hub and the facing carrier, said drive means comprising two co-axial annular drive plates arranged one on each side of the hub flange, one of the drive plates being interposed between the facing carrier plate and the hub flange and the other of the drive plates being interposed between the counter plate and the hub flange, the drive plates being rotationally engaged with the hub by splines which loosely mesh with the splines on the hub to provide the limited rotation of said drive plates about the hub;

main torsion damper springs resisting rotation of the carrier relative to the intermediate drive means, each of said main spring being accommodated in aligned apertures in the drive plates, the facing carrier plate and the counter plate; and

auxiliary damping springs, softer than said main springs, resisting rotation of the drive means relative to the hub, each of said auxiliary springs being accommodated in aligned apertures in the hub flange and the two annular drive plates.

4,440,284

AUTOMATED ALUMINUM CAN REDEMPTION CENTER FOR DIRECT RETURN DEPOSIT PAYOUT

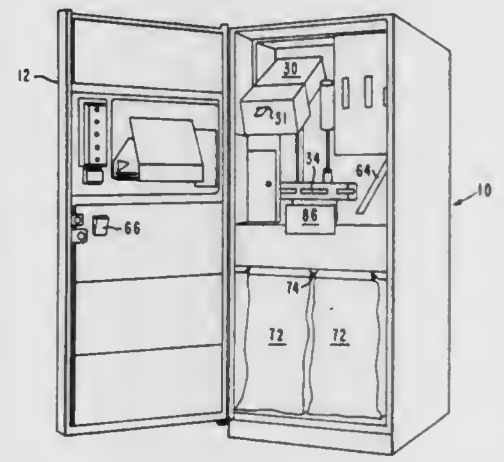
Bruce H. DeWoolfson, Arlington, Va., assignor to Environmental Products Corporation, McLean, Va.

Continuation-in-part of Ser. No. 148,371, May 9, 1980, Pat. No. 4,345,679. This application Mar. 5, 1982, Ser. No. 355,206

The portion of the term of this patent subsequent to Aug. 24, 1999, has been disclaimed.

Int. Cl.³ G07F *7/00*

U.S. Cl. 194—4 R **13 Claims**



1. Apparatus for collecting and storing empty aluminum containers having a distinguishing indicia thereon and for issuing predetermined return deposits for collected containers comprising:

preselection means for exposing a crushed or non-crushed container offered by a customer to an electromagnetic field for identifying whether said container is substantially aluminum without establishing direct electrical contact with said container, and for detecting the presence of said distinguishing indicia on said crushed or non-crushed container;

said preselection means including a container access area configured to accommodate both crushed or non-crushed containers for exposure to said field;

means for accepting only a container identified by said preselection means as being substantially aluminum and as having said distinguishing indicia thereon, independent of the configuration of said container;

dispensing means responsive to said preselection means for dispensing payment in return for containers having a substantially aluminum composition and carrying said distinguishing indicia;

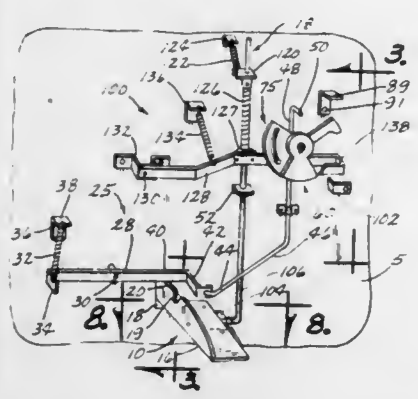
means cooperating with said accepting means for crushing said containers; and

means for storing crushed containers received from said crushing means.

4,440,285
ADJUSTABLE PRICE SETTING MECHANISM FOR A VENDING MACHINE

Francis A. Wittern, Des Moines, and Arthur N. Wirstlin, Altoona, both of Iowa, assignors to Fawn Engineering Co., Des Moines, Iowa

Filed Jun. 24, 1982, Ser. No. 391,565
Int. Cl.^{3} G07F ***5/08***
U.S. Cl. 194—93 **9 Claims**



1. A mechanical control system for a vending machine having a frame and a vending member, comprising:

coin operated means having a shaft rotatable in response to monetary coins inserted therein, said shaft having a starting position and rotating in a first direction to a first position in response to the insertion of monetary coins of a low price denomination, and rotating to a second position in response to the insertion of monetary coins of a high price denomination;

a first cam rigidly secured to said shaft to rotate with said shaft;

a second cam freely rotatable upon said shaft and having a projection secured thereto, said second cam being gravitationally biased in said first direction and said projection being engageable with said first cam; and

a lever holding rod and lever having a "locked" and an "unlocked" position, and being biased to said locked position, said lever holding rod and lever locking said vending member in said locked position and permitting said vending member to vend an article in said unlocked position; said shaft rotating said first cam to said first position in response to the insertion of coinage of a low price denomination and said second cam rotating with said first cam to said first position, due to said gravitational bias in said first direction, said second cam holds said lever holding rod and lever in said unlocked position in said first position and permits said vending member to vend a low price article; said shaft rotating said first cam to a second position in response to the insertion of money coins of a high price denomination, said first cam holding said lever holding rod and lever into said unlocked position in said second position, and permitting said vending member to vend a high price article.

4,440,286
ORIENTATING DEVICE

John W. C. Saxon, Sawtry, England, assignor to Avdel Limited, Hertfordshire, England

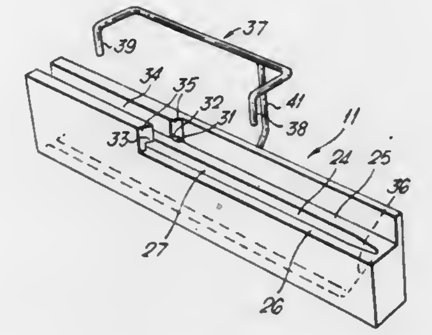
Filed Mar. 5, 1982, Ser. No. 355,216
Claims priority, application United Kingdom, Mar. 13, 1981, 8108004
Int. Cl.^{3} B65G ***47/24***
U.S. Cl. 198—380 **3 Claims**

1. An orientating device for orientating a component comprising an axially elongated body extending on both sides of a transversely extending abutment, the first part of the elongated body on one side of the abutment having a maximum transverse dimension greater than that of the second part of the elongated body on the other side of the abutment but not greater than that of the abutment and one of the body parts being longer in axial extent away from the abutment than is the other of the body parts; which orientating device comprises:

a slotted track along which the component is fed, the slot being so dimensioned as to pass the second part of the component body but not to pass the first part of the body nor the abutment, whereby the component can pivot about the position of engagement of the abutment with the track;

and air blast means arranged to urge the component to pivot as aforesaid so that the second part of the component body enters the slot, whereby the component can take up a desired orientation substantially transverse to the track with the second part of the component body entering into the slot;

wherein said air blast means comprises two air jets arranged so as to act successively on a component fed along the track at two positions spaced apart along the track, whereby when a component of total axial length less than the distance apart of the two positions is fed along the track, the component can be acted on by only one of the air jets at any one time;

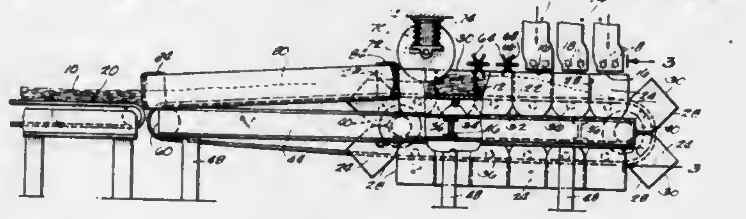


wherein said orientating device also includes abutment stop means situated on the track intermediate the positions of action of the two air jets, the abutment stop means being so arranged and positioned with respect to the positions of action of the two air jets that a component fed along the track and oriented along the track has its movement along the track arrested by the engagement of its abutment with the abutment stop in such a position that, regardless of whether the longer of its body parts is leading or trailing, only the longer of its body parts extends to a position of action of an air jet, whereby that air jet causes the component to pivot about its abutment towards the desired orientation transverse to the aforesaid track.

4,440,287
FLAKE ALIGNER INCLUDING BAFFLES SUPPORTED ON CONTINUOUSLY MOVING CONVEYOR

Anders E. Lund, Houghton; Gordon P. Krueger, Hancock, and Lynn B. Sandberg, Chassell, all of Mich., assignors to Board of Control of Michigan Technological University, Houghton, Mich.

Filed Apr. 5, 1982, Ser. No. 365,623
Int. Cl.^{3} B65A ***47/24***
U.S. Cl. 198—382 **9 Claims**

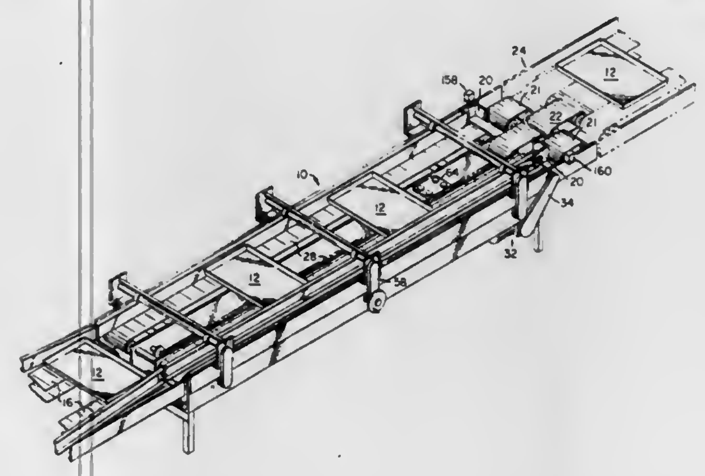


1. Apparatus for forming a continuous elongated loosely felted mat of thin elongated wood flakes with the flakes being aligned in mutually parallel interleaved relation, the apparatus comprising means defining a mat supporting surface and including a plurality of conveyor belts positioned in adjacent side-by-side relation and means for supporting the conveyor belts for continuous movement as a conveyor, means for depositing wood flakes onto the supporting surface to form a loosely felted mat, means positioned between the means for depositing and the supporting surface for aligning the wood flakes in substantially mutually parallel relation and in substantially parallel relation to the direction of movement of the supporting surface and for maintaining the wood flakes in substantially parallel alignment as the flakes fall from the means for depositing onto the supporting surface, said means for aligning and maintaining alignment including a plurality of sets of thin planar baffle plates, each of said sets including a plurality of thin planar baffle plates supported in generally coplanar alignment and in mutually adjacent relation to form an elongated continuous baffle and each of said sets being positioned between pairs of said conveying members, said baffle plates of one set being separated from said baffle plates of an adjacent set by one of said conveyor belts and parallel to the baffle plates of an adjacent set of baffle plates, and means for supporting said baffle plates for movement with said supporting surface.

4,440,288
GROUP END SENSOR

William M. Thomas, Garland, and Richard D. Smith, Richardson, both of Tex., assignors to Stewart Engineering and Equipment Co., Plano, Tex.

Filed Dec. 4, 1981, Ser. No. 327,625
Int. Cl.^{3} B65G ***47/26***
U.S. Cl. 198—425 **25 Claims**



1. A grouping system for grouping objects comprising:

a frame;

a conveyor supported on said frame for moving the objects in a first direction;

first drive means for operating the conveyor to move the objects in the first direction at at least a first relatively fast speed and a second relatively slow speed;

a barrier mounted on said frame moveable between extended and retracted positions, the barrier in the extended position for contacting an object moving on the conveyor to stop the motion of the object in the first direction, the barrier stopping each following object as it contacts the preceding stopped object;

group end sensor means including forward and rearward sensors, each of said sensors for sensing the position of an object on said conveyor, said sensors detecting objects at positions separated by a predetermined distance, said group end sensor means adapted for movement along said frame;

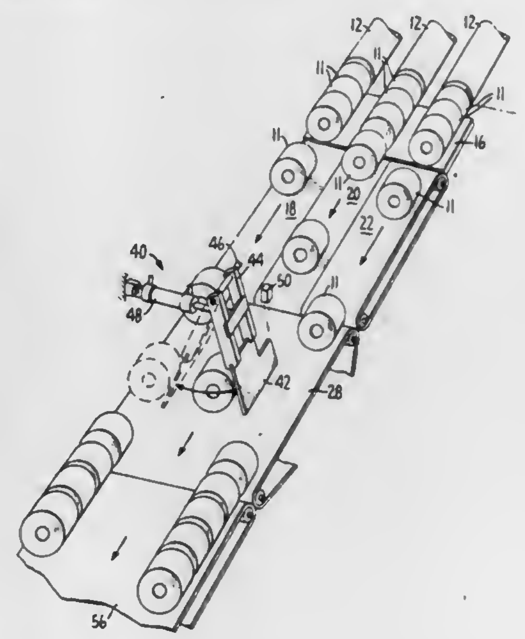
second drive means for operating the group end sensor means in said first direction and in a second, opposite direction; and

control means for controlling said first and second drive means in response to said forward and rearward sensors, said control means operating said conveyor at the first relatively fast speed with the barrier extended and no object contacting the barrier and initially positioning said group sensor means so that the rearward sensor senses an object at the predetermined distance prior to contacting the barrier, said control means being responsive to the sensing of an object by the rearward sensor to operate the conveyor at the second relatively slow speed, said control means thereafter positioning the group sensor means rearward of the last stopped object with the forward sensor sensing said last stopped object and operating the conveyor at the first relatively fast speed until a following object is sensed by the rearward sensor.

4,440,289
DISCRETE ARTICLE TRANSPORT AND CONSOLIDATING SYSTEM

Rudolf R. Weis, Antioch, Calif., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

Filed Dec. 21, 1981, Ser. No. 332,419
Int. Cl.^{3} B65G ***47/68***
U.S. Cl. 198—448 **3 Claims**



1. In combination:

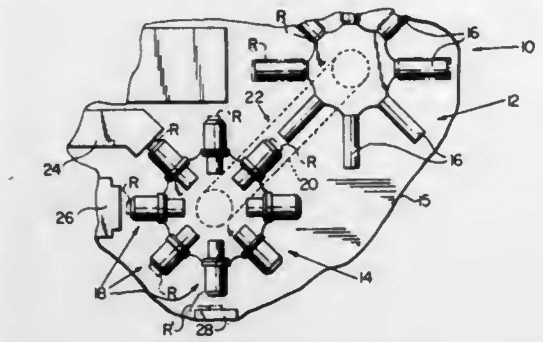
a plurality of conveyors including an inner conveyor and outer conveyors disposed on opposite sides of said inner conveyor and parallel thereto for receiving discrete articles disposed generally side by side and transporting and consolidating said articles, said inner conveyor comprising a differential speed conveyor operating at a speed differing from the speed of said outer conveyors to move the articles on said inner differential speed conveyor out of side by side relationship with the articles on said outer conveyors; and

diverter means for engaging articles moved by the inner differential speed conveyor after they are moved out of said side by side relationship and displacing said articles into linear alignment with the articles moved by said outer conveyors, said diverter means comprising a reciprocal member for engaging articles moved by said inner differential speed conveyor and positively displacing said articles laterally and prime mover means connected to said reciprocal member for effecting back and forth movement thereof whereby articles engaged thereby are displaced to opposite sides of said inner differential speed conveyor onto said outer conveyors.

4,440,290
RECEPTACLE FORMING APPARATUS HAVING SPLIT RECEIVER

Warren E. Johnson, and Andrzej Maliszewski, both of Bristol, Conn., assignors to Sherwood Tool, Incorporated, Kensington, Conn.

Filed Apr. 2, 1981, Ser. No. 250,226
Int. Cl.³ B65G *47/86*
U.S. Cl. 198—479 11 Claims

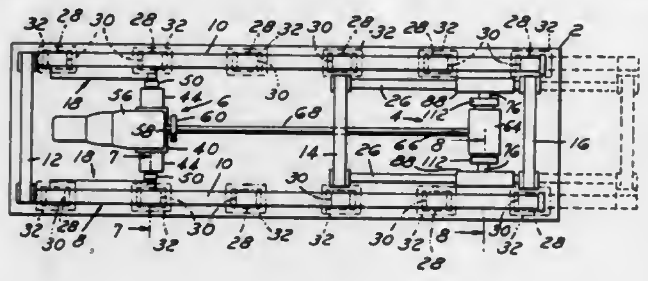


1. In an apparatus for forming a receptacle and comprising a rotatable turret, a receptacle receiver assembly having one part mounted in fixed position on the turret and another part supported for movement relative to the one part between receptacle holding and releasing positions, the one and the other part cooperating to define a radially outwardly opening receptacle receiving bore, a cam disposed at a predetermined location about the periphery of the turret, and cam engaging means associated with the receiver for moving the other part to its receptacle releasing position, the improvement wherein said one part defines the inner end portion of said bore, said other part cooperates with the outer end portion of said one part to define the outer end portion of said bore, and said cam engaging means comprises a yoke disposed below the outer end portion of said one part, a roller follower journalled on said yoke, and operating means including rods extending through said one part, each of said rods having one end connected to said yoke and its opposite end connected to said other part for moving said other part away from said one part in response to engagement of said roller follower with said cam.

4,440,291
DRIVE MECHANISM FOR RECIPROCATING AND MULTIPLE STEP INDEX DEVICES

John H. Brems, Apt. 16-D, 2800 S. Ocean Blvd., Boca Raton, Fla. 33432

Filed Feb. 10, 1982, Ser. No. 347,542
Int. Cl.³ B65G *25/00*
U.S. Cl. 198—488 7 Claims



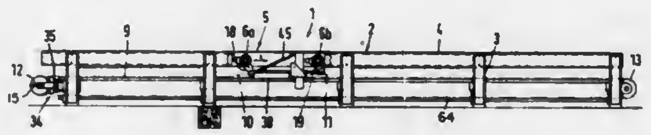
1. In a transfer system in which the motions required of a transfer member are generally, in sequence, a lift motion, a forward transfer motion, and a lowering motion, a modified cycloidal path generating mechanism for said transfer member utilizing higher harmonic component addition to achieve significantly longer substantially vertical movements at the ends of the cycle than an unmodified cycloidal path generating mechanism, comprising:

(a) a first transfer mechanism comprising:
  (1) a frame,
  (2) first shaft means journalled in said frame and rotating about a first axis,
  (3) first crank means mounted on said first shaft means,
  (4) gear means journalled on said first crank means for oscillation about a second axis displaced from said first axis,
  (5) oscillating means operative between said frame and said gear means for oscillating said gear means about said second axis at a frequency which is an integral multiple of the frequency of rotation of said first crank means about said first axis,
  (6) rack means mounted on said transfer member in pitch line contact with said gear means,
  (7) floating frame means operative between said rack means and said gear means for maintaining pitch line contact therebetween, and
(b) a second transfer mechanism comprising:
  (1) second shaft means journalled in said frame parallel to said first shaft means and rotating about a third axis,
  (2) second crank means mounted on said second shaft means,
  (3) connecting means mounted on said second crank means and rotatable about a fourth axis displaced from said third axis a distance equal to the distance between said first axis and said second axis,
  (4) slide means mounted on said transfer member supported by said connecting means, and
(c) drive means interconnecting said first shaft means and said second shaft means to drive said first shaft means and said second shaft means in synchronism and at equal angular velocities.

4,440,292
APPARATUS FOR TRANSVERSE MOVEMENT OF ELONGATED WORKPIECES

Ludwig Regenbrecht, Gevelsberg, Fed. Rep. of Germany, assignor to Rolf Peddinghaus, Ennepetal, Fed. Rep. of Germany

Filed Sep. 4, 1981, Ser. No. 299,790
Int. Cl.³ B65G *25/00*
U.S. Cl. 198—774 3 Claims

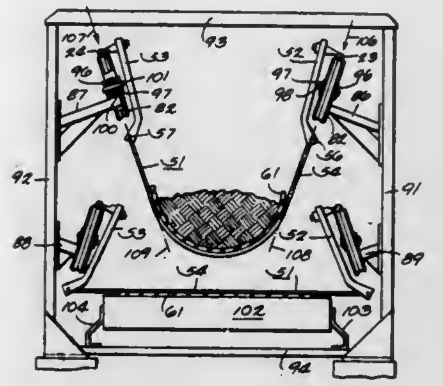


1. Apparatus for horizontal transport of elongate workpieces transverse to their longitudinal direction consisting of frame support means including horizontal guide beams defining longitudinal channels, lifting carriages supported by wheels movable in said channels, single means for moving said carriage relative to said beams in both horizontal and vertical directions whereby the carriage can be raised above the beam to lift the workpiece of the beam and lower the workpiece into the beam when desired, the means for raising each carriage consisting of longitudinally disposed interconnected angle levers and the means for moving the carriages in a longitudinal direction consists of a flexible pulling member disposed over a pulling system including a driving and driven pulley, said angle levers are interconnected by rigid means, said angle levers are pivotally connected to the carriages to adjustably support said carriages, said angle levers are supported by said wheels which move in said channels, means connecting one end of said pulling member to said angle levers and the other end of said pulling member to said carriage.

4,440,293
SLING BELT BULK MATERIAL CONVEYOR

Kenneth N. Allan, Menomonee Falls; Thomas J. Worringer, Wauwatosa, and Robert T. Baugh, Brookfield, all of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Division of Ser. No. 217,587, Dec. 18, 1980, Pat. No. 4,378,875. This application Sep. 30, 1982, Ser. No. 431,157
The portion of the term of this patent subsequent to Apr. 5, 2000, has been disclaimed.
Int. Cl.³ B65G *17/02*
U.S. Cl. 198—813 3 Claims

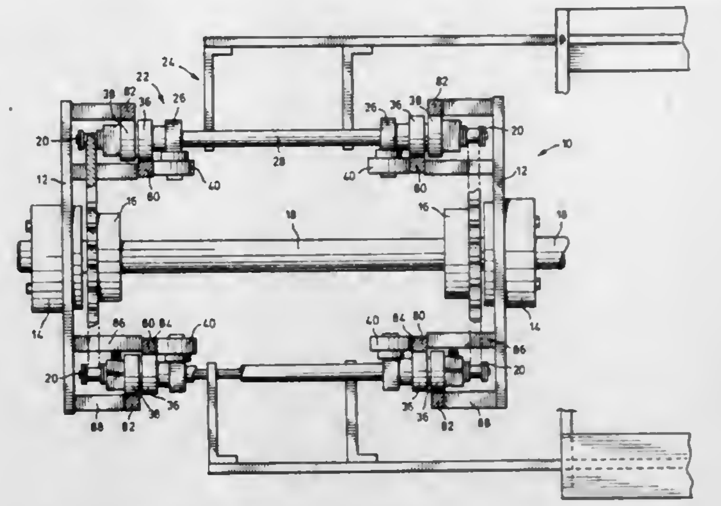


1. A conveyor including a pair of laterally spaced endless support cables each having a forwarding run and a return run between longitudinally spaced tail and head ends of said conveyor, said forwarding runs being substantially coextensive and situated at substantially the same elevation, said conveyor characterized by
- a plurality of transverse slings arranged at longitudinally spaced intervals along said endless support cables, each sling having its opposite ends fastened, respectively, to said cables,
- an endless flexible conveyor belt having working and return runs extending between said head and tail ends of said conveyor, said working run being supported without attachment on said slings in the forwarding run of said support cables,
- a head pulley and a tail pulley supporting said endless conveyor belt,
- means supporting said support cables including
  - a head sheave and a tail sheave supporting each of said support cables,
  - a plurality of cable support sheaves disposed at intervals along, and in supporting relation to, said forwarding run of said support cables, and
  - means rotatably supporting each of said support sheaves on an inclined plane for rotation about an axis substantially at a right angle to the line of force imposed on it by the cable it supports, said line of force lying substantially in said inclined plane,
- a first tensioning winch connected to one of said sheaves supporting one of said support cables individually operable to tension the latter,
- a second tensioning winch connected to one of said sheaves supporting the other of said support cables individually operable to tension the latter independently of said one support cable,
- a belt tensioning means operatively associated with said conveyor belt operable to tension said belt independently of said support cables and
- first and second individually controlled electric motors drivingly connected, respectively, to said first and second tensioning winches individually operable to selectively tension said support cables at relatively high tensions.

4,440,294
CONVEYOR

Marinus J. M. Langen, Rexdale, Canada, assignor to H. J. Langen & Sons Limited, Mississauga, Canada

Filed Feb. 6, 1979, Ser. No. 9,846
Int. Cl.³ B65G *15/60*
U.S. Cl. 198—838 2 Claims



1. A conveyor assembly comprising:
(a) a frame;
(b) an endless conveyor member extending in an endless path, said endless conveyor comprising;
  (i) a pair of endless transmission roller chains supported by sprockets, at least one of which is driven, said chains being arranged in a spaced parallel relationship at opposite sides of said endless path,
  (ii) a plurality of support shafts mounted on and extending laterally between said endless chains,
  (iii) first and second rollers mounted on said support shaft at each side of said conveyor member, the first rollers being longitudinally aligned with respect to one another and the second rollers being longitudinally aligned with respect to one another, the first and second rollers being laterally spaced with respect to one another,
(c) first and second guide rail means mounted on said frame and extending parallel to the longitudinal extent of each side of said endless conveyor, said first guide rail being disposed inwardly of said endless path in alignment with said first rollers for supporting said first rollers against movement inwardly of said endless path, said second guide rails being disposed outwardly of said endless path in alignment with said second rollers and laterally spaced from said first rollers so as to support said second rollers against movement outwardly from said endless path and be out of engagement with said first rollers,
(d) sprocket means on said frame drivingly engaging said endless chains for movement along said endless path with said first rollers and said second rollers rolling along said first and second guide rails respectively while rotating in opposite directions thereby to provide a scuff free support for said endless conveyor.

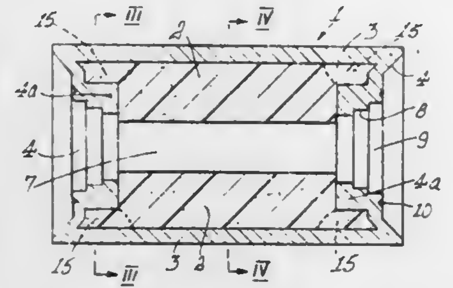
4,440,295
IDLER ROLLER

Thomas J. Blackwood-Murray, Sandton, and David Evans, Kempton Park, both of South Africa, assignors to Aerofoam Industries (Proprietary) Limited, Boksburg North, South Africa

Filed Oct. 31, 1980, Ser. No. 203,079
Claims priority, application South Africa, Nov. 1, 1979, 79/5863; Nov. 1, 1979, 79/5864
Int. Cl.³ B65G *39/10*
U.S. Cl. 198—843 10 Claims

1. An idler roller, comprising: a prefabricated cylindrical core having a central bore therethrough for accommodating an idler shaft, and an outer cylindrical shell of non-foamed syn-

thetic plastic material separately moulded around the outer cylindrical surface and end faces of the core but not within said central bore to provide a tubular load bearing wall and end walls integral therewith, the end walls of the shell each including a cavity in which a bearing for receiving the said shaft is to be mounted.



4,440,296

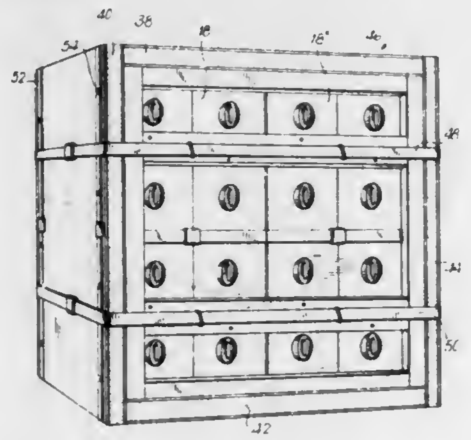
ANTI-PROPAGATION EXPLOSIVE PACKAGING

Philip M. Howe, Conowingo; Gould Gibbons, Finksburg, both of Md.; Clifford L. Aseltine, Houston, and Frank Williams, Rosharon, both of Tex., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 6, 1982, Ser. No. 446,936

Int. Cl.³ F42B *37/00, 39/00;* **B65D** *85/30*

U.S. Cl. 206—3 **9 Claims**



1. A shielding apparatus for a plurality of munitions assembled together into a unit, comprising:

at least a first shield;

said first shield containing a material having an areal density high enough to render fragments from said plurality of munitions non-lethal to nearby munitions;

said material being incapable itself of forming lethal fragments; and

said shield being disposed at distances close enough to at least two adjacent ones of said plurality of munitions that fragments from detonation of one or more of said at least two adjacent ones impact said shield in a plate-like impact.

4,440,297

SELLING PACKAGE FOR SMALL PIECES ESPECIALLY FOR CHRISTMAS DECORATIONS

Harold Wohlfahrt, Herrngasse 2, 8803 Rothenburg ob der Tauber, Fed. Rep. of Germany

Filed May 19, 1982, Ser. No. 379,759

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1982, 8202317[U]

Int. Cl.³ B65D *25/54, 81/02*

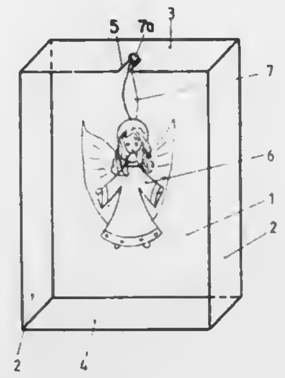
U.S. Cl. 206—45.31 **8 Claims**

1. A box for displaying and selling Christmas decorations or the like products, wherein:

said box has a lower part including a side panel which forms a base for displaying said box in an upright position on one of its sides;

a second panel opposite said base panel;

said second panel having a support means receiving and supporting a substantially flexible hanging member of an article to be displayed and the attached article;



said box being dimensioned that said hanging tab is received in said support means so as to suspend said article above said base panel in freely swinging relation thereto when said box is in said upright position; and

a lid having a window-like opening for viewing an article within said box.

4,440,298

GREETING CARDS

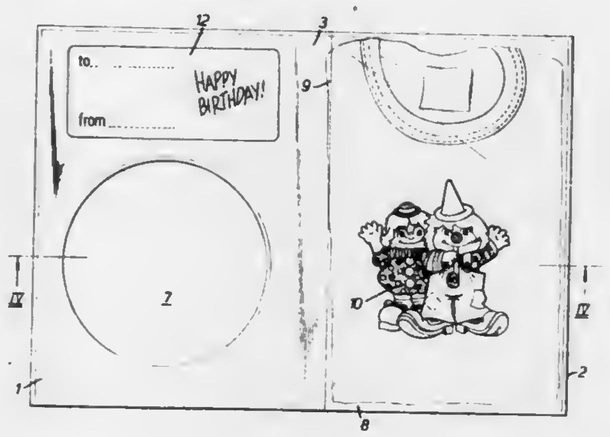
Peter E. Knight, Essex, England, assignor to Adrian Marsh Limited, Essex, England

Filed Jul. 19, 1982, Ser. No. 399,965

Claims priority, application United Kingdom, Jul. 22, 1981, 8122613

Int. Cl.³ B65H *71/00*

U.S. Cl. 206—216 **2 Claims**



1. A greeting card comprising a front cover, a rear cover connected to the front cover by a hinge to enable the card to be opened and closed, a sheet of clear material attached to the inside surface of the cover and sealed thereto along the free edges of said rear cover, said sheet defining with the rear cover a pocket, a garment folded substantially flat and received in said pocket, and a window in the front cover, said garment being visible through said window when the card is closed.

4,440,299

CONTAINER FOR AT LEAST ONE CARRIER MEMBER BEARING A REELED TAPE-LIKE RECORDING MEDIUM, ESPECIALLY A MAGNETIC TAPE CASSETTE, AND AN ASSEMBLY OF TWO OR MORE SUCH CONTAINERS

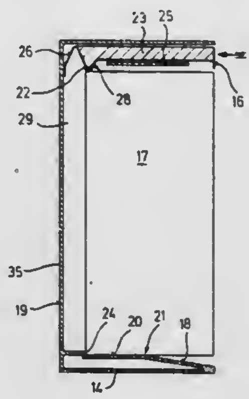
Ludwig Peinecke, Frankenthal, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 19, 1982, Ser. No. 379,886

Claims priority, application Fed. Rep. of Germany, May 25, 1981, 8115534[U]

Int. Cl.³ A47B *81/06;* **B65D** *85/672*

U.S. Cl. 206—387 **5 Claims**



1. A container for accommodating at least one carrier member bearing a reeled tape-like recording medium, especially a magnetic tape cassette, which container consists of a hollow body of essentially right parallelepipedic shape, said hollow body comprising:

two large side walls which are parallel to one another, three narrow walls which interconnect said side walls, and an open side with an insertion/withdrawal opening for the carrier member with the reeled tape;

a support surface which is substantially parallel to the bottom narrow wall and is considerably shorter than the length of the bottom wall of the carrier member,

a ramp declining along an edge from said support surface to said insertion/withdrawal opening;

a holding means on the hollow body, said holding means, while said carrier member is resting with its bottom wall on said support surface, normally engaging said carrier member at its top so as to keep said member from tilting forwardly along said edge; and

means for releasing said holding means from said carrier member so as to permit said member to tilt forwardly, under the effect of gravity, about said edge into a withdrawal position on said inclined ramp, in which position the carrier member protrudes from the insertion/withdrawal opening.

4,440,300

MOLDING DEVICE FOR NESTED PIPES

Tatsuo Kanazawa, Kamagaya, and Tsuneo Suyama, Narita, both of Japan, assignors to Kubota, Ltd., Osaka, Japan

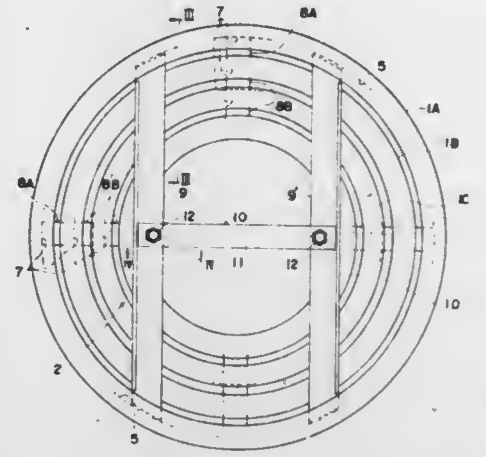
Filed Apr. 14, 1982, Ser. No. 368,133

Claims priority, application Japan, Jul. 31, 1981, 56-121254

Int. Cl.³ B65D *85/20, 85/62;* **F16L** *7/00*

U.S. Cl. 206—446 **10 Claims**

10. A nested pipe assembly comprising nested pipes of different diameters; spigot spacer means interposed between the spigots of each two adjacent pipes; socket spacer means interposed between the socket of each two adjacent pipes restraining the diametrically smaller one of the two pipes from moving axially thereof in the direction of insertion thereof into the other diametrically larger pipe; and a holding device attached to the socket ends of the nested pipes; the holding device including a frame structure adapted to be assembled and disassembled and comprising at least two beam members, each beam member having ends spaced apart a distance less than the internal diameter of the socket end of the diametrically largest pipe and having an intermediate portion abuttingly contacting the socket end face of each diametrically smaller pipe, one of said beam members being provided at both of its ends with engaging portions fitting into an annular groove formed in the inner periphery of the socket of the diametrically largest pipe,



at least one end of the other of said beam members being provided with an engaging portion fitting into said annular groove of the diametrically largest pipe socket, and connecting means detachably connecting said beam members together whereby said beam members and connecting means are assembled to form said frame structure.

4,440,301

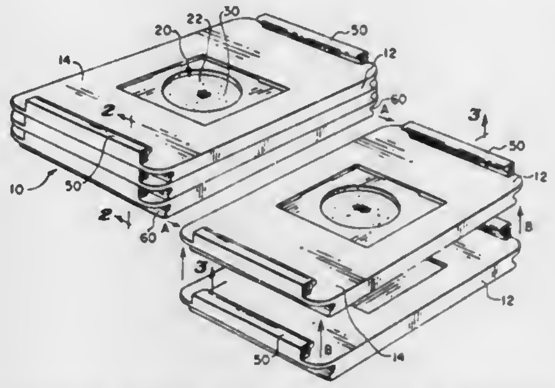
SELF-STACKING REAGENT SLIDE

Franklin S. Intengan, Hialeah, Fla., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Jul. 16, 1981, Ser. No. 283,841

Int. Cl.³ B65D *85/48*

U.S. Cl. 206—456 **17 Claims**



1. A self stacking reagent slide comprising a substantially planar body, having a reaction area, said reaction area being defined by an opening through said planar body and adapted for engagement of a sheet-like porous medium, said planar body being further provided with interlocking means said interlocking means comprising ribs and mating grooves arranged along an axis parallel to the plane of said planar body so as to permit the sliding engagement and disengagement of the top face of said slide with the bottom face of a slide of like construction and the sliding engagement and disengagement of the bottom face of said slide with the top face of a slide of like construction.

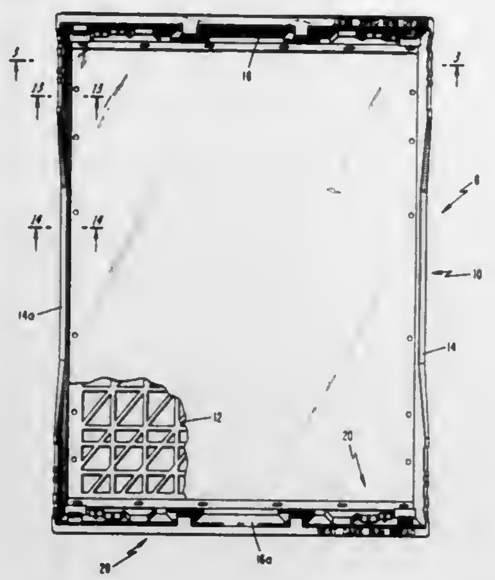
4,440,302
NESTABLE AND STACKABLE BASKET ASSEMBLY

Charles R. Ehrman, Memphis, Tenn.; Ronald W. Killgo, Athens, Tex., and Paul P. Piper, Jr., Memphis, Tenn., assignors to Piper Industries, Inc., Memphis, Tenn.

Filed Nov. 18, 1981, Ser. No. 322,655

Int. Cl.³ B65D *21/06*

U.S. Cl. 206—506 **21 Claims**



1. A nestable and stackable basket assembly enabling a plurality of like basket assemblies to nest within each other at adjustable heights in stacked relationship, comprising:

(a) a bottom wall, end walls and side walls forming an upwardly open basket body;

(b) stacking tower means including stepped slot means located in each end wall and projecting from said end walls to provide nesting stop surfaces located at different and corresponding heights;

(c) lug means supported on and projecting from the upper portion of each of the end walls, each of said lug means having an upwardly projecting support surface, said lug means being laterally and slidably movable along the end walls such that the support surfaces of the lug means can be vertically aligned for supporting engagement with the corresponding stop surfaces of like basket assemblies, whereby multiple nested and stacked positions of said basket assemblies may be obtained.

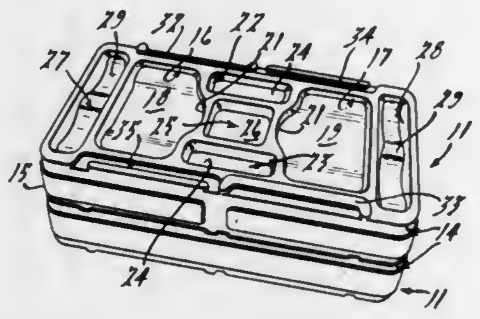
4,440,303
TRAY

Richard H. Seager, Mystic, Conn., assignor to King-Seeley Thermos Co., Norwich, Conn.

Filed Nov. 16, 1981, Ser. No. 321,418

Int. Cl.³ B65D *21/02*

U.S. Cl. 206—509 **1 Claim**



1. An insulated tray having spaced upper and lower surfaces, said upper and lower surfaces being formed with a plurality of different shaped depression means therein for receipt of food articles or the like, said depressions including a pair of elongated depressions each extending along one side of said upper surface substantially between opposite marginal edges, said elongated depressions each having the same configuration, said depressions on said upper surface and said lower surface being configured to present the same appearance regardless of which surface faces upwardly and regardless of which said of the exposed surfaces lies to the right of the viewer, interlocking means formed on said upper surface, and interlocking means formed on said lower surface, said interlocking means comprising only a relatively shallow recess and a complimentary relatively low projection formed adjacent each other on each of the marginal edges of each of said tray surfaces, said recesses and said projections lying on opposite quadrants of the respective tray surfaces, said recesses and said projections having a U-shape in plan, said upper and lower surface interlocking means being configured so that pairs of said trays may be stacked one upon the other and interlocked against relative transverse movement, said interlock means being further configured so that the pairs of trays may be stacked with either tray inverted relative to the other with both trays upright, or with both trays inverted.

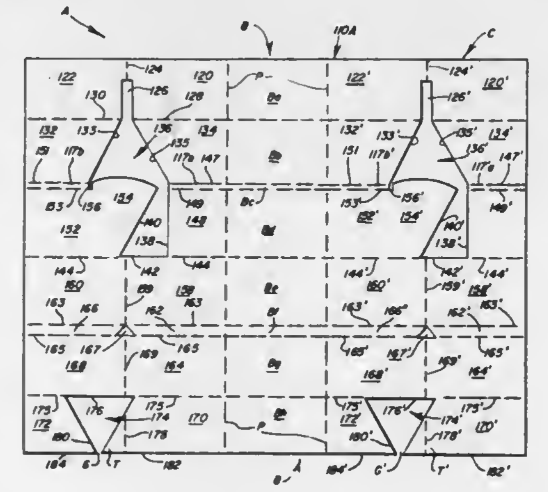
4,440,304
PROTECTIVE PADS WITH SELF-LOCKING PANELS AND BLANK THEREFOR

Matthew S. Konopko, Chicago, Ill., assignor to Stone Container Corporation, Oak Brook, Ill.

Continuation-in-part of Ser. No. 262,193, May 11, 1981, Pat. No. 4,372,446. This application Mar. 15, 1982, Ser. No. 358,334

Int. Cl.³ B65D *81/10*

U.S. Cl. 206—586 **25 Claims**



1. A pad for protection of a crated object formed from a single blank of foldable sheet material, said pad comprising:

A. a pair of multiple-ply wall formations intersecting to form two walls of a corner configuration;

B. a multiple-ply base formation connected to both of said walls at substantially right angle in said corner configuration;

C. said base formation being of generally L-shaped configuration having conjoined first multiple-ply leg and second multiple-ply leg formations; and

D. at least one said ply in at least one of said leg formations including a mitered base panel having a tip formation formed by the intersection of at least one mitered edge with at least one other edge of said panel, said tip formation being slidably and releasably compressed in the direction of coplanar engagement thereof with a second base panel forming one of said plies in said other leg formation, to releasably lock engagement of said panels within said corner configuration while allowing release of said locked engagement by slidable, coplanar withdrawal of said tip formation from said engagement.

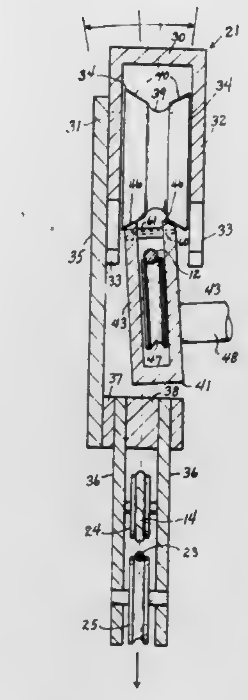
4,440,305
CARRIAGE FOR CABLE LOGGING SYSTEM

Cleveland J. Biller, Morgantown, and David D. Johnson, Booth, both of W. Va., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 210,460, Nov. 25, 1980, abandoned. This application Nov. 12, 1982, Ser. No. 441,198

Int. Cl.³ B66C *21/00*

U.S. Cl. 212—90 **11 Claims**



1. A logging system comprising yarder means, tailspar means, skyline cable means interconnecting the yarder means and the tailspar means, intermediate support means located between the yarder means and the tailspar means, said intermediate support means comprising an upwardly facing channel shaped member having upstanding side walls provided with support pulley means journalled between said side walls, said side walls extending uniformly from end to end of said channel shaped member, means supporting said channel shaped member substantially parallel with said skyline cable means with the cable means supportingly engaged on said pulley means and received in said channel shaped member, load carriage means provided with carriage pulley means normally supportingly engaged on said skyline cable means and being engageable on the top edges of said side walls, means to elevate the load carriage means and disengage the carriage pulley means from the skyline cable means responsive to the movement of the carriage means over the channel shaped member, wherein the top edges of the side walls of said channel shaped member are upwardly and inwardly bevelled, wherein the carriage pulley means has tread means shaped to substantially conform with the upwardly and inwardly bevelled track surfaces defined by said side wall top edges, wherein said tread means comprises substantially frusto-conical, inwardly tapering pulley peripheral surfaces on the carriage pulley means spaced to engage on the bevelled top edges of said channel shaped member, and wherein said frusto-conical peripheral surfaces are substantially wider than the bevelled track surfaces of said side wall top edges to allow variable angling of the load carriage means relative to said channel shaped member.

4,440,306
TAMPER-EVIDENT CLOSURE

E. James Van Buskirk, Norwich, and James Ennis, Preston, both of Conn., assignors to Silver Industries, Norwich, Conn.

Filed Jan. 12, 1983, Ser. No. 457,370

Int. Cl.³ B65D *55/02*

U.S. Cl. 215—230 **12 Claims**

1. A tamper evident closure for a container having a threaded neck comprising:

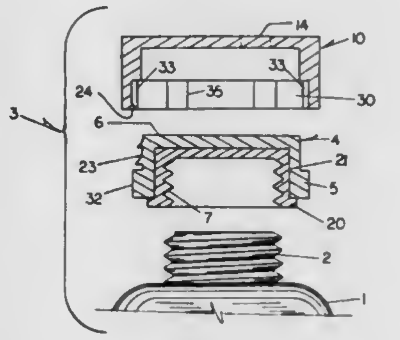
(a) a cap having a side portion and a top portion, and cap threads associated with the side portion for engaging the neck threads such that the cap may be threaded onto the neck in a clockwise direction to close the container and threaded from the neck in a counter-clockwise direction to open the container;

(b) an enclosing means for enclosing the side portion and the top portion of the cap and being rotatable about the cap in the counter-clockwise direction;

(c) visible warning indicia disposed on at least one of the side portion and the top portion of the cap;

(d) transparent means associated with the enclosing means wherein the warning indicia on the cap is visible through the transparent means when the indicia and transparent means are in alignment with each other;

(e) pre-positioning means disposed on said enclosing means and said cap for releasably initially pre-positioning the enclosing means on the cap at a predetermined position where the said warning indicia is not aligned with nor visible through the transparent means;



(f) clockwise anti-rotation means disposed on said enclosing means and said cap for preventing clockwise rotation of the enclosing means about the cap so that the enclosing means and cap may be clockwise rotated to thread the cap into the neck and close a filled container without disturbing the pre-positioning of the enclosed means on the cap;

(g) counter-clockwise rotation limit and locking means disposed on said enclosing means and said cap for limiting the counter-clockwise rotation of the enclosing means about the cap to a predetermined position where said warning indicia and transparent means are aligned with each other, and for permanently locking the enclosing means and cap together in that predetermined position;

whereby rotation of the enclosing means about the cap in the counter-clockwise direction to first open the container results in the warning indicia being permanently visible through the transparent means.

4,440,307
CONTAINER ASSEMBLY

Herbert D. Bartels, Palos Heights, and Leonard A. Maliszewski, Western Springs, both of Ill., assignors to The Continental Group, Inc., New York, N.Y.

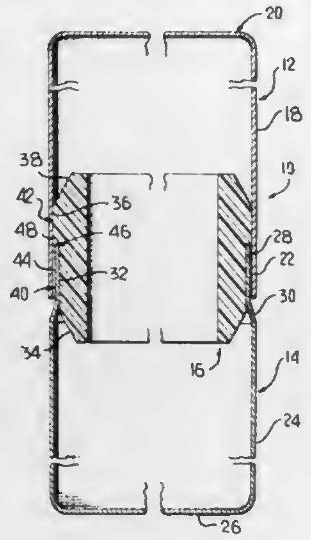
Filed Jun. 30, 1978, Ser. No. 921,035

Int. Cl.³ B65D *7/00*

U.S. Cl. 220—4 B **9 Claims**

1. A container assembly comprising a pair of cup-shaped container halves and a coupling sleeve, said container halves including first and second container halves having free ends of different diameters and including an outer free end portion and an inner free end portion each terminating in a free end, said inner and outer free end portions being in telescoped relation

with one another and with said coupling sleeve, said free end portions being disposed entirely to one side of said coupling sleeve in a radial direction, said coupling sleeve being disposed radially inwardly of said free end portions.



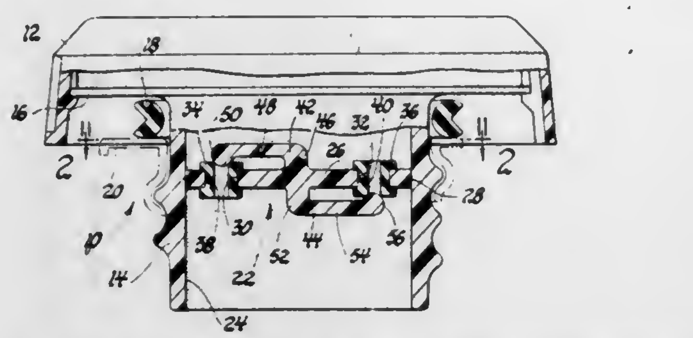
4,440,308
FUEL CAP VALVE STRUCTURE

Steven F. Baker, Bellevue, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 20, 1982, Ser. No. 451,277

Int. Cl.^{3} B65D *51/16*

U.S. Cl. 220—204 **3 Claims**



1. A valve structure for use in a threaded closure of a fuel cap for providing a superatmospheric pressure relief and a subatmospheric pressure relief, said valve structure comprising; a flat plate member having spaced flat surfaces and a cylindrical outer surface adapted to be secured to the inner surface of the threaded closure; two apertures extending between the flat surfaces on said flat plate member; two grommet members formed of resilient material each disposed in respective ones of said apertures and each grommet having a central opening and spaced ridge surfaces contacting the flat surfaces of the flat plate member; and a pair of stem members with each stem having a body portion integral with and extending normal to respective ones of the flat surfaces and a flexible arm portion extending from said body portion parallel to the respective flat surface and terminating in a valve member which engages and sealingly closes a respective grommet member.

4,440,309
HERMETICAL STOPPER FOR LIQUID RECEPTACLE

Tsuyoshi Morimoto, Osaka, Japan, assignor to Totoku Co., Ltd., Osaka, Japan

Filed Oct. 18, 1982, Ser. No. 434,897

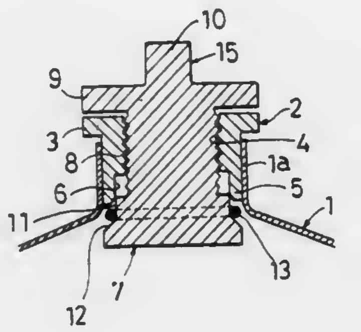
Claims priority, application Japan, Oct. 22, 1981, 56-157778[U]

Int. Cl.^{3} B65D *53/00*

U.S. Cl. 220—235 **3 Claims**

1. A hermetical stopper used for a liquid receptacle, which comprises;

providing a holding member down the bottom of the main body of said stopper which is to be inserted into the discharge port of said receptacle, said holding member projecting below said main body and being made to shift in the direction of entering and leaving said main body by the action of an operating means being located on the upperside of said main body;



mounting an O ring externally on the outer circumference of the projecting part of said holding member; and

making said O ring swell outward by the shifting movement of said holding member to the side of said main body, whereby said O ring is made to closely adhere to the inner wall of said liquid receptacle.

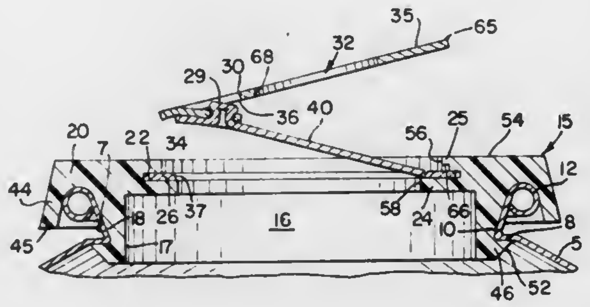
4,440,310
CLOSURE FOR DOMED BEVERAGE CONTAINERS AND THE LIKE

William M. Heyn, New Canaan, Conn., assignor to The Continental Group, Inc., Stamford, Conn.

Filed Feb. 2, 1983, Ser. No. 463,230

Int. Cl.^{3} B65D *17/34*

U.S. Cl. 220—270 **16 Claims**



1. In combination, a container having an end portion defining an open end, a plastic fitment, said end portion and said fitment having cooperating means providing sealing attachment of said fitment to said container, said fitment having an opening, a closing disk, means connecting said disk to said fitment whereby said disk closes off the opening, said disk having a weakening line defining an opening panel in said disk, and manually operable tab means cooperating with said disk to break said disk along said weakening line for removal of said opening panel and providing access to contents of said container.

4,440,311
SEALED MOISTUREPROOF CONTAINER

Louis S. Hoffman, Morristown, and Susan L. Kurlander, Hoboken, both of N.J., assignors to H. P. Hood Inc., Boston, Mass.

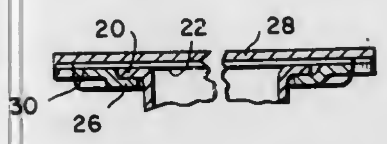
Division of Ser. No. 181,154, Aug. 25, 1980. This application Jun. 28, 1982, Ser. No. 392,649

Int. Cl.^{3} B65D *41/16, 41/18*

U.S. Cl. 220—306 **6 Claims**

1. A container having an open end, an outwardly-extending end flange extending continuously peripherally of the open end disposed in the plane of the open end and a removable lid applied to the open end comprising a surrounding structure positioned peripherally of the end flange having outwardly and inwardly-extending flanges, the outwardly-extending

flange of the surrounding structure lying in the plane of the end flange and the inwardly-extending flange lying below the end flange in parallel relation to the end flange and a film sheet adhesively secured to the end flange and to the outwardly-extending flange of the surrounding structure with adhesive such that the bond between the end flange and the outwardly-extending flange is greater than the bond between the film and the end flange so that by grasping the lid and pulling upwardly thereon to disengage the inwardly-extending flange from beneath the end flange, the bond between the film and the end flange can be broken and the film peeled away from the end flange.



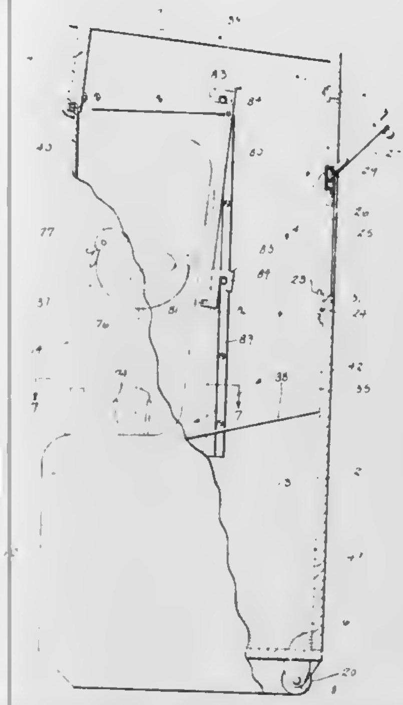
4,440,312
VENDING MACHINE WITH FRONT DISPLAY AREA

Robert L. Glaser, Deerfield, Ill., assignor to L. M. Becker & Co., Inc., Appleton, Wis.

Filed Nov. 25, 1981, Ser. No. 324,798

Int. Cl.^{3} G07F *11/44*

U.S. Cl. 221—24 **4 Claims**



1. In a vending machine having a merchandise chamber for a flowable body of merchandise items, said flowable body being of a selected normal depth, wherein the chamber comprises a bottom wall, a top wall, a vertical front wall that is at least partially transparent, vertical side walls, a back wall, mechanized dispensing means near the bottom of the chamber for dispensing items of merchandise to the exterior of the chamber, and a display member behind the front wall and disposed above the normal merchandise depth, improvement wherein:

the portion of the chamber below the selected normal depth is a lower storage area, and the portion of the chamber above the selected normal depth is an upper chamber;

there is a vertical hopper partition extending between the side walls behind the display member to divide the upper chamber into a front display area and a rear hopper, both of which extend above the normal merchandise depth, the portion of the lower storage area in front of the partition being a lower frontal storage chamber, the lower frontal storage chamber being suitable for storing a plurality of said merchandise items at a selected normal depth below said display member and being at least partially unseparated from said front display area, the bottom of the partition being spaced above the bottom wall a distance corresponding to the normal merchandise depth to limit to that depth the body of merchandise that can flow from the rear hopper into the lower frontal storage chamber and so as to allow for a refilling of the lower frontal storage chamber from merchandise items stored in the rear hopper; and

there is a loading aperture near the top of the hopper that allows merchandise to be introduced from the exterior of the machine into the hopper.

4,440,313
VENDING MACHINE FOR FLAT ARTICLES

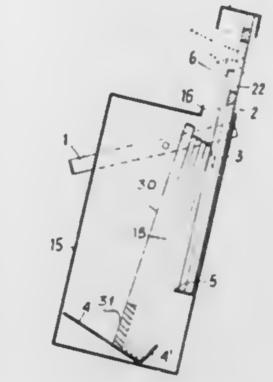
Manfred Krassnig, Karl-Friedrich-Gauszstrasse 33 (Kärnten), A-9020 Klagenfurt, Austria

Filed Oct. 27, 1981, Ser. No. 315,676

Claims priority, application Austria, Oct. 30, 1980, 5359/80; Aug. 17, 1981, 3593/81; Fed. Rep. of Germany, Sep. 14, 1981, 3136334; Sep. 14, 1981, 8126732[U]

Int. Cl.^{3} B65H *3/22;* G07F *11/16*

U.S. Cl. 221—213 **9 Claims**



1. In a vending machine for flat articles, such as newspapers and the like, having a housing in which a delivery slot for the articles is provided, a delivery device actuatable by a handle disposed outside the housing, the delivery device having sharp projections directed in a delivery direction and facing an article to be delivered, a support plate on which the articles stand being inclined downwardly toward the delivery device and at its lower edge having an upwardly extending bend, the improvement wherein the delivery device comprises

an ejection plate means carrying said sharp projections approximately at a center thereof and upon operation of the handle for being moved into a delivery position in which said ejection plate means extends in part out of the delivery slot,

at least one supporting projection at an edge of said ejection plate means opposite the delivery slot, said at least one supporting projection is directed towards the support plate,

said ejection plate means being arranged inclined rearwardly, the support plate forming an acute angle with said ejection plate means, and wherein

said lower edge of said support plate is disposed away from a path of travel of said ejection plate for holding said articles away from said sharp projections prior to operation of said handle, the positioning of said support plate providing for engagement of one end of an article while an opposite end nearer said delivery slot is permitted to rest upon said ejection plate thereby providing for engagement of said sharp projections only after movement of said delivery plate.

4,440,314

METHOD AND APPARATUS FOR THE AUTOMATIC DYNAMIC DOSING AT LEAST OF ONE FLUID COMPONENT OF A MIXED FLUID

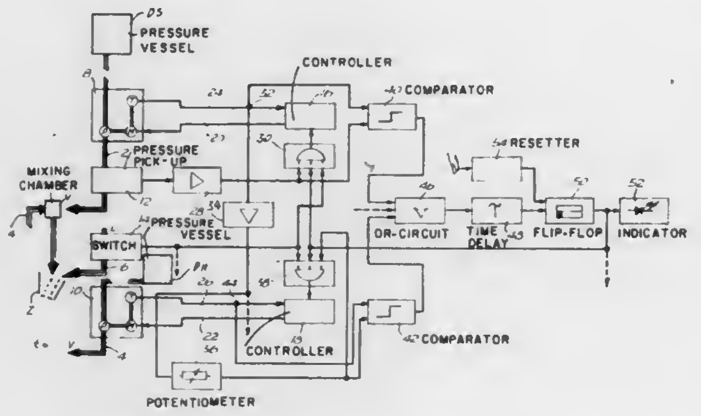
Kurt Vetter, Rechbergweg 24, Remseck 3, Fed. Rep. of Germany 7148 , and Werner Schweiker, Fasanenweg 8, Gemmrigheim, Fed. Rep. of Germany 7121

Continuation of Ser. No. 972,373, Dec. 22, 1978, abandoned. This application Jul. 13, 1981, Ser. No. 282,564

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1977, 2758096

Int. Cl.^{3} B67D *5/32, 5/52;* G01F *5/00;* G05D *11/00*

U.S. Cl. 222—39 13 Claims



1. In an apparatus for performance of a method for the automatic dynamic dosing at least of one liqiud component of a mixed liquid, particularly of a hardener of a 2 component-lacquer with mother lacquer, with which the flow of a pressure-transported main component is measured and the flow of a pressure-fed secondary component which is to be dosed is regulated and moreover adjusted corresponding to a predetermined ratio of the two components to be mixed, wherein the measured flow of the main component is used as a variable desired value of the nominal value of the main component for the control thereof and the flow of the main component is controlled such that a control value (actual value) thereof corresponds to the desired value, and controlling the flow of the secondary component by using the control value (the actual value) of the flow of the main component for determining the desired value of the flow of the secondary component in the predetermined ratio to this control value, and having one pressure vessel containing the main component and one pressure vessel containing the secondary component, an analog measuring transducer which produces an electrical value proportional to the actual flow of the main component, a first servo controlled system including a first geared pump for feeding the secondary component in the first servo controlled system, a first electrical machine which is operatable as a motor and drives the first geared pump, the geared pump forming a first regulating element with the first electrical machine, a first electronic four-quadrant controller for the first electrical machine and a digital potentiometer for adjusting to the predetermined ratio the quantities of the secondary component relative to the main component, the improvement further comprising

a second servo controlled system for the main component, including

a geared pump means for feeding the main component in the second servo controlled system, said geared pump means being arranged between the pressure vessel containing the main component and said measuring transducer, the latter also constituting a part of the second servo controlled system,

a second electrical machine which is operatable as a motor and constitutes means for driving said geared pump means for the main component,

said geared pump means with the second machine associated therewith forms a second regulating element, and

a second electronic four-quadrant controller operatively connected to said second electrical machine associated with the main component and with said measuring transducer, and

two tacho-generators are coupled with respectively each said first and second electrical machines and said first and second electronic four-quadrant controllers and constitute parts of said first and second servo controlled systems,

said digital potentiometer is connected to an electrical connection line in said second servo controlled system between one of said tacho-generators and said second electronic four-quadrant controller, said first electronic four-quadrant controller being also connected to said first electrical machine and connected to said digital potentiometer.

4,440,315

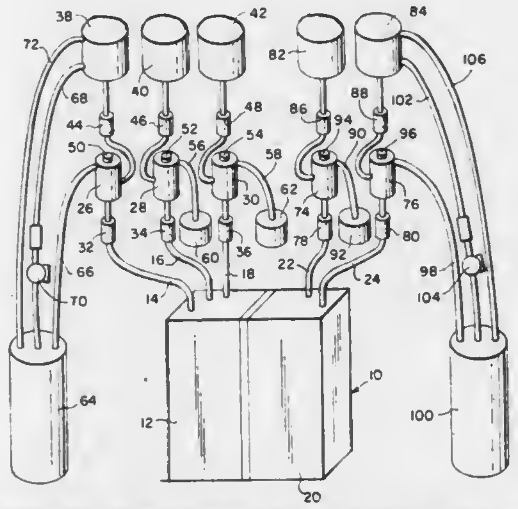
AUTO FLOW SYSTEM

Lev Slobodnik, 185-01 Hillside Ave., Apt. 5-P, Jamacia, N.Y. 11432

Filed Nov. 20, 1981, Ser. No. 323,652

Int. Cl.^{3} B67D *5/08*

U.S. Cl. 222—56 9 Claims



1. An automatic flow system for a mixing device which produces level signals corresponding to the quantity of the solution in the device, said system comprising:

a plurality of containers, each retaining a respective predetermined volume in accordance with desired mixing portions;

a first plurality of control valves respectively controlling the flow between said containers and said device;

a plurality of storage drums;

a second plurality of control valves respectively controlling the flow between said storage drums and said containers;

a control circuit responsive to a low level signal from said mixing device for operating said first plurality of control valves to supply said mixing device with said predetermined volumes, and responsive to a high level signal for closing said first plurality of control valves and opening said second plurality of control valves to refill said containers from said storage drums; and

said system further comprising at least one supply tank coupled to a corresponding one of said storage drums, and pump means controlling the flow between said supply tank and said corresponding storage drum, said pump means responsive to the high level signal for commencing operation, and stop operation by means of the limit switch on one of said plurality of containers.

4,440,316

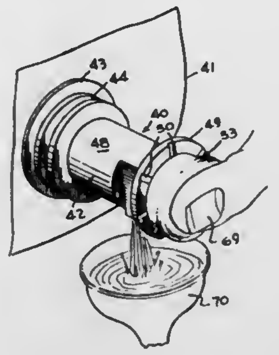
COMBINED PIERCER AND VALVE FOR FLEXIBLE BAG

William C. Christine, Catasauqua, Pa., assignor to Trinity Associates, Nazareth, Pa.

Continuation-in-part of Ser. No. 124,971, Feb. 27, 1980, abandoned, and Ser. No. 317,261, Nov. 2, 1981, abandoned. This application Jun. 11, 1982, Ser. No. 387,436

Int. Cl.^{3} B67B *7/26*

U.S. Cl. 222—83.5 2 Claims



1. A valve for use with a flexible film bag comprising a valve body including a first flange secured to the outer surface of said bag, a second flange spaced outwardly from said first flange, said valve body including a cylindrical portion, a third flange adjacent to the outer end of said cylindrical portion, there being a plurality of radially disposed slits in said third flange, an outwardly projecting portion on the outer end of the cylindrical portion, and said outwardly projecting portion having slots registering with said slits, a resilient deformable cap engaging the outwardly projecting portion of said valve body, a circular valve seat on the inner portion of said body, there being a plurality of concentric ridges on said valve seat, a wall portion on the outer end of said valve body, there being a central opening in said wall portion, a movable piercer including a shaft portion projecting through the opening in said wall portion, a snap through connector on the outer end of said shaft portion engaging said cap, a valve element on said shaft portion mounted for movement into and out of opened and closed relation with respect to said valve seat, said piercer including on its inner end a cutting edge, said piercer including a cylindrical section having longitudinally extending grooves in its outer surface, there being a discharge spout in the lower end of said valve body.

4,440,317

STERILE LIQUID STORING AND DISPENSING APPARATUS

James A. Clark, Honeoye Falls, and Henry J. Emmel, Irondequoit, both of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Aug. 28, 1981, Ser. No. 297,383

Int. Cl.^{3} B65D *35/28*

U.S. Cl. 222—103 11 Claims

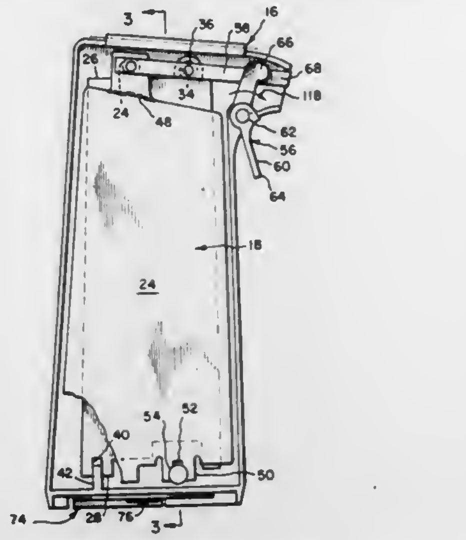
1. A sterile liquid storing and dispensing apparatus, comprising:

a sealed flexible container for sterile liquids and having an integral dispensing spout therein;

a housing for said sealed flexible container, said housing including first and second portions being cooperatively engageable so as to facilitate access to and retention of said sealed flexible container, said housing further including an aperture therein being configured to receive said dispensing spout;

pressure means pivotally mounted to one of said first and second housing portions for engaging said sealed flexible container to exert a continual pressurizing force thereon when said sealed flexible container is positioned within said housing; and

a selectively operable valve mounted in said housing so as to press against said dispensing spout to normally close said dispensing spout in a first position and being movable to a second position to release pressure to permit opening of said spout, said pressure means exerting continual pressure against said sealed flexible container and forcing liquid therefrom when said valve is in its second open position until said valve returns to its first closed position, the continual pressurizing force being exerted on said flexible container by said pressure means preventing outside contaminants from being transmitted back to the liquid within said sealed flexible container.



4,440,318

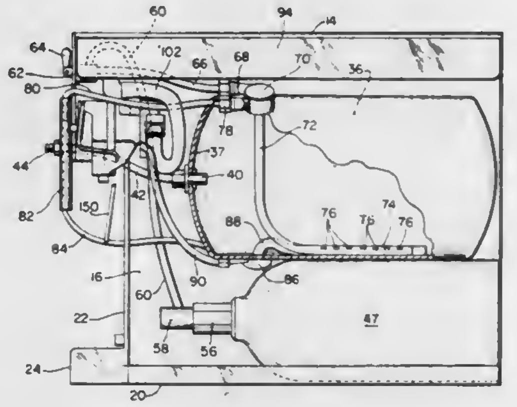
BEVERAGE DISPENSER

Irving Berger, 2170 NE. First Ave., Boca Raton, Fla. 33432

Filed Mar. 11, 1980, Ser. No. 129,205

Int. Cl.^{3} B67D *5/62*

U.S. Cl. 222—129.1 14 Claims



1. A portable beverage dispenser for use in a refrigerator comprising a housing, a water container located in said housing and having a water inlet joined thereto for receiving water from a source for introduction into said water container, a water connector mounted in said housing at the front thereof for exterior access thereto, said water connector being interconnected to said water inlet that is joined to said water container, and a flexible hose disconnectably secured to said water connector and to a tap water outlet for directing tap water to the interior of said water container, and a carbonated water outlet communicating with the interior of said water container, a gas vessel located in said housing adjacent to said water container and having a carbon gas under pressure therein, a gas conduit extending from said gas vessel and communicating with the interior of said water container, means connected to said gas vessel for periodically supplying said carbon gas to said water container through said gas conduit, wherein said gas cooperates with said water upon refrigeration thereof to produce carbonated water in said water container, a dispensing assembly mounted on said housing and including a plurality of dispensing valves, one of which communicates with said water container for receiving carbonated water therefrom, at least

one syrup container mounted in said housing and communicating with another of said dispensing valves for directing syrup thereto, said dispensing assembly further including a mixing chamber with which said valves communicate, and means joined to said dispensing assembly for actuating said valves for simultaneously introducing the carbonated water and syrup into said mixing chamber for mixing therein, whereafter the carbonated mixture is dispensed into a drinking container, a second syrup container mounted in said housing, said dispensing assembly including at least one other dispensing valve that has communication with said second syrup container, and a flavor selector device that is engageable with said dispensing valves and that is movable into engagement with a selected valve to provide for the combined dispensing of a selected syrup and said carbonated water to obtain the carbonated mixture in the drinking container, said selector device being laterally movable to simultaneously engage the valve for dispensing said carbonated water and a selected syrup valve for jointly introducing the carbonated water and selected syrup into said mixing chamber for the dispensing of the carbonated mixture into said drinking container.

4,440,319

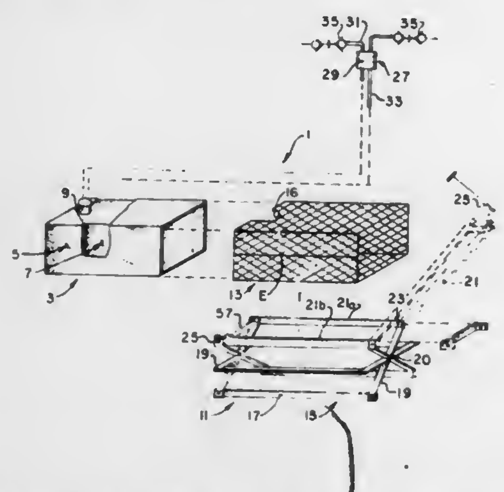
SYSTEM, APPARATUS, AND METHOD OF DISPENSING A LIQUID FROM A SEMI-BULK DISPOSABLE CONTAINER

Harold L. Nitchman, 1230 Parody, St. Charles, Mo. 63301, and William B. Cunningham, Jr., 916 Woodshire La., St. Louis, Mo. 63141

Filed Jul. 21, 1981, Ser. No. 285,611

Int. Cl.³ B67D *5/60;* **F25J** *5/60*

U.S. Cl. 222—131 **29 Claims**



1. A system for dispensing of a liquid from a container containing a supply of said liquid therein, said container being of liquid impervious construction and having at least one opening therein, means sealably cooperable with said at least one opening of said container for permitting pressurization of said liquid within said container and for pressure dispensing said liquid from within said container, and pressure containment means for receiving and for withstanding pressure forces exerted on said container during dispensing of said liquid from therewithin said pressure containment means comprising a containment vessel incapable of sealably holding gas pressure therewithin for receiving said container and a frame into which said containment vessel with said container received therein is removably installed, said container having axial and circumferential pressure forces applied thereto when internally pressurized, said frame at least in part carrying said axial pressure forces applied to said container and said containment vessel at least in part carrying said circumferential pressure forces and substantially limiting expansion of said container upon internal pressurization of said container.

4,440,320

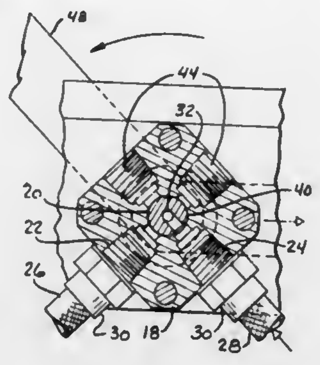
FOAM DISPENSING APPARATUS

Steven A. Wernicke, 407 E. Elm, Wheaton, Ill. 60187

Filed Nov. 30, 1981, Ser. No. 325,907

Int. Cl.³ B67D *5/60, 1/08, 5/08*

U.S. Cl. 222—145 **6 Claims**



1. A foam dispenser for converting a plurality of foam components into an expanded foam and having means for flushing the dispenser with a cleaning solution after the foam is discharged comprising, in combination:

(a) a barrel having a plurality of passages formed therein which communicate with a mixing chamber;

(b) a nozzle connected to the barrel having a bore therethrough, one end of which communicates with the mixing chamber while the other end provides an opening for discharging the expanded foam from the dispenser;

(c) a tube for carrying each foam component to the dispenser, each such tube having a corresponding tube for carrying the cleaning solution to the dispenser;

(d) a rotary valve member for each pair of foam component and cleaning solution tubes, each such valve having a single passageway formed therethrough with an inlet and outlet, each valve being mounted for movement on the barrel so that the inlet of each valve is rotatable between positions nearly coterminous with the outlets of the foam component tubes and the cleaning solution tubes, and the outlet of the valve remains in communication with the mixing chamber; and

(e) means for moving all valves in unison between communication with the foam component carrying tubes and communication with the cleaning solution carrying tubes so that after the foam components have been mixed and the expanded foam discharged from the dispenser the entire dispenser, from the point where the foam components enter the dispenser, can be flushed with the cleaning solution.

4,440,321

DEBRIS RECEPTACLE, COVER, AND CONTENTS COMPRESSOR AND DISCHARGE ASSEMBLY

Robert G. Campbell, Collingswood, and Warren A. Campbell, III, Audubon, both of N.J., assignors to Hilldale Enterprises, Annapolis, Md.

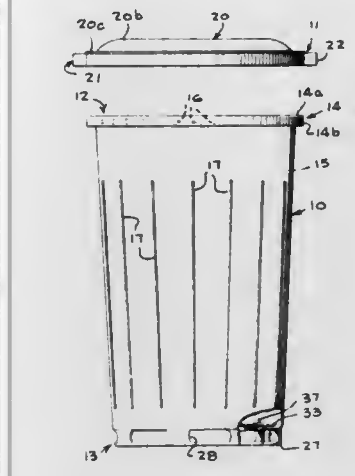
Filed Jun. 16, 1982, Ser. No. 389,451

Int. Cl.³ B67D *5/32;* **B65D** *90/00*

U.S. Cl. 222—153 **8 Claims**

1. A receptacle and cover assembly for collecting lawn debris and the like and including means for assisting transfer of the contents to expendable lawn trash bags and the like, comprising a main receptacle body section in the shape of an upwardly opening container having a lateral side wall terminating in a lip formation at the upper end thereof bounding the top opening and a lower edge formation at the bottom of the receptacle body section for supporting the same in upright position on a supporting surface, a removable cover member for said receptacle body section, the body section having a centrally open outer bottom wall portion extending inwardly from the side wall at a position spaced slightly above said lower edge formation defining an inwardly projecting shelf-

like ledge extending inwardly from the side wall as an encircling formation bounding the center opening thereof, a moveable bottom panel member forming a discharge assist piston providing collectively with said outer bottom wall portion the bottom of the receptacle having its outer peripheral portions overlying the shelf-like ledge formation and collectively therewith forming the bottom of the receptacle, the center opening in said bottom wall portion being large enough for passage of the operator's hand therethrough to manually engage and force said bottom panel member from the bottom wall portion of said receptacle body section toward the open upper end thereof when the cover is removed and an expendable debris collecting bag is fitted over the receptacle body portion to facilitate transfer of the contents of the body section into the expendable bag, said receptacle body portion and said bottom wall portion being formed of resiliently deformable molded plastic material, said bottom panel member having catch formations integrally formed thereon, and said bottom wall portion having integrally formed slots for receiving and releasably interlocking with said catch formations for releasably restraining the bottom panel member latched to the bottom wall portion.



4,440,322

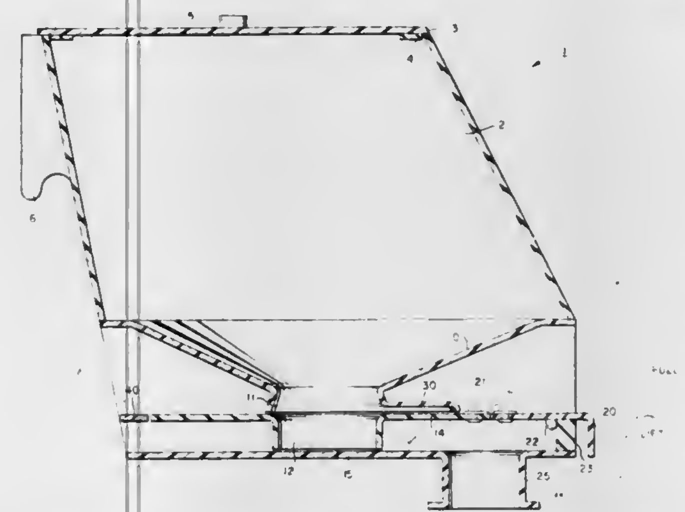
DISPENSER FOR NUTS OR THE LIKE

Joseph D. Henry, 2728 E. Huntington, Duarte, Calif. 91010

Filed Sep. 28, 1982, Ser. No. 425,298

Int. Cl.³ G01F *11/10*

U.S. Cl. 222—153 **5 Claims**



1. A dispenser of small objects of similar size comprising:
a hopper for said objects having a top opening;
a lid adapted to close said opening and fitted thereto;
said hopper having a funnel shaped bottom leading downwardly to a circular gate;
said gate having further a conical extension which diverges downwardly and which ends in a lower edge which is everywhere in the same horizontal plane;
a transfer slide mounted for limited horizontal movement immediately adjacent the lower edge of said gate;
a bottomless measuring cup formed in said transfer slide of such size and so located as to be in register with said gate when said transfer slide is in one of its limits of movement;
a horizontal stationary bottom plate located immediately adjacent the lower edge of said measuring cup;
said horizontal bottom plate having an opening herein of such size and so located as to be in register with said bottomless measuring cup when said transfer slide is in its other limit of movement;
a chute depending from the edges of the said opening in said bottom plate;
handle means articulated to said transfer slide whereby said transfer slide may be manually moved horizontally between its limits of motion;
said handle means being provided with catch means, which must be released by lifting the handle, before the handle means can be used to move said transfer slide.

4,440,323

DEVICE FOR DISPENSING METERED QUANTITIES OF FLUID FROM A CONTAINER

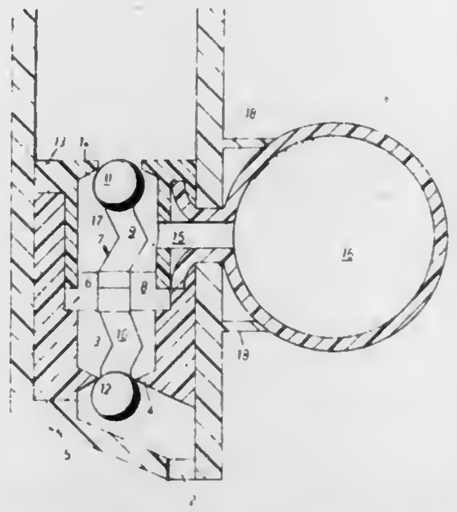
Gustav E. V. Beason, Malmö, Sweden, assignor to Patra AG, Lucerne, Switzerland

Filed Nov. 9, 1981, Ser. No. 319,729

Claims priority, application Sweden, Nov. 12, 1980, 8007934

Int. Cl.³ G01F *11/32*

U.S. Cl. 222—209 **8 Claims**



1. In a device for dispensing metered quantities of fluids from a container said device comprising a through-flow passageway having a fluid outlet opening, a valve chamber in said passageway, and a pressurizing bulb in communication with said valve chamber, an upper valve seat and a lower valve seat, said upper and lower valve seats delimiting said valve chamber, an upper valve body arranged to be pressed against said upper valve seat into sealing position in response to an excess pressure in said valve chamber but to be pulled away from said upper valve seat to expose the latter in response to a vacuum pressure in said valve chamber, a lower valve body arranged to be pulled against said lower valve seat into sealing position against the latter in response to a vacuum pressure in said valve chamber but to be pressed clear away from said lower valve seat so as to open the latter in response to an excess pressure in said valve chamber, the improvement comprising a plate positioned in said valve chamber between said valve bodies, said plate being arranged to allow passage of fluid, and resilient arm members interconnecting said valve bodies and said plate.

4,440,324

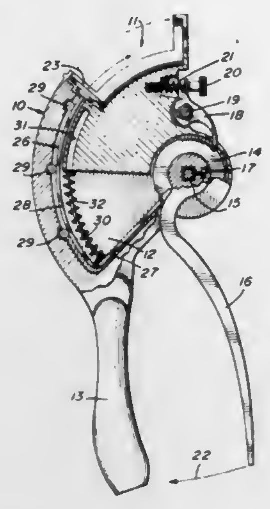
CARTRIDGE-TYPE DISPENSER GUN

Maurice Lebecque, 7849 Bloomfield St., Apt. 3, Montreal, Quebec, Canada H3N 2H4

Filed Jun. 4, 1982, Ser. No. 385,309

Int. Cl.³ B67D *5/42, 5/46*

U.S. Cl. 222—326 **15 Claims**



1. A cartridge-type dispenser gun comprising a body defining a longitudinally arc-shaped cartridge chamber, a hand-controlled actuation assembly operatively connected to said body, a piston connected to the actuation assembly and displaceable longitudinally in the cartridge chamber, a pawl and ratchet assembly connected to the hand-controlled actuation assembly and stepingly holding the piston in advanced position in the cartridge chamber, and spring means connected to the piston and operatively retracting the same in the cartridge chamber upon release of the pawl and ratchet assembly.

4,440,325

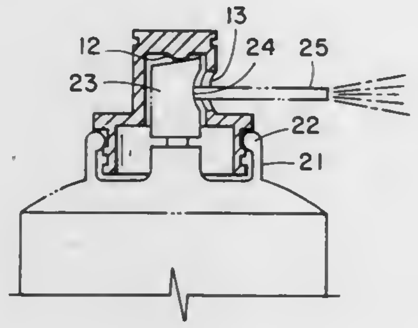
ACTUATOR

Martin B. Treuhaft, 3434 Fallen Leaf, San Antonio, Tex. 78230, and Knut L. Winquist, 326 E. Glenview, San Antonio, Tex. 78201

Filed Jul. 24, 1981, Ser. No. 286,479

Int. Cl.³ B65D *83/14*

U.S. Cl. 222—402.14 **5 Claims**



1. An acutator for an aerosol-type container having a spring loaded valve member, said container having an annular collar provided with an annular protruding portion, said actuator having a radially projecting flange portion from which depends an annular resilient collar, said collar being provided with parallel upper and lower annular grooves, said grooves being dimensioned to engage about and couple with said annular protruding portion, whereby when said annular protruding portion is engaged with the lower groove said container valve is maintained in an unactuated position and when said annular protruding potion is engaged with the upper groove said container valve is in and is restrained in an actuated position.

4,440,326

DISPENSING DEVICE

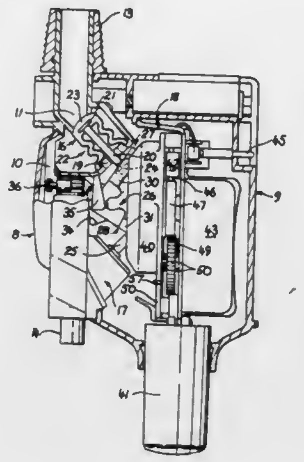
Peter K. Bayly, Eltham North, and John E. Oretti, Doncaster, both of Australia, assignors to Peter Bayly Associates Australia Pty., Australia

Filed Jun. 4, 1981, Ser. No. 270,369

Claims priority, application Australia, Jun. 6, 1980, PE3938

Int. Cl.³ G01F *11/28*

U.S. Cl. 222—450 **9 Claims**



1. A dispenser device including, a metering chamber having an inlet port and an outlet port, an inlet valve operative to open and close said inlet port in fill and discharge conditions respectively of said metering chamber, an outlet valve operative to close and open said outlet port in said fill and discharge conditions respectively, each said valve including a tail portion extending externally of said metering chamber, valve control means which is movable between two extreme conditions, the arrangement being such that said fill condition exists at one of said extreme conditions and said discharge condition exists at the other, said valve control means including an inlet valve control arm and an outlet valve control arm respectively associated with said inlet and outlet valves, the valve control arms being pivotally movable relative to the metering chamber, a portion of each valve control arm being operatively associated with the tail portion of the associated valve so the pivotal movement of each control arm causes operation of the associated valve, actuator means operative to cause movement of said valves to effect a change of the said condition of said metering chamber, said actuator means having start and activated conditions, said start condition corresponding to said fill condition of said metering chamber, and said actuator means including cam means operatively associated with said valve control means and arranged so that operation of said cam means from the start condition causes the inlet valve control arm to operate the inlet valve to close the inlet port before the outlet valve is caused by the cam means acting through the outlet valve control arm to open the outlet port.

4,440,327

FLUID DISPENSING CLOSURE WITH INTEGRAL VALVE

Richard C. G. Dark, 8553 Red Hill Country Club Dr., Rancho Cucamonga, Calif. 91730

Continuation-in-part of Ser. No. 228,212, Jan. 26, 1981, abandoned. This application Dec. 16, 1981, Ser. No. 331,162

Int. Cl.³ B65D *25/46*

U.S. Cl. 222—530 **31 Claims**

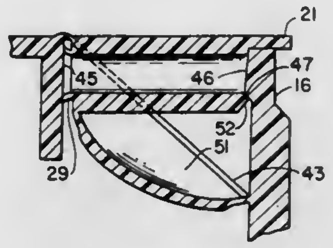
1. A unitary dispensing closure and valve for cooperation with an associated container, comprising:

a rigid base defining a seal surface and a rigid latch surface,

a rigid spout having a dispensing passage, a first end portion connected with the rigid base at a rectilinear pivot line hinge, and a dispensing second end portion,

an invertible diaphragm connected to the outlet spout by a first hinge continuous with the pivot line and defining therewith a continuous hinge about the spout first end portion, said invertible diaphragm being connected to the rigid base by a second hinge,

said pivot line and said second hinge defining a continuous hinge disposed in a common bi-sector plane which bisects an angle between said rigid base seal surface and inside surface of the outlet spout when the spout is in its dispensing position, said pivot line, first hinge and second hinge cooperating to invert the invertible diaphragm during pivoting movement of the outlet spout about the pivot line between its sealed and dispensing positions, the movement of the outlet spout to the sealed position being governed by pivoting of the spout about said rectilinear pivot to collapse the invertible diaphragm through the bi-sector plane, said invertible diaphragm being disposed in a convexed configuration when the spout is in its dispensing position and being disposed in a concaved configuration when the spout is in its sealed position,



resilient fluid seal means configurated and positioned to provide sealing between the base seal surface and the first end portion of the outlet spout about said dispensing passage when the outlet spout is in its said sealed position, and means on said base for attaching the closure to the associated container.

4,440,328

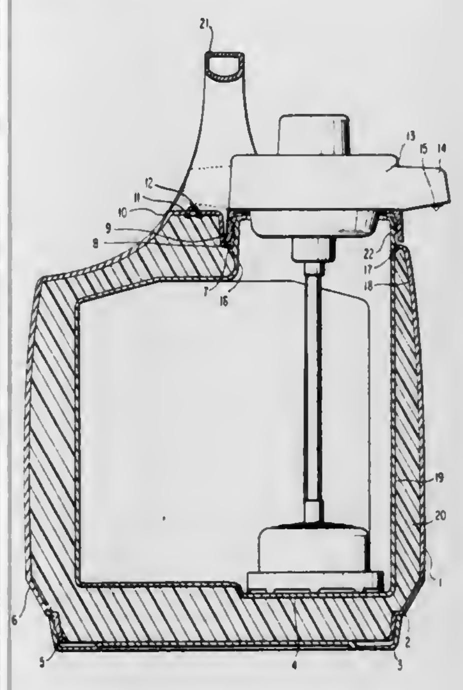
WIDE-MOUTHED ISOTHERMAL CONTAINER WITH INTEGRATED HANDLE EQUIPPED WITH IMMERSED PUMP

Elias M. De Freitas, Gomes, Brazil, assignor to Termolar S/A, Porto-Alegre-RS, Brazil

Filed Jan. 26, 1982, Ser. No. 342,987

Int. Cl.³ B67D *5/40*

U.S. Cl. 222—538 **8 Claims**



1. A wide-mouthed isothermal container having an integrated handle equipped with an immersed pump comprising an outer case (1) having curved side walls (6); and a curved upper wall (10) of a horizontal section and a parabolic section; a bottom portion (3); a circular passage opening (7) in said upper wall; said horizontal section of said upper wall further having a semi-cylindrical depression and a horizontal surface (8) at the bottom of said semi-cylindrical depression; a handle (21) integral with said outer case and enclosing an empty space (23); the said horizontal section of said upper wall forming a horizontal plane (11) and provided with a hump (12); a pump (13) fitted to said container, said pump being mounted at said circular passage opening and positioned in the semi-cylindrical depression, whereby, the pump is mounted eccentrically to the central vertical axis of the container so that a spout of the pump projects outwardly from the outer case when the spout is in a pouring position; said spout having (14) an outlet (15) adapted to engage said hump (12) when the spout is rotated to a non pouring position.

4,440,329

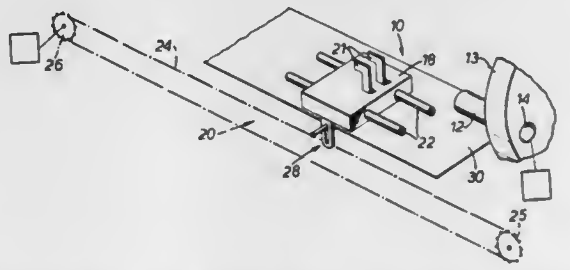
APPARATUS FOR UNLOADING HOSIERY MACHINERY

Michael J. Hodges, High Wycombe, England, assignor to Dextomat Machinery Limited, England

Filed Jan. 22, 1982, Ser. No. 341,639

Int. Cl.³ D05B *21/00*

U.S. Cl. 223—43 **6 Claims**



1. Apparatus for use in the hosiery manufacturing industry, comprising a hollow hose carrier open at at least one, forward end thereof, means for creating suction in the carrier, and a hose unloading mechanism associated with the carrier and operable to unload said carrier and to convey unloaded hose to a position forward thereof; said unloading mechanism including: a movable carriage, drive means to move said carrier to and fro along a guide path extending forwardly thereof, means supported by said carrier and operable at a position remote from the forward end of said carrier to take hold of a portion of a hose thereon during a forward or unloading movement of said carriage; and means for controlling said suction-creating means whereby suction is applied while said hose portion is displaced forwardly of said carrier, to evert the hose during an initial stage of the unloading operation.

4,440,330

REAR CARRIER FOR MOTORCYCLES AND THE LIKE

Clarence R. Goodman, 4727 W. Marlette, Glendale, Ariz. 85301

Filed Oct. 23, 1981, Ser. No. 314,176

Int. Cl.³ B62J *7/04*

U.S. Cl. 224—30 R **6 Claims**

1. A rear mounted carrier for a cycle having a frame comprising:

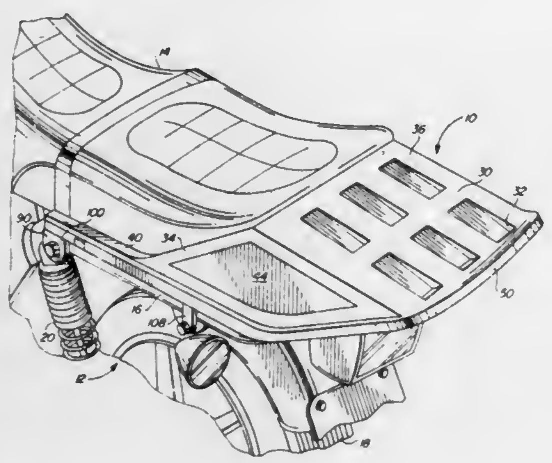
(a) a substantially horizontal platform defining a load supporting surface, said platform having front, rear and opposite sides;

(b) support arms secured at the opposite sides of said platform, said arms extending generally forwardly at either side of the platform, said platform and arms being plastic and injection molded as a unitary structure;

(c) metal reinforcing channel means extending along the inner side of each of said support arms, said metal reinforcing channel means being generally U-shaped having a web portion and extending flanges, the flanges of said reinforcing channel means engaging said support arms;

(d) boss means extending between said metal reinforcing channel and said support arms at predetermined spaced apart locations; and

(e) mechanical fastener means extending at selected of said bosses between said metal reinforcing channel and said support arm and securing the same together whereby loads imposed at the points of attachment of said support arms and reinforcing channel are distributed along the carrier when said platform is secured to said vehicle.



4,440,331

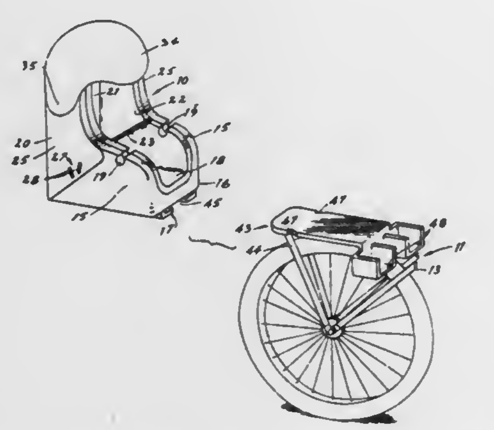
PROTECTIVE CHILD CARRIER ASSEMBLY

Kristin L. Schimmels, S. 2211 Conklin Rd., Veradale, Wash. 99037

Filed Dec. 3, 1981, Ser. No. 327,248

Int. Cl.³ B62J *7/04*

U.S. Cl. 224—31 **12 Claims**



1. A protective child carrier assembly capable of being interchangeably mounted to either an automobile having a seat and safety seat belt, or a bicycle having a rigid frame, said carrier assembly comprising:

a base section having a smooth downwardly facing flat bottom surface for supporting the carrier assembly on the seat of a an automobile, and an opposite upwardly facing top surface for receiving and supporting a child;

said base section having a forwardly open slot formed therein adjacent the smooth flat bottom surface;

means on the base section for releasably receiving a safety seat belt of an automobile to selectively secure the base to the vehicle;

a backrest section having a back support surface;

pivot means mounting the backrest section to the base section for adjustably securing the backrest section at a selected angular position in relation to the base section;

an elongated bicycle mounting bracket having opposed longitudinal side edges adapted to be releasably received within the forwardly open slot of the base section by sliding motion of the base section forwardly over the bracket;

said mounting bracket side edges each having a notch formed therein;

latch means adjacent the flat bottom surface of the base section and on opposite sides of the forwardly open slot for releasably securing the base and backrest sections to the bicycle mounting bracket with the latch means engaging the notches; and

means for securing the bicycle mounting bracket to the rigid frame of a bicycle.

4,440,332

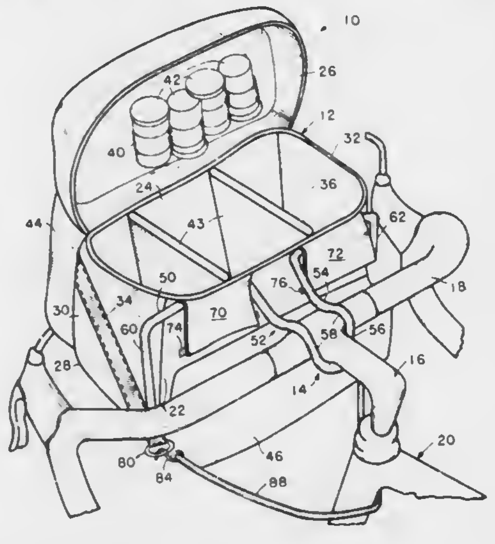
REINFORCED BICYCLE PACK

Thomas W. Kullen, 848 E. Bryan Ave., Salt Lake City, Utah 84105

Filed Dec. 30, 1982, Ser. No. 454,835

Int. Cl.³ B62J *7/06*

U.S. Cl. 224—36 **12 Claims**



1. A reinforced bicycle pack comprising:

a bag having a back, front, top, bottom and two sides;

a sleeve on each side extending from the back, bottom area toward the front, top area; and

a support frame having a lateral portion extending along the back, top of the bag, two leg portions extending downwardly toward the bottom of the bag, and two angled portions extending from the back, bottom area toward the front, top area, one received in each of said sleeves to support and erect the bag;

means for attaching said lateral portion to the bag; and

means for engaging said lateral portion with the bicycle.

4,440,333

ARTICLE CARRIER FOR AUTOMOTIVE VEHICLES

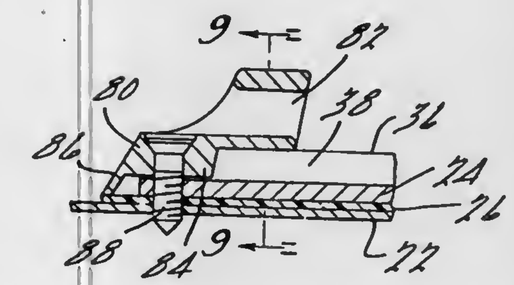
John A. Bott, 931 Lake Shore Dr., Grosse Pointe Shores, Mich. 48236

Continuation of Ser. No. 242,138, Mar. 9, 1981, abandoned, which is a continuation of Ser. No. 56,373, Jul. 10, 1979, abandoned, which is a division of Ser. No. 924,072, Jul. 7, 1978, Pat. No. 4,182,471, which is a division of Ser. No. 743,602, Nov. 22, 1976, Pat. No. 4,099,658, which is a continuation of Ser. No. 486,415, Jul. 8, 1974, abandoned. This application Apr. 18, 1983, Ser. No. 485,859

Int. Cl.³ B60R *9/00*

U.S. Cl. 224—324 **11 Claims**

1. An article carrier for the trunk lid of an automobile, said trunk lid extending horizontally as an exterior body surface and having a leading edge, a trailing edge, and laterally disposed side edges, including a plurality of parallel slats fixedly secured on said horizontally extending exterior body surface, extending from adjacent said leading edge to adjacent said trailing edge, and lying closely against said surface in a low profile configurafion throughout the entire length of said slat, each of said slats having a generally horizontal transverse cross-sectional width greater than its cross-sectional vertical height, and each said slat having an upper article supporting surface, extending the length thereof; a bracket secured to the laterally outermost slats disposeable adjacent said side edges at the end of said slats adjacent the trailing edge of said body surface; an elevated restraining bar supported by said brackets and extending laterally across said slats and said body surface; and end cap means including integral tie down means directly fixedly secured to said body surface and operably associated with at least the intermediate slats of said carrier and cooperable with said slats to restrain articles disposed on said slats substantially out of contact with said body surface, said end cap means disposed at least at the ends of said slats adjacent the leading edge of said body surface.



4,440,334

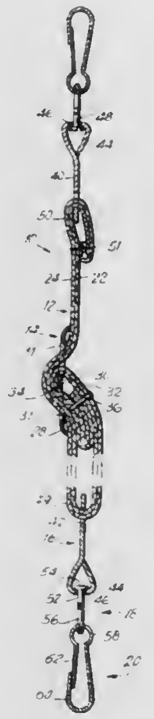
ADJUSTABLE CAMERA STRAP CONSTRUCTION

Joseph Kappel, Hewlett, and Richard Goldberg, Scarsdale, both of N.Y., assignors to Coast Manufacturing Co., Inc., Mt. Vernon, N.Y.

Filed May 5, 1983, Ser. No. 491,845

Int. Cl.³ A45F *5/00*

U.S. Cl. 224—258 **2 Claims**



1. An improved adjustable camera strap construction which comprises:

(a) a shoulder strap;

(b) means adjustably secured to said strip to accommodate the length thereof in accordance with the particular physique of the user;

(c) at least one belt hook made of a rigid durable material, receiving said strap at one end; and

(d) said belt hook carrying a latch having means to detachably engage a standard mounting post of a camera body, said hook has an opening defined at one end thereof for receiving said strap, and a narrowing portion at the other end, said narrowing portion forming a triagular finger having an opening defined in a flat portion thereof, said flat portion being perpendicular to the main body of said hook, said opening receiving said latch, whereby the belt hook will durably secure the strap to the latch hook during the useful life of the construction.

4,440,335

SUPPORT ROD STEAMER ROD LOCK

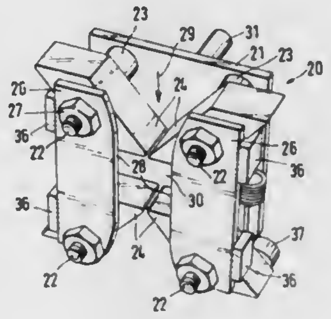
Valentin Appenzeller, Kempen, Fed. Rep. of Germany, assignor to Eduard Küsters, Krefeld, Fed. Rep. of Germany

Filed Mar. 25, 1981, Ser. No. 247,324

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1980, 3012756

Int. Cl.³ B65H *17/18, 17/54*

U.S. Cl. 226—107 **12 Claims**



1. In a rod lock for a support rod steamer for steaming webs of textile and similar materials, said steamer including a guide at the beginning thereof and extending over the length of said steamer; a support rod conveyor endlessly revolving in the loop plane of the material to which rod locks are attached, said conveyor conveying support rods in a loop from the end of said guide to the beginning of said guide, each rod lock comprising a base body firmly connected to said support rod conveyor having a slot open on both sides in the travel direction of the conveyor, for receiving the end of a support rod and a locking element arrangement rotatable relative to the base body in a plane of the loops for closing off openings of the slot when a support rod has been received at the end of said guide, and an external control cam for releasing said locking element arrangement in order to release the support rod at the beginning of said guide, the improvement comprising said locking body arrangement comprising:

(a) at least first and second locking elements arranged in tandem spaced from each other in the direction of the slot supported in axes perpendicular to the plane of the loops;

(b) means resiliently biasing said rotatable locking elements into a position of rotation in which they lock the receiving region of the slot from the outside but so that the leading locking elements can be rotated out of the slot merely by the weight of the support rod; and

(c) stops against which said rotatable locking elements are resiliently held.

4,440,336

APPARATUS FOR ATTACHING FASTENERS TO BELTS

Harry T. Kifor, Canton, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

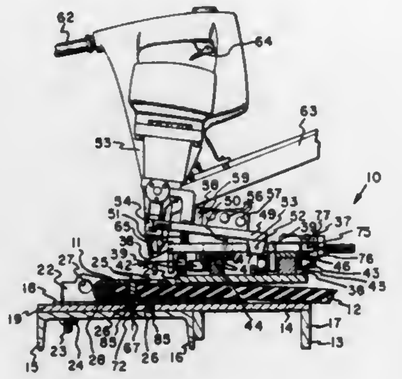
Filed Jul. 2, 1981, Ser. No. 279,716

Int. Cl.³ B27F *7/14*

U.S. Cl. 227—4 **7 Claims**

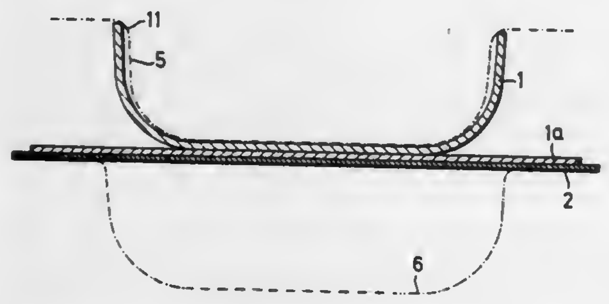
1. Apparatus for riveting a plate member of a belt fastener having a plurality of holes to an edge portion of a belt comprising a supporting structure including a way, a rivet driving means mounted on a carriage movable on said way for movement to a plurality of riveting positions over said holes in said plate member positioned over said edge portion, said carriage including a hinged support on which said rivet driving means is mounted for movement towards and away from said belt and said belt fastener, guide means for directing said rivet driving means to said riveting positions over said holes in said plate member, said rivet driving means being actuated in response to movement of said rivet driving means into each of said riveting

positions for insertion of a rivet through each of said holes in said plate member and into said edge portion and resilient



means for urging said hinged support away from said belt fastener.

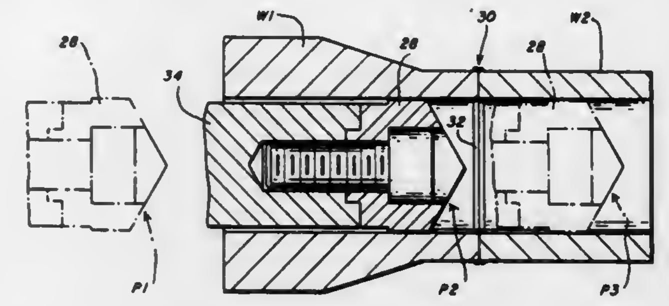
4,440,337
METHOD OF PRODUCING SIMILAR DEEP-DRAWN PARTS
Rolf Eckert, Bergisch Gladbach, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany
Filed Oct. 8, 1981, Ser. No. 309,724
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1980, 3038276
Int. Cl.³ B21C *37/08;* B21D *22/20*
U.S. Cl. 228—173 C **4 Claims**



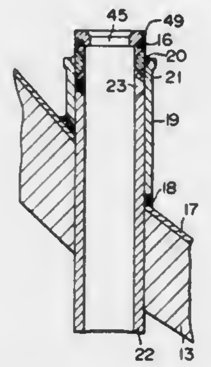
1. A method of producing a series of similar deep-drawn parts, for double-walled structural parts having uniformly spaced walls and edge welding, using a tool having a punch and a lower portion for receiving material from, and shaping it in cooperation with, said punch, said method, for each deep-drawing procedure, comprising the steps of:
placing a planar outer plate on said lower tool portion;
placing a planar filler plate upon said outer plate;
placing a preformed inner plate over said punch;
placing said punch, with said inner plate thereon, on said filler plate in such a way that said inner plate is located between said punch and said filler plate;
in common shaping said outer plate, said filler plate, and said inner plate in such a way that said outer and inner plates receive their final form, and said filler plate is deformed;
removing said filler plate from between said formed outer and inner plates; and
using said formed filler plate as the preformed inner plate in producing a subsequent deep-drawn part.

4,440,338
FRICTION WELDING MACHINE
Christopher T. S. Stevenson, New Britain, Conn., assignor to Litton Industrial Products, Inc., New Britain, Conn.
Filed Dec. 10, 1981, Ser. No. 329,248
Int. Cl.³ B02C *31/00*
U.S. Cl. 228—2 **2 Claims**

1. In a friction welding machine having a horizontally displaceable workhead assembly including a rotatable chuck for gripping and rotating a first tubular workpiece about its axis and a means for securing a secured tubular workpiece in a stationary position axially aligned opposite one end of the first workpiece gripped by said chuck, an integral shear for shearing internal weld flash formed by the friction welding operation, the integral shear comprising:
a shear tool mounted on the end of a shear bar,
a shear cylinder and piston for displacing the shear bar and shear tool along the axis of the rotatable chuck,
a slideably mounted program bar,
means for coupling the program bar to the shear piston whereby axial movement of the shear piston is followed by the program bar,
first, second, and third adjustable cams mounted on the program bar and defining remote, ready, and advanced positions of the shear tool with respect to said tubular workpieces, and
first, second, and third switches engagable by the first, second, and third cams to define the location of the shear tool at remote, ready, and advanced positions, respectively, within said tubular workpieces, whereby during a friction welding cycle said shear tool may be advanced from a remote position within one of said workpieces, to a ready position adjacent the weld area of said two workpieces, then to an advanced position in the other of said workpieces past the weld area in order to shear internal weld flash, and thereafter back to said remote position.

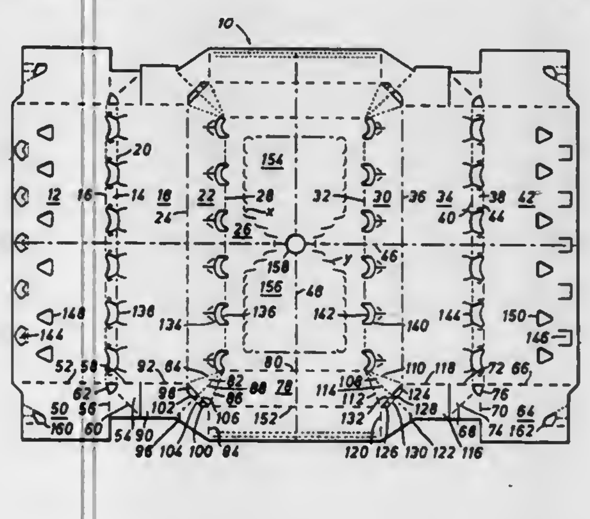


4,440,339
METHOD OF REPAIRING HOUSING OF CONTROL ROD DRIVING SYSTEM
Yasumasa Tamai, and Takaichi Koyama, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jun. 12, 1981, Ser. No. 272,882
Claims priority, application Japan, Jun. 19, 1980, 55-83757
Int. Cl.³ B23K *31/06*
U.S. Cl. 228—119 **9 Claims**



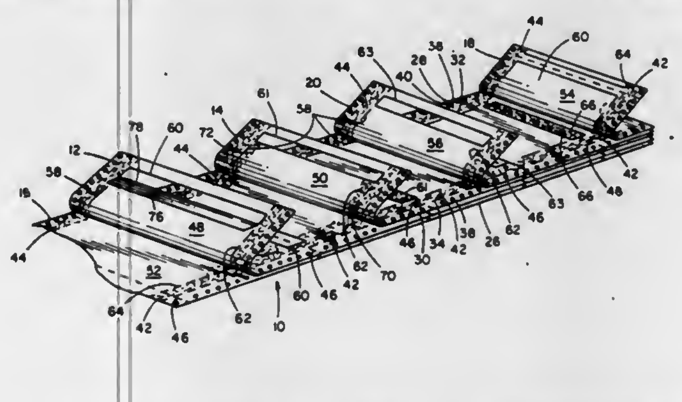
1. A method of repairing the housing of a control rod driving system of a nuclear reactor, said housing being inserted through the wall of a pressure vessel of said reactor into a cylindrical sleeve secured to the inner surface of said vessel which housing is jointed by welding to said cylindrical sleeve, said method comprising the steps of:
cutting said housing in the circumferential direction of the housing at a portion thereof positioned between the weld joint and the inner surface of said reactor vessel and surrounded by said cylindrical sleeve, thereby to divide said housing into a first housing part still secured to the weld joint and another removable housing part;
removing said removable housing part;
inserting a second housing part into said cylindrical sleeve through the wall of said nuclear reactor vessel; and
uniting said first housing part and said second housing part by welding thereby to form a new housing for said control rod driving system.

4,440,340
FULLY ENCLOSED WRAP-AROUND CARTON
Martinus C. M. Bakx, Roosendaal, Netherlands, assignor to The Mead Corporation, Dayton, Ohio
Filed May 28, 1982, Ser. No. 383,085
Claims priority, application United Kingdom, May 29, 1981, 8116393
Int. Cl.³ B65D *5/02, 75/08*
U.S. Cl. 229—40 **4 Claims**



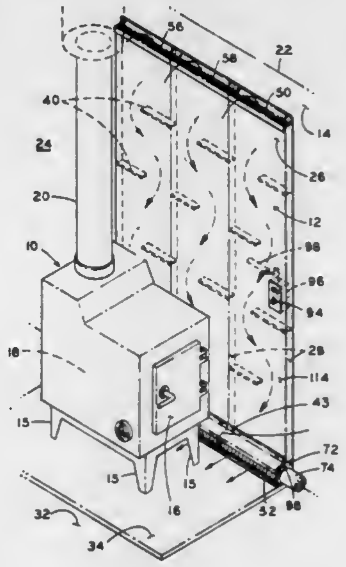
4. An elongate blank for forming a carton of the wrap-around type, which blank comprises a first bottom wall panel (12), a first side wall panel (18,22), a top wall panel (26), a second side wall panel (30,34), and a second bottom wall panel (42), hinged one to the next along transverse fold lines so that the blank can be folded into a tubular structure, each of said bottom, top and side wall panels having an end closure panel hinged thereto along each of its longitudinal edges for closing the ends of the tubular structure, characterized in that each top wall end closure panel is hinged at each of its ends to an adjacent side wall panel by a web panel structure comprising a side wall end closure panel (116) and a gusset panel (108) which panels have adjacent edges spaced a part by an aperture (124,126) struck from the blank and hinged together by a bridging piece (128) spanning the aperture.

4,440,341
RETURN ENVELOPE MAILER
Thomas G. Pennock, North Tonawanda, N.Y., assignor to Moore Business Forms, Inc., Grand Island, N.Y.
Filed Nov. 3, 1982, Ser. No. 438,787
Int. Cl.³ B65D *27/10*
U.S. Cl. 229—69 **6 Claims**



1. A continuous business form assembly comprising a first web, a second web, a third web and a fourth web, all the webs being continuous in a longitudinal direction, and having a transverse extent perpendicular to the longitudinal direction, the first web also having longitudinally spaced, transversely extending flaps, the flaps each having cut edges and a folded edge, the flaps being folded and thereby providing openings in the first web adjacent the flaps; the second web having openings longitudinally and transversely substantially aligned with the openings of the first web, the second web being joined to the first web to form return envelopes such that the flaps are return envelope flaps, and the third web being joined to the fourth web, in part through the openings of the first and second webs, and the third and fourth webs being adapted to form originating envelopes including therein the return envelopes.

4,440,342
HEAT DISPERSING THERMAL BARRIER
Rodger H. Flagg, 1415 Lynn Ave., Ft. Wayne, Ind. 46805
Filed Apr. 1, 1981, Ser. No. 250,055
Int. Cl.³ F24D *5/00*
U.S. Cl. 237—50 **15 Claims**



1. An apparatus for actively dispersing heated air in spaced proximity to a free-standing heating device installed in a room having combustionable materials forming at least in part a floor, a ceiling, and a plurality of walls therebetween, which comprises:
(a) a vertically disposed heat-resistant room confronting outer panel adapted to extend from near the ceiling to near the floor in spaced relation from the room wall, and adapted to extend along the wall a distance sufficient to provide suitable thermal protection to the combustionable wall in spaced proximity to the heating device;
(b) a vertically disposed, heat resistant wall confronting inner panel, said inner panel adapted with a plurality of vertically disposed spaced apart convolutions adapted to extend to abut said outer panel in a manner to form a plurality of vertically aligned fluid passages between said inner and outer panels and said convolutions;
(c) a horizontal chamber having opposing sides and ends, and adapted to extend substantially across one end of the vertically aligned fluid passages; and
(d) an air blower adapted with an inlet and outlet port, with one port adapted to be in fluid communication with the horizontally disposed chamber, and the other port adapted to be in fluid communication with the room air, said inlet and outlet ports positioned in relation to the horizontal chamber in a manner to force air downwardly through the plurality of vertically aligned fluid passages to draw radiant heat from the heating device through the outer panel by conduction, and to disperse the heat by convection to the passing air, wherein: the heat resistant outer panel provides thermal protection to the combustionable wall in proximity to the heating device, allowing

closer positioning of the heating device in relation to the heat resistant outer panel to provide safe installation while conserving room space; and providing active disbursement of the heated room air from near the ceiling in proximity to the heating device, through the vertically aligned fluid passages to exhaust the heated air back into the room, near the floor, where it is needed for occupant comfort.

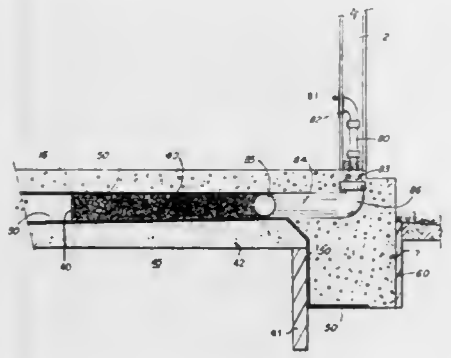
4,440,343
AIR CIRCULATION SYSTEM AND AIR FLOW ELEMENTS THEREFOR

Hervin J. Bergeron, Jr., Opelousas, La., assignor to Stephen J. Ledet, Jr., Opelousas and James Donald Elder, Sulphur, both of, La., part interest to each

Continuation-in-part of Ser. No. 135,073, Mar. 28, 1980, and Ser. No. 54,659, Jul. 3, 1979, abandoned. This application Feb. 2, 1981, Ser. No. 230,375

Int. Cl.^{3} F24D *5/10*

U.S. Cl. 237—69 **15 Claims**



1. An air circulation system for generally enclosed structures such as homes comprising:

(a) an enclosed structure having at least a floor and enclosing walls and roof forming within an interior living area;

(b) a void air space subsurface to said floor;

(c) blower means connecting said living area and said void air space for moving air from said living area to said void air space;

(d) return line means for returning air from said void space to said living space;

(e) structural means in said void air space and communicating with said floor for facilitating heat exchange between said floor and said void air space and between said void air space and the ground therebelow, said structural means comprising at least in part a plurality of interfacing self-contained elements containing particulate expanded clay aggregate and means adjacent said elements for biasing air flow through said interfacing elements, said blower means and said return line means communicating with said interfacing elements for air flow transfer therewith.

4,440,344
FUEL INJECTOR

Barrie J. Martin, Shenfield, England, assignor to Eaton Corporation, Cleveland, Ohio

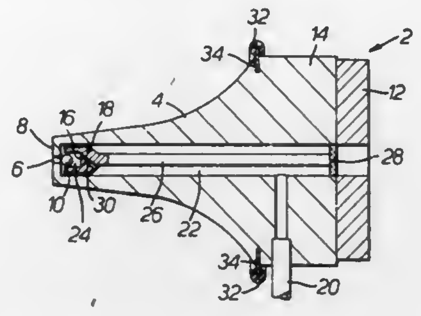
Continuation of Ser. No. 179,536, Aug. 19, 1980, abandoned. This application Jul. 21, 1982, Ser. No. 400,352

Claims priority, application United Kingdom, Sep. 11, 1979, 7931506

Int. Cl.^{3} B05B *1/08*

U.S. Cl. 239—102 **12 Claims**

1. An injector for injecting fuel for an engine, which injector comprises a nozzle, a fuel injection orifice in a transverse face of the nozzle, a fuel passage formed in said nozzle communicating with said fuel injection orifice, valve obturator means for closing the orifice, vibratory means for vibrating the nozzle to cause the valve obturator means to move away from the orifice to allow fuel to be injected, and a housing for the valve obturator means, the housing: (A) being fixed in position and secured to the nozzle at the end remote from the orifice (B) having an open downstream end with an opening formed therein, and (c) being positioned adjacent the orifice but with said downstream end spaced apart from the transverse face of the nozzle.



4,440,345
SPRINKLER

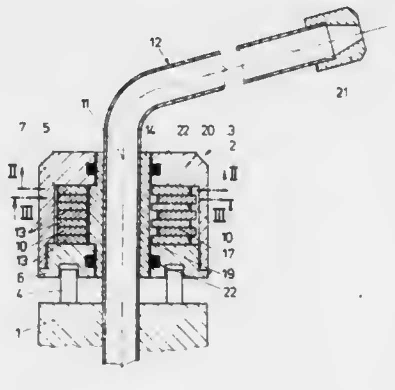
Eduard Figwer, Vienna, and Franz Schmitzberger, St. Pölten, both of Austria, assignors to Oesterreichische Salen-Kunststoffwerk Gesellschaft m.b.H., Kaiserstrasse, Austria

Filed Aug. 19, 1980, Ser. No. 179,483

Claims priority, application Austria, Aug. 30, 1979, 5790/79

Int. Cl.^{3} B05B *3/02*

U.S. Cl. 239—214 **12 Claims**



1. A sprinkler comprising:

a spray pipe having at least one outlet nozzle, said spray pipe being rotatable about an axis in response to the discharge of water from said at least one nozzle;

a stationary bearing member supporting said spray pipe for rotation of said spray pipe;

a stationary housing surrounding a portion of said spray pipe in a fluid tight manner so as to define a cavity;

at least two spaced first radial extensions in said cavity and fixed to said spray pipe; and

high viscosity fluid at least partially filling said cavity wherein said housing, said at least two radial extensions and said high viscosity fluid together comprise a braking means spaced from said bearing member, wherein said radial extensions are formed of oil resisting plastic materials.

4,440,346
AXIALLY TRANSLATABLE VARIABLE AREA CONVERGENT/DIVERGENT NOZZLE

Walter H. Wiley, Palm Beach Gardens, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 28, 1981, Ser. No. 334,490

Int. Cl.^{3} B64C *15/06*

U.S. Cl. 239—265.39 **7 Claims**

1. A variable area C/D nozzle assembly for a gas turbine engine comprising:

engine fixed structure;

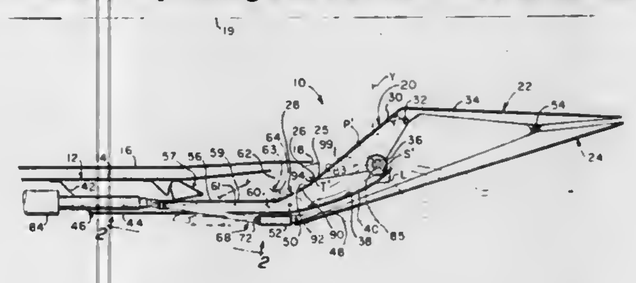
unison ring means supported from said fixed structure and being axially translatable;

at least one actuator adapted to engage and axially translate said unison ring means;

a plurality of upstream flaps circumferentially disposed about the engine axis defining a convergent nozzle, each of said upstream flaps having a forward end and a rearward end, said forward end of each flap being pivotally connected to said unison ring means for translation therewith and to permit rotation of said flaps to allow varying the exit area of said convergent nozzle;

cam track and cam follower means associated with said upstream flaps and adapted to decrease the exit area of said convergent nozzle as said forward ends translate downstream and increase the exit area of said convergent nozzle as said forward ends translate upstream;

a plurality of downstream flaps circumferentially disposed about the engine axis and defining a divergent nozzle, each downstream flap having a forward end and a downstream end, said forward ends of said downstream flaps being pivotally connected to said rearward ends of said upstream flaps; and



a plurality of external flaps circumferentially disposed about the engine axis radially outwardly of said downstream flaps and defining an external nozzle contour, said external flaps each having a forward end pivotally connected to said unison ring means for translation therewith, said downstream flaps and said external flaps being pivotally connected to each other downstream of their respective forward ends, wherein said unison ring means comprises a radially inner unison ring and a radially outer unison ring, said upstream flaps being pivotally connected to said inner unison ring and said external flaps being pivotally connected to said outer unison ring, said unison ring means including interconnection means interconnecting said inner and outer unison rings such that translation of either unison ring results in translation of the other unison ring.

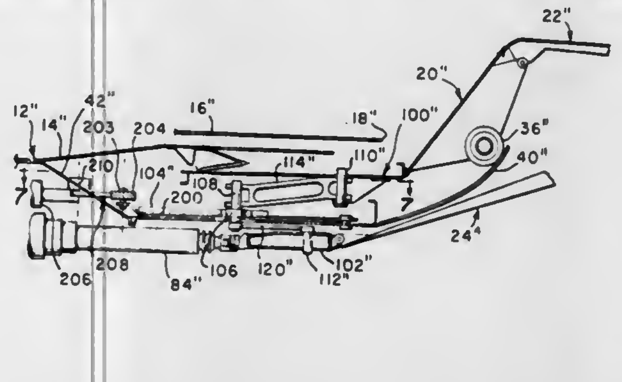
4,440,347
SIMPLIFIED MEANS FOR BALANCING THE LOADS ON A VARIABLE AREA NOZZLE

William M. Madden, Palm Springs, and Walter H. Wiley, Palm Beach Gardens, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 28, 1981, Ser. No. 334,494

Int. Cl.^{3} B64C *15/06*

U.S. Cl. 239—265.39 **9 Claims**



1. A variable area nozzle assembly for a gas turbine engine comprising:

engine fixed structure;

unison ring means supported from said fixed structure and being axially translatable and including a first unison ring;

at least one actuator adapted to engage and axially translate said unison ring means;

a plurality of upstream flaps circumferentially disposed about the engine axis defining a convergent nozzle, each of said upstream flaps having a forward end and a rearward end, said forward end of each flap being pivotally connected to said first unison ring for translation therewith;

cam track means supported by said fixed structure, said cam track means including a cam track associated with each of said upstream flaps and disposed radially outwardly thereof, each of said upstream flaps including follower means adapted to rest on the track associated therewith and to follow said track as said unison ring means translates, said track being shaped to cause rotation of said flaps as said unison ring means translates;

wherein said unison ring means includes balance means having a forwardly facing annular balance surface, said balance means being fixed relative to said first unison ring, said balance surface being subjected to a net pressure load having a component in the downstream direction which reduces the force which said actuator must exert to hold said flaps in a fixed position and to move said first unison ring.

4,440,348
FUEL INJECTION DEVICE FOR DIESEL ENGINES WITH PRECOMBUSTION CHAMBERS

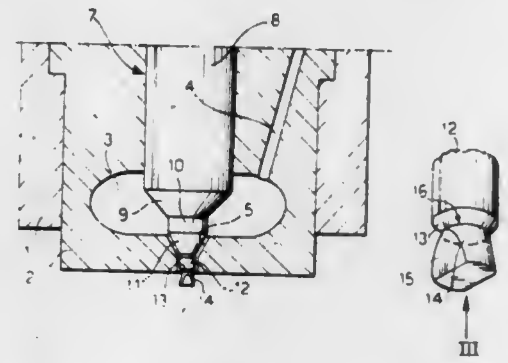
Antonio Burgio di Aragona, Moncalieri, Italy, assignor to Fiat Auto S.p.A., Turin, Italy

Filed Aug. 20, 1981, Ser. No. 294,643

Claims priority, application Italy, Sep. 2, 1980, 68357 A/80

Int. Cl.^{3} B05B *1/26*

U.S. Cl. 239—533.12 **10 Claims**

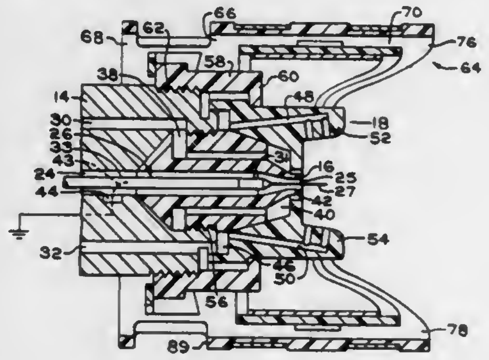


1. Fuel injection device for diesel engines with precombustion chambers, including an atomizer nozzle body (2) having a fuel supply duct (4) and an outlet opening (6), a needle (7) mounted for axial sliding movement in the atomizer nozzle body (2) and having a guide portion (8), an intermediate portion (9,10,11) which acts as a valve shutter member for controlling the fuel flow from the supply duct (4) to the outlet opening (6) in dependence on the pressure of the fuel in the supply duct (4), and a terminal portion (12,13,14) which extends through the outlet opening (6) and includes a cylindrical part (12), a frusto-conical part (13) tapering in the direction of the fuel outflow, and an end part (14) shaped so as to impart the desired form to the jet of fuel issuing from the outlet opening (6) in use, characterised in that the side surface of the end part (14) of the needle (7) has at least two flat faces (15) disposed on opposite sides of said end part, each of which lies in a plane tangential to the circumference defining the periphery of the smaller end (16) of the tapering frusto-conical part (13).

4,440,349
ELECTROSTATIC SPRAY GUN HAVING INCREASED SURFACE AREA FROM WHICH FLUID PARTICLES CAN BE FORMED

James E. Sickles, Glenshaw, Pa., and Themistocles C. Anestos, Utica, Mich., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 17, 1979, Ser. No. 76,014
Int. Cl.³ B05B *5/02*
U.S. Cl. 239—698 **11 Claims**



1. A spray gun having a gas nozzle and a fluid nozzle, each of said nozzles being in cooperative spatial relationship with the other to cause a fluid stream issuing from the fluid nozzle to be atomized and sprayed as fluid particles by gas issuing from the gas nozzle, with said spray gun having disposed within the fluid stream means for increasing surface area from which said particles can be formed, said means being electrically grounded at least during fluid issue from the fluid nozzle, and with said spray gun additionally having induction charging electrode means disposed adjacent the gas and fluid nozzles, said electrode means (a) having a rear edge located rearward of a plane which is perpendicular to the axis of liquid flow and which passes through the discharge point of said fluid nozzle and (b) defining a charging zone wherein an electrostatic charge is imparted to atomized electrically chargeable fluid particles.

4,440,350
APPARATUS AND METHOD FOR COATING WITH AN ATOMIZABLE MATERIAL

Peter W. Dietz, Delanson, and Ralph T. Wood, Elnora, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 3, 1982, Ser. No. 345,508
Int. Cl.³ B05B *5/04*
U.S. Cl. 239—703 **9 Claims**

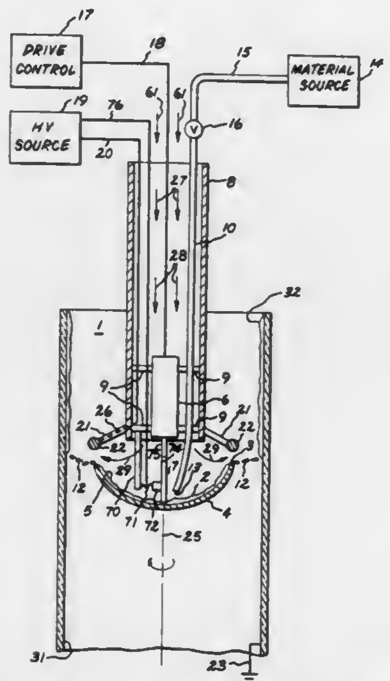
1. An apparatus for applying a coating of an atomizable material to the inside surface of an elongate glass tube comprising:

a rotatable member having a surface for receiving said material, said surface rotating together with said member;

means for rotating said member, said means being disposed adjacent to said rotatable member;

material delivery means for delivering said material to said surface of said member, said material delivering means being situated along the same direction as the extension of the axis of rotation through said surface of said member; and

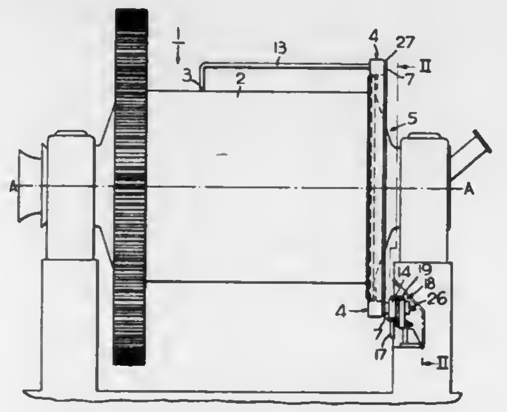
non-rotatable, hollow tubular support means for insertion into said glass tube, said support means having said rotating means affixed thereto at an end thereof, said support means having an opening in the end of said support means to which said rotating means is affixed, said opening facing said receiving surface.



4,440,351
APPARATUS FOR DELIVERING FLUID TO A ROTATING BODY

Carl F. Novotny, Greenfield, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 21, 1981, Ser. No. 333,171
Int. Cl.³ B02C *23/40*
U.S. Cl. 241—41 **9 Claims**



1. An apparatus for delivering fluid from a stationary source to a rotary body, such as a mill for treating particulate material with a fluid, said body having a generally horizontal axis of rotation and said body having support means and rotation means, improvement comprising:

a. a rotary annular manifold box concentric to said axis of rotation;

b. means for affixing said manifold box to said rotary body to rotate with said body;

c. a plurality of feed orifices in said rotary manifold box opening along an orifice axis parallel to said axis of rotation; each said orifice being a like distance from said axis of rotation;

d. valve means positioned within said rotary manifold box aligned with each of said feed orifices and biased to close said orifices;

e. conduit means for transmitting fluid from said manifold to said rotary body;

f. a stationary fluid supply manifold having a fluid feed face positioned adjacent to and engaging a portion of the rotary manifold through which a minority of the orifices open; said feed face containing a cavity communicating with the minority of feed orifices in the rotary manifold as said orifices rotate past the stationary manifold; and,

g. conduit means for transporting pressurized fluid from a fluid source to said cavity within the stationary manifold whereby said fluid is transmitted from the cavity of said rotary manifold box to apply pressure against the bias of the valves aligned therewith thereby opening such valves and discharge fluid through said orifices to the conduit means for transmitting fluid to said rotary body.

4,440,352
MACHINE FOR THE COMMINUTING OF BULK MATERIAL

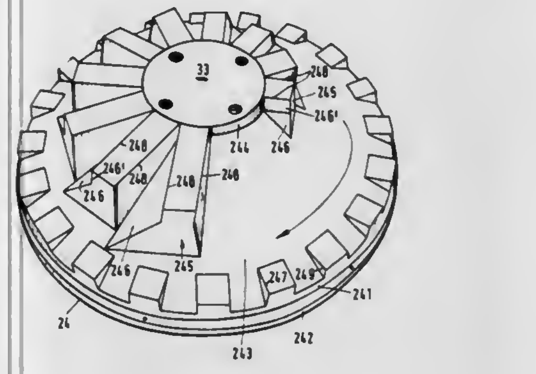
Kurt Rössler, Belm, Fed. Rep. of Germany, assignor to Osnabrücker Metallwerke J. Kampschulte GmbH & Co. KG, Osnabrück, Fed. Rep. of Germany

Division of Ser. No. 167,287, Jul. 9, 1980, Pat. No. 4,387,858. This application Jan. 26, 1983, Ser. No. 461,083

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1979, 2928471

The portion of the term of this patent subsequent to Jun. 14, 2000, has been disclaimed.

Int. Cl.³ B02C *18/12*
U.S. Cl. 241—152 A **23 Claims**



1. In a comminution apparatus, the combination comprising a housing for receiving material to be comminuted, a stator mounted in said housing, said stator having stator cutting edge means, a rotor rotatably mounted in said housing for rotation about a vertical axis, said rotor having rotor cutting edge means, said stator cutting edge means and said rotor cutting edge means each having a plurality of cutting edges which cooperate during rotation of said rotor to effect comminution of said material, said cutting edges each having an outer terminating end and an inner terminating end, at least one of said cutting edge means having the cutting edges thereof disposed in a common plane which is perpendicular to said vertical axis, said cutting edges disposed in said common plane having at least one of their terminating ends disposed along a spiral path, whereby the cutting edges having their at least one terminating ends disposed along a spiral path have cutting edge sections progressively radially displaced considered in the direction of rotation of said rotor such that the material being comminuted is engaged at progressively radially displaced locations by said progressively radially displaced cutting edge sections.

4,440,353
TEXTILE MACHINE ARRANGEMENT

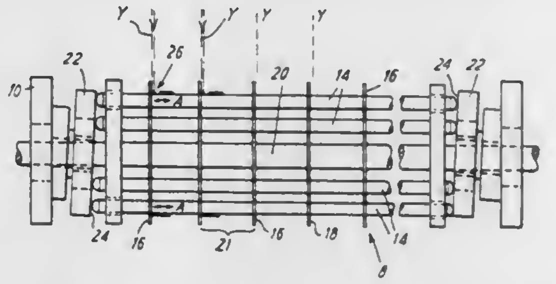
William E. A. Shelton, Oadby, and David C. Corby, Cosby, both of England, assignors to Alan Shelton Limited, Croft, England

Filed Nov. 16, 1981, Ser. No. 321,775

Claims priority, application United Kingdom, Nov. 19, 1980, 8037020

Int. Cl.³ B65H *51/22*
U.S. Cl. 242—47.01 **5 Claims**

1. A textile machine arrangement comprising a textile machine having a multiplicity of feed stations, a multiplicity of yarn sources for supplying yarn for each feed station on said machine, said yarn sources being located adjacent to said machine, and a yarn feed mechanism for drawing yarns from said sources and feeding them at a desired rate and tension along a path towards the appropriate ones of said feed stations, said machine arrangement being characterized in that said yarn sources are located in at least one group arranged to one side of said machine, and that said yarn feed mechanism includes a rotatable elongate roller device having a plurality of cylindrical path-defining surface portions each rotatable simultaneously and co-axially with a neighboring surface portion whereby each yarn is fed to one only of said surface portions and the yarn path of each yarn includes a region in which the yarn partakes of travel in a helical manner about a respective cylindrical surface portion of said roller device, said elongate roller device having a plurality of parallel disposed rods arranged in an annular formation, a plurality of plates arranged at intervals along the rods and each being provided with a plurality of apertures through each of which is slidingly received one of said rods, the portions of said rods between adjacent ones of said plates defining said surface portions, said plates being fixedly mounted upon a centrally disposed shaft and extending at least substantially radially thereof with end portions of said shaft flanking said plates, a stationary end plate having an oblique surface, and said rods being mounted for rotation with respect to said oblique surface of said stationary end plate and having oblique end surfaces which impinge against said oblique surface of said stationary end plate whereby rotation of said shaft causes lengthwise movement of said rods with respect to said apertured plates.



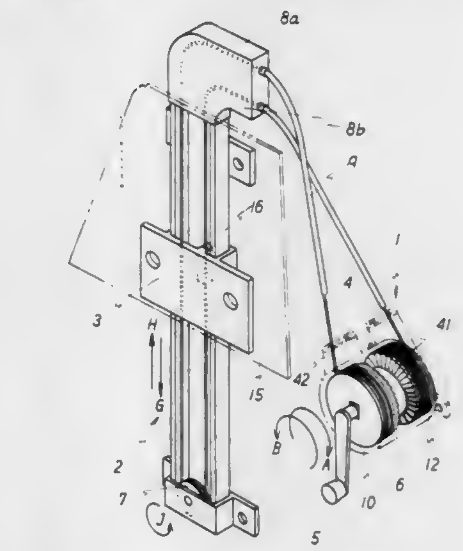
4,440,354
AUTOMATIC TENSION-ADJUSTING MECHANISM FOR WINDOW REGULATORS

Tetuo Kobayashi, Ikeda, and Syoichi Hirai, Nishinomiya, both of Japan, assignors to Nippon Cable System Inc., Hyogo, Japan

Filed Nov. 9, 1981, Ser. No. 319,717

Claims priority, application Japan, Jun. 22, 1981, 56-96985; Jul. 27, 1981, 56-112093[U]

Int. Cl.³ E05F *11/48, 5/12;* B65H *75/00*
U.S. Cl. 242—54 R **4 Claims**



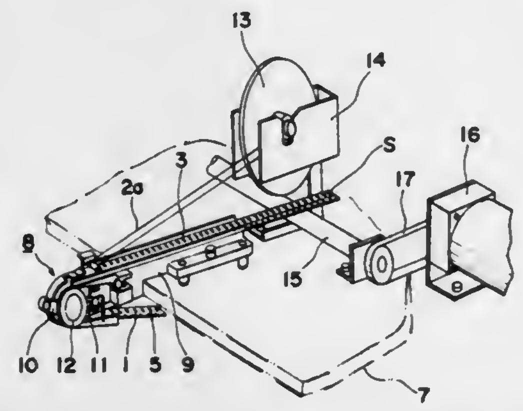
3. An automatic tension-adjusting mechanism for a window regulator comprising:

a wire arranged in a loop and having two ends;
a shaft mounted for rotation;
a first pulley secured on said shaft for rotation therewith and having one end of said wire affixed thereto;
a second pulley supported on said shaft for rotational and axial movement with respect thereto and having the other end of said wire affixed thereto;
said first and second pulleys each being formed with a plurality of ratchet teeth on their adjacent sides adapted to mesh with each other;
spring means frictionally engaging said second pulley and arranged to urge said second pulley axially on said shaft toward said first pulley to cause meshing of said ratchet teeth, whereby rotation of said shaft in one direction will cause said second pulley to rotation in said one direction with said first pulley; and
rotation of said shaft in the other direction will cause said ratchet teeth to disengage and allow said first pulley to rotate in said other direction while said second pulley is retained frictionally by said spring means and thereby takes up any excess elongation existing in said wire loop, whereafter said wire will cause said second pulley to rotate in said other direction.

4,440,355
ELECTRONIC COMPONENT SUPPLY APPARATUS

Kazuhiro Mori; Yoshihiko Misawa, both of Katano; Eiji Itemadani, Sakai, and Akira Kabeshita, Miriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 23, 1982, Ser. No. 351,466
Claims priority, application Japan, Feb. 23, 1981, 56-25871
Int. Cl.^{3} B65H *75/02*
U.S. Cl. 242—55 8 Claims

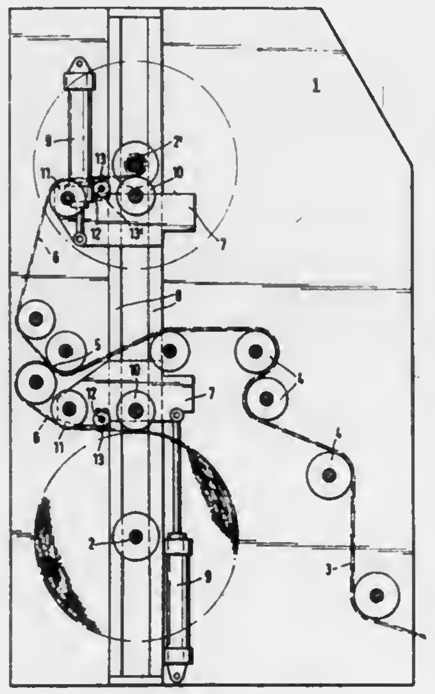


1. An electronic component supply apparatus for use in an electronic component mounting arrangement, which employs an electronic component collective support in the form of an electronic component carrier tape including a tape base formed with a plurality of recesses arranged at equal intervals for accommodating electronic components therein, and a covering tape fixedly adhering to one surface of said tape base for covering said recesses of said tape base, said electronic component supply apparatus comprising means for intermittently feeding said electronic component carrier tape by a predetermined pitch, means for horizontally supporting said electronic component carrier tape, with said covering tape positioned upward in respect to said tape base, a cover member arranged to contact said covering tape during winding thereof so as to separate said covering tape from said tape base and having a predetermined thickness, and means for winding up, under a predetermined tension, of said covering tape at a speed lower than the speed for intermittently feeding said tape base of said electronic component carrier tape.

4,440,356
MACHINE FOR SEPARATING AND SLITTING THIN SHEET

John C. Lang, Nashville, Tenn., assignor to Erwin Kampf GmbH & Co., Wiehl, Fed. Rep. of Germany

Filed Jul. 23, 1981, Ser. No. 285,987
Int. Cl.^{3} B65H *35/02*
U.S. Cl. 242—56.5 4 Claims

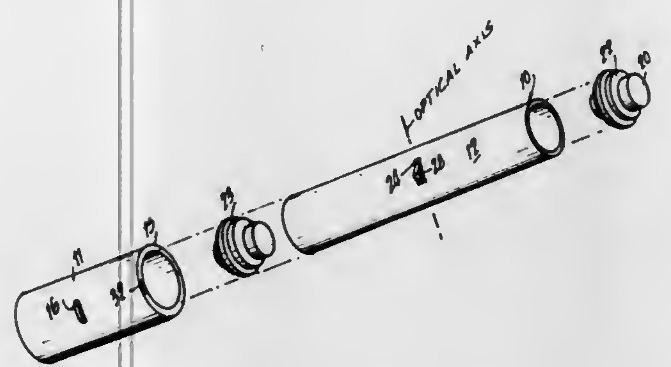


1. In a machine for processing a web of thin sheet, especially thin aluminum sheet or aluminum foil, which includes at least one driven winding shaft journalled in a stationary support structure of the machine and guide and deflecting rolls which lead the sheet toward a winding point at which the sheet is wound onto the winding shaft; in said machine, a device for longitudinally slitting the sheet into a plurality of sheet strips which are being wound onto the winding shaft in the form of longitudinally abutting strip coils, the device comprising in combination:
a winding carriage guided for displacement towards and away from the winding shaft;
a pressure roll journalled on the winding carriage so as to contact the strip coils at the winding point;
means for biasing the winding carriage towards the winding shaft so that the pressure roll exerts a radial winding pressure at the winding point, while progressively displacing the winding carriage away from the winding shaft, in response to the increase in diameter of the strip coils;
a sheet deflecting roll likewise journalled on the winding carriage, at a short distance from the pressure roll and ahead of the latter in the sense of sheet movement, the location of the deflecting roll being such that it deflects the sheet path in all positions of the winding carriage, thereby creating a terminal sheet run between the deflecting roll and the pressure roll which remains in an unchanging relationship relative to the winding carriage in all carriage positions; and
a plurality of transversely spaced slitting knives arranged on the winding carriage in a position in which the knives reach into the path of the terminal sheet run, just ahead of the winding point.

4,440,357
MANDREL AND CORE ASSEMBLY FOR LARGE FORMAT CAMERAS

Quentin D. Vaughan, Hollywood, Fla., assignor to Visual Graphics Corporation, Tamarac, Fla.

Filed Jul. 15, 1982, Ser. No. 398,686
Int. Cl.^{3} B65H *75/02*
U.S. Cl. 242—68.5 6 Claims

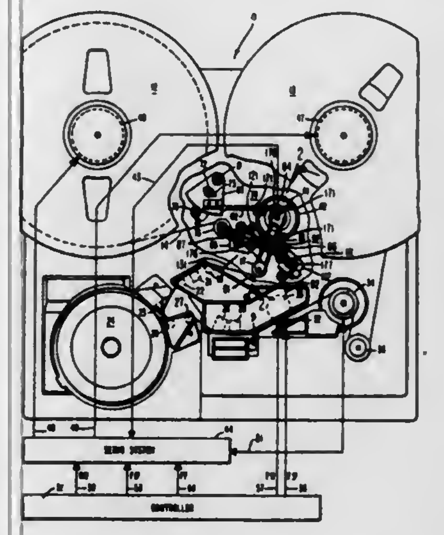


1. A mandrel and core assembly for supporting rolls of photosensitive material within a camera comprising an elongated, cylindrical mandrel, means at each end of said mandrel to rotatably secure it within the camera, a first slot in the mandrel located between the ends of the mandrel, normal to the longitudinal axis of the mandrel, and upon the longitudinal optical axis of the image plane of the camera, a detent yieldably carried by the mandrel within the first slot extending through the said slot and beyond the outer surface of the mandrel, an elongated, hollow core, said core having a cylindrical core body adopted to carry a roll of photosensitive material thereon and slidably receivable upon the mandrel, and a second slot in the core body midway between the ends thereof of a size to receive the detent therein to couple the core and mandrel together.

4,440,358
TAPE TENSIONING APPARATUS AND METHOD OF ASSEMBLY

Dennis M. Ryan, San Mateo, and Robert Hursey, Los Altos, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Sep. 2, 1982, Ser. No. 414,234
Int. Cl.^{3} B65H *59/38, 63/02;* G03B *1/04;* G11B *15/32*
U.S. Cl. 242—189 7 Claims

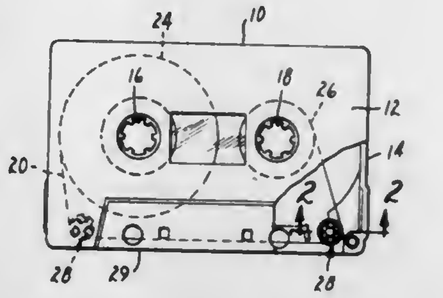


4. Field-replaceable tension-sensing apparatus for a tape transport, comprising:
a housing adapted for detachable attachment to said transport on said tape path thereon and between a pair of tape-engaging and path-determining means for said tape;
a tape-engaging tension arm mounted for pivoting motion on a shaft in said housing and extending from said housing for engaging said tape between said path-determining means and for inducing said loop in said tape with the length of said loop varying with said tension of said tape in said loop, said loop-inducing means being arranged for motion in accordance with the varying length of said loop as an indication of said tape tension;
a first circuit board attached to and moving with said shaft for carrying electronic elements, and a space-traversing-signal generating means mounted on said circuit board in predetermined indexed relation with said arm;
means for receiving and transducing said space-traversing signal mounted on a second circuit board fixedly attached to said housing in predetermined spaced relation to said generating means; in predeterminded indexed relation to said housing and being adapted to produce a tension-representing signal as an indication of the degree to which said signal generating means departs from a predetermined indexed relation with said housing;
said signal generating means including a light emitting diode and a grating lens for focussing said light into a substantially radially linear zone upon said receiving and transducing means;
said receiving and transducing means being a photo-potentiometer element of toroidal shape mounted coaxially with said shaft and adapted to produce said tension signal as a indication of the rotational position of said light zone with respect to said housing;
said housing being adapted for attachment to said transport in predetermined indexed relation therewith; and
whereby the tension signal always represents the rotational position of said arm with respect to said housing, and, when said housing is mounted on said transport, the position of said arm with respect to said transport as well; and whereby said apparatus may be attached to said transport without the need for subsequent calibration.

4,440,359
CASSETTE ROLLER GUIDE

Norman E. Nelson, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 22, 1982, Ser. No. 360,348
Int. Cl.^{3} G03B *1/04;* G11B *15/32*
U.S. Cl. 242—199 7 Claims



1. In a tape cassette including a pair of generally parallel sidewalls having spaced inner surfaces, the combination with said sidewalls of a roller guide assembly comprising:
a roller guide having an axis disposed generally normal to said inner surfaces, axially spaced bearing surfaces adjacent said inner surfaces, a main portion comprising a generally cylindrical outer surface about said axis, and at least one axially extending projection integrally formed with said main portion and defined by a partial radially extending cut between said projection and said main portion, said projection defining one of said bearing surfaces and being resiliently deflected toward said main portion by the spacing between the inner surfaces of said sidewalls to locate said roller guide with respect to said inner surfaces; and
means mounting the guide between said sidewalls for rotation relative thereto around said axis.

4,440,360
EXTENDABLE FIN

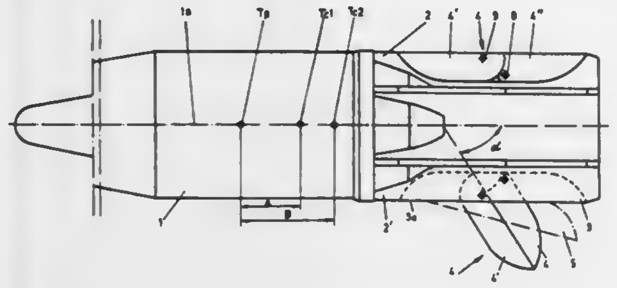
Stig Hallström, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Continuation of Ser. No. 195,165, Oct. 8, 1980, abandoned. This application Jan. 19, 1983, Ser. No. 459,163

Claims priority, application Sweden, Oct. 9, 1979, 7908358

Int. Cl.³ F42B *13/32*

U.S. Cl. 244—3.28 **10 Claims**



1. In a fin stabilized ammunition unit including a projectile for firing into a trajectory, an improved stabilizing apparatus comprising:
- a projectile housing having a fin carrying longitudinal groove;
- first and second longitudinally extending planar fin parts, disposed within said groove, which have abutting ends, each mounted for rotation in a common plane containing a longitudinal axis of the projectile on separate pivot points adjacent said abutting ends in said groove, remaining free ends of said fin parts extending in opposite directions from said pivot points, said fin parts having complementary surface portions which abut to form a single fin upon pivoting of said fin parts away from said groove in response to rotational acceleration of said projectile which forces said fin parts from said groove.

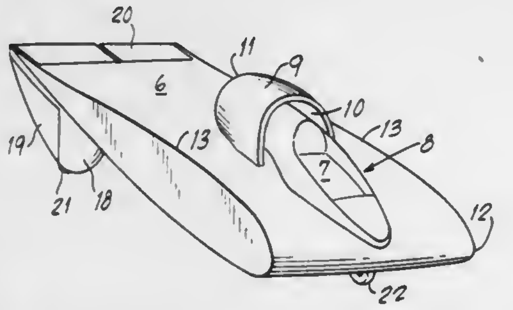
4,440,361
AIRCRAFT STRUCTURE

Rodney McGann, 4187 Old San Jose Rd., Santa Cruz, Calif. 95065

Continuation-in-part of Ser. No. 208,069, Nov. 18, 1980, abandoned, which is a continuation-in-part of Ser. No. 54,817, Jul. 5, 1979, abandoned. This application Sep. 27, 1982, Ser. No. 423,639

Int. Cl.³ B64C *1/00*

U.S. Cl. 244—36 **7 Claims**



1. An aircraft structure comprising a substantially rectangular airfoil having an aspect ratio within the range of 0.35 to 1 comprising a leading edge, a trailing edge, and substantially rectangular tips free from obstructions to air flow around the tips adjacent the leading edge, a duct mounted on the upper surface of the airfoil having an air inlet port on the upper surface only of said airfoil and spaced not more than one third the chord of said airfoil from said tips and within the range of about 25 to 40 percent of said chord from the leading edge of said airfoil and said duct being spaced a substantial distance from the trailing edge of said airfoil, and means for inducing airflow from said leading edge and from said tips into and through said air inlet port and duct at a velocity greater than the velocity of flow of air over the leading edge of the airfoil thereby substantially eliminating vortices at the tips of the airfoil, and a downwardly extending fin and rudder at each tip of the airfoil on the lower surface thereof near the trailing edge of said airfoil.

4,440,362
TWO-AXIS RUDDER TRIM FOR AIRCRAFT

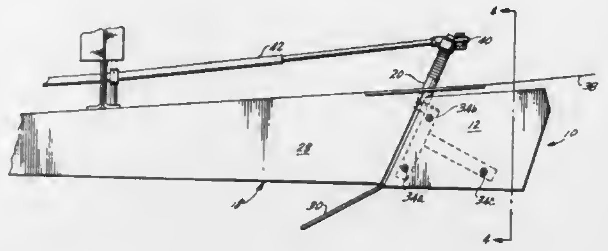
Robert A. Walker, 17130 Roscoe Blvd., Los Angeles, Calif. 91325

Continuation of Ser. No. 169,405, Jul. 16, 1980, Pat. No. 4,373,689. This application Sep. 29, 1982, Ser. No. 427,566

The portion of the term of this patent subsequent to Feb. 15, 1990, has been disclaimed.

Int. Cl.³ B64C *5/10*

U.S. Cl. 244—87 **12 Claims**



1. A two axis trim element for aircraft comprising:
- a rotatable shaft with a longitudinal axis;
- a substantially vertical surface coupled to the shaft, said surface having a lower edge;
- a horizontal surface having a leading edge and being attached to the lower edge of the vertical surface along a first side edge of the horizontal surface;
- a downwardly-canted tab extending from the leading edge of the horizontal surface;
- an upwardly-canted tab extending from a second side edge of the horizontal surface opposite the vertical surface; and
- means to controllably rotate the shaft about the longitudinal axis to allow orientation of the trim element in different rotatable positions.

4,440,363
LANDING MAT OR THE LIKE

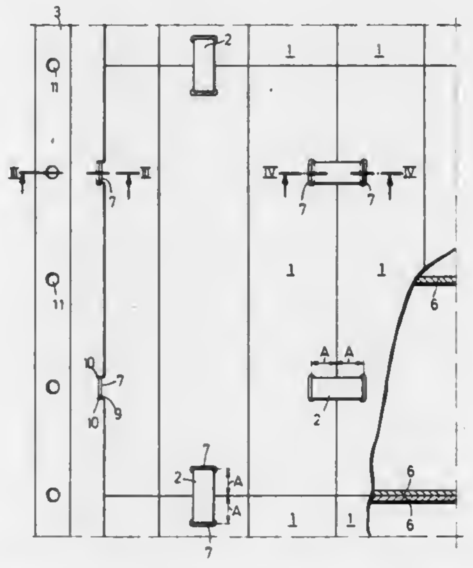
Werner Brand, Hagen, Fed. Rep. of Germany, assignor to Estel Hoesch Werke AG, Dortmund, Fed. Rep. of Germany

Filed Oct. 1, 1981, Ser. No. 307,592

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1980, 3037809

Int. Cl.³ B64F *1/00*

U.S. Cl. 244—114 R **4 Claims**



1. A load-supporting platform adapted to rest on precompacted terrain, comprising a multiplicity of multiply adjoining substantially identical units having opposite longitudinal edges continuous with corresponding edges of other units and transverse edges contiguous with corresponding edges of other units, each of said units having a pair of downwardly turned flanges along their opposite longitudinal edges and inner ribs parallel to but spaced from said flanges and formed as flattened corrugations, a transverse rib for at least one of said units extending at an angle to said inner ribs and flanges thereof, each of said units being formed at a predetermined distance inwardly of at least one of its edges with a window opposite a window formed in an adjoining unit along the contiguous edge thereof, and clips spanning contiguous edges of adjoining units and removably received in the windows thereof, said windows being elongated and having a major axis parallel to the respective edge of the unit formed with the window, said clip being a metal strip formed with a hook at one end engageable in one window and, at the other end, with a downwardly turned tongue provided with a corrugation engageable beneath an edge of another of said windows receiving said tongue.

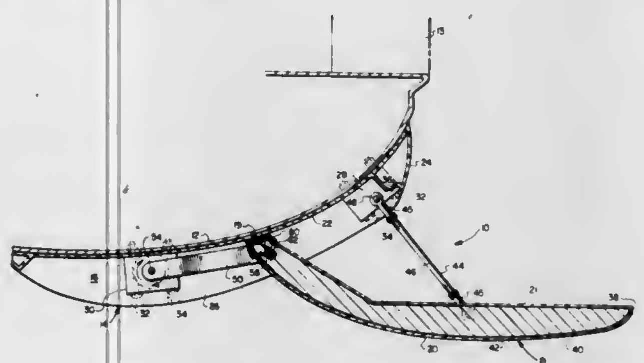
4,440,364
RETRACTABLE AIRCRAFT STEP

Steven S. Cone, 13611 Heartside Pl., Dallas, Tex. 75234; David E. Jones, 747 Vinecrest, Richardson, Tex. 75080, and Richard C. Serkland, Rte. 5, Box 93, McKinney, Tex. 75069

Filed Sep. 8, 1981, Ser. No. 300,259

Int. Cl.³ B64C *1/24*

U.S. Cl. 244—129.6 **18 Claims**



1. A retractable aircraft step for attachment to an airframe, said step comprising:
- a support member;
- a step member connected to said support member and movable between a retracted position and an extended position wherein said step member extends generally under and adjacent to a doorway in said airframe;
- linkage means interconnecting said step member and said support member for moving said step member between said positions, said linkage means including first link means pivotally connected to said support member and said step member, second link means pivotally connected to said support member at a point spaced from said pivotal connection of said first link means to said support member, said second link means being pivotally connected to said step member at a point spaced from the pivotal connection of said first link means to said step member, and a beam mounted on said step member and including opposed end portions forming pivotal connections between respective ones of a pair of links comprising one of said first and second link means and said step member, said end portions being elastically deflectable at an interference point in the path of movement of said linkage means to allow said step member to be moved between said extended and retracted positions.

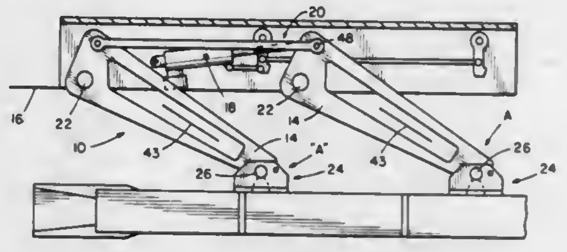
4,440,365
LAUNCH MECHANISM

John W. Holtrop, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 3, 1981, Ser. No. 326,872

Int. Cl.³ B64D *1/02*

U.S. Cl. 244—137 R **3 Claims**



1. A release mechanism for securing and releasing a store having a securing lug comprising:
- a swing arm having length, a proximate end portion, a distal end portion, and pivotingly movable at the proximate end with respect to the vehicle between a store storage position and a store launch position, and
- means for securing and releasing the store disposed at the distal end portion, said means for securing and releasing comprising:
- a hook for securingly engaging the securing lug, the hook being pivotable about a first pivot point disposed at the distal end portion and pivotably disengagable from the lug for release of the store,
- a cam disposed in predetermined relationship to the store, the cam and the store being pivotably movable about a second pivot point with respect to the swing arm,
- the hook being provided with a cam follower surface movingly engagable with the cam upon pivoting of the arm at the proximate end portion with respect to the vehicle, the cam being pivotable with respect to the swing arm about the second pivot point, and
- a tang disposed along a portion of the cam follower surface and engagable with the cam upon pivoting of the swing arm into a predetermined position intermediate the storage position and the launch position, the hook being pivotable about the first pivot point upon engagement of the tang with the cam upon further travel of the cam past a predetermined position for moving the hook out of engagement with the securing lug upon further pivoting of the swing arm past the predetermined position.

4,440,366
PARACHUTE CONTROL APPARATUS

Arthur A. Keeler, Mt. Waverley; William M. Rice, Altona, and Edward C. Tremayne, North Coburg, all of Australia, assignors to Commonwealth of Australia, Canberra, Australia

Filed Nov. 3, 1981, Ser. No. 317,882

Claims priority, application Australia, Nov. 3, 1980, PE6289

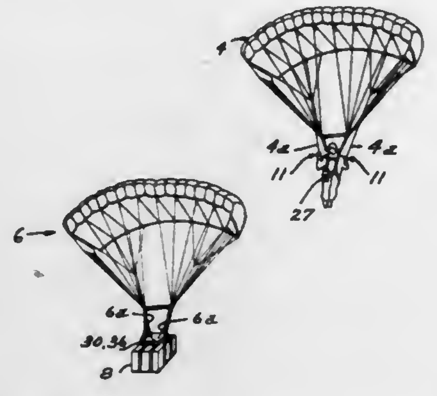
Int. Cl.³ B64D *17/34*

U.S. Cl. 244—138 R **8 Claims**

1. Parachute control apparatus for enabling control of the descent path of slave parachute from a manned and simultaneously descending parachute, the apparatus including:
- hand operable master controlling means selectively operable by a parachutist, and comprising two hand held master controllers, one for each hand of the parachutist, the master controllers being arranged to be held together with the parachutist's control line toggles whereby the parachutist can selectively pull on his own control line to control his own parachute in direction and glide angle and can simultaneously selectively operate the master controllers,
- a control signal transmitter adapted to be carried by the parachutist and responsive to operation of the two master

controllers to transmit respective control signals to the slave parachute,

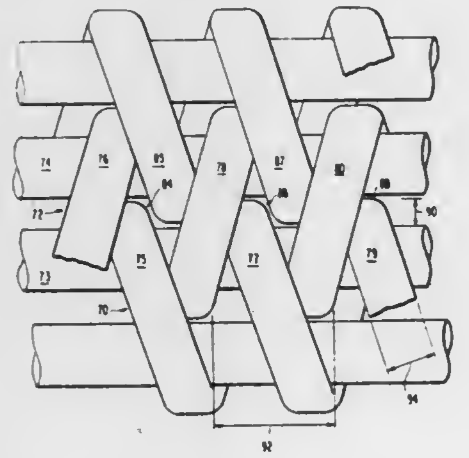
a control signal receiver adapted to be carried by the slave parachute and operative to respond to the control signals received from the transmitter by generating appropriate drive signals, and



control line drive means adapted to be operatively associated with control lines of the slave parachute and responsive to the drive signals of the control signal receiver to operate the control lines of the slave parachute and control the descent path thereof.

4,440,367
BARRIER-TYPE METAL WIRE FABRIC AND ITS MANUFACTURE

Ronald G. Daringer, Cambridge, Md., assignor to Maryland Wire Belts, Inc., Church Creek, Md.
Division of Ser. No. 227,666, Jan. 23, 1981, Pat. No. 4,396,041. This application Jun. 13, 1983, Ser. No. 503,413
Int. Cl.³ B21F *27/00*
U.S. Cl. 245—6 **11 Claims**



1. Barrier-type metal wire fabric comprising

a plurality of metal wire helically-wound spirals and connector rod means of predetermined gage and configuration assembled to establish a longitudinal direction for such fabric,

such spirals being formed from elongated metal wire having a predetermined transverse cross-sectional configuration with at least two diametrically opposed planar surfaces,

such spirals including left-hand wound spirals and right-hand wound spirals,

each such helically-wound spiral being elongated and having a centrally located winding axis with individual helical loops uniformly distributed along such winding axis,

such individual helical loops having a substantially elliptical configuration when projected onto a plane in transversely perpendicular relationship to such winding axis,

such elliptical configuration defining a major axis and a minor axis with the major axis being oriented in the longitudinal direction of assembled fabric,

an individual loop having an internal surface and external surface defining longitudinally leading and trailing bight end portions of its curvilinear configuration,

such bight end portions being connected by intermediate elongated leg portions disposed generally longitudinally in assembled fabric,

such internal loop configuration defining an enlarged centrally-located opening with spacing between such elongated leg portions being greater contiguous to such minor axis than contiguous to such bight ends,

such internal loop surface being defined by one of the at least two diametrically opposed planar surfaces of such helically-wound wire with such exterior loop surface being defined by the remaining planar surface of the two diametrically opposed surfaces of such helically-wound wire,

such connector rod means including a plurality of metal wire connector rods,

such connector rods being elongated and having a length dimension at least equal to the lateral dimension of metal wire fabric as assembled,

each such connector rod presenting a predetermined curvilinear cross-sectional exterior surface configuration,

the plurality of helically-wound spirals being disposed with their winding axes substantially parallel and extending in the lateral direction of assembled metal wire fabric and with internal loop portions of next adjacent pairs of helically-wound spirals overlapping in the longitudinal direction of assembled wire fabric,

such next adjacent pairs of overlapping spirals being oppositely wound such that left-hand spiral portions overlap with right-hand spiral portions,

such adjacent pairs of spirals being free of interlocking weaving of overlapping portions with at least a portion of the external loop bight end surface of one spiral being disposed within the internal loop of its next adjacent oppositely wound spiral at a location contiguous to the minor axis of such latter internal loop,

the connector rod means being disposed to extend in the lateral direction of the metal wire fabric as assembled with a connector rod extending laterally through overlapping portions of internal loop surfaces of next adjacent pairs of helically-wound spirals,

such connector rod means providing for pivotal relative movement of next adjacent pairs of spirals about a connector rod while substantially eliminating non-rotational relative movement between such next adjacent pairs of helically-wound spirals,

the helically-wound spirals and connector rod means as assembled establishing a metal wire fabric of extended surface area which is substantially free of open passages in a direction transverse of such surface area.

4,440,368
MOUNTING SYSTEM FOR PANEL MOUNTED DEVICES

Robert D. Kitchen, Freeport, Ill., assignor to Honeywell Inc., Minneapolis, Minn.
Filed May 7, 1981, Ser. No. 261,359
Int. Cl.³ G12B *9/00*
U.S. Cl. 248—27.1 **12 Claims**

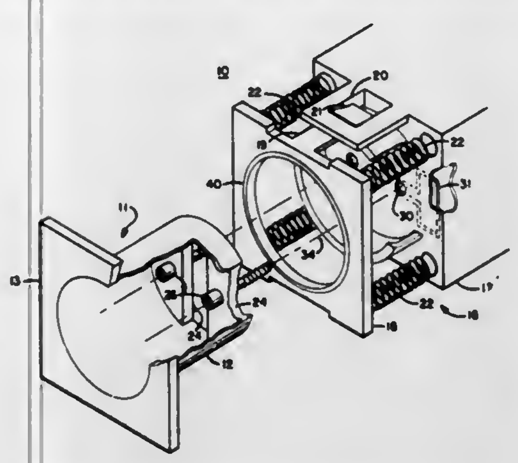
1. A quick mounting system for panel mounted devices comprising:

a base to be mounted on a panel;

a mounting flange cooperating with said base to provide for clamping the panel between said base and said mounting flange;

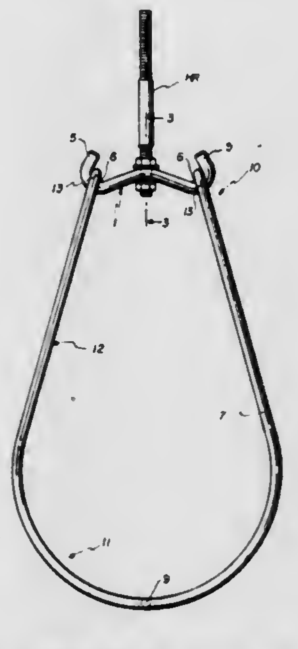
screw means captive in said mounting flange and having a threaded shank with a given major diameter extending from said mounting flange in a first direction toward said base along an axis transverse to the panel at the mounting location;

thread engagement means in said base having a deflectable member configured and biased to engage at least a portion of the threads of said screw means and a ramp surface cooperating with the deflectable member to permit deflection thereof away from the axis in response to a force in the first direction and to prevent deflection away from the axis in response to a force in a direction opposite the first direction.



4,440,369
PIPE HANGER

James C. Banks, 1401 N. Shawano Dr., Marshfield, Wis. 54449
Filed Mar. 11, 1982, Ser. No. 357,139
Int. Cl.³ F16L *3/00*
U.S. Cl. 248—62 **4 Claims**



1. A pipe hanger or the like to be attached to a depending hanger rod comprising in combination:

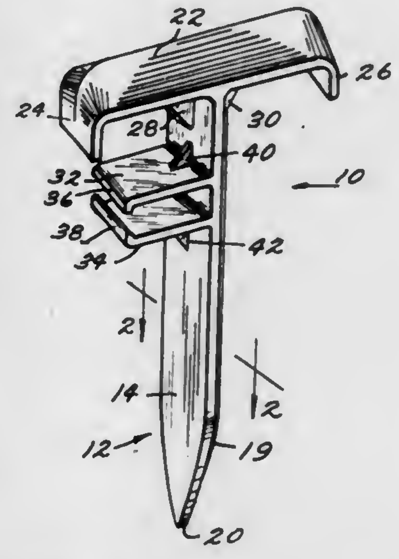
a first member having outwardly extending hooked ends and fixed to the hanger rod,

a second member having a lower portion of arcuate shape and a top portion with means to removably attach to said hooked ends for rapid attachment to the hanger rod,

said arcuate lower portion supporting a pipe thereon in which said top portion of said second member is provided with substantially linear portions, said second member formed out of a spring, resilient material in which said second member is provided with first and second free ends, on said top portion, one said free end adapted to be initially looped over one of said hooked ends of said first member, a pipe to be supported draped thereon, and a second free end looped over a second said hooked end of said first member wherein said first member is formed from first and second rods, welded together along portions thereof, a central area provided with an opening for slidable insertion upon the hanger rod in which said joined portions of said first member curve outwardly and downwardly in which said hooked ends taper upwardly and inwardly toward the hanging rod, and a bight portion is provided at a transition between said joint areas and said hooked ends in which said free ends of said second member define loops, said loops communicating with and formed by first and second rods tapering downwardly and outwardly, rigidly constrained and separated at a lowermost portion by means of a third rod therebetween.

4,440,370
SECURING STAKE

Robert M. Rood, 7164 Victoria Rd., St. Paul, Minn. 55119
Filed Sep. 28, 1982, Ser. No. 426,143
Int. Cl.³ A62C *23/04*
U.S. Cl. 248—75 **1 Claim**



1. A securing stake comprising:

an elongated blade portion formed of a stiffly resilient material;

said blade portion having first, second and third integrally formed surfaces, and said first surface being a relatively wide substantially flat surface, and said second and third surfaces being relatively narrow and disposed at an angle with said first surface such that said blade portion has a generally triangular cross section and is relatively thin at the edges thereof and thick in the middle, the width of said first, second and third surfaces varying such that said blade portion tapers to a point at one end, the thickness of the middle of said blade portion also tapering in the vicinity of said point;

a cross member portion, integrally formed with said blade portion, disposed at the end of said blade portion opposite said point, having a width in the plane of said blade portion first surface substantially equal to the width of said blade portion first surface, and extending substantially equal distances on either side of said blade portion in directions perpendicular to the plane of said blade portion first surface;

said cross member portion including at each end thereof downturned portions extending toward said blade portion point;

first and second transverse support braces, integrally formed between said cross member portion and said blade portion; and

first and second stiffly resilient projecting arms integrally formed with said blade portion, extending outwardly from said blade portion first surface, said arms being generally parallel to said cross member portion, and having a width in the plane of said blade portion first surface equal to the width of the blade portion first surface;

said first arm being disposed a first predetermined distance from said cross member and including at the end thereof a short downturned portion extending toward said blade portion point;

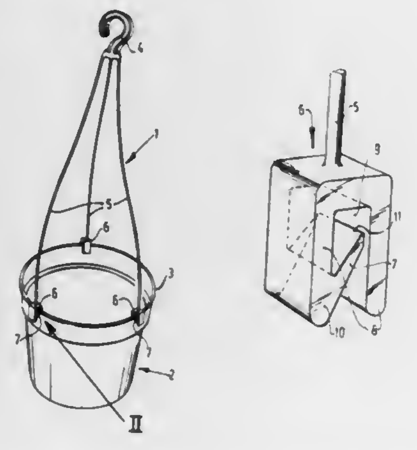
said second arm being disposed a second predetermined distance from said first arm and including a short upturned portion extending toward said cross member portion;

a third transverse support brace integrally formed between

- the upper surface of said first arm and said blade portion first surface; and
- a fourth transverse support brace integrally formed between the lower surface of said second arm and said blade portion first surface.

4,440,371
POT HANGER

Dirk W. Wijsman, Rosmalen, Netherlands, assignor to Elho International B.V., Rosmalen, Netherlands
Filed Jun. 29, 1981, Ser. No. 278,098
Claims priority, application Netherlands, Aug. 28, 1980, 8004871
Int. Cl.^{3} A47H *1/10*
U.S. Cl. 248—318 **3 Claims**

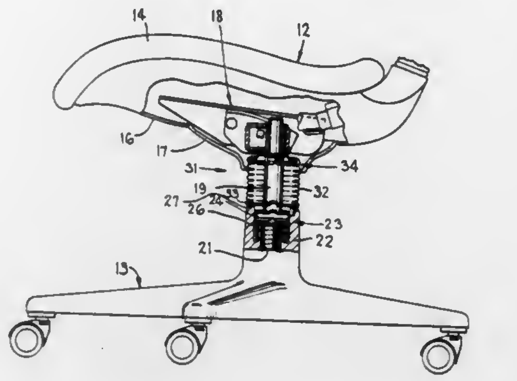


1. A hanger assembly for use with pots of the type having a circular rim defined by a circumscribing top wall portion terminating in an enlarged lip overhanging said top wall portion, said assembly comprising a hanger portion having at least three flexible rod-like members depending therefrom and each having a carrying member connected thereto, each carrying member being of inverted generally U-shape to define a pair of spaced legs joined at their upper ends by a bridge piece and each leg being of greater length than of width so each pair of spaced legs is able to accomodate the circular rim therebetween with clearance, the opposed surfaces of said legs near said bridge piece being spaced apart by an amount greater than the thickness of said rim whereby to straddle such rim with said clearance, a tapered tongue angling upwardly from the lower end of one of said legs generally toward the juncture of the other leg and said bridge piece, said tongue terminating in a tip which is in spaced relation to such juncture and in spaced relation to said other leg such that said tip engages against said top wall portion in underlying relation to said lip and supports the pot by downward pressure of said lip on said tongue, said tongue being of a thickness less than that of said one leg and tapering toward said tip, each said carrying member being formed of resilient material whereby the weight of said pot preferentially deforms said tongue and especially the tip thereof to increase the pressure thereof against said top wall portion below said lip.

4,440,372
BELLOWS MOUNTING ARRANGEMENT FOR SWIVEL CHAIR

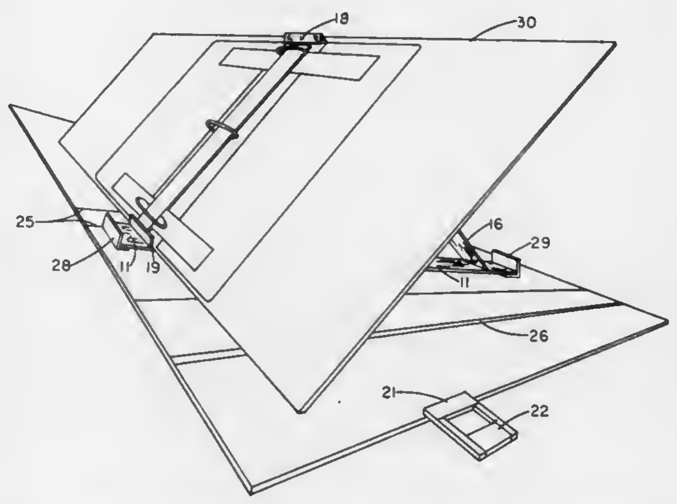
Joseph M. Wisniewski, Marne, Mich., assignor to Haworth, Inc., Holland, Mich.
Filed Mar. 18, 1981, Ser. No. 244,840
Int. Cl.^{3} F16M *11/00*
U.S. Cl. 248—406 **15 Claims**

1. In a chair having a seat means, a pedestal-type base, a spindle assembly vertically joining the base and the seat means for permitting rotation of the latter about an upright axis defined by the spindle assembly, and an elongated extendible and contractible tubular boot disposed between said base and seat means in surrounding relationship to said spindle assembly, said boot having its lower end anchored to said base, the improvement comprising retainer means coacting between said seat means and the upper end of said boot for axially securing said upper end to said seat means while permitting relative rotation therebetween about said axis, said retainer means including a bearing ring snugly and nonrotatably seated within the upper end of said boot, and a retainer member fixed relative to said seat assembly and having an annular portion which is rotatably supported on said bearing ring, said bearing ring and said retainer member having means coacting therebetween for axially securing said bearing ring and said retainer member together.



4,440,373
FOLIO AND NOTEBOOK DISPLAY STAND

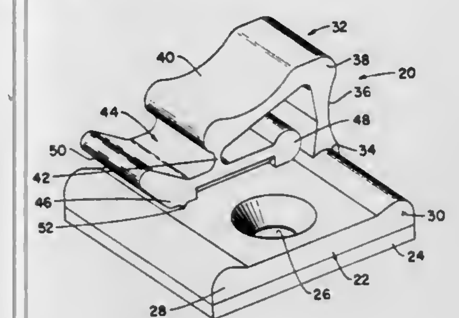
Bruce Beitler, P.O. Box 935, and Irene Ostendorf, 1203 W. 35th, both of Kearney, Nebr. 68847
Filed Feb. 17, 1981, Ser. No. 234,952
Int. Cl.^{3} A47B *97/04*
U.S. Cl. 248—461 **8 Claims**



1. A notebook display stand and portfolio, comprising
- a portfolio having two folding panels hingedly connected along a folding line therebetween,
- a collapsible triangular frame for supporting a notebook at an inclined position,
- a detachable frame mounting means on said portfolio for allowing detachment of said frame from said portfolio,
- said frame comprising
  - an elongated base member operably attached to said portfolio by said detachable frame mounting means,
  - an elongated support member, for supporting a notebook, having one end hingedly connected to said base member and an opposite free end, and
  - an elongated brace member having one end hingedly connected to the free end of the support member and a lower end detachably connectable to the base member,
- said base member being longer than said support member which is longer than said brace member,
- said brace member being foldable into generally parallel alignment against said support member which is foldable into generally parallel alignment against said base member upon collapsing of said frame.

4,440,374
INTEGRALLY FORMED RESILIENT CLIP AND EXTENSION

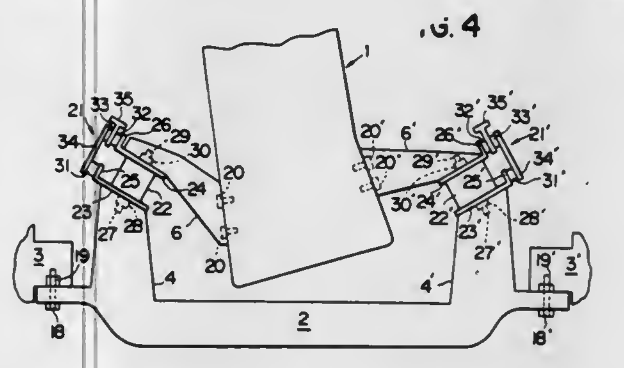
Jean R. Achille, Forest Park, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Apr. 21, 1981, Ser. No. 256,220
Int. Cl.^{3} F16M *13/00*
U.S. Cl. 248—544 **17 Claims**



1. A resilient clip adapted for releasably accommodating at least one elongated article, such as tube or cable, wherein said clip includes a base, an integral resilient arm means attached to one side of the base adjacent one edge and having an end disposed in spaced overlying relation to said base, pressure means for positioning said at least one article relative to said base including a side facing said base and opposite outer margins extending generally transverse to the length of said resilient arm means, flexible integrally formed means attaching the pressure means to the end of the said resilient arm means, said flexible means disposed transverse to the length of said resilient arm means and intermediate said outer margins, said pressure means normally positioned adjacent the base and laterally yieldable away from said base along with the end of said resilient arm means to permit insertion, between the base and the pressure means, of an article to be supported, said pressure means including rib means on said side facing said base.

4,440,375
ENGINE MOUNTING STRUCTURE FOR AUTOMOTIVE VEHICLE

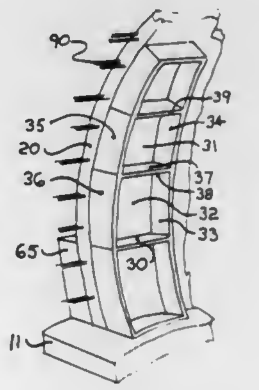
Masao Fukushima, Fuchu, and Komei Yazaki, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan
Filed Apr. 7, 1981, Ser. No. 251,855
Claims priority, application Japan, Apr. 17, 1980, 55-51350
Int. Cl.^{3} F16M *13/00*
U.S. Cl. 248—559 **4 Claims**



1. An engine mounting structure for mounting an automotive engine on the body structure of an automotive vehicle, comprising at least one shock and vibration insulating unit which comprises:
- a first coupling member to be connected to the body structure of the vehicle;
- a second coupling member to be connected to the body structure of the engine and spaced apart from the first coupling member;
- a main resilient block intervening directly between the first and second coupling members; and
- vibration cancelling means comprising at least one combination of a first mass member, a second mass member, a first auxiliary resilient block intervening directly between said first coupling member and said first mass member, a second auxiliary resilient block directly intervening between said second coupling member and said second mass member, and a third auxiliary resilient block directly intervening between the first and second mass members.

4,440,376
EARTH SHELTERED BUILDING TECHNOLOGY

Richard E. Peterson, 412 Pierce Ave., #3, St. Paul, Minn. 55104
Filed Sep. 9, 1980, Ser. No. 185,560
Int. Cl.^{3} E04G *11/06*
U.S. Cl. 249—18 **10 Claims**



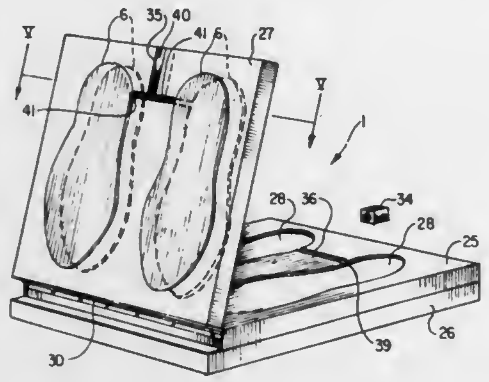
1. A reusable construction form system for assembly and disassembly relative to a preformed foundation surface at a building site, said form system for producing ellipsoidal cavities to receive building material in the construction of a generally curvilinear thin shelled building structure for an earth sheltered building onto the preformed foundation surface, said form system being disposed to produce ellipsoidal cavities having a vertical cross section of an elliptical configuration with an eccentricity value ranging essentially from 0.50 to 0.95, said form system comprising:
- (a) an inner form network of a plurality of differing, predetermined inner form panels, said inner form panels varying in configuration and being placable at predetermined locations in said inner form network as determined by the location relative to the preformed foundation surface, said inner form network having an outward facing non-cohesive convex surface which extends generally upward from a generally inner edge of said foundation surface, said outward facing surface of said inner form network further having a vertical cross section of an elliptical configuration having an eccentricity value which ranges essentially from 0.50 to 0.95 to form an inner ellipsoidal structure, and,
- (b) an outer form network comprising a plurality of detachably mountable strata of predetermined outer form panels, said outer form network having a generally continuous, non-cohesive concave surface running generally spacially parallel to said convex surface of said inner form network to form an outer ellipsoidal structure.

4,440,377
MOLD FOR FOOTWEAR SOLE

Ladislav Hujik, Batawa, Ontario, Canada K0K 1E0
Filed Sep. 22, 1982, Ser. No. 421,425
Claims priority, application Canada, May 5, 1982, 402309
Int. Cl.^{3} B29C *1/00*
U.S. Cl. 249—119 **3 Claims**

1. A mold for molding a plurality of footwear soles compris-

ing a bottom mold; an intermediate mold; hinge means pivotally connecting said intermediate mold to said bottom mold, whereby said intermediate mold can be rotated between an open position and a closed position on said bottom mold for defining at least one first mold cavity with said bottom mold; a vertically movable top mold for closing on said intermediate mold to define at least one second mold cavity with said intermediate mold; and an injection port in said intermediate mold for introducing moldable plastic material into said first and second cavities for forming said soles on said intermediate mold, whereby, when the mold is opened by moving said top mold away from said intermediate mold, the intermediate mold can be rotated to the open position for discharging the molded soles.



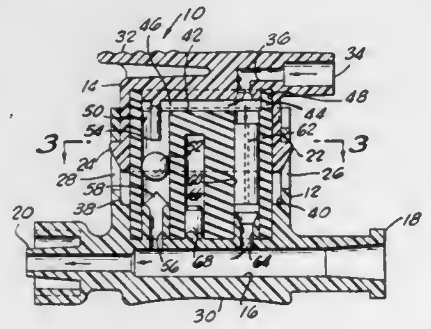
4,440,378
FLOW CONTROL APPARATUS

Michael P. Sullivan, P.O. Box 175, Wasco, Oreg. 97065

Filed Oct. 16, 1981, Ser. No. 312,856

Int. Cl.^{3} F16K *7/02, 51/00;* **A61M** *5/00*

U.S. Cl. 251—117 **12 Claims**



1. A flow control apparatus comprising

a housing having a hollow body and a plunger slidably positioned in and extending from said hollow body, said housing including a central cavity defined by said hollow body and said plunger, an inlet into said central cavity and an outlet from said central cavity;

a block of resilient material positioned in said central cavity between said inlet and said outlet and having a first passage therethrough oriented to provide communication between said inlet and said outlet and a second passage therethrough oriented to provide communication between said inlet and said outlet, said second passage including a rigid flow restrictor therein; and

a valve in said passage.

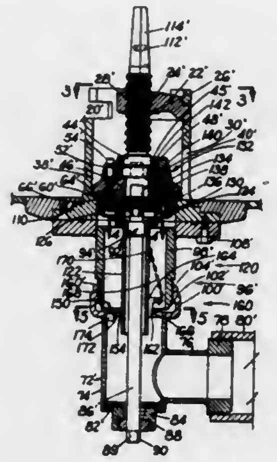
4,440,379
BOTTOM OPERATOR FOR TOP OPERATED BOTTOM INSTALLED TANK CAR VALVE ASSEMBLY

Gunter R. Behle, St. Peters, and David P. Hillstead, St. Charles, both of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Apr. 16, 1982, Ser. No. 369,043

Int. Cl.^{3} F16K *27/03, 51/00*

U.S. Cl. 251—144 **14 Claims**



1. For use in a top operated lading valve assembly located in a tank bottom and including a valve seat and threaded valve cage through which a threaded top operator extends and including a vertically movable lading valve having a lading valve opening; sufficient clearance existing between said top operator and said lading valve whereby said lading valve may rotate relative to said top operator; top operating connecting means extending downwardly through said lading valve opening; and including a depending lading valve outlet chamber, an unloading assembly for operating the lading valve assembly from the bottom comprising:

a hollow body portion having means at its upper end for connecting the body portion to the lading valve outlet chamber; bottom operating shaft means having a lower non-round end located below said body portion; said bottom operating shaft having an upper connection portion adapted to engage said top operator connecting means whereby said top operator may be rotated by said bottom operating shaft means and said lading operating shaft means and said lading valve moved vertically relative to said valve seat; said unloading assembly including means separate from said upper connection portion for preventing rotation of said lading valve while said top operator is rotated by said bottom operating shaft means.

4,440,380
WEDGEBALL VALVE

Gunter R. Behle, St. Peters, and John A. Hrinsin, St. Louis, both of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

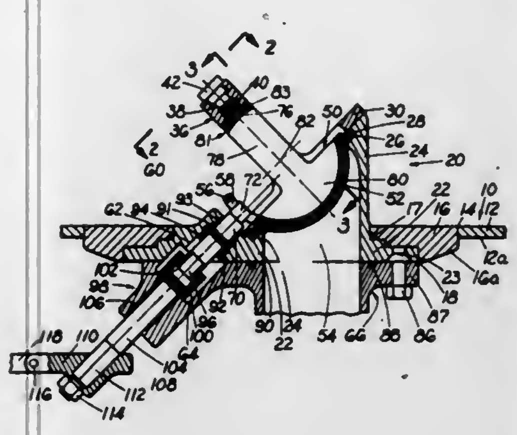
Filed Apr. 28, 1982, Ser. No. 372,590

Int. Cl.^{3} F16K *51/00, 25/00*

U.S. Cl. 251—144 **13 Claims**

1. A valve assembly comprising:

at least two spaced ball valve segments located within a valve housing mounted within a tank; said housing including a cage extending into said tank and having an inclined sealing surface which at least are of said ball valve segments engages in closed position; a lading outlet chamber located below said inclined sealing surface and being in fluid communication with the passage through said cage; an operating shaft inclined with respect to the axis of said outlet chamber; said operating shaft passing through inclined openings provided in the valve housing and in the outlet chamber; said operating shaft including connecting means for drivably engaging and rotating said ball valve segments; whereby movement of the operating shaft rotates said valve segments between open and closed positions, whereby one of said segments seats on said sealing surface in said closed position.



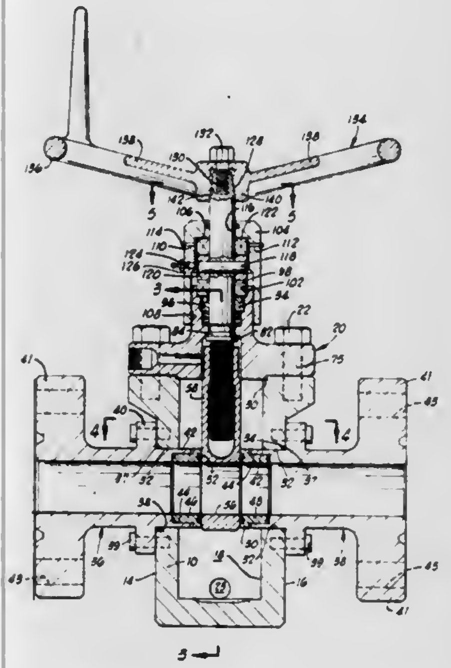
4,440,381
GATE VALVE

Robert G. Tipton, Jr., Rte. 1, Macomb, Okla. 74852

Filed Sep. 8, 1981, Ser. No. 299,968

Int. Cl.^{3} F16K *3/02, 3/30*

U.S. Cl. 251—214 **10 Claims**



1. A gate valve comprising:

a valve body defining a cylindrical bore opening at one side of the body, and further defining a fluid flow passageway extending through the body and intersecting the cylindrical bore at a right angle;

a pair of tubular seat ring adapters, each of which includes a sleeve portion, and wherein the sleeve portions are extended into the valve body at opposite sides thereof, and are bored at the inner end thereof to form valve seat ring shoulders, each of said seat ring adapters further including:

  an annular pipe flange at its outer end adapted for coupling the gate valve into a pipe line; and

  an annular second flange between the pipe flange and the respective adapter sleeve portion, and adjacent the valve body;

means fastening said second flanges of said seat ring adapters to opposite sides of the valve body;

a pair of aligned annular valve seat rings within the valve body on opposite sides of said cylindrical bore and aligned with said fluid flow passageway, each of said seat rings seated in the bore of one of said sleeve portions against the respective seat ring shoulder;

a gate reciprocably disposed in said cylindrical bore and having:

  opposite sides slidably contacting said seats; and

  side edges slidably contacting opposite sides of said cylindrical bore;

a bonnet assembly fastened to said body and closing the opening of said cylindrical bore;

a valve stem projecting through said bonnet and having a first end threadedly engaging said gate, and projecting through said bonnet, and having a second end, and a portion of frusto-pyramidal configuration adjacent said second end; and

an operator handle connected to the second end of said stem from the end thereof engaging said gate, said operator handle including a hub portion having a cavity therein of frusto-pyramidal configuration, said cavity receiving said stem portion of frusto-pyramidal configuration with said stem portion of frusto-pyramidal configuration extending less than the total distance from one side of said hub to the other along the axis of said stem and having a space defined between the second end of said stem and the bottom of said frusto-pyramidal cavity, whereby said cavity bottom forms a wall against which a part of a fastening member connected to said stem can be abutted when said fastening member is extended into said stem through the second end thereof and is placed in tension.

4,440,382
VALVE WITH A DIRECT PASSAGE AND ROTARY CONTROL

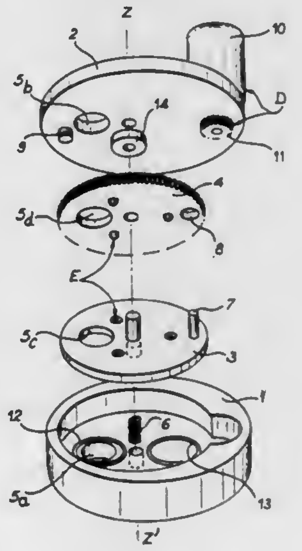
Jean Pruvot, Noisy le Grand, and Andre Roquefort, Clamart, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Oct. 9, 1981, Ser. No. 310,280

Claims priority, application France, Oct. 17, 1980, 80 22263

Int. Cl.^{3} F16K *31/44, 25/00*

U.S. Cl. 251—248 **8 Claims**



1. A valve having a direct passage and rotary control, comprising:

a body including an orifice therethrough;

a cover adapted to sealingly engage said body and including an orifice therethrough and positioned such that when said cover is sealingly engaged with said body said orifice of said cover is axially aligned with said orifice of said body;

a first plate rotatably disposed in said body near a bottom of said body and including an orifice therethrough such that when said valve is in a valve open position for a fluid flow therethrough said orifice of said first plate is axially aligned with said orifice of said body, and when said valve is in a valve closed position said orifice of said first plate is out of alignment with said orifice of said body and said fluid flow is precluded frrom passing through said valve;

a lug integral with said first plate;

a second plate rotatably disposed between said first plate and said cover and including an orifice and a lug hole therethrough, said lug hole adapted to receive said lug therein to align said orifice of said second plate with said orifice of said first plate and wherein said first plate and said second plate are rotatably disposed about a longitudinal axis of said valve;

drive means operatively associated with said second plate for alternately rotating said second plate to said valve open position and said valve closed position, said drive means including a motor having a rotational axis parallel to said longitudinal axis and wherein said motor has a lateral dimension such that any peripheral edge of said motor does not extend beyond any peripheral edge of said valve;

a stop member integral with said cover and positioned such that said lug abuts against said stop member when said valve is in said valve closed position;

a ratchet mechanism operatively associated with said first plate and said second plate and disposed therebetween such that when said drive means alternately rotates said second plate to said valve open position and said valve closed position said ratchet mechanism is constructed so as to be operative to engage said first plate with said second plate during rotation thereof, and when said lug abuts against said stop member said ratchet mechanism is constructed so as to be operative to axially displace said first plate against said bottom of said body; and

a sealing joint disposed about said orifice of said body such that when said first plate is axially displaced by said ratchet mechanism said sealing joint is compressed in a sealtight manner about said orifice of said body by said first plate and said fluid flow through said orifice of said body is precluded.

4,440,383

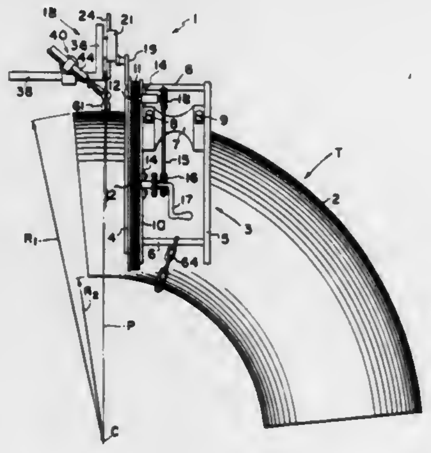
PIPE CUTTING APPARATUS

Timothy C. Dearman, Pearland, Tex.

Filed Apr. 28, 1983, Ser. No. 489,559

Int. Cl.^{3} B23K *7/04*

U.S. Cl. 266—54 **18 Claims**



1. A stabilizer for a pipe cutter movable orbitally about an axis, said stabilizer comprising a body having a pair of parallel, spaced apart legs extending from a cross-bar; a pair of pipe engageable followers; means mounting said followers on each of the legs of said body and remote from said cross-bar so that said followers may engage a pipe; and means carried by said cross-bar substantially midway between said legs for mounting said body for rocking movements about an axis substantially parallel to the first mentioned axis.

4,440,384

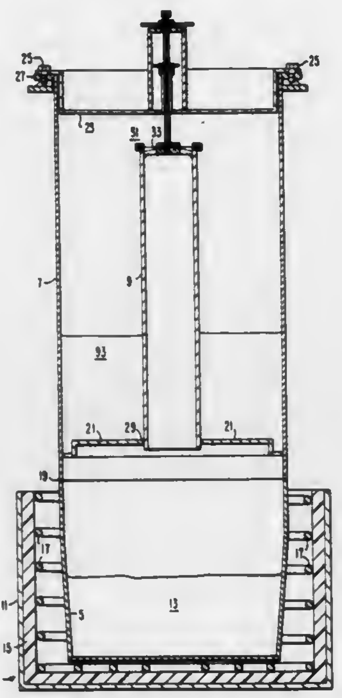
RETORT PIPE SEAL

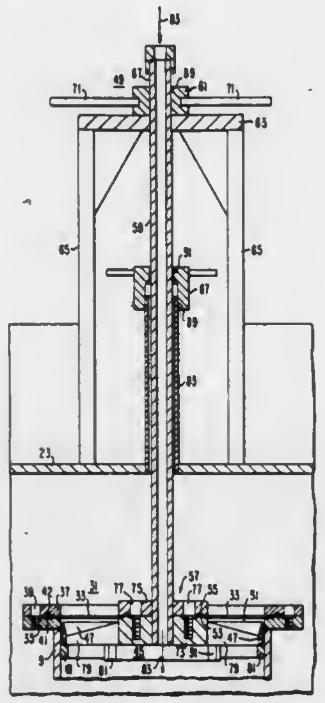
Harmon A. Evans, Ogden, Utah, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 8, 1980, Ser. No. 184,686

Int. Cl.^{3} C21B *7/22*

U.S. Cl. 266—149 **7 Claims**





1. Apparatus for reacting chemicals, comprising:

(a) retort means for containing a first reactant;

(b) crucible means for containing a second reactant;

(c) passage means interconnecting the retort means and the crucible means;

(d) means for heating at least one of the reactants to a predetermined temperature;

(e) wall means between the retort meand and crucible means for transmitting heat therebetween by radiation;

(f) closure means in the passage means for preventing interaction between the reactants and including a diaphragm extending across the passage means in a fluid-tight manner; and

(g) opening means for opening the closure means to effect interreaction of the reactants at the predetermined temperature and including cutter means for movement against and severance of the diaphragm.

4,440,385

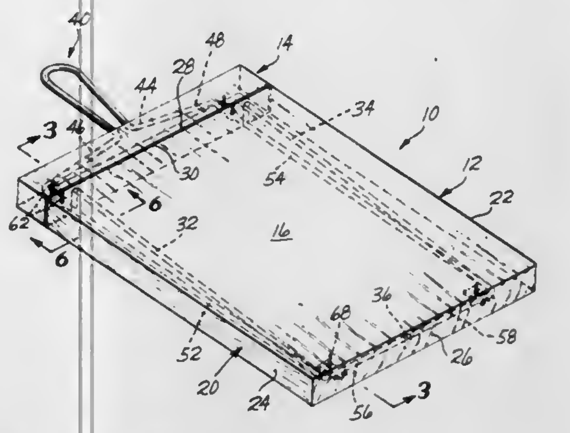
CUTTING BOARD WITH FUNNELING EFFECT

Dan W. Kingery, 408 S. 7th #3, Renton, Wash. 98055

Filed Nov. 23, 1981, Ser. No. 324,153

Int. Cl.^{3} B23Q *3/00*

U.S. Cl. 269—13 **24 Claims**



1. In a cutting board,

an upper board surface for cutting material thereon;

an opposite lower board surface on which the board is adapted to be supported during cutting;

said upper and lower surfaces being spaced;

a handle connected to and operative to lift said board;

the improvement comprising;

means connecting said handle to said board; and

means within said board to permit an end of the board adjacent the handle to be lowered with respect to said handle and to be lowered on and with respect to said means connecting when said board is lifted by said handle.

4,440,386

APPARATUS FOR FORMING STACKS READY TO BE PACKAGED FROM FLAT WORKPIECES

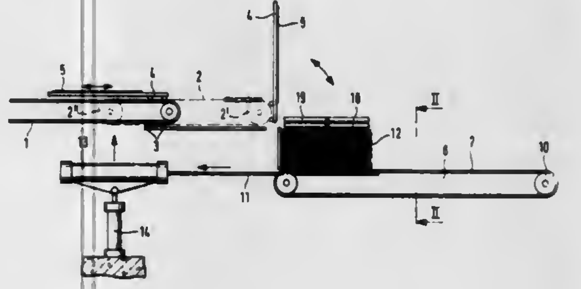
Fritz Achelpohl, Lengerich, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Mar. 4, 1982, Ser. No. 354,534

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1981, 3108195

Int. Cl.^{3} B65H *29/68*

U.S. Cl. 271—70 **2 Claims**



1. Apparatus for forming stacks ready to be packaged from flat workpieces such as flattened bags or sacks, comprising a depositing conveyor which is continuously and successively supplied with the workpieces by a conveyor and which consists of two parallel endless chains, the chains running over two spaced sprockets with parallel rotary axes and being hinged by two spaced pins to the front end of a depositing plate provided with rake-like fingers, and a conveyor belt which intermittently discharges the formed stacks and is disposed below the throw-off station formed by the depositing plate, the latter swinging through 180° when passing over the head end of the depositing conveyor, characterised in that the conveying plane of the discharge conveyor belt, which consists of a plurality of spaced individual belts, lies below the depositing conveyor at a distance equal to the height of the stacks to be formed, that a stacking shaft disposed beneath the depositing plate which has just swung through 180° is defined by side walls and by a rear wall provided with vertical slots, the base of the shaft being formed by fork-like prongs which are lowerable as the stack height increases, are reciprocatable in the conveying plane of the discharge conveyor, engage through slots in the rear wall and are lowerable between the individual belts in grooves of the direction-changing drum to below the conveying plane of the discharge conveyor, and that overlapping folding blades are provided which are successively horizontally movable into and out of the stacking shaft transversely over the upper edges of the side walls and the lateral prongs of the depositing plate which has been swung into the shaft.

4,440,387

SHEET FEED APPARATUS

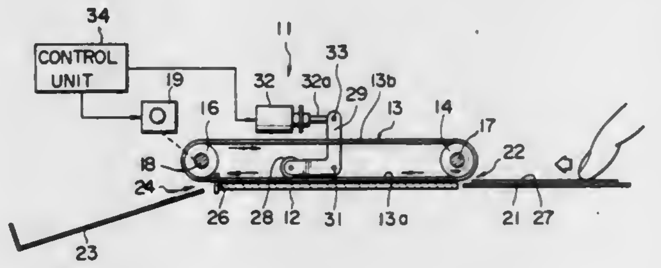
Tadashi Ikoma; Akira Hirose, and Yohtaro Kakitani, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 891,530, Mar. 30, 1978, abandoned. This application Jul. 26, 1982, Ser. No. 401,502

Claims priority, application Japan, Apr. 8, 1977, 52-40193

Int. Cl.^{3} B65H *9/04*

U.S. Cl. 271—245 **6 Claims**



1. A sheet feed apparatus comprising:

a transparent document support platen;

endless belt means disposed closely above and parallel to the platen;

drive means for rotatably driving the belt means, the platen and belt means defining an inlet and an outlet in such a manner that a sheet inserted into the inlet is fed by the belt means across the platen toward the outlet upon rotation of the belt means by the drive means;

sheet stopper means retractably provided to a downstream edge portion of the platen;

pressure means separate from the belt means for pressing the belt means and sheet together at a predetermined intermediate position; and

control means for controlling the pressure means to press the belt means and sheet together at said predetermined position with a high force upon insertion of the sheet into the inlet and with a low force as the sheet closely approaches the stopper means.

4,440,388

APPARATUS FOR STACKING THIN FLEXIBLE OBJECTS

Michel Divoux, and Michel Dorez, both of Paris, France, assignors to Hotchkiss-Brandt Sogeme H.B.S., Paris, France

Filed Sep. 2, 1981, Ser. No. 298,915

Claims priority, application France, Sep. 5, 1980, 80 19260

Int. Cl.^{3} B65H *29/24*

U.S. Cl. 271—195 **5 Claims**

1. Apparatus for stacking thin flexible objects comprising:

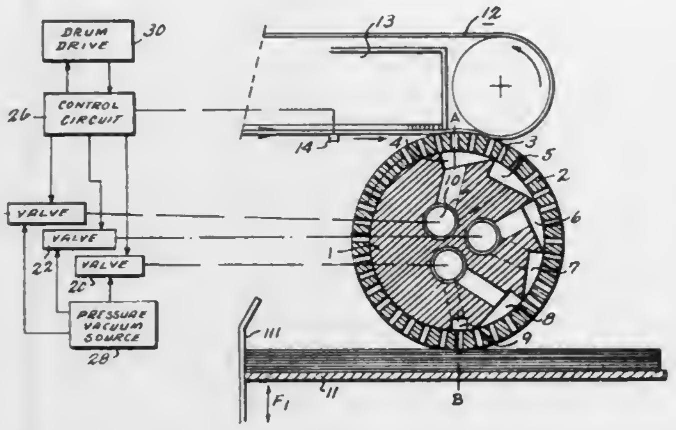
a rotary drum having holes over its periphery extending to the interior thereof;

a fixed body within said interior having a plurality of chambers communicating with said holes over a half circumference of said drum from one location on said body to a second location on said body;

valve means for connecting said chambers to a source of air at a pressure above atmospheric and to a vacuum;

conveying means for delivering said objects to said drum at said one location of said body;

means for controlling said valve means so that said objects are successively engaged with the drum by suction and rotate therewith as said chambers are successively connected to said vacuum and disengaged from said drum at said second location as said chambers are successively connected to said pressure source to produce a blowing action moving said object toward a stack of said objects.



4,440,389

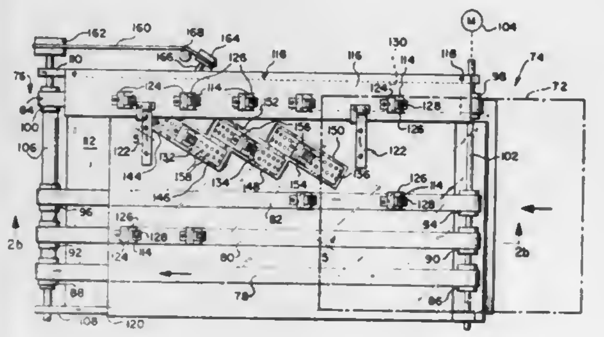
SHEET REGISTRATION DEVICE

Jack D. Ames, Irving, and David W. Smith, Richardson, both of Tex., assignors to The Mead Corporation, Dayton, Ohio

Filed Mar. 8, 1982, Ser. No. 355,974

Int. Cl.³ B65H *9/16*

U.S. Cl. 271—251 **8 Claims**



1. A sheet registration device for receiving a sheet from a sheet input and delivering the sheet to a sheet output, while laterally aligning the sheet prior to delivery to said sheet output, comprising:

endless belt conveyor means, extending between said sheet input and said sheet output and including a plurality of endless belts,

means defining an alignment surface extending generally parallel to and to one side of said endless belts,

drive means for driving said endless belt conveyor means such that a sheet supplied to said endless belt conveyor means from said sheet input is carried by said belts to said sheet output,

alignment means, including a plurality of parallel vacuum belts and a cooperating plenum, adjacent said endless belt conveyor means and skewed with respect to said endless belts, for engaging a sheet as it is carried by said endless belt conveyor means and for transporting the sheet laterally such that a lateral edge thereof contacts said adjacent surface, said vacuum belts defining a plurality of openings through which a partial vacuum from said plenum is applied to a sheet supported thereon, said openings being sufficient in size such that a sheet is not vacuum engaged unless the sheet is supported by all of said vacuum belts, and

means for supplying a partial vacuum to said plenum.

4,440,390

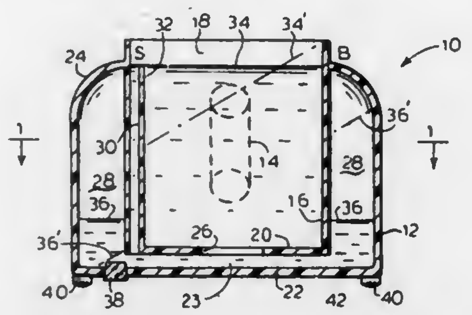
NOVELTY CUP FOR FORCIBLY EJECTING LIQUID

Clayton G. Bailey, P.O. Box 69, Port Costa, Calif. 94569

Filed Jun. 28, 1982, Ser. No. 392,735

Int. Cl.³ A63J *23/00*

U.S. Cl. 272—27 N **3 Claims**



1. A novelty cup comprising:

inner and outer side walls forming a cylindrical cup chamber and a surrounding annular chamber closed at the top by an annular shoulder, the upper edge of said inner wall forming a cup lip, said inner and outer side walls and said annular shoulder being free of openings and gaps such that air may be trapped and compressed within said annular chamber;

a cup bottom between the lower edges of said outer side wall;

a second, false bottom spaced above said cup bottom and between the lower edges of said inner side wall and defining with said cup bottom a bottom chamber, said false bottom including an enlarged opening allowing fluid communication between said cup chamber, said bottom chamber and said annular chamber;

a vertical passage on said inner wall of substantially smaller diameter than said enlarged opening and extending from near said lip through said false bottom;

said cup being so constructed that when a liquid is added to said cup to a substantially greater depth than said false bottom, air is sufficiently compressed within said annular chamber, such that when said cup is tilted to where said compressed air reaches said vertical passage, said air expands against the lesser weight of liquid therein and forcibly ejects said liquid upwardly through said vertical passage.

4,440,391

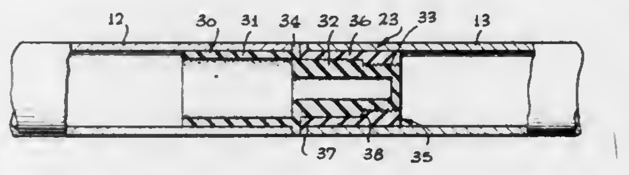
EXERCISE DEVICE

Arsenio B. Saenz, Jr., 1662 Mayfair St., and Gerald K. Cairns, 1676 Mayfair St., both of Simi, Calif. 93065

Filed Sep. 1, 1982, Ser. No. 413,968

Int. Cl.³ A63B *23/00*

U.S. Cl. 272—93 **1 Claim**



1. An exercising device comprising the combination of:

a continuous, elongated bar having opposite free ends with end marginal regions;

said elongated bar being substantially hollow so as to be characterized as semi-rigid whereby said bar may be flexed or bent;

said elongated bar consisting of at least three bar sections detachably connected together at adjacent ends about the central longitudinal axis of said bar;

coupling means detachably connecting said sections together in load bearing relationship;

cushion members removably carried on the extreme free ends of said elongated bar;

said coupling means includes a cylindrical member having a projecting threaded portion carried on one of said bar sections and a cylindrical receptacle member having a threaded bore carried on another of said bar sections;

said receptacle member adapted to detachably couple with said projecting member threaded portion so that said bar sections lie on a common central longitudinal axis;

each of said coupling means members include end flanges separating the extreme opposing ends of respective bar sections coupled together; and

said coupling means members include stop means for limiting insertion of said projecting threaded portion into said threaded receptacle portion.

4,440,392

ONE PIECE MOLDED GAMES RACKET

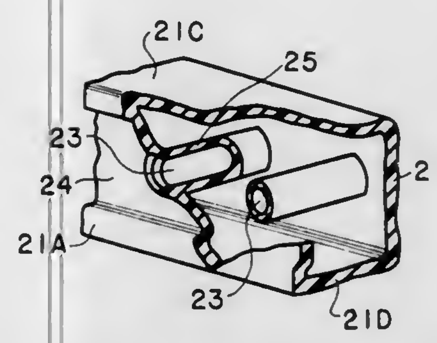
Frank W. Popplewell, Essex, England, assignor to Dunlop Limited, London, England

Division of Ser. No. 15,912, Feb. 28, 1979, Pat. No. 4,297,308. This application Jan. 29, 1981, Ser. No. 229,506

Claims priority, application United Kingdom, Mar. 7, 1978, 8925/78

Int. Cl.³ A63B *49/10*

U.S. Cl. 273—73 C **15 Claims**



1. A games racket frame comprising a head and a shaft, in which at least said head is in the form of a hollow injection moulding of thermoplastics material reinforced with short filament reinforcing material, said moulding having walls formed by a first wall portion which lies at an outer circumference of said head, a second wall portion which lies at an inner circumference of said head and sidewall portions which connect with said first and second wall portions to complete the walls of the head of said frame, said first wall portion being connected to said second wall portion by an internal support means, said head having holes for stringing and said stringing holes passing through said internal support means, said moulding, including said internal support means, being an integrally-formed, seamless construction.

4,440,393

TENNIS NET SUPPORT POST

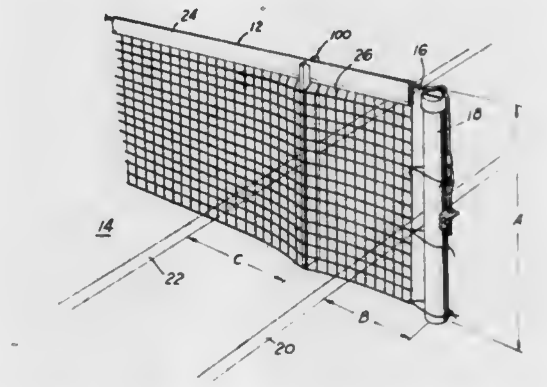
Allan J. Smith, Jr., 1621 Old Springhouse La., Dunwoody, Ga. 30338

Continuation-in-part of Ser. No. 56,322, Jul. 15, 1979, Pat. No. 4,291,875. This application Sep. 25, 1981, Ser. No. 305,476

Int. Cl.³ A63B *71/02*

U.S. Cl. 273—29 BB **2 Claims**

1. A device for supporting a tennis net for regulation singles tennis play on a doubles court, the net being of the type having a top cable, a band surrounding said cable and netting depending from the band, the netting composed of a network of horizontal and vertical strands, said support comprising: an elongated subsantially rigid, vertically extending member having an upper channel having an open top and a closed bottom, a lower channel having a closed top and an open bottom; said support member having a top and a flat bottom which engages the ground, said upper channel defining a first passageway dimensioned to receive therethrough said top cable and said band and said lower channel defining a second passageway dimensioned to receive a horizontal strand of said netting, said upper and lower channel being spaced so that said first and second passageways are within the same vertical plane and said rigid support member being disposed outside of said vertical plane, and wherein said upper channel includes a leg which horizontally extends from said support member adjacent the top of said support member, a wall upwardly extending from the end of said leg, said wall terminating in an arcuate-shaped which defines an inwardly directed groove, said top of said support member having a groove therein which is oppositely directed from said inwardly directed groove on said leg grooves defining an opening to receive therein said cable.



4,440,394

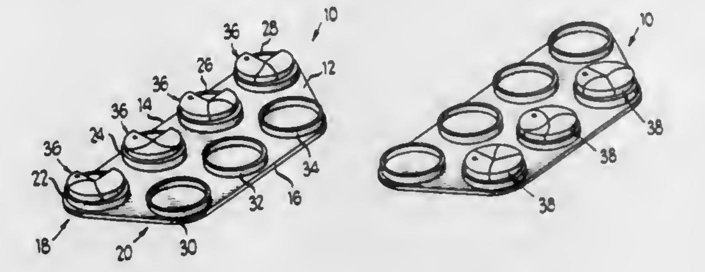
TOY PUZZLE

Alan A. Hicks, Chicago, and Jeffrey D. Breslow, Highland Park, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 12, 1982, Ser. No. 348,232

Int. Cl.³ A63F *9/10*

U.S. Cl. 273—157 R **19 Claims**



9. A toy puzzle, comprising:

a base member,

a first row of a plurality of containers on said base member,

a second row of a plurality of containers on said base member,

the number of containers in said first row is a whole number X,

the number of containers in said second row is $X-1$, and

a plurality of puzzle pieces of a configuration such that said pieces can be positioned in each of said first row containers in the form of one figure, and in said second row containers in the form of another figure.

4,440,395

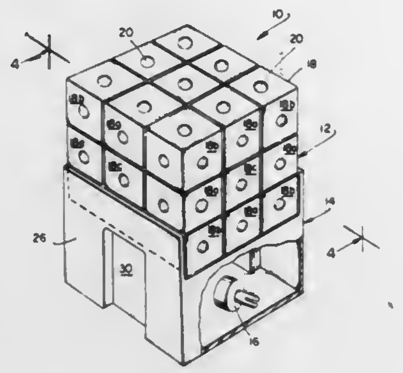
VARIABLE GEOMETRIC BOARD GAME

Joseph F. Hyland, c/o Palm Research, 3298 Casey Key Rd., Nokomis, Fla. 33555; Joseph J. Wetherell, 20 Woodsbridge Rd., Katonah, N.Y. 10536, and Mark Setteducati, 107 Clinton St., Emerson, N.J. 07630

Filed Dec. 11, 1981, Ser. No. 329,659

Int. Cl.³ A63F *3/00*

U.S. Cl. 273—241 **11 Claims**



1. A variable geometric board game apparatus providing a competitive game of skill and strategy for two or more players comprising a cube with each of its six sides being color coded, said cube further being formed of interconnected articulated subcubes, a plurality of companion playing pieces, said playing pieces being attachable to selected subcubes, said subcubes being rotationally displaceable about each of three mutually perpendicular axes passing through the center of the cube for achieving an arrangement of playing pieces on consecutive subcubes bearing the same color and lying on one face of the cube.

4,440,396

METHOD FOR ENCOURAGING SELF IMPROVEMENT

Rosalie Frudakis, 2316 Locust St., Philadelphia, Pa. 19103

Division of Ser. No. 152,203, May 2, 1980, Pat. No. 4,344,625. This application Apr. 16, 1982, Ser. No. 369,189

Int. Cl.³ A63F *3/00*

U.S. Cl. 273—242 **6 Claims**

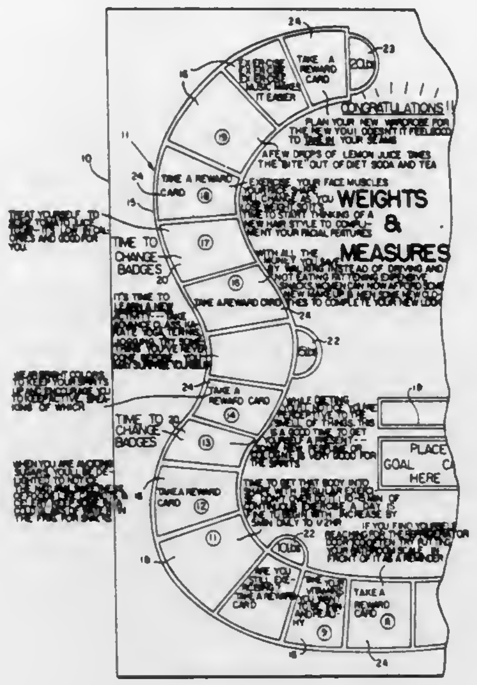
1. A method for encouraging adherence to a self-improvement program directed to a goal, comprising the steps of:

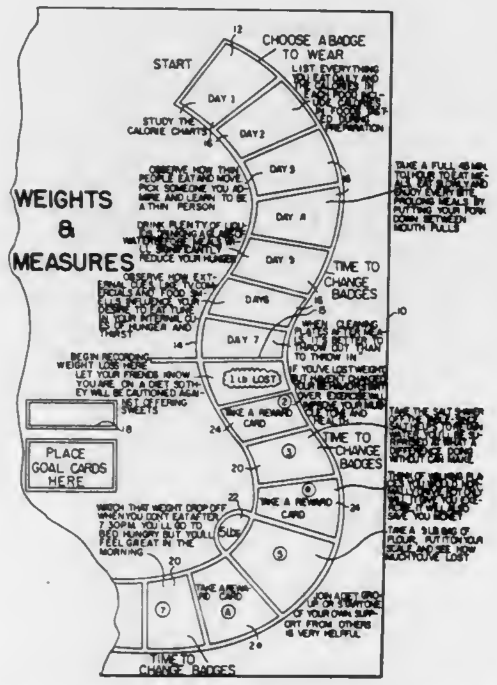
depicting the self-improvement program by an unbranched segmented path, the path having an initial portion and a remaining portion;

monitoring progress toward the goal by moving one of a plurality of playing pieces along the segmented path, the plurality of playing pieces embodying at least one of structural and pictorial characteristics reflecting stages of development in progressing toward the goal;

substituting the playing pieces one for another as the stages of development are achieved; and,

moving the appropriate playing piece along the initial portion of the unbranched path only in accordance with elapsed time and moving the appropriate playing pieces along the remaining portion of the unbranched path only in accordance with actual progress toward the goal, movement along the entire path being necessarily independent of chance, whereby at the outset of the game mental attitudes are directed towards the goal without concern for initial success in reaching the goal and whereby subsequent progress along the unbranched path necessarily reflects only actual incremental success in progressing toward the goal.





4,440,397

TAX BOARD GAME

Alfred N. Butner, 14565 Harvard Ct., Los Altos Hills, Calif. 94022

Continuation of Ser. No. 228,619, Jan. 26, 1981, which is a continuation of Ser. No. 36,182, May 4, 1979, abandoned. This application Jan. 18, 1982, Ser. No. 340,126

Int. Cl.³ A63F *3/00*

U.S. Cl. 273—256 **2 Claims**

1. In a board game, the combination comprising:

a marker for each player;

a board with a path for movement of the marker through predetermined spaces;

means to randomly determine the number of spaces of movement for each marker;

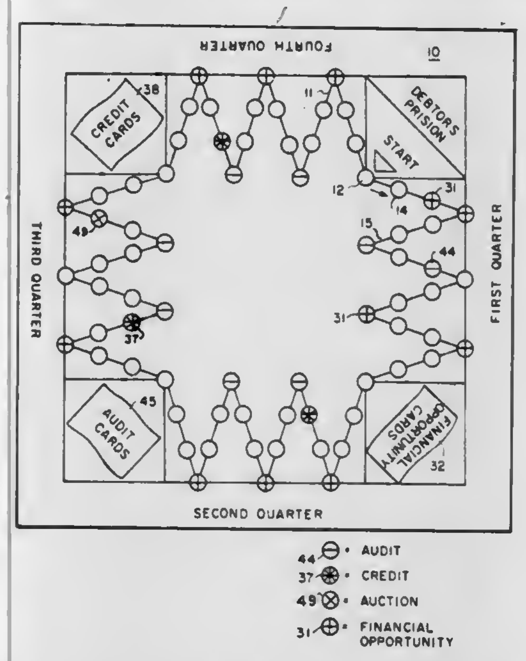
a supply of play money to be at least partially distributed to the players and comprising two indentifiable sets of the same type of money representing taxable and non-taxable income;

means on the board identifying the two sets of money for determining an amount of money from one or both of the two money stes to be distributed to each player whose marker lands at predetermined spaces on said board;

means for applying an individual tax status to each player including a plurality of cards indicating the tax status for that player receiving the card for all subsequent tax calculations until another event changes that status for the player;

a plurality of said predetermined spaces correlated to the cards and instructing the player landing thereon to draw one of said plurality of cards having preselected tax consequences for changing the tax status for the player whose marker lands on the spaces; a calculator for determining the taxes owed on the taxable money by each player including a tax status indicator and means to calculate the tax to be paid by each player by setting the calculator to indicate the individual tax status of the player and the taxable play money received by the player for a preceding time period and reading from the calculator the resulting tax liability; and

means to assign and maintain a continuing account of the net financial worth of each player after calculating with the calculator the tax consequences of each player on a periodic basis including a determination of the play money held by each player.



4,440,398

CARD GAME AND METHOD OF PLAYING SAME

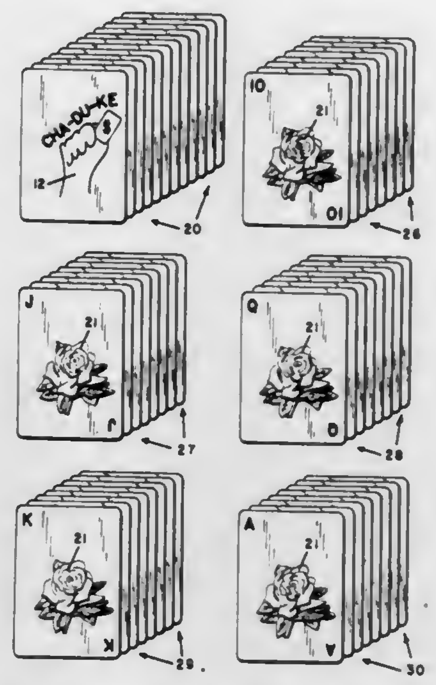
Alfred G. Charon, Cloquet, Minn., assignor to Cha-Du-Ke, Cloquet, Minn.

Filed May 24, 1982, Ser. No. 381,039

Int. Cl.³ A63F *1/00*

U.S. Cl. 273—292 **9 Claims**

6. A game apparatus comprising a deck of fifty-two cards, said cards having exactly six distinguishable groups of cards, a first group of cards having exactly twelve cards, second through sixth groups of cards each having exactly eight cards, said cards in said first group being similarly marked and distinguishable from said cards of said second through sixth groups, said cards of said second through sixth groups including dissimilar indicia establishing a ranking between said second through sixth groups of cards.



4,440,399

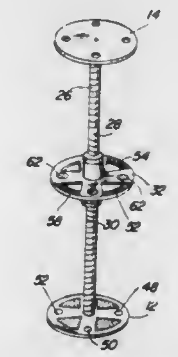
AMUSEMENT GAME

David A. Smith, R.R. #5, Vandalia Acres, Jacksonville, Ill. 62650

Filed May 31, 1983, Ser. No. 499,343

Int. Cl.³ A63B *63/00, 63/06*

U.S. Cl. 273—346 **5 Claims**



1. A game comprising a vertically-disposed rod having recessed spiral grooves therein spaced along its entire length with reversed spiral grooves medially the ends of said rod, upper and lower stabilizer plates secured to said rod at each end thereof and having inner faces, said upper plate having equi-distantly spaced apertures therein, a gravity rotating plate on said rod, equi-distantly spaced, triangular-like cutouts in said rotating plate, said lower stabilizer plate having equi-distantly spaced, triangular areas covered with Velcro, and a ball having a strip of Velcro around its periphery.

4,440,400

PLAYING OR TRAINING DEVICE

Manfred Neuberger, Hockenheim, Fed. Rep. of Germany, assignor to Conpaten, Ltd., St. Helier, Channel Islands

Continuation of Ser. No. 906,884, May 17, 1978, abandoned. This application Apr. 28, 1980, Ser. No. 143,993

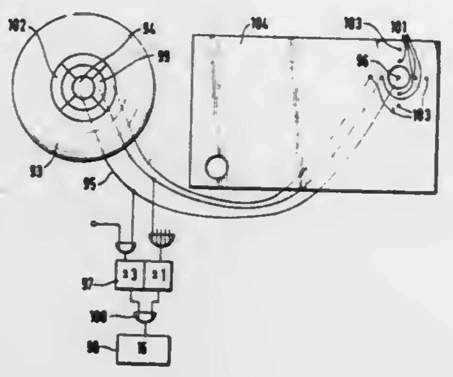
Claims priority, application Fed. Rep. of Germany, May 21, 1977, 2723092

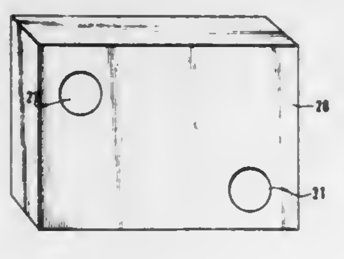
Int. Cl.³ A63B *69/22*

U.S. Cl. 273—411 **14 Claims**

1. A playing and/or training device which indicates a preci-

sion with which desired impacts by a player on a ball may be designated, comprising
- a ball to be impacted,
- at least two impact pressure sensing means within said ball for sensing impacts directed onto at least two predetermined areas of the surface of said ball,
- indicating means responsive to an impact on the area of said ball containing said sensing means for providing an indication when the said sensing means senses an impact,
- resilient means for supporting said ball between two lateral support means,
- each impact pressure sensing means comprising a switch contact actuated by a pressure acting on said switch contact because of an impact in an area in which said switch control is placed,
- said indicating means comprising lamps, each lamp being connectible to an electric source by one of said switch contacts when the ball surface is impacted at the predetermined area assigned to said lamp,
- a target indicator panel,
- said target indicator panel including said lamps which are positioned relative thereto for visual observation by the player whereby each lamp is topographically arranged within the target indicator panel to represent a target which said ball will hit if impacted at the corresponding predetermined area of its surface to activate a sensing means.





4,440,401
SEAL ASSEMBLY FOR BEARING CUPS SLIDABLE IN AXIAL DIRECTION IN BORE

Armin Olschewski; Gerhard Herrmann, both of Schweinfurt, and Bernhard Bauer, Hassfurt, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

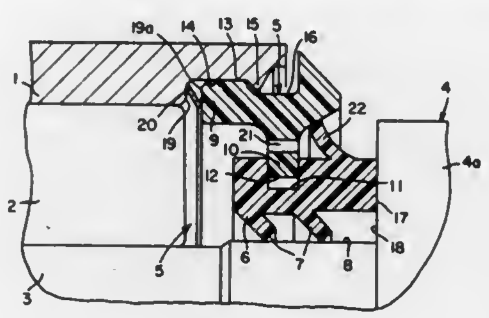
Filed May 13, 1983, Ser. No. 494,435

Claims priority, application Fed. Rep. of Germany, May 15, 1982, 8214245

Int. Cl.^{3} F16J *15/32, 15/38*

U.S. Cl. 277—50 **7 Claims**

1. Sealing arrangement for bearing cups, in particular, for universal joints, consisting of a support body connected to the bearing cup and a seal ring which is fastened to a flange of the support body, characterized in that the support body (5, 23) has a relatively wide guide section (13) at the outside surface and is arranged limited slidable in axial direction in the bore of the bearing cup (1) and in that the seal ring (6) rests with a radially running face (17) against a shoulder (18) of the machine component (4) supported in the bearing cup (1).



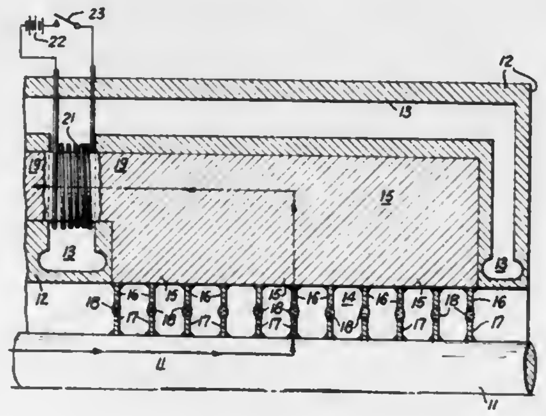
4,440,402
FERROFIN MAGNETIC SEAL WITH OPPOSED FIN-LIKE PROJECTIONS

Oscar Pinkus, Guilderland, and Jed A. Walowit, Clifton Park, both of N.Y., assignors to Mechanical Technology Incorporated, Latham, N.Y.

Filed Mar. 25, 1982, Ser. No. 361,787

Int. Cl.^{3} F16J *15/16, 15/44, 15/40*

U.S. Cl. 277—80 **19 Claims**



1. A ferrofin magnetic fluid seal comprising a shaft having a magnetically permeable portion supporting a plurality of concentric fin-like projections of magnetically permeable material circumferentially arrayed in parallel along a portion of the axial length of the shaft, a housing surrounding and rotatably supporting said shaft, said housing having a seal forming section having a plurality of parallel, axially arrayed fin-like projections made from magnetically permeable material circumferentially surrounding the interior of the housing and opposing said axially arrayed, parallel concentric fin-like projections on said shaft portion, a magnetic fluid disposed within the gaps defined between the ends of the opposing fin-like projections extending from said shaft portion and from said surrounding housing seal forming section, said housing seal forming section being fabricated from magnetically permeable material and being physically disposed in a closed series magnetic circuit with a source of magnetic flux, said closed series magnetic circuit further including the axially arrayed, concentric fin-like projections extending from said housing, the magnetically permeable shaft portion and the axially arrayed, concentric fin-like projections extending therefrom and the magnetic fluid droplets disposed in the gaps between the opposing ends of the sets of opposing fin-like projections, the fin-like projections on the magnetically permeable shaft portion and on the seal forming section each have a tooth width t and a tooth spacing s which are optimized so as to yield a maximum number of magnetic seal stages N over a given axial length L of the shaft in accordance with the expression $N_{max}=L/(t+s)$, and the ends of the opposing fin-like projections being spaced apart a distance h that defines the gaps in which the magnetic fluid is trapped to form the magnetic seal and wherein optimum sealing capacity is obtained where t ranges in value from substantially h to 5h and s ranges in value from substantially 2h to 3h.

4,440,403
DROP-PROOF AND DUST-PROOF DEVICE IN ROTARY OPERATION SECTION OF CAMERA

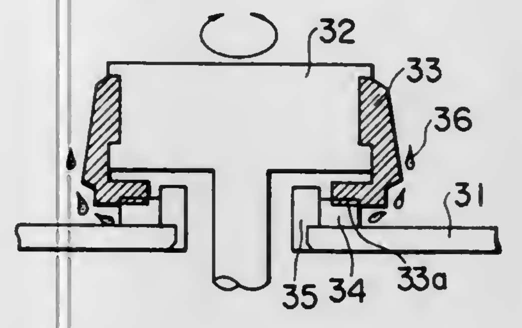
Fumio Urano, Omiya, and Junji Umetsu, Kita, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 17, 1978, Ser. No. 906,802

Claims priority, application Japan, May 30, 1977, 52/69535[U]; May 30, 1977, 52/69536[U]

Int. Cl.^{3} F16J *15/32*

U.S. Cl. 277—81 R **2 Claims**



1. In a camera of the type having an external camera casing, an aperture in said casing, an annular projecting portion of said casing surrounding said aperture, a rotatable shaft passing through said aperture and a camera operating member secured to said shaft outside of said camera casing, a water-proof and dust-proof seal comprising:
- an intermediate ring member slidably fitted at a circumferential surface around said annular projection, said annular projection being provided with v-shaped grooves on its outer periphery; and
- an annular flexible ring securing said intermediate ring to said operating member whereby said operating member is freely rotatable and said flexible ring accommodates eccentricities in the rotational movement of said operating member.

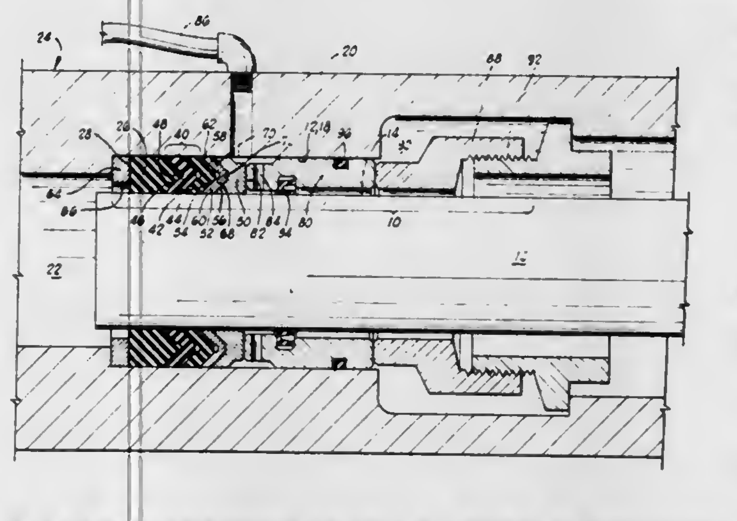
4,440,404
PACKING ARRANGEMENT

James D. Roach, Henderson, Colo., and Clinton W. Cole, Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Aug. 9, 1982, Ser. No. 406,546

Int. Cl.^{3} F16K *43/00*

U.S. Cl. 277—124 **23 Claims**



1. A packing assembly for sealing an annular space between a pump plunger and a pump body of a reciprocating plunger pump, said assembly comprising:
- a radially compressed elastomeric header ring means disposed in a high pressure end of said annular space, for preventing migration of fluid through said annular space;
- packing ring means disposed in said annular space behind said header ring means, said packing ring means including at least one V-shaped packing ring with a concave side of said packing ring facing said header ring means;
- a female adapter ring disposed in said annular space behind a last V-shaped packing ring of said packing ring means; and
- a V-shaped anti-extrusion ring means disposed in said annular space between said last V-shaped packing ring and said female adapter for preventing extrusion of said last V-shaped packing ring between said female adapter and each of said pump plunger and said pump body, said anti-extrusion ring means including:
  - a concave side engaging said last V-shaped packing ring;
  - a convex side engaging a forward concave side of said female adapter; and
  - radially inner and outer sealing surfaces for engaging said pump plunger and said pump body, respectively.

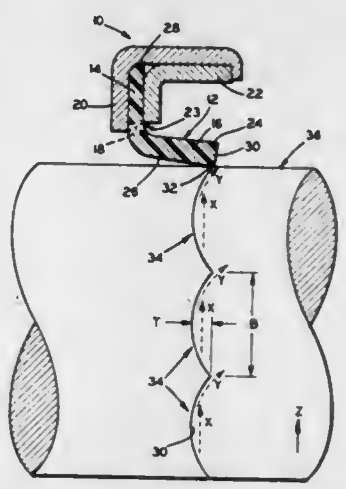
4,440,405
HYDRODYNAMIC SHAFT SEAL WITH CONTINUOUSLY DIVERGENT SEAL ELEMENT

Jerome E. Schaus, Glen Ellyn, and Daniel Danek, Berywn, both of Ill., assignors to Dana Corporation, Toledo, Ohio

Filed Sep. 29, 1982, Ser. No. 426,501

Int. Cl.^{3} F16J *15/32*

U.S. Cl. 277—134 **9 Claims**



1. In a hydrodynamic shaft seal including a sealing element comprising two radially extending faces, generally concentric annular inner and outer edges defining the boundaries of said faces, said element further comprising a radially outwardly extending fixed body portion, and a radially inwardly extending flexible body portion; an improvement comprising said faces having a continuous divergence from said outer edge to said inner edge, said divergence comprising an increasing lateral separation of said faces from said outer edge to said inner edge in the range of 0.006 to 0.060 inch per inch of radial length of said flexible body portion.

4,440,406
DEVICES USED FOR THE CONNECTION OF PIPES

Kurt S. B. Ericson, 48, Prins Boudewijnlaan, B-2230 Schilde, Belgium

Division of Ser. No. 145,729, May 1, 1980, Pat. No. 4,318,547. This application Jan. 8, 1982, Ser. No. 338,142

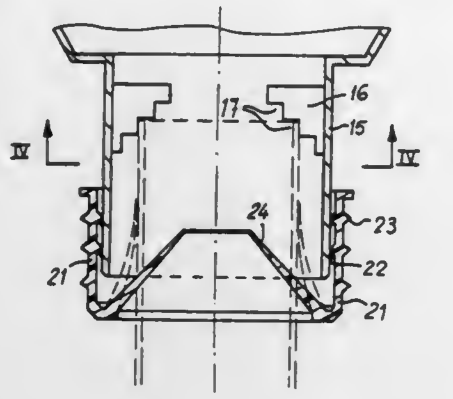
Claims priority, application Belgium, May 4, 1979, 194985

Int. Cl.^{3} F21S *1/12;* F16J *15/32*

U.S. Cl. 277—207 A **4 Claims**

1. A device for connecting a tubular body with pipes of different sizes, said device comprising: a connecting muff of flexible material having a flexible lip which is fixedly connected with the inner wall of the muff and which projects towards the longitudinal axis of the muff so as to leave a central

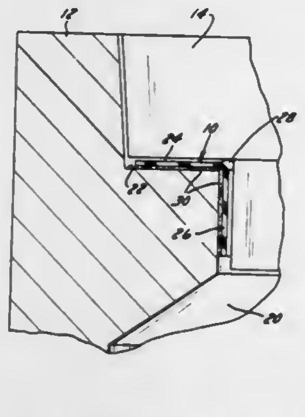
opening, said lip being extensible in order to accommodate pipes of different sizes, and guiding and centering means for the pipes, said guiding and centering means being connected to the inner periphery of the tubular body in the form of projections, each projection having a staggered section defining locating surfaces for the pipes in such a manner that whatever the size of the pipe the lip becomes deformed and tightly engages the pipe introduced thereinto.



4,440,407

MANHOLE COVER GASKET SEAL

Michael Gagas, 5558 N. Shoreland Ave., Milwaukee, Wis. 53217
Filed Nov. 24, 1982, Ser. No. 444,504
Int. Cl.³ F16J *15/10*
U.S. Cl. 277—212 F **9 Claims**



1. The combination of a manhole frame having a circular opening and a recess around the opening forming a manhole cover seat, and

a manhole cover positioned on said seat, the improvement comprising

a manhole cover gasket seal for sealing the manhole cover in the recess of the manhole frame, said seal comprising

a first annular section having an inner diameter substantially equal to the diameter of the opening in the manhole frame and

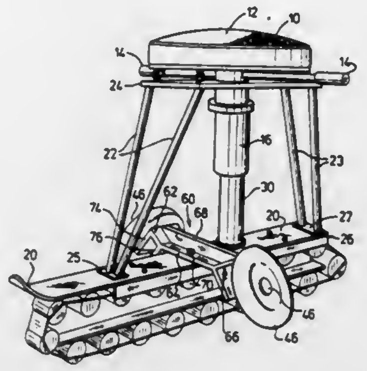
a second annular section having an outer diameter substantially equal to the diameter of the opening in the manhole frame, said second section being secured to said first section, whereby said first section forms a seal between the manhole cover and the seat around the opening in the frame and said second section holds the first section in position around the opening in the manhole frame.

4,440,408

RECREATIONAL SLEIGH

Boris A. Velman, 25 Cedarcroft Blvd., Apt. 606, Willowdale, Ontario, M2R 2Z3, Canada
Filed Oct. 19, 1981, Ser. No. 312,196
Int. Cl.³ B62D *55/00*
U.S. Cl. 280—7.12 **3 Claims**

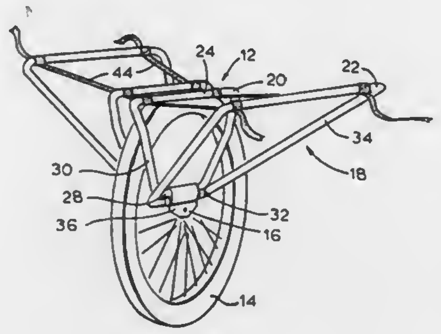
1. A recreational device comprising a seat, a ski having means formed thereon permitting travel over a ground surface, support means interconnecting said seat to said ski a predetermined distance apart to permit a user to sit on said seat over the ski, a pair of opposed handles which extend laterally from the underside of the seat perpendicular to the longitudinal axis of the ski, a continuous belt mounted on the underside of the ski, said endless belt having a plurality of rollers mounted thereon a substantially equal distance apart adapted to engage and roll on the ground, and a pair of wheels mounted one on each side of said ski within a central one-third of the length of the ski, each of said wheels being inclined at an angle of from about 20° to 30° from the vertical axis of the support means and inclined away from each other facing the front end of the ski at an angle of from about 15° to 20° from the longitudinal axis of the ski.

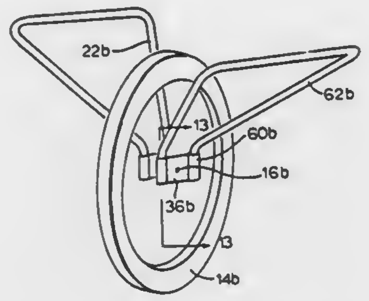


4,440,409

BOAT TRANSPORTER

Alan B. Margison, 54 Amelia, Elmvale, Ontario, Canada L0L 1P0
Filed Jul. 13, 1981, Ser. No. 282,489
Int. Cl.³ B62B *1/10*
U.S. Cl. 280—47.13 B **7 Claims**



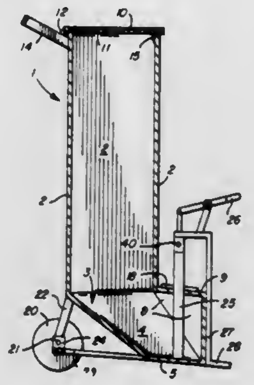


1. A transporter for a boat or similar device comprising a cradle having a pair of laterally spaced support frames each of which includes a longitudinally extending member to support said boat or similar device, an axle extending between said support frames at a location spaced from said longitudinally extending member and a wheel rotatably supported on said axle whereby upon placement of a boat or similar device upon said cradle said wheel supports said boat or similar device and permits movement thereof, said axle being received in a pair of brackets spaced along the longitudinal axis of said transporter, and each of said frames having a pair of terminal portions which are slidably received in respective sockets to secure said frame to said axle, said terminal portions being cranked out of the plane of said frame member whereby said frame is reversible on said bracket to enable said frames to be secured in either a mutually divergent position or a mutually converging position.

4,440,410

HOPPER FOR CONTAINING DRYWALL JOINT COMPOUND

Larry R. Bradshaw, 1703 Shely St., Longview, Tex. 75604
Filed Nov. 30, 1981, Ser. No. 325,749
Int. Cl.³ B62B *1/10;* **B67D** *5/50*
U.S. Cl. 280—47.26 **7 Claims**

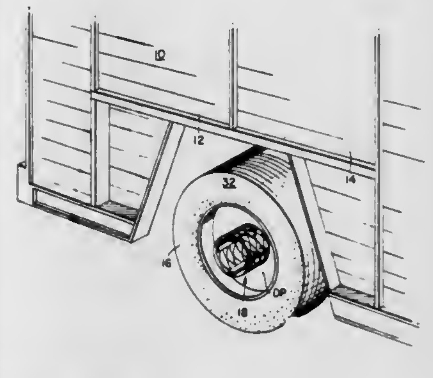


1. A hopper for containing liquid joint cement comprising a supply container having an open top and a generally funnel-shaped bottom portion; and a pump support characterized by a pump support deck extending from said supply container in a slightly downward slope; a pump support front extending essentially vertically downwardly from said pump support deck and defining a frontal extremity of said pump support means; and pump support sides extending rearwardly from said pump support front and downwardly from said pump support deck to said bottom portion of said hopper and an access aperture in said pump support deck for inserting a pump into the interior of said bottom portion to pump joint cement from said hopper.

4,440,411

VEHICLE HUB STEP

Walter R. Hess, 690 Washington Ave., Carlstadt, N.J. 07072
Filed Jun. 17, 1982, Ser. No. 389,351
Int. Cl.³ B60R *3/00*
U.S. Cl. 280—165 **6 Claims**



1. A vehicle hub step comprising:

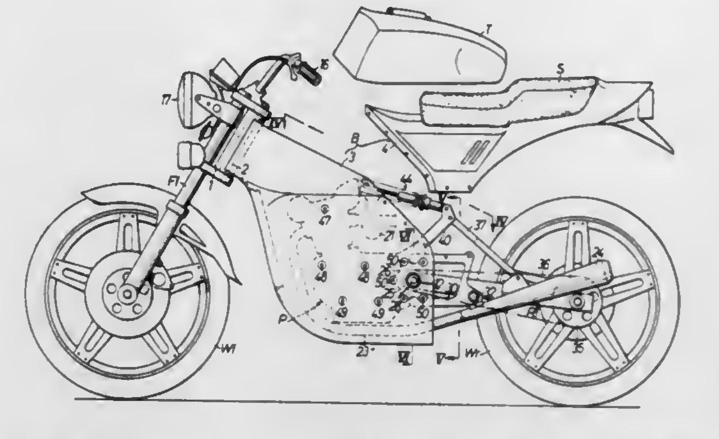
a cylinder of mesh-like material having inner and outer ends; inner and outer rings secured to said inner and outer ends; and

a plurality of bars having flanges thereon secured in spaced apart relationship about the inner circumference of the cylinder, said flanges having aperatures therein for receiving the threaded ends of hub studs whereby the hub step is secured to the hub of the vehicle by suitable nuts.

4,440,412

MOTORCYCLE

Tadashi Kamiya, Niiza, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed May 21, 1980, Ser. No. 152,103
Claims priority, application Japan, May 26, 1979, 54-65237
Int. Cl.³ B62K *11/04*
U.S. Cl. 280—281 B **1 Claim**

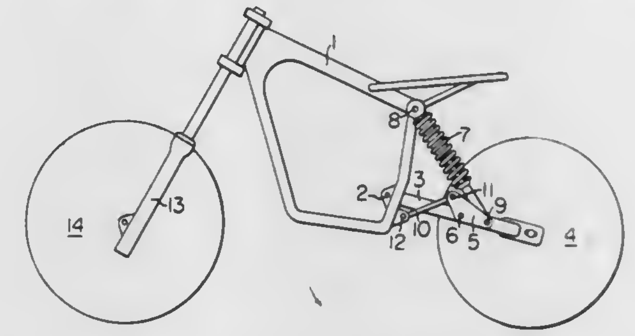


1. A two-wheeled motorcycle comprising a steamlined cowling structure forming a part of the vehicle frame and having a pair of side sections, a roof section interconnecting said side sections at their top, and a bottom section interconnecting said side sections at their bottom; a power unit accommodated in said cowling structure and connected at its opposite sides to said respective side sections of said cowling structure, said side sections having at their inside a plurality of pairs of reinforcing and power unit supporting bosses in face-to-face relation to the adjacent sides of said power unit, said cowling structure being formed at its rear end with an opening through which said power unit is inserted into and removed from said cowling structure.

4,440,413

REAR WHEEL SUSPENSION FOR A MOTORCYCLE

Shinichi Miyakoshi, Fujimi, and Kazuhiro Yamamoto, Asaka, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 119,485, Feb. 7, 1980, Pat. No. 4,322,088. This application Jul. 22, 1981, Ser. No. 285,792
Claims priority, application Japan, Feb. 13, 1979, 54-16827[U]
Int. Cl.³ B62K *25/04*
U.S. Cl. 280—284 **4 Claims**



1. A rear wheel suspension for a motorcycle comprising: a body frame, a rear wheel support frame pivotally mounted on said body frame for upward and downward movement relative thereto and rotatably supporting a rear wheel, a rear shock absorber having opposite ends and disposed between said body frame and said rear wheel support frame for damping relative movements between said body frame and said rear wheel, lever plate means pivotally mounted on said rear wheel support frame, said lever plate means having a first arm and a second arm extending in the opposite directions, said first arm being pivotally connected to one end of said rear shock absorber which is pivoted at the other end thereof to said body frame,

said second arm being connected to said body frame through a pull rod, whereby the rate of increase in the compression stroke of said shock absorber is increased in proportion to the upward movement of said rear wheel relative to said body frame due to the combined action of the upward movement of said rear wheel support frame and the pivotal movement of said lever plate means relative to said rear wheel support frame.

4,440,414

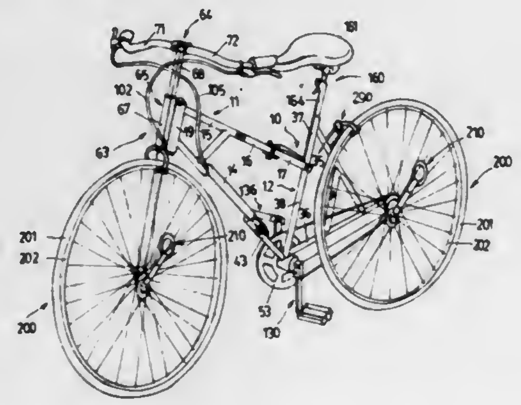
FOLDABLE BICYCLE

Fu-Chow Wang, 4 Fl., 17-3, La. 113, Shia Men St., Taipei, Taiwan

Continuation-in-part of Ser. No. 103,917, Dec. 17, 1979, abandoned. This application Apr. 6, 1981, Ser. No. 251,040

Int. Cl.^{3} B62K *15/00*

U.S. Cl. 280—287 **21 Claims**



1. A foldable bicycle which comprises: a handlebar structure; a front frame portion comprised of an upper diagonal brace, a lower diagonal brace, a front inclined tube bridging said upper and lower diagonal braces, and a steering column, said steering column being connected to said handlebar structure and forming with said upper and lower diagonal braces a triangular form; a rear frame portion; a hinge bolt, said hinge bolt axially connecting said rear frame portion to said front frame portion; said handlebar structure having a steering bolt and being connected to said front frame portion by said steering bolt; a seat structure connected to said rear frame portion; a right and left pedal structure, said right and left pedal structure being opposingly connected to said rear frame portion; a front wheel assembly and a rear wheel assembly, said front and rear wheel assemblies each having brake mechanisms connected thereto, said front wheel assembly being removably connected to said handlebar structure, said rear wheel assembly being removably connected to said rear frame portion; and at least one over-center hinge for hingedly connecting said rear frame portion to said front frame portion, whereby upon removal of said wheel assembly and said seat structure from said foldable bicycle, said front frame portion can be folded by means of said over-center hinge and said hinge bolt into a small triangular unit.

4,440,415

HYDRAULIC LIFT ARM ASSEMBLY MOUNTING ARRANGEMENT

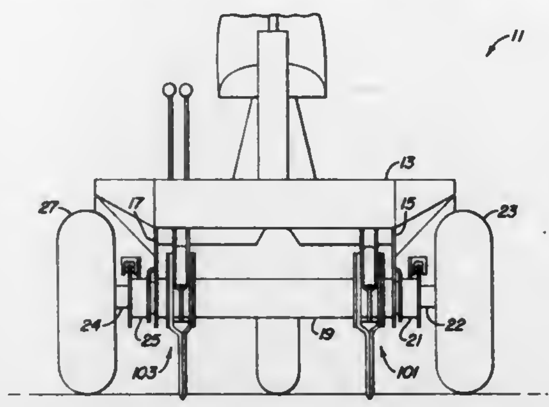
Lloyd A. Wykhuis, and John B. Kuhn, both of Mayville, Wis., assignors to Deere & Company, Moline, Ill.

Filed Dec. 20, 1982, Ser. No. 450,877

Int. Cl.^{3} B60D *1/00*

U.S. Cl. 280—460 A **3 Claims**

1. In combination with a unibody frame structure having an axle tube extending longitudinally between opposing sidewalls of said unibody frame structure, a lift assembly pivotally mounted to the axle tube, said lift assembly comprising: a first generally S-shaped lift arm; a second generally S-shaped lift arm, first means for rotatably mounting said lift arms around said axle tube such that said lift arms are in spaced apart relationship in the region in close proximity to said axle tube and in abutting parallel alignment at the other end; a hydraulic cylinder having a displaceable cylinder arm, said cylinder arm being pivotally mounted to said lift arms in said region in spaced apart relationship; and, second means for pivotally mounting said hydraulic cylinder to said axle tube between said lift arms in said spaced apart region.



4,440,416

AGRICULTURAL MACHINE

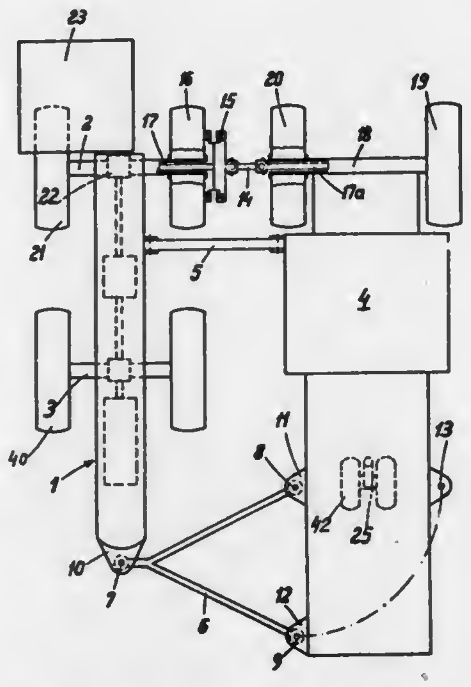
Helmut Claas, and Nils Frederiksen, both of Harsewinkel, Fed. Rep. of Germany, assignors to Claas Ohg, Harsewinkel, Fed. Rep. of Germany

Filed Mar. 12, 1982, Ser. No. 357,558

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1981, 3109409

Int. Cl.^{3} B60D *1/14*

U.S. Cl. 280—473 **17 Claims**



1. In a machine for agricultural works, a combination comprising a multi-purpose vehicle including a driven front axle with front wheels and a rear axle with steerable rear wheels, a motorless agricultural machine coupled to said vehicle and including a non-steerable front axle with front wheels and a rear axle with steerable rear wheels; and means for selectively connecting said agricultural machine to said vehicle in one position in which said agricultural machine is disposed laterally of said vehicle for operation on a field and another position in which said agricultural machine is disposed behind said vehicle for transportation along a road, said connecting means including a connecting rod connectable between said vehicle and said agricultural machine to maintain them in said first position, a coupling linkage pivotally interconnected between said vehicle and said agricultural machine, and means for coaxially aligning the front axle of the agricultural machine with the front axle of the vehicle when the vehicle and the agricultural machine are in said first position.

4,440,417

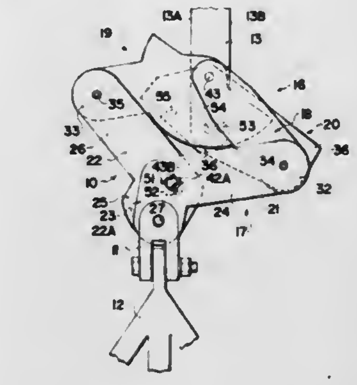
HITCH ASSEMBLY

Jerry K. Kirchner, 1314 - 13th St. S., Lethbridge, Alberta, Canada T1K 1S9

Filed Mar. 18, 1982, Ser. No. 359,251

Int. Cl.^{3} B60D *1/00*

U.S. Cl. 280—478 R **31 Claims**



1. An adjustable hitch assembly for connecting a towed device such as an implement, trailer or the like, to a towing vehicle such as a car, truck, tractor or the like, said towed device including a tow bar, said towing vehicle including a draw bar having a front connecting means and a rear hitch connecting aperture spaced from said front connecting means; comprising in combination a scissors action having a rear hitch connection to the towed device at one end thereof and a front hitch connection to the towing vehicle at the other end thereof, a control plate operatively connected by one end thereof adjacent to a location intermediate the ends of the scissors action and connectable by the other end thereof to the front hitch connection at the other end of said scissors action, said scissors action being movable from a fully retracted position to a fully extended position and vice-versa and any position therebetween, stops on said control plate and on said scissors action engageable with the sides of the draw bar when installed thereon, to align the front connecting means with the rear connecting means when said scissors action is fully retracted and locking hitch means engageable through said scissors action and said rear hitch connecting aperture of said draw bar when said scissors action is fully retracted.

4,440,418

SKI BASE COATING

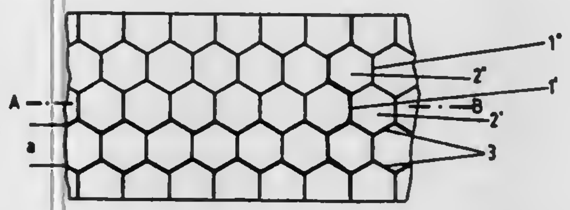
Adolf Staufer, Molln, Austria, assignor to TRAK Sportartikel GmbH, Fed. Rep. of Germany

Filed Sep. 29, 1981, Ser. No. 306,658

Claims priority, application Austria, Oct. 2, 1980, 4921/80

Int. Cl.^{3} A63C *7/06*

U.S. Cl. 280—604 **21 Claims**



1. A ski base coating including a push-off aid which comprises a plurality of steps having steep gradient push-off flanks in a push-off direction and flat angle ramps in a gliding direction, the upper side of the steps being formed of a continuous honeycomb arrangement of hexagonal fields (2', 2''), each having sides and a hexagon face, wherein the fields (2', 2'') are so arranged that one of the hexagon sides (1', 1'') each extends transversely of the push-off direction, that said hexagon side (1', 1'') is designed as a push-off edge, and that the hexagon faces form the flat angle step ramps.

4,440,419

INDIVIDUAL WHEEL SUSPENSION FOR NON-STEERED MOTOR VEHICLE WHEELS EXHIBITING A CHANGE IN CAMBER WHEN SPRUNG, ESPECIALLY ON AUTOMOBILES

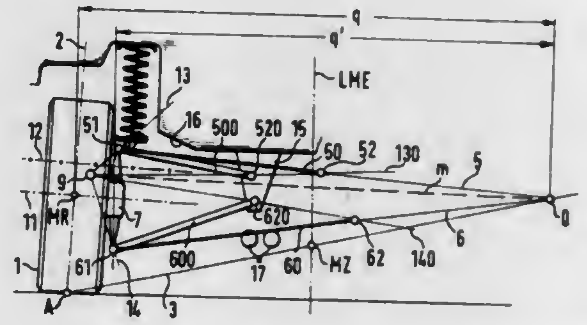
Werner Kosak, Dachau, and Wolfgang Matschinsky, Munich, both of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 16, 1981, Ser. No. 321,607

Claims priority, application Nov. 14, 1980 European Pat. Off. 80107073.1

Int. Cl.^{3} B62D *17/00*

U.S. Cl. 280—661 **13 Claims**



1. An individual wheel suspension for a non-steered wheel of a motor vehicle having a vehicle body and a wheel support wherein a change in camber of the wheel is exhibited during spring deflection, comprising a trailing arm which is rigidly connected to the wheel support and articulated to the vehicle body by means of a lengthwise arm disposed in the lengthwise direction of the vehicle and in a direction running transversely to the vehicle by means of two wishbones located one above the other, the wishbones form auxiliary tie rods in a transverse plane running vertically through the center of the wheel, extensions of said tie rods beyond the center of the vehicle intersect at a transverse pole located at a distance from the wheel center plane, said auxiliary tie rods include articulations to the wheel support which are provided at an additional distance determined relative to said transverse pole in the vicinity of the wheel center plane, the auxiliary tie rod of the lower wishbone is at least approximately half as long as said additional distance and the upper wishbone forms an auxiliary tie rod whose length is less than or equal to that of the auxiliary tie rod of the lower wishbone, said lengthwise arm is arranged pointed forward in the direction of travel of the vehicle with the articulation of the lengthwise arm to the vehicle body being located above the wheel axle and in the vicinity of the wheel center plane.

4,440,420

INDEPENDENT SUSPENSION OF A STEERABLE WHEEL TO MOTOR VEHICLES

Rudolf Müller, Dachau, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 29, 1982, Ser. No. 426,930

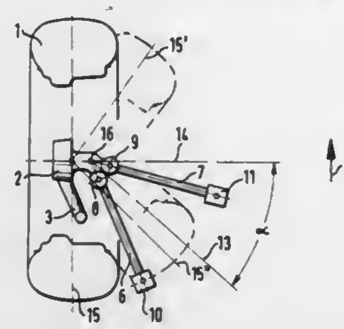
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1981, 3138850

Int. Cl.^{3} B60G *3/20*

U.S. Cl. 280—691 **3 Claims**

1. An independent wheel suspension for a steered wheel of a motor vehicle, comprising wheel carrier means, means for guiding the wheel during spring and steering movements including transverse guide means operatively connecting the lower area of the wheel carrier means with a vehicle superstructure and two individual guide members operatively connecting the upper area of the wheel carrier means with the vehicle superstructure, the wheel being pivotal about an ideal

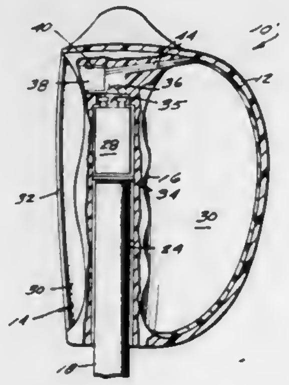
instantaneous pivot axis which results from line of intersection of the two planes that are defined respectively by the lower pivot paint at the wheel carrier means and the two axes of the upper guide members, characterized in that—as viewed in plan



view—the symmetry line with respect to the upper two guide members subtends in the straight driving position of the wheel an acute angle to the wheel axis and is located to the rear of the wheel axis as viewed in the driving direction.

4,440,421
SKI POLE GRIP WITH ELECTRICAL HEATING

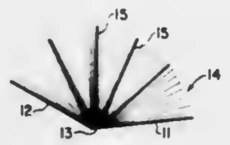
Jerome E. Adamson, 400 W. Brambleton Ave., Ste. 300, Norfolk, Va. 23510
Division of Ser. No. 198,067, Oct. 17, 1980, Pat. No. 4,343,490. This application May 18, 1982, Ser. No. 379,496
Int. Cl.³ A63C *11/22*
U.S. Cl. 280—821 **5 Claims**



1. A ski pole hand shield comprising:
a substantially rigid enclosure member having means defining an access opening thereto, and dimensioned to enclose a skier's hand;
a hand grip disposed within said enclosure member and accessible through said access opening; wherein said hand grip comprises means defining a central bore therein and an opening to the central bore at a first end thereof; and wherein said enclosure member has an opening therein aligned with the opening and central bore of said hand grip so that an end of ski pole may be inserted through said aligned openings into said central bore and held by said hand grip;
a rechargeable battery mounted within said hand grip central bore adjacent a second end thereof, opposite said first end;
a socket electrically connected to said rechargeable battery and mounted in said hand grip adjacent said enclosure member across opening, said socket being adapted to be connected to an external source of electrical energy for recharging said battery; and
means for transforming electrical energy from said battery to heat so that a major portion of a skier's hand within said enclosure may be heated.

4,440,422
SECTIONALIZED PAPERBACK BOOK

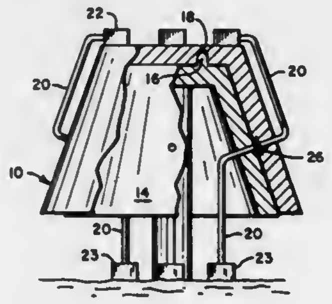
Edward R. Bruchas, 115 Moyna Dr., Hendersonville, Tenn. 37075
Filed Aug. 4, 1982, Ser. No. 405,250
Int. Cl.³ B42B *9/00*
U.S. Cl. 281—15 R **6 Claims**



1. A paperback book comprising a plurality of sections each section comprising a plurality of pages, at least one dividing page between each pair of contiguous sections, said dividing page being stiffer than the pages of the sections, and a spine secured to adjacent edges of all pages so as to bind them together, said spine being longitudinally perforated at each dividing page whereby adjoining sections may be divided by tearing the spine along said perforations.

4,440,423
CONTROL CONNECTOR

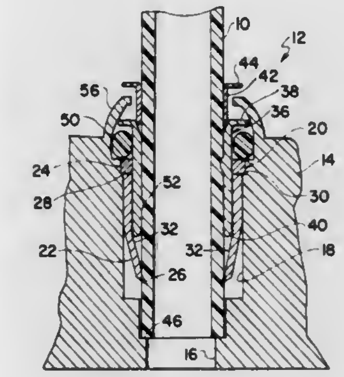
John R. Pfeifler, II, Oxnard, Calif., assignor to Vetco Offshore, Inc., Ventura, Calif.
Filed May 27, 1982, Ser. No. 382,510
Int. Cl.³ B61G *5/08;* F16L *35/00, 55/00*
U.S. Cl. 285—25 **6 Claims**



1. An underwater hydraulic control connector, comprising:
a cap member;
a head member, the cap and head members being engagable each with the other;
a means for aligning the cap and head members during engagement;
a plurality of conduits in the cap and head members, each cap member conduit mating with a corresponding head member conduit for fluid communication when the cap and head members are engaged;
a seal assembly located around the mating end of each of the cap conduits for forming a fluid tight seal between the mated conduits;
the cap member further having an annular groove disposed about the mating end of the cap conduit, the groove having an increasing diameter at an increasing depth beneath the mating surface of the cap member;
the seal assembly further comprising,
a resilient packing member configured to fit closely into at least the portion of the annular groove of increasing diameter for retention thereby, and comprising an inner sealing lip for forming an annular seal around the mating end of the cap member conduit, said inner lip having a first diameter, and an outer sealing lip for forming an annular seal around the mating end of the head member conduit when the cap and head members are engaged, said outer lip having a second diameter at least as great as said first diameter, the packing member further having an annular channel between the inner and outer sealing lips, the bottom of the channel having a diameter at least as great as said second diameter, and
a resilient ring of a substantially circular cross-section, disposed in the channel and retained therein, for axially urging said inner sealing lip against the cap member and said outer sealing lip against the head member, when the members are engaged.

4,440,424
RELEASABLE COUPLING DEVICE

Paul Mode, Westfield, N.J., assignor to Nycoil Corporation, Fanwood, N.J.
Filed Jun. 2, 1978, Ser. No. 912,003
Int. Cl.³ F16L *21/06*
U.S. Cl. 285—39 **8 Claims**

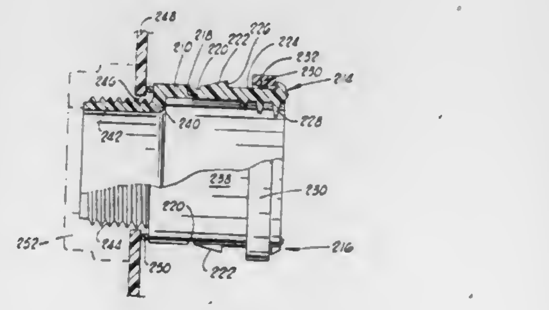


1. A releasable coupling device for a tube, said releasable coupling device comprising: a fitting having a bore therein and an opening into the bore through which the tube is to be inserted, the internal diameter of said opening being greater than the diameter of said bore; a retaining ring in said opening having a plurality of axially extending, inwardly biased fingers adapted to engage said tube when said tube is inserted into said fitting towards said bore so that said tube is restrained against axial movement out of said fitting; unlocking means for forcing said plurality of fingers radially outward to cause disengagement of said fingers from said tube; and wherein said retaining ring comprises a multi-sided web portion having said plurality of fingers depending therefrom, adjacent sides of said web portion defining a plurality of conrners, the diameter of an imaginary circle passing through said corners being greater than the diameter of said opening before said retaining ring is inserted in said opening and the diameter of an imaginary circle passing through the mid-point of said sides being less than the diameter of said opening before said retaining ring is inserted in said opening whereby said retaining ring may be support solely within said opening by the engagement of said corners against the side wall of said opening when said retaining ring is inserted into said opening.

4,440,425
FLEXIBLE CONDUIT SYSTEM

Harold T. Pate, Cleveland, and Helmut P. Fochler, Chagrin Falls, both of Ohio, assignors to Indian Head Inc., New York, N.Y.
Division of Ser. No. 78,376, Sep. 24, 1979, which is a division of Ser. No. 875,229, Feb. 6, 1978, Pat. No. 4,248,459. This application Mar. 30, 1982, Ser. No. 363,512
Int. Cl.³ F16L *41/00*
U.S. Cl. 285—161 **2 Claims**

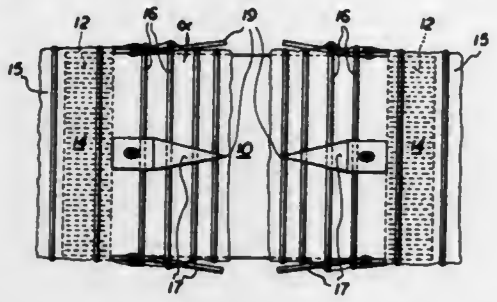
1. An inlet fitting for engaging a corrugated tubing section to an electrical box having an opening in a side wall thereof comprising:
a generally cylindrical body severed along parallel, axially extending lines to define a pair of opposed clamping portions of arcuate cross-sectional configuration pivotable radially outwardly relative to the axis of the cylindrical body, said cylindrical body further including a medial cylindrical body portion having one side connected to one of the ends of each of said clamping portions, and having an opposite side, each of said clamping portions including:
a plurality of axially spaced, radially inwardly extending teeth projecting toward the axis of the cylindrical body from the radially inner side of the respective clamping portion;
a hinge section of radially reduced thickness adjacent said medial cylindrical body portion and connecting said one end of the respective clamping portion to said cylindrical body portion to hingedly interconnect the respective clamping portion to the medial cylindrical body portion for radial pivotation of the respective clamping portion about said hinge section of radially reduced thickness;
a free end opposite said one end of the respective clamping portion;
an inclined surface sloping radially outwardly from a relatively thin radial section to a relatively thick radial section in an axial direction from a location adjacent said hinge section toward the free end of the respective clamping portion, said inclined surface terminating in a first radially extending shoulder spaced axially from the free end of the respective clamping portion and spaced axially from said teeth toward said hinge section; and



a radially outwardly projecting end portion of the respective clamping portion adjacent the free end thereof spaced from said shoulder and defining with said shoulder a locking collar-receiving recess extending transversely across the clamping portion, said recess having a bottom which is in coplanar alignment with the external surface of said generally cylindrical body;
a cylindrical nipple of smaller diameter than said cylindrical body;
a second radially extending shoulder extending between, and interconnecting, one end of said nipple with a side of said cylindrical body opposite the side thereof connected to said clamping portions; and
an annular locking collar having a greater internal diameter than the outer diameter of said cylindrical body mounted on, and surrounding, said cylindrical body, and axially slidable on said cylindrical body to a position around said clamping portions in which said locking collar is retained in said recesses to retain said clamping portions in a conduit-engaging position extending parallel to the axis of the cylindrical body, said annular locking collar including a radially inner surface adapted to cooperate with said inclined surface to allow said locking collar to be slid over said inclined surface as said locking collar is moved axially from a location adjacent said second radially extending shoulder, across said inclined surface, into the recesses of said clamping portions.

4,440,426
DUCT CONNECTOR

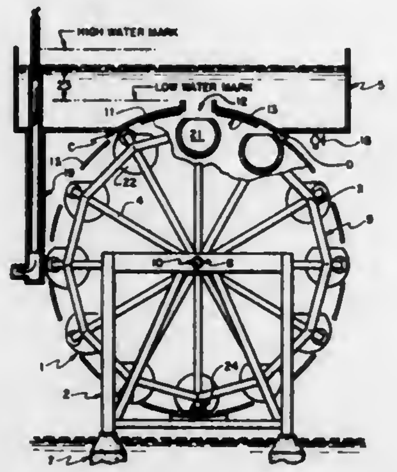
Karl Fahrion, 1000 Constance St., Pittsburgh, Pa. 15212
Continuation of Ser. No. 147,467, May 7, 1980, abandoned. This application Jan. 25, 1982, Ser. No. 342,349
Int. Cl.^{3} F16L *33/00*
U.S. Cl. 285—239 **6 Claims**



1. Apparatus for connecting flexible duct to sheet metal components, said flexible duct having a flexible scrim material that is supported on a wire helix, said apparatus comprising:
a tubular sheet metal collar adapted on one end for longitudinal insertion into the flexible duct; and
piercing members having a first end connected to said collar adjacent the end thereof and having an apical end that is oppositely disposed from the one end of the collar, the apical ends of said piercing members being located on the outside of the scrim and the first end of said piercing members being located on the inside of the scrim with the wire helix being secured between piercing member and said collar, whereby a connection is made by forcing the flexible duct over the collar and then drawing the flexible duct in a direction such that the apical ends of the piercing members pierce the scrim.

4,440,427
RESOURCE EFFICIENT WATER POWER PRIME MOVER

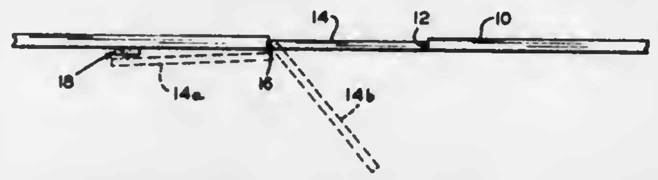
Willard B. Felton, 527 W. Orman Ave., Pueblo, Colo. 81003
Filed May 24, 1982, Ser. No. 381,416
Int. Cl.^{3} F05B *7/00*
U.S. Cl. 290—54 **6 Claims**



1. In a water wheel type of power apparatus:
an arrangement of buckets suspended on pinion controlled pivots with the open portion facing upward in the normal pendent position;
each bucket located at the extremity of a spoke of the wheel with an idler pinion to engage a stationary rack at the bottom of the wheel;
a driven pinion attached to the bucket that is controlled by the rack and pinion at the bottom of the wheel;
an overlying water basin with a portion of its bottom contoured to engage in a water-tight mode the water wheel at the top;
an orifice in the water basin that allows the discharge of water only during the time a bucket is in place to be filled ;
a water seal that prevents the flow of water during the time that no bucket is present for filling;
a rack at the bottom of the wheel to engage the idler pinion and control the bucket through three-hundred-sixty degrees of rotation during the discharge cycle;
a frame supporting the wheel over a discharge basin for spent water control;
a coupling from the drive shaft of the water wheel to utilize the generated power.

4,440,428
APPARATUS FOR DELAYING THE CLOSING OF A DOOR

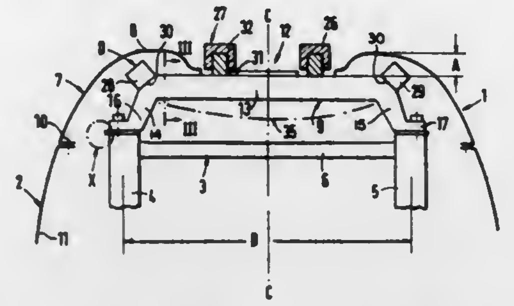
Frank L. Jessup, 1023 Eastlawn Dr., New Whiteland, Ind. 46184, and Robert S. Kaiser, 11 McDonald Rd., Malboro, N.J. 07746
Filed Sep. 1, 1981, Ser. No. 298,498
Int. Cl.^{3} E05C *17/56*
U.S. Cl. 292—251.5 **6 Claims**



1. Apparatus for holding a normally closed door open for a controlled period of time comprising in combination with a door movable between a closed first position and an open second position with the door normally biased toward the closed position,
means for holding said door in said second position,
means responsive to manual movement of said door to said second position for actuating said holding means,
timing means also responsive to manual movement of said door to said second position for initiating timing of the controlled period and at the expiration of the controlled period of time to disable the means for holding so that the door is released for movement to its first position.

4,440,429
BUMPER FOR A MOTOR VEHICLE, IN PARTICULAR A PASSENGER CAR

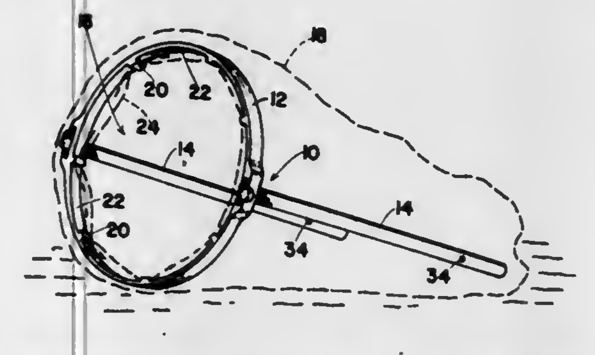
Wolfgang Eyb, Leonberg, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany
Filed Oct. 16, 1981, Ser. No. 311,972
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1980, 3039365
Int. Cl.^{3} B60R *19/08*
U.S. Cl. 293—120 **6 Claims**



1. A shock absorbing bumper arrangement for a motor vehicle, in particular a passenger car, which comprises a cover made of an elastic material and a dimensionally stable beam, characterized by the fact that the beam is surrounded, at least in sections, by said cover and consists of fiberglass-reinforced plastic, said beam being fixed to body frame elements in the manner of a beam at two locations located relatively far apart outside of a middle longitudinal plane of the vehicle,
the beam comprises a transverse part and supports which run approximately in the longitudinal direction of the vehicle and have ends which are designed to secure the beam, by means of attachment elements, to the body frame elements, and
the transverse part and the supports of the beam are unitarily constructed as a single piece.

4,440,430
BAG OPENER

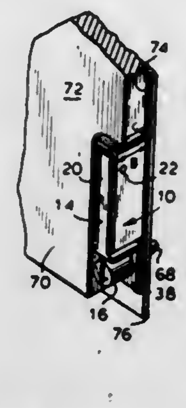
William A. Kruse, 129 Windsor Ave., Kensington, Calif. 94708
Filed Dec. 10, 1980, Ser. No. 215,104
Int. Cl.^{3} A47F *13/06*
U.S. Cl. 294—1 R **3 Claims**



1. A bag opener for a flexible bag, which comprises:
a ring-shaped portion dimensioned to fit inside a top of a bag, said ring-shaped portion being defined by an enclosed strip having sides extending normally to a plane defined by the ring-shaped portion, said ring-shaped portion having a plurality of apertures, each with a wall parallel to the sides of the enclosed strip, and a plurality of substantially straight leg portions extending through each of the apertures, being substantially normal to the plane defined by said ring-shaped portion and dimensioned to extend inside the bag to a point proximate to a bottom of the bag when said ring-shaped portion is inside the top of the bag, each of said leg portions having a top end extending around to form a clip with a side of the leg portion, the top end and side of the leg portion engaging the aperture wall and one of the strip sides to hold said leg portion in a fixed relationship relative to said ring portion.

4,440,431
HANDLE AND FASTENING APPARATUS

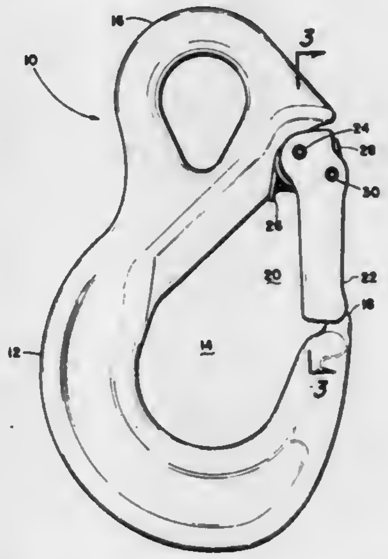
Francisco A. Collurafici, Baltimore, and Ralph L. Lee, Rockville, both of Md., assignors to Fairchild Industries, Inc., Germantown, Md.
Filed Jan. 16, 1981, Ser. No. 225,681
Int. Cl.^{3} A47J *45/00*
U.S. Cl. 294—27 H **5 Claims**



1. Handle and fastening apparatus comprising a housing, a handle, said handle having a substantially L-shaped portion and an inner end portion, said handle having the inner end portion thereof rotatably connected to said housing to permit said handle to be pivoted from a stowed position to an operative extended position and the substantially L-shaped portion of said handle having portions thereof protruding outward away from the rest of said handle, and fastener means connected to one of the legs of the L-shaped outer end portion of said handle.

4,440,432
SELF-LOCKING, QUICK RELEASE, LATCHED HOOK

Hugo M. J. Goris, Boortmeerbeek, Belgium, assignor to The Crosby Group, Inc., Tulsa, Okla.
Filed Feb. 22, 1982, Ser. No. 350,862
Int. Cl.^{3} B66C *1/36*
U.S. Cl. 294—82 R **1 Claim**



1. A self-locking, quick release, latched, anti-fouling lifting hook comprising:
a substantially J-shaped body;
an attachment means located at the top end of said J-shaped body;
a point located at the other end of said body, thus defining the throat of said hook;
a rib projecting into the throat adjacent said top end, said rib including a locking ledge;
a spring loaded latch means, pivotally attached to said rib and held, under tension, for inward movement from a first position in contact with said point and thus closing said throat to a second position substantially straddling said rib;
a lever arm means pivotally attached to said latch means having a cog formed at one end thereof to be engageable with said locking ledge to prevent inward movement of said latch means, a spring normally biasing said lever arm means cog into said locking ledge, the other end of said lever arm means adaptable to be moved into the same said inward direction as the pivotal movement of said latch means from said first to said second position whereby, substantially simultaneously, said cog is released and said latch means moved.

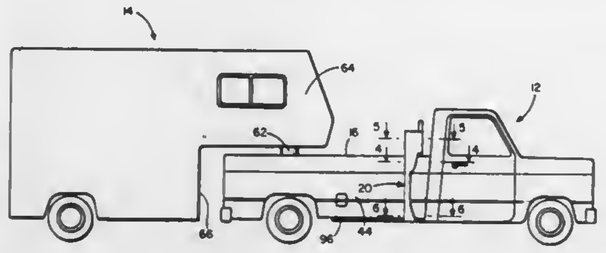
4,440,433
AIR DEFLECTOR AND METHOD OF PROVIDING AIR DEFLECTOR

Wallace W. Williams, 42 E. Terrace St., and Eddie Williams, 3033 N. Glen St., both of Altadena, Calif. 91001
Filed Apr. 5, 1982, Ser. No. 365,746
Int. Cl.^{3} B62D *35/00*
U.S. Cl. 296—15 **12 Claims**

1. An air deflector to mount on a first vehicle for towing a second vehicle, said first vehicle being provided with structure defining a substantially vertical opening, comprising:
side shield structure to extend outwardly and rearwardly outside a side wall of the first vehicle along said side wall,

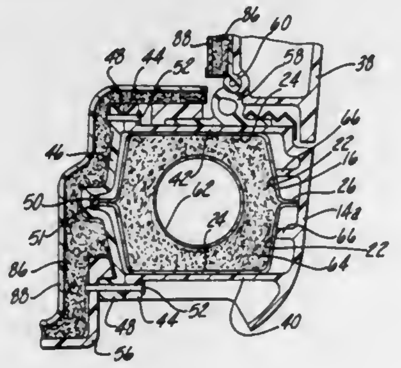
said side shield structure having a front surface for deflecting air away from the vehicles and a rear surface; and

a mounting for said shield structure to mount said shield structure on the first vehicle, said mounting including a post having a portion for securing said shield structure on said post and a portion for inserting in the substantially vertical opening to mount said shield structure on the first vehicle.



4,440,434
VEHICLE BODY CONSTRUCTION

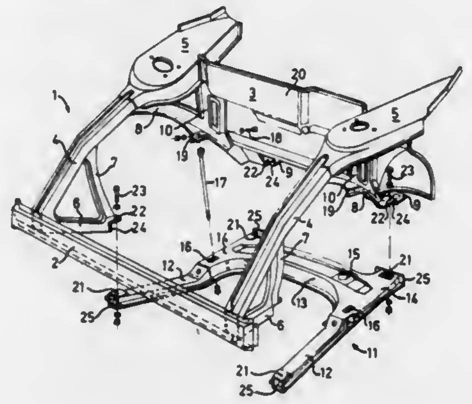
Aldo Celli, Via Jacopo Palma 9, Milano, Italy 20146
Filed Dec. 24, 1981, Ser. No. 334,234
Int. Cl.³ B62D *29/04*
U.S. Cl. 296—185 **6 Claims**



1. A vehicle body of the type having a series of tubular structural members rigidly secured together to form a frame and a plurality of plastic panels overlying and secured to said structural members to provide the exterior of the body, each structural member comprising a pair of straight metal channel members each having a flat bottom wall and a pair of spaced side walls having laterally outwardly extending flanges along the longitudinal free edges thereof, each pair of channel members being arranged in opposed relation with their flanges juxtaposed and secured together to form the hollow structural member; said structural members being secured together in said frame with the secured flanges at one side of the structural member extending in a direction outwardly of the vehicle body and the opposite secured flanges extending in a direction inwardly of the vehicle body, the bottom walls of the channel members forming parallel side walls of the structural member which extend generally parallel to the secured flanges and in a direction transversely of the plane of the panels, each of said plastic panels having at least one pair of parallel spaced walls projecting from the inner face of the panel in a direction inwardly of the vehicle body, said pair of inwardly projecting walls and the portion of the panel extending therebetween straddling a portion of the structural member such that the inwardly projecting walls on the panel are in substantial coplanar engagement with the bottom walls of the structural member, said inwardly projecting walls having laterally outwardly extending flanges along their free edges spaced in a direction inwardly of the vehicle body from the inner face of the panel, the means for securing the panel to the structural member comprising an elongate adaptor cap straddling the side of the structural member facing inwardly of the vehicle body and having laterally outwardly extending flanges along opposed free edges thereof which are seated on and against the flanges at the edges of said inwardly projecting walls, the flanges of the adaptor cap and the flanges at the edges of said inwardly projecting walls having registering openings extending therethrough and blind rivets extending through said registering openings and securing the adaptor cap to the flanges of the inwardly projecting walls, said rivets being adapted to be inserted through said registering openings and crimped from the face of the adaptor cap which faces inwardly of the vehicle body, said adaptor cap engaging a portion of the structural member facing inwardly of the vehicle body and a portion of the panel between said inwardly projecting walls engaging a portion of the structural member facing outwardly of the vehicle body so as to rigidly secure the panel to the structural member.

4,440,435
MOTOR VEHICLE FRONT SECTION

Stig I. Norlin, Kungshamn, Sweden, assignor to Saab-Scania Aktiebolag, Sweden
Filed Nov. 24, 1981, Ser. No. 324,627
Claims priority, application Sweden, Nov. 24, 1980, 8008208
Int. Cl.³ B60R *21/00*
U.S. Cl. 296—188 **21 Claims**



1. An impact absorbing front section in a motor vehicle, the front section comprising:

a front structure in the front section, the front structure being securable to the vehicle body,

a first vertical abutment surface in the front structure extending in a direction substantially transverse to the length of the vehicle

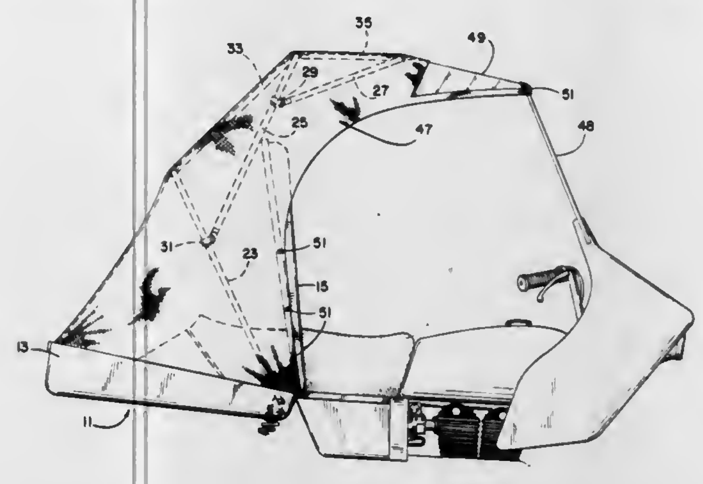
a subframe for carrying a drive unit of the vehicle,

a second vertical abutment surface in the subframe for cooperating with the first vertical abutment surface, the second vertical abutment surface extending substantially parallel to the first vertical abutment surface, and

securing means for securing and positioning the subframe with respect to the front structure so that the first vertical abutment surface and the second vertical abutment surface are spaced a predetermined distance apart, and so that impact on the front of the vehicle drives the first vertical abutment surface and the second vertical abutment surface into contact, the subframe being positioned by the securing means so that the subframe serves to oppose collapse of the front structure under impact after the first vertical abutment surface and the second vertical abutment surface are driven into contact.

4,440,436
CONVERTIBLE TOP FOR MOTORCYCLES AND SNOWMOBILES

Marian S. Giddens, 311 W. Hermosa Dr., Fullerton, Calif. 92645, and Michael B. Arnold, P.O. Box 52428, Nairobi, Kenya
Filed May 6, 1982, Ser. No. 375,753
Int. Cl.³ B60J *7/00*
U.S. Cl. 296—107 **7 Claims**



1. Apparatus providing a convertible canopy for single-seat vehicles comprising:

a pannier of substantially U-shaped cross-section curved to fit about the seat of a said vehicle and having apertures in the inner walls of the terminal ends thereof;

a plurality of rigid U-shaped frame members each sized to fit within said pannier, the first of said rigid U-shaped frame members having an aperture in each of its respective ends;

first attachment means attached to the respective ends of a second of said rigid U-shaped frame members for attaching said second frame member to said first frame member such that said second frame member may slide along said first frame member and pivot with respect thereto;

second attachment means attached to the respective ends of a third of said rigid U-shaped frame members for attaching said third frame member to said second frame member such that said third frame member may slide along said second frame member and pivot with respect thereto;

means insertable through the apertures in said pannier and in said first rigid U-shaped frame member for pivotably mounting said first frame member with respect to said pannier and for rigidly mounting said pannier with respect to said vehicle; and

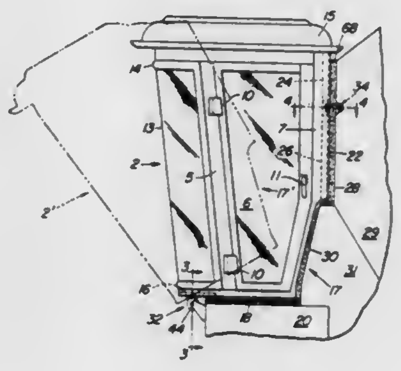
canopy means for covering said plurality of rigid U-shaped frame members.

4,440,437
OPERATOR ENCLOSURE MOUNTING FOR A SELF-PROPELLED HARVESTER

Gunter Hahm, Kleinbundenbach; Klaus Pauli, Homburg-Einod, and Walter Schleicher, Swisttal, all of Fed. Rep. of Germany, assignors to Deere & Company, Moline, Ill.
Filed May 18, 1982, Ser. No. 379,414
Claims priority, application European Pat. Off., May 22, 1981, 81103938.7
Int. Cl.³ B62D *33/06*
U.S. Cl. 296—190 **4 Claims**

1. In a self-propelled harvester having an operator station defined in part by harvester body structure portions including an approximately horizontal floor portion and a generally upright wall portion rearward and upward of and contiguous with the floor portion and including an operator enclosure having a frame and generally upright front and rear walls and opposite side walls and a downwardly and rearwardly facing bottom opening having a perimeter defined by lower portions of said walls and shaped to mate with the body floor and body upright wall portions so as to enclose the operator station, said enclosure rear wall extending above the body structure upright wall portion and adjacent a further body structure portion, a mounting arrangement for the enclosure comprising:

a plurality of spaced apart resilient mountings connecting the enclosure to the harvester body structure, including at least one rear mounting connected to a rearward upright portion of the enclosure and at least one forward mounting disposed adjacent a lower portion of the front wall, said forward mounting including means permitting forward pivoting of the operator enclosure about a horizontal lateral axis passing through said mounting so that the enclosure may be pivoted forward to expose the operator station; and



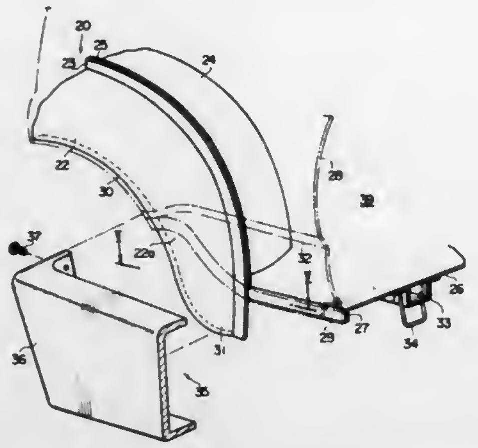
a mat-like insulating element carried by the body structure and interposed between the perimeter of the enclosure bottom opening and the harvester body structure for minimizing the noise and vibration transmitted into the operator station from the harvester body structure said element covering entirely the harvester body structure portions enclosed by the enclosure, and meeting and at least partially underlying substantially the entire perimeter of the enclosure bottom opening and sharing in the support of the enclosure.

4,440,438
REAR VEHICLE BODY STRUCTURE OF AN AUTOMOTIVE VEHICLE

Takao Miyoshi, Yokosuka, and Sumio Inami, Atsugi, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan
Filed Oct. 5, 1981, Ser. No. 308,679
Claims priority, application Japan, Oct. 31, 1980, 55-152261
Int. Cl.³ B62D *25/16*
U.S. Cl. 296—195 **3 Claims**

1. A rear vehicle body structure of an automotive vehicle comprising: a pair of rear wheel houses each including a rear wheel house outer panel having a lower portion and a rear wheel house inner panel secured to the rear wheel house outer panel; a pair of rear fender panels each secured to the rear wheel house outer panel; and a rear floor panel having lateral ends and in part secured along each of its lateral ends to the rear wheel house inner panel; wherein said rear wheel house outer panel terminates below said rear fender panel and said rear floor panel, the rear wheel house outer panel projecting outwardly away from the lateral end of said rear floor panel and having a laterally outer portion curved in cross section toward the axis of rotation of said rear wheel, and wherein said rear fender panel has a rear lower end portion in part secured

to the lateral end of said rear floor panel projecting rearwardly from said rear wheel house, the rear lower end portion of said



rear fender panel in part extending across and secured to said lower portion of said rear wheel house outer panel.

4,440,439
CONVERTIBLE SEATS FOR TRANSPORT

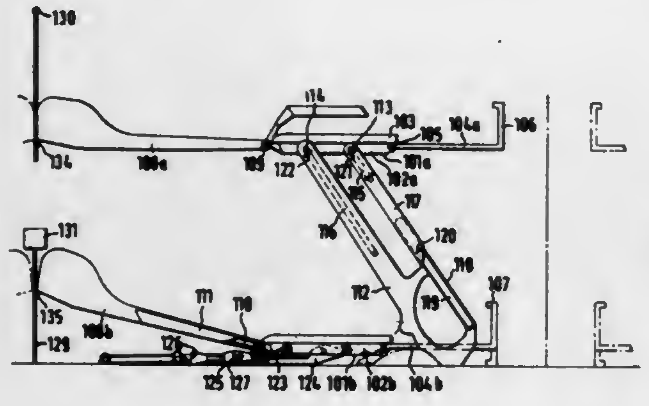
George S. A. Szabo, Gleimstrasse 2, 8000 Müchen 80, Fed. Rep. of Germany

Continuation of Ser. No. 102,236, Dec. 10, 1979. This application Feb. 26, 1982, Ser. No. 352,772

Claims priority, application United Kingdom, Dec. 14, 1978, 48472/78

Int. Cl.^{3} A47C *13/00*

U.S. Cl. 297—62 **3 Claims**



1. A convertible seat unit comprising a first chair in combination with a second chair positioned in line with same wherein said first chair comprises in combination

(a) a first seat base having projections from the framework thereof,

(b) a first back rest movably mounted on the rear portion of said first seat base so as to be capable of being reclined from an erect, sitting position into a substantially horizontal, stretched berth position,

(c) a first leg rest, mounted at the front portion of said first seat base, and capable of being moved from an unobstructive position under said first seat base into a substantially horizontal berth position, and

(d) a first supporting means of retaining and locating said first seat base both in a sitting position and alternatively in an elevated berth position which comprises a base support member having parallel, upward stretching arms containing longitudinal channels which said projections engage in a slideable manner, and wherein said second chair comprises

(e) a second seat base,

(f) a second back rest movably mounted on the rear portion of said second seat base so as to be capable of being reclined from an erect, sitting position into a substantially horizontal, stretched berth position,

(g) a second leg rest, mounted at the front portion of said second seat base, and capable of being moved from an unobstructive position under said second seat base into a substantially horizontal berth position, and

(h) a second supporting means of retaining and locating said second seat base in a sitting position and alternatively in a horizontal berth position directly underneath said first chair when said first chair is in the elevated berth position, said supporting means comprising substantially parallel legs turnably mounted at one end on the floor and at the other end on said second seat base and a locking member turnably mounted at one end on the floor and capable of lockably engaging one of said legs and said second seat base.

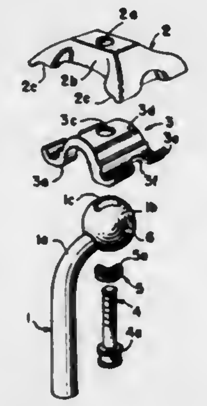
4,440,440
SADDLE ROD FOR BICYCLES AND LIKE VEHICLES

Henry Juy, Dijon, France, assignor to Etablissements le Simplex, France

Filed Jun. 8, 1981, Ser. No. 271,200

Int. Cl.^{3} B62J *1/00*

U.S. Cl. 297—195 **6 Claims**



1. A saddle rod for bicycles and the like, comprising:

a saddle tube (1) having a spherical head (1*b*);

a head carriage unit having a lower element (3) forming a spherical cap (3*b*) which rests upon said spherical head, said head carriage unit encases the wires of a saddle frame;

a screw passing through said spherical head secures said head carriage unit to said saddle tube; and

said spherical head is provided with a vertical bore (1*c*) for said screw, having an hourglass shape with an approximate circular section at the center of said bore, the diameter of said circular section is slightly larger than the diameter of said screw passing therethrough, wherein said vertical bore is further provided with egg-shaped and flared sections at the periphery of the sphere in a lengthwise direction so that said screw can be angularly shifted and thereby said head carriage unit in the lengthwise direction only.

4,440,441
ENERGY ATTENUATING SEAT AND LEG THEREFOR

Ralph G. Marrujo, and Adrianus A. G. Cooper, both of Winston-Salem, N.C., assignors to Fairchild Industries, Inc., Germantown, Md.

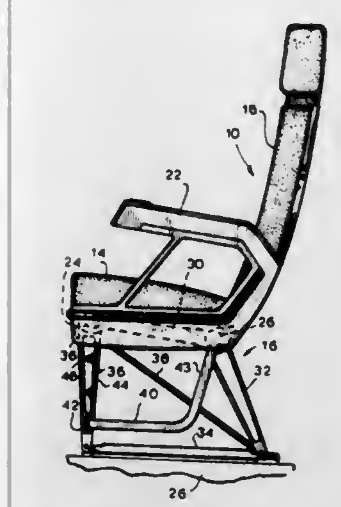
Filed Dec. 17, 1981, Ser. No. 331,690

Int. Cl.^{3} B60R *21/10*

U.S. Cl. 297—216 **15 Claims**

1. A leg for a seat comprising two elongated spaced apart flange portions which are connected together at their respective ends which form a gap or space between at least a portion of the flange portions and means connected to at least one of said flange portions for increasing the loads which can be applied to said leg during elastic deformation of said leg, said

means for increasing loads which can be applied comprising means for a portion of one flange portion located on one side



of the gap or space to exert a force upon the other adjacent flange portion located on the other side of the gap or space.

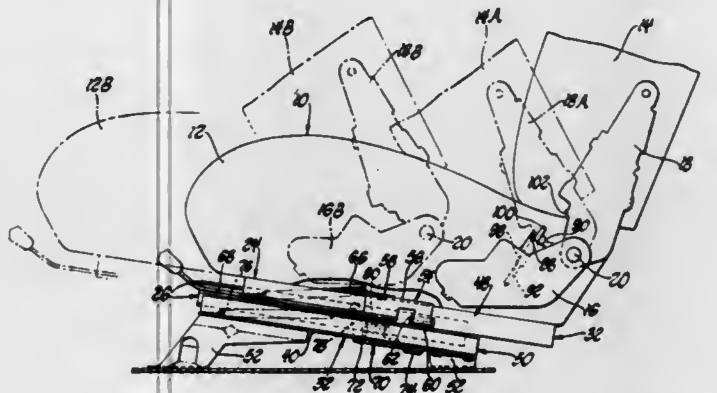
4,440,442
SEAT POSITION CONTROL MECHANISM

James R. Drouillard, Rochester, and Richard W. A. Rees, West Bloomfield, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 11, 1982, Ser. No. 347,689

Int. Cl.^{3} B60N *1/02, 1/04*

U.S. Cl. 297—341 **3 Claims**



1. In a vehicle having a seat cushion and a seat back pivotally mounted to the seat cushion for forward tilting movement, a seat position control mechanism comprising,

laterally spaced inboard slave and outboard control track arrangements for mounting the seat on the vehicle for horizontal movement to a plurality of adjusted positions and movement from one location to an easy enter position and return to the one location, the inboard slave track arrangement including a single track assembly including a pair of slidable members, one mounted to the vehicle and the other mounted to the seat,

the outboard track control arrangement being comprised of an upper and a lower track assembly, one track member of each of the upper and the lower track assemblies being respectively mounted to the seat and to the vehicle and the other track members of the upper and lower track assemblies being secured to each other,

first latch means releasably locking the one track member of the upper track assembly to the other track member of such assembly at a plurality of locations defining the horizontal adjusted positions of the seat,

second latch means releasably locking the one track member of the lower track assembly to the other track member of such assembly at the one location,

and means operated by tilting movement of the seat back for releasing the second latch means, said means including a fixed length cable member connected at one end thereof to the second latch means and connected at the other end thereof to the seat cushion, a sheath at least partially surrounding the cable member and having one end thereof fixed to the one track member of the lower track assembly and the other end thereof slidably mounted to the seat cushion, and means on the seat back engageable with means on the other end of the sheath upon tilting movement of the seat back for bending the sheath relative to the fixed one end thereof to thereby bend the cable member intermediate its ends and release the second latch means.

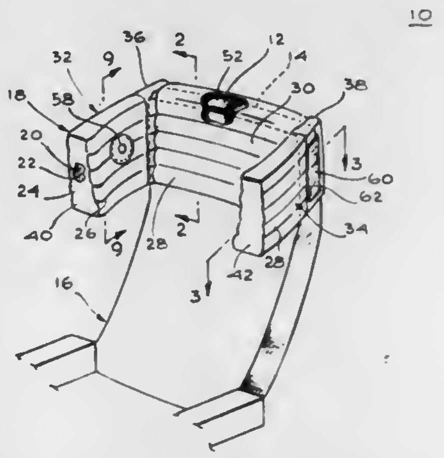
4,440,443
HEADREST

Robert A. Nordskog, 16000 Strathern St., Van Nuys, Calif. 91406

Filed Apr. 10, 1981, Ser. No. 252,938

Int. Cl.^{3} A47C *7/36*

U.S. Cl. 297—397 **5 Claims**



1. A headrest adapted to be secured to the upper portion of an airplane seat backrest, comprising:

(a) a resilient body filled with an air-filled, flexible, foam material;

(b) said body, including a cavity therein disposed at the bottom and back thereof and adapted to be slipped over the top of a seat backrest;

(c) said body being so designed as to extend a minimal distance above said seat backrest when in its operative position;

(d) a pair of privacy wings secured to said body at the respective sides thereof;

(e) said privacy wings extending forwardly from and substantially perpendicular to said body to form a resting area for a person's head;

(f) said wings extending forwardly a sufficient distance to block off the side views of a person resting his head therebetween;

(g) said body having its central portion made of a relatively soft, resilient material and its end portions being made of a relatively rigid, resilient material;

(h) said wings being made of a relatively rigid, resilient material;

(i) a pair of speakers located in each of said wings and directed inwards to said resting area; and

(j) wherein said wings are pivotally secured to said body at the opposed ends thereof.

4,440,444
METHOD FOR CONTROLLING VOID IN AN IN SITU OIL SHALE RETORT

Thomas E. Ricketts, Grand Junction, Colo., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Jun. 15, 1981, Ser. No. 273,972

Int. Cl.^{3} E21C *41/10*

U.S. Cl. 299—2 **45 Claims**

1. A method for forming an in situ oil shale retort in a retort

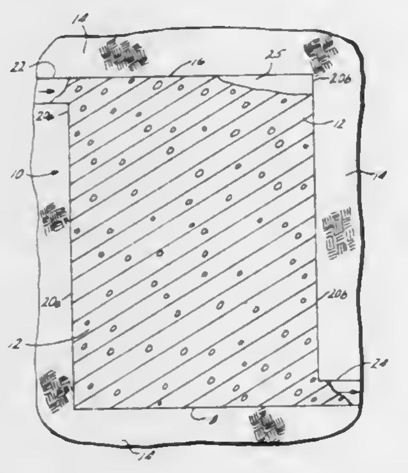
site in a subterranean formation containing oil shale, the in situ oil shale retort site having top, bottom, and side boundaries of unfragmented formation, comprising the steps of:

(a) excavating at least one void in the subterranean formation extending between the side boundaries of the retort site, leaving at least one zone of unfragmented formation within the boundaries of the retort site and having a horizontal free face adjacent such a void;

(b) explosively expanding such a zone of unfragmented formation toward the void for forming a fragmented permeable mass of formation particles in the in situ oil shale retort by:

(i) explosively expanding a first portion of the zone of unfragmented formation located between the horizontal center of such a zone of unfragmented formation and a first side boundary of the retort site; and thereafter

(ii) sequentially explosively expanding remaining portions of the zone of unfragmented formation in a time delay sequence progressing away from the first portion of said zone of unfragmented formation;



(c) forming at least one retort inlet adjacent the intersection of the first side boundary of the retort site and the top boundary of the retort site for introduction of a retort inlet mixture; and

(d) forming at least one retort outlet adjacent the intersection of a second side boundary of the retort site and the bottom boundary of the retort site for withdrawal of off-gas, the second side boundary being on the opposite side of the retort site from the first side boundary.

4,440,445

FLUID OUTLET AT THE BOTTOM OF AN IN SITU OIL SHALE RETORT

Ned M. Hutchins, Grand Junction, Colo., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Continuation-in-part of Ser. No. 204,641, Nov. 6, 1980, abandoned. This application Nov. 30, 1981, Ser. No. 326,143

Int. Cl.^{3} E21C *41/10*

U.S. Cl. 299—2 **24 Claims**

1. A method for recovering liquid and gaseous products from an in situ oil shale retort in a subterranean formation containing oil shale, such an in situ oil shale retort containing a fragmented permeable mass of formation particles containing oil shale and having upper, lower, and side boundaries, comprising the steps of:

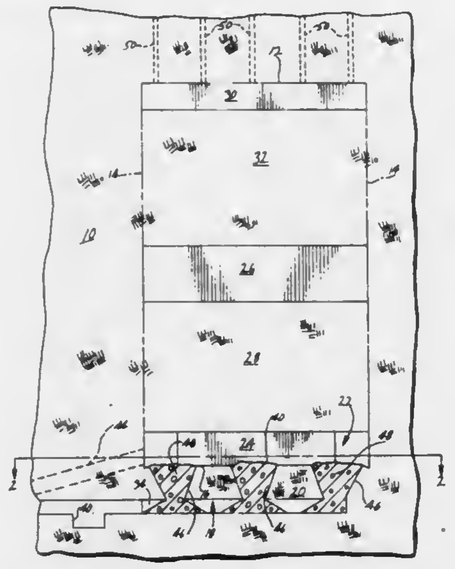
excavating formation from within the retort boundaries for forming a lower void extending generally horizontally across a lower level of the retort site, leaving a first zone of unfragmented formation within the retort boundaries above the lower void;

excavating formation from a production level spaced below the lower void for forming at least one production level drift, leaving a second zone of unfragmented formation between the lower void and the production level drift;

forming a plurality of product withdrawal passages through said second zone of unfragmented formation between the lower void and the production level drift for providing fluid communication between the fragmented mass in the retort and the production level drift, each of said product withdrawal passages containing a permeable mass of particles;

explosively expanding such first zone of unfragmented formation toward at least the lower void for forming a fragmented permeable mass of formation particles containing oil shale within the retort;

withdrawing the mass of particles from the product withdrawal passages;



establishing a retorting zone in an upper portion of the fragmented mass in the retort and advancing the retorting zone through the fragmented mass in the retort for producing liquid and gaseous products of retorting;

passing such liquid and gaseous products of retorting from the fragmented mass in the retort through each of such a plurality of empty product withdrawal passages to the production level drift; and

withdrawing such products of retorting from the production level drift.

4,440,446

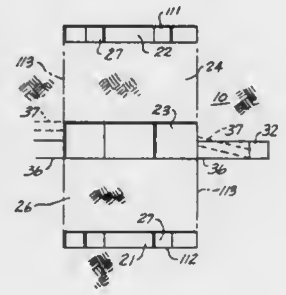
METHOD FOR FORMING A MODULE OF IN SITU OIL SHALE RETORTS

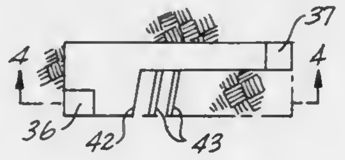
Ned M. Hutchins, Grand Junction, Colo., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Jan. 12, 1982, Ser. No. 338,896

Int. Cl.^{3} E21C *41/10*

U.S. Cl. 299—2 **17 Claims**





1. A method for forming a plurality of in situ oil shale retorts in a row of retort sites in a subterranean formation containing

oil shale, each such retort comprising top, bottom and side boundaries of unfragmented formation and containing a fragmented permeable mass of formation particles containing oil shale, comprising the steps of:

excavating a first drift at a higher elevation through the retort sites along a row of such retort sites;

excavating a second drift at a lower elevation through the retort sites along the row;

excavating an upper portion of a void in such a retort site, the upper portion extending substantially to the side boundaries and being at about the elevation of the first drift;

establishing communication between the upper portion of the void and the second drift for forming a generally vertically extending free face;

forming a plurality of generally vertically extending blastholes adjacent to the free face;

placing explosive charges in such blastholes;

detonating such explosive charges for explosively expanding formation between such blastholes and the free face toward the free face;

excavating the explosively expanded formation via the second drift for enlarging the void below the upper portion to about the elevation of the second drift and leaving a zone of unfragmented formation remaining in the retort site having a horizontally extending free face adjoining the void; and

explosively expanding at least a portion of the remaining zone of formation toward the void for forming a fragmented permeable mass of formation particles containing oil shale in the in situ oil shale retort.

4,440,447

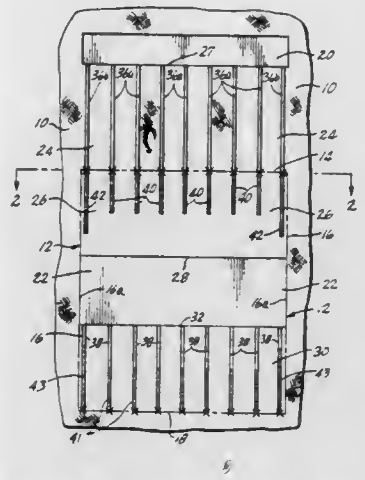
METHOD FOR FORMING AN IN SITU OIL SHALE RETORT WITH EXPLOSIVE EXPANSION TOWARDS A HORIZONTAL FREE FACE

Thomas E. Ricketts, and John E. Shaler, both of Grand Junction, Colo., assignors to Occidental Oil Shale, Inc., Grand Junction, Colo.

Continuation of Ser. No. 183,081, Sep. 2, 1980, abandoned. This application Mar. 12, 1982, Ser. No. 357,687

Int. Cl.^{3} E21B *43/247;* E21C *41/10*

U.S. Cl. 299—2 **49 Claims**



1. A method for forming a fragmented permeable mass of formation particles in an in situ oil shale retort having top, bottom, and side boundaries of unfragmented formation in a retort site in a subterranean formation containing oil shale, the method comprising the steps of:

forming at least one void within the retort site in the subterranean formation, the void bounded by generally vertical side walls and zones of unfragmented formation above and below, the surface adjacent the void of at least one of such zones of unfragmented formation forming a substantially horizontal free face towards which such a zone of unfragmented formation is to be expanded;

forming an array of spaced apart explosive charges in the zone of unfragmented formation, the array of explosive charges comprising at least one central explosive charge spaced apart from the side boundaries and at least one outer explosive charge closer to an adjacent side boundary than such a central explosive charge the actual depth of burial of each such outer explosive charge being less than the actual depth of burial of each such central explosive charge, and the scaled depth of burial of each such outer explosive charge being not more than the scaled depth of burial of each such central explosive charge; and

detonating the array of explosive charges for explosively expanding the zone of unfragmented formation toward its substantially horizontal free face for forming a fragmented permeable mass of formation particles in the in situ oil shale retort.

4,440,448

METHOD FOR OPENING MINERAL DEPOSIT AND SUBSEQUENT MINING THEREOF

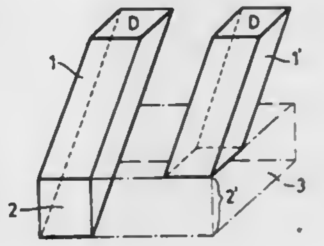
Gustav Hoberstorfer, 8 Vibblabyvägen, S-175 41 Järfälla, and Torsten Noren, 8 Svalnäs alle, S-182 63 Djursholm, both of Sweden

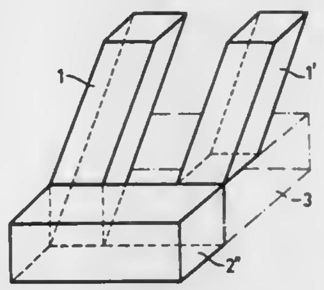
Filed Aug. 7, 1981, Ser. No. 291,048

Claims priority, application Sweden, Oct. 24, 1980, 8007489

Int. Cl.^{3} E21C *41/00*

U.S. Cl. 299—11 **12 Claims**





1. A method for opening a mineral deposit and subsequent mining of mineral rock including refilling with solid stabilizing filling materials and obtaining necessary and desirable stabilization by addition of binding agents or other reinforcement, a development required for the mining being positioned at least substantially entirely in the mineral rock, comprising the steps of driving inclined access and service ramps in one of an upward and a downward direction, establishing artificial access and service ramp systems in the stabilizing filling material, alternately utilizing the ramp systems such that within the range of at least two ramp systems, one ramp system, which at a given occasion is blocked by the mining of an ore slab from the one ramp system and cannot serve as a continuous communication link, is utilized along its entire distance except for the blocking point proper by alternating use between the one ramp system and another ramp system within the range.

4,440,449

MOLDING PILLARS IN UNDERGROUND MINING OF OIL SHALE

William A. Sweeney, Larkspur, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Feb. 5, 1982, Ser. No. 346,185

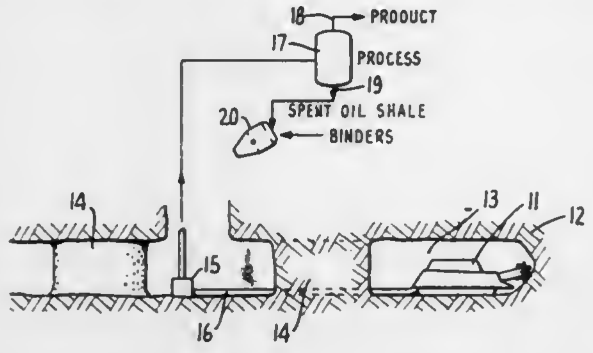
Int. Cl.^{3} E21C *41/10*

U.S. Cl. 299—11 **4 Claims**

1. In a process for underground mining of a subsurface

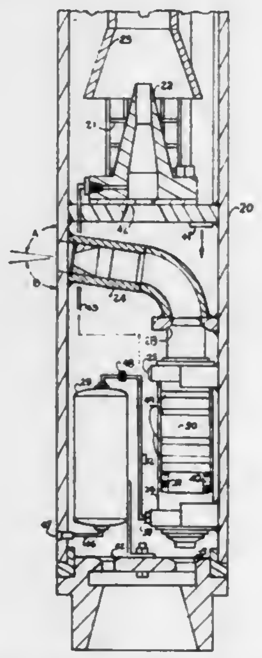
deposit of oil shale wherein the deposit is mined and removed so as to form an underground cavity having a multiplicity of spaced unmined pillars that provide support for the roof of the cavity, the improvement comprising:

(a) assembling a mold in a space between unmined pillars;
(b) filling the mold with a fluid cementitious composition comprising
  (i) 45% to 94% by weight of shale having a residual carbon content less than about one percent by weight and 20% to 35% by weight of its Mg, Ca, and Fe carbonates decomposed to the corresponding oxides,



  (ii) 1% to 20% by weight of a binder, and
  (iii) 5% to 50% by weight of water to form a body of said composition that extends vertically from the floor of the cavity to the roof thereof between the pillars;
(c) allowing the body to harden whereby a support member is formed for supporting the roof of the cavity; and
(d) disassembling the mold.

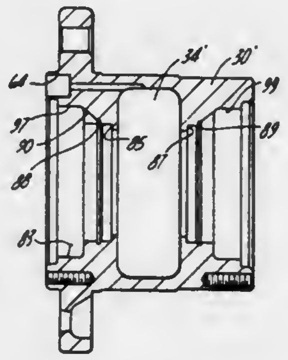
4,440,450
BOREHOLE MINING VALVE ACTUATION
John E. Coakley, Westfield, N.J., assignor to Slurry Mining Engineering Inc., Westfield, N.J.
Filed Aug. 18, 1982, Ser. No. 409,060
Int. Cl.³ E21C ***45/00***
U.S. Cl. 299—17 **22 Claims**



1. An apparatus for actuating downhole flow control valves of a borehole mining tool with a power cylinder having a piston actuated by the fluid supply pressure to the tool comprising:

(a) a double-acting power cylinder with a piston within the cylinder and piston rods attached thereto and extending through the ends of the cylinder to operate valve plugs for the drilling water flow valve and for the mining water flow valve, the piston having hydraulic system pressure on one side and pneumatic or gas pressure on the opposite side, the power cylinder having a port at each end of the cylinder communicating with the pneumatic side or the hydraulic side of the piston;
(b) pneumatic or gas pressure within the cylinder on one side of the piston capable of holding the piston at the opposite end when subjecting the hydraulic side of the piston to drilling system pressure;
(c) the pneumatic side port sealed to retain the air or gas within the cylinder:
(d) a piston stop within the pneumatic side of the piston to stop the movement of the piston after a change of valve position;
(e) means of increasing the fluid supply pressure to the mining system pressure and applying the pressure to the hydraulic port side of the power cylinder which forces the piston opposed by the pneumatic pressure on the opposite side of the piston against the stop with the piston rod extensions to the valves closing the drilling port and opening the mining port valve.

4,440,451
VEHICLE HUB WITH BEARING REMOVABLE FEATURE
Fred L. Goodell, Grosse Ile, and Michael J. Ellison, Canton, both of Mich., assignors to AM General Corp., Detroit, Mich.
Division of Ser. No. 311,855, Oct. 16, 1981, which is a continuation-in-part of Ser. No. 288,834, Jul. 31, 1981, Pat. No. 4,418,737. This application Sep. 28, 1982, Ser. No. 425,756
Int. Cl.³ B60B ***27/00***
U.S. Cl. 301—105 R **6 Claims**

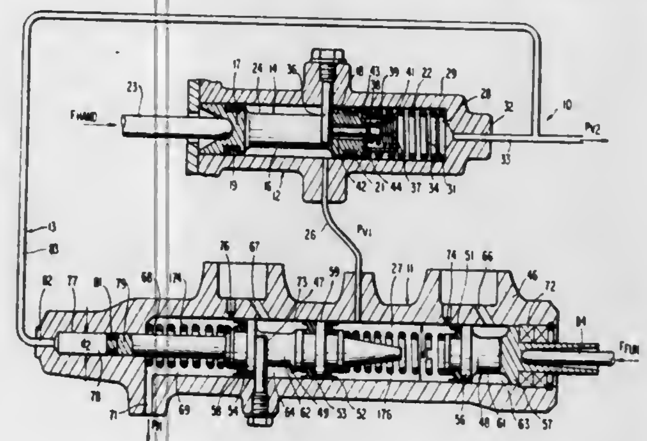


1. A hub for vehicle comprising:

an annular member having an inner peripheral surface with at least one portion thereof adapted to receive a bearing assembly;
a plurality of spaced ramps formed in said surface interiorly of bearing receiving portion; and
sealing ring receiving means formed in the inner surface of the hub for holding a sealing ring, with the ramps radially extending outwardly from the sealing ring receiving means to the bearing receiving portion;
whereby said bearings may be removed by a device adapted to contact interior portions of the bearing assembly through said ramps.

4,440,452
HYDRAULIC BRAKE SYSTEM FOR TWO-WHEELED VEHICLES
Manfred Burckhardt, Waiblingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany
Filed Dec. 23, 1981, Ser. No. 333,978
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1980, 3049108
Int. Cl.³ B60T ***8/26, 11/20***
U.S. Cl. 303—6 A **21 Claims**

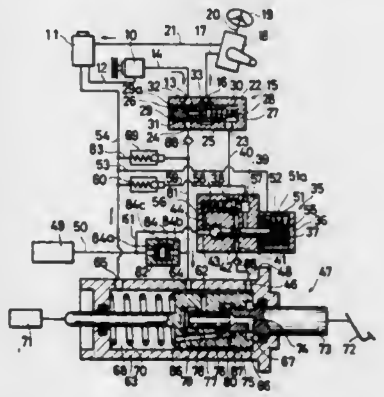
1. A hydraulic braking system for two-wheeled vehicles, the braking system including a first main brake cylinder means connected with a rear axle braking circuit, means for actuating the first main brake cylinder means, a second main brake cylinder means connected with a front axle braking circuit, means for actuating the second main brake cylinder means, means for distributing a brake force in a predetermined ratio when the first main brake cylinder means is actuated so as to produce a pressurization of both the front axle and rear axle braking circuits and to reduce the pressure in the rear axle braking circuit when the second main brake cylinder is simultaneously actuated with the first main brake cylinder, characterized in that the first main brake cylinder means includes a tandem main brake cylinder having a primary pressure chamber means forming an output pressure chamber means for the front axle braking circuit, an axially displaceably mounted primary and secondary piston means axially delimiting the primary pressure chamber means, a second pressure chamber means axially delimited by the secondary piston means and an inner wall of a housing of the first main brake cylinder means forming an output pressure chamber for the rear axle braking circuit, the second main brake cylinder means includes an output pressure chamber means, a displaceably mounted piston means for delimiting an annular pre-pressure chamber means, means for communicating the annular pre-pressure chamber means with the output pressure chamber means of the second main brake cylinder means when the piston means of the second main brake cylinder means is in a rest position, means are provided for pressure tight sealing off communication between the pre-pressure chamber means and the output pressure chamber means of the second main brake cylinder means after a displacement of the piston means of the second main brake cylinder means a small fraction of a working stroke, and in that feedback means are provided for exerting a restoring force proportional to a front axle braking pressure on the secondary piston means of the tandem main brake cylinder.



4,440,453
HYDRAULIC SYSTEM FOR A VEHICLE
Yoshiharu Adachi, Gamagori, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Mar. 24, 1982, Ser. No. 361,375
Claims priority, application Japan, Mar. 31, 1981, 56-49011
Int. Cl.³ B60T ***13/16***
U.S. Cl. 303—50 **6 Claims**

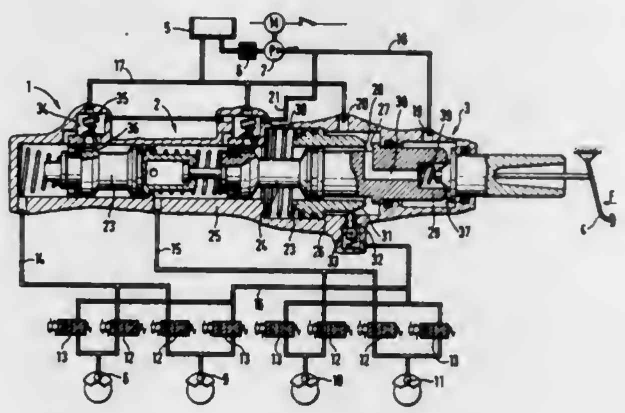
1. A hydraulic system for automotive vehicles comprising,

a flow divider valve means for dividing a fluid flow from a single fluid flow supply source into a regulated portion and a remaining portion,
a fluid storage means in communication with said single fluid flow supply source for changing a fluid therein,
an unloader valve means for interrupting fluid flow of said regulated portion passing therethrough in response to fluid pressure in said fluid storage means,
a hydraulic brake booster having a power piston dividing the interior of said booster into a pressure chamber in communication with said fluid flow from said flow divider and a drain chamber communicating with a reservoir and being provided with open-center valve means for controlling fluid flow from said pressure chamber into said drain chamber upon a manual actuation and a normally closed valve means for permitting communication between said pressure chamber and said fluid storage means upon an extension of said manual actuation subsequently to closure of said open-center valve means, and



a bypass valve means for permitting a fluid flow of said regulated portion to bypass said unloader valve means in response to fluid pressure in fluid flow of said regulated portion upstream of said unloader valve means and downstream of said flow divider.

4,440,454
PRESSURE CONTROL ARRANGEMENT FOR VEHICLE BRAKING SYSTEM WITH ANTISKID CONTROL EQUIPMENT
Juan Belart, Walldorf; Jochen Burgdorf, Neugasse; Dieter Kircher, Frankfurt am Main, and Lutz Weise, Mainz, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.
Filed Oct. 28, 1981, Ser. No. 316,012
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1980, 3040540
Int. Cl.³ B60T ***8/02***
U.S. Cl. 303—114 **17 Claims**



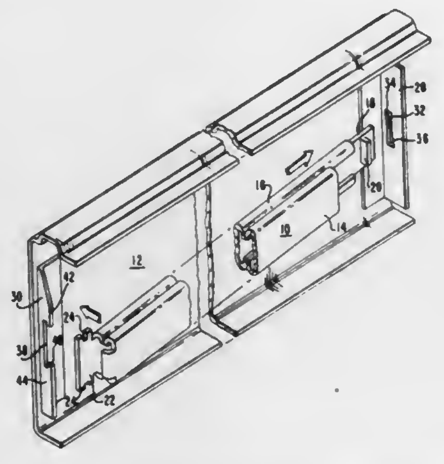
1. An arrangement for controlling the pressure of a hydraulic braking fluid supplied to wheel brake actuating cylinders interposed between supply and return conduits of a vehicle braking system provided with antiskid control equipment and with a supply reservoir in dependence on the position of a brake pedal, comprising a master cylinder device including a housing defining an elongated bore, and at least one master piston received in said bore for longitudinal movement in and opposite to a working direction and delimiting in said bore a working compartment for the hydraulic braking fluid that communicates with at least one of the supply conduits; means for transmitting the brake pedal force to said master piston to move the same in said working direction and thus to pressurize the hydraulic braking fluid present in said working compartment; an auxiliary source of a pressurized hydraulic braking fluid, means for admitting the pressurized hydraulic braking fluid from said auxiliary source into said working compartment only during antiskid control operation of the antiskid control equipment, including a circulating conduit for pressurized

fluid; and means for controlling the pressure in said circulating conduit, and a throttling valve interposed at the output of said circulating conduit and arranged between said brake pedal and said master piston to constitute at least a part of said transmitting means, and said throttling valve responsive to pressurized fluid from said circulating conduit for permitting flow from said circulating conduit only after the pressure in said circulating conduit has exceeded a value having a predetermined ratio to the brake pedal force to provide pressurized fluid from said admitting conduit to said working compartment.

4,440,455
DRAWER GLIDE MOUNT

Richard J. Lanting, Grand Rapids, and Bruce A. Rentz, Kentwood, both of Mich., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 3, 1982, Ser. No. 384,702
Int. Cl.^{3} F16C ***29/00***
U.S. Cl. 308—3.8 **4 Claims**



1. A drawer glide mount for mounting a drawer glide to the interior surface of drawer casing side wall, said drawer glide mount comprising;

front and rear mounting tabs secured to the interior surface of the side wall of said drawer casing adjacent the front and rear ends thereof, one of said mounting tabs including a slot therethrough and the other of said mounting tabs including a keyslot in the side edge thereof, said keyslot comprising an elongated slot of a first vertical dimension and an entrance opening of a lesser vertical dimension, and

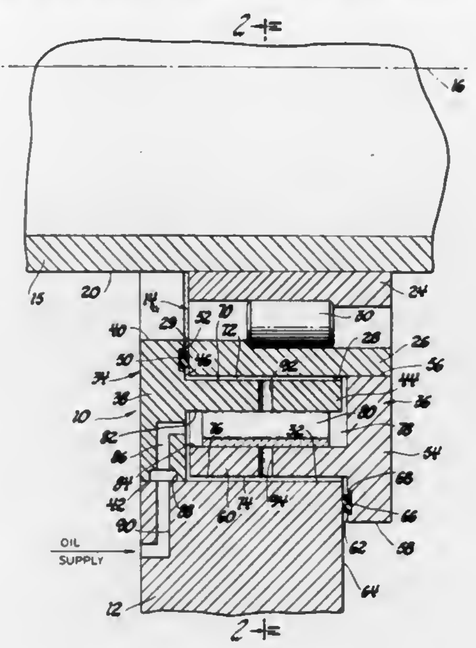
a drawer glide having a planar extension on one end thereof and an extension having cutout notches in the top and bottom edges thereof forming a drawer glide key therein on the other end thereof, the distance between the base of said notches in the top and bottom edges being greater than the entrance opening in said keyslot whereby when said planar extension is inserted into said slot, said drawer glide key must be rotated into said keyslot for locking engagement with said front and rear mounting tabs.

4,440,456
SQUEEZE FILM BEARING MOUNT

Steven A. Klusman, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 24, 1983, Ser. No. 478,247
Int. Cl.^{3} F16C ***27/00***
U.S. Cl. 308—184 R **3 Claims**

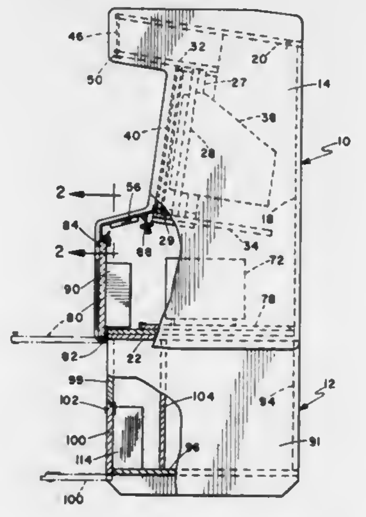
1. In a shaft bearing mount in an annulus between a cylindrical bore in a support structure and a concentric cylindrical surface of a shaft bearing outer race, the combination comprising, a first adapter rigidly attached to said support structure having a cylindrical flange projecting into said annulus with an inner surface thereof cooperating with said bearing race outer surface in defining an inner squeeze film annulus, a second adapter rigidly attached to said outer race having a cylindrical flange projecting into said annulus radially outboard of said first adapter cylindrical flange with an outer surface of said second adapter flange cooperating with said bore in defining an outer squeeze film annulus, and means for maintaining each of said inner and said outer squeeze film annuli filled with hydraulic fluid so that oscillations of said outer race relative to said bore are fluid damped at each of said inner and said outer squeeze film annuli.



4,440,457
UNIVERSAL ELECTRONIC VIDEO GAME CABINET

H. Frank Fogelman, and Arnum Ambrose, both of San Diego, Calif., assignors to Sega Electronics, Inc., San Diego, Calif.

Filed Oct. 13, 1981, Ser. No. 310,520
Int. Cl.^{3} A47B ***81/06***
U.S. Cl. 312—7.2 **14 Claims**



1. A universal convertible electronic video game cabinet, said cabinet comprising:

front panel means, side panel means, and back panel means arranged and interconnected to define an upstanding box-like enclosure,

partition means separating the interior of said cabinet into an exclusive electronics compartment and an exclusive coin compartment,

said front panel means including an opening defined by a video mounting frame for mounting a video monitor with the video screen at a level for viewing from a standing position,

a control panel for mounting manually manipulable control means detachably mounted by releasable latch means below and forward of said video mounting opening,

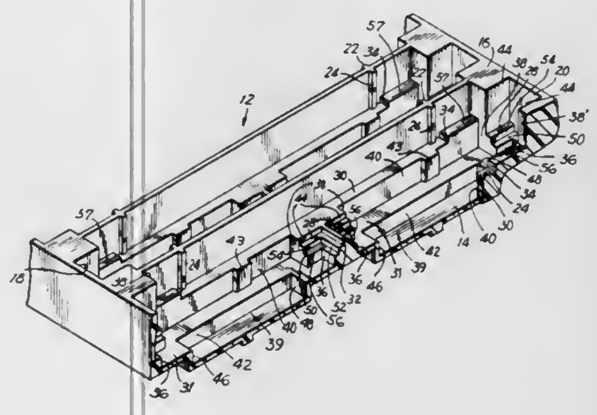
a first access opening for providing restricted access solely to electronics components in said electronics compartment, and

a second access opening in said front panel secured by second lockable closure means for providing restricted access solely to said coin compartment.

4,440,458
HOLDER FOR VIDEO GAME AND COMPUTER CARTRIDGES, VIDEO FILM CARTRIDGES, AUDIO/VIDEO CASSETTES AND THEIR STORAGE CASES

Joseph L. Berkman, Mamaroneck, N.Y., assignor to Berkman Industries, Inc., Boynton Beach, Fla.

Filed Feb. 11, 1982, Ser. No. 348,149
Int. Cl.^{3} A47B ***81/06***
U.S. Cl. 312—9 **24 Claims**

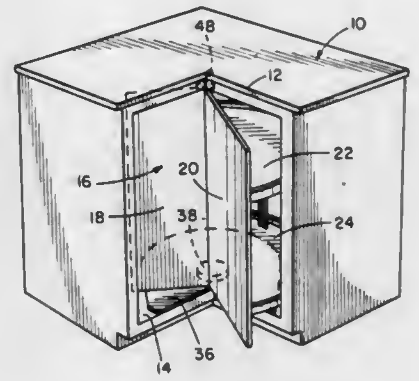


1. A storage unit or holder having at least one bin for video cassettes and video game/computer cartridges, wherein the bin is capable of interchangeable receiving and storing a plurality of differently sized video cassettes, video film cartridges and differently sized video game/computer cartridges each said bin comprising a generally rectangular configuration bounded by a bottom wall (**14**), side wall surfaces (**22,24**), and end walls (**18, 20**), another bottom wall surface (**30**) projecting from and being disposed above said bottom wall (**14**) and on both sides of each bin transversely extending substantially for the width of said bin, and terminating generally at second end surface walls (**34**) extending upwardly from said another bottom wall surface (**30**); additional side surface walls (**40**), projecting from said side wall surfaces (**22,24**), and extending on one side from said bottom wall (**14**) to said another bottom wall surface (**30**) and on the other side from said another bottom wall surface (**30**), to a further bottom wall surface (**31**) projecting from and being disposed above said bottom wall (**14**) and residing between the bottom wall (**14**) and said another bottom wall surface (**30**); additional end surface walls (**36**) projecting from said end wall (**18,20**) and extending from said further bottom wall surface (**31**) to additional bottom surface walls (**50**); and at least one channel-shaped side wall surfaces (**42, 46, 48**) extending upwardly from said bottom wall (**14**) to said further bottom wall surface (**31**); other bottom surface walls (**28**) projecting from said bottom wall surface (**31**) and being disposed between said additional bottom surface walls (**50**) and short bottom surface walls (**57**) above said another bottom wall surface (**30**); and secondary side surface walls and secondary end surface walls; wherein each bin can securely hold in place between cooperatively associated walls one video cassette of either Beta or VHS configuration, or two video film or game/-computer cartridges of either the same or different configurations.

4,440,459
ROTATABLE SHELF HARDWARE

Charles G. Hallgren, Rockford, Ill., assignor to Keystone Consolidated Industries, Inc., Peoria, Ill.

Filed May 7, 1982, Ser. No. 376,183
Int. Cl.^{3} A47B ***49/00, 57/00***
U.S. Cl. 312—238 **6 Claims**



1. Hardware for a rotary shelf unit comprising, in combination:

an upper bracket assembly for pivotally attaching a cabinet door to a cabinet housing to pivot about a vertical axis;

a lower support assembly for attachment to a bottom horizontal shelf affixed to the cabinet door for pivotally supporting the cabinet door about the vertical axis, said lower support assembly including:

a mounting plate for affixing to the floor of a cabinet;

a hub adjustably attached to the mounting plate;

a hub receptacle for attachment to the bottom shelf and for receipt of the hub;

said hub including a laterally outward, biased follower member, and said hub receptacle including at least one detent for cooperation with the follower member;

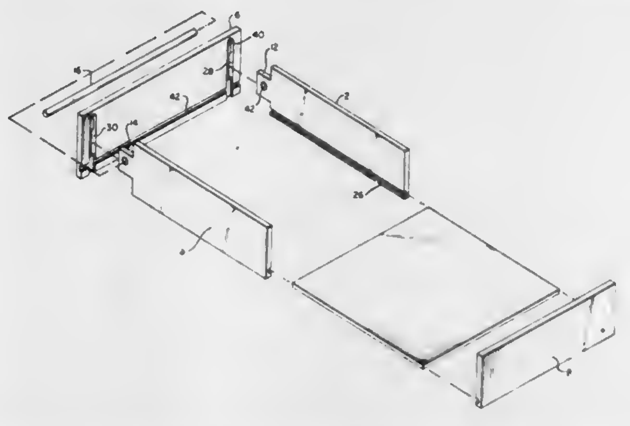
said biased follower member comprising a coil spring interposed between first and second roller carriages, said carriages mounted for reciprocal movement in a radial slot in the hub, each of said carriages including a roller member rotatable about an axis parallel to the vertical axis; and

roller means spacing the bottom shelf and mounting plate.

4,440,460
FURNITURE AND DRAWER THEREFOR

John C. Brighoff, 2712 Sams Creek Rd., New Windsor, Md. 21776

Filed Aug. 6, 1981, Ser. No. 290,721
Int. Cl.^{3} A47B ***95/02***
U.S. Cl. 312—320 **15 Claims**



1. A drawer for an article of furniture comprising:

a wooden front member having two rectangular mortise apertures therethrough adjacent but spaced inwards of the side edges thereof, said mortise apertures being parallel to each other and being vertically disposed;

a pair of parallel wooden side members each having integral therewith a tenon extending forwardly at the forward end thereof, each said tenon being firmly inserted through and protruding forwardly beyond a respective one of said mortise apertures, said front member being secured to said pair of side members by the two mortise and tenon joints thereby made;

a rod connected to the portions of said tenons protruding forwardly beyond said front member, and extending parallel to said front member in spaced relationship therefrom;

a back member connected at its ends to the rear ends of said side members;

a bottom of the drawer connected to said front, side and back members; and

said rod forming a handle by which the drawer can be pulled open with the force necessary to open the drawer being transmitted directly through said rod to said side members;

whereby said side members are the main structural members of the drawer, and in use failure of the joints between said wooden front member and said wooden side members is mitigated by said rod handle being connected to said tenons of said side members.

4,440,461
SLIDE ARRANGEMENT

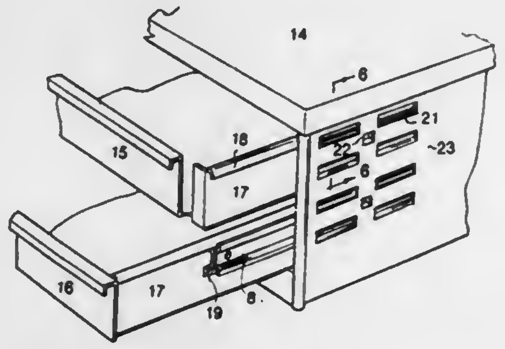
George G. Powell, and Reece J. Powell, both of Broadford, Australia, assignors to Sinclair & Powell Proprietary Limited, Victoria, Australia

PCT No. PCT/AU80/00045, § 371 Date Apr. 6, 1981, § 102(e) Date Apr. 6, 1981, PCT Pub. No. WO81/00349, PCT Pub. Date Feb. 19, 1981

PCT Filed Aug. 7, 1980, Ser. No. 253,856

Int. Cl.^{3} A47B *88/00*

U.S. Cl. 312—330 R **5 Claims**



1. A metal receptacle comprising
(a) a housing having two generally parallel internal surfaces, each of which is provided with guide means, said guide means being integrally formed in at least one of said surfaces and comprising at least one pair of spaced, generally parallel ridges;
(b) drawer means located in the housing and having two generally parallel external surfaces each of which is adjacent one of said internal surfaces;
(c) floating slide means communicating between respective pairs of said internal and external surfaces to facilitate sliding movement of the drawer means into and out of the housing, said slide means having a first portion engaging the guide means and a second portion engaging said drawer means.

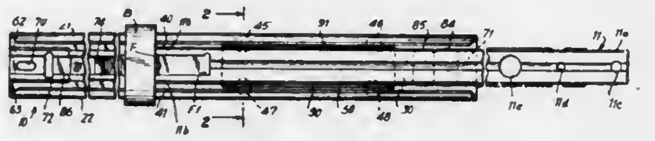
4,440,462
SELF-ALIGNING DRAWER AND SLIDE BRACKET ARRANGEMENT THEREFOR AND ASSOCIATED METHOD

Morris Manson, Nine Terrace Dr., Drive Neck, N.Y. 11021

Filed Oct. 26, 1981, Ser. No. 314,889

Int. Cl.^{3} A47B *88/00;* F16C *21/00*

U.S. Cl. 312—348 **6 Claims**



1. An article of manufacture comprising a case member, a drawer slidably mountable in said case member, and a telescopic slide means coupled between said drawer and said case member and engaging the drawer for sliding displacement relative to said case member, said telescopic slide means including at least one telescopic member having at least one loose engagement with said drawer to permit limited displacement between said one telescopic member and drawer and thereby a self alignment of said drawer relative to said case member, said drawer being provided with an opening and said telescopic member protruding into said opening and having a loose fit therein to permit said limited displacement, said drawer including front and rear parts and the first said telescopic member extending along the outside of said drawer between said front and rear parts, said opening being provided in one of said parts, the first said telescopic member including a first end portion extending with loose fit into said opening and a second end portion adjacent the rear part of the drawer, said article further including connecting means connecting said second end portion to the rear part of the drawer, said telescopic slide means including a second telescopic member mounted on said case member and telescopically coupled with the first said telescopic member, said opening being a blind bore opening, said opening including a jog of increased dimensions at the entry into said opening, said article further including a guide means located at least partly in said jog to engage and guide displacement of said first end portion and to retain the latter in said opening.

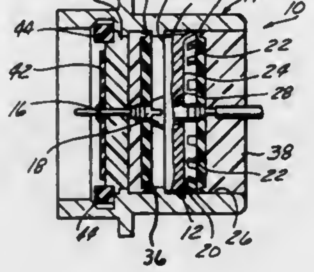
4,440,463
ELECTRICAL CONNECTOR HAVING A METALLIZED PLASTIC GROUNDING INSERT

Edward R. Gliha, Jr., Bainbridge, and Christopher Marks, Guilford, both of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Oct. 26, 1981, Ser. No. 314,901

Int. Cl.^{3} H01R *4/66*

U.S. Cl. 339—14 R **10 Claims**



1. In combination with an electrical connector of the type having a plated plastic grounding insert, said connector including a generally cylindrical connector shell, having a bore formed therein at least one contact mounted in said shell having a grounding electrode to be grounded to said shell and a grounding insert electrically connecting said electrode of said at least one contact to said connector shell said grounding insert consisting of a disc portion, and a series of integral spring fins disposed about the periphery of said disc portion, trailing from the rear face thereof and inclined radially outwardly, said spring fins being compressibly received in said bore formed in said shell; said insert further being formed with at least one opening extending through said disc portion corresponding to each of said at least one contact and each located to receive said contact with said grounding electrode and each having an integral generally conical grounding tower surrounding each of said at least one opening and adapted to grip said electrode of said at least one contact passing therethrough, the improvement wherein said grounding insert is comprised of a molded plastic member having a conductive surface layer integrally applied thereto to completely cover the member.

4,440,464
COAXIAL HF PLUG CONNECTOR HAVING ALTERNATE CONNECTING MEANS

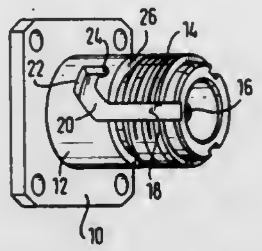
Georg Spinner, Am Eichberg 12, D-8152 Feldkirchen-Westerham 1, Fed. Rep. of Germany

Filed Jun. 9, 1981, Ser. No. 272,056

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1980, 3022102

Int. Cl.^{3} H01R *13/625*

U.S. Cl. 339—33 **5 Claims**



1. A coaxial HF plug connector including a coupler and a plug, characterized by the fact that the coupler includes a sleeve which is provided with external screw threads and bayonet paths, said bayonet paths extending at least in part through the external screw threads whereby said coupler may accommodate a plug having either internal threads or bayonet projections.

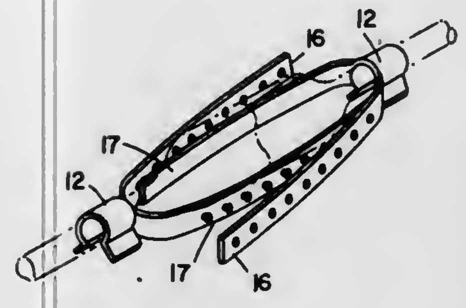
4,440,465
ELECTRICAL PLUG CONNECTOR LOCK

James M. Elliott, 3163 Coolidge Ave., Oakland, Calif. 94602; Eric A. Rickel, and Terri F. Rickel, both of 18018 Lazy Dog Rd., Nevada City, Calif. 95959

Filed Apr. 6, 1981, Ser. No. 251,325

Int. Cl.^{3} H01R *13/62;* A44B *13/00*

U.S. Cl. 339—75 P **4 Claims**



1. A locking assembly for retaining together a pair of mutually engaging plug connectors extending from separate cable members, comprising; a pair of substantially identical locking members, each locking member including a collar portion adapted to engage one of said cable portions adjacent to the base of the respective plug connector, each collar portion including means for releasably engaging said cable portion, said means comprising a tubular member having a bore extending therethrough and dimensioned to receive said cable portion therein, and a slot extending longitudinally through said tubular member, said slot being narrower than the diameter of said cable portion and adapted to admit or release said cable portion in resiliently engaging fashion; a pair of arms extending longitudinally from each of said collar members toward the other collar member; and means on each of said pair of arms for mutual engagement with the arms of the other locking member to join said locking members in fixed longitudinal relationship.

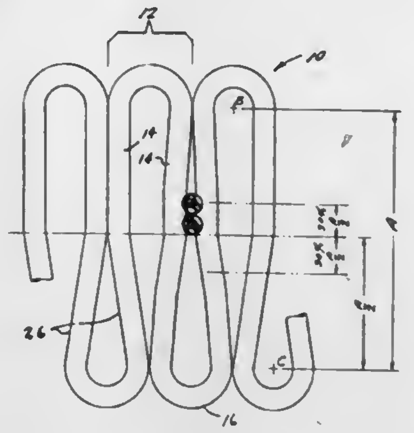
4,440,466
WIRE CONNECTOR

Karl-Heinz Phol, Woodbury, Conn., assignor to The Siemon Company, Watertown, Conn.

Filed Jun. 8, 1981, Ser. No. 271,603

Int. Cl.^{3} H01R *11/22*

U.S. Cl. 339—97 P **5 Claims**



1. A multiple terminal solderless electrical connector comprising:

a discrete number of interconnected loops, said loops being formed from a continuous piece of conductive resilient material, said loops from being arranged in a co-planar relationship between two end loops, said loops each having two straight parallel side portions connected by a semi-circular portion, said straight side portions of adjacent of said loops being in an abutting relationship, at least all of those loops intermediate the end loops having non-parallel extensions of said straight side portions, said extensions each having an arcuate section which connects with an arcuate section of an extension of an adjacent loop whereby said extensions interconnect the abutting side portions of adjacent loops through open loops between each pair of said extensions, the length of each of said extensions being greater than the radius of said connected arcuate sections, the length of said straight parallel side portions being at least approximately half the distance (A) between a pair of parallel lines extending respectively through the centers of said loop semi-circular portions and said connected arcuate sections of said side portion extensions in a direction perpendicular to said straight side portions.

4,440,467
BULB SOCKET AND COVER ASSEMBLY

Armando Vologni, and Giorgio Vologni, both of Via Bizet no 2 - 42100, Reggio Emilia, Italy

Filed May 20, 1982, Ser. No. 380,378

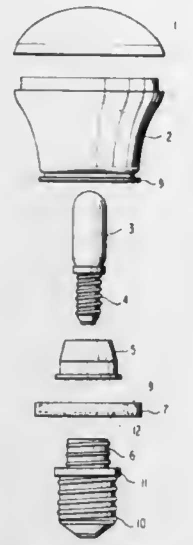
Claims priority, application Italy, May 29, 1981, 34853/81[U]

Int. Cl.^{3} H01R *13/00*

U.S. Cl. 339—154 L **3 Claims**

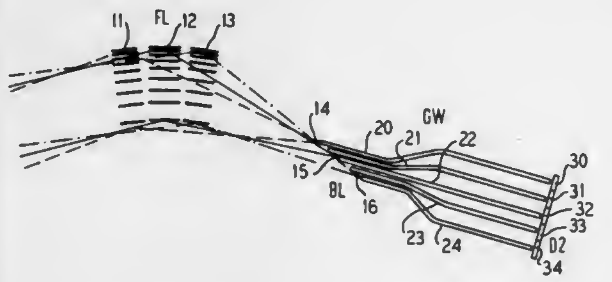
1. A bulb socket assembly comprising a cylindrical base member having external threads thereon adapted to mate with the threads of a standard light bulb socket, a hollow tubular socket extending coaxially from one end of said base member and having a diameter substantially less than the diameter of

said cylindrical base member, said hollow tubular socket having external threads thereon, an apertured cover support disc surrounding said hollow tubular socket, an internally threaded sleeve member threadingly engaged with said external threads on said hollow tubular member for securing said cover support disc in engagement with said base member and cover means detachably connected to said cover support disc.



4,440,468
PLANAR WAVEGUIDE BRAGG LENS AND ITS UTILIZATION

Franz Auracher, Baierbrunn, and Michael Stockmann, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Aug. 25, 1981, Ser. No. 296,134
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1980, 3035849
Int. Cl.³ G02B *5/174*
U.S. Cl. 350—96.12 **13 Claims**

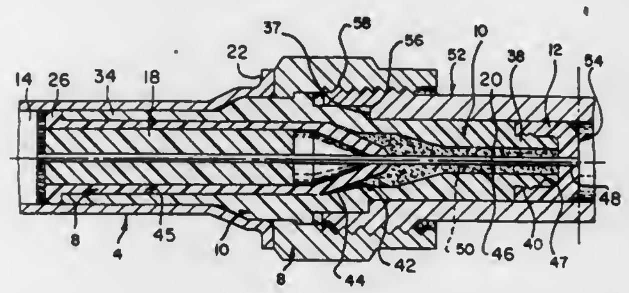


10. In a planar optical component utilizing a planar waveguide Bragg lens and a plurality of detector elements, the improvement comprising the planar waveguide Bragg lens being off-axis with a high deflection efficiency for light of various angles of incidence, said lens comprising a plurality of grating structures arranged in series and each grating structure having grating elements being inclined relatively towards the elements of other structures at varying angles so that the range of the angle of incidence of the individual grating structures overlap and light from various point sources can be imaged with approximately equal quality by said lens, and said component includes waveguides extending between a plane of focal points for the Bragg lens and the detector elements.

4,440,469
OPTICAL WAVEGUIDE CONNECTOR

William L. Schumacher, Hershey, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Sep. 18, 1980, Ser. No. 188,395
Int. Cl.³ G02B *7/26*
U.S. Cl. 350—96.20 **9 Claims**

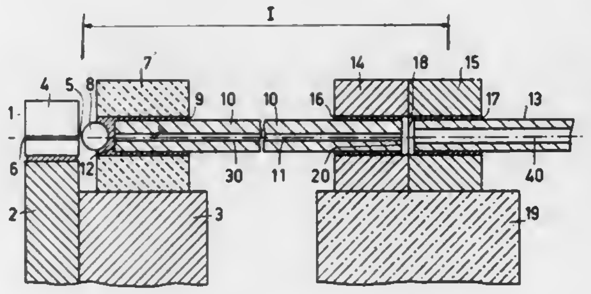
1. An optical waveguide connector for connecting to an optical fiber of an optical waveguide member and for connection within a coupling member, comprising:
contact body means having a forward section and a rear section, said contact body means having profiled passageway means extending therethrough, said profiled passageway means having a smaller diameter in said forward section, said profiled passageway means in said rear section adapted to receive an inner jacket surrounding the optical fiber and said smaller diameter profiled passageway means in said forward section receiving the optical fiber therein;
said forward section having a forward end of smaller outer diameter than the outer diameter of said forward section;



resilient and radially compressible alignment ferrule means having a centrally disposed aperture therethrough for closely receiving an end of the optical fiber therein with a forward end surface of the optical fiber located coplanar with a forward surface of said alignment ferrule means, said alignment ferrule means having a counterbore rearward of said aperture engaging said forward end of said forward section, the outer diameter of said alignment ferrule means being the same as the outer diameter of said forward section so that said forward section with said alignment ferrule means thereon is positionable within the coupling member with the alignment ferrule means resiliently engaging the coupling member thereby compressibly engaging the optical fiber end disposed in said aperture and aligning the axis of the optical fiber with the axis of the coupling member.

4,440,470
OPTICAL TRANSMISSION SYSTEM COUPLING A SEMICONDUCTOR LASER DIODE TO A MULTIMODE OPTICAL FIBER

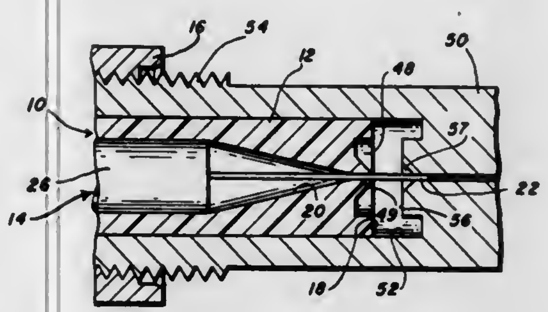
Giok D. Khoe, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 17, 1981, Ser. No. 293,756
Claims priority, application Netherlands, Sep. 12, 1980, 8005134
Int. Cl.³ G02B *7/26*
U.S. Cl. 350—96.20 **6 Claims**



1. An optical transmission system comprising:
a semiconductor laser for generating light having a coherence length;
a multimode transmission fiber; and
a monomode fiber providing a coupling path for guiding light from the laser to the transmission fiber, said monomode fiber having a length greater than the coherence length of the laser light in the monomode fiber.

4,440,471
FIBER OPTIC CONNECTORS

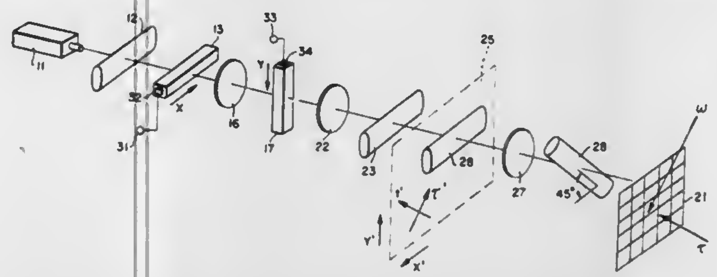
Robert G. Knowles, Litchfield, Conn., assignor to Litton Systems, Inc., Watertown, Conn.
Filed Nov. 9, 1981, Ser. No. 319,438
Int. Cl.³ G02B *7/26*
U.S. Cl. 350—96.20 **8 Claims**



1. A fiber optic connector having at least one optic terminal comprising
a hollow cylindrical ferrule having a terminal face on one end,
an axial bore through said terminal face communicating with the interior of said ferrule, said axial bore being dimensioned slightly larger than an optic fiber of a selected fiber optic cable,
one end of said selected fiber optic cable disposed within said ferrule having its optic fiber located within said axial bore,
a circular groove in said ferrule face defining an annular central portion concentric with said ferrule axis, and
said annular central portion sloping towards the center of said terminal face into engagement with said optic fiber so as to define a constricted portion of said axial bore at said terminal face.

4,440,472
SPACE INTEGRATING AMBIGUITY PROCESSOR

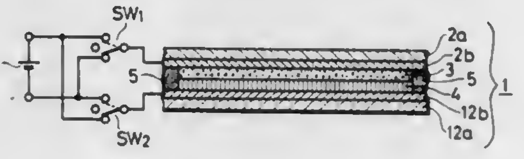
Jonathan D. Cohen, Severn, Md., assignor to The United States of America as represented by the Director of National Security Agency, Washington, D.C.
Filed Apr. 24, 1981, Ser. No. 257,061
Int. Cl.³ G02B *5/18;* G06G *9/00;* G01S *13/58*
U.S. Cl. 350—162.12 **5 Claims**



1. A two-dimensional optical processor, comprising:
means for providing a coherent light beam;
a two-dimensional detector;
means for modulating the light beam in a first spatial dimension, x, said x-modulating means including a first one-dimensional spatial light modulator to which is provided a first modulating signal;
means for expanding the x-modulated beam in a second, mutually orthogonal spatial dimension, y;
means for modulating said expanded x-modulated beam in the second spatial dimension, said y-modulating means including a second one-dimensional spatial light modulator to which is provided a second modulating signal;
optical means for focusing the twice-modulated light beam at a plane perpendicular to the beam such that position in one direction t' on the plane corresponds to time delay in both modulating signals and position in a perpendicular direction τ' on the plane corresponds to relative time delay between the modulating signals;
optical means in said plane for matching the phase of the modulating signals within said focused beam, and
optical means for imaging said phase-matched beam along one axis τ' and transforming said beam along a perpendicular axis t' and for illuminating the detector with the resulting light beam.

4,440,473
VOLTAGE POLARITY SWITCHING MEANS FOR CHOLESTERIC LIQUID CRYSTAL DISPLAYS

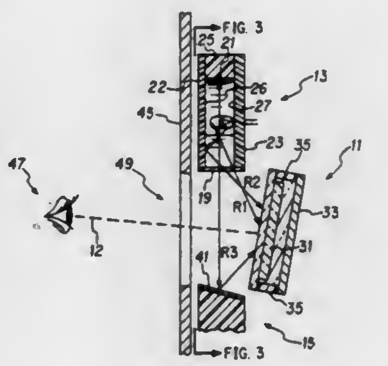
Souichi Sekimoto, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Jun. 5, 1981, Ser. No. 270,723
Claims priority, application Japan, Oct. 31, 1980, 55-152277
Int. Cl.³ G02F *1/137, 1/135, 1/133*
U.S. Cl. 350—342 **9 Claims**



1. A display device comprising: a first transparent electrode; a film layer having an electro-optical effect comprising a layer of nematic liquid crystal material containing several to several tens of percent of cholesteric liquid crystal material; a photosensitive film layer and a second transparent electrode, said first transparent electrode, said film layer having an electro-optical effect said photosensitive film layer and said second transparent electrode being stacked together in the stated order; means for providing a d.c. voltage across said first and second transparent electrodes; and means for switching the polarity of said d.c. voltage applied across said first and second transparent electrodes.

4,440,474
ILLUMINATED PASSIVE DISPLAY FROM AN OBLIQUE ANGLE

James S. Trcka, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Dec. 21, 1981, Ser. No. 332,631
Int. Cl.³ G02F *1/133;* F21V *9/14, 5/00*
U.S. Cl. 350—345 **15 Claims**



13. Display apparatus comprising:
first means for providing a light beam comprising plane polarized light rays which are substantially collimated, said collimated polarized light rays having electric field vectors, and the orientation of polarization being such that the electric field vectors of said polarized rays are parallel to a first predetermined plane which itself is perpendicular to a second predetermined plane,
display second means for being illuminated by the collimated

polarized rays of said first means, said second means comprising a reflective dichroic liquid crystal display having a substantially flat front face and being oriented (i) such that said face is substantially perpendicular to said second plane, the collimated polarized light rays reaching said second means thereby having their electric field vectors oriented substantially parallel to said second means front face, and (ii) such that the collimated polarized light rays reaching said second means are directed by said first means to arrive obliquely relative to the front face.

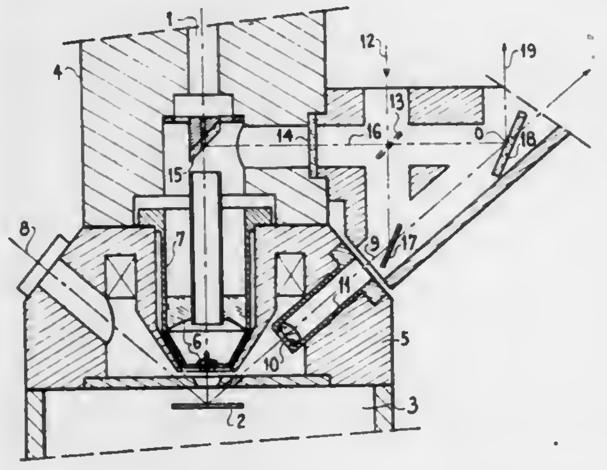
4,440,475
ELECTRON PROBE MICROANALYZER COMPRISING AN OBSERVATION SYSTEM HAVING DOUBLE MAGNIFICATION
Daniel Colliaux, Courbevoie, France, assignor to Compagnie d'Applications Mecaniques a l'Electronique, au Cinema et a l'Atomistique (C.A.M.E.C.A.), Courbevoie, France

Filed Jan. 18, 1982, Ser. No. 339,995

Claims priority, application France, Jan. 23, 1981, 80 01289

Int. Cl.^{3} G02B *21/18*

U.S. Cl. 350—502 6 Claims



1. An electron probe microanalyzer, for analyzing a sample by means of an electron beam, comprising an electromagnetic lens provided with a central channel, for focusing the electron beam and provided with lateral channels, said microanalyzer being equipped with a system for observing the sample to be analyzed, wherein said system comprises a high-magnification mirror-objective placed within said central channel, a stationary device for producing an illuminating beam for illumination of the sample through said objective and associated stationary observation means, an auxiliary objective having lower magnification than the first and placed in one of said lateral channels, and a mechanically-controlled optical device for directing said illuminating beam to either of the two objectives and for directing the return beam from the objective employed to the stationary observation means.

4,440,476
OPTICAL DEVICE FOR AN INTENSIFIER TUBE
Andrew G. Jacobson, 851 Brookhurst, Dallas, Tex. 75218

Filed May 12, 1982, Ser. No. 377,343

Int. Cl.^{3} G02B *23/12*; H01J *31/50*

U.S. Cl. 350—538 6 Claims

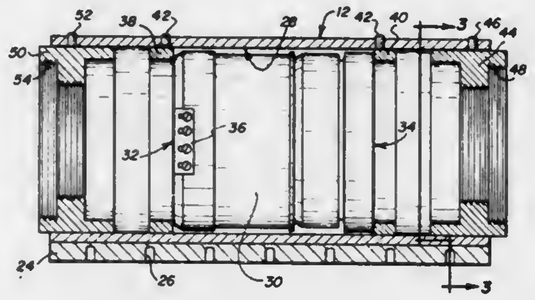
1. An optical device for an intensifier tube comprising:

an elongated housing forming a cylindrical chamber extending therethrough,

means for mounting an intensifier tube in said chamber comprising first and second annular means sized to mate in an axial sliding relationship with the walls of said chamber and fastener means in said housing for releasably fixing said first and second annular means in selective axial position in said housing whereby the axial mounting position of the intensifier tube may be varied,

objective and eye piece optical means for projecting light to and receiving light from the intensifier tube, connector means on each of said eye piece and objective means, and

third and fourth annular means sized to axially slide in said housing, said third annular means positioned in said chamber at one end of said housing, said fourth annular means positioned in said chamber at the other end of said housing whereby the intensifier tube and said first and second annular means will be positioned between said third and fourth annular means, connector means on each of said third and fourth annular means for releasable mating engagement with said connector means of said objective and eye piece optical means, and fastener means in said housing for releasably fixing said third and fourth annular means in selective axial position in said housing whereby said eye piece and said objective means can be mounted extending from the ends of said housing and said eye piece means can be releasably mounted in a fixed position a relative distance from one end of said intensifier tube and the objective means can be releasably mounted in a fixed position a relative distance from the other end of said intensifier tube.

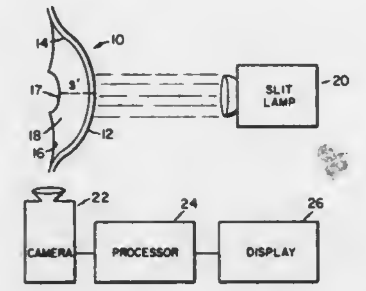


4,440,477
METHOD AND DEVICE FOR MEASURING THE OPTICAL POWER OF THE CORNEA
Ronald A. Schachar, Denison, Tex.

Filed Oct. 30, 1981, Ser. No. 316,664

Int. Cl.^{3} A61B *3/10, 3/14*

U.S. Cl. 351—212 21 Claims



1. A device for measuring the optical power of the cornea, comprising:

means for illuminating the cornea with light from an object disposed a known distance from the anterior surface of the cornea; and

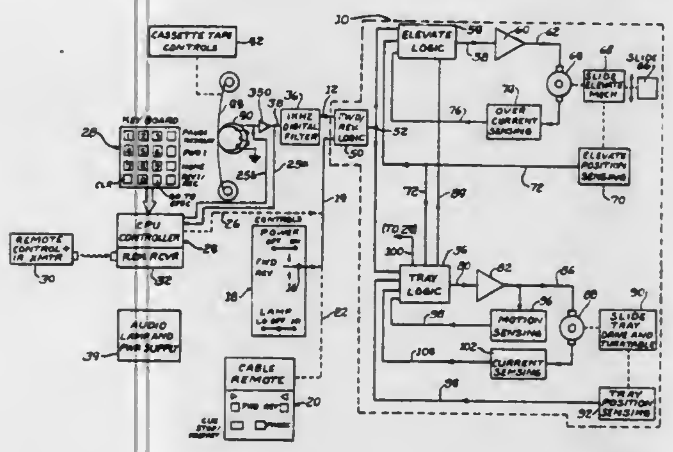
means for forming an optical representation of a cross section of the cornea and means for directly measuring from said optical representation the distance from the anterior corneal surface to the image formed by light from the object passing through the corneal surface such that the radius of curvature of the anterior surface of the cornea can be calculated.

4,440,478
SLIDE TRAY POSITION SENSING ARRANGEMENT FOR SLIDE PROJECTOR APPARATUS UTILIZING TWO SLIDE TRAY TYPES
Nicholas Mischenko, Mount Prospect; Robert R. Parker, Wheeling, and Rudolph Starai, Arlington Heights, all of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Dec. 31, 1981, Ser. No. 336,471

Int. Cl.^{3} G03B *23/04*

U.S. Cl. 353—25 11 Claims



1. In slide projector apparatus having a drive transport arrangement for carrying a rotary slide tray including a plurality of slide positions and for selectively moving the slide tray to present the slide positions to a slide change station, and a position detecting arrangement for detecting the position of said drive transport arrangement, the detecting arrangement including an array defining arrangement for defining a predetermined array of spaced apertures, the predetermined array including one aperture corresponding to each of the slide positions in a predetermined slide tray, the array defining arrangement being moved by the drive transport arrangement along with the slide tray, the detecting arrangement further including an illumination source positioned on one side of the aperture array defining arrangement and a photodetection arrangement arranged along the path of travel of the predetermined aperture array and on the side of the aperture array opposite the light source such that illumination from the illumination source impinges on the photodetection arrangement when an aperture is within a predetermined vicinity of a detection station defined by the detecting arrangement, wherein the improvement comprises the drive transport arrangement comprising a rotary turntable, and the aperture defining arrangement comprising a circumferential aperture ring having the predetermined aperture array formed therethrough as a circumferential array, said turntable comprising turntable accepting means for carrying said aperture ring, said ring turntable accepting means being formed as a portion of said turntable below the top surface of said turntable that carries the slide tray.

4,440,479
REFLEX PHOTOMETRIC ASSEMBLY FOR CAMERA
Kazuyuki Nemoto, Hachioji, Japan, assignor to Olympus Optical Co. Ltd., Tokyo, Japan

Filed Dec. 3, 1981, Ser. No. 327,125

Claims priority, application Japan, Jan. 14, 1981, 56-4745; Jan. 16, 1981, 56-5193[U]

Int. Cl.^{3} G03B *7/00*

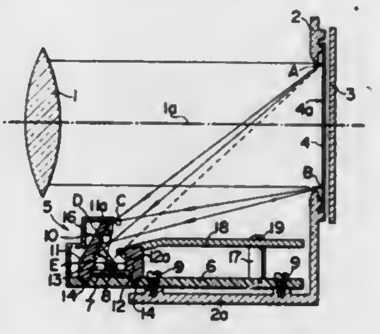
U.S. Cl. 354—480 12 Claims

1. A reflex photometric assembly for a camera determining its proper exposure by receiving light which passes through a taking lens and is reflected by a shutter blind and a film surface towards a photometric transducer element for photometry, the assembly comprising:

a mounting member which is secured to the body of the camera;

means supporting said photoelectric transducer element being secured upon said mounting member;

a one-piece light receiving structure integrally formed of a reflecting member having a reflecting surface to direct the light reflected by the shutter blind and the film surface toward the photoelectric transducer element and a shield member having shield means to prevent light reflected by either the shutter blind or the film surface from directly impinging upon the element and connecting members



extending between said reflecting member and said shield member, said connecting members, said reflecting member and said shield member cooperatively defining an opening in which the transducer element is positioned; and

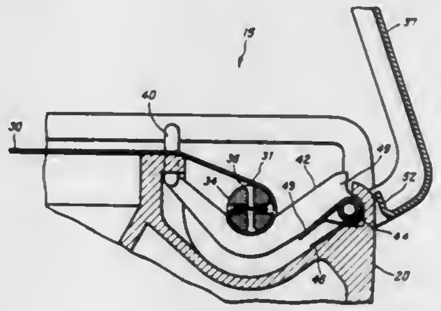
said mounting member including means for positioning and fixing the light receiving structure for simply and yet accurately positioning said transducer element relative to said reflecting surface and said shield member.

4,440,480
FILM SAVING APPARATUS FOR PHOTOGRAPHIC CAMERA
James K. Skurski, 5591 Clinchfield Trail, Norcross, Ga. 30092

Filed Jul. 26, 1982, Ser. No. 401,878

Int. Cl.^{3} G03B *35/10*

U.S. Cl. 354—110 8 Claims



1. Film saving apparatus for a photographic camera of the type for use with roll film having a lead end with a tongue portion extending from a notched portion thereof comprising:

a housing,

a take-up spool disposed in said housing,

means for supplying film having a tongue portion extending from a notched portion at the leader end of the film along a predetermined path onto said take-up spool,

stop means positioned in the film path at right angles thereto and having a length across the film path that is insufficient to block the tongue portion of the film but which will block the notched portion of the film, said stop means being moveable from a first position in the film path to block the film at the notched portion thereof to a second position out of the film path permitting the film to be advanced along its path onto said take-up spool, and

actuating means to move said stop means from its first position in the film path blocking the advance of the film to a second position out of the film path permitting the film to advance along its path onto said take-up spool.

4,440,481
PHOTOGRAPHIC CAMERA

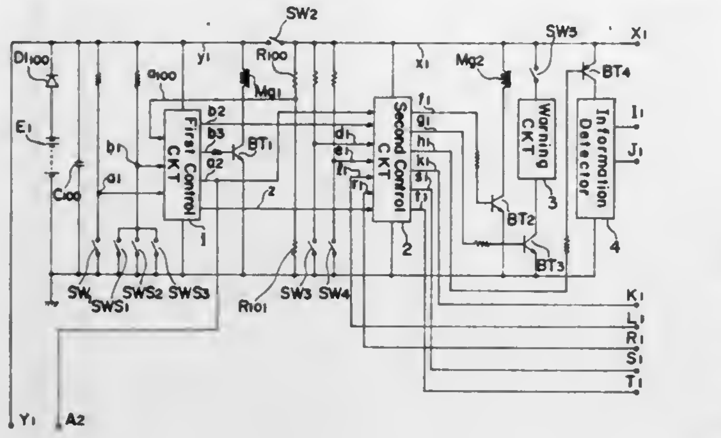
Takeo Hoda; Shigeru Oyokota; Kiyoshi Seigenji, all of Sakai, and Nobuyuki Taniguchi, Tondabayashi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 27, 1982, Ser. No. 424,630

Claims priority, application Japan, Oct. 14, 1981, 56-164486

Int. Cl.³ G03B *17/18, 17/42*

U.S. Cl. 354—171 **17 Claims**



1. A photographic camera capable of being used with a roll film, which comprises:

a spool for rolling up the film;

means for certifying that the tip of film is fastened to said spool;

a back lid of the camera for enclosing the roll film;

means for detecting whether said back lid is opened or closed;

means, responsive to said certifying means and said detecting means, for disabling the film winding up operation of the camera when the tip of film is fastened to said spool and said back lid is left open; and

means for cancelling said disabling means.

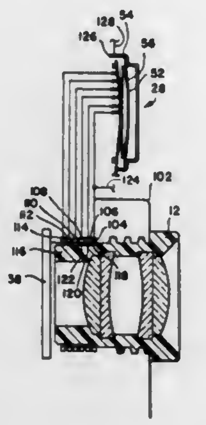
4,440,482
SONIC AUTOFOCUS CAMERA HAVING VARIABLE SONIC BEAMWIDTH

Edwin K. Shenk, Westford, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 30, 1982, Ser. No. 429,820

Int. Cl.³ G03B *3/10*

U.S. Cl. 354—195.1 **14 Claims**



1. An autofocus camera of the type employing interchangeable lens assemblies, comprising:

a camera body

an adjustable focus lens assembly including a lens having a particular optical field of view and means for detachably mounting said lens assembly on said camera body;

a rangefinder for deriving a signal representative of subject distance, said rangefinder including a capacitance-type sonic transducer, that includes a backplate member, for transmitting sonic energy toward a distant subject and for receiving a reflection of said energy from said subject;

drive means coupled to said adjustable focus lens assembly and responsive to said rangefinder derived signal-for adjusting said lens to a focus position that will cause said lens assembly to form an in-focus image of a subject, located at a distance determined by said rangefinder, at the camera focal plane; and

means for changing the effective size of a surface of said backplate member to thereby change the sonic beam angle of said transducer such that the magnitude of said beam angle is correlated to the optical field of view angle of an attached adjustable-focus lens.

4,440,483
PHOTOGRAPHIC ROLL FILM CAMERA

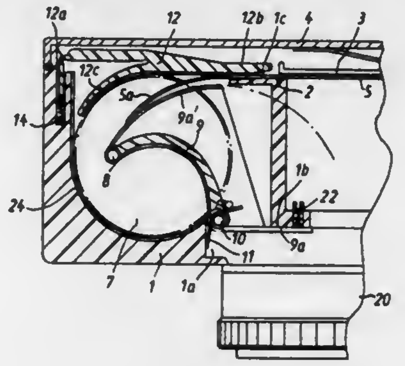
Gerda Linke, Munich; Dieter Engelsmann, Unterhaching; Dieter Maas, Baldham; Alfred Bässler, Munich, and Hubert Hackenberg, Holzkirchen, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed May 10, 1982, Ser. No. 376,839

Claims priority, application Fed. Rep. of Germany, May 26, 1981, 3120864

Int. Cl.³ G03B *1/56, 17/02*

U.S. Cl. 354—212 **20 Claims**



1. A photographic roll film camera, comprising means for accommodating a film supply; means forming a spoolless film take-up chamber; means for transporting a film between said film supply means and said film take-up chamber; means for forming a film roll in said film take-up chamber, said take-up chamber having a wall which corresponds to a whole film roll and thereby forms one part of said film roll forming means, said film roll forming means further having a spring-biased guiding lever extending into said take-up chamber and bounding together with said wall a small space in said take-up chamber for forming a first coil of the film roll so that an initial portion of the film can be guided into said small space by said guiding lever and thereafter with increase of a diameter of the film roll during winding of subsequent coils said guiding lever turns and thereby said space expands, and an adjustable stationary abutment, said guiding lever having a lever arm which is spring-biased to abut against said stationary abutment for fixing a depth of turning of said guiding lever.

4,440,484
CAMERA LENS BARREL HAVING RETRACTABLE MOVABLE CONTACTS

Shinsuke Komoto, and Yasuyuki Haneishi, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 19, 1982, Ser. No. 369,770

Claims priority, application Japan, Apr. 21, 1981, 56-57504[U]

Int. Cl.³ G03B *17/14*

U.S. Cl. 354—286 **8 Claims**

1. A lens barrel for a camera body having a first mount electrically connected to a first branch circuit and at least one

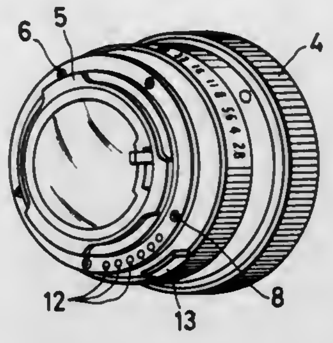
first contact electrically connected to a second branch circuit, comprising:

a second mount;

means for mounting said second mount onto said first mount;

at least one movable second electrical contact located on said second mount, said movable second contact being retractable and extendable into and out of a surface of said second mount, said movable second contact being spaced apart from said first contact when retracted, said movable second contact being electrically connected with said first contact when extended;

switching means connected to said movable second contact for transmitting movement thereto;



means for electrically connecting said second contact to said first mount of said camera body so that said first branch circuit, said movable second contact, and said first contact are electrically connected with said second branch circuit of said camera body when said movable second contact is extended;

said switching means comprising a switching member integrally connected to said movable second contact, a first end of said switching member extending radially outward beyond an outer surface of said second mount, said first end being movable along an axial direction of said lens barrel to extend and retract said movable second contact.

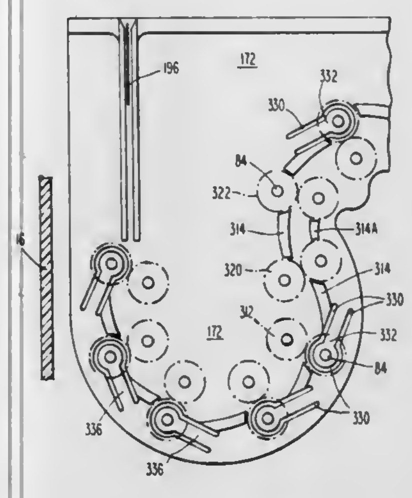
4,440,485
APPARATUS FOR CONTINUOUSLY AUTOMATICALLY PROCESSING A PLURALITY OF DENTAL X-RAY FILMS

Robert Maldonado, Santa Clara, and Raymond A. Erickson, Gilroy, both of Calif., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Jan. 17, 1983, Ser. No. 458,374

Int. Cl.³ G03D *3/08*

U.S. Cl. 354—322 **7 Claims**



1. Apparatus for continuously automatically developing a plurality of film separately released by a dispenser disposed in dispensing relationship to a developer tank for developing said film, said apparatus including a fixer tank, a rinse tank, and a drying area in respective sequential communication with said developer tank, each of said tanks containing respective liquids therein, roller support means for rotatably mounting pairs of spaced drive rollers in a curvilinear path sequentially through said liquids in each of said tanks and linearly along said drying area, means to operably rotate each of said pairs of drive rollers such that said film released by said dispenser is grasped by said pairs of rotating rollers to be sequentially propelled through said drying area, the improvement thereto comprising,

cantilevered spring means provided in said roller support means at portions thereof where one of said rollers of a pair thereof is rotatably mounted, said cantilevered spring means having a leg portion integral with said roller support means and a cut-out portion surrounding said leg portion.

4,440,486
FIXING APPARATUS

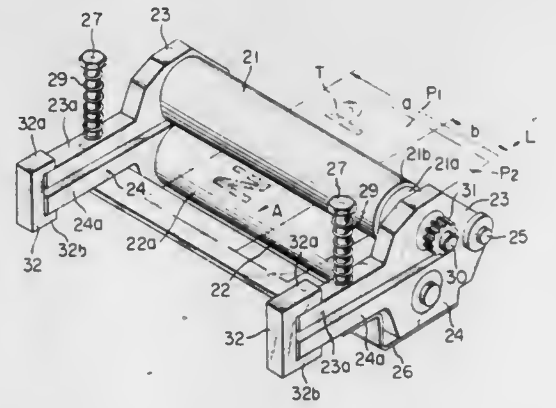
Kazuo Isaka, Kawasaki, and Fumitaka Kan, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 16, 1982, Ser. No. 369,001

Claims priority, application Japan, Apr. 20, 1981, 56-59469; Nov. 21, 1981, 56-187445; Nov. 21, 1981, 56-187446; Feb. 26, 1982, 57-30247

Int. Cl.³ G03G *15/00, 15/20*

U.S. Cl. 355—3 FU **15 Claims**



1. A fixing apparatus of the type in which a nip pressure is applied to a toner image bearing member between a pair of rotary members to fix the toner image onto the bearing member, said fixing apparatus comprising:

a first rotary member;

a second rotary member disposed to nip a toner image bearing member between said first and second rotary members;

support means for rotatably supporting said rotary members;

a pressing means for applying a pressing force between said first and second rotary members; and

limiting means, which, at least when said toner image bearing member enters between said first and second rotary members, act on said support means independently from said pressing means for restraining the inter-axis distance between said two rotary members from increasing more than a predetermined value.

4,440,487
COPYING APPARATUS

Makoto Miura, Hino, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 12, 1982, Ser. No. 377,555

Claims priority, application Japan, May 22, 1981, 56-77599; May 22, 1981, 56-77600; May 22, 1981, 56-77601

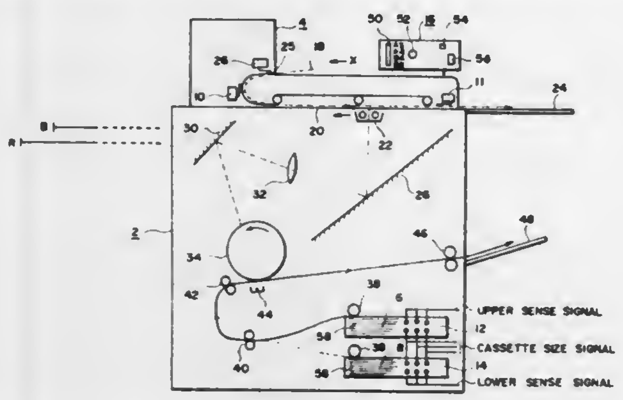
Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 R **14 Claims**

1. A copying apparatus comprising:

means for sensing a size of an original to be copied so as to output an original size information;

first controlling means for controlling a copying operation; and second controlling means for controlling said first controlling means so as to perform copying operation control in



accordance with said original size information by said sensing means as needed.

4,440,488
CLEANING DEVICE FOR AN IMAGE-CARRYING MEMBER

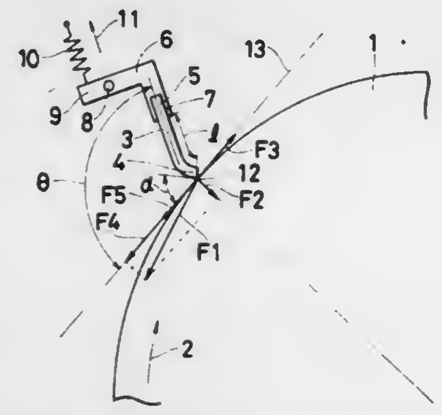
Takashi Maekawa; Shoji Matsumoto, and Toshikazu Matsui, all of Osaka, Japan, assignors to Mita Industrial Company Limited, Osaka, Japan

Filed Aug. 25, 1982, Ser. No. 411,479

Claims priority, application Japan, Sep. 3, 1981, 56-139283

Int. Cl.³ G03G *15/08*

U.S. Cl. 355—15 **4 Claims**



1. A cleaning device for an image carrying member which includes an elastic blade having a proximal end fixed to a holder and a terminal end held against said image carrying member for removing toner from said image-carrying member upon movement of the image-carrying member, wherein said terminal end of said blade is flexing to extend forward in the moving direction of the image-carrying member at an angle of α to a line tangential to a surface of said image-carrying member rearward of a contact point between said terminal end of the blade and said image-carrying member with respect to said direction, and said blade has an axis passing through said proximal end of said blade and extending at an angle of θ to said line rearward of said point with respect to said direction, said angles α and θ being selected to meet the following relationship:

$$\theta > 90° > \alpha.$$

4,440,489
EXPOSURE AIDING DEVICE FOR AN ENLARGER

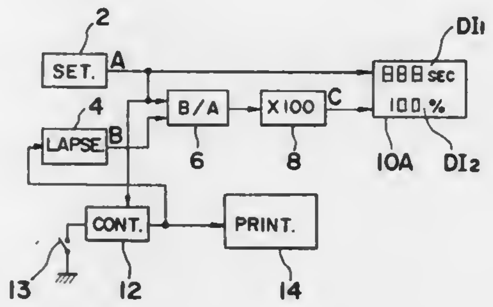
Yoshio Yuasa, Kawachinagano, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 12, 1982, Ser. No. 397,233

Claims priority, application Japan, Jul. 16, 1981, 56-105641[U]

Int. Cl.³ G03B *27/70*

U.S. Cl. 355—69 **10 Claims**



1. An exposure aiding device for an enlarger comprising:

means for setting an exposure amount to output a setting signal corresponding to said set exposure amount,

means for outputting successively an elapsed signal corresponding to an instantaneous amount of exposure accumulated from a start of printing process of said enlarger,

means for calculating a value corresponding to a ratio of said elapsed exposure amount to said set exposure amount based on said setting signal and said elapsed signal to output a calculated signal indicating said calculated ratio, and

means for informing an information relating to said calculated ratio based on said calculated ratio.

4,440,490
COMBINED MASKING FRAME AND PHOTOGRAPHIC SHEET MATERIAL CONTAINER

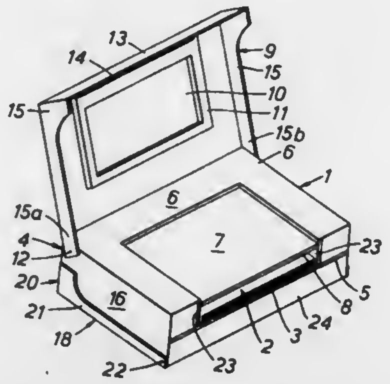
Michael H. Moore, Ilford; Brian F. Moss, Rayleigh, and George F. A. M. Turner, Ingatestone, all of England, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Oct. 25, 1982, Ser. No. 436,254

Claims priority, application United Kingdom, Nov. 4, 1981, 8133191

Int. Cl.³ G03B *27/58*

U.S. Cl. 355—72 **5 Claims**



1. A combined masking frame and photographic sheet material container having a top face and a bottom face and comprising

a storage space having a side opening for removing sheets of said material stored in said space,

flat panel means in at least one of said top and bottom faces, said panel means having a rectangular recess therein of a size adapted for accomodating a sheet of said stored material,

said recess having a light-reflecting planar recess bottom surface,

lid means being hingedly attached to at least one of the top and bottom faces of said container, in such a manner as to cover, when in closed position, the flat panel means in the respective container face to which it is attached,

each lid means present comprising a lid having a rectangular opening,

hinge means on one side of said lid for connecting said lid to said container, and

an angular flange depending from the side of said lid opposite said hinge means and adapted for covering said side opening in a light-tight manner when said lid is in closed position,

said rectangular lid opening being of somewhat smaller area size than said recess, whereby said lid is adapted to serve as a masking frame around the edges of a sheet of said material placed in said recess,

said container and lid being composed of opaque material.

4,440,491
PHOTOGRAPHIC TRANSPARENCY SUPPORTING DEVICE

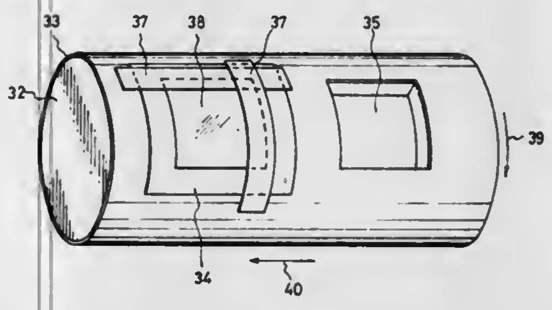
Sho Takahama, Takarazuka, Japan, assignor to Konan Camera Research Institute, Hyogo, Japan

Filed Sep. 24, 1981, Ser. No. 305,186

Claims priority, application Japan, Oct. 2, 1980, 55-138447

Int. Cl.³ G03B *27/62*

U.S. Cl. 355—75 **3 Claims**



1. A photographic transparency supporting device comprising a supporting base member having at least one window therein and at least one holding member for holding a photographic transparency between both members and in overlying relationship to said window, a magnetic rubber layer covering at least that portion of said base member surrounding said window and said holding member is formed of a material attracted by said magnetic rubber layer.

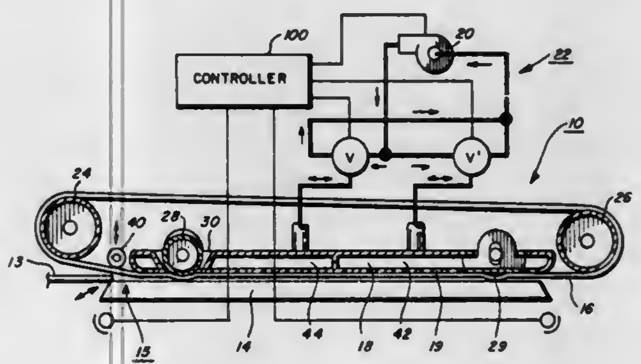
4,440,492
VARIABLE FORCE WIDE DOCUMENT BELT TRANSPORT SYSTEM

Anthony Howard, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 3, 1982, Ser. No. 414,713

Int. Cl.³ G03B *27/62, 27/64*

U.S. Cl. 355—76 **14 Claims**



1. In a document transport for transporting document sheets over a copier platen and into a registration position thereon for copying with a single, light reflective, flexible, unapertured and air impervious wide frictional movable belt providing a uniform light imaging background for the document sheet, the improvement comprising:

selectably actuatable vacuum means for selectably applying a vacuum to vacuum plenum means overlying said vacuum belt above said platen,

said vacuum means lifting all but selected minor areas of said belt away from said platen toward said vacuum plenum means when a vacuum is applied to said vacuum plenum means,

said vacuum plenum means allowing said belt to drop from said vacuum plenum means into engagement with a document sheet on the platen over a much larger area of said belt when said vacuum is removed from said vacuum plenum means as compared to when said vacuum is applied to said vacuum plenum means, and

belt deforming means for deforming said minor areas of said belt away from said vacuum plenum means towards said platen for selective area driving of a document sheet on the platen with said deformed minor areas of said belt when said vacuum is applied to said vacuum plenum means.

4,440,493
PRINTING APPARATUS

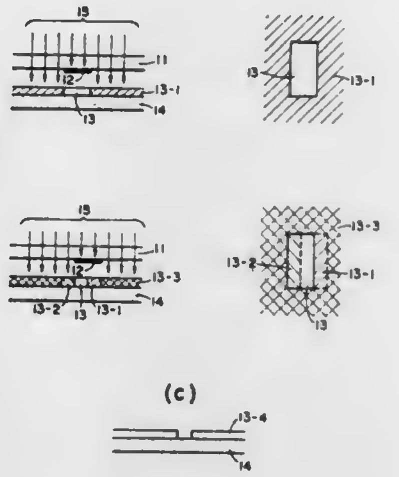
Ryozo Hiraga, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 385,980, Jun. 7, 1982, abandoned, which is a continuation of Ser. No. 260,392, May 4, 1981, abandoned. This application Mar. 2, 1983, Ser. No. 471,062

Claims priority, application Japan, May 14, 1980, 55-63784; May 14, 1980, 55-63785; May 14, 1980, 55-63786; May 14, 1980, 55-63787; May 14, 1980, 55-63788

Int. Cl.³ G03B *27/04*

U.S. Cl. 355—86 **5 Claims**



1. An apparatus for forming a mask pattern on a wafer and printing the mask pattern on the wafer, said apparatus comprising:

a source of radiation energy for imparting a divided exposure radiation energy to a mask a plurality of times; and

means for moving at least one of said mask and wafer relative to the other of said mask and said wafer for making the relative positional relation of the mask pattern and the wafer differ by a minute amount each time said divided exposure is effected.

4,440,494

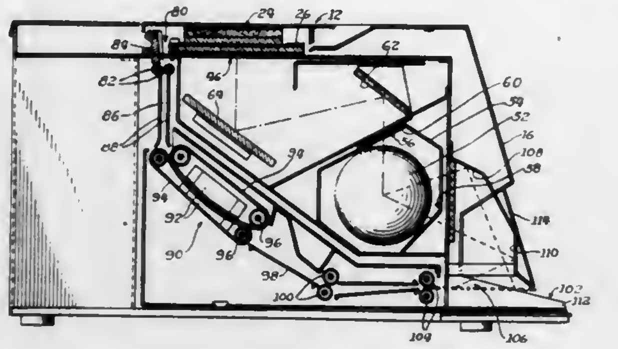
MICROFILM DUPLICATOR

Thomas R. Wells, Des Plaines, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Sep. 28, 1982, Ser. No. 425,219

Int. Cl.³ G03B *27/30*

U.S. Cl. 355—100 **18 Claims**



1. An integral unit for duplicating images received from a microfiche onto a duplicating medium comprising:

an exposure station, a developing station and a discharge station, all housed within an integral enclosure;

the exposure station comprising means to form a latent image on the duplicating medium by exposure of the duplicating medium to the images on the microfiche,

microfiche support means for retaining the microfiche in a fixed microfiche plane, and

duplicating medium support means for retaining the duplicating medium in a first position parallel to the microfiche plane during exposure of the duplicating medium;

a developing path traversable by the duplicating medium extending from the exposure station to the developing station;

the duplicating medium support means moveable to a second position to discharge the duplicating medium into the developing path;

the developing station comprising means for developing the latent images on the duplicating medium;

a discharge path traversable by the duplicating medium extending from the developing station to the discharge station;

whereby the duplicating medium has a latent image imposed thereon from the microfiche at the exposure station, is developed at the developing station, and is outputted at the discharge station.

4,440,495

APPARATUS AND THE USE THEREOF FOR CHECKING THE ALIGNMENT OF WHEEL AXLES

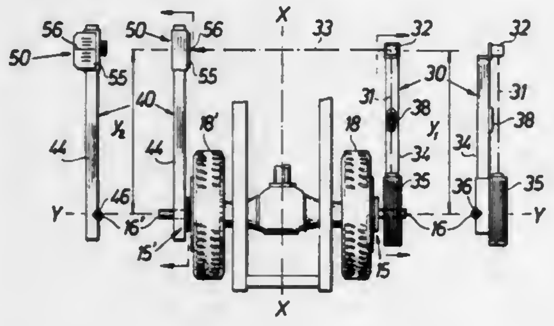
Hans R. Bergström, and Rolf Malmborg, both of Kungsör, Sweden, assignors to Aktiebolaget SAMEFA, Kungsoer, Sweden

Filed Oct. 9, 1980, Ser. No. 195,458

Claims priority, application Sweden, Oct. 12, 1979, 7908488

Int. Cl.³ G01C *1/00*

U.S. Cl. 356—155 **6 Claims**



1. In an apparatus for checking and determining the alignment of wheel axes, preferably the axes of two substantially coaxially arranged wheels (a wheel in this context being a single wheel or two wheels together) forming a wheel pair, said apparatus comprising two measuring units in the form of elongate elements each adapted for attachment to an axle of a wheel in a pair of wheels, so that said elements extend substantially at right angles and in the same direction out from the respective axle, one unit comprising a scale unit having a scale situated at a given distance (y_2) from the coacting axle, while the other unit is a beaming unit comprising a ray or beam emitter for emitting a light beam, and a reflector means situated at substantially the same given distance (y_1) from the axle coacting with the beaming unit and adapted for reflecting the light beam substantially 90° in a direction towards said scale on the scale unit, the improvement comprising means for adapting to relative, as opposed to absolute, alignment measurement, including means mounting the scale for displacement along the scale unit and means for locking the scale in a selected position along the scale unit.

4,440,496

PROCESS AND DEVICE FOR INSPECTING AND CHECKING THE INTERNAL SURFACE OF A HOLLOW CYLINDRICAL WORKPIECE WHICH HAS UNDERGONE MECHANICAL WORKING

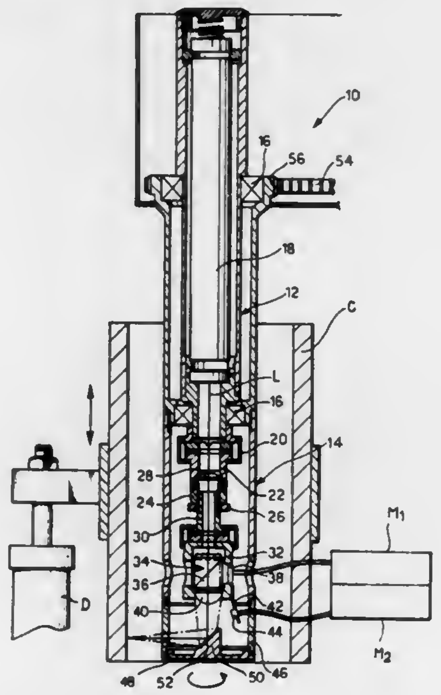
Emilio Milana, Rivalta, Italy, assignor to Fiat Auto S.p.A., Turin, Italy

Filed May 28, 1981, Ser. No. 267,977

Claims priority, application Italy, May 28, 1980, 67831 A/80

Int. Cl.³ G01N *21/88*

U.S. Cl. 356—241 **8 Claims**



1. Process for inspecting and checking the internal surface of a hollow cylindrical workpiece which has undergone mechanical working, particularly a finishing operation of grinding or the like, as a result of which the said internal surface has two sets of intersecting, helical score lines, the process including the steps of:

directing a beam of laser radiation onto the internal surface of the workpiece normally to said surface to form a diffraction pattern;

effecting relative rotational and translational movement of the workpiece and the said incident laser beam respectively about and along the axis of the workpiece to scan the entire internal surface of the workpiece successively,

detecting by photo-electric means the diffraction pattern formed by the laser radiation incident on said internal surface of the workpiece, said diffraction pattern having a cruciform shape the arms of which intersect at angles corresponding to the angles of intersection of the two sets of score lines and which rotate as a result of the relative rotation between the workpiece and the laser beam, the said photo-electric means providing an electrical output signal which as a function of time as a positive peak in correspondence with the passage of each arm of said diffraction pattern over the photo-electric means;

forming from the said electrical output signal an indication related to the characteristics of the two sets of intersecting helical score lines.

4,440,497

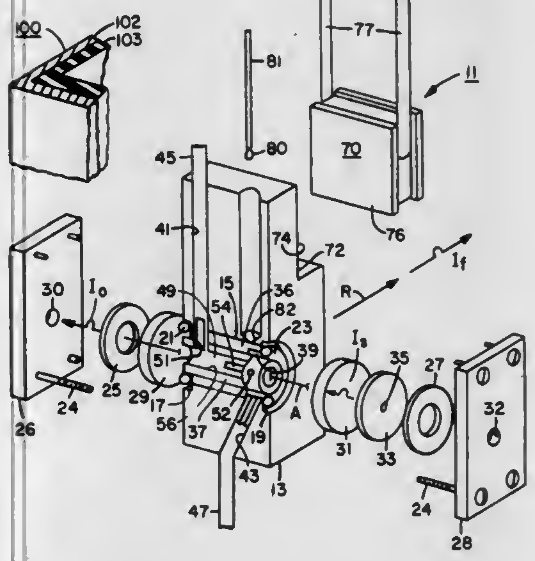
COMBINATION ABSORBANCE FLUORESCENCE ASPIRATING THERMAL CUVETTE

Glen A. Carey, North Ridgeville, and Steven J. Hydo, Wellington, both of Ohio, assignors to Corning Glass Works, Corning, N.Y.

Filed May 17, 1982, Ser. No. 378,598

Int. Cl.³ G01N *1/10*

U.S. Cl. 356—246 **9 Claims**



1. An aspirating abosrbance thermal flow cell or cuvette for containing therein a fluid sample to be tested under the influence of an external light source comprising:

a housing having a chamber therein formed with a cylindrical sidewall, said chamber having an inlet and outlet for communicating the fluid sample along a flow path through the same from the inlet to the outlet, the chamber having spaced apart opposed openings centered along a straight line axial optical path and a notch opening in the sidewall, intermediate the opposed openings, forming an axial slot therein;

a pair of first transparent optical windows in the form of flat sided circular disks, one located in each of the opposed openings and being oriented with the flat sides perpendicular to the optical path, the disks closing the opposed openings in the chamber and providing a through window into and out of the chamber for passage of light from the external source through the fluid sample, the light being attenuated in intensity as it passes through the fluid sample, the attenuation being a function of an absorbance characteristic of the fluid sample; and

a second transparent optical window, sealed within the slot for closing the side opening and providing a radial optical path for passage of fluorescent light from within the chamber to without the same, said fluorescent light being a function of a fluorescence characteristic of the fluid resulting from exitation by the light from the external source.

4,440,498

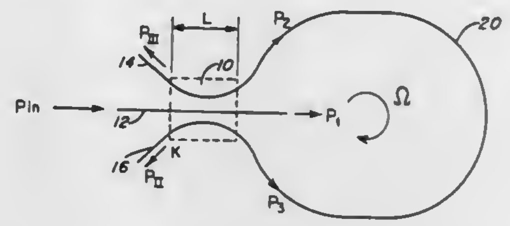
OPTICAL FIBER GYROSCOPE WITH (3×3) DIRECTIONAL COUPLER

Sang K. Sheem, Richardson, Tex., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 13, 1981, Ser. No. 320,999

Int. Cl.³ G01C *19/64;* G02B *5/14*

U.S. Cl. 356—350 **9 Claims**



1. In an optical fiber gyroscope wherein light is introduced into an optical fiber waveguide formed in a loop for propagating therearound in mutually opposite directions to emerge therefrom for relative phase shift detection induced by rotation of the loop, the improvement residing in a directional coupler for carrying light to and from the loop comprising:

a first elongate optical waveguide adapted to have laser light launched into one end thereof and carry that light therethrough;

second and third optical waveguides including elongate portions thereof coextensively disposed with a length of the first optical waveguide at close distances therefrom and from each other whereby the laser light is coupled thereinto and directed into the loop for propagating therethrough in mutually opposite directions;

said second and third optical waveguides receiving the oppositel propagated light from the loop and mixing it for mutual interference by coupling from one to the other across the distance therebetween;

said second and third waveguides directing their respective mixed lights to detection means where their powers are compared;

whereby relative changes in light powers provides an indication of loop rotation.

4,440,499

METHOD AND APPARATUS OF BLOWING MORTAR OR THE LIKE

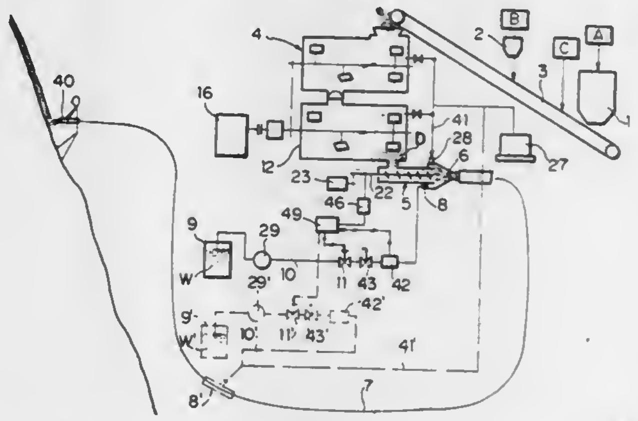
Kouichi Tomikawa, Kanagawa, and Hiroshi Takahashi, Gunma, both of Japan, assignors to Engineering Resources Development Office, Tokyo, Japan

Filed Mar. 3, 1981, Ser. No. 241,458

Claims priority, application Japan, May 3, 1980, 55-27750

Int. Cl.³ B28C *5/06*

U.S. Cl. 366—3 **7 Claims**



1. A method of feeding material, such as mortar or thee like to be blown on compression air, comprising the steps of blowing dry mixture of the material through a feed mechanism of a

blowing machine; feeding a predetermined amount of the dry mixture from an outlet nozzle of the feeding mechanism of the blowing machine into a hose adapted to transmit the mixture to a working surface via a blowing nozzle and simultaneously supplying liquid of a predetermined amount bearing on the compression air through said outlet nozzles of the blowing machine so that the material is mixed with the liquid while the material is fed into the hose whereby the mixture is transformed from dry condition to wet condition; controlling grains in the mixed material during feeding it in said hose to thereby provide the desired water-cement ratio, so that the mixed material with the desired cement ratio is formed in said outlet nozzle of the blowing machine, enters the hose, travels through the latter, and is blown from said hose by the blowing nozzle.

4,440,500

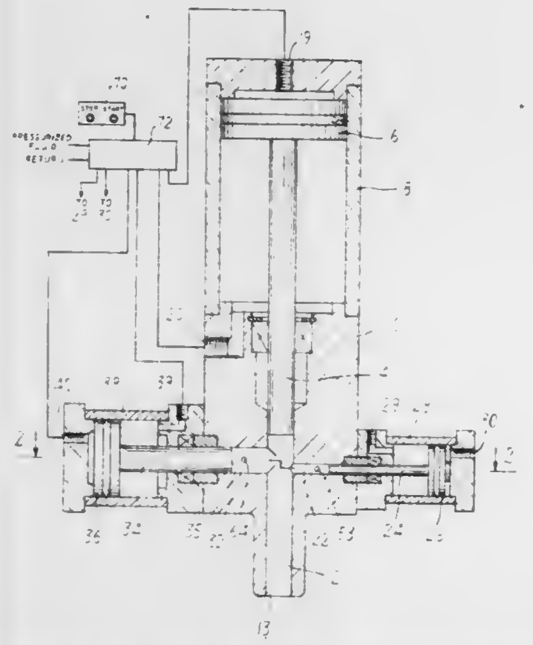
HIGH PRESSURE IMPINGEMENT MIXING APPARATUS

Fritz W. Schneider, Louisville, Ky., assignor to Polyurethane Technology of America-Martin Sweets Company, Inc., Louisville, Ky.

Filed Jun. 21, 1982, Ser. No. 390,777

Int. Cl.^{3} B01F *5/04*

U.S. Cl. 366—177 **12 Claims**



1. Apparatus for high pressure impingement mixing of at least two liquid components comprising:

a housing having a transfer dispense chamber including a first opening, a second opening, and an outlet for dispensing mixed components;

an impingement mixing chamber means for impingement mixing of liquid components and for directing said components through said first opening into said transfer dispense chamber, and across said transfer dispense chamber out through said second opening, said means including an impingement mixing chamber, injection means for introducing said at least two liquid components into said mixing chamber for impingement mixing thereof, and a reciprocatable plunger for selectively cleaning said mixing chamber;

an aftermixer chamber means, including an aftermixer chamber communicating with said second opening, for receiving mixed components directed from said mixing chamber means, for further mixing said components in said aftermixer chamber, and for returning said mixed components delivered thereto to said transfer dispense chamber such that the returned components are dispensed through said outlet;

second plunger means disposed in said aftermixer chamber for mechanical cleaning of said aftermixer chamber; and

third plunger means disposed in said transfer dispense chamber for mechanical cleaning of said transfer dispense chamber after a dispense operation.

4,440,501

METHOD OF AUTOMATIC ADJUSTMENT OF SELF-CONTAINED RADIO-CLOCK BY MEANS OF TIME MARK

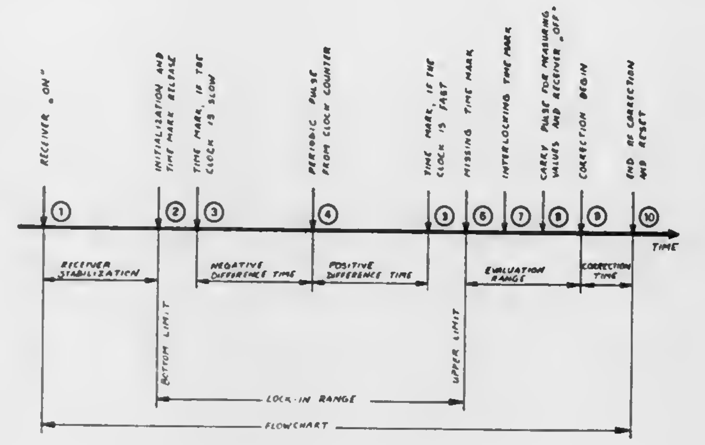
Werner Schulz, Valentinianstr. 6, 6802 Ladenburg, DE, Fed. Rep. of Germany

Filed Jun. 11, 1981, Ser. No. 272,559

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1980, 3022949; European Pat. Off., Mar. 25, 1981, 81102235

Int. Cl.^{3} G04C *11/02*

U.S. Cl. 368—47 **6 Claims**



1. A method of automatic adjustment, by means of a reference time mark which according to a time scale is periodically transmitted by a transmitter, of a self-contained radio-clock including an oscillator and a display, comprising the steps of deriving from the oscillator frequency a predetermined lock-in time range defining a lower limit and an upper limit which exceeds the range of the time mark; measuring periodically data relating to the deviation of the rate of the clock, such as the magnitude and direction of the deviation, by comparing the time marks with the periodic pulses from the clock; storing the measured deviation data for use to provide for correction of the clock rate of the clock in the event the time mark is missing and to provide for a validity check of the measured data; thereupon correcting the rate of the clock and the position of the display according to the stored deviation data without changing the stored data until the next time mark arrives.

4,440,502

ELECTRONIC TIMEPIECE

Fumio Kanno, Sayama, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Oct. 27, 1982, Ser. No. 437,176

Claims priority, application Japan, Oct. 27, 1981, 56-170826; Jul. 20, 1982, 57-126147; Jul. 28, 1982, 57-131842

Int. Cl.^{3} G04B *19/04*

U.S. Cl. 368—80 **6 Claims**

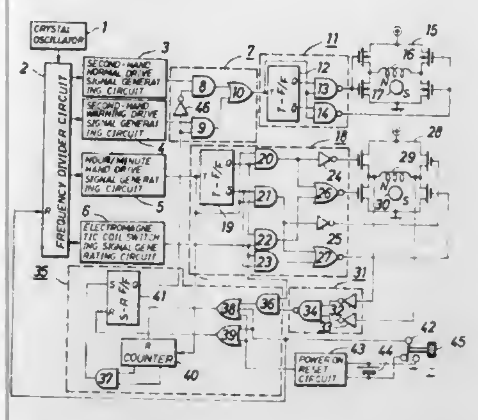
1. In an electronic timepiece powered by a battery and having time indicating hands, the improvement comprising:

a first stepping motor including a first electromagnetic coil and a first rotor for driving at least a seconds-hand;

a second stepping motor including a second electromagnetic coil and a second rotor for driving at least an hours-hand;

a means for judging failure of stepping of said second rotor of said second stepping motor; and

a controlling means responsive to the output of said judging means for causing said first stepping motor to be actuated in a warning mode different from the normal mode to give warning of the failure of stepping of said second rotor of said second stepping motor.



4,440,503

ELECTRONIC TIMER

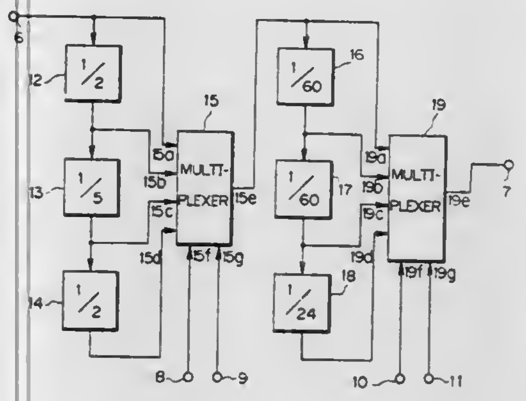
Isao Arichi, Kurahsiki; Tetuya Waniisi, and Takuji Koh, both of Okayama, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Sep. 4, 1981, Ser. No. 299,582

Claims priority, application Japan, Sep. 8, 1980, 55-128312[U]

Int. Cl.^{3} G04F *10/02*

U.S. Cl. 368—107 **3 Claims**



1. An electronic timer comprising:

a case having first and second windows and a manually adjustable control therein for setting a desired time;

an oscillator within said case;

a first frequency divider within said case for dividing the output of said oscillator at one of a plurality of first dividing factors;

first selecting means within said case for manually selecting one of said first factors including switch means having a display viewable through said first window and indicating a multiplication factor for the set time;

a second frequency divider within said case for dividing the output of said first selecting means by one of a plurality of second dividing factors; and

second selecting means within said case for manually selecting one of said second factors including switch means having a display viewable through said second window and indicating timing in seconds, minutes, hours, or days.

4,440,504

ELECTRONIC TIMEPIECE INCLUDING A PIEZOELECTRIC ALARM

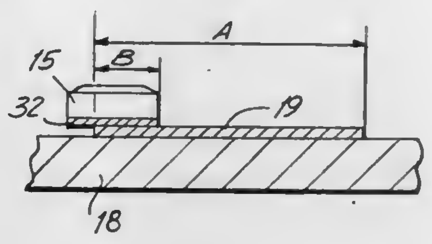
Hajime Miyazaki, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Jul. 30, 1981, Ser. No. 288,610

Claims priority, application Japan, Aug. 7, 1980, 55-108520

Int. Cl.^{3} G04C *21/16*

U.S. Cl. 368—255 **10 Claims**



1. An electronic timepiece including a piezoelectric type alarm buzzer comprising:

a timepiece case having a front side with an opening for viewing a display of time and an opposed caseback;

a timepiece movement for generating at least a display of time and alarm drive signals and a battery for driving said movement, said movement and battery disposed within said timepiece case;

a substantially planar piezoelectric element electrically coupled to said movement and mounted on said caseback wherein said element has a dimension of at least length A in a radial direction on the caseback;

an electrical insulating member contacting a portion of said piezoelectric element; and

said battery is substantially circular in plan view and is mounted on said insulating member, said insulating member overlaps said piezoelectric element a distance B, the ratio B/A being about 0.5 or less.

4,440,505

WATCHCASE HAVING A THIN APPEARANCE WHEN BEING WORN

Paul Gogniat, Bienne, Switzerland, assignor to Montres Rado S.A., Longeau, Switzerland

Filed Jul. 21, 1982, Ser. No. 400,372

Claims priority, application Switzerland, Aug. 10, 1981, 5129/81

Int. Cl.^{3} G04B *37/00*

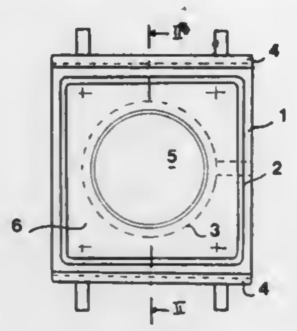
U.S. Cl. 368—292 **12 Claims**

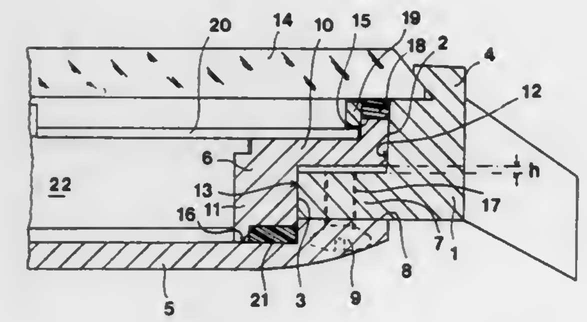
1. A watch case comprising a case band, a crystal and a back detachably mounted on the case band and a caging ring for positioning a movement of the watch in the case, characterized in that:

the case band has an upper opening sealed by the crystal and a smaller-sized lower opening defined by a projection of said case band radially extending inwardly at the lower part of case band,

the caging ring has an upper portion and a lower portion containing outer surfaces, the outer surfaces of said upper and lower portions of said caging ring fitting within the upper and lower openings, respectively, of the case band, the ring being insertable in said case band through its upper opening before the mounting of the crystal and being fit into the lower opening of the case band; and

the back is held against the lower surface of the projection of the case band by means of set screws, said set screws being tightened to lock the caging ring in the case, wherein the watch case presents a thinner appearance than it has by providing said smaller lower opening of said case band and said caging ring to enable the edge of the back and





said set screws to be moved inwardly so as to be hidden when worn on a wrist.

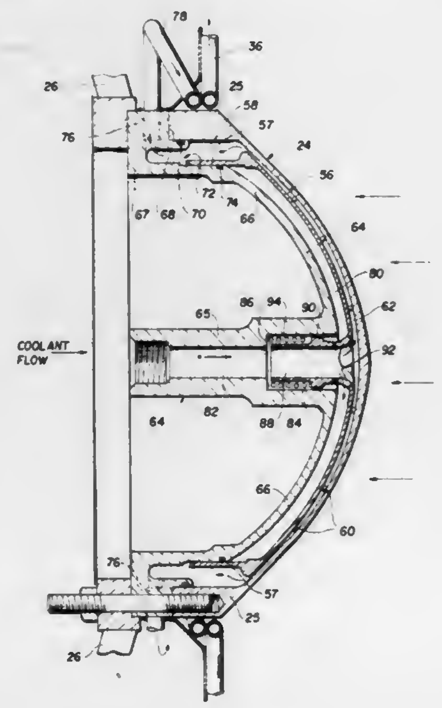
4,440,506
LASER POWER METER

Frederick G. Eitel, North Palm Beach, Fla., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 5, 1982, Ser. No. 365,747

Int. Cl.³ G01K *17/00*

U.S. Cl. 374—32 **15 Claims**



1. A laser power meter, comprising:

conversion means for converting incident laser radiation into thermal energy, which conversion means includes an optic which absorbs and converts at least a portion of the incident laser radiation into thermal energy;

a fluid channel adjacent said optic, which fluid channel conducts a fluid in heat exchange relationship with said optic, and which fluid channel is defined by a disk which is spaced apart from said optic; and

gap control means, responsive to changes in the shape of said optic, for regulating the spacing between said optic and said disk and thereby regulating the width of said fluid channel.

4,440,507
PROCEDURE FOR MEASURING THERMAL ENERGY TRANSPORTED BY FLUID FLOW

Matti R. Karras, and Olavi Hirsimäki, both of Finnish, Finland, assignors to Valmet Oy, Finland

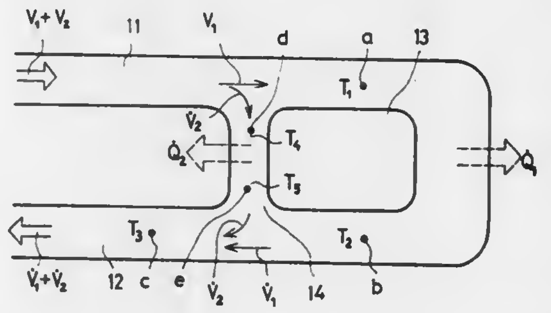
PCT No. PCT/FI81/00038, § 371 Date Jan. 26, 1982, § 102(e) Date Jan. 26, 1982, PCT Pub. No. WO81/03543, PCT Pub. Date Dec. 10, 1981

PCT Filed May 27, 1981, Ser. No. 354,092

Claims priority, application Finland, May 28, 1980, 801730

Int. Cl.³ G01K *17/08*

U.S. Cl. 374—39 **11 Claims**



1. A method for measuring thermal power Q_1 transferred to or from a fluid flowing through a consumption unit at a volumetric flow rate V_1, comprising the steps of:

connecting a bypass line in parallel with a line carrying said fluid through said consumption unit and allowing a portion of said fluid to flow through said bypass line at a volumetric flow rate V_2,

transferring additional thermal power Q_2 to or from said fluid flowing through said bypass,

measuring temperature, T_1, of said fluid flowing in said consumption unit line as said fluid flows into said consumption unit before the transfer of Q_1,

measuring temperature, T_2, of said fluid flowing in said consumption unit line as said fluid flows out of said consumption unit after the transfer of Q_1,

measuring temperature, T_4, of said fluid flowing through said bypass as said fluid flows into said bypass before the transfer of Q_2,

measuring temperature, T_5, of said fluid flowing through said bypass as said fluid flows out of said bypass after the transfer of Q_2,

measuring transfer of Q_2 to or from said fluid flowing through said bypass,

measuring temperature, T_3, of fluid flowing in a return line downstream of said consumption unit and bypass lines, and

calculating the transfer of Q_1 to or from said fluid flowing through said consumption unit, based on the following formula:

$$\dot{Q}_1 = \frac{(T_1 - T_2)\cdot(T_5 - T_3)}{(T_4 - T_5)\cdot(T_3 - T_2)}\cdot\dot{Q}_2.$$

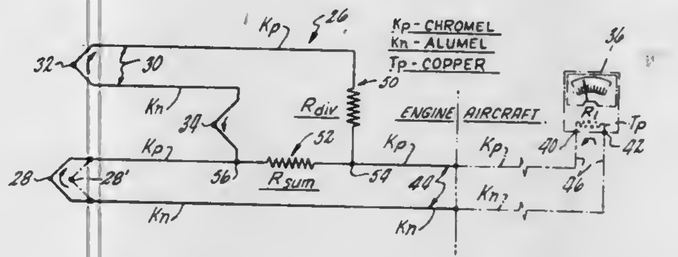
4,440,508
DETECTOR-TRANSDUCER FOR SENSING TEMPERATURES IN AN ENGINE

Joseph J. Haloburdo, Jr., Bolton, and Rocco M. Tommasini, West Hartford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 9, 1982, Ser. No. 367,147

Int. Cl.³ G01K *7/14*

U.S. Cl. 374—144 **11 Claims**



1. A detector-transducer for sensing a temperature in an engine having locations at different temperatures and working medium fluids flowing therethrough, which comprises:

a means for detecting temperature and transducing the temperature into a first electromotive force;

a resistor in series with the means for detecting and transducing temperature;

a supplementary thermocouple having a first junction and a second junction in series which are connected across the resistor;

wherein the first junction is placed in heat transfer communication with working medium fluids flowed through the engine at a first temperature and the second junction is placed in heat transfer communication with fluids flowed through the engine at a second temperature that is not equal to the first temperature to develop a second electromotive force which is adapted to bias the first electromotive force under operative conditions.

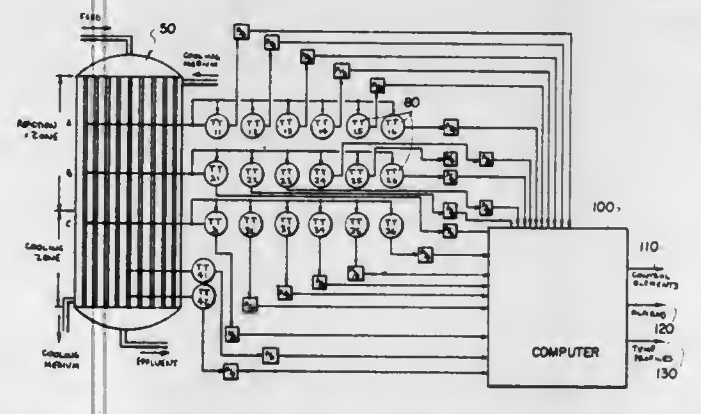
4,440,509
DETECTION OF HOT AND COLD SPOTS IN CHEMICAL REACTORS

Suresh C. Agarwal, Euclid, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Mar. 29, 1982, Ser. No. 363,200

Int. Cl.³ G01K *7/00, 13/00*

U.S. Cl. 374—166 **5 Claims**



1. An apparatus for determining the temperature gradient in an isothermic chemical reactor having a longitudinal axis and a plurality of longitudinally extending heat transfer medium tubes, one tube coinciding with said longitudinal axis, comprising, a first plurality of temperature sensors distributed at equispaced locations along said tube, and a second plurality of at least six temperature sensors on a cross-sectional plane of the reactor passing through each of said locations, said longitudinally extending tubes grouped into sets of tubes each within an equitempered zone axially symmetrical about the longitudinal axis, at least one temperature sensor of said second plurality of temperature sensors in one tube of each set, some of said second plurality of temperature sensors equispaced along a radial line in each cross-sectional plane.

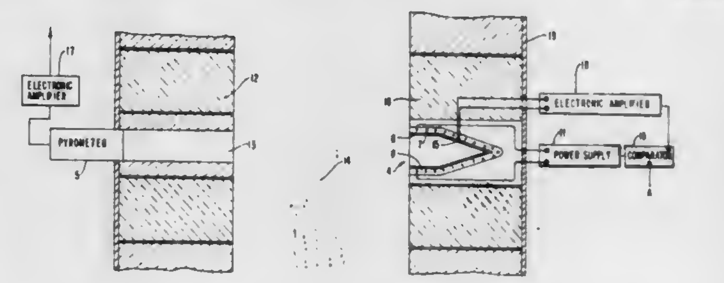
4,440,510
PYROMETRIC GAS TEMPERATURE MEASUREMENT SYSTEM

Alexander Stein, Secaucus, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 324,973, Nov. 25, 1981. This application Sep. 9, 1982, Ser. No. 416,291

Int. Cl.³ G01K *7/00;* G01J *5/16*

U.S. Cl. 374—169 **8 Claims**



1. A system for remotely measuring the line averaged temperature of hot gases in a fired furnace comprising:

(a) a black body in thermal contact with said gas, wherein said black body is fixed to an interior furnace side wall by means such that it is heated to within 100° C. below said temperature of said hot gases;

(b) heating means surrounding said black body for adjusting physical temperature of said black body;

(c) thermometer means in said black body for measuring the physical temperature of said black body;

(d) a spectral pyrometer means in an opposite side wall viewing said black body through said gas wherein said spectral pyrometer operates at a wavelength where said gas has an emissivity within the range of 0.1 and 0.9; and

(e) electronic means for comparing the physical temperature of said black body as measured by said thermometer with the radiation temperature measured by said spectral pyrometer to obtain a resultant signal that is used to control said heating means.

4,440,511
MULTISHAFT SUPPORTING DEVICES

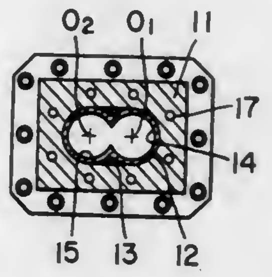
Junya Ishibashi, Numazu; Shigeru Miyazaki, Mishima, and Shoichi Tanaka, Shizuoka, all of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 14, 1982, Ser. No. 417,862

Claims priority, application Japan, Sep. 17, 1981, 56-146749

Int. Cl.³ F16C *17/22*

U.S. Cl. 384—278 **5 Claims**

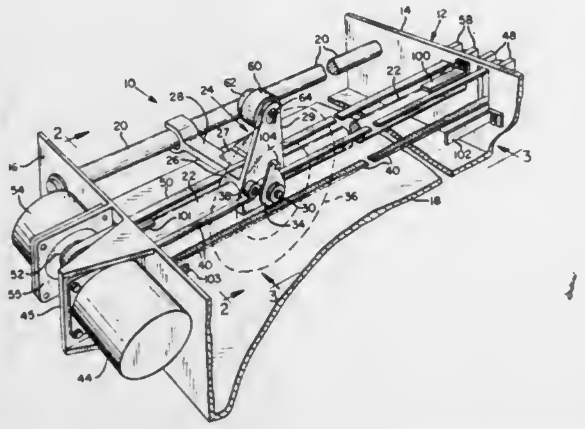


1. A multishaft supporting device comprising a barrel provided with a bore, a sleeve inserted into said bore and provided with an opening for receiving a plurality of shafts, and inserts interposed between said barrel and said sleeve, said inserts being made of material having larger thermal expansion coefficient than said barrel and said sleeve.

4,440,512

DAISY WHEEL PRINTER HAVING LOW MASS CARRIAGE

Mitchell D. Forcier, 14007 SE. 30th St., Apt. H, Vancouver, Wash. 98664
Filed Jun. 7, 1982, Ser. No. 385,849
Int. Cl.^{3} B41J *1/30*
U.S. Cl. 400—144.2 **3 Claims**



1. A printer comprising:

frame means including a guide means extending from side to side of the frame means;

a carriage mounted for side-to-side movement on the guide means;

a print wheel rotatably mounted on the carriage;

first and second bidirectional stepping motor means mounted on the frame means;

first drive means including a first drive belt connected to the carriage and drivable by the first stepping motor means for indexing the carriage along the guide means to a selected print position, and

second drive means including a second drive belt drivingly interconnecting the second motor means and the print wheel for rotating the print wheel to a selected angular position to present a selected print character at said print position;

said belts being arranged so that indexing the carriage induces proportional rotation in the print wheel;

the first drive means being proportioned to the second drive means so that stepping the first stepping means by a single step rotates the print wheel by an amount equal to an amount of wheel rotation resulting from stepping the second stepping motor means an integral number of steps;

the first drive means including a first drive pulley of circumference A on the first motor means,

the second drive means including a second drive pulley of circumference B on the second motor means and a print wheel pulley of circumference C drivingly connected to the print wheel;

the first step motor means being operable to produce M steps per revolution;

the second step motor means being operable to produce N steps per revolution;

the first and second drive pulleys being sized so that:

$$\frac{A}{M} = \frac{K \times B}{N},$$

K being said integral number; and the print wheel pulley being sized so that:

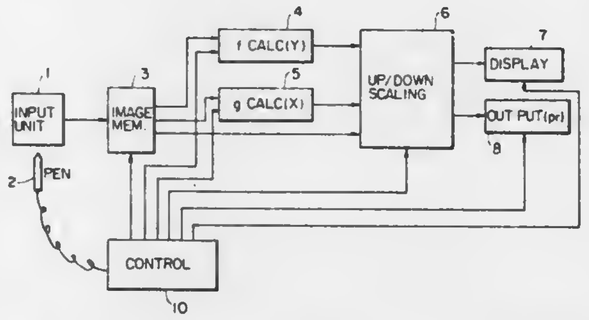
$$\frac{B}{N} = \frac{C}{L},$$

L being the number of angular spaced character positions on the print wheel.

4,440,513

CHARACTER SHAPING DEVICE

Hiroyuki Kataoka, and Yoshio Arai, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Mar. 9, 1982, Ser. No. 356,544
Claims priority, application Japan, Mar. 12, 1981, 56-34631
Int. Cl.^{3} G06K *9/00*
U.S. Cl. 400—165.1 **8 Claims**

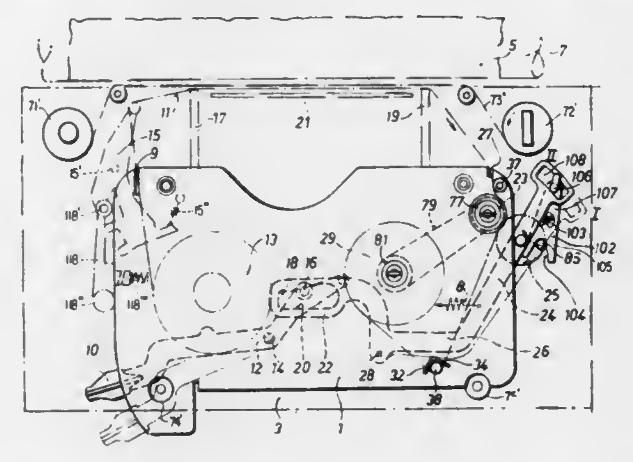


1. A character shaping device, comprising: an image memory for reading a character in a tablet area and for storing said character as image information in the form of a binary signal for each of a plurality of picture elements; means for determining an x-peripheral distribution function and y-peripheral distribution function of said stored information, respectively; means for determining an area bounding said character and the center of gravity position of said character in respective directions from said x- and y-peripheral distribution functions; means for storing a preset normalization area within said tablet area, and the center position thereof; and means for altering said character bounding area to equate said character bounding area with said normalization area, and center said character within said normalization area, to produce a sized, centered character.

4,440,514

ADJUSTABLE RIBBON FEED RATES DEPENDENT UPON RIBBON TYPE FOR INK RIBBON CASSETTES

Alfred Keiter; Wolfgang Mudder, and Bernd Tappehorn, all of Wilhelmshaven, Fed. Rep. of Germany, assignors to Olympia Werke AG, Wilhelmshaven, Fed. Rep. of Germany
Filed Feb. 2, 1981, Ser. No. 230,504
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1980, 3003886
Int. Cl.^{3} B41J *32/00*
U.S. Cl. 400—208 **14 Claims**

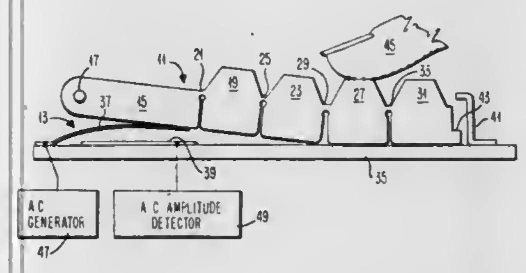


1. In a feed mechanism for advancing an ink ribbon supported in a cartridge which is inserted into a typing machine in feeding steps whose length is determined in dependence upon the type of the ribbon, the cartridge including a supply reel and a takeup reel between which the ribbon is advanced, guides being provided for guiding the ribbon through a printing station of the machine, the improvement wherein said mechanism comprises: a feed roller rotatably mounted in said cartridge for engaging the ribbon to advance the ribbon in feeding steps, said feed roller being selected from a plurality of feed rollers having respectively different diameters on the basis of the type of the ribbon; a driving device mounted in said machine and including a pressure roller movable into a position against said feed roller when said cartridge is inserted in said machine; and means for rotating said feed roller in angular steps for advancing the ribbon in corresponding feeding steps, said rotating means being settable for causing each angular step of rotation of said feed roller to have a selected one of at least two different magnitudes, each magnitude corresponding to a respectively different ribbon feeding step length, and said rotating means being coupled to said pressure roller in a manner to be set to produce angular rotation steps of a selected magnitude in dependence on the position of said pressure roller when said pressure roller is in its position against said feed roller, whereby the magnitude of each ribbon feeding step is automatically determined as a function of the diameter of said selected feed roller.

4,440,515

KEYBAR KEYBOARD

Ernie G. Nassimbene, Los Gatos, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 1, 1982, Ser. No. 383,921
Int. Cl.^{3} B41J *5/28*
U.S. Cl. 400—479 **6 Claims**



1. A keyboard comprising:

a plurality of keybar actuators, said keybar actuators each comprising:

at least three keys interconnected one to the other and jointly movable in the same common direction about at least one common pivot upon depression of any key of a given keybar actuator, said remaining keybar actuators being independently pivoted to remain stationary during such movement of said given keybar actuator;

switch actuation means responsive to the movement in said common direction of any depressed key of said given keybar actuator to indicate which one of said at least three keys of said given keybar actuator was depressed upon movement of said given keybar actuator in said common direction.

4,440,516

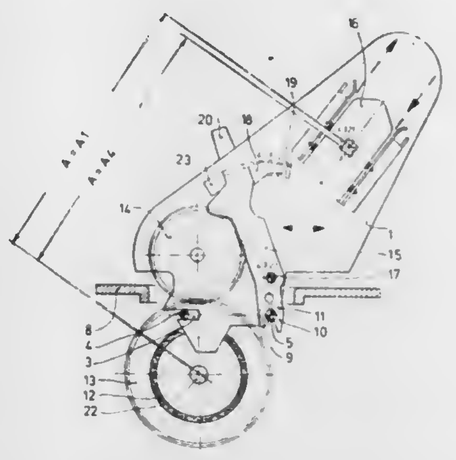
TRANSPORT DEVICE FOR TRANSPORTING AN ENDLESS FORM TO AND FROM THE PRINTING ROLLER

Manfred Rosenthal, Kirchen-Freusburg, and Wendelin Weber, Siegen, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Dec. 7, 1981, Ser. No. 327,974
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1980, 3046592
Int. Cl.^{3} B41J *11/32*
U.S. Cl. 400—616.1 **10 Claims**

1. A transport device for transporting an endless form to and from a printing mechanism, which mechanism has a printing roller and a frame within which the roller is journalled for rotation about a roller axis, the frame having two pairs of members for mounting a transport device, the members of each pair being disposed at respective axial locations with respect to the printing roller axis and spaced from each other transversely with respect to said axis,

said transport device comprising two side walls, at least one drive shaft journalled in the side walls, and transport chains which cooperate pair-wise and are arranged on said at least one drive shaft,

characterized in that the device further comprises a respective control lever journalled to each of said side walls for pivoting about a lever axis, said lever comprising a bearing lug disposed to one side of the pivot axis, arranged for engaging one of said members on the mechanism frame,



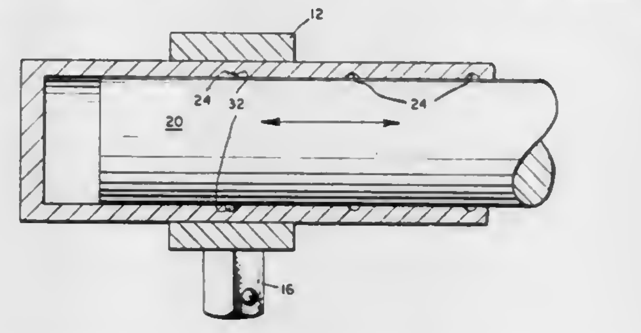
said device further comprising means for releasably locking the lever in a selected one of a plurality of pivotal positions, said means comprising a projection arranged on each lever at the other side of the pivoting axis for resiliently and releasably engaging the respective device side wall at a respective one of a plurality of positions, and

each side wall of the device has a slotted hole for engaging the other member of the respective pair, arranged such that pivoting of the lever causes the side wall to slide along the slotted hole with respect to said other member to adjust the distance between the transport chains and the printing roller.

4,440,517

ADJUSTABLE TORQUE-MULTIPLIER BREAKER-BAR

Michael A. Potter, 8253 Grand Ave., and Richard L. Green, 7671 Joshua View, both of Yucca Valley, Calif. 92284
Filed Mar. 23, 1981, Ser. No. 246,366
Int. Cl.^{3} F16B *21/00*
U.S. Cl. 403—24 **4 Claims**



1. An adjustable, torque-multiplier breaker-bar which comprises:

an elongated sleeve;

a plurality of interior annular grooves in stepped positions along the longitudinal dimension of said sleeve;

a headpiece secured near the distal end of said sleeve including a headpiece collar secured about said sleeve and said headpiece collar having a tool-holding member;

a rod, slideably inserted into said sleeve at the proximal end thereof, the rod having a handgrip attached at the proximal end of said rod;

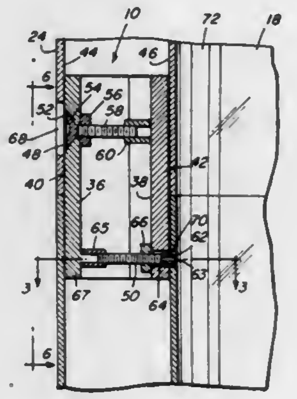
biasing ball and spring means near the distal end of said rod for cooperating with said annular grooves in maintaining an adjusted position of insertion of said rod into said sleeve; and

wherein the specific number of said plurality of interior annular grooves is at least one per inch and with the groove closest to the distal end of said sleeve lying in a transverse plane intermediate the terminal ends of said headpiece collar.

4,440,518
TUBING COUPLING

George N. Davlantes, 7844 Gazette Ave., Canoga Park, Calif. 91306

Filed Oct. 26, 1981, Ser. No. 315,168
Int. Cl.³ F16B *7/04*
U.S. Cl. 403—297 **7 Claims**



1. A connector for tubular pieces comprising:

a pair of opposite longitudinal separable elements,
each said element having an exterior portion adapted to engage the interior walls of said tubular pieces,

first threaded means threadedly connected to one of said elements and having an affixed collar adapted to engage an interior surface of the other of said elements for separating said elements and thereby placing said wall engaging portions into pressing engagement with said interior walls,

second threaded means longitudinally spaced from said first means, also threadedly connected to one of said elements and having an affixed collar adapted to engage an interior surface of the other of said elements for separating said elements and thereby placing said wall engaging portions into pressing engagement with said interior walls,

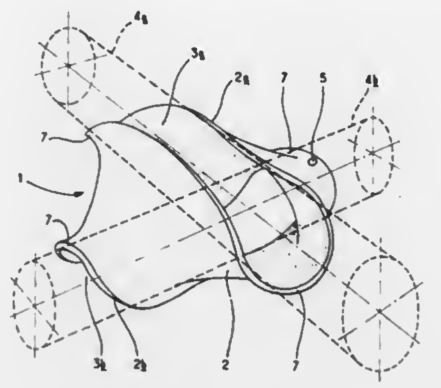
said separable elements being pivotable about one of said threaded means in response to threading of the other of said threaded means.

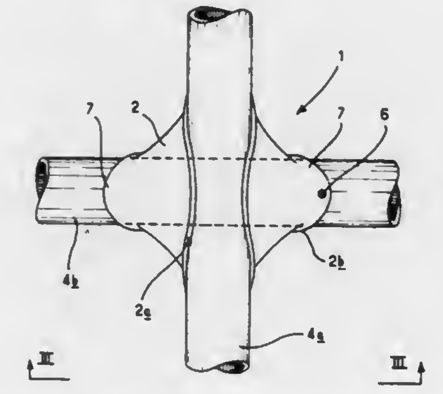
4,440,519
COUPLING MEMBER

Jean-Francois Pennel, 132, Blvd. de l'Hopital, 75013 Paris, France, and Patrick H. Vesnier, Paris, France, assignors to Jean-Francois Pennell and Centrale des Equipements Mobiliers et Immobiliers (CEMI), both of Paris, France

Filed Nov. 28, 1980, Ser. No. 211,137
Int. Cl.³ B25G *3/36;* E04G *7/00*
U.S. Cl. 403—391 **18 Claims**

1. A device for coupling together two elongated elements extending at an angle to each other, at least one of which has a convex exterior, so that the two elements are held against relative angular displacement with respect to each other, said device comprising a substantially rigid one piece band comprised of a continuous closed loop of essentially uniform wall thickness, said band having two substantially continuously curving rims, each rim defining an opening which forms the boundary of a recess for receiving a corresponding one of the elements to be coupled together, said boundaries of said recesses defined by said openings defining a single space within and laterally bounded by said band, and each rim substantially constituting a curve traced on a convex surface of the corresponding element to be coupled, at least one rim extending more than 180° around the corresponding element to be coupled.

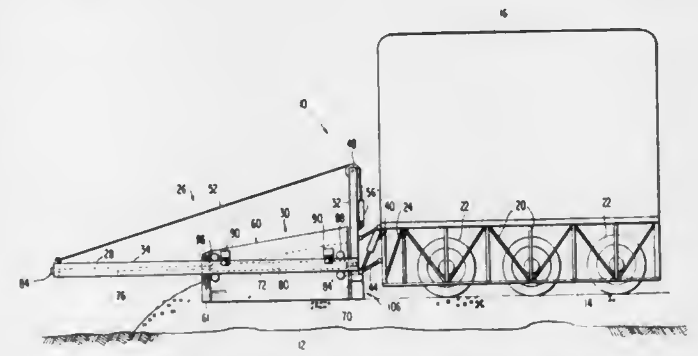




4,440,520
ICE AGGREGATE ROAD AND METHOD AND APPARATUS FOR CONSTRUCTING SAME

Edwin N. Fisher, Belle Center, Ohio, assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Aug. 8, 1980, Ser. No. 176,554
Int. Cl.³ E01C *3/06*
U.S. Cl. 404—72 **43 Claims**



27. A method of continuously constructing an ice aggregate road in cold climates using a machine that supports, transports and distributes ice aggregate and bond water and grades distributed aggregate, comprising the steps of:

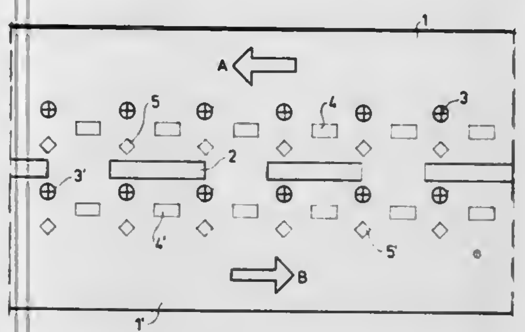
(a) crushing ice to form an ice aggregate which includes fines;
(b) screening said ice aggregate to remove substantially all of said fines from said aggregate;
(c) placing the resulting ice aggregate in the machine;
(d) positioning said machine adjacent a first area over which said road is desired to be formed;
(e) distributing and grading said resulting ice aggregate over said first area with said machine;
(f) applying bond water to the top surface of said resulting ice aggregate in said first area with said machine;
(g) moving said machine onto the freshly bonded ice aggregate in said first area; and
(h) repeating steps (d) through for a second area adjacent said first area.

4,440,521
METHOD TO DISTRIBUTE WEAR FROM PASSING VEHICLES OVER A ROAD SURFACE

Sven R. V. Gebelius, Drottningholmsvägen 195, Bromma, Sweden (S-161 36)

PCT No. PCT/SE81/00159, § 371 Date Jan. 25, 1982, § 102(e) Date Jan. 25, 1982, PCT Pub. No. WO81/03513, PCT Pub. Date Dec. 10, 1981

PCT Filed Jun. 2, 1981, Ser. No. 354,089
Claims priority, application Sweden, Jun. 4, 1980, 8004173
Int. Cl.³ E01F *9/00*
U.S. Cl. 404—72 **11 Claims**



1. A method of evenly distributing the wear from passing vehicles over the surface of a road comprising:

applying to the surface of each lane of traffic of said road a first plurality of linearly spaced first marks extending in the direction of traffic flow;

directing vehicles using said lane so that all wheels on a given side of every vehicle pass over said first marks, and when said first marks are substantially worn off;

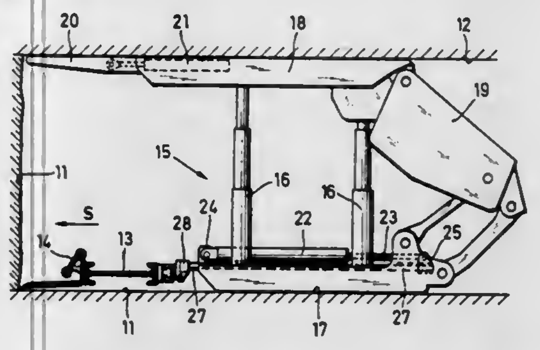
applying to the surface of each lane of traffic of said road a second plurality of linearly spaced second marks extending in the direction of traffic flow, the line of said second marks being laterally displaced in relation to said first marks; and

directing vehicles using said lane so that all wheels on the given side of every vehicle pass over said second marks.

4,440,522
HYDRAULIC CONTROL ARRANGEMENT FOR A ROOF SUPPORT UNIT OF A MINERAL MINING INSTALLATION

Michael Dettmers, Kamen, and Walter Weirich, Dortmund, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Dec. 19, 1980, Ser. No. 217,968
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1980, 3002818
Int. Cl.³ E21D *15/14, 23/00, 23/16;* F15B *11/20*
U.S. Cl. 405—293 **17 Claims**

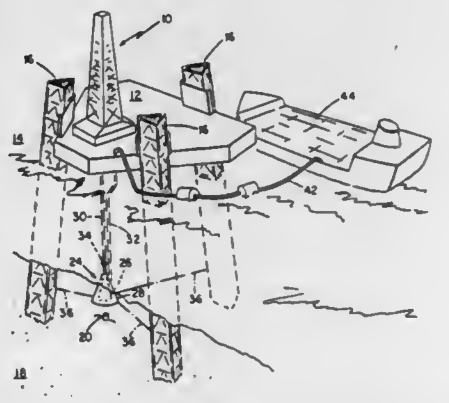


1. A hydraulic control arrangement for a roof support unit of a mineral mining installation, the hydraulic control arrangement comprising: a first hydraulic ram, a second hydraulic ram, a third hydraulic ram, and a metering ram, each of the first, second and third hydraulic rams having a pair of pressure chambers positioned on opposite sides of a respective reciprocable piston, the metering ram being hydraulically interposed between said first hydraulic ram and said second and third hydraulic rams in an arrangement such that the amount of hydraulic fluid supplied to one of the pressure chambers of each of the second and third hydraulic rams is dependent upon the amount of hydraulic fluid expelled from one of the pressure chambers of the first hydraulic ram during the working stroke of the first hydraulic ram, the metering ram having a reciprocable piston with first and second metering chambers and a working chamber on one side thereof, and a high pressure chamber on the opposite side thereof, said first and second metering chambers being connected respectively to the said one pressure chambers of the second and third hydraulic rams, said working chamber being connected to the said one pressure chamber of the first hydraulic ram, and said high-pressure chamber being connected to a hydraulic high-pressure line.

4,440,523
SEPARATING COLLECTOR FOR SUBSEA BLOWOUTS

Jerome H. Milgram, Arlington, and James Burgess, Cambridge, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jun. 16, 1983, Ser. No. 505,051
Int. Cl.³ E02B *17/00;* E02D *23/00*
U.S. Cl. 405—60 **11 Claims**



1. A collector apparatus for use with a blown-out seabottom wellhead, said apparatus comprising a

collector means having an extended, open base and an upper portion enclosing a volume to receive fluid comprising gas and lesser quantities of oil rising, in the water, from the wellhead,

and a conduit-defining riser means connected to said collector means and extending thereabove to conduct said fluid therefrom

said apparatus characterized in that said collector means comprises

a plurality of collector elements, each having an extended, open base,

a first said collector element disposed below at least a second said collector element with an open volume defined therebetween,

said first collector element positioned to intercept said fluid rising from said wellhead,

and said second collector element positioned to receive and collect excess flow of said rising fluid that is not collected by said first collector element,

said riser means comprising at least a first conduit-defining riser extending from said first collector element to the surface of the sea, and a second conduit-defining riser extending from said second collector element to a storage means above said second collector element

said first riser including an adjustable valve means adapted to restrict flow through said riser whereby only a portion of gas from said blown-out wellhead is allowed to flow through said first riser and a further portion of gas and oil are rejected by said first collector element and flow into said second collector element, said second riser adapted to conduct gas in a gas-lift pumping flow rate capable of carrying water and accompanying oil from said second collector element to said storage means.

4,440,524
PROCESS FOR BRINGING A BODY OF WATER INTO COMMUNICATION WITH A TUNNEL

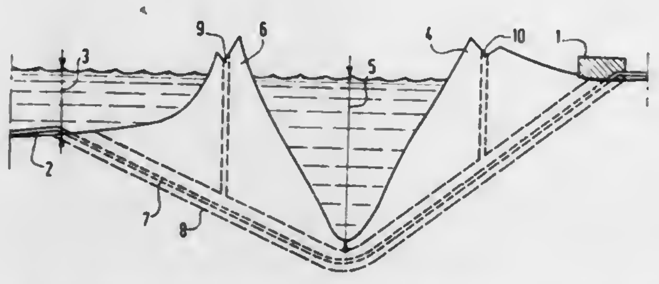
Louis Le Therisien, Paris, France, assignor to Compagnie Francaise des Petroles, Paris, France

Filed May 13, 1981, Ser. No. 263,384

Claims priority, application France, May 16, 1980, 80 10997

Int. Cl.^{3} F16L *1/04;* E21D *10/16*

U.S. Cl. 405—154 **12 Claims**



1. A process for establishing communication between an end of a length of pipe and a body of overlying water, comprising the steps of:

(a) excavating an elongate tunnel (8) under the bed of said body of water,

(b) excavating an underground cavity (11) beneath an end portion of said tunnel adjacent said body of water, said cavity having a volume at least equal to the volume of the ground (12) located between the bed of said body of water and the end portion of said tunnel above said cavity, said volume of ground forming a roof of said cavity,

(c) installing a length of pipe (7) in said tunnel such that an end of the length of pipe is disposed at said end portion of said tunnel at an entrance to said cavity,

(d) installing a chamber (60) in said cavity for protecting devices for the head of an underground well,

(e) installing a removable roof (61) over said chamber,

(f) constructing at least one leaktight shield (16) between the wall of said tunnel and said length of pipe at a position remote from said cavity, and

(g) collapsing the volume of ground forming said roof into said cavity such that the end of said length of pipe becomes immersed in and thus openly communicates with said body of water.

4,440,525
DIVERS WEIGHT BELT

Henry L. Perla, Orlando, Fla., assignor to H.I.M. Inc., Orlando, Fla.

Filed Dec. 2, 1981, Ser. No. 326,542

Int. Cl.^{3} B63C *11/30*

U.S. Cl. 405—186 **8 Claims**

1. A diver's weight belt comprising:

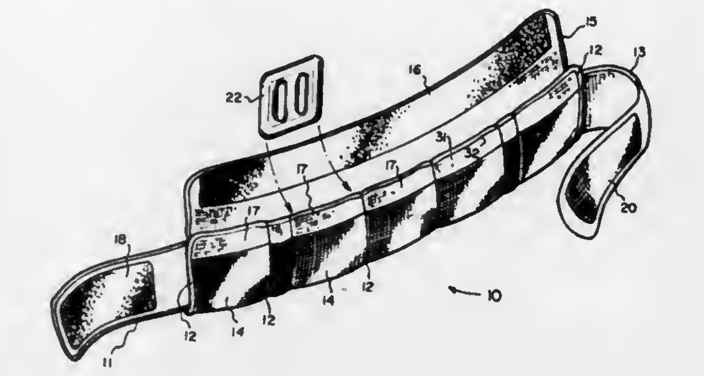
a belt having an outer surface and an inner surface, said inner surface worn toward the diver's body, said belt formed from cushioned material and having a length sufficient to reach around a diver's waist;

a plurality of pockets attached to said belt, said pockets formed from said cushioned material;

diving weights disposed in said pockets;

a single pad formed from said cushioned material and upwardly extending from said pockets and folded back and over said belt in a manner to close said pockets, said folded pad disposed along said inner surface of said pad thereby forming a double cushion between said diving weights and a diver's body and forming means for preventing accidential loss of said weights during use of said belt;

closure means attached to said pad and to said inner surface of said belt for holding said pockets closed when said pad is folded over said pockets; and



belt ends having belt buckling means associated with each end thereof, said buckling means adapted to close said belt around a diver's waist with said pad in contact with a diver's body.

4,440,526
ROCK ANCHORING ARRANGEMENT

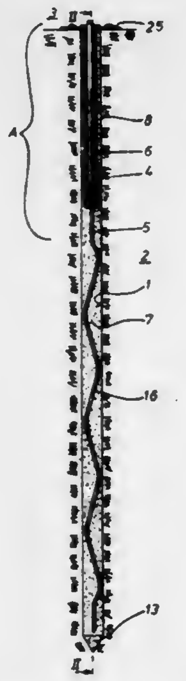
Manfred Koppers, Duisburg; Karlheinz Bohnes, Bochum, and Bernhard Stephan, Gelsenkirchen, all of Fed. Rep. of Germany, assignors to Bochumer Eisenhütte Heintzmann GmbH & Co., Bochum, Fed. Rep. of Germany

Filed Dec. 18, 1981, Ser. No. 332,358

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1980, 3047709

Int. Cl.^{3} E21D *21/00*

U.S. Cl. 405—260 **21 Claims**



1. An anchoring arrangement adapted to be inserted into and held by a body of hardenable material in a bore provided in a support structure, especially in a rock formation encountered in tunnel and mine construction, particularly such involving a considerable convergence, comprising a sleeve centered on an axis and having a leading end and a trailing end as considered in the direction of insertion thereof into the bore; a mounting plate arranged at said trailing end of said sleeve and adapted to contact the support structure around the bore; an elongated anchoring rod having a trailing end portion at least partially accommodated within said sleeve and having a predetermined cross-sectional area, a leading end portion of a smaller cross-sectional area than said trailing end portion extending beyond said leading end of said sleeve into the bore, and a transition region situated between said leading and trailing end portions, at least said trailing end portion and transition region being of a yieldable material; and at least one drawing die secured to said sleeve at said leading end and having an aperture of a cross-sectional configuration corresponding to that of said anchoring rod at said transition region, said drawing die deforming said yieldable material at said transition region when said sleeve and anchoring rod are subjected to opposite axial forces tending to pull said anchoring rod out of said sleeve, to achieve gradual drawing of said transition region and trailing end portion of said anchoring rod through said drawing die when the magnitude of said axial forces exceeds a predetermined level.

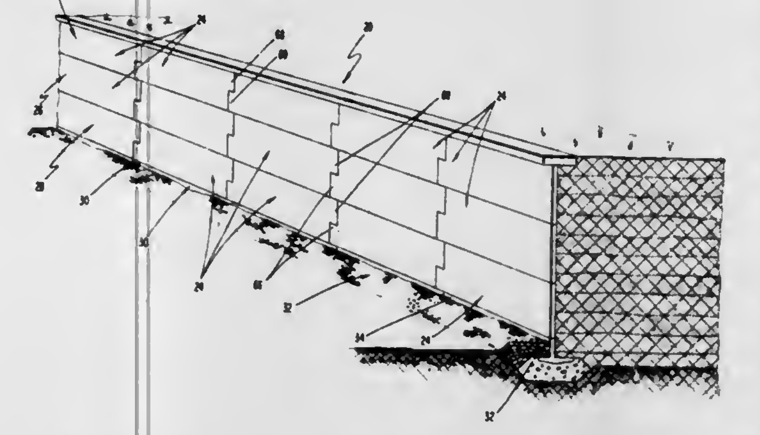
4,440,527
MARINE STRUCTURE

Henri C. Vidal, 8 bis Blvd. Maillot, 92200 Neuilly sur Seine, France

Filed Sep. 22, 1981, Ser. No. 304,625

Int. Cl.^{3} E02D *29/02*

U.S. Cl. 405—284 **7 Claims**



1. A method of erecting a wall in a wet environment, comprising the steps of:

installing a course of footer panels in a submerged location;

placing a course of wall panels on the footer panels, said wall panels having a plurality of reinforcing members hingedly attached thereto;

depositing a layer of particulate material behind the course of wall panels;

swinging said reinforcing members from a generally vertical position with respect to the placed wall panel to a generally horizontal position with respect to the placed wall panel having engagement with said layer of particulate material; and

repeating the placing, depositing and swinging steps until the wall reaches the desired height.

6. An assembly suitable for use in erecting walls in a wet environment comprising:

a wall panel fashioned from reinforced concrete, having a pair of reinforcing members embedded therein;

a pair of members, one end of each member being securely attached to a corresponding one of the reinforcing members, the second end of each member projecting from the wall panel and having an aperture, the apertures of the members being in alignment;

an elongated metal strip provided with a connector end having an aperture therethrough;

pin means passing through the apertures of the pair of members and through the aperture of the connector end, including means for preventing disengagement of the pin means from the apertures, and the pin means being operable to pivotally connect the metal strip to the wall panel so that upon placement of the wall panel the metal strip can be lowered into position; and

including a plurality of elongated metal strips, each strip having associated therewith corresponding pair of members and corresponding pin means.

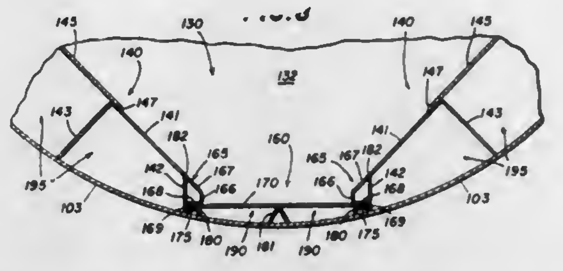
4,440,528
CONTAINER FOR PULVERULENT MATERIAL

Erling Mowatt-Larssen, Warren, and Edward L. Davis, Youngstown, both of Ohio, assignors to General American Transportation Corporation, Chicago, Ill.

Division of Ser. No. 202,762, Oct. 31, 1980, abandoned. This application Aug. 27, 1982, Ser. No. 412,071

Int. Cl.^{3} B65G *53/38*

U.S. Cl. 406—90 **10 Claims**



8. A porous slide assembly for mounting in a trough disposed in the bottom of a storage chamber for pulverulent material with a plenum chamber beneath said porous slide assembly for receiving air to fluidize pulverulent material reposing upon said slide, said porous slide assembly comrising spaced-apart mounting bars in the bottom of said storage chamber extending longitudinally thereof, an elongated porous element having articulated clamping bars secured only thereto along the edges thereof, said clamping bars being laterally spaced apart a distance so as to lie freely on the outer sides of said mounting bars to stretch the elongated porous element between said mounting bars, and frame members overlying the edges of said elongated porous element and secured only to the walls of the associated storage chamber above the trough, each of said frame members having a first portion overlying said porous element along the perimeter thereof and cooperating with said clamping bars securely to mount said porous element in a position enclosing the bottom of the trough and contacting the adjacent portion of the pulverulent material therein, each of said frame members having a second portion disposed between said clamping bars and the walls of the associated storage chamber in engagement with both for laterally retaining said clamping bars and rigidifying said first portion, thereby to hold said clamping bars in the proper relationship with respect to said mounting bars and thus to mount said elongated porous element within the associated storage chamber.

4,440,529
METHOD AND MEANS FOR OPERATING A DRILL FOR ELIMINATING AXIAL SCRATCHES DURING RETRACTION

Samuel P. Henslee, Idaho Falls, Id.; Pascal J. Noronha, Loveland, Ohio, John B. Logan, Fort Worth, Tex., assignors to General Dynamics Corporation, Fort Worth, Tex.

Continuation of Ser. No. 965,625, Dec. 1, 1978, abandoned. This application Apr. 30, 1981, Ser. No. 258,920

Int. Cl.^{3} B23B *45/04, 45/14*

U.S. Cl. 408—1 R **9 Claims**

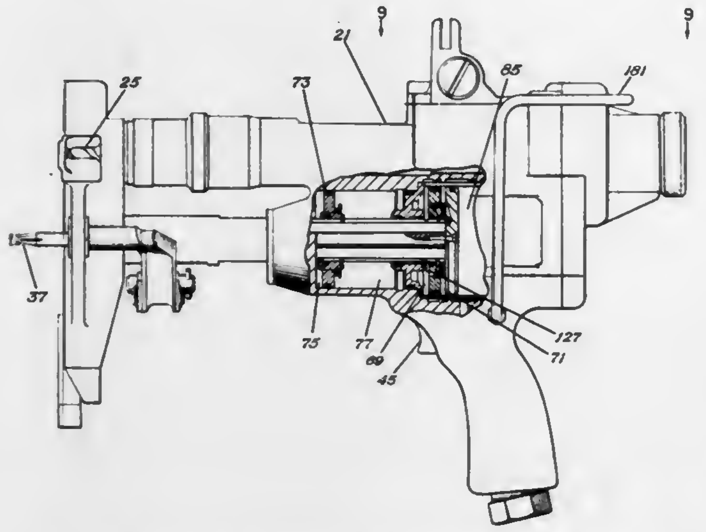
1. A method of operating a drill of the type having two motors for rotating a drill bit, means for feeding said drill bit forward while said two motors are operated for drilling a hole in a workpiece, and means for moving said drill bit rearward for retracting said drill bit from the hole, said method comprising the steps of:

operating said two motors for rotating said drill bit,

while said two motors are being operated to rotate said drill bit, feeding said drill bit forward to drill a hole in the workpiece,

after the hole is drilled, moving said drill bit rearward at a constant and known rate to retract said drill bit from the hole,

while said drill bit is being retracted from the hole, operating only one of said motors to rotate said drill bit, said drill bit being moved rearward and rotated at rates respectively during retraction such that the ratio V_L/V_R is less than 0.22, where V_L is the linear velocity of said drill bit at its axis during retraction and V_R is equal to the product of the radius of said drill bit and its angular velocity during retraction.



4,440,530

MACHINE TOOL WITH TOOL POSITION COMPENSATING APPARATUS AND CONTACT DETECTING APPARATUS

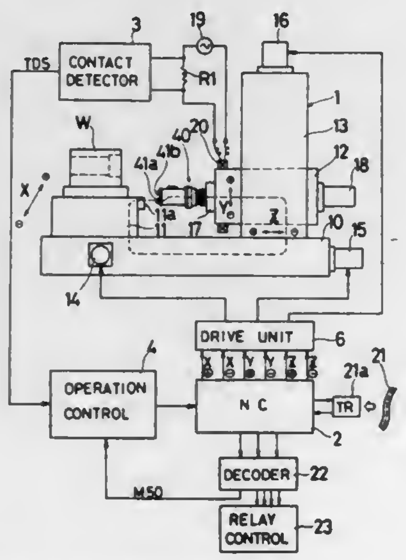
Tetsuro Yamakage, Anjo, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 11, 1981, Ser. No. 301,208

Claims priority, application Japan, Sep. 11, 1980, 55-126789

Int. Cl.³ B23B *39/08, 39/24*

U.S. Cl. 408—3 **8 Claims**



1. A machine tool comprising:

a machine body;

a work table mounted on said machine body for mounting thereon a workpiece to be machined;

a spindle head mounted on said machine body;

a tool spindle rotatably supported in said spindle head;

feed means for effecting relative movements between said work table and said tool spindle;

feed control means connected to said feed means for controlling said feed means in accordance with feed pulses and axis designation signals;

a tool holder receivable in said tool spindle;

a cutting tool supported on said tool holder;

a pair of engaging members axially slidable received in said tool holder, one end of each of said engaging members extending from one end of said tool holder and being engageable with said work table;

a compensating cam member rotatably supported in said tool holder to be rotated in one direction to extend said cutting tool outwardly in the radial direction when one of said engaging members is moved inwardly relative to said tool holder, and to be rotated in the other direction to retract said cutting tool inwardly in the radial direction when the other engaging member is moved inwardly relative to said tool holder;

means for detecting contact between said work table and said engaging members and said compensating cam member and outputting a detection signal; and

control means responsive to said detection signal output from said detecting means for causing said feed control means to effect relative movement between said work table and said tool spindle by an amount which is required to adjust the radial position of said cutting tool.

4,440,531

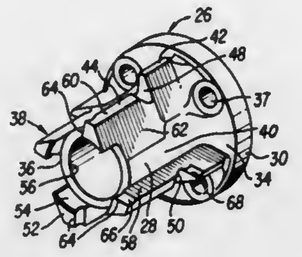
REAMING AND COUNTERBORING CUTTING TOOL

William H. Astle, Rancho Cordova, Calif., assignor to Tri Tool Inc., Rancho Cordova, Calif.

Filed Mar. 23, 1982, Ser. No. 361,115

Int. Cl.³ B23B *41/10;* B23P *15/26*

U.S. Cl. 408—82 **2 Claims**



1. A rotary reaming and counterboring tool for use with an axially extending mandrel comprising:

a central tool body extending axially along the tool rotary axis, the body including a proximal and distal end, said proximal end including a generally radially extending portion transversely larger than said distal end;

a plurality of longitudinally and radially extending lands on said central body between its proximal and distal ends, and straight flutes between the lands;

axial apertures extending through the transversely larger portion of the proximal end between the lands;

said lands each comprising longitudinally and radially stepped, generally trapezoidal cross sectional elements having, with respect to the rotational cutting direction, a flat radial forward face; a peripheral outer edge; and a rear face intersecting the rear end of said outer face and inclined away from said front face in a direction towards the central body;

said lands each having distal end portions projecting axially beyond said central body, and terminating at distal end surfaces;

each land having a radially larger portion located towards the proximal end of the central body, the intersection of the smaller and larger portions of each land constituting a longitudinally and radially stepped area including a radial end surface;

first and second forward facing radial cutting edges located respectively at the distal end and stepped area of each land; and

the distal and stepped end surfaces of each land being cut behind each cutting edge to provide clearance angles for the respective cutting edges;

said central body including a mandrel receiving bore extending completely therethrough along the rotary axis of the central body;

said lands each including, at their axially projecting distal ends, inner surfaces spaced radially outwardly from the diameter of said bore;

said land forward faces each including radius cuts adjacent each cutting edge;

said land rear faces comprising flat surfaces intersecting said central body in the flute area;

an undercut section disposed where each radial end face at said stepped area intersects the smaller land portion;

said radially extending proximal end portion of said central body comprising a mounting flange having a greater transverse dimension, e.g., diameter, than said larger portions of said lands; and

said outer circumferential edge of each land being raked radially inwardly adjacent each cutting edge for clearance.

4,440,532

DRILL BIT FOR DRILLING HOLES IN COMPOSITE FIBER/RESIN LAMINATES

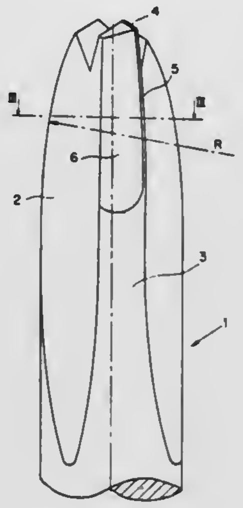
Sebastiano D'Apuzzo, Naples, Italy, assignor to Aeritalia Societa Aerospaziale Italiana p.A., Naples, Italy

Filed Jul. 20, 1981, Ser. No. 284,839

Claims priority, application Italy, Aug. 1, 1980, 49404 A/80

Int. Cl.³ B23D *77/14;* B23B *41/00;* B26D *1/00*

U.S. Cl. 408—229 **4 Claims**



1. A drill bit for drilling a hole in a composite material comprising a plastic laminate incorporating graphite carbon or glass fibers, said bit comprising an odd number of cutting elements, each including a first straight cutting edge and a second curved cutting edge, and having an axis about which said bit is rotated for drilling a hole, each of said cutting elements comprising:

a first quadrilateral face lying on a place forming a low conicity angle with said axis, a first side of said quadrilateral face being oriented in a direction so as to cross said axis and forming said first cutting edge, said first cutting edge terminating at a distance from said axis;

a second face and a third face, each having a side common to said first face and forming a dihedral angle therebetween, the edge of said dihedral angle running from said first straight cutting edge to a point on said axis opposite to an end of the bit with reference to said first straight cutting edge whereby the sides common to said third and second faces of adjacent cutting elements meet at said point on the axis of the bit;

and said second curved cutting edge angularly merging with said first straight cutting edge, said second cutting edge having a curved profile lying in a plane crossing said axis, with a radius three- to four-fold the diameter of the bit, said second cutting edge being defined by the intersection of a solid of revolution having a surface of said radius and a cylinder having an axis parallel to said axis of the bit and tangential to a point at which said first and said second cutting edges meet, whereby a concave cylinder profile is formed between a pair of adjacent cutting elements.

4,440,533

DEBURRING TOOL

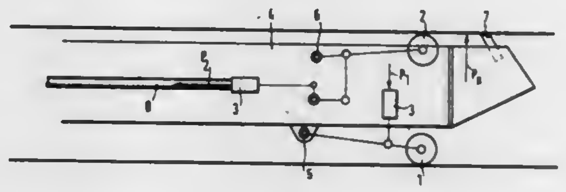
Otto Götting; Walter Hess, and Franz Nicolai, all of Mülheim-Ruhr, Fed. Rep. of Germany, assignors to Mannesmann AG, Duesseldorf, Fed. Rep. of Germany

Filed May 17, 1982, Ser. No. 378,688

Claims priority, application Fed. Rep. of Germany, May 15, 1981, 3119943

Int. Cl.³ B23D *1/10*

U.S. Cl. 409—299 **2 Claims**



1. A tool for deburring the inside wall of welded tubes, including a tool body on which is mounted a cutter, the tool further comprising:

a lower roller linked to the body and being subjected to a constant force by a means for urging the lower roller against the tube wall;

an upper roller;

linkage means, including a rod that is accessible externally to a tube when the tool is inserted in the tube, the linkage means further being connected to the upper roller to urge the upper roller at variable pressure forces against the tube wall; and

means for measuring the pressure differential effective between the upper roller and the lower roller.

4,440,534

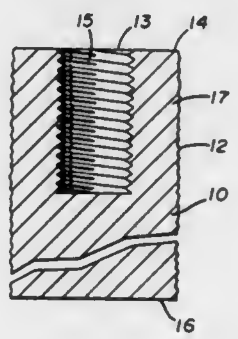
CERAMIC INSERT

Micheal D. LaBate, 115 Hazen Ave., Ellwood City, Pa. 16117

Division of Ser. No. 251,319, Apr. 6, 1981, Pat. No. 4,391,434, which is a continuation-in-part of Ser. No. 123,369, Feb. 21, 1980, Pat. No. 4,262,885. This application Jun. 7, 1982, Ser. No. 385,892

Int. Cl.³ F16B *13/04;* C21B *7/14*

U.S. Cl. 411—82 **1 Claim**



1. A ceramic insert for incorporation in a refractory article, the insert comprising a cylindrical body member of uniform diameter having a cavity axially inwardly of one end thereof and extending no more than half the axial distance of said body member, a thread pattern formed in the area of the body member defining said cavity, said insert formed of a mixture of

81.5% by weight Mulcoa brand refractory mix containing 60% aluminum oxide, 5% pure aluminum oxide (Al_2O_3) and 13.5% raw fire clay together with 18.5% by weight phosphoric acid (H_3O_4P) so that the pure aluminum oxide will react with the phosphoric acid to precipitate as a hard salt bonding the ceramic insert to the refractory article when said refractory article is baked, a rough surface on the exterior of said cylindrical body arranged to engage said refractory article in non-slip relation when said insert is embedded therein prior to said baking.

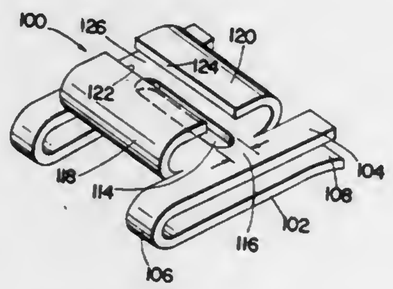
4,440,535
SHEET METAL FASTENER

Donald N. Oehlke, Troy, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 14, 1981, Ser. No. 263,526

Int. Cl.³ F16B *37/04*

U.S. Cl. 411—112 5 Claims



1. A one-piece, self-retaining sheet metal fastener for substantially fixed mounting to a panel having a slotted aperture therethrough and for receiving and retaining a rotationally tightened externally threaded fastener, said sheet metal fastener formed from a strip of sheet metal the thickness of which is less than the pitch distance of the external threads of the externally threaded fastener, said sheet metal fastener comprising generally parallel leg and base portions joined by bight portion for resilient receipt of an edge of the panel therebetween, said base portion being generally flat and defining a first thread engaging elongated slot therethrough, said first slot defined by a pair of substantially parallel substantially straight first edges spaced apart by a distance less than the major diameter of the externally threaded fastener, a pair of arm portions extending upwardly and then inwardly from opposite edges of said base portion, said arm portions terminating at opposed substantially parallel substantially straight second edges spaced apart by a distance less than the major diameter of the external threads of the externally threaded fastener to define a second thread engaging elongated slot therebetween, said second thread engaging slot spaced from and generally aligned with said first thread engaging slot.

4,440,536
METHOD AND DEVICE FOR POSITIONING AND GUIDING PIPE IN A DRILLING DERRICK

Orville C. Scaggs, P.O. Box 430, Lindsey, Okla. 73052

Continuation-in-part of Ser. No. 42,001, May 24, 1979, Pat. No. 4,274,777, and Ser. No. 931,150, Aug. 4, 1978, abandoned. This application Apr. 30, 1981, Ser. No. 258,933

Int. Cl.³ E21B *19/14*

U.S. Cl. 414—22 7 Claims

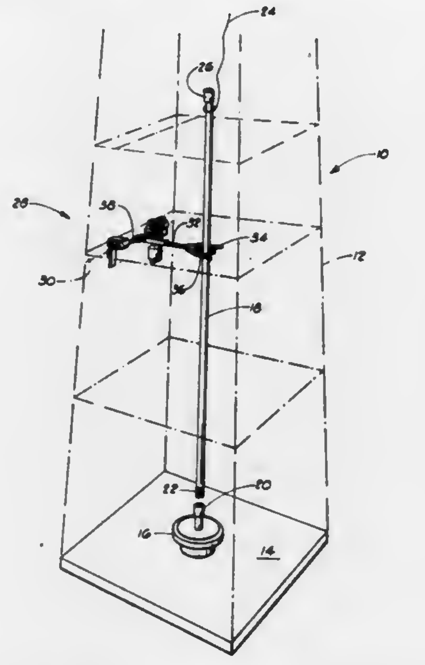
1. A method of coupling a first pipe joint to a second pipe joint in a drilling derrick having a work table, comprising the steps of:

positioning by moving in a vertical arc a mechanical arm in the derrick so that a pipe-receiving slot of the arm can receive the upper end of a first pipe joint at a location linearly above a second pipe joint disposed in the work table section of the derrick;

locking said mechanical arm such that said pipe-receiving slot is immobile in a position linearly above said second pipe joint;

swinging the upper end of a pipe joint so that it is received in the pipe-receiving slot of the arm;

enclosing the slot with a closure member so that the upper end of the pipe positioned in the slot is retained linearly above the second pipe joint;



swinging the lower end of the first pipe joint adjacent to the second pipe joint;

coupling the lower end of the first pipe joint to the upper end of the second pipe joint;

opening the slot by moving the closure member; and

moving the pipe receiving slot of the arm away from the upper end of the first pipe joint.

4,440,537
CONVEYOR SYSTEM

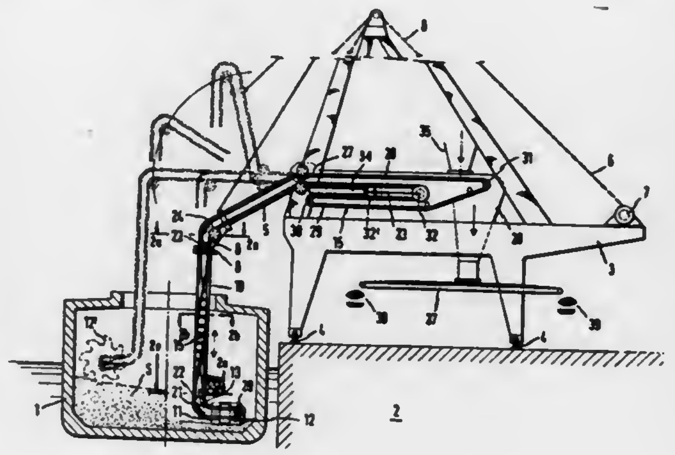
Karl-Günther Blättermann, Hamburg-Rahlstedt, and Jürgen Paelke, Tostedt, both of Fed. Rep. of Germany, assignors to Conrad Scholtz AG, Hamburg, Fed. Rep. of Germany

Filed Jan. 13, 1982, Ser. No. 339,158

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1981, 3101515; Jan. 28, 1981, 3102731

Int. Cl.³ B65G *63/00*

U.S. Cl. 414—139 10 Claims



1. In a conveyor system for loading or unloading bulk material into and from large containers, particularly ships, and including a gantry, boom means having one end thereof mounted on said gantry for pivotal movement of said boom means about a horizontal axis in a vertical plane, a leg means adapted to extend from one end thereof downwardly from generally the other end of said boom means along a vertical axis, means for pivotally connecting the other end of said boom means to the one end of said leg means while allowing said leg means to maintain its vertical orientation regardless of the position of said boom means and for rotating said leg means about the vertical axis relative to said boom means, and conveyor belt means movably carried by said gantry, said boom means and said leg means for conveying the bulk material between the other end of said leg means and said gantry; the improvements in combination therewith, characterized by providing a simplified construction of said conveyor system for providing both loading and unloading operations and eliminating the necessity of plural conveyor belts, of:

said conveyor belt means comprising a single flexible continuous conveyor belt having inner and outer sides and defining conveying and returning segments extending between said gantry and the other end of said leg means, spaced-apart flexible corrugated walls mounted on said conveyor belt and extending generally outwardly from said outer side generally along and inwardly of the outer edges of said conveyor belt, and a plurality of spaced-apart cleat means mounted on said conveyor belt and extending generally outwardly from said outer side transversely between said corrugated walls for defining with said conveyor belt and said corrugated walls bucket-shaped compartments for conveying the bulk material;

separate spaced-apart guide means respectively carried by said connecting means and by said leg means at generally the other end thereof for receiving, guiding and maintaining each of the conveying and returning segments of said conveyor belt at the locations of said guide means in predetermined desired positions and planes relative to each other regardless of the rotational position of said leg means;

said conveyor belt being unrestrained between said guide means for allowing said flexible conveyor belt to twist therebetween with rotation of said leg means relative to said boom means; and

means for selectively driving said conveyor belt in forward and reverse directions for loading and unloading bulk material.

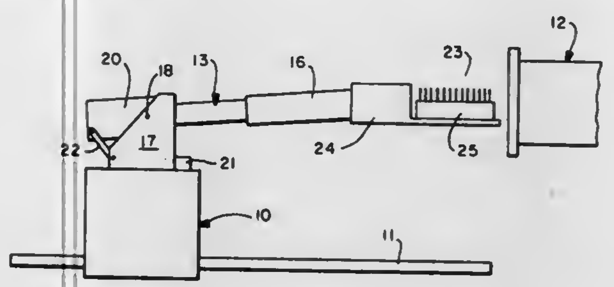
4,440,538
APPARATUS FOR LOADING AND UNLOADING A FURNACE

Gerald M. Bowers, Boonville, Calif., assignor to Atomel Products Corporation, Sunnyvale, Calif.

Filed Dec. 30, 1981, Ser. No. 335,853

Int. Cl.³ H01L *21/324*

U.S. Cl. 414—183 3 Claims



1. An apparatus for loading and unloading a furnace with wafers held in a boat carried by a boat carrier including a support assembly movable horizontally on an axis parallel to the loading axis of said furnace, a ram mounted on said support assembly and movable relative to said support assembly on an axis lying in the same plane as the loading axis of said furnace, portions of said ram adapted to enter said furnace being formed of inert material with respect to conditions in said furnace, said ram being tiltable in a vertical plane from a position with its long axis horizontal to a position with the end of said ram most distant from said support assembly at a higher elevation than the end of said ram nearer said support assembly, engaging means on the end of said ram formed to engage said boat carrier when said ram is in a tilted position and to disengage from said boat carrier when said ram is in a horizontal position, wherein the improvement in said apparatus comprises:

said engaging means being formed with an end having upwardly facing and downwardly facing surfaces formed to engage opposed surfaces of said boat carrier, said upwardly facing and downwardly facing surfaces being spaced apart and engaging said opposed surfaces on said boat carrier at substantially point contacts relative to said axis of loading of said furnace;

said end of said engaging means being further formed and dimensioned for removal from engagement with said boat carrier without contacting said boat carrier except at said point contacts; and

said ram being formed and dimensioned for insertion into and for removal of said ram and boat carrier from said furnace and for insertion into and removal of said end from said boat carrier without contact of said ram with said furnace.

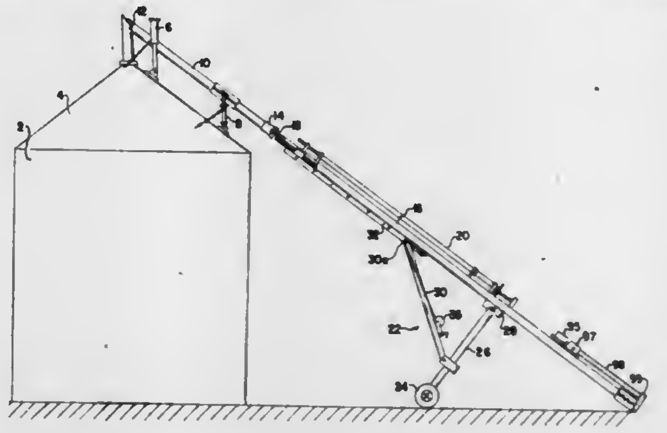
4,440,539
METHOD AND APPARATUS FOR CONVEYING PARTICULATE MATTER

Thomas J. Sullivan, P.O. Box 5119, 220 Nesbitt St., Poland, Ohio 44514

Filed Feb. 1, 1982, Ser. No. 344,367

Int. Cl.³ B65G *65/32*

U.S. Cl. 414—300 10 Claims



1. Apparatus for conveying particulate material from a lower elevation to a location of higher elevation, said location being situated substantially centrally with respect to the roof of a container of substantial dimension, said apparatus comprising, in combination,

a first enclosed-auger section having a receiving end and a delivery end,

means for mounting said first section upon said roof,

means for aligning the discharge end of a second enclosed-auger section with said receiving end of said first section,

a portable second enclosed-auger section of substantial length, said second section having a feed end and a delivery end,

means for releasably securing said delivery end of said second enclosed-auger section to said first section, and

drive means for the auger in said second section, the second auger section having a drive-transfer means for driving the auger in said first section.

4,440,540
APPARATUS FOR LIFTING A WHEELCHAIR ONTO THE ROOF OF AN AUTOMOBILE

David Gottlieb, 15 Devorah Hanevia St., and Eliezer Zer, 6 Amos St., both of Bnei Brak, Israel

Continuation-in-part of Ser. No. 880,572, Feb. 23, 1978, Pat. No. 4,236,860. This application Dec. 1, 1980, Ser. No. 211,913

Int. Cl.^{3} B60R *9/00*

U.S. Cl. 414—462 **2 Claims**

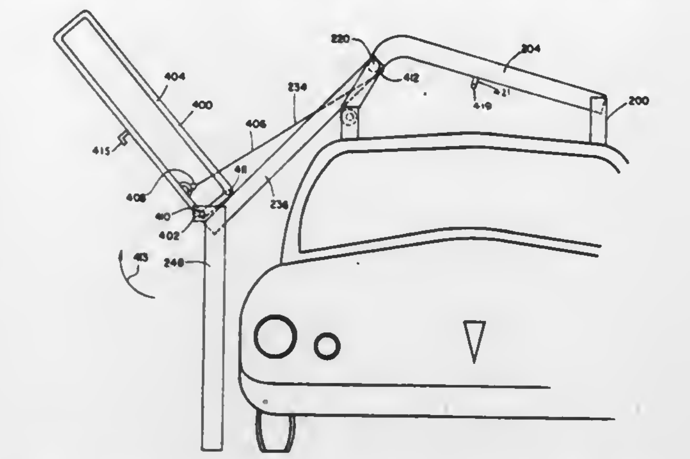
1. A device for selectively positioning a mobility aid appliance for an invalid onto an automobile comprising:

(a) a fixed support apparatus mountable onto the roof of an automobile, and defining a fixed track;

(b) an axle arranged for rotational rolling engagement with said track and movement therealong;

(c) a mobility aid appliance support shaft means, said shaft means comprising first and second shaft elements which are extensible with respect to each other, said shaft means further defining first and second ends, said first end being rotatably mounted onto said axle, and said second end being associated with a mobility aid appliance for support thereof, said second shaft element defining said second end; and

(d) a cover rotatably mouned onto said second shaft element.



CHEMICAL

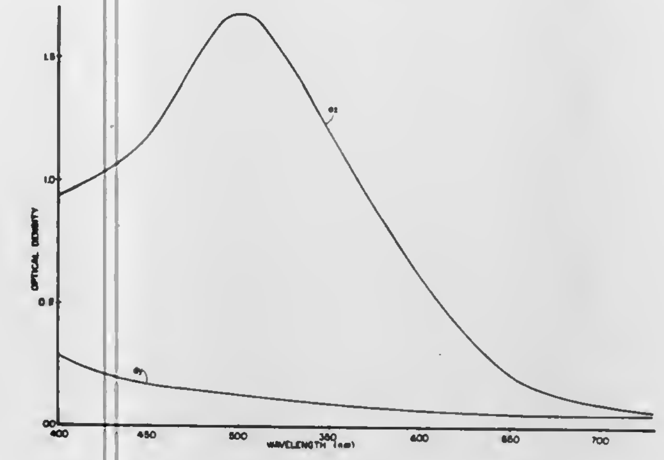
4,440,541
POLARIZER: DICHROIC DYE IN ORIENTED POLYACRYLIC ACID/CHITOSAN COMPLEX SHEET

Carl M. Berke, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed May 20, 1982, Ser. No. 380,054

Int. Cl.^{3} D06P *7/00*

U.S. Cl. 8—489 **6 Claims**



1. A dichroic light polarizer comprising a molecularly oriented sheet of a polyacrylic acid/chitosan polyelectrolyte complex dyed with a dichroic dye.

4,440,542
CONTROLLED DELIVERY OF IMMISCIBLE MATERIALS INTO AN AQUEOUS SYSTEM

Lary L. Foley, San Francisco, Calif., assignor to The Clorox Company, Oakland, Calif.

Filed Sep. 18, 1981, Ser. No. 303,472

Int. Cl.^{3} A61K *7/46*

U.S. Cl. 8—523 **7 Claims**

1. An article for controllably releasing water immiscible components into an aqueous system consisting essentially of a silica-silicate water soluble foam and the water immiscible components adsorbed upon said foam.

4,440,543
METHOD FOR STABILIZING A SLURRY OF FINELY DIVIDED PARTICULATE SOLIDS IN A LIQUID

J. Paul Echtler, Pittsburgh, Pa., assignor to Conoco Inc., Wilmington, Del.

Continuation of Ser. No. 152,073, May 21, 1980, abandoned. This application Aug. 10, 1981, Ser. No. 291,596

Int. Cl.^{3} C10L *1/32*

U.S. Cl. 44—51 **2 Claims**

1. A method of providing stability of particle distribution and redispersibility in the transporting and combusting of coal in combustible liquid comprising the steps as follows:

storing a readily pumpable, readily redispersible slurry of solids mixture in a combustible liquid which is neither a pseudo-plastic nor a thixotropic fluid, said liquid not being highly viscose such as methanol said solids mixture comprising from about 90 to about 99 weight percent coal particles and from about 1 to about 10 weight percent finely divided wood particles,

said wood particles being of a size less than the largest coal particles and each having a particle size no larger than about 50 Tyler mesh (297 microns),

pumping said readily pumpable and redispersible solids mixture in said combustible liquid as a slurry with substantially no fibrous matrix being formed and said wood particles remaining discrete as a stable dispersible slurry,

injecting said stable dispersible slurry through a nozzle means for fine dispersion in a combustion zone, combusting said slurry.

4,440,544
PROCESS FOR THE CONVERSION OF GROUND HYDROUS LIGNITE INTO A PUMPABLE DEHYDRATED SUSPENSION OF FINE-GROUND LIGNITE AND OIL

Friedrich Honolke; Adrian Brandl; Eduard Schibilla, and Gerhard Hohne, all of Dortmund, Fed. Rep. of Germany, assignors to Uhde GmbH, Dortmund, Fed. Rep. of Germany

Filed May 21, 1982, Ser. No. 380,998

Claims priority, application Fed. Rep. of Germany, May 23, 1981, 3120602

Int. Cl.^{3} C10L *1/32*

U.S. Cl. 44—51 **13 Claims**

1. A method for producing a pumpable suspension in oil of dehydrated, finely-ground lignite, said method comprising the steps of:

(a) mixing hydrous, ground lignite with an oil which has a vapor pressure less than ½ bar at a temperature in the range of 190° to 240° C. and a diluent for the oil, said diluent being inert with respect to and miscible with the oil being effective to produce a solution with the oil which has a viscosity lower than that of the oil, being immiscible with water, and having a vapor pressure greater than 1 bar at a temperature in the range of 190° to 240° C.;

(b) controlling the proportions of the lignite, of the oil and of the diluent so that the mixture, when the lignite is ground so that substantially all the particles thereof are finer than 2 mm, is a pumpable suspension;

(c) grinding the lignite in the mixture so that substantially all the particles thereof are finer than 2 mm;

(d) heating the suspension to a temperature in the range of 190° to 240° C.;

(e) subjecting the suspension to a pressure in the range of 30 to 80 bar;

(f) partially dehydrating the lignite therein by maintaining the suspension at a temperature within the range of 190° to 240° C. and at a pressure in the range of 30 to 80 bar for at least 5 minutes;

(g) after the partial dehydration step, separating the suspension into a slurry of partially dehydrated lignite and oil and a liquid composed principally of water, diluent and oil;

(h) separating water from the liquid of step (g) and mixing the oil and diluent which remain with the slurry of partially dehydrated lignite and oil from step (g) to produce a suspension of partially dehydrated lignite;

(i) reducing the pressure of the suspension of partially dehydrated lignite to one in the range of 1 to 18 bar while maintaining the temperature thereof at one in the range of 190° to 240° C.; and

(j) separating water and the diluent from the suspension of step (i), leaving a dehydrated lignite suspension in oil.

4,440,545
GASOHOL HAVING CORROSION INHIBITING PROPERTIES

Charles F. Weidig, Grosse Pointe, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Nov. 2, 1981, Ser. No. 317,574

Int. Cl.^{3} C10L *1/18*

U.S. Cl. 44—56 **5 Claims**

1. A liquid fuel for use in internal combustion engines comprising a major amount of hydrocarbons boiling in the gasoline boiling range, a minor amount of ethanol, and a corrosion inhibiting amount of tetrapropenylsuccinic acid or anhydride.

4,440,546

PROCESS FOR GASIFICATION OF CARBONACEOUS MATERIAL

Michael S. Lancet, Pittsburgh, Pa., and Everett Gorin, San Rafael, Calif., assignors to Conoco Inc., Wilmington, Del.
Continuation of Ser. No. 305,588, Sep. 25, 1981, abandoned. This application Mar. 14, 1983, Ser. No. 474,911
Int. Cl.^{3} C10J *3/14, 3/16*
U.S. Cl. 48—202 **5 Claims**

1. A process for producing a tar free gaseous product comprising hydrogen and carbon monoxide by catalyzed gasification of bituminous coal consisting of the steps as follows:

(a) providing a mixture consisting essentially of finely divided bituminuous coal particles of a size of 65 mesh or smaller than 65 mesh and finely divided calcium oxide particles of a size smaller than 100 mesh, said calcium oxide and said bituminuous coal being in intimate contact and in a weight ratio of about 0.5 to 1.0, said bituminous coal having the property of becoming liquid with sufficient heating, and said bituminous coal yielding tar when sufficiently heated,
(b) briquetting said mixture to form a briquetted mixture,
(c) feeding said briquetted mixture into the top of a fixed bed gasifier,
(d) catalytically gasifying said briquetted mixture with steam in said gasifier to form gaseous mixture comprising tar, carbon dioxide, hydrogen and carbon monoxide, said hydrogen and said carbon monoxide each comprising a substantial portion of said gaseous mixture,
said gasifying comprising
(i) heating said briquetted mixture of finely divided coal and finely divided calcium oxide in said fixed bed gasifier to form a catalyzed coke, said catalyzed coke reacting with said added steam to form said gaseous mixture and,
(ii) adding steam to said gasifier,
(e) destroying said tar in a tar destruction zone at the top of said gasifier to form a tar free gaseous product, by operating said tar destruction zone above 1200° F., the heat for tar destruction being provided by exothermic reaction of said calcium oxide and said carbon dioxide, said tar free gaseous product comprising hydrogen and carbon monoxide each in substantial proportion,
whereby said calcium oxide catalyzes said gasification to form said tar free gaseous product, the rate of said catalyzed gasification being substantially increased from the rate of uncatalyzed gasification of said bituminuous coal, said tar being eliminated by sufficient heat of reaction of said calcium oxide and said carbon dioxide to maintain said tar destruction zone above 1200° F. to cause destruction of said tar during gasification.

4,440,547

ALUMINA COATED SILICON NITRIDE CUTTING TOOLS

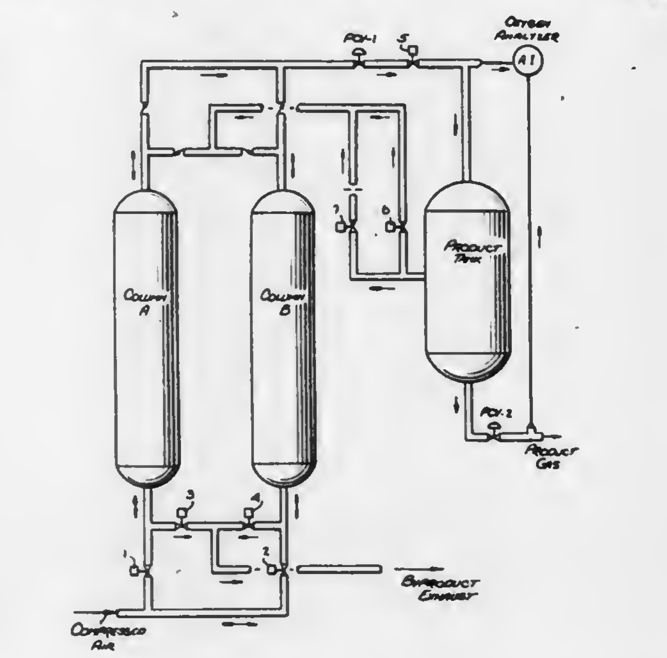
Vinod K. Sarin, Lexington, and Sergej-Tomislav Buljan, Acton, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.
Filed May 20, 1982, Ser. No. 380,363
Int. Cl.^{3} B24D *11/00*
U.S. Cl. 51—295 **11 Claims**

1. A coated ceramic cutting tool comprising a densified silicon nitride substrate body having at least one adherent coating layer; said substrate body consisting essentially of a first phase of silicon nitride and a refractory second phase comprising silicon nitride and an effective amount of a densification aid selected from the group consisting of silicon dioxide, aluminum oxide, magnesium oxide, yttrium oxide, hafnium oxide, zirconium oxide, the lanthanide rare earth oxides, and mixtures thereof; said adherent coating layer consisting essentially of aluminum oxide.

4,440,548

PRESSURE SWING ABSORPTION SYSTEM

Joel D. Hill, Tulsa, Okla., assignor to Calgon Carbon Corporation, Pittsburgh, Pa.
Filed Apr. 19, 1982, Ser. No. 369,694
Int. Cl.^{3} B01D *53/04*
U.S. Cl. 55—26 **15 Claims**



1. A molecular sieve, pressure swing adsorption process employing at least two columns for generating an enriched gas which comprises the sequential steps of:

(a) passing a pressurized gas mixture at an adsorption pressure sufficient to support a pressure swing cocurrently through a first adsorption column of molecular sieves thereby generating enriched gas, said gas flowing to a product tank;
(b) prior to breakthrough of said first column, partially pressurizing a second adsorption column of molecular sieves by passing a small fraction of enriched gas from said product tank countercurrently to said second column, thereafter stopping said gas mixture flow to said first column;
(c) partially venting said first adsorption column countercurrently, flowing the vented gas cocurrently to said second adsorption column (bottoms equalization), thereafter isolating said first column;
(d) substantially simultaneously with step (c), passing said gas mixture cocurrently to said partly pressurized second column, thereby fully pressurizing said second column to the adsorption pressure;
(e) countercurrently fully venting said isolated first column to atmospheric pressure while passing the gas mixture cocurrently through said pressurized second column thereby generating enriched gas, said enriched gas flowing to said product tank;
(f) regenerating said first column by countercurrently purging said first column with enriched gas from the product tank;
(g) repeating the sequence of steps (a)–(f) treating said second column as said first column and vice versa.

11. An apparatus for the fractionation of a gas mixture, said apparatus comprising a pressure swing adsorption unit having:

(a) at least two pressure resistant housings for molecular sieve adsorbent, each housing having an inlet and an outlet;
(b) a pressure resistant product gas housing having one inlet and at least two outlets;
(c) a main gas mixture inlet;
(d) a purge gas/waste gas outlet;
(e) a first connecting means between said main gas mixture inlet and each of said molecular sieve housings inlets;
(f) a second connecting means between said product gas housing inlet and each of said molecular sieve housings outlets;

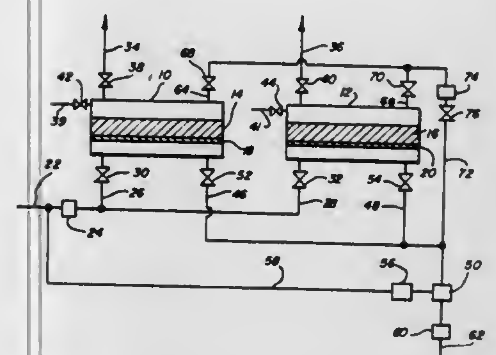
(g) a third connecting means between said purge/waste gas outlet and each of said molecular sieve housings inlets;
(h) a fourth connecting means between one of said product gas housing outlets and each of said molecular sieve housings outlets;

there being a valve in each connecting means, said valves being arranged such that said molecular sieve housings are connected in a parallel gas flow arrangement, said valves being connected to a valve control means whereby gas flow in said unit is controlled by the opened or closed position of said valves such that said apparatus is capable of a continuous cycle between said two pressure resistant molecular sieve housings comprising the steps of (1) adsorption; (2) countercurrent venting between molecular sieve housing inlets; (3) product gas purge from said product gas housing; (4) partial repressurization with product gas from said product gas housing; (5) partial cocurrent repressurization using gas vented countercurrently from one molecular sieve housing; (6) final repressurization with feed gas and (7) adsorption.

4,440,549

METHOD FOR REDUCING PEAK VAPOR EMISSIONS IN SOLVENT RECOVERY SYSTEMS

Maurice V. Girard, Chateauneuf de Grasse, France; Michael J. Worrall, Hinsdale, and Bernard R. Seguy, Lisle, both of Ill., assignors to AMCEC Corporation, Oak Brook, Ill.
Filed Apr. 13, 1982, Ser. No. 367,950
Int. Cl.^{3} B01D *53/04*
U.S. Cl. 55—59 **5 Claims**



1. The method of reducing peaks in water vapor and solvent emission levels during cooling and drying of an adsorber container following the termination of steam scrubbing of the adsorber container in a system for recovering solvents from solvent laden gas comprising the steps of:

terminating the flow of steam through said adsorber container to end said steam scrubbing operation;
initiating a flow of solvent laden gas through said adsorber container to begin said cooling and drying operation;
recirculating the flow of solvent laden gas from said adsorber container back to an input of said solvent recovery system;
maintaining said recirculating flow until the emission level in the gas leaving said adsorber container reaches a predetermined level;
terminating said recirculating flow and discharging the flow of gas from said adsorber container to the atmosphere.

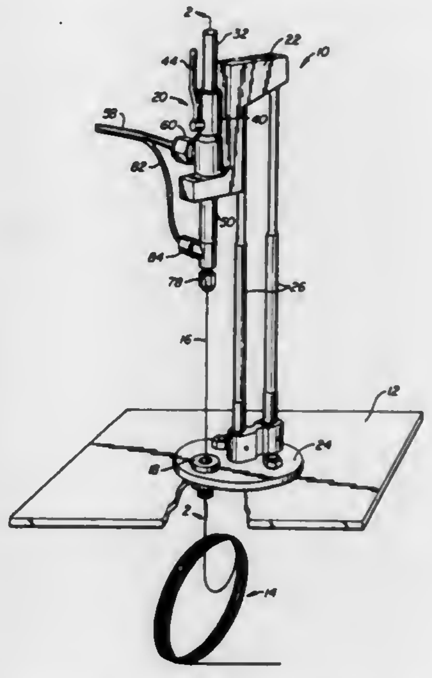
4,440,550

ON-COLUMN INJECTOR

Rand G. Jenkins, Roseville, and Norman W. Wohlers, Davis, both of Calif., assignors to J & W Scientific, Inc., Rancho Cordova, Calif.
Filed Jun. 28, 1983, Ser. No. 508,742
Int. Cl.^{3} B01D *15/08*
U.S. Cl. 55—67 **10 Claims**

7. A method for introducing a sample into a capillary column located within the oven of a gas chromatograph, said method comprising:

maintaining an initial portion of the column outside of the oven;
continuously flowing a carrier gas through the column;

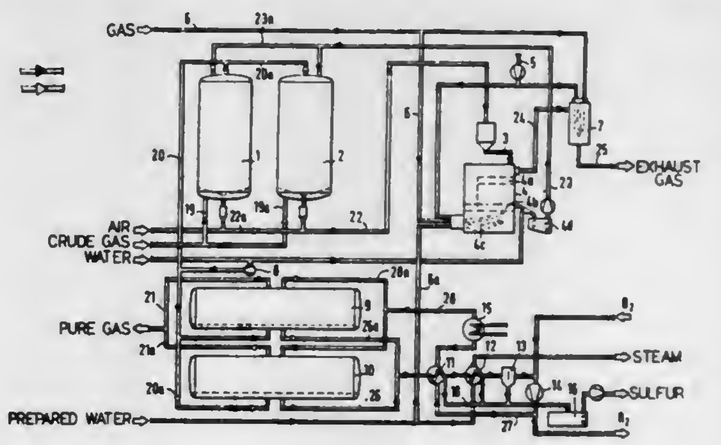


injecting the sample into the initial portion of the column; and
abruptly inserting the intitial portion of the column into the oven.

4,440,551

METHOD FOR THE ADSORPTIVE REMOVAL OF HYDROGEN SULFIDE FROM GAS MIXTURES

Klaus-Dirk Henning; Jürgen Klein, both of Essen, and Burkhard Harder, Hattingen, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany
Filed Aug. 3, 1981, Ser. No. 289,515
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1980, 3029187
Int. Cl.^{3} B01D *53/04*
U.S. Cl. 55—73 **4 Claims**

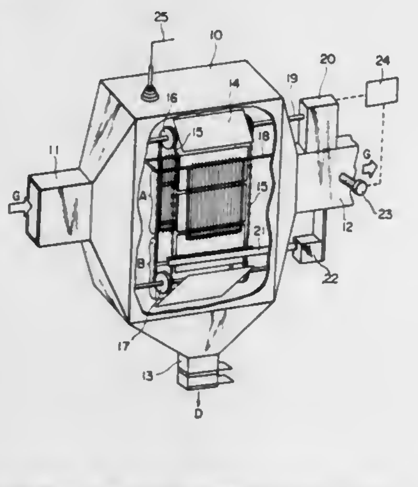


1. Method for the adsorptive removal of hydrogen sulfide from gas mixtures in carbon containing absorption agents by adsorption at pressures between 1–80 bar and regeneration, by pressure lowering and/or temperature change while simultaneously rinsing with a nonadsorbable or only negligibly adsorbable component of the gas mixture in an adsorption reactor, characterized in that a molecular carbon containing screen is used, made of fossil and/or critical bituminous fuel with at pore diameter smaller than 10 nm measured by methanol adsorption pore volume of 15–25 cm^3/100 g and micropore volume in the pore diameter range of 0.35–10 nm is smaller than 10 cm^3/100 g, wherein an inner surface of said molecular

screen is relieved from surface groups which are capable of reacting with the H_2S by means of an aftertreatment with a reducing gas.

4,440,552
ELECTROSTATIC PARTICLE PRECIPITATOR

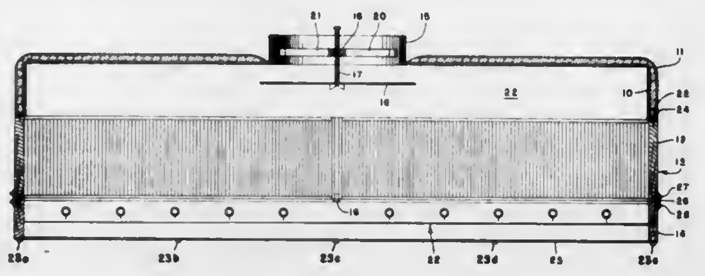
Tsuneo Uchiya, Abiko; Hiroaki Yabuta, Toride, and Seizi Hikizi, Iruma, all of Japan, assignors to Hitachi Plant Engineering & Construction Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 240,609, Mar. 5, 1981, abandoned. This application Aug. 6, 1982, Ser. No. 405,872
Claims priority, application Japan, Mar. 6, 1980, 55-27368; Mar. 6, 1980, 55-27369; Mar. 6, 1980, 55-28272; Mar. 6, 1980, 55-27367; Aug. 6, 1980, 55-107118
Int. Cl.³ B03B *3/10, 3/36, 3/74*
U.S. Cl. 55—114 **9 Claims**



1. An electrostatic particle precipitator for removing dust particles from a flue gas moving along a predetermined path, at least a portion of said dust particles having an electric resistance of at least $10^{13}\Omega$cm, said precipitator comprising:
(a) a casing having:
  (1) an inlet for receiving a flue gas,
  (2) an outlet for exhausting a flue gas from the casing after passing therethrough,
  (3) a first region disposed in direct alignment of gas flow between said inlet and outlet, and
  (4) a second region disposed out of direct alignment with the gas flow between said inlet and outlet;
(b) a plurality of rows of dust collecting plate electrodes disposed within said casing for movement alternately and repeatedly through said first and second regions, said plates being oriented with their surfaces facing perpendicular to the flow of gas between said inlet and outlet;
(c) a plurality of discharge electrodes disposed between said rows of collecting electrodes;
(d) means for applying a voltage between said discharge electrodes and collecting electrodes in said first region to cause the electrostatic precipitation of said dust onto said collecting electrodes;
(e) dust removing mean disposed in said second region for removing accumulated dust from said collecting electrodes; and
(f) control means for controlling the speed of movement of the collecting electrodes through said regions relative to the rate of removal of dust effected by the dust removing means for maintaining the accumulated layer thickness of dust on said collecting electrodes at a level at which the electric intensity gradient in the accumulated layer is below that at which a reverse ionization zone is generated inhibiting further accumulation of said dust with an electric resistance of at least $10^{13}\Omega$cm on said collecting plates.

4,440,553
AIR-FILTRATION MODULE WITH IONIZATION FOR ELIMINATION OF STATIC ELECTRICITY

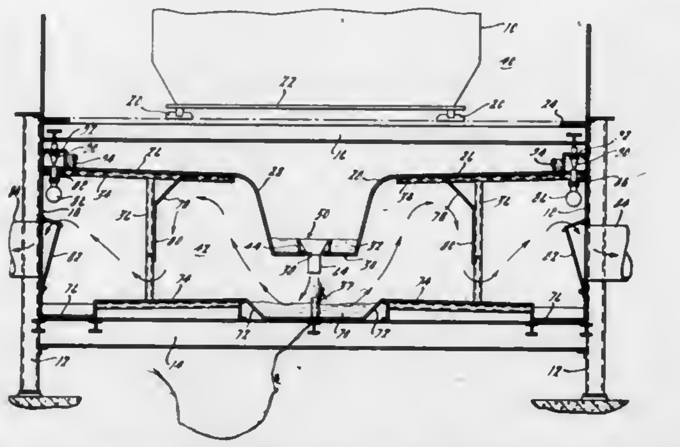
Martin C. Helmus, 2525 Knollview, SW., Wyoming, Mich. 49509, and Wallace L. Baker, 4505 Hersman, SE., Grand Rapids, Mich. 49506
Filed Jun. 5, 1982, Ser. No. 365,556
Int. Cl.³ B03B *3/01, 3/70*
U.S. Cl. 55—126 **1 Claim**



1. An air-filtration module having a housing provided with air-inlet means and an open outlet end; a filter element secured to said housing in said open end, said housing defining a space between said air-inlet means and said filter element; and grille means fixed with respect to said housing and defining an outlet for air emerging from said filter element, said grille means and filter element being spaced from each other in said housing to define a space free of filtration material, wherein the improvement comprises:
an electrostatic ionization generator fixed with respect to said housing and interposed between said filter element and said grille means, said filter element and said grille means being formed of grounding material components so as to provide ground potential on opposite sides of said ionization generator.

4,440,554
GAS SCRUBBING DEVICE

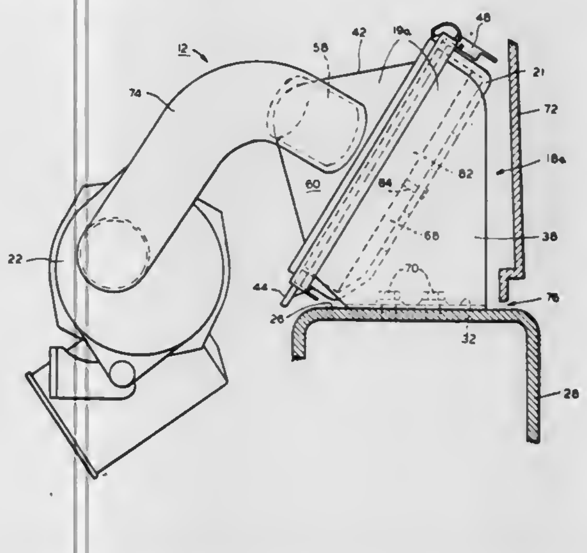
Geoffrey A. Perry, Livonia, Mich., assignor to Gallagher-Kaiser Corp., Detroit, Mich.
Filed Sep. 30, 1982, Ser. No. 430,327
Int. Cl.³ B01D *47/00*
U.S. Cl. 55—241 **16 Claims**



1. A gas scrubbing device comprising a first chamber for receiving a stream of gas containing entrained particulate matter, a second chamber separated from said first chamber by an angularly inclined flood sheet formed with a trough having a base along the lowermost portion thereof, a plurality of frames disposed in said trough defining communicating openings between said first and second chambers, a venturi removably disposed on each frame comprising a pair of downwardly and inwardly inclined side walls and end walls formed at their lower edges with an inwardly extending opposed lip defining therebetween a venturi throat, each said venturi removably supported by each said frame in a substantially horizontal position and with the upper edge thereof spaced upwardly from the base of said trough, means for providing a pressure differential between said first and second chambers to induce flow of gas from said first chamber through said venturi into said second chamber, and means for discharging a continuous sheet of liquid over said flood sheet for flow toward and into said trough and overflow as a continuous curtainous stream into each said venturi for atomization along said lip of said throat by the gas stream passing therethrough.

4,440,555
ENGINE COMPARTMENT AND AIR CLEANER

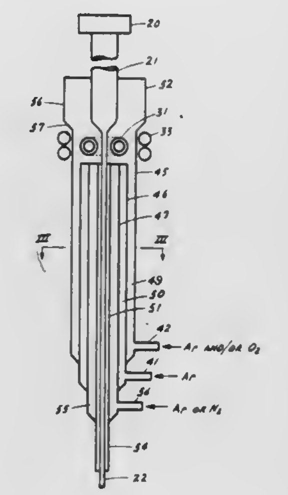
Willard L. Chichester, Battle Creek, Mich., assignor to Clark Equipment Company, Buchanan, Mich.
Filed May 20, 1982, Ser. No. 380,201
Int. Cl.³ B01D *46/10;* **F02B** *77/00*
U.S. Cl. 55—385 B **11 Claims**



1. An engine compartment for a vehicle in combination with an air cleaner housing, said engine compartment comprising two side frame members, one of said side frame members having a horizontally disposed upper surface, said air cleaner housing having an inlet portion and an outlet portion, said inlet portion comprising a bottom wall secured to said upper surface and two end walls and including an inlet opening for admitting air into said air cleaner housing, said outlet portion comprising an air outlet opening for directing air from said housing to the engine carburetor, a flat air filter mounted in said housing at an acute angle with said bottom wall, and said filter being sealed around its periphery to said outlet portion.

4,440,556
OPTICAL FIBER DRAWING USING PLASMA TORCH

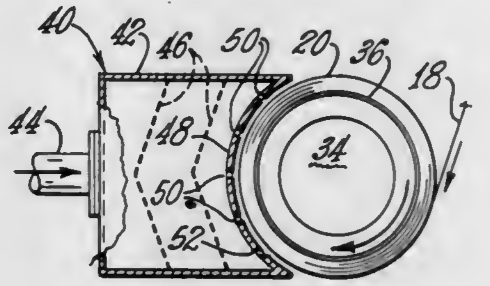
Shin M. Oh; Dilip K. Nath, both of Roanoke, and Pablo C. Pureza, Burke, all of Va., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Jun. 23, 1982, Ser. No. 391,273
Int. Cl.³ C03B *37/025*
U.S. Cl. 65—2 **27 Claims**



19. A method of heating a portion of a preform from which an optical fiber is to be drawn in a fiber-drawing operation, comprising the steps of
maintaining an atmosphere of plasma-forming gaseous medium in a heating zone surrounding said portion of the preform; and
exciting in the atmosphere present in the heating zone a ring-shaped plasma circumferentially surrounding said portion of the preform.

4,440,557
METHOD AND APPARATUS FOR FORMING AND COLLECTING CONTINUOUS GLASS FILAMENTS

Michael W. Morrison, Newark; Clarence E. Fracker, Jr., Frazeysburg, and Jerome F. Marra, Heath, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Filed Dec. 20, 1982, Ser. No. 450,941
Int. Cl.³ C03B *37/12*
U.S. Cl. 65—3.1 **24 Claims**



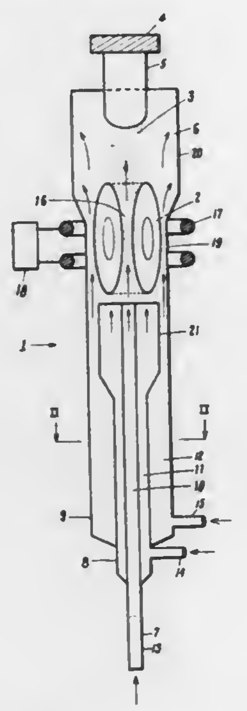
9. The method of forming and collecting glass filaments comprising:
supplying streams of molten glass to be drawn into filaments;
rotating a member to draw said streams into filaments and to wind said filaments thereabout in layers;
applying a coating to said filaments advancing toward said member;
directing a planar flow of gas into severly oblique contact with the outer layer of said strand along the length thereof to penetrate and at least partially remove the boundary layer of air associated with the rotating layer; and
directing a body of gas into contact with the outer strand layer along the length thereof to at least partially dry the coating on said filaments.

4,440,558
FABRICATION OF OPTICAL PREFORMS BY AXIAL CHEMICAL VAPOR DEPOSITION

Dilip K. Nath, Roanoke; Pablo C. Pureza, Burke, and Shin M. Oh, Roanoke, all of Va., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Jun. 14, 1982, Ser. No. 387,983
Int. Cl.³ C03B *19/06, 37/025*
U.S. Cl. 65—3.12 **24 Claims**

1. A method of producing an optical preform, comprising the steps of forming a flow of a heated gaseous medium through and beyond a heating zone, including inducing a ring-shaped plasma in the heating zone for heating the gaseous medium to a predetermined temperature;
introducing only into the center of the ring-shaped plasma at least one reactant capable of undergoing a chemical conversion into an optical material soot at the predetermined temperature for the soot to be formed in, and entrained in

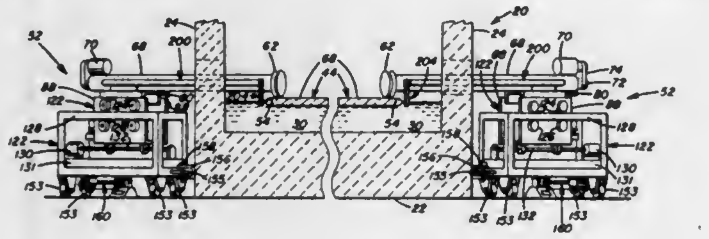
the flow of the gaseous medium for travel beyond, the heating zone; and



disposing a bait in the flow of the gaseous medium beyond the heating zone for depositing the entrained optical material soot on the bait and thus growing the optical preform.

4,440,559
APPARATUS FOR SENSING A GLASS RIBBON EDGE AND METHOD OF USE

Hugh E. Shaw, Jr., Crystal City, Mo., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Jun. 30, 1982, Ser. No. 393,912
Int. Cl.³ C03B *18/06*
U.S. Cl. 65—99.5 **13 Claims**



1. A method of measuring sideward displacement of a glass ribbon supported on a molten metal bath contained in a chamber having sidewalls and advancing along a ribbon movement path, comprising:

advancing edge detecting means in a first direction away from the adjacent chamber sidewall into physical contact with a ribbon edge wherein the measuring path is transverse to the ribbon movement path;

moving the edge detecting means in a second direction along the movement path away from the ribbon edge toward the chamber sidewall into a first home position;

at a selected interval repeating said advancing step;

practicing said moving step to move the edge detecting means away from the ribbon edge into a second home position;

determining the distance and direction along the measuring path between the first and second home positions to measure sideward displacement of the advancing ribbon.

8. An apparatus for measuring substrate displacement comprising:

means for detecting substrate edge, said detecting means including:

block means having at least one orifice;

means for moving a fluid under a predetermined pressure out of the at least one orifice;

means mounting said moving a fluid means for controlling the fluid flow out of said orifice when said block means contacts the substrate edge wherein the fluid moves out of said orifice at a first pressure and wherein said controlling means includes a member pivotally mounted on said block means for movement toward and away from said orifice; and

means for measuring variations in pressure to determine when the ribbon edge is contacted;

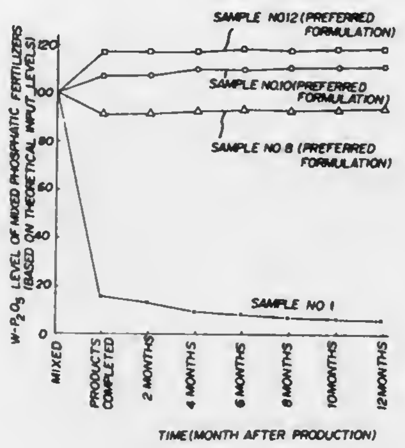
means for moving said detecting means to advance said detecting means in a first direction along a measuring path into contact with the substrate edge, and to retract said detecting means in a second direction along the path a predetermined distance into a home position, said means for moving said detecting means including a pipe having said block means of said detecting means mounted at one end and connectable at the other end to a fluid supply;

means for activating said means for moving said detecting means at selected intervals; and

means responsive to the movement of said detecting means for measuring differences in the distance and direction between successive home positions of said detecting means to measure substrate displacement.

4,440,560
MIXED PHOSPHATIC FERTILIZER AND PROCESS FOR PRODUCING THE SAME

Teruo Nakamura; Michio Kiyoto; Kazuo Akashi, and Isao Hasegawa, all of Tokyo, Japan, assignors to Japan Metals and Chemicals Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 185,741, Sep. 10, 1980, abandoned. This application Dec. 22, 1981, Ser. No. 333,441
Claims priority, application Japan, Dec. 13, 1979, 54-161841
Int. Cl.³ C05B *21/00*
U.S. Cl. 71—24 **1 Claim**



1. A mixed phosphatic fertilizer obtained by adding and mixing from about 17.65 to about 100 parts by weight of humic acid with 100 parts by weight of a mixture of about 80 to 98% by weight of fused phosphate as a main component and about 20 to 2% by weight of at least one compound selected from a specific group consisting of calcium superphosphate, calcium triple-superphosphate and phosphoric acid.

4,440,561
DEFOLIANT COMPOSITION AND METHOD

Jacques Meyer, Zofingen, and Walter E. Schären, Vordemwald, both of Switzerland, assignors to Siegfried Aktiengesellschaft, Zofingen, Switzerland
Filed Feb. 3, 1982, Ser. No. 345,490
Claims priority, application Switzerland, Feb. 19, 1981, 1101/81
Int. Cl.³ A01N *37/40*
U.S. Cl. 71—70 **9 Claims**

1. A composition suitable for controlled pre-harvest defoliation and/or desiccation of crop plants comprising, in a synergistic combination, the constituents:

(1) methyl-5-(2,4-dichlorophenoxy)-2-nitrobenzoate;
(2) 3-(3,4-dichlorophenyl)-1-methoxy-1-methyl urea; and
(3) a mineral oil;

said composition containing said constituents (1) and (2) in a weight ratio of from 1:6.25 to 6.25:1 and said constituent (3) being contained in said composition in an amount of from about 0.8 to about 3.2 parts, by weight, per each part, by weight, of the total amount of said constituents (1) and (2).

4,440,562
HERBICIDAL EMULSIONS

Erhard J. Prill, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.
Filed Jul. 20, 1981, Ser. No. 285,166
Int. Cl.³ A01N *25/08, 25/22*
U.S. Cl. 71—86 **8 Claims**

1. A herbicidal emulsion composition consisting essentially of the following components:

A. from about 10.0 to about 25.0 percent by weight of the isopropylamine salt of N-phosphonomethylglycine;

B. from about 2.0 to about 12.5 percent by weight of a surfactant for Component A;

C. from about 20.0 to about 35.0 percent by weight of 2-chloro-2′,6′-diethyl-N-(methoxymethyl) acetanilide;

D. From about 1.25 to about 1.75 percent by weight of an organophilic clay;

E. from about 4.5 to about 9.0 percent by weight of an emulsifier selected from the group consisting of alkyl aryl sulfonates, phosphate esters of nonyl phenol ethoxylates and polyalkyleneglycol ethers;

F. from about 10.0 to about 20.0 percent by weight of an organic solvent in which 2-chloro-2′,6′-diethyl-N-(methoxymethyl)acetanilide herbicide is soluble, which is nonreactive to said herbicide and which is essentially water-insoluble; and

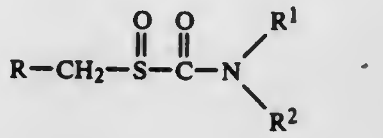
G. balance being made up of water.

4,440,563
THIOLCARBAMATE SULFOXIDES STABILIZED WITH BUTYROLACTONE AND WATER

Herbert B. Scher, Moraga, Calif., assignor to Stauffer Chemical Company, Westport, Conn.
Filed Sep. 24, 1980, Ser. No. 190,155
Int. Cl.³ A01N *43/00*
U.S. Cl. 71—88 **10 Claims**

1. A liquid herbicidal composition comprising a combination of

(a) about 1 to about 30 percent by weight of a thiolcarbamate sulfoxide of the formula



$$R-CH_2-\overset{O}{\overset{\|}{S}}-\overset{O}{\overset{\|}{C}}-N\begin{matrix}R^1\\R^2\end{matrix}$$

in which

R is alkyl C_1–C_7, haloalkyl C_1–C_5, alkoxy C_1–C_5 and phenyl;

R^1 and R^2 independently are alkyl C_1–C_6, cycloalkyl C_3–C_8, alkenyl C_2–C_6 and alkynyl C_2–C_4; or

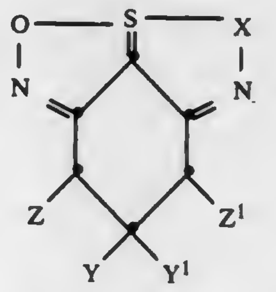
R^1 and R^2 together with the nitrogen atom to which they are attached form piperidino, hexamethyleneimino, decahydroquinolyl, 2,5-dimethylpiperidino and 5-ethyl-2-methylpiperidino; and

(b) about 99 to about 70 percent by weight of a mixture of water and butyrolactone, in a ratio of about 0.10 to about 3.0 parts by weight water per 1.0 part by weight butyrolactone.

4,440,564
HETEROCYCLIC PENTALENES AS HERBICIDES

Michael T. Clark, and Ian J. Gilmore, both of Sittingbourne, England, assignors to Shell Oil Company, Houston, Tex.
Continuation-in-part of Ser. No. 388,777, Jun. 15, 1982, abandoned. This application Sep. 15, 1982, Ser. No. 418,369
Claims priority, application United Kingdom, Jun. 24, 1981, 8119403
Int. Cl.³ A01N *43/02*
U.S. Cl. 71—90 **2 Claims**

1. A method for controlling unwanted plant growth at a locus, which comprises treating the locus with an effective dosage of a compound of the formula:

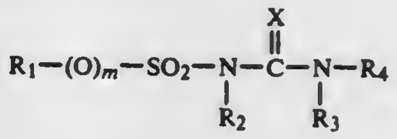


wherein X is O or S, and Z, Z^1, Y and Y^1 each is hydrogen or alkyl of from one to three carbon atoms.

4,440,565
HETEROCYCLICALLY SUBSTITUTED (HALOGENO)ALKYL- AND (HALOGENO)ALKOXYSULFONYLUREAS, AND THEIR USE IN AGRICULTURE

Lothar Willms, Unkel; Hilmar Mildenberger; Dieter Günther, both of Kelkheim; Klaus Bauer, Rodgau; Helmut Bürstell, Frankfurt am Main, and Hermann Bieringer, Eppstein, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Mar. 22, 1982, Ser. No. 360,489
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1981, 3111451
Int. Cl.³ C07D *251/46, 251/52;* **A01N** *43/66, 43/70*
U.S. Cl. 71—93 **13 Claims**

1. A compound of the formula



$$R_1-(O)_m-SO_2-\underset{R_2}{\underset{|}{N}}-\overset{X}{\overset{\|}{C}}-\underset{R_3}{\underset{|}{N}}-R_4$$

wherein R_1 is an alkyl, alkenyl or alkadienyl radical which has up to 10 C atoms, is optionally substituted by up to 6 halogen atoms, and can be interrupted by oxygen, R_2 and R_3 are H or (C_1–C_4)-alkyl, X is 0 or S, m is 0 or 1 and R_4 is a six-membered 1,3,5-triazine mono- or di-substituted by halogen, NO_2, CN, CHO, (C_1–C_4)-alkylamino, (C_1–C_4)-dialkylamino or a combination thereof; (C_1–C_4)-alkyl optionally substituted by halogen, (C_1–C_3)-alkoxy, (C_1–C_3)-alkylthio, (C_1–C_3)-alkylamino, (C_1–C_3)-dialkylamino, (C_1–C_4)-alkoxycarbonyl or a combination thereof; (C_1–C_4)-alkoxy or (C_1–C_4)-alkylthio optionally substituted by halogen, (C_1–C_4)-alkoxycarbonyl or a combination thereof; (C_1–C_4)-alkoxycarbonyl, or a combination thereof; and, if R_2 is hydrogen, a physiologically tolerated salt thereof with a base.

3. A plant growth regulating composition comprising a concentration of a compound defined in claim 1 that is effective to regulate plant growth and an inert carrier material therefor.

4,440,566
HERBICIDAL SUBSTITUTED 2-(1-(OXYAMINO)-ALKYLIDENE)-CYCLOHEXANE-1,3-DIONES

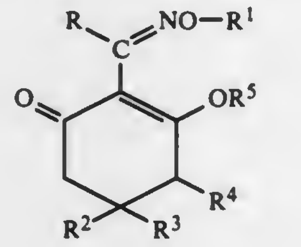
Tatao Luo, El Sobrante, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 405,228, Aug. 5, 1982, abandoned, which is a continuation of Ser. No. 210,206, Nov. 25, 1980, abandoned. This application Aug. 9, 1982, Ser. No. 406,423

Int. Cl.³ C07C *131/00;* **A01N** *31/06, 33/24*

U.S. Cl. 71—98 **24 Claims**

1. A compound of the formula



wherein

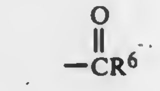
R is alkyl of 1 to 6 carbon atoms or phenyl;

R^1 is haloalkenyl of 2 to 6 carbon atoms and 1 to 3 halogen atoms, p-halobenzyl or p-trifluoromethylbenzyl;

R^2 and R^3 are independently hydrogen, alkyl of 1 to 3 carbon atoms, alkylthio of 1 to 6 carbon atoms, or alkylthioalkyl of 2 to 8 carbon atoms;

R^4 is hydrogen, or carbalkoxy of 2 to 4 carbon atoms;

R^5 is hydrogen, a cation, or



$$-\overset{\overset{O}{\|}}{C}R^6$$

wherein R^6 is alkyl of 1 to 6 carbon atoms, phenyl or naphthyl.

22. A method of killing vegetation which comprises applying to said vegetation or its growth environment a herbicidally effective amount of a compound of the formula defined in claim **1.**

4,440,567
COMPOSITION OF MATTER

Leonard J. Stach, Riverside, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed Feb. 28, 1983, Ser. No. 470,111

Int. Cl.³ A01N *37/34;* **C07C** *121/75*

U.S. Cl. 71—105 **3 Claims**

1. The composition of matter, α-cyanobenzyl-3,6-dichloro-2-methoxybenzoate.

2. A herbicidal composition comprising an inert carrier and, as an essential ingredient in a quantity toxic to weeds, the compound of claim **1.**

4,440,568
BORON ALLOYING ADDITIVE FOR CONTINUOUSLY CASTING BORON STEEL

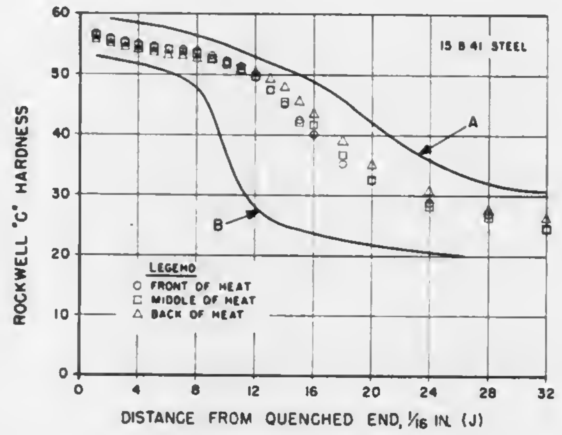
John O. Staggers, Downingtown; Samir K. Banerji, Norristown, and Michael J. Lalich, Downingtown, all of Pa., assignors to Foote Mineral Company, Exton, Pa.

Filed Jun. 30, 1981, Ser. No. 279,079

Int. Cl.³ C21C *7/00;* **C22C** *30/00*

U.S. Cl. 75—53 **31 Claims**

14. A method for the continuous casting of boron steel which comprises adding to the molten steel at least one addition agent having a high affinity for oxygen present in the steel in an amount sufficient to deoxidize the steel, introducing the deoxidized steel to a tundish provided with a nozzle through which the steel is continuously cast into a mold, and adding to the deoxidized steel prior to casting a boron alloying additive consisting essentially of from about 0.25 to about 3.0 percent boron, from about 2.5 to about 40 percent of at least one rare earth metal, from about 6 to about 60 percent titanium, up to about 75 percent silicon, up to about 10 percent calcium, up to about 5 percent zirconium, up to about 10 percent manganese, up to about 2 percent aluminum, and the balance iron, said percentages being by weight, based on the total weight of said additive, and the weight ratio of titanium to boron being from about 20:1 to about 60:1, and the weight ratio of titanium plus rare earth metal to boron being from about 30:1 to about 90:1, the amount of boron alloying additive employed being such as to provide a steel with a boron content of from about 0.0005 to about 0.003 percent, and a titanium content of from about 0.035 to about 0.055 percent, said percentages being by weight of the steel.



4,440,569
RECOVERY OF ZINC FROM ZINC-CONTAINING SULPHIDIC MATERIAL

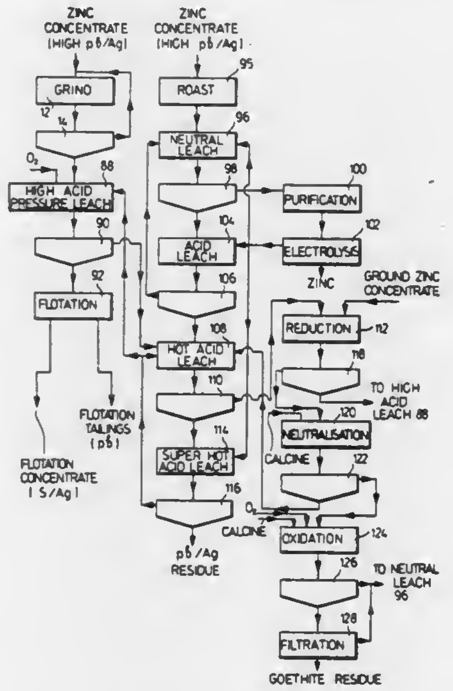
Donald R. Weir, and Ian M. Master, both of Fort Saskatchewan, Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Canada

Filed Feb. 22, 1983, Ser. No. 468,740

Claims priority, application United Kingdom, Feb. 24, 1982, 8205495

Int. Cl.³ C22B *19/00, 15/00, 11/00;* **C01G** *49/02*

U.S. Cl. 75—120 **6 Claims**



1. A process for recovery zinc from zinc containing sulphidic material which also contains iron and at least one metal selected from the group consisting of lead and silver, the process comprising leaching the material under pressurized oxidizing conditions at a temperature in the range of from about 130° to about 170° C. in aqueous sulphuric acid solution with a stoichiometric acid excess of sulphuric acid relative to the zinc content of the material of from about 40 to 100% to produce a first residue containing a major proportion of the said at least one metal and a first leach solution containing a major proportion of the zinc and iron, separating the first residue from the first leach solution, treating the first residue to recover values of said at least one metal, roasting zinc and iron containing sulphidic material to produce a zinc oxide and zinc ferrite containing material, leaching the zinc oxide and zinc ferrite containing material in a weak aqueous sulphuric acid solution to dissolve zinc oxide and produce a leach solution containing dissolved zinc and a zinc ferrite containing second residue, separating the zinc ferrite containing second residue from the second leach solution, recovering zinc from the second leach solution, leaching the zinc ferrite containing second residue in a strong aqueous sulphuric acid solution to dissolve zinc ferrite and produce a third leach solution containing dissolved zinc and iron and a third residue, said strong aqueous sulphuric acid solution comprising at least a portion of said first leach solution containing zinc and iron, separating the third residue from the third leach solution, reducing ferric iron in the third leach solution to ferrous iron, neutralizing the solution and hydrolyzing the ferrous iron under oxidizing conditions to precipitate an iron compound, and separating the iron compound from the remaining solution.

4,440,570
PROCESS FOR PURIFYING AND RECOVERING CONTAMINATED CATALYST SOLUTION OBTAINED IN THE CARBONYLATION OF METHYL ACETATE AND/OR DIMETHYLETHER

Heinz Erpenbach, Cologne; Klaus Gehrmann; Winfried Lork, both of Erftstadt, and Peter Prinz, Hürth, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 29, 1982, Ser. No. 402,961

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1981, 3134348

Int. Cl.³ C22B *11/00;* **C01G** *55/00;* **C07F** *9/54;* **C07D** *213/06*

U.S. Cl. 75—121 **7 Claims**

1. In a process for purifying and recovering constituents from a contaminated catalyst solution which is obtained as a result of the carbonylation of methyl acetate, dimethylether, or a mixture of methylacetate and dimethyl ether, the contaminated catalyst solution containing carbonyl compounds of noble metals of group VIII of the Periodic System of the elements, quaternary heterocyclic aromatic nitrogen compounds or quaternary organophosphorus compounds as organic promoters, undistillable organic contaminants, and volatile constituents, including acetic acid, acetic anhydride and ethylidene diacetate, the improvement which comprises: distillatively freeing the catalyst solution from the volatile constituents and water-treating the remaining solid distillation residue, the noble metal/carbonyl-compound being thereby precipitated together with the organic contaminants and the organic promoter becoming dissolved in water; removing the precipitated and contaminated noble metal/carbonyl-compound by filtration; recovering the noble metal therefrom; and recovering the organic promoter by evaporating the water.

4. In a process for purifying and recovering constituents from a contaminated catalyst solution which is obtained as a result of the carbonylation of methyl acetate, dimethylether, or a mixture of methylacetate and dimethylether, the contaminated catalyst solution containing carbonyl compounds of noble metals of group VIII of the Periodic System of the elements, quaternary heterocyclic aromatic nitrogen compounds or quaternary organophosphorus compounds as organic promoters, undistillable organic contaminants, and volatile constituents including acetic acid, acetic anhydride and ethylidene diacetate, the improvement which comprises: distillatively freeing the catalyst solution from the volatile constituents and water-treating the remaining solid distillation residue, the noble metal/carbonyl-compound being thereby precipitated together with the organic contaminants and the organic promoter becoming dissolved in water; removing the precipitated and contaminated noble metal/carbonyl-compound by filtration; recovering the noble metal therefrom; and recovering the organic promoter by extracting it with halogenated hydrocarbons and evaporating said halogenated hydrocarbons.

6. A process as claimed in claim **4** wherein 10 to 100 parts by weight water are used per part by weight distillation residue.

4,440,571
PROCESS FOR THE SURFACE TREATMENT OF INORGANIC FIBERS FOR REINFORCING TITANIUM OR NICKEL AND PRODUCT

Toshikatsu Ishikawa, Tokyo; Junichi Tanaka, Yokohama; Haruo Teranishi, Machida; Tatsuya Okamura, Kobe, and Tokuji Hayase, Chigasaki, all of Japan, assignors to Nippon Carbon Co., Ltd., Tokyo, Japan

Filed Jul. 6, 1982, Ser. No. 395,231

Claims priority, application Japan, Jul. 10, 1981, 56-107721; Nov. 26, 1981, 56-188338

Int. Cl.³ B22F *1/00, 3/00*

U.S. Cl. 75—229 **6 Claims**

3. A process for the surface treatment of inorganic fibers for reinforcing titanium, comprising the steps of:

coating the surface of inorganic fibers selected from the group consisting of carbon fibers, alumina fibers, silicon carbide fibers, potassium titanate fibers, boron fibers and tungsten fibers, with an aqueous or organic solvent solution containing, in parts by weight, 1 part of a titanate, 1–5 parts of a borate, 0.1–0.9 parts of a tetraalkylammonium hydroxide and 0.7–2.7 parts of water or an organic solvent,

heat treating the thus coated inorganic fibers at 1300°1500° C., in an inert or non-oxidizing atmosphere, and then

ionically or chemically plating the thus heat treated inorganic fibers with nickel to form a nickel coating thereon thereby to obtain a surface treated inorganic fibers for reinforcing titanium.

6. Inorganic fiber-reinforced titanium or nickel produced by applying titanium in the foil or particulate form to the surface treated inorganic fibers obtained by the process of claim **3** and then molding the whole at a temperature of 800°–1000° C. and a molding pressure of 100–1000 Kg/cm² for 0.5–6 hours to compound the metal and the fibers with each other thereby obtaining the inorganic fiber-reinforced titanium or nickel.

4,440,572
METAL MODIFIED DISPERSION STRENGTHENED COPPER

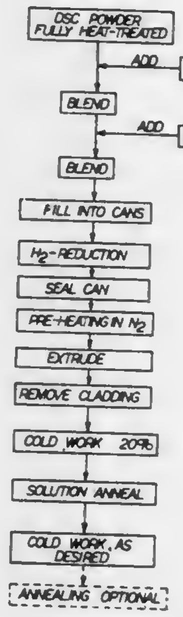
Anil V. Nadkarni, Mentor, and Prasanna K. Samal, Lyndhurst, both of Ohio, assignors to SCM Corporation, New York, N.Y.

Filed Jun. 18, 1982, Ser. No. 389,605

Int. Cl.³ B22F *3/00;* **C22C** *1/05*

U.S. Cl. 75—232 **13 Claims**

1. A process for making a modified dispersion strengthened copper alloy which comprises blending a major amount of an unmodified pre-made dispersion strengthened copper powder containing a refractory metal oxide in an amount sufficient to strengthen the copper, and a minor amount of one or more powdered modifying metals different from copper and alloyable therewith, and heating said blend to a temperature below



the melting point of copper and sufficient to alloy at least a part of said modifying metal or metals with said copper.

4,440,573
METHOD FOR PRODUCING DIAMOND COMPACT

Hiroshi Ishizuka, 19-2, Ebara 6-chome, Shinagawa-ku, Tokyo, Japan

Filed Apr. 23, 1982, Ser. No. 371,130
Claims priority, application Japan, Apr. 24, 1981, 56-61271
Int. Cl.^{3} B22F *3/00;* **C22C** *1/05*

U.S. Cl. 75—243 **2 Claims**

1. A method for producing a compact of diamond particles comprising providing a mass of diamond particles and a mass of infiltrant metallic material, each mass having a substantially identical surface area; positioning said mass of diamond particles and said mass of infiltrant metallic material such that said surfaces of substantially identical surface area are separated by a barrier layer of high melting metal having a surface area of 85% to 97% of the surface areas of said mass of diamond particles and said mass of infiltrant metallic material; subjecting said positioned masses and barrier layer to an elevated temperature-pressure condition within the diamond stability region of the carbon phase diagram but below the melting point of said metallic barrier layer, thereby allowing a regulated amount of molten infiltrant metal to flow around said barrier layer and throughout the mass of diamond particles to bond the said diamond particles to each other and recovering a compact of bonded diamond particles.

4,440,574
NONSLUDGING COMPLEXES OF CHROMIUM AND STEARIC ACID

Salvatore A. Bruno, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Feb. 22, 1983, Ser. No. 468,770
Int. Cl.^{3} C09K *3/18*

U.S. Cl. 106—2 **1 Claim**

1. A solution comprising a Werner Complex of stearato, Cr^{+3}, Cl and OH groups present in the approximate ratio of 1:2:4:1, respectively, said solution containing from 5–7 weight percent chromium, from 15–30 weight percent n-pentanol and from 47.7–32.7 weight percent isopropanol.

4,440,575
GRANULAR INSULATION PRODUCT AND PROCESS FOR ITS PREPARATION

Jean-Charles Daussan, 42 rue Saint-Marcel; Gerard Daussan, 9 avenue Leclerc de Hauteclocque, both of 57000 Metz, and Andre Daussan, 52 rue des Pepinieres, 57050 Longeville les Metz, all of France

Continuation-in-part of Ser. No. 156,392, Jun. 4, 1980, abandoned. This application Oct. 19, 1982, Ser. No. 435,309
Claims priority, application Monaco, Jun. 11, 1979, 1386
Int. Cl.^{3} 252 *62;* **B28B** *7/34*

U.S. Cl. 106—38.22 **6 Claims**

1. A method for the production of a granular heat insulating product to be spread on the free surface of a bath of molten metal contained in a metallurgical vessel, comprising the following steps:

introducing in a substantially vertical-axis cylindrical tank containing a vertical-axis blade, rice husk ash wetted with an aqueous suspension of paper pulp containing between 2 and 5% of paper pulp for enabling the wetted rice husk ash grains to roll on one another, rotating the blade at a speed of 40 to 300 rpm until spherical granules of a diameter in the range of from 0.5 mm to 5 mm are obtained, and drying the granules to less than 2% moisture content.

4,440,576
HYDRAULIC CEMENTS PREPARED FROM GLASS POWDERS

James E. Flannery; Joseph F. Mach, and Dale R. Wexell, all of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Sep. 27, 1982, Ser. No. 424,030
Int. Cl.^{3} C04B *7/00*

U.S. Cl. 106—85 **14 Claims**

1. A hydraulic cement exhibiting high mechanical strength, long term durability against attack by water, and, after curing, essential freedom from creep, said cement composed of glass powders consisting essentially, expressed in terms of mole percent on the oxide basis, of about 60–76% SiO_2, 15–30% K_2O, and 2–15% total of at least one metal oxide selected from the group of 0–10% Al_2O_3, 0–5% V_2O_5, 0–5% TiO_2, 0–5% MoO_3, and 0–5% WO_3.

4,440,577
POLYHYDROXY POLYPHENYL COMPOUNDS AS ADDITIVES FOR CEMENTITIOUS MATERIALS

Alphonso W. Marcellis, Boonton, and Grannis S. Johnson, Plainfield, both of N.J., assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Sep. 7, 1982, Ser. No. 415,018
Int. Cl.^{3} C04B *7/35*

U.S. Cl. 106—90 **34 Claims**

1. Water soluble residue obtained from resorcinol production by the alkaline fusion method having the following composition:

Resorcinol: about 2 to about 8% by wt.
Dihydroxy diphenyl: about 12 to about 20% by wt.
Trihydroxy diphenyl: about 25 to about 35% by wt.
Higher molecular weight polymers: balance

which has been sulfonated, sulfomethylated, sulfonated and condensed with formaldehyde, sulfomethylated and condensed with formaldehyde, co-condensed with ligninsulfonate and formaldehyde or co-condensed with aromatic sulfonic acid formaldehyde condensate and formaldehyde and their sodium, potassium, ammonium, aluminum and zinc salts.

4,440,578
METHOD AND APPARATUS FOR PROCESSING RAW MEAL HAVING A HIGH ALKALI CHLORIDE AND/OR SULFATE CONTENT

Darius A. Wadia, 96 Marine Dr., Bombay, India

Filed May 12, 1982, Ser. No. 377,320
Int. Cl.^{3} C04B *7/44*

U.S. Cl. 106—100 **10 Claims**

1. A method for processing raw meal in an installation for calcination of granular, powdered limestone, aluminum hydrate, or the like including those having relatively high alkali chloride and/or sulfate content of up to 2% Cl and/or 2.5% SO_3, said method including the steps of metering dry raw meal into a processing apparatus, pumping said raw meal from said processing apparatus to a separate combustion chamber, supplying fuel to said combustion chamber and igniting same whereby said dry raw meal in said combustion chamber is heated to a temperature in the range between 100° C. and 600° C., pumping said heated dry raw meal to a cyclone separator, processing said dry raw meal through said cyclone separator to a long dry process rotary kiln, whereby the temperature of the gas exiting the cyclone separator is typically in the range of 150° C. to 200° C. above the temperature of said raw meal as it exits said combustion chamber (above 450° C.) and the thermal efficiency of said processing apparatus is improved.

4,440,579
AIR BLOWING ASPHALT USING SULFONIC ACID CATALYST

Penny K. Eidem, Point Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Nov. 30, 1982, Ser. No. 445,400
Int. Cl.^{3} C08L *95/00*

U.S. Cl. 106—274 **16 Claims**

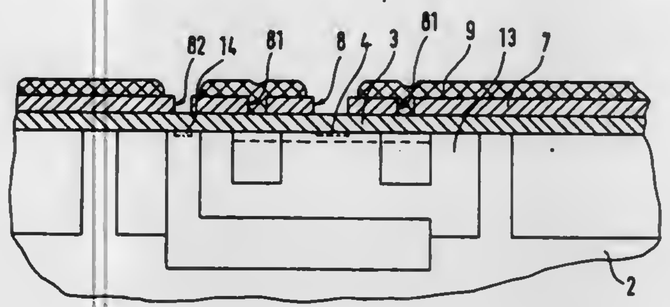
1. An asphalt composition comprising a catalytic amount of from about 0.25 weight percent to about 10 weight percent of asphalt soluble organic sulfonic acid, and asphalt in an amount to equal 100 weight percent.

4,440,580
METHOD OF FABRICATING AN INTEGRATED BIPOLAR PLANAR TRANSISTOR BY IMPLANTING BASE AND EMITTER REGIONS THROUGH THE SAME INSULATING LAYER

Hans-Juergen Gahle, Emmendingen, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Mar. 31, 1982, Ser. No. 364,156
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1981, 3115029
Int. Cl.^{3} H01L *21/265, 21/223, 21/72*

U.S. Cl. 148—1.5 **3 Claims**



1. A method of fabricating an integrated bipolar planar transistor whose base region is formed by ion implantation through an insulating layer of a given thickness and composition of a first insulating material deposited on a semiconductor body, and whose emitter region is also formed by ion implantation, wherein the improvement comprises the steps of ion implanting the dopants of a first conductivity type for the emitter region through the same insulating layer as those for the base region forming a first photoresist mask layer having a selected opening; over the insulating layer, implanting ions of a second conductivity type into a portion of the surface of the semiconductor body below said opening, which portion is doped so as to be of the first conductivity type; removing the first photoresist mask layer; depositing an additional insulating layer made of a second material which is etchable selectively with respect to the first material; opening at least one window in the additional insulating layer at least where the emitter region is to be formed; covering the remaining portions of the additional insulating layer with a second photoresist mask layer; implanting ions of the first conductivity type into the semiconductor surface through the exposed portions of the insulating layer; removing the second photoresist mask layer; and activating the implanted ions during a post-diffusion process.

4,440,581
PROCESS FOR THE PRODUCTION OF VANADIUM CARBIDE COATINGS ON IRON

Ulrich Baudis, Hanau; Peter Biberbach, Rodenbach, and Wolfgang Weber, Karlstein, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jun. 29, 1981, Ser. No. 278,617
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1980, 3025033
Int. Cl.^{3} C23C *9/10*

U.S. Cl. 148—6.11 **9 Claims**

1. A process for the production of a vanadium carbide layer on iron or an iron alloy having a carbon content of at least 0.1 weight% by a solid state reaction comprising treating a workpiece of the iron or iron alloy at a temperature of 800° to 1100° C. in a salt bath which contains 1–30 weight % of vanadium or ferrovandium powder, said salt bath consisting essentially of 50 to 100% barium chloride and a member selected from the group consisting of an alkaline earth metal halide, another alkali metal halide or a mixture of both an alkali metal halide and another alkaline earth metal halide.

4,440,582
PROTECTIVE COATING COMPOSITION AND METHOD OF USE THEREFOR

Noel A. Smith, and William J. Avallone, both of Troy, Mich., assignors to Saran Protective Coating Company, Detroit, Mich.

Filed Apr. 15, 1982, Ser. No. 368,718
Int. Cl.^{3} C10M *3/14*

U.S. Cl. 148—6.15 R **21 Claims**

1. An aqueous coating composition for improving corrosion resistance of metal parts, consisting essentially of:

(a) a phosphating oil,
(b) an aminofunctional alkylpolysiloxane or aminofunctional polyalkylsiloxane, and
(c) water.

4,440,583
METHOD OF CONTROLLED COOLING FOR STEEL STRIP

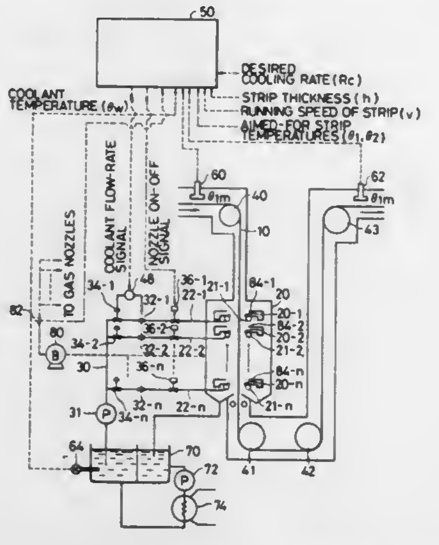
Hiroshi Ikegami; Norichika Nagira, and Katsuhiko Yui, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Nov. 17, 1982, Ser. No. 442,431
Claims priority, application Japan, Jan. 11, 1982, 57-2584
Int. Cl.^{3} C21D *11/00*

U.S. Cl. 148—128 **1 Claim**

1. In a method of controlledly cooling steel strip in a cooling apparatus of a continuous annealing line comprising a plurality of nozzles spraying a coolant against the hot strip arranged in the direction in which the strip travels and a flow-rate control valve provided in a coolant supply tube leading to said nozzles, the improvement which comprises calculating the heat transfer

rate necessary for obtaining a desired cooling rate by using an equation including the thickness of the strip, the cooling starting and finishing temperatures, and the desired cooling rate, correcting the obtained heat transfer rate according to the effect of natural cooling in idle-pass zones preceding and following the coolant spray zone, calculating and setting a coolant flow rate from an equation expressing the predetermined relationship between the heat transfer rate and coolant flow rate, calculating the length of the coolant spraying region in the direction of strip travel from the running speed of the strip, the cooling starting and finishing temperatures, and the desired cooling rate, setting the nozzles to be turned on and off so that the coolant is ejected from such a number of nozzles as correspond to the calculated length of the spraying region, correcting the coolant flow rate by re-calculating the heat transfer rate on the basis of said settings when the strip thickness varies while being controlled-cooled, and correcting the on-off pattern of the nozzles by re-calculating the length of the spraying region when the strip running speed varies.



4,440,584
METHOD AND APPARATUS FOR COOLING STEEL SHEET

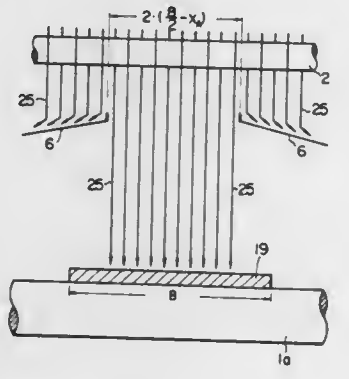
Kenji Takeshige; Kenji Hirabe; Yukifumi Ogawa; Kazuyoshi Arikata; Kazunori Yako, all of Fukuyama; Kenichi Sakai, Kasaoka; Toshinori Matsuo, Fukuyama, and Hiroshi Kamio, Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 10, 1982, Ser. No. 406,932

Claims priority, application Japan, Aug. 21, 1981, 56-130222

Int. Cl.³ C21D *1/647, 9/573*

U.S. Cl. 148—128 **11 Claims**



1. In a method for cooling a steel sheet, which comprises:

ejecting cooling water onto a steel sheet laid horizontally from above and from below said steel sheet immediately after the completion of hot rolling to cool said steel sheet;

the improvement characterized by:

shielding each of the both side edge portions of the upper surface in the width direction of said steel sheet from said ejected cooling water by a shielding means movable in the width direction of said steel sheet so that the temperature distribution in the width direction of said steel sheet becomes uniform at the completion of the ejection of cooling water; and,

determining a shielding width of each of said both side edge portions of said steel sheet, which is shielded from said ejected cooling water, on the basis of the width and the thickness of said steel sheet, the temperature and the flow rate per unit area of cooling water ejected onto the upper and the lower surfaces of said steel sheet, the period of time from start to completion of the ejection of cooling water, and the temperature distribution in the width direction of said steel sheet immediately before the start of the ejection of cooling water.

4,440,585
AMORPHOUS MAGNETIC ALLOY

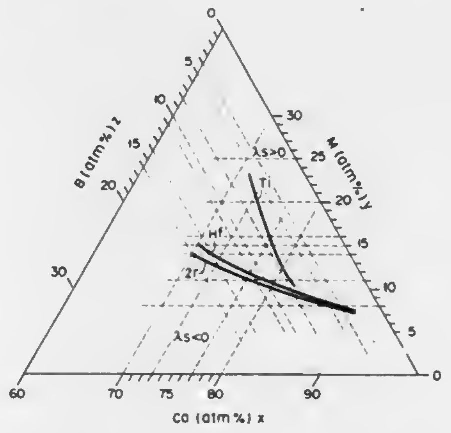
Jun Kanehira, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 4, 1983, Ser. No. 455,523

Claims priority, application Japan, Jan. 19, 1982, 57-6571; Mar. 12, 1982, 57-38999

Int. Cl.³ C22C *19/07*

U.S. Cl. 148—403 **6 Claims**



1. An amorphous magnetic alloy having the composition $Co_xM_yB_z$, M is at least one element selected from the group consisting of zirconium and hafnium, and x, y, z are respective atomic percents and $70 \leqq x \leqq 80$, $8 \leqq y \leqq 15$ and $10 \leqq z \leqq 16$.

4,440,586
METHOD OF MANUFACTURING A DIE FOR DUPLICATING PLASTICS INFORMATION CARRIERS

Gerardus J. M. Lippits; Arnoldus J. M. Van Den Broek; Adriaan J. G. Op Het Veld; Rinse Dijkstra, and Jelis De Jonge, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 95,130, Nov. 16, 1979, Pat. No. 4,275,091, which is a continuation of Ser. No. 887,188, Mar. 16, 1978, abandoned, which is a division of Ser. No. 774,973, Mar. 7, 1977, abandoned. This application Oct. 27, 1980, Ser. No. 200,666

Claims priority, application Netherlands, Oct. 15, 1976, 7611395

Int. Cl.³ C25D *5/56;* **B05D** *3/06*

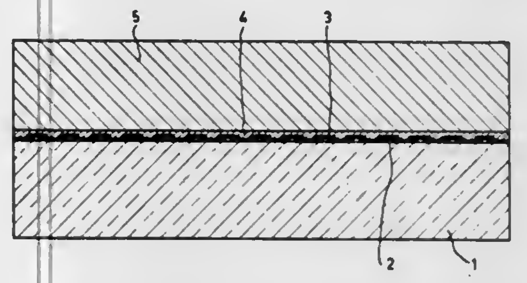
U.S. Cl. 156—151 **3 Claims**

1. A method of manufacturing a die particularly adapted for the manufacture of a plastics information carrier containing an information track readable by an optical beam or similar reading means by:

(a) directly applying to a metal surface of a rigid, substantially flat die, which surface contains the negative of the desired information track, a thin layer of a thickness of 0.2–300 microns of a light-curable polymerizable liquid having a viscosity of from 1 to 100 cP and comprising low molecular weight acrylic monomers or a mixture of low molecular weight acrylic monomers and acrylic oligomers, which liquid contains 25–70% by weight of unsaturated hydrocarbon and/or phenyl groups, has an average functionality in regard to unsaturatedness of between 2.1 and 6, is at least substantially aprotic and consists for at least 95% of monomers having a maximum average molecular weight of about 400;

(b) applying to the exposed surface of said thin layer of polymerizable liquid a thin light-pervious plastic substrate;

(c) exposing said thin layer of polymerizable liquid to light radiation through said substrate for a time sufficient to cause said thin layer of polymerizable liquid to cure to a solid state adhering to said substrate thereby producing a laminate of said substrate and said cured layer containing the desired optically readable information readily removable from said die without effect on said laminate or said die; and



(d) removing said laminate from said die,

said method comprising providing on one major surface of a flat glass plate said information track, electrolessly depositing on said surface of said flat glass plate containing said information track a first metal layer by electroless deposition and then, depositing, by electrodeposition, a second metal layer on said first metal layer, causing a flat stiffening plate to adhere to the surface of said second metal layer remote from said first metal layer and removing said glass plate from the first metal layer thereby forming a flat father disc having a free metal surface containing the negative of said information track and suitable for use as a die.

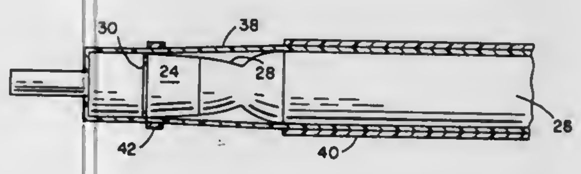
4,440,587
METHOD OF MAKING ROCKET MOTOR CASE WITH INTEGRAL NOZZLE

Richard J. Thompson, and Ocke C. Fruchtnicht, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 2, 1982, Ser. No. 404,253

Int. Cl.³ B32B *31/00;* **B65H** *54/64*

U.S. Cl. 156—154 **4 Claims**



1. A method of making a rocket motor case with an integral nozzle comprising: providing a mandrel that has forward and aft sections with a necked down nozzle insert section mounted therebetween and said forward and aft sections and said nozzle insert having external configurations that define the desired internal configuration shape of a rocket motor case with an integral nozzle, said mandrel being mounted about a center line axis through said forward and aft mandrel sections and said nozzle insert, winding strands of reinforcing fibers about said mandrel at an angle of about 0-to about 15 degrees relative to said center line axis until said mandrel has the external surface completely covered with the winding strands radially spaced from an external portion of said necked down nozzle insert, radially wrapping fibers about the wound fiber on said aft section of said mandrel, radially wrapping fibers about the wound fibers at the forward end of said mandrel, cutting the linear fibers at the forward end of said mandrel beyond said radial wrapping thereon, squeezing the linear fibers between said two radial wrappings of fiber to cause said linear fibers to conform to the external shape of said nozzle insert, radially wrapping fibers about said nozzle insert from the smallest diameter thereof outwardly toward said other radially wrapped fibers to provide a rocket motor with an integral nozzle that has linear fibers for providing stiffness and radial fibers for providing burst strength.

3. The method of making a rocket motor case and integral nozzle as defined in claim 1, wherein said fibers are preimpregnated with an epoxy resin before being wound into said rocket motor case and integral nozzle structure, and wherein said integrally wound rocket motor case and nozzle that has been wound on said mandrel are placed in an oven and cured.

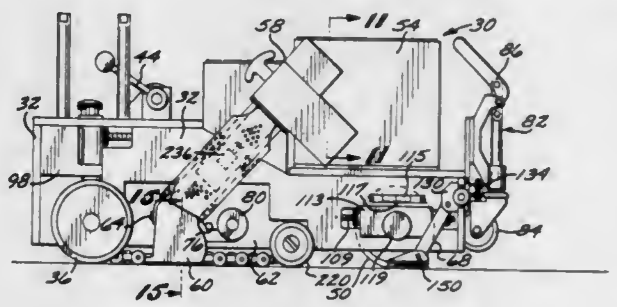
4,440,588
HOT AIR WELDER FOR WELDING ROOFING MATERIAL

Edward J. Stevenson, 2727 Los Feliz, Thousand Oaks, and Donald E. Dean, 3065 Steven White Dr. #12, San Pedro, both of Calif. 90731

Filed Mar. 1, 1982, Ser. No. 353,168

Int. Cl.³ B32B *31/08*

U.S. Cl. 156—157 **28 Claims**



1. An improvement in a hot air roof welder for joining adjacent, overlapping layers of thermoplastic material comprising:

a chassis;

a heater assembly having a shaped delivery port arranged and configured for disposition between two overlapping layers of thermoplastic material, said shaped delivery port being coupled to the remaining portion of said heater assembly so that said shaped delivery port is reversible with respect to said chassis, said shaped delivery port having an inside and outside orientation with respect to said chassis; and

an air dam movably coupled to said chassis and disposed in relation to said shaped delivery port and chassis such that said air dam is disposed in a predetermined relationship with respect to said shaped delivery port, said air dam being disposed between said shaped delivery port and chassis when said shaped delivery port is arranged and configured in said inside orientation, said shaped delivery port being disposed between said air dam and said chassis when said shaped delivery port is arranged and configured in said outside orientation, said air dam forming in part in said thermoplastic material a barrier to confine hot air from said heater assembly to an area in proximity to said shaped delivery port and for downwardly urging said thermoplastic material thereby facilitating close contact between said shaped delivery port and said overlapping portions of said thermoplastic material,

whereby a hot air welder is devised which is capable of manufacturing inside and outside welded seams with equal ease and facility.

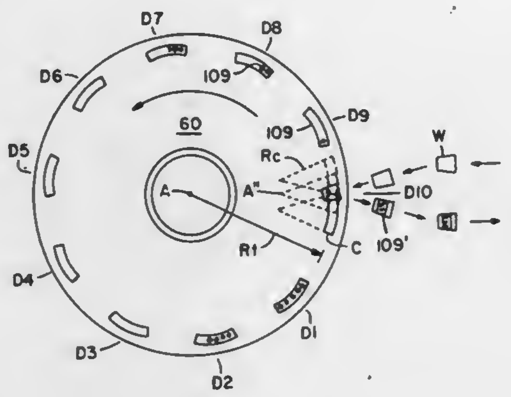
4,440,589
PRINT TRANSFER DEVICE FOR DECORATING MACHINE

William E. Lock, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Dec. 21, 1981, Ser. No. 332,722

Int. Cl.^{3} B32B *31/00;* **B29C** *17/04;* **B65C** *9/04;* **B41D** *7/00*

U.S. Cl. 156—232 **11 Claims**



1. A method of transferring a design from a planar design carrying surface to a conic design receiving surface having a central axis and apex therealong, transfer occurring by intimate non-slip rolling contact of the design carrying surface against the design receiving surface, comprising the steps of:

establishing the design in a plane representing a developed surface of the conic design receiving surface, said developed surface having a radius of curvature and a center therefor;

locating the developed surface in the design carrying surface at a radial position about a center of rotation;

rotating the design carrying surface about the center of rotation, the radial position of the design carrying surface being on a radius larger than its radius of curvature;

rotatably supporting the conic design receiving surface about its central axis;

engaging the conic design receiving surface against the design carrying surface;

establishing coincidence bwteeen the center of the developed surface and the apex of the conic design receiving surface;

orienting the conic design receiving surface into intimate rolling contact with the design carrying surface along a line of contact in the plane of the design, whereby the conic design receiving surface rollably engages the design carrying surface to effect the transfer of the design carried thereby on the conic design receiving surface, and including the step of moving the conic design receiving surface relative to the design carrying surface in response to the instantaneous position of the same such that the apex of the conic design receiving surface and the center of the design carrying surface are in coincidence in the line of contact;

maintaining intimate contact along said line of contact in the plane of the design; and

maintaining coincidence of the center of the developed surface and the apex of the conic design receiving surface during the step of engaging said surfaces together.

4,440,590
MANUFACTURE OF SIGNS

Ronald B. Collins; Martin E. Dowzall; Brian J. Smith, and Geoffrey R. Taylor, all of London, England, assignors to Letraset Corp.

Continuation of Ser. No. 903,770, May 8, 1978, abandoned. This application Feb. 24, 1982, Ser. No. 351,939

Claims priority, application United Kingdom, Oct. 4, 1977, 41245/77

Int. Cl.^{3} B32B *31/00;* **B41M** *5/00;* **G09F** *7/16*

U.S. Cl. 156—234 **18 Claims**

1. In a method of manufacturing a sign comprising a sign sheet and wherein the indicia of the sign are provided on a preformed transfer material, the improvement which comprises:

providing a dry transfer material comprising a light transmitting carrier sheet bearing on one side a plurality of preformed discrete transferable thermoplastic adhesive ink film indicia,

transferring preselected ones of said ink film indicia completely from said carrier sheet to a temporary support sheet in the desired order to build up a predetermined legend for the sign, said transferring step being performed by applying pressure to the rear surface of the carrier sheet in the vicinity of said preselected indicia to create a bond between said preselected indicia and said temporary support sheet greater than the bond between said indicia and said carrier sheet,

bringing the transferred ink film indicia on the temporary support sheet into contact with a surface of a light transmitting sign sheet under sufficient heat and pressure to create a bond between said indicia and said sign sheet that is stronger than said bond between said preselected indicia and said temporary support sheet and to cause said transferred indicia to adhere to the sign sheet surface more strongly than to said temporary support, and

removing the temporary support sheet, from said ink film indicia to leave said indicia permanently bonded on the sign sheet, said indicia being readable through the sign sheet with no intervening adhesive and said sign sheet protecting said indicia against abrasion.

4,440,591
METHOD OF MANUFACTURING HIGH POTENTIAL ELECTRETS

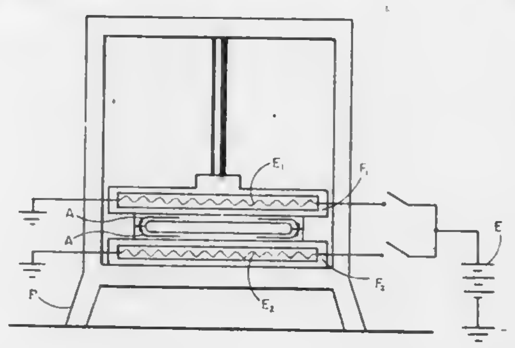
H. Wilson Pook, 120 Widmore Rd., Bromley, Kent, England

Filed May 19, 1982, Ser. No. 379,648

Claims priority, application United Kingdom, May 20, 1981, 8115402

Int. Cl.^{3} B32B *31/20*

U.S. Cl. 156—309.6 **5 Claims**



1. A method for producing electrets comprising the steps of:

placing a laminate assembly of dielectric plastic material, including a first and second exterior sheet of plastic material exteriorly placed on either side of a centrally disposed interior sheet of plastic material, between the opposed faces of a press;

closing and concurrently heating the faces of said press to produce compressive forces therebetween imposed on said laminate assembly and to heat the exterior sheets thereof to melting whereby said exterior sheets translate under pressure over said interior sheet to develop electrostatic charges in the course of said translation; and

discontinuing the application of heat to said faces while maintaining said compressive forces therebetween until said laminate assembly cools, to thereby fix said electrostatic charges.

4,440,592
PORTABLE TYPE LABEL APPLYING APPARATUS

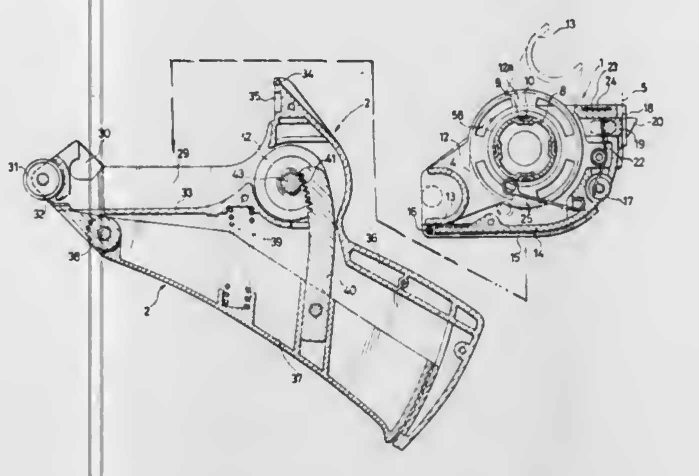
Yo Sato, Tokyo, and Tadao Kashiwaba, Kitagami, both of Japan, assignors to Kabushiki Kaisha Sato, Japan

Filed Apr. 15, 1982, Ser. No. 368,732

Claims priority, application Japan, Apr. 30, 1981, 56-66223

Int. Cl.^{3} B65C *9/18, 9/46, 11/00*

U.S. Cl. 156—384 **43 Claims**



23. A portable label applying apparatus, comprising:

a rolled label strip cassette for holding a composite label web, which web comprises a series of labels temporarily adhered to a web of backing paper; the cassette comprising a cassette frame; label rolling means on the frame for having the composite label web rolled up thereon; label delaminating means on the frame and spaced from the label rolling means for delaminating individual labels from the backing paper web; and guide means on the frame for guiding the backing paper web away from the delaminating means;

a label applier to which the cassette is removably attached; feed means in the label applier for engaging and feeding the backing paper web in a direction which delaminates the labels from the backing paper web at the delaminating means; and

a bail supported to the frame of the cassette and being movable between a first position away from the delaminating means and a second position closer to the delaminating means; a label strip holding portion on the bail for engaging the label strip in the second position of the bail for shifting the label strip to make a sharp turn around the delaminating means for aiding in delamination of labels from the backing paper web.

39. A portable label applying apparatus, comprising:

a rolled label strip cassette for holding a composite label web, which web comprises a series of labels temporarily adhered to a web of backing paper; the cassette comprising a cassette frame; label rolling means on the frame for having the composite label web rolled up thereon; label delaminating means on the frame and spaced from the label rolling means for delaminating individual labels from the backing paper web; and guide means on the frame for guiding the backing paper web away from the delaminating means; and

a label applier to which the casssette is removably attached; feed means in the label applier for engaging and feeding the backing paper web in a direction which delaminates the labels from the backing paper web at the delaminating means;

the label strip feed means comprises a feed roller rotatably attached to the label applier and an actuating lever on the label applier and connected with the feed roller for rotating the feed roller to engage and feed the backing paper web.

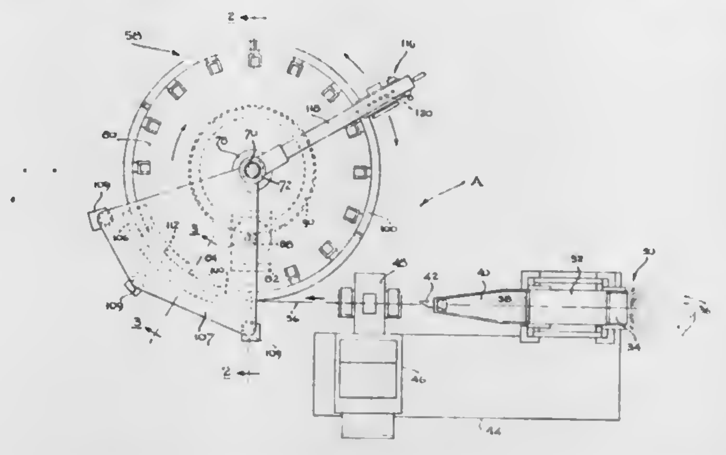
4,440,593
REINFORCED PLASTIC COMPOSITE ARTICLES AND APPARATUS AND METHOD FOR PRODUCING SAME

William B. Goldsworthy, Palos Verdes Estates, Calif., assignor to Goldsworthy Engineering, Inc., Torrance, Calif.

Filed Dec. 11, 1981, Ser. No. 329,757

Int. Cl.^{3} B32B *1/10, 31/26*

U.S. Cl. 156—441 **45 Claims**



1. Apparatus for producing arcuately shaped filament containing reinforced plastic composite articles which have a non-constant cross-sectional shape over their length, said apparatus comprising:

(a) a first arcuately shaped die-forming member having an elongate recess which comprises a first recess portion of different cross-sectional shape than a second recess portion so as to be of non-constant cross-sectional shape over its length,

(b) a second arcuately shaped die-forming member located in proximity to and cooperating with said first die-forming member to form a filament containing reinforced plastic material receiving die channel comprised of said elongate recesses so that said die channel has a first channel portion of different cross-sectional shape than a second channel portion so as to be of non-constant cross-sectional shape over its length, and which second die channel portion is contiguous with said first die channel portion along the length of said die channel and in a direction of movement of one of said die-forming members so that the reinforced plastic material is simultaneously disposed in both of said die channel portions at a portion of the time during movement of at least one of the die-forming members, so that the reinforced plastic material is simultaneously disposed in both of said die channel portions at a portion of the time during movement of at least one of the die-forming members,

(c) means for moving at least one of said die-forming members and simultaneously pulling filament containing reinforcing material through said die channel with the moving die-forming member and at the same rate of speed as the moving die-forming member and for a substantial distance so that the two die-forming members form a die channel of substantial distance, and

(d) curing means associated with at least one of said die-forming members for simultaneously applying a curing energy to the material in each of said die channel portions to thereby cure a binder impregnated in said filament containing reinforced plastic material while in said die channel and during movement thereof in said die channel, to thereby form a composite article which may have a first article portion of a first cross-sectional shape and a second article portion spaced from or contiguous with the first article portion along the length of the article and which second article portion has a different cross-sectional shape than the first article portion to thereby provide an article with a non-constant cross-sectional shape over its length.

4,440,594

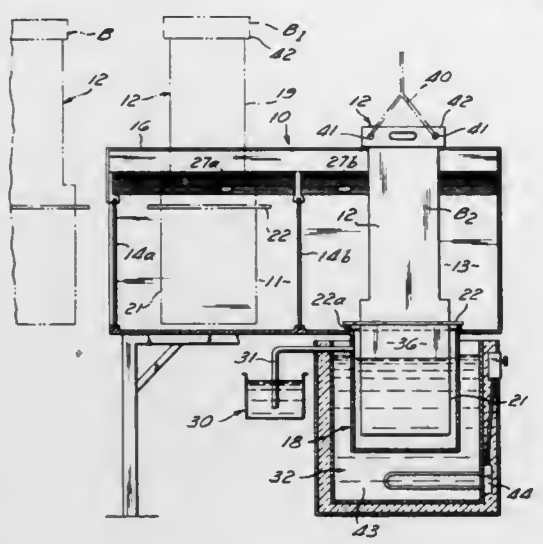
METHOD AND APPARATUS OF CHEMICAL MILLING OF CHEMICAL MATERIALS

Llewelyn B. Stearns, 9213 E. Carron Dr., Pico Rivera, Calif. 90660

Filed Sep. 29, 1982, Ser. No. 427,734

Int. Cl.^{3} C23F ***1/00***

U.S. Cl. 156—664 **20 Claims**



20. The method for chemical milling of a workpiece which comprises:

(a) pre-treating said workpiece in a completely enclosed, substantially vapor tight, first zone, venting any gases produced during said pre-treatment;

(b) passing said pre-treated workpiece into an acid-milling solution contained in a substantially vapor tight second zone, without any introduction of air, during the transfer of said pre-treated workpiece to said second zone;

(c) reacting said pre-treated workpiece with said acid-milling solution, at a temperature above ambient temperature, to produce nitrogen oxide fumes in said second zone in the presence of minimal amounts of air during the reaction; and

(d) venting said fumes directly from said substantially airtight second zone, into a third zone comprising a water containing vessel for the dissolution of water soluble nitrogen oxide gases.

4,440,595

APPARATUS FOR CONCENTRATING MINERAL ACIDS

Hans Broberg, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

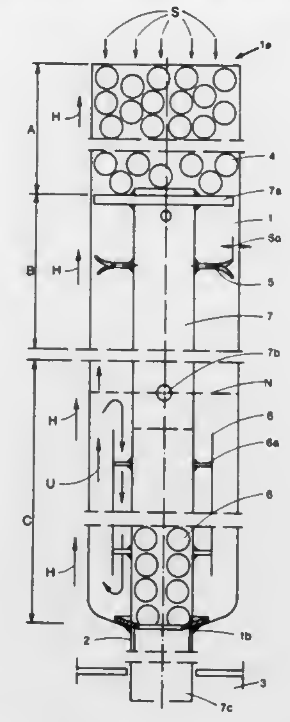
Filed Mar. 3, 1982, Ser. No. 354,403

Claims priority, application Sweden, Mar. 16, 1981, 8101648

Int. Cl.^{3} B01D ***1/10, 1/14, 1/22***

U.S. Cl. 159—13 A **19 Claims**

1. Apparatus for the concentration of a mineral acid which comprises at least one externally heatable quartz tube having inlet means at the upper end thereof which is for the mineral acid to be concentrated, outlet means at the lower part thereof for draining off concentrated mineral acid; and outlet means at the upper part of the tube for removing rising vapors from the mineral acid; wherein said quartz tube includes an upper rectification zone, a center liquid film zone, and a lower reservoir zone; wherein said rectification zone includes means for providing a well moistened inner surface during use which is dependent upon the quantity of acid supplied, rate of rising vapors in said rectification zone, and vapors temperatures; said liquid film zone contains at least one device for causing turbulent flow of the vapors rising in the liquid film zone so that said vapors due to their turbulence and rate of ascent cause a coaction with the acid drops falling from said upper rectification zone whereby said acid drops disintegrate and are thrown against the inner surface of the quartz tube in the liquid film zone wherein they disintegrate further and mix with acid running down the inner surface of said quartz tube forming an essentially unbroken liquid film; and wherein said reservoir zone includes means for collecting acid running down from said liquid film zone and contains at least one circulatory device for controllably circulating collected acid during the boiling of collected acid and further contains overflow means for removing surplus concentrated acid.



4,440,596

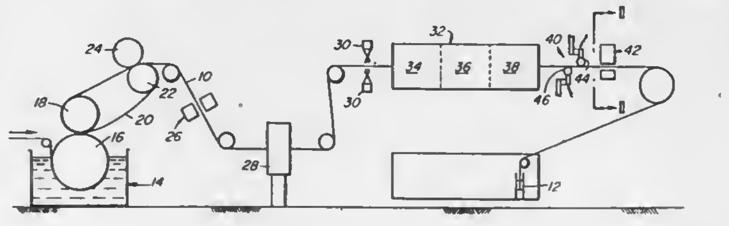
CONTROL OF DIAMETER OF FIBER INSULATION ON CONDUCTORS

Michael A. Shannon, Glenburnie, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed May 21, 1982, Ser. No. 380,612

Int. Cl.^{3} E04C ***1/62***

U.S. Cl. 162—106 **7 Claims**



1. A pulp vat apparatus for applying a layer of pulp fiber to conductors comprising a vat, a cylinder mould rotatable within the vat about an axis to move any part of its periphery alternately towards and away from the bottom of the vat, the mould having axially spaced annular perforate regions each for accommodating a conductor as the conductors pass in laterally spaced positions downwardly into the vat beneath the mould and upwardly out of the vat, an outlet for water from within the mould, partition means within the vat extending radially outwards from the cylinder mould in positions between perforate regions to divide the vat into compartments with each perforate region associated solely with one compartment, flow inlet means for pulp to each compartment, means to vary the rate of flow of pulp through each inlet means independently of the other inlet means, means for guiding a plurality of electrical conductors through the vat in laterally spaced positins along the annular perforate regions of the mould, means for measuring the diameter of the fiber insulation surrounding each of the conductors after drying of the fiber and for producing a signal corresponding to the measured diameter, and means to operate the flow rate varying means depending upon the variation of the produced signal from a datum signal representative of a desired diameter, to raise or lower the level of the pulp in each compartment independently of other compartments and corresponding to a required increase or decrease in the diameter of the fiber towards the desired diameter.

4,440,597

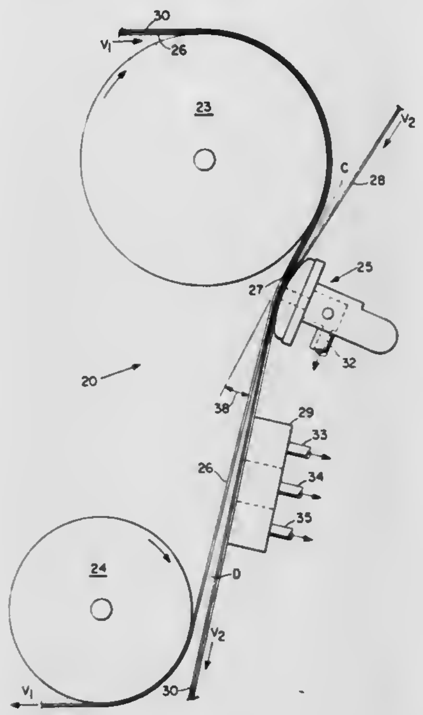
WET-MICROCONTRACTED PAPER AND CONCOMITANT PROCESS

Edward R. Wells, Cincinnati, and Thomas A. Hensler, West Chester, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 15, 1982, Ser. No. 358,500

Int. Cl.^{3} D21H ***5/24***

U.S. Cl. 162—111 **27 Claims**



1. A process for making high bulk, MD-extensible tissue paper having a predetermined MD stress/strain modulus substantially different from comparably extensible dry-creped paper, said MD stress/strain modules being substantially greater than for said comparably extensible dry-creped paper through their lowest one-third ranges of MD extensibility, said process comprising the steps of:

forming an embryonic paper web from an aqueous fibrous papermaking furnish;

forwarding said embryonic web at a first velocity on an endless carrier fabric to a transfer zone;

non-compressively removing sufficient water from said embryonic web that it has a fiber consisting of from about ten (10) to about thirty (30) percent immediately prior to its reaching said transfer zone to enable said embryonic web to be transferred to an endless foraminous transfer fabric at said transfer zone, said transfer fabric having a sufficiently greater void volume than said carrier fabric to obviate macrofolding of said web;

forwarding at a second velocity said endless foraminous transfer fabric along a looped path in contacting relation with a transfer head disposed at said transfer zone, said transfer head having a convex fabric-contacting surface, said second velocity being substantially less than said first velocity;

guiding said carrier fabric and said transfer fabric to cause them to converge and then diverge at acute angles while traversing said convex surface, said acute angles being sufficiently small and the curvature of said convex surface being sufficiently large to substantially obviate fabric-tension-induced compaction of said embryonic web as it passes through said transfer zone;

applying only a sufficient level of differential gaseous pressure across said embryonic web at said transfer zone to cause said embryonic web to transfer to said transfer fabric in said transfer zone without precipitating substantial compaction of said embryonic web; and

completing the papermaking-machine drying of said embryonic web while maintaining the macroscopic interfiber relationships therein in the plane of the web and without overall mechanical compaction of the web.

4,440,598

PRESS SECTION IN A PAPER MACHINE

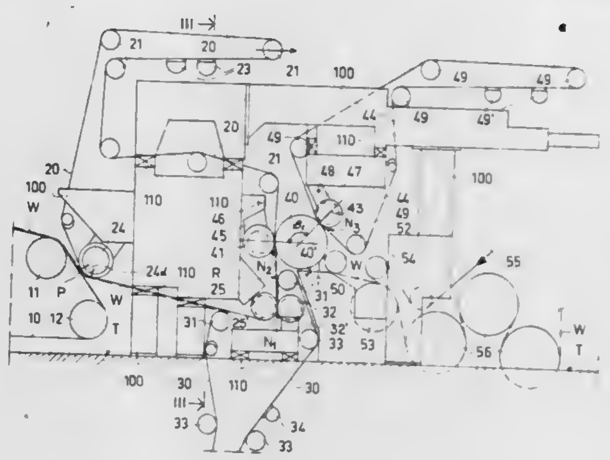
Erkki Koski, and Olli Tapio, both of Jyväskylä, Finland, assignors to Valmet Oy, Finland

Filed Jul. 27, 1981, Ser. No. 287,299

Claims priority, application Finland, May 7, 1981, 811403

Int. Cl.^{3} D21F ***3/04, 3/08***

U.S. Cl. 162—305 **18 Claims**



1. A no-draw press section of a paper machine comprising:

a first double felted press nip defined by first and second rolls through which first upper and second lower felt fabrics pass, a paper web leaving the wire section of the paper machine being supported by the first felt fabric and conducted through the first double felted press nip between said two felt fabrics so that the web is dewatered through both of its surfaces in said first double felted press nip;

at least two single felted press nips defined against a plain surface roll, said first felt fabric passing through a first one of said single felted press nips to serve as a press fabric therein, said first single felted press nip being situated at a given distance from said first double felted press nip, the first felt fabric and paper web supported thereby having a run between the first double felted press nip and the first single felted press nip whereupon the web separates from said first felt fabric after passing through said first single felted press nip and adheres to the surface of said plain surface roll and is conducted on said surface to a second one of said single felted press nips through which a separate third press felt passes;

said press section including only non-suction rolls and wherein said first and second rolls each have a solid shell and a recessed surface;

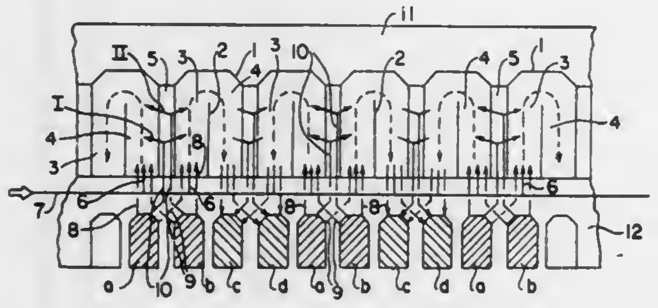
said first upper felt fabric which constitutes a fabric loop and the web supported thereby being guided over a first sector of said first recessed surface roll which is prior to said first double felted press nip and located inside said first felt fabric loop such that the direction of the run of said first felt fabric which wraps said first sector of said first recessed surface roll and the web supported thereby is changed so as to be directed generally upwardly prior to said first double felted press nip, the magnitude of said first sector being in the range of about 30° to 150°; and

said second lower felt fabric which passes through said first double felted press nip being guided over a second sector of said first recessed surface roll which is substantially as large as or only slightly smaller than said first sector of said first recessed surface roll to provide external support for the web prior to said first double felted press nip, said second felt fabric being separated from the web substantially immediately after said first double felted press nip.

4,440,599
HEATING SYSTEM FOR A COKE OVEN BATTERY HAVING TWIN-HEATING FLUES

Carl-Heinz Struck, Bochum; Ralf Schumacher, Hagen, and Heinz Thubeauville, Bochum, all of Fed. Rep. of Germany, assignors to Dr. C. Otto & Comp. G.m.b.H., Bochum, Fed. Rep. of Germany

Filed Dec. 6, 1982, Ser. No. 447,198
Int. Cl.³ C10B *21/06, 21/18, 21/22*
U.S. Cl. 202—141 **6 Claims**

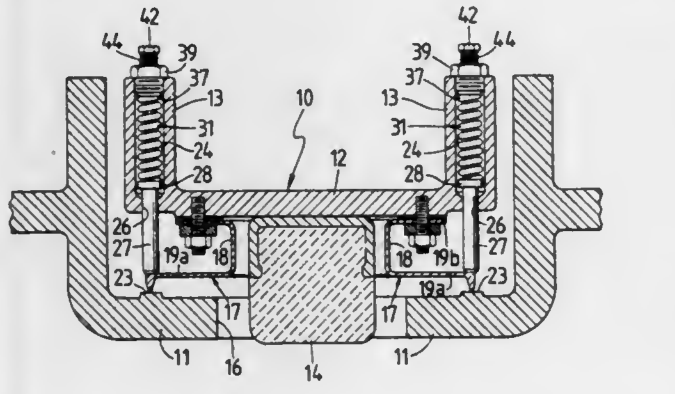


1. A battery of coke ovens with coke oven chambers having a heating system therefor, said heating system including a plurality of twin-heating flues extending between said coke oven chambers transversely to the length of said battery of coke ovens, a flue midfeather for dividing each twin-heating flue into two flue parts interconnected by a flow space across the top of said flue midfeather, an oven crown, an oven sole, a heating wall midfeather extending from said oven sole to said oven crown between each of said twin-heating flues, and regenerators extending below said oven sole transversely of said battery of coke ovens, three passageways extending from each regenerator in a manner such that two regenerators communicate with each twin-heating flue, said three passageways comprising a first passageway extending into the bottom of a first flue part of a first twin-heating flue, a second passageway extending into the bottom of a first flue part of an adjacent twin-heating flue which is separated by one of said heating wall midfeathers from said first twin-heating flue, and a third passageway rising in the last-mentioned heating wall midfeather and having a branched passageway communicating with each of said first flue parts.

4,440,600
SPRING ADJUSTING DEVICE FOR A SELF-SEALING COKE OVEN DOOR

Samuel J. Cantavespre, Birmingham, Ala., assignor to Haran W. Bullard, Jr., Birmingham, Ala., a part interest

Filed Sep. 30, 1982, Ser. No. 429,824
Int. Cl.³ C10B *25/06, 25/16*
U.S. Cl. 202—248 **6 Claims**



1. In a self-sealing coke oven door carrying a flexible sealing member at the side thereof facing an opening for a coke oven door and including a continuous sealing edge in position to engage an adjacent sealing surface on a coke oven door jamb in response to placement of the door within its coke oven door opening, the improvement comprising:

(a) there being a plurality of spaced apart plunger receiving openings extending through and disposed around the coke oven door adjacent the outer edge thereof,

(b) there being a plurality of elongated, outwardly projecting housings carried by the side of said door opposite the side thereof carrying said sealing member with each said housing having a passageway therethrough in alignment with an adjacent plunger receiving opening,

(c) an elongated plunger mounted for sliding movement through each said plunger receiving opening with the innermost end of said plunger in position to engage said sealing member and urge said sealing edge into engagement with said sealing surface upon movement of said plunger toward said door jamb,

(d) a compression spring mounted within said passageway with the innermost end of said spring contacting the outermost end of said plunger,

(e) alignment means within said passageway engaging said spring and retaining said spring out of engagement with the side walls of said passageway,

(f) an elongated threaded actuator member carried by the outer end of each said housing for compressing said spring and urging said plunger toward said door jamb and into engagement with said sealing member,

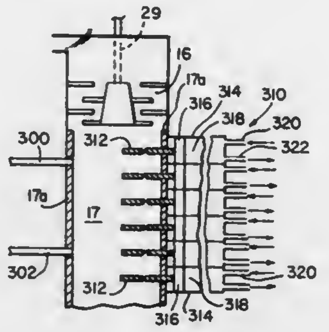
(g) a closure member enclosing the outer end of said passageway and including a threaded opening therethrough in alignment with said passageway for receiving said threaded actuator member, and

(h) an extensible member interposed between said closure member and said actuator member and defining a labyrinth seal therebetween with said extensible member being adapted to contract and expand in response to rotation of said threaded actuator member in opposite directions.

4,440,601
METHOD AND APPARATUS FOR HIGH VOLUME FRACTIONAL DISTILLATION OF LIQUIDS

Jerome Katz, and Sidney J. Fogel, both of Rochester, County of Monroe, N.Y.

Continuation-in-part of Ser. No. 115,615, Jan. 28, 1980, abandoned, which is a continuation-in-part of Ser. No. 769,291, Feb. 22, 1977, Pat. No. 4,186,060, and a continuation-in-part of Ser. No. 787,832, Apr. 18, 1977, Pat. No. 4,186,058. This application Jan. 15, 1981, Ser. No. 224,072
Int. Cl.³ B01D *1/28, 3/14;* B01J *8/02*
U.S. Cl. 203—24 **86 Claims**



1. A method for high volume distillation of impure liquids comprising the steps of:

(a) evaporating said impure liquid in a fractional distillation evaporator to separate a low boiling component vapor from said liquid;

(b) compressing said vapor to a predetermined pressure;

(c) reacting at least a portion of said compressed vapor at said predetermined pressure in the vapor phase in a catalyst-containing reaction zone for producing an adjusted composition vapor;

(d) compressing said vapor exiting said reaction zone to form a recompressed vapor at a predetermined pressure corresponding to a predetermined temperature differential between said recompressed vapor and said impure liquid;

(e) adding sufficient energy to operate said compression steps;

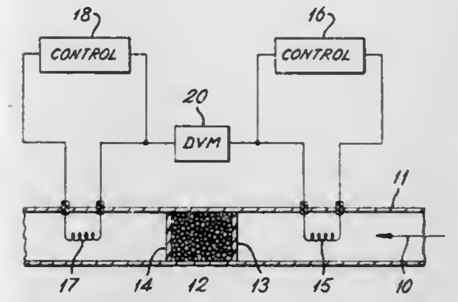
(f) cooling said recompressed vapor in heat transfer relation with said impure liquid whereby said recompressed vapor at least partially condenses, transferring heat to said impure liquid for fractionally distilling said liquid and separating said low boiling component vapor; and

(g) collecting said condensed low boiling component.

4,440,602
APPARATUS AND METHOD FOR MEASURING THE CONCENTRATION OF IONS

John V. Dobson, Hartlepool, England, assignor to National Research Development Corporation, London, England

Filed May 4, 1982, Ser. No. 374,895
Claims priority, application United Kingdom, May 6, 1981, 8113820
Int. Cl.³ G01N *27/46*
U.S. Cl. 204—1 T **7 Claims**



1. A method of measuring the concentration of a predetermined ion in an electrolyte, comprising the steps of

passing an electrolyte along a duct, the electrolyte containing first ions, the concentration of which is to be measured, and second ions,

measuring an electromotive force which depends on the concentration of the second ions (but not the first ions) at a first location in the duct,

passing the electrolyte through material positioned in the duct downstream of the first location, the material, when equilibrated with the electrolyte, changing the concentration of the second ion in accordance with the concentration of the first ion,

and

measuring, at a second location downstream from the said material, an electromotive force which depends on the concentration of the second ion (but not the first ion),

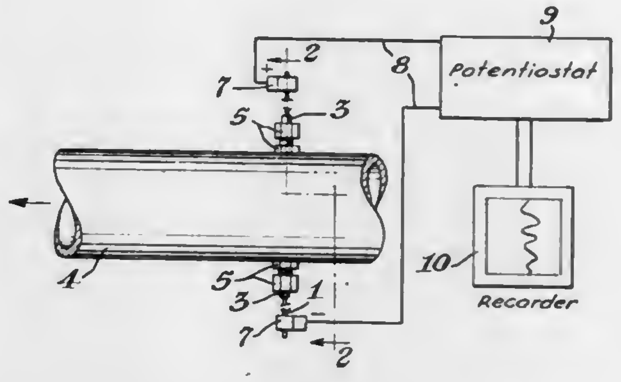
the flow rate of the electrolyte along the duct being constant when a quasi electronic equilibrium is set up or sufficiently slow to allow ionic equilibrium to be set up in the regions of the first and second locations.

4,440,603
APPARATUS AND METHOD FOR MEASURING DISSOLVED HALOGENS

Richard M. VanEffen; James D. McLean, and Dalton L. Decker, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 17, 1982, Ser. No. 389,360
Int. Cl.³ G01N *27/46*
U.S. Cl. 204—1 T **14 Claims**

8. Amperometric method for measuring dissolved halogen gases and chemical analogs thereof in a stirred or flowing electrolyte solution, and which comprises contacting the solution to be measured with a cathode electrode and at least a second electrode which is a reference electrode, the cathode electrode comprising a substrate on which is formed an adherent electrically conductive film, and which forms the working surface of the cathode electrode, the film being of a composition which comprises $[Ti_x(Ru, Ir)_{1-x}]O_2$, wherein x=mole fraction $\geqq 0$ to <1, and (Ru, Ir) represents either ruthenium or iridium or mixtures thereof, impressing a negative D.C. voltage on the cathode electrode whereby the cathode electrode has a negative polarity of between about −0.1 to −1 volt, and

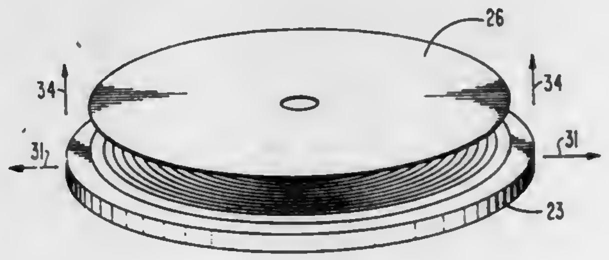


which avoids substantial reductions of electroactive materials in the solution other than said halogen analytes of interest, and measuring the current flowing as a result of the applied voltage to measure responding halogen analyte(s) of the solution.

4,440,604
METHOD FOR THE MANUFACTURE OF LAPPING DISC FOR FORMING KEELS ON VIDEODISC STYLI

Charles H. F. Morris, Jr., Allentown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 25, 1982, Ser. No. 436,378
Int. Cl.³ C25D *1/10*
U.S. Cl. 204—5 **9 Claims**



1. In the matrixing method employed in the manufacture of a lapping disc for forming a keel of a predetermined cross sectional configuration on a terminal end of a videodisc stylus wherein a flat surface of a metal substrate is recorded with a spiral groove having an aspect ratio of about one or less, almost perpendicular walls and a configuration substantially mating the predetermined cross sectional configuration of the keel and a metal master is thereafter electroformed on the surface of the substrate to provide an assembly of a predetermined diameter of the master formed on the substrate, the improvement which comprises: causing the separation of the master from the substrate by substantially uniformly heating the assembly to a temperature sufficient to cause separation of the master from the substrate.

4,440,605
REPAIR OF REINFORCED CONCRETE STRUCTURES BY MINERAL ACCRETION

Wolf H. Hilbertz, Austin, Tex., assignor to The Marine Resources Company, Galveston, Tex.

Filed Feb. 13, 1981, Ser. No. 234,321
Int. Cl.³ C25B *1/00;* C25D *9/08*
U.S. Cl. 204—16 **5 Claims**

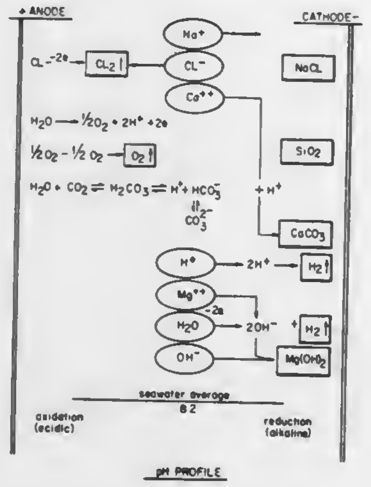
1. A method of repairing a damaged concrete structure comprising a concrete body and a metal reinforcing member embedded therein, said structure being in a damaged condition

by reason of a separation in the concrete body, comprising the steps of:

disposing the damaged concrete structure in a volume of electrolyte;

disposing an anode in the electrolyte in proximity to the concrete structure;

connecting said anode to the positive potential terminal of a direct current electrical power supply;



connecting the metal reinforcing member in said concrete structure to the negative potential terminal of said direct current electrical power supply, making said member a cathode; and

establishing a direct electrical current between the cathode and the anode for a time sufficient for accreting a solid mass of high strength electro-deposited mineral material within the separation in the concrete body to fill the same and bind opposing sides of the separation together.

4,440,606

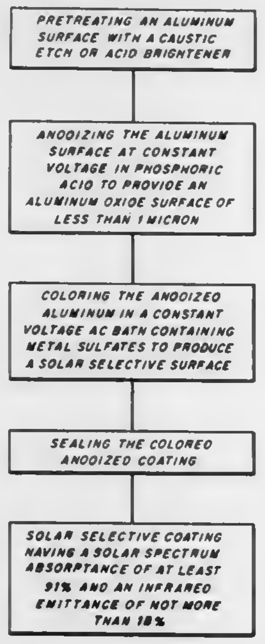
METHOD FOR PRODUCING A SOLAR SELECTIVE COATING ON ALUMINUM

John H. Powers, Lower Burrell, and Hang T. Dang, Pittsburgh, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Aug. 18, 1982, Ser. No. 409,067

Int. Cl.^{3} C25D *11/22*

U.S. Cl. 204—33 **22 Claims**


PRETREATING AN ALUMINUM SURFACE WITH A CAUSTIC ETCH OR ACID BRIGHTENER
ANODIZING THE ALUMINUM SURFACE AT CONSTANT VOLTAGE IN PHOSPHORIC ACID TO PROVIDE AN ALUMINUM OXIDE SURFACE OF LESS THAN 1 MICRON
COLORING THE ANODIZED ALUMINUM IN A CONSTANT VOLTAGE AC BATH CONTAINING METAL SULFATES TO PRODUCE A SOLAR SELECTIVE SURFACE
SEALING THE COLORED ANODIZED COATING
SOLAR SELECTIVE COATING HAVING A SOLAR SPECTRUM ABSORPTANCE OF AT LEAST 91% AND AN INFRARED EMITTANCE OF NOT MORE THAN 18%

1. A process for the production of a solar selective coating on aluminum which comprises:

(a) pretreating the aluminum surface;

(b) anodizing the pretreated aluminum at a constant voltage of at least 10 volts in a phosphoric acid bath for a time period sufficient to provide a total anodizing current of from 90 to 175 coulombs per square decimeter of aluminum surface;

(c) coloring the anodized aluminum using alternating current in a coloring bath containing at least 85 grams per liter of metal sulfates at a constant voltage of from 8 to 12 volt RMS for a time sufficient to permit total current flow of from 100 to 325 coulombs per square decimeter; and

(d) sealing the colored anodized coating to provide a solar selective coating on aluminum of less than 1 micron thickness and having an infrared emittance of not more than 18% and a solar spectrum absorptance of at least 91%.

4,440,607

METHOD OF PRODUCING TIN PLATE FOR LITHOGRAPHY WITH DIRECT PRINTED ULTRAVIOLET-CURED INKS

Salvatore B. Messineo, Upland; Don L. Lasswell, Montclair, and Joe Yee, Upland, all of Calif., assignors to Kaiser Steel Corporation, Oakland, Calif.

Continuation of Ser. No. 228,246, Jan. 26, 1981, abandoned, which is a continuation of Ser. No. 79,836, Sep. 28, 1979, abandoned, which is a continuation-in-part of Ser. No. 971,794, Dec. 12, 1978, abandoned. This application Jun. 1, 1982, Ser. No. 383,628

Int. Cl.^{3} C25D *11/38*

U.S. Cl. 204—35 N **6 Claims**

1. The method of treatment of reflowed tin plate to provide the plate with surface properties enabling the adhesion thereto of ultraviolet light cured, low solvent printing inks comprising immersing tin plate in an aqueous solution of sodium dichromate, rinsing and drying the tin plate, and oiling the surface thereof with acetyl tributyl citrate, the improvement which comprises maintaining said solution of sodium dichromate at a concentration within the range of from about 15 grams per liter to about 30 grams per liter and at a pH of from about 2.0 to about 3.0, and applying ultraviolet light curable, low solvent ink to the oiled tinplate.

4,440,608

PROCESS AND BATH FOR THE ELECTRODEPOSITION OF TIN-LEAD ALLOYS

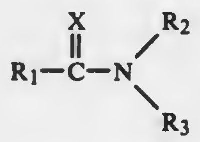
Vincent C. Opaskar, Cleveland Heights; Sidney C. Beach, Parma, and Robert J. Zellner, Shaker Heights, all of Ohio, assignors to McGean-Rohco, Inc., Cleveland, Ohio

Filed Aug. 16, 1982, Ser. No. 408,238

Int. Cl.^{3} C25D *3/56, 3/60*

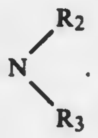
U.S. Cl. 204—43 S **12 Claims**

7. A bath for the electrodeposition of alloys of tin and lead comprising an aqueous acidic fluoride containing lead-tin plating solution having dissolved therein from about 0.025 to about 5.0 g/l of at least one compound having the formula



$$R_1-\overset{\overset{\displaystyle X}{\|}}{C}-N(R_2)(R_3)$$

wherein X is O, S, or NH and R_2 and R_3 are H, or lower alkyl and R_1 is



$$N(R_2)(R_3)$$

4,440,609

METHOD OF ELECTRODEPOSITING A LOW COERCINE FORCE, CORROSION-RESISTANT ALLOY OF NICKEL, IRON AND BORON

Marybelle C. Blakeslee, Golden, Colo.; Judith D. Olsen, Golden's Bridge, and Lubomyr T. Romankiw, Briarcliff Manor, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 221,598, Dec. 31, 1980, abandoned. This application May 11, 1983, Ser. No. 493,499

Int. Cl.^{3} C25D *3/56*

U.S. Cl. 204—43 T **3 Claims**

1. A process for electrodepositing an alloy of high corrosion resistance and H_o and H_c of less than 0.1 Oe in films 3000 Å thick, said process comprising electrodepositing nickel-iron and boron from an acid bath of pH at or below 2.5 which comprises a borane reducing agent, with the deposited alloy containing approximately 0.1 to 2% by weight boron, from 17% to 27% by weight iron, and the balance nickel.

4,440,610

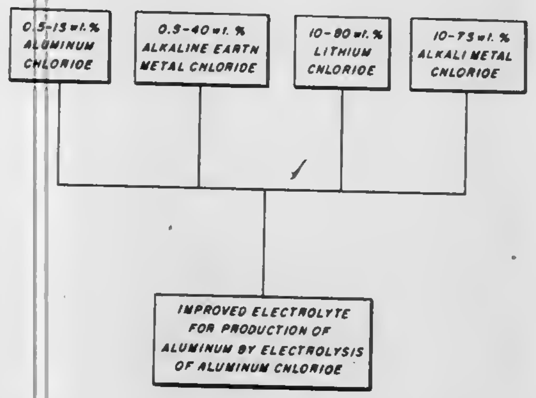
MOLTEN SALT BATH FOR ELECTROLYTIC PRODUCTION OF ALUMINUM

Robert K. Dawless, Monroeville; Alfred F. LaCamera, Level Green, and Chester H. Klingensmith, Leechburg, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Sep. 27, 1982, Ser. No. 423,682

Int. Cl.^{3} C25C *3/06*

U.S. Cl. 204—67 **10 Claims**


0.5-15 wt.% ALUMINUM CHLORIDE
0.5-40 wt.% ALKALINE EARTH METAL CHLORIDE
10-90 wt.% LITHIUM CHLORIDE
10-75 wt.% ALKALI METAL CHLORIDE
IMPROVED ELECTROLYTE FOR PRODUCTION OF ALUMINUM BY ELECTROLYSIS OF ALUMINUM CHLORIDE

1. In an improved process for electrolytic production of aluminum by electrolysis of aluminum chloride in a cell, the electrolysis being performed in a metal chloride electrolyte bath characterized by a lower aluminum solubility, the improvement comprising performing the electrolysis in an electrolyte consisting essentially of 0.5 to 15 wt.% aluminum chloride, from 3 to 40 wt.% of an alkaline earth metal chloride selected from the group consisting of barium, calcium, magnesium and strontium chloride, from 10 to 90 wt.% lithium chloride, and from 10 to 80 wt.% sodium chloride.

4,440,611

CATHODIC ELECTROCHEMICAL PROCESS FOR PREVENTING OR RETARDING MICROBIAL AND CALCAREOUS FOULING

Hari P. Dhar; John O. Bockris, and Donald H. Lewis, all of College Station, Tex., assignors to The Texas A & M University System, College Station, Tex.

Filed Dec. 9, 1981, Ser. No. 328,853

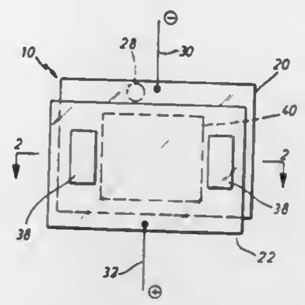
Int. Cl.^{3} C23F *13/00*

U.S. Cl. 204—147 **8 Claims**

1. A method of preventing or retarding microbial or calcareous fouling of a conducting or semi-conducting surface in an aqeuous environment, comprising:

applying a cathodic voltage and a cathodic current to said surface for the electrochemical production of hydrogen peroxide from oxygen dissolved in said aqueous environment;

limiting the maximum voltage and the maximum current applied to said surface to produce substantially no hydrogen by the electrolysis of said aqueous environment; and



controlling said cathodic voltage within a range of potentials for continuously producing hydrogen peroxide on said suerface.

4,440,612

RESINOUS COMPOSITIONS CURABLE THROUGH A TRANSESTERIFICATION CURING MECHANISM

Joseph T. Valko, Gibsonia, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 288,238, Jul. 29, 1981. This application May 11, 1983, Ser. No. 493,467

Int. Cl.^{3} C25D *13/06;* C08L *63/02*

U.S. Cl. 204—181 C **4 Claims**

1. In a method of coating a conductive substrate serving as a cathode in an electrical circuit comprising said cathode and an anode immersed in an aqueous electrodepositable coating composition, said method comprising passing electric current between said cathode and said anode to cause a coating to deposit on said cathode; said coating composition comprising a polymeric polyol containing cationic groups, a polyester crosslinking agent and a transesterification catalyst, characterized in that the polyester crosslinking agent has at least two beta-alkoxyester groups per molecule and the coating composition is substantially free of polyesters containing more than one beta-hydroxyester group per molecule.

4,440,613

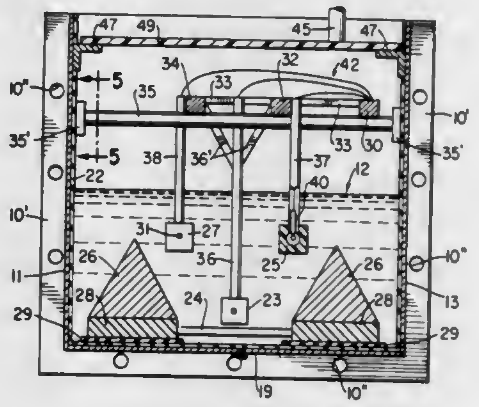
ELECTROPLATING MACHINE

Chester Pilgrim, 320 A Summit St., West Reading, Pa. 19611

Filed May 3, 1982, Ser. No. 374,004

Int. Cl.^{3} C25D *17/02;* B65G *49/04*

U.S. Cl. 204—206 **18 Claims**



1. A wire electroplating machine comprising:

a continuous electrolyte bath contained in a tank with a bottom, two side walls and two end walls;

means for moving the wire through said continuous electrolyte bath and positioned to receive the wire after it has passed through said bath;

a first electrode means located in said bath so as to create a first charging area and providing metallic ions having an electrical charge of one polarity, said first electrode means including (a) at least one longitudinal metallic conductor, said longitudinal conductor having upwardly raised contact areas at spaced apart locations along the top surface thereof, (b) means for insulating the longitudinal conductor from the tank containing the electrolyte bath, (c) at least one longitudinal metallic ion producing metal bar having recesses at spaced locations along its bottom which correspond to the raised areas of said longitudinal conductor, said bar being mounted on said longitudinal conductor such that there is electrical contact between the raised areas of the conductor and the recesses of the bar, and (d) a source of electrical potential connected to said longitudinal conductor;

at least one insulating housing located in and surrounded by said bath, said housing being positioned such that the wire passes through the housing without substantial deviation from a straight path and without permitting a substantial number of metallic ions to enter the housing from the continuous electrolyte bath; and

a second electrode means located at least partially in said insulating housing for imparting an electrical charge to the wire of opposite polarity to that of the metallic ions, said second electrode means creating a second charging area in said insulating housing that is isolated from the first charging area resulting from said first electrode means.

4,440,614

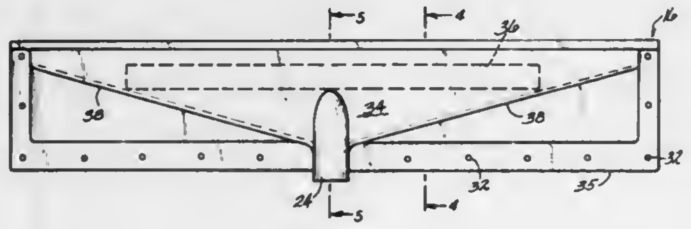
INLET END BOX BRINE PIPE BAFFLE

Don E. Reynolds, and James F. Pickering, both of Athens, Tenn., assignors to Olin Corporation, New Haven, Conn.

Filed Nov. 10, 1983, Ser. No. 550,438

Int. Cl.³ C25B *1/40, 9/00, 15/08*

U.S. Cl. 204—219 **6 Claims**



1. In a flowing mercury cathode electrolytic cell for the electrolysis of aqueous solutions to produce at least one product gas and a product hydroxide having a cell box with a cathodic conducting insulated side walls, and an insulated and removable top, brine inlet trough means having a first side and an outer side, the brine inlet trough means further having an inlet flow funnel and opposing ends, product outlet means, adjustable anodes and electrical current conducting means, the improvement comprising:

an improved flow baffle means insertable into the brine inlet trough means, the flow baffle means being elongate and generally tubular between a first end and an opposing second end having an upper circumference and a lower circumference, the lower circumference having a fully closed portion in the area overlying the inlet flow funnel and interrupted portions on adjacent sides of the fully closed portion with at least one opening on each side extending outwardly to the first and second opposing ends, the upper circumference being fully closed for a portion in an area intermediate the first end and the opposing second end and being interrupted on adjacent sides of the fully closed portion with at least one opening on each side intermediate the fully closed portion of the upper circumference and the first end and the second opposing end, respectively, the upper circumference further being fully closed adjacent the first end and the opposing second end.

4,440,615

FILTER-PRESS TYPE ELECTROLYZER

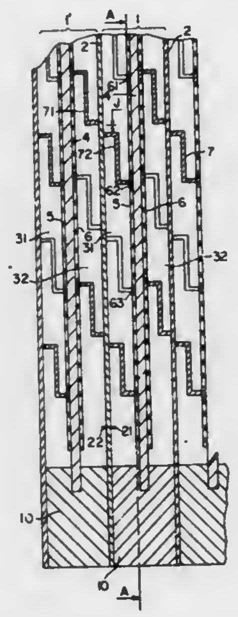
Gerard Pere, Le Breuil, France, assignor to Creusot-Loire, Paris, France

Filed Jul. 30, 1982, Ser. No. 403,684

Claims priority, application France, Sep. 30, 1981, 81 18421

Int. Cl.³ C25B *9/00;* C25C *7/00;* C25D *17/00*

U.S. Cl. 204—253 **4 Claims**



1. A filter-press type electrolyzer housing a plurality of cells and equipped with electrodes consisting of solid metal plates (2), called "plate electrodes", and of latticed or perforated plates (5,6), called "pre-electrodes", parallel to said plate electrodes and separated from the latter by bracing tongues (71, 72), said pre-electrodes disposed along both sides of a diaphragm (4) for each cell, wherein said pre-electrodes are equipped with solid strips (61, 62, 63), which are all parallel to one another and parallel to the direction (F) in which said bracing tongues are welded to said pre-electrodes, each bracing tongue (72) having the shape of an S and being welded to the associated pre-electrode on a solid strip (62) of the latter, and to the associated plate electrode, so as to leave a gap (J) from the associated tongue (71), located on the opposite face of said plate electrode, and said bracing tongues being placed in staggered arrangement, as viewed in a plane prallel to said electrodes.

4,440,616

METAL COLLECTOR

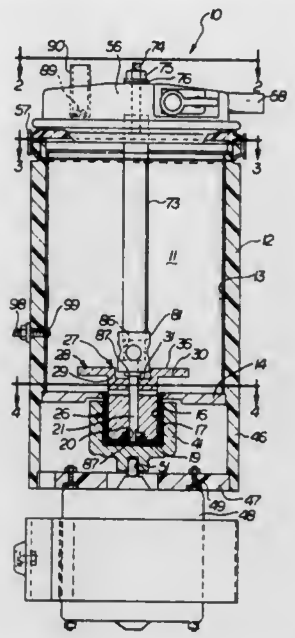
Kenneth R. Houseman, Westlake, Ohio, assignor to General Dental Inc., St. Louis, Mo.

Filed Sep. 30, 1982, Ser. No. 431,026

Int. Cl.³ C25C *7/00;* C25B *11/12*

U.S. Cl. 204—272 **7 Claims**

1. A device for collecting ionized metal from a liquid solution comprising a generally cylindrical chamber, means forming a cathode for receiving metal deposits adjacent the circumference of the chamber, an anode in the chamber adjacent its axis, a liquid inlet and means associated with the inlet for supplying liquid to a zone adjacent the axis of the chamber and adjacent one end thereof, outlet means adjacent an opposite end of the chamber for conducting liquid from the chamber, an impeller/turbulator supported in the chamber between said inlet means and said chamber one end for rotation about the axis of said chamber, means to rotate said impeller/turbulator about the chamber axis, the impeller/turbulator having a rotor including flow inducing channel means having an axial component in its orientation, said impeller/turbulator being adapted to induce a turbulent helical pattern of flow of liquid through the chamber, said channel means having said axial component having a closed boundary, said impeller/turbulator including a disc concentrically disposed on the axis of the chamber, said channel means having an inlet on a side of the disc facing said



one chamber end and an outlet on a side of the disc facing said opposite chamber end.

4,440,617

NON-BLEEDING ELECTRODE

Frank Solomon, Great Neck, N.Y., assignor to Diamond Shamrock Corporation, Dallas, Tex.

Division of Ser. No. 202,564, Oct. 31, 1980, Pat. No. 4,370,284. This application Oct. 27, 1982, Ser. No. 436,979

The portion of the term of this patent subsequent to Jan. 25, 2000, has been disclaimed.

Int. Cl.³ C25B *11/06*

U.S. Cl. 204—290 R **11 Claims**

1. A non-bleeding gas electrode consisting essentially of a hydrophobic, polytetrafluoroethylene-containing, porous backing layer, an active layer containing high surface area carbon particles and a current distributor, wherein said active layer has pores ranging in size from about 1 to about 40 microns and sufficiently large to relieve internal liquid pressures in said active layer.

4,440,618

GAS DISCHARGE DEVICE COMPRISING A PRESSURE CONTROLLER FOR CONTROLLING A PRESSURE OVER A WIDE RANGE

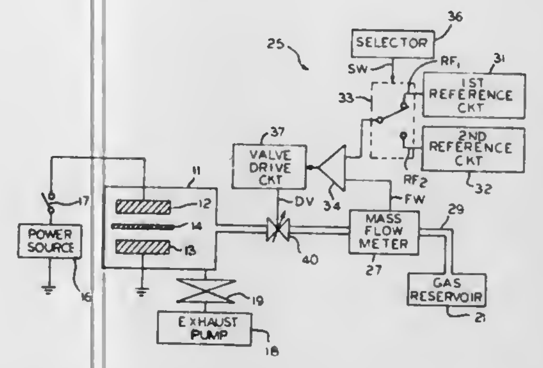
Toshiyuki Suzuki, and Kazuo Nakamura, both of Tokyo, Japan, assignors to Anelva Corporation, Tokyo, Japan

Filed Mar. 16, 1983, Ser. No. 475,862

Claims priority, application Japan, Mar. 19, 1982, 57-42818

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—298 **7 Claims**



1. A gas discharge device including a chamber defining a hollow space, a first electrode in said hollow space, a second electrode opposite to said first electrode in said hollow space, voltage supplying means for supplying a voltage between said first and said second electrodes, exhausting means for exhausting said hollow space, and gas introducing means for introducing a gas into said hollow space, said voltage causing a gas discharge to start at a first pressure and to continue at a second pressure which is lower than said first pressure, in said hollow space between said first and said second electrodes, said gas discharge comprising pressure adjusting means coupled to at least one of said exhausting means and said gas introducing means for adjusting said pressure between said first and said second pressures at a first and a second flow rate which are variable within a first and a second predetermined range, respectively, said first predetermined range being higher than said second predetermined range by a preselected order.

4,440,619

ELECTRO-ANALYTICAL MEASURING EQUIPMENT WITH MEASURING CELL, COMPRISING INTEGRAL SENSING ELEMENT AND SEVERAL REFERENCE ELECTRODES

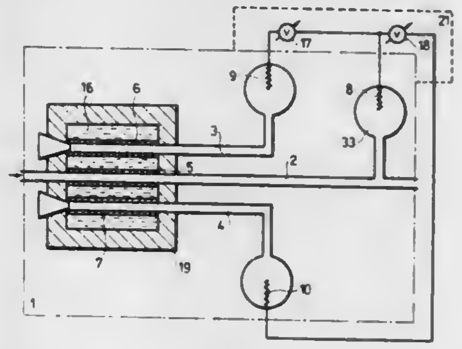
Janos Daroczy; Janos Erdelyi; Jeno Havas; Lajos Kecskes; Henrik Müller; Katalin Nyiro, and Ferenc Takacs, all of Budapest, Hungary, assignors to Radelkis Elektrokemiai Müszergyarto Szövetkezet, Budapest, Hungary

Filed Mar. 1, 1982, Ser. No. 353,289

Claims priority, application Hungary, Mar. 13, 1981, 639/81

Int. Cl.³ G01N *27/28*

U.S. Cl. 204—401 **5 Claims**



1. In electro-analytical measuring equipment having at least one measuring cell and an electronic signal processor for selective and rapid determination of the concentration and ion-activity of a stationary or flowing sample solution or of the partial pressure of a sample, the improvement wherein the measuring cell comprises an integral sensor having three sensing elements of chemically similar composition and in constant electrically conductive contact with each other, one of the sensing elements in contact with a sample and the other sensing elements in contact with two different standardizing media and three reference electrodes connected to the electronic signal processor, with one of the reference electrodes in contact with the sample through an internal electrolyte and the other reference electrodes in contact with the standardizing media through two other internal electrolytes.

4,440,620

MEASURING ELECTRODE DEVICE

Noriaki Ono, and Takashi Kamiyama, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 14, 1982, Ser. No. 449,700

Claims priority, application Japan, Dec. 22, 1981, 56-206100; Dec. 22, 1981, 56-206101; Dec. 22, 1981, 56-206103

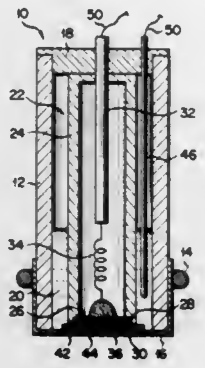
Int. Cl.³ G01N *27/30, 27/46*

U.S. Cl. 204—403 **20 Claims**

1. A measuring electrode device for measuring the concentration of a predetermined gas or a biochemical substance dissolved in a liquid to be inspected, comprising:

an outer casing of substantially cylindrical shape having an open one end;

- a gas permeable membrane attached to the one end of the outer casing to close the one end and to permeate only gas dissolved in the liquid to be inspected toward the outer casing when contacted with the liquid to be inspected;
- an electrolyte housed in the outer casing and in contact with the gas permeable membrane and which varies in the pH upon reaction with the predetermined gas permeated through the gas permeable membrane;
- a reference electrode arranged in the outer casing, partly dipped in the electrolyte and maintained at a predetermined potential;



- a pH electrode arranged within the outer casing and having a pH sensitive member in contact with the electrolyte, the member having a semiconductor substrate and a pH sensitive membrane formed on the substrate and in contact with the electrolyte, a potential difference being produced between the pH sensitive membrane and the electrolyte according to a variation of the pH of the electrolyte, the pH sensitive membrane being formed of at least one element selected from the group consisting of silicon nitride, aluminum oxide and tantalum pentoxide, and a potential difference being produced between the pH electrode and the reference electrode according to the variation of the pH of the electrolyte.

4,440,621

SYSTEM FOR DETECTION OF AIR/FUEL RATIO IN IC ENGINE BY USING OXYGEN SENSOR OPERATED WITH SUPPLY OF CURRENT

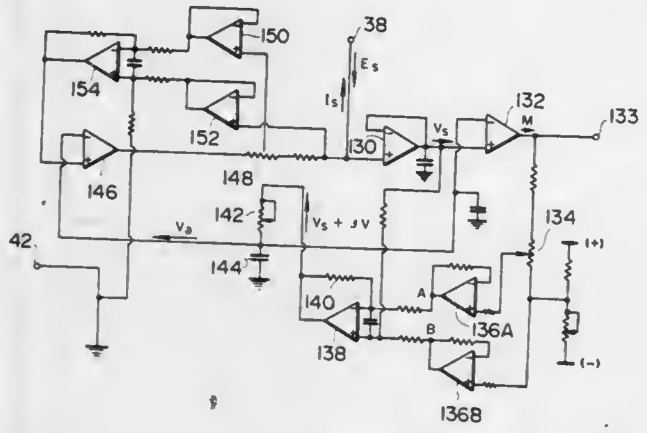
Tsuyoshi Kitahara, Yokohama; Masaaki Uchida, Yokosuka, and Kohki Sone, Tokyo, all of Japan, assignors to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Dec. 2, 1982, Ser. No. 446,315

Claims priority, application Japan,

Int. Cl.³ G01N *27/58*

U.S. Cl. 204—406 **9 Claims**



1. In a system for detecting the air/fuel ratio of air-fuel mixture supplied to an internal combustion engine, the system having an oxygen sensor element of the concentration cell type, which is disposed in an exhaust passage of the engine and has a laminate of a measurement electrode layer exposed to exhaust gas, a microscopically porous layer of an oxygen ion conductive solid electrolyte and a reference electrode layer supported on a ceramic substrate, current supplying means for supplying a DC current to the sensor element to cause migration of oxygen ions in the solid electrolyte layer to thereby produce a reference oxygen partial pressure at the interface between the solid electrolyte layer and the reference electrode layer, and judgement means for producing an air/fuel ratio signal which indicates whether the air/fuel ratio is above or below the stoichiometric ratio of said air-fuel mixture by comparing a signal voltage which is substantially proportional to output voltage of the sensor element with a reference signal,

- the improvement comprising said current supplying means comprising:
- modification means for producing a modified voltage which is lower than said signal voltage by a predetermined value while said air-fuel ratio signal indicates that the air/fuel ratio is below said stoichiometric ratio but is higher than said signal voltage by said predetermined value while said air/fuel ratio signal indicates that the air/fuel ratio is above said stoichiometric ratio;
- smoothing means for smoothing said modified voltage to produce a smoothed voltage; and
- current control means for controlling said DC current such that said DC current flows in said solid electrolyte layer from said reference electrode layer toward said measurement electrode layer and becomes smaller as said smoothed voltage becomes higher while said smoothed voltage is below a reference level, but flows in the reverse direction and becomes larger as said smoothed voltage becomes higher while said smoothed voltage is above said reference level.

4,440,622

INTEGRATION OF SHORT-CONTACT-TIME LIQUEFACTION AND CRITICAL SOLVENT DEASHING WITH GASIFICATION THROUGH METHANOL-TO-GASOLINE

Francis J. Derbyshire, Ewing, N.J.; Philip Varghese, Newtown, Pa., and Darrell D. Whitehurst, Titusville, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 23, 1982, Ser. No. 391,280

Int. Cl.³ C10G *1/00;* C07C *1/00*

U.S. Cl. 208—8 LE **19 Claims**

1. An integrated process for the conversion of solid coal to a wide slate of fuel products comprising: liquefying a portion of said coal by contacting said coal with a solvent to product dissolved coal liquids and an undissolved coal residue, separating a light SRC from said coal liquids by mixing said coal liquids with a light solvent under supercritical conditions of temperature and pressure, whereby said light solvent is converted to a dense-gas phase capable of dissolving said coal liquid, and varying the density of said dense-gas phase to precipitate out said light SRC, said light SRC having a hydrogen concentration greater than said coal feed and remaining portions of said coal liquid, upgrading said light SRC in the presence of hydrogen to produce a plurality of upgraded fuel products, gasifying a mixture of said residue and a portion of said coal liquids under oxidizing conditions to produce a synthesis gas comprising hydrogen and carbon monoxide, shifting the hydrogen to carbon monoxide ratio of said synthesis gas to produce a hydrogen gas stream, combining a portion of said hydrogen gas stream with said synthesis gas, converting said combined hydrogen gas stream and synthesis gas to methanol, passing at least a portion of said methanol in contact with a catalyst capable of converting said methanol to gasoline products, recycling at least one of the product streams for use in the integrated process, said recycle product streams including methanol or said gasoline products for use as said light solvent, light SRC or upgraded fuel products as said solvent for liquefying said coal, or said hydrogen gas stream to upgrade said light SRC or for inclusion with said solvent to liquefy said coal.

4,440,623

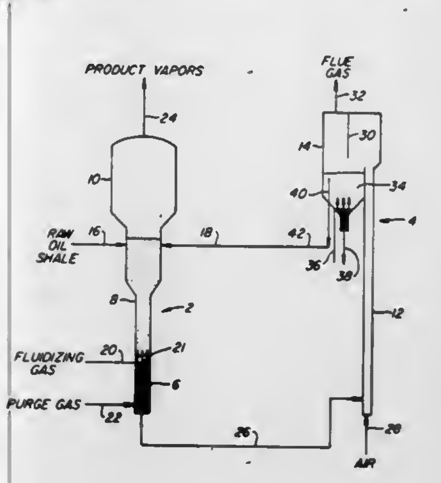
RECYCLE CLASSIFIER FOR RETORTING OIL SHALE

P. Henrik Wallman, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 30, 1982, Ser. No. 412,486

Int. Cl.³ C10G *1/02;* C10B *53/06, 49/16*

U.S. Cl. 208—11 R **8 Claims**



1. A process for pyrolyzing a particulate oil shale containing at least 50 weight percent particles of non-fluidizable size which comprises:

- (a) mixing in the upper part of a retorting zone the particulate oil shale with a hot fluidizable particulate heat transfer material in a ratio sufficient that at least 60 weight percent of the particles in the mixture are fluidizable;
- (b) passing an inert gas upwardly in the upper part of the retorting zone at a velocity above the minimum fluidization velocity of the fluidizable particles through the mixture of oil shale and heat transfer material, whereby a fluidized zone composed of particles of fluidizable size is established in the upper part of the retorting zone;
- (c) collecting in the lower part of the retorting zone below the fluidized zone particles of both fluidizable and non-fluidizable size which have passed through said fluidized zone, whereby a packed bed of solids is established below said fluidized zone;
- (d) pyrolyzing in the retorting zone the kerogen in the oil shale to release hydrocarbon vapors which are recovered as product vapors;
- (e) introducing a purge gas into said packed bed to carry hydrocarbon vapors out of lower part of said retorting zone;
- (f) withdrawing solids comprising a mixture of heat transfer material and pyrolyzed oil shale from the bottom of the retorting zone;
- (g) recovering from the mixture of heat transfer material and pyrolyzed oil shale a fluidizable fraction of particles within a preselected size range;
- (h) heating the fluidizable fraction of step (f) to form hot heat transfer material;
- (i) and recycling the hot heat transfer material of step (e) back to the retorting zone for admixture with additional particulate oil shale.

4,440,624

STARTING PITCHES FOR CARBON FIBERS

Seiichi Uemura, Tokyo; Shunichi Yamamoto; Takao Hirose, both of Kamakura; Hiroaki Takashima, Kawasaki, and Osamu Kato, Yokohama, all of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed Oct. 20, 1982, Ser. No. 435,617

Claims priority, application Japan, Oct. 23, 1981, 56-168606

Int. Cl.³ C10C *3/00;* C01B *31/02*

U.S. Cl. 208—22 **6 Claims**

1. A starting pitch for carbon fibers, obtained by mixing 100 parts by weight of (1) a heavy fraction oil boiling at not lower than 200° C. obtained at the time of steam cracking of petroleum with (2) 10–200 parts by weight of wax having an average molecular weight of 250–1000 to form a mixture and then heat treating the thus obtained mixture at 360°–480° C. under a pressure of 2–50 Kg/cm^2.G thereby to obtain the starting pitch for carbon fibers, the starting pitch so obtained being heat treated to produce a precursor pitch which is melt spun, infusibilized, carbonized or graphitized to obtain the carbon fibers.

4,440,625

METHOD FOR MINIMIZING FOULING OF HEAT EXCHANGES

Ting S. L. Go, Houston, and Richard F. Miller, Humble, both of Tex., assignors to Atlantic Richfield Co., Los Angeles, Calif.

Continuation-in-part of Ser. No. 305,240, Sep. 24, 1981, abandoned. This application May 25, 1983, Ser. No. 497,983

Int. Cl.³ C10G *9/16*

U.S. Cl. 208—48 AA **18 Claims**

7. An antifoulant composition comprised of

- (a) about 70 to 95 parts by weight of an inert organic solvent and
- (b) about 5 to 30 parts by weight of a mixture comprised of:
  - (1) about 10 to 90 parts by weight of at least one N,N-dialkylhydroxylamine wherein the alkyl groups are the same or different and each alkyl group has 2 to 10 carbon atoms, and
  - (2) about 90 to 10 parts by weight of at least one organic surfactant.

11. In a method of inhibiting fouling in petroleum processing equipment comprising injecting into a petroleum or petroleum derivative feed stream to said equipment an amount of antifoulant effective to substantially reduce the rate of fouling, the improvement comprising using as the antifoulant a composition comprised of: (a) about 10 to 90 parts of at least one N,N-dialkylhydroxylamine wherein the alkyl groups are the same or different and each alkyl group has 2 to 10 carbon atoms, and (b) about 90 to 10 parts of at least one organic surfactant, based on the total weight of N,N-hydroxylamine and surfactant in said composition.

4,440,626

CATALYTIC REFORMING PROCESS

William E. Winter, and Gerald E. Markley, both of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 473,957, Mar. 10, 1983, abandoned, which is a continuation-in-part of Ser. No. 336,495, Dec. 31, 1981. This application Apr. 6, 1983, Ser. No. 482,509

Int. Cl.³ C10G *35/06*

U.S. Cl. 208—65 **23 Claims**

1. In a process for reforming, with hydrogen, a naphtha feed in a reforming unit having at least one catalyst-containing on stream reactor through which the hydrogen and naptha are heated and flowed to contact the catalyst at reforming conditions, the improvement comprising

- concentrating within the most rearward reaction zone of the reactor at least 40 percent to about 90 percent, based on the total weight of catalyst in said reactor, of a rhenium promoted platinum catalyst, the weight ratio of rhenium:-platinum being at least about 1.5:1, and
- concentrating within the most forward reaction zone of the reactor a platinum catalyst, or rhenium promoted platinum catalyst which contains rhenium in concentration providing a weight ratio of rhenium:platinum up to about 1.2:1.

4,440,627

CATALYTIC REFORMING PROCESS

Gerald E. Markley, Baton Rouge, La., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 473,956, Mar. 10, 1983, abandoned, which is a continuation-in-part of Ser. No. 336,422, Dec. 31, 1981. This application Apr. 6, 1983, Ser. No. 482,510

Int. Cl.^{3} C10G *35/06*

U.S. Cl. 208—65 **36 Claims**

1. In a process for reforming, with hydrogen, a naphtha feed in a reforming unit having at least one catalyst-containing on stream reactor through which the hydrogen and naphtha are heated and flowed to contact the catalyst at reforming conditions,

wherein from about 40 percent to about 90 percent, based on the total weight of catalyst in said reactor, of a rhenium promoted platinum catalyst, the weight ratio of rhenium:-platinum being at least about 1.5:1, is concentrated within the most rearward reaction zone of the reactor, and

wherein a platinum catalyst, or rhenium promoted platinum catalyst which contains rhenium in concentration providing a weight ratio of rhenium:platinum of up to about 1.2:1 is concentrated within the most forward reaction zone of the reactor,

the improvement comprising

maintaining a start-of-run temperature ranging from about 875° F. to about 935° F.

4,440,628

CATALYTIC REFORMING PROCESS

William E. Winter, and Gerald E. Markley, both of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 473,954, Mar. 10, 1983, abandoned, which is a continuation-in-part of Ser. No. 409,073, Aug. 18, 1982, which is a continuation-in-part of Ser. No. 336,495, Dec. 31, 1981. This application Apr. 6, 1983, Ser. No. 482,511

Int. Cl.^{3} C10G *35/06*

U.S. Cl. 208—65 **34 Claims**

1. In a process for reforming, with hydrogen, a naphtha feed in a reforming unit which contains a plurality of catalyst-containing on stream reactors connected in series, the most rearward reactors of the series containing at least about 30 percent, based on the total weight of catalyst in all of the reactors of the unit, of a rhenium promoted platinum catalyst, the weight ratio of rhenium:platinum of which is at least about 1.5:1, the hydrogen and naphtha being heated and flowed from one reactor to another to contact the catalyst contained therein at reforming conditions, the reaction being continued over a period of at least about 700 hours, the catalyst gradually becoming less active due to coke deposition thereupon, and wherein the loss of activity caused by the coke deposition is compensated for during this period by gradually increasing the temperature of the hydrogen and naphtha feed to the reactors,

the improvement comprising

conducting the reaction at temperatures ranging from about 850° F. to about 950° F. (E.I.T.), at pressures ranging from about 150 psig to about 350 psig, and at gas rates ranging from about 2500 SCF/B to about 4500 SCF/B.

4,440,629

HYDROCARBON HYDROCRACKING PROCESS

Laurence O. Stine, Western Springs, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Sep. 13, 1982, Ser. No. 417,320

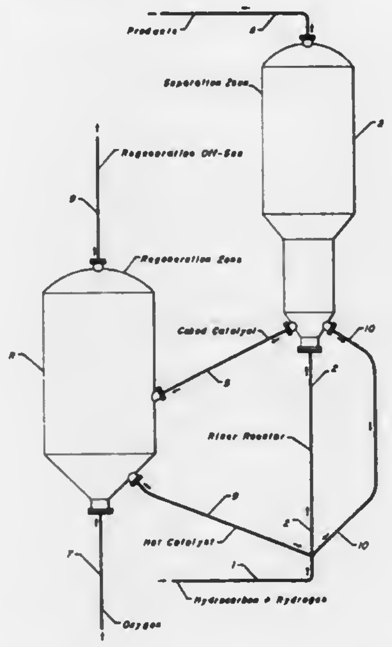
Int. Cl.^{3} C10G *47/28*

U.S. Cl. 208—111 **12 Claims**

1. A process for hydrocracking hydrocarbon feedstocks to lower boiling components which comprises:

(a) combining said hydrocarbon feedstock and hydrogen containing gas with hot solid zeolitic active catalyst particles, the weight ratio of catalyst to oil being within the range between 1 and 15, with hydrogen pressure being maintained within the range between 200 psig and 2000 psig, to form a suspension;

(b) passing said suspension through a riser reaction zone at a temperature between about 600° F. and less than 1000° F. to catalytically crack said feedstock while avoiding thermal conversion of said feedstock and providing a hydrocarbon residence time between about 1 second and 10 minutes;



(c) separating and recovering said lower boiling components and said solid catalyst particles;

(d) regenerating at least a portion of the separated solid catalyst particles with a water-free oxygen-containing gas in a fluidized bed operated at conditions to produce regenerated catalyst and gaseous products consisting essentially of carbon monoxide and carbon dioxide; and

(e) returning at least a portion of the regenerated catalyst combined with the hydrocarbon feedstock and hydrogen.

4,440,630

PROCESS FOR SIMULTANEOUS HYDRODESULFURIZATION AND HYDRODEWAXING WITH A CATALYST OF CONTROLLED PORE SIZE AND METALS CONTENT

Stephen M. Oleck, Moorestown, and Robert C. Wilson, Jr., Woodbury, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 346,439, Feb. 8, 1982. This application Sep. 30, 1982, Ser. No. 430,159

Int. Cl.^{3} C10G *47/20*

U.S. Cl. 208—111 **7 Claims**

1. A process for simultaneously catalytically hydrodesulfurizing and hydrodewaxing a petroleum residual oil or other suitable petroleum base stock, said process consisting essentially of contacting a mixture of hydrogen and said residual oil at a hydrogen pressure of from about 500 to 3,000 psig, a temperature of from about 600° to 850° F. and a space velocity of from about 0.1 to 5.0 LHSV with a catalyst consisting essentially of 15–25 wt. % of a ZSM-5 type zeolite, 90–70 wt. % of alumina, based on alumina plus zeolite, and a metal content of 10–25 wt. %, expressed as oxides, of at least one Group VIII metal selected from the group consisting of nickel, cobalt and iron, and at least one Group VIB metal, based on total catalyst, said catalyst having about 80% of its pore volume in pores no greater than 100 Angstrom units in diameter and at least 90% of its pore volume in pores no greater than 150 Angstrom units in diameter and having a metal content which is balanced with the amount of ZSM-5 type zeolite in the catalyst whereby an increase in the zeolite content is balanced with an increase in the metal content, and recovering an upgraded petroleum product characterized by the fact that its

650°–750° F. fraction has a sulfur content no higher than 0.3 weight percent and a pour point no higher than 0° F. and that at 775° F.+ fraction has a sulfur content no higher than 0.5 weight percent.

4,440,631

PROCESS FOR HYDROCRACKING HEAVY HYDROCARBON OILS AND CATALYST THEREFOR

Osamu Togari; Masatoshi Matsuda; Kenji Shimokawa, all of Yokohama, and Toshiji Makabe, Kawasaki, all of Japan, assignors to Chiyoda Chemical Engineering & Construction Co., Ltd., Yokohama, Japan

Filed Jun. 15, 1983, Ser. No. 504,439

Claims priority, application Japan, Jun. 15, 1982, 57-101378

Int. Cl.^{3} C10G *47/12, 47/10*

U.S. Cl. 208—112 **6 Claims**

1. A catalyst for hydrocracking heavy hydrocarbon oils, comprising:

a porous inorganic carrier composed mainly of alumina or titania; and

two or more catalytic metal components composited with said carrier, the metals of said catalytic metal components being either (a) V and at least one first auxiliary element selected from the group consisting of Zn, Fe, Co, Ni, Cu, Ag, Sn and Pb or (b) Mo and at least one second auxiliary element selected from the group consisting of Zn, Cu, Ag, Sn, Pb and the lanthanum-series elements,

said catalyst having at least 60% of its total pore volume in pores with a diameter of 200 Å or more, at least 40% of its total pore volume in pores with a diameter of 300 Å or more and not more than 20% of its total pore volume in pores with a diameter of at least 1000 Å.

5. A process for hydrocracking a heavy hydrocarbon oil, comprising contacting the heavy hydrocarbon oil with a catalyst at a temperature of 420°–480° C., a hydrogen pressure of 100–250 Kg/cm^2 and a liquid hourly space velocity of 0.1–10 hr^{-1}, said catalyst including a porous inorganic carrier composed mainly of alumina or titania, and two or more catalytic metal components composed with said carrier, the metals of said catalytic metal components being either (a) V and at least one first auxiliary element selected from the group consisting of Zn, Fe, Co, Ni, Cu, Ag, Sn and Pb or (b) Mo and at least one second auxiliary metal component selected from the group consisting of Zn, Cu, Ag, Sn, Pb and the lanthanum-series elements, and said catalyst having at least 60% of its total pore volume in pores with a diameter of 200 Å or more, at least 40% of its total pore volume in pores with a diameter of 300 Å or more and not more than 20% of its total volume in pores with a diameter of at least 1000 Å.

4,440,632

CATALYTIC CRACKING WITH REDUCED EMISSION OF NOXIOUS GAS

Iacovos A. Vasalos, Thessaloniki, Greece, and Eugene G. Wollaston, Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Sep. 15, 1980, Ser. No. 187,612

Int. Cl.^{3} C10G *11/18;* **B01J** *37/14*

U.S. Cl. 208—113 **11 Claims**

1. A process for the fluidized catalytic cracking of a hydrocarbon feedstock containing organic sulfur compounds which comprises:

(a) cracking said feedstock in a reaction zone through contact with a particulate cracking catalyst;

(b) separating cracking products from cracking catalyst which is deactivated by sulfur containing coke deposits and passing said deactivated cracking catalyst to a stripping zone;

(c) contacting the deactivated cracking catalyst with an oxygen-containing gas in said stripping zone at a temperature in the range from about 550° to about 700° C. and reacting the oxygen with said sulfur-containing coke deposits to form products which include sulfur-containing gases, wherein the amount of oxygen introduced into said stripping zone is effective to remove at least about 10 weight percent of the sulfur content and less than about 30 weight percent of the carbon content of said sulfur-containing coke deposits, and wherein said weight percent of the sulfur content removed is greater than said weight percent of the carbon content removed;

(d) withdrawing an effluent gas from the stripping zone and combining said stripping zone effluent gas with said cracking products;

(e) withdrawing from the stripping zone cracking catalyst which is deactivated by modified coke deposits having a reduced sulfur content and passing said catalyst from the stripping zone to a regeneration zone;

(f) removing said modified coke deposits from the deactivated cracking catalyst in said regeneration zone by burning with an oxygen-containing regeneration gas, thereby regenerating and heating the cracking catalyst;

(g) recycling a stream of hot regenerated cracking catalyst from the regeneration zone to the stripping zone in an amount which is effective to maintain the temperature in said stripping zone within the range from about 550° to about 700° C. and to provide a recycle ratio of hot regenerated cracking catalyst to deactivated cracking catalyst within the range from about 0.05 to about 1.0; and

(h) withdrawing a stream of regenerated cracking catalyst from the regeneration zone and passing said regenerated cracking catalyst to the reaction zone.

4,440,633

PROCESS FOR SOLVENT DEASPHALTING HEAVY HYDROCARBON FRACTIONS

Yves Jacquin, Sevres; Manuel Gimenez-Coronado, Colombes, and Huynh Dai-Nghia, Rueil Malmaison, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Apr. 30, 1982, Ser. No. 373,595

Claims priority, application France, Apr. 30, 1981, 81 08837

Int. Cl.^{3} C10C *3/08*

U.S. Cl. 208—309 **8 Claims**

1. In a process for deasphalting a heavy hydrocarbon fraction containing asphaltenes, comprising the step of admixing said fraction with a deasphalting solvent, thereby forming a first liquid phase, being a hydrocarbons solution in said solvent and having a reduced asphaltene content, and a second liquid phase, being an asphalt fraction having an increased asphaltene content; separating said first and second liquid phases; and removing the solvent from said first liquid phase and recovering the resultant deasphalted oil,

the improvement wherein said admixing is effected in a contact zone, at least a portion of which is subjected to ultrasonic radiation.

4,440,634

ORGANIC SALT COMPOSITIONS IN EXTRACTION PROCESSES

Howard L. Mitchell, Baton Rouge, La., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Division of Ser. No. 289,323, Aug. 3, 1981. This application Sep. 29, 1982, Ser. No. 426,665

Int. Cl.^{3} C10G *25/00*

U.S. Cl. 208—310 R **8 Claims**

1. A process for extracting aromatic and olefinic hydrocarbons from mixed liquid, vapor or gaseous feedstreams containing paraffins comprising contacting said feedstreams at a temperature in the range of about 20°–500° C., with a composition of matter, being a solid salt, of the formulae:

[C] [A]

wherein

[C] is a monovalent or divalent cation selected from the group consisting of the formulae:

$[R_4Q]$

$[R_3R'Q]$

$[R_3Q\text{-}L\text{-}QR_3]$, and

[A] is a monovalent or divalent anion or a solid polyanionic metal oxide selected from the group consisting of the formulae:

$[R''_4M]$

[AS]

$[R''_3M\text{-}L'\text{-}MR''_3]$

wherein

Q is independently N, P or AS;

R is independently selected from the group consisting of phenyl, naphthyl, biphenylyl, and their monochloro and monomethyl derivatives;

R′ is independently selected from the group consisting of benzyl, naphthylmethyl, and their monochloro and monomethyl derivatives; linear and branched C_6–C_{12} alkyl; cyclopentyl, cyclohexyl, adamantyl, bicyclooctyl, their monomethyl, dimethyl, partially fluorinated and partially chlorinated derivatives;

R″ is independently selected from the group consisting of phenyl, naphthyl, phenoxy, naphthoxy, and their methyl, polymethyl, chloro, polychloro, fluoro and polyfluoro derivatives;

L is $—CH_2(p—C_6H_4)CH_2—$;

L′ is $p—C_6H_4$;

M is B or Al;

[AS] comprises a solid polyanionic metal oxide in which the metal is independently selected from the group consisting of Al, Si, Ti, Zr, Th, Hf, W, B and mixtures thereof; and wherein the number of cations and anions are sufficient to render the salt electrically neutral.

4,440,635

PROCESS AND APPARATUS FOR THE RECOVERY OF CELLULOSE FIBERS FROM PAPER-PLASTIC MIXTURES

Haigh M. Reiniger, 320 Standish St., South Duxbury, Mass. 06901, assignor to Haigh M. Reiniger, Old Lyme and Toste W. Moller, Rowayton, both of, Conn., a part interest

Continuation of Ser. No. 25,010, Mar. 29, 1979, abandoned. This application Feb. 3, 1981, Ser. No. 231,263

Int. Cl.³ B02C *23/14*

U.S. Cl. 209—4 **34 Claims**

1. A process for reclaiming low density moisture absorbent materials from a material mixture, comprising:

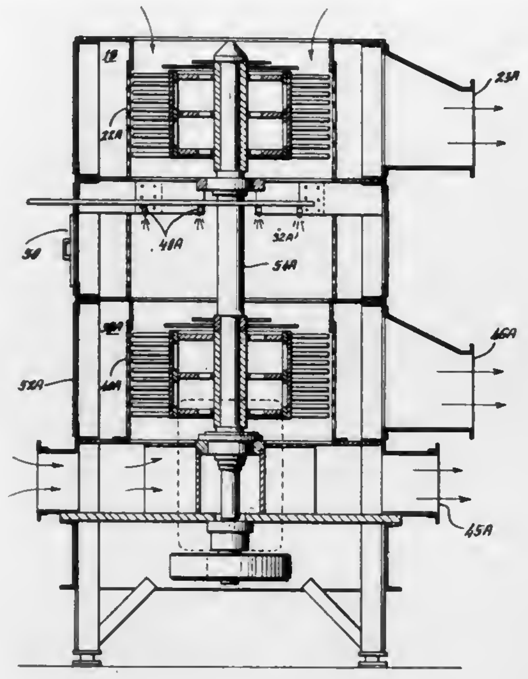
inputting a material mixture containing high and low density moisture inabsorbent and low density moisture absorbent materials

selectively and controllably applying moisturizers to said material mixture and increasing the moisture content of said material mixture to a predetermied value to moisturize said low density absorbent materials and increase the weight and density thereof to form high density moisturized materials and a moisture weighted material mixture;

establishing a centrifugal field and segregating said moisture weighted material mixture in said field to produce a high density fraction and a low density fraction;

partially fiberizing said high density moisturized materials to selectively reduce the size thereof;

separating said segregated high density fraction into an oversize and an undersized fraction; and collecting the undersized fraction as recovered product and discharging the oversized fraction as an unreclaimed product.



4,440,636

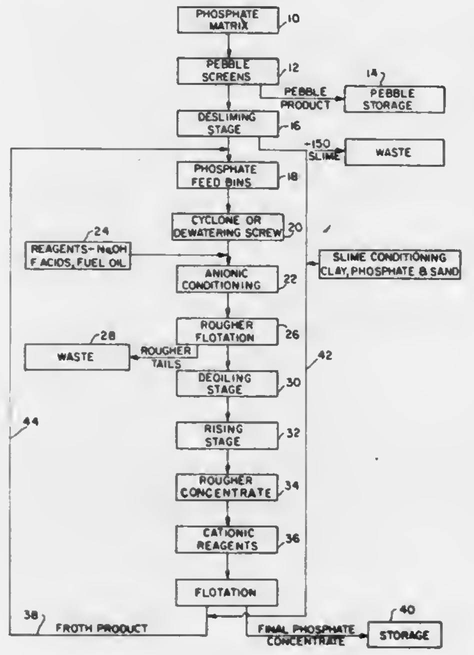
RECOVERY IN PHOSPHATE ORE FLOTATION PROCESS

George M. Lilley, Lakeland, Fla., assignor to J. Warren Allen, Lithia, Fla., a part interest

Filed Feb. 11, 1982, Ser. No. 347,694

Int. Cl.³ B03D *1/14*

U.S. Cl. 209—10 **2 Claims**



1. The method of improving the recovery in a phosphate flotation process comprising the steps of:

treating the phosphate ore with an anionic reagent to float the phosphate ore as a phosphate overfloat;

removing the anionic reagent from the phosphate overfloat;

treating the phosphate overfloat with a cationic reagent to underfloat the phosphate and to overfloat a froth product containing limited amounts of phosphate;

treating the froth products with a slime under 150 mesh containing clay, silica and phosphate to at least partially deactivate the cationic reagent;

agitating the partially deactivated froth product with the slime to further deactivate the cationic reagent in the froth product; and

introducing the froth product into the phosphate flotation process prior to the adding of the anionic reagent.

4,440,637

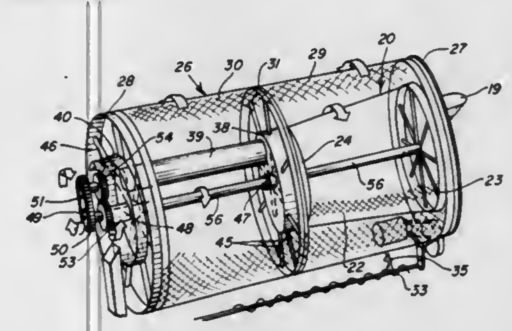
ROTARY GRAIN SCREENERS

Edward H. Smit, Sheffield, and Eugene G. Sukup, Dougherty, both of Iowa, assignors to Sukup Manufacturing Co., Sheffield, Iowa

Filed Apr. 30, 1982, Ser. No. 373,699

Int. Cl.³ B07B *1/24*

U.S. Cl. 209—241 **14 Claims**



1. In a rotary grain screener which includes an inner drum including an annular coarse mesh screen and a plurality of axially spaced rim means supporting said coarse mesh screen, an outer drum including an annular fine mesh screen and a plurality of axially spaced rim means supporting said fine mesh screen, frame means supporting and journalling said drums for rotation about a common axis, and drive means for rotating said drums in opposite directions, said drive means comprising: a reverse drive transmission assembly including first and second members at one end of said outer drum and journalled for rotation about said common axis, a drive transmission between said first and second members at said one end for effecting rotation of one of said members in a direction opposite that of the other, a first component connected to said first member and disposed along said common axis, a second component connected to said second member and disposed along said common axis, first connecting means coupled to said first component and extending radially outwardly to one of said rim means of said inner drum, second connecting means coupled to said second component and extending radially outwardly to one of said rim means of said outer drum, a motive power source, and a second drive transmission assembly positioned and arranged for driving one of said drums from said motive power source to effect rotation thereof in one direction and rotation of the other of said drums in a reverse direction through said reverse drive transmission assembly.

4,440,638

SURFACE FIELD-EFFECT DEVICE FOR MANIPULATION OF CHARGED SPECIES

Millard M. Judy, and John L. Sutko, both of Dallas, Tex., assignors to U.T. Board of Regents, Austin, Tex.

Filed Feb. 16, 1982, Ser. No. 348,988

Int. Cl.³ B01D *15/08*

U.S. Cl. 210—198.2 **7 Claims**

6. A device for chromatographic separation of charged species particles, comprising:

a device body having a plurality of grooves formed therein to define interconnecting channel paths therethrough and define lands between the channel grooves;

first and second electrically-isolated semiconductor regions formed on each of said lands;

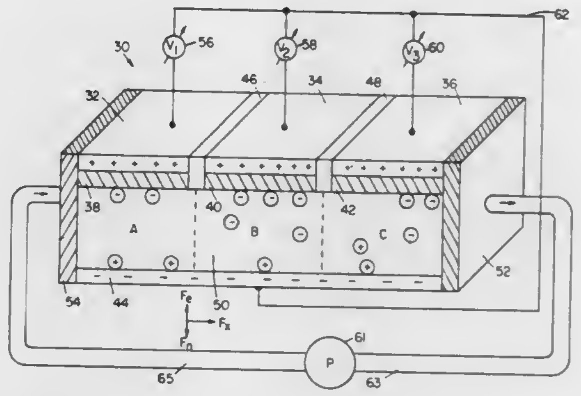
a cover of a silicon-based dielectric material overlaying said device body to make said grooves into fluid tight container regions;

means for defining a fluid inlet port to said device body in fluid communication with said interconnecting channel paths;

means for defining a plurality of fluid outlet ports from said device body in fluid communication with said interconnecting channel paths;

an electrically-conductive fluid containing charged species particles introduced into the device body channel paths through the fluid inlet port;

means connecting to each of said semiconductor regions for establishing an electrical potential thereon, so as to produce electric fields in said fluid that impose electrostatic forces on charged species particles in the fluid as it passes through said device body, whereby certain of the charged species particles move more slowly through the device body and exit an outlet port at a different time from other charged species particles in the fluid.



4,440,639

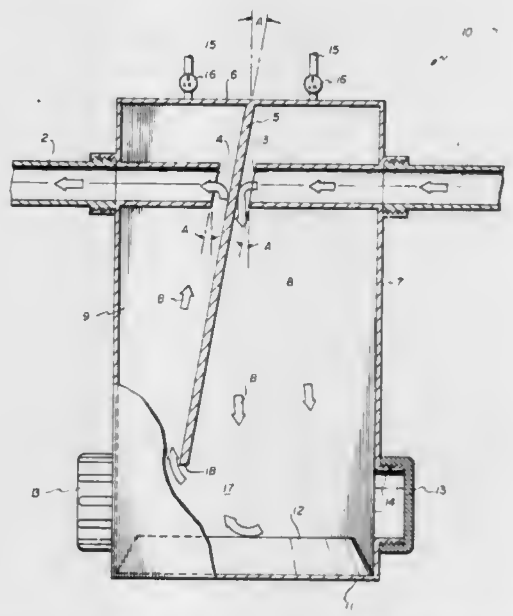
UNIVERSAL MAGNETIC ANGLED STRAINER

Charles W. Galuska, Lilac City Estates, 5 Fuchia Dr., Rochester, N.H. 03867

Filed May 12, 1982, Ser. No. 377,457

Int. Cl.³ B01D *35/06;* B03C *1/02*

U.S. Cl. 210—222 **9 Claims**



1. A device for separating magnetic particles from a fluid stream or the like comprising, in combination:

an enclosure,

an inlet and an outlet conduit means communicating with said enclosure,

a baffle means with said enclosure interposed between said outlet and inlet conduit means and angulated from vertical,

said baffle means dividing said enclosure into plural areas: an inlet area, a lower separation area, and an outlet area,

said separation area including a magnetic source to remove the magnetic particles from the fluid stream wherein open free ends of said inlet and outlet conduit means are within said enclosure and mouths of said free ends are disposed in parallel relationship with said interposed baffle.

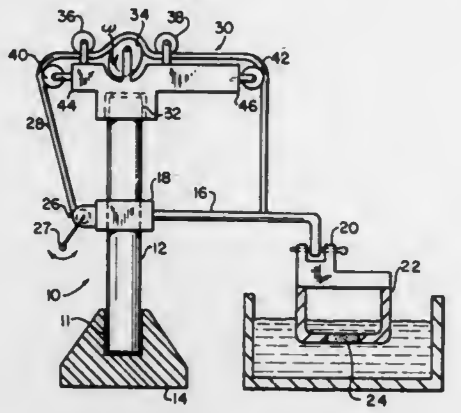
4,440,640
HOIST TO BE USED IN COMBINATION WITH MOLTEN METAL FILTERING APPARATUS

Daniel E. Groteke, 8 E. Lakeview Dr., Apt. #4, Cincinnati, Ohio 45237, and Maurice R. Meeker, Monroe, Ohio, assignors to Daniel E. Groteke, Cincinnati, Ohio

Filed Apr. 14, 1982, Ser. No. 368,109

Int. Cl.^{3} B01D *29/38*

U.S. Cl. 210—237 **12 Claims**



1. A hoist system comprising:
a stand;
a vertical member having a first end and a second end, said first end being mounted to said stand;
a coupling slidably connected to said vertical member;
an extension arm attached to said coupling;
means for raising and lowering said extension arm;
a molten metal filtering vessel; and
means for rigidly connecting said filtering vessel to said extension arm.

4,440,641
HOLLOW FILAMENT MODULE AND METHOD AND APPARATUS FOR PRODUCTION OF THE SAME

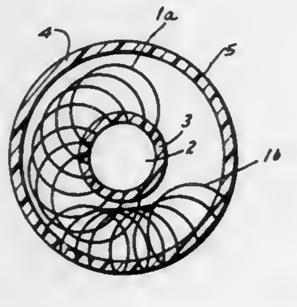
Karl Ostertag, Erlenbach, Fed. Rep. of Germany, assignor to Akzo NV, Arnhem, Netherlands

Filed Feb. 12, 1982, Ser. No. 348,455

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1981, 3105192

Int. Cl.^{3} B01D *31/00*

U.S. Cl. 210—321.3 **14 Claims**



1. A hollow filament module comprising an annular package of hollow filaments having a longitudinal axis, an axially extending inner flow channel element of a hardened mass and an outer element likewise of hardened mass coaxial with the inner flow channel element and radially outwardly arranged from the latter, the hollow filaments forming said package being curved and of substantially equal lengths and extending in substantially radial direction in planes forming with said axis an angle of substantially 90°, the filaments in adjacent planes crossing each other at crossing points and engaging each other at said crossing points, each of said hollow filaments having two open ends embedded in the hardened mass of the respective element so that the open ends of at least some of the filaments are arranged to communicate with said axially extending inner flow channel element and the open ends of at least some of the filaments are arranged to communicate with the peripheral surface of said outer element and fluid will flow through the respective filaments.

4,440,642
SEPARATING AND CLEANING APPARATUS FOR COOLING LUBRICANT

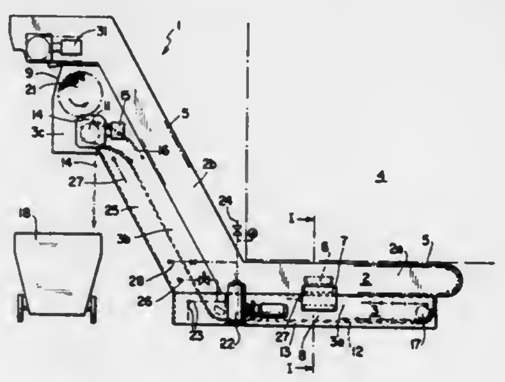
Elmar Frese, Düsseldorf, and Gerhard Koch, Dortmund, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Duesseldorf and Mayfran GmbH, Essen, both of, Fed. Rep. of Germany

Filed Jul. 9, 1982, Ser. No. 396,597

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1981, 3127440

Int. Cl.^{3} B01D *33/22*

U.S. Cl. 210—387 **7 Claims**



1. An apparatus for returning cooling lubricant adhering to swarf produced when machining metals in a machine tool, said apparatus adapted to be positioned under a working bed of said machine tool, comprising:
a swarf conveyor comprising an endless conveyor belt, and a swarf conveyor guide frame guiding said conveyor belt, said swarf conveyor guide frame defining said swarf conveyor and having a straight substantially horizontal section with a free end to be positioned below said working bed and an ascending section terminating in a first discharge head whereby swarf removed from said cooling lubricant by said conveyor belt is discharged at said discharge head;
a filter unit for separating cooling lubricant from swarf comprising an endless scraper belt, and a filter unit guide frame guiding said endless scraper belt, said filter unit guide frame having a straight substantially horizontal section with a free end positioned below the straight substantially horizontal section of said swarf conveyor guide frame, and having an ascending section positioned below the ascending section of said swarf conveyor guide frame, said filter unit guide frame ascending section terminating in an upper and with a second discharge head;
a filter band storage roll disposed at said upper end of said filter unit and supplying filter band to an upper side of an upper run of said scraper belt, said filter band extending around said scraper belt and emerging as used filter band from said upper end of said filter unit;
a connection between said straight section of said swarf conveyor and said straight section of said filter unit for permitting cooling lubricant to flow from said swarf conveyor to said filter unit; and
a pump for producing a vacuum in said filter unit for drawing cooling lubricant through said filter band.

4,440,643
PROCESS FOR PRODUCING AROMATIC POLYIMIDE COMPOSITE SEPARATING MEMBRANE

Hiroshi Makino; Yoshihiro Kusuki; Takashi Harada; Hiroshi Shimazaki, and Tosio Isida, all of Ichihara, Japan, assignors to Ube Industries, Ltd., Chiba, Japan

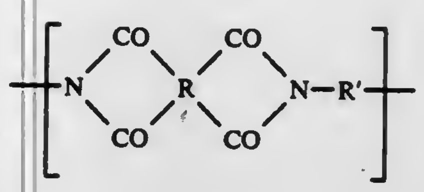
Filed Jun. 11, 1982, Ser. No. 387,493

Claims priority, application Japan, Jun. 22, 1981, 56-95389

Int. Cl.^{3} B01D *39/00, 39/14;* B05D *3/02*

U.S. Cl. 210—500.2 **20 Claims**

1. A process for producing an aromatic polyimide composite separating membrane, comprising the steps of:
coating at least one surface of a porous membrane substrate comprised of an aromatic polyimide which contains at least 80 molar % of at least one recurring unit of the formula (I):



(I)

wherein R represents an aromatic tetravalent radical and R′ represents an aromatic divalent radical, with a homogeneous solution containing 0.05% to 10% by weight of an aromatic polyamic acid dissolved in an organic polar solvent capable of dissolving said polyamic acid therein, but not capable of dissolving said polyimide membrane substrate, at a temperature of 140° C. or less, to form a thin layer of said polyamic acid solution; and
after or during drying said thin layer of said polyamic acid solution by evaporating said solvent therefrom, heating the resultant polyamic acid coating layer at a temperature of 150° C. or more, whereby the amideacid structure in said polyamic acid is imide-cyclized to convert said polyamic acid coating layer to the corresponding polyimide coating layer.

2. An aromatic polyimide composite separating membrane produced in accordance with the process as claimed in claim 1.

4,440,644
METHOD FOR THE BIOLOGICAL REMOVAL OF FREE AND COMPLEX CYANIDES AND THIOCYANATES FROM WATER

Terrence I. Mudder, Piedmont, and James L. Whitlock, Spearfish, both of S. Dak., assignors to Homestake Mining Company, Lead, S. Dak.

Filed Apr. 20, 1983, Ser. No. 486,610

Int. Cl.^{3} C02F *3/34, 3/08;* C12R *1/38;* C12N *1/20*

U.S. Cl. 210—611 **3 Claims**

1. A process for the biological degradation of cyanides, thiocyanates and metal cyanide complexes in an aqueous waste wherein organic matter dissolved in said waste acts as nutrients for growth of an aerobic flora, said process comprising:
acclimating in said aerobic flora at least one microorganism of the strain *Pseudomonas paucimobilis mudlock*, ATCC accession no. 39204; and
contacting the aqueous waste with the aerobic flora to degrade the cyanides, thiocyanates and metal cyanide complexes to environmentally acceptable products.

4,440,645
DISSOLVING GAS IN A LIQUID

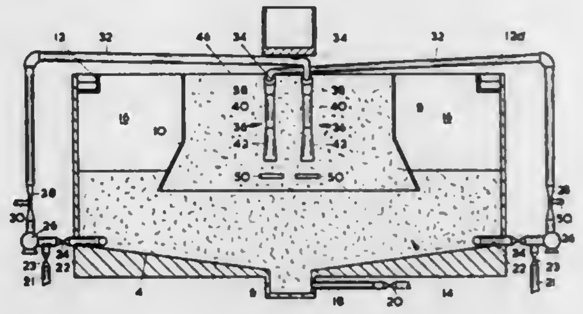
Oliver A. Kite, West Wickham, England, assignor to The BOC Group plc, London, England

Filed Nov. 4, 1982, Ser. No. 439,498

Int. Cl.^{3} C02F *3/22*

U.S. Cl. 210—626 **6 Claims**

1. A method of treating sewage containing aerobic microorganisms in a single tank having a body of said sewage in the lower portion of said tank and clarified liquid thereabove comprising the steps of:
providing a skirt member having a lower open end extending upwardly from said body of sewage to define a volume of said sewage separate from an adjacent body of clarified liquid in said tank;
removing a flow of sewage from said body of sewage and pressurizing said flow;
introducing oxygen into said pressurized flow to form a mixture of oxygen and sewage;



introducing said mixture as a jet downwardly into the inlet of a chamber disposed in said volume defined by said skirt member to induce sewage in to said chamber and thereby oxygenate said sewage;
discharging said oxygenated sewage downwardly through an outlet of said chamber at a reduced velocity; and
reducing the momentum of said discharged oxygenated sewage by directing the same onto baffles spaced from the outlet of said chamber such that undissolved oxygen is substantially retained in said volume and is substantially precluded from entering said body of clarified liquid.

4,440,646
CHELATION

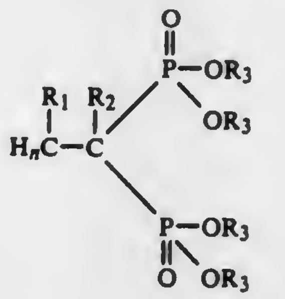
Edward G. Budnick, Scotch Plains, N.J., assignor to Plains Chemical Development Co., Roselle, N.J.

Continuation-in-part of Ser. No. 482,275, Aug. 24, 1965, Pat. No. 3,471,552, and a continuation-in-part of Ser. No. 818,802, Apr. 23, 1969, Pat. No. 3,892,676, which is a division of Ser. No. 485,624, Sep. 7, 1965, Pat. No. 3,471,406, and a continuation-in-part of Ser. No. 813,385, Feb. 27, 1969, abandoned, which is a division of Ser. No. 505,471, Oct. 28, 1965, abandoned. This application Jun. 3, 1971, Ser. No. 149,833

Int. Cl.^{3} C02F *5/14*

U.S. Cl. 210—699 **23 Claims**

1. A method of inhibiting the precipitation of scale-forming salts in an aqueous system comprising adding to said system at least a precipitating inhibition amount of an ethane diphosphonate having the formula



wherein
a. R_1 is chlorine;
b. R_2 is selected from the group consisting of chlorine, bromine and hydroxyl;
c. R_3 is alkali metal, ammonium or hydrogen;
d. n is an integer having a value of 2.

4,440,647

PAINT SPRAY BOOTH DETACKIFICATION COMPOSITION AND METHOD

Walter J. Puchalski, Southampton, Pa., assignor to Betz Laboratories, Inc., Trevose, Pa.

Filed Feb. 9, 1983, Ser. No. 465,224

Int. Cl.³ B01D *21/01;* **C02D** *1/20;* **C09D** *9/00;* **C09K** *3/00*

U.S. Cl. 210—712 **8 Claims**

1. A composition for the detackification and clarification of paint spray booth paint wastes comprising, on a 100% actives basis:

a. about 3–15% by weight of a polymer formed by reaction of hexamethylene diamine and ethylene dichloride,

b. about 2–5% by weight of a polyamide - epichlorohydrin resin,

c. about 3–10% by weight of an amphoteric metal salt selected from the group consisting of soluble salts of zinc, iron, aluminum and lanthanum,

d. the remainder of said composition being water.

5. A process for controlling pollution and contamination in paint, lacquer or enamel spray booths in which water is used to wash air in said booth, and to remove over-sprayed paints, enamels or lacquers, said water being recirculated for further use in washing the air in said spray booths, said process comprising adding to said water an effective amount for the purpose of a detackifying composition comprising a polymer formed by reaction of hexamethylenediamine and ethylene dichloride, a polyamide-epichlorohydrin resin, and an amphoteric metal salt, said amount being sufficient to reduce the tackiness of said paints, enamels and lacquers and to thereby reduce the tendency of over-sprayed paints, enamels and lacquers to adhere to pump parts, mist eliminators, or sump sidewalls of said spray booths, said composition being effective to condition paint, enamel and lacquer solids so as to facilitate removal of said solids from said water.

4,440,648

PROCESS AND AN APPARATUS FOR ENRICHING LIQUIDS WITH OXYGEN

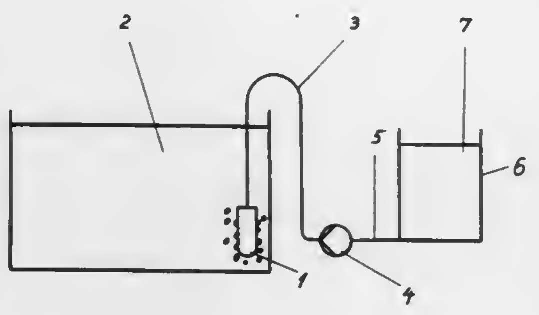
Klaus Gerlach, Aschaffenburg; Wolfgang Lange, Obernburg, and Dieter Loh, Erlenbach, all of Fed. Rep. of Germany, assignors to Akzo NV, Arnhem, Netherlands

Filed Oct. 22, 1981, Ser. No. 313,755

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1980, 3042281

Int. Cl.³ C02F *1/72*

U.S. Cl. 210—759 **8 Claims**



1. A process for enriching liquids with oxygen by means of a catalyst and a liquid which gives off oxygen under the effect of that catalyst, comprising introducing approximately 0.1 up to 5% hydrogen peroxide solution as the oxygen-yielding liquid into a container, immersing said container, closed with a porous moulding in the pores of which is incorporated said catalyst, selected from the group consisting of ruthenium oxide and ruthenium hydroxide, into said liquid to be enriched with oxygen so that at least the entire porous molding is immersed, and allowing the oxygen-yielding liquid to pass through the porous molding under the effect of excess pressure building up in said container through the formation of oxygen therein, so that again oxygen is given off by said oxygen-yielding liquid, which oxygen for the most part is fed to the liquid to be enriched with oxygen.

4,440,649

WELL DRILLING AND COMPLETION FLUID COMPOSITION

Royal E. Loftin, and Adelina J. Son, both of Houston, Tex., assignors to Halliburton Company, Duncan, Okla.

Filed Jan. 28, 1982, Ser. No. 343,620

Int. Cl.³ C09K *7/02*

U.S. Cl. 252—8.5 C **2 Claims**

1. A well drilling and completion fluid composition consisting essentially of:

water;

sepiolite clay viscosity increasing agent present in said composition in an amount in the range of from about 1 to about 50 pounds per barrel of composition;

vinylamide-vinylsulfonate terpolymer fluid loss reducing and rheology stabilizing agent present in said composition in an amount in the range of from about 1 to about 30 pounds per barrel of composition, said terpolymer being prepared by the reaction of 2-acrylamide-2 methyl-3-propyl sodium sulfonate, vinylacetamide and acrylamide monomers;

sodium hydroxide present in said composition in an amount in the range of from about ⅛ to about 2 pounds per barrel of composition; and

potassium acetate clay stabilizing agent present in said composition in an amount in the range of from about 1 to about 100 pounds per barrel of composition.

4,440,650

PROCESS FOR ENHANCING RECOVERY OF OIL FROM OIL-BEARING EARTH FORMATIONS

James M. Watson, and James R. Butler, both of Big Spring, Tex., assignors to Cosden Technology, Inc., Dallas, Tex.

Filed Nov. 2, 1981, Ser. No. 317,213

Int. Cl.³ C09K *3/00*

U.S. Cl. 252—8.55 D **7 Claims**

1. A process for enhancing oil recovery from oil-bearing earth formations, comprising the steps of:

(a) collecting H_2S-containing wellhead gas from an existing well;

(b) concentrating the H_2S from the wellhead gas, said concentrating step comprising extracting the H_2S from the wellhead gas with an organic amine and thereafter distilling the H_2S from the amine;

(c) oxidizing the concentrated H_2S to SO_3 at the well site;

(d) reacting the SO_3 with crude petroleum at the well site to produce a sulfonated petroleum mixture, said crude petroleum being recovered from an operating well located in the same field as the well from which the H_2S-containing wellhead gas is recovered;

(e) adding a neutralizing agent to the sulfonated mixture to form a surface active petroleum sulfonate salt mixture;

(f) incorporating the petroleum sulfonate salt mixture into an oil recovery enhancing fluid; and

(g) injecting the oil recovery enhancing fluid into an oil-bearing earth formation.

4,440,651

USE OF PEROXIDE IN WATERFLOOD OIL RECOVERY

William P. Weisrock, Broken Arrow, Okla., assignor to Standard Oil Company, Chicago, Ill.

Continuation-in-part of Ser. No. 184,831, Sep. 8, 1980, abandoned. This application Nov. 9, 1981, Ser. No. 319,336

Int. Cl.³ E21B *43/22*

U.S. Cl. 252—8.55 D **9 Claims**

1. A process for displacing crude oil within an oil-bearing formation penetrated by at least one injection well in fluid communication with at least one producing well, comprising injecting from about 0.1 to about 0.5 pore volume of aqueous fluid into said formation through said at least one injection well to move said oil to said at least one producing well, said volume of aqueous fluid containing from about 0.1 weight percent to about 3.0 weight percent peroxide.

4,440,652

PROCESS FOR SECONDARY RECOVERY

Walter D. Hunter, Houston, Tex., assignor to Texaco Development Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 245,875, Mar. 23, 1981, abandoned, which is a division of Ser. No. 122,323, Feb. 19, 1980, abandoned. This application Feb. 8, 1982, Ser. No. 346,982

Int. Cl.³ E21B *43/22*

U.S. Cl. 252—8.55 D **8 Claims**

1. A process for recovering hydrocarbons from a subterranean hydrocarbon-bearing formation penetrated by an injection well and a production well which comprises:

(A) injection into the formation via an injection well a drive fluid comprising water having dissolved therein about 0.01 to about 5.0 weight percent of an N-substituted polyacrylamide bearing N-substituents of the formula:

$$—(CH_2CH_2O)_{m-1}CH_2CH_2SO_3M,$$

wherein m is an integer of from 2 to 5 and M is selected from the group consisting of hydrogen, sodium, potassium and ammonium, wherein the number average molecular weight of the N-substituted polyacrylamide is about 10,000 to about 8,000,000,

(B) forcing the fluid through the formation, and

(C) recovering hydrocarbons through the production well.

4,440,653

HIGHLY STABLE ALCOHOL FOAMS AND METHODS OF FORMING AND USING SUCH FOAMS

James E. Briscoe; Phillip C. Harris, and Glenn S. Penny, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

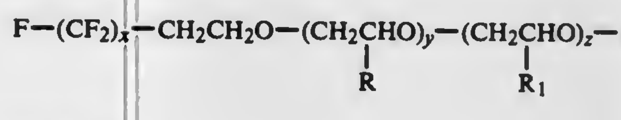
Filed Mar. 8, 1982, Ser. No. 355,990

Int. Cl.³ C09K *7/00;* **E21B** *43/16*

U.S. Cl. 252—8.55 R **32 Claims**

9. A method of treating a water-sensitive subterranean formation wherein a treating fluid foreign to the formation is introduced therein comprising the steps of:

forming a foamed treating fluid having a vapor phase and having a liquid phase comprised of one or more alcohols or aqueous solutions thereof and a nonionic foam-forming surfactant or mixture of nonionic surfactants having the structural formula:



$$F—(CF_2)_x—CH_2CH_2O—(CH_2\underset{\displaystyle R}{\underset{|}{C}}HO)_y—(CH_2\underset{\displaystyle R_1}{\underset{|}{C}}HO)_z—R_2$$

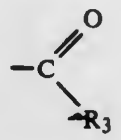
wherein:

x is an integer from 2–12 or an integer or fractional integer representing an average value of from 2–12;

y and z are each individually an integer from 0–20 or an integer or fractional integer representing an average value of from 0–20;

R and R_1 are each individually hydrogen or an aliphatic hydrocarbon radical containing from 1–4 carbon atoms; and

R_2 is hydrogen or an ester group of the formula



wherein R_3 is an aliphatic hydrocarbon radical containing from 1–4 carbon atoms; and

introducing said foamed treating fluid into said formation.

4,440,654

COOLING EMULSION AND METHOD OF PRODUCING A COOLING EMULSION

Henry Zimzik, Kirchstrasse 7, 5419 Marienhausen, Fed. Rep. of Germany

Filed Apr. 1, 1982, Ser. No. 364,505

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1981, 3113724; Aug. 20, 1981, 3132886

Int. Cl.³ C10M *3/26*

U.S. Cl. 252—34.7 **20 Claims**

1. A method for producing a cooling emulsion, particularly for use as an auxiliary means in boring, cutting, and grinding in the metalworking industry, in which organic substances which are per se immiscible with water are rendered water-dispersible and are emulsified with water, comprising:

mixing

(a) about 3% to 15% by weight of natural animal or vegetable wax,

(b) 0.1% to 0.45% by weight of emulsifier, and

(c) the remainder, an aqueous di-, tri-ethanolamine mixture comprising about 50% by weight of water, 37.5% by weight of diethanolamine and about 12.5% by weight of triethanolamine,

bringing the resulting mixture to a boil while stirring to emulsify the wax component and initiate aminization,

then cooling the mixture in a first cooling step to a reaction temperature of about 84° to 93° C., while stirring,

completing aminizing the wax component by the di-, triethanolamine mixture, and

then cooling the aminized emulsion in a second cooling step down to metalworking temperature.

16. A cooling emulsion for use in boring, cutting, and grinding, comprising:

(A) 2.5% to 5% by weight of a reacted emulsion of

Parts by Weight	Ingredient
3 to 15%	natural wax
0.1 to 0.45%	emulsifier
remainder	di-, triethanolamine mixture,

said di-,tri-ethanol mixture consisting essentially of

Parts by Weight	Ingredient
50%	water
37.5%	diethanolamine
12.5%	triethanolamine

(B) 97.5% to 95% by weight of water, with the pH of the emulsion being pH 8 to 9.

4,440,655

SULFUR-CONTAINING MANNICH BASES AND LUBRICANTS CONTAINING SAME

Robert M. Gemmill, Jr., Pitman, and Andrew G. Horodysky, Cherry Hill, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 280,736, Jul. 8, 1981, abandoned. This application Jul. 15, 1982, Ser. No. 398,534

Int. Cl.³ C10M *1/20, 1/32, 1/38*

U.S. Cl. 252—47.5 **27 Claims**

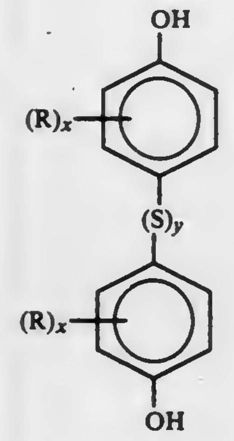
1. A product of reaction made by reacting an aldehyde, at least one amine selected from (1) amines of the formula

NHZR″

wherein R″ is a C_{10} to C_{28} hydrocarbyl or hydroxyalkyl group and Z is hydrogen or R″, (2) cyclic amines having at least 6 carbon atoms in the ring, and (3) an alkylolamine of the formula:

$HOR''NHM$

wherein R''' is a C_2–C_6 alkyl group and M is hydrogen or —R'''OH, and at least one thiodiphenol of the formula:



wherein R is a C_1–C_{30} hydrocarbyl group, x is 0 to 2 and y is 1 to 3, the reaction being carried out at from about 80° C. to about 150° C. and said thiodiphenol, aldehyde and amine are used in molar ratios of 1.0:0.1–10:0.1–10, respectively.

4,440,656

BORATED ALKOXYLATED ALCOHOLS AND LUBRICANTS AND LIQUID FUELS CONTAINING SAME

Andrew G. Horodysky, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 23, 1981, Ser. No. 323,519

Int. Cl.³ C10L *1/18, 1/30;* **C10M** *1/20, 1/54*

U.S. Cl. 252—49.6 18 Claims

1. A product of reaction obtained by reacting, at from about 90° C. to about 280° C., an alkoxylated alcohol of the formula

$RO(R'O)_xH$

wherein R is a hydrocarbyl group containing 9 to 18 carbon atoms, R' is a hydrocarbylene group containing 2 to 4 carbon atoms and x is 1 to 7 with boron oxide or another boron compound of the formula

$(R''O)_xB(OH)_y$

wherein R'' is an alkyl group containing 1 to 6 carbon atoms, x is 0 to 3 and y is 0 to 3, the sum of x and y being 3, the said product of reaction containing from about 0.1% to about 10% by weight of boron.

4,440,657

SYNTHETIC ESTER LUBRICATING OIL COMPOSITION CONTAINING PARTICULAR T-BUTYLPHENYL SUBSTITUTED PHOSPHATES AND STABILIZED HYDROLYTICALLY WITH PARTICULAR LONG CHAIN ALKYL AMINES

Stephen J. Metro, Scotch Plains, and Dale D. Carr, Morristown, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Sep. 1, 1982, Ser. No. 413,894

Int. Cl.³ C10M *3/40*

U.S. Cl. 252—49.9 12 Claims

1. A synthetic ester lubricating oil composition comprising a major amount of synthetic ester base oil, from about 0.1 to about 5% by weight, based on the weight of lubricating oil composition of a phosphate ester having the formula:

$(RO)_3PO$

with each R being phenyl or t-butylphenyl provided at least one R group is t-butylphenyl, and from about 0.001 to about 0.1% by weight, based on the weight of lubricating oil composition, of an alkyl amine having the formula:

$NR_1R_2R_3$

where each of R_1, R_2 and R_3 is a long chain alkyl group of about 16 to about 36 carbon atoms or hydrogen provided at least one of R_1, R_2 and R_3 is said alkyl group and the total number of carbon atoms is about 24 to about 60, said synthetic ester base oil being selected from the group consisting of:

(a) simple esters derived from monohydric aliphatic alcohols having from about 1 to about 18 carbon atoms and monobasic aliphatic acids having from about 2 to about 22 carbon atoms;

(b) complex esters formed from the reaction of three or more of the following compounds:
  (i) monohydric aliphatic alcohols having about 1 to about 18 carbon atoms;
  (ii) monobasic aliphatic acids having about 2 to about 22 carbon atoms;
  (iii) aliphatic glycols or polyglycols having about 2 to about 70 carbon atoms;
  (iv) polyhydric aliphatic alcohols having about 4 to about 25 carbon atoms;
  (v) dibasic aliphatic acids having about 2 to about 25 carbon atoms;
  (vi) polybasic aliphatic acids having about 3 to about 30 carbon atoms, wherein at least one polyfunctional alcohol and at least one polyfunctional acid are employed; and

(c) polyolesters derived from polyhydric aliphatic alcohols containing from about 2 to about 10 hydroxyl groups and about 4 to about 25 carbon atoms and monobasic aliphatic acids having from about 2 to about 22 carbon atoms.

4,440,658

ANTI-RUST COMPOSITIONS

Alfred B. Piotrowski, and Richard S. Herd, both of Woodbury, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 16, 1981, Ser. No. 225,574

Int. Cl.³ C10M *1/32*

U.S. Cl. 252—51.5 A 7 Claims

1. A lubricant comprising a major amount of a grease or other solid lubricant prepared from an oil of lubricating viscosity and a minor amount, of an anti-rust additive compound sufficient to inhibit rust formation on metal surfaces contacting said grease, of a t-alkyl primary amine salt of a monoalkylimidazolylethyl phthalate or mixtures thereof wherein said alkyl group contains from about 1 to about 30 carbon atoms and wherein a first compound is prepared by reacting equi-molar amounts of phthalic anhydride and an imidazoline, and thereafter reacting equi-molar amounts of said first compound and a t-alkyl primary amine.

4,440,659

LUBRICATING OIL ASHLESS DISPERSANT AND LUBRICATING OILS CONTAINING SAME

Jackson C. Chen, Troy; Marguerite S. Baylerian, Huntington Woods; Bryan T. Davis, West Bloomfield, and Ellis B. Rifkin, Southfield, all of Mich., assignors to Ethyl Corporation, Richmond, Va.

Filed Feb. 19, 1982, Ser. No. 350,206

Int. Cl.³ C10M *1/32*

U.S. Cl. 252—51.5 A 20 Claims

1. An ashless dispersant suitable for use in lubricating oil, said dispersant being made by a process comprising

(1) heating a mixture of reactants consisting essentially of 100 parts by weight of a Bright Stock mineral oil, about 1–25 parts by weight of a $C_{1\text{-}20}$ alkyl acrylate or methacrylate and about 1–25 parts by weight of maleic anhydride in the presence of a free radical-generating catalyst at a temperature high enough to form free radicals up to about 250° C. to form a succinic grafted intermediate, and

(2) reacting said intermediate with an amine containing 1–30 carbon atoms and 1–6 amine groups, at least one of said amine groups being a primary or secondary amine group, the amount of said amine being sufficient to provide at least one primary or secondary amine group for each grafted succinic group at a temperature high enough to cause the formation of succinamide or succinimide groups up to about 250° C.

10. A composition comprising a major amount of an oil of lubricating viscosity and a dispersing amount of an ashless dispersant of claim 1.

4,440,660

ESTER LUBRICANTS

Gerrit A. van Rijs, Zevenhuizen; Arie D. Kardol, Waddinxveen, and Adriën G. Hinze, Dordrecht, all of Netherlands, assignors to Internationale Octrooi Maatschappij "Octropa" B.V., Rotterdam, Netherlands

Filed Jun. 8, 1982, Ser. No. 386,264

Claims priority, application Netherlands, Jun. 9, 1981, 8102759

Int. Cl.³ C10M *1/22, 1/24*

U.S. Cl. 252—56 S 11 Claims

1. Ester mixture suitable for use in lubricating a car engine consisting of:

(A) 60–95 mol-% diesters of a 2-alkyl-substituted propane diol-1,3 and a mixture of C_6–C_{10}- and C_{12}–C_{18}-monocarboxylic acids;

(B) 0–40 mol-% diesters of a C_5–C_{15}-ether diol and a mixture of C_6–C_{10}- and C_{12}–C_{18}-monocarboxylic acids;

(C) 5–35 mol-% triesters derived from a trimethylol alkane (C_1–C_4) and a mixture of C_6–C_{10}- and C_{12}–C_{18}-monocarboxylic acids, the molar percentage of C_6–C_{10}-monocarboxylic acid to C_{12}–C_{18}-monocarboxylic acid in the mixture of acids used to make the esters (A), (B) and (C) being 20–50:80–50.

4,440,661

POWDERED CLEANING COMPOSITION

Shoji Takeuchi, Higashimurayama; Kozaburo Nishiyama, Fuchu, and Tadashi Gomi, Fussa, all of Japan, assignors to Fuji Kasei Co., Ltd. and Yuho Chemicals Inc., both of Tokyo, Japan

Filed Sep. 27, 1982, Ser. No. 424,860

Claims priority, application Japan, Oct. 16, 1981, 56-164253

Int. Cl.³ C11D *7/52*

U.S. Cl. 252—89.1 14 Claims

1. A powdered cleaning composition for cleaning in the dry state comprising:

a carrier comprised of 20 to 50 wt. % based on the carrier of an organic fiber having a length of from 110 to 1000 microns and 50 to 80 wt. % based on the carrier of an amino aldehyde resin;

and adsorbed in said carrier at least one surfactant and water wherein said surfactant is present in an amount of 0.01 to 40 wt. % based on the carrier and said water is present in amount of 20 to 250 wt. % based on the carrier.

4,440,662

CLEANING COMPOSITION FOR CONTACT LENSES

Akira Tsuzuki; Takeo Kibe, both of Nagoya, and Shunichi Hioki, Ichinomiya, all of Japan, assignors to Toyo Contact Lens Co., Ltd., Nagoya, Japan

Filed Sep. 13, 1982, Ser. No. 417,477

Claims priority, application Japan, Oct. 22, 1981, 56-167897

Int. Cl.³ C11D *1/44, 1/825*

U.S. Cl. 252—106 13 Claims

1. A cleaning composition for contact lenses, which comprises, as the major component a mixture of (A) at least one member selected from the group consisting of (a), polypropyleneoxide-polyethyleneoxide block copolymers having an ethyleneoxide content of from 33 to 55% by weight and a molecular weight of from 1,500 to 10,000 and (b) condensation products of polypropyleneoxide-polyethyleneoxide block copolymers with ethylene diamine having an ethyleneoxide content of from 35 to 55% by weight and a molecular weight of from 1,500 to 10,000 and (B) at least one member selected from the group consisting of (a_1) polypropyleneoxide-polyethyleneoxide block copolymers having an ethyleneoxide content of from 70 to 90% by weight and a molecular weight of at least 4,000 and (b_1) condensation products of polypropyleneoxide-polyethyleneoxide block copolymers with ethylene diamine having an ethyleneoxide content of from 70 to 90% by weight and a molecular weight of at least 4000, wherein the weight ratio of (A):(B) is from 10:1 to 1:30.

4,440,663

ALKALINE AQUEOUS LIQUID DETERGENT COMPOSITIONS CONTAINING NORMALLY UNSTABLE ESTER PERFUMES

Stanton L. Boyer, and Charles A. Schulz, both of Fairfield, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 301,673, Sep. 14, 1981, abandoned. This application Oct. 8, 1982, Ser. No. 433,492

Int. Cl.³ C11D *1/66, 3/20, 3/50*

U.S. Cl. 252—174.11 12 Claims

1. An alkaline aqueous liquid detergent composition comprising:

(a) from about 7% to about 30% of zeolite A detergency builder;

(b) from about 5% to about 40% of a water-soluble or water-dispersible soap of unsaturated fatty acids containing from about 16 to 22 carbon atoms;

(c) from about 1% to about 30 of a nonionic surfactant;

(d) from about 5% to about 15% of a water-soluble polycarboxylate detergency builder capable of sequestering calcium and magnesium ions in water solution;

(e) from about 0.01% to about 4% of a perfume material comprising from about 4% to about 90% of the total weight of the perfume of normally unstable ester compounds; and

(f) from about 20% to about 82% water; wherein said composition is substantially free of synthetic anionic surfactants.

4,440,664

PROCESS FOR THE DISPERSION OF CHAIN EXTENDER IN POLYOL

Mark A. Pollock, Johnson City, and Jimmie D. Fleenor, Gray, both of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 1, 1982, Ser. No. 438,543

Int. Cl.³ C09K *3/00;* **C08G** *18/10*

U.S. Cl. 252—188.31 8 Claims

1. A process for preparing dispersions of hydroquinone di(β-hydroxyethyl)ether in polyurethane-forming polyol comprising the steps of:

(a) heating and blending an initial mixture of about 5 to 30 parts by weight of said ether and about 10 to 50 parts by weight of said polyol until a condensed phase is formed by the melting of said ether at a temperature of at least about 90° C.;

(b) combining with said initial mixture an additional quantity of polyol sufficient to bring the total amount of polyol in the resulting dispersion to about 100 parts by weight, the additional polyol being at a temperature substantially below that of said initial mixture so that the addition thereof to said initial mixture results in adiabatic quenching of the resulting dispersion to a temperature in the range of about 70° to 85° C.;

(c) annealing said dispersion by heating said dispersion to a temperature which is at least about 5° C. greater than the quenching temperature and which is in the range of about 84° to 90° C.; and

(d) cooling said dispersion to a desired handling temperature which is less than about 60° C.

4,440,665

CONCENTRATED AQUEOUS SURFACTANT COMPOSITIONS

Douglas E. Mather, Whitehaven; Edward T. Messenger, Workington, and Brinley M. Phillips, Whitehaven, all of England, assignors to Albright & Wilson Limited, Warley, England

Filed May 25, 1979, Ser. No. 42,351

Claims priority, application United Kingdom, May 26, 1978, 22991/78

The portion of the term of this patent subsequent to Jan. 6, 1998, has been disclaimed.

Int. Cl.^{3} B01F ***17/28;*** **C11D** ***3/33***

U.S. Cl. 252—356 **10 Claims**

1. An aqueous surfactant composition consisting essentially of at least 20% but not more than 55% by weight of water, and an active mixture consisting of at least 5% by weight of said mixture, of a first, amphoteric surfactant with at least 5% by weight of said mixture of at least 1 surfactant selected from the group consisting of nonionic surfactants and amphoteric surfactants non-homologous with said first amphoteric surfactant, said mixture being capable of forming a "G" phase in the presence of water and the concentration of active ingredient in said composition corresponding to that at which the composition can exist, at least predominantly in the "G" phase.

4,440,666

METHOD OF MAKING CORROSION INHIBITING POLYAMINE AMIDES, THE AMIDES, AND USE THEREFOR

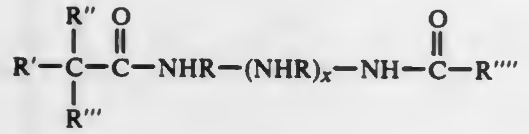
Richard F. Miller, Humble; Tony S. Go, and George R. Wilson, III, both of Houston, all of Tex., assignors to Atlantic Richfield Co., Los Angeles, Calif.

Filed Aug. 6, 1982, Ser. No. 405,821

Int. Cl.^{3} C23F ***11/14***

U.S. Cl. 252—392 **28 Claims**

1. A corrosion inhibitor for hydrocarbonaceous liquid processing systems comprised of an amide having the structural formula:



$$R'-\underset{R'''}{\overset{R''}{C}}-\overset{O}{\overset{\|}{C}}-NHR-(NHR)_x-NH-\overset{O}{\overset{\|}{C}}-R''''$$

wherein R is a straight or branched chain alkylene group having 2 to 6 carbon atoms; x is an integer of 0 to 12; R', R" and R''' are the same or different alkyl groups and the average sum of the carbon atoms in R', R" and R''' varies from 3 to 20, and R'''' is an aliphatic hydrocarbon radical having 9 to 29 carbon atoms.

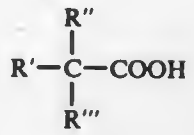
25. A process for preparing a corrosion inhibitor composition comprising reacting, at a temperature of about 50° to 250° C.,

(a) a polyamine having the structural formula

$NH_2(NHR)_x—NH_2$

wherein R is a straight or branched chain alkylene group having 2 to 6 carbon atoms and x is an integer having a value of 0 to 12,

(b) a carboxylic acid having the structural formula



$$R'-\underset{R'''}{\overset{R''}{C}}-COOH$$

wherein R', R" and R''' are alkyl groups and the average total sum of the carbon atoms in R', R" and R''' is 3 to 20, and

(c) an aliphatic fatty acid having 10 to 30 carbon atoms.

4,440,667

CATALYST REGENERATION IN A CATALYTIC REFORMING PROCESS

William C. Baird, Jr.; Paul E. Eberly, Jr., and George J. Balinsky, all of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 394,669, Jul. 2, 1982, abandoned. This application Jan. 7, 1983, Ser. No. 456,512

Int. Cl.^{3} B01J ***23/96***

U.S. Cl. 502—53 **6 Claims**

1. In a process for regeneration of a coked platinum-iridium catalyst promoted with a selenium, component which has been contacted with naphtha and the naphtha reformed for at least about 600 hours at semi-regenerative severities, the improvement comprising

contacting said coked catalyst with hydrogen at pressures ranging from about 100 psig to about 600 psig, at temperatures ranging from about 950° F. to about 1100° F., for a period ranging from about 0.5 hour to about 48 hours to remove coke from, and regenerate said coked catalyst.

4,440,668

CATALYST FOR THE CONVERSION OF SYNTHESIS GAS TO HIGHER ALCOHOLS

Clarence D. Chang, Princeton, and Patrick D. Perkins, Titusville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 6, 1982, Ser. No. 395,403

Int. Cl.^{3} B01J ***21/06, 23/72, 23/78***

U.S. Cl. 502—331 **3 Claims**

1. A catalyst for the production of alcohols from synthesis gas which consists essentially of the oxides of

(i) copper
(ii) cobalt
(iii) zirconium and
(iv) an alkali metal.

4,440,669

ELECTRICALLY CONDUCTING COMPOSITIONS OF DOPED POLYPHENYLENES AND SHAPED ARTICLES COMPRISING THE SAME

Dawn M. Ivory, Stanhope; Granville G. Miller, Morristown; Ronald R. Chance, and Ray H. Baughman, both of Morris Plains, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 22,237, Mar. 20, 1979, abandoned. This application Feb. 17, 1981, Ser. No, 234,511

Int. Cl.^{3} H01B ***1/06***

U.S. Cl. 252—518 **22 Claims**

1. A composition comprising a solid polymer consisting essentially of units having para-phenylene linkages, or of mixtures of such units with units having meta-phenylene linkages, and having incorporated therein

an electron donor doping agent selected from the group consisting of Group IA metals and Group IA metal arenes and mixtures thereof, or

an electron acceptor doping agent selected from the group consisting of Bronsted Acids, SO_3, N_2O_5, halides of Groups VIB, VIII, IIIA and VA; mixed halides and fluorine-containing peroxides and mixtures thereof, wherein:

(a) the direct current conductivity of the composition incorporating the electron donor agent alone is at least 10^{-3} ohm^{-1} cm^{-1}; and

(b) the direct current conductivity of the composition incorporating the electron acceptor agent alone, or in admixture with said electron donor agent, is at least 10^{-3} ohm^{-1} cm^{-1};

said conductivities being measured by the four-probe-in-line method at room temperature.

4,440,670

METHOD OF SYNTHESIZING HIGH SURFACE AREA UNAGGLOMERATED NOBLE METAL PYROCHLORE COMPOUNDS

Harold S. Horowitz, Edison, and Joseph T. Lewandowski, Middlesex, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Sep. 30, 1982, Ser. No. 430,237

Int. Cl.^{3} C01G ***55/00;*** **H01B** ***1/08***

U.S. Cl. 252—518 **21 Claims**

1. A method of preparing compounds having the formula:

$A_2[B_{2-x}A_x]O_{7-y}$

wherein A is selected from the group consisting of lead, bismuth and mixtures thereof, wherein B is selected from the group consisting of ruthenium, iridium and mixtures thereof, wherein x is a value such that $0<x\leqq 1.0$ and y is a value such that $0\leqq y\leqq 1$, comprising:

(a) reacting A cations and B cations from an aqueous solution source of these cations in a liquid alkaline medium having a pH of at least about 12.0 in the presence of an oxygen source at a temperature below about 200° C. for a sufficient time to form a pyrochlore precipitate,

(b) displacing the liquid alkaline medium with water to form a slurry comprising water and pyrochlore precipitate, thereby avoiding contact of the precipitate thus formed with air;

(c) atomizing the slurry thus formed to produce a fine spray,

(d) contacting the spray thus formed with a freezing medium for a period of time sufficient to form a frozen powder comprising an intimate mixture of pyrochlore compound and ice slurried in the freezing medium,

(e) freeze drying the frozen powder thus formed to recover a pyrochlore compound of reduced agglomeration relative to that obtained in the absence of steps (c)–(e).

4,440,671

COMPOSITIONS OF HYDROCARBON-SUBSTITUTED DIPHENYL AMINES AND HIGH MOLECULAR WEIGHT POLYETHYLENE GLYCOLS; AND THE USE THEREOF AS WATER-TREE RETARDANTS FOR POLYMERS

Robert J. Turbett, Millington, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 362,959, Mar. 31, 1982. This application Feb. 23, 1983, Ser. No. 469,178

Int. Cl.^{3} H01B ***3/18***

U.S. Cl. 252—573 **34 Claims**

1. A composition, which serves to improve resistance to water-treeing in polymeric compositions, comprising a hydrocarbon-substituted diphenyl amine and a high molecular weight polyethylene glycol.

13. A composition having improved resistance to water-treeing comprising an ethylene polymer, a hydrocarbon-substituted diphenyl amine in an amount of 0.2 to about 2 percent by weight and a polyethylene glycol, having a molecular weight of about 1,000 to about 20,000 in an amount of about 0.2 to about 1 percent by weight.

4,440,672

PHOTOCHROMIC COMPOSITION RESISTANT TO FATIGUE

Nori Y. C. Chu, Southbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.

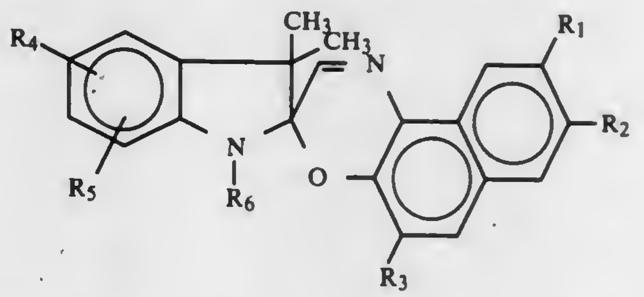
Filed Mar. 22, 1982, Ser. No. 360,455

Int. Cl.^{3} G02B ***5/23***

U.S. Cl. 252—586 **26 Claims**

1. An organic photochromic composition comprising:

at least one photochromic compound having the structural formula:



wherein one of R_1, R_2, and R_3 is hydrogen, halogen, or lower alkoxy and the others are hydrogen, R_4 and R_5 are hydrogen, lower alkyl, lower alkoxy, or halogen, and R_6 is lower alkyl; and

an ultraviolet stabilizer belonging to the class of singlet oxygen quenchers.

4,440,673

METHOD OF AND APPARATUS FOR THE TREATMENT OF RADIOACTIVE WASTE WATER FROM NUCLEAR POWER PLANTS

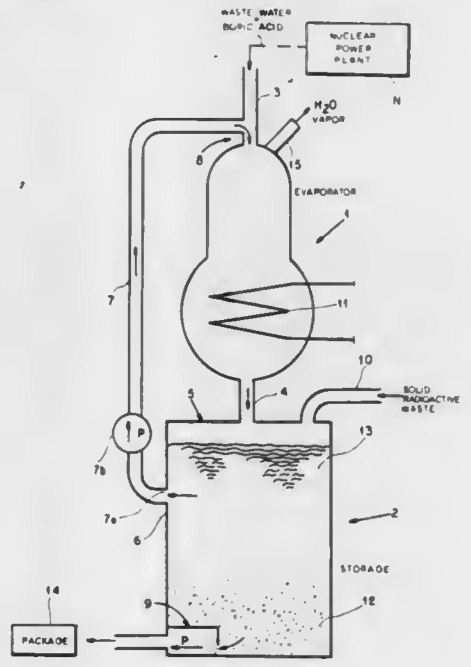
Rainer Ambros, Biblis; Norbert Brenner, Bürstadt, and Jürgen Fischer, Essen, all of Fed. Rep. of Germany, assignors to Rheinisch-Westfälisches Elektrizitätswerk AG, Essen, Fed. Rep. of Germany

Filed Mar. 20, 1980, Ser. No. 132,084

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1979, 2911272

Int. Cl.^{3} G21F ***9/14***

U.S. Cl. 252—632 **1 Claim**



1. A method of treating radioactive waste water from a nuclear reactor containing dissolved boric acid which comprises the steps of:

(a) concentrating radioactive waste water containing dissolved boric acid derived from a nuclear reactor in an evaporator to a boric acid concentration in a concentration below the boric acid saturation level at the tempera-

ture of the concentrate but above the saturated level of the concentrate for boric acid at room temperature;
- (b) collecting the concentrate following step (a) at a temperature of at least 50° C. in a storage tank and permitting the concentrate in said storage tank to cool to room temperature and adding a radioactive solid waste containing diatomaceous earth to the tank, thereby precipitating boric acid solids from the concentrate in said tank and permitting the precipitate to sediment as a sludge therein;
- (c) thereafter decanting clear concentrate from the sedimented boric-acid-containing sludge in said tank and recycling the decanted clear concentrate to the evaporator of step (a);
- (d) repeating steps (b) and (c) while accumulating sludge in said tank thereby enabling radiation in the waste water to decay; and
- (e) discharging the sludge from said tank upon its accumulation therein to a predetermined level.

4,440,674

SYNERGISTIC VINYL HALIDE STABILIZER COMPOSITIONS OF ANTIMONY ORGANIC SULFUR-CONTAINING COMPOUNDS, ALKALINE EARTH CARBOXYLATES AND ALKALI METAL CARBONATES

Dale J. Dieckmann, Cleveland, and Charles W. Fletcher, Highland Heights, both of Ohio, assignors to Dart Industries Inc., Northbrook, Ill.

Filed Aug. 8, 1980, Ser. No. 176,473

Int. Cl.^{3} C08K *5/59*

U.S. Cl. 524—177 **22 Claims**

1. A vinyl halide resin composition which comprises a vinyl halide resin and, as a processing stabilizer, an effective amount of a composition consisting essentially of,
- an antimony organic sulfur-containing compound having an Sb-S group, and mixtures thereof,
- a metal carboxylate selected from the group consisting of an alkaline earth metal salt of a carboxylic or thiocarboxylic acid, and mixtures thereof, and
- an alkali metal carbonate, said antimony compound, metal carboxylate and carbonate components in relative amounts which together provide a synergistic stabilizing effectiveness upon said resin.

4,440,675

HUMAN IMMUNE INTERFERON

Irwin A. Braude, Burke, Va., assignor to Meloy Laboratories, Inc., Springfield, Va.

Continuation-in-part of Ser. No. 293,775, Aug. 17, 1981, Pat. No. 4,382,027. This application Oct. 29, 1982, Ser. No. 437,660

Int. Cl.^{3} C07G *7/00;* **A61K** *45/02*

U.S. Cl. 260—112 R **18 Claims**

1. A process for purifying crude human immune interferon which comprises:
- (a) contacting a solution of crude interferon with Controlled Pure Glass beads for a period of time sufficient to accomplish equilibrated adsorption of the crude interferon to the beads in the presence of a neutral pH buffer, washing the glass beads having interferon adsorbed thereon with a chemically compatible buffer to remove the unbound contaminant until the optical density of the eluate at 280 nm is about 0, washing the glass beads having interferon adsorbed thereon with a neutral pH buffer solution until the optical density at 280 nm is about 0, eluting the adsorbed immune interferon from the glass beads with an ammonium sulfate solution;
- (b) contacting the solution of interferon with an adsorbent selected from the group consisting of Concanavalin A-Sepharose, lentil lectin-Sepharose and pea lectin-agarose for a period of time sufficient to accomplish equilibrated adsorption of the interferon to the absorbent in the presence of a neutral pH buffer, washing the adsorbent having interferon adsorbed thereon from the soluble fraction with ammonium sulfate until the optical density of the eluate at 280 nm is about 0, washing the absorbent with a neutral pH buffer until the optical density of the eluate at 280 nm is about 0, eluting the adsorbed interferon with a buffer containing a member of the group consistng of alpha-methyl D-mannoside and 1-methyl D-glucoside;
- (c) contacting the interferon with a member selected from the group consisting of Heparin-Sepharose or Procian Red-agarose for a period of time sufficient to accomplish equilibrated adsorption of the interferon to the member equilibrated in a neutral pH buffered solution, washing the member containing adsorbed interferon thereon with first a neutral pH buffered solution containing a sugar selected from the group consisting of alpha-methyl D-mannoside and 1-methyl D-glucoside to remove the unbound material until the optical density of the eluate at 280 nm is about 0, washing with a neutral pH buffered solution until the optical density is about 0 to remove the bound material eluting the adsorbed interferon with a second neutral pH buffered solution containing a highly concentrated salt;
- (d) dialyzing the partially purified interferon against a chemically compatible buffer and contacting the solution of dialyzed partially pure interferon with a column of cationic exchanger resin for a period of time sufficient to accomplish equilibrated adsorption of the interferon to the exchanger in the presence of a buffer at pH about 9.0 to 10.0, washing the resin having interferon adsorbed thereon from the soluble fraction with a buffered solution until the optical density of the eluate at 280 nm is about 0, eluting the adsorbed interferon with a desorbing buffer of 20 mM tris-HCl at pH 9.0–10.0 containing 50 mM NaCl; and
- (e) further purifying by subjecting the elution fraction to gel-filtration treatment equilibrated in a neutral pH buffered solution containing a highly concentrated salt, and eluting whereby the solutes within the elution fractions are separated according to their molecular weights; and collecting the solute fraction containing a near homogeneous interferon preparation.

4,440,676

PROCESS FOR THE PRODUCTION OF A DIPEPTIDE, A POLYPEPTIDE OR A PROTEIN

John I. G. Cadogan, Richmond, England; Ian Gosney, and Salih Yaslak, both of Edinburgh, Scotland, assignors to The British Petroleum Company p.l.c., London, England

Filed May 25, 1982, Ser. No. 381,781

Claims priority, application United Kingdom, Dec. 24, 1981, 8138996

Int. Cl.^{3} C07C *103/52*

U.S. Cl. 260—112.5 R **10 Claims**

1. In a process for the production of a dipeptide, a polypeptide or a protein wherein an end amino-group is directly combined with an end carboxyl group in the presence of a coupling agent to form a peptide linkage the improvement which comprises using as the coupling agent a pentaco-ordinate spirophosphorane.

4,440,677

METHOD AND INTERMEDIATES FOR PRODUCING α-L-ASPARTYL-L-PHENYLALANINE

Hugh L. Dryden, Deerfield, and John B. Hill, Woodstock, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Filed Jun. 20, 1983, Ser. No. 506,465

Int. Cl.^{3} C07C *103/52*

U.S. Cl. 260—112.5 R **7 Claims**

1. N-acetoacetyl-α-L-aspartyl-L-phenylalanine methyl ester.

2. A method for preparing α-L-aspartyl-L-phenylalanine methyl ester comprising:
- (a) reacting L-aspartic acid with diketene in basic solution at −10° C. to +20° C. to form N-acetoacetyl-L-aspartic acid
- (b) dehydrating N-acetoacetyl-L-aspartic acid with a dehydrating agent to form N-acetoacetyl-L-aspartic anhydride.
- (c) reacting the resulting N-acetoacetyl-L-aspartic acid anhydride with L-phenylalanine methyl ester to form N-acetoacetyl-α-L-aspartyl-L-phenylalanine and
- (d) removing the N-acetoacetyl group from N-acetoacetyl-α-L-aspartyl-L-phenylalanine by reaction with hydroxylamine salt.

4,440,678

TRIPEPTIDE DERIVATIVES AND THEIR APPLICATION IN ASSAYING ENZYMES

Lars G. Svendsen, Reinach, Switzerland, assignor to Pentapharm, A.G., Basel, Switzerland

PCT No. PCT/CH81/00014, § 371 Date Sep. 16, 1981, § 102(e) Date Sep. 16, 1981, PCT Pub. No. WO81/02294, PCT Pub. Date Aug. 20, 1981

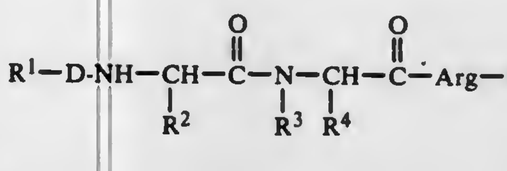
PCT Filed Feb. 6, 1981, Ser. No. 302,420

Claims priority, application Switzerland, Feb. 12, 1980, 1130/80

Int. Cl.^{3} C07C *103/52;* **C12Q** *1/56*

U.S. Cl. 260—112.5 R **5 Claims**

1. Tripeptide derivatives having the formula



$$R^1-D\text{-}NH-\underset{\displaystyle R^2}{\underset{|}{CH}}-\overset{\displaystyle O}{\overset{\|}{C}}-\underset{\displaystyle R^3}{\underset{|}{N}}-\underset{\displaystyle R^4}{\underset{|}{CH}}-\overset{\displaystyle O}{\overset{\|}{C}}-Arg-R^5 \qquad I$$

wherein
- R^1 represents an alkanoyl group which has 2 to 8 carbon atoms and which may carry an amino group in the ω-position, a phenylalkanoyl group which has 2 to 4 carbon atoms in the alkanoyl and the phenyl radical of which may be substituted with an amino group in the p-position, a cyclohexylcarbonyl group which may be substituted with an aminomethyl radical in the 4-position, a benzoyl group which may be substituted with methyl, amino or halogen in the o- or p-position, an alkoxycarbonyl group having 1 to 8 carbon atoms in the alkoxy group, a benzyloxycarbonyl group which may be substituted with methoxy, methyl or chlorine in the p-position, an alkanesulfonyl group having 1 to 4 carbon atoms, a phenylsulfonyl group which may be methylated in the p-position or an α- or β-naphthylsulfonyl group,
- R^2 represents a straight-chained or branched alkyl radical having 1 to 6 carbon atoms, a hydroxyalkyl radical having 1 to 2 carbon atoms, an alkoxyalkyl radical having 1 to 2 carbon atoms in the alkyl and 1 to 4 carbon atoms in the alkoxy, a benzyloxyalkyl radical having 1 to 2 carbon atoms in the alkyl, an ω-carboxyalkyl or ω-alkoxycarbonylalkyl radical which has 1 to 3 carbon atoms in the alkyl and the alkoxy group of which is straight-chained or branched and has 1 to 4 carbon atoms, or an ω-benzyloxycarbonyl-alkyl radical having 1 to 3 carbon atoms in the alkyl, or a cyclohexyl-, cyclohexylmethyl-, 4-hydroxycyclohexylmethyl-, phenyl-, benzyl-, 4-hydroxybenzyl- or imidazol-4-yl-methyl radical, except that when R^2 is isopropyl or cyclohexyl, R' cannot be benzyloxycarbonyl,
- R^3 represents hydrogen or a straight-chained or branched alkyl radical having 1 to 4 carbon atoms,
- R^4 represents hydrogen or a methyl or ethyl radical, and
- R^5 represents an amino group which is substituted with aromatic or heterocyclic radicals and which is capable of being split off hydrolytically with formation of a coloured or fluorescent compound $H-R^5$, and salts thereof with acids.

4,440,679

PASTEURIZED THERAPEUTICALLY ACTIVE PROTEIN COMPOSITIONS

Peter M. Fernandes, Concord, and John L. Lundblad, El Cerrito, both of Calif., assignors to Cutter Laboratories, Inc., Berkeley, Calif.

Continuation of Ser. No. 127,351, Mar. 5, 1980, abandoned. This application Dec. 20, 1982, Ser. No. 451,645

Int. Cl.^{3} A61K *35/16, 37/02, 37/06;* **C07G** *7/00*

U.S. Cl. 260—122 **25 Claims**

1. A method of pasteurizing a composition comprising a thermally sensitive, therapeutically active protein selected from the group consisting of antihemophilic factor (Factor VIII), fibronectin, plasminogen, antithrombin III, fibrinogen, alpha-1-antitrypsin, and prekallikrein, which comprises:
- (a) mixing the protein composition with a compound selected from the group consisting of sugars and reduced sugars in an aqueous medium said compound being present in the mixture in an amount of about 30% to saturation, on a weight to volume basis, and
- (b) heating the mixture at a temperature of about 60°-75° C. and a pH of about 5.5-8.0 for a time sufficient to pasteurize the protein composition and render it substantially free of infective hepatitis.

23. A method for pasteurizing a composition containing a thermally sensitive, therapeutically active protein selected from the group consisting of antihemophilic factor (Factor VIII), fibronectin, plasminogen, albumin, an immune serum globulin, a modified immune serum globulin, antithrombin III, Plasma Protein Fraction (human), fibrinogen, alpha-1-antitrypsin, human blood plasma, partially fractionated human blood plasma and prekallikrein, which comprises:
- (a) mixing the protein composition with an aqueous medium containing a heat stabilizing compound consisting essentially of non-heat treated sugars and reduced sugars, said compound being present in the mixture in an amount of about 30% to saturation, on a weight to volume basis and
- (b) heating the mixture at a temperature of about 60°-75° C. and a pH of about 5.5-8.0 for a time sufficient to pasteurize the protein composition and render it substantially free of infective hepatitis.

4,440,680

MACROMOLECULAR BIOLOGICALLY ACTIVE COLLAGEN ARTICLES

Gheorghe Cioca, Belleville, N.J., assignor to Seton Company, Newark, N.J.

Division of Ser. No. 190,372, Sep. 24, 1980, Pat. No. 4,374,121, which is a continuation-in-part of Ser. No. 74,738, Sep. 12, 1979, Pat. No. 4,279,812. This application Jan. 4, 1982, Ser. No. 336,835

Int. Cl.^{3} C07G *7/00*

U.S. Cl. 260—123.7 **2 Claims**

1. A regenerated collagen product having an average molecular weight of 383,000 to 460,000 with 4% to 6% of the polypeptide chains having a molecular weight of 30,000 to 60,000 and 8% to 12% of the polypeptide chains having a molecular weight of 1,000,000 to 1,500,000, said collagen product having an axial periodicity between triple helix fibrils of about 750 Å to 850 Å.

4,440,681

WATER-INSOLUBLE MONOAZO DYESTUFFS AND THEIR PREPARATION

Horst Tappe, Dietzenbach; Rudolf Löwenfeld, Dreieich; Uwe Kosubek, Büttelborn, and Maria Kallay, Königstein, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

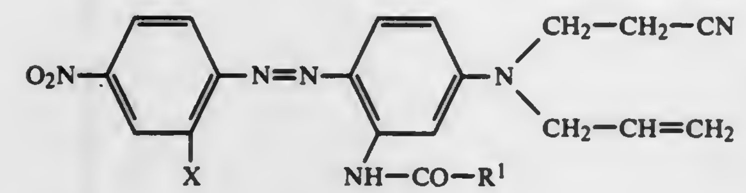
Filed Apr. 24, 1981, Ser. No. 257,360

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1980, 3016301

Int. Cl.^{3} C09B *29/08*

U.S. Cl. 260—207.1 **2 Claims**

1. Water-insoluble azo dyestuffs of the formula



wherein X is hydrogen, chloro, bromo, cyano or nitro and R^1 is methyl or ethyl.

4,440,682

STEREOSPECIFIC SYNTHESIS OF ISOCEPHALOSPORINS AND 2-OXA ISOCEPHALOSPORINS

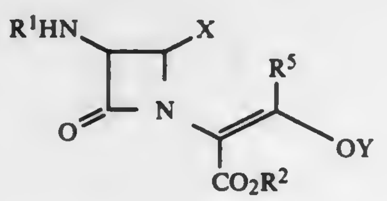
Ajay K. Bose, Mountain Lakes, N.J.; Isabel F. Fernandez, Madrid, Spain, and Kanti J. Gala, Harrison, N.J., assignors to Laboratorio Farmaceutico Quimico "LaFarquim, S.A.", Madrid, Spain

Filed Apr. 6, 1981, Ser. No. 251,128

Int. Cl.^{3} C07D *205/08, 498/04, 497/04, 403/12*

U.S. Cl. 260—239 A **6 Claims**

1. A racemic or enantiomeric cis-3,4-azetidinone of formula VI or an unequal mixture of enantiomers thereof



wherein

R^1 is an N-acyl side chain of the α-amino-β-lactam antibiotics which is selected from the group consisting of R^3CO or alpha-alkyl-β-(alkoxycarbonyl)vinyl, alpha-alkyl-beta-(alkylcarboxyl) vinyl, alpha-alkyl-beta-(alkyl)-beta-(alkoxycarbonyl) vinyl, alpha-alkyl-beta-(alkyl)-beta-(alkylcarbonyl)vinyl wherein each alkyl or alkoxy substituent of each said vinyl independently is from 1 to 3 carbons in length; R^3 being selected from (2-thienyl) methyl, (2-thienyl) methoxy, phenyl, benzyl, phenoxy, phenoxymethyl, phenylethyl, phenoxyethyl, the monosubstituted froms of said phenyl containing groups wherein the substituent is halogen, amino, carboxyl, carboxyester of 2 to 7 carbons, carboxamido, N-alkylcarboxamido of 1 to 4 carbons in the alkyl group

$PhCHNH_2$, $-CH_2NH_2$, CH_3CHNH_2, $HSCH_2CHNH_2$,

$HOC_6H_5CH_2CHNH_2$, $PhCH_2CHNH_2$, or $HO_2C(CH_2)_2\ CHNH_2$;

R^2 is hydrogen, benzyl, p-nitrobenzyl, phenyl, p-biphenyl or alkyl of 1 to 3 carbon atoms;

R^5 is hydrogen, alkyl of 1 to 3 carbons, phenyl, furyl, thienyl, acetoxymethyl or S-(N-methyltetrazol-1-yl) thiomethyl;

X is hydroxy, methanesulfonoxy, p-toluenesulfonoxy, trifluoromethanesulfonoxy, alkylcarbonato of 2 to 4 carbons, benzylcarbonato, chloro, bromo or iodo, and;

Y is methanesulfonyl, p-toluenesulfonyl, trifluoromethanesulfonyl, alkoxycarbonyl of 2 to 4 carbons or benzyloxycarbonyl.

4,440,683

CYCLIZATION TO FORM CEPHEM RING AND AZETIDINONE INTERMEDIATES THEREFOR

Teruji Tsuji, Osaka; Yoshio Hahashima, Kyoto; Mitsuru Yoshioka, Osaka; Masayuki Narisada, Osaka; Hiroshi Tanida, Osaka; Taichiro Komeno, Osaka, and Wataru Nagata, Hyogo, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

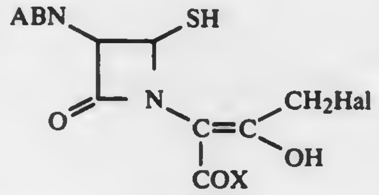
Division of Ser. No. 125,232, Feb. 27, 1980, Pat. No. 4,332,722, which is a division of Ser. No. 66,462, Aug. 13, 1979, abandoned, which is a continuation of Ser. No. 856,807, Dec. 1, 1977, abandoned, which is a division of Ser. No. 658,665, Feb. 17, 1976, Pat. No. 4,079,181. This application Jan. 11, 1982, Ser. No. 338,651

Claims priority, application Japan, Feb. 17, 1975, 50/19612; Feb. 21, 1975, 50/22229; Mar. 7, 1975, 50/28452; Mar. 30, 1975, 50/33808

Int. Cl.^{3} C07D *205/08, 403/04, 401/12, 405/12*

U.S. Cl. 260—239 A **6 Claims**

1. A member selected from the group consisting of (a) a compound of the formula



wherein A is hydrogen, B is hydrogen or an acyl group of the following formula

Ar—CQQ—CO— or Ar—G—CQQ—CO—

wherein Ar is furyl, thienyl, pyrryl, oxazolyl, isoxazolyl, oxadiazolyl, oxatriazolyl, thiazolyl, isothiazolyl, thiadiazolyl, thiatriazolyl, pyrazolyl, imidazolyl, triazolyl, tetrazolyl, phenyl, pyridyl, pyrimidyl, pyrazinyl, pyridazinyl, triazinyl or cyclohexadienyl, each being optionally substituted by alkyl containing 1 to 3 carbon atoms, aminomethyl, hydroxy, alkoxy containing 1 to 3 carbon atoms or halogen, Q is hydrogen or methyl, and G is oxygen or sulfur or alternatively, A and B together with the nitrogen to which they are attached represent phthalimido and Hal is chlorine, bromine, iodine or fluorine, and X is OH or a carboxy protecting group containing up to 20 carbon atoms, and

(b) an oxo tautomer of said compound. pg,81

4,440,684

PROCESS FOR THE PREPARATION OF 6-METHYL-$\Delta^{4,6}$-3-KETO STEROIDS

Klaus Annen; Henry Laurent; Helmut Hofmeister, and Rudolf Wiechert, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

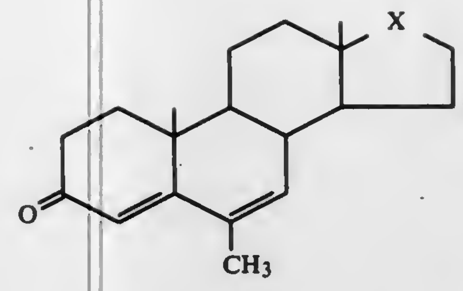
Filed Feb. 4, 1983, Ser. No. 463,702

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1982, 3204281

Int. Cl.^{3} C07J *19/00*

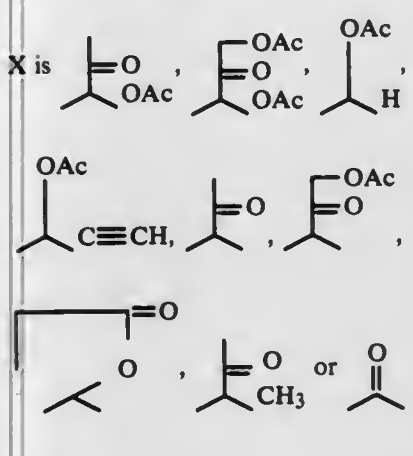
U.S. Cl. 260—239.57 **23 Claims**

1. A process for preparing a 6-methyl-$\Delta^{4,6}$-3-keto steroid of the formula



wherein

X is



comprising

reacting, in a single stage, a corresponding Δ^4-3-keto steroid, in the presence of an alkali metal acetate, with methoxymethyl acetate in an inert solvent at a temperature above room temperature.

4,440,685

IMIDAZODIAZEPINES AND PROCESSES THEREFOR

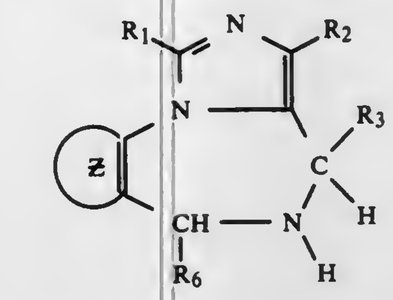
Armin Walser, West Caldwell, and Rodney I. Fryer, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 243,091, Mar. 12, 1981, abandoned, which is a division of Ser. No. 905,820, May 15, 1978, Pat. No. 4,280,957, which is a continuation of Ser. No. 663,660, Mar. 4, 1976, abandoned, which is a continuation-in-part of Ser. No. 602,691, Aug. 7, 1975, abandoned, which is a continuation-in-part of Ser. No. 504,924, Sep. 11, 1974, abandoned. This application Jun. 16, 1983, Ser. No. 504,999

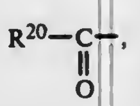
Int. Cl.^{3} C07D *487/14, 487/04, 495/04;* **A61K** *31/55*

U.S. Cl. 260—245.6 **5 Claims**

1. A compound of the formula

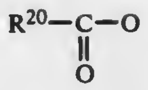


R_1 is selected from the group consisting of hydrogen, lower alkyl, hydroxy lower alkyl,



$$R^{20}-\underset{\underset{O}{\|}}{C}-,$$

phenyl, C_1 to C_7 alkoxy lower alkyl, halo lower alkyl, amino lower alkyl, mono- or di- C_1 to C_7 alkyl or phenyl or chlorophenyl or tolyl substituted amino lower alkyl, pyridyl benzyl and the group $R^{65}CO$ wherein R^{65} is hydrogen or lower alkyl R_2 is selected from the group consisting of hydrogen, lower alkyl, hydroxy lower alkyl



$$R^{20}-\underset{\underset{O}{\|}}{C}-O$$

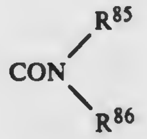
lower alkyl, C_1 to C_7 alkoxy lower alkyl, halo-lower alkyl, amino or mono- or di- C_1 to C_7 alkyl or phenyl or chlorophenyl or tolyl substituted amino lower alkyl, cyano, cyano lower alkyl, mono- or di- C_1 to C_7 alkyl or phenyl or chlorophenyl or tolyl substituted amino, the grooup -COOR where R is hydrogen or lower alkyl, the group

$$\overset{|}{R}CO$$

where R is hydrogen or lower alkyl, or the group

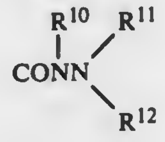
$$R-\overset{|}{C}=N-R'$$

wherein R′ is hydrogen, lower alkyl hydroxy, phenyl, C_1 to C_7 alkoxy, amino, mono or di-alkylamino and arylamino and R is hydrogen or lower alkyl, the group



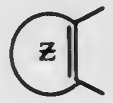
$$CON\genfrac{}{}{0pt}{}{\diagup R^{85}}{\diagdown R^{86}}$$

(where R^{85}, R^{86} are hydrogen, lower alkyl, hydroxy lower alkyl, lower alkenyl, aryl or together R^{85} and R^{86} with the nitrogen atom form a part of a 5- or 6-membered heterocyclic ring selected from the group consisting of morpholino, piperazino, piperidino and pyrrolidino and the group $(CH_2)_n NR^{95}R^{96}$ where R^{95} and R^{96} are hydrogen, lower alkyl, hydroxy lower alkyl, lower alkenyl, aryl, or together R^{95} and R^{96} with the nitrogen atom form a part of a 5- or 6-membered heterocyclic ring selected from the group consisting of morpholino, piperazino, piperidino and pyrrolidino) or the group

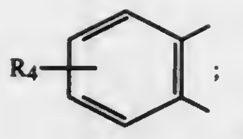


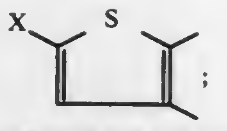
$$CO\overset{R^{10}}{\overset{|}{N}}N\genfrac{}{}{0pt}{}{\diagup R^{11}}{\diagdown R^{12}}$$

where R^{10}, R^{11}, R^{12} are hydrogen, lower alkyl or the group $(CH_2)_nNR^{13}R^{14}$ where n is 1 to 4 and R^{13}, R^{14} are hydrogen or lower alkyl with limitation that where R^{10}, R^{11} or R^{12} *l is* $(CH_2)_nR^{13}R^{14}$ then the remaining substituents are hydrogen or lower alkyl; R_3 is selected from the group consisting of hydrogen or lower alkyl; R_4 is selected from the group consisting of hydrogen, halogen, cyano, trifluoromethyl, lower alkyl, mono- or di- C_1 to C_7 alkyl or phenyl or chlorphenyl or tolyl substituted amino, amino, hydroxy lower alkyl and lower alkanoyl; R^{20} is hydrogen or C_1 to C_6 alkyl; R_6 is selected from the group consisting of phenyl, mono-halo substituted phenyl, di-halo substituted phenyl, pyridyl and mono-halo or mono-nitro substituted pyridyl with the limitation that phenyl is not nitro substituted; and

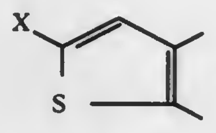


is selected from the group consisting of



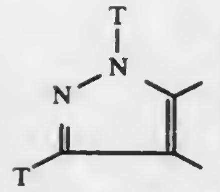


wherein X is chlorine, bromine, or iodine



wherein X is chlorine, bromine, or iodine

and



wherein T is hydrogen or lower alkyl

and the pharmaceutically acceptable salts thereof.

4,440,686

2-AZIDO-3-BENZYLOXY-PROPIONIC ACID-BENZYL ESTER, PROCESS FOR ITS PRODUCTION AND ITS USE

Franz Effenberger, Stuttgart, and Gerhard Zoller, Maintal, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Aug. 25, 1982, Ser. No. 411,323

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1981, 3135840

Int. Cl.³ C07C *117/00*

U.S. Cl. 260—34 **4 Claims**

1. 2-azido-3-benzyloxypropionic acid benzyl ester.

4,440,687

AZIDO NITRAMINO ETHERS

Edward F. Witucki, Van Nuys, and Joseph E. Flanagan, Woodland Hills, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 8, 1982, Ser. No. 366,745

Int. Cl.³ C07C *117/00*

U.S. Cl. 260—349 **2 Claims**

1. As a new compound, bis(2-azidoethoxymethyl) nitramine.

2. As a new compound, 1,12-diazido-3,10-dioxa-5,8-dinitrazadodecane.

4,440,688

NOVEL DERIVATIVES OF URSODEOXYCHOLIC ACID

Carlo Scolastico, Vallisneri Street 13B; Cesare Sirtori, Bossi Street 1, both of Milan, Italy, and David Kritchevsky, 36 St. at Spruce, Philadelphia, Pa. 19105

Filed Jun. 28, 1982, Ser. No. 392,634

Claims priority, application Italy, Jul. 24, 1981, 23108 A/81

Int. Cl.³ C07J *13/00*

U.S. Cl. 260—397.1 **1 Claim**

1. The compound 7-oleyl-ursodeoxycholic acid.

4,440,689

ACYLOXYSTEROIDS AND PROCESS FOR PRODUCING SAME

Issei Nitta, Machida; Shinichiro Fujimori, Yokohama; Toshio Haruyama, Sagamihara, and Shinya Inoue, Yamato, all of Japan, assignors to Mitsubishi Chemical Industries, Limited, Tokyo, Japan

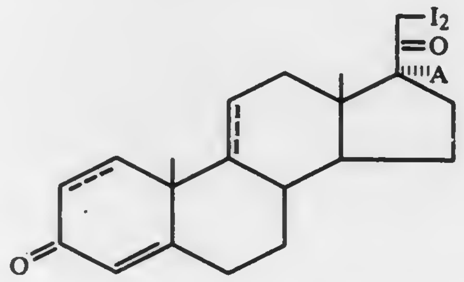
Filed Jul. 8, 1982, Ser. No. 396,447

Claims priority, application Japan, Jul. 22, 1981, 56-114867; Jul. 22, 1981, 56-114868; Jul. 23, 1981, 56-115691; Jul. 28, 1981, 56-118340; Jul. 28, 1981, 56-118341; Jul. 28, 1981, 56-118342; Jul. 28, 1981, 56-118344; Jul. 29, 1981, 56-118710; Aug. 26, 1981, 56-133843; Aug. 27, 1981, 56-134768

Int. Cl.³ C07J *9/00*

U.S. Cl. 260—397.4 **10 Claims**

1. A diiodosteroid of formula (Ia):



(Ia)

wherein the dotted lines in the rings independently represent a single or double bond and A represents an acyloxy group.

4,440,690

PROCESS FOR THE SYNTHESIS OF 6-BROMO-17,21-DIHYDROXY 3,11,20-TRIOXO-1,4-PREGNADIENES 17,21-DIESTERS

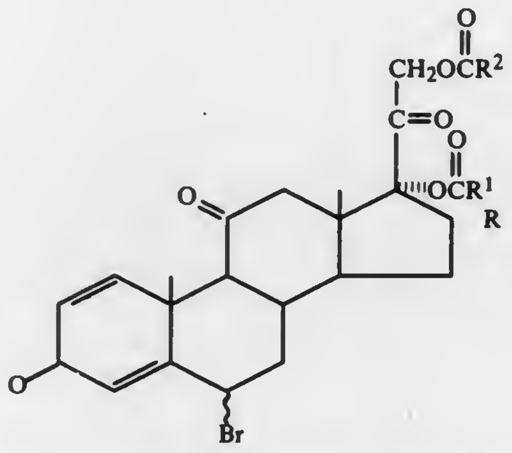
Elliot L. Shapiro, Cedar Grove, and Lawrence E. Finkenor, Wayne, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Dec. 27, 1982, Ser. No. 453,844

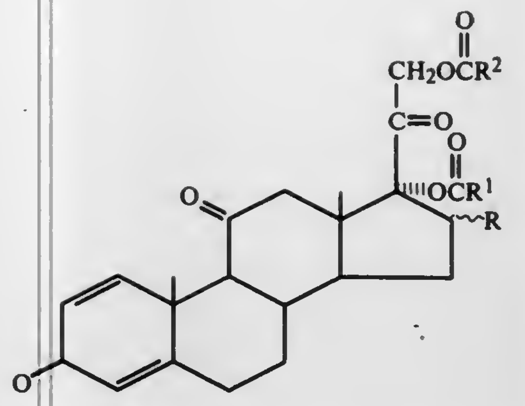
Int. Cl.³ C07J *5/00*

U.S. Cl. 260—397.45 **5 Claims**

1. A process for the selective synthesis of a compound of the formula:



wherein R is hydrogen or lower alkyl; and R¹ and R² are independently selected from lower alkyl; which comprises reaction of a compound of the formula



wherein R is hydrogen or lower alkyl; and R^1 and R^2 are independently selected from lower alkyl; with bromine in a solution of hydrogen bromide in acetic acid.

4,440,691

INDANCARBOXYLIC ACID ZINC SALTS

Seiji Kuzuna, Kawanishi; Shoji Kishimoto, Takarazuka, and Tetsuya Aono, Nagaokakyo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

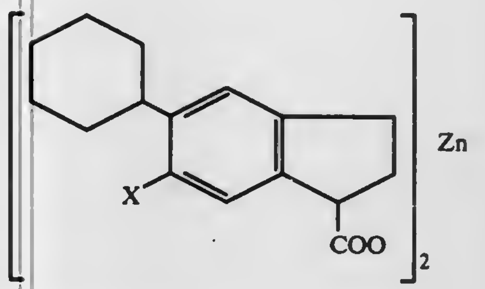
Filed Mar. 15, 1982, Ser. No. 358,215

Claims priority, application Japan, Mar. 19, 1981, 56-41114

Int. Cl.³ C07F *3/06*

U.S. Cl. 260—429.9 **2 Claims**

1. A compound of the formula:



wherein X is a halogen atom.

4,440,692

SUBSTITUTED CARBONIC ACID ESTERS

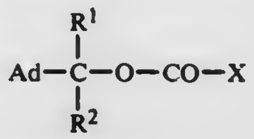
Hubert Kalbacher, Hefelestrasse 15, 7407 Rottenburg/Neckar, and Wolfgang Voelter, Panoramastrasse 71, 7400 Tuebingen-Hagelloch, both of Fed. Rep. of Germany

Continuation of Ser. No. 71,668, Aug. 31, 1979, abandoned. This application Apr. 28, 1982, Ser. No. 372,798

Int. Cl.³ C07C *69/96, 125/063*

U.S. Cl. 260—463 **7 Claims**

1. Compounds having the formula:



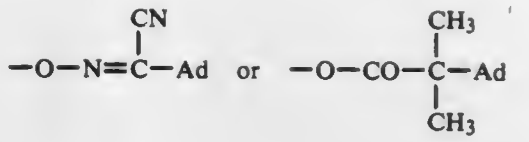
$$\mathrm{Ad}-\overset{R^1}{\underset{R^2}{C}}-O-CO-X \qquad (I)$$

wherein,

Ad is the 1-adamantyl residue which is unsubstituted or substituted by alkyl groups of 1 to 8 carbon atoms, alkoxy groups of 1 to 8 carbon atoms, nitro groups, or halogen,

R^1 and R^2 are saturated alkyl groups of 1 to 8 carbon atoms; and

X is chlorine; fluorine; azido, phenoxy; phenoxy substituted in the benzene nucleus by fluorine, chlorine, bromine, iodine, nitro, alkoxy groups, or alkyl groups; N-oxysuccinimido; or residues having the formulae:



$$-O-N=\overset{CN}{C}-\mathrm{Ad} \quad \text{or} \quad -O-CO-\overset{CH_3}{\underset{CH_3}{C}}-\mathrm{Ad}$$

wherein Ad has the above-identified meaning.

4,440,693

PREPARATION OF ELECTRICALLY CONDUCTIVE PRODUCTS

Herbert Naarmann, Wattenheim; Klaus Penzien, Frankenthal; Volker Muench, and Klaus-Dieter Franz, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

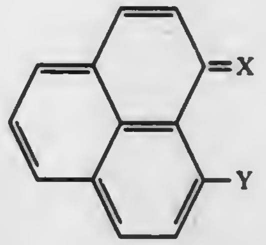
Filed Dec. 4, 1981, Ser. No. 327,726

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1980, 3047085

Int. Cl.³ C07F *00/00, 1/08, 15/02*

U.S. Cl. 260—439 R **6 Claims**

1. A process for the preparation of electrically conductive products which are stable to air and have conductivities greater than 1×10^{-3} S/cm, said process comprising: reacting, in solution, a cation of a metal selected from the group consisting of Mn, Tc, Re, Fe, Ru, Os, Co, Rh, Ir, Ni, Pd and Cu, which metal cation is employed in the form of a salt, with a 1,9-substituted phenalene of the general formula (I)



(I)

where X is O, NH, S, Se or Te and Y is OH, NH_2 or SH, as organic chelating compound to give a metal chelate; isolating said metal chelate from said solution, and then oxidizing the said metal chelate with an oxidizing agent selected from the group consisting of AsF_5, SbF_5, $SbCl_5$, chlorine, bromine, and iodine to form said electrically conductive product.

4,440,694

PROCESS FOR THE PRODUCTION OF VINYLSTILBENE COMPOUNDS

Daniel Bellus, Riehen; Hans-Ulrich Blaser, Ettingen; Guglielmo Kabas, Aesch, all of Switzerland; Dieter Reinehr, Kandern, Fed. Rep. of Germany; Alwyn Spencer, and Kurt Weber, both of Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

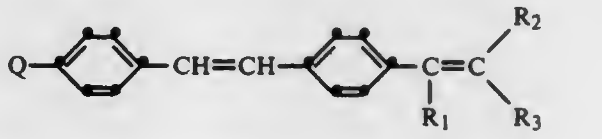
Filed May 8, 1981, Ser. No. 262,001

Claims priority, application Switzerland, May 13, 1980, 3730/80; Mar. 5, 1981, 1474/81

Int. Cl.³ C07C *121/70, 69/618, 103/24*

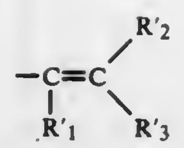
U.S. Cl. 260—465 D **13 Claims**

1. A process for the production of a vinylstilbene compound of the formula

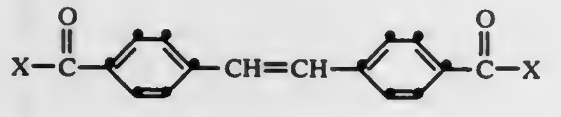


(I)

wherein Q is the grouping —COX or



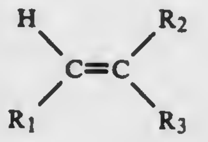
and wherein each of R_1 and R_1' independently is hydrogen, cyano, alkyl or a non-chromophoric esterified carboxyl group, each of R_2 and R_2' independently is hydrogen, alkyl or alkenyl each unsubstituted or substituted by non-chromophoric substituents, or is a non-chromophoric second order substituent, each of R_3 and R_3' independently is hydrogen, cyano, or alkyl or alkenyl each unsubstituted or substituted by non-chromophoric substituents, and X is chlorine, bromine or iodine; or R_1 together with R_3 or R_1' together with R_3' are an alkylene bridge, with the proviso that not more than one of R_2 and R_3 and not more than one of R_2' and R_3' are hydrogen, and that, if Q is —COX, R_1 and R_3 are hydrogen and R_2 is carboxylic acid (C_1–C_4)alkyl ester or cyano, which process comprises reacting 1 molar equivalent of a compound of the formula II



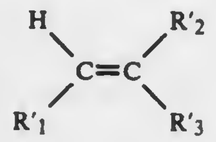
(II)

wherein X is as defined above, in the presence of a base and with the addition, as a catalyst, of palladium metal or a palladium compound which, under the reaction conditions, form labile palladium(O) compounds which do not contain phosphorus, with 1 molar equivalent of a compound of the formula III or with 1 molar equivalent of each of the compounds of the formulae III and IV

(III)



(IV)



wherein R_1, R_2 and R_3 and R_1', R_2' and R_3' are as defined above.

4,440,695
METHOD FOR PREPARATION OF N-PHOSPHONOMETHYLGLYCINE

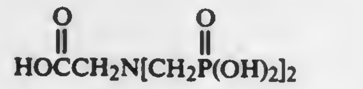
Jeffrey D. Robbins, Berkeley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Aug. 12, 1982, Ser. No. 407,366

Int. Cl.^{3} C07F *9/38*

U.S. Cl. 260—502.5 F **10 Claims**

1. A method for the production of N-phosphonomethylglycine which comprises reacting N,N-bis(phosphonomethyl)glycine, having the formula



$$HO\overset{O}{\overset{\|}{C}}CH_2N[CH_2\overset{O}{\overset{\|}{P}}(OH)_2]_2$$

with hydrochloric acid in the presence of water, and at a sufficient temperature and at a pressure ranging from about 3 to about 10 atmospheres sufficient to cause the formation of N-phosphono-methylglycine.

4,440,696
PROCESS FOR PRODUCING TRIARYLPHOSPHITES

Rudolf Maul, Lorsch/Hessen; Eberhard Otto, Lindenfels, and Horst Zinke, Ernsthofen, all of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 103,132, Dec. 13, 1979, Pat. No. 4,312,818, which is a continuation of Ser. No. 928,644, Jul. 27, 1978, abandoned. This application Oct. 1, 1981, Ser. No. 307,474

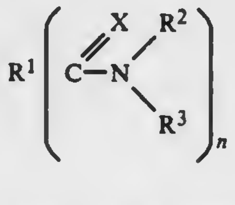
The portion of the term of this patent subsequent to Jan. 26, 1999, has been disclaimed.

Int. Cl.^{3} C07F *9/141*

U.S. Cl. 260—976 **6 Claims**

1. A process for producing a triaryl phosphite of the formula $(RO)_3P$, in which R represents aryl substituted by one or more straight-chain or branched-chain alkyl, cycloalkyl, aryl or aralkyl groups in the 2-, 2,4-, 2,6- or 2,4,6-positions, by reaction of a phosphorus trihalide with a hydroxy-substituted aromatic compound of the formula ROH in the presence or absence of a solvent, and in the presence of 0.005 to 10 mol %, relative to the hydroxy-substituted aromatic compound, of a catalyst selected from the group consisting of

(a) an amide of a carboxylic acid of the formula



in which, where n is 1, R^1 is phenyl, benzyl, naphthyl, cyclohexyl, cyclopentyl, pyridyl or alkyl having 1 to 13 C atoms; where n is 2, R^1 is phenylene, naphthylene, cyclohexylene or alkylene having 1 to 12 C atoms, or a direct bond; X is an oxygen atom; and R^2 and R^3 independently of one another are each a hydrogen atom, phenyl, benzyl, cyclohexyl or alkyl having 1 to 12 C atoms, or R^2 and R^3 together are alkylene which is optionally interrupted by O or S atoms;

(b) a primary, secondary or tertiary amine in which alkyl, cycloalkyl, aryl, alkaryl, aralkyl or alkaralkyl of 1 to 18 C atoms is linked to the N atom; and

(c) a saturated or unsaturated non-aromatic N-heterocyclic compound which is pyrrolidine, Δ^3-pyrroline, N-methylpyrrolidine, dihydroindole, pyrazolidine, imidazolidine, Δ^2-pyrazoline, 1-phenylpyrazolidine, oxazolidine, thiazolidine, oxazoline, triazolidine, oxadiazolidine, thiadiazolidine, piperidine, morpholine, N-methylmorpholine, quinolidine, 1,2-dihydropurine, 8-aza-bicyclo-[3.2.1]-octane, 1,5-diazabicyclo[5.4.0]-undec-5-ene, 2-methyl-Δ^2-oxazoline or 2-aminothiazole.

4,440,697
CARBURETOR

Yoshihiro Sakurai, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

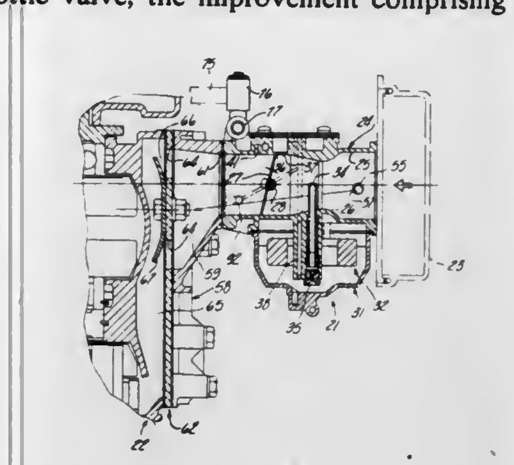
Continuation of Ser. No. 282,016, Jul. 10, 1981, abandoned. This application Jan. 25, 1983, Ser. No. 460,766

Claims priority, application Japan, Jul. 11, 1980, 55-94807; Jul. 11, 1980, 55-94804; Jul. 11, 1980, 55-94805; Jul. 11, 1980, 55-94806

Int. Cl.^{3} F02M *7/08*

U.S. Cl. 261—34 A **8 Claims**

1. In an induction system for an internal combustion engine, a manifold having an inlet opening and outlet means offset from said inlet opening, a carburetor in registry with said inlet opening for delivering a fuel air charge thereto, and an accelerating pump in said carburetor for delivering fuel upon opening of said throttle valve, the improvement comprising the discharge of said accelerating pump being directed toward the center of said manifold outlet means.



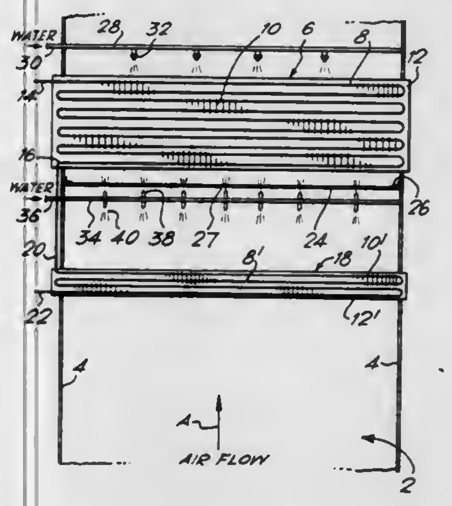
4,440,698
APPARATUS FOR ENSURING HEAT EXCHANGE BETWEEN A GAS FLOW AND A HEAT EXCHANGER

Ivan Bloomer, 5 Deena Close, Queens Dr., London W3 OHR, England

Continuation of Ser. No. 205,479, Nov. 10, 1980, abandoned. This application Sep. 21, 1982, Ser. No. 420,969

Int. Cl.^{3} B01F *3/04*

U.S. Cl. 261—148 **12 Claims**



1. Apparatus for improving heat exchange between a gas flow and the fluid in a heat exchanger in heat transfer relation to said gas flow comprising: a duct defined by longitudinally extending duct walls, means for establishing a flow of gas through the duct, a heat exchanger comprising at least two spaced rows of fluid conduits mounted in the duct and extending transversely to said duct such that the gas flows through each of said rows, at least one spray nozzle arranged to spray liquid within the duct, and a diaphragm mounted within the duct upstream of the heat exchanger in the direction of gas flow, said diaphragm including a rigid plate extending transversely across the duct and having a plurality of perforations therein extending therethrough and defining a plurality of flow passages which extend through said diaphragm and are arranged to define constrictions for the gas flow such that jets of gas are produced, the velocity of said gas jets being sufficient to entrain and carry at least a portion of said liquid through said two rows of fluid conduits.

4,440,699
METHOD AND DEVICE FOR MOULDING A TRANSPARENT OBJECT

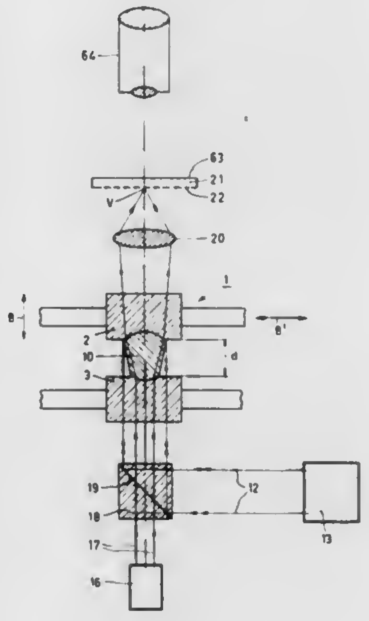
Albert Smid, and Jan Haisma, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 24, 1982, Ser. No. 381,114

Claims priority, application Netherlands, Feb. 18, 1982, 8200634

Int. Cl.^{3} B29D *11/00*

U.S. Cl. 264—1.4 **11 Claims**



1. A method for moulding a transparent object such as a lens or the like comprising the steps of introducing a volume of transparent materials between a pair of transparent elements configured to impart a desired shape to the material, passing a beam of radiation through said elements and the material disposed therebetween before the material has assumed its final shape so as to form a radiation spot in a plane of observation, comparing the intensity distribution of said spot formed in said observation plane with a reference distribution representative of the intensity distribution of the spot occurring when said elements assume a predetermined position relative to each other and adjusting the position of said elements relative to each other so that the intensity distribution of said spot corresponds to said reference distribution.

7. An apparatus for moulding a transparent material so as to form a transparent object of a predetermined shape such as a lens or the like, said apparatus comprising a pair of elements arranged for movement relative to each other and configured so as to impart the predetermined shape to the material disposed therebetween, means for producing an aligning beam of radiation, said elements being transparent to the radiation of said aligning beam and being arranged in the path thereof so that said aligning beam passes through said elements, means for detecting the intensity distribution in the aligning beam radiation which has passed through said elements, said intensity distribution being indicative of the position of said elements relative to each other, and means for adjusting the relative position of said elements in response to said detecting means.

4,440,700
PROCESS FOR COLLECTING CENTRIFUGALLY EJECTED FILAMENTS

Tokio Okada; Shigezo Kojima; Haruhisa Tani; Kazuhiko Kurihara, and Hiroshi Yazawa, all of Tokyo, Japan, assignors to Polymer Processing Research Institute Ltd., Tokyo, Japan

Filed Apr. 26, 1982, Ser. No. 372,190

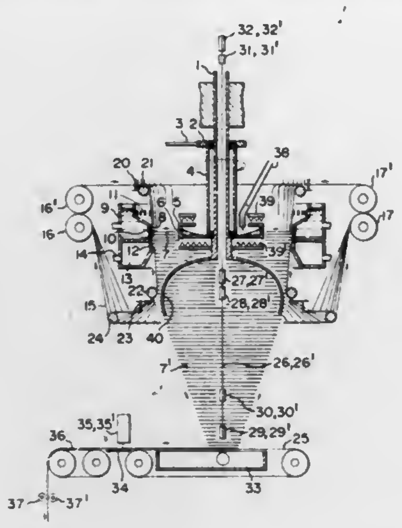
Claims priority, application Japan, Apr. 28, 1981, 56-64854; May 26, 1981, 56-79767

Int. Cl.^{3} B29C *6/00*

U.S. Cl. 264—8 **12 Claims**

1. In a process for producing a plurality of continuous syn-

thetic organic polymer filaments by centrifugally and horizontally ejecting liquid polymer from a plurality of nozzles of a head rotating at high velicity, the improvement which comprises obtaining a plurality of filaments of uniform thickness by
- (a) establishing an annular curtain of downwardly flowing water at a spaced distance laterally outwardly from said nozzles,
- (b) catching and cooling the centrifugally ejected continuous molten synthetic organic polymer filaments by impinging them against said annular curtain of downardly flowing water, and allowing said filaments to move downwardly with the downwardly flowing water in said annular curtain,
- (c) separating said ejected filaments from said annular water curtain after said filaments have been cooled by said water, and
- (d) collecting cooled and separated continuous filaments of synthetic organic polymers that have uniform thickness.



4,440,701
METHOD FOR FORMING VISCOUS AND PLASTICALLY DEFORMABLE FOOD MATERIAL INTO A GLOBULIN SHAPE

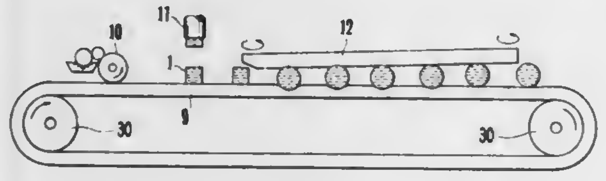
Katsumoto Ohki, Shizuoka; Tadahiko Hirokawa, Yokohama, and Hajime Sasaki, both of Kanagawa, all of Japan, assignors to Morinaga & Co., Ltd., Japan

Filed Mar. 27, 1981, Ser. No. 248,574

Claims priority, application Japan, Apr. 5, 1980, 55-44064; Jul. 21, 1980, 55-98811

Int. Cl.^{3} B01J *21/04*

U.S. Cl. 264—15 14 Claims



1. A method of forming a viscous and plastic food material into a globular shape, comprising:

feeding a viscous and plastic food material portion of a predetermined amount into the space between a pair of beds of which the surfaces, opposite to each other, have elasticity and a fibrous coating with at least one of the surfaces kept moist by an anti-sticking liquid; eccentrically rotating at least one of said beds, thus rotating and rounding the food material portion between the beds; and adjusting the space between the pair of beds to accommodate the pressure applied to the food material portion; the viscous and plastic food material being selected from the group consisting of processed rice paste food material, dough made from powdered grain, food material containing starch as its principal ingredient, food material containing fats and fatty oils mixed with a sweetener, and food material containing sugar or corn syrup.

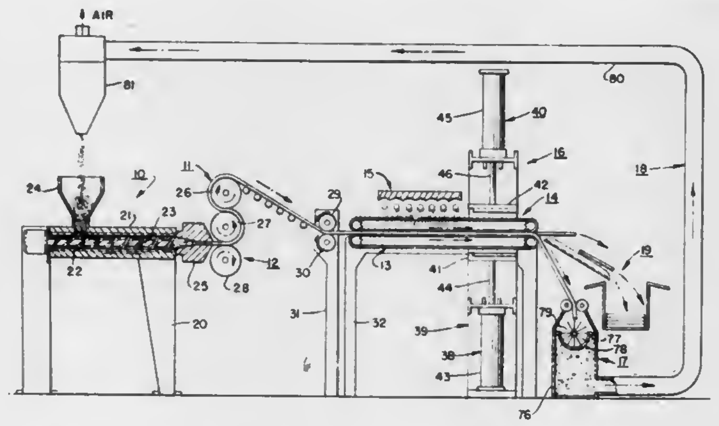
4,440,702
METHOD AND APPARATUS FOR MAKING THIN-WALLED PLASTIC ARTICLES

Kenneth J. Susnjara, Santa Claus, Ind., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 119,975, Feb. 8, 1980, abandoned. This application Jun. 10, 1982, Ser. No. 387,150

Int. Cl.^{3} B29C *1/14, 3/04, 7/00, 17/03*

U.S. Cl. 264—37 19 Claims



1. A method of making a thin-walled article comprising advancing a continuous web of a thermoplastic material to a forming station, intermittently positioning a heated section of said web at said forming station, advancing a female mold section at said forming station to a position adjacent a side of said web section, advancing a male mold section at said forming station on an opposite side of said web section, towards said female mold section to shear a blank from said web section, continuing the advance of said male mold section to compress the sheared blank between the surfaces of the mold sections and correspondingly form said article in said mold sections, cooling said formed article in said female mold section, retracting said male mold section, ejecting said formed article from said female mold section into the opening formed by the shearing of said web section in forming said blank, carrying the formed article away from the forming station by the movement of said web, and then separating said formed article from the web.

4,440,703
PROCESS FOR PRODUCING FOAMED AND MOLDED ARTICLE OF POLYPROPYLENE RESIN

Hiroyuki Akiyama, Hiratsuka; Kuninori Hirosawa, Isehara, and Hideki Kuwabara, Hatano, all of Japan, assignors to Japan Styrene Paper Corporation, Tokyo, Japan

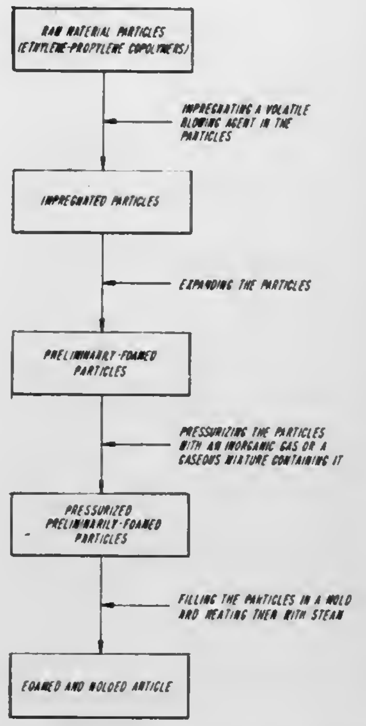
Filed Aug. 4, 1982, Ser. No. 405,027

Claims priority, application Japan, Aug. 5, 1981, 56-122717

Int. Cl.^{3} B29D *27/00*

U.S. Cl. 264—50 2 Claims

1. A process for producing a foamed and molded article of a polypropylene resin, which comprises pressurizing preliminarily-foamed particles of a non-crosslinked ethylene/-propylene copolymer having a melt index value of from 0.1 to 25, a latent heat of crystallization of not more than 28 cal/g and an ethylene content of from 1 to 30% by weight as a base resin with an inorganic gas or a gaseous mixture of the inorganic gas and a volatile blowing agent whereby the inorganic gas or the gaseous mixture penetrates into said particles and impart an elevated pressure in the range of 0.5 to 5 kg/cm^2(G) to the inside of said particles, thereafter filling said particles in a perforated mold capable of enclosing the particles but allowing escape of gases therefrom, and then heating said particles with steam to expand them to the configuration of the mold.


RAW MATERIAL PARTICLES (ETHYLENE-PROPYLENE COPOLYMERS)
IMPREGNATING A VOLATILE BLOWING AGENT IN THE PARTICLES
IMPREGNATED PARTICLES
EXPANDING THE PARTICLES
PRELIMINARILY-FOAMED PARTICLES
PRESSURIZING THE PARTICLES WITH AN INORGANIC GAS OR A GASEOUS MIXTURE CONTAINING IT
PRESSURIZED PRELIMINARILY-FOAMED PARTICLES
FILLING THE PARTICLES IN A MOLD AND HEATING THEM WITH STEAM
FOAMED AND MOLDED ARTICLE

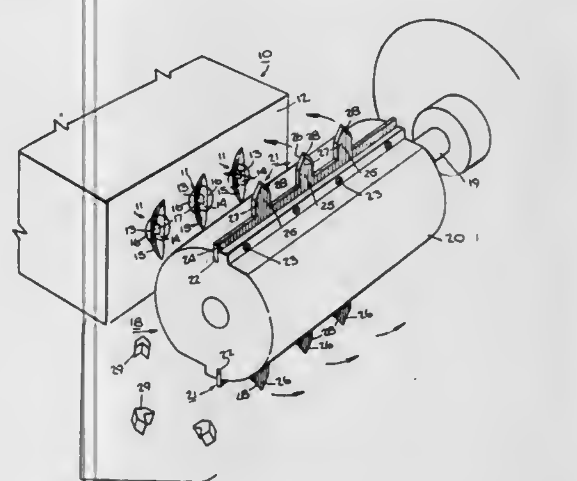
4,440,704
METHOD FOR MAKING EXPANDABLE FILLING ELEMENTS OF BILLOWED CONFIGURATION FOR PACKAGING

Harry Bussey, Jr., P.O. Box 115 Serpentine Rd., Navesink, N.J. 07752

Division of Ser. No. 230,113, Jan. 29, 1981, abandoned. This application Jul. 22, 1982, Ser. No. 400,719

Int. Cl.^{3} B29D *27/00*

U.S. Cl. 264—51 21 Claims



1. A method of making expandable filling elements for packaging, said method comprising the steps of

extruding a plastified mass of thermoplastic material containing an expanding agent through an orifice having a predetermined cross-sectional shape and along a longitudinal axis;

cutting the extruded mass transversely of said axis adjacent the orifice, and along a non-linear path across the extruded mass to form a plurality of expandable cut pieces; and

cooling the cut pieces to prevent substantial expansion of the cut pieces.

4,440,705
PROCESS FOR THE PREPARATION OF CELLULAR AND NON-CELLULAR POLYURETHANE ELASTOMERS

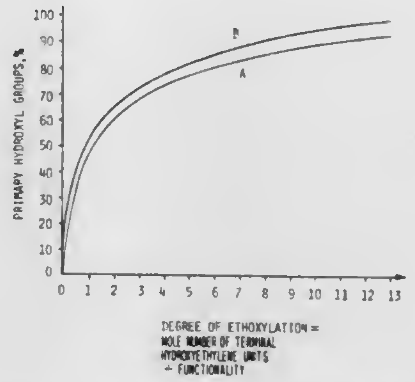
Dietmar Nissen; Wolfgang Straehle, both of Heidelberg, and Matthias Marx, Bad Durkheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jul. 1, 1982, Ser. No. 394,460

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1981, 3126517

Int. Cl.^{3} C08G *18/14, 18/48*

U.S. Cl. 264—53 3 Claims



1. A process for the preparation of cellular or non-cellular polyurethane elastomers by reacting organic polyisocyanates, polyether polyols, chain extenders and/or cross-linking agents in the presence of catalysts as well as blowing agents, auxiliaries and additives, wherein polyoxyalkylene polyether polyols with terminal hydroxyethylene groups are used as the polyether polyols said polyether polyols prepared by reacting initiator compounds having molecular weights of 18 to 342 and containing from 2 to 8 Zerewitinoff active hydrogen atoms in the presence of alkaline catalysts selected from the group consisting of alkali metal alkoxides, alkali metal hydroxides and alkaline earth metal hydroxides comprising
- (a) initially reacting alkylene oxides containing more than 2 carbon atoms in the presence of from 0.01 to 0.25 mole of said catalyst per equivalent of said initiator compound,
- (b) further reacting the alkylene oxides containing more than 2 carbon atoms in the presence of from 0.10 to 1.0 mole of said catalyst per equivalent of said initiator compound,
- (c) further reacting the alkylene oxide adduct of step (b) with ethylene oxide at a maximum concentration of 30 weight percent based on the weight of the crude polyether polyol, and
- (d) removing the alkaline catalyst.

3. The process of claim 1, wherein the components for the manufacture of the cellular and non-cellular polyurethane elastomers are prepared in accordance with the reaction molding technique.

4,440,706
ISOSTATIC MOLDING OF TWO-TERMINAL CERAMIC INSULATOR

James S. Hoffman, Grand Blanc, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 8, 1981, Ser. No. 271,508

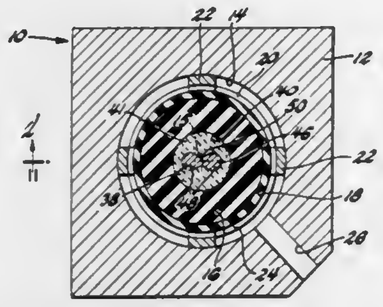
Int. Cl.^{3} C04B *37/00*

U.S. Cl. 264—56 3 Claims

1. A method for manufacturing a ceramic electrical insulator body adapted to receive and electrically isolate two parallel conductive rods, said method comprising

compacting ceramic powder by directing isostatic pressure radially towards an axis to press said powder about an axial core and to thereby form a self-sustaining body defining a bore derived from said core, said bore comprising parallel enlarged channels derived from axially parallel core sections that are longitudinally connected to maintain the core sections in a desired parallel relationship

despite the radial compaction pressure, whereupon the connection forms an opening between channels, and
firing the compact body to form a dense insulator body having channels derived from the enlarged bore channels in the compact body and adapted to each receive a conductive rod, said firing resulting in shrinkage of the channel-connecting opening to a size sufficient to prevent contact between rods received in each channel to thereby électrically isolate the rods.



4,440,707
PROCESS FOR PRODUCING SILICON NITRIDE SINTERED PRODUCTS HAVING HIGH TOUGHNESS

Toru Shimamori; Yoshinori Hattori, and Yasushi Matsuo, all of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

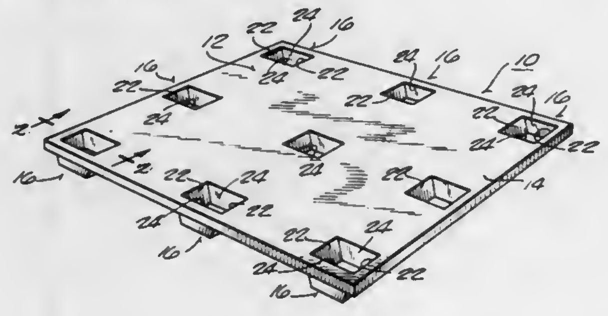
Filed Sep. 29, 1982, Ser. No. 428,507
Claims priority, application Japan, Sep. 30, 1981, 56-155453
Int. Cl.³ C04B *35/38*
U.S. Cl. 264—65 **2 Claims**

1. A process for producing a silicon nitride sintered product having high toughness comprising blending from 97 to 57% by weight of metallic silicon powder having a maximum particle size of 25 μm or less with from 1 to 15% by weight, calculated as TiN, of a TiN powder having a maximum particle size of 20 μm or less or a powder of titanium component capable of changing into TiN during reaction sintering, and from 2 to 28% by weight of one or more components selected from the group consisting of AlN, Al_2O_3, SiO_2 and oxides of rare earth elements, molding the resulting mixture, carrying out reaction sintering in a nonoxidizing atmosphere of a nitrogen gas or a nitrogen-containing mixed gas, and thereafter resintering in the same atmosphere at a temperature of from 1,600° to 2,200° C.

4,440,708
METHOD FOR MOLDING ARTICLES HAVING NON-PLANAR PORTIONS FROM MATTED WOOD FLAKES

Bruce A. Haataja, Lake Linden; Tauno B. Kipela, Atlantic Mine; Anders E. Lund, and James F. Hamilton, both of Houghton, all of Mich., assignors to Board of Control of Michigan Technological University, Houghton, Mich.

Continuation of Ser. No. 972,034, Dec. 21, 1978, abandoned. This application Dec. 24, 1981, Ser. No. 334,267
Int. Cl.³ B29J *5/06*
U.S. Cl. 264—109 **18 Claims**

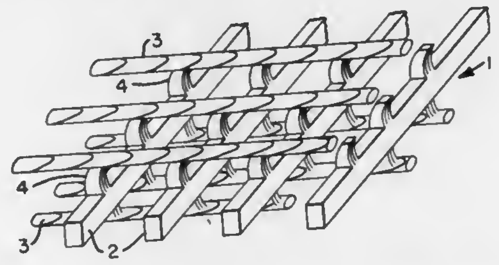


1. A method for molding an article having a major plane and at least one non-planar portion displaced from the major plane, said method including the steps of:
(a) providing flake-like wood particles having an average length of about 1¼ inch to about 6 inches, an average thickness of about 0.005 to about 0.075 inch, and an average width of about 3 inches or less and no greater than the length;
(b) admixing a resinous particle board binder with the wood particles;
(c) depositing a loosely-felted, layered mat formed from said mixture on one open part of a mold including two separable parts defining a mold chamber having the shape of the article, the wood particles in each layer of the mat lying substantially flat in a place generally parallel to the major plane and being randomly oriented; and
(d) closing the mold and applying sufficient heat and pressure on said mat to compress it into substantially the desired shape and size of the article and to bond the wood particles together to form a unitary structure.

4,440,709
METHOD OF MANUFACTURING RETICULAR SHEET

Ole-Bendt Rasmussen, 7 Topstykked, 3460 Burkerod, Denmark

Continuation of Ser. No. 134,551, Mar. 27, 1980, abandoned, which is a continuation of Ser. No. 928,457, Jul. 27, 1978, abandoned, which is a continuation of Ser. No. 681,531, Apr. 29, 1976, abandoned. This application Apr. 26, 1982, Ser. No. 372,034
Int. Cl.³ B29C *17/10*
U.S. Cl. 264—145 **28 Claims**

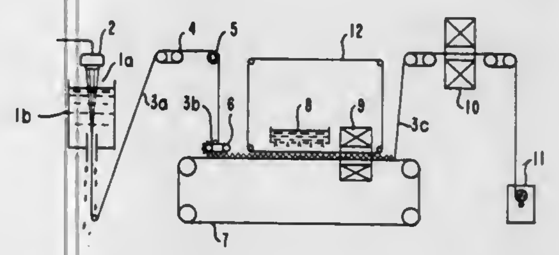


1. A method of manufacturing a unitary reticular sheet, comprising the steps of forming from at least one polymeric material, a composite sheet comprising at least one generally continuous film and joined to at least one side surface of said film an array of elongated ribs having a generally common lengthwise direction and projecting exteriorly of said film surface, said film and said ribs being integrally united in their solid state, and subsequently producing in said film a system of generally parallel elongated furrows spaced apart a generally uniform predetermined distance and having a generally common lengthwise direction and a depth exceeding the film thickness and extending into adjacent portions of said ribs but without completely interrupting said ribs to separate said film into a generally uniformly spaced apart array of substantially parallel filamentitious structures while said ribs remain generally intact, the lengthwise direction of said furrows criss-crossing with the lengthwise direction of said ribs, whereby said arrays are physically spaced apart at their nearest points in a direction generally perpendicular to the plane of said sheet and are connected by discrete links derived from the adjacent portion of said ribs and disposed between said arrays.

4,440,710
PROCESS FOR THE PREPARATION OF HIGH YOUNG'S MODULUS POLY-P-PHENYLENE-TEREPHTHALAMIDE

Takashi Fujiwara, Miyazaki; Shuji Kajita, Takatsuki; Tetsuo Matsushita, Miyazaki, and Seiichi Manabe, Ibaraki, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 129,404, Mar. 11, 1980, Pat. No. 4,374,978. This application Aug. 6, 1982, Ser. No. 406,043
Claims priority, application Japan, Mar. 13, 1979, 54-29115
Int. Cl.³ D01D *5/12*
U.S. Cl. 264—184 **10 Claims**



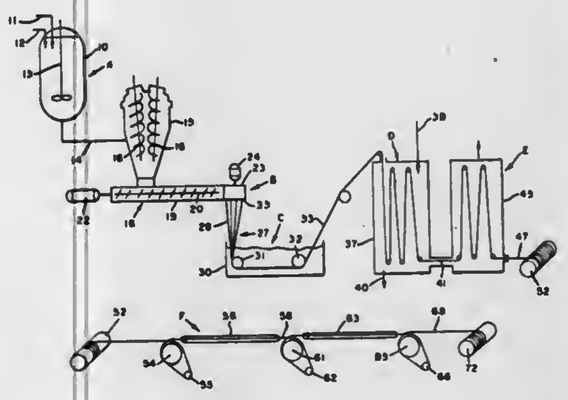
1. A process for the preparation of fibers, filament, and yarn consisting essentially of poly-p-phenylene-terephthalamide and having improved bending fatigue resistance life, which comprises extruding an anisotropic dope of a polymer consisting essentially of poly-p-phenylene-terephthalamide in concentrated sulfuric acid having a concentration of at least 98% by weight in a non-coagulating layer, passing the extrudate through a coagulating layer, depositing the resulting coagulated fibers on a net conveyor, in the absence of substantial tension washing the fibers to remove sulfuric acid and drying the fibers, releasing the fibers from the tension-free state, and heating the fibers under a tension of 1 to 15 g/d at a temperature of 250° C. to 450° C. for such a time as satisfies the requirement:

250≦(temperature, °C.)×(time, seconds) 0.08≦550.

4,440,711
METHOD OF PREPARING HIGH STRENGTH AND MODULUS POLYVINYL ALCOHOL FIBERS

Young D. Kwon, Morristown; Sheldon Kavesh, Whippany, and Dusan C. Prevorsek, Morristown, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Sep. 30, 1982, Ser. No. 432,044
Int. Cl.³ D01F *6/14*
U.S. Cl. 264—185 **24 Claims**

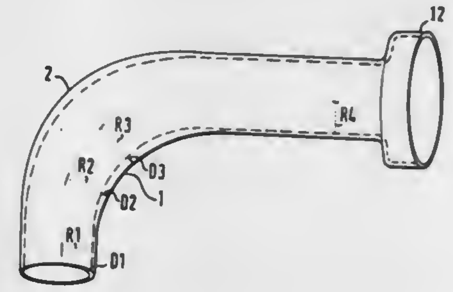


1. A process comprising the steps:
(a) forming a solution of a linear polyvinyl alcohol having a weight average molecular weight at least 500,000 in a first solvent at a first concentration between about 2 and about 15 weight percent polyvinyl alcohol,
(b) extruding said solution through an aperture, said solution being at a temperature no less than a first temperature upstream of the aperature and being substantially at the first concentration both upstream and downstream of said aperture,
(c) cooling the solution adjacent to and downstream of the aperture to a second temperature below the temperature at which a rubbery gel is formed, forming a gel containing first solvent of substantially indefinite length,
(d) extracting the gel containing first solvent with a second, volatile solvent for a sufficient contact time to form a fibrous structure containing second solvent, which gel is substantially free of first solvent and is of substantially indefinite length;
(e) drying the fibrous structure containing second solvent to form a xerogel of substantially indefinite length free of first and second solvent; and
(f) stretching at least one of:
  (i) the gel containing the first solvent,
  (ii) the fibrous structure containing the second solvent and,
  (iii) the xerogel,
at a total stretch ratio sufficient to achieve a tenacity of at least about 10 g/denier and a modulus of at least about 200 g/denier.

4,440,712
PROCESS FOR THE PREPARATION OF SHAPED ARTICLES

Friedrich Imgram, Am Frankfurter Weg 2, D 6056 Heusenstamm, Fed. Rep. of Germany

Filed Jan. 26, 1982, Ser. No. 342,759
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1981, 3102475
Int. Cl.³ B29C *27/20*
U.S. Cl. 264—209.5 **13 Claims**



1. A process for the preparation of shaped articles from crosslinkable synthetic plastic materials comprising:
molding a crosslinkable synthetic plastic material into a first configuration;
crosslinking said crosslinkable synthetic plastic material at a temperature in excess of the crystalline melting point of said material;
working said crosslinked first configuration into a second configuration having a predetermined relationship to said first configuration;
subjecting specific areas of said second configuration to a localized heat treatment to obtain a deformation in said specific areas of said second configuration without a return to said first configuration of said article, wherein the magnitude of deformation of the final configuration is between the magnitude of deformation of said first configuration and the magnitude of deformation of said second configuration.

4,440,713

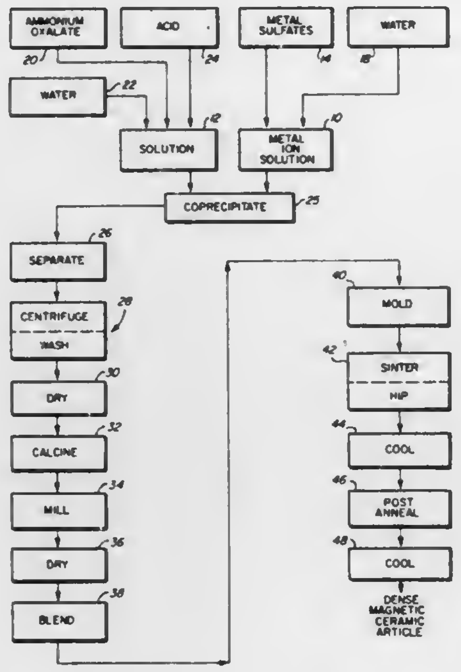
PROCESS FOR MAKING FINE MAGNETIC FERRITE POWDER AND DENSE FERRITE BLOCKS

Eugene B. Rigby, Tucson, Ariz., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Sep. 30, 1982, Ser. No. 429,645

Int. Cl.^{3} C01G *49/00;* C04B *33/32*

U.S. Cl. 264—325 **18 Claims**



1. A wet process for producing a ferrite powder comprising the steps of:

forming an aqueous metal ion sulfate solution of ferrous and zinc ions and divalent ions of one other metal in which the divalent metal ion of said one other metal is selected from the group consisting of Mn and Ni;

heating said formed metal ion solution to approximately 50° C. or less;

providing a solution containing ammonium oxalate;

heating said ammonium oxalate solution to approximately 70° C.;

reacting said metal ion solution with said ammonium oxalate solution by adding the ammonium oxalate solution into the metal ion solution to co-precipitate metal oxalates;

controlling the co-precipitate solution to have a pH from between three to about four;

separating said co-precipitated material from the liquid phase;

washing the metal oxalate precipitate to remove excess ammonium oxalate and the acid contaminants;

drying said separated co-precipitated material;

calcining the co-precipitated material in a temperature of approximately 200° C. to convert the ferrous ions to ferric ions; and

milling said calcined ferric material to form a fine powder.

4,440,714

INERTIAL CONFINEMENT FUSION METHOD PRODUCING LINE SOURCE RADIATION FLUENCE

Ronald P. Rose, Peters Township, Washington County, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 29, 1981, Ser. No. 229,357

Int. Cl.^{3} G21B *1/00*

U.S. Cl. 376—104 **2 Claims**

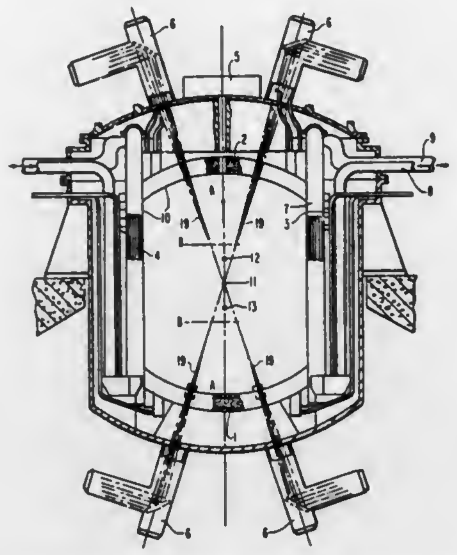
1. A method for extracting useful radiation in a controlled manner from target pellets imploded by an energy beam in an inertial confinement fusion reactor such that components of said reactor are subjected to an approximately linear source radiation fluence, which comprises

(A) injecting a first target pellet into the reactor causing said pellet to follow a trajectory which is a linear path;

(B) directing an energy beam at a first site along said linear path timed to intersect and strike said pellet thereby inducing fusion through inertial confinement;

(C) injecting a second target pellet into the reactor along said linear path;

(D) directing said energy beam at a second site along said linear path, said second site being displaced from said first site by a first distance in one dimension along said linear path, said energy beam timed to intersect and introduce inertial confinement fusion in said second pellet at said second site;



(E) repeating the above steps C and D with third, fourth and subsequent pellets and third, fourth and subsequent sites, and second, third, and subsequent distances such that all fusion events occur along a line being said linear path and reactor components are exposed to an approximately linear source radiation fluence.

4,440,715

METHOD OF CONTROLLING NUCLEAR POWER PLANT

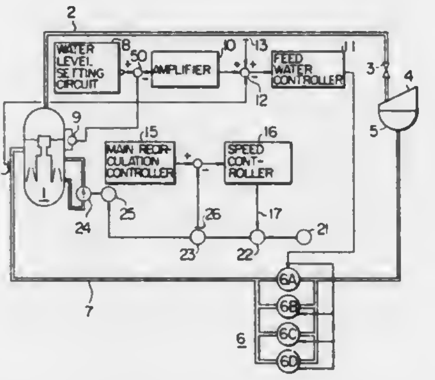
Takao Sato, Ibaraki; Tetsuo Ito, and Setsuo Arita, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 2, 1980, Ser. No. 192,993

Claims priority, application Japan, Oct. 5, 1979, 54-128357

Int. Cl.^{3} G21C *7/00*

U.S. Cl. 376—210 **7 Claims**



4. A method of controlling an output of a nuclear power plant including a boiling water reactor having first and second coolant loops, a water feed pipe system in the first loop connected to the reactor and having a plurality of water feed pumps for feeding water into the reactor, a steam pipe system connected to the reactor for feeding steam produced by the reactor from the reactor, and a recirculating control system in the second loop for controlling a recirculating water flow rate in the second loop of the reactor to thereby control the flow rate of steam produced in the first loop by the reactor, the method comprising the step of controlling the recirculating water flow rate in response to the tripping of at least one of the plurality of water feed pumps, the recirculating water flow rate being controlled for a predetermined period of time so as to cause the flow rate of steam produced by the reactor to be less than the flow rate of the feed water supplied to the reactor.

4,440,716

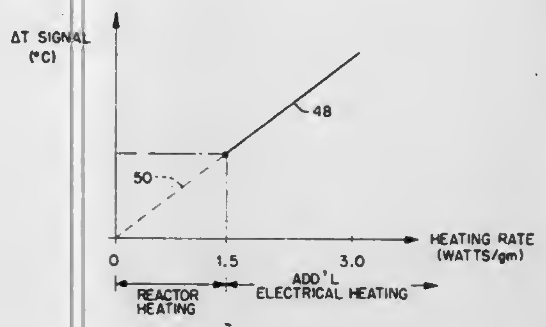
IN-SITU CALIBRATION OF LOCAL POWER MEASURING DEVICES FOR NUCLEAR REACTORS

Robert D. Smith, Bethesda, Md., assignor to Scandpower, Inc., Bethesda, Md.

Filed Jan. 30, 1981, Ser. No. 230,027

Int. Cl.^{3} G21C *17/00*

U.S. Cl. 376—247 **16 Claims**



10. In a method of in-situ calibration of a local power monitoring unit installed within a radioactive environment, having an elongated heat conductive body adapted to be heated by gamma radiation and a thermocouple device mounted in the body from which a differential temperature signal output is obtained as a result of directional changes in heat flux paths within the body, the steps of: electrically heating the body internally thereof from a current source externally of said radioactive environment during a calibration period; varying the current during said calibration period to control said internal heating of the body; monitoring changes in the signal output of the thermocouple device during the calibration period; and analyzing said changes in the signal output to determine a sensitivity function for the power monitoring unit during said internal heating of the body.

4,440,717

HEATED JUNCTION THERMOCOUPLE LEVEL MEASUREMENT APPARATUS

Frank Bevilacqua, Windsor, and Joseph M. Burger, Granby, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Sep. 1, 1981, Ser. No. 298,436

Int. Cl.^{3} G21C *17/00;* G01F *23/72*

U.S. Cl. 376—247 **9 Claims**

1. An apparatus for sensing the level of a liquid contained within a pressure vessel comprising:

a. a plurality of axially spaced elongated heat conductive housings, each of said housings having

(1) a sensing portion located within said pressure vessel,

(2) a heating element located within said sensing portion of said housing having an active length at least coextensive with the range of level to be sensed by said housing,

(3) thermally conductive, electrically insulating means filling said housing at least through said active length of said heater,

(4) a first thermocouple junction, said first thermocouple junction located within said sensing portion of said housing at a location that the heat flux from said heating element at said first thermocouple junction has a substantial effect on said first thermocouple,

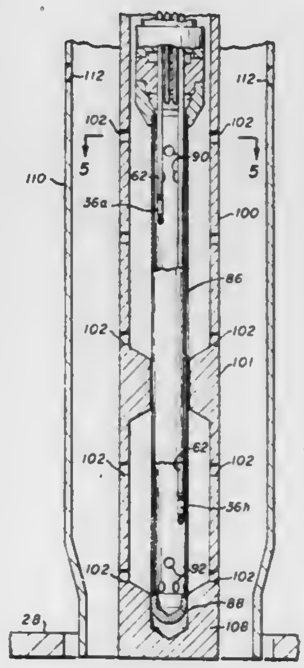
(5) a second thermocouple junction, said second thermocouple junction electrically and serially connected to said first thermocouple junction, said second thermocouple junction located within said sensing portion of said housing at a location sufficiently remote from said heating element that the heat flux from said heating element at said second thermocouple junction has substantially no effect on said second thermocouple junction,

(6) a splash guard enclosing a volume, having an exterior and means for fluid communication between the volume enclosed by said splash guard and the exterior of said splash guard said splash guard enclosing a portion of said housing over at least the active length of said heating element;

b. means for supplying energy to each of said heating elements;

c. means for measuring the net voltage generated by each of said first thermocouple junctions and said second thermocouple junctions;

d. a first tubular element having an interior, an exterior, an enclosed lower end, and means for fluid communication between said interior and said exterior said first tubular element surrounding said plurality of axially spaced elongated heat conductive housings and extending substantially the length of said housings, whereby liquid or liquid flashing to gas within said first tubular element exits through said fluid communicating means upon a pressure reduction or change in fluid level in said pressure vessel thereby maintaining equalized liquid levels on said interior and exterior of said first tubular element,



e. a second tubular element having an interior, an exterior, and means for fluid communication between said interior and said exterior, said second tubular element surrounding said first tubular element, and extending substantially the length of said first tubular element; and

f. at least a portion of said fluid communicating means between said interior and said exterior of said second tubular element are axially offset from said fluid communicating means between said interior and said exterior of said first tubular element.

4,440,718

FUEL ASSEMBLY TRANSFER DEVICE FOR BREEDER NUCLEAR REACTOR

Andre Plagnard, Montrouge, France, assignor to Novatome, Le Plessis, France

Filed Aug. 10, 1981, Ser. No. 291,679

Claims priority, application France, Sep. 22, 1980, 80 20344

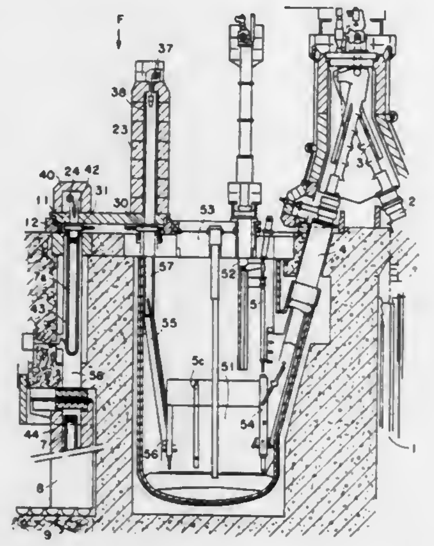
Int. Cl.^{3} G21C *19/22*

U.S. Cl. 376—269 **4 Claims**

1. A device for the transfer of fuel assemblies for a breeder nuclear reactor between a storage position external and adjacent to the reactor vessel and a position for evacuation and introduction from which the evacuation of irradiated assemblies and the supplying of the reactor with new assemblies is effected, comprising

(a) a support adapted to rest on the structure of said reactor laterally of said reactor vessel above two access shafts formed in said structure vertically in line with said storage position and with said position for evacuation, respectively, said support being fixed on said structure by means of dismountable fixing devices;

(b) a platform mounted horizontally and movable in rotation about a vertical axis on said support with the interposition of a sealing joint and pierced by at least one aparture situated so as to be brought in concordance successively with the upper parts of each of said access shafts by rotation of said platform;



(c) at least one hopper able to contain a fuel assembly in vertical position and disposed on the upper surface of said platform round the aperture formed therein, said hopper being equipped with a winch for the vertical displacement of said assembly; and

(d) corresponding connecting devices, disposed, respectively, on the lower surface of said platform round the aperture and on the upper parts of the access shafts.

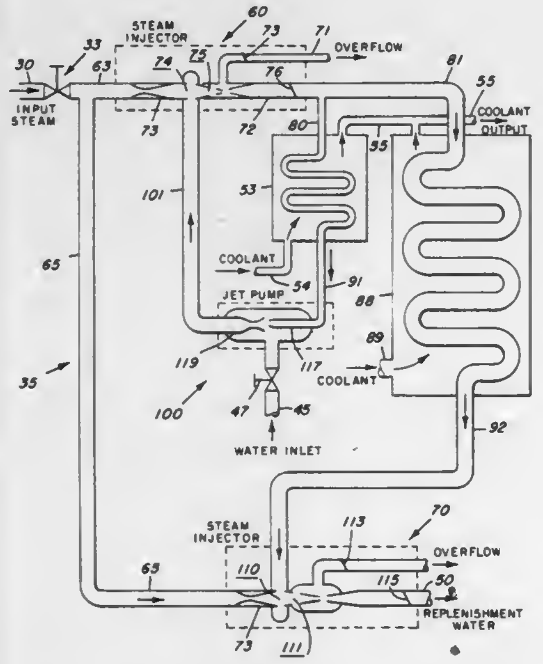
4,440,719
STEAM DRIVEN WATER INJECTION

Robert W. Howard, San Jose, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Oct. 13, 1981, Ser. No. 310,928

Int. Cl.³ G21C *15/00;* F04F *5/22*

U.S. Cl. 376—372 **2 Claims**



1. In a nuclear system including a pressure vessel containing a nuclear reactor core for generating steam, an injection system for supplying water through a return pipe of the pressure vessel, said injection system comprising first and second steam-driven water injectors for driving water, each of them including an inlet and an output for water and effective for raising water pressure between inlet and output; first pipe means for applying steam from said vessel to said first injector; second pipe means for connecting the output of said first injector to the inlet of the second injector, the output of said second injector being effective for feeding water into said return pipe of the pressure vessel; first cooling means for cooling water passing through said second pipe means, said first cooling means being in thermal communication with said second pipe means; jet pump means for receiving input water from a source of water and effective for directing it to the inlet of said first injector, said second pipe means including a branch effective for diverting a portion of the water flowing from the output of said first injector to said jet pump means wherein said portion of water is effective for entraining water from said source of water for introduction into the inlet of said first injector; and second cooling means for cooling said portion of water in the branch of said second pipe means and subject to thermal communication with said branch, whereby the operational capability of said injection system for raising the pressure level of water in said return pipe is increased.

4,440,720
MAGNET ALLOY USEFUL FOR A MAGNETIC RECORDING AND REPRODUCING HEAD AND A METHOD OF MANUFACTURING THEREOF

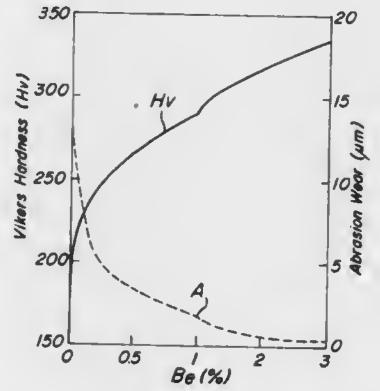
Hakaru Masumoto, Sendai, and Yuetsu Murakami, Izumi, both of Japan, assignors to The Foundation: The Research Institute of Electric and Magnetic Alloys, Sendai, Japan

Filed Sep. 9, 1981, Ser. No. 300,586

Claims priority, application Japan, Dec. 16, 1980, 55-177682

Int. Cl.³ C22C *19/03*

U.S. Cl. 420—459 **8 Claims**



1. A magnet alloy useful for a magnetic recording and reproducing head consisting of by weight 70 to 86% of nickel, more than 1% and less than 14% of niobium, 0.001 to 3% of beryllium, the remainder of iron and a small amount of impurities, said magnet alloy having initial permeability of more than 3,000, maximum permeability of more than 5,000, and Vickers hardness of more than 130.

4,440,721
AQUEOUS LIQUIDS CONTAINING METAL CAVITATION-EROSION CORROSION INHIBITORS

Joe C. Wilson, Woodhaven; Stanley T. Hirozawa, Birmingham, and John J. Conville, Canton, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Continuation of Ser. No. 315,319, Oct. 26, 1981, abandoned. This application Feb. 11, 1983, Ser. No. 465,889

Int. Cl.³ C23F *11/04, 11/18;* C02F *5/10*

U.S. Cl. 422—16 **18 Claims**

12. A process for inhibitng mineral scale and corrosion of metal in the presence of aqueous liquids and especially for inhibiting cavitation-erosion corrosion of aluminum comprising adding to said aqueous liquid the following parts based upon 100 parts by weight of said aqueous liquid from about:

(A) 0.5 to 2 parts by weight of a water-soluble hydrogen phosphate,

(B) 0.001 to 0.50 parts by weight of a water-soluble molybdate, tungstate, or selenate, and

(C) a 0.1 part to 0.8 part by weight of a water-soluble silicate.

4,440,722
DEVICE FOR OXYGENATING BLOOD CIRCULATING IN AN EXTRACORPOREAL CIRCUIT WITH A HEAT EXCHANGER

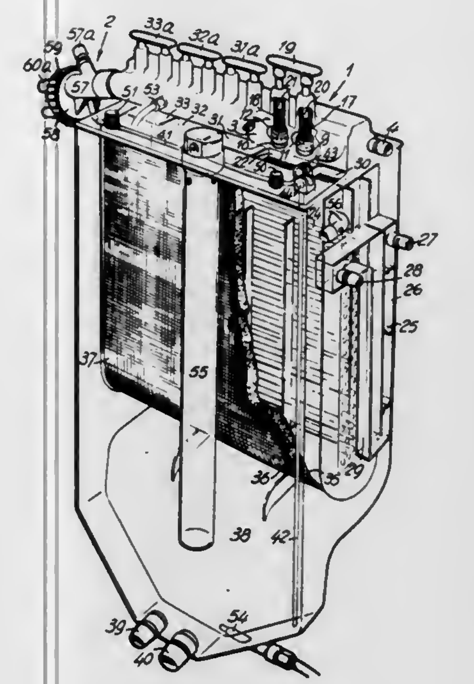
Libero Luppi, Mirandola, Italy, assignor to Dideco S.p.A, Mirandola, Italy

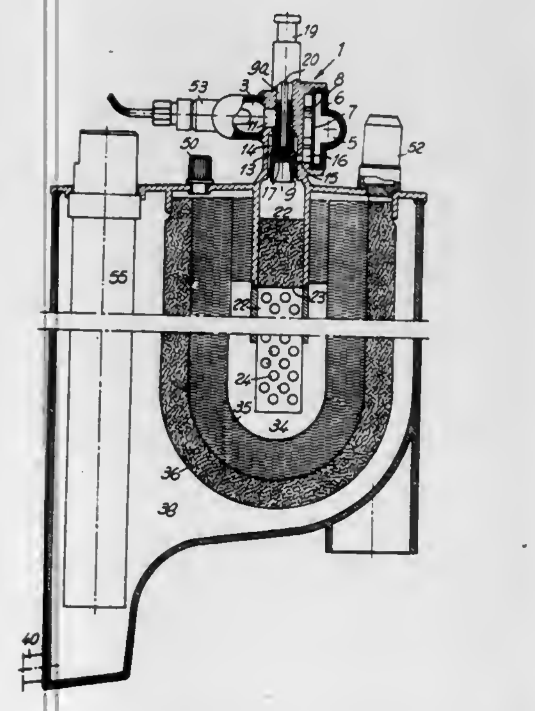
Filed Oct. 2, 1981, Ser. No. 308,322

Claims priority, application Italy, Oct. 6, 1980, 25141 A/80; Jul. 10, 1981, 22864 A/81

Int. Cl.³ A61M *1/03*

U.S. Cl. 422—46 **4 Claims**





1. A device for oxygenating blood circulating in an extracorporeal circuit, comprising a housing, a venous blood inlet manifold and an oxygen inlet manifold secured to said housing, a plurality of oxygenating modules each arranged between the interior of said manifolds and the interior of said housing, a blood and oxygen mixing chamber in said housing below said oxygenating modules and communicating therewith, a homogenizing filter in said mixing chamber, a heat exchanger in said housing below said homogenizing filter, an antifoaming filter generally surrounding said heat exchanger in said housing, an arterial blood collecting chamber in said housing, and arterial blood outlet fittings communicating with said arterial blood collecting chamber, wherein each of said oxygenating modules comprises at least one stub pipe extending substantially perpendicularly to said venous blood inlet manifold and directed into said mixing chamber, a shutter means for controlling communication between the interior of said at least one stub pipe and the interior of said venous blood inlet manifold, inclined through holes in said at least one stub pipe for providing communication between the interior of said at least one stub pipe and the interior of said oxygen inlet manifold, and wherein said shutter means comprises a plunger of elastic material slidable in contact with said at least one stub pipe inside thereof between a position in which communication of said at least one stub pipe with said manifolds is closed and a position in which the latter communication is open, and wherein plungers of stub pipes of a same oxygenating module have a common operating member operable from outside said housing for selectively operating said oxygenating modules thereby adapting the device to different blood flow rates while maintaining substantially a constant degree of oxygenation of the blood flowing through the device.

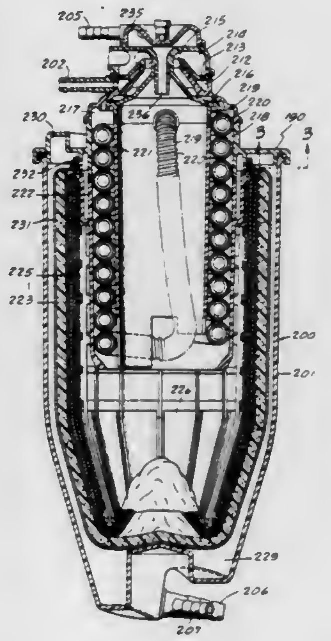
4,440,723
BLOOD OXYGENATOR

Lucas S. Gordon, Fountain Valley, Calif., assignor to Bentley Laboratories, Inc., Irvine, Calif.

Filed Jul. 10, 1981, Ser. No. 282,283

Int. Cl.³ A61M *1/03*

U.S. Cl. 422—47 **5 Claims**



1. An apparatus for oxygenating blood comprising:

a housing having an outer shell portion and a cap portion closing the upper end of said outer shell portion, said cap portion having fixedly mounted thereon:
- a blood inlet means;
- an oxygen-containing gas inlet means;
- an excess oxygen and carbon dioxide vent means;
- a wall means suspended from said cap portion and extending in a direction toward the bottom of said outer shell portion and spaced radially inwardly therefrom, said wall means defining therewithin a blood oxygenating chamber with said blood and oxygen-containing gas inlet means communicating therewith;

said wall means and said outer shell portion defining therebetween a vent chamber in communication with said blood oxygenating chamber;

said excess oxygen and carbon dioxide vent means communicating with said vent chamber;

an oxygenated blood outlet means connected to said outer shell portion;

said cap portion being rotatably joined to said outer shell portion at the upper portion of said vent chamber thereby allowing for cap rotation without possibility of blood loss from the device, and whereby the cap portion and shell portion are relatively rotatable during oxygenation of blood.

4,440,724
COMPOSITION FOR DETECTING KETONE BODIES AND METHOD OF PREPARATION

David L. Tabb, Beaumont, and Janine P. Burrows, Orange, both of Tex., assignors to Helena Laboratories Corporation, Beaumont, Tex.

Filed Nov. 1, 1982, Ser. No. 438,063
Int. Cl.^{3} G01N *33/64*

U.S. Cl. 422—56 **6 Claims**

3. A test device for the detection of ketone bodies in body fluid prepared by the process comprising;

impregnating a carrier wth an aqueous solution of soluble nitroprusside;

drying the impregnated carrier;

further impregnating the carrier in the area previously impregnated with an aqueous solution including a metal salt, TAPS and TRIS; and

drying the carrier;

the pH of the finished test device being no greater than 7.0.

4,440,725
REGENERATOR TEMPERATURE CONTROL

Harold J. Swindell, Kansas City, and Randall G. Thompson, Odessa, both of Mo., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 193,870, Oct. 3, 1980, now Defensive Publication No. 4,354,957. This application Jul. 22, 1982, Ser. No. 400,832
Int. Cl.^{3} G01N *31/12;* B01J *8/24;* G05D *7/00, 23/00*

U.S. Cl. 422—62 **3 Claims**

1. Apparatus useful for regenerating cracking catalyst and comprising

(a) a regenerator vessel,

(b) means to introduce cracking catalyst into said vessel,

(c) means for introducing a free oxygen containing gas into said regenerator and into contact with said catalyst,

(d) an analyzer means for automatically analyzing the flue gas in the regenerator for its carbon monoxide content and generating a corresponding analysis signal,

(e) temperature sensor means for automatically measuring the temperature of the flue gas and generating a temperature signal responsive to the measured temperature,

(f) a control system receiving said analysis signal and said temperature signal and generating an output signal for the manipulation of said free oxygen containing gas flow, said control system comprising

(aa) a direct acting controller and a reverse acting controller, both controllers receiving a set point signal,

(bb) a switch means switching the output of one controller or the output of the other controller to the output of the control system, said switch means being connected to the input of the control system, receiving the analysis signal and being adapted to switch from one controller to the other controller and back responsive to said analysis signal and an analysis set point,

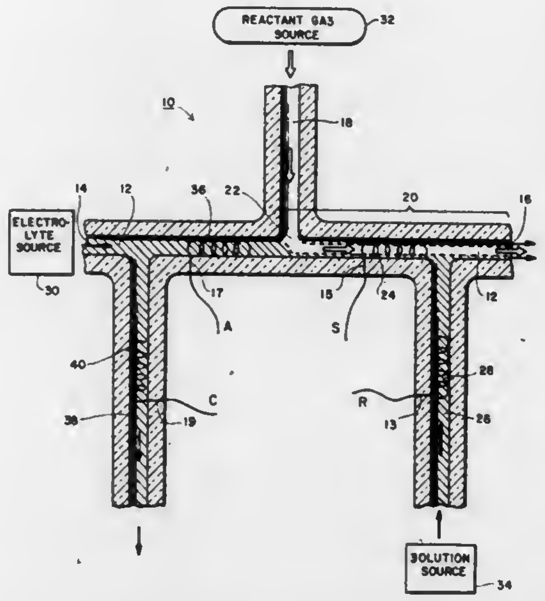
(g) a controller, controlling the flow of free oxygen containing gas into said regenerator, responsive to said output signal from said control system.

4,440,726
APPARATUS FOR ELECTROCHEMICAL DETECTION AND COULOMETRIC TITRATION

Dale M. Coulson, 21 Willow Rd., Apt. 13, Menlo Park, Calif. 94025

Filed Jan. 17, 1983, Ser. No. 458,305
Int. Cl.^{3} G01N *31/08*

U.S. Cl. 422—89 **9 Claims**



1. A cell for an electrochemical measuring apparatus, which comprises means defining a first capillary tube having an entrance end for introducing an electrolyte solution to said cell and an exit end for removing the solution from said cell, means defining a second capillary tube for introducing a reactant to the electrolyte solution in said cell, said second capillary tube intersecting said first capillary tube between the entrance and the exit ends to define a reaction zone for the reactant and the electrolyte in said first capillary tube at said point of intersection and extending downstream thereof, means defining a third capillary tube intersecting said first capillary tube in the reaction zone downstream of the intersection of said first and second capillary tubes near the exit end for establishing a solution bridge to the reaction zone, a sensing electrode in the reaction zone of said first capillary tube immediately downstream of the intersection of said first and second capillary tubes and upstream of the intersection of said first and third capillary tubes, a reference electrode positioned within the bore of said third capillary tube to be electrically connected to the reaction zone by the solution bridge, said electrodes being contoured to the internal surface of the bore and positioned to contact the solution within the bore of the respective capillary tubes and allowing unobstructed flow therethrough.

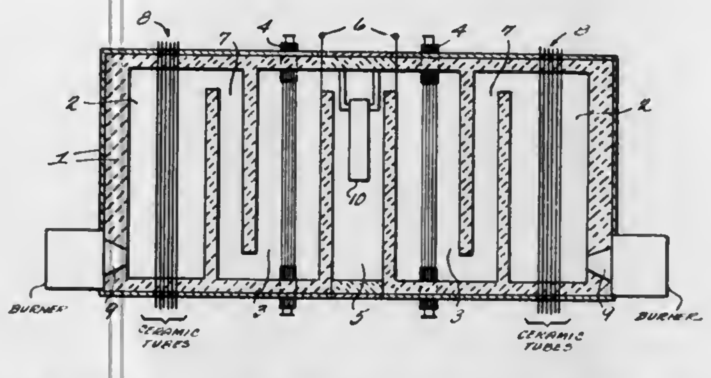
4,440,727
TUBULAR FURNACE FOR PERFORMANCE OF GAS REACTIONS

Heinz Bruck, Lerchenweg 31, 6238 Hofheim/Taunus, Fed. Rep. of Germany

Filed Aug. 17, 1982, Ser. No. 408,827
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1981, 3134851
Int. Cl.^{3} B01J *8/06*

U.S. Cl. 422—197 **4 Claims**

1. In a tube furnace suitable for carrying out a gaseous chemical reaction for the production of hydrocyanic acid in ceramic tubes which are suspended in a heating chamber of the furnace, the furnace including burner means, a flue gas channel and recuperator means, the improvement comprising, in combination, an outer wall having a metal covering, two interior heating chambers, a separate burner means for heating each said heating chamber, a plurality of ceramic tubes suspended in each said heating chamber, each said heating chamber having a recuperator chamber in flow communication therewith and a flue gas channel for receiving flue gases from both said recuperator chambers, said flue gas channel being located between said recuperator chambers, said furnace including a flue gas conduit between each said heating chamber and said respective recuperator chamber, said furnace having an upper cover with each flue gas conduit receiving flue gas near said upper cover of said furnace, eacn said recuperator chamber having an opening adjacent a wall opposite said upper cover and each said flue gas conduit being arranged to discharge flue gas into said opening of each said recuperator chamber.

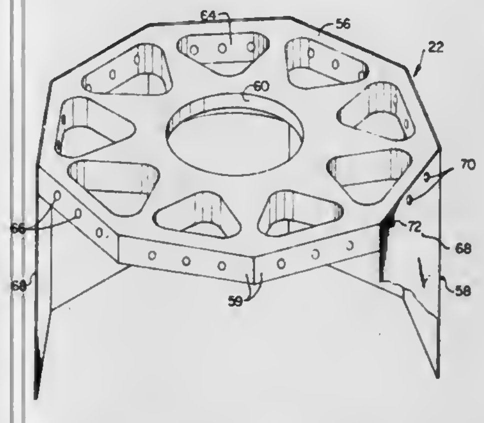


4,440,728
APPARATUS FOR GROWING TUBULAR CRYSTALLINE BODIES

Richard W. Stormont, Warwick, R.I., and Lawrence Eriss, Arlington, Mass., assignors to Mobil Solar Energy Corporation, Waltham, Mass.

Filed Aug. 3, 1981, Ser. No. 289,410
Int. Cl.^{3} C30B *15/36*

U.S. Cl. 422—246 **12 Claims**



1. Apparatus for use in growing thin-walled hollow tubular crystalline bodies from the melt comprising in combination

a holder substantially in the form of a polygonal plate dimensioned to conform to the interior transverse cross-section of a selected hollow tubular crystalline body having a predetermined interior transverse cross-section;

a stem adapted to suspend said holder from a pulling mechanism; and

a seed in the form of a thin-walled hollow polygonal prism affixed peripherally to said holder.

4,440,729
PROCEDURE FOR CHEMICAL, AUTOMATIC DISSOLUTION OF MOLYBDENUM CORE WIRE IN TUNGSTEN FILAMENT COIL AND A DEVICE FOR IMPLEMENTING THE PROCEDURE

Günther Jönsson, Karlskrona, Sweden, assignor to Lumalampan Aktiebolag, Karlskrona, Sweden

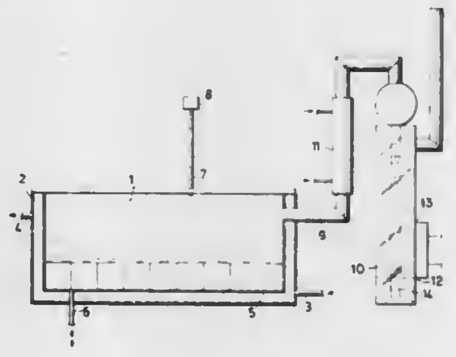
Filed Apr. 14, 1981, Ser. No. 302,215
Claims priority, application Sweden, Sep. 12, 1980, 8006387
Int. Cl.^{3} C01G *39/00*

U.S. Cl. 423—55 **12 Claims**

1. A process for dissolving a molybdenum core wire in a tungsten filament coil comprising:

(a) reacting said filament coil in a sealed reaction vessel fitted with at least one liquid trap with an acid mixture consisting essentially of 2.5 to 3.5 moles of nitric acid, 12 to 14 moles of sulfuric acid and 7 to 9 moles of water in the presence of an oxygen containing gas to thereby dissolve said core wire; and

(b) continuously monitoring the amount of said oxygen containing gas by a liquid level sensing device being capable of sensing the level of liquid in said liquid trap and comprising an upper and lower liquid level sensing region, said liquid level sensing device being connected to an oxygen containing gas supply, the amount of liquid in said liquid trap varying directly with the amount of oxygen containing gas in said reaction vessel, wherein when the level of liquid in said liquid trap is at the same level as said lower liquid level sensing region, said oxygen containing gas is supplied to said reaction vessel and when the level of liquid is at the same level as said upper liquid level sensing region, the supply of said oxygen containing gas is stopped.



4,440,730
CHLORINATION OF TITANIUM ORES USING LIGNITIC REACTIVE CARBONS

James P. Bonsack, Aberdeen, Md., assignor to SCM Corporation, New York, N.Y.

Filed Nov. 17, 1982, Ser. No. 442,284
Int. Cl.^{3} C01G *23/02*

U.S. Cl. 423—74 **6 Claims**

1. In a process for chlorinating a titaniferous material to form $TiCl_4$ wherein discrete particles of titaniferous material and discrete particles of porous carbon reductant having a particle size in the range of about −6 mesh +140 mesh characterized in that it has micropores therein having a pore diameter of less than about 20 Angstroms are fluidized and contacted with a chlorine providing material at a temperature of from 400° C. to 2000° C. until the titanium content of the titaniferous material is substantially chlorinated, the improvement which comprises utilizing as the porous carbon reductant a brown coal char or lignite based carbon characterized by a particle size in the range of about −6 mesh +140 mesh and having initially micropores therein having a pore diameter of about 20 Angstroms to the extent of from about 30% to about 95% of the total surface area of the carbon in said porous carbon reductant whereby vanadium values are substantially removed from the $TiCl_4$.

4,440,731
PROCESS FOR REMOVAL OF CARBON DIOXIDE FROM INDUSTRIAL GASES

Roscoe L. Pearce, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 8, 1981, Ser. No. 299,689
Int. Cl.^{3} B01D *53/34*

U.S. Cl. 423—228 **3 Claims**

1. In a process for removing carbon dioxide (CO_2) from industrial combustion gases containing the CO_2 and O_2 contacting the gas, in a gas-liquid contactor, with an aqueous solution which contains an alkanol amine absorbent-reactant;

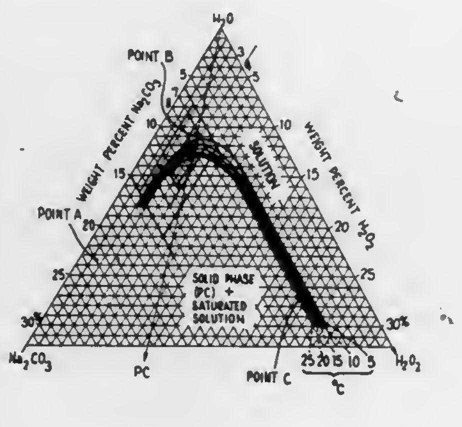
circulating the solution from the contactor to a regeneration step wherein the CO_2 is released from the absorbent, the CO_2 recovered and the essentially CO_2 free absorbent recycled to the contactor, the improvement which consists of employing as the essential additives to said solution, to reduce degradation of the absorbent under the conditions of use and corrosion of the metals in contact with said solution during use, at least above 50 ppm of copper^{+2} and at least from 50 parts per million parts of solution one or more of the following: dihydroxyethylglycine, an alkali metal carbonate, an alkali metal or ammonium permanganate and nickel and/or bismuth oxides.

3. In a process for removing carbon dioxide (CO_2) from industrial combustion gases containing the CO_2 and O_2 by contacting the gas, in a gas:liquid contactor, with an aqueous solution which contains an alkanol amine absorbent-reactant; circulating the solution from the contactor to a regeneration step wherein the CO_2 is released from the absorbent, the CO_2 recovered and the essentially CO_2 free absorbent recycled to the contactor, the improvement which consists of employing as the essential additives to said solution, to reduce degradation of the absorbent under the conditions of use and corrosion of the metals in contact with said solution during use, from at least about 50 ppm of dihydroxyethylglycine and at least about 50 parts per million parts of a thiocyanate salt and nickel and/or bismuth oxides.

4,440,732
HOLLOW GRANULAR PERCARBONATE

Tsuneshi Takeda; Kazuya Otsuji; Junichi Tamura; Yoshikazu Morii, all of Wakayama; Michio Higashiwaki, Sakai, and Yoshitaka Nakatani, Wakayama, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Jun. 26, 1981, Ser. No. 277,547
Claims priority, application Japan, Jul. 4, 1980, 55-91261
Int. Cl.³ C01B *31/00, 15/10*
U.S. Cl. 423—415 P **15 Claims**



1. A process for preparing sodium percarbonate in the form of hollow granules, consisting essentially of the steps of:

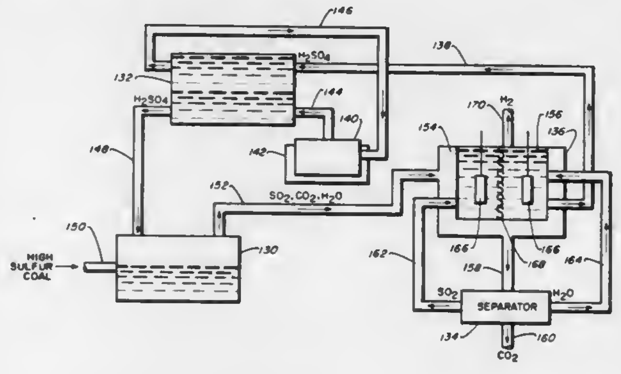
forming an aqueous reaction solution consisting essentially of 6.0 to 15.0 wt. % of dissolved Na_2CO_3, 1.5 to 6.0 wt. % of dissolved hydrogen peroxide and the balance is essentially water;

then adding gradually to said aqueous reaction solution amounts of (1) granules of anhydrous sodium carbonate having particle sizes in the range of 50 to 2000 microns and (2) an aqueous hydrogen peroxide solution, at rates effective to continuously maintain (a) the concentration of dissolved hydrogen peroxide in said reaction solution in the range of 1.5 to 6.0 wt. %, (b) the concentration of said dissolved Na_2CO_3 in said reaction solution in the range of 6.0 to 15.0 wt. %, and (c) a molar ratio of said dissolved Na_2CO_3 to dissolved hydrogen peroxide in said reaction solution at a value of at least 2:3, whereby to convert said anhydrous sodium carbonate to sodium percarbonate and to precipitate said sodium percarbonate in the form of hollow granules.

4,440,733
THERMOCHEMICAL GENERATION OF HYDROGEN AND CARBON DIOXIDE

Daniel D. Lawson, Arcadia, and Christopher England, Sierra Madre, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Nov. 6, 1980, Ser. No. 204,477
Int. Cl.³ C01B *13/00*
U.S. Cl. 423—437 **10 Claims**



4. A method of gasifying coal containing at least 2 percent by weight of sulfur comprising:

mixing said coal with concentrated sulfuric acid to form a mixture and heating the mixture to between 300° C. and 400° C. whereby said coal reacts with the sulfuric acid to produce decomposition gases comprising SO_2, H_2O and CO_2.

4,440,734
PROCESS FOR THE RECOVERY OF SULFURIC ACID

Demetre Kougioumoutzakis, Ste-Foy, Canada, assignor to Gouvernement du Quebec, Quebec, Canada

Filed Feb. 11, 1982, Ser. No. 347,785
Claims priority, application Canada, Mar. 24, 1981, 373743
Int. Cl.³ C01C *1/242;* **C01B** *17/90*
U.S. Cl. 423—549 **16 Claims**

1. A process for selectively separating sulfuric acid from liquors containing sulfuric acid and impurities comprising a plurality of metallic ions, which comprises treating by liquid-liquid extraction of said liquors with an organic solvent consisting essentially of tri-isooctylamine, kerosene, and isodecanol under conditions effective to provide a selective liquid-liquid extraction of said liquors to give an organic phase containing the extracted sulfuric acid and substantially no metallic ions, and an aqueous phase containing substantially all said plurality of metallic ions, separating said organic and said aqueous phase, regenerating said organic phase by introducing gaseous NH_3 therein under conditions to form solid $(NH_4)_2SO_4$, and separating said solid $(NH_4)_2SO_4$ from said organic phase thereby regenerating said organic solvent including said tri-isooctylamine, kerosene and isodecanol.

4,440,735
PROCESS FOR PRODUCTION OF PHOTOCONDUCTIVE CADMIUM SULFIDE

Takeshi Ikeda, Tokyo; Atsuko Yamamoto, Komae, and Masanao Kasai, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 18, 1982, Ser. No. 340,460
Claims priority, application Japan, Jan. 28, 1981, 56-10966
Int. Cl.³ H01C *31/00;* **C01B** *17/00;* **H01L** *31/00;* **H01B** *1/06*
U.S. Cl. 423—561 B **3 Claims**

1. A process for production of photoconductive cadmium sulfide, characterized in that a flux is added in an amount from about 20 to 65 weight percent based on the cadmium sulfide, and the resulting mixture is fired at a temperature higher than the melting point of said flux by at least 50° C., said flux being a mixture of $CdCl_2$ and alkali metal chloride said alkali metal chloride being present in an amount from 10 mole percent to 90 mole percent, based on the total flux wherein the total alkali metal chloride present in the process is supplied solely from said flux.

4,440,736
TITANIUM-BASED BODY-CENTERED CUBIC PHASE ALLOY COMPOSITIONS AND ROOM TEMPERATURE HYDRIDE-FORMING REACTIONS OF SAME

Arnulf J. Maeland, Succasunna; George G. Libowitz, Brookside, and George Rak, Pinebrook, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 420,465, Sep. 20, 1982, abandoned. This application May 2, 1983, Ser. No. 490,599
Int. Cl.³ C01B *6/24*
U.S. Cl. 423—644 **11 Claims**

1. A method of producing a metal hydride which comprises reacting hydrogen gas at a temperature between about 0° C. and about 100° C. with a solid solution alloy having a body-centered cubic phase structure and comprising:

(a) a body-centered cubic phase structure comprising titanium and a second metal selected from the group consisting of molybdenum, vanadium and niobium; and

(b) dissolved in said body-centered cubic phase structure, wherein said second metal is vanadium or niobium or molybdenum, at least about 1 atom percent of a third metal selected from the group consisting of aluminum, cobalt, chromium, copper, manganese, nickel, iron, gallium, germanium and silicon;

wherein the reaction rate of said solid solution alloy with hydrogen at said temperature is at least about ten times the reaction rate of unalloyed titanium with hydrogen at said temperature and identical hydrogen pressures.

4,440,737
ROOM TEMPERATURE REACTION OF VANADIUM-BASED ALLOYS WITH HYDROGEN

George G. Libowitz, Brookside; James F. Lynch, Plainfield, and Arnulf J. Maeland, Succasunna, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 420,467, Sep. 20, 1982, abandoned. This application May 2, 1983, Ser. No. 490,768
Int. Cl.³ C01B *6/24*
U.S. Cl. 423—644 **10 Claims**

1. A method of producing a vanadium-based metal hydride which comprises reacting hydrogen gas at a temperature between about 0° C. and 100° C. with a vanadium-based binary solid solution alloy having a body-centered cubic structure and having a formula $V_{1-x}M_x$, wherein M is a metal selected from the group consisting of manganese, chromium, cobalt, iron, nickel and mixtures thereof and wherein x varies from at least about 2 atom percent up to the solubility limit of cobalt, iron, nickel and up to about 20 mol percent of manganese and up to about 40 mol percent of chromium in said solid solution alloy;

Wherein the reaction rate of said solid solution alloy with hydrogen at said temperature is at least about 100 times the reaction rate of un-alloyed vanadium with hydrogen at said temperature and identical hydrogen pressures and wherein the reacting of said solid solution alloy with hydrogen at said temperature is effected without preactivation of said solid solution alloy with hydrogen at a elevated temperature.

4,440,738
STABLE RADIOGRAPHIC IMAGING AGENTS

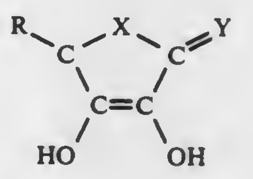
Mahdi B. Fawzi, Fairfield; James J. Benedict, Cincinnati; Joseph E. Bugaj, Harrison; Charles R. Degenhardt, Cincinnati, and Barry F. Van Duzee, Westchester, all of Ohio, assignors to Mallinckrodt, Inc., St. Louis, Mo.

Filed Jun. 10, 1982, Ser. No. 387,138
Int. Cl.³ A61K *49/00, 43/00*
U.S. Cl. 424—1.1 **18 Claims**

1. A composition, useful in the preparation of technetium-99m-based imaging agents, comprising:

(a) a pertechnetate reductant; and

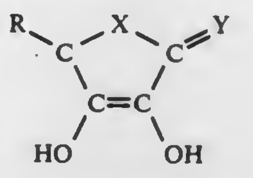
(b) an effective amount, no more than about 25%, by weight, of a reductate stabilizer selected from the group consisting of compounds and mixtures of compounds having the formula:



wherein X is CRR′ O, or NR′, R′ is hydrogen, or lower alkyl, Y is oxygen, sulfur, nitrogen, or CH_2, R is hydrogen, lower alkyl, alkyl containing from 3 to 8 carbon atoms substituted with one or more hydroxy, halogen, amino, or thiol groups, alkyl containing from 1 to 8 carbon atoms halogen-substituted on the first and/or second carbon atom, lower alkenyl nicotinic acid and nicotinamide complexes thereof and pharmaceutically-acceptable salts, amides, and esters, thereof.

15. A composition, useful in the preparation of technetium-99m-based radiographic imaging agents, comprising:

(a) an effective amount of a reductate stabilizer selected from group consisting of compounds and mixtures of compounds having the formula:



wherein X is CRR′ O, or NR′, R′ is hydrogen, or lower alkyl, Y is oxygen, sulfur, nitrogen, or CH_2, R is hydrogen, lower alkyl, alkyl containing from 3 to 8 carbon atoms substituted with one or more hydroxy, halogen, amino, or thiol groups, alkyl containing from 1 to 8 carbon atoms halogen-substituted on the first and/or second carbon atom, lower alkenyl, nicotinic acid, nicotinamide complexes thereof and pharmaceutically-acceptable salts, amides, and esters thereof; dissolved in

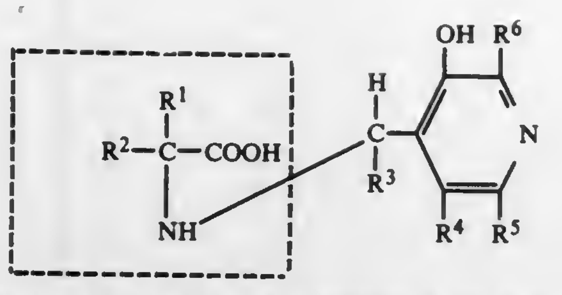
(b) an oxidized pertechnetate solution.

4,440,739
RADIOACTIVE DIAGNOSTIC AGENT AND NON-RADIOACTIVE CARRIER THEREFOR

Makoto Azuma, Takarazuka, and Masaaki Hazue, Amagasaki, both of Japan, assignors to Nihon Medi-Physics Co., Ltd., Hyogo, Japan

Filed Nov. 25, 1981, Ser. No. 324,903
Claims priority, application Japan, Nov. 27, 1980, 55-167135
Int. Cl.³ A61K *43/00, 49/00*
U.S. Cl. 424—1.1 **12 Claims**

1. A non-radioactive carrier comprising an N-pyridoxyl-α-amino acid of the formula:



(I)

wherein R^1 and R^2 are each an atom or an atomic group present in the α-amino acid residue encompassed by the dotted line and R^3, R^4, R^5 and R^6 are each a hydrogen atom, a halogen atom, a C_1–C_{10} alkyl group or a C_1–C_{10} alkyl group substituted with at least one hydrophilic group or its salt, and a reducing agent for pertechnetate.

4,440,740

α-KETO ALDEHYDES AS ENHANCING AGENTS OF GASTRO-INTESTINAL DRUG ABSORPTION

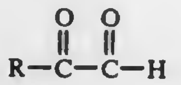
Joseph A. Fix, and Stefano A. Pogany, both of Lawrence, Kans., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 26, 1982, Ser. No. 371,873

Int. Cl.^{3} A61K *43/00, 49/00, 31/11*

U.S. Cl. 424—1.1 **17 Claims**

1. A method for enhancing the absorption of an orally or rectally administered drug from the gastrointestinal compartment into the bloodstream, said method comprising the steps of preparing a drug form capable of being orally or rectally administered, said drug form comprising a therapeutically effective dosage amount of a drug capable of being absorbed into the bloodstream from the gastrointestinal compartment said drug comprising antibiotics, xanthines, anticancer agents, polypeptides, antiarthritic, cardiovascular agents, antidiabetics, antiulcers, antifungals, antinauseants, sedatives, diuretics, antihypertensives, anti-inflammatories, anthelmintics, antiviral agents, radio-opaques and radionuclide diagnostic agents, polynucleotides, or anti-Parkison agents and an α-keto aldehyde of the formula:



$$R-\overset{O}{\overset{\|}{C}}-\overset{O}{\overset{\|}{C}}-H$$

wherein R is hydroxy, phenyl, substituted phenyl or lower alkyl (C_{1-5}) and wherein the substituents on the substituted phenyl radical can be halo, lower alkyl, (C_{1-5}) or hydroxy and the pharmaceutically acceptable acid addition salts when R is hydroxy or a pharmaceutically acceptable salt thereof as adjuvants, said adjuvant being present in said drug in a sufficient amount to be effective in enhancing said absorption and the percentage of the drug to drug plus adjuvant is 5% to 50% by weight and administering said drug form into said gastrointestinal compartment.

4,440,741

BICARBONATE-CONTAINING STICK DEODORANT

Frank W. Marschner, Whitehouse Station, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 845,503, Oct. 25, 1977, abandoned. This application Feb. 16, 1979, Ser. No. 12,936

Int. Cl.^{3} A61K *7/32*

U.S. Cl. 424—65 **20 Claims**

1. A stable opaque water-based deodorant stick comprising a water-insoluble amount of sodium or potassium bicarbonate as the essential deodorizing agent, dispersed by means of 0.1–10% suspending agent in an aqueous polyhydric alcohol solidified by an alkali metal salt of a saturated C_{14}–C_{20} fatty acid gelling agent, said polyhydric alcohol constituting about 20–90% by weight of the total composition.

4,440,742

BICARBONATE-CONTAINING STICK DEODORANT

Frank W. Marschner, Whitehouse Station, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 845,503, Oct. 25, 1977, abandoned. This application Feb. 16, 1979, Ser. No. 12,938

Int. Cl.^{3} A61K *7/32*

U.S. Cl. 424—65 **17 Claims**

1. A stable transparent water-based deodorant stick comprising a water-soluble amount of at least 0.1% by weight of sodium or potassium bicarbonate as the essential deodorizing agent, dissolved in an aqueous polyhydric alcohol, solidified by an alkali metal salt of a saturated C_{14}–C_{20} fatty acid gelling agent, said polyhydric alcohol constituting about 20–90% by weight of the total composition.

4,440,743

HAIR CARE COMPOSITIONS

Joseph A. Faucher, 45 Maple Hill, Pleasantville, N.Y. 10570

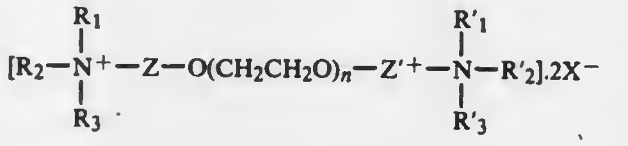
Continuation of Ser. No. 41,617, May 23, 1979, abandoned, which is a continuation-in-part of Ser. No. 811,038, Jun. 29, 1977, abandoned. This application Mar. 10, 1982, Ser. No. 356,758

Int. Cl.^{3} A61K *7/06;* **A45D** *7/00*

U.S. Cl. 424—70 **11 Claims**

1. A method of conditioning hair which comprises applying to said hair an effective conditioning amount of an aqueous composition comprising:

A. from about 0.3 to about 5 weight percent of a compound of the formula:



$$[R_2-\overset{R_1}{\underset{R_3}{N}}{}^{+}-Z-O(CH_2CH_2O)_n-Z'^{+}-\overset{R'_1}{\underset{R'_3}{N}}-R'_2].2X^-$$

wherein:

R_1, R_1', R_2, R_2', and R_3, and R_3' are the same or different and aeight aliphatic carbon atoms;

Z and Z′ are the same or different and are divalent aliphatic organic radicals having from 1 to 8 aliphatic carbon atoms and are divalent hydroxy-alkylene, alkylene groups, divalent radicals of esters, divalent radicals of carboxylic acids, or divalent radicals of ketones;

n is an integer from 2 to 50;

X is chloride or bromide; and

B. water.

4,440,744

QUATERNARY, COPOLYMERIC, HIGH MOLECULAR WEIGHT AMMONIUM SALTS BASED ON ACRYLIC COMPOUNDS, AND THEIR USE IN COSMETICS

Dieter Strasilla, Weil am Rhein, Fed. Rep. of Germany; Hubert Meindl, Riehen, Switzerland; Laszlo Moldovanyi, Basel, Switzerland, and Charles Fearnley, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

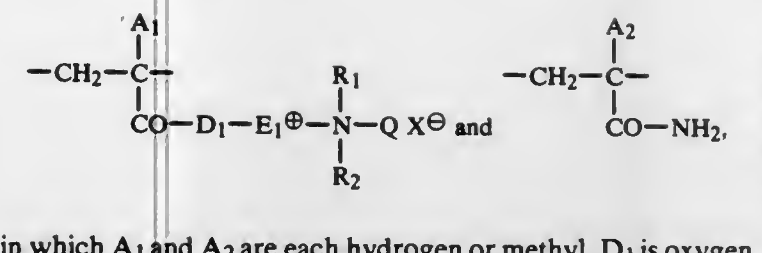
Division of Ser. No. 286,920, Jul. 27, 1981. This application Sep. 28, 1982, Ser. No. 425,600

Claims priority, application Switzerland, Aug. 1, 1980, 5876/80

Int. Cl.^{3} A61K *7/08, 7/06*

U.S. Cl. 424—70 **14 Claims**

12. A method of hair treatment to give ease of wet and dry combing which comprises the step of applying to the hair a cosmetic which contains at least one copolymeric, quaternary ammonium salt which is soluble or forms a microemulsion in an aqueous surfactant system, which has a molecular weight distribution of 10^4 to 10^9, the molecular weight of at least 5 percent by weight of the copolymer being 10^7 and 10^9, and comprises, in any order, recurring structural elements of the formulae



$$-CH_2-\overset{A_1}{\underset{CO-D_1-E_1^{\oplus}-\overset{R_1}{\underset{R_2}{N}}-Q\,X^{\ominus}}{C}}- \quad\text{and}\quad -CH_2-\overset{A_2}{\underset{CO-NH_2,}{C}}-$$

in which A_1 and A_2 are each hydrogen or methyl, D_1 is oxygen or —NH—, E_1 is alkylene having 1 to 4 carbon atoms unsubstituted or substituted by hydroxyl, R_1 and R_2 are each methyl or ethyl, Q is alkyl or hydroxyalkyl having 1 to 4 carbon atoms or benzyl and $X^{\ominus}$ is the radical of at least one anionic sulfonate surfactant.

4,440,745

ABRASIVE COMPOSITIONS

Helmut Schmidt, Höchberg, and Alfred Kaiser, Kist, both of Fed. Rep. of Germany, assignors to Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V., Munich, Fed. Rep. of Germany

Filed Dec. 17, 1981, Ser. No. 332,100

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1980, 3048369

Int. Cl.^{3} A61K *31/74, 31/695*

U.S. Cl. 424—78 **8 Claims**

7. A method for treating acne comprising applying to the human skin an effective acne treatment amount of a composition comprising a porous, organo-modified silicic acid heteropolycondensate as an abrasive, said heteropolycondensate being prepared by hydrolytic polycondensation of:

(a) from 35 to 90% by weight of at least one silicon-functional silane of the formula (I):

SiR_4 (I),

wherein X is hydrogen, halogen, alkoxy, acyloxy or an $—NR_2$ group, in which R is hydrogen and/or alkyl, with the proviso that not all of X are hydrogen;

(b) from 10 to 50% by weight of at least one organo-silane of the formula (II):

$SiR'_aX_{(4-a)}$ (II),

wherein X is as defined above; R′ is alkyl, alkenyl, aryl, aralkyl or alkylaryl; and a is an integer of 1, 2 or 3;

(c) optionally from 0 to 15% by weight of at least one organo-functional silane of the formula (III):

$SiR'_bX_c(R''Y)_{(4-b-c)}$ (III),

wherein R′ and X are as defined above; R″ is straight-chain or branched alkylene, optionally interrupted by oxygen or sulfur atoms or —NH— groups; phenylene, alkylphenylene or alkylenephenylene; Y is halogen, unsubstituted or substituted amino, unsubstituted or substituted anilino, or an aldehyde, keto, carboxy, hydroxy, mercapto, cyano, hydroxyphenyl, diazo, carboxylic acid alkyl ester, sulfonic acid (SO_3H) or phosphoric acid (PO_3H_2) group; b is 0 or an integer of 1 or 2; c is an integer of 1, 2 or 3; and/or

(d) optionally from 0 to 40% by weight of at least one compound selected from the group consisting of substantially involatile oxides of elements selected from the group consisting of the main group I*a* to V*a* and the side group IV*b* or V*b* of the Periodic Table, which are soluble in the reaction medium, and compounds of these elements which are capable of forming a substantially involatile oxide soluble in the reaction medium, in the presence of at least the amount of water stoichiometrically required for hydrolysis and optionally in the presence of a condensation catalyst and/or an organic solvent, followed by removing any solvent present and drying and comminuting the silicic acid heteropolycondensate obtained, and at least one topically acceptable carrier of adjuvant.

8. A method for clensing, scouring or polishing delicate surfaces comprising applying to a delicate surface an effective amount of a composition comprising a porous, organo-modified silicic acid heteropolycondensate as an abrasive, said heteropolycondensate being prepared by hydrolytic polycondensation of:

(a) from 35 to 90% by weight of at least one silicon-functional silane of the formula (I):

SiX_4 (I),

wherein X is hydrogen. halogen, alkoxy, acyloxy or an $—NR_2$ group, in which R is hydrogen and/or alkyl, with the proviso that not all of X are hydrogen;

(b) from 10 to 50% by weight of at least one organo-silane of the formula (II):

$SiR'_aX_{(4-a)}$ (II),

wherein X is as defined above; R′ is alkyl, alkenyl, aryl, aralkyl or alkylaryl; and a is an integer of 1, 2 or 3;

(c) optionally from 0 to 15% by weight of at least one organo-functional silane of the formula (III):

$SiR'_bX_XR''Y)_{(4-b-c)}$ (III),

wherein R′ and X are as defined above; R″ is straight-chain or branched alkylene, optionally interrupted by oxygen or sulfur atoms or —NH— groups; phenylene, alkylphenylene or alkylenephenylene; Y is halogen, unsubstituted or substituted amino unsubstituted or substituted anilino, or an aldehyde, keto, carboxy, hydroxy, mercapto, cyano, hydroxyphenyl, diazo, carboxylic acid alkyl ester, sulfonic acid (SO_3H) or phosphoric acid (PO_3H_2) group; b is 0 or an integer of 1 or 2; c is an integer of 1, 2 or 3; and the sum of b+c is an integer of 1, 2 or 3; and/or

(d) optionally from 0 to 40% by weight of at least one compound selected from the group consisting of substantially involatile oxides of elements selected from the group consisting of the main groups I*a* to V*a* and the side group IV*b* or V*b* of the Periodic Table, which are soluble in the reaction medium, and compounds of these elements which are capable of forming a substantially involatile oxide soluble in the reaction medium, in the presence of at least the amount of water stoichio-metrically required for hydrolysis and optionally in the presence of a condensation catalyst and/or an organic solvent, followed by removing any solvent present and drying and comminuting the silicic acid heteropolycondensate obtained,

and at least one carrier.

4,440,746

GRANULAR PESTICIDE COMPOSITION

Michael J. Maglio, Glenolden, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Oct. 28, 1982, Ser. No. 437,381

Int. Cl.^{3} A01N *57/00, 57/26*

U.S. Cl. 424—78 **4 Claims**

1. A granular slow release soil pesticide composition prepared by mixing from about 5 to about 90% by weight of an aqueous solution of polyvinyl alcohol and from about 2 to about 50% of a compatible pesticide plus 0 to about 80% of at least one filler selected from the class consisting of diatomites, attapulgites, bentonites, talcs, montmorillonites, perlites, vermiculites, calcium carbonates, corn cob grits, wood flour, lignin sulfonates, and mixtures thereof with from about 1 to about 20% of a borate until said ingredients react to form a gel, drying the gel, and grinding the dried product to the desired particle size.

4,440,747
MONOCLONAL ANTIBODY-RICIN HYBRIDS AS A TREATMENT OF MURINE GRAFT-VERSUS-HOST DISEASE

David M. Neville Jr., Bethesda, and Richard J. Youle, Kensington, both of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 186,735, Sep. 30, 1980, Pat. No. 4,359,457. This application Feb. 19, 1982, Ser. No. 350,223

Int. Cl.^{3} A61K *39/00*

U.S. Cl. 424—85 **2 Claims**

1. A process for the treatment of graft versus host disease comprising

removing bone marrow cells from a murine donor;

in vitro treating the donor cells with anti-thy 1.2-ricin in the presence of excess lactose; and

injecting the treated cells into a murine recipient.

4,440,748
STRAIN OF *ESCHERICHIA COLI* BY BACTERIAL CONJUGATION

Amy C. Graham, Avenel, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 3, 1982, Ser. No. 373,388

Int. Cl.^{3} A61K *39/108;* **C12N** *15/00, 1/20*

U.S. Cl. 424—92 **5 Claims**

1. A biologically pure culture of a microorganism which is a strain of *Escherichia coli* synthesizing both K88 and K99 antigens, with access number ATCC 39076.

4. A vaccine for prevention of colibacillosis comprising K88 and K99 pili purified from a strain of *Escherichia coli* with access number ATCC 39076 or the whole inactivated cell and a pharmaceutically acceptable carrier.

4,440,749
PREVENTIVE AND TREATING AGENT FOR BLOOD LIPIDS ABNORMALITY AND/OR ARTERIOSCLEROSIS

Shigemi Fujisaki; Takashi Fujisaki; Junichi Yoshida, and Yasuhiro Fujisaki, all of Nishinomiya, Japan, assignors to Kaken Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Apr. 12, 1983, Ser. No. 484,313

Claims priority, application Japan, Apr. 30, 1982, 57-71494

Int. Cl.^{3} A61K *37/48*

U.S. Cl. 424—94 **4 Claims**

1. A method of preventing or treating blood lipids abnormality comprising administering to a patient in need of such therapy an effective amount of pronase or serrathiopeptinase to prevent or treat said blood lipids abnormality.

4,440,750
OSTEOGENIC COMPOSITION AND METHOD

Julianne Glowacki, Jamaica Plain, Mass., and Bruce B. Pharriss, Palo Alto, Calif., assignors to Collagen Corporation, Palo Alto, Calif. and President and Fellows of Harvard College, Cambridge, Mass.

Filed Feb. 12, 1982, Ser. No. 348,414

Int. Cl.^{3} A61K *35/32, 37/00*

U.S. Cl. 424—95 **18 Claims**

1. An osteogenic composition comprising a plastic dispersion of particulate demineralized bone and reconstituted collagen fibers dispersed in a continuous aqueous phase having a substantially physiological pH and ionic strength.

4,440,751
BROAD SPECTRUM ANTIBIOTIC COMPLEX PRODUCED BY A NOVEL MICROMONOSPORA

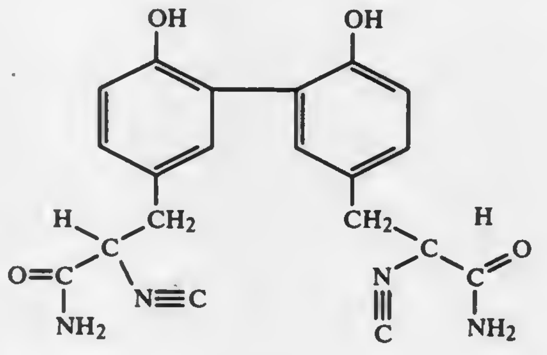
Jay A. Waitz, Far Hills; Joseph A. Marquez, Montclair; Mahesh G. Patel, Verona, and Ann C. Horan, Metuchen, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Oct. 6, 1980, Ser. No. 194,490

Int. Cl.^{3} A61K *35/00, 31/275;* **C07C** *121/80;* **C12P** *13/02*

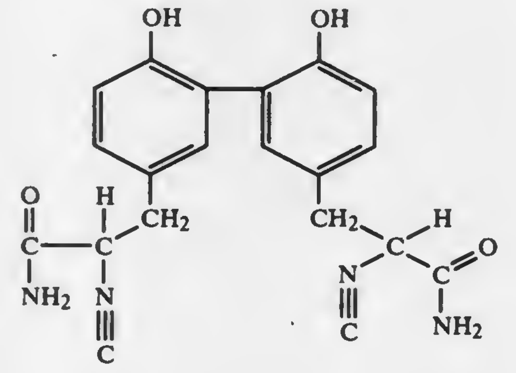
U.S. Cl. 424—114 **6 Claims**

1. A composition of matter having substantial antibacterial activity produced by cultivating a strain of *Micromonospora echinospora* var. *challisensis* having the identifying characteristics of NRRL 12255 in a pH and temperature controlled aqueous nutrient medium having assimilable sources of carbon and nitrogen under controlled aerobic conditions until a composition of matter having substantial antibiotic activity is produced, which composition of matter yields an antibiotic complex designated hazymicin complex, said composition of matter consisting essentially of a mixture of hazymicin component 5 and hazymicin component 6, wherein said components are represented by the formulae



Component 5

and



Component 6

4,440,752
ANTIBIOTICS Y-16482 α AND/OR Y-16482 β, A PROCESS FOR PRODUCTION THEREOF, AND A PHARMACEUTICAL COMPOSITION CONTAINING EITHER OR BOTH OF THEM

Tomohiko Munakata; Katsuyoshi Isagai, both of Nakatsu; Yoshifumi Ikeda, Fukuoka; Junichi Sakai, Nakatsu, and Hideo Matsuki, Fukuoka, all of Japan, assignors to Yoshotomi Pharmaceutical Industries Ltd., Japan

PCT No. PCT/JP81/00151, § 371 Date Feb. 19, 1982, § 102(e) Date Feb. 19, 1982, PCT Pub. No. WO82/00146, PCT Pub. Date Jan. 21, 1982

PCT Filed Jul. 1, 1981, Ser. No. 355,735

Claims priority, application Japan, Jul. 7, 1980, 55-92921

Int. Cl.^{3} A61K *35/00;* **C12P** *1/04*

U.S. Cl. 424—118 **6 Claims**

1. Antibiotic Y-16482 α or Y-16482 β, hydrochloride of which having the following characters;

(I) Antibiotic Y-16482 α, hydrochloride of which having the following characters:
- (1) Appearance: pale yellow powder
- (2) Melting point: it begins to carbonize at 215° C. and to liquefy at 260° C.

- (3) Elemental analysis: C 55.10%, H 6.61%, N 8.88% $Cl^{\ominus}$ 11.40%
- (4) Exo-alanyl group exists
- (5) Solubility: soluble in water, methanol, sparingly soluble in chloroform, ether and benzene.
- (6) Specific rotation: $[\alpha]_D^{21}-106°$ (c=0.5, methanol)
- (7) Ultraviolet absorption spectrum (concentration: 25.4 mc g/ml. in methanol): $\lambda max=270$ nm ($E_{1\,cm}^{1\%}=145$) (See FIG. 1)
- (8) Infrared absorption spectrum (KBr method): main absorption (cm^{-1}) 3200, 2950, 1660, 1460, 1246, 1000 (See FIG. 2)
- (9) Thin-layer chromatography (silica gel): Rf=0.6 (toluene:chloroform:methanol=1:3:2), Rf=0.45 (n-butanol:acetic acid:water=4:1:1)
- (10) Color reaction: positive to ninhydrin and Dragendorff reaction
- (11) Alkalinity-Acidity-Neutrality: amphoteric compound or

(II) Antibiotic Y-16482 β, hydrochloride of which having the following characters:
- (1) Appearance: pale yellow powder
- (2) Melting point: it begins to carbonize at 230° C. and to liquefy at 300° C. or a higher temperature
- (3) Elemental analysis: C 54.83%, H 6.54%, N 9.01%, $Cl^{\ominus}$ 11.99%
- (4) Molecular weight: peak of molecular ion according to high sensitive mass spectrum is 524.2629±5.7 mmu.
- (5) Molecular formula: $C_{28}H_{36}N_4O_6.2HCl\ H_2O$
- (6) Exo-alanyl group exists.
- (7) Solubility: soluble in water and methanol, sparingly soluble in ethyl acetate, chloroform, ether and benzene.
- (8) Specific rotation: $[\alpha]_D^{21}-144°$ (c=0.5, methanol)
- (9) Ultraviolet absorption spectrum (in methanol, concentration 20.6 mcg/ml); max=271 nm ($E_{1\,cm}^{1\%}=162$) (See FIG. 3)
- (10) Infrared absorption spectrum (KBr method): main absorption (cm^{-1}) 3350, 3200, 2950, 1660, 1460, 1240 (See FIG. 4)
- (11) Thin-layer chromatography (silica gel): Rf=0.5 (toluene:chloroform:methanol=1:3:2), Rf=0.4 (n-butanol:acetic acid:water=4:1:1)
- (12) Color reaction: positive to ninhydrin, Dragendorff reaction
- (13) Alkalinity-Acidity-Neutrality: amphoteric compound

4,440,753
PURIFICATION OF GLYCOPEPTIDE ANTIBIOTICS USING NON-FUNCTIONAL RESINS

Mack H. McCormick, Westlake, Oreg., and Gene M. Wild, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 15, 1982, Ser. No. 358,399

Int. Cl.^{3} A61K *135/00*

U.S. Cl. 424—124 **9 Claims**

1. A process for purifying a glycopeptide antibiotic selected from actaplanin or vancomycin which comprises:

A. contacting an aqueous solution thereof with a macroporous, non-ionic styrene-divinylbenzene copolymer adsorption resin having an average pore volume of 0.5 to 4.5 ml/g, a surface area of 200 to 800 m^2/g, and a pore diameter of 40 to 1300 Å;

B. separating the contacted resin from the aqueous solution;

C. washing the resin with an aqueous solution having a pH value of about 1 to about 9, and containing about 3 to about 50% by volume of a polar organic solvent;

D. recovering the glycopeptide from the aqueous washing solution by crystallization, concentration or decantation.

4,440,754
ANTI-INFLAMMATORY AND ANTI-ULCER COMPOUNDS AND PROCESS

John R. J. Sorenson, 1167 Hollywood Ave., Cincinnati, Ohio 45224

Division of Ser. No. 910,421, May 30, 1978, Pat. No. 4,221,785, which is a division of Ser. No. 563,778, Mar. 31, 1975, abandoned. This application May 23, 1980, Ser. No. 152,588

Int. Cl.^{3} A61K *33/34, 31/30*

U.S. Cl. 424—140 **5 Claims**

1. A method of treating gastrointestinal ulcers and arthritis comprising the administration of a therapeutically effective amount of an organic coordination compound of copper, said compound comprising the reaction product of copper and an amino acid or alkaline earth salt thereof.

4,440,755
SPECIAL HEALING POWDER FOR LIVESTOCK

Edgar C. Weathers, 1801 S. 22nd St., Louisville, Ky. 40210

Continuation-in-part of Ser. No. 69,598, Aug. 24, 1979, abandoned. This application Sep. 6, 1983, Ser. No. 529,274

Int. Cl.^{3} A61K *33/18*

U.S. Cl. 424—150 **8 Claims**

1. Composition for promoting the healing of a wound of an animal, comprising:

from 82.05 to 95.52 volume percent lime;

from 1.41 to 10.81 volume percent alum; and

from 2.70 to 8.45 volume percent salt, which has been well mixed and blended.

4,440,756
LIGHT-STABLE PESTICIDAL COMPOSITIONS

Jean-Jacques Herve, Aubagne; Jean-Claude Suglia, Le Destrousse, and Colette Meinard, Marseille, all of France, assignors to Roussel Uclaf, Paris, France

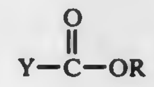
Filed Jun. 9, 1981, Ser. No. 271,989

Claims priority, application France, Jun. 11, 1980, 80 12960; Jan. 16, 1981, 81 00752

Int. Cl.^{3} A01N *25/22*

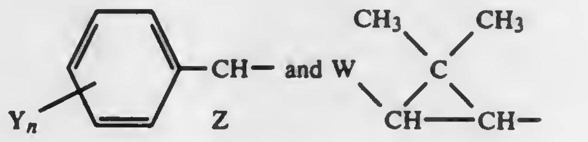
U.S. Cl. 424—174 **30 Claims**

1. A light stable pyrethrinoid composition comprising (a) at least one liquid vehicle, (b) at least one surface-active agent soluble in the said liquid vehicle, (c) at least one azodyestuff stabilizer selected from the group consisting of a mixture of 1-[{4-(phenylazo)-phenyl)}- azo]-3-naphthalenol and 4-[{4-(phenylazo)-phenyl}-azo]-phenol (a component of Scarlet R), 1-[4-(4-phenylazo-phenyl)-azo]- naphthalene (Red organol BS), 1-[{2-methyl-4-(2-methylphenylazo)-phenyl}-azo]-2-naphthalenol (Red Sudan IV), 1-[(1-naphthalenyl)-azo]-2-naphthalenol (Scarlet 2R for fat), 1-(phenylazo)-2-naphthalenol (Sudan I), 1-[(2-hydroxy-4-methyl-phenyl)-azo]-2-naphthalenol (Sudan II), 1-[{dimethyl-4-[(dimethyl-phenyl)-azo}-phenylazo]-2-naphthalenol (Red to fat 5B), 2-[(2-methoxypheny)-azo]-phenol (Red to fat G), 4-[(4-ethoxyphenyl)-azo]-1-naphthalenol (Brown to fat B), and 1-[{4-(phenylazo)-phenyl}-azo]-2-naphthalenol and (d) at least one ester of the formula

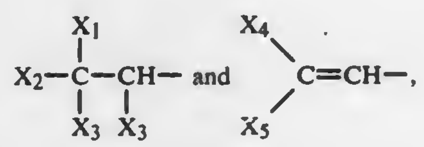


$$Y-\overset{\overset{\displaystyle O}{\|}}{C}-OR \qquad I$$

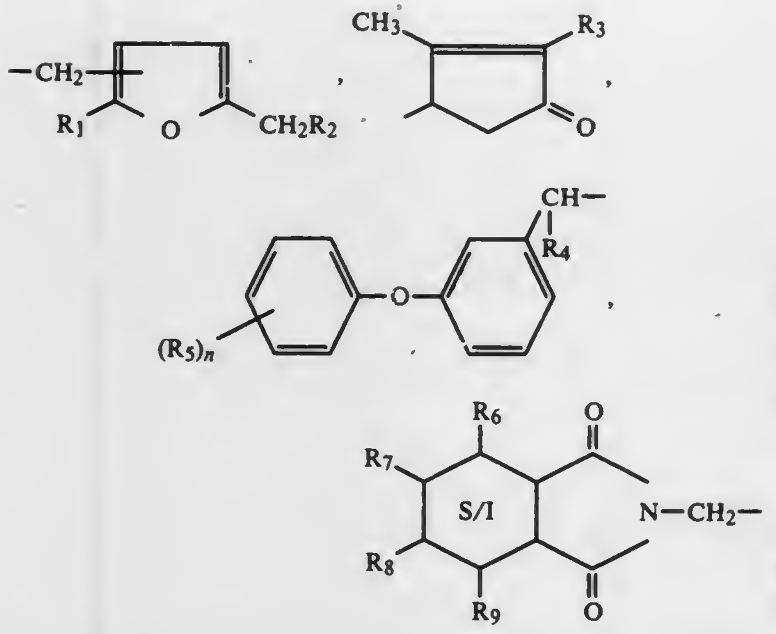
wherein Y is selected from the group consisting of



in its various stereoisomeric forms and mixtures thereof, Z is alkyl of 1 to 6 carbon atoms, Y is selected from the group consisting of hydrogen, halogen, $—CN$, $—NO_3$, alkyl of 1 to 4 carbon atoms and alkoxy of 1 to 4 carbon atoms, n is 0,1,2 or 3, W is selected from the group consisting of



X_1 is selected from the group consisting of hydrogen, fluorine, chlorine and bromine, X_2 is selected from the group consisting of fluorine, chlorine and bromine, X_3 is selected from the group consisting of chlorine, bromine and iodine, X_4 is a halogen and X_5 is a halogen optionally other than that of X_4 and due to asymetric carbon atom in W, the compounds are in the A isomer or B isomer form or mixtures thereof and R is selected from the group consisting of



and benzyl optionally substitued with at least one member of the group consisting of alkyl of 1 to 4 carbon atoms, alkenyl of 2 to 6 carbon atoms, alkenyloxy of 2 to 6 carbon atoms, alkadienyl of 4 to 8 carbon atoms, methylenedioxy, benzyl and halogens, R_1 is selected from the group consisting of hydrogen and methyl, R_2 is selected from the group consisting of monocyclic aryl and $—CH_2—C≡CH$, R_3 is an aliphatic of 2 to 6 carbon atoms having at least one carbon-carbon insaturation, R_4 is selected from the group consisting of hydrogen, $—CN$, CH_3 and $—C≡CH$, R_5 is selected from the group consisting of chlorine and methyl, n is 0, 1 or 2, R_6, R_7, R_8 and R_9 are individually selected from the group consisting of hydrogen, chlorine and methyl and S/I indicates that the ring may be aromatic, dihydro or tetrahydro the alcoholic moiety R—OH being capable of containing one or more asymetric carbon atoms and of existing in the form of various stereoisomers.

4,440,757

PHARMACEUTICAL COMPOSITION COMPRISING DERIVATIVE OF AMINOBENZOIC ACID FOR REGULATING PROSTAGLANDIN

Chikao Yoshikumi, Kunitachi; Yoshio Ohmura, Funabashi; Fumio Hirose, Tokyo; Masanori Ikuzawa, Tachikawa; Kenichi Matsunaga, Tokyo; Takayoshi Fujii, Tokyo; Minoru Ohhara, Tokyo, and Takao Ando, Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 84,467, Oct. 12, 1979, Pat. No. 4,322,409, and a continuation-in-part of Ser. No. 81,190, Feb. 10, 1979, Pat. No. 4,322,408, and a continuation-in-part of Ser. No. 102,535, Dec. 11, 1979, Pat. No. 4,313,939, and a continuation-in-part of Ser. No. 102,224, Dec. 10, 1979, Pat. No. 4,315,921, said Ser. No. 84,467, said Ser. No. 81,190, is a continuation-in-part of Ser. No. 24,095, Mar. 26, 1979, abandoned, said Ser. No. 102,535, is a continuation-in-part of Ser. No. 39,218, May 15, 1979, abandoned, said Ser. No. 102,224, is a continuation-in-part of Ser. No. 39,282, May 15, 1979, abandoned. This application Aug. 1, 1980, Ser. No. 174,543

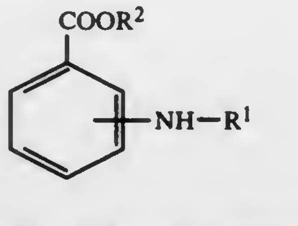
Claims priority, application Japan, Apr. 6, 1978, 53-40594; Apr. 10, 1978, 53-42014; Apr. 10, 1978, 53-42015; Apr. 11, 1978, 53-42576; May 26, 1978, 53-63146; Dec. 29, 1978, 53-161385; Dec. 29, 1978, 53-161386; Jul. 5, 1980, 55-91113

The portion of the term of this patent subsequent to Feb. 2, 1999, has been disclaimed.

Int. Cl.³ A61K *31/70*

U.S. Cl. 424—180 **8 Claims**

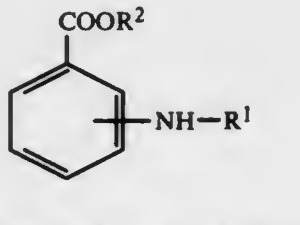
1. A pharmaceutical composition having an activity of regulating production or metabolism of prostaglandins in a mammal in dosage unit form, which comprises a dosage effective to produce said activity of a compound of the formula



wherein R^1 is selected from the group consisting of the residual groups formed by removing OH at 1 (alpha)- or 1(beta) position from arabinose, xylose, rhamnose, glucose, galactose, mannose and fructose, and R^2 is hydrogen atom or an alkyl of one to four carbon atoms,

or a pharmaceutical acceptable salt thereof; and a pharmaceutically acceptable carrier or a diluent therefor.

5. A method for regulating the production and metabolism of prostaglandin in a mammal, which comprises administering an effective amount of a compound represented by the general formula:



wherein R^1 denotes one member selected from the group consisting of the residual groups formed by removing OH at 1(alpha)- or 1(beta) position from arabinose, xylose, rhamnose, glucose, galactose, mannose and fructose, and R^2 is a hydrogen atom, an alkyl group of one to four carbon atoms or a pharmaceutically acceptable metal.

4,440,758

POLY-CATION SALTS OF BIS(OR TRIS)[4-O-MONOHEXOSE-OXY]-ARYLENE SULFATE DERIVATIVES

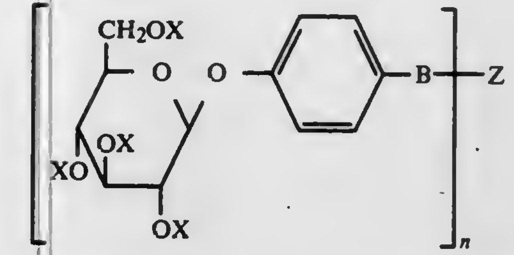
Janis Upeslacis, Pomona, N.Y.; Robert E. Schaub, Upper Saddle River, N.J., and Seymour Bernstein, New City, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Oct. 25, 1982, Ser. No. 436,208

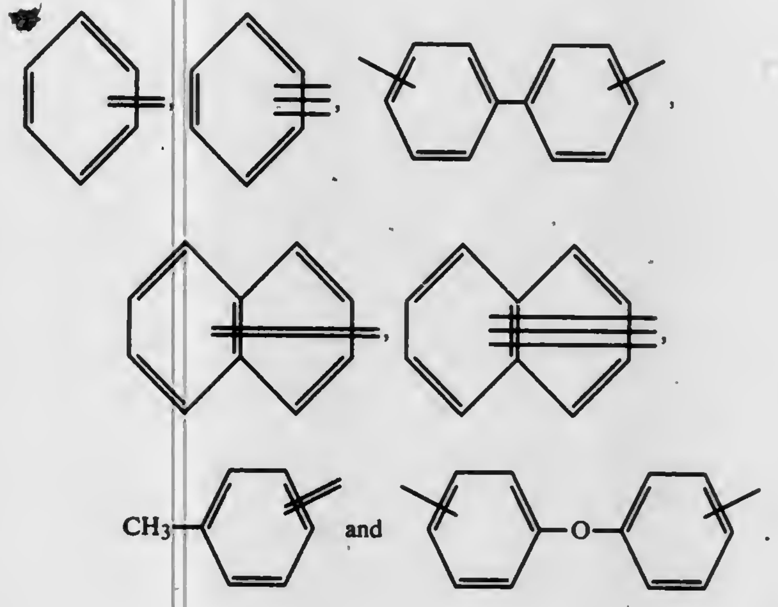
Int. Cl.³ A61K *31/70;* C07H *15/22*

U.S. Cl. 424—180 **18 Claims**

7. A method of modulating the complement system in a body fluid which comprises subjecting said body fluid to the action of an effective complement modulating amount of a pharmaceutically acceptable compound selected from those of the formula:



wherein X is $—SO_3M$ and M is a nontoxic pharmaceutically acceptable cation salt, wherein the salt forming moiety is selected from the group consisting of alkali metal, alkaline earth metal, aluminum, ammonia, zinc and substituted ammonia selected from the group consisting of trialkylamine (C_1-C_6), piperidine, pyrazine, alkanolamine (C_2-C_6) and cycloalkylamine (C_3-C_6); B is selected from the group consisting of $—NHCO—$ and $—NHSO_2—$; n is an integer 2 or 3; and Z is an arylene selected from the group consisting of:



4,440,759

20-AMINO TYLOSIN DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Satoshi Omura, 12-7 Seta 5-chome, Setagaya-ku, Tokyo, and Akira Nakagawa, 30-31 Sumiyoshi-cho 2-chome, Fuchu-Shi, Tokyo, both of Japan

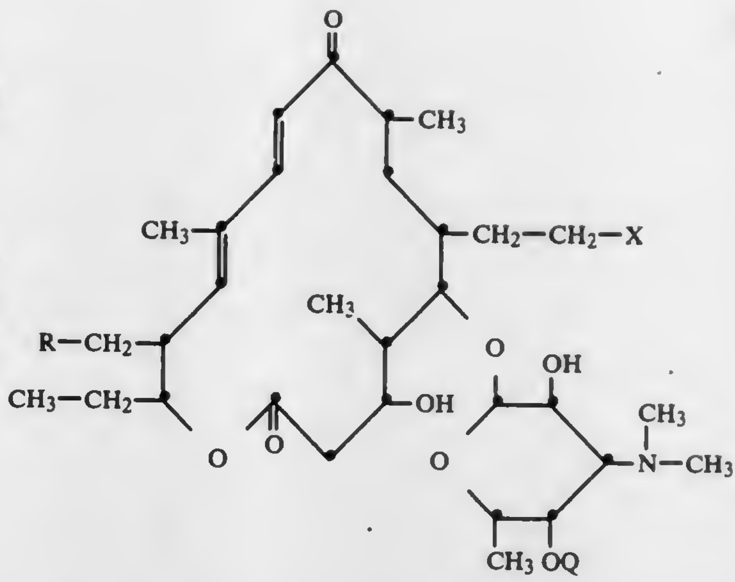
Filed Feb. 24, 1983, Ser. No. 469,535

Claims priority, application Japan, Feb. 25, 1982, 57-29480

Int. Cl.³ A61K *31/71;* C07H *15/08*

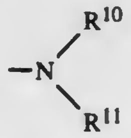
U.S. Cl. 424—180 **10 Claims**

1. A macrolide of formula (I):



(I)

where R is mycinosyloxy,
where Q is hydrogen or mycarosyl,
where X is a group of formula:



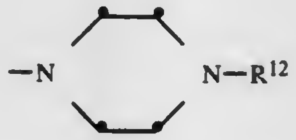
where:

(i) R^{10} and R^{11} independently represent $C_{1\text{-}4}$ alkyl, $C_{3\text{-}10}$ cycloalkyl; or a group of formula:

$$—(CH_2)_n—Ph$$

where n is 0, 1 or 2, and Ph is phenyl or phenyl substituted by a $C_{1\text{-}4}$ alkoxycarbonyl, amino, halogen, $C_{1\text{-}4}$ alkyl or $C_{1\text{-}4}$ alkoxy group;

(ii) one only of R_{10} and R^{11} represents hydrogen or a group of formula:



where R^{12} is hydrogen or $C_{1\text{-}4}$ alkyl, or

(iii) R^{10} and R^{11} taken together with the adjacent nitrogen atom form a heterocyclic ring selected from piperazino and morpholino; or a pharmaceutically-acceptable salt, or an acyl ester derived from a monocarboxylic acid having from 2 to 7 carbon atoms, thereof.

10. A veterinary formulation which comprises as an active ingredient an amount of a compound of claim 1 which is effective to suppress or treat microbial infections caused by gram-positive bacteria, Mycoplasma or Pasteurella associated with one or more physiologically-acceptable carriers or vehicles therefor.

4,440,760

FOOD SUPPLEMENT

Rex E. Newnham, 144 Collins St., Thornbury, Australia 3071

Filed Jul. 27, 1981, Ser. No. 287,235

Int. Cl.³ A61K *31/695*

U.S. Cl. 424—184 **14 Claims**

1. A composition useful for the treatment of arthritis which comprises from about 2 to about 500 parts by weight of a boron-containing compound; Guaiacum in an amount up to an equivalent of 150 parts by weight of the dried herb; Berberis in an amount up to an equivalent of 150 parts by weight of the

dried herb; Harpagophytum recumbens in an amount up to an equivalent of 150 parts by weight of the dried herb; and an effective amount of a compound selected from the group consisting of Rhus-tox, Bryonia, or mixtures thereof.

4,440,761
INTERFERON INDUCER, A PROCESS FOR PRODUCING THE SAME AND PHARMACEUTICAL COMPOSITION CONTAINING THE SAME

Yasuhiko Kojima, Yokohama; Seishi Konno, and Takashi Hashimoto, both of Tokyo, all of Japan, assignors to The Kitasato Institute, Tokyo, Japan

Continuation-in-part of Ser. No. 119,325, Feb. 7, 1980. This application Aug. 6, 1981, Ser. No. 290,283

Claims priority, application Japan, Aug. 6, 1980, 55-107955

Int. Cl.^{3} A61K ***35/78***

U.S. Cl. 424—195 **10 Claims**

1. A process for producing a water-soluble interferon inducer having a moleculer weight of from about 10,000 to about 200,000 from a plant tissue, comprising extracting said interferon inducer with water from the seed of a plant belonging to the genus Carthamus containing said interferon inducer at a temperature of from ambient to the boiling point of the extraction mixture for a period of up to 5 days sufficient to extract the major portion of said interferon inducer present in said tissue, forming a supernatant from the extracted solution, fractionating the supernatant to yield fractions containing the major portion of said interferon inducer present in the supernant, and recovering said interferon inducer therefrom.

4,440,762
PROTECTION OF THE GASTRIC MUCOSAL LINING FROM DAMAGE BY ASPIRIN AND RELATED DRUGS

Kim D. Rainsford, Kingston Beach, and Michael W. Whitehouse, Aranda, both of Australia, assignors to The Australian National University, Canberra, Australia

Filed Nov. 3, 1978, Ser. No. 957,575

Claims priority, application Australia, Nov. 9, 1977, 2352

Int. Cl.^{3} A61U ***31/60***

U.S. Cl. 424—230 **3 Claims**

1. A pharmaceutical formulation consisting essentially of aspirin, sodium acetate and D-glucose in molar proportions of 1:3:3.

4,440,763
USE OF 4-AMINOSALICYCLIC ACID AS AN ANTI-INFLAMMATORY AGENT

Myron J. Lover, Mountainside, N.J., assignor to Block Drug Company, Inc., Jersey City, N.J.

Filed Mar. 18, 1981, Ser. No. 245,035

Int. Cl.^{3} A61K ***31/60***

U.S. Cl. 424—230 **10 Claims**

1. A method of treating inflammation which comprises administering to a mammal having an inflammatory condition an anti-inflammatory effective amount of a composition consisting essentially of 4-aminosalicylic acid or a pharmaceutically acceptable ester, salt, pro-drug or complex thereof.

4,440,764
WATER SOLUBLE ESTERS OF STEROID-OXAZOLE AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Giangiacomo Nathansohn, and Giorgio Winters, both of Milan, Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

Filed Apr. 27, 1981, Ser. No. 258,098

Claims priority, application Italy, Apr. 28, 1980, 21671 A/80

Int. Cl.^{3} A61K ***31/58***

U.S. Cl. 424—241 **3 Claims**

1. 11β,21-dihydroxy-2′-methyl-5′H-pregna-1,4-dieno[17,16-d]-oxazole-3,20-dione-21-hemisuccinate or a pharmaceutically acceptable salt thereof.

3. A pharmaceutical composition for parenteral administration which contains 11β,21-dihydroxy-2′-methyl-5′H-pregna-1,4-dieno[17,16-d]oxazole-3,20-dione-21-hemisuccinate or a pharmaceutically acceptable salt thereof, as the active ingredient in combination with a pharmaceutically acceptable carrier.

4,440,765
AMIDINOUREAS

Julius Diamond, Morris Plains, N.J., and George H. Douglas, Malvern, Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

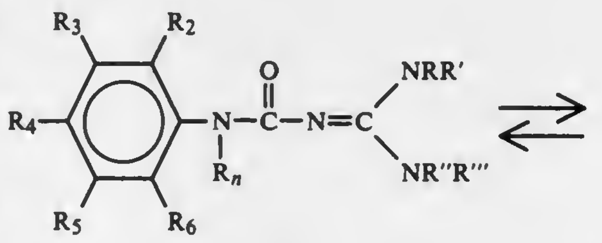
Continuation of Ser. No. 59,914, Jul. 23, 1979, Pat. No. 4,304,786, which is a continuation of Ser. No. 942,247, Sep. 14, 1978, Pat. No. 4,204,000, which is a continuation-in-part of Ser. No. 787,673, Apr. 14, 1977, abandoned, which is a division of Ser. No. 558,187, Mar. 31, 1975, Pat. No. 4,060,635. This application Dec. 8, 1981, Ser. No. 328,763

The portion of the term of this patent subsequent to May 20, 1997, has been disclaimed.

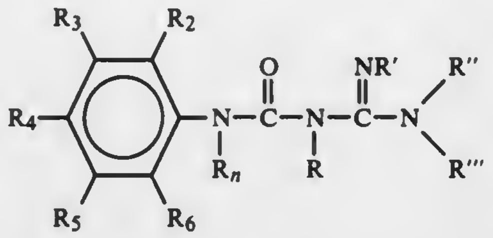
Int. Cl.^{3} A61K ***31/17, 31/275***

U.S. Cl. 424—244 **3 Claims**

1. A method for treating gastrointestinal hyperacidity in a human or mammal in need thereof which comprises the oral or parenteral administration of an effective amount of an amidinourea of the general formula I or its tautomeric form II when R is hydrogen:



I



II

where:

R_2, R_3, R_4, R_5 and R_6 may be the same or different and are
- hydrogen,
- halo,
- loweralkyl,
- haloloweralkyl,
- nitro,
- loweralkoxy,
- hydroxy,
- arloweralkoxy,
- acyloxy,
- cyano,
- haloloweralkoxy or
- loweralkylsulfonyl;

R and R′ are hydrogen or loweralkyl;

R″ and R‴ are
- hydrogen,
- loweralkyl,
- loweralkenyl,
- cycloalkenyl up to 9 carbon atoms,
- cycloalkylloweralkyl,
- loweralkyl,
- cycloalkyl
- aralkyl,
- loweralkynyl,
- haloalkyl,
- hydroxyalkyl,
- alkoxyalkyl,
- cyanoalkyl,
- aminoalkyl,
- mono- and di- loweralkylaminoalkyl,
- carbamoylalkyl,
- mono- and di- carbamoylalkyl,
- carboxyalkyl,
- alkoxycarbonylalkyl,
- aralkoxycarbonylalkyl,
- formyl,
- acyl,
- acylalkyl,
- alkylsulfonyl or
- aralkylsulfonyl;

R″ and R‴ together may form a 5–7 atom ring which may include 0–2 hetero atoms of N, O or S;

R_n is hydrogen or loweralkyl provided at least one of R, R′, R″ and R‴ is other than hydrogen; and the non-toxic acid addition salts thereof.

4,440,766
3,7-DISUBSTITUTED-3-CEPHEM-4-CARBOXYLIC ACID COMPOUNDS

Takashi Kamiya, Suita; Kunihiko Tanaka, Toyonaka; Yoshiharu Nakai, Otsu, and Kazuo Sakane, Amagasaki, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

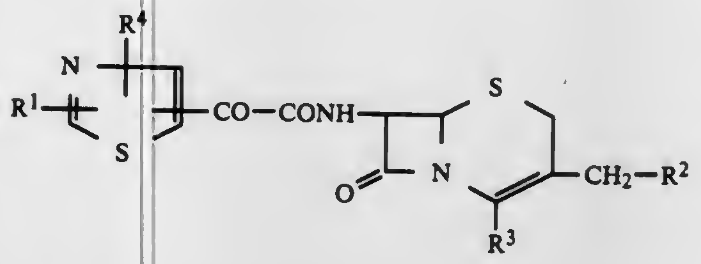
Division of Ser. No. 772,734, Feb. 28, 1977, Pat. No. 4,303,655. This application Aug. 10, 1981, Ser. No. 291,777

Claims priority, application United Kingdom, Mar. 9, 1976, 9425/76; Oct. 4, 1976, 41145/76

Int. Cl.^{3} C07D ***501/22;*** **A61K** ***31/545***

U.S. Cl. 424—246 **14 Claims**

1. A compound of the formula:



wherein

R^1 is amino, lower alkylamino, a protected amino, a protected lower alkylamino or hydroxy,

R^2 is hydrogen, lower alkanoyloxy or carbamoyloxy

R^3 is carboxy or an esterified carboxy and

R^4 is hydrogen or halogen, or

R^2 and R^3 are linked together to represent a group of the formula: —COO—.

4,440,767
DERIVATIVES OF CEPHALOSPORANIC ACID, PROCESSES FOR THEIR PRODUCTION AND THEIR USE

Hans Fliri, and Helmut Hamberger, both of Vienna, Austria, assignors to Sandoz Ltd., Basel, Switzerland

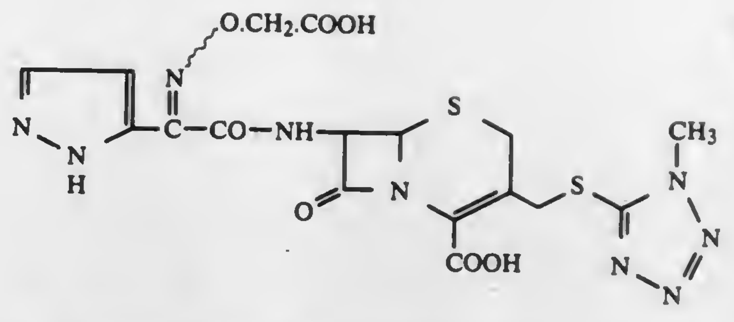
Filed Jan. 18, 1982, Ser. No. 340,435

Claims priority, application Switzerland, Jan. 19, 1981, 317/81

Int. Cl.^{3} A61K ***31/545;*** **C07D** ***501/56***

U.S. Cl. 424—246 **11 Claims**

1. 7-[(carboxymethoximino)-1H-pyrazol-3-yl-acetyl]amino-3-desacetoxy-3-(1-methyl-1H-tetrazol-5-yl-thio)cephalosporanic acid of formula I,



(I)

and chemotherapeutically acceptable salts thereof with bases as well as chemotherapeutically acceptable solvates thereof.

5. A chemotherapeutic composition comprising a compound of the formula I, as claimed in claim 1, in free acid form or in the form of a chemotherapeutically acceptable salt thereof, with a base or in the form of a chemotherapeutically acceptable solvate thereof, together with a chemotherapeutically acceptable diluent or carrier.

4,440,768
HEXAHYDROPYRROLO[3,4-c]QUINOLINE COMPOUNDS AND PHARMACEUTICAL COMPOSITIONS, AND METHODS FOR THEIR USE

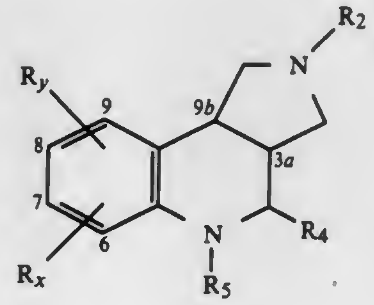
Howard S. Shapiro, Wilmington, Del., assignor to ICI Americas inc., Wilmington, Del.

Division of Ser. No. 223,527, Jan. 8, 1981, Pat. No. 4,350,814, which is a division of Ser. No. 87,458, Oct. 22, 1979, Pat. No. 4,268,513. This application Jul. 8, 1982, Ser. No. 396,156

Int. Cl.^{3} C07D ***491/14, 491/22;*** **A61K** ***31/535***

U.S. Cl. 424—248.4 **11 Claims**

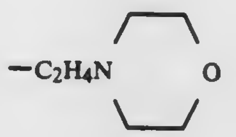
1. A compound selected from the group consisting of hexahydropyrrolo[3,4-c]quinolines of the following formula (I):



(I)

wherein

R_2 is



R_4 is hydrogen, C_1–C_3 alkyl or phenyl;

R_5 is hydrogen, $C_{1\text{-}6}$ alkyl, C_3–C_6 cycloalkyl, acetyl, benzyl or CH_2CF_3; and

R_x and R_y, which may be the same or different, are hydrogen, halogen, trifluoromethyl, C_1–C_6 alkyl, C_3–C_6 cycloalkyl, C_1–C_3 alkoxy, C_1–C_3 alkylthio, hydroxy or cyano, or when R_x and R_y are alkoxy on adjacent carbons, they combine to form a 5-membered methylene dioxy or a 6-membered ethylene dioxy ring, and the pharmaceutically-acceptable acid addition salts thereof.

4,440,769

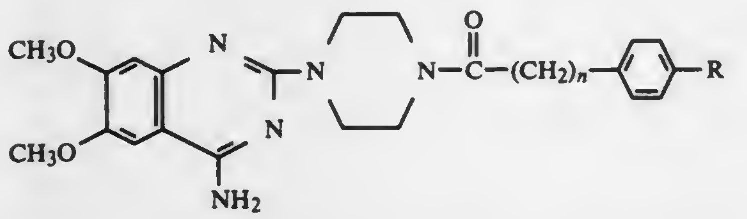
2-(4-PHENYLALKANOYLPIPERAZIN-1-YL) QUINAZOLINE COMPOUNDS, PHARMACEUTICAL COMPOSITIONS AND METHOD OF PRODUCING α_1 ANTAGONISTIC ACTIVITY

John F. DeBernardis, Lake Villa, and Martin Winn, Deerfield, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Feb. 11, 1983, Ser. No. 465,846
Int. Cl.^{3} A61K *31/505;* C07D *403/04*

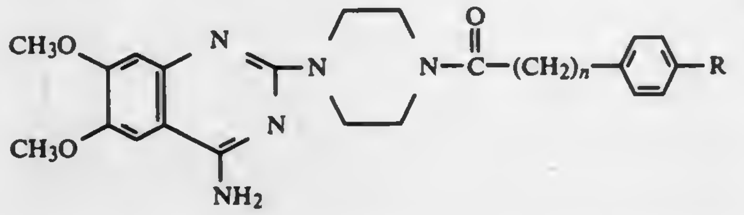
U.S. Cl. 424—251 **16 Claims**

1. A compound of the formula



wherein n is 3, 4 or 5, and R is —NH_2 or —N_3, or a pharmaceutically acceptable acid addition salt thereof.

14. A method of producing antagonistic activity in an α_1-adrenergic receptor comprising administering to a patient in need of such treatment a therapeutically effective amount of a compound of the formula



wherein n is 3, 4 or 5, and R is —NH_2 or —N_3, or a pharmaceutically acceptable acid addition salt thereof, sufficient to produce said activity.

4,440,770

DIURETIC, HYPOTENSIVE AND ANTIEDEMIC QUINOLINE OXIMES

Ei Mochida, Tokyo; Haruo Ohnishi, Funabashi; Kazuo Yamaguchi, Koganei; Yasuo Suzuki, Kawaguchi, and Hiroshi Kosuzume, Yokohama, all of Japan, assignors to Mochida Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 7, 1981, Ser. No. 281,242

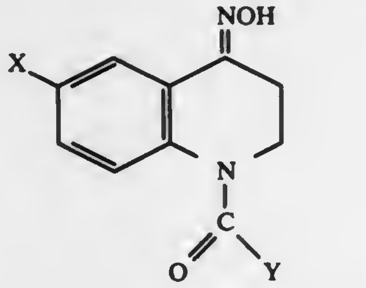
Claims priority, application Japan, Jul. 28, 1980, 55-103273; Mar. 19, 1981, 56-39909

The portion of the term of this patent subsequent to Dec. 20, 2000, has been disclaimed.

Int. Cl.^{3} A61K *31/47*

U.S. Cl. 424—258 **14 Claims**

7. A method for treating a disease selected from the group consisting of hypertension and edema which comprises administering to a human body needing treatment for such a disease an effective amount of a 6-halo-4-oximino-1,2,3,4-tetrahydroquinoline derivative of the formula (I):



(I)

or a pharmaceutically acceptable salt thereof, wherein X represents a halogen atom, and Y represents a straight-chain or branched-chain alkyl group having 1–4 carbon atoms, a phenyl-substituted lower alkyl group, a phenylalkenyl group, a lower alkoxy group or a lower alkyl-substituted amino group.

4,440,771

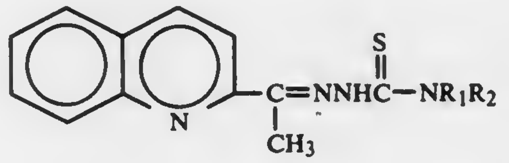
2-ACETYL QUINOLINE THIOSEMICARBAZONES USEFUL IN TREATMENT OF GONORRHEA, MALARIA OR BACTERIAL INFECTIONS

John P. Scovill, Silver Spring; Daniel L. Klayman, Chevy Chase; Samuel P. Massie, Laurel, all of Md.; Steven D. Grant, Lander, Wyo.; Armando Gonzalez, Orlando, Fla.; Norman E. Morrison, Baltimore, Md., and Arthur S. Dobek, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 12, 1982, Ser. No. 348,462
Int. Cl.^{3} C07D *215/12;* A61K *31/47*

U.S. Cl. 424—258 **54 Claims**

1. A quinoline thiosemicarbazones compound of the formula



or a pharmaceutically-acceptable acid addition salt thereof wherein

R_1 is alkyl of 1 to 12 carbon atoms; cycloalkyl of 3 to 10 carbon atoms; substituted alkyl of 1 to 12 carbon atoms (wherein the substituent is amino, alkylamino of 1 to 4 carbon atoms, dialkylamino of 1 to 4 carbon atoms in each alkyl group, cycloalkyl of 3 to 10 carbon atoms, hydroxy, COO alkyl of 1 to 4 carbon atoms, phenyl, or pyridyl); alkenyl of 2 to 6 carbon atoms; alkynyl of 3 to 6 carbon atoms; substituted benzyl (wherein the substituent is methyl or phenyl on the alpha carbon atom, or the substituent is methyl, dimethyl, halo, dihalo, or ethoxy on the phenyl ring); adamantyl; phenyl; naphthyl; substituted phenyl or substituted naphthyl (wherein the ring is mono-, di-, or trisubstituted and the substituents are alkyl of 1 to 4 carbon atoms, halo, alkoxy of 1 to 4 carbon atoms, hydroxy, phenoxy, trifluoromethyl, dimethylamino, diethylamino, or pyridyl; thienyl; indolyl; furyl; acridyl; quinolyl; or pyridazinyl; and

R_2 is hydrogen or is selected from the group of radicals listed above for R_1, in which case R_1 and R_2 may be the same or different; or

R_1 and R_2 are taken together with the nitrogen atom to which they are attached to form a heterocyclic ring selected from the group consisting of:

(1) alkylenimino having 3 to 13 carbon atoms;
(2) alkylenimino having 3 to 13 carbon atoms which may contain one double bond and/or is mono- or disubstituted with alkyl having 1 to 4 carbon atoms, hydroxy, phenyl, or benzyl;
(3) alkylenimino having 3 to 13 carbon atoms which is either bridged by an alkylene group having 1 to 3 carbon atoms, or is fused to a phenyl ring, or is attached by a spiro linkage to an ethylene ketal group;
(4) homopiperazinyl; homopiperazinyl substituted with alkyl having 1 to 4 carbon atoms; piperazinyl; or piperazinyl substituted with alkyl having 1 to 4 carbon atoms, dialkyl having 1 to 4 carbon atoms in each alkyl group, phenyl, COO alkyl having 1 to 4 carbon atoms in the alkyl group, trifluoromethylphenyl, halophenyl, benzyl, or pyridyl; and
(5) morpholino; dialkylmorpholino having 1 to 4 carbon atoms in each alkyl group;

provided that:

when R_2 is hydrogen, then R_1 cannot be ethyl, isopropyl, or monochlorophenyl.

54. A method for treating an animal which has a bacterial infection by administering to said animal a therapeutically effective amount of a quinoline thiosemicarbazone compound of claim **1**.

4,440,772

ACID ADDITION SALTS OF DEXTROROTATORY ERGOT ALKALOIDS, A PROCESS FOR THE PREPARATION THEREOF AS WELL AS THEIR USE AS MEDICINES

Nebojsa Djordjevic; Rudolf Rucman; Suncica Jovanovic; Breda Bole-Vunduk; Tone Lavric; Boza Lavric; Cvetka Gruskovnjak; Ana Kocjan, and Hermina Krmelj, all of Ljubljana, Yugoslavia, assignors to LEK, tovarna farmacevtskih in kemicnih izdelkov, n.sol.o., Yugoslavia

Division of Ser. No. 58,332, Jul. 17, 1979, abandoned. This application Jun. 2, 1981, Ser. No. 269,212

Claims priority, application Yugoslavia, Jul. 19, 1978, 1736/78

Int. Cl.^{3} A61U *31/48, 31/475*

U.S. Cl. 424—261 **28 Claims**

1. A process for the treatment of a condition selected from the group of arterial hypertension, heart insufficiency, heart arrhythmia or cephalalgia, or for inducing a vasoconstrictory effect, which comprises administering to a host in need of said treatment a physiologically active amount of a physiologically compatible acid addition salt of ergotaminine, ergosinine, ergocryptinine, ergocristinine or ergocorninine.

4,440,773

PYRIDYLALKYLENETHIOPRIDYL, -TETRAHYDROPYRIDYL AND -PYRIDINIUM COMPOUNDS

Roger Crossley, and Kay H. Dickinson, both of Reading, England, assignors to John Wyeth & Brother Limited, Maidenhead, England

Continuation-in-part of Ser. No. 217,925, Dec. 18, 1980, Pat. No. 4,343,805, which is a continuation of Ser. No. 98,421, Nov. 29, 1979, abandoned. This application Feb. 19, 1982, Ser. No. 350,442

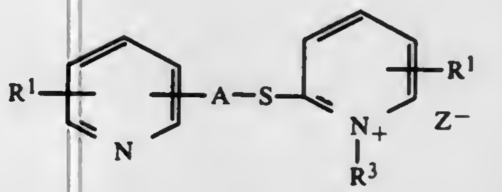
Claims priority, application United Kingdom, Dec. 16, 1978, 48813/78

Int. Cl.^{3} C07D *213/32;* A61K *31/44*

U.S. Cl. 424—263 **9 Claims**

1. A compound of the formula

I



wherein the R^1 groups are, independently, hydrogen, hydroxy, loweralkyl, hydroxyloweralkyl, halogen, formyl, phenyl, phenylethyl, halophenyl or $CH(OR^4)_2$ where R^4 is alkyl of 1 to 4 carbon atoms or two R^4 radicals are joined to form a loweralkylene chain; A is a saturated alkylene radical having 1 to 4 carbon atoms, which may be substituted by lower alkyl of 1 to 6 carbon atoms; S is sulfur; R^3 is loweralkyl, phenyl or benzyl; and Z is a pharmaceutically acceptable anion; and pharmaceutically acceptable acid addition salts thereof with a proviso that A is linked to the 2 or 3 position of the pyridine ring.

7. A method of treating ulcers or hypersecretion in a mammal which comprises administering to said mammal in need of said treatment an effective anti-ulcer amount of a compound of formula I as defined in claim 1.

4,440,774

3-AMINO-2-HYDROXYPROPOXYARYL IMIDAZOLE DERIVATIVES

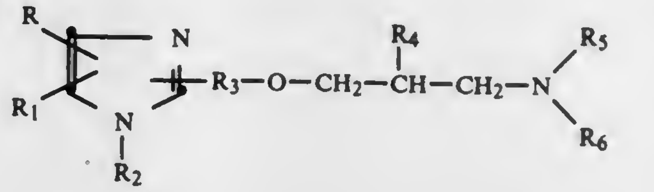
John J. Baldwin, Gwynedd Valley, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 184,501, Sep. 5, 1980, abandoned, which is a continuation of Ser. No. 801,120, May 27, 1977, abandoned, which is a continuation of Ser. No. 641,420, Dec. 17, 1975, Pat. No. 4,134,983, which is a continuation-in-part of Ser. No. 554,372, Mar. 3, 1975, abandoned. This application Apr. 20, 1981, Ser. No. 255,202

Int. Cl.^{3} A61K *31/415, 31/435, 31/495, 31/535;* C07D *401/04, 403/04, 405/04, 409/04*

U.S. Cl. 424—267 **48 Claims**

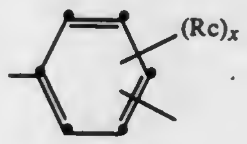
1. A compound of the formula



wherein

R and R_1 are independently selected from hydrogen and heterocyclic group having 5–6 ring atoms, one of which is the hetero atom O, S or N such that only one of R and R_1 is hydrogen, R_2 is selected from hydrogen, C_1–C_{10} linear or branched alkyl, hydroxy C_1–C_{10} linear or branched alkyl and C_3–C_6 alkenyl,

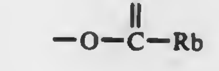
R_3 is selected from naphthyl, tetrahydronaphthyl, indanyl and phenyl having the formula



wherein

Rc is selected from halogen, C_1–C_4 linear or branched alkyl, C_3–C_4 cycloalkyl, C_1–C_4 alkoxy, hydroxy, cyano and phenyl and x is 0, 1, 2, 3 or 4,

R_4 is hydroxy or

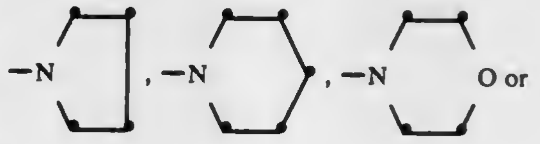


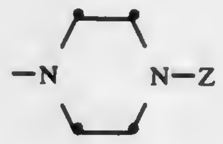
$$-O-\overset{O}{\overset{\|}{C}}-Rb$$

wherein

Rb is C_1–C_6 linear or branched alkyl and

R_5 and R_6 (i) when separate, are independently selected from hydrogen, C_3–C_6 cycloalkyl, C_1–C_6 linear or branched alkyl and monosubstituted C_1–C_6 linear or branched alkyl wherein the substituent is phenyl, methoxyphenyl or dimethoxyphenyl provided that when one of R_5 and R_6 is said substituted alkyl group the other is hydrogen and (ii) when joined together with the N atom form





wherein Z is H or C_1–C_{10} branched or linear alkyl, and pharmaceutically acceptable acid addition and quaternary ammonium salts thereof.

47. Pharmaceutical composition for treating hypertension or effecting β-adrenergic blockade comprising an effective amount of a compound of claim 1 and pharmacologically acceptable compounding agents.

4,440,775

AZOLYL ALKYLTHIOUREAS AND GUONIDINES AND ALKYLAMINONITROETHYLENE COMPOUNDS AS HISTAMINE H_2-ANTAGONISTS

Graham J. Durant; Charon R. Ganellin, both of Welwyn Garden; Geoffrey R. Owen, High Wycombe, and Rodney C. Young, Bengeo, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

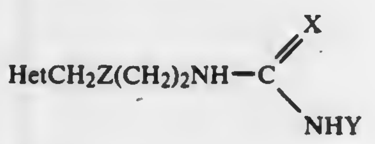
Division of Ser. No. 183,555, Sep. 2, 1980, Pat. No. 4,347,250, which is a division of Ser. No. 35,152, May 2, 1979, Pat. No. 4,247,558, which is a division of Ser. No. 892,231, Mar. 31, 1978, Pat. No. 4,166,856, which is a division of Ser. No. 686,185, May 13, 1976, Pat. No. 4,098,898. This application Jun. 18, 1982, Ser. No. 389,837

Claims priority, application United Kingdom, May 21, 1975, 21817/75; Nov. 20, 1975, 47782/75

Int. Cl.³ A61K *31/425, 31/42, 31/41*

U.S. Cl. 424—269 **6 Claims**

1. A compound of the formula:



$$\mathrm{HetCH_2Z(CH_2)_2NH{-}C({=}X)NHY}$$

wherein X is sulphur, $CHNO_2$, N.CN or NH; Y is amino, lower alkylamino, di(lower alkyl)amino, lower alkoxy, phenylethyl, allyl, 2,2,2-trifluoroethyl, or $(CH_2)_nR$; Z is sulphur or methylene; Het is an oxazole, isoxazole, triazole or thiadiazole ring, which ring is attached at a ring carbon, and which ring is optionally substituted by lower alkyl, hydroxy, halogen or amino; n is an integer from 1 to 12; and R is hydroxy, lower alkoxy, amino or lower alkylamino; provided that when X is sulphur, Y is not phenylethyl and provided that when X is NH, Y is 2,2,2-trifluoroethyl or $(CH_2)_nR$ and provided that when X is N.CN, Y is not amino or lower alkylamino, or a pharmaceutically acceptable acid addition salt thereof.

4,440,776

ANTIINFLAMMATORY 4,5-DIPHENYL-2-SUBSTITUTED-THIO-IMIDAZOLES AND THEIR CORRESPONDING SULFOXIDES AND SULFONES

Ulrich Niedballa, and Irmgard Bottcher, both of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

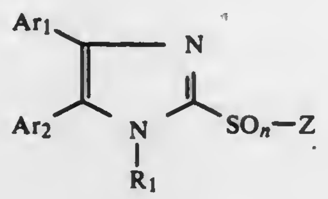
Division of Ser. No. 190,309, Sep. 24, 1980, Pat. No. 4,355,039, which is a division of Ser. No. 41,367, May 22, 1979, Pat. No. 4,269,847. This application Mar. 24, 1982, Ser. No. 361,225

Claims priority, application Fed. Rep. of Germany, May 24, 1978, 2823197

Int. Cl.³ C07D *233/84;* **A61K** *31/415*

U.S. Cl. 424—273 R **13 Claims**

1. A method of treating inflammation in a mammal which comprises administering an antiinflammatorily effective amount of a compound of the formula



wherein

Z is C_{1-6} alkyl substituted by one hydroxy;

Ar_1 and Ar_2 are independently each phenyl or phenyl substituted by C_{1-4} alkyl, with the proviso that Ar_1 and Ar_2 are not both unsubstituted phenyl;

R_1 is hydrogen, C_{1-4} alkyl or C_{1-4} alkyl substituted by hydroxy, C_{1-4} alkoxy or C_{1-6} alkanoyloxy; and

n is 0, 1 or 2;

or a physiologically acceptable salt thereof with an acid.

4,440,777

USE OF EUCALYPTOL FOR ENHANCING SKIN PERMEATION OF BIO-AFFECTING AGENTS

Jacob A. Zupan, St. Joseph, Mo., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Jul. 7, 1981, Ser. No. 280,967

Int. Cl.³ A61K *31/19, 31/40*

U.S. Cl. 424—274 **11 Claims**

1. A composition of matter for topical application comprising from 0.001% to about 80% of the total composition of a systemically or dermally effective non-steroidal anti-inflammatory agent selected from the group consisting of indomethacin, naproxen, fenoprofen, ibuprofen, sulindac and desoxysulindac and a skin permeation enhancing amount of eucalyptol.

4,440,778

ANTI-INFLAMMATORY ANALGESIC CATAPLASM AND PROCESS FOR PRODUCING THE SAME

Ichiro Matsui, Toyama; Tsutomu Tanaka, Kamiichi; Yukio Bando, and Kiyonobu Ohashi, both of Toyama, all of Japan, assignors to Kowa Co., Ltd., Nagoya, Japan

Filed Feb. 12, 1982, Ser. No. 348,315

Claims priority, application Japan, Feb. 26, 1981, 56-27199

Int. Cl.³ A61K *31/40*

U.S. Cl. 424—274 **4 Claims**

1. An anti-inflammatory analgesic cataplasm comprising:
indomethacin in the range of from 0.1 to 5.0 by weight;
a polyalcohol selected from the group consisting of glycerin, polyethylene glycol, propylene glycol and sorbitol;
a binder selected from the group consisting of gelatin, gum arabic, methyl cellulose, polyvinyl alcohol, hydroxyethyl cellulose, sodium polyacrylate, sodium carboxymethyl cellulose, sodium alginate, propylene glycol alginate, santan gum and a carboxyvinyl polymer;
a vehicle selected from the group consisting of kaolin, bentonite, zinc oxide, titanium oxide and aluminum silicate;
an aromatic alcohol selected from the group consisting of benzyl alcohol and phenethyl alcohol, or a non-ionic surfactant selected from the group consisting of polyoxyethylene sorbitan fatty acid ester and a sorbitan fatty acid ester or mixtures of said aromatic alcohol and said non-ionic surfactants; and
water, said cataplasm having a pH of 5 to 7.

4,440,779

TRICYCLIC DERIVATIVES OF SUBSTITUTED PYRROLE ACIDS AS ANALGESIC AND ANTI-INFLAMMATORY AGENTS

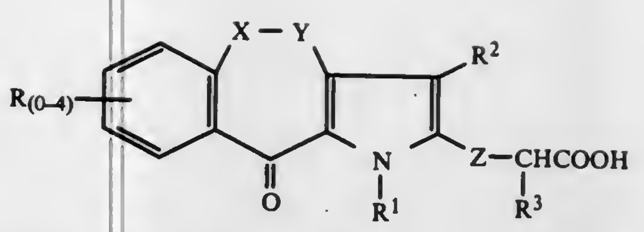
James B. Doherty, New Milford; Conrad P. Dorn, Plainfield; Bruce E. Witzel, Westfield; Debra L. Allison, Scotch Plains, and Tsung-Ying Shen, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 279,140, Jun. 30, 1981, abandoned. This application Jun. 4, 1982, Ser. No. 385,232

Int. Cl.³ A61K *31/55;* **C07D** *209/94, 491/044*

U.S. Cl. 424—274 **14 Claims**

1. A compound having the formula:



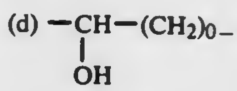
(I)

or a pharmaceutically acceptable alkali metal, alkaline metal or quaternary ammonium salt thereof wherein there are 0–4 R groups and

R is
- (a) hydrogen;
- (b) lower alkyl;
- (c) halo-loweralkyl;
- (d) hydroxy or lower alkoxy;
- (e) halo;
- (f) lower alkylthio;
- (g) lower alkylsulfinyl;
- (h) lower alkylsulfonyl;
- (i) lower alkenyl;
- (j) phenyl;
- (k) substituted phenyl wherein the substituent is loweralkyl, loweralkylsulfonyl, loweralkylsulfinyl, loweralkylthio, loweralkoxy, chloro or fluoro;
- (l) carboxy;
- (m) carbalkoxy;
- (n) cyano;
- (o) loweralkylamino or amino;
- (p) di(loweralkyl)amino;
- (q) lower alkanoyl; or
- (r) benzoyl or substituted benzoyl wherein the substituent is fluoro, chloro, loweralkyl or loweralkoxy;

R^1 is
- (a) hydrogen;
- (b) lower alkyl;
- (c) lower alkenyl;
- (d) lower alkanoyl;
- (e) phenyl or substituted phenyl;
- (f) benzoyl or substituted benzoyl;
- (g) benzyl or substituted benzyl;
- (h) lower alkoxy;
- (i) lower alkylamino;
- (j) di(loweralkyl)amino; or
- (k) hydroxy C_{1-6}alkyl;

Z is
- (a) $-(CH_2)_{0-n}$, n being 0–10;
- (b) $-CO(CH_2)_{1-n}-$;
- (c) $-(CH_2)_{1-n}-CO-$; or

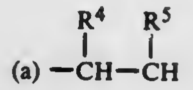


$$\text{(d) } -\underset{\substack{|\\ \mathrm{OH}}}{\mathrm{CH}}-(CH_2)_{0-n};$$

R^2 is
- (a) hydrogen;
- (b) lower alkyl;
- (c) lower alkenyl;
- (d) lower alkoxy; or
- (e) $-CH_2OH$;
- (f) halo; or
- (g) phenyl or substituted phenyl;

R^3 is hydrogen, lower alkyl, hydroxy, loweralkoxy, or halo; and

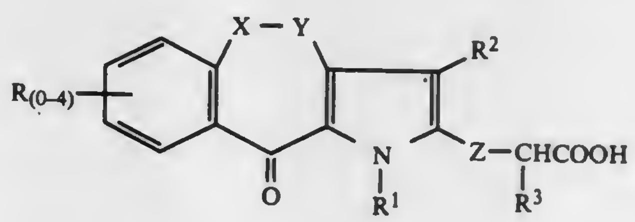
X-Y is



$$\text{(a) } -\overset{\substack{R^4\\ |}}{\mathrm{CH}}-\overset{\substack{R^5\\ |}}{\mathrm{CH}}$$

wherein R^4 and R^5 independently are hydrogen, loweralkyl loweralkoxy or halo;
- (b) $-CR^4{=}CR^5-$;
- (c) $-O-CH_2-$;
- (d) $-CH_2-O-$;
- (e) $-S-CH_2-$;
- (f) $-CH_2-S-$;
- (g) $-CO-O-$;
- (h) $-O-CO-$;
- (i) $-CO-NH-$; or
- (j) $-NH-CO-$.

9. A method of treatment of inflammatory conditions, fever and pain which comprises the administration to a mammalian species in need of such treatment an effective amount of a compound of formula:



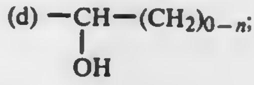
(I)

or a pharmaceutically acceptable alkali metal, alkaline metal or quaternary ammonium salt thereof wherein

there are 0–4 R groups and R is
- (a) hydrogen;
- (b) lower alkyl;
- (c) halo-loweralkyl;
- (d) hydroxy or lower alkoxy;
- (e) halo;
- (f) lower alkylthio;
- (g) lower alkylsulfinyl;
- (h) lower alkylsulfonyl;
- (i) lower alkenyl;
- (j) phenyl;
- (k) substituted phenyl wherein the substituent is loweralkyl, loweralkylsulfonyl, loweralkylsulfinyl, loweralkylthio, loweralkoxy, chloro or fluoro;
- (l) carboxy;
- (m) carbalkoxy;
- (n) cyano;
- (o) loweralkylamino or amine;
- (p) di(loweralkyl)amino;
- (q) lower alkanoyl; or
- (r) benzoyl or substituted benzoyl wherein the substituent is fluoro, chloro, loweralkyl or loweralkoxy;

R^1 is
- (a) hydrogen;
- (b) lower alkyl;
- (c) lower alkenyl;
- (d) lower alkanoyl;
- (e) phenyl or substituted phenyl;
- (f) benzoyl or substituted benzoyl;
- (g) benzyl or substituted benzyl;
- (h) lower alkoxy;
- (i) lower alkylamino;
- (j) di(loweralkyl)amino; or
- (k) hydroxy C_{1-6}alkyl;

Z is
- (a) $-(CH_2)_{0-n}$, n is being 0–10;
- (b) $-CO(CH_2)_{1-n}-$;
- (c) $-(CH_2)_{1-n}-CO-$; or



$$\text{(d) } -\underset{\substack{|\\ \mathrm{OH}}}{\mathrm{CH}}-(CH_2)_{0-n};$$

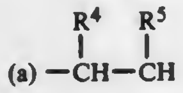
R^2 is
- (a) hydrogen;
- (b) lower alkyl;
- (c) lower alkenyl;
- (d) lower alkoxy; or
- (e) $-CH_2OH$;

(f) halo; or

(g) phenyl or substituted phenyl;

R^3 is hydrogen, lower alkyl, hydroxy, loweralkoxy, or halo; and

X-Y is

(a)


$$-\overset{\overset{R^4}{|}}{C}H-\overset{\overset{R^5}{|}}{C}H$$

wherein R^4 and R^5 independently are hydrogen, loweralkyl loweralkoxy or halo;

(b) $—CR^4═CR^5—$;

(c) $—O—CH_2—$;

(d) $—CH_2—O—$;

(e) $—S—CH_2—$;

(f) $—CH_2—S—$;

(g) —CO—O—;

(h) —O—CO—;

(i) —CO—NH—; or

(j) —NH—CO—.

4,440,780

FUNGICIDAL 3-(N-ACYL-N-ARYLAMINO)-AND 3-(N-THIONOACYL-N-ARYLAMINO)-GAMMA-BUTYROLACTONES AND GAMMA-THIOBUTYROLACTONES

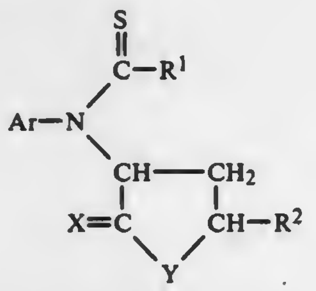
David C. K. Chan, Petaluma, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jun. 1, 1979, Ser. No. 44,740

Int. Cl.³ A01N *43/08, 43/10, 43/36;* **C07D** *333/30, 207/26, 307/30*

U.S. Cl. 424—275 **10 Claims**

1. A compound of the formula



wherein Ar is phenyl, naphthyl, or phenyl or naphthyl substituted with 1 to 4 of the same or different substituents selected from fluoro, chloro, bromo, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms; R^1 is hydroxymethyl, halomethyl of 1 to 3 of the same or different halogens selected from fluoro, chloro or bromo, alkoxyalkyl of 2 to 6 carbon atoms, alkylthioalkyl of 2 to 6 carbon atoms, phenylthioalkyl of 7 to 10 carbon atoms, phenoxyalkyl of 7 to 10 carbon atoms, phenylthioalkyl or phenoxyalkyl of 7 to 10 carbon atoms substituted on the phenyl ring with 1 to 2 of the same or different substituents selected from fluoro, chloro, bromo, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms, cycloalkyl or 3 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms substituted with 1 to 4 of the same or different substituents selected from alkyl of 1 to 4 carbon atoms, fluoro, chloro, bromo, hydroxy or alkoxy of 1 to 4 carbon atoms; and R^2 is hydrogen, chloro, bromo, alkyl of 1 to 6 carbon atoms, phenyl or phenyl substituted with 1 to 2 of the same or different substituents selected from fluoro, chloro, bromo or alkyl of 1 to 6 carbon atoms; Y is O, S or —NH—; and X is O or S.

7. A method for the control of fungi which comprises contacting said fungi or their habitats with a fungicidally effective amount of a compound of the formula defined in claim 1.

10. A fungicidal composition comprising a biologically inert carrier and a fungicidally effective amount of a compound of the formula defined in claim 1.

4,440,781

OXYOCTADECANOATES AS PSYCHOTROPIC AGENTS

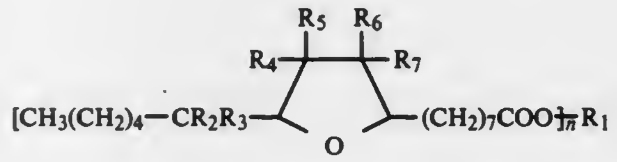
Herman P. Benecke, and Bob E. Sherwood, both of Columbus, Ohio, assignors to The Vinoxen Company, Inc., Stamford, Conn.

Filed Jun. 11, 1982, Ser. No. 387,636

Int. Cl.³ A61K *31/34;* **C07D** *307/12, 307/32, 307/28*

U.S. Cl. 424—285 **19 Claims**

1. A method for producing a psychotropic response in a human or animal subject suffering from a condition for which a psychotropic response would be therapeutic, comprising administering to said subject a psychotropically effective nontoxic amount of a 9,12-oxyoctadecanoate having the formula I



(I)

wherein n=1 and R_1 is H, lower alkyl, cyclo(lower)alkyl, aryl(lower)alkyl, lower alkoxy(lower)alkyl, di(lower)alkylamino(lower)alkyl, cyclic amino(lower)alkyl or alkanoylamino(lower)alkyl; or n=2-6 and R_1 is a lower alkyl or cyclo(lower)alkyl polyol residue; and

(a) R_2, R_3, R_4, R_5 and R_6 are each H; and R_7 is OH; or

(b) R_2, R_3, R_4 and R_5 are each H; and R_6 and R_7 together are O; or

(c) R_2, R_3, R_4, R_6 and R_7 are each H; and R_5 is OH; or

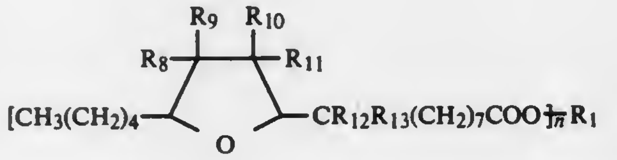
(d) R_2, R_3, R_6 and R_7 are each H; and R_4 and R_5 together are O; or

(e) R_2 is OH; and R_3, R_4, R_5, R_6 and R_7 are each H; or

(f) R_2 is OH; R_3, R_4 and R_6 are each H; and R_5 and R_7 together are a C—C bond; or

(g) R_2 and R_3 together are O; and R_4, R_5, R_6 and R_7 are each H; or

(h) R_2 and R_3 together are O; R_4 and R_6 are each H; and R_5 and R_7 together are a C—C bond; or a 10,13-oxyoctadecanoate having the formula II



(II)

wherein n and R_1 are as defined hereinabove; and

(a) R_8, R_9, R_{10}, R_{11} and R_{12} are each H; and R_{13} is OH; or

(b) R_8, R_9, R_{10} and R_{11} are each H; and R_{12} and R_{13} together are O; or

(c) R_8, R_{10} and R_{12} are each H; R_9 and R_{11} together are a C—C bond; and R_{13} is OH; or

(d) R_8 and R_{10} are each H; R_9 and R_{11} together are a C—C bond; and R_{12} and R_{13} together are O; or

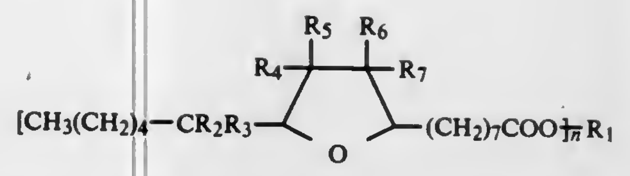
(e) R_8, R_9, R_{10}, R_{12} and R_{13} are each H; and R_{11} is OH; or

(f) R_8, R_9, R_{12} and R_{13} are each H; and R_{10} and R_{11} together are O; or

(g) R_8 is OH; and R_9, R_{10}, R_{11}, R_{12}, and R_{13} are each H; or

(h) R_8 and R_9 together are O; and R_{10} R_{11}, R_{12} and R_{13} are each H; or a pharmaceutically acceptable addition salt thereof.

17. A psychotropic composition, consisting essentially of (1) a non-toxic amount effective for producing a psychotropic response in a human or animal subject of a 9,12-oxyoctadecanoate having the formula I



(I)

wherein n=1 and R_1 is H, lower alkyl, cyclo(lower)alkyl, aryl(lower)alkyl, lower alkoxy(lower)alkyl, di(lower)alkylamino(lower)alkyl, cyclic amino(lower)alkyl or alkanoylamino(lower)alkyl; or n=2-6 and R_1 is a lower alkyl or cyclo(lower)alkyl polyol residue; and

(a) R_2, R_3, R_4, R_5 and R_6 are each H; and R_7 is OH; or

(b) R_2, R_3, R_4 and R_5 are each H; and R_6 and R_7 together are O; or

(c) R_2, R_3, R_4, R_6 and R_7 are each H; and R_5 is OH; or

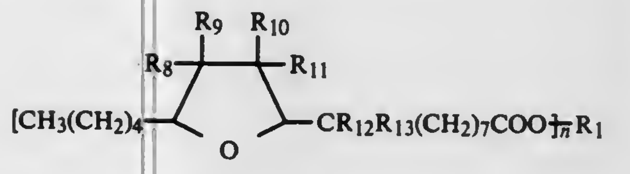
(d) R_2, R_3, R_6 and R_7 are each H; and R_4 and R_5 together are O; or

(e) R_2 is OH; and R_3, R_4, R_5, R_6 and R_7 are each H; or

(f) R_2 is OH; R_3, R_4 and R_6 are each H; and R_5 and R_7 together are a C—C bond; or

(g) R_2 and R_3 together are O; and R_4, R_5, R_6 and R_7 are each H; or

(h) R_2 and R_3 together are O; R_4 and R_6 are each H; and R_5 and R_7 together are a C—C bond; or a 10,13-oxyoctadecanoate having the formula II



(II)

wherein n and R_1 are as defined hereinabove; and

(a) R_8, R_9, R_{10}, R_{11} and R_{12} are each H; and R_{13} is OH; or

(b) R_8, R_9, R_{10} and R_{11} are each H; and R_{12} and R_{13} together are O; or

(c) R_8, R_{10} and R_{12} are each H; R_9 and R_{11} together are a C—C bond; and R_{13} is OH; or

(d) R_8 and R_{10} are each H; R_9 and R_{11} together are a C—C bond; and R_{12} and R_{13} together are O; or

(e) R_8, R_9, R_{10}, R_{12} and R_{13} are each H; and R_{11} is OH; or

(f) R_8, R_9, R_{12} and R_{13} are each H; and R_{10} and R_{11} together are O; or

(g) R_8 is OH; and R_9, R_{10}, R_{11}, R_{12}, and R_{13} are each H; or

(h) R_8 and R_9 together are O; and R_{10} R_{11}, R_{12} and R_{13} are each H; or a pharmaceutically acceptable addition salt thereof;

and (2) a pharmaceutically acceptable carrier;

wherein said composition is in unit dosage form as a tablet, dragee, capsule, ampoule, suppository or sterile injectable preparation.

4,440,782

METHOD OF TREATING VIRAL INFECTIONS

James P. Davidson, Lansing; Barnett Rosenberg, Holt, both of Mich., and Ronald W. Hinz, Avoca, Iowa, assignors to Research Corporation, New York, N.Y.

Division of Ser. No. 773,216, Mar. 1, 1977, Pat. No. 4,258,051, which is a division of Ser. No. 540,109, Jan. 10, 1975, Pat. No. 4,053,587. This application Sep. 18, 1980, Ser. No. 188,343

The portion of the term of this patent subsequent to Mar. 24, 1998, has been disclaimed.

Int. Cl.³ A61K *31/28, 31/555*

U.S. Cl. 424—287 **3 Claims**

1. A method for treating an animal afflicted with a viral infection comprising administering to said animal an effective anti-viral amount of a platinum coordination compound having the formula:

$$[Pt(II)A_x(OOC)_2—CRR_1]$$

wherein:

x=1 or 2;

R and R_1 are selected from the group consisting of H, lower alkyl, aryl, aralkyl, alkenyl, cycloalkyl, cycloalkenyl, alkoxy, OH, or combine with the carbon atom to form a cycloalkyl or cycloalkenyl;

when x=1, A is $HR_2N—CHR_3—CHR_4—NR_5H$ and when x=2, A is H_2NR_6 or an amino acid, wherein R_2, R_3, R_4 and R_5 are the same or different and are selected from the group consisting of H. CH_3, C_2H_5, hydroxy and lower alkoxy, provided that R_2 and R_5 may also be aryl or aralkyl and each R_6 is the same or different and is selected from the group consisting of H, lower alkyl, aryl, aralkyl, hydroxy lower alkyl, hydroxyl- and alkoxyl-amines, and alkoxyl alkyl amines, all of said alkyl and alkoxy groups being lower alkyl and alkoxy groups.

4,440,783

COMPOSITION FOR REPELLING ANIMALS FROM GARBAGE AND THE LIKE

Harry M. Downing, Hewitt, N.J., assignor to Bernard Weiss, New York, N.Y.; Jonathan J. Stern, Upper Saddle River, N.J. and Burt B. Houseworth, Elmsford, N.Y.

Filed Feb. 24, 1983, Ser. No. 469,228

Int. Cl.³ A01M *47/46*

U.S. Cl. 424—302 **9 Claims**

1. A composition for repelling animals from garbage comprising:

(a) 1 to 25 weight percent of an active portion containing a minor but repellent effective concentration of an isothyocyanate chosen from the group consisting of allyl isothiocyanate and C_1 to C_4 alkyl isothiocyanate together with an odor masking material for making the composition more acceptable to humans, and

(b) 75 to 99 weight percent of a non-active liquid diluent portion which comprises the major portion of the overall composition.

4,440,784

ANTI-INFLAMMATORY, ANALGESIC, AND ANTIPYRETIC PHARMACEUTICAL COMPOSITION

Ikuo Katsumi, Kobe; Hideo Kondo, Takasago; Katsuji Yamashita; Takayoshi Hidaka, both of Kobe; Kazunori Hosoe, Takasago; Yutaka Ariki, Himeji; Toshiaki Yamashita, Kakogawa, and Kiyoshi Watanabe, Akashi, all of Japan, assignors to Kanegafuchi Chemical Industry Company, Ltd., Osaka, Japan

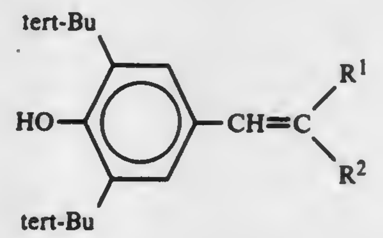
Filed Jan. 5, 1982, Ser. No. 337,130

Claims priority, application Japan, Feb. 5, 1981, 56-16602; Nov. 9, 1981, 56-179949

Int. Cl.³ A61K *31/19, 31/235*

U.S. Cl. 424—308 **4 Claims**

1. An anti-inflammatory, analgesic, and antipyretic pharmaceutical composition which comprises an effective amount of a 3,5-di-tert-butyl-4-hydroxystyrene derivative represented by the general formula:



wherein R^1 stands for a group represented by $—COOR^4$; R^4 is a hydrogen atom or an alkyl group with $C_1\sim C_4$; R^2 stands for an alkyl group with $C_1\sim C_4$, a hydroxyalkyl group with $C_1\sim C_4$, or an acyl group represented by $—COR^6$; and R^6 is an alkyl group with $C_1\sim C_3$ or its pharmaceutically acceptable salt as an active ingredient in combination with pharmaceutical excipients.

4,440,785

METHODS OF USING 2-AMINOBIPHENYLACETIC ACIDS, ESTERS, AND METAL SALTS THEREOF TO TREAT INFLAMMATION

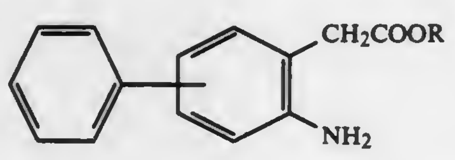
David A. Walsh, Richmond, Va., assignor to A. H. Robins Company, Inc., Richmond, Va.

Continuation-in-part of Ser. No. 202,287, Oct. 30, 1980, abandoned, which is a division of Ser. No. 64,767, Aug. 8, 1979, abandoned, which is a continuation-in-part of Ser. No. 851,641, Nov. 15, 1977, abandoned. This application Jan. 13, 1982, Ser. No. 339,211

Int. Cl.³ A61K *31/19;* **C07C** *149/43*

U.S. Cl. 424—317 **8 Claims**

1. A method for alleviating inflammation in a living animal body with a minimum of undesirable side effects comprising internally administering to said living animal body an effective amount of a compound having the formula:



wherein R is hydrogen, lower alkyl, sodium or potassium, and the phenyl substituent is in the 3, 4, or 5 position and hydrates thereof.

4,440,786

COMPOUNDS WITH ANTIINFLAMMATORY AND ANALGESIC ACTIVITY, PROCESS FOR THE PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITIO NS THEREFROM

Leonardo de Vincentiis, Rome, Italy, assignor to Ausonia Farmaceutici s.r.l., Pomezia, Italy

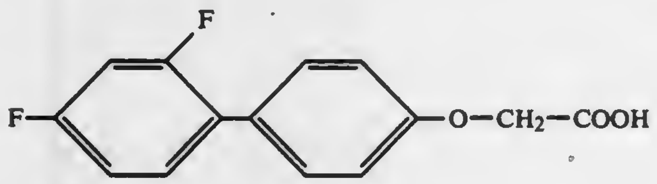
Filed May 20, 1982, Ser. No. 380,124

Claims priority, application Italy, Nov. 24, 1981, 25245 A/81

Int. Cl.³ C07C *59/52;* **A01N** *37/12*

U.S. Cl. 424—319 **10 Claims**

1. The compound (2',4'-difluoro-4-biphenyl)-oxyacetic acid of formula I



(I)

or a pharmaceutically acceptable salt thereof with sodium, potassium, magnesium or calcium or an organic base which is lysine, arginine or ethanolamine.

7. A pharmaceutically composition having antiinflammatory and analgesic activity, which comprises as the active ingredient an effective amount of a compound according to claim 1 and inert excipients.

4,440,787

COMPOUNDS WITH ANTIINFLAMMATORY AND ANALGESIC ACTIVITY, PROCESS FOR THE PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITIONS THEREFROM

Leonardo de Vincentiis, Rome, Italy, assignor to Ausonia Farmaceutici s.r.l., Pomezia, Italy

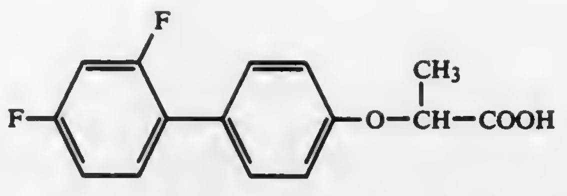
Filed May 20, 1982, Ser. No. 380,125

Claims priority, application Italy, Nov. 24, 1981, 25243 A/81

Int. Cl.³ C07C *59/52;* **A01N** *37/12*

U.S. Cl. 424—319 **10 Claims**

1. The compound (2',4'-difluoro-4-biphenyl)oxypropionic acid of formula I



(I)

or a pharmaceutically acceptable salt thereof with a metal which is sodium, potassium, calcium or magnesium or an organic base which is lysine, arginine or ethanolamine.

7. A pharmaceutical composition having antiinflammatory an analgesic activity, which comprises as the active ingredient an effective amount of a compount according to claim **1** and inert excipients.

4,440,788

CYSTEINE DERIVATIVES

Hiroshi Terayama, Tokyo; Yoshiharu Morita, and Kobei Umezu, both of Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries, Limited, Tokyo, Japan

PCT No. PCT/JP81/00107, § 371 Date Dec. 30, 1981, § 102(e) Date Dec. 30, 1981, PCT Pub. No. WO81/03330, PCT Pub. Date Nov. 26, 1981

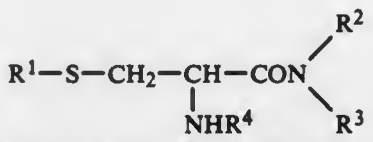
PCT Filed May 11, 1981, Ser. No. 336,377

Claims priority, application Japan, May 13, 1980, 55-63263; Jun. 27, 1980, 55-87272

Int. Cl.³ A61K *31/16;* **C07C** *149/23, 103/183*

U.S. Cl. 424—320 **3 Claims**

1. A method for accelerating regeneration of parenchymatous cells of the human or animal liver, when the number or function of said cells is reduced due to hepatic failure due to various hepatopathy inducing factors such as acute and chronic hepatitis or chemical poisoning, which comprises orally or parenterally administering to said human or animal a therapeutically effective amount of a cysteine derivative having the formula:



$$R^1{-}S{-}CH_2{-}\underset{\substack{|\\ NHR^4}}{CH}{-}CON\begin{matrix}\diagup R^2\\ \diagdown R^3\end{matrix}$$

wherein R_1 is methyl or ethyl, R_2 and R_3 are each hydrogen or a lower alkyl having about 1–6 carbon atoms, and R_4 is acetyl, or a non-toxic pharmaceutically acceptable acid addition salt thereof.

4,440,789

SYNTHETIC ABSORBABLE HEMOSTATIC COMPOSITION

Frank V. Mattei, Piscataway, N.J., and Namassivaya Doddi, Upland, Calif., assignors to Ethicon, Inc., Somerville, N.J.

Filed Nov. 16, 1982, Ser. No. 442,217

Int. Cl.³ A61K *31/74;* **C08G** *63/08*

U.S. Cl. 424—78 **14 Claims**

1. A synthetic body absorbable hemostatic composition for use in the control of osseous hemorrhage, comprising from 60% to 80% by weight of purified polydioxanone in a biocompatible base, said polydioxanone having an inherent viscosity in hexafluoroisopropanol at a concentration of 0.1 g/dl and at a temperature of 25° C. of between about 0.03 and 0.15, said base comprising a natural or synthetic oil or wax which is absorbable in the body, said polydioxanone having a sufficiently low inherent viscosity such that the mixture with the base is workable and softenable by hand to bring about a putty-like consistency at room temperature and having a tackiness sufficient for it to adhere readily to a bloody bone surface and yet being able to be manipulated without crumbling or sticking to the surgeon's gloves.

4,440,790

PROCESS FOR STABILIZING PEPPERMINT OIL

Bernie Blackwell, Laurelton, N.Y.; Shelley Netherwood, Brea, Calif., and Dominick J. Piccolo, Brooklyn, N.Y., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Dec. 20, 1982, Ser. No. 450,870

Int. Cl.³ A23L *1/22, 1/222;* **A23G** *3/30*

U.S. Cl. 426—3 **21 Claims**

1. A process for preparing a peppermint oil containing a reduced menthofuran content, which comprises reacting the peppermint oil with about 0.5% to about 15% by weight maleic anhydride, based on the weight of peppermint oil to selectively form a menthofuran-maleic anhydride adduct without otherwise affecting the flavoring agent properties of the remaining peppermint oil constituents and recovering the peppermint oil having a reduced menthofuran content.

4,440,791

CULTURED EGG-MILK PRODUCT

Kenneth A. MacKenzie, Stretton, Australia, assignor to The Egg Marketing Board, South Queensland, Australia

Filed May 17, 1982, Ser. No. 378,776

Claims priority, application Australia, Mar. 11, 1982, PF3054

Int. Cl.³ A23C *9/13*

U.S. Cl. 426—43 **15 Claims**

1. A method of producing a cultured egg milk product from whole or skim milk, skim milk powder, sugar and liquid whole egg or powdered whole egg in liquid form comprising the steps of heating said milk and dissolving said skim milk powder and sugar therein to form a first mixture; homogenizing said first mixture, subsequently heating said first mixture and maintaining said first mixture at an elevated temperature; cooling said first mixture and adding said egg to form a second mixture; adding bacterial cultures to said second mixture, said bacterial cultures being selected to cause fermentation of said second mixture, and incubating said second mixture until a predetermined degree of bacterial growth has been achieved.

4,440,792

METHOD FOR PREVENTING GELATION OF CORN STEEP LIQUOR

Marion M. Bradford; Frank T. Orthoefer, and Kenneth N. Wright, all of Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Sep. 7, 1982, Ser. No. 415,192

Int. Cl.³ A23L *1/34*

U.S. Cl. 426—271 **13 Claims**

1. A method of treating corn steep liquor (CSL) or a liquid CSL composition which comprises the adding to the liquor or composition a Ca++ complexing agent in an amount effective to prevent or reverse the gelling of said corn steep liquor.

4,440,793

METHOD FOR PRODUCING BREAD CRUMBS

Masao Seki, Kamakura, Japan, assignor to Fuji Foods Industry Co., Ltd., Japan

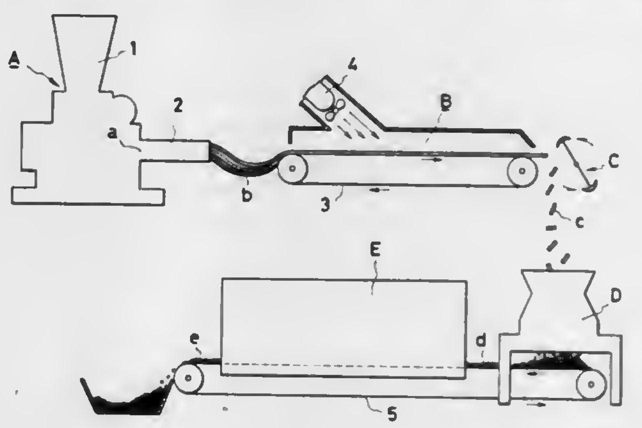
Filed May 3, 1982, Ser. No. 374,068

Claims priority, application Japan, May 8, 1981, 56-69235

Int. Cl.³ A21D *13/06*

U.S. Cl. 426—549 **3 Claims**

1. A method for producing bread crumbs which comprises forming a mixture obtained by adding 0.5–6.0% soybean protein to wheat flour, mixing therein suitable amounts of salt, fats, emulsifier, pH adjustor, coloring matter and flavoring as secondary materials, adding α-converted starch to said mixture, adding water thereto without adding yeast, thereafter charging said mixture into an extruder having a die at one end thereof, heating and pressing said mixture while in said extruder and extruding the mixture from said die into a rope-like configuration, simultaneously therewith drawing the rope-like material from said extruder at a speed greater than the extrusion speed to produce bubbles within the rope-like material, flattening a section of the bubbles and rope-like material, cutting and crushing the material, and drying the same to produce bread crumbs.



4,440,794

INSTANT RICE PUDDING MIX

David L. Davies, Banbury, England, assignor to General Foods Corporation, White Plains, N.Y.

Filed Feb. 22, 1983, Ser. No. 468,443

Int. Cl.³ A23L *1/187, 1/168, 1/195*

U.S. Cl. 426—578 **7 Claims**

1. An instant rice pudding mix which comprises a mixture of a powder comprising 15 to 35% by weight of a finely divided sugar, 25 to 40% by weight of a starch, 5 to 20% by weight of a finely divided fat; 5 to 25% by weight of a dried skim-milk powder; up to 3% by weight of an emulsifier and 0 to 4% by weight of an edible gum; and granules formed by the extrusion of a dough formed from 87 to 100% by weight of rice flour, up to 4.0% by weight of a starch-complexing agent, up to 5% by weight of an aerating agent and up to 4.0% of dried skim milk powder and/or dried whey powder mixed with a proportion of water sufficient to produce an extrudable dough.

4,440,795

PROCESS FOR THE PREPARATION OF A STABLE CITRUS FLAVORED MALT BEVERAGE

Henry Goldstein, Brookfield; Joseph T. Hoff, Hartland; Charles L. Cronan, Shorewood, and Ch. S. Rao, Milwaukee, all of Wis., assignors to Miller Brewing Company, Milwaukee, Wis.

Continuation-in-part of Ser. No. 231,971, Feb. 6, 1981, abandoned. This application Jun. 23, 1982, Ser. No. 391,179

Int. Cl.³ C12G *3/06*

U.S. Cl. 426—592 **3 Claims**

1. A method of preparing a stable citrus flavored alcoholic malt beverage, said method comprising selecting as the feed a beer prepared by the fermentation of grain, said beer comprising water, alcohol, carbohydrates, proteins, amino acids, including sulphur containing amino acids, inorganics, sugars and volatiles, subjecting said beer to reverse osmosis employing a membrane which has a molecular weight cutoff of up to about 200 for organics and a nominal pore size of about 5 Angstroms, then collecting the permeate which consists essentially of water, alcohol, and the organics having molecular weight of up to about 200 which are mostly the volatiles which are responsible for the beer flavor and aroma, and adding citrus flavoring to said permeate.

4,440,796

COLD SOLUBLE POWDERED TEA EXTRACTS

Tito-Livio Lunder, and Corine-Madeleine Nielsen, both of Lausanne, Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Jul. 9, 1982, Ser. No. 396,895

Int. Cl.^{3} A23F *3/30*

U.S. Cl. 426—597 **9 Claims**

1. A process for the production of a cold soluble powdered tea extract which comprises treating a hot soluble powdered tea extract with a mixture of from 25% to 65% by weight of an aliphatic di- or tri-carboxylic acid and from 15% to 65% by weight of an aliphatic di- or tri-carboxylic acid salt based on the weight of the hot soluble powdered tea extract and grinding the resultant mixture to the desired particle size.

4,440,797

METHOD FOR CONTINUOUS PRODUCTION OF CHOCOLATE MASS

Klaus Berkes, Dresden; Helmut Förster, Heidenau; Wolfgang Huth, Dresden; Günter Ritschel; Georg Schebiella, both of Heidenau; Norbert Scholz, and Frank-Gerhard Thomas, both of Dresden, all of German Democratic Rep., assignors to Veb Kombinat Nagema, Dresden, German Democratic Rep.

Continuation-in-part of Ser. No. 221,191, Dec. 29, 1980. This application Apr. 30, 1981, Ser. No. 259,107

Claims priority, application German Democratic Rep., Dec. 29, 1979, 218276

Int. Cl.^{3} A23G *1/00, 1/14*

U.S. Cl. 426—613 **13 Claims**

1. A method for the continuous production of a refined chocolate mass, comprising the stepssof preparing a non-refined cocoa mass composed of a mixture of conventional components such as a mixture of cocoa mass with sugar or cocoa mass mixed with sugar, milk powder and cocoa butter; then producing from the non-refined cocoa mass a non-refined chocolate mass by reducing in size the components of the cocoa mass to a fineness required for the refined chocolate mass but still containing undesired aromatic substances, the non-refined chocolate mass being low in fat (in comparison to the refined chocolate mass) and having a friable or pulverized structure; then moving the non-refined chocolate mass in a feeding direction while internally mixing the same with a preheated gas stream flowing in the same feeding direction to remove moisture and undesired volatile components therefrom and to assist in advancing the mass in the feeding direction; simultaneously conching the mass by subjecting it to intensive mechanical mixing and shearing stresses until the mass is plasticized; separating gas from the plasticized mass; increasing liquidity of the mass by adding an emulsifier; thereafter adding to the liquefied mass doses of fat substances to adjust the fat content of the mass to that required in the refined chocolate mass; then homogenizing the completed mass by repeating the intensive conching or mechanical mixing and shearing treatment without the use of a gas stream while cooling the homogenized mass to a lower temperature and discharging the resulting refined chocolate mass for final processing.

4,440,798

LOW COST TEXTURIZED VEGETABLE PROTEIN

Emil A. Huang, Fridley, Minn., assignor to Nabisco Brands, Inc., Parsippany, N.J.

PCT No. PCT/US81/00568, § 371 Date Nov. 8, 1982, § 102(e) Date Dec. 29, 1982, PCT Pub. No. WO82/03750, PCT Pub. Date Nov. 11, 1982

PCT Filed Apr. 29, 1981, Ser. No. 453,578

Int. Cl.^{3} A23J *3/00*

U.S. Cl. 426—656 **12 Claims**

1. The method of preparing a textured protein comprising the steps of:

(a) mixing a meal of carbohydrate containing proteinaceous vegetable material with between about 10% and 75% water by weight of the total to form a homogeneous mass;

(b) forming said mass under temperature and pressure conditions which retain the proteins therein in the undenatured state to obtain discrete pieces of a desired configuration having a dough-like consistency wherein a substantial portion of the protein molecules are in the undenatured state and the protein and carbohydrate molecules of said pieces are in substantially the original matrix relationship of the proteinaceous vegetable material; and

(c) cooking said pieces to a meat-like consistency in water in the presence of at least one protein insolubilizing agent present in sufficient concentration to maintain the proteins insoluble in order (1) to denature the proteins in situ whereby contiguous protein molecules interlock to form a three dimensional protein network structure throughout each of the pieces, and (2) to leach out at least some carbohydrates from within the protein structure.

4,440,799

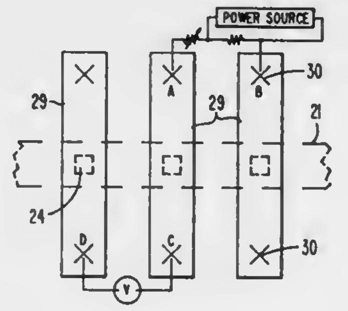
MONITOR FOR IMPURITY LEVELS IN ALUMINUM DEPOSITION

Thomas J. Faith, Jr., Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 22, 1982, Ser. No. 435,971

Int. Cl.^{3} H01L *21/24*

U.S. Cl. 427—8 **9 Claims**



1. A method of predicting the degree of post-alloy contact resistance between an aluminum-based film deposited in a vacuum chamber and a silicon substrate therefor comprising:

(a) providing in the chamber a monitor wafer of p-type silicon having a plurality of contact resistance measurement test sites, each test site comprising a region of N^+-doped high conductivity such that contact with the film will occur at a plurality of predetermined areas in said region;

(b) depositing the aluminum-based film on a selected portion of the monitor wafer, said portion including said contact areas and comprising a plurality of Kelvin contacts;

(c) measuring the contact resistance at said contact areas prior to alloying of said film;

(d) determining the distribution of contact resistance in the film from a significant number of such measurements; and

(e) using said determination as an indication of the post-alloy contact resistance.

4,440,800

VAPOR COATING OF POWDERS

David H. Morton, Kyle Bay; Stephen G. Szirmai, Dover Heights, and Edmund C. Potter, St. Ives, all of Australia, assignors to Unisearch Limited, Kensington and Commonwealth Scientific and Industrial Research, Campbell, both of, Australia

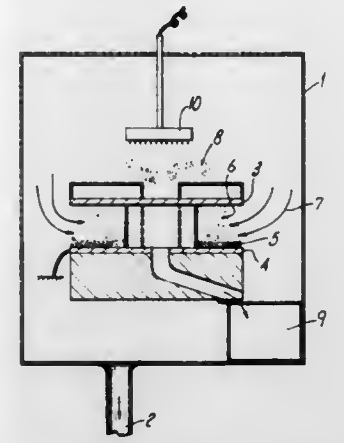
Filed Apr. 16, 1981, Ser. No. 255,662

Claims priority, application Australia, Apr. 24, 1980, PE3290/80

Int. Cl.^{3} B05D *1/04*

U.S. Cl. 427—13 **18 Claims**

1. A method of vapour coating of a particulate material, comprising dispersing said particulate material by the application of an electrostatic field and causing a vapour or dispersion of a coating material to permeate the dispersion of particulate material.



4,440,801

METHOD FOR DEPOSITING A METAL LAYER ON POLYESTERS

Ari Aviram, Yorktown Heights; Veronica I. Mayne-Banton, and Rangaswamy Srinivasan, both of Ossining, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 9, 1982, Ser. No. 396,922

Int. Cl.^{3} C23C *3/02*

U.S. Cl. 427—54.1 **20 Claims**

1. A method for deposition of a metal layer onto selected areas of a polyester substrate, comprising the steps of:

irradiating said polyester substrate with ultraviolet radiation of wavelengths less than 220 nm to create acid groups where said substrate is irradiated by said uv radiation,

neutralizing said acid groups in said irradiated polyester substrate to make them more basic, and

electrolessly depositing said metal onto said polyester substrate to form a continuous metal layer thereon, said depositing occurring substantially in those areas of said substrate where said neutralizing has occurred.

4,440,802

PREPARATION OF PREPREGS FROM CELLULOSIC FIBERS USING WATER-BORNE RESIN COMPOSITIONS

Edward Irving, Burwell, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 28, 1983, Ser. No. 479,404

Claims priority, application United Kingdom, Apr. 3, 1982, 8209955; Aug. 5, 1982, 8222600

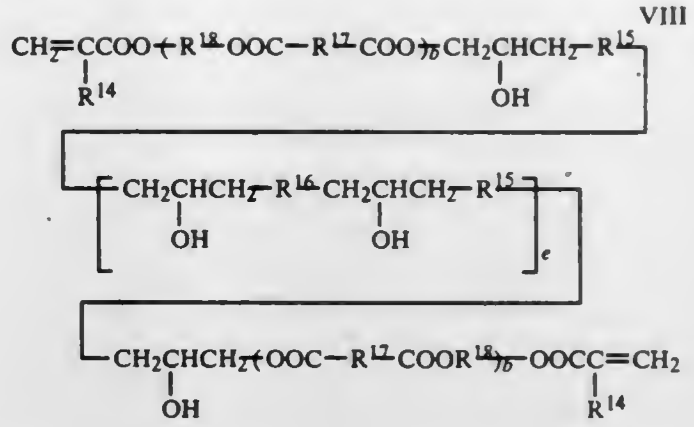
Int. Cl.^{3} B05D *3/06, 3/02*

U.S. Cl. 427—54.1 **10 Claims**

1. A method for the production of prepregs which comprises (1) impregnating cellulosic fibers with a water-borne composition comprising

(a) a photopolymerisable resin, and

(b) an epoxide resin, and then (2) exposing the impregnated fibers to actinic radiation so that (a) becomes photopolymerised, (a) being of formula



VIII

$$\mathrm{CH_2{=}\underset{R^{14}}{\underset{|}{C}}COO\left(R^{18}OOC-R^{17}COO\right)_b CH_2\underset{OH}{\underset{|}{C}}HCH_2-R^{15}-\left[CH_2\underset{OH}{\underset{|}{C}}HCH_2-R^{16}-CH_2\underset{OH}{\underset{|}{C}}HCH_2-R^{15}\right]_e-CH_2\underset{OH}{\underset{|}{C}}HCH_2\left(OOC-R^{17}COOR^{18}\right)_b-OO\underset{R^{14}}{\underset{|}{C}}C{=}CH_2}$$

where

b represents zero or 1,

e is an integer of at least 1,

each R^{14} denotes a hydrogen atom or a methyl group,

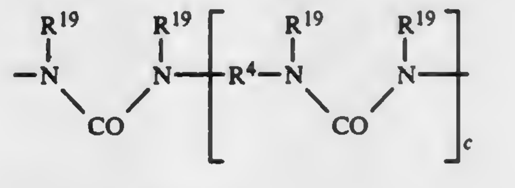
each R^{15} represents the divalent residue of a compound having two glycidyl groups directly attached to an atom or atoms of oxygen, nitrogen, or sulphur, after removal of the said two glycidyl groups,

each R^{16} represents the divalent residue of a dihydric alcohol, a dihydric phenol, a dicarboxylic acid, or a compound containing two groups selected from amide groups and imide groups, after removal of two terminal hydrogen atoms attached to an atom or atoms of oxygen or nitrogen,

each R^{17} denotes an alkylene group of 1 to 6 carbon atoms, an alkenylene group of 2 to 10 carbon atoms, an arylene group of 6 to 10 carbon atoms, or a cycloalkylene or cycloalkenylene group of 5 to 8 carbon atoms,

each R^{18} denotes a divalent aliphatic, cycloaliphatic, or araliphatic group of 2 to 8 carbon atoms,

with the proviso that at least 25% of the total of the (e+1) R^{15} and e R^{16} groups each represent a group of the formula



IX

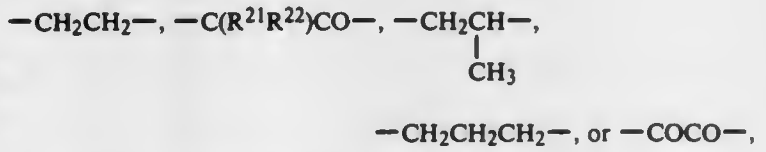
or a group of formula

$$-O(OC)_d-R^{20}-(CO)_d-O- \qquad X$$

wherein

R^4 represents a divalent aliphatic, cycloaliphatic, or araliphatic radical of 1 to 8 carbon atoms,

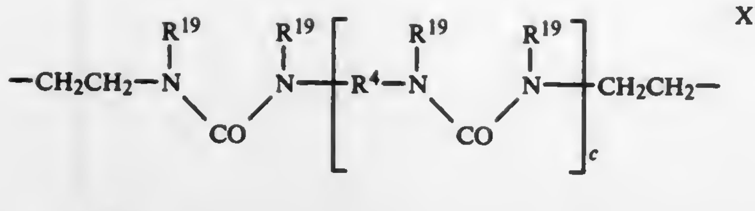
each R^{19} denotes an alkyl group of 1 to 4 carbon atoms or each pair of R^{19} conjointly represents a group of formula



$$-\mathrm{CH_2CH_2}-,\ -\mathrm{C(R^{21}R^{22})CO}-,\ -\mathrm{CH_2}\underset{\mathrm{CH_3}}{\underset{|}{\mathrm{C}}}\mathrm{H}-,\ -\mathrm{CH_2CH_2CH_2}-,\text{ or }-\mathrm{COCO}-,$$

c and d are each zero or 1,

R^{20} represents a straight or branched chain aliphatic group of 2 to 20 atoms or, provided each d is 1, it may alternatively represent a group of formula



$$-CH_2CH_2-\underset{\diagdown CO \diagup}{\overset{R^{19}}{N}\quad\overset{R^{19}}{N}}-\left[R^4-\underset{\diagdown CO \diagup}{\overset{R^{19}}{N}\quad\overset{R^{19}}{N}}\right]_c-CH_2CH_2-$$

XI

and

R^{21} and R^{22} either each denote a hydrogen atom or a straight or branched alkyl group of up to 9 carbon atoms or together they denote a tetramethylene, pentamethylene, methylpentamethylene, or hexamethylene group.

4,440,803
PROCESS FOR PREPARING ARSENIC-SELENIUM PHOTORECEPTORS

Monroe J. Hordon, Pittsford, and Robert E. Gerace, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 90,835, Nov. 1, 1979, abandoned. This application Apr. 20, 1981, Ser. No. 255,201

Int. Cl.^{3} B05D *5/12*

U.S. Cl. 427—74 **9 Claims**

1. A process of vapor depositing a substantially uniform thin film of photoconductive material on a substrate body which comprises:

positioning a plurality of substrate bodies on a plurality of elongated, horizontally extending cylindrical support mandrels;

rotating each of said mandrels about an associated longitudinal axis thereof and simultaneously transporting said plurality of mandrels in an annular path about a horizontal axis;

establishing an evacuated atmosphere about said mandrels;

vaporizing a suitable photoconductive material, which is positioned in a planar array of crucibles located within the annular path of travel of said mandrels, with at least one additional crucible being positioned in an outrigger configuration at each corner of the planar array, said crucible array extending substantially coextensively along the entire length of the plurality of substrate bodies; and

controlling the evaporation rate of the photoconductive material by means of a sensing system to monitor both evaporation rate of the photoconductive material and crucible temperature, said sensing system including a cascade dual-loop feedback control system continuously blending the evaporation rate and crucible temperature to produce an integrated feedback response to modify resistive power input to said crucibles to thereby establish an evaporation rate profile for the pre-evaporation, evaporation and post evaporation stages of the coating cycle.

4,440,804
LIFT-OFF PROCESS FOR FABRICATING SELF-ALIGNED CONTACTS

Alvin Milgram, Sunnyvale, Calif., assignor to Fairchild Camera & Instrument Corporation, Mountain View, Calif.

Filed Aug. 2, 1982, Ser. No. 404,109

Int. Cl.^{3} B05D *5/12*

U.S. Cl. 427—91 **8 Claims**

1. A lift-off process for fabricating self-aligned regions of first and second material on the surface of semiconductor structure comprising;

depositing a layer of first material on the surface of the semiconductor;

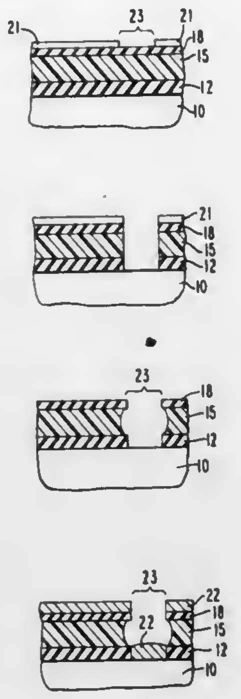
depositing a layer of a polyamide on the layer of first material;

depositing at least one layer of masking material on the polyimide;

defining openings to the surface of the semiconductor structure through the at least one layer of masking material, the layer of polyimide, and the layer of first material, including the step of isotropically etching substantially only the polyimide in the openings;

depositing second material on the semiconductor structure and on the at least one layer of masking material; and

removing the polyimide and the second material deposited thereon.



4,440,805
STABILIZED DISPERSION FOR ELECTROLESS PLATING CATALYSTS USING CORROSION INHIBITORS AS STABILIZERS

Nathan Feldstein, 63 Hemlock Cir., Princeton, N.J. 08540

Continuation-in-part of Ser. No. 105,865, Dec. 21, 1979, Pat. No. 4,273,804, which is a division of Ser. No. 941,044, Sep. 11, 1978, Pat. No. 4,180,600, which is a continuation-in-part of Ser. No. 820,904, Aug. 1, 1977, Pat. No. 4,131,699, which is a continuation of Ser. No. 625,326, Oct. 23, 1975, Pat. No. 4,048,354, and a continuation-in-part of Ser. No. 938,890, Aug. 31, 1978, Pat. No. 4,265,942. This application May 1, 1981, Ser. No. 259,631

The portion of the term of this patent subsequent to Dec. 26, 1995, has been disclaimed.

Int. Cl.^{3} C23C *3/02*

U.S. Cl. 427—97 **13 Claims**

1. A process for the preparation of a substrate prior to electroless metal deposition or chemical metal deposition comprising the step of contacting said substrate with a stable aqueous colloidal dispersion which comprises at least one non-noble catalytic metal capable of electroless plating initiation, and a stabilizer, said stabilizer being a corrosion inhibitor for non-noble metal(s).

4,440,806
RAINFALL SANDER

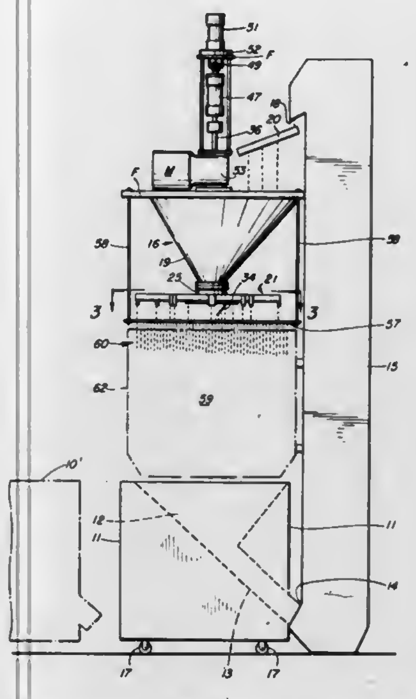
Georges Muri, Mount Royal, Canada, assignor to Shell-O-Matic Inc., Montreal, Canada

Filed Jul. 13, 1982, Ser. No. 397,908

Int. Cl.^{3} B05D *1/02*

U.S. Cl. 427—180 **10 Claims**

1. A method of coating an article such as a wax pattern with particulate material which comprises providing an article to be coated with a finely divided particulate material, providing a supply of finely divided particulate material, placing said article in downstream relationship to said supply of particulate material, feeding said finely divided particulate material from said supply to form a first central stream of said particulate material, subjecting said stream to the action of a rotating conical flow-controlling member to form an annular stream, feeding said annular stream through a plurality of hollow rotating arms of varying lengths located peripherally of said rotating conical flow controlling member and forming said stream into a plurality of rotating smaller finely divided steams which are radially dispersed relative to the axially flow direction of said first stream, and which form a shower of said particulate material dispersed in a substantially uniform flow of said particulate material over a given area downstream of said supply thereof whereby a substantially uniform coating is provided on said article.



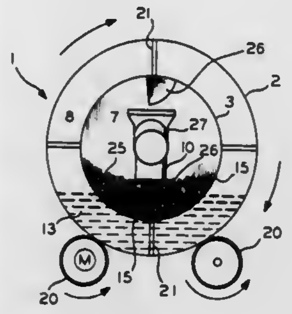
4,440,807
PROCESS AND APPARATUS FOR MAKING RUBBER COVERED CARBON BLACK PELLETS

Thomas J. Gunnell, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 145,908, May 2, 1980, Pat. No. 4,337,294. This application Apr. 13, 1982, Ser. No. 367,857

Int. Cl.^{3} B05D *7/00;* **B32B** *9/00, 5/16*

U.S. Cl. 427—221 **7 Claims**



1. A process for producing a coated carbon black pellet, which pellet consists essentially of a carbon black pellet core which is substantially free of rubber and a layer of rubber surrounding said carbon black pellet core, said process comprising coating a carbon black pellet core with a layer of said rubber.

4,440,808
METHOD OF UNIFORMLY APPLYING LIQUID TREATING MEDIA TO FORAMINOUS WORKPIECES

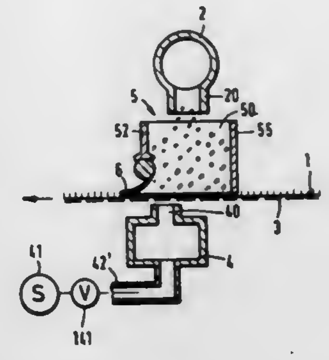
Mathias Mitter, Schloss Holte, Fed. Rep. of Germany

Filed Nov. 25, 1981, Ser. No. 325,059

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1980, 3044408

Int. Cl.^{3} B05D *3/12*

U.S. Cl. 427—244 **10 Claims**



1. A method of uniformly applying a liquid treating medium to a foraminous workpiece, such as a textile web, having an upper surface and a lower surface, comprising the steps of foaming the liquid treating medium; depositing the foamed medium directly on the upper surface of the workpiece within a circumambiently restricted area which is open at the top for admission of foamed medium thereinto and extends downwardly all the way to the upper surface of the workpiece; applying suction to the lower surface of the workpiece to draw some of the foamed medium and liquid released by bursting of the foam bubbles into the workpiece at a single location below the restricted area; and thereafter mechanically pressing additional foamed medium from within the restricted area into the upper surface of the workpiece.

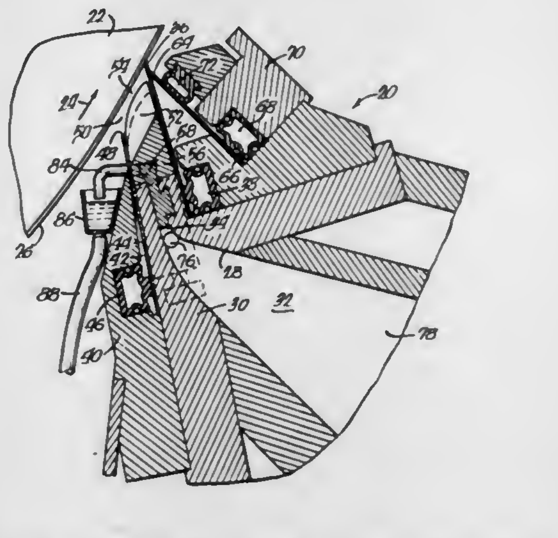
4,440,809
METHOD AND APPARATUS FOR RECIRCULATING COATING LIQUID IN A PAPER COATING APPARATUS

William C. Vreeland, Wisconsin Rapids, Wis., assignor to Consolidated Papers, Inc., Wisconsin Rapids, Wis.

Filed Jan. 17, 1983, Ser. No. 458,472

Int. Cl.^{3} B05C *3/18*

U.S. Cl. 427—356 **18 Claims**



1. In an improved applicator for applying coating liquid to a moving web of paper carried through an application zone, wherein the applicator is of the type comprising a body portion defining a chamber therein having an elongate opening thereto extending substantially transversely across the web; a doctor blade extending from a rear side of said chamber opening substantially transversely across and against the web; an orifice plate at a front side of said chamber opening extending substan-

tially transversely across and toward but spaced from the web to define a gap therewith; means for sealing opposite side ends between said doctor blade and orifice plate, said means for sealing, doctor blade and orifice plate defining said application zone therebetween; and means for introducing coating liquid through said chamber opening and into said application zone for application onto the web, the improvement comprising means at each side end of said opening and application zone for withdrawing coating liquid from an area of said opening and application zone below said means for sealing and said orifice plate gap, whereby stagnant areas of coating liquid do not form at said side ends of said opening and zone and stagnate coating does not build up thereat.

4,440,810
METHOD FOR DECORATING LOW-EXPANSION CERAMIC ARTICLES

Ray B. Forker, Jr., Beaver Dams, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Apr. 22, 1982, Ser. No. 370,678

Int. Cl.^{3} B05D *3/02*

U.S. Cl. 427—376.2 **6 Claims**

1. A method for glazing a low-expansion glass, glass-ceramic or ceramic substrate wherein a fluid suspension of a fritted, high-expansion enameling composition is sprayed onto the surface of the substrate to form a coating and the coating is dried and fired to fuse the composition into a smooth enamel layer, characterized in that:

(a) the fluid suspension consists essentially of a fritted, high-expansion enameling composition and a non-aqueous vehicle, the enameling composition having a fired expansion coefficient of about $45-75\times10^{-7}/°C$. and comprising a flux glass with a composition comprising 25–40% SiO_2, 40–60% PbO, 3–10% ZrO_2, 4–12% B_2O_3 and 0.2–3% Li_2O, and the non-aqueous vehicle comprising a squeegee oil base and a volatile solvent; and

(b) the sprayed coating is applied in a thickness such that the smooth enamel layer does not exceed about 18 microns in thickness.

4,440,811
METHOD FOR COATING AND AN APPARATUS FOR COATING

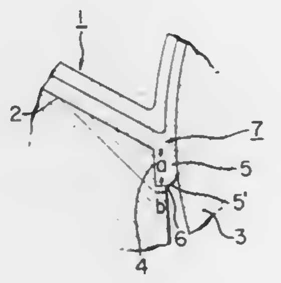
Yosatomi Hitaka, Hino, and Takemasa Namiki, Iruma, both of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 157,213, Jun. 6, 1980, abandoned. This application Feb. 11, 1982, Ser. No. 348,078

Claims priority, application Japan, Jun. 13, 1979, 54-73465

Int. Cl.^{3} B05D *1/26, 1/34*

U.S. Cl. 427—402 **3 Claims**



1. A method for reducing streak defects during the coating of one or more layers of a coating liquid onto a moving substrate from a coating hopper having a coating surface comprising the steps of:

supplying a coating liquid from an efflux end of a coating hopper as a layer;

forming a bead of the supplied coating liquid, said bead bridging the coating hopper and the substrate with part of said bead formed at an entering side of the substrate relative to the efflux end and an end of said bead at the entering side in contact with the hopper;

holding said end of said bead at a liquid end-holding portion of a liquid puddle arranged on the coating hopper, said liquid end-holding portion being formed on said coating surface of the coating hopper by notching said coating surface, said notched coating surface containing an interfering surface substantially perpendicular to the flow of said layer of coating liquid, said interfering surface interfering with the flow of said layer of coating liquid; and

moving the substrate in contact with the coating liquid so that the substrate is coated with the coating liquid.

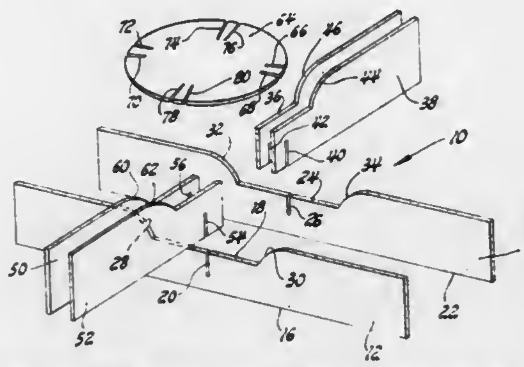
4,440,812
COLLAPSIBLE CENTERPIECE

Kay L. Norrid, 29772 Robert Dr., Livonia, Mich. 48150

Filed Jul. 19, 1982, Ser. No. 399,442

Int. Cl.^{3} A47B *3/06*

U.S. Cl. 428—12 **4 Claims**



1. A decorative, collapsible centerpiece, comprising:

a first pair of elongated legs, each leg being formed of a stiff, deformable sheet material, each leg having a lower longitudinal side edge, and an upper longitudinal side edge;

a second pair of elongated legs formed of a stiff deformable sheet material, each leg having a lower longitudinal side edge, and an upper longitudinal side edge;

at least one of said pairs of legs having slot means in its mid-section for receiving the other of said pairs of legs, such that the lower longitudinal side edges of both of said pairs of legs are disposed in a common plane to cooperate to form a self-supporting assembly disposed along their lower longitudinal side edges; and

a planar support formed of a stiff sheet material disposed on the upper longitudinal side edges of both of said pairs of legs, said planar support having slot means in its peripheral edge receiving a portion of each of said legs such that it is separated from the other of said legs.

4,440,813
SCALE MODELLING

Peter Foo, Greenwood Rd., Liverpool, England L18 7HT

Filed Jan. 3, 1983, Ser. No. 455,320

Int. Cl.^{3} A63H *33/04;* **B44F** *9/04*

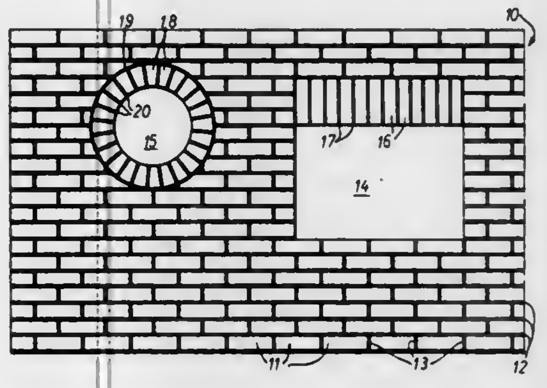
U.S. Cl. 428—15 **11 Claims**

1. A method of modelling walls and like structures comprising the steps of:

(1) representing a strip **(30)** of bricks from a elongated rectangular cross-sectionally shaped material having transverse slots **(31)** therein, the spaces between said slots representing bricks or the like;

(2) inserting thin rectangularly shaped strips **(32)** into the slots **(31)**, so that said strips **(32)** represent cross joints of a simulated wall;

(3) attaching to the lower surface of strip **(30)** a thin elongated strip **(33)** dimensioned for simulating a bed-joint strip of a simulated wall; and



(4) repeating steps (1) through (3) so as to form a simulated wall or like structure.

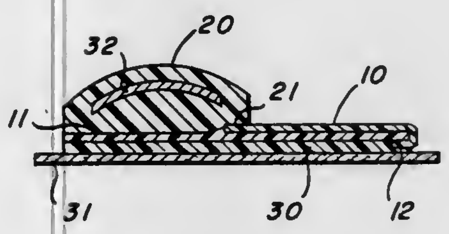
4,440,814
OFFSET TWO-STRIPE DECORATIVE MOLDING

Dennis R. Wolters, Dayton, Ohio, assignor to Protective Treatments, Inc., Dayton, Ohio

Filed Jun. 29, 1982, Ser. No. 393,404

Int. Cl.^{3} B32B *3/04;* **B60R** *13/04*

U.S. Cl. 428—31 **6 Claims**



1. An elongated composite molding strip having two laterally offset portions of different character providing a two-stripe appearance comprising, a first adherent elastomer tape having a decorative film positioned to cover one side thereof, a first side margin of said film projecting beyond one side margin of said first tape and being folded thereunder, a decorative molding positioned on the uncovered side of said first tape, one side margin of said molding being coextensive with the other side margin of said first tape and the other side margin of said molding extending over the adjacent side margin of said film, and a second adherent elastomer tape underlying said first elastomer tape and coextensive therewith, said second elastomer tape trapping said folded under side margin of said film and providing an exposed adherent undersurface.

4,440,815
CLEAR, AUTOCLAVABLE PLASTIC FORMULATION FOR MEDICAL LIQUID CONTAINERS

Mostafa Zomorodi, Gurnee, Ill., and Alan J. Trieber, Seabrook, N.H., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 278,253, Jun. 29, 1981, abandoned. This application Sep. 8, 1983, Ser. No. 530,444

Int. Cl.^{3} C08L *53/02, 53/00, 23/08, 23/12*

U.S. Cl. 428—35 **9 Claims**

1. A clear, flexible, thermoplastic material capable of being processed into hollow shapes by conventional plastic processing methods and subsequently autoclaved comprising:

(a) from about 45% to about 70% by weight of a polyolefin consisting essentially of polypropylene, and copolymers thereof, admixed with,

(b) from about 5 to about 25% by weight of ethylene lower-alkyl acrylate polymers,

(c) from about 10% to about 40% by weight of a thermoplastic elastomer composition consisting essentially of an ethylene butylene block copolymer having terminal polystyrene units, and

(d) from 0 to about 15% of a high boiling point petroleum distillation byproduct.

4,440,816
RUBBER-MODIFIED ASPHALT COMPOSITION

William E. Uffner, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 167,986, Jul. 14, 1980, abandoned. This application Mar. 22, 1982, Ser. No. 360,729

Int. Cl.^{3} D06N *7/00;* **C08L** *95/00*

U.S. Cl. 428—40 **30 Claims**

15. A glass fiber asphalt composite comprising a bundle of glass fibers, said bundle of glass fibers having been impregnated with a non-tacky rubber-modified asphalt, and an adhesive coating on one surface of the impregnated bundle, said adhesive coating comprising an asphalt which has been reacted with (1) a polymerizable vinyl aromatic monomer and (2) a depolymerized rubber.

19. A composite as defined in claim 15 which includes a removable protective strip overlying said adhesive coating.

4,440,817
MEANS FOR AN ELASTIC BODY WITH PROTECTIVE LAYER

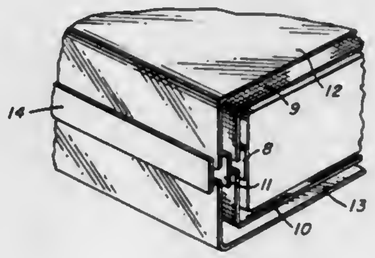
Lars Ahlm, Ulricehamn, Sweden, assignor to Timmele Laminering AB, Ulricehamn, Sweden

Filed Jun. 24, 1982, Ser. No. 391,688

Claims priority, application Sweden, Jul. 3, 1981, 8104154

Int. Cl.^{3} A47C *27/15;* **B32B** *3/04, 3/06*

U.S. Cl. 428—71 **9 Claims**



1. An integrated elastic body comprising a predominantly open cell foam plastic core, an inner noise suppressing fabric layer overlying said core and stabilized relative thereto, and an outer non-permeable plastic protective layer overlying said inner layer and unitarily bonded to said inner layer and said core, wherein said body further comprises attachment strips interposed between said core, said inner fabric layer and said outer protective layer, and a covering strip disposed over at least a portion of said outer protective layer.

4,440,818
FLOOR MAT CONNECTOR DEVICE

Walter Buchan, Norton, Mass.; Paul P. Cardin, Woonsocket, and Norman M. Fain, Providence, both of R.I., assignors to Teknor Apex Company, Pawtucket, R.I.

Filed Mar. 30, 1983, Ser. No. 481,051

Int. Cl.^{3} B32B *3/12*

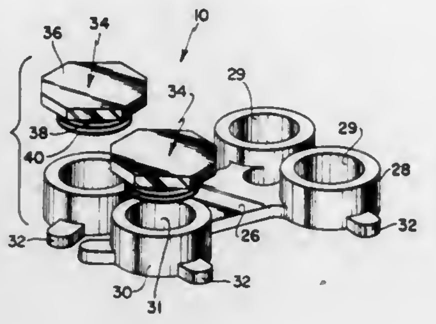
U.S. Cl. 428—99 **10 Claims**

1. A connector device for interconnecting floor mats and the like of the type having a base portion with a plurality of apertures therethrough and a plurality of supporting feet or the like which maintain the base portion in at least slightly upwardly spaced relation to a supporting surface therebeneath, said connector device comprising:

a. a connector body having a thickness not substantially greater than the height of said supporting feet;

b. a first connector element attached to said body and extending upwardly therefrom into an aperture adjacent the periphery of a first of said mats from the underside of said first mat;

c. a second connector element attached to said body and extending upwardly therefrom into an aperture adjacent the periphery of a second of said mats from the underside of said second mat, said connector body extending between said first and second mats; and



d. a plug element received in said second mat aperture from the upper side of said second mat and attached to said second connector element, at least a portion of said plug element being a greater dimension than said second mat aperture and engaging at least a portion of said second mat base portion to prevent the withdrawal of said second connector element.

4,440,819
INTERCONNECTION OF UNIDIRECTIONAL FIBER ARRAYS WITH RANDOM FIBER NETWORKS

Robin W. Rosser, Santa Monica, and Leon B. Keller, Palos Verdes Estates, both of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Dec. 27, 1982, Ser. No. 453,429
Int. Cl.³ B32B *5/08, 5/10, 5/26, 5/28*
U.S. Cl. 428—107 **21 Claims**

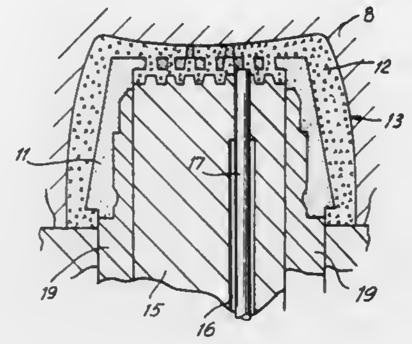
1. A multidirectional fiber array comprising high strength, high modulus unidirectional fibers interconnected with random fiber networks of high strength polymer fibers.

8. A process for preparing a multidirectional fiber array comprising unidirectional fibers, interconnected with high strength polymer fibers, which comprises placing unidirectional fibers in a solution comprising fiber-forming polymeric material in a solvent, and cooling the resultant solution while subjecting it to the application of sonic vibrations.

4,440,820
PLASTIC MOLDING

Masahiko Shiho, Suzaka, and Yasunori Sato, Nagano, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 24, 1981, Ser. No. 334,421
Claims priority, application Japan, Dec. 24, 1980, 55-183491
Int. Cl.³ B32B *3/24*
U.S. Cl. 428—120 **2 Claims**



1. A plastic molding comprising

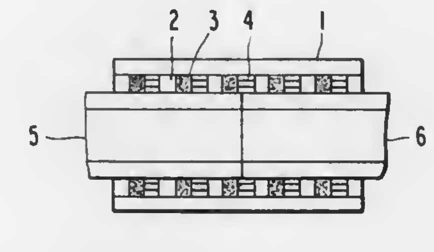
a first part molding of a determined color having a top and projections formed at said top and defining an enclosed area, said first part molding having a plurality of scattered through holes formed therein, each of said through holes being positioned in a matrix configuration to maintain a predetermined distance between adjacent through holes, at least one of said projections corresponding to at least one of said through holes, all or some of the corresponding through holes being formed within said enclosed area; and

a second part molding of a color different from that of said first part molding adhered to the top of said first part molding including said enclosed area to permit exposure of the face at the end of said one of said projections, said second part molding being adhered to at least one part of said top and back of said first part molding to permit said first part molding to be buried in the plastic material of said second part molding, said plastic material on said top and back being joined together via said through holes, with part of said plastic material on said back being filled in said enclosed area via at least one of said through holes.

4,440,821
HEAT SHRINKABLE MATERIAL

Minoru Komura, and Yasuhiro Moriyama, both of Ibaraki, Japan, assignors to Nitto Electric Industrial Co., Ltd., Ibaraki, Japan

Filed Apr. 17, 1980, Ser. No. 141,225
Claims priority, application Japan, Apr. 20, 1979, 54-53774[U]
Int. Cl.³ B32B *3/10*
U.S. Cl. 428—195 **1 Claim**



1. A heat shrinkable material suitable for covering terminals or joints of electric cables and fluid transport pipes consisting essentially of:

(1) a heat shrinkable substrate,

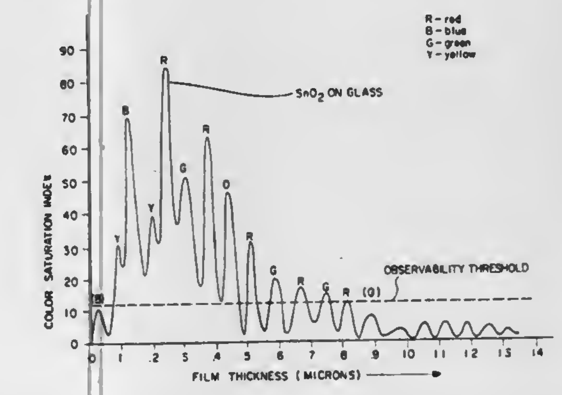
(2) a layer of a first adhesive (A) provided in a dot-, net-, or stripe-like pattern form on one side of the substrate, said first adhesive (A) being capable of adhering at ordinary temperature and being fluid at ordinary temperature,

(3) a layer of a hot-melt second adhesive (B) provided on the same side of the substrate on certain areas where none of the first adhesive (A) has been coated, said hot-melt second adhesive (B) being incapable of adhering at ordinary temperature but capable of adhering when heated, and

(4) a layer of a third adhesive (C) provided on the same side of the substrate on the areas contiguous to the layer formed by the layer of first adhesive (A) and the layer of hot-melt second adhesive (B) where none of the first adhesive (A) or the hot-melt second adhesive (B) has been coated, said third adhesive (C) being of the thermosetting type.

4,440,822
NON-IRIDESCENT GLASS STRUCTURES

Roy G. Gordon, 22 Highland St., Cambridge, Mass. 02138
Continuation of Ser. No. 103,509, Dec. 14, 1979, abandoned, which is a continuation-in-part of Ser. No. 784,542, Apr. 4, 1977, Pat. No. 4,187,336. This application May 7, 1981, Ser. No. 261,371
Int. Cl.³ B32B *7/02, 17/06*
U.S. Cl. 428—216 **8 Claims**



1. A transparent glass product substantially free of iridescent appearance, having a glass substrate bearing a coating which is substantially uniform across the surface area thereof, said coating consisting of

(a) a lower coating zone comprising a material formed of at least two components which is characterized by a gradual change from a first composition proximate to said substrate having a relatively large proportion of a second component; and

(b) an upper coating zone having a refractive index substantially the same as that of said second component; wherein said lower coating zone is substantially linear with respect to its molecular proporation of said first component, as a function of distance from the glass substrate; wherein said first component is SiO_2, said second component is SnO_2, and said upper coating zone is fluorine-doped tin oxide and wherein said material forming said lower coating zone contains tin oxide in a quantity below 40 percent at the interface of said lower coating zone which is closest to said glass substrate.

4,440,823
PRINTED BOARD FOR ELECTRICAL CIRCUITS

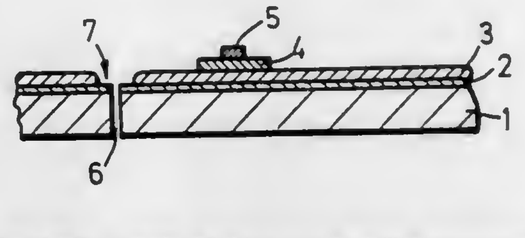
Horst Hoffmann, Höhenkirchen, Fed. Rep. of Germany, assignor to Wilhelm Ruf KG, Munich, Fed. Rep. of Germany
Division of Ser. No. 246,153, Mar. 23, 1981, abandoned. This application Jun. 8, 1982, Ser. No. 386,254
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1980, 3013667
Int. Cl.³ B32B *3/00, 7/00;* **C23F** *1/02;* **B44C** *1/22*
U.S. Cl. 428—209 **1 Claim**

1. A printed circuit board for an electrical circuit, said printed circuit board comprising:

(a) an insulating board;

(b) a copper layer on said insulating board; and

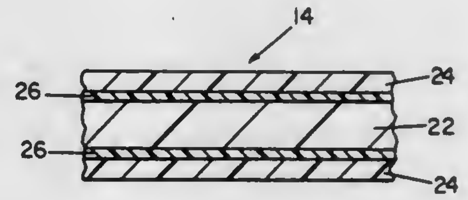
(c) an etch resistant, electrically conducting lacquer layer



covering said copper layer is protected from oxidation by said electrically conducting lacquer layer and its conductivity is enhanced.

4,440,824
THERMOFORMABLE COEXTRUDED MULTILAYERED STRUCTURE

Laszlo J. Bonis, Swampscott, Mass., assignor to Composite Container Corporation, Medford, Mass.
Continuation-in-part of Ser. No. 314,118, Oct. 23, 1981, abandoned. This application Oct. 4, 1982, Ser. No. 432,421
Int. Cl.³ B65D *5/64;* **B32B** *27/08*
U.S. Cl. 428—216 **12 Claims**



1. A coextruded multilayered structure comprising

a layer of a polyolefin of the group of polyethylene and polypropylene, to provide effective moisture barrier properties,

a layer of high impact polystyrene,

said polystyrene layer providing a printable and heat sealable surface and thermoformability during manufacture, and

an adhesive tie layer between said polystyrene and polyolefin layers,

said tie layer consisting essentially of one of the group of ethylene-vinyl acetate copolymer and polyolefin with acrylic acid additive.

4,440,825
LAMINATE WITH SKIN BASED ON AES GRAFT COPOLYMER

Charles F. Paddock, Southbury, Conn., assignor to Uniroyal, Inc., New York, N.Y.
Filed Aug. 9, 1982, Ser. No. 406,597
Int. Cl.³ B32B *3/26*
U.S. Cl. 428—318.6 **10 Claims**

1. A laminate having at least two layers, one of which comprises an uncured flexible skin layer of AES graft copolymer composition of resin-forming monomeric material on an ethylene-propylene-non-conjugated diene terpolymer rubber spine, and the other layer being a rigid foamed plastic compatible with AES, whereby the laminate is reprocessible.

4,440,826
DECORATIVE SURFACE COVERING

Jack H. Witman, East Hempfield Township, Lancaster County, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.
Filed Jan. 24, 1983, Ser. No. 460,126
Int. Cl.³ B32B *27/14*
U.S. Cl. 428—327 **16 Claims**

1. A decorative surface covering comprising

a backing material,

optionally a design disposed on said backing material, and
a thermoplastic coating material disposed on said backing material having translucent or transparent chips embedded therein, the dry thickness of said coating material being not greater than the thickness of said chips, said chips being embedded such that said coating material is extruded from beneath said chips, thereby making said backing material and said optional pattern visible through said chips.

4,440,827

PROCESS FOR PRODUCING RECORDING PAPER FOR INK JET RECORDING AND OPTICAL BAR CODE PRINTING

Shigehiko Miyamoto, Kamagaya, and Yoshinobu Watanabe, Matsudo, both of Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 334,380, Dec. 24, 1981, abandoned. This application Feb. 9, 1983, Ser. No. 465,189
Claims priority, application Japan, Dec. 25, 1980, 55-184682
Int. Cl.³ B32B *5/16;* **B05D** *3/02, 3/12;* **G01D** *15/34*
U.S. Cl. 428—327 **13 Claims**

1. A process for producing a recording paper for ink jet recording and optical bar code printing having, on the surface of a support, a coating layer comprising an inorganic pigment and an aqueous polymeric binder characterized by obtaining said coating layer by twice or more repeating a coating step with the same coating color which comprises coating a coating color prepared by mixing 100 parts by weight of said inorganic pigment containing 50–100 parts by weight of synthetic silica with 5-18 parts by weight of said aqueous polymeric binder in an amount of 2-9 g solid/m² per one side of the support by one run of coating procedure and then drying the coating color.

10. A recording paper obtained by the process defined by claim 1.

4,440,828

SUBSTRATE FOR A MICROWAVE ELECTRONIC CIRCUIT AND A METHOD FOR THE MAKING OF SAID SUBSTRATE

Jean-Claude Resneau; Pierre Roset, and Jean Doyen, all of Paris, France, assignors to Thomson-CSF, Paris, France
Filed Apr. 14, 1983, Ser. No. 484,994
Claims priority, application France, Apr. 16, 1982, 82 06599
Int. Cl.³ H01M *6/20, 2/16*
U.S. Cl. 428—334 **5 Claims**

1. A substrate for a microwave circuit, comprising a plate comprising fused grains of boron nitride comprising 42% boron, 53.5% nitride, between 1:5 and 2.5% oxygen and 1.5% calcium having two large faces, and a thin glass film deposited at least on one face of said faces, thereby permitting surface metallization of said face and ensuring cohesion of the grains of born nitride wherein said glass film has a dielectric constant substantially equal to the dielectric constant of quartz or of said boron nitride.

4,440,829

COATED BONDING TAPES HAVING IMPROVED PEEL STRENGTH COMBINED WITH LOW TEMPERATURE FLEXIBILITY

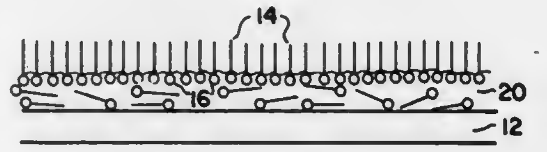
Michael J. Gerace, Centerville, and Jeffry D. Adams, Vandalia, both of Ohio, assignors to Protective Treatments, Inc., Dayton, Ohio
Filed Jun. 29, 1982, Ser. No. 393,374
Int. Cl.³ C09J *7/02;* **B60R** *13/00*
U.S. Cl. 428—343 **15 Claims**

1. A coated bonding tape having improved peel strength combined with low temperature flexibility comprising, a layer of impact-resistant material constituted by a milled layer of pigmented and plasticized elastomer coated with a pressure-sensitive adhesive coating, said elastomer layer having an elastomer component consisting essentially of a mixture of butyl rubbers, pigment and plasticizer for said elastomer sufficient to provide a half thickness reduction at a pressure below 800 psi, at least about 45% of said butyl rubber mixture being cross-linked, at least about 20% of said butyl rubber mixture being noncross-linked with an average molecular weight above about 250,000, and at least about 60% of said pigment having reinforcing character, the proportion of plasticizer providing a tape body having a tensile strength of at least about 30 psi before plastic flow begins, and said pressure-sensitive adhesive coating being selected to provide a bond to said tape body strong enough to force said bonding tape to fail cohesively when peeled from a substrate.

4,440,830

SUBSTRATES COATED WITH RELEASE COMPOSITION BASED ON POLYVINYL ALCOHOL AND COMPOSITES WITH PRESSURE SENSITIVE ADHESIVES

Lawrence K. Wempe, R.D. #1, Center Valley, Pa. 18034
Division of Ser. No. 254,833, Apr. 16, 1981, Pat. No. 4,386,183. This application Oct. 28, 1982, Ser. No. 437,406
Int. Cl.³ C09J *7/02;* **B32B** *9/04*
U.S. Cl. 428—352 **22 Claims**

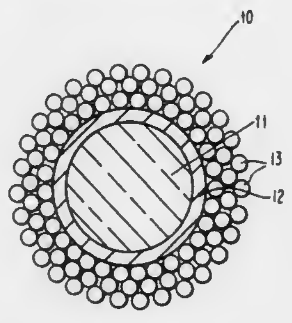


1. A substrate coated with a release coating composition consisting essentially of:
(a) a polyvinyl alcohol,
(b) a migratable release promoting agent which is a surfactant that in a 10% aqueous polyvinyl alcohol solution at 5 wt.% based on the polyvinyl alcohol provides a dried film on a glass plate having a release value of less than about 0.91 pounds per inch determined by applying a 0.004 inch coating of the surfactant modified polyvinyl alcohol solution to the glass plate, heating the coated glass plate for about 10 minutes at 120° to 125° C. to yield a dried film, applying a strip of masking tape to the film by rolling once with a 4.3 pound roller and pulling an edge of the tape away from the film at a 180° angle,
(c) a water soluble salt of a coordinating metal, and
(d) a water soluble boron compound.

4,440,831

ZINC SILICATE PHOSPHOR PARTICLES AND METHOD FOR MAKING THEM

James M. Brownlow, Crompond, and Ifay F. Chang, Chappaqua, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 30, 1981, Ser. No. 280,147
Int. Cl.³ C09K *11/10, 11/16, 11/20;* **H01J** *29/26*
U.S. Cl. 128—404 **17 Claims**



1. An improved zinc silicate phosphor comprising particles with
an inner core of silicon and oxygen rich material,
an intermediate region rich in manganese oxides, and
an outer portion rich in zinc and oxygen.

8. An improved zinc silicate phosphor comprising particles with
an inner core of silicon and oxygen rich material,
an intermediate region rich in manganese oxides, and
an outer portion rich in zinc and oxygen,
said phosphor having been a product made by the process of:
(a) providing particles of silicic acid to sizes on the order of one micrometer and larger,
(b) mixing said silicic acid particles in an aqueous solution of Mn, Mg and As cations and highly active anions,
(c) adding zinc oxide particles to the result of step (b), drying, and
(d) firing the product of step (c) whereby a reacted oxide product is produced.

4,440,832

METHOD AND MATERIAL FOR PREPARING A SURFACE FOR WINTER SPORTS

Erling O. Wiig, 60 Amigo La., Walnut Creek, Calif. 94596
Continuation of Ser. No. 941,778, Sep. 13, 1978, abandoned. This application Dec. 14, 1979, Ser. No. 103,527
Int. Cl.³ B05D *5/00*
U.S. Cl. 428—405 **12 Claims**

11. A composition of matter useful for providing a winter sports surface, comprising:
a plurality of sodium chloride crystals; and
an aqueous solution of dimethyl silicone, the solution impregnated upon the crystal surfaces and about the crystal lattice structure of substantially each sodium chloride crystal.

4,440,833

COPPER-LAMINATED HARD PAPER MADE OF A FIRE RESISTANT LAMINATE

Arnold Franz, Troisdorf-Spich, and Siegfried Koepnick, Troisdorf, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany
Filed Oct. 28, 1982, Ser. No. 437,305
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1981, 3143121
Int. Cl.³ B32B *27/00, 15/10*
U.S. Cl. 428—425.1 **4 Claims**

1. A copper-laminated hard paper comprising a fire resistant laminate formed of a cellulose-containing substrate material and an impregnating varnish of a phenol-resol with additives of plasticizers and flame retardants, said impregnating varnish having the following composition, by weight:

ammoniacal-condensed phenol-resol resin	35–50%
low-molecular phenolic resin	0–12%
diphenyl cresyl phosphate	20–35%
hexamethylenetetramine	1–6%
tetrabromobisphenol A	0–5%
pentabromodiphenyl ether	0–3%
and a blocked polyetherurethane component comprised of a reaction product of polyethylene glycol, polypropylene glycol and p-nonylphenol with toluene-2,4-diisocyanate	5–20%
having the following composition, by weight	
polyethylene glycol	15–20%
polypropylene glycol	50–60%
toluene-2,4-diisocyanate	8–12%
nonylphenol	10–15%

3. An impregnating varnish for producing hard paper laminates which contains, by weight:

ammoniacal-condensed phenol-resol resin	35–50%
low-molecular phenolic resin	0–12%
diphenyl cresyl phosphate	20–35%
hexamethylenetetramine	1–6%
tetrabromobisphenol A	0–5%
pentabromodiphenyl ether	0–3%
and a blocked polyetherurethane component comprised of a reaction product of polyethylene glycol, polypropylene glycol and p-nonylphenol with toluene-2,4-diisocyanate	5–20%
having the following composition, by weight	
polyethylene glycol	15–20%
polypropylene glycol	50–60%
toluene-2,4-diisocyanate	8–12%
nonylphenol	10–15%

4,440,834

PROCESS FOR THE MANUFACTURE OF TURBINE BLADES COOLED BY MEANS OF A POROUS BODY AND PRODUCT OBTAINED BY THE PROCESS

Jean-Pierre P. A. Aubert, Charenton, and Jacques P. H. Tirole, Sevres, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, S.N.E.C.M.A., France
Filed May 27, 1981, Ser. No. 267,540
Claims priority, application France, May 28, 1980, 80 11769
Int. Cl.³ B22F *5/00*
U.S. Cl. 428—554 **11 Claims**

1. A process for making turbine blades comprising the steps of:
(a) forming a hollow turbine blade such that the ends of the blade are open;
(b) temporarily closing one end of the hollow turbine blade;
(c) placing at least one partition in the hollow blade extending from one end of the blade to the other so as to define separate cavities therein;
(d) filling at least one of the separate cavities with a mixture comprising approximately 85% to 99.5% by weight of chips formed of a base metal chosen from the group consisting of nickel, chromium, tungsten, molybdenum, iron, cobalt, and different alloys of these metals, and approximately 15% to 0.5% by weight of a secondary metal selected from the group consisting of tin, indium, gallium, germanium, antimony, and mixtures and alloys of these metals; and,
(e) heating the assembly sufficiently to fuse the secondary metal to thereby join the metal chips to each other and to the walls of the blade.

8. An air-cooled turbine blade comprising:
(a) a hollow turbine blade formed such that the ends of the blade are open;
(b) means to at least temporarily close one end of the blade;
(c) a partition located within the hollow blade and extending from one end of the blade to the other to divide the blade interior into separate cavities; and
(d) a porous filling located in at least one of the cavities, the filling comprising approximately 85% to 99.5% by weight of chips formed of a base metal selected from the group consisting nickel, chromium, tungsten, molybdenum, iron, cobalt and alloys of these metals, and approximately 15% to 0.5% by weight of a secondary metal selected from the group consisting of tin, indium, gallium, germanium, antimony, and mixtures and alloys of these metals, wherein the secondary metal fuses the chips to each other and to the interior walls of the blade such that the chips define a multiplicity of air channels therebetween.

4,440,835

THIN NON-FLAT GAS ELECTRODE, CURRENT COLLECTOR AND PROCESS OF MANUFACTURE

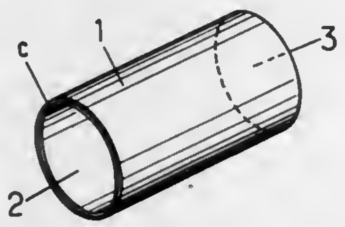
Rene Vignaud, Aulnay Sous Bois, France, assignor to Societe Les Piles Wonder, Saint Ouen, France

Filed Apr. 13, 1982, Ser. No. 367,993

Claims priority, application France, Apr. 13, 1981, 81 07407; Apr. 13, 1981, 81 07408

Int. Cl.^{3} H01M *4/88, 4/86*

U.S. Cl. 429—42 **19 Claims**



1. A process for manufacturing an electrode, particularly a thin gas electrode of any non-flat shape, said process comprising preparing a homogeneous mixture of dry particles of active compounds, said homogeneous mixture comprising at least one compound with electrocatalytic activity or at least one compound with electrocatalytic activity and at least one compound presenting electronic conductivity, and dry fibers of polytetrafluorethylene, adding a lubricant or a mixture of a lubricant and a surfactant so as to cause coating of the particles of the mixture with the lubricant, and shaping the lubricated particles of the mixtute so as to form the electrode.

4,440,836

NONAQUEOUS CELL EMPLOYING AN ANODE HAVING A BORON-CONTAINING SURFACE FILM

John C. Bailey, Columbia Station, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 14, 1982, Ser. No. 449,575

Int. Cl.^{3} H01M *6/16*

U.S. Cl. 429—48 **8 Claims**

1. A nonaqueous cell comprising an active metal anode, a cathode and an ionically conductive electrolyte solution containing a solute dissolved in a nonaqueous solvent and wherein said solute consists of a salt of a first component of a halide of an element selected from the group consisting of Al, Sb, Zr, and P, and a second component of a halide, sulfide, sulfite, oxide or carbonate of calcium or an alkali metal selected from the group consisting of Li, Na, and K; and wherein said active metal anode has a surface layer of a boron-containing material thereon.

4,440,837

POSITIVE ELECTRODE CURRENT COLLECTOR FOR LIQUID METAL CELLS

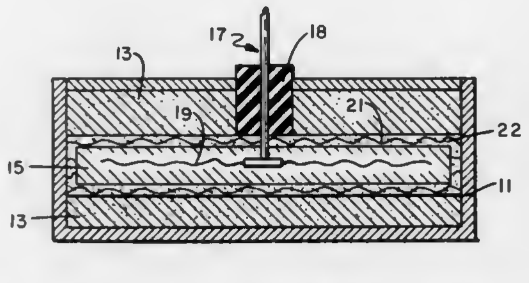
Hiroshi Shimotake, Hinsdale, and Louis G. Bartholme, Joliet, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 27, 1982, Ser. No. 424,112

Int. Cl.^{3} H01M *4/52, 6/36*

U.S. Cl. 429—112 **17 Claims**

1. An electrochemical cell comprising a positive electrode including a sulfide, a negative electrode, a molten salt electrolyte including halides of a metal selected from the alkali metals and the alkaline earth metals in contact with both said positive and negative electrodes, said positive electrode having a current collector selected from the group consisting of copper, aluminum and alloys thereof with an iron coating thereon deposited electrolytically on said current collector from an iron chloride bath, whereby said current collector when subjected to cell voltage forming a sulfur-containing compound on the surface thereof thereby substantially protecting said current collector from further sulfur ions during cell operation.



4,440,838

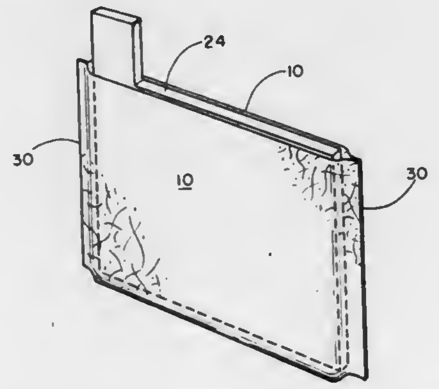
LEAD ACID BATTERY, SEPARATOR THEREFOR

George F. Schmidt, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jun. 7, 1982, Ser. No. 385,737

Int. Cl.^{3} H01M *2/16*

U.S. Cl. 429—250 **9 Claims**



1. A battery separator for physically separating battery plates immersed in a solution of sulfuric acid electrolyte in a lead-acid battery cell, and for holding paste on a grid of a plate of the cell so as to oppose shedding of paste from the surface of the grid, preventing shedded portions of the paste from dropping off the grid and falling to the bottom of the cell as mud, comprising:

(a) a flexible and fibrous polyolefin substrate comprised of a plurality of physically entangled microfibers; and

(b) a wetting composition deposited upon and adhered to external surfaces of said microfibers, said composition comprising of an admixture of:

  (1) an epoxy emulsion comprised of:

    (i) an epoxy compound,

    (ii) a wetting agent, and

    (iii) an emulsifier, and

  (2) a polyamine curing agent, said emulsion and said curing agent when admixed and cured at a suitable curing temperature providing a crosslinked epoxy compound, said crosslinked compound being characterized by having an insoluble property as well as a hydrophilic property in said electrolyte, said wetting agent being of the type which when immersed in and in contact with said electrolyte solution remains on the fiber and does not dissolve into the electrolyte and yet provides rapid wetting, the crosslinked epoxy compound containing tertiary amine groups, in the form of a polymeric salt, said salt being disposed over the surface of said microfibers after neutralization raising the critical surface tension thereof above that of the electrolyte, thus said raised critical surface tension of said microfibers permitting said electrolyte to wet the salt rapidly, the wetting of said salt being substantially permanent while said separator is immersed in said electrolyte.

4,440,839

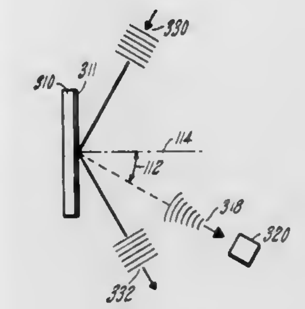
METHOD OF FORMING LASER DIFFRACTION GRATING FOR BEAM SAMPLING DEVICE

Francois M. Mottier, West Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 244,943, Mar. 18, 1981, abandoned. This application Feb. 22, 1983, Ser. No. 468,614

Int. Cl.^{3} G03H *1/04, 1/22, 1/26*

U.S. Cl. 430—2 **8 Claims**



1. A method of forming a cross product diffraction grating on a surface of a laser mirror for deflecting a sampled beam of predetermined wavelength from a beam incident on said mirror surface and focusing said sampled beam, comprising the steps of:

generating a zone plate interference pattern for a Gabor-type holographic zone plate, said zone plate pattern having predetermined parameters for focusing deflected radiation at a predetermined position;

generating a linear interference pattern for a first holographic diffraction grating for deflecting a sample beam of optical radiation towards said predetermined position;

forming a cross product interference holographic pattern in a light-sensitive medium by exposing said light-sensitive medium to said interference patterns; and

transferring said cross product holographic interference pattern to said mirror surface, thereby forming said cross product diffraction grating on said mirror surface.

4,440,840

PHOTOGRAPHIC IMAGE-PROCESSING METHOD

Takashi Yamaguchi, Kawasaki, Japan, assignor to Toppan Printing Co., Ltd., Tokyo, Japan

Filed Oct. 20, 1982, Ser. No. 435,296

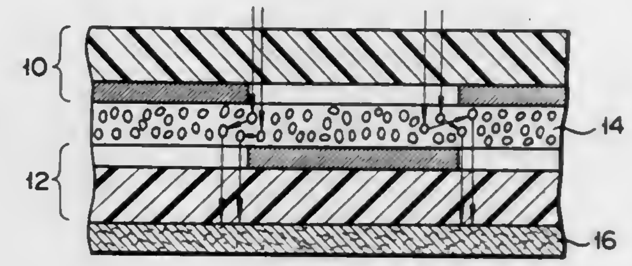
Int. Cl.^{3} G03F *9/00*

U.S. Cl. 430—4 **5 Claims**

1. A photographic image-processing method to obtain a contour image comprising the steps of:

making positive and negative transparent films;

laying up the positive and negative films with a transparent diffusion film therebetween and with the images of the positive and negative films in registration thereby forming a mask; and



exposing a photosensitive sheet to electro-magnetic waves from above by way of the mask which is placed on the photosensitive sheet.

4,440,841

PHOTOMASK AND PHOTOMASK BLANK

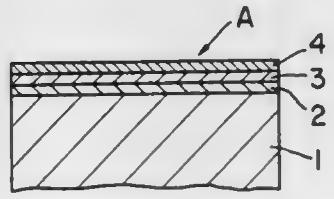
Kazuhiro Tabuchi, Tsurugashima, Japan, assignor to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Filed Nov. 4, 1981, Ser. No. 318,201

Claims priority, application Japan, Feb. 28, 1981, 56-28721; Feb. 28, 1981, 56-28722; May 7, 1981, 56-68693; May 7, 1981, 56-68694

Int. Cl.^{3} G03F *9/00*

U.S. Cl. 430—5 **10 Claims**



1. A photomask blank comprising a transparent substrate, a transparent electroconductive film having a thickness between 10 and 1,000 Å comprising a material selected from the group consisting of molybdenum, tantalum, niobium, titanium, chromium, vanadium, tungsten, zirconium, indium oxide and tin oxide, a transparent chemically resistant protective film comprising a material selected from the group consisting of aluminum oxide, calcium oxide, magnesium oxide, silicon oxide, silicon nitride, cerium oxide, titanium oxide, tantalum oxide and chromium oxide and a masking film comprising at least one layer of a masking material selected from the group consisting of chromium, chromium oxide, chromium nitride, silicon, silicon oxide, tantalum, tantalum nitride, tantalum oxide, iron oxide and combinations thereof, said three films being laminated successively on said transparent substrate, said protective film and said masking film selected so that they are different materials and so that the protective film is chemically resistant to an etchant suitable for etching the masking film.

4,440,842

Patent Not Issued For This Number

4,440,843

ELECTROPHOTOGRAPHIC COPYING PROCESS FOR FORMING POSITIVE OR NEGATIVE IMAGES

Masaji Nishikawa, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan

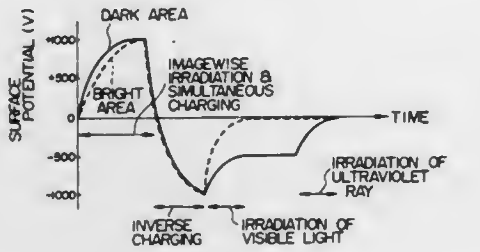
Filed Nov. 9, 1981, Ser. No. 319,328.

Claims priority, application Japan, Nov. 12, 1980, 55-158091

The portion of the term of this patent subsequent to Apr. 3, 2001, has been disclaimed.

Int. Cl.³ G03G *13/22*

U.S. Cl. 430—55 **4 Claims**



1. An electrophotographic copying process for selectively forming a positive or a negative electrostatic latent image utilizing a photosensitive member for electrophotography which includes a conductive layer carrying a sequential lamination of a first and a second photoconductive layer thereon, the first photoconductive layer having a range of photoconductive response extending over a range of light rays from ultraviolet rays to visible light rays and defined as a first wavelength region, the second photoconductiver layer being sensitive only to ultraviolet rays and defined as a second wavelength region, the process comprising a selective use of:

(a) a step of charging the photosensitive member simultaneously with an irradiation thereof with an image of an original which is formed by raditionin the first wavelength region, followed by an inverse charging until the surface potential of the photosensitive member reaches the same magnitude with an opposite polarity to that in the previous charging step, subsequently followed by a uniform exposure of the photosensitive member to radiation in the first wavelength region to trap a charge in a portion of the photosensitive member corresponding to a dark area of the image to form a positive electrostatic latent image; or

(b) a step of charging the photosensitive member simultaneously with an irradiation thereof with an image of an original which is formed by radiation in the first wavelength region, followed by an inverse charging which reduces the entire surface potential to substantially zero, subsequently followed by a uniform exposure of the photosensitive member to radiation in the second wavelength region to trap a charge in a portion of the photosensitive member corresponding to a bright area of the image to form a negative electrostatic latent image.

4,440,844

ELECTROPHOTOGRAPHIC COPYING PROCESS INVOLVING SIMULTANEOUS CHARGING AND IMAGING

Masaji Nishikawa, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan

Filed Nov. 9, 1981, Ser. No. 319,428

Claims priority, application Japan, Nov. 12, 1980, 55-158093

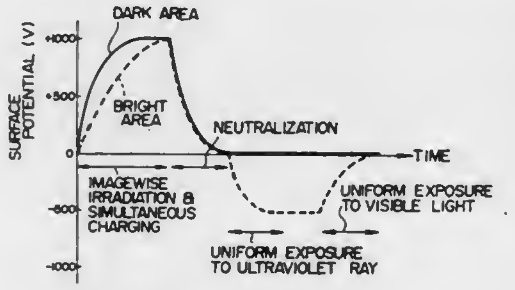
The portion of the term of this patent subsequent to Apr. 3, 2001, has been disclaimed.

Int. Cl.³ G03G *13/22*

U.S. Cl. 430—55 **4 Claims**

1. An electrophotographic copying process for selectively forming a positive or a negative copy utilizing a photosensitive member for electrophotography which includes a conductive layer carrying a sequential lamination of a first and a second photoconductive layer thereon, the first photoconductive layer having a range of photoconductive response extending over a range of light rays from ultraviolet rays to visible light rays and defined as a first wavelength region, the second photoconductive layer being sensitive only to ultraviolet rays and defined as a second wavelength region, the process comprising a selective use of:

(A) a step of charging the photosensitive member simultaneously with an irradiation thereof with an image of an original which is formed by radiation in the first wavelength region, followed by an inverse charging which reduces the entire surface potential to substantially zero, subsequently followed by a uniform exposure of the photosensitive member to radiation of the second wavelength region to trap a charge in a portion of the photosensitive member corresponding to a bright area of the image to form an electrostatic latent image; or



(B) a step of charging the photosensitive member simultaneously with an irradiation thereof with an image of an original which is formed by radiation in the first wavelength region, followed by an inverse charging which reduces the entire surface potential to substantially zero, subsequently followed by a uniform exposure of the photosensitive member to radiation of the first wavelength region to trap a charge in a portion of the photosensitive member corresponding to a bright area of the image to form an electrostatic latent image; and

(C) the step of developing the latent image of (A) or (B) using a toner which is charged with the same polarity for producing a positive copy or a negative copy.

4,440,845

DISAZO COMPOUND, METHOD OF MAKING SAME AND ELECTROPHOTOGRAPHIC ELEMENT USING SAME

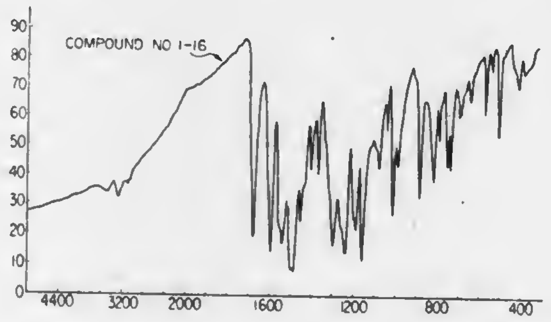
Mitsuru Hashimoto, Numazu, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Jun. 4, 1982, Ser. No. 385,341

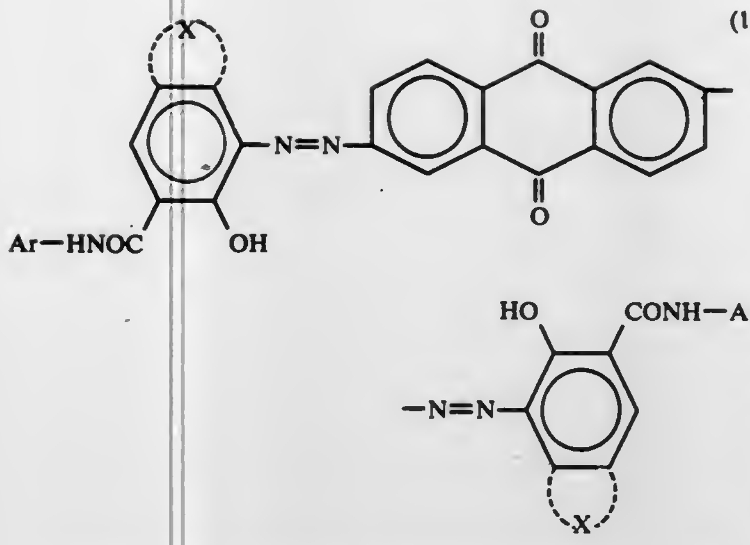
Claims priority, application Japan, Jun. 8, 1981, 56-87845; Jun. 8, 1981, 56-87846

Int. Cl.³ G03G *5/06, 5/14*

U.S. Cl. 430—57 **28 Claims**



1. A multilayer type electrophotographic element comprising a charge carrier generating layer and a charge transfer layer superimposed on an electrically conductive substrate, wherein said charge carrier generating layer contains a disazo compound having the general formula (1):



(1)

wherein X is a substituted or unsubstituted aromatic ring or hetero ring and Ar is a substituted or unsubstituted aromatic ring or hetero ring.

4,440,846

PHOTOCOPY SHEET EMPLOYING ENCAPSULATED RADIATION SENSITIVE COMPOSITION AND IMAGING PROCESS

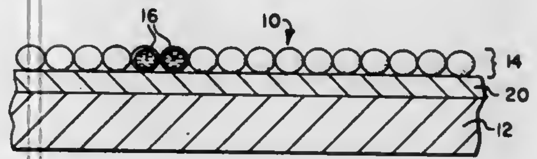
Frederick W. Sanders; Gary F. Hillenbrand; Jonathan S. Arney, and Richard F. Wright, all of Chillicothe, Ohio, assignors to Mead Corporation, Dayton, Ohio

Filed Nov. 12, 1981, Ser. No. 320,643

The portion of the term of this patent subsequent to Aug. 16, 2000, has been disclaimed.

Int. Cl.³ G03C *1/40, 1/00*

U.S. Cl. 430—138 **52 Claims**



1. A photosensitive imaging system in which images are formed by image-wise reaction of one or more chromogenic materials and a developer, said system comprising:

a substrate having front and back surfaces,

a chromogenic material,

a radiation curable composition which undergoes an increase in viscosity upon exposure to actinic radiation,

a coating containing said chromogenic material and said radiation curable composition on one of said front and back surfaces, and

a developer material capable of reacting with said chromogenic material to form a visible image,

said radiation curable composition being encapsulated in rupturable capsules as an internal phase,

wherein images are formed by image-wise exposing said coating to actinic radiation and rupturing said capsules in the image areas such that said internal phase is released from said capsules in the image areas and said chromogenic material and said developer react pattern-wise to form an image.

4,440,847

DIAZO MATERIAL WITH WATERBORNE DRAFTING SUBBING COMPOSITION OF ACRYLIC RESIN AND AZIRIDINE AND PROCESS OF USING

Jesse E. Whittemore, Jr., Guilford, Conn., assignor to AM International, Inc., Chicago, Ill.

Filed Aug. 20, 1982, Ser. No. 409,842

Int. Cl.³ G03C *1/76, 1/52, 5/34*

U.S. Cl. 430—146 **5 Claims**

1. A light sensitive imaging member capable of being written on and erased with increased hardness and enhanced adhesion consisting essentially of an oleophilic support substrate, a dried drafting layer coated from a waterborne latex dispersion consisting essentially of the reaction product of an acrylic resin and an aziridine cross-linking agent on at least one surface thereof and a layer of a light-sensitive diazo composition on at least one surface of said drafting layer.

3. An imaging process which comprises providing the light-sensitive imaging member of claim 1, selectively exposing said diazo composition to actinic radiation, and developing said exposed composition to an alkaline environment in the presence of a coupling agent for said diazo composition to produce a visible image.

4,440,848

VINYL-ESTER POLYMERIC TIMING LAYER FOR COLOR TRANSFER ASSEMBLAGES

David B. Bailey, and Edward P. Abel, both of Webster, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 31, 1983, Ser. No. 462,501

Int. Cl.³ G03C *1/40, 5/54, 1/76*

U.S. Cl. 430—215 **33 Claims**

1. In a photographic assemblage comprising:

(a) a photosensitive element comprising a support having thereon at least one photosensitive silver halide emulsion layer having associated therewith a dye image-providing material;

(b) a dye image-receiving layer;

(c) a neutralizing layer for neutralizing an alkaline processing composition; and

(d) a timing layer comprising a polymer located between said neutralizing layer and said dye image-receiving layer; the improvement wherein said polymer comprises:

  (i) from about 1 to about 30 weight percent of a hydrophilic component comprising a polymerized monovinyl ester of a polybasic acid, and

  (ii) the balance comprising a hydrophobic component comprising a polymerized alkyl vinyl ester and a polymerized aryl vinyl ester.

4,440,849

DYE DIFFUSION TRANSFER PROCESS WITH DEVELOPMENT ACCELERATORS

Werner Krafft, Leverkusen, Fed. Rep. of Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 21, 1982, Ser. No. 390,262

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1981, 3125058

Int. Cl.³ G03C *5/54, 1/40, 5/30*

U.S. Cl. 430—239 **4 Claims**

1. A process for the production of colored images by the dye diffusion transfer process in which an imagewise exposed color photographic recording material, comprising at least one photosensitive silver halide emulsion layer and, associated therewith, a non-diffusing color-providing compound, is developed in surface-to-surface contact with an image-receiving layer using a developer preparation containing a development accelerator, wherein the improvement comprises

1. the color photographic recording material used is one which contains, in association with at least one negative silver halide emulsion layer, a combination of a non-diffus-

ing reducible color providing compound and an ED-compound, and

2. the developer preparation used is one which contains, as development accelerator, a combination of two of the compounds A and B or a combination of a compound C with at least one compound of A and B defined in the following of which
   A is an aliphatic 1,3-diol selected from the group consisting of 1,3-propane diol, 1,3-butane diol, 2,2-dimethyl-1,3-propane-diol, 2-methyl-2-propyl-1,3-propane diol, 2,2-diethyl-1,3-propane diol, 2-ethyl-1,3-hexane diol, 2-methyl-2,4-pentane diol, 2,2,4-trimethyl-1,3-pentane diol and 1,3-diethyl-2-methyl-1,3-propane diol,
   B is 1,4-cyclohexane dimethanol, and
   C is phenoxyethanol.

4,440,850

PHOTOPOLYMERISATION PROCESS WITH TWO EXPOSURES OF A SINGLE LAYER

John G. Paul, Falkirk, Scotland; Bernard P. Stark, Great Shelford, England, and Ewald Losert, Rheinfelden, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 12, 1982, Ser. No. 397,373

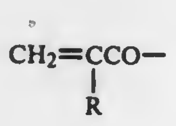
Claims priority, application United Kingdom, Jul. 23, 1981, 8122803

Int. Cl.^{3} G03C ***5/00***

U.S. Cl. 430—325 **13 Claims**

1. A process for production of an image which comprises

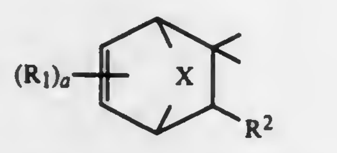
(1) exposing to actinic radiation a layer, supported on a carrier, of a liquid composition containing a compound (A) having in the same molecule both at least one group of formula



$$CH_2{=}\underset{\displaystyle R}{\underset{|}{C}}CO{-}$$

I

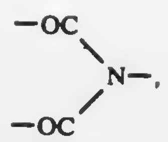
and at least one group of formula



II

such that the layer solidifies and becomes essentially nontacky due to photopolymerisation of (A) through the group or groups of formula I but remains substantially photocrosslinkable, and subsequently P1 (2) exposing as through an image-bearing transparency consisting of substantially opaque and substantially transparent areas at least part of the layer so solidified to a substantially greater amount of actinic radiation such that the further exposed part or parts of the photopolymerised layer undergo photocrosslinking through the group or groups of formula II, and

(3) developing the image by dissolving in a solvent parts of the layer which have not become substantially photocrosslinked, where
   R denotes a hydrogen atom or a methyl group,
   a is zero or an integer of from 1 to 4,
   R_1 denotes a methyl group, or, if a is 1, may alternatively denote an allyl group,
   R^2 denotes a hydrogen atom, a carboxyl group, a carbonyloxyalkyl group (which may be interrupted in the chain by an ether oxygen atom), a carbonyloxyalkene group joined through an oxygen atom to a group of formula I, the alkyl or alkylene group having up to 8 carbon atoms, or together with one of the indicated free valencies, R^2 denotes a cyclic imide group of structure



and

X denotes a methylene bridge, a methylene bridge substituted by one or two of the aforesaid methyl groups R^1, a methylene bridge substituted by the allyl group R^1, or an oxygen atom.

4,440,851

METHOD FOR THE FORMATION OF A DIRECT POSITIVE IMAGE

Yasuo Tosaka, and Keiji Ogi, both of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Oct. 12, 1982, Ser. No. 433,683

Claims priority, application Japan, Oct. 22, 1981, 56-167927

Int. Cl.^{3} G03C ***7/16***

U.S. Cl. 430—378 **8 Claims**

1. A method for the formation of direct positive images wherein a silver halide light-sensitive color two silver halide emulsion layers having different spectral sensitivities coated thereon, said silver halide emulsion being an internal latent image type containing unfogged silver halide crystals, comprising imagewise exposing said photographic material and subsequently subjecting said material to an overall area exposure prior to or during the development thereof to form a direct positive image, wherein said overall area exposure is such that the photographic intensity ratios among said silver halide emulsion layers are not more than six, and the intensity of the overall area exposure has a value between a light intensity value yielding 0.8 times the maximum image density of an emulsion layer, and 10 times of said light intensity value, wherein said photographic intensity ratio is the ratio between photographic intensities of two emulsion layers and said photographic intensity is the reciprocal of the intensity value that corresponds to an image density which is 50% of the maximum when an imagewise-unexposed internal latent type silver halide emulsion layer is subjected to light-intensity scale exposure and the density of the image formed by said layer is measured with a light corresponding to the absorption maximum of the image.

4,440,852

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL CONTAINING OXONAL DYES

Akira Onishi, Hachioji, and Noboru Fujimori, Hino, both of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

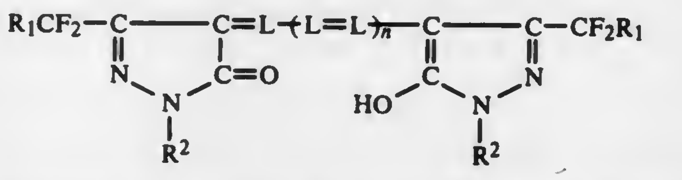
Filed Jun. 14, 1982, Ser. No. 388,131

Claims priority, application Japan, Jun. 25, 1981, 56-99349

Int. Cl.^{3} G04C ***1/84***

U.S. Cl. 430—522 **4 Claims**

1. A silver halide photographic light-sensitive material comprising a support and a layer containing an oxonol dye represented by the following formula (1)



(1)

wherein R_1 is a hydrogen atom, fluorine atom, or a fluorinated alkyl group having from 1 to 4 carbon atoms; R_2 is hydrogen, a substituted or unsubstituted alkyl group, or a substituted or unsubstituted aryl group; n is an integer of 0, 1 or 2; and L is methine group which may be substituted.

4,440,853

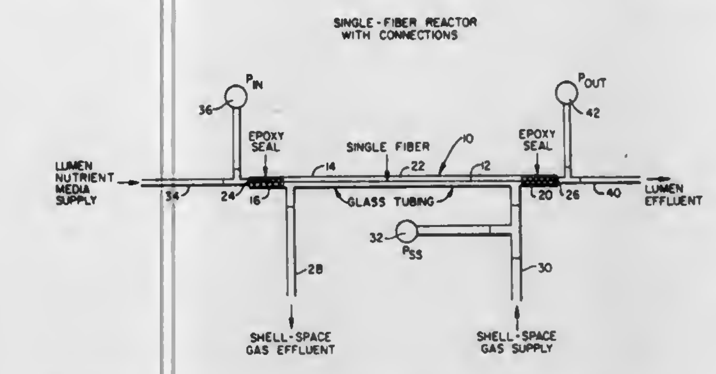
MICROBIOLOGICAL METHODS USING HOLLOW FIBER MEMBRANE REACTOR

Alan S. Michaels, San Francisco; Channing R. Robertson, Stanford, and Stanley N. Cohen, Portola Valley, all of Calif., assignors to Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Continuation of Ser. No. 179,591, Aug. 21, 1980, abandoned. This application Jun. 20, 1983, Ser. No. 504,599

Int. Cl.^{3} C12P ***1/00, 21/00;*** **C12N** ***11/00***

U.S. Cl. 435—68 **8 Claims**



1. A method for continuously transforming a substrate to a product by microbiological means employing microorganisms in a flow reactor, said flow reactor comprising:
   a housing;
   at least one hollow fiber in said housing, said hollow fiber having an inlet port and an outlet port and characterized by having a lumen, a porous membrane surrounding said lumen and having orifices smaller than said microorganisms, said orifices having a maximum diameter of about 0.01 micron, and a spongy supporting wall having asymmetric pores internally communicating through said orifices with said lumen and externally communicating with the volume enclosed by said housing through openings of a size greater than said microorganisms, said openings having a diameter of at least 5 microns; and
   a nutrient medium pervading said housing;
   said method comprising:
   growing microorganisms in said housing under conditions and for a period of time whereby at least 60% of the available volume of said pores in said supporting wall is occupied by said microorganisms at a cell density greater than 10^{12} viable cells/ml., while continually passing substrate containing nutrient medium into said lumen through said inlet port, whereby nutrients and substrate flow into said pores and said substrate is transformed to product by said microorganisms, said product diffusing back through said orifices into said lumen; and
   continuously removing nutrient medium containing product from said lumen through said outlet port.

4,440,854

PREPARATION OF 6-DEOXY-D-FRUCTOSE AND 6-DEOXY-L-SORBOSE

George M. Whitesides, 124 Grasmere St., Newton, Mass. 02160; Francois P. Mazenod, 16 Cite Vieusseux, 1203 Geneve, Switzerland, and Chi-Huey Wong, 402 Rindge Ave., Apt. 15F, Cambridge, Mass. 02139

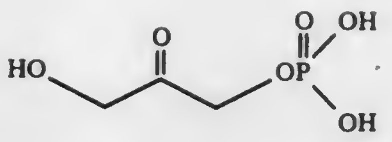
PCT No. PCT/US82/00534, § 371 Date Aug. 30, 1982, § 102(e) Date Aug. 30, 1982

PCT Filed Apr. 23, 1982, Ser. No. 422,070

Int. Cl.^{3} C12P ***19/24, 19/02;*** **C07H** ***3/08***

U.S. Cl. 435—94 **3 Claims**

1. Process for the preparation of 6-deoxy-D-fructose and/or 6-deoxy-L-sorbose, characterized by the fact that
   a. Fructose-1,6-diphosphate or 1,3-dihydroxyacetone phosphate of the formula



   is treated with D- and/or L-lactaldehyde in the presence of an enzymatic system composed of aldolase and triose phosphate isomerase in an aqueous medium at pH 7.0, and
   b. The monophosphate salt thus obtained is hydrolyzed.

3. Process for the preparation of 6-deoxy-D-fructose and/or 6-deoxy-L-sorbose, characterized by the fact that 1,3-dihydroxyacetone is treated with D- and/or L-lactaldehyde in the presence of an anionic exchange resin.

4,440,855

PROCESS FOR PREPARING L-GLUCOSONE

Robert O. Horwath, Westport, and William J. Colonna, Wilton, both of Conn., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Filed Jun. 30, 1982, Ser. No. 393,290

Int. Cl.^{3} C12P ***19/02;*** **C12N** ***9/04;*** **C12R** ***1/645, 1/66, 1/69***

U.S. Cl. 435—105 **2 Claims**

1. A process for oxidizing L-glucose to L-glucosone which comprises contacting L-glucuose with glucose-2-oxidase produced by a microorganism selected from the group consisting of genera Polyporus, Aspergillus, Oudemansiella, Radulum, Lenzites, Irpex, Pellicularia, Armillaria, Schizophyllum and Corticium.

4,440,856

PROCESS FOR PRODUCING L-GLUTAMIC ACID

Toshihide Nakanishi, Hofu; Mamoru Kohata, Kawasaki, and Minoru Sakurai, Hofu, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Dec. 16, 1981, Ser. No. 331,312

Int. Cl.^{3} C12P ***13/18;*** **C12R** ***1/13, 1/15;*** **C12N** ***1/20***

U.S. Cl. 435—111 **11 Claims**

1. A process for producing L-glutamic acid which comprises:
   culturing an L-glutamic acid producing mutant microorganism belonging to the genus Corynebacterium or Brevibacterium in a biotin-rich nutrient medium until L-glutamic acid is accumulated in the culture liquor and thereafter recovering said L-glutamic acid therefrom;
   said mutant microorganism being temperature-sensitive remediable with an unsaturated higher fatty acid;
   said culturing step being carried out, at least in part, at a temperature at which said mutant requires the presence of said unsaturated higher fatty acid for growth or growth comparable to its parent strain at the said temperature;

and
   said nutrient medium being essentially free of said unsaturated higher fatty acid.

4,440,857

PROCESS FOR PREPARING MYCAROSYLTYLACTONE

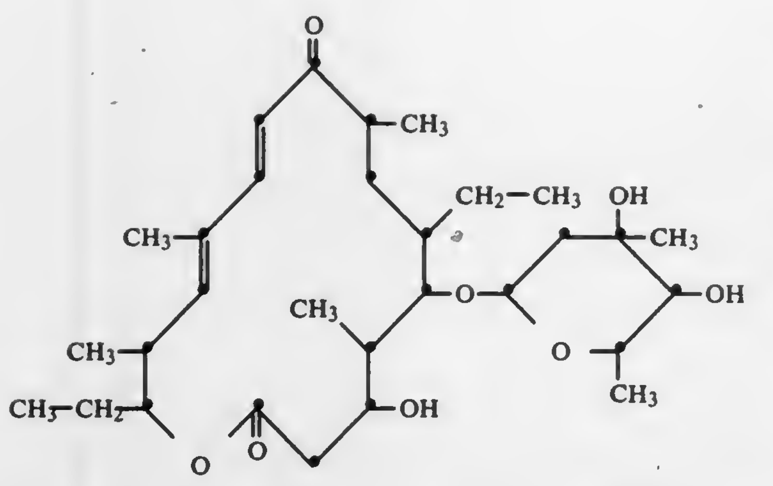
Eugene T. Seno, Norwich, England, and Richard H. Baltz, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 173,313, Jul. 29, 1980, abandoned. This application Mar. 18, 1982, Ser. No. 359,385

Int. Cl.^{3} C12P ***17/16, 17/08;*** **C12R** ***1/54***

U.S. Cl. 435—118 **6 Claims**

1. A process for preparing the compound mycarosyltylactone, which has the formula



which comprises cultivating *Streptomyces fradiae* NRRL 12201 or a mycarosyltylactone-producing mutant or recombinant thereof in a culture medium containing assimilable sources of carbon, nitrogen, and inorganic salts under submerged aerobic fermentation conditions until a substantial amount of compound is produced and isolating the mycarosyltylactone.

5. The biologically purified culture of microorganism *Streptomyces fradiae* NRRL 12201 or a mycarosyltylactone-producing mutant or recombinant thereof.

4,440,858
PROCESS FOR THE CONTINUOUS PRODUCTION OF ACRYLAMIDE OR METHACRYLAMIDE USING MICROORGANISMS

Yasumasa Yamaguchi; Ichiro Watanabe, and Yoshiaki Satoh, all of Kanagawa, Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

Filed May 2, 1980, Ser. No. 146,937

Claims priority, application Japan, May 2, 1979, 54-53380

Int. Cl.³ C12P *13/02;* **C12N** *11/00, 11/02, 11/04;* **C12R** *1/01, 1/07, 1/13, 1/15, 1/265, 1/365*

U.S. Cl. 435—129 **14 Claims**

1. A process for continuously producing acrylamide or methacrylamide from acrylonitrile or methacrylonitrile by use of a microorganism capable of promoting the hydration reaction of acrylonitrile or methacrylonitrile into the corresponding amide compound,

said process comprising immobilizing the microorganism or enzyme extracted therefrom, continuously bringing the acrylonitrile or methacrylonitrile into contact with the immobilized microorganism or enzyme in at least one reactor containing an aqueous medium at a pH of 6 to 10 to cause the hydration reaction in a reaction solution, and recycling a part of the reaction solution to dilute the unreacted acrylonitrile or methacrylonitrile and water therewith in a ratio of 2 to 100 parts by volume of reaction solution to the volume of acrylonitrile or methacrylonitrile and aqueous medium used to produce said reaction solution.

4,440,859
METHOD FOR PRODUCING RECOMBINANT BACTERIAL PLASMIDS CONTAINING THE CODING SEQUENCES OF HIGHER ORGANISMS

William J. Rutter; Howard M. Goodman; Axel Ullrich; John Shine; John Chirgwin, and Raymond Pictet, all of San Francisco, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Continuation of Ser. No. 801,343, May 27, 1977, abandoned. This application Sep. 11, 1981, Ser. No. 301,141

Int. Cl.³ C12N *15/00;* **C12P** *21/00, 21/04, 19/34;* **C12N** *1/00*

U.S. Cl. 435—172 **23 Claims**

1. A method for making a microorganism having a gene derived from a higher organism comprising the steps of:

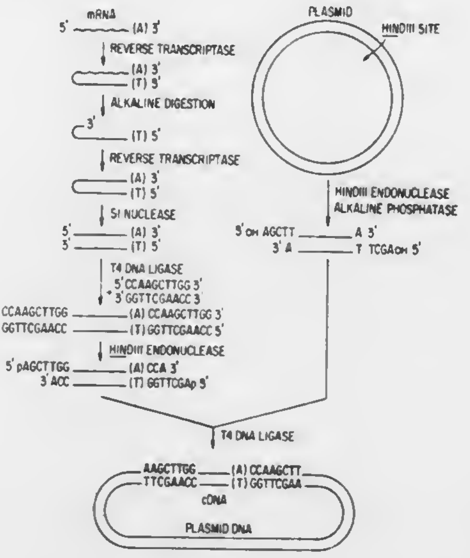
(a) isolating from the higher organism a population of cells containing mRNA, a large proportion of said mRNA having a specific nucleotide sequence and being polyadenylated,

(b) extracting the mRNA from the population of cells under conditions which prevent RNase degradation of the mRNA,

(c) separating polyadenylated mRNA substantially free of protein, DNA and other RNA,

(d) synthesizing a double stranded cDNA wherein one strand has a nucleotide sequence complementary to that of the polyadenylated mRNA,

(e) attaching a polynucleotide having a sequence, containing the recognition site for a restriction endonuclease, to both ends of the cDNA,



(f) incubating the cDNA having recognition site sequences at both ends with a restriction endonuclease capable of acting at the recognition site, in order to produce cohesive ends on the cDNA,

(g) providing a plasmid DNA having cohesive ends complementary to the cohesive ends of the cDNA, said plasmid DNA cohesive ends having 5' hydroxyl termini, whereby covalent ring closure of the plasmid DNA is prevented in the absence of added cDNA,

(h) mixing the cDNA and the plasma DNA together in order to form a cDNA-plasmid recombinant, and

(i) mixing a microorganism together with the cDNA plasmid recombinant in order to transform the microorganism, and

(j) thereby transferring to the said microorganism the gene derived from a higher organism.

4,440,860
STIMULATING CELL GROWTH

Michael Klagsbrun, Newton, Mass., assignor to The Children's Medical Center Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 113,229, Jan. 18, 1980, abandoned, which is a continuation-in-part of Ser. No. 953,491, Oct. 23, 1978, abandoned. This application Mar. 2, 1981, Ser. No. 239,523

Int. Cl.³ C12N *5/00, 5/02;* **C12M** *3/00, 3/04*

U.S. Cl. 435—240 **33 Claims**

1. A cell culture medium comprising mammalian milk and fibronectin.

4,440,861
SOLAR APPARATUS AND PROCESS

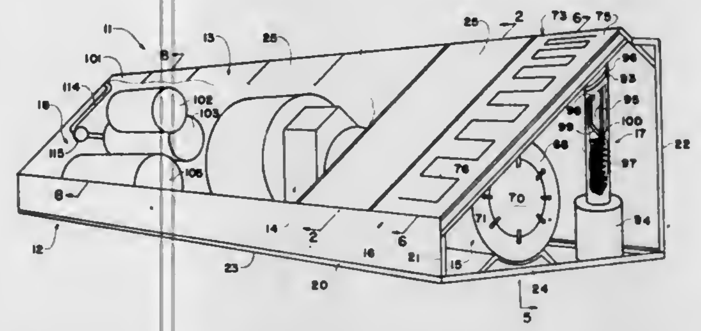
Walton W. McCarthy, Bozeman, Mont., assignor to Entropy Dynamics, Bozeman, Mont.

Continuation-in-part of Ser. No. 187,348, Sep. 15, 1980, Pat. No. 4,345,974. This application Oct. 1, 1981, Ser. No. 307,610

Int. Cl.³ B01D *3/00;* **C07C** *29/80;* **C12C** *7/08;* **C12M** *1/02*

U.S. Cl. 435—306 **1 Claim**

1. Solar apparatus for producing alcohol including a frame portion, a heating portion, a slurry-forming portion, a fermentation portion, a distillation portion, a condensation portion and a drying portion; said frame portion including a base section having a length substantially greater than the width thereof, upstanding sections extending upwardly from each longitudinal ege of said base section, one of said upstanding sections having a height substantially greater than the other upstanding section; said heating portion including a plurality of solar panel members, said panel members being disposed adjacent to one another, said panel members extending between said upstanding sections of said frame portion; said slurry-forming portion being disposed below said heating portion and including hammer mill means and a frustoconical section thereunder, said frustoconical section including a tangential liquid inlet opening and a tangential slurry outlet opening; said fermentation portion being disposed below said heating portion and including a fermentation chamber, pump means disposed adjacent said chamber, an inlet conduit extending between said pump means and the bottom of said chamber, an outlet conduit extending downwardly from said pump means and adjacent the bottom of said chamber and having a plurality of discharge openings therealong; said distillation portion including a solar panel member extending between said upstanding sections, said solar panel member including a base section and a face section, said face section including a conduit having a circuitous path, transparent layers over said face section, distributing means disposed under the lower end of said face section, a plurality of spaced baffle means extending from said face section to said base section; said condensation portion being disposed below said distillation portion and including a first chamber, a second chamber extending downwardly within said first chamber partway down from the top, a spiral conduit disposed within said first chamber and communicating with the lower end of said second chamber; said drying portion including a solar air heating section disposed adjacent to said heating portion, a solids storage means, a rotatable cylindrical member horizontally disposed below said solar heating section, liquid collecting means disposed below said cylindrical member, and liquid storage means associated with said collecting means.



4,440,862
METHOD OF DETERMINING CORROSION PROPERTIES OF ZIRCONIUM ALLOYS

Bo-Ching Cheng, and Ronald B. Adamson, both of Fremont, Calif., assignors to General Electric Company, San Jose, Calif.

Filed Oct. 30, 1981, Ser. No. 316,757

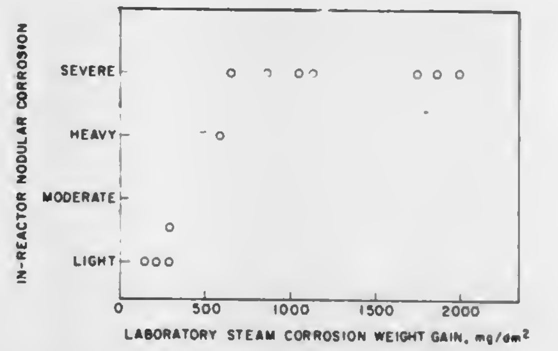
Int. Cl.³ G01N *17/00*

U.S. Cl. 436—6 **10 Claims**

1. A method of determining the relative resistance to nodular-type of corrosion of an alloy of zirconium in an environment of a water cooled nuclear fission reactor, comprising exposing a specimen of the alloy to high pressure steam sequentially applied at two distinct temperature levels by applying the steps of:

(a) subjecting a specimen of an alloy of zirconium to an atmosphere of steam at a temperature of about 300° to about 420° C. at a pressure of at least about 1000 psig for a period of at least about 5 hours;

(b) thereupon subjecting the specimen of an alloy of zirconium at an atmosphere of steam at a temperature of about 490° to about 520° C. at a pressure of at least about 1000 psig for a period of at least about 12 hours; and



(c) ascertaining any corrosion formation on said steam exposed specimen of alloy of zirconium.

4,440,863
BREAST CYST FLUID PROTEIN ASSAY

Darrow E. Haagensen, Jr., Newtonville, Mass., assignor to Duke University, Durham, N.C.

Continuation-in-part of Ser. No. 102,095, Dec. 10, 1979, which is a division of Ser. No. 880,257, Feb. 22, 1978, Pat. No. 4,229,426. This application Aug. 13, 1981, Ser. No. 292,369

Int. Cl.³ G01N *33/54, 33/58, 33/60;* **C07C** *7/00*

U.S. Cl. 436—539 **5 Claims**

1. A method useful in determining the maturity of a fetus which method comprises determining the concentration of the glycoprotein gross cystic disease fluid protein-15 (GCDFP-15) in an amniotic fluid sample by conducting an immunoassay for said glycoprotein in said amniotic sample utilizing a GCDFP-15 selective antibody and GCDFP-15 labelled with a unique and detectable label to produce an antigen-antibody reaction product, separating said product from the said reagents and determining the concentration of GCDFP-15 in the amniotic fluid sample by detecting the quantitative value of said label in either said reaction product or said reagents and comparing said label value to a standard curve whereby the concentration of GCDFP-15 in said amniotic fluid is directly correlatable to the maturity of said fetus after about 24 weeks of gestation wherein said GCDFP-15 is characterized as follows:

(a) a glycoprotein having a calculated monomer size of about 15,000 daltons as determined by sodium dodecyl sulfate acrylamide gel analysis; and

(b) immunologically not identical to any components of plasma as determined by Ouchterlony analysis; and

(c) immunological cross identity with a component of human milk and human saliva; and

(d) cleavage with cyanogen bromide provides two peptides one of which is blocked, and one of the peptides has a molecular weight of about 12,500 daltons as determined by sodium dodecyl sulfate acrylamide gel analysis and having the following partial sequence of amino acids:

```
                                          10
H2N—Val-Val-Lys-Thr-Tyr-Leu-Ile-Ser-Ser-Ile-Pro-Leu
                              20
Gln-Gly-Ala-Phe-Asn-Tyr-Lys-Tyr-Thr-Ala-(Cys)-Leu-(Cys)-
                  30                                  39
Asp-Asp-Asn-Pro-Lys-Thr-Phe-Tyr-Trp-Asp-Phe-Tyr-Thr-(Gln)-
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( ) indicate possible derivitization.

4,440,864

CHEMICALLY BONDABLE FOUNDRY SAND

John Campbell, Worcester, England, assignor to Cosworth Research and Development Limited, Worcester, England

Filed Mar. 19, 1982, Ser. No. 359,923

Claims priority, application United Kingdom, Apr. 1, 1981, 8110234

Int. Cl.³ C04B *35/80*

U.S. Cl. 501—95 **7 Claims**

1. A chemically bondable reclaimable foundry sand mixture for fabricating cores or moulds used in metal castings consisting essentially of a granular mixture of sand, organic resin binder and a plurality of organic fibres intimately mixed and dispersed throughout the mixture and which fibres increase resistance to fracture and breakage of cores or moulds used in metal castings, whereby a core or mould prepared from said sand mixture is physically strong and handleable and relatively unbreakable during metal casting but which core or mould is easily reclaimed from said sand mixture by resin burn-off procedures.

4,440,865

REFRACTORY COMPOSITIONS AND METHOD

Paul V. Salazar, 1506 Clinton Pl., River Forest, Ill. 60305

Division of Ser. No. 355,320, Mar. 8, 1982. This application Aug. 31, 1983, Ser. No. 527,979

Int. Cl.³ C04B *35/10, 35/18, 35/80*

U.S. Cl. 501—95 **20 Claims**

1. A refractory composition having an increased shelf life comprising:

Aluminum phosphate	5-70%;
A refractory material selected from the group consisting of alumina, aluminum silicate, and mixtures thereof	2-94%; and
Phosphoric acid	1-10%.

4,440,866

PROCESS FOR THE PRODUCTION OF SINTERED BAUXITE SPHERES

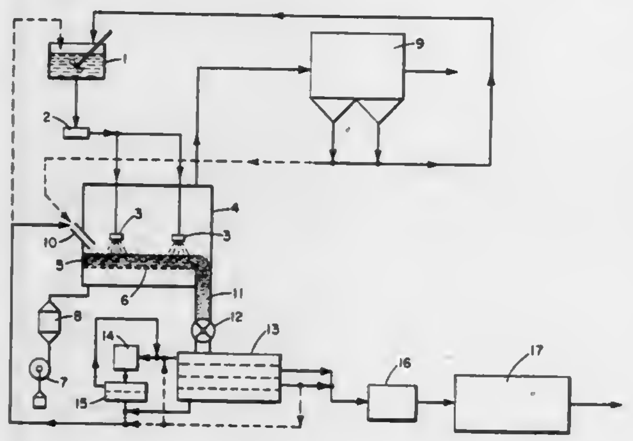
Eugene P. Lunghofer, Youngstown, N.Y.; Sten Mortensen, and Aubrey P. Ward, both of Columbia, Md., assignors to A/S Niro Atomizer, Soeborg, Denmark

Continuation-in-part of Ser. No. 278,356, Jun. 29, 1981, abandoned. This application Oct. 28, 1982, Ser. No. 437,321

Claims priority, application United Kingdom, Jul. 7, 1980, 8022175; Denmark, Jul. 1, 1982, 36/82

Int. Cl.³ C04B *35/16*

U.S. Cl. 501—127 **9 Claims**



1. A process for the production of sintered bauxite spheres, suitable for use as fracture propping agent in oil wells, comprising the steps of

(a) preparing an aqueous feed suspension comprising bauxite and a binder,

(b) continuously atomizing said feed suspension into a layer of already partly dried bauxite particles fluidized in a stream of drying air,

(c) continuously recovering particles from said layer

(d) continuously separating said recovered particles in oversize, undersize and product fractions making allowance for shrinkage in the subsequent sintered operation,

(e) continuously recycling material selected from the group consisting of undersize fractions, relative fine product fractions, ground product fractions and ground oversize fractions, to the layer of fluidized particles at a site at substantial distance, measured along the flow path of the particles, from the site where said recovering of particles takes place, and

(f) drying and sintering the non-recycled product fractions by heating them at a temperature between 1200° and 1650° C.

4,440,867

CALCINED, HIGH SURFACE AREA, PARTICULATE MATTER, PROCESSES USING THIS MATTER, AND ADMIXTURES WITH OTHER AGENTS

Inderjit H. Sabherwal, Los Angeles, Calif., assignor to Ensotech, Inc., N. Hollywood, Calif.

Filed May 14, 1982, Ser. No. 378,081

Int. Cl.³ B01J *39/02, 39/04;* **C02F** *1/42*

U.S. Cl. 502—62 **34 Claims**

1. A process for producing high surface area particulate matter, which process comprises:

calcining, a charge of

feed particulate matter selected from the group consisting of clay mineral, feldspar, zeolite, coal ash, fly ash, pozzolan and volcanic ash,

at a temperature above about 1100° C.,

for a time sufficient to develop fractures extending from the surface of the calcined particulate matter,

which fractures increase substantially the surface area of the calcined particulate matter over the surface area of said feed particulate matter.

4,440,868

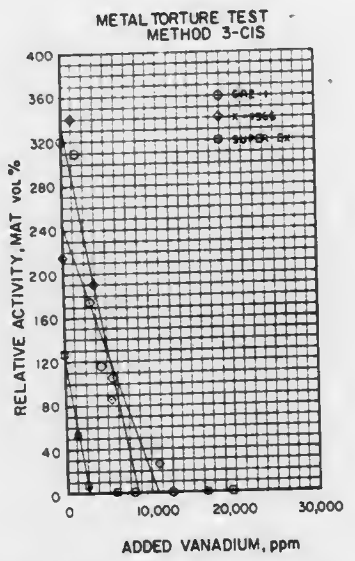
CARBO-METALLIC OIL CONVERSION CATALYSTS

William P. Hettinger, Jr.; Hubert W. Beck, both of Russell, and Stephan M. Kovach, Ashland, all of Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Dec. 7, 1981, Ser. No. 328,354

Int. Cl.³ B01J *29/06*

U.S. Cl. 502—65 **12 Claims**



1. A composition of matter of fluidizable solid catalyst particles comprising in combination,

(a) from 35 to 60 weight percent of a crystalline zeolite comprising a La/Ce ratio greater than 1/1 and a silica/alumina ratio of at least 4.5 dispersed in a matrix composition comprising clay particles of about 1 micron size and a refractory metal oxide of gelacious or colloid ancestrary,

(b) the zeolite, clay, refractory metal oxide materials of step (a) each initially comprising less than 0.25 weight percent of sodium, and

(c) a spray dried product of a mixture of step (a) providing fluidizable catalyst particles of a pore volume in the range of 0.35 cc/g up to about 0.8 cc/g.

10. A catalyst particle composition comprising in combination;

(a) at least 40 weight percent of a high activity crystalline aluminosilicate of large pore size dimensions such as provided by mordenite, zeolite "L", ZSM4, gmelinite and faujasite, ion exchanged sufficiently to provide a greater than 3/1 lanthanum to cerium ratio exchanged zeolite of less than 0.25 weight percent sodium,

(b) said ion exchanged crystalline aluminosilicate admixed with a matrix composition comprising a clay material treated with an acidic modifier and a silica sol containing refractory material,

(c) said matrix material of a composition providing a pore volume of at least about 0.40 cc/g, and

(d) spray dried particles of the composition of (b) ion exchanged and dried to provide excess lanthanum in the particle composition.

4,440,869

OLEFIN POLYMERIZATION CATALYST

Mark L. Shannon, and Mark P. Mack, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Sep. 30, 1982, Ser. No. 429,632

Int. Cl.³ C08F *4/64, 4/68, 4/62*

U.S. Cl. 502—104 **9 Claims**

1. A method for preparing catalysts for polymerization of alpha-olefins comprising contacting, in substantial absence of proton donor, a soluble magnesium compound of the general formula

$Mg(OSiR_3)_2$ with transition metal tetraalkoxide of the general formula $M(OR^1)_4$ in a saturated aliphatic hydrocarbon solvent to form a solution, then forming a precipitate by chlorinating the solution in the substantial absence of free oxygen and recovering the precipitate for use as a catalyst, wherein each R is, independently, alkyl groups or alkoxy groups containing from 1 to about 20 carbon atoms or aryl, aryloxy groups, cycloalkoxy groups or cycloalkyl groups containing from 6 to 14 carbon atoms and each R^1 is independently, alkyl groups or etherically substituted alkyl groups containing from 1 to 20 carbon atoms, aryl, cycloalkyl or etherically substituted aryl or cycloalkyl groups containing from 6 to 14 carbon atoms and M is titanium, vanadium, chromium or zirconium.

4,440,870

NOVEL BORATE CATALYST SYSTEMS

John R. Sanderson; Lewis W. Watts, Jr., and Walter H. Brader, Jr., all of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 28, 1982, Ser. No. 402,661

Int. Cl.³ B01J *21/02*

U.S. Cl. 502—207 **3 Claims**

1. A catalyst system of at least two transition metal borates comprising

a. a transition metal borate where the transition metal is taken from the group consisting of Group IVB and Group VB of the Periodic Table, and

b. a transition metal borate where the transition metal is taken from Group VIII of the Periodic Table.

4,440,871

CRYSTALLINE SILICOALUMINOPHOSPHATES

Brent M. Lok, New City; Celeste A. Messina, Ossining; Robert L. Patton, Katonah, all of N.Y.; Richard T. Gajek, New Fairfield, Conn.; Thomas R. Cannan, Valley Cottage, and Edith M. Flanigen, White Plains, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jul. 26, 1982, Ser. No. 400,438

Int. Cl.³ B01J *27/14*

U.S. Cl. 502—214 **38 Claims**

1. Microporous crystalline silicoaluminophosphates the pores of which are uniform and have nominal diameters of greater than about 3 Angstroms and whose essential empirical chemical composition in the as-synthesized and anhydrous form is

$$mR:(Si_xAl_yP_z)O_2$$

wherein "R" represents at least one organic templating agent present in the intracrystalline pore system; "m" has a value of from 0.02 to 0.3; "m" represents the moles of "R" present per mole of $(Si_xAl_yP_z)O_2$; "x", "y" and "z" represent the mole fractions of silicon, aluminum and phosphorus respectively, present as tetrahedral oxides, said mole fractions being such that they are within the pentagonal compositional area defined by points ABCD and E of the ternary diagram which is FIG. 1 of the drawings.

4,440,872

TRANSITION METAL OXIDE ACID CATALYSTS

Dane C. Grenoble, Baton Rouge, La.; Chang J. Kim, Somerset, and Lawrence L. Murrell, South Plainfield, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 203,140, Nov. 3, 1980, abandoned, which is a continuation-in-part of Ser. No. 82,316, Oct. 5, 1979, Pat. No. 4,269,737, which is a continuation-in-part of Ser. No. 927,829, Jul. 25, 1978, abandoned. This application Dec. 18, 1981, Ser. No. 332,214

Int. Cl.³ B01J *21/12, 23/30*

U.S. Cl. 502—242 **31 Claims**

1. A solid acid catalyst comprising at least one catalytic metal oxide component wherein said catalytic metal is selected from the group consisting of (a) tungsten, niobium and mixtures thereof and (b) mixtures of (a) with tantalum, hafnium, chromium, titanium, zirconium and mixtures thereof wherein said catalytic metal oxide component is supported on a silica-containing inorganic refractory metal oxide support, the silica content of which is less than 50 wt.% of said support calculated as SiO_2, said catalyst being steamed prior to use at a temperature above about 600° C.

4,440,873

PROCESS FOR PRODUCING ETHYLENE GLYCOL AND/OR GLYCOLIC ACID ESTER, CATALYST COMPOSITION USED THEREFOR, AND PROCESS FOR PRODUCTION THEREOF

Haruhiko Miyazaki; Taizo Uda; Koichi Hirai; Yasuo Nakamura, all of Ube; Harumi Ikezawa, Onoda, and Takanori Tsuchie, Ube, all of Japan, assignors to UBE Industries, Ltd., Yamaguchi, Japan

Filed Apr. 21, 1982, Ser. No. 370,555

Claims priority, application Japan, Apr. 30, 1981, 56-64015

Int. Cl.³ B01J *23/72, 37/18*

U.S. Cl. 502—244 **8 Claims**

1. A hydrogenation catalyst composition useful for the hydrogenation of an oxalate diester, said composition being composed of a reduction product of copper-containing silica gel formed by contacting an ammine complex of copper with colloidal silica sol.

4,440,874

CATALYST COMPOSITION AND METHOD FOR ITS MANUFACTURE

Charles E. Thompson, Warren, N.J., assignor to Engelhard Corporation, Iselin, N.J.

Filed Apr. 14, 1982, Ser. No. 368,185

Int. Cl.^{3} B01J *21/04, 23/58, 23/78*

U.S. Cl. 502—327 **15 Claims**

1. A catalyst composition comprising a carrier on which are carried:

(a) a refractory metal oxide support;

(b) a catalytically effective amount of a platinum group metal component; and

(c) a catalytically enhancing amount of an oxide composite comprising at least one of magnesium ferrite, calcium ferrite, strontium ferrite, and barium ferrite.

4,440,875

CATALYTIC PROCESS FOR THE PRODUCTION OF HYDROCARBONS FROM SYNGAS

Andras G. T. G. Kortbeek; Guy Barre, and Jean M. Durel, all of Grand Couronne, France, assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 16, 1982, Ser. No. 408,382

Claims priority, application France, Sep. 28, 1981, 81 18208

Int. Cl.^{3} C07C *1/04*

U.S. Cl. 518—728 **7 Claims**

1. A process for the selective production of C_4 hydrocarbons from synthesis gas, wherein the synthesis gas is passed at conversion conditions of elevated pressure and temperature over a catalyst consisting of zirconium oxide promoted with at least one alkali metal compound.

4,440,876

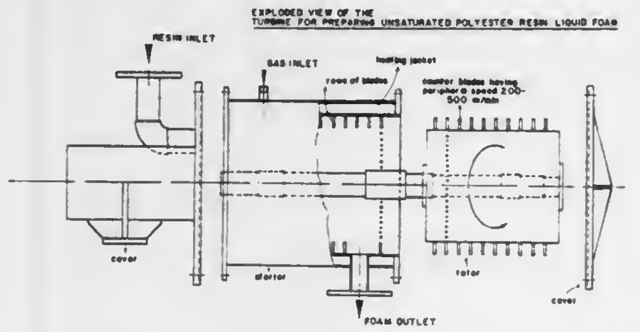
LIQUID FOAMS OF REINFORCED UNSATURATED POLYESTER RESINS AND PROCESS FOR MAKING THE SAME

Massimo Mazzola, Segni, and Aldo Cipriani, Colleferro, both of Italy, assignors to SNIA VISCOSA S.p.A. Societa Nazionale Industria Applicaziono Viscosa, Milan, Italy

Continuation-in-part of Ser. No. 145,251, Apr. 30, 1980. This application Jan. 13, 1983, Ser. No. 457,632

Int. Cl.^{3} C08J *9/30*

U.S. Cl. 521—123 **7 Claims**


EXPLODED VIEW OF THE TURBINE FOR PREPARING UNSATURATED POLYESTER RESIN LIQUID FOAM
RESIN INLET
GAS INLET
heating jacket
rows of blades
counter blades having peripheral speed 200-500 m/min
cover
stator
rotor
cover
FOAM OUTLET

1. A continuous process for making fiber-reinforced foams which are suitable for transforming into reinforced solid cellular materials having a density lower than 0.7 kg/l if no inert filler material is present or a density lower than 1 kg/l if inert fillers are present as well, said process essentially comprising:

(1) mixing together an unsaturated polyester resin, a reinforcing material and, optionally an inert filler, said reinforcing material being selected from the group consisting of synthetic fibers, vegetable fibers and mineral fibers having a maximum length of 3 mm, whereby a liquid mixture is obtained;

(2) transferring said liquid mixture of reinforcing material, unsaturated polyester resin and, optionally, said inert filler to a turbine having a free internal volume of at least 2 liters and comprising a rotor and a stator, both having either prismatic or cylindrical projections, said turbine rotor having a peripheral speed of greater than 200 m/min and; thereafter

(3) introducing a gas into said turbine at a pressure of from 1.1 to 10 absolute atmospheres, said turbine operating to distribute said gas in the form of small bubbles homogeneously and uniformly throughout said mixture, thereby producing a reinforced foam of unsaturated polyester resin, and thereafter discharging said reinforced foam from said turbine.

4,440,877

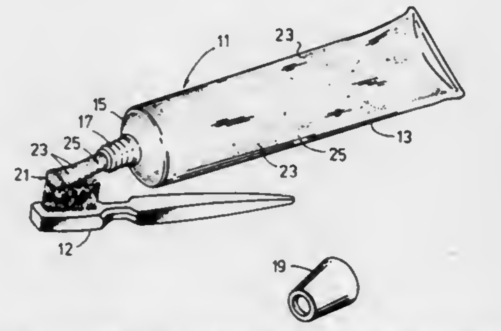
FUNCTIONAL AGGLOMERATED SPECKLES AND METHODS FOR MANUFACTURING SUCH SPECKLES

John P. Hauschild, Bridgewater, and Joseph R. Principe, East Brunswick, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 307,272, Sep. 30, 1981, Pat. No. 4,376,762. This application Aug. 30, 1982, Ser. No. 413,194

Int. Cl.^{3} A61K *7/16*

U.S. Cl. 523—105 **10 Claims**



1. Functional agglomerated speckles, for incorporation in dentifrices, which comprise agglomerates of a water insoluble powdered functional material, a water insoluble, ethanol soluble ethyl cellulose binder, and a water soluble binder.

4,440,878

RESIN-FORMING MATERIAL, IMPLANT MATERIAL AND COMPOSITIONS FOR RESTORATIVE MATERIAL SUITABLE FOR MEDICAL OR DENTAL USE

Haruyuki Kawahara, Moriguchi; Teruo Makita, Kobe; Shozo Kudo, Minoo, and Takashi Funakoshi, Osaka, all of Japan, assignors to Kanebo, Ltd., Tokyo, Japan

Continuation of Ser. No. 138,814, Apr. 9, 1980, Pat. No. 4,327,014. This application Jan. 20, 1982, Ser. No. 340,687

Claims priority, application Japan, Apr. 11, 1979, 54-44752; Apr. 11, 1979, 54-44753

The portion of the term of this patent subsequent to Apr. 27, 1999, has been disclaimed.

Int. Cl.^{3} C08K *3/28*

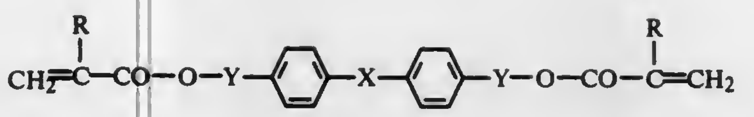
U.S. Cl. 523—116 **9 Claims**

1. A dental filling material, consisting essentially of:

(A) from about 50 to about 95% by weight of finely divided, inorganic filler material which is safe and effective for use in a dental filling in the human body, wherein at least 50% by weight of said filler material is at least one nitride substance having a Moh's hardness of at least 7 and is selected from the group consisting of vanadium nitride, boron nitride, aluminum nitride, silicon nitride, titanium nitride and zirconium nitride, and the balance of said filler material is one or more inorganic dental filler substances which are different from said nitride substance, having a Moh's hardness of at least 5 and are useful as a filler for dental filling materials; and

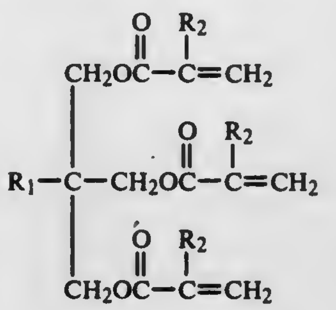
(B) from about 50 to about 5% by weight of polymerizable monomer component capable of polymerizing to form a binder resin for dental filling materials, said polymerizable monomer component being selected from the group consisting of

(1) monomers having the formula



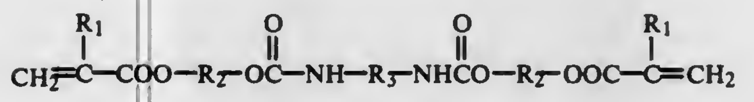
wherein R is hydrogen or methyl, X is alkylidene and Y is oxyalkylene having from 2 to 5 carbon atoms,

(2) monomers having the formula



wherein R_1 is CH_3, CH_3CH_2 or $CH_3CH_2CH_2$, and R_2 is H or CH_3,

(3) monomers having the formula



$$CH_2{=}\overset{R_1}{\overset{|}{C}}-COO-R_2-O\overset{O}{\overset{\|}{C}}-NH-R_3-NH\overset{O}{\overset{\|}{C}}O-R_2-OOC-\overset{R_1}{\overset{|}{C}}{=}CH_2$$

wherein R_1 is hydrogen or methyl, R_2 is alkylene and R_3 is a divalent hydrocarbon group,

(4) neopentylglycol dimethacrylate,

(5) triethyleneglycol dimethacrylate,

(6) bisphenol A diglycidyl methacrylate, and mixtures thereof.

4,440,879

PROCESS FOR PREPARING FILLER-CONTAINING POLYTETRAFLUOROETHYLENE FINE POWDER

Shoji Kawachi, Nishinomiya; Katsutoshi Yamamoto, Settsu, and Shinichiro Kai, Ibaraki, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Feb. 18, 1981, Ser. No. 235,622

Claims priority, application Japan, Feb. 2, 1980, 55-18724

Int. Cl.^{3} C08K *3/24;* **C08L** *27/18, 27/20*

U.S. Cl. 523—200 **9 Claims**

1. A process for preparing filler-containing polytetrafluoroethylene fine powder, comprising the steps of: mixing together an aqueous dispersion containing 5 to 50% by weight of particles of polytetrafluoroethylene having an average particle size of from about 0.1 to 0.3μ and an aqueous dispersion containing 1 to 120 parts by volume based upon 100 parts by volume of aqueous medium of filler particles having an average particle size of from 0.001 to 200μ adsorbed with polyvalent cations selected from the group consisting of aluminum ions, iron ions, magnesium ions, calcium ions, barium ions, copper ions and zinc ions at the surface thereof so as to be charged positively in the presence of an anionic surfactant and 30 to 100 parts by weight to 100 parts by weight of the solid components of a water-immiscible liquid having a boiling point of 30° to 150° C. and a surface tension of not more than 35 dyne/cm to coagulate the polytetrafluoroethylene particles and the filler particles in combination, wherein the amount of the filler is from 5 to 60% by volume to the volume of polytetrafluoroethylene and the content of the filler in the aqueous dispersion is from 1 to 120 parts by volume based upon 100 parts by volume of aqueous medium; and recovering the coagulated particles from the resultant dispersion mixture, said filler particles being per se negatively chargeable in water.

4,440,880

PROCESS FOR STABILIZING BY ENCAPSULATION RED PHOSPHORUS TO BE USED AS FLAME RETARDANT OF POLYMERIC MATERIALS AND PRODUCT SO OBTAINED

Giancarlo Albanesi, and Gianfranco Rinaldi, both of Milan, Italy, assignors to Saffa S.p.A., Milan, Italy

Filed Oct. 22, 1981, Ser. No. 314,049

Claims priority, application Italy, Nov. 19, 1980, 26064 A/80

Int. Cl.^{3} C08K *3/02, 9/10;* **C08L** *61/28*

U.S. Cl. 523—205 **18 Claims**

1. A process for stabilizing red phosphorus powder, in its various allotropic forms, by encapsulating the particles of said powder in a malamine resin for its safe use as a flame retardant of polymeric materials, which comprises the steps of:

(a) preparing an aqueous solution of a melamine condensate cationized with a mineral acid by reacting in an aqueous medium melamine, formaldehyde, triethanolamine, and an aliphatic monohydroxyl alcohol having up to 5 carbon atoms, in the respective percent by weight ratios: 25.27% to 21.62%, 36.04% to 30.85%, 29.87% to 25.57% and 8.82% to 21,96%, and adjusting the pH thereof with the mineral acid;

(b) forming a hydrodispersion of the solution formed in step (a) by dispersing red phosphorus powder directly therein;

(c) heating said hydrodispersion, under stirring, at 80° to 100° C. to encapsulate individual particles of the red phosphorus powder by precipitating onto said individual particles of red phosphorus powder, said melamine condensate to form a continuous and compact layer of an insoluble, partially cross-linked melamine resin; and

(d) subsequently drying the insoluble, partially cross-linked layer of melamine resin in an inert gas stream at 80° to 130° C. to obtain a cross-linked melamine resin-encapsulated red phosphorus powder suitable for easy and safe dispersion in polymeric materials, said layer of melamine resin which encapsulates said red phosphorus powder amounting to 0.1 to 30% by weight of the red phosphorus powder.

16. A self-extinguishing polymeric composition which includes 3% to 15% by weight of the red phosphorus powder encapsulated with melamine resin according to the process defined in claim 1.

4,440,881

AQUEOUS, ADHESIVE COATING COMPOSITION WITH A NON-SELFCROSSLINKABLE ELASTOMER FOR USE WITH FILAMENTARY MATERIALS

Mikhail M. Girgis, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 324,750, Nov. 25, 1981, which is a continuation-in-part of Ser. No. 238,725, Feb. 27, 1981, Pat. No. 4,405,746. This application Sep. 29, 1982, Ser. No. 426,593

The portion of the term of this patent subsequent to Sep. 20, 2000, has been disclaimed.

Int. Cl.^{3} C08L *61/12;* **B32B** *25/02, 27/04*

U.S. Cl. 523—206 **29 Claims**

1. Filamentary material coated with an aqueous adhesive coating composition, wherein the aqueous coating composition comprises:

(1) at least three elastomeric materials, where the total gel content of the coating composition attributable to the elastomeric materials is less than about 70 weight percent based on the aqueous coating composition, wherein the three elastomeric materials are:

A. A vinyl-pyridine-containing elastomeric latex selected from the group consisting of an elastomeric copolymer latex produced from a vinyl pyridine-containing monomer and 1,3-diene hydrocarbon monomer and an elastomeric terpolymer latex produced from vinyl pyridine-containing monomer, 1,3-diene hydrocarbon monomer and a vinyl-containing monomer,

B. non-self-crosslinkable elastomeric latex having a gel content of less than 40% and an average particle size of less than around 2000 angstroms,

C. carboxylated butadiene polymer having an amount of bound styrene not exceeding 75 weight percent of the copolymer and having an amount of carboxylation in the range of about 1 to about 10 weight percent of the copolymer, where the amount of the copolymer present is in the range of about 3 to about 10 weight percent of the dry solids of the aqueous coating composition, and

(2) phenolic aldehyde condensate polymer,

(3) and water.

4,440,882

EMULSION BASED ON EPOXY RESIN AND POLYAMMONIUM SALTS AND ITS PREPARATION

Joern-Volker Weiss, Haltern, and Heinz Riemer, Bottrop, both of Fed. Rep. of Germany, assignors to Chemische Werke Huels, AG, Marl, Fed. Rep. of Germany

Filed Jun. 16, 1983, Ser. No. 504,929

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1982, 3222528

Int. Cl.^{3} C08L *63/00;* **C08K** *5/16;* **C08J** *3/06;* **C04B** *13/26*

U.S. Cl. 523—401 **15 Claims**

1. An epoxy resin-polyammonium salt emulsion comprising

(a) a liquid epoxy resin;

(b) water,

(c) an emulsifier comprising a primary aliphatic alcohol of 12–14 carbon atoms; an adduct thereof with up to 5 ethylene oxide groups; or a polyglycol ester of a C_{10-22}-aliphatic carboxylic acid; and

(d) a latent curing agent comprising the reaction product obtained by complete neutralization with oxalic acid of (i) a polyamine of the formula

$$H_2N{-}CH_2{-}CH_2{-}NH{-}_x H$$

wherein x = 2, 3, or 4,

or of (ii) a reaction product, containing amino groups, of such a polyamine with a fatty acid.

4,440,883

ELECTRICALLY INSULATING ENCAPSULATION COMPOSITION FOR SEMICONDUCTOR ARRANGEMENTS

Erich Pammer, Taufkirchen, Fed. Rep. of Germany, assignor to Siemens AG, Berlin and Munich, Fed. Rep. of Germany

Filed Apr. 23, 1982, Ser. No. 371,122

Claims priority, application Fed. Rep. of Germany, May 7, 1981, 3118130

Int. Cl.^{3} C08K *3/22*

U.S. Cl. 523—402 **14 Claims**

1. Method for the manufacture of an electrically insulating encapsulating composition for semiconductor arrangements free of contaminating traces of radioactivity which causes soft-error failure through alpha radiation which comprises forming the encapsulating material by admixing a resin and an inorganic filler in the form of a radiation-free compound selected from the group of silicon compounds consisting of a silicon oxide, a silicon oxide hydrate, a silicon nitride, and from the group of aluminum compounds consisting of an aluminum oxide and an aluminum hydroxide, said silicon oxide, silicon oxide hydrate and silicon nitride prepared from a radiation-free, highly volatile silicon halogenide compound and said aluminum oxide and aluminum hydroxide prepared from a radiation-free, highly volatile aluminum halogenide compound.

4,440,884

CAUSTIC SENSITIVE, WATER RESISTANT LABELING ADHESIVE

Leonard C. Jannusch, New Brighton, Minn., assignor to H. B. Fuller Company, St. Paul, Minn.

Filed Oct. 20, 1982, Ser. No. 435,356

Int. Cl.^{3} C08L *3/00;* **C09J** *3/06, 3/24;* **B32B** *9/02*

U.S. Cl. 524--26 **37 Claims**

1. An aqueous adhesive, capable of forming substantial bonds resistant to humidity and water, and capable of rapidly debonding in the presence of strong base, which comprises an effective debonding amount of finely divided aluminum, an effective amount of a natural product bonding agent, and water.

4,440,885

PEROXIDE EMULSIONS AND SIZING COMPOSITION CONTAINING SAME

Albert E. Tamosauskas, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 136,644, Apr. 2, 1980, abandoned. This application Apr. 2, 1982, Ser. No. 364,713

Int. Cl.^{3} C08K *3/40, 5/54, 9/06;* **C03C** *17/30*

U.S. Cl. 524—57 **25 Claims**

1. Aqueous sizing composition for treating glass fibers, wherein the sizing composition has an aqueous emulsion of an organic peroxide that is a solid at about 20° C. and that has limited solubility or is insoluble in water, comprising:

(a) an amount of an aqueous emulsion of the solid organic peroxide to give an amount of active peroxide in the aqueous sizing composition in the range of about 0.1 to about 6 percent wherein:

(1) the solid organic peroxide with limited water solubility or that is insoluble in water selected from the group consisting of hydroperoxides, alpha-oxy, and alpha-peroxy hydroperoxides, dialkyl peroxides, aldehyde and ketone peroxides, diacyl peroxides, peroxy esters, peroxy acids, peroxy dicarbonates, monoperoxy carbonates and perketals is present in an amount of about 1 to about 70 percent by weight of the aqueous emulsion,

(2) about 1 to about 70 weight percent of a hydrocarbon solvent having a kauri-butanol number from about 10 to about 60 when the organic peroxide is substantially aliphatic, or having a kauri-butanol number of about 40 to about 100 when the organic peroxide has substantial aromaticity,

(3) about 1 to about 15 weight percent of a nonionic emulsifier blend having 3 emulsifiers, selected from the group consisting of polyalkylene glycol ethers, polyethoxy phenols, alkyl polyether alcohols, ethylene oxide alkylated phenol condensation products, alkyl aryl polyether alcohols, and polyoxypropylene-polyoxyethylene condensates, phenoxy polyethoxy ethanols, polyethylene derivatives of fatty acids, partial esters of sorbitol anhydrides; ethoxylated alcohols, ethoxylated alkyl phenols, ethoxylated fatty acids, ethoxylated fatty esters and oils; glycerol esters, glycol esters, monoglycerides and derivatives, sorbitan derivatives, sucrose esters and derivatives, and mixtures thereof each in proportions to give an overall hydrophilic-lipophilic balance (HLB) level for the emulsifier system in the range of about 9 to about 20, and

(4) at least about 27 weight percent of water;

(b) about 0.5 to about 10 weight percent of a coupling agent; and

(c) about 70 to about 99 weight percent water.

4,440,886

ASPHALT COMPOSITIONS

Gerard Kraus, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 29, 1982, Ser. No. 445,309

Int. Cl.^{3} C08L *95/00*

U.S. Cl. 524—68 **11 Claims**

1. An asphalt composition stabilized against viscosity increases at elevated temperatures comprising asphalt and a finite small effective viscosity stabilizing amount of at least one alkali metal nitrite.

4,440,887

4-AMINOMETHYLPOLYALKYLPIPERIDINES USEFUL AS LIGHT STABILIZERS

Hans Hinsken, Kandern, Fed. Rep. of Germany; Wolfgang Mueller, Allschwil, Switzerland, and Hermann Schneider, Grenzach-Wyhlen, Fed. Rep. of Germany, assignors to Sandoz Ltd., Basel, Switzerland

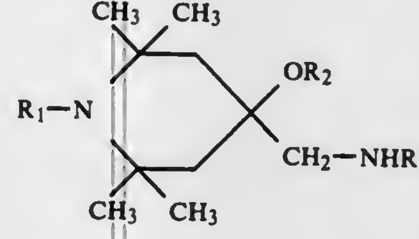
Filed Jan. 22, 1982, Ser. No. 341,614

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1981, 3102718

Int. Cl.^{3} C07D *211/48;* **C08K** *5/34;* **C09D** *3/81*

U.S. Cl. 524—99 **20 Claims**

1. A compound of formula I



I

in which

R_1 is hydrogen or C_{1-8}alkyl;

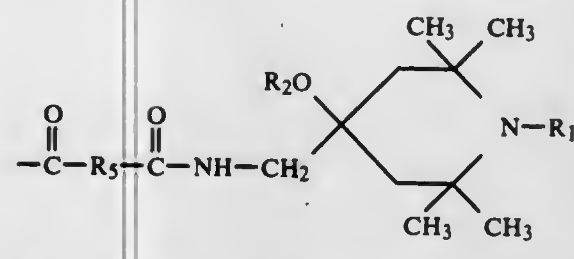
R_2 is hydrogen, (C_{1-22}alkyl)carbonyl, phenyl (C_{1-4}alkyl)carbonyl, cyclohexylcarbonyl, phenylcarbonyl in which the phenyl ring is unsubstituted or substituted by 1 or 2 C_{1-12}alkyl groups having a total of not more than 18 carbon atoms, or a group of formula (a)

$$-CONHR_4 \qquad (a)$$

where

R_4 is C_{1-18}alkyl unsubstituted or substituted by a $-N{=}C{=}O$ group, cyclohexyl, benzyl, phenyl, or (C_{1-12}alkyl)-phenyl; and

R_3 is (C_{1-22}alkyl) carbonyl, a group of formula (a) or is a group of formula (b)



(b)

where R_5 is C_{1-20}alkylene or phenylene.

6. A polymeric material stabilized against the effects of light, containing from 0.01 to 5% by weight of a compound of formula I, stated in claim 1.

4,440,888

FIRE RESISTANT HOT-MELT ADHESIVES CONTAINING MODIFIED POLYETHYLENE

Mary J. Cook, and Kenneth W. Hyche, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 28, 1982, Ser. No. 392,485

Int. Cl.^{3} C08K *5/51*

U.S. Cl. 524—139 **9 Claims**

1. An adhesive composition capable of being used as a hot-melt adhesive comprising a blend of

(a) about 20 to 60 percent by weight of at least one modified polyethylene having a saponification number of about 3 to 10 prepared by reacting polyethylene with a member selected from the group consisting of an unsaturated polycarboxylic acid, an unsaturated polycarboxylic anhydride, and an unsaturated polycarboxylic ester,

(b) about 30 to 70 percent by weight of at least one phosphate ester or halogenated organic flame retardant compound and at least one inorganic compound of antimony, boron or tin, said inorganic compound being present in an amount of 3 to 15 weight percent of the 30 to 70 percent by weight combination, and

(c) about 5 to 40 percent by weight of at least one tackifier resin selected from the group consisting of hydrocarbon resin, polyterpene resin and rosin ester resin.

4,440,889

POLYETHYLENE TEREPHTHALATE MOLDING COMPOSITIONS

William L. Hergenrother, and John M. Doshak, both of Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Jun. 23, 1982, Ser. No. 391,200

Int. Cl.^{3} C08K *5/52*

U.S. Cl. 524—143 **8 Claims**

1. Polyethylene terephthalate molding compositions which can be molded at temperatures of 100° C. or less comprising:

(a) from about 40 to about 70 parts by weight per 100 parts of total composition of a polyethylene terephthalate having an intrinsic viscosity of 0.4 to 1.0 dl/g as measured at 25° C. in a 1:1: mixture of phenol and tetrachloroethane;

(b) from about 0.5 to about 5.0 parts by weight per 100 parts by weight of total composition of a plasticizer selected from the group consisting of benzoate esters of polyols, phthalate esters and phosphate esters;

(c) from about 0.5 to about 10.0 parts by weight per 100 parts by weight of total composition of a lubricating polymer;

(d) from about 0.1 to about 5.0 parts by weight per 100 parts by weight of total composition of a nucleating agent;

(e) from about 20 to about 60 parts by weight per 100 parts by weight of total composition of a reinforcing material or mixture of reinforcing material and filler;

(f) from about 0.01 to about 1.0 parts by weight per 100 parts by weight of total composition of a molecular weight reducing agent for said polyethylene terephthalate, wherein said molecular weight reducing agent is selected from the group consisting of benzoic acid, neopentyl glycol and water.

4,440,890

FLAME RETARDANT POLY(ARYL KETONE)

Lloyd M. Robeson, Whitehouse Station, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

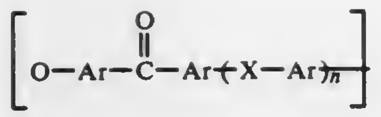
Filed Jun. 21, 1983, Ser. No. 506,392

Int. Cl.^{3} C08K *5/42*

U.S. Cl. 524—159 **21 Claims**

1. A flame retardant molding composition comprising:

(a) a poly(aryl ketone) of the following formula:



$$\left[O-Ar-\overset{O}{\overset{\|}{C}}-Ar\left(X-Ar\right)_{n}\right]$$

wherein Ar is independently a divalent aromatic radical selected from phenylene, biphenylene or naphthylene, X is independently O,

$$\overset{O}{\overset{\|}{C}},$$

or a direct bond, and n is an integer of from 0 to 3, and

(b) a flame retarding amount of an alkali or alkaline earth metal salt of an aromatic sulfonic acid.

4,440,891

HALOGEN-CONTAINING POLYMERS STABILIZED WITH ORGANIC ANTIMONY COMPOUND AND AN ORTHO MERCAPTO PHENOL COMPOUND

Jack D. Taylor, Katy, Tex., and Kenneth V. Smith, Cincinnati, Ohio, assignors to Carstab Corporation, Chicago, Ill.

Filed Aug. 9, 1982, Ser. No. 406,584

Int. Cl.^{3} C08K *5/37*

U.S. Cl. 524—177 **6 Claims**

1. A stabilizer composition for halogen containing organic polymer comprising:

A. an organic antimony compound or mixture of organic antimony compounds having at least one antimony atom and at least one antimony to sulfur to carbon linkage wherein the sulfur to carbon part of each antimony to sulfur to carbon linkage is derived from the group consisting of mercaptides, mercapto acids, mercapto esters, mercapto alkyl esters of carboxylic acids, and mixtures thereof; and

B. an organic compound or mixture of organic compounds having at least one carbocyclic aromatic ring which has bonded directly thereto a total of from two to six hydroxyl and mercapto groups, with the proviso that at least one hydroxyl group and at least one mercapto group are bonded directly to adjacent ring carbon atoms.

5. A polymer composition comprising a halogen-containing organic polymer normally susceptible to heat induced deterioration and an effective amount of a stabilizer composition according to claim 1.

4,440,892

AGENTS HAVING A TUMOR-INHIBITING ACTION AND THEIR USE

Gerhard D. Wolf, Dormagen; Bruno Bömer, Leverkusen, and Robert Bierling, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

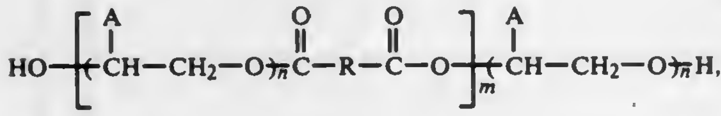
Filed Jun. 25, 1981, Ser. No. 277,473

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1980, 3026447

Int. Cl.^{3} C08K *5/06;* C08F *20/42*

U.S. Cl. 524—283 **2 Claims**

1. A pharmaceutical composition containing as an active ingredient is a water-soluble polyester based on one or more polyether-glycols, corresponding to the formula



(II)

$$HO\left[\left(\overset{A}{\overset{|}{C}}H-CH_2-O\right)_{n}\overset{O}{\overset{\|}{C}}-R-\overset{O}{\overset{\|}{C}}-O\right]_{m}\left(\overset{A}{\overset{|}{C}}H-CH_2-O\right)_{n}H, \qquad (II)$$

in which

A denotes statistically distributed hydrogen or methyl, 67 to 100 mol % being hydrogen atoms and 0–33 mol % being methyl groups,

R denotes an alkylene or arylene radical having up to 6 carbon atoms,

n denotes a number from 9 to 300 and

m denotes a number from 1 to 15.

4,440,893

MOLDING OF POLYMERS

Lyle R. Kallenback, and Faber B. Jones, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 16, 1983, Ser. No. 467,110

Int. Cl.^{3} C08K *3/22*

U.S. Cl. 524—305 **22 Claims**

1. A composition of matter having substantially no bubble formation when molded, said composition comprising:

(a) a polymer selected from the group consisting of homopolymers and copolymers of ethylene, said polymer being one that has been produced by a solution polymerization process using a chromium containing polymerization catalyst,

(b) an acetylene peroxy compound, and

(c) a metal oxide selected from the group of oxides of metals of Group IIA and IIB of the Periodic Table.

4,440,894

THERMOSETTING VINYL ACETATE TETRAPOLYMER COATINGS

Zychowski, Edwin A., Des Plaines; Kenneth E. Jasenof, Skokie, and Artemio L. Jimenez, Hanover Park, all of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Oct. 8, 1982, Ser. No. 433,389

Int. Cl.^{3} C08F *00/000*

U.S. Cl. 524—390 **9 Claims**

1. A thermosetting solvent solution coating composition characterized by forming hard and impact resistant baked coatings of good gloss retention on exterior exposure comprising, an organic solvent medium comprising a butanol having dissolved therein a solution copolymer obtained by copolymerizing from 55% to 75% of vinyl acetate with from 15% to 40% of C_2–C_8 alkyl acrylate or methacrylate, from 3% to 10% of C_2–C_4 hydroxyalkyl acrylate or methacrylate, and from about 0.5% to about 5% of copolymerizable monoethylenically unsaturated carboxylic acid in organic solvent solution medium consisting essentially of a butanol at a solids content of at least 65%, said copolymer being in admixture with from 8% to 20%, based on the mixture, of a polyalkoxymethyl melamine with a volatile alcohol.

7. A coating composition as recited in claim 1 in which said composition is reduced to coating viscosity with aromatic hydrocarbons.

4,440,895

SYNTHETIC RUBBER DISPERSIONS CONTAINING CARBOXYL GROUPS, A PROCESS FOR THEIR PREPARATION AND THEIR USE

Ferdinand Heins, Monheim-Baumberg; Martin Matner, Odenthal, and Hellmut Striegler, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

Filed Dec. 4, 1981, Ser. No. 327,601

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1980, 3047084

Int. Cl.^{3} C08F *212/10, 212/34;* C08L *0/00*

U.S. Cl. 524—822 **1 Claim**

1. Process for the preparation of aqueous synthetic rubber dispersions by emulsion polymerization of from 0.3 to 1.0% by weight of itaconic acid and 99.0 to 99.7% by weight of a mixture of from 10 to 90% by weight of butadiene, 10 to 90% by weight of styrene, 0 to 50% by weight of (meth)acrylonitrile and 0 to 25% by weight of N-methylol-(meth)-acrylamide and N-methoxymethyl-(meth)acrylamide in the presence of from 0.05 to 0.5% by weight, based on the copolymer, of an emulsifier consisting of the sulphate or sulphonate type comprising introducing part of the water, part or all of the itaconic acid, all or part of the emulsifier and part of the other monomers into a reactor equipped with a stirrer, adjusting the pH to 3.5 to 6 by addition of a base, initiating the polymerization at a temperature of at least 70° C. by addition of part of 0.5 to 1.5% by weight, based on the total quantity of monomers, of an ammonium peroxodisulphate and/or an alkali metal peroxodisulphate and adding at least one non-aqueous stream of the remaining monomers, and at least one aqueous stream containing the remainder of the peroxodisulphate while maintaining a temperature of the reactor of 75° to 150° C. until the monomers have undergone almost complete conversion.

4,440,896

PROCESS FOR THE PREPARATION OF LATTICES OF VINYL ACETATE POLYMERS

Jean-Luc Schupplser, Claye Souilly, and Jean-Claude Daniel, Fontenay-Sous-Bois, both of France, assignors to Rhone-Poulenc Specialties Chimiques, France

Filed Aug. 5, 1982, Ser. No. 405,412

Claims priority, application France, Aug. 10, 1981, 81 15436

Int. Cl.^{3} C08F *2/16*

U.S. Cl. 524—458 **11 Claims**

1. A process for the preparation of a latex of a vinyl acetate polymer, comprising the step of polymerizing vinyl acetate or vinyl acetate and a monomer copolymerizable with vinyl acetate, in aqueous emulsion, in the presence of an initiator, an emulsifier and a protective colloid, said protective colloid comprising a water-soluble polymer (a) containing at least one monomer selected from the group consisting of acrylamide, methacrylamide, substituted or unsubstituted N-alkyl derivatives of acrylamide and substituted or unsubstituted N-alkyl derivatives of methacrylamide, and a water-soluble polymer (b) of ethylene glycol, said polymer (b) having molecular weight between 1,000 and 50,000.

11. A latex of a vinyl acetate polymer, obtained in accordance with the process of claim **1**, said latex containing particles of said polymer in a concentration of 10 to 70% by weight, said polymer having a glass transition temperature between −20° and 50° C., said particles having a size distribution between 0.05 and 1 μm, and said latex having a viscosity between about 50 mPa.s and 80,000 mPa.s.

4,440,897

PROCESS OF MAKING SUBSTANTIALLY EXTERNAL SURFACTANT-FREE VINYL POLYMER EMULSION PRODUCTS

Rudolf Maska, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 1, 1982, Ser. No. 383,415

Int. Cl.^{3} C08L *33/08, 35/02*

U.S. Cl. 524—460 **10 Claims**

1. A process of preparing a substantially external surfactant—free polymer emulsion product which comprises the steps of:

(a) dispersing in water an amine or inorganic base neutralized saturated polymer, said polymer being derived from a first monomer mixture consisting essentially of from about 2 to about 100 percent by weight of a carboxylic acid or anhydride having ethylenic unsaturation and the balance, if any, of at least one other copolymerizable ethylenically unsaturated monomer wherein said monomer is alkyl acrylate or alkyl methacrylate containing from 1 to 8 carbon atoms, hydroxyalkyl acrylate or methacrylate containing from 2 to 4 carbon atoms in the alkyl moiety, styrenes, acrylamides, methacrylamides or a mixture thereof;

(b) adding a second monomer mixture of vinyl monomer and a polymerization catalyst to the dispersion of step (a), said vinyl monomer being vinyl chloride, vinylidene chloride, or a mixture thereof, and a proportion of the second monomer mixture added being such as to consist essentially of from about 25 percent to about 75 percent by weight of the total weight of the monomers used in forming the polymer emulsion product; and

(c) polymerizing the mixture of step (b) to form the polymer emulsion product.

4,440,898

CREPING ADHESIVES CONTAINING ETHYLENE OXIDE/PROPYLENE OXIDE COPOLYMERS

William S. Pomplun, Winnebago County, and Herbert E. Grube, Outagamie County, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jun. 17, 1982, Ser. No. 389,192

Int. Cl.^{3} C08L *29/04, 39/06, 71/02*

U.S. Cl. 524—503 **4 Claims**

1. A creping adhesive for use in a throughdrying process for the manufacture of creped wadding, said creping adhesive consisting essentially of an aqueous admixture of ethylene oxide/propylene oxide copolymer and a water soluble or water dispersible high molecular weight thermoplastic polymer selected from the group consisting of polyvinyl alcohol and polyvinyl pyrrolidone and having sufficient strength to form an adhesive film, wherein the relative amount of ethylene oxide moieties in the ethylene oxide/propylene oxide copolymer is from about 10 to 80 weight percent based on the combined dry weights of the ethylene oxide/propylene oxide copolymer and the thermoplastic polymer and wherein the amount of the ethylene oxide/propylene oxide copolymer is from about 40 to about 60 dry weight percent of the adhesive composition.

4,440,899

POLYOLEFIN POWDER COMPOSITIONS, IN PARTICULAR POLYETHYLENE POWDER COMPOSITIONS, WITH IMPROVED ADHESION, AND OBJECTS MADE OR TO BE MADE OF SUCH COMPOSITIONS

Erik R. Peerlkamp, Born, Netherlands, assignor to Stamicarbon B.V., Geleen, Netherlands

Filed Aug. 31, 1981, Ser. No. 298,253

Claims priority, application Netherlands, Aug. 30, 1980, 8004958

Int. Cl.^{3} C08K *5/00;* C08J *3/20;* C08L *23/04, 23/10*

U.S. Cl. 524—528 **8 Claims**

1. A polyolefin composition for rotational molding having improved adhesion to a substrate and easily releasable from mold walls, comprising an intimate mixture of about 20 percent to about 99.5 percent by weight of a first stabilized polyolefin powder, said first polyolefin powder containing at least about 0.025 percent by weight of a stabilizer, with about 0.5 percent to about 80 percent by weight of a second at most slightly stabilized polyolefin powder, said second powder having a crystalline melting point which is at least 1° C. higher than said first powder such that during rotational molding said composition forms a stabilized outer layer and a non-stabilized inner layer.

4,440,900

METHOD FOR MAKING COATINGS AND ADHESIVE BONDS WITH POLYVINYL CHLORIDE PLASTISOLS HAVING IMPROVED ADHESION, AND PLASTISOLS FOR SAID PROCESS

Christian Burba, Ascheberg-Herbern; Ulrich Goeke, Luenen, and Norbert Esper, Bergkamen, all of Fed. Rep. of Germany, assignors to Schering AG, Berlin and Bergkamen, Fed. Rep. of Germany

Filed May 23, 1983, Ser. No. 497,163

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1982, 3221354

Int. Cl.^{3} B05D *7/24, 5/10;* **C09D** *3/74;* **C09J** *3/14*

U.S. Cl. 524—569 **10 Claims**

1. A plastisol composition for the production of coatings or adhesive bonds comprising a finely divided vinyl chloride polymer, a plasticizer, and from 0.5 to 5 percent by weight of the entire plastisol, of an adhesion promoter which is a condensation product of

(A) a polymerized fatty acid,

(B) a polycarboxylic acid having three or more carboxyl groups, or an anhydride or ester thereof, in an amount from 3 to 20 percent by weight of said polymerized fatty acid, and

(D) an excess, based on the number of carboxyl groups of components (A) and (B), of a polyalkylene polyamine.

4,440,901

PROCESS FOR THE PRODUCTION OF PLASTIC BASED ON POLYISOCYANATES

Helmut Reiff, and Dieter Dieterich, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 1, 1983, Ser. No. 509,910

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1982, 3227017

Int. Cl.^{3} C08G *18/10*

U.S. Cl. 524—591 **13 Claims**

1. A process for the production of plastics based on an isocyanate-polyaddition product which may optionally contain ionic groups with the provision that the ionic groups, if present, are exclusively sulfonate groups which comprises

(1) forming an isocyanate group-containing prepolymer from
  (a) a compound which has a molecular weight of from 146 to about 10,000, is substantially free from hydroxyl groups, contains at least two terminal carboxyl groups and optionally contains ether and/or ester groups,
  (b) excess quantities of an organic nonaromatic polyisocyanate which has at least one cyclohexane ring and exclusively contains aliphatically- and/or cycloaliphatically-bound isocyanate groups and
  (c) up to 10 equivalent percent, based on the isocyanate-reactive groups in component (a), of a compound which is monofunctional for the purpose of the isocyanate-addition reaction and
(2) reacting the product of step (1) with
  (d) a chain-lengthening agent comprising water, a polyamine containing at least two primary and/or secondary amino groups or hydrazine or a derivative thereof containing at least two primary and/or secondary amino groups.

4,440,902

BISESTERS OF ALKENYLSUCCINIC ACIDS AND ETHYLENE OXIDE/PROPYLENE OXIDE BLOCK POLYMERS AND THEIR USE

Helmut Diery, Kelkheim, Fed. Rep. of Germany, and Bernhard Mees, Charlotte, N.C., assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

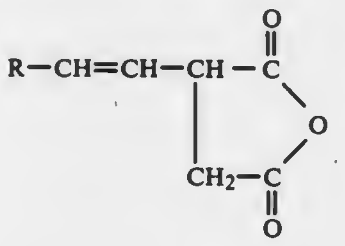
Filed Sep. 9, 1982, Ser. No. 416,100

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1981, 3136213

Int. Cl.^{3} C08F *283/06;* **C08L** *71/02*

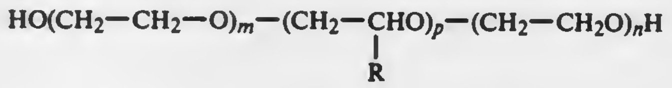
U.S. Cl. 525—404 **2 Claims**

1. A bisester of alkenylsuccinic acid and an ethylene oxide/-propylene oxide block polymer, obtained by reaction of alkenylsuccinic anhydride of the Formula 1



(1)

wherein R denotes branched or unbranched C_2–C_{20}alkyl, with an ethylene oxide/propylene oxide block polymer of the Formula 2



$$HO(CH_2-CH_2-O)_m-(CH_2-\underset{\overset{|}{R}}{C}HO)_p-(CH_2-CH_2O)_nH \qquad (2)$$

wherein R denotes methyl or ethyl, n and m are numbers selected such that the polyethylene oxide contribution to the total molecule of the block polymer is 5 to 80% of the molecular weight and p is a number from 10 to 70.

4,440,903

DIHALOISOCYANIDE DERIVATIVES OF POLYMERS FOR COUPLING NUCLEOPHILES

Leon Golstein, Rehovot; Mordechai Sokolovsky, Tel-Aviv, and Amihay Freeman, Rishon Lezion, all of Israel, assignors to Ramot University Authority for Applied Research and Industrial Development Ltd., Tel-Aviv, Israel

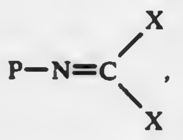
Filed Jun. 30, 1978, Ser. No. 921,055

Int. Cl.^{3} C12N *11/08, 11/06;* **C07G** *7/00;* **C07C** *143/00*

U.S. Cl. 525—54.1 **4 Claims**

2. A process for coupling at least one nucleophilic group to a polymeric backbone, comprising:

converting an isocyanide-substituted polymer, the backbone of which is selected from the group consisting of polyamides, polyesters and urea-formaldehyde polymers, to a dihaloisocyanido polymer of the general formula



wherein P is the polymeric backbone and X is chlorine or bromine, by reacting the isocyanide-polymer with a solution of the halogen in an inert non-aqueous solvent; and

reacting said dihaloisocyanido polymer with a bifunctional or multifunctional nucleophile, wherein said nucleophile is a polymer containing nucleophilic groups capable of reacting with the $—NCX_2$ groups of the dihaloisocyanido polymer.

4,440,904

NONAPEPTIDE ANTI-SECRETORY AGENTS

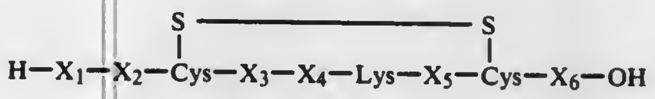
Dimitrios Sarantakis, West Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Jan. 31, 1983, Ser. No. 462,168

Int. Cl.^{3} C08L *89/00;* **C07C** *103/52;* **A61K** *37/00*

U.S. Cl. 525—54.11 **4 Claims**

1. A compound of the formula:



$$H-X_1-X_2-\overset{\overset{S}{|}}{Cys}-X_3-X_4-Lys-X_5-\overset{\overset{S}{|}}{Cys}-X_6-OH$$

in which

X_1 is either L- or D-His, Lys or Arg;
X_2 is either L- or D-Phe, Tyr, Trp, Leu, Met, His, Glu or Asp;
X_3 is Phe, Tyr, Trp, Leu or Met;
X_4 is L- or D-Trp;
X_5 is Thr, Val or Abu; and,
X_6 is either L- or D-Phe, Tyr, Trp, Leu, Met, Ser or Thr; the linear precursor intermediates thereof, pharmaceutically acceptable salts and amides thereof.

4,440,905

DUNKELSPERSERS

David L. Dunkelberger, Newtown, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 135,945, Mar. 31, 1980, abandoned. This application Aug. 13, 1981, Ser. No. 256,202

Int. Cl.^{3} C08L *51/04*

U.S. Cl. 525—66 **17 Claims**

1. An improved impact modifier composition comprising a blend of an elastomeric impact modifier and a dunkelsperser, the weight ratio of said elastomeric impact modifier to said dunkelsperser being from about 99.5 to 0.5 to about 96 to 4, said dunkelsperser being a polymer or a copolymer, said dunkelsperser polymer or copolymer being formed from at least 50 weight percent of at least one of the monomers selected from the group consisting of styrene, substituted styrene, an olefin, and an unsaturated ester of an organic acid different from the methyl ester of methacrylic acid, and where said dunkelsperser substantially reduces gel colonies in a rigid thermoplastic matrix polymer containing said improved modifier composition.

4,440,906

THERMOPLASTIC MOLDING MATERIAL

Franz Brandstetter, Neustadt; Juergen Hambrecht, Neckargemuend, and Adolf Echte, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 6, 1982, Ser. No. 337,404

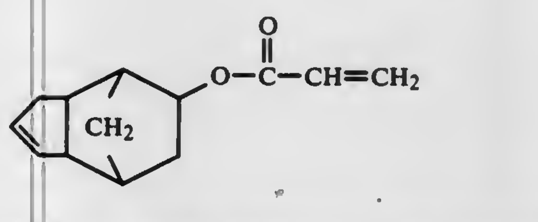
Int. Cl.^{3} C08L *61/04*

U.S. Cl. 525—68 **2 Claims**

1. A thermoplastic molding material comprising a mixture of

(a) a polymer of a monomer selected from the group consisting of styrene, nuclear-alkylated styrene, sidechain-alkylated styrene and mixtures thereof, having an intrinsic viscosity of from about 40 to 140 ml/g, as the hard component,

(b) a poly(alkyl acrylate), alkyl being of about 2 to 8 carbon atoms, which is prepared by crosslinking an acrylic ester with about 0.5 to 20% by weight of tricyclodecenyl acrylate having the formula (I)



(I)

based on the comonomers employed, thereby preparing a grafting base, and grafting the crosslinked acrylic ester, to the extent of 10 to 60% by weight, solely with stryene, wherein said poly(alkyl acrylate) has a glass transition temperature of below 0° C., as the soft component and

(c) a polyphenylene ether with an average chain length corresponding to not less than 50 benzene nuclei, the weight ratio a:b being (95–40):(5–60) and the weight ratio (a+b):c being (5–90):(95–10).

4,440,907

PROCESS OF PRODUCING A WATER-CURABLE, SILANE MODIFIED ALKYLENE-ALKYL ACRYLATE COPOLYMER BY REACTING AN ALKYLENE-ALKYL ACRYLATE COPOLYMER WITH A POLYSILOXANE PREDISPERSED IN A THERMOPLASTIC RESIN MATRIX

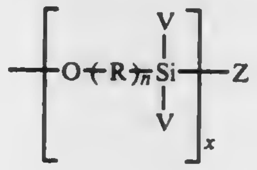
Michael J. Keogh, Bridgewater, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 294,784, Aug. 20, 1981, Pat. No. 4,369,289, which is a continuation-in-part of Ser. No. 192,319, Sep. 30, 1980, Pat. No. 4,328,323, which is a continuation-in-part of Ser. No. 70,785, Aug. 19, 1978, Pat. No. 4,291,136, which is a continuation-in-part of Ser. No. 892,153, Mar. 31, 1978, abandoned. This application Sep. 17, 1982, Ser. No. 419,142

Int. Cl.^{3} C08L *23/26, 83/10*

U.S. Cl. 525—106 **19 Claims**

1. A process of producing a water-curable, silane modified alkylene-alkyl acrylate copolymer which comprises admixing an alkylene-alkyl acrylate copolymer, an organo titanate and polysiloxane having the formula:



wherein R is a hydrocarbon radical, each V is hydrogen, a hydrocarbon radical or a hydrolyzable group and Z is a hydrolyzable group, n is an integer having a value of 1 to 18 inclusive and x is an integer having a value of at least 2, said polysiloxane predispersed in a thermoplastic resin matrix which is compatible with the said polysiloxane and said alkylene-alkyl acrylate copolymer and does not adversely interfere with the reaction between said polysiloxane and said alkylene-alkyl acrylate copolymer, with the result that said polysiloxane reacts with said alkylene-alkyl acrylate copolymer to produce a water-curable, silane modified copolymer.

4,440,908

FINELY DIVIDED IONOMER COATED THERMOPLASTIC RESIN

Dorothee M. McClain, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Division of Ser. No. 205,838, Nov. 10, 1980, Pat. No. 4,336,210. This application Sep. 8, 1981, Ser. No. 299,912

Int. Cl.^{3} C08L *33/02, 23/04, 23/26;* **C08J** *3/12*

U.S. Cl. 525—196 **16 Claims**

1. A dry powder of finely dispersed thermoplastic resin comprising resins selected from homopolymers and copolymers of olefins wherein the individual resin particles are substantially coated uniformly with a substantially water-insoluble ionomer, the ionomer including at least about 50 mol percent of an ethylenically unsaturated alpha-olefin of about 2 to about 10 carbon atoms, from about 0.2 to about 50 mol percent of an alpha, beta ethylenically unsaturated carboxylic acid having from about 3 to about 8 carbon atoms, with at least 10% of the acid groups being neutralized, said individual resin particles having diameters greater than about 10 microns and being present in the form of a finely divided dry powder.

4,440,909

BLENDS OF BIS(ALLYL CARBONATE) MONOMERS WITH POLYMERS AND POLYMER BLENDS PRODUCED THEREFROM

John C. Crano, and Ronald L. Haynes, both of Akron, Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 219,063, Dec. 22, 1980, Pat. No. 4,346,197. This application Jan. 27, 1982, Ser. No. 343,122

The portion of the term of this patent subsequent to Aug. 24, 1999, has been disclaimed.

Int. Cl.^{3} C08L *47/00*

U.S. Cl. 525—277 **7 Claims**

1. A resin comprising a bis(allyl carbonate) monomer chosen from the group consisting of alkylene bis(allyl carbonate) monomers, alkylene ether bis(allyl carbonate) monomers, alkylene polyether bis(allyl carbonate) monomers, alkylene carbonate bis(allyl carbonate) monomers, and mixtures thereof; and a dispersed copolymer of (a) a monofunctional vinyl monomer, and (b) a difunctional monomer having vinyl and allyl functionality, said dispersed copolymer being swellable by or soluble in the monomer of the bis(allyl carbonate) and having a viscosity average molecular weight above 100,000, said resin being pseudoplastic, fusible, capable of being cured to a hard resin, and having a shear stress of 10^4 to 10^7 dynes per square centimeter at a shear rate of 10^1 to 10^4 per second.

4,440,910

TOUGHENED CYANOACRYLATES CONTAINING ELASTOMERIC RUBBERS

John T. O'Connor, Wallingford, Conn., assignor to Loctite Corporation, Newington, Conn.

Filed Jan. 18, 1982, Ser. No. 339,952

Int. Cl.^{3} C08L *23/08, 51/06, 35/04*

U.S. Cl. 525—295 **8 Claims**

1. A curable adhesive comprising a substantially solvent-free mixture of:

(a) a monomeric ester of 2-cyanoacrylic acid, and

(b) about 0.5% to about 20% by weight of an elastomeric polymer selected from the group consisting of elastomeric copolymers of a lower alkene monomer and (i) acrylic acid esters (ii) methacrylic acid esters or (iii) vinyl acetate.

4,440,911

MODIFIED POLYETHYLENE AND LAMINATE THEREOF

Hiroshi Inoue; Masaaki Isoi, both of Saitama, and Kazuo Sei, Kanagawa, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 18, 1982, Ser. No. 359,401

Claims priority, application Japan, Apr. 7, 1981, 56-51098

Int. Cl.^{3} C08F *255/02*

U.S. Cl. 525—301 **11 Claims**

1. A fabricable thermoplastic composition which comprises linear low density copolymer of ethylene and an alpha-olefin wherein said alpha-olefin is selected from the group consisting of butene-1, hexene-1, methyl pentene-1, and octene-1 and comprises between 3 and 14 weight percent of the copolymer, said copolymer being reacted with from 0.01 to 3 wt. % of an unsaturated carboxylic acid or a derivative thereof, based on the weight of the copolymer, said linear low density copolymer being substantially free of long chain branching and having a density of 0.915 to 0.935 and the weight-average molecular weight/number-average molecular weight ratio from 3 to 12.

4,440,912

COPOLYMERS OF POLYARYLATES WITH POLYETHYLENE ARYLATES AND PROCESS FOR THEIR PREPARATION

Daniel W. Fox; Bruce A. Kaduk, and John B. Starr, Jr., all of Pittsfield, Mass., assignors to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 187,768, Sep. 16, 1980, Pat. No. 4,358,568. This application Apr. 23, 1982, Ser. No. 371,263

Int. Cl.^{3} C08L *67/00, 69/00*

U.S. Cl. 525—439 **3 Claims**

1. A copolymer prepared by blending of (1) a high molecular weight polyethylene arylate having an intrinsic viscosity of at least about 0.5 dl./g., as measured in a 60:40 mixture of phenol and tetrachloroethane at 25° C. and (2) a low or high molecular weight bisphenol-A-isophthalate-terephthalate carbonate polyarylate or bisphenol-A-isophthalate-terephthalate-polyarylate, said low molecular weight polyarylate having an intrinsic viscosity of about 0.1-3.0 dl./g., as measured in a 60:40 mixture of phenol and tetrachloroethane at 25° C. and said high molecular polyarylate having an intrinsic viscosity of at least about 0.5-0.6 dl./g. as measured in a 60:40 mixture of phenol and tetrachloroethane, and heating to 265°-270° C., said copolymer being transparent, tough, completely soluble in chlorinated solvent, maintaining its dimensional stability over a wide range of temperatures, and possessing a single glass transition temperature.

4,440,913

COATING COMPOSITION FOR PLIABLE SUBSTRATES

Shinji Sugiura; Yasuhiro Fujii; Katsunori Sato; Tuguo Nezu, and Yasumasa Okumura, all of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Hyogo, Japan

Filed Dec. 22, 1982, Ser. No. 452,047

Claims priority, application Japan, Dec. 25, 1981, 56-209315; Dec. 25, 1981, 56-209316

Int. Cl.^{3} C08L *67/04*

U.S. Cl. 525—443 **3 Claims**

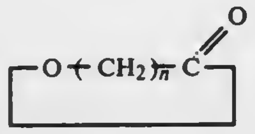
1. In a heat-curable coating composition containing an oil-free polyester resin composed substantially of a condensation product of an aliphatic polybasic acid, an aromatic polybasic acid, or the anhydrides thereof and a polyhydric alcohol and an aminoaldehyde resin as binder components, the improvement wherein

(A) the materials for said oil-free polyester resin contain 40 to 75% by weight, based on the total weight of said materials, of at least one polyester-forming compound selected from the group consisting of

(a) an aliphatic dibasic acid represented by the formula $HOOC—CH_2—_nCOOH$ wherein n is an integer of 4 to 10 as a polybasic acid,

(b) an aliphatic glycol represented by the formula $HO—CH_2—_nOH$ wherein n is an integer of 4 to 10 as a polyhydric alcohol, and

(c) a lactone represented by the formula



wherein n is an integer of 4 to 10,

(B) the entire polybasic acid components of the polyester resin contain at least 10%, based on the total weight of said polybasic acid components, of an alicyclic polybasic acid or its anhydride, and

(C) the polyester resin has a hydroxyl value of 20 to 95.

4,440,914

SOLID EPOXY RESIN SYSTEMS

David Helfand, Yorktown Heights, N.Y., and Ralph F. Sellers, Somerset, N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

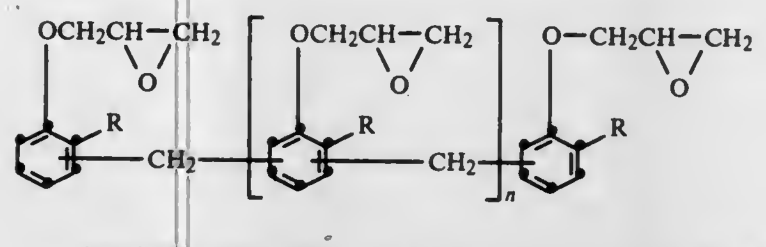
Continuation-in-part of Ser. No. 312,600, Oct. 19, 1981, abandoned. This application Sep. 20, 1982, Ser. No. 419,663

Int. Cl.^{3} C08G *59/38*

U.S. Cl. 525—482 **17 Claims**

1. A solid advanced epoxy resin comprising the reaction product resulting from a catalyzed advancement reaction of

(a) a polyepoxide resin having a functionality greater than two, said resin (1) corresponding to the formula



wherein R is H or CH_3 and n is about 0.2-6.0, or (2) being the tetraglycidyl ether of tetra[hydroxyphenyl)ethane;

(b) a diglycidyl ether of a polyhydric phenol or the alkyl or halogen derivatives thereof; and

(c) a polyhydric phenol or the alkyl or halogen derivatives thereof;

components (a) and (b) being present in concentration ranges of from 60-90%, by weight, and 10-40%, by weight, respectively, and component (c) being present in a concentration range of 2 to 23%, based on the total weight of components (a) and (b).

4,440,915

STABILIZED POLYPHENYLENE SULFIDE AND METHOD FOR PRODUCING SAME

Toshiyuki Asakura; Hiroaki Kobayashi, both of Ohtsu, and Yukio Noguchi, Shiga, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

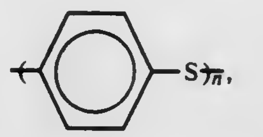
Continuation-in-part of Ser. No. 321,695, Nov. 16, 1981, abandoned. This application Nov. 22, 1982, Ser. No. 443,861

Claims priority, application Japan, Nov. 27, 1980, 55-165896

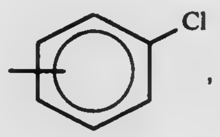
Int. Cl.^{3} C08F *283/00*

U.S. Cl. 525—537 **8 Claims**

1. An essentially linear stabilized polyphenylene sulfide having a reduced degree of oxidizing crosslinking characteristics which comprises a recurring unit,



wherein n is greater than 20, and about 0.05 to about 10 mole % per phenylene sulfide unit of an aromatic constituent chemically bonded with said polyphenylene sulfide chain, said aromatic constituent containing an electron attractive group consisting of



and said stabilized polyphenylene sulfide has a melting point in the range of about 250° C. to about 350° C.

4,440,916

PROCESS FOR SOLID STATE FREE RADICAL REACTIONS

Paul F. Waters, and Thomas T. Scambos, both of Washington, D.C., assignors to General Technology Applications, Inc., Reston, Va.

Continuation of Ser. No. 198,385, Oct. 20, 1980, abandoned. This application May 6, 1982, Ser. No. 375,653

Int. Cl.^{3} C08G *81/00, 83/00;* **C08J** *3/20*

U.S. Cl. 525—54.2 **9 Claims**

1. A process for the solid state reaction of a first normally solid polymer with at least one other normally solid polymer which comprises:

generating free radicals on at least the surface of said first polymer by the mechanical working of said polymer at cryogenic temperature in an atmosphere non-reactive toward said free radicals;

maintaining at least said first polymer at cryogenic temperatures, and

while at cryogenic temperatures, contacting said first polymer with said other polymer and subsequently heating at a rate and for a time sufficient to cause reaction between said first and second polymers.

4,440,917

VINYL ETHERS MONOMERS AND POLYMERS THEREFROM

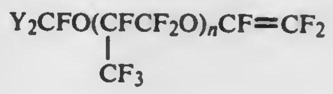
Paul R. Resnick, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Division of Ser. No. 330,332, Dec. 14, 1981, Pat. No. 4,414,159, which is a division of Ser. No. 191,301, Sep. 26, 1980, Pat. No. 4,334,082. This application Sep. 1, 1982, Ser. No. 413,787

Int. Cl.^{3} C08F *214/18*

U.S. Cl. 526—243 **7 Claims**

1. A copolymer of a vinyl ether monomer of the formula:



$$Y_2CFO(\underset{\displaystyle CF_3}{\underset{|}{C}}FCF_2O)_nCF{=}CF_2$$

wherein Y is selected from the group consisting of CF_2CN, CF_2CO_2R, CF_2CO_2H, CF_2CO_2M, CF_2CONH_2 and CF_2CONR_2; R is CH_3 or C_2H_5; n is an integer from 0 to 10; M is an alkali metal, ammonium or quaternary ammonium group;

and at least one perfluorinated comonomer selected from the group consisting of tetrafluoroethylene, hexafluoropropylene, chlorotrifluoroethylene, perfluoroalkylvinyl ether wherein the alkyl group contains 1 to 4 carbon atoms, and the vinyl ether, $CF_2{=}CF[OCF_2CF(CF_3)\text{]}_mOCF_2CF_2SO_2F$, where m is 1 or 2.

4,440,918

CONTACT LENS CONTAINING A FLUORINATED TELECHELIC POLYETHER

David E. Rice, Oakdale, and Jay V. Ihlenfeld, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

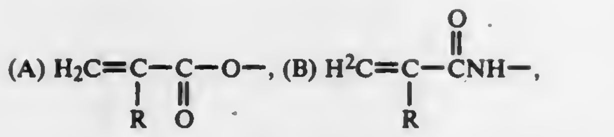
Filed Jan. 18, 1982, Ser. No. 340,473

Int. Cl.^{3} C08F *4/18;* **G02C** *7/04*

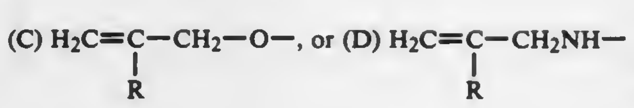
U.S. Cl. 526—246 **14 Claims**

1. An ophthalmic device selected from the group consisting of a contact lens and a corneal implant and comprising a polymer of a telechelic perfluoropolyether having a backbone of perfluorooxyalkylene units, a number average molecular weight between about 500 and 15,000, and at least one polymerizable ethylenically unsaturated group wherein said telechelic perfluoropolyether has the formula $Q—X—Y—(C_kF_{2k}O)_p(C_qF_{2q})—Z$ wherein p represents the number of $—C_kF_{2k}O—$ subunits in said backbone and is an integer of from 3 to 200, q is an integer of from 1 to 4, and k may be the same of different within each of said $—C_kF_{2k}O—$ subunits and is an integer of from 1 to 4

wherein Q is selected from

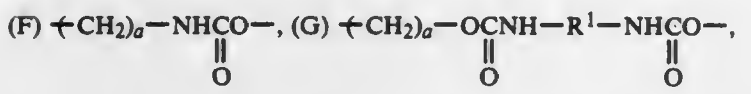


$$(A)\ H_2C{=}\underset{R}{\underset{|}{C}}{-}\underset{O}{\underset{\|}{C}}{-}O{-},\quad (B)\ H^2C{=}\underset{R}{\underset{|}{C}}{-}\overset{O}{\overset{\|}{C}}NH{-},$$

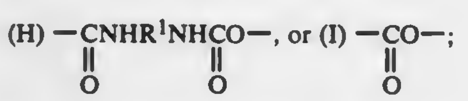


$$(C)\ H_2C{=}\underset{R}{\underset{|}{C}}{-}CH_2{-}O{-},\ \text{or}\ (D)\ H_2C{=}\underset{R}{\underset{|}{C}}{-}CH_2NH{-}$$

wherein R is selected from hydrogen or methyl;
wherein X is selected from (E) a covalent bond,

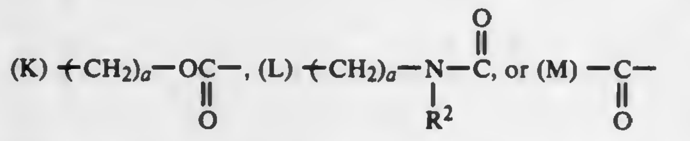


$$(F)\ {+}CH_2)_a{-}NH\underset{O}{\underset{\|}{C}}O{-},\quad (G)\ {+}CH_2)_a{-}O\underset{O}{\underset{\|}{C}}NH{-}R^1{-}NH\underset{O}{\underset{\|}{C}}O{-},$$



$$(H)\ {-}\underset{O}{\underset{\|}{C}}NHR^1NH\underset{O}{\underset{\|}{C}}O{-},\ \text{or}\ (I)\ {-}\underset{O}{\underset{\|}{C}}O{-};$$

wherein R^1 is selected from a divalent aliphatic group having from 2 to 14 carbon atoms, a divalent 5- or 6-membered cyclic group having from 5 to 14 carbon atoms, or an arylene group having from 6 to 14 carbon atoms, and a im an integer of from 2 to 12;
wherein Y is selected from (J) $—CH_2)_b$,



$$(K)\ {+}CH_2)_a{-}O\underset{O}{\underset{\|}{C}}{-},\quad (L)\ {+}CH_2)_a{-}\underset{R^2}{\underset{|}{N}}{-}\overset{O}{\overset{\|}{C}},\ \text{or}\ (M)\ {-}\underset{O}{\underset{\|}{C}}{-}$$

wherein R^2 is a lower alkyl group having 1 to 4 carbon atoms, a is an integer of from 2 to 12, and b is an integer of from 1 to 12; provided that when
(1) Q is (A), then X is selected from (E), (F), or (G) and Y is selected from (J), (K), or (L);
(2) Q is (B), then X is selected from (E), (F), or (G) and Y is selected from (J), (K), or (L);
(3) Q is (C) then either
  (i) X is (E) and Y is (M), or
  (ii) X is selected from (E), (F), (G), (H), or (I) and Y is selected from (J), (K), or (L); and
(4) Q is (D) then either
  (i) X is (E) and Y is (M), or
  (ii) X is selected from (H) or (I) and Y is selected from (J), (K), or (L); and
wherein Z is selected from $—OC_kF_{2k+1}$, or Q—X—Y— wherein Q, X, Y and k are as defined above.

4,440,919
LOW N-VINYL LACTAM CONTENT BASED BIOMEDICAL DEVICES

Richard C. Chromecek, Macedon; Gary D. Friends, Ontario; Lawrence Y. Wissman, and Raymond A. Yourd, III, both of Rochester, all of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Nov. 12, 1981, Ser. No. 320,353

Int. Cl.³ C08F ***226/06, 226/08;*** **G03B** ***21/46***

U.S. Cl. 526—263 **21 Claims**

1. As a new article of manufacture a contact lens formed from a hydrophilic polymer formed by polymerizing (a) one or more N-vinyl lactams and/or heterocyclic N-vinyl monomers, said N-vinyl lactams being selected from the group consisting of N-vinyl-2-pyrrolidinone, N-(1-methyl) vinyl pyrrolidinone, N-vinyl-2-piperidone and N-vinyl-2-caprolactam which may be substituted in the lactam ring by one or more lower alkyl groups, said heterocyclic N-vinyl monomers being selected from the group consisting of N-vinyl imidazole, N-vinyl succinimide, N-vinyl diglycolylimide, N-vinyl glutarimide, N-vinyl-3-morpholinone and N-vinyl-5-methyl-3-morpholinone, (b) one or more hydrophilic comonomers selected from the group consisting of hydroxyesters, free acids, amides and amines of acrylates, methacrylates, or itaconates, said hydrophilic monomer(s) being at least 50% of the total monomer of (a) and (b) present and (c) a resonance free di(alkene tertiary amine) cyclic crosslinking agent, said cyclic compound having the formula $CH_2{:}CG(CH_2)_xN{\sim}J{\sim}N\ (CH_2)_xCG{:}CH_2$ wherein x is 0 or 1, G is hydrogen or methyl and J is the balance of a structure forming cyclic dialkene urea, said agent being present in an amount from 0.01 to 10 weight percent of the total monomers of (a) and (b) present to form a crosslinked 3-dimensional polymeric network, said polymer having an oxygen permeability of at least 8×10^{-11} cm^2 cm/sec.cm^2 mmHg) and a tear initiation strength of at least 2 g/mm of thickness.

4,440,920
AROMATIC POLYESTERS

Shiro Fujikake; Motoo Kawamata, and Hikotada Tsuboi, all of Kanagawa, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

PCT No. PCT/JP82/00142, § 371 Date Dec. 10, 1982, § 102(e) Date Dec. 10, 1982, PCT Pub. No. WO82/03867, PCT Pub. Date Nov. 11, 1982

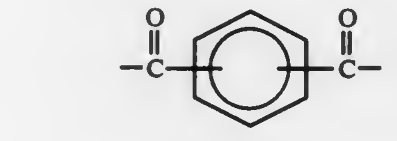
PCT Filed Apr. 28, 1982, Ser. No. 453,893

Claims priority, application Japan, Apr. 30, 1981, 56-64255

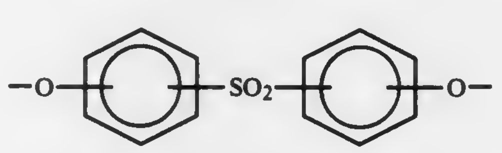
Int. Cl.³ C08G ***63/18, 63/66, 63/68***

U.S. Cl. 528—128 **5 Claims**

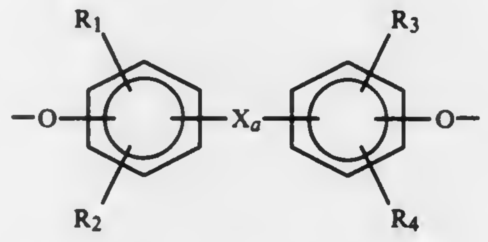
1. An aromatic polyester comprising the structural units shown by the following formulae A, B and C:



A



B



C

wherein two carbonyl groups in formula A are in a meta or paraposition with each other, an oxygen atom in formula B is in a meta or paraposition with an SO_2 group, an oxygen atom in formula C is in a meta or paraposition to X, X in formula C represents a divalent hydrocarbon group having 1–10 carbon atoms, O, CO, S, SO or SO_2, a is 0 or 1, and R_1 to R_4 are the same or different and each represent hydrogen, a hydrocarbon group having 1–8 carbon atoms or a halogen atom with a proviso that when X is SO_2, it is excluded that all of R_1 to R_4 are hydrogen, a ratio of the number of structural unit A to the number of structural unit B being 1:0.36–1.06, a ratio of the number of structural unit A to the number of structural unit C being 1:0.04–0.66, a ratio of the number of structural unit A to the number of structural units B and C being 1:0.99–1.10 and logarithmic viscosity number of the polymer being 0.2–2.0.

4,440,921
COUPLING OF POLYORGANOPHOSPHAZENES TO CARBOXYLIC ACID

Harry R. Allcock; Thomas X. Neenan, both of State College, and Walter C. Kossa, Wilkes-Barre, all of Pa., assignors to Research Corporation, Tucson, Ariz.

Filed Jun. 21, 1982, Ser. No. 390,350

Int. Cl.³ C08G ***73/00, 79/02***

U.S. Cl. 528—168 **32 Claims**

1. A carboxylated phosphazene polymer, comprising a phosphazene polymer backbone covalently coupled to a carboxylate-containing compound through a linking group attached at one end to said carboxylate-containing compound by an amide bond formed at a primary aliphatic amino group of said linking group and at the other end of said linking group to a phosphorous of said backbone.

4,440,922
POLYESTER CONTAINERS HAVING IMPROVED GAS BARRIER PROPERTIES

Robert B. Barbee, and Thomas H. Wicker, Jr., both of Kingsport, Tenn., assignors to Eastman Kodak Co., Rochester, N.Y.

Filed Apr. 13, 1983, Ser. No. 484,402

Int. Cl.³ C08G ***63/66***

U.S. Cl. 528—194 **10 Claims**

1. A container having improved gas barrier properties consisting essentially of a substantially thermoplastic polyester which consists essentially of the reaction product of
  (A) a diol containing up to about 8 carbon atoms, and
  (B) a diacid component consisting essentially of
    (i) about 5 to 100 mole percent of a first diacid selected from the group consisting of 1,4-phenylenedioxy diacetic acid, 1,3-phenylenedioxy diacetic acid, 1,2-phenylenedioxy diacetic acid, and mixtures thereof, and
    (ii) 0 to about 95 mole percent of terephthalic acid,
    wherein said polyester has an inherent viscosity of about 0.5 to 1.5.

4,440,923
METHOD OF PRODUCING HIGH-MOLECULAR WEIGHT POLYPHENYLENE OXIDES

Martin Bartmann, Recklinghausen; Hanns-Jorg Bax; Klaus Burzin, both of Marl, and Wilfried Ribbing, Dorsten, all of Fed. Rep. of Germany, assignors to Chemische Werke Huls AG, Marl, Fed. Rep. of Germany

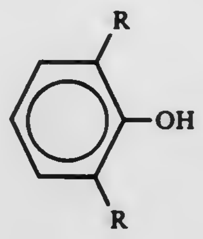
Filed May 23, 1983, Ser. No. 497,236

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1982, 3224691

Int. Cl.³ C08G ***65/44***

U.S. Cl. 528—216 **14 Claims**

1. A method of producing high molecular-weight polyphenylene oxides, having a relative viscosity change in relation to the concentration greater than 50 ml/g, measured in a 0.5% solution in chloroform at 25° C., comprising the oxidative coupling of a diortho-substituted phenol having the formula:



wherein R is an n-alkyl radical with 1 to 6 carbon atoms or an aryl radical, in the presence of an oxidizing agent, an organic solvent, a copper-amine catalyst which comprises a copper salt and an amine, and an activator, which comprises a polyvalent alcohol and a 20 to 60% solution suspension of an alkali or alkaline earth hydroxide, in a temperature range of 20° to 80° C., wherein X moles of alkali or alkaline earth hydroxide, and y moles of polyvalent alcohol are used per 100 moles of said phenol, wherein $1<X<25$ and $1<Y<30$.

4,440,924
PROCESS FOR PRODUCTION OF POLYESTER

Katsuaki Kuze; Yuziro Matsuyama; Hiroshi Hashimoto, all of Shiga; Takeshi Ohta, Tsuruga, and Osamu Makimura, Ogaki, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Japan

Filed Sep. 15, 1983, Ser. No. 532,624

Claims priority, application Japan, Oct. 5, 1982, 57-175895; Oct. 5, 1982, 57-175896; Oct. 7, 1982, 57-176682; Oct. 14, 1982, 57-180663

Int. Cl.³ C08G ***63/30***

U.S. Cl. 528—275 **5 Claims**

1. A process for production of a polyester comprising units of ethylene terephthalate as the major repeating units by supplying terephthalic acid and ethylene glycol continuously or intermittently to bis(beta-hydroxyethyl) terephthalate or its oligomer so as to carry out esterification under a pressure of not more than about 1.0 kg/cm^2, followed by polycondensation, which is characterized in that at least one magnesium compound is incorporated into the reaction system in an amount of about 30 to 400 ppm in terms of Mg to the polyester when the esterification rate in the step of esterification reaches about 20–80% and at least one phosphorus compound is incorporated into the reaction system in an amount as satisfying the following equation (I) at the stage after the esterification rate reaches not less than about 91% and before the termination of the initial condensation in the step of esterification:

$$1.2 \leqq Mg/P \leqq 20 \qquad (I)$$

wherein Mg/P is the atomic ratio of the magnesium atom to the phosphorus atom.

4,440,925
PROCESS FOR MAKING FINE PARTICULATE NON-AGGLOMERATING CHLOROPOLYETHYLENE

Alexander Ohorodnik, Erftstadt; Hans W. Keuper, Cologne; Horst Semmler; Joachim Hardel, both of Brühl; Hermann Vierling, Hürth, and Robert Willms, Knapsack, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

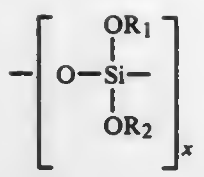
Filed Feb. 9, 1982, Ser. No. 347,308

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1981, 3105404

Int. Cl.³ C08F ***8/22***

U.S. Cl. 528—487 **11 Claims**

1. A process for making fine particulate, non-agglomerating chloropolyethylene by subjecting pulverulent polyethylene to a chlorination reaction in aqueous or aqueous/hydrochloric acid-suspension with chlorine gas at a temperature of about 20° to 140° C. in the presence of silicic acid and silicon oil, separating, washing and drying the chloropolyethylene, which comprises: terminating the chlorination; intensively mixing the aqueous/hydrochlorid acid suspension of chloropolyethylene with an aqueous or aqueous/hydrochlorid acid-dispersion containing
(A) about 2 to 6 weight % of talc,
(B) 0.05 to 1 weight % of a fixing agent consisting of
  (a) an orthophosphoric acid monoester, an orthophosphoric acid diester or mixtures thereof wherein the ester radicals are alkyl radicals having 10 to 20 carbon atoms or polyoxyalkylene radicals having 4 to 20 carbon atoms or
  (b) a polysiloxane of the general formula



$$\left[-O-\underset{OR_2}{\overset{OR_1}{Si}}-\right]_x$$

in which R_1 and R_2 stand for alkyl, aryl or aralkyl radicals and x stands for a whole number of 10 to 10,000,

the percentages of (A) and (B) being based on the chloropolyethylene quantity and

(C) 0.5 to 2.5% by volume of a non-ionic dispersant, based on the volume of the chloropolyethylene suspension;

separating the chloropolyethylene from the mixture, washing with water and drying the chloropolyethylene.

4,440,926
HEPARIN ESTERS AND PROCESSES FOR THEIR PREPARATION

Jean S. Mardiguian, La Varenne Saint-Hilaire, France, assignor to Pharmindustrie, Gennevilliers, France

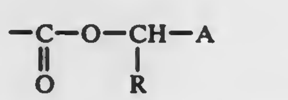
Filed Apr. 29, 1981, Ser. No. 258,811

Claims priority, application France, May 14, 1980, 80 10792

Int. Cl.³ C08B ***37/10***

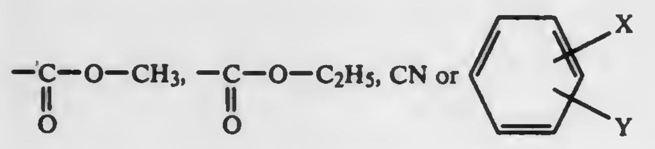
U.S. Cl. 536—21 **15 Claims**

1. Esters of heparin, which are derived from heparin by replacement of the carboxyl groups of heparin by groups of the formula:



$$-\underset{O}{\overset{}{\underset{\|}{C}}}-O-\underset{R}{\underset{|}{CH}}-A \qquad (I)$$

in which R is hydrogen or methyl and A is hydrogen, methyl, phenyl,



X representing chlorine, nitro, alkyl containing 1 to 4 carbon atoms or methoxy and Y representing hydrogen or chlorine, the replacement being a partial or total replacement when A is other than hydrogen, methyl or phenyl, and, when A is hydrogen, methyl or phenyl, the replacement being a partial replacement corresponding to a 10% to 90% esterification percentage of the carboxyl groups and the esters being selective esters wherein are esterified, partially or wholly, either only the carboxyl groups of the D-glucuronic acid linkages, only the carboxyl groups of the D-glucuronic acid and unsulfated L-iduronic acid linkages, only the carboxyl groups of the unsulfated L-iduronic acid and sulfated L-iduronic acid linkages, or only the carboxyl groups of the sulfated L-iduronic acid linkages, and the alkali metal, alkaline earth metal, magnesium, quaternary ammonium and triethylamine, pyridine and imidazole salts of said esters.

4,440,927
PROCESS FOR PREPARING INHIBITORS OF 3-HYDROXY-3-METHYLGLUTARYL COENZYME A REDUCTASE VIA A CHIRAL SYNTHON

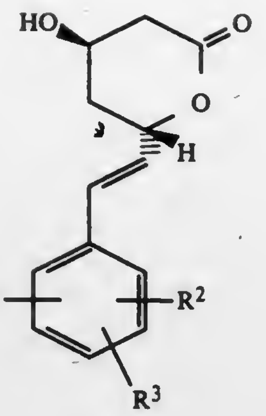
John D. Prugh, Chalfont, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 275,521, Jun. 19, 1981, abandoned. This application May 3, 1982, Ser. No. 373,605

Int. Cl.³ C07D ***309/30, 309/10***

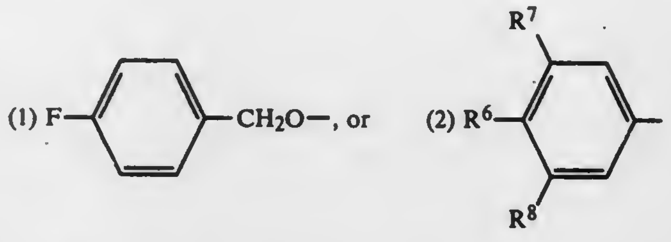
U.S. Cl. 549—292 **2 Claims**

1. A process for preparing the compound of structural formula:



wherein:

R^2 and R^3 are independently chloro or C_{1-3} alkyl; and R^1 is



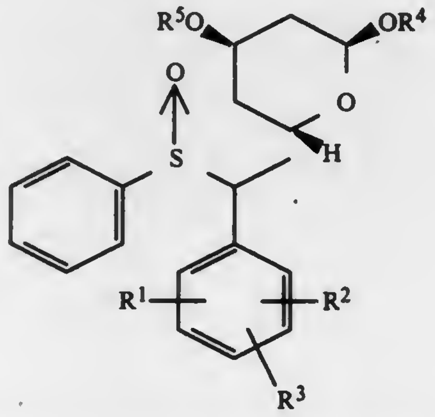
wherein

R^6 is hydrogen, fluoro- or chloro, and

R^7 and R^8 are independently hydrogen, chloro or C_{1-3} alkyl;

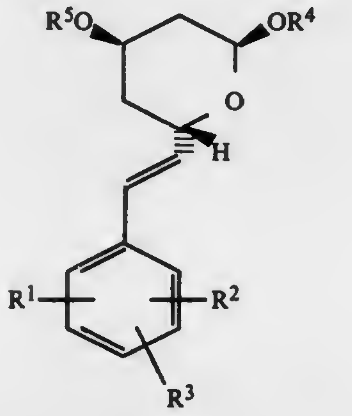
which comprises the steps of:

(A) treating a compound of structural formula:



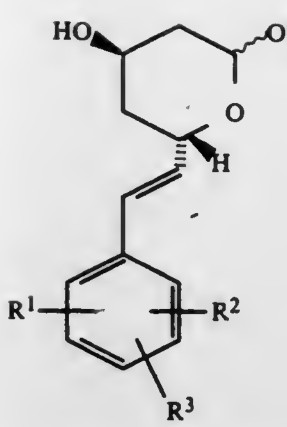
III

wherein R^4 is C_{1-3} alkyl; R^5 is benzyl, 4-fluorobenzyl, or 4-methoxybenzyl; at 45° to 80° C. for 2–12 hours in the presence of base in a liquid aromatic hydrocarbon; to produce the compound of formula:



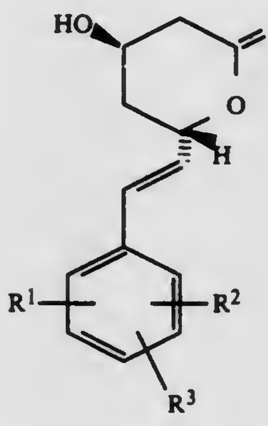
IV

(B) followed by treatment with palladium hydroxide on carbon catalyst in a C_{2-4} alkanol to remove the R^5 group followed by treatment with aqueous acetic acid to produce the compound of structure VI



VI

(C) followed by treatment with N-iodosuccinimide and tetra-n-butylammonium iodide in an inert solvent to produce the compound of formula



4,440,928
PROCESS FOR PREPARATION OF URACILS

Kanenobu Matsui; Shinichiro Uchiumi; Hideki Asada, and Takashi Umezu, all of Ube, Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

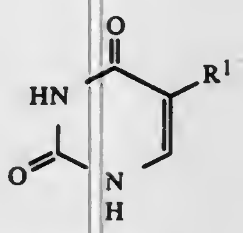
Filed Aug. 25, 1982, Ser. No. 411,464

Claims priority, application Japan, Sep. 1, 1981, 56-136145

Int. Cl.³ C07D ***239/55***

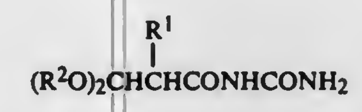
U.S. Cl. 544—309 **10 Claims**

2. A process for the preparation of uracils represented by the formula:



wherein R^1 stands for a hydrogen atom or an alkyl group having 1 to 6 carbon atoms,

which comprises cyclizing a 3,3-dialkoxypropionic acid derivative represented by the formula:



$$(R^2O)_2CH\overset{R^1}{\overset{|}{C}}HCONHCONH_2$$

wherein R^1 is as defined above, and R^2 independently stand for an alkyl group having 1 to 8 carbon atoms or an aralkyl group having 7 to 9 carbon atoms,

in the presence of an acid catalyst.

4,440,929
IMIDAZOQUINOXALINE COMPOUNDS

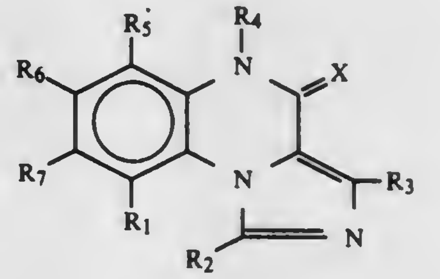
Thomas D. Lee, Scarsdale, N.Y., and Richard E. Brown, East Hanover, N.J., assignors to USV Pharmaceutical Corporation, Tarrytown, N.Y.

Continuation-in-part of Ser. No. 283,717, Jul. 16, 1981, abandoned. This application Mar. 29, 1982, Ser. No. 362,713

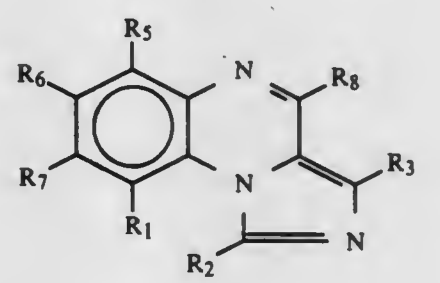
Int. Cl.³ C07D ***487/04;*** **A61K** ***31/495;*** **C07D** ***233/90, 405/10***

U.S. Cl. 544—346 **16 Claims**

1. Imidazoquinoxalines selected from the group consisting of structures I and II



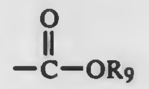
I



II

wherein

R_1, R_5, R_6 and R_7 are independently H, alkyl, aryl, alkenyl, alkynyl, hydroxy, hydroxyalkyl, alkoxy, mercapto, mercaptoalkyl, alkylthio, amino, alkylamino, aminoalkyl, carboxaldehyde,



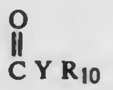
$$-\overset{O}{\overset{\|}{C}}-OR_9$$

wherein R_9 is H or pharmaceutically acceptable salts, carbalkoxy, alkanoyl, cyano, nitro, halo, trifluoromethyl, alkylsulfonyl, sulfonamido, or

R_1, R_5, R_6 or R_7 taken together with an adjacent group from a methylenedioxy group;

R_4 is H, alkyl, alkenyl, alkynyl, aryl, aralkyl, hydroxy or alkanoyl;

R_3 is H, cyano, tetrazolo, carboxaldehyde, hydroxyalkyl or



$$\overset{O}{\overset{\|}{C}}YR_{10}$$

wherein Y is O or NH and R_{10} is H, alkyl, aryl, hydroxyalkyl, alkoxyalkyl, aminoalkyl or pharmaceutically acceptable salt thereof;

R_2 is H, alkyl, halo, amino, alkylamino, arylamino, hydroxyamino, hydroxy, alkoxy, mercapto, or alkylthio;

R_8 is alkyl, halo, amino, alkylamino, arylamino, hydroxyamino, hydroxy, alkoxy, mercapto, or alkylthio;

X is oxygen, sulfur, imino, or hydroxyimino;

with the proviso that when R_2 is hydroxy it can be in enol or keto form; and

wherein the alkyl of the alkyl, hydroxyalkyl, alkoxy, aminoalkyl, alkylamino, alkylthio, mercaptoalkyl, alkanoyl, aralkyl and carbalkoxy contains from 1 to 8 carbon atoms and

the alkenyl and alkynyl contain 2 to 8 carbon atoms.

4,440,930

HERBICIDALLY ACTIVE QUINOLINE OR QUINOXALINE ACETOPHENONE OXIME DERIVATIVES

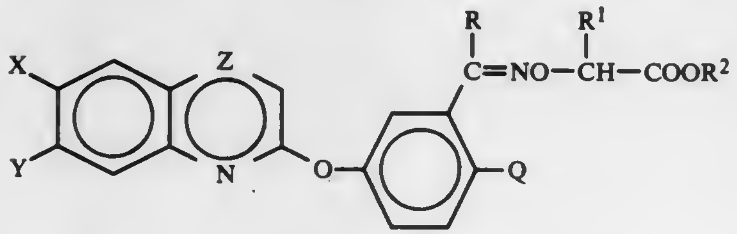
Dennis K. Krass, Canal Fulton, and Sidney B. Richter, Fairlawn, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 25, 1982, Ser. No. 436,223

Int. Cl.^{3} C07D *241/44, 215/22;* **A01N** *43/60; 43/42*

U.S. Cl. 544—354 **3 Claims**

1. A compound of the formula:



wherein:

R is hydrogen or alkyl of up to 3 carbon atoms which alkyl may be monosubstituted by halogen, cyano, alkoxy or alkylthio;

R^1 is hydrogen or methyl;

R^2 is hydrogen, alkyl of up to 10 carbon atoms or an agronomically suitable salt;

Q is halogen, nitro, or cyano;

X and Y are the same or different and represent hydrogen, halogen, alkyl or haloalkyl of up to 4 carbon atoms; and

Z is nitrogen.

4,440,931

7β-ARYLALKYL-3-METHOXY OR 3-HYDROXY-4,5α-EPOXY-6β-HYDROXY-7α-HYDROXYMETHYL-17-METHYL OR 17-CYCLOALKYLMETHYLMORPHINANS

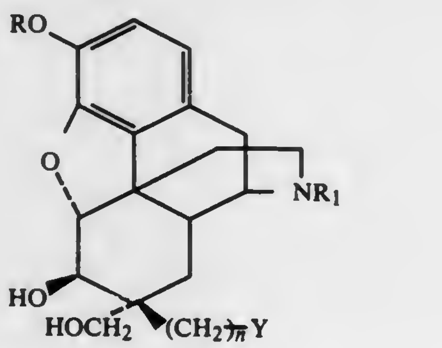
Michael P. Kotick; David L. Leland, and Joseph O. Polazzi, all of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Sep. 9, 1982, Ser. No. 416,146

Int. Cl.^{3} C07D *489/02;* **A61K** *31/485*

U.S. Cl. 546—44 **10 Claims**

1. 7β-alkyl or arylalkyl-3-methoxy or hydroxy-4,5α-epoxy-6β-hydroxy-7α-hydroxymethyl-17-methyl or cycloalkylmethylmorphinans characterized by the formula:



wherein R is H or methyl, R_1 is methyl, cyclopropylmethyl or cyclobutylmethyl, n is 2 to 4 and Y is H or phenyl.

4,440,932

7β-ARYLALKYL-7α-METHYL-6-OXO OR 6α-HYDROXY-3-METHOXY OR 3-HYDROXY-4,5α-EPOXY-17-METHYL OR 17-CYCLOALKYL-METHYLMORPHINANS

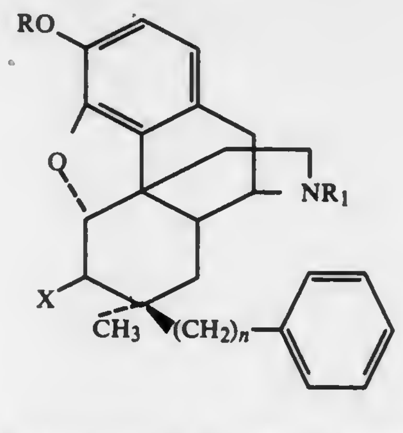
Michael P. Kotick, and David L. Leland, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Sep. 9, 1982, Ser. No. 416,145

Int. Cl.^{3} C07D *489/02;* **A61K** *31/485*

U.S. Cl. 546—44 **10 Claims**

1. 7β-arylalkyl-7α-methyl-6-oxo or 6α-hydroxy-3-methoxy or 3-hydroxy-4,5α-epoxy-17-methyl or 17-cycloalkylmethylmorphinans of the formula:



wherein R is H or methyl, X is oxo or α-hydroxy, n is 2 to 4 and R_1 is methyl, cyclopropylmethyl or cyclobutylmethyl.

4,440,933

PROCESS FOR PREPARING 1,2,5-THIADIAZOLES

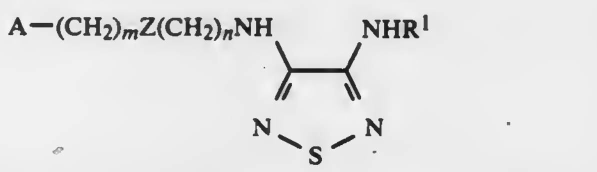
Thomas A. Montzka, Manlius, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

Filed Mar. 16, 1983, Ser. No. 475,985

Int. Cl.^{3} C07D *285/10*

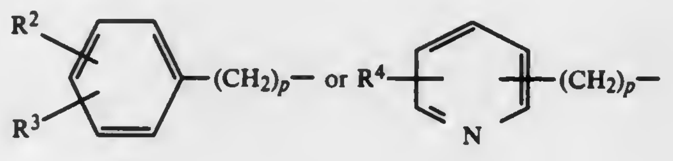
U.S. Cl. 546—193 **9 Claims**

1. A process for the preparation of a compound of the formula



I

wherein R^1 is hydrogen, (lower)alkyl, 2-fluoroethyl, 2,2,2-trifluoroethyl, allyl, propargyl,



in which

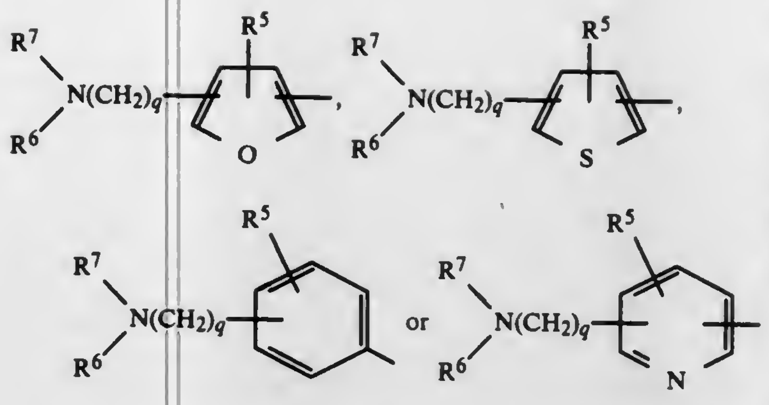
p is 1 or 2, R^2 and R^3 each are independently hydrogen, (lower)alkyl, (lower)alkoxy or halogen, and, when R^2 is hydrogen, R^3 also may be trifluoromethyl, or R^2 and R^3, taken together, may be methylenedioxy, and R^4 is hydrogen, (lower)alkyl or (lower)alkoxy;

m is an integer of from 0 to 2 inclusive;

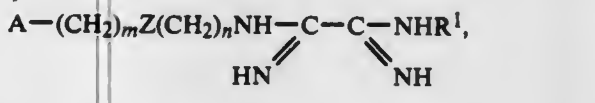
n is an integer of from 2 to 5 inclusive;

Z is oxygen, sulfur or methylene; and

A is



in which R^5 is hydrogen, (lower)alkyl or (lower)alkoxy, q is an integer of from 1 to 4 inclusive and R^6 and R^7 each are independently (lower)alkyl, (lower)alkoxy(lower)alkyl in which the (lower)alkoxy moiety is at least two carbon atoms removed from the nitrogen atom, or phenyl(lower)alkyl, and, when R^6 is hydrogen, R^7 also may be cyclo(lower)alkyl, or R^6 and R^7, taken together with the nitrogen atom to which they are attached, may be pyrrolidino, methylpyrrolidino, dimethylpyrrolidino, morpholino, thiomorpholino, piperidino, methylpiperidino, dimethylpiperidino, N-methylpiperazino, 1,2,3,6-tetrahydropyridyl, homopiperidino, heptamethyleneimino, octamethyleneimino, 3-azabicyclo[3.2.2]non-3-yl or 3-pyrrolino; and nontoxic, pharmaceutically acceptable salts, hydrates and solvates thereof; which process comprises reacting a substituted ethanediimidamide of the formula

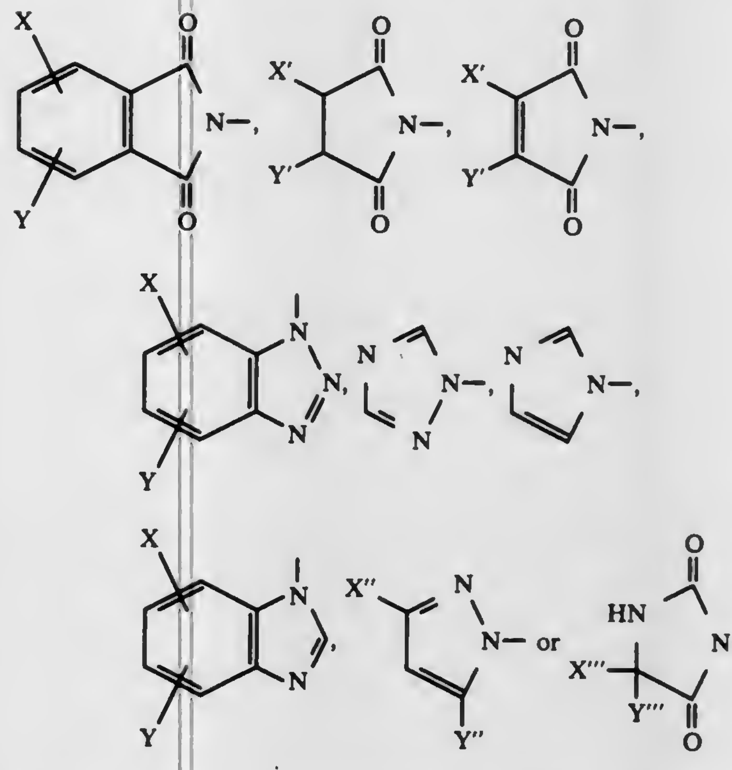


$$A-(CH_2)_mZ(CH_2)_nNH-\underset{\underset{HN}{\|}}{C}-\underset{\underset{NH}{\|}}{C}-NHR^1, \qquad II$$

in which A, m, Z, n and R^1 are as described above, with a compound of the formula

$$R-S-R \qquad VII$$

in which the two R groups are the same and may be



in which X and Y are independently hydrogen, (lower)alkyl, (lower)alkoxy, chloro, bromo, nitro, methanesulfonyl, benzenesulfonyl, cyclo(lower)alkyl or phenyl, X' and Y' are independently hydrogen, (lower)alkyl or phenyl, X'' and Y'' are independently hydrogen or (lower)alkyl and X''' and Y''' are independently (lower)alkyl or phenyl, in a non-reactive organic solvent, at a temperature of from about 0° C. to about 100° C.

9. A process for the preparation of 3-amino-4-[3-(4-piperidinomethyl-2-pyridyloxy)propylamino]-1,2,5-thiadiazole, or a nontoxic pharmaceutically acceptable salt, hydrate or solvate thereof, which comprises reacting N-[3-(4-piperidinomethyl-2-pyridyloxy)propyl]ethanediimidamide with about an equimolar amount of N,N'-thiobisphthalimide in a non-reactive organic solvent at a temperature of from about 10° C. to about 50° C.

4,440,934

5-(4-HYDROXYPHENYL) HYDANTOIN DERIVATIVES

Sung J. Kim; Ik W. Um, both of Seoul, and Won J. Park, Anyang, all of Rep. of Korea, assignors to Pacific Chemical Ind. Co., Ltd., Seoul, Rep. of Korea

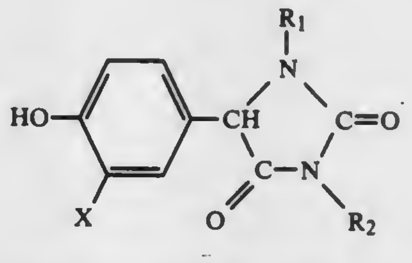
Filed Aug. 26, 1982, Ser. No. 411,783

Claims priority, application Rep. of Korea, Aug. 26, 1981, 81-3119; Apr. 30, 1982, 82-1902

Int. Cl.^{3} C07D *233/78*

U.S. Cl. 548—312 **4 Claims**

1. A 5-(4-hydroxyphenyl)hydantoin derivative of the formula(I)



(I)

wherein R_1 represents a hydrogen atom or a 1-hydroxy lower alkyl radical, and R_2 represents a 1-hydroxy lower alkyl radical, and X represents a hydrogen or chlorine atom.

4,440,935

BICYCLOIMIDAZOLES

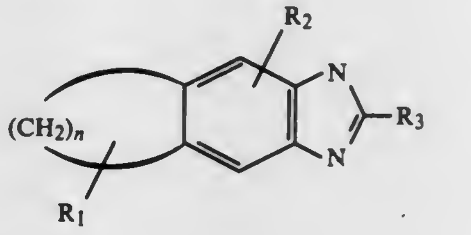
Fu-chih Huang, Boonton, N.J., assignor to USV Pharmaceutical Corporation, Tarrytown, N.Y.

Division of Ser. No. 285,216, Jul. 7, 1981, Pat. No. 4,368,201. This application Sep. 20, 1982, Ser. No. 420,076

Int. Cl.^{3} A61K *31/425;* **C07D** *235/24*

U.S. Cl. 548—326 **2 Claims**

1. A compound of the structure



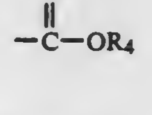
wherein

n is 3, 4, or 5

R_1 is hydrogen or C_1–C_6 alkyl,

R_2 is hydrogen, C_1–C_6 alkyl, hydroxyl, C_1–C_6 alkoxy, cyano, phenyl, carboxyl, tetrazole, or halogen,

R_3 is tetrazole, carboxamide or



$$-\overset{\overset{Z}{\|}}{C}-OR_4$$

wherein

Z is oxygen, sulfur or NH and

R_4 is H, alkali metal, ammonium, C_1–C_6 alkyl, C_1–C_6 alkoxy C_1–C_6 alkyl, C_6 aryl, or C_6 aryl C_1–C_6 alkyl.

4,440,936

RHODIUM-PHOSPHINE CHIRAL HYDROGENATION CATALYSIS OF ACETOPHENONE, ATROPIC ACID, AND ALPHA-ACYLAMIDOACRYLIC ACIDS AND ESTERS THEREOF

Dennis P. Riley, Forest Park, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

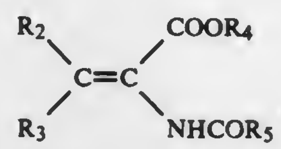
Division of Ser. No. 132,475, Mar. 19, 1980, Pat. No. 4,331,818. This application Jan. 18, 1982, Ser. No. 339,913

Int. Cl.^{3} C07D *209/20;* **C07C** *65/13, 101/04, 103/00*

U.S. Cl. 548—498 **15 Claims**

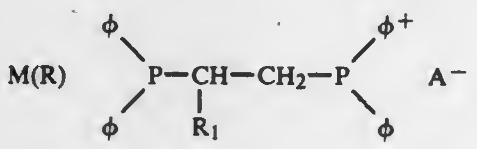
1. In a method for chiral hydrogenation of a prochiral substrate, which includes the steps of:

(a) providing a prochiral substrate selected from the group consisting of acetophenone, atropic acid, alpha-acylamido acrylic acids and esters thereof of formula:

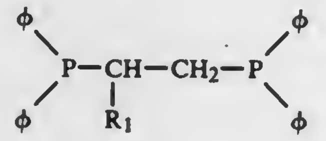


wherein R_2 and R_3 are —H, or substituted or unsubstituted alkyl, cycloalkyl or aryl, R_4 is —H or aryl, and R_5 is substituted or unsubstituted alkyl or aryl; and

(b) reacting the prochiral substrate with hydrogen in the presence of a catalytic amount of a chiral hydrogenation catalyst of formula:



wherein M is a transition metal, R is a chelating diene, A^- is a non-coordinating anion and



is the (S)- or (R)- stereoisomer; the improvement wherein R_1 is cyclohexyl.

4,440,937

CYCLIC CARBONIC ACID DERIVATIVES

Heinrich Krimm, and Hans-Josef Buysch, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

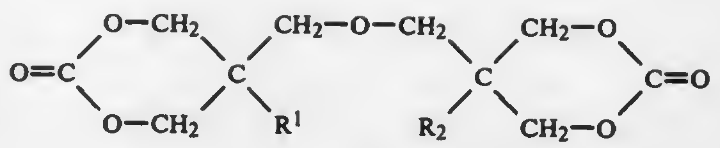
Filed Jan. 20, 1982, Ser. No. 340,943

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1981, 3103136; Jan. 30, 1981, 3103138; Jan. 30, 1981, 3103139

Int. Cl.^{3} C07D *319/06*

U.S. Cl. 549—228 **2 Claims**

1. A compound of the formula



wherein R^1 and R^2 represent methyl or ethyl.

4,440,938

PROCESS FOR THE PREPARATION OF A FURAN DERIVATIVE

John Bradshaw, Hertfordshire, England, assignor to Glaxo Group Limited, London, England

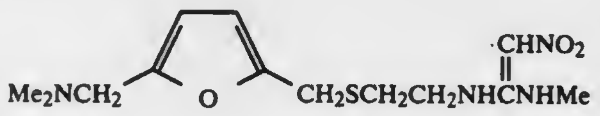
Continuation of Ser. No. 223,483, Jan. 8, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 431,600

Claims priority, application United Kingdom, Jan. 8, 1980, 8000580; Jan. 8, 1980, 8000581

Int. Cl.^{3} C07D *307/52*

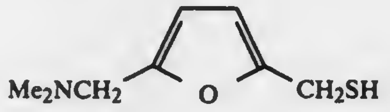
U.S. Cl. 549—495 **5 Claims**

1. A process for the preparation of the furan derivative of formula (I)



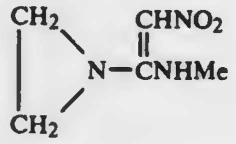
(I)

which comprises reacting a thiol of formula (II)



(II)

with an alkylating agent of formula (III)



(III)

4,440,939

PROCESS FOR THE PREPARATION OF ESTERS OF LEUKOTRIENE A

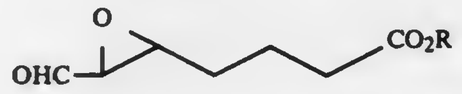
John G. Gleason, Delran, N.J.; Charles M. Kinzig, Merion Station, and Deborah L. Bryan, West Chester, both of Pa., assignors to SmithKline Beckman Corporation, Philadelphia, Pa.

Division of Ser. No. 333,850, Dec. 22, 1981, Pat. No. 4,387,239, which is a division of Ser. No. 230,915, Feb. 2, 1981, Pat. No. 4,352,757. This application Nov. 4, 1982, Ser. No. 439,088

Int. Cl.^{3} C07D *303/42*

U.S. Cl. 549—548 **2 Claims**

1. A compound by the following structural formula:



(IV)

wherein R is alkyl of 1 to 4 carbon atoms, benzyl or 1,1,1-trichloroethyl.

4,440,940

ANTI-ATHEROSCLEROTIC AGENTS

Robert G. Shepherd, South Nyack, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 85,652, Oct. 17, 1979, abandoned. This application Nov. 19, 1981, Ser. No. 323,522

Int. Cl.^{3} C07C *101/00*

U.S. Cl. 560—19 **16 Claims**

1. An acid containing the organic radical (2,3-methanohept-4-ylamino) selected from the group consisting of 3-(2,3-methanohept-4-ylamino)benzoic acid, 3-[3-(2,3,-methanohept-4-ylamino)phenyl]propionic acid, 4-[3-(2,3,-methanohept-4-ylamino)phenyl]butyric acid, 3-[3-(2,3-methanohept-4-ylamino)phenyl]acrylic acid, 3-(2,3-methanohept-4-ylamino)-phenylpropionic acid, 3-(2,3,-methanohept-4-ylamino)benzoylacetic acid, 3-[3-(2,3,-methanohept-4-ylamino)benzoyl]-propionic acid, and 2-(2,3,-methanohept-4-ylamino)benzoylacetic acid.

4,440,941

AROYL-AMINOACIDS, AMIDES AND ESTERS THEREOF

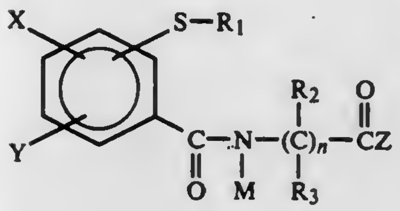
John T. Suh, Greenwich, Conn.; Paul R. Menard, Tuckahoe, N.Y., and Howard Jones, Holmdel, N.J., assignors to USV Pharmaceutical Corporation, Tarrytown, N.Y.

Filed Dec. 22, 1980, Ser. No. 219,051

Int. Cl.^{3} C07C *63/04, 69/84*

U.S. Cl. 560—20 **12 Claims**

1. A compound of the structure



wherein:

X and Y are hydrogen, halogen, hydroxy, alkoxy, trifluoromethyl, nitro, carboxy, cyano, sulfonamido, sulfhydryl, alkyl, alkenyl, alkynyl, alkanoyl, alkylmercapto, amino, alkylamino, dialkylamino, and may be the same or different with the proviso that when X is nitro, sulfonamido, alkyl, alkenyl, or alkynyl Y is hydrogen, halo or trifluoromethyl;

R_1 is hydrogen, alkanoyl, substituted alkanoyl wherein the substituent is hydroxy, amino or cycloalkyl, benzoyl, phenylalkanoyl, or cycloalkylcarbonyl;

n is an integer from 1 to 4 inclusive;

R_2 and R_3 are hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkyl-alkyl, phenyl, phenylalkyl, and substituted derivatives thereof wherein the substituents are hydroxy, amino, halogen, mercapto, alkylmercapto, and may be the same or different;

M is alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkyl-alkyl, phenyl or phenylalkyl; and

Z is hydroxy, amino, alkylamino, dialkylamino, or alkoxy,

wherein the alkyl, alkenyl, and alkynyl groups and the alkyl moieties in alkoxy, alkanoyl, alkylmercapto, alkylamino, and dialkylamino contain from 1 to 6 carbon atoms, the cycloalkyl groups contain from 3 to 7 carbon atoms, and where Z is hydroxy, their pharmaceutically acceptable, nontoxic alkali and alkaline earth salts.

4,440,942

CRYSTALLINE DIASTEREOMERIC L-ALPHA-METHYLDOPA POE ESTER AND PROCESS FOR ITS PREPARATION

John Budavari, Watchung, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 1, 1982, Ser. No. 353,697

Int. Cl.^{3} C07C *101/08*

U.S. Cl. 560—40 **16 Claims**

1. Crystalline, diastereomeric L-α-methyldopa POE ester, also referred to as (R),(S)-α-pivaloyloxyethyl-(S)-3-(3,4-dihydroxyphenyl)-2-methylalaninate.

2. A process for isolating in a crystalline form, diastereomeric L-α-methyldopa POE ester from its crude reaction mixture which comprises:

(A) bringing said crude reaction mixture comprising diastereomeric L-α-methyldopa POE ester and an aprotic solvent to room temperature and diluting by up to about four times by volume with an inert organic solvent.

(B) extracting the organic solvent solution with an aqueous inorganic salt solution of ionic solution strength of from 5% (by weight) to saturated,

(C) finally, adding from about 0.5 to 5 volumes of an apolar solvent, aging the slurry, and collecting the resulting crystalline product.

16. The crystalline mixture, diastereomeric L-α-methyldopa POE ester, isolated from a crude reaction mixture comprising diastereomeric L-α-methyldopa POE ester, an aprotic solvent, unreacted starting materials and reaction by-products by the steps comprising:

(A) bringing said crude reaction mixture to room temperature and diluting by up to about four times by volume with an inert organic solvent,

(B) extracting the organic solvent solution with an aqueous inorganic salt solution of ionic solution strength of from 5% (by weight) to saturated,

(C) drying the organic solvent of Step (B) over a suitable drying agent,

(D) finally, concentrating the organic phase, adding from about 0.5 to 5 volumes of an apolar solvent, adding seed crystals, aging the slurry.

4,440,943

PHENOXIODININ-5-IUM ANTIMICROBIAL COMPOUNDS

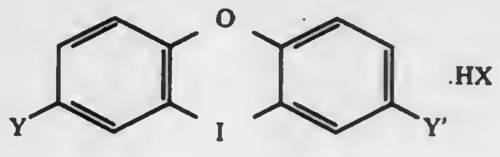
Edward E. Flagg, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 15, 1982, Ser. No. 358,148

Int. Cl.^{3} C07C *63/14*

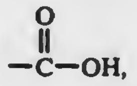
U.S. Cl. 560—65 **22 Claims**

1. A compound corresponding to the formula:



wherein X is an anion, and Y and Y′ each independently represent:

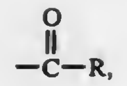
(a)



$$-\overset{O}{\overset{\|}{C}}-OH,$$

provided that when both Y and Y′ are carboxyl, X is bromo;

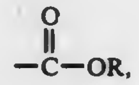
(b)



$-\overset{\overset{O}{\|}}{C}-R,$

wherein R represents alkyl;

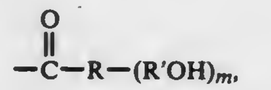
(c)



$-\overset{\overset{O}{\|}}{C}-OR,$

wherein R represents alkyl;

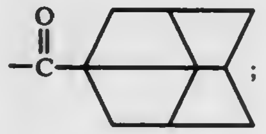
(d)



$-\overset{\overset{O}{\|}}{C}-R-(R'OH)_m,$

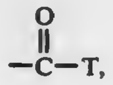
wherein R and R′ are each independently alkyl, and m is an integer of from one to six, both inclusive;

(e) adamantanoyl, i.e.,



;

(f)



$-\overset{\overset{O}{\|}}{C}-T,$

wherein T represents:

phenylalkylether;

(g)

$-SO_2-Q$

wherein Q represents:

(1) halo or

(2) mono or dialkyl-substituted amino.

4,440,944

FIRE RETARDANT EPOXY RESINS CONTAINING 3-HYDROXYALKYLPHOSPHINE OXIDES

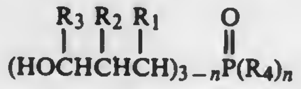
Edward R. Fretz, Jr., East Windsor, and Joseph Green, East Brunswick, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 369,786, Apr. 19, 1982, Pat. No. 4,380,571, which is a division of Ser. No. 264,256, May 18, 1981, Pat. No. 4,345,059. This application Feb. 3, 1983, Ser. No. 463,177

Int. Cl.³ C08G *59/62*

U.S. Cl. 560—76 **1 Claim**

1. A flame retardant hardener for epoxy resins comprising the reaction product of an anhydride with a 3-hydroxypropylphosphine oxide having the general formula:



$(HO\overset{\overset{R_3}{|}}{C}H\overset{\overset{R_2}{|}}{C}H\overset{\overset{R_1}{|}}{C}H)_{3-n}\overset{\overset{O}{\|}}{P}(R_4)_n$

wherein R_1 may be the same or a different radical selected from the group consisting of hydrogen, phenyl, hydroxymethyl and alkyl radicals of 1–4 carbon atoms, R_2 may be the same or a different radical selected from the group consisting of hydrogen, hydroxymethyl, and alkyl radicals of 1–4 carbon atoms, R_3 may be the same or a different radical selected from the group consisting of hydrogen and methyl radicals, R_4 is an alkyl radical 2–8 carbon atoms and n is either 0 or 1.

4,440,945

ANISOTROPIC HEAT-CURABLE ACETYLENE-TERMINATED MONOMERS AND THERMOSET RESINS PRODUCED THEREFROM

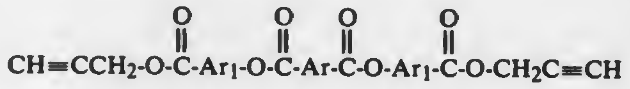
Anthony B. Conciatori, Chatham; Eui W. Choe, Randolph, and Gerald Farrow, New Providence, all of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Jul. 19, 1982, Ser. No. 399,609

Int. Cl.³ C07C *69/82, 69/76, 69/80*

U.S. Cl. 560—86 **12 Claims**

1. Heat-curable acetylene-terminated monomers capable of forming an anisotropic melt phase of the formula:



$CH\equiv CCH_2\text{-}O\text{-}\overset{\overset{O}{\|}}{C}\text{-}Ar_1\text{-}O\text{-}\overset{\overset{O}{\|}}{C}\text{-}Ar\text{-}\overset{\overset{O}{\|}}{C}\text{-}O\text{-}Ar_1\text{-}\overset{\overset{O}{\|}}{C}\text{-}O\text{-}CH_2C\equiv CH$

wherein Ar is a divalent radical comprising at least one aromatic ring and Ar_1 is a divalent radical selected from the group consisting of phenylene, naphthylene, biphenylene and mixtures thereof with at least some of the hydrogen atoms present upon the aromatic rings in said divalent radicals optionally being replaced by substitution selected from the group consisting of an alkyl group of 1 to 4 carbon atoms, an alkoxy group of 1 to 4 carbon atoms, halogen, phenyl and mixtures thereof.

4,440,946

PRODUCTION OF ESTERS FROM ALDEHYDES USING A SILVER/CADMIUM/ZINC/ZIRCONIUM CATALYST

Richard H. Summerville, deceased, late of W. Orange, N.J., and James E. Summerville, Jr., administrator, Signal Mountain, Tenn., assignors to Celanese Corporation, New York, N.Y.

Filed Jul. 26, 1982, Ser. No. 401,607

Int. Cl.³ C07C *67/24;* **B01J** *23/06*

U.S. Cl. 560—210 **15 Claims**

1. A process for producing a carboxylate ester which comprises contacting a mixture of alcohol and aldehyde in vapor phase with a coprecipitate catalyst composition comprising silver-cadmium-zinc-zirconium which is substantially in the free metal form.

15. A coprecipitate catalyst composition comprising $Ag_{1.0}Cd_{0.1-1.5}Zn_{0.1-1}Zr_{0.5-2.0}K_{0-0.6}$ which is substantially in the free metal form.

4,440,947

PREPARATION OF SUBSTITUTED ALPHA-HALOGENO-PROPIONIC ACIDS AND THEIR DERIVATIVES

Dieter Arlt, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

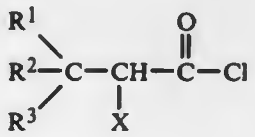
Filed Mar. 5, 1982, Ser. No. 355,042

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1981, 3111848

Int. Cl.³ C07C *61/14, 51/04, 53/19, 17/04, 19/02*

U.S. Cl. 560—226 **14 Claims**

1. A process for the production of a substituted α-halogenopropionic acid or derivative thereof of the formula



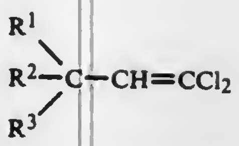
wherein

R^1 is a hydrogen or halogen atom, or an alkyl, halogen-substituted alkyl or aryl group,

R^2 and R^3 each independently is a hydrogen or halogen atom or a methyl or ethyl group, and

X is a chlorine or bromine atom,

comprising reacting a substituted vinylidene chloride of the formula



with chlorine or bromine chloride in the presence of a compound of the formula

$R^5-SO_3R^6$

wherein

R^5 is an optionally halogen-substituted C_1 to C_{18} alkyl group, an optionally alkyl-substituted aryl group, a C_1 to C_8 alkoxy group, a chlorine or fluorine atom or a hydroxyl group, and

R^6 is a hydrogen atom or a methyl or ethyl group.

4,440,948

PROCESS FOR PREPARING METHACRYLIC ACID

Yoshio Oda; Keiichi Uchida; Takeshi Morimoto, and Seisaku Kumai, all of Yokohama, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 563,472, Mar. 31, 1975, Pat. No. 3,998,877. This application Sep. 22, 1976, Ser. No. 725,671

Claims priority, application Japan, Apr. 2, 1974, 49-36597; Apr. 2, 1974, 49-36598; Jul. 2, 1974, 49-74971

The portion of the term of this patent subsequent to Dec. 21, 1993, has been disclaimed.

Int. Cl.³ C07C *51/25, 57/055*

U.S. Cl. 562—532 **12 Claims**

1. A process for preparing methacrylic acid, which comprises:

reacting methacrolein with molecular oxygen in the vapor phase at a temperature of from 230° C. to 450° C. in the presence of a catalyst consisting essentially of

$Mo_{12}P_{\alpha'}X_{\beta'}Y_{\gamma'}O_{\delta'}$

wherein X is at least one member selected from the group consisting of Cs and Tl; Y is at least one member selected from the group consisting of V, Zr, Nb, Ni, Ta and Fe; $\alpha'=0.1-3$; $\beta'=0.2-9$; $\gamma'=0.1-7$ and $\delta'=36-100$, which contains a cesium or thallium phosphomolybdate structural component.

4,440,949

AMIDINOUREAS

George H. Douglas, Malvern; William L. Studt, Harleysville, and Stuart A. Dodson, Lansdale, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

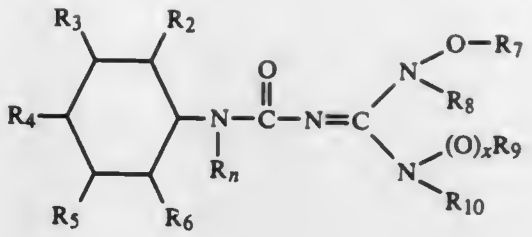
Continuation of Ser. No. 1,636, Jan. 8, 1979, Pat. No. 4,242,339, which is a division of Ser. No. 934,780, Aug. 18, 1978, Pat. No. 4,169,155, which is a division of Ser. No. 811,092, Jun. 17, 1977, Pat. No. 4,115,647, which is a division of Ser. No. 671,763, Mar. 30, 1976, Pat. No. 4,058,557. This application Dec. 30, 1980, Ser. No. 221,453

The portion of the term of this patent subsequent to Nov. 15, 1994, has been disclaimed.

Int. Cl.³ C07C *401/06, 99/02, 127/15, 127/19*

U.S. Cl. 564—48 **5 Claims**

1. A compound of the formula:



where:

R_2, R_3, R_4, R_5 and R_6 may be the same or different and are:
  - hydrogen,
  - halo,
  - loweralkyl,
  - haloloweralkyl,
  - nitro,
  - amino,
  - acylamino,
  - hydroxy,
  - aralkyloxy or
  - loweralkoxy;

R_n is hydrogen or loweralkyl;

R_7, R_8, R_9 and R_{10} may be the same or different and are:
  - hydrogen,
  - alkyl,
  - alkenyl,
  - alkynyl,
  - cycloalkyl or
  - aralkyl;

R_7 and R_8 together and R_9 and R_{10} together may form a ring selected from the group consisting of isooxazolidine and isooxazine;

x is 0–1;

the sum total of carbon atoms present in R_7, R_8, R_9 and R_{10} together is less than twelve; and

the non-toxic acid addition salts thereof.

4,440,950

PROCESS FOR PREPARATION OF AMINOBENZALDEHYDES AND AMINOBENZYLKETONES

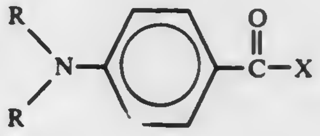
Charles A. Drake, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 15, 1982, Ser. No. 441,584

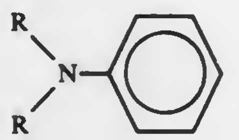
Int. Cl.³ C07C *85/18*

U.S. Cl. 564—305 **7 Claims**

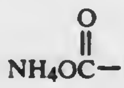
1. A process for the production of an N,N-dihydrocarbylaminobenzyldehyde or N,N-dihydrocarbylaminobenzylketone of the formula



consisting of (a) reacting an N,N-dihydrocarbylaniline of the formula



and a protected Schiff's base, derived from the reaction of ammonia and an aldehyde of the formula R'CHO, in the presence of a carboxylic acid of the formula R"COOH, an ammonium salt of a carboxylic acid of the formula



$$NH_4O\overset{O}{\overset{\|}{C}}-R'',$$

and water wherein R is a C_1 to C_{20} hydrocarbyl radical, R' is either H or a C_1 to C_9 hydrocarbyl radical, X is either H or a C_1 to C_{10} hydrocarbyl radical, and R" is either hydrogen or a C_1 to C_{10} hydrocarbyl radical, followed by (b) hydrolysis of the resulting product of (a).

4,440,951
PROCESS FOR PREPARATION OF AMINOBENZALDEHYDES AND AMINOBENZYLKETONES

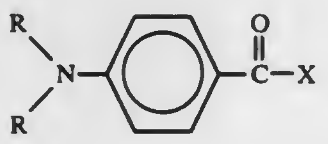
Charles A. Drake, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 15, 1982, Ser. No. 441,585

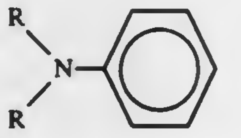
Int. Cl.³ C07C *85/18*

U.S. Cl. 564—305 **7 Claims**

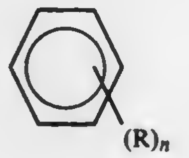
1. A process for the production of N,N-dihydrocarbylaminobenzaldehyde or N,N-dihydrocarbylaminobenzylketone of the formula



consisting of reacting N,N-dihydrocarbylaniline of the formula



and a protected Schiff's base, derived from the reaction of ammonia and an aldehyde of the formula R'CHO, in the presence of a carboxylic acid of the formula R"COOH, an aromatic hydrocarbon of the formula



and water wherein R is a C_1 to C_8 hydrocarbyl radical, R' and X are either H or a C_1 to C_{10} hydrocarbyl radical, R" is either hydrogen or a C_1 to C_6 alkyl radical and n is a whole number from 0 to 6.

4,440,952
1-METHYL-2,6-DIAMINO-3-ISOPROPYL BENZENE

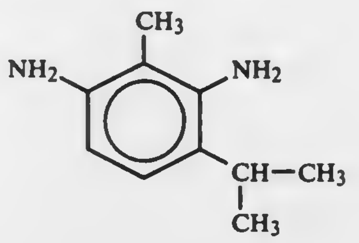
Kryn G. Ihrman, Farmington, Mich., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 403,289, Jul. 30, 1982, which is a continuation-in-part of Ser. No. 397,488, Jul. 12, 1982, abandoned. This application Sep. 29, 1982, Ser. No. 427,139

Int. Cl.³ C07C *87/58*

U.S. Cl. 564—305 **1 Claim**

1. The compound 1-methyl-2,6-diamino-3-isopropylbenzene:



4,440,953
PURIFICATION OF N-SUBSTITUTED AMINOBENZALDEHYDES

Charles A. Drake, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 28, 1983, Ser. No. 489,447

Int. Cl.³ C07C *85/26*

U.S. Cl. 564—437 **11 Claims**

1. A process for recovering high purity N-substituted aminobenzaldehydes, from a material containing such compounds comprising the steps of:

(1) suspending crude aminobenzaldehyde in aqueous medium,
(2) contacting the product of step (1) with acid,
(3) separating insolubles from the product of step (2),
(4) neutralizing the soluble product of step (3) to form a precipitate, and
(5) recovering the precipitate of step (4).

4,440,954
PROCESS FOR THE PURIFICATION OF P-AMINOPHENOL

William R. Clingan, Ferguson; Edward L. Derrenbacker, Creve Coeur, and Thomas J. Dunn, Jefferson County, all of Mo., assignors to Mallinckrodt, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 156,661, Jun. 5, 1980, abandoned. This application Apr. 20, 1981, Ser. No. 251,461

Int. Cl.³ C07C *89/04*

U.S. Cl. 564—439 **33 Claims**

1. A process for the recovery and extractive purification of p-aminophenol prepared by catalytic reduction of nitrobenzene in acid medium whereby 4,4'-diaminodiphenyl ether and aniline are present as impurities, the process comprising neutralizing an aqueous feed solution containing p-aminophenol and said impurities with a base to adjust the pH of said solution to between approximately 4.0 and 5.0, extracting the resulting aqueous feed solution with an organic solvent consisting of mixtures of aniline and toluene within the range between approximately 4 parts by volume aniline to 1 part by volume toluene and approximately 1 part by volume aniline to 4 parts by volume toluene whereby 4,4'-diaminodiphenyl ether is selectively extracted into said organic solvent and an aqueous phase containing principally p-aminophenol and an organic anilinetoluene phase containing p-aminophenol, 4,4'-diaminodiphenyl ether and other minor amine by-products are produced, separating said aqueous phase from said organic phase and thereafter recovering p-aminophenol of improved purity from said aqueous phase.

4,440,955
PROCESS FOR THE PREPARATION OF 2,2-DIMETHYL-3-VINYL-CYCLOPROPANECARBOXYLIC ACIDS AND ESTERS

Manfred Jautelat, Burscheid, and Dieter Arlt, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

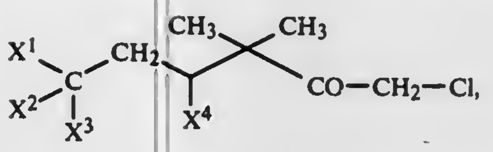
Division of Ser. No. 331,403, Dec. 16, 1981. This application Nov. 22, 1982, Ser. No. 443,840

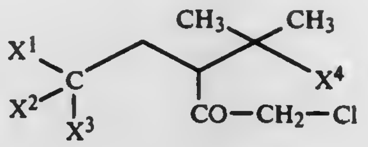
Claims priority, application Fed. Rep. of Germany, Jan. 8, 1981, 3100354

Int. Cl.³ C07C *49/16*

U.S. Cl. 568—419 **3 Claims**

1. A compound selected from the group consisting of





and mixtures thereof,
in which

X^1 and X^2 each independently is a halogen atom or a fluorine-substituted alkyl group, and
X^3 and X^4 each independently is a halogen atom.

4,440,956
SELECTIVE HYDROGENATION OF ACETYLENES IN THE PRESENCE OF BUTADIENE AND CATALYST USED IN THE HYDROGENATION

Mark C. Couvillion, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 436,250, Oct. 25, 1982, abandoned, which is a continuation-in-part of Ser. No. 299,688, Sep. 8, 1981, abandoned. This application Mar. 8, 1983, Ser. No. 473,293

Int. Cl.³ B01J *23/68, 23/72, 23/84, 23/86*

U.S. Cl. 585—260 **6 Claims**

1. A catalyst for removing α-acetylenes from liquid hydrocarbon streams consisting essentially of a mixture of finely divided copper metal and minor amounts of at least one polyvalent activator metal selected from the group consisting of silver, platinum, palladium, manganese, cobalt, nickel, chromium and molybdenum, dispersed on an aluminum oxide support, said support being a gamma alumina as defined by the Joint Committee on Powder Diffraction Standards, #29-63, of high purity having a surface area of between about 68 and about 350 square meters per gram, and 90 to 60 percent of the pores have a pore diameter between about 40 Å and 120 Å and not more than 25 percent nor less than 2 percent have a pore diameter between 1000 Å to 10,000 Å, a silicone content as SiO_2 of less than about 0.15 weight %, a sodium content as Na_2O of less than about 0.15 weight %, a sulfur content less than about 0.01 weight % and an iron content as Fe_2O_3 of less than about 0.06 weight %, said gamma alumina may contain up to 35% by weight of alpha alumina.

4,440,957
PREPARATION OF β-ISOPROPYLNAPHTHALENE

Kurt Handrick; Georg Kölling, and Paul Kiedel, all of Essen, Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Continuation of Ser. No. 136,968, Apr. 3, 1980, abandoned, which is a continuation of Ser. No. 7,406, Jan. 29, 1979, abandoned, which is a continuation of Ser. No. 842,841, Oct. 3, 1977, abandoned. This application Aug. 3, 1981, Ser. No. 289,525

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1976, 2644624

Int. Cl.³ C07C *2/68, 5/22*

U.S. Cl. 585—323 **10 Claims**

1. A continuous process for preparing β-isopropylnaphthalene comprising

(a) alkylating naphthalene with propylene by introducing these two compounds into a multiplicity of reaction zones at a temperature between about 150° and 280° C. and a pressure between about 5 and 30 atm in the absence of a normally liquid solvent and in the presence of a phosphoric acid catalyst supported on a SiO_2, this introduction being effected in amounts to obtain a mol ratio of 1/5 to 1/20 mol of propylene to 1 mol of naphthalene in each reaction zone until 45 to 65% of the naphthalene are converted in the entire alkylating reaction to an isomeric mixture of α- and β-isopropylnaphthalene, then
(b) charging said isomeric mixture into an isomerization zone wherein said mixture is heated to a temperature between about 180° and 280° C. at an inert gas pressure of between about 5 and 30 atm and in contact with said phosphoric acid catalyst supported on SiO_2 until no further β-isopropylnaphthalene is formed,
(c) whereupon the β-isopropylnaphthalene is recovered from the isomerization zone at a purity of about 90 to 95%.

4,440,958
METHOD FOR PROMOTING THE ACTIVITY OF CATION-EXCHANGEABLE LAYERED CLAY AND ZEOLITE CATALYSTS IN PROTON-CATALYSED REACTIONS

Reginald Gregory, Camberley, and David J. Westlake, Woking, both of England, assignors to The British Petroleum Company Limited, London, England

Filed Jul. 29, 1981, Ser. No. 288,019

Claims priority, application United Kingdom, Aug. 1, 1980, 8025259

Int. Cl.³ C01C *67/04*

U.S. Cl. 560—247 **13 Claims**

1. A method for promoting the activity of a cation-exchangeable layered clay or a zeolite catalyst in an esterification reaction which comprises carrying out such as reaction in the presence of said catalyst and in the presence of a strong acid.

2. A method for promoting the activity of a cation-exchangeable layered clay or a zeolite catalyst in an esterification reacton which comprises reacting an olefin with a carboxylic acid in the presence of said catalyst and a strong acid.

3. A method according to claim **2** wherein the carboxylic acid is acetic and the ester produced is ethyl acetate.

7. A method according to claim **1**, **2** or **3** wherein the strong acid is either sulphuric acid, phosphoric acid, hydrochloric acid, hydrofluoric acid or para-toluene solphonic acid.

4,440,959
PROCESS FOR THE MANUFACTURE OF CHLOROACETALDEHYDE DIMETHYL ACETAL

Wolfgang Deinhammer, Burghausen, Fed. Rep. of Germany, assignor to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Nov. 1, 1982, Ser. No. 437,909

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1981, 3149652

Int. Cl.³ C07C *41/48, 41/58*

U.S. Cl. 568—604 **5 Claims**

1. In a process for the manufacture of chloroacetaldehyde dimethyl acetal including the steps of reacting vinyl acetate and chlorine in stoichiometric amounts in the presence of excess methanol at temperatures of less than 20° C., and subsequently separating off the chloroacetaldehyde dimethyl acetal from the reaction mixture, the improvement comprising the steps of:

distilling off at least partially the low-boiling constituents having boiling points of up to 60° C. from the reaction mixture when the addition of chlorine is complete, under the pressure of the surrounding atmosphere, thereby producing a liquid residue;

neutralizing the liquid residue with solid substances selected from the group consisting of the oxides and carbonates of metals of Group IIa of the Periodic Table and a combination thereof, while maintaining a temperature of from 20° to 60° C., so as to produce a phase separation with an organic upper layer;

separating off the organic upper layer after phase separation is complete, to produce a crude product; and

purifying the crude product by distillation to produce relatively pure chloroacetaldehyde dimethyl acetal.

4,440,960
CONTINUOUS PREPARATION OF 3-ALKYL-BUTEN-1-ALS

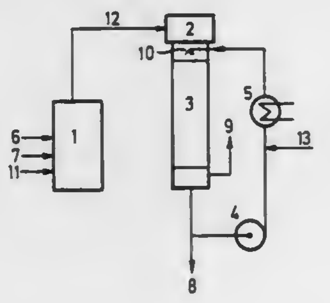
Wolfgang Sauer, Kirchheimbolanden; Werner Aquila, Mannheim; Wolfgang Hoffmann, Frankenthal; Karl Brenner, Ludwigshafen, and Klaus Halbritter, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 11, 1981, Ser. No. 330,024

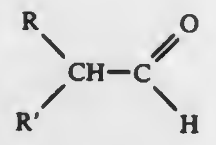
Claims priority, application Fed. Rep. of Germany, Dec. 31, 1980, 3049543

Int. Cl.³ C07C *45/29*

U.S. Cl. 568—471 **3 Claims**



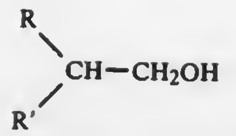
1. A process for the continuous preparation of 3-alkyl-buten-1-als of the formula



$$\begin{matrix} R & & & O \\ & CH & - & C \\ R' & & & H \end{matrix}$$

I

where R is hydrogen and R′ is $H_2C{=}C(CH_3)—$, or R and R′ together are $H_3C—C(CH_3){=}$, by oxidative dehydrogenation of 3-alkyl-buten-1-ols of the formula



$$\begin{matrix} R & & \\ & CH-CH_2OH \\ R' & & \end{matrix}$$

II

where R and R′ have the above meanings, by passing these compounds and oxygen over a catalyst containing copper and/or silver at from 320° to 650° C., condensing the reaction gases and separating off the 3-alkyl-buten-1-als, wherein, within one second after contact with the catalyst, the vaporous reaction mixture, which is at from 320° to 650° C., is brought into contact with a liquid comprising water and/or the condensed reaction mixture at from −20° to 50° C., and the 3-alkyl-buten-1-als are separated off from the resulting condensate.

4,440,961
BRANCHED CHAIN OLEFINIC ALCOHOLS, THIOLS, ESTERS AND ETHERS, ORGANOLEPTIC USES THEREOF, PROCESSES FOR PREPARING SAME AND INTERMEDIATES THEREFOR

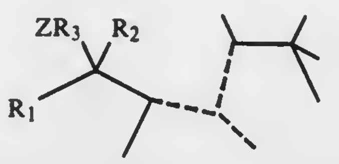
Richard M. Boden, Monmouth Beach, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 322,734, Nov. 19, 1981, Pat. No. 4,375,505, which is a continuation-in-part of Ser. No. 212,887, Dec. 4, 1980, Pat. No. 4,318,934. This application Sep. 23, 1982, Ser. No. 422,525

Int. Cl.³ C07C *33/025, 69/007, 149/08, 153/09*

U.S. Cl. 568—840 **7 Claims**

1. A branched chain olefinic chalcogen derivative having the formula:



wherein Z represents oxygen or sulfur; wherein one of the dashed lines represents a carbon-carbon double bond and each of the other of the dashed lines represent carbon-carbon single bonds; wherein R_1 represents C_1–C_4 alkyl; R_2 represents C_1–C_4 alkyl; R_3 represents hydrogen, MgX, Li, C_1–C_3 lower alkyl or C_1–C_3 lower acyl and wherein X represents chloro, bromo or iodo.

4,440,962
PROCESS FOR REMOVING NITROSATING AGENTS FROM 1-CHLORO-2,6-DINITRO-4-(TRIFLUOROMETHYL) BENZENE

Edoardo Pallucca, Settimo Milanese, Italy, assignor to Oxon Italia S.P.A., Milan, Italy

Filed Apr. 22, 1982, Ser. No. 370,746

Int. Cl.³ C07C *79/12*

U.S. Cl. 568—933 **9 Claims**

1. A process for removing nitrosating agents from 1-chloro-2,6-dinitro-4-(trifluoromethyl)benzene (DINITRO-PCBT), characterised in that DINITRO-PCBT is treated with an aqueous bisulphite solution having an SO_2 concentration of between 1% and 5% at a pH of between 1 and 3, at a temperature of between 50° and 100° C. for a time of between 1 and 3 hours, and in that the organic layer is separated from the aqueous layer, and the acidity and last traces of the bisulphite solution are eliminated from the organic layer by an aqueous alkaline solution.

4,440,963
PRODUCTION OF MTBE AND ETBE

William V. Childs, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 9, 1982, Ser. No. 406,154

Int. Cl.³ C07C *41/05, 41/38*

U.S. Cl. 568—697 **12 Claims**

1. A process for the production of MTBE which comprises reacting methanol and isobutene under reaction conditions to form a methanol-containing methyl-tertiary butyl ether reactor effluent stream comprising unreacted isobutylene, unreacted methanol, and product methyl tertiary butyl ether, and

fractionating said MTBE reactor effluent stream in admixture with an azeotroping component selected from the group consisting of 2-methylpentane and 1,1,2-trichloro-1,2,2-trifluoroethane, thereby taking unreacted methanol as an azeotropic overhead stream, wherein said overhead stream further contains unreacted isobutylene, and taking as product methyl tertiary butyl ether as bottoms.

4,440,964
SUBSTITUTED 2-ALKYLSULFONYLALKYL NITROBENZENES AND PROCESS FOR THEIR PREPARATION

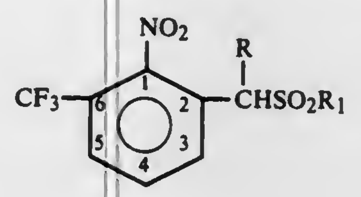
John P. Chupp, Kirkwood; Gerhard H. Alt, and Terry M. Balthazor, both of University City, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 17, 1982, Ser. No. 358,774

Int. Cl.³ C07C *131/00*

U.S. Cl. 568—30 **10 Claims**

1. Compounds having the formula



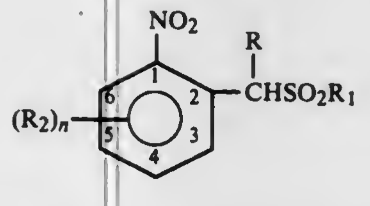
I

wherein

R is hydrogen or methyl;

R_1 is $C_{1\text{-}6}$ alkyl, phenyl or phenyl substituted with $C_{1\text{-}6}$ alkyl or alkoxy or halogen.

4. Process for preparing compounds having the formula



I

wherein

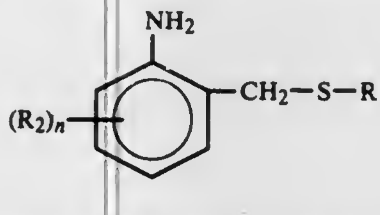
R is $C_{1\text{-}6}$ alkyl or alkanoyl, formyl or alkenyl or alkynyl having up to 4 carbon atoms;

R_1 is $C_{1\text{-}6}$ alkyl, phenyl or phenyl substituted with $C_{1\text{-}6}$ alkyl or alkoxy or halogen;

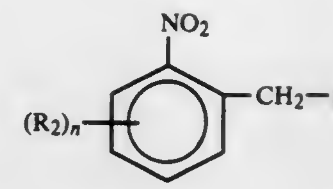
R_2 is independently hydrogen or the same as R or R_1, NO_2, CN, CF_3 or $C_{1\text{-}6}$ alkoxy or alkoxycarbonyl and

n is 0–4, which comprises the steps of

(a) reacting a compound having the formula



wherein R_1, R_2 and n are as defined above, with a peracid to form



II

wherein R_1, R_2 and n are as defined above;

(b) reacting the product of step (a) with a compound of the formula

RZ III

in the presence of a base selected from the group consisting of alkali or alkaline earth oxides or hydroxides wherein R is as defined above except hydrogen; and Z is sulfate or tosylate radical or a halogen atom or RZ is a 1,4-Michael addition agent.

4,440,965
POLYMER LUBRICANTS

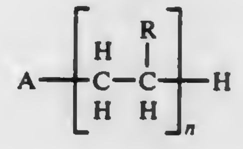
Richard F. Palmer, Camas, Wash., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 18, 1982, Ser. No. 379,406

Int. Cl.³ C07C *1/16*

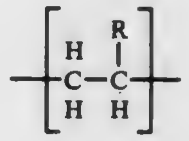
U.S. Cl. 585—12 **13 Claims**

1. A lubrication method which comprises positioning between two surfaces, at least one of which is movable with respect to the other, a lubricant to reduce friction between said surfaces; wherein said lubricant is of the formula



$$A-\left[\begin{matrix} H & R \\ -C- & C- \\ H & H \end{matrix}\right]_n-H$$

where A is a negative ion; wherein n is a whole number greater than 2; wherein each R in each



$$-\left[\begin{matrix} H & R \\ C- & C \\ H & H \end{matrix}\right]-$$

group is independently selected from the group consisting of H and $—CH_2CH_3$ such that at least about 60% of the R's are CH_2CH_3; and wherein the average molecular weight of said lubricant is within the range of about 150 to about 3,000.

4,440,966
PRODUCTION OF INDANES

Gerald J. Ferber, Ilford, and Peter J. Goddard, Luton, both of England, assignors to Bush Boake Allen, London, England

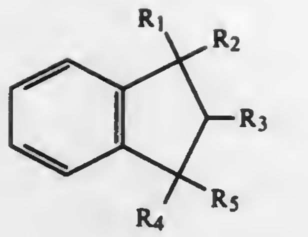
Filed Mar. 11, 1982, Ser. No. 357,189

Claims priority, application United Kingdom, Mar. 13, 1981, 8108050

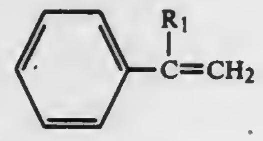
Int. Cl.³ C07C *3/00, 3/50, 3/54*

U.S. Cl. 585—415 **17 Claims**

1. A process for the production of an indane of the formula:



wherein R_3 represents a hydrogen atom or a methyl group; at least one of R_1 and R_2 represents a methyl group and the other represents a hydrogen atom or a methyl group; and R_4 and R_5 which may be the same or different represent alkyl groups having from 1 to 3 carbon atoms, which comprises; reacting a styrene with an alkene in the presence of an acid catalyst to form a reaction product mixture containing said indane, characterised in that the styrene is a compound of the formula:



wherein R_1 represents a hydrogen atom or a methyl group; the alkene is selected from the group consisting of propylene, 2-methyl-but-1-ene, 2-methyl-but-2-ene, 2-methyl-pent-1-ene, 2-methyl-pent-2-ene, 3-methyl-but-1-ene, isobutylene and diisobutylene, and the acid catalyst consists essentially of an aqueous solution of phosphoric acid which comprises above 85% w/w phosphoric acid.

4,440,967
CATALYST AND REVERSE DISPROPORTIONATION PROCESS
Charles F. Hobbs, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.
Filed Jul. 29, 1982, Ser. No. 402,874
Int. Cl.^{3} C07C *5/09*
U.S. Cl. 585—435 **13 Claims**

1. A process for the reverse disproportionation of stilbene and ethylene which comprises contacting stilbene and ethylene at reverse disproportionation conditions with an activated catalyst containing catalytically-effective amounts of cobalt, tungsten, and an alkali or alkaline earth component or compounds thereof supported on a carrier material, to produce styrene.

4,440,968
CATALYST AND REVERSE DISPROPORTIONATION PROCESS
Charles F. Hobbs, Des Peres, Mo., assignor to Monsanto Company, St. Louis, Mo.
Filed Jul. 29, 1982, Ser. No. 403,253
Int. Cl.^{3} C07C *5/09*
U.S. Cl. 585—435 **13 Claims**

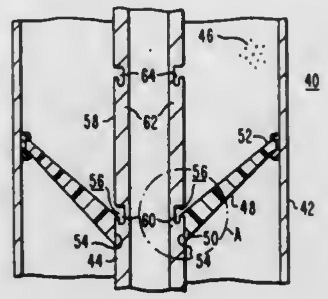
1. A process for the reverse disproportionation of stilbene and ethylene which comprises contacting stilbene and ethylene at reverse disproportionation conditions with an activated catalyst containing catalytically-effective amounts of iridium, tungsten, and an alkali or alkaline earth component or compounds thereof supported on a carrier material, to produce styrene.

4,440,969
PURIFICATION OF OLEFINS BY BORON TRIFLUORIDE-ALCOHOL TREATMENT
William A. Sweeney, Larkspur, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed May 28, 1982, Ser. No. 382,904
Int. Cl.^{3} C07C *7/10*
U.S. Cl. 585—851 **9 Claims**

1. A process for purifying predominantly straight chain liquid olefins having from 5 to 50 carbon atoms which comprises contacting the olefins with a liquid solution of boron trifluoride in an alcohol or mixture of alcohols selected from the group consisting of mono and poly hydroxylic aliphatic compounds having from one to five carbon atoms, intimately admixing the liquid olefins and liquid solution of boron trifluoride, separating into two liquid layers, and recovering the olefin layer, under reaction conditions sufficient to minimize the olefinic reactions normally catalyzed by boron trifluoride while recovering an olefin product essentially free of color-forming impurities and impurities which retard or suppress further reaction of the olefins.

ELECTRICAL

4,440,970
VERTICALLY ALIGNED GAS-INSULATED TRANSMISSION LINE HAVING PARTICLE TRAPS AT THE INNER CONDUCTOR
Steinar J. Dale, Monroeville, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Mar. 10, 1982, Ser. No. 356,686
Int. Cl.^{3} H01B *9/06, 9/04;* **H02G** *5/06*
U.S. Cl. 174—14 R **6 Claims**



1. A gas-insulated transmission line, comprising:

an outer conductor;

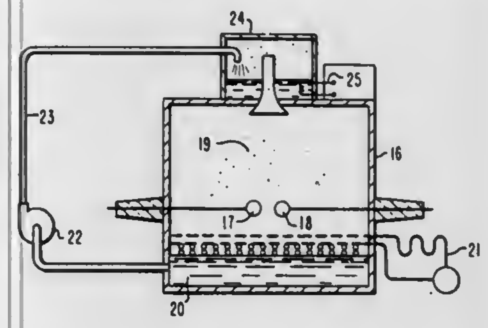
a tubular inner conductor adapted for connection to an external energizing source disposed interiorly within said outer conductor, said tubular inner conductor having a wall thickness and a hollow interior;

an insulating gas disposed within the space between said outer and inner conductors;

support means for insulatably supporting said inner conductor within said outer conductor; and

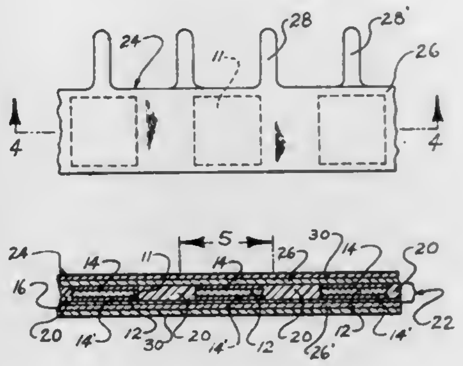
particle trapping means for trapping foreign particles disposed along said inner conductor, said particle trapping means comprising said inner conductor wall having a circumferentially disposed cavity formed therein open facing said outer conductor, said cavity extending radially inwardly a distance less than the wall thickness of said inner conductor such that said cavity and the hollow interior of said inner conductor are separated by a portion of said inner conductor wall.

4,440,971
SUPERSATURATED VAPOR DIELECTRICS
Ronald T. Harrold, Murrysville, Pa., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.
Filed May 24, 1982, Ser. No. 381,094
Int. Cl.^{3} H01B *3/20*
U.S. Cl. 174—17 GF **12 Claims**



1. Apparatus with high electrical breakdown strength comprising a chamber containing electrodes separated by a substantially droplet-free dielectric gas supersaturated with the vapors of a dielectric liquid, and means to effect said supersaturation without atomization of said dielectric liquid.

4,440,972
MINIATURIZED BUS BAR WITH CAPACITORS AND METHOD OF MAKING SAME
Michael J. Taylor, Mesa, Ariz., assignor to Rogers Corporation, Rogers, Conn.
Filed Mar. 31, 1981, Ser. No. 249,394
Int. Cl.^{3} H01B *7/00, 13/00*
U.S. Cl. 174—72 B **13 Claims**



1. A high capacitance multilayer bus bar assembly comprising:

a pair of spatially separated conductors, said conductors having inwardly facing planar surfaces;

capacitor ribbon means positioned between said conductors, said ribbon means having a pair of outwardly facing planar surfaces, said ribbon means comprising a plurality of spatially separated discrete capacitors embedded within an insulating material, said capacitors each having a pair of oppositely disposed planar conductive surfaces, said conductive surfaces being exposed at and in part defining said planar surfaces of said ribbon means, said conductive surfaces being electrically connected to respective of said conductor inwardly facing surfaces;

an elongated electrically conductive strip, said strip being affixed to at least one of said ribbon means planar surfaces, said strip being in electrical contact with said conductive surfaces of said capacitors at said one planar surface and with the inwardly facing surface of the adjacent one of said conductors; and

means for retaining said capacitor conductive surfaces electrically connected to said respective conductor inwardly facing surfaces.

11. A method of forming a high capacitance bus bar assembly comprising the following steps:

selecting a plurality of substantially identical capacitive elements each comprising a wafer of dielectric material with a pair of conductively coated opposed surfaces;

positioning a substrate within a frame;

arranging the capacitive elements in a linear array upon the substrate with one of said conductively coated surfaces of each capacitive element facing the substrate and the other of said conductively coated surfaces facing upward;

filling the frame with a curable electrical insulating material in uncured form to a level where the insulating material surrounds the capacitive elements with the upward facing conductively coated surfaces of the capacitive elements being free of the insulating material;

preventing the insulating material from covering the conductively coated surfaces of the capacitive elements;

curing the insulating material;

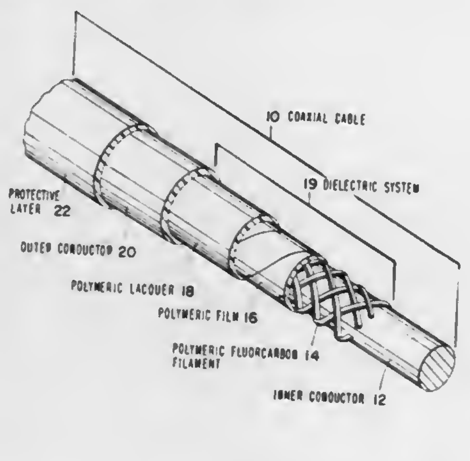
removing the frame;

shearing the insulating material to form a strip having a linear array of capacitive elements embedded therein; and

securing the strip between a pair of bus bar conductors with the conductive coated surfaces of the capacitive elements being electrically connected to respective of the bus bar conductors.

4,440,973
COAXIAL CABLES

Richard E. Hawkins, Colchester, Vt., assignor to Champlain Cable Corporation, Wilmington, Del.
Continuation of Ser. No. 156,545, Jun. 5, 1980. This application Mar. 17, 1982, Ser. No. 358,955
The portion of the term of this patent subsequent to Jun. 1, 1999, has been disclaimed.
Int. Cl.³ H01B *7/18*
U.S. Cl. 174—107 **9 Claims**

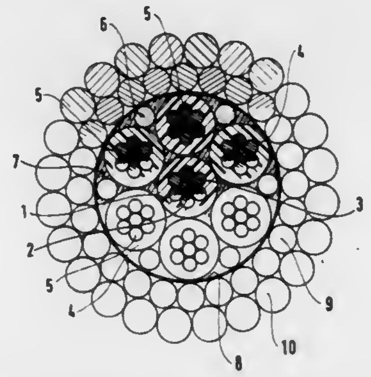


1. A coaxial cable having improved strength properties over a wide temperature range, comprising:
(a) an inner conductor;
(b) a dielectric system comprising:
  (i) a first layer of braided high tensile strength polymeric fluorocarbon filaments surrounding said inner conductor in an open weave along the length of the inner conductor, said filaments having a tensile strength of at least 40,000 psi and a dielectric constant of less than 2.8;
  (ii) a second layer consisting of a polymeric film which remains stable at temperatures of up to 150° C. surrounding circumferentially the first layer and providing a continuous skin enclosing the first layer; and
  (iii) a third layer consisting of a crosslinked polymeric lacquer surrounding circumferentially the second layer and providing a continuous skin enclosing the second layer;
(c) an outer conductor disposed circumferentially about the dielectric system; and
(d) an outer protective layer surrounding circumferentially the outer conductor.

9. A method of making a coaxial cable having improved strength properties over a wide temperature range, comprising:
(a) covering a metallic conductor circumferentially with a first layer of braided high tensile strength polymeric fluorocarbon filaments in an open weave along the length of the conductor, said filaments having a tensile strength of at least 40,000 psi and a dielectric constant of less than 2.8;
(b) covering the first layer circumferentially with a second layer of a polymeric film thereby providing a continuous skin enclosing the first layer; and
(c) covering the second layer circumferentially with a third layer consisting of a cross-linked polymeric lacquer thereby providing a continuous skin enclosing the second layer;
(d) covering the third layer circumferentially with an outer conductor; and
(e) covering the outer conductor circumferentially with an outer protective layer.

4,440,974
ELECTROMECHANICAL CABLE FOR WITHSTANDING HIGH TEMPERATURES AND PRESSURES, AND METHOD OF MANUFACTURE

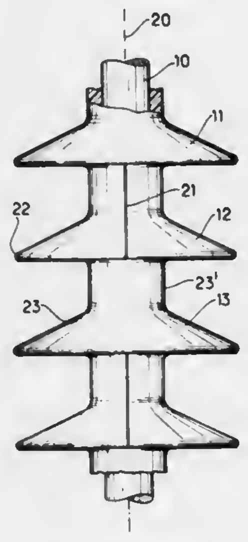
Jacques Naudet, Rueil Malmaison, France, assignor to Les Cables de Lyon, Rueil Malmaison, France
Filed Jun. 16, 1982, Ser. No. 388,818
Claims priority, application France, Jun. 18, 1981, 81 11992
Int. Cl.³ H01B *9/02*
U.S. Cl. 174—108 **5 Claims**



1. An electromechanical cable capable of withstanding high pressures and temperatures of at least 200° C., the cable comprising a core having a plurality of insulated conductors covered with a conductive filler which fills the voids between the conductors, the core being surrounded by a layer of conductive textile material and by at least one layer of helically wound metal armor wire, the improvement wherein the filler is a composite material consisting essentially of a silicone polymer with a semiconductor charge of carbon black.

4,440,975
ELECTRICAL INSULATOR INCLUDING A MOLDED ONE-PIECE COVER HAVING PLATE-LIKE FINS WITH ARCUATELY DISPLACED MOLD LINE SEGMENTS

Alexandre Kaczerginski, Bellerive sur Allier, France, assignor to Ceraver, Paris, France
Filed Jul. 21, 1982, Ser. No. 400,292
Claims priority, application France, Aug. 5, 1981, 81 15203
Int. Cl.³ H01B *17/02*
U.S. Cl. 174—209 **4 Claims**

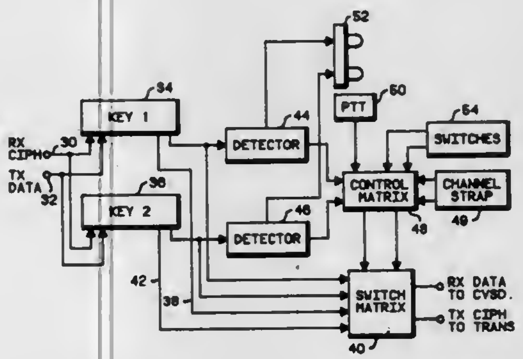


1. An electrical insulator including an elongated insulating core having a longitudinal axis and a one-piece molded insulator cover disposed around the core, the cover having a plurality of axially spaced plate-like fins and a sleeve portion between each pair of adjacent fins, each fin having a circumferential edge which is symmetrical with respect to the axis of the core, and the surface of the cover having a mold line which extends from one end of the cover to the other end, wherein the improvement comprises:

said mold line has at least two arcuately displaced segments between the edges of the end fins.

4,440,976
AUTOMATIC SELECTION OF DECRYPTION KEY FOR MULTIPLE-KEY ENCRYPTION SYSTEMS

Paul M. Bocci, Hoffman Estates; Terence E. Sumner, Roselle, and James R. Wojnarowski, Cary, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jun. 17, 1981, Ser. No. 274,696
Int. Cl.³ H04K *1/00*
U.S. Cl. 179—1.5 R **9 Claims**

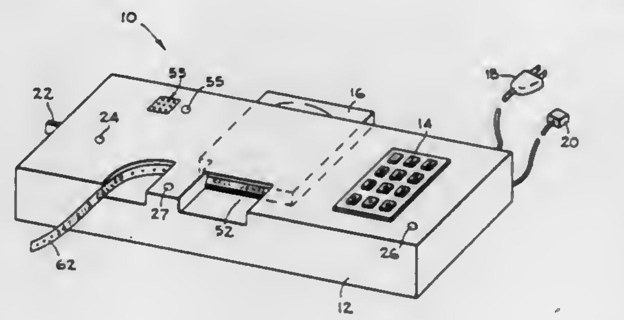


7. An apparatus for automatic selection of a proper key for decrypting a voice signal that has been subjected to delta modulation and encrypted according to one of first and second decryption keys, the apparatus comprising:
a. a first encode-decode module capable of decrypting according to a first key, the first encode-decode module receiving the encrypted data and decrypting according to the first key;
b. a first detector of delta modulation connected to the first encode-decode module to receive a signal from the first encode-decode module and test that signal for the presence of delta-modulation;
c. a second encode-decode module adapted to decrypt signals according to a second key different from the first key, the second encode-decode module receiving the encyrpted signal and simultaneously decoding it according to the second key while said first module decrypts the encrypted signal with the first key;
d. a second detector of delta-modulation connected to the second encode-decode module and receiving an output signal from the second encode-decode module to test it for the presence of delta-modulation;
e. a control matrix connected to the first and second detectors of delta-modulation and responsive to signals from the first and second detectors of delta-modulation to generate a control signal in response to a detected signal containing delta modulation; and
f. a switch matrix connected to the first and second encode-decode modules and to the control matrix to enable passage of an output signal from one of the first and second encode-decode modules that produces a signal containing delta-modulation.

8. The apparatus of claim 7 comprising in addition a visual indicator connected to the first and second detectors of delta modulation and responsive to signals therefrom to indicate visually that one of the first and second encode-decode modules is producing a signal that contains delta modulation.

4,440,977
PUSHBUTTON DECODER AND PRINTER

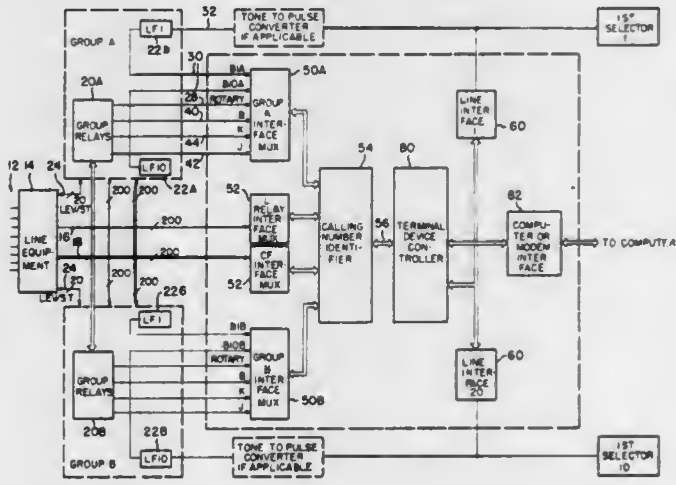
John Pao, 527 Madera Dr., San Mateo, Calif. 94403, and Burton R. Tunzi, 2904 Scott Blvd., Santa Clara, Calif. 95050
Filed Jul. 25, 1979, Ser. No. 60,739
Int. Cl.³ H04M *11/06*
U.S. Cl. 179—2 DP **5 Claims**



1. Apparatus for printing characters along a tape in response to the transmission of audio tone dial signals comprising:
(a) an audio tone dial decoder for receiving audio tone dial signals and converting the audio tone dial signals into control signals; and
(b) a printer responsive to the control signals produced by said audio tone dial decoder for printing characters along a tape,
(c) said audio tone dial decoder comprising:
  (a) a plurality of memory circuits for storing control signals for operating said printer;
  (b) a dual tone multiple frequency analyzing circuit receiving said audio tone dial signals for converting said audio tone dial signals into code signals;
  (c) a select function control logic circuit operatively responsive to said code signals for selecting one of said memory circuits; and
  (d) a select letter control logic circuit operatively responsive to said code signals addressing said selected memory circuit to select therefrom the stored control signals, said selected signals constituting the control signals which operate said printer.

4,440,978
UNIVERSAL MEASURED SERVICE INTERFACE FOR STEP-BY-STEP TELEPHONE EXCHANGES

Mark L. Barnett, Bothell, and John C. Owens, Issaquah, both of Wash., assignors to Telematic Products, Inc., Redmond, Wash.
Filed Jul. 12, 1982, Ser. No. 397,464
Int. Cl.³ H04M *15/06*
U.S. Cl. 179—5.5 **9 Claims**



1. In a telephone central office exchange, a system having a plurality of linefinders, each connecting one of several incoming lines to an outgoing line of said linefinder, each of said linefinders having a B relay that is energized when said line-

finder is attempting to connect an incoming line to an outgoing line, a set of group relays associated with and controlling the operation of one linefinder at a time as it attempts to connect an incoming line to an outgoing line, said system further including line equipment having a line relay and a cut-off relay for each incoming line, each of said line relays being energized to produce a line signal when a station associated with said incoming line is "off hook" and the corresponding cut-off relay is not energized, each of said cut-off relays being energized to produce a control signal when a linefinder has connected the corresponding incoming line to its outgoing line, a system for identifying a calling number associated with an incoming line and a number called on said incoming line, comprising:

line multiplexer means connected to said line relays for selectively applying respective signals from individual line relays to an output port;

cut-off multiplexer means connected to said cut-off relays for selectively applying respective signals from individual cut-off relays to an output port;

group multiplexer means connected to said group relays for selectively applying respective signals from said B relays to an output port;

called number decoder means connected to the output line of each linefinder for determining the number called by signals on said output lines;

processing means connected to the output ports of said line multiplexer means, cut-off multiplexer means, group multiplexer means, and called number decoder means for identifying line relays and corresponding cut-off relays that have changed state in a preset pattern within a predetermined time that a B relay for an identifiable linefinder changes state in order to identify the incoming line connected to each linefinder outgoing line and to determine the number called on each linefinder output line, thereby identifying a calling station connected to each incoming line and a number called by said calling station.

4,440,979

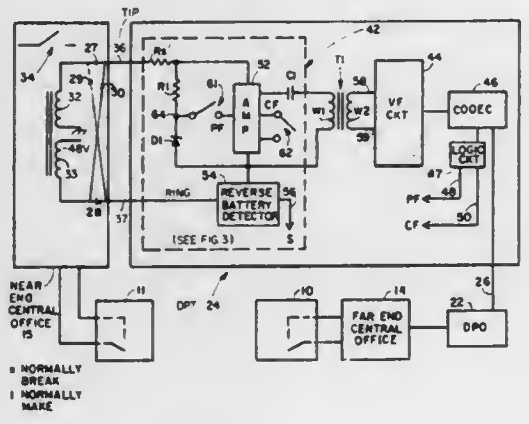
CURRENT SINK FOR DPT CHANNEL UNIT

Gregor D. McGibbon, San Carlos, and Kenneth K. Yu, Mountain View, both of Calif., assignors to GTE Automatic Electric Incorporated, Northlake, Ill.

Filed May 3, 1982, Ser. No. 373,814

Int. Cl.³ H04M *7/06*

U.S. Cl. 179—16 EA **19 Claims**



1. Apparatus responsive to a first control signal that is one of a first state, a second state, and varying between the first and second states for selectively passing DC loop current from a source on a pair of lines and around a winding of a VF transformer only when the first signal is of the second state, and passing VF (voice frequency) signals on the lines to and from the winding, comprising:

first and second nodes;

first means for electrically connecting said nodes to associated lines;

second means for selectively AC coupling the winding across said nodes for coupling VF signals on the lines to and from the winding;

third means electrically connected across said nodes and including a first resistor having a larger resistance between a side thereof and a tap thereof for terminating the lines with the large resistance of said first resistor when the first signal is a first state;

current amplifier means electrically connected between said nodes and having an input terminal; and

first switch means electrically connected between said tap and said input terminal of said amplifier means and responsive to a second state of the first signal for causing said amplifier means to conduct for passing DC loop current on the lines and around the winding; a first state of said first signal disabling said amplifier means for preventing it passing DC loop current.

4,440,980

OVERVOLTAGE PROTECTION FOR A LINE CIRCUIT

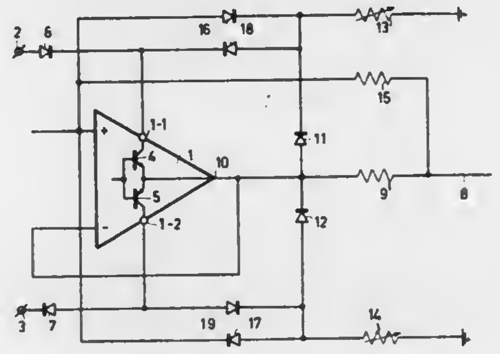
Pieter Bakker, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 6, 1981, Ser. No. 251,460

Claims priority, application Netherlands, Jan. 20, 1981, 8100242

Int. Cl.³ H04M *19/00;* **H02H** *3/22*

U.S. Cl. 179—81 R **7 Claims**



1. A control stage for a telephone subscriber's line for applying current in two directions to one wire of said subscribers's line comprising:

an amplifier having an input and an output;

said amplifier further having a first supply terminal (1-1) and a second supply terminal (1-2) for applying a supply current to said amplifier;

a first diode (6) connected between said first supply terminal (1-1) and a first voltage source (2) and a second diode (7) connected between said second supply terminal (1-2) and a second voltage source (3), the supply current being applied to and discharged from said amplifier via said diodes;

a third diode (11) connected between the output of said amplifier and said first supply terminal; and

a fourth diode (12) connected between the output of said amplifier and said second supply terminal.

4,440,981

ELECTRONIC HOLD CIRCUIT

Gary Grantland, Hartselle; Hugh S. Montgomery, Huntsville; Eduard F. B. Boeckmann, Huntsville, and Larry A. Woodworth, Huntsville, all of Ala., assignors to GTE Automatic Electric Inc., Northlake, Ill.

Filed Nov. 26, 1982, Ser. No. 444,759

Int. Cl.³ H04M *1/00*

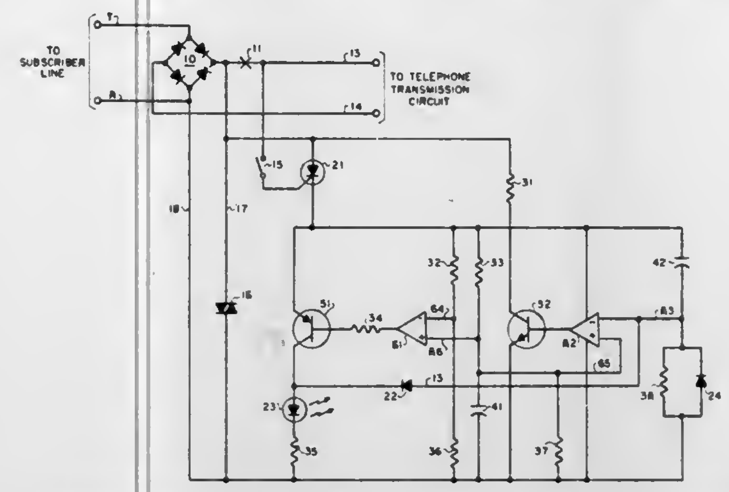
U.S. Cl. 179—81 R **11 Claims**

1. A hold circuit for use with a telephone instrument, said telephone instrument connected to the tip lead and ring lead of a subscriber telephone line and a source of line voltage, said hold circuit comprising:

first and second hold circuit leads, said first hold circuit lead connected to said ring lead and said second hold circuit lead connected to a first switching device, said first switching device including a trigger lead connected to a hold switch, said hold switch arranged to be manually manipulated for turning on said first switching device and connecting said tip lead to said second hold circuit lead applying said line voltage to said first and second hold circuit leads;

sensing means connected across said first and second hold circuit leads, said sensing means providing an output signal to a second switching device turning on said second switching device responsive to the application of said line voltage to said first and second hold circuit leads; and

subscriber line seizing means connected across said first and second hold circuit leads in response to said second switching device turning on, seizing said subscriber line into a hold condition.



4,440,982

HEARING AID

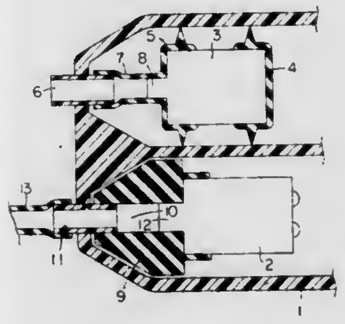
Johannes M. G. M. Kaanders; Cornelis H. M. van Rijsewijk, and Antoon F. Smerecnik, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 8, 1982, Ser. No. 346,669

Claims priority, application Netherlands, Mar. 17, 1981, 8101286

Int. Cl.³ H04R *1/28, 25/00*

U.S. Cl. 179—107 R **6 Claims**



1. A hearing aid comprising, a housing having an outlet opening therein, a microphone supported within the housing, a receiver having a sound outlet for connection to a sound transmission duct, suspension means for supporting the receiver within said housing, said suspension means comprising a component including a body located within the housing and made of an elastic damping material and having a sound transmission duct within said body which communicates with the sound outlet in the receiver, said suspension means further comprising a rigid duct supported in said outlet opening of the housing and coupled to said body so that the rigid duct communicates with the sound duct within said body and also functions as the sole support for said component and said receiver such that the component is only in physical contact with the housing at the inner surface of said outlet opening and via said rigid duct located therein, said suspension means supporting the receiver mainly on the side of the receiver where the receiver sound outlet is located whereby sound vibrations produced in the walls of the receiver are substantially damped from reaching the housing.

4,440,983

ELECTRO-ACOUSTIC TRANSDUCER WITH ACTIVE DOME

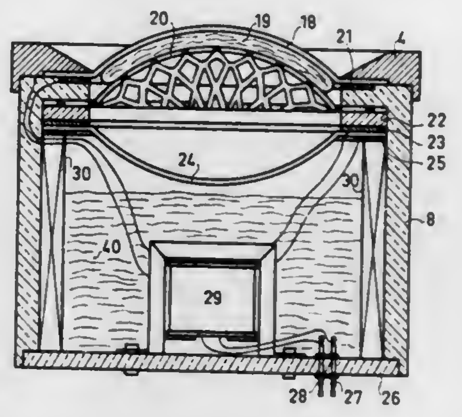
Hugues Facoetti; Philippe Menoret; Francois Micheron; Patrick Petit, and Pierre Ravinet, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jan. 5, 1981, Ser. No. 222,673

Claims priority, application France, Jan. 8, 1980, 80 00311

Int. Cl.³ H04R *15/00*

U.S. Cl. 179—110 A **9 Claims**



1. In an electro-acoustic transducer comprising a rigid case capped by a self-supporting active radiating membrane made from a polymer material having at least one dome shaped protuberance, said case being partially filled with an acoustically permeable resilient member having a bearing face conforming to the exact shape of the protuberance; the shape taken by the bearing face of said member being determined by the shape of said protuberance so that said resilient member is deformed by deformation of said protuberance in response to an applied force and restores said protuberance to its initial shape upon removal of said force.

4,440,984

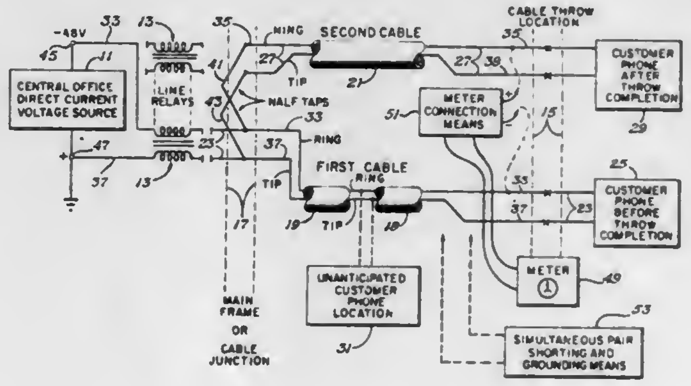
METHOD OF TESTING TELEPHONE CABLE PAIRS

James M. Buzbee, 1602 NW. 5th Ave., Mineral Wells, Tex. 76067

Filed May 6, 1982, Ser. No. 375,544

Int. Cl.³ H04B *3/46*

U.S. Cl. 179—175.3 A **11 Claims**


-48V
CENTRAL OFFICE DIRECT CURRENT VOLTAGE SOURCE
LINE RELAYS
RING
SECOND CABLE
TIP
HALF TAPS
RING
FIRST CABLE
RING
TIP
TIP
CABLE THROW LOCATION
METER CONNECTION MEANS
CUSTOMER PHONE AFTER THROW COMPLETION
CUSTOMER PHONE BEFORE THROW COMPLETION
METER
UNANTICIPATED CUSTOMER PHONE LOCATION
MAIN FRAME OR CABLE JUNCTION
SIMULTANEOUS PAIR SHORTING AND GROUNDING MEANS
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1. An improved method of testing telephone cable; wherein first and second telephone cables each comprising a plurality of pairs extend from a location where half taps have been applied and over approximately equal distances to a cable throw or test location; wherein it is desired to determine for each pair to be tested whether or not a customer phone is present, and if present, its location relative to the cable throw or test location, all without disconnecting a customer phone, making a bridging connection through a test set, or disconnect-

ing the central office direct current voltage source; which improved method comprises:

a. connecting a meter between conductors of like polarity of the pair being tested of the first cable and the corresponding half tap pair of the second cable and; observing the presence or absence of current flow, and if current is present, observing the direction of the current flow through the meter, thereby determining whether or not a customer phone is present and if so, whether it is connected to the first cable or to the second cable; and if a throw is completed again observing the direction of current flow through the meter, thereby determining whether or not the customer phone has been transferred and is therefore on the field side of the throw location as it should be.

4,440,985

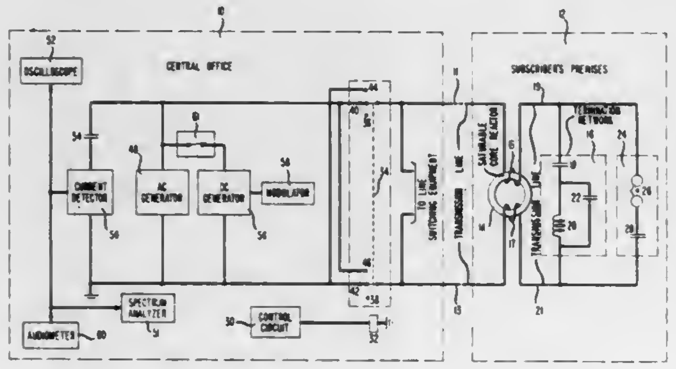
APPARATUS FOR DETERMINING THE LOCATION OF FAULTS IN A TRANSMISSION LINE

Joseph Federico, Berkeley Heights, and Sigurd G. Waaben, Princeton, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 275,903, Jun. 22, 1981, abandoned. This application Dec. 27, 1982, Ser. No. 452,942

Int. Cl.^{3} H04B *3/46*

U.S. Cl. 179—175.3 F **14 Claims**



14. Circuitry for locating faults in a transmission line as being located on one side or the other of a nonlinear network arranged in cascade with said line, said network

characterized by

means for generating spikes in response to a first signal applied to said line from a test source and for superimposing said spikes on said first signal, and

means for displacing said spikes in response to a second signal applied to said transmission line with said first signal,

said circuitry comprising means for detecting said displaced spikes.

4,440,986

MICROPROCESSOR CONTROLLER FOR SIMULTANEOUSLY CONTROLLING A PBX AND PROVIDING MULTIPLE USER ACCESS FOR GENERAL PURPOSE DATA PROCESSING

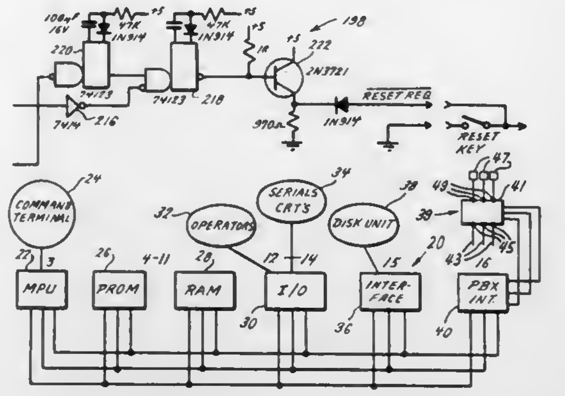
John T. Thorson, Oak Forest, Ill., assignor to Walter L. Douglas, Hickory Hills, Ill.

Continuation-in-part of Ser. No. 13,617, Feb. 21, 1979, abandoned. This application Oct. 27, 1980, Ser. No. 200,965

Int. Cl.^{3} H04M *11/00;* H04Q *3/54*

U.S. Cl. 179—2 DP **25 Claims**

1. A stored program controlled microprocessor controller includes a microprocessor with means to operate said microprocessor in a time sharing mode to simultaneously service a centrally program controlled PBX and a data processing system, said controller having a first memory dedicated to storing the program for controlling PBX operation, said PBX including a plurality of trunk ports, each of which has means to connect to an incoming trunk, and a plurality of line ports, each of which has means to connect to a telephone extension; thedata processing system having a plurality of data ports for accessing the microprocessor to input, process and output data and programming information unrelated to the operation of said PBX, said controller having an additional memory means, means to partition said additional memory means and assign at least one of said partitions to each of said data ports, each data port thereby having access to no partition other than its assigned partition, and means to allocate and prioritize the processing time of said microprocessor between said PBX and said data processing system.



4,440,987

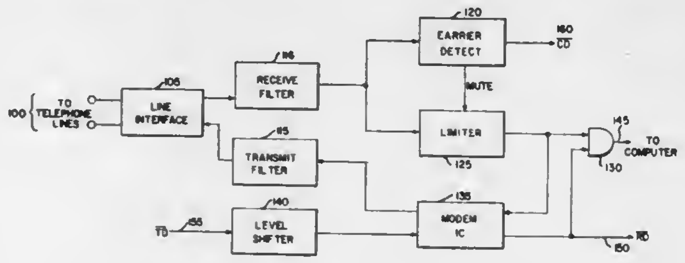
COMPUTER AND PERIPHERAL INTERFACE CIRCUIT

Jerry J. Heep, Arlington, and Paul Schreiber, Fort Worth, both of Tex., assignors to Tady Corporation, Fort Worth, Tex.

Filed Dec. 29, 1981, Ser. No. 335,554

Int. Cl.^{3} H04L *27/14*

U.S. Cl. 179—2 DP **5 Claims**



2. Apparatus for converting frequency-shift-keyed signals into tone burst-coded signals comprising,

means responsive to said frequency-shift-keyed signals for converting said signals into squarewaves,

means responsive to said squarewaves for generating a first electrical signal when said squarewaves have a first frequency and for generating a second electrical signal when said squarewaves have a second frequency, and

means responsive to said squarewaves and to said first signal for producing a tone burst at the frequency of said squarewave and responsive to said squarewave and to said second signal for producing no signal.

4,440,988

MODEM WITH LOW PART COUNT AND IMPROVED DEMODULATOR

Dale A. Heatherington, Decatur, Ga., assignor to Hayes Microcomputer Products, Inc., Norcross, Ga.

Division of Ser. No. 273,398, Jun. 15, 1981. This application Dec. 13, 1982, Ser. No. 448,980

Int. Cl.^{3} H04M *11/00*

U.S. Cl. 179—2 C **3 Claims**

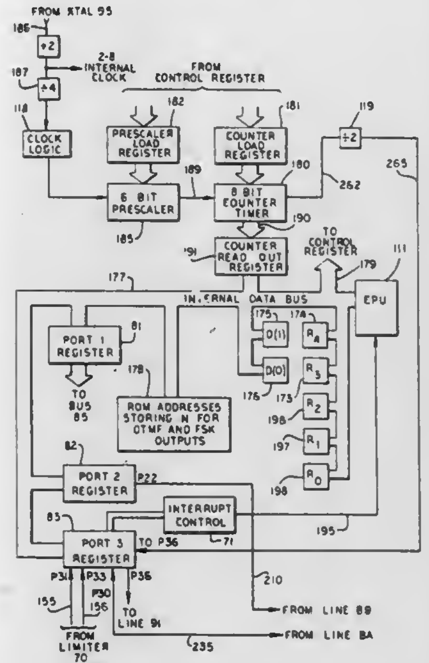
1. In a data communications adapter for connecting a data port to a telephone line and for providing angle modulated signals to said telephone line in response to data signals provided to said data port, the improvement comprising in combination:

a first register means for storing data signals received from said data port;

a second register means for providing a frequency signal;

signal generating means connected to said second register for providing an output signal of a frequency proportional to said frequency signal;

control means responsive to a first predetermined string of said data signals at said data port to provide a first mode of operation for said data communications adapter and alternately for providing a second mode of operation for said data communications adapter;



said control means being responsive to said data signals stored in said first register means to cause said second register means to provide one of a predetermined set of said frequency output signals corresponding to one of a predetermined group of predetermined high tones for dual tone dialing when said data communications adapter is in said first mode of operation and alterately responsive to said data signals stored in said first register means for providing one of a predetermined pair of said frequency signals corresponding to one of a predetermined pair of said angle modulated signals; and

coupling means for coupling said output signal from said signal generating means to said telephone line.

4,440,989

KEY TELEPHONE AREA VOICE PAGING CIRCUIT AND METHOD

William D. Gibb, Belleville, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Mar. 22, 1982, Ser. No. 360,184

Int. Cl.^{3} H04M *1/72, 1/60*

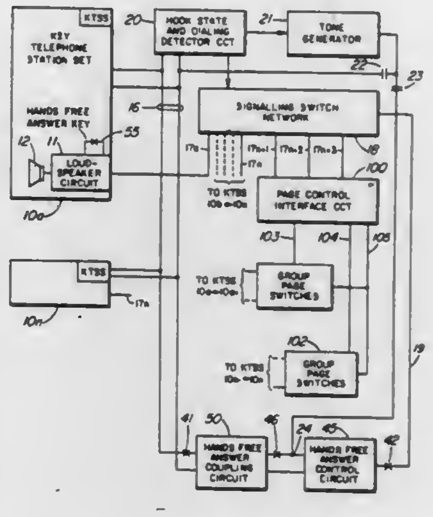
U.S. Cl. 179—99 P **6 Claims**

1. An area voice paging circuit for use in a key telephone system wherein a signalling switch network, having signalling ports, provides for connection of a.c. voice band signals and d.c. control signals to loudspeaker circuits each being selectable via a respective one of the signalling ports, and each residing in an associated key telephone station set, the area voice paging circuit comprising:

a page control interface circuit for generating a page signal in response to receipt of the d.c. control signals via the signalling switch network, and for generating a d.c. biased voltage signal which includes an a.c. voltage signal corresponding to the a.c. voice band signals, the a.c. voltage signal being superimposed on a predetermined d.c. voltage;

a plurality of page switches each having an output terminal connected in common with one of a plurality of the signalling ports, the page switches being responsive to an assertion of the page signal from the page control interface circuit for coupling the d.c. biased voltage signal from the page control interface circuit to the respective signalling ports for use in the associated loudspeaker circuits; and wherein the page control interface circuit comprises:

a plurality of page buffer circuits each having a signal input for receiving the d.c. control signal from one of the signalling ports, a page signal output, a unidirectional current path connected to the signal input, and a comparator with inputs, one input being connected to receive a reference voltage and another input being connected in series with a resistance to the signal input, the comparator being responsive to the d.c. control signal exceeding the reference voltage for generating the page signal at the page signal output;


KTSS
KEY TELEPHONE STATION SET
HANDS FREE ANSWER KEY
LOUD-SPEAKER CIRCUIT
HOOK STATE AND DIALING DETECTOR CCT
TONE GENERATOR
SIGNALLING SWITCH NETWORK
PAGE CONTROL INTERFACE CCT
GROUP PAGE SWITCHES
HANDS FREE ANSWER COUPLING CIRCUIT
HANDS FREE ANSWER CONTROL CIRCUIT

an amplifier system including a resistive input connected to the unidirectional current path in each of the plurality of page buffer circuits, a power amplifier for amplifying the a.c. voice band signals appearing across the resistive input to generate the d.c. biased voltage signal at an output of the power amplifier, in response to an amplifier control signal, and a threshold detector for generating the amplifier control signal in response to more than a predetermined d.c. voltage appearing across the resistive input.

4,440,990

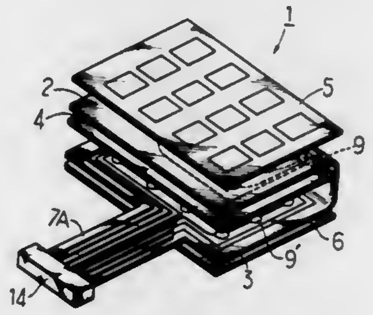
MEMBRANE KEYBOARD ASSEMBLY

Satoru Nozaki, Northridge, Calif., assignor to SMK Electronics Corporation, USA, Carson, Calif.

Filed May 19, 1982, Ser. No. 379,709

Int. Cl.^{3} H01H *9/00*

U.S. Cl. 200—5 A **8 Claims**



1. A membrane keyboard assembly for use in a membrane keyboard switch device, comprising:

a flexible base;

plural contact areas formed on said flexible base;

plural connection lines formed on said flexible base and each connected to a respective one of said contact areas, said connection lines containing spaced gaps;

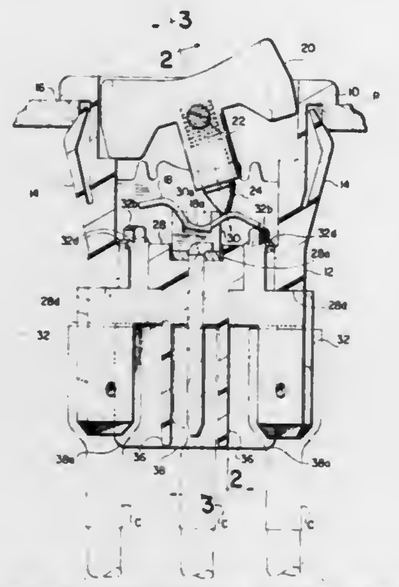
resistive layers applied to selected of said contact areas and said connection lines and the spaced gaps, whereby the portions of said resistive layers applied to said spaced gaps shunt said selected of said connection lines and said contact areas to form suppression resistances.

4,440,991
ELECTRIC SWITCH WITH NESTED TERMINALS

Richard W. Sorenson, Avon, Conn., assignor to Carlingswitch, Inc., West Hartford, Conn.

Filed Oct. 7, 1981, Ser. No. 309,458
Int. Cl.³ H01H *21/00*

U.S. Cl. 200—6 R **4 Claims**



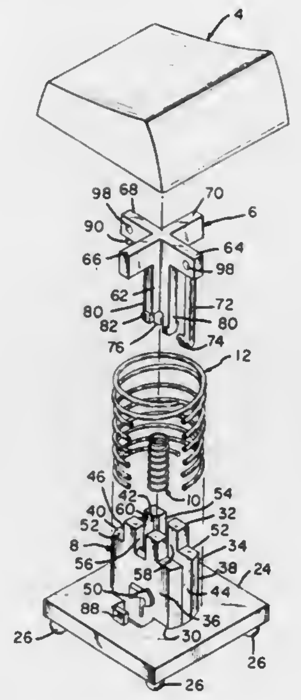
1. An electric switch comprising a molded case of dielectric material and including a generally rectangular body portion, means for said case to be front mounted in a panel opening, said body portion defining an upwardly open cavity, at least one movable contact in said cavity, an operating member movably mounted in said case for selectively moving said movable contact, said body portion further including a bottom wall having slots defined therein, terminals in said switch case bottom wall, said terminals having lower blade portions for slidably receiving wire connectors, said blade portions projecting downwardly but arranged generally within the periphery of said rectangular body portion, upper portions of some of said terminals defining contacts which are selectively engageable by said movable contact, each of said some terminals having an intermediate portion in the plane of said blade portion and defining an offset between said upper contact defining portion and said lower blade portion such that said upper contact portion is located inside said switch cavity and said lower blade portion has at least one vertically extending edge located adjacent to an outside corner of said rectangular body portion said switch case body having an integrally formed divider wall in said cavity to define side-by-side subcavities, certain of said terminals in said bottom wall slots having upper portions in certain of said subcavities and other of said terminals having upper portions in the other of said subcavities, said some terminals having edges of their blade portions located adjacent at least two corners of said rectangular body portion said some terminals located with edges thereof adjacent said corners of said switch case body portion, at least one center terminal associated with one of said subcavities and located in a slot defined in said bottom wall so that one vertically extending edge of the blade portion of said center terminal is arranged adjacent to and in the plane of the long side of said rectangular body portion, said center terminal having its generally planar blade oriented perpendicular to said long side of said rectangular body portion each of said terminals comprising a flat strip of conductive material having a thickness which is constant throughout its length, said upper portion of each terminal having a width which is less than that of said intermediate portion to define an abutment edge on said terminal, said slots in said bottom wall being stepped so that each said slot has a downwardly facing abutment surface for engagement by said terminal abutment edge to locate said terminal in said switch case body portion.

4,440,992
LOW PROFILE KEYBOARD SWITCH ACTUATING ASSEMBLY

Mark R. Desmarais, Derry, N.H., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 354,319, Mar. 3, 1982, abandoned. This application Jun. 28, 1983, Ser. No. 508,647
Int. Cl.³ H01H *3/12*

U.S. Cl. 200—340 **4 Claims**



1. A low profile switch actuating assembly comprising a frame having a fixed end and a free end, an axial opening extending into the free end towards the fixed end, a plunger in the opening, the plunger having a lower end which is proximate to the fixed end of the frame and a force-receiving end which is proximate to the free end of the frame, the plunger being slidably movable into the frame from a normal position to a depressed position, the force-receiving end of the plunger being located beyond the free end of the frame when the plunger is in the normal position and being movable towards the free end when the plunger is moved to the depressed position, the force-receiving end of the plunger having a key top thereon which is pressed to move the plunger to the depressed position, the switch actuating assembly being characterized in that:

the free end of the frame has a plurality of angularly spaced slots extending therethrough from the axial opening,

the force-receiving end of the plunger has a plurality of radially extending arms extending therefrom, the arms being in alignment with the slots in the frame, the arms having adjacent portions, which are adjacent to the axis of the plunger and which are dimensioned to be freely received in the slots, the arms having outer end portions which are remote from the axis of the plunger,

the key top has an underside which is opposed to the free end of the frame, a frame-receiving recess is provided in the underside which is dimensioned to receive the free end of the frame, a plurality of arm-receiving recesses extend radially from the frame-receiving recess,

the force-receiving end of the plunger and the adjacent portions of the arms being in the frame-receiving recess, the outer end portions of the arms being received in, and secured in, the arm-receiving recesses whereby,

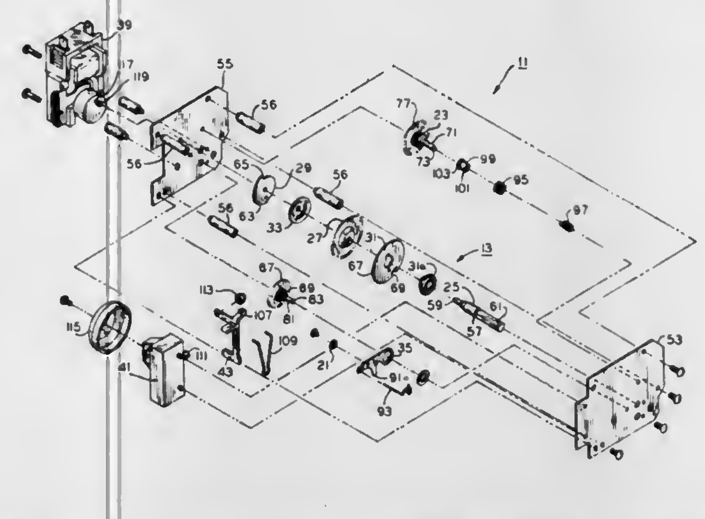
upon movement of the plunger from the normal position to the depressed position, the free end of the frame enters the frame-receiving recess and the adjacent portions of the plunger arms enter the arm-receiving slots.

4,440,993
TIMER DEVICE AND METHOD OF OPERATING

Richard A. Wandler, Clinton, Iowa, and Kenneth R. Renkes, Fenton, Ill., assignors to General Electric Company, Fort Wayne, Ind.

Filed Aug. 17, 1982, Ser. No. 408,797
Int. Cl.³ H01H *7/08*

U.S. Cl. 200—38 R **20 Claims**



19. A timer device adapted for timing through an operating time period selected therefor by an operator comprising:

means adapted to be rotatably driven for indicating the remaining operating time in the selected operating time period for the timer device;

a continuous gear associated with said indicating means;

a pair of means interconnected in meshing engagement with said continuous gear and operable generally for rotatably driving said indicating means in different preselected speed modes through an operating time period in excess of a predetermined operating time period and through the predetermined operating time period with the sum of the excess and predetermined operating time periods comprising the selected operating time period for the timer device;

means for actuating one of said driving means in its meshing engagement with said continuous gear to rotatably drive said indicating means in one of the different preselected speed modes;

means associated with said indicating means and operable generally at the end of the excess operating time period for disabling a part of said one driving means in the meshing engagement with said continuous gear and disassociating said part of said one driving means from another part of said one driving means while continuing to operate the drive of said another part of said one driving means by said actuating means; and

means operable generally for interconnecting the other of said driving means and said another part of said one driving means with said other driving means being in the meshing engagement thereof with said continuous gear so as to rotatably drive said indicating means in another of the different preselected speed modes to initiate the predetermined operating time period upon the disabling of said first named part of said one driving means.

4,440,994
PIVOTED ACTUATOR OFF LOCK SWITCH WITH OPERATOR KEY NONREMOVABLE IN ON POSITION

Gursharan P. S. Nat, Smithfield, N.C., assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 20, 1982, Ser. No. 410,103
Int. Cl.³ H01H *27/00*

U.S. Cl. 200—42 T **5 Claims**

1. An electric switch comprising, in combination: an insulating housing having an opening thereon;

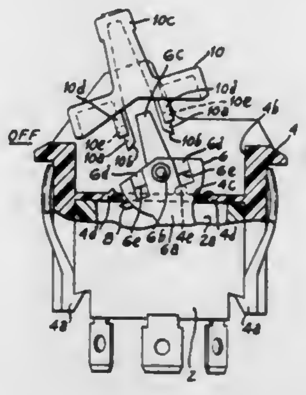
switch contacts in said housing;

a pivotally supported actuator within said opening movable between ON and OFF positions for actuating said switch contacts between ON and OFF conditions, respectively;

locking means carried by said actuator and biased for engagement with said housing for preventing movement of said actuator from said OFF position to said ON position;

a manual operator removably coupled to said actuator for releasing said locking means, said operator having resilient coupling means extending along the exterior of said actuator and cammed outwardly by said actuator during coupling movement of said operator to said actuator, said coupling means moving inwardly into engagement with cooperating means on said actuator upon completion of said coupling movement for releasably retaining said operator coupled to said actuator; and

means on said housing in juxtaposition with said coupling means when said actuator is moved to said ON position, said means on said housing comprises a constriction in said opening and movement of said actuator to said ON position carries at least one of said coupling means into juxtaposition with said constriction for preventing outward movement of said coupling means.

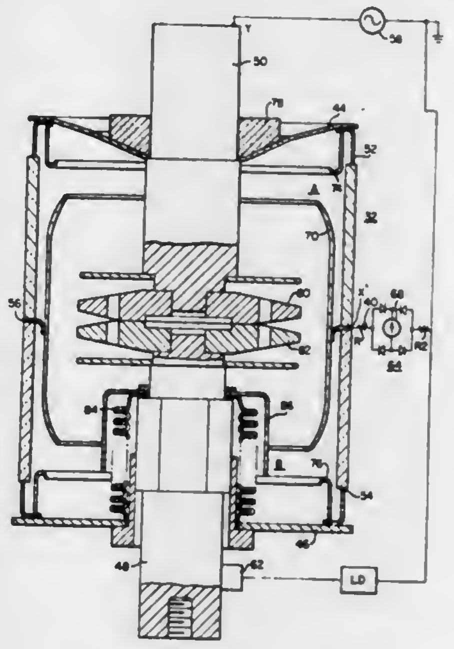


4,440,995
VACUUM CIRCUIT INTERRUPTER WITH ON-LINE VACUUM MONITORING APPARATUS

William J. Lange, Murrysville, and Robert B. Gosser, Irwin, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 19, 1981, Ser. No. 226,331
Int. Cl.³ H01H *33/66*

U.S. Cl. 200—144 B **20 Claims**



1. A vacuum circuit interrupter, comprising:

(a) enclosure means defining a substantially evacuated volume;

(b) relatively movable contact means electrically interconnectable with an external voltage source means and disposed to interrupt electrical current within said evacuated volume;

(c) first and second spaced electrically conductive shield means disposed within said enclosure means for protecting internal portions of said enclosure means, said first and second shield means having therebetween a subvolume, said first of said shield means being electrically interconnectable with said external voltage source means for having a voltage potential existent thereon, said second of said shield means communicating electrically with a region external of said enclosure means; and

(d) current measurement means disposed outside of said enclosure means in circuit relationship with said second shield means and connectable with said voltage source means at another electrical potential so that an electric field of sufficient magnitude is present in said subvolume to cause electrons which are present in said subvolume to to interact with gas molecules in said subvolume to form gas ions which in turn interact with one of said shield means to thus cause electrical current to flow through said current measurement means to thus give an indication of the amount of gas present in said substantially evacuated volume.

4,440,996

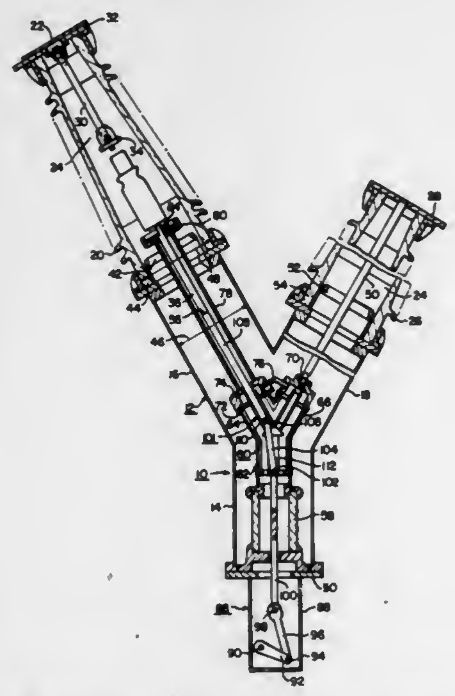
DEAD TANK GAS-INSULATED PUFFER-TYPE CIRCUIT INTERRUPTER HAVING INTERRUPTING UNIT IN INSULATED CASING

Ben J. Calvino, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 17, 1981, Ser. No. 331,941

Int. Cl.³ H01N *33/88*

U.S. Cl. 200—148 A **9 Claims**



1. A gas-insulated circuit breaker comprising:

a Y-shaped, hollow grounded metal base member having a support section and two angularly-extending legs;

a hollow insulating casing secured to each base member leg and having a cover secured to the end thereof distal from said base member leg;

a stationary contact disposed in one of said casings;

a movable contact disposed in said one casing and separable from said stationary contact to establish an arc therebetween;

an insulating gas disposed within said base member and said casings;

means disposed within said one casing for directing a blast of insulating gas into the arc established between said separating contacts comprising a piston fixedly disposed in said one casing and a puffer cylinder secured to said movable contact and movable over said piston to compress the gas therebetween;

an operating mechanism associated with said base member support section for moving said movable contact; and

drive rod means insulatably connecting said movable contact and said operating mechanism, said operating mechanism moving said movable contact through said drive rod means.

4,440,997

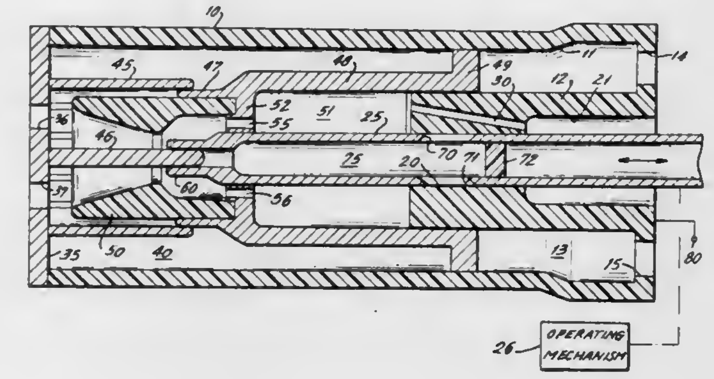
PUFFER INTERRUPTER WITH ARC ENERGY ASSIST

Ruben D. Garzon, Malvern, Pa., assignor to Brown Boveri Electric Inc., Rolling Meadows, Ill.

Filed May 28, 1982, Ser. No. 382,920

Int. Cl.³ H01H *33/88*

U.S. Cl. 200—148 A **14 Claims**



1. A puffer interrupter which employs arc energy assist for its opening operation; said puffer interrupter comprising an elongated housing having a stationary contact means fixed therein and a stationary piston fixed therein; said stationary piston telescopically receiving a movable cylinder; said movable cylinder having a movable contact means fixed thereto and having an insulation nozzle fixed thereto; said movable contact means being movable with said cylinder and said nozzle between an engaged and disengaged position with respect to said stationary contact means; said insulation nozzle defining an axial gas flow path which surrounds the arcing space between said movable and stationary contact means when said movable contact means separates from said stationary contact means; said movable cylinder and said piston defining a compressible volume which is connected to the interior of said nozzle and which is compressed when said movable contact means moves to said disengaged position; said cylinder having an enlarged outer flange which moves within and is slidably sealed to the interior of said elongated housing for at least a portion of the motion of said cylinder within said housing; the volume surrounding said insulation nozzle communicating with one surface of said flange so that an increase in pressure within said last mentioned volume produces a differential force which tends to move said movable contact means towards said disengaged position; said movable contact means comprising a tubular main contact and a concentric tubular movable arcing contact disposed coaxially and interiorly of said tubular main contact; said stationary contact means comprising a tubular main stationary contact which telescopically receives said tubular main contact in said engaged position, and a central stationary arcing contact rod which telescopically engages said tubular movable arcing contact when said movable contact means is in its said engaged position; said movable and stationary arcing contact means having a deeper telescopic region of engagement than said tubular movable and stationary main contacts whereby said movable and stationary arcing contacts are the last to disengage when said cylinder is moved to said disengaged position; said nozzle being disposed in the annular space between said tubular main contact and said tubular movable arcing contact.

4,440,998

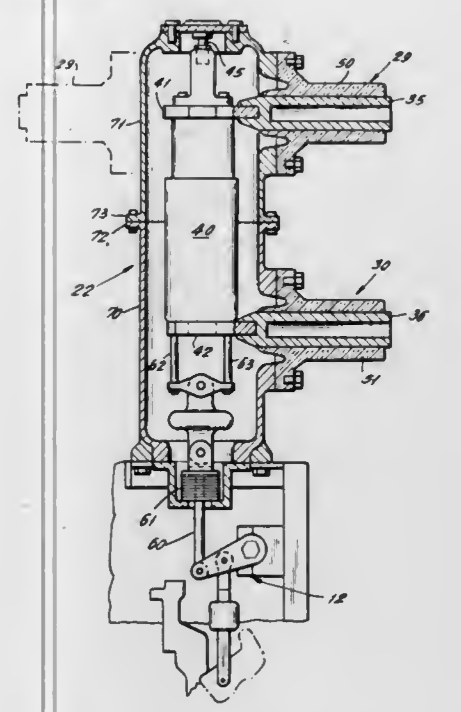
SEGMENTED CIRCUIT BREAKER HOUSING WITH ROTATABLY ADJUSTABLE BUSHING POSITIONS

Lorne D. McConnell, and Edward M. Spencer, both of Chalfont, Pa., assignors to Brown Boveri Electric Inc., Rolling Meadows, Ill.

Filed Jul. 9, 1982, Ser. No. 396,776

Int. Cl.³ H01H *33/70*

U.S. Cl. 200—148 R **10 Claims**



1. A circuit breaker housing containing interrupter structure means in which the major parts thereof can be arranged to provide at least two different spacings between free ends of its bushings, whereby said circuit breaker housing can be used in either an indoor or an outdoor application; said circuit breaker housing comprising an elongated cylinder which includes first and second cylinder halves which are coaxial with one another and which both have a respective symmetric flange at one of their respective ends; said flanges having means so that they can be moved relative to each other and being connectable in sealed abutting engagement with one another and being fixed to one another in one of at least two predetermined relative angular relationships; said circuit breaker housing being operable in an installation when said flanges are in either of said at least two angular relationships; each of said first and second cylinder halves having respective cylindrical bushings extending therefrom which have axes which are perpendicular to the axis of said first and second cylinder halves, respectively; each of said bushings of said first and second cylinder halves having a respective free terminal end; said interrupter structure means disposed within the interior of said first and second cylinder halves; said interrupter structure means having first and second terminals connected to said bushings of said first and second cylinder halves, respectively; said free ends of said bushings having a first spacing when the first and second flanges are fixed together in a first of said predetermined angular relationships and having a second spacing when said first and second flanges are fixed together in a second of said predetermined angular relationships.

4,440,999

MEMBRANE SWITCH

John I. Doughty, White Bear Lake, Minn., assignor to Press On, Inc., Stillwater, Minn.

Filed Aug. 13, 1982, Ser. No. 407,821

Int. Cl.³ H01H *9/00*

U.S. Cl. 200—5 A **7 Claims**

1. A membrane switch, comprising:

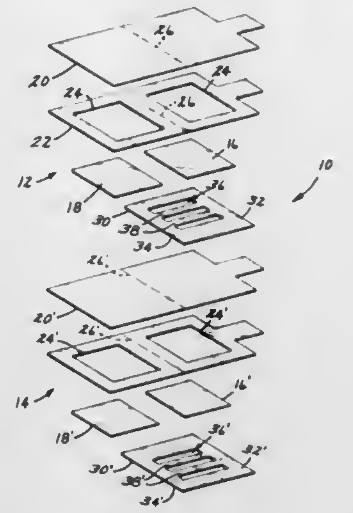
(a) a spacer lamina having oppositely facing surfaces and defining a window therein;

(b) a first transparent, resilient electrical circuit contact adjacent a first of said surfaces and interposed in said window;

(c) a second transparent electrical circuit contact adjacent a second of said surfaces and interposed in said window;

(d) contact support mounting said contacts, wherein each contact is inlain within a segment of said support, having a surface for engaging the opposite of said contacts flush with a surface of said support in which it is inlain; and

(e) conductive ink printed around said contacts and also printed on said support, forming borders around said contacts, wherein a signal may be conducted to said contacts.



4,441,000

SLIDE SWITCH MECHANISM

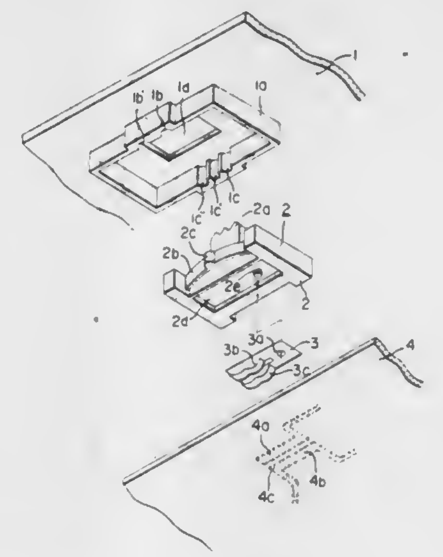
Kaname Suwa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 24, 1982, Ser. No. 352,021

Claims priority, application Japan, Mar. 6, 1981, 56-32113

Int. Cl.³ H01H *9/00, 15/00*

U.S. Cl. 200—291 **6 Claims**



1. A slide switch mechanism comprising:

a guide member;

a slide member for switching electrical contacts, said slide member being reversibly mountable in said guide member for slidable movement therein;

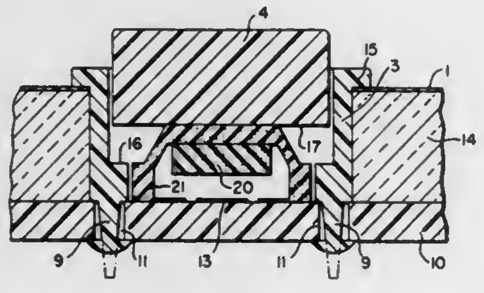
first engaging means provided in different patterns on two mutually opposed faces of said guide member; and

second engaging means provided on a face of said slide member in sliding contact with said guide member to elastically engage with said first engaging means, wherein when said slide member is fitted in said guide member in one manner, said slide member stops at a position different from the stopping position of the slide member when fitted in said guide member in the reverse manner.

4,441,001
KEYBOARD FOR INPUTTING PLURAL LETTERS OR SYMBOLS

Ryuzo Miyano; Haruyuki Uenishi, both of Ikoma; Hisashi Akatani, Hirakata, and Takenori Akamine, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 9, 1981, Ser. No. 271,926
Claims priority, application Japan, Jun. 10, 1980, 55-78600
Int. Cl.³ H01H *3/12*
U.S. Cl. 200—308 **6 Claims**



1. A keyboard comprising:

a printed circuit substrate having top and bottom surfaces and having a latticework configuration forming a plurality of apertures and also having a plurality of electrodes arranged on frames of said latticework; a transparent panel placed on said top surface of said printed circuit substrate and having through apertures arranged at positions opposite to said plurality of electrodes;

a plurality of switch members which are fitted into said through apertures in said transparent panel;

a display member arranged on said bottom surface of said printed circuit substrate, said display, member having a plurality of indicia contained thereon;

said keyboard being arranged such that said printed circuit substrate, said transparent panel and said plurality of switch members are integral with each other and with said display member, and said indicia of said display member are disposed at positions which are visible through said apertures of said printed circuit substrate, wherein each of said plurality of switch members corresponds to a respective one of said plurality of visible indicia.

4,441,002
COOK-BY-WEIGHT MICROWAVE OVEN

Wesley W. Teich; George Freedman, both of Wayland, and Joseph R. Adamski, Brighton, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 190,135, Sep. 24, 1980, abandoned. This application Mar. 1, 1982, Ser. No. 353,721
Int. Cl.³ H05B *6/68*
U.S. Cl. 219—10.55 B **6 Claims**

1. A microwave oven comprising:

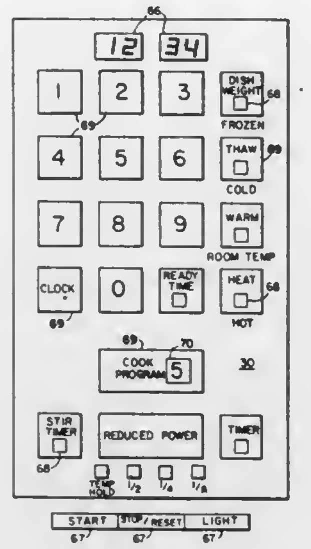
a conductive cavity;

a magnetron for supplying microwave energy to said cavity;

a weight sensitive device coupled to said cavity for providing a signal corresponding to the initial weight of food positioned within said cavity;

an operator actuable control for selecting frozen, refrigerator temperature, or room temperature as being indicative of the approximate initial temperature of said food;

a microprocessor for calculating a first time period for thawing said food, a second time period for raising the temperature of said food from refrigerator temperature to room temperature, and a third time period for raising the temperature of said food from room temperature to a hot temperature, said first, second, and third time periods being calculated as a function of said initial weight signal; and

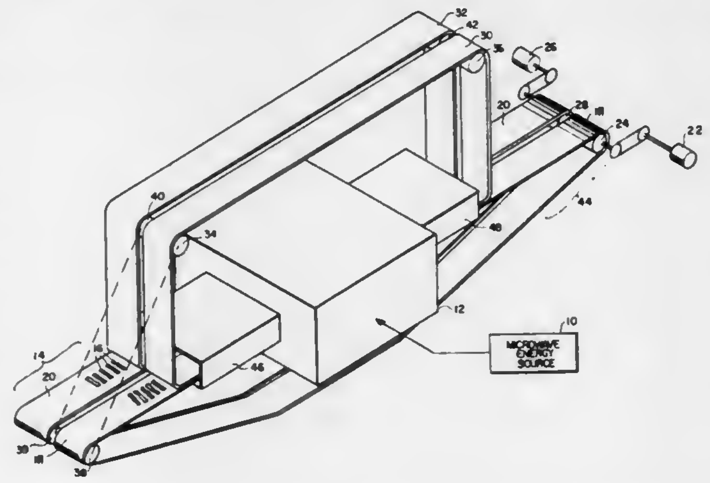


said microprocessor controlling said magnetron in accordance with a selection of said first, second, and third time periods in response to said operator actuable control.

4,441,003
CONVEYORIZED MICROWAVE OVEN WITH MULTIPLE LANES

E. Eugene Eves, II, Westford, and Richard H. Edgar, Chelmsford, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Apr. 16, 1982, Ser. No. 369,198
Int. Cl.³ H05B *9/06*
U.S. Cl. 219—10.55 A **1 Claim**



1. The method of cooking product in a conveyorized microwave oven, comprising the steps of:

providing a conductive cavity having first and second apertures on opposing walls for providing continuous access to the interior thereof wherein leakage of microwave energy is prevented by a first microwave suppression tunnel coupled with said first aperture and a second microwave suppression tunnel coupled with said second aperture;

energizing said cavity with microwave energy;

moving a first conveyor belt through said first aperture, said cavity and said second aperture for transporting product to be heated by said microwave energy;

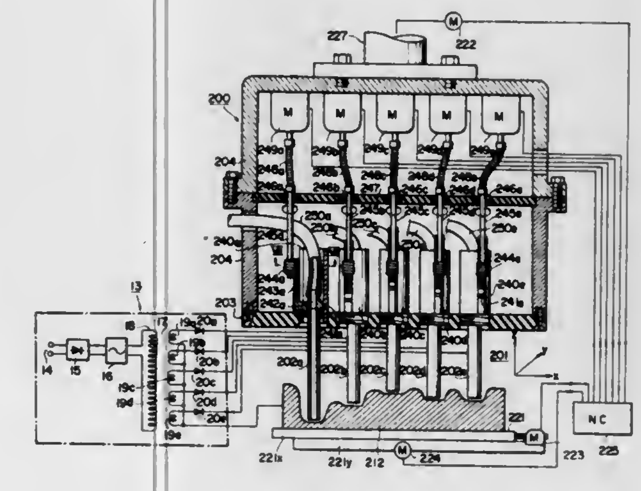
moving a second conveyor belt through said first aperture, said cavity and said second aperture for transporting product to be heated by said microwave energy; and

controlling the speed of said first conveyor belt in accordance with the load of said product on said first conveyor belt, the load of said product on said second conveyor belt, and the effective dummy load of said oven.

4,441,004
MULTIPLE PIPE ELEMENT ELECTRODE ASSEMBLY EDM METHOD AND APPARATUS

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Jun. 9, 1981, Ser. No. 271,982
Claims priority, application Japan, Jun. 12, 1980, 55-78383; Jun. 25, 1980, 55-85185; Jun. 26, 1980, 55-86909; Jun. 26, 1980, 55-86910
Int. Cl.³ B23P *1/08*
U.S. Cl. 219—69 E **30 Claims**



1. An EDM method of machining a contoured cavity in a conductive workpiece, comprising:

(a) forming a multiple pipe assembled EDM electrode by (a1) arranging a multiplicity of conductive open-ended pipe elements two-dimensionally in parallel with one another and spaced apart from one another with a predetermined uniform minimum spacing to establish a mutually electrically insulating relationship in such a manner that an imaginary envelope surface which is substantially defined collectively by the frontal open-end portions of said conductive pipe elements has a preselected three-dimensional contour complementary with a contour of a said cavity to be machined in the workpiece and (a2) securely holding together said multiplicity of pipe elements so arranged in sub-step (a1);

(b) juxtaposing said multiple pipe assembled EDM electrode with the workpiece to define an EDM gap between the annular machining surface provided on each of said frontal open-end portions and said workpiece;

(c) flushing said multiple EDM gap with a dielectric liquid by establishing a forced flow of said dielectric liquid through said pipe elements;

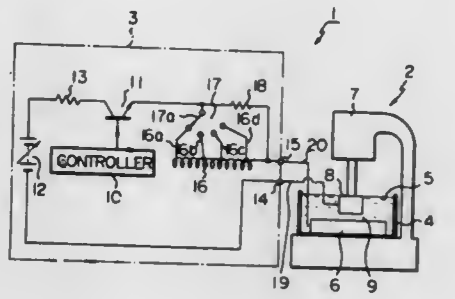
(d) effecting a succession of electrical discharges through said flushed dielectric liquid across each of said multiple EDM gaps between said annular machining surfaces and the localized areas of the workpiece respective juxtaposed therewith by passing a succession of electrical pulses individually between each of said multiple pipe elements and said workpiece to cause EDM material removal from said localized areas; and

(e) advancing said assembled electrode unitarily and relatively into said workpiece in a machining feed direction parallel with said pipe elements to a predetermined depth while relatively displacing said EDM electrode and said workpiece in a plane essentially orthogonal to said machining feed direction by a distance in excess of said predetermined uniform spacing along each of two mutually orthogonal axes on said plane.

4,441,005
EDM PULSE GENERATOR WITH A VARIABLE OUTPUT INDUCTOR FOR PRODUCING PULSE WITH GRADUALLY RISING EDGES

Toshihiko Furukawa, Yamato, Japan, assignor to Sodick Co., Ltd., Yokohama, Japan

Filed Apr. 23, 1981, Ser. No. 256,765
Claims priority, application Japan, May 6, 1980, 55-58742; Aug. 20, 1980, 55-113393
Int. Cl.³ B23P *1/08*
U.S. Cl. 219—69 C **3 Claims**



1. A working pulse generator for an electrical discharge machining apparatus capable of mirror finishing which provides working pulses to a gap formed between a workpiece and an electrode, said working pulse generator comprising

means for repetitively generating pulses having a narrow pulse width of not greater than 10 μsec. comprising a direct current power source, switching means connected in series with the direct current power source, and controller means for controlling the switching means to repetitively open and close to produce said narrow width pulses at an output, the switching means being a switching transistor and the controller controlling the conducting condition of the switching transistor,

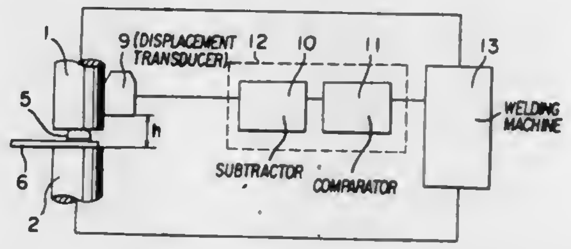
an output circuit comprising the parallel combination of a resistor and connected to the output of said pulse generating means for producing a gradual rise in rising portions of said pulses, and

means for providing said pulses having gradual rising portions from said output circuit to the machining gap, the providing means applying the pulses across the gap between the electrode and the workpiece in such a way that the potential of said workpiece is higher than that of the electrode.

4,441,006
PROCESS OF JOINING A CONTACT

Kazumichi Machida, and Yoshie Inada, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP82/00013, § 371 Date Jul. 19, 1982, § 102(e) Date Jul. 19, 1982, PCT Pub. No. WO82/02621, PCT Pub. Date Aug. 5, 1982
PCT Filed Jan. 14, 1982, Ser. No. 403,628
Int. Cl.³ B23K *1/00*
U.S. Cl. 219—85 CM **4 Claims**



1. A process for joining a contact for electric equipment to a base, said process comprising the steps of:

(a) placing between the contact and the base a layer of a bonding medium which melts to form a bond at a temperature lower than the temperature at which the contact and the base melt;

(b) placing the contact and the base between upper and lower electrodes;

(c) pressing the upper and lower electrodes towards each other with a constant pressure;

(d) supplying an electric current to the upper and lower electrodes at a predetermined constant voltage;

(e) detecting changes in the spacing between the upper and lower electrodes due first to the increase in thickness of the contact, the layer of a bonding medium, and the base caused by electrical heating and then to the decrease in thickness of the layer of a bonding medium when it melts and part of it flows out from between the base and the contact; and

(f) turning off the electric current at a predetermined interval of time after the spacing between the upper and lower electrodes has begun to decrease, the predetermined interval of time being calculated to correspond to the interval during which an optimum amount of the layer of a bonding medium has melted and flowed out from between the contact and the base to form a fillet.

4,441,007
ELECTRICAL STUD-WELDING APPARATUS

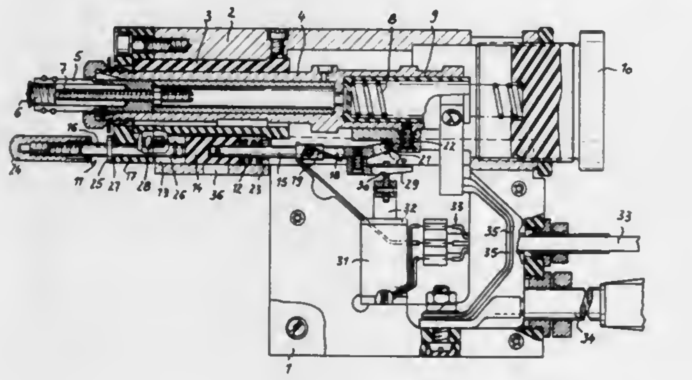
Ernst G. Jordan, Menden, Fed. Rep. of Germany, assignor to Firma OBO Bettermann OHG, Fed. Rep. of Germany

Filed Oct. 30, 1981, Ser. No. 316,974

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1981, 3103543

Int. Cl.³ B23K ***9/20***

U.S. Cl. 219—98 **14 Claims**



1. An electrical stud-welding apparatus comprising a housing member, a welding piston supported for limited axial displacement in the housing, the apparatus having on one end a studholder protruding beyond the forward end of the housing and a force accumulator in the form of a spring element pressing against its other end, an actuating member for displacing the welding piston into its rearward position against the force of the spring element and held fast until the start of the welding process, the actuating member being disposed for resting on the workpiece-side of the apparatus in such manner that when the apparatus housing is brought toward the workpiece the welding piston is positively brought into the ready-for-welding position, said actuating member being constructed as a rod supported for limited displacement along an axis parallel to the welding piston, said rod, in its forward position, protruding beyond the stud holder with its inserted stud.

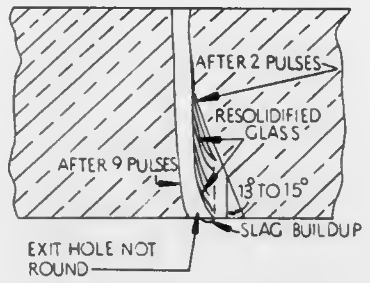
4,441,008
METHOD OF DRILLING ULTRAFINE CHANNELS THROUGH GLASS

Uck I. Chan, West Bloomfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 14, 1981, Ser. No. 301,796

Int. Cl.³ B23K ***27/00***

U.S. Cl. 219—121 LL **11 Claims**



1. A method for generating an ultrafine channel through and between opposed surfaces of a glass body, comprising:

(a) preheating said glass body to the temperature range of 500°–1040° F. (260°–560° C.); and

(b) directing a beam of laser energy along a fixed axis at said preheated body and against one of said surfaces for a period sufficient to melt and vaporize the portion of said glass body in the path of said beam, said laser energy having a wave length of at least about 10.6 microns and an energy level of 200–500 watts, said beam being focused at a point away from said one surface at a distance spaced from said one surface in the range of 0.02–0.08 inches.

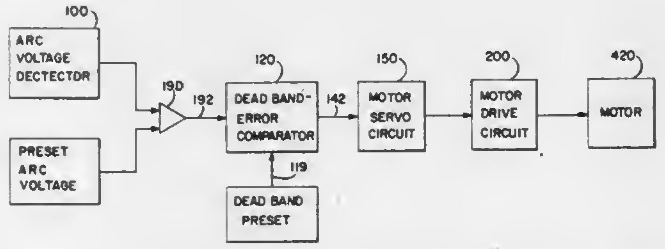
4,441,009
ARC VOLTAGE CONTROL CIRCUIT FOR WELDING APPARATUS

William J. Toohey, San Diego, Calif., assignor to Larry Russell, El Toro, Calif.

Filed Apr. 26, 1982, Ser. No. 372,194

Int. Cl.³ B23K ***9/10***

U.S. Cl. 219—124.03 **7 Claims**



1. An improved arc voltage control circuit for controlling an electrically positionable welding electrode relative to a workpiece, comprising:

arc voltage detection means for providing a first signal indicative of the arc voltage;

reference means for providing a second signal indicative of a reference arc voltage level;

comparator means for providing an error signal indicative of the difference between the reference voltage level and the arc voltage;

electrode positioning means responsive to control signals;

servo circuit means responsive to said error signal for providing said control signal to said positioning means so as to cause said positioning means to position said electrode to diminish said error signal, said positioning occurring with an acceleration characteristic which is independent of the magnitude of the error signal.

4,441,010
PROCESS AND APPARATUS FOR THE LATERAL POSITIONING OF A MEMBER RELATIVE TO A JOINT

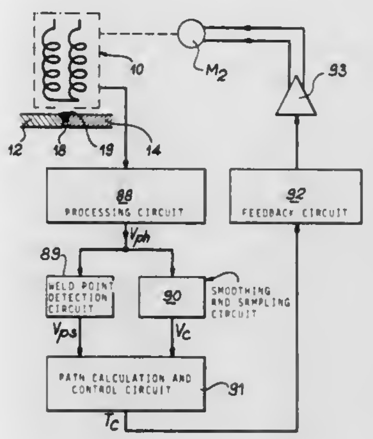
Jean Cornu, Nantes; Jean-Marie Detriche, Saint Germain en Laye; Pierre Gil, Bures sur Yvette; Paul Marchal, Gif-sur-Yvette, and Jean Vertut, Issy les Moulineaux, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Apr. 23, 1982, Ser. No. 371,268

Claims priority, application France, Apr. 30, 1981, 81 08671

Int. Cl.³ B23K ***9/12***

U.S. Cl. 219—124.34 **16 Claims**


10
M2
93
12
18
19
14
88
PROCESSING CIRCUIT
92
FEEDBACK CIRCUIT
Vph
89
WELD POINT DETECTION CIRCUIT
90
SMOOTHING AND SAMPLING CIRCUIT
Vps
Vc
PATH CALCULATION AND CONTROL CIRCUIT
91
Tc

1. A process for the lateral positioning of a member relative to a joint formed between two metal surfaces and having discontinuities and using at least one eddy current probe having a given axis, said process comprising the steps of:

processing by differential measure a signal supplied by each of said at least one probe, to obtain at least one positioning signal varying with a lateral position of the axis of the said probe relative to an axis of the joint and at least one signal indicating the presence of a discontinuity and generated when the said probe faces a discontinuity of the joint,

performing a servo-control of the position of said member as a function of variations of said positioning signal, and

interrupting said servo-control of the position of said member as a function of variations of said positioning signal and replacing said positioning signal by a calculated positioning signal when a signal indicating the presence of a discontinuity is generated.

4,441,011
ROTARY ARC-WELDING METHOD

Hirokazu Nomura, and Yuji Sugitani, both of Tsu, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP81/00357, § 371 Date Jul. 2, 1982, § 102(e) Date Jul. 2, 1982, PCT Pub. No. WO82/01839, PCT Pub. Date Jun. 10, 1982

PCT Filed Nov. 27, 1981, Ser. No. 396,909

Claims priority, application Japan, Nov. 28, 1980, 55-166719

Int. Cl.³ B23K ***9/12***

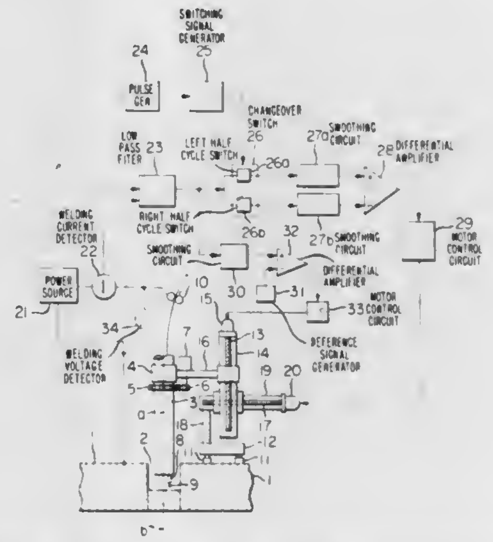
U.S. Cl. 219—124.34 **2 Claims**

1. In a rotary arc-welding method, which comprises:

directing a nozzle substantially vertically toward a groove formed between objects of welding; directing a welding electrode through said nozzle eccentrically from the center axial line of said nozzle and substantially vertically toward said groove; feeding a welding current of a prescribed voltage and a prescribed current to said welding electrode to produce an arc between the tip of said welding electrode and said groove to weld said objects of welding with each other along said groove by means of the arc heat; rotating said nozzle to cause a circular movement of said arc from the tip of said welding electrode corresponding to the eccentricity thereof; feeding a shielding gas toward said groove to shield said arc and said groove from the open air; detecting at least once, for each one rotation of said nozzle, a value of variation of one of said voltage and said current of said welding current, for each of the left half cycle and the right half cycle relative to a vertical plane parallel to the welding direction and including said center axial line of said nozzle; calculating, for said each one rotation, the difference between respective values for said left half cycle and said right half cycle of said detected value of variation; and, controllably moving, for said each one rotation; said nozzle at right angles and horizontally to said welding direction so that said calculated difference becomes null;

the improvement comprising:

continuously detecting, for each one rotation of said nozzle, said value of variation for each of said left half cycle and said right half cycle;



smoothing, for said each one rotation, respective values for said left half cycle and said right half cycle of said detected value of variation;

calculating, for said each one rotation, the difference between the thus smoothed respective values for said left half cycle and said right half cycle of said detected value of variation; and,

controllably moving, for said each one rotation, said nozzle at right angles and horizontally to said welding direction so that said calculated difference becomes null;

thereby aligning said center axial line of said nozzle with the center of the two opposite faces of said groove.

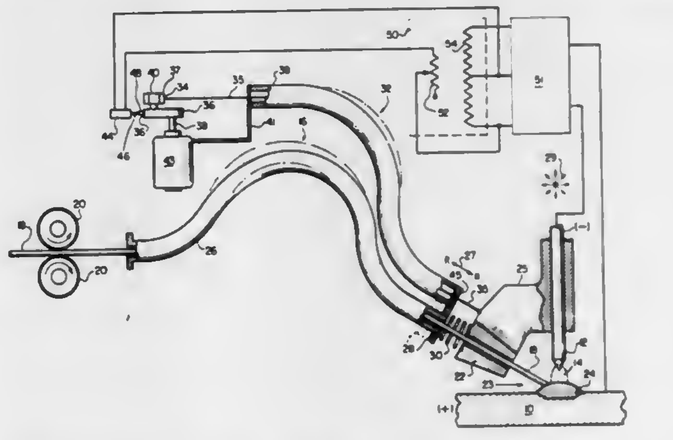
4,441,012
METHOD AND APPARATUS FOR CONTROLLING HEATING POWER DURING THE APPLICATION OF MOLTEN FILLER MATERIAL TO A WORKPIECE

James D. Risbeck, and Ernest B. Cooper, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Dec. 14, 1981, Ser. No. 330,116

Int. Cl.³ B23K ***9/09***

U.S. Cl. 219—137 R **19 Claims**



1. In a method for applying filler material to a workpiece in which an end of a filler wire of the filler material is melted in

a heat producing means to provide a heating/molten pool region deposited on the workpiece, the improvement comprising:
  introducing the filler wire into the pool region in a reciprocating manner to alternately advance the end of the filler wire into and out of the pool region; and
  varying the heat produced by the heat producing means so that peak heating pulses are initiated when the advancing end of the filler wire contacts the pool region; and maintaining the peak heating pulses until the filler wire is withdrawn from the pool region.

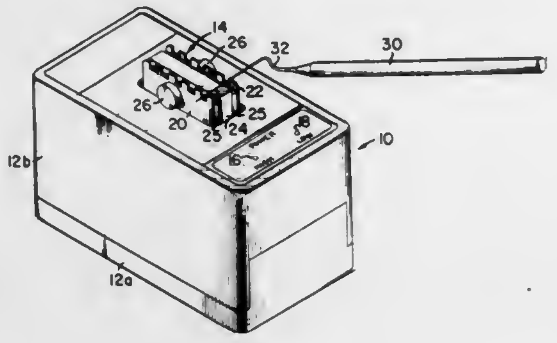
4,441,013
DENTAL INSTRUMENT HEATER

Carl J. Masreliez, King County, Wash., assignor to American Analytic Technology, Inc., Redmond, Wash.

Filed Jun. 15, 1981, Ser. No. 273,906

Int. Cl.³ H05B *1/00*

U.S. Cl. 219—231 **9 Claims**



1. An electric heater for an electrically conductive dental instrument, comprising a source of electrical power and a pair of electrical contacts connected to said electrical power source, said electrical contacts including a pair of electrically conductive blades, each having a plurality of rectangular notches formed along one edge, said blades being mounted in transverse spaced-apart relationship with the notches of said blades being positioned adjacent each other, said notches having a width which is larger than the transverse dimension of said dental instrument and being free of any obstruction along a line extending transversely between and beyond adjacent notches so that said dental instrument may be inserted between adjacent notches while projecting transversely therefrom, thereby allowing current from said source to heat said dental instrument.

4,441,014
ELECTRIC SOLDERING IRON TEMPERATURE ADJUSTABLE BY CHANGING HANDLE POSITION DURING USE

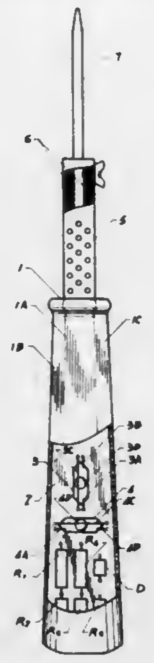
Rong-Fu Hong, No. 401 Chiu-Ju 2 Rd., Kaohsiung, Taiwan

Filed Jul. 17, 1981, Ser. No. 284,403

Int. Cl.³ B23K *3/04;* H05B *3/02*

U.S. Cl. 219—240 **3 Claims**

1. In an electric soldering iron having a hollow handle, a soldering tip mounted at one end of the handle, an electrical heating element mounted on sad tip in thermal contact therewith, a protective cover surrounding said heating element, a connector for connecting said heating element to a power source, and a temperature control for controlling the temperature of the soldering tip, the improvement wherein said temperature control comprises, a circuit board mounted within the handle, two double pole, double throw mercury switches on said circuit board, each comprising a hollow tubular casing, a mercury drop in said casing, a pole at each end of said casing, and a common line connecting one contact of each of said poles, a first switch being positioned substantially lengthwise in the handle and a second switch being positioned substantially cross-wise in the handle, so that when the handle is substantially horizontal neither switch is actuated and when tilted vertically about said tip said first switch is actuated and when rotated about the longitudinal axis of the handle said second switch is actuated, three groups of resistance elements on said circuit board comprising a first group connected in series through a diode with one end pole of said first switch and adapted to energize said heating element to heat said tip to a preparation temperature when said handle is tilted vertically with the tip above the handle, a second group connected in series with the other end pole of said first switch, a third group having a lower resistance than said second group connected in series with one end pole of said second switch, said first group having a lower resistance than said second and third group and being further connected in series with the other end pole of said second switch, said common line of said first switch being connected to said common line of said second switch and a first terminal of said heating element, and said first group being connected to the non-common contact of said other end pole of said second switch, said first, second and third groups being connected to one terminal of said connector, the other terminal of said connector being connected to the second terminal of said heating element.



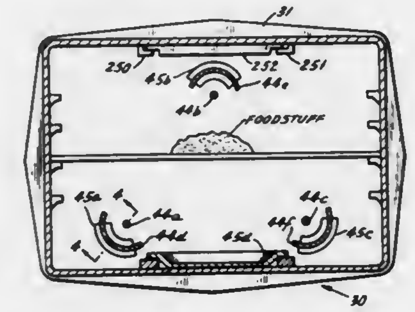
4,441,015
COOKING APPARATUS EMPLOYING A ROTISSERIE MODE WITH STATIONARY FOOD

Charles W. Eichelberger, Schenectady; Robert J. Wojnarowski, Ballston Lake, both of N.Y., and William D. Ryckman, Jr., Orange, Conn., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 4, 1982, Ser. No. 336,806

Int. Cl.³ H05B *1/02;* F27D *11/02;* F24C *7/04*

U.S. Cl. 219—411 **18 Claims**



1. An interior oven structure comprising:
  a cooking container;
means within said cooking container for supporting foodstuff in a general central location therein;
a plurality of electrically individually-energizable cooking heat sources contained totally within said cooking container and spaced from and symmetrically surrounding said generally central location which receives said foodstuff:
electrical switching means connected to said plurality of electrically individually-energizable heat sources for selectably sequentially switching power to selected ones of said plurality of heat sources to cause the heat energy therefrom to impinge from a cyclically rotating variable direction upon all associated surfaces of said foodstuff and produce rotisserie-type cooking; and
duty cycle control means connected to said electrical switching means for variably controlling in the selected sequence the switching time and duration characteritics in which said selected ones of said plurality of heat sources are individually energized and deenergized.

4,441,016
ELECTRIC RICE COOKER

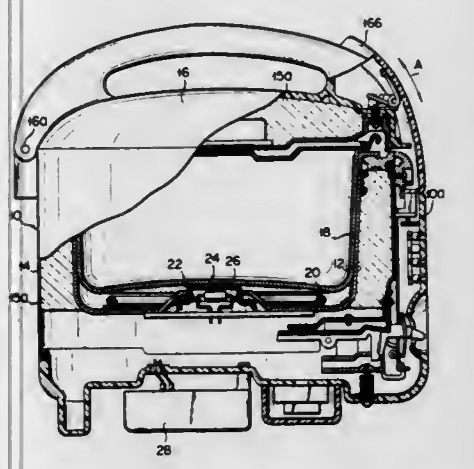
Hiroyuki Oota, Iwakura; Terutaka Aoshima, Toyohashi; Kenji Yamamori, and Ryuho Narita, both of Nagoya, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 27, 1983, Ser. No. 461,494

Claims priority, application Japan, Jan. 30, 1982, 57-14559

Int. Cl.³ F27D *11/02*

U.S. Cl. 219—441 **11 Claims**



1. An electric rice cooking apparatus for performing main cooking and subsequent auxiliary cooking for effectively converting beta-starch to alpha-starch, comprising:
(a) a cooking kettle for containing rice and water;
(b) thermal insulating frame means for detachably placing said cooking kettle therein;
(c) heater means disposed in said frame means, for receiving power and for electrically generating heat to heat said cooking kettle and contents thereof;
(d) temperature detecting means for measuring the actual kettle temperature of said cooking kettle and for producing a detection signal corresponding to the actual kettle temperature;
(e) first controlling means, connected to said temperature detecting means and said heater means, for storing first and second reference temperatures, for deenergizing said heater means to complete the main cooking at a proper time when the kettle temperature increased by heating by said heater means reaches the first reference temperature, and for energizing said heater means again to initiate the auxiliary cooking when the kettle temperature decreased by deenergization by said heater means reaches the second reference temperature;
(f) auxiliary cooking operating time determinating means connected to said first controlling means, for electrically detecting the actual lapse time required for the actual kettle temperature to reach the second reference temperature after the main cooking is completed in every cooking operation, for determining a cooking amount in accordance with the time interval, and for producing a time data signal representing a reference timer operating interval corresponding to an auxiliary cooking operating time in accordance with the cooking amount; and
(g) second controlling means, connected to said auxiliary cooking operating time determining means and said heater means, for measuring the actual lapse time of the auxiliary cooking, and for finally deenergizing said heater means independently of said first controlling means when the length of the actual lapse time is equal to said reference timer operating interval, thereby completing the auxiliary cooking operating time.

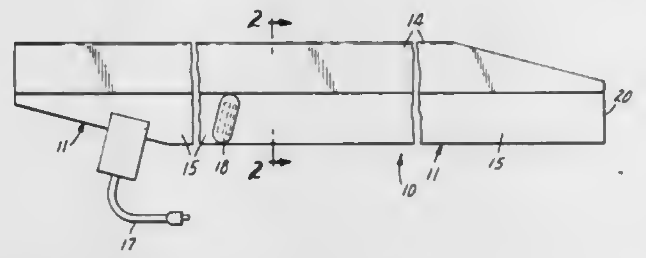
4,441,017
FLEXIBLE STRIP HEATER

Mark D. Sorlien, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 2, 1983, Ser. No. 471,508

Int. Cl.³ H05B *3/34*

U.S. Cl. 219—528 **6 Claims**



1. An electrical strip heater for wrapping in an overlapping spiral around and applying heat to elongate generally cylindrical objects, comprising:
  a thin, flexible, elongate fiber reinforced base having a uniform width along a majority of its length,
  resistance wire insulated within said base along the length and across a uniform portion of the width of said base to provide for resistance heating along the length of said base across said uniform portion of its width, and
  a flexible insulating layer overlying only a portion of one surface of said base and bonded thereto, extending the length of said base parallel to said portion of said base containing said resistance wire and having a width equal to that of said portion of said base containing said resistance wire, said insulating layer having a transverse cross-section that is generally rectangular.

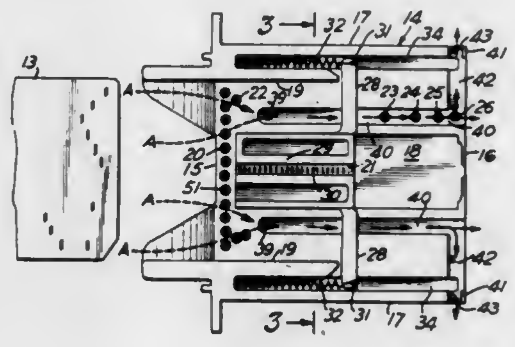
4,441,018
CARD READER WITH AIR PASSAGE CLEANING STRUCTURE

Kenneth R. Wessel, White Plains, N.Y., assignor to Sealectro Corporation, Mamaroneck, N.Y.

Filed Jan. 6, 1982, Ser. No. 337,490

Int. Cl.³ G06K *7/10*

U.S. Cl. 235—458 **10 Claims**



1. An optical punched-card reading apparatus for use with a punched data card having a plurality of columns and rows, said apparatus comprising an assembly of components designed to

channelize air flow through said apparatus for removing foreign matter therefrom, said components, including:

a substantially rectangular first plate having opposed first and second surfaces, and front, rear and two opposed side edges, the first surface of said first plate having a recess extending rearwardly from the front edge thereof and dimensioned to slidably accept the data card, said first plate further including a first row of data sensing apertures disposed in said recess parallel to the front edge of said first plate, said first row of data sensing apertures corresponding in number and spacing to the rows on the data card, said first plate further including a first strobe aperture centrally located in said recess, said data sensing and strobe apertures extending through to the second surface of said first plate, said first plate further including at least one air passageway defining an elongated channel in said recess, said air passageway extending continuously from a point intermediate the edges of said first plate and rearward the first row of data sensing apertures to at least one exit at least one said edge of said first plate, whereby said air passageway in said first plate accommodates air flow for removing foreign matter from said apparatus;

a second plate with opposed first and second surfaces having substantially the same configuration as said first plate and being mounted on said first plate such that the first surface of said second plate covers the recess on the first plate, said second plate including a second row of data sensing apertures and a second centrally located strobe aperture, each said aperture on said second plate extending from the first surface to the second surface thereof and being in register with a corresponding aperture on said first plate forming a pair of registered apertures, said first surface of said second plate further including at least one air passageway defining an elongated channel extending continuously from a point intermediate the edges of said second plate and rearward of said second row of data sensing apertures to at least one exit from said punched-card reading apparatus, whereby said air passageway in said second plate accommodates air flow for removing foreign matter from said apparatus;

a light sensitive sensor mounted within one aperture of each said pair of registered apertures, and a light source mounted in the other aperture of each said pair of registered apertures;

electrical means for connecting said light sources and said light sensors to a readout device and power source;

a strobe generating slide for cooperating with the data card to generate intermittent light signals as the data card is inserted into said apparatus, said strobe generating slide being mounted in the space formed by said recess of said first plate and the first surface of said second plate such that said slide is slidably movable toward and away from the front and rear edges of said first plate; and

a housing for enclosing said assembly of components, whereby the movement of the data card passed the row of data sensing apertures of said first and second plates along with the simultaneous movement of said strobe generating slide passed the strobe apertures of said first and second plates generates a combination of signals for transmitting the data on the data card to the readout device.

4,441,019

WAVEFRONT SENSOR WITH ASTIGMATIC OPTICS

John W. Hardy, Lexington, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Jan. 28, 1982, Ser. No. 343,653

Int. Cl.^{3} G01J *1/20*

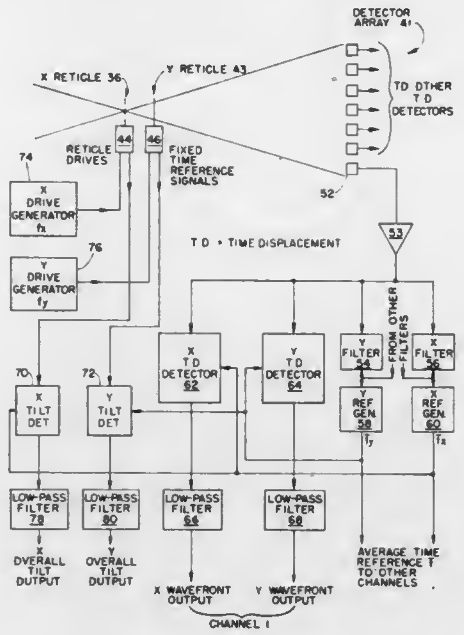
U.S. Cl. 250—201 **7 Claims**

1. A relatively simple wavefront sensor, comprising:

a. an astigmatic optical system for focusing an incident wavefront to x and y focal planes along on optical axis, with the x and y focal planes being displaced from each other along the optical axis because of the astigmatic nature of the optical systems;

b. an x modulation reticle positioned at the x focal plane, and an x drive means for moving the x modulation reticle, substantially perpendicular to the optical axis, to modulate the wavefront at the x focal plane at a frequency f_x;

c. a y modulation reticle positioned at the y focal plane, and a y drive means for moving the y modulation reticle, substantially perpendicular to both the optical axis and the direction of oscillation of the x modulation reticle, to modulate the wavefront at the y focal plane at a frequency f_y; and



d. a two-dimensional detector means positioned substantially perpendicular to the optical axis to detect the wavefront at a two-dimensional array of zones after it has passed through the x and y focal planes and for producing an output signal for each zone indicative of the light detected in that zone such that the time relationships between the signals produced for the different zones are representative of the slope of the wavefront in the different zones.

4,441,020

METHOD FOR TRACING AN OBJECT

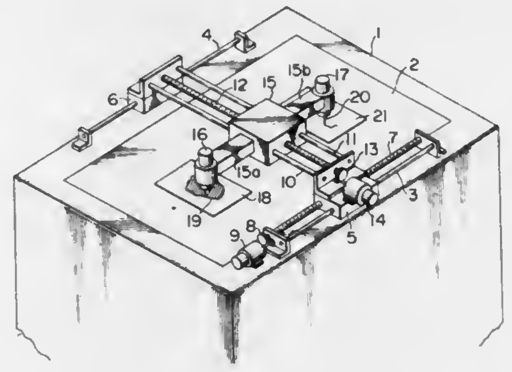
Takashi Sakamoto; Tetsuo Sano, and Eiji Kodama, all of Kyoto, Japan, assignors to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed Jun. 3, 1981, Ser. No. 269,952

Claims priority, application Japan, Jun. 5, 1980, 55-75820

Int. Cl.^{3} G05B *1/00*

U.S. Cl. 250—202 **8 Claims**



1. A method for tracing an object wherein the object is sensed by a set of sensing elements included in an optical head which moves along the object, to detect a position and a direction of the object, wherein the optical head is controlled to trace the object depending on the detected position and the direction of the object, and wherein the object is reproduced by reproduction means which is moved in synchronization with the optical head, the improvement comprising the step of moving the optical head along portions of the object, which the sensing elements can discriminate hardly or not at all nor follow the object, according to line segment data which are stored previously by coordinate reading means and may be predetermined and represent a plurality of points of coordinates.

4,441,021

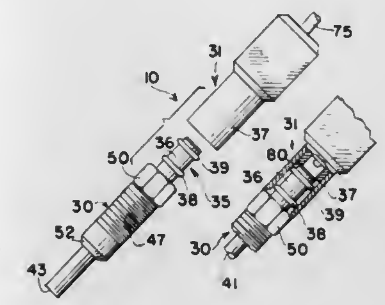
LUMINOSITY PROBE FOR DIESEL ENGINE TIMING APPARATUS

Gene E. Olson, Kenosha, Wis.; Jerome A. Thompson, Milford, Mich.; Donald D. Grover, Kenosha, Wis.; Christopher B. Stout, Kenosha, Wis., and Thomas P. Becker, Kenosha, Wis., assignors to Snap-on Tools Corporation, Kenosha, Wis.

Filed Jul. 23, 1981, Ser. No. 285,942

Int. Cl.^{3} G02B *5/14*

U.S. Cl. 250—227 **17 Claims**



1. A luminosity probe for diesel engine timing apparatus, comprising a tubular body member having an inserting portion adapted to be mounted in an opening into the combustion zone of a selected engine cylinder, one end of said body member being exposed to light in the combustion zone, said tubular body member having a projecting portion projecting beyond the cylinder exterior, a light pipe within said body member, resilient sealing material on said projecting portion, a tubular detector housing telescopically receiving said projecting portion and being constructed to deform said resilient sealing material, whereby said resilient sealing material establishes a detachable, frictional, light-tight and thermally insulated connection between said body member and said detector housing, and whereby said body member and said detector housing relate in push on, pull off manner and said optical detector is insulated from combustion heat, an optical detector within said detector housing in effective relation with the adjacent end of said light pipe, said optical detector including means for converting optical energy signals in said light pipe derived from combustion within the cylinder to electrical energy signals, and output means for the electrical energy signals.

4,441,022

COATING THICKNESS MEASURING DEVICE

Boris B. Joffe, Buffalo; Jerry J. Spongr, Tonawanda, and Byron E. Sawyer, North Tonawanda, all of N.Y., assignors to Twin City International Inc., Amherst, N.Y.

Filed Apr. 27, 1981, Ser. No. 257,975

Int. Cl.^{3} G01N *23/00*

U.S. Cl. 250—308 **22 Claims**

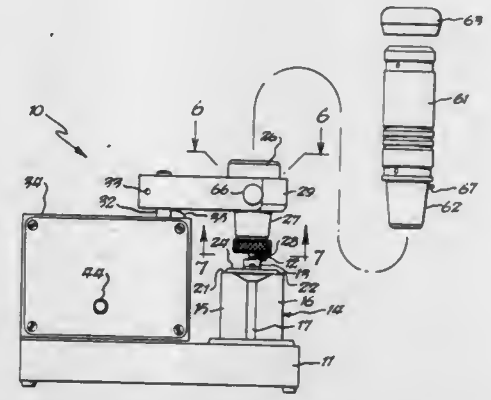
1. A coating thickness measuring device for measuring the thickness of coatings applied to parts, said device comprising:

a base;

positioning means on the base for receiving and positioning a part having a coating thereon, the thickness of which is to be measured;

a probe provided with a radiation source and a radiation detector and having an aperture through which radiation can pass;

supporting means carried by said base and capable of supporting said probe for movement between a raised position wherein the aperture of said probe is generally vertically spaced above a part carried by said supporting means and a lowered operative position wherein said probe is disposed with said aperture in overlying relationship on said part in order to provide radiation backscatter therefrom, said probe being capable of sensing said radiation backscatter when in said operative position and providing a suitable output signal indicative of the thickness of the coating;



moving means which are capable of moving the probe between the lowered operative position and the raised position and further being capable of permitting the probe to descend from the raised position to its lowered operative position; and

means for controlling the rate of descent of said probe upon release from its raised position so that the impact force of said probe on the part is uniform from part to part when it attains its lowered operative position.

4,441,023

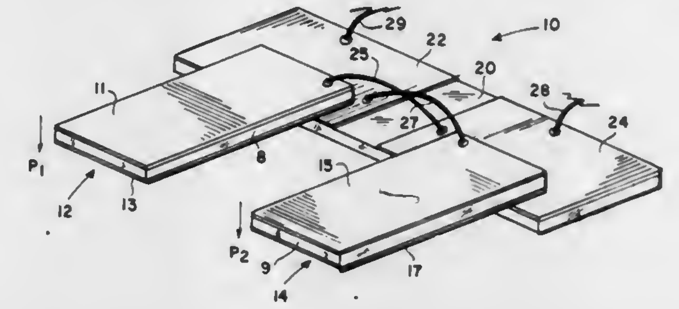
HIGH OUTPUT DIFFERENTIAL PYROELECTRIC SENSOR

Alan P. Doctor, Ormond Beach, and Friedrich H. Oettel, Daytona Beach, both of Fla., assignors to Eltec Instruments, Inc., Daytona Beach, Fla.

Filed Jul. 29, 1981, Ser. No. 288,192

Int. Cl.^{3} G01J *5/10*

U.S. Cl. 250—338 **22 Claims**



1. A differential thermal sensor having compensation for variations in ambient temperature and for mechanical vibration comprising:

a first elongate thermal detector having a polarized pyroelectric crystal disposed between two conductive electrodes;

a second elongate thermal detector identical to said first thermal detector and having a polarized pyroelectric crystal disposed between two conductive electrodes;

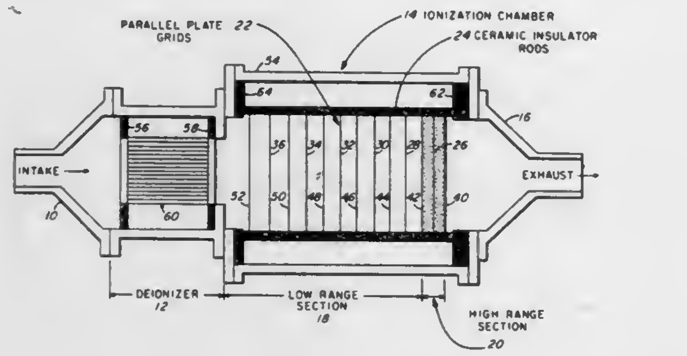
a mounting base, said first detector mounted on said base and extending therefrom in a cantilevered manner, and said second detector mounted on said base adjacent said first detector and extending from said base in a cantilevered manner; and

a pair of conductors conductively attached to said electrodes of said first and second detectors so as to form a parallel opposing connection of said detectors, said pair of conductors also forming output connections for said sensor.

4,441,024
WIDE RANGE RADIOACTIVE GAS CONCENTRATION DETECTOR

David F. Anderson, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 16, 1981, Ser. No. 321,946
Int. Cl.³ G01T *1/18*
U.S. Cl. 250—380 11 Claims



1. A wide range radioactive gas concentration detector comprising:

a deionizer for removing charged particles from said radioactive gas;

an ionization chamber coupled to said deionizer;

a first series of parallel plate grid means spaced sufficiently close to provide a first essentially uniform electric field of sufficient intensity to essentially eliminate ion recombination effects in the detection of low concentration radioactive gases, said first series of parallel plate grid means disposed in a first active region of said ionization chamber having sufficient volume to detect said low concentration radioactive gases;

a second series of parallel plate grid means spaced sufficiently close to provide a second essentially uniform electric field of sufficient intensity to essentially eliminate ion recombination effects in the detection of high concentration radioactive gases, said second series of parallel plate grid means disposed in a second active region of said ionization chamber having sufficient volume to detect said high concentration radioactive gases;

means for detecting currents produced in said first and second series of parallel plate grid means in response to the migration of ions produced by said radioactive gas in said ionization chamber;

whereby said detected currents are indicative of the concentration of said radioactive gas.

4,441,025
PROTECTIVE DEVICES

William J. McCoy, Jr., 41 Balsey Rd. South, Stamford, Conn. 06902

Filed Jul. 13, 1981, Ser. No. 282,868
Int. Cl.³ G21F *3/02*
U.S. Cl. 250—516.1 6 Claims

1. A protective apparel device comprising

a main body portion having support straps in the shoulder region thereof,

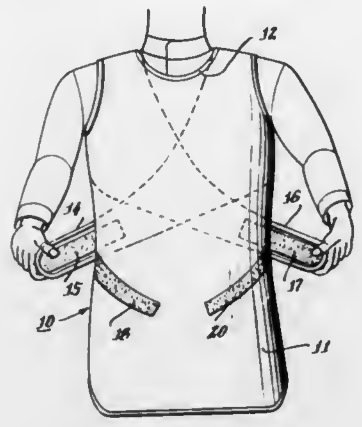
and means to selectively distribute the weight of said device by transfering its weight selectively between the lower body region and the shoulder region of the user,

said means comprising flaps integral with said main body portion for securing said apparel to the body of the user,

said flaps being characterized by

being adapted to cross in the region of the lower back of the user,

having fastening means at their outermost ends for removeable affixation to said main body in selected positions of extension of said flaps about the body of the user with corresponding changes in the degree of tension on said flaps, and

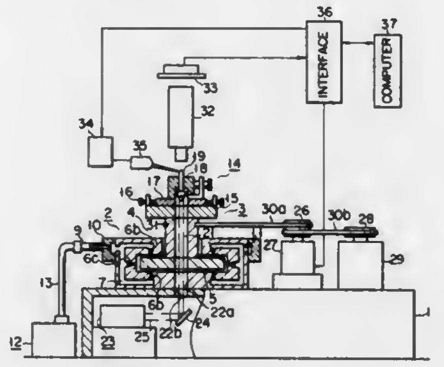


being oriented downward at their outermost ends when affixed to said main body.

4,441,026
CONCENTRICITY EVALUATING SYSTEM

Yoshinaga Moriwaki; Masaki Horike, both of Yokohama, and Masashi Kamiya, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 28, 1981, Ser. No. 315,731
Claims priority, application Japan, Oct. 30, 1980, 55-154178[U]
Int. Cl.³ G01N *21/86*
U.S. Cl. 250—561 6 Claims



1. A concentricity evaluating system comprising:

a stage which is supported by a hydrostatic bearing in at least one of radial and thrust directions;

means for detecting the angle of rotation of said stage;

fixing means for fixing a hollow cylindrical member on said stage, which the hole of the hollow cylindrical member coaxially aligned with said stage;

light emitting means for emitting a light beam onto the end face of said hollow cylindrical member or into the hole thereof, thereby clearly indicating the profile of the hole;

optical means for enlarging the image of the profile of said hole;

light receiving means arranged at a predetermined position for receiving a part of the enlarged image transmitted from said optical means;

measuring means for electrically measuring the displacement of the circumference of the hollow cylindrical member while the member is rotating;

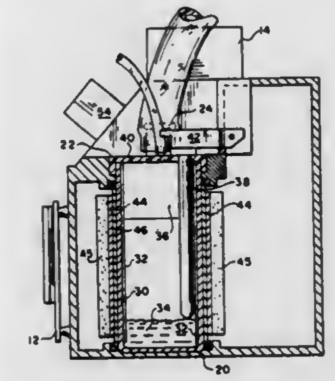
interface means for processing output data from said displacement meter, said light receiving means and said rotation angle detecting means; and

control means for receiving output data from said interface means and for detecting an arithmetic operation on the data.

4,441,027
LIQUID LEVEL CONTROLLER FOR A RESPIRATORY GAS HUMIDIFIER DEVICE

Gerry D. Richardson, and Joseph A. Cairo, both of Marietta, Ga., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Division of Ser. No. 289,558, Aug. 3, 1981, Pat. No. 4,354,984. This application Apr. 12, 1982, Ser. No. 367,641
Int. Cl.³ G01F *23/02;* G01N *21/21*
U.S. Cl. 250—577 12 Claims



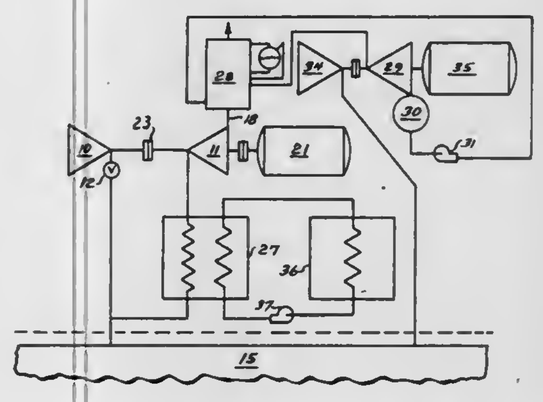
1. In a liquid level sensing device for detecting the liquid level in a canister having an optical probe therein: a bracket carried by a frame and carrying a light source and a light sensing member for determining liquid level in the canister in conjunction with said probe, the improvement comprising, in combination:

said bracket defining first and second parallel arms having free ends, hinge means between said parallel arms and frame whereby said bracket carrying said light source and said sensing means is permitted to rotate into registry with said probe for liquid level detecting operation in probe-engaging relation and also to rotate out of probe-engaging relation and registry with said probe, whereby the canister may be removed and replaced while the bracket is out of probe-engaging relation, the first arm of said bracket being more flexible than the second arm, and snap-fit means adjacent said first arm positioned to mate with corresponding snap-fit means on the frame, to releasably retain said bracket in a position out of probe-engaging relation.

4,441,028
APPARATUS AND METHOD FOR MULTIPLYING THE OUTPUT OF A GENERATING UNIT

Robert M. Lundberg, 1350 Aster St., Apt. 12D, Chicago, Ill. 60610

Filed Jun. 16, 1977, Ser. No. 807,241
Int. Cl.³ F02C *9/00*
U.S. Cl. 290—52 9 Claims



1. In a power generating apparatus having first and second heat engine means and a compressor directly and mechanically connected to the first heat engine means, the method of generating power in accordance with a variable demand, including the steps of:

establishing a storage reservoir of compressed gas by the continuous operation of said first heat engine means driving the compressor;

operating the first heat engine means continuously at a constant work output and at a constant heat and gas flow input rate, said work output substantially conforming to the average rate of demand of said second heat engine means to generate power,

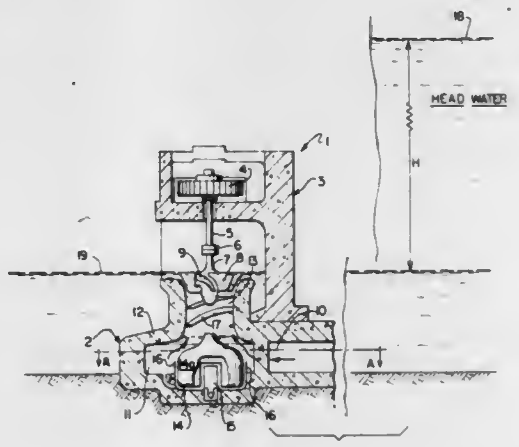
withdrawing intermittently said stored portion of said compressed gas in said reservoir to a second heat engine means to increase the generation of power as required to satisfy such a variable demand while maintaining said first heat engine means at a constant work output, and

generating power by a power receiving means driven by said second heat engine means, said power receiving means adapted to accept up to the full load output of said second heat engine means with said second heat engine means withdrawing intermittently said stored portion of said compressed gas from said storage reservoir.

4,441,029
HYDROPOWER TURBINE SYSTEM

David T. Kao, Lexington, Ky., assignor to The University of Kentucky Research Foundation, Lexington, Ky.

Filed Jun. 25, 1982, Ser. No. 392,349
Int. Cl.³ H02P *13/20*
U.S. Cl. 290—52 9 Claims



1. A cavitation free, upward flow, low-head hydropower turbine system which comprises

(a) a flow conduit unit inclusive of a runner housing which defines a chamber, a flow intake means which directs fluid into said chamber, said runner housing having an upper narrow portion defining a vertical discharge channel for said fluid, and a valve means positioned beneath said narrow portion of said runner housing within said chamber for controlling said fluid flow discharge from said vertical discharge channel; and

(b) a runner-generator unit including a generator and a fixed blade propeller turbine runner which is at least partially surrounded by the vertical discharge channel of said flow conduit unit.

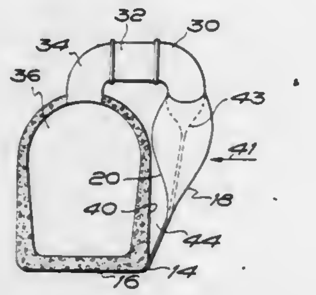
4,441,030
ENERGY CONVERSION APPARATUS

Norman W. Bellamy, Coventry, England, assignor to Sea Energy Associates, Limited, England

Filed Aug. 5, 1982, Ser. No. 405,453
Claims priority, application United Kingdom, Aug. 5, 1981, 8123908
Int. Cl.³ F03B *13/12*
U.S. Cl. 290—53 14 Claims

1. A flexible bag for the energy conversion arrangement indicated herein, wherein the bag is designed to be attached relative to the spine at or along the bottom edge thereof, from which extend front and rear sides of the bag, the front side being for facing the oncoming waves, and the rear side being for location in opposition to the spine, the rear side being

sufficiently free of the spine so that in use water of the body of water can locate behind the rear side and the spine surface keeping the rear surface out of contact with the spine, so that by compression of the bag by an oncoming wave meeting the front surface, the fluid in the bag is forced upwardly by virtue of the reaction of the volume of water between the rear side and the spine, which volume increases in height rather than being expelled from the bag edges, and the bag has coupling passage means at the top for the expulsion of fluid therefrom, and for the intake of fluid thereinto, so that displacement of the fluid can be used to drive a suitable prime mover.



4,441,031
POWER SOURCE VOLTAGE CHANGE DISCRIMINATION CIRCUIT

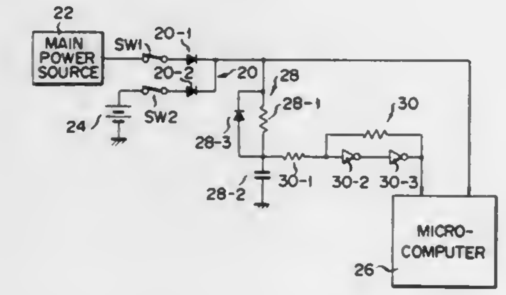
Yoshiaki Moriya, Tokyo; Ryo Mitani, Kawasaki, and Atsushi Kobayashi, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Dec. 9, 1981, Ser. No. 329,058

Claims priority, application Japan, Dec. 10, 1980, 55-174258

Int. Cl.³ H02J *9/00*

U.S. Cl. 307—66 **6 Claims**



1. A power source voltage change discrimination circuit comprising:

a main power source terminal to which is applied a main power source voltage;

a reference power source terminal to which is applied a constant reference voltage;

an auxiliary power source terminal to which is applied an auxiliary power source voltage of a level between levels of the main power source voltage and the reference voltage;

voltage selecting means connected to said main power source terminal and said auxiliary power source terminal for selecting the higher voltage of the main and auxiliary power source voltages supplied to said main and auxiliary power source terminals, respectively;

delay means connected to an output terminal of said voltage selecting means for generating an output voltage which is kept substantially constant for a preset period of time after an output voltage from said selecting means is changed, and then becomes equal to the output voltage of said selecting means; and

a Schmitt circuit connected to said delay means for generating an output signal corresponding to an output signal from said delay means, said Schmitt circuit having hysteresis characteristics to prevent a change in the output signal of the Schmitt circuit when an output voltage of said voltage selecting means is changed while the input voltage to said Schmitt circuit is kept above the lower level-shift voltage of the Schmitt circuit.

4,441,032
CONVERTER CONTROL APPARATUS FOR PARALLEL CONNECTED MULTI-TERMINAL DIRECT CURRENT SYSTEM

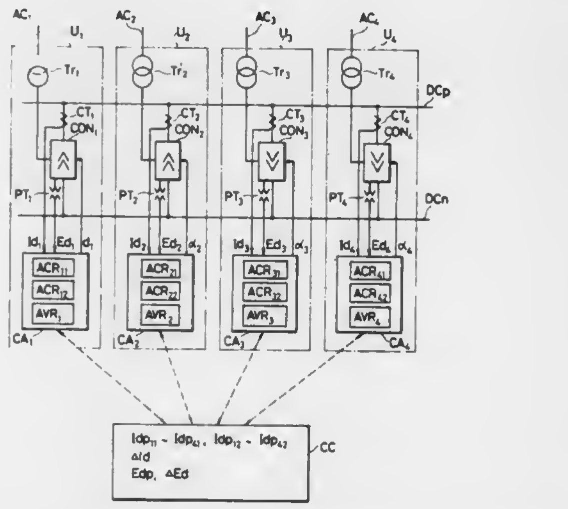
Takeichi Sakurai, Tokyo; Kiyoshi Goto, Musashino; Hiroo Konishi, Katsuta, and Tadao Kawai, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 21, 1982, Ser. No. 341,575

Claims priority, application Japan, Jan. 21, 1981, 56-6330

Int. Cl.³ H02J *1/00*

U.S. Cl. 307—82 **12 Claims**



1. In a parallel connected multi-terminal direct current system wherein at least three converters are connected in parallel to direct current transmission lines for operation as inverters or rectifiers, each converter having a converter control apparatus comprising:

first constant current control means for providing a first signal for controlling the current of the converter on the basis of the deviation between a first current reference signal of said converter and the actual current thereof;

second constant current control means for providing a second signal for controlling the current of the converter on the basis of the deviation between a second current reference signal of said converter and the actual current thereof;

first and second constant voltage control means for providing third and fourth signals, respectively, for controlling the voltage of the converter on the basis of the deviation between a voltage reference signal of said converter and the actual voltage thereof;

first selector means for selecting the larger one between said first signal of said first constant current control means and the third signal of said first constant voltage control means;

second selector means for selecting the larger one between said second signal of said second constant current control means and the fourth signal of said second constant voltage control means; and

third selector means for selecting the smaller one between the signals selected by said first and second selector means.

4,441,033
PROCESS FOR THE GENERATION OF HIGH CAPACITY PULSES FROM AN INDUCTIVE ENERGY STORAGE DEVICE

Franz Maier, and Stephan Maier, both of Wettingen, Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

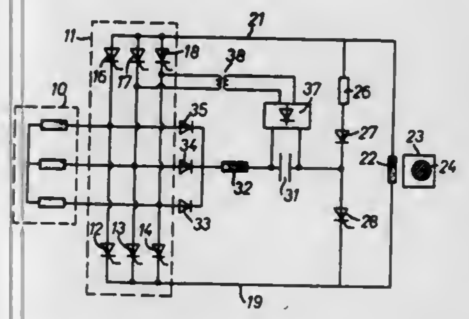
PCT No. PCT/CH81/00087, § 371 Date Aug. 20, 1982, § 102(e) Date Aug. 20, 1982, PCT Pub. No. WO82/02295, PCT Pub. Date Jul. 8, 1982

PCT Filed Jul. 30, 1981, Ser. No. 413,353

Claims priority, application Switzerland, Dec. 22, 1980, 9452/80

Int. Cl.³ H03K *3/00*

U.S. Cl. 307—107 **3 Claims**



1. A circuit for generating high-voltage pulses, comprising: an inductive storage unit;

a power source;

at least one thyristor for selectively connecting said power source to said inductive storage unit;

a quenching circuit connected to said inductive storage unit, said quenching circuit having a first branch containing a quenching capacitor;

a discharge circuit connected in parallel with said inductive storage unit, said discharge circuit having a first branch containing a resistor and a unidirectional element connected in series, said first branch of said discharge circuit having a common junction with said first branch of said quenching circuit; and

a quenching thyristor connected to said common junction so as to be in series with each of said quenching capacitor and said resistor and thereby form a second branch of each of said quenching and discharge circuits.

4,441,034
CONTACT-CONTROLLED CAPACITIVE SWITCHING APPARATUS

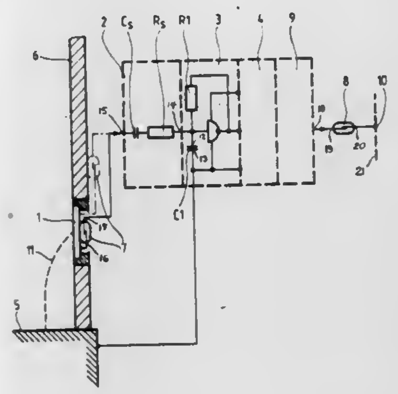
Thomas Iten, Zug, Switzerland, assignor to Inventio AG, Hergiswil, Switzerland

Filed Nov. 16, 1982, Ser. No. 441,436

Claims priority, application Switzerland, Nov. 26, 1981, 7570/81

Int. Cl.³ B66B *13/24*

U.S. Cl. 307—117 **13 Claims**



1. A contact-controlled capacitive switching means operating in a non-contact signalling mode and having a contact button, said switching means being located at a storey of a structure and comprising:

an oscillator including a resistor-capacitor element determining the frequency of the oscillator;

said capacitor having two terminals;

a switching circuit series connected to said oscillator;

a coupling member comprising at least one resistor and having a first terminal and a second terminal;

one of said two terminals of said capacitor of said oscillator being connected to the first terminal of said coupling member and the other of said two terminals of said capacitor of said oscillator being grounded, so that upon actuating the contact button there is caused a change in the oscillator frequency and a change of a discrete signal present at an output of the switching means;

a thermal circuit breaker having an input and an output; and said input being adapted to be connected to said contact button and said output being connected to said second terminal of said coupling member.

4,441,035
CMOS TURN-ON CIRCUIT

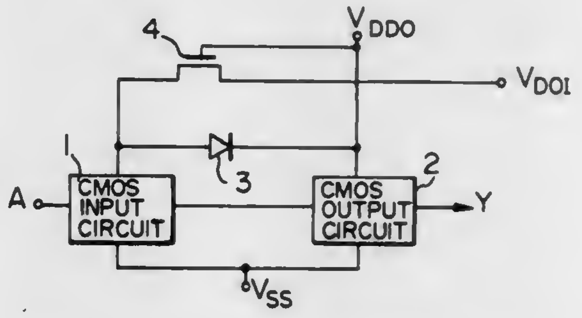
Andreas Demetriou, Carp, Canada, assignor to Mitel Corporation, Ontario, Canada

Filed Oct. 5, 1981, Ser. No. 308,414

Claims priority, application Canada, Jul. 17, 1981, 381955

Int. Cl.³ H03K *17/08, 17/22, 17/284*

U.S. Cl. 307—200 B **7 Claims**



1. The combination of a CMOS integrated circuit requiring two different D.C. voltage supplies of similar polarity for simultaneous application to said circuit, means for connecting a higher voltage terminal of said two voltage supplies to said circuit, a field effect transistor having one of its source or drain connected to a lower voltage supply terminal and the other of its source or drain connected to said circuit, and its gate connected to the higher voltage supply terminal whereby during approximately simultaneous application of said supplies to said circuit, the lower voltage supply is not connected to said circuit until after the higher voltage supply is connected to said circuit.

4,441,036
MONOLITHICALLY INTEGRATED CIRCUIT WITH CONNECTIBLE AND/OR DISCONNECTIBLE CIRCUIT PORTIONS

William G. Oldham, El Cerreto, Calif., assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 19, 1981, Ser. No. 294,300

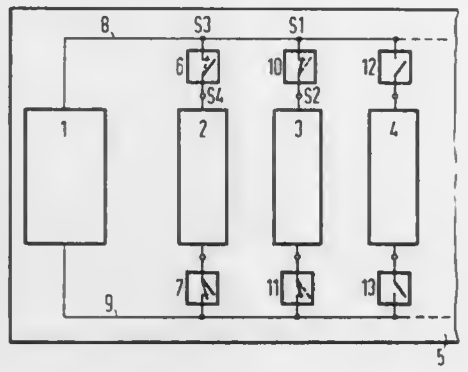
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1980, 3032306

Int. Cl.³ H03K *17/687;* **H01L** *27/14;* **G11C** *7/00*

U.S. Cl. 307—242 **11 Claims**

1. A monolithically integrated circuit, comprising: at least one circuit portion which is a replacement circuit for other functionally disturbed circuit portions of the same kind in the integrated circuit connectible and disconnectible by at least one switch element from other circuit portions; the switch element having an integrated field effect transistor designed as a MIS structure with a gate insulating layer separating a gate

from a substrate; the gate being directly connected to a reference potential of the circuit; means for selectively charging the gate layer with the gate connected to the reference potential so that an uncharged state of the gate insulating layer can determine a high or low value of a threshold voltage of the transistor when the gate is connected to the reference potential and thus determine a first switching state of the field effect transistor while a charged state of the gate insulating layer may determine a low or high value of the threshold voltage opposite from the uncharged state and thus a second switching state of the field effect transistor; and said means for selectively charging comprising an electron beam induced charge in the gate insulating layer which occurs when a channel region of the transistor is scanned while the gate is connected to the reference potential.



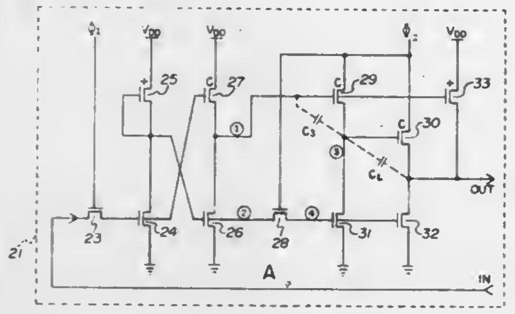
4,441,037
INTERNALLY GATED VARIABLE PULSEWIDTH CLOCK GENERATOR

Gregory E. Gaertner, and Ta-Ming Wu, both of San Diego, Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Dec. 22, 1980, Ser. No. 218,479

Int. Cl.^{3} H03K *5/13, 17/687*

U.S. Cl. 307—265 **3 Claims**



1. A circuit apparatus for generating a variable pulsewidth high ramp rate output signal in response to a pair of complementary clock signals and a logic signal, said generator comprising:

a first transistor means disposed for gating therethrough said logic signal in response to a first of said pair of clock signals;

latch circuit means having an input terminal coupled to said first transistor means and having an output terminal;

second transistor means having a gate terminal coupled to said output terminal of said latch circuit means and a first signal terminal coupled to a second of said pair of clock signals;

third transistor means having a gate terminal coupled to the second signal terminal of said second transistor, a first signal terminal coupled to said second of said pair of clock signals and a second signal terminal coupled to an output terminal of said circuit apparatus, such that the ramp rate of said output signal is equal to the ramp rate of said second of said pair of clock signals.

4,441,038
ELECTRET DEVICE

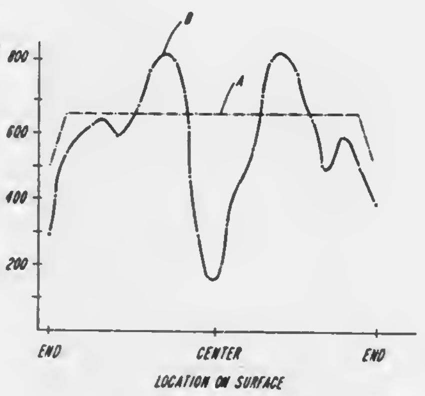
Masamichi Tanaka, Yamato, and Hiroto Wada, Yokosuka, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 280,056, Jun. 30, 1981, abandoned. This application Jun. 1, 1983, Ser. No. 499,873

Claims priority, application Japan, Jun. 30, 1980, 55-88778; Jun. 30, 1980, 55-88779; Jun. 30, 1980, 55-88818; Jun. 30, 1980, 55-88820; Jun. 30, 1980, 55-88783; Jun. 30, 1980, 55-88785; Jun. 30, 1980, 55-88786; Jun. 30, 1980, 55-88787

Int. Cl.^{3} G11C *13/02*

U.S. Cl. 307—400 **14 Claims**



1. An electret device comprising:

a dielectric body provided with a surface electric charge and having two substantially flat and generally parallel surfaces, a conductive electrode secured on one of said flat surfaces, and a cover body attached on the opposite one of said flat surfaces, whereby said cover body has a uniform surface charge distribution.

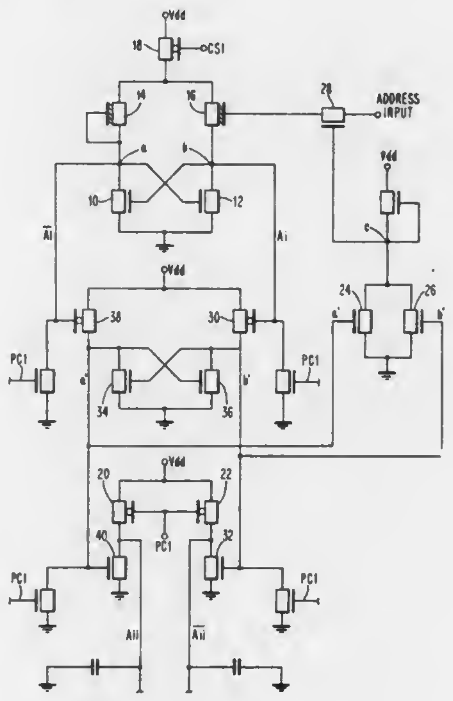
4,441,039
INPUT BUFFER CIRCUIT FOR SEMICONDUCTOR MEMORY

Stanley E. Schuster, Granite Springs, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 20, 1981, Ser. No. 323,612

Int. Cl.^{3} H03K *19/094, 17/04, 3/356;* **G11C** *8/00*

U.S. Cl. 307—475 **1 Claim**



1. An address input buffer circuit for address input voltages comprising a differential voltage generator including first and second depletion type transistors each having a source to drain path and a gate electrode, said first depletion transistor connected between a first node and a source of supply voltage and said second depletion transistor connected between a second node and said source of supply voltage,

a source of address input voltage being in one of either a high or low voltage level state, said gate electrode of said second depletion transistor connected to said source of said address input voltage, said second depletion transistor responsive to said high address voltage level state for providing a first polarity differential voltage across said first and second nodes and responsive to said low address voltage level state for providing a second polarity differential voltage across said first and second nodes,

said first and second depletion type transistors each having a source, a drain and a gate electrode, said source and gate electrode of said first depletion transistor connected to said first node and said source electrode of said second depletion transistor connected to said second node, said drain electrodes of said first and second depletion devices being timely connected to said source of supply voltage,

a bistable differential voltage detector including first and second enhancement type transistors each having source, drain and gate electrodes, said drain electrode of said first enhancement transistor and said gate electrode of said second enhancement transistor being connected to said first node and said drain electrode of said second enhancement transistor and said gate electrode of said first enhancement transistor being connected to said second node, and said source electrodes of said first and second enhancement type transistors being connected to reference potential, one of said first and second enhancement transistors conducting in response to said first polarity differential voltage across said first and second nodes for producing a corresponding output voltage on its drain electrode, and the other one of said first and second enhancement transistors conducting in response to said second polarity differential voltage across said first and second nodes for producing a corresponding output voltage on its drain electrode,

a zero threshold transistor device connected between said source of supply voltage and said first and second depletion transistors, and a source of clock pulse signals connected to said zero threshold transistor device for turning said zero threshold transistor device on and applying said supply voltage to said first and second depletion transistors for operating said differential voltage generator,

a static memory interface structure connected to said source of supply voltage and to first and second nodes of said differential voltage generator and said bistable differential voltage detector, said static interface memory structure having first and second output address lines,

a switching device having a first and a second side, said switching device being connected on one side to said source of address input signals and said gate of said second depletion transistor and the other side of said switching device being connected to said static interface memory structure,

a source of precharge pulse signal connected to said static interface memory structure, said precharge pulse signal from said source functioning to raise said output address lines of said static interface memory structure to a high level and actuating said switching device, causing said address input voltage to be applied to said gate electrode of said second depletion transistor,

and said static interface memory structure being responsive to said corresponding output voltages from said bistable differential voltage detector on said first and second nodes for discharging one or the other corresponding precharged first and second output address lines to a low level, the other one of said first and second output address lines remaining at said high level, and wherein said address input signal is maintained on said gate of said second depletion device of said differential voltage detector until the occurrence of a subsequent precharge pulse signal.

4,441,040
INTEGRABLE SEMICONDUCTOR CIRCUIT WITH A NEGATIVELY FED-BACK, NON-INVERTING OPERATIONAL AMPLIFIER

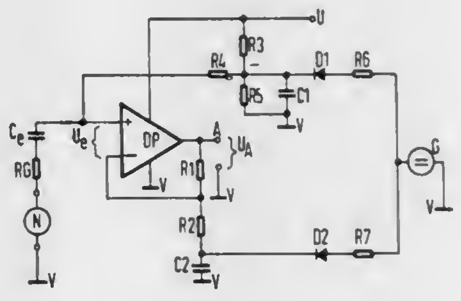
Gerald Mündel, Glonn, and Michael Lenz, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft GmbH, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 18, 1982, Ser. No. 359,526

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1981, 3114042

Int. Cl.^{3} H03K *17/74;* **G06G** *7/10*

U.S. Cl. 307—491 **4 Claims**



1. Integrable semiconductor circuit, including a negatively fed-back non-inverting operational amplifier having a signal output, an inverting and a non-inverting signal input and supply inputs, a first resistor connected between the signal output and the inverting input of the operational amplifier, a second resistor being connected to the inverting input of the operational amplifier and to the output of the operational amplifier through the first resistor, first and second capacitors, the second capacitor being connected between the second resistor and reference potential, forming a voltage divider including the first and second resistors and the second capacitor connected between reference potential and the output of the operational amplifier with a first circuit point disposed between the second resistor and the second capacitor connecting the inverting input of the operational amplifier to reference potential, an operating potential source being connected to one of the supply inputs of the operational amplifier and the other supply input being connected to reference potential together supplying the operational amplifier with a supply voltage, series-connected third and fourth resistors having a second circuit point disposed therebetween, said series-connected third and fourth resistors being connected between the operating potential source and the non-inverting input of the operational amplifier, a fifth resistor connected between the second circuit point and reference potential, and the first capacitor being connected in parallel with the fifth resistor, wherein the improvement comprises an auxiliary d-c voltage source having a first pole connected to reference potential and a second pole, first and second diodes each having an anode connected to said second pole of said auxiliary d-c voltage source and a cathode, one of said series-connected third and fourth resistors connected between the supply potential source and the non-inverting input of the operational amplifier being additionally connected between the cathode of said first diode and the non-inverting input of the operational amplifier, and the cathode of said second diode being connected to said first circuit point.

4,441,041

CIRCUIT ARRANGEMENT FOR GENERATING A DIRECT CONTROL VOLTAGE WHICH IS DEPENDENT ON AN ALTERNATING VOLTAGE

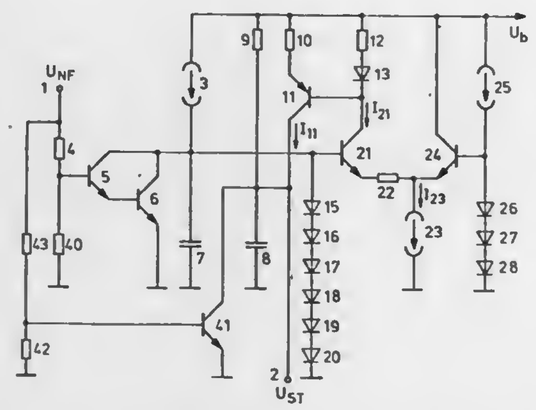
Ernst Schröder, Hanover, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt, Fed. Rep. of Germany

Filed Jun. 17, 1982, Ser. No. 389,494

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1981, 3124289

Int. Cl.^{3} H03G *3/10*

U.S. Cl. 307—494 **11 Claims**



1. A circuit arrangement for generating a direct control voltage which is dependent on an alternating voltage input signal, particularly for dynamic compression or expansion, said circuit arrangement comprising, in combination: an input terminal for an alternating voltage input signal; a first charging capacitor; a first charging circuit means for charging said first capacitor; a first discharging circuit means, controlled by the signal at said input terminal, for discharging said first capacitor; a second charging capacitor whose charge voltage constitutes said control voltage; a second charging circuit for charging said second capacitor; a second discharging circuit means,- controlled by the signal at said input terminal, for discharging said second capacitor; a third charging circuit means, connected in parallel with said second charging circuit means, for charging said second capacitor, said third charging circuit means including a controllable current path which is actuated when the voltage of said first charging capacitor exceeds a given threshold value and further circuit means for causing the charging current of said third charging circuit means to have a first current value at a voltage across said first charging capacitor below said threshold value and a second value when said voltage is above said threshold value with said first or second value being proportional to the voltage of said first charging capacitor up to a limit value, and with the range of said first value immediately following the range of said second value.

4,441,042

ELECTRIC MOTOR

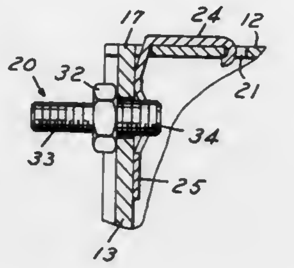
Robert Colwell, Owosso, Mich., assignor to Univeral Electric Company, Owosso, Mich.

Filed Sep. 28, 1982, Ser. No. 425,414

Int. Cl.^{3} H02K *15/00*

U.S. Cl. 310—42 **15 Claims**

1. An electric motor comprising:
a motor,
said frame comprising a generally cylindrical shell,
a stator,
said shell encircling said stator,
a rotor,
a pair of end members on the ends of said shell and rotatably supporting said rotor,
said shell having a plurality of circumferentially extending slots spaced from an edge of said shell,
said shell having a plurality of notches in said edge aligned with said slot,
a plurality of spring nuts, each said spring nut having a first leg with one end thereof hooked into said slot and extending along the outer surface of said shell,
each said nut having a second leg extending radially inwardly through said notch in underlying relationship to said end member associated with said end of said shell,
said end member having an opening therethrough,
said second leg of each said spring nut having a threaded opening aligned with the opening in said end member,
and a plurality of studs,
each said stud having a threaded end and an enlarged shoulder portion,
said threaded end extending through said opening in said end member and being threaded into the opening of said spring nut elastically deforming the second leg of the spring nut in tight engagement with the underside of said one end member,
said shoulder portion of each said stud engaging the outer surface of said end member.



4,441,043

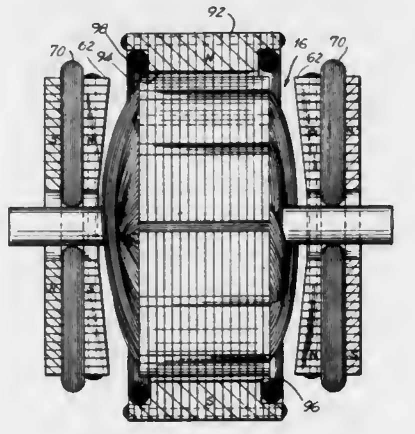
COMPOUND INTERACTION/INDUCTION ELECTRIC ROTATING MACHINE

Dominic DeCesare, 223 Center St., Elizabeth, N.J. 07202

Filed Nov. 24, 1980, Ser. No. 209,646

Int. Cl.^{3} H02K *37/00*

U.S. Cl. 310—46 **32 Claims**



1. A dynamoelectric machine comprising:
a frame;
a rotatable shaft supported by said frame;
a cylindrical rotor mounted coaxially on said shaft, said cylindrical rotor defining two axial end surfaces each substantially in a plane normal to said shaft and a cylindrical circumferential surface coaxial with said shaft between said axial end surfaces, said rotor being provided with a plurality of rotor coil winding grooves which are generally parallel to said shaft and substantially uniformly spaced from each other about said circumferential surface;
a distributed armature winding having axial portions parallel to said shaft and received within said rotor grooves and radial portions in the region of said end surfaces and extending between substantially diametrically opposite grooves with respect to said shaft; and
magnetic field producing means mounted on said frame for producing a first magnetic field directed to interact with said winding axial portions and second magnetic fields, in the region of at least one axial end surface of said rotor, which are directed to interact with the respective winding radial portions, said winding radial portions at each axial end surface of said rotor creating a build-up of overlapping windings which is minimum at said circumferential surface and gradually increases to a maximum in the region of said shaft, said build-up generally defining a conical convex surface, and said magnetic field producing means being configurated to generally conform to said circumferential and conical concave surfaces to thereby minimize the air gaps between said magnetic field producing means and said winding portions and optimize the coupling between the magnetic fields of said windings.

4,441,044

TRANSDUCER WITH A PIEZOELECTRIC SENSOR ELEMENT

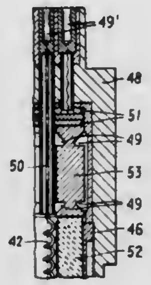
Friedrich Ruckenbauer; Peter Claassen, and Peter Krempl, all of Graz, Austria, assignors to Hans List, Graz, Austria

Filed May 14, 1982, Ser. No. 378,272

Claims priority, application Austria, May 20, 1981, 2267/81

Int. Cl.^{3} H01L *41/08*

U.S. Cl. 310—338 **8 Claims**



1. A transducer for measuring state variables such as pressure and mechanical force, said transducer comprising at least one piezoelectric sensor element for dynamic measurements having contact electrodes, a signal lead being connected to said contact electrodes for carrying the measurement signals from said at least one piezoelectric sensor element which correspond to the values of the state variable to be measured, and at least one additional measuring element for static or quasi-static measurements which in influenced by the state variable to be measured in the same way as said piezoelectric sensor element and which has an additional signal lead independent of said piezoelectric sensor element, wherein said additional measuring element is a plate capacitor whose one plate is mechanically linked to a part of the transducer which will change its position relative to the other plate as the variable to be measured changes, wherein an a/c excitation voltage of variable frequency may be applied via said signal lead to at least one piezoelectric sensor element, and wherein the measurement signals obtained in this way via said additional signal lead of at least one of the other measuring elements may be used for determining the frequency characteristic of said transducer.

4,441,045

LOW-PRESSURE SODIUM VAPOR DISCHARGE LAMP

Leo M. Sprengers, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

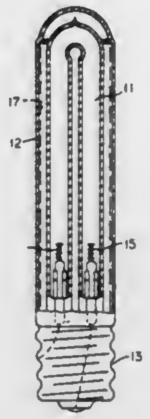
Continuation of Ser. No. 195,536, Oct. 9, 1980, abandoned. This application May 25, 1983, Ser. No. 497,215

Claims priority, application Netherlands, Nov. 14, 1979, 7908311

Int. Cl.^{3} H01J *61/22, 61/34, 61/35*

U.S. Cl. 313—25 **4 Claims**

1. A low-pressure sodium vapor discharge lamp having an operating power of not more than 25 watts, the lamp comprising an elongate discharge tube and an outer bulb enveloping the tube, the discharge tube having an arc voltage of at least 60 volts, a substantially circular cross-section, and first and second internal main electrodes disposed near the respective ends of the discharge tube, the outer bulb being coated with an infrared radiation-reflecting layer predominantly consisting of indium oxide, the reflecting layer being not more than 0.4 micron thick, the inside diameter of the discharge tube being between 0.4 and 1.0 cm and the electric resistance per square of the infrared radiation-reflecting layer has a value between 3 and 7 ohms.



4,441,046

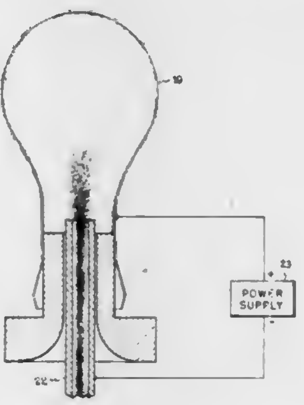
INCANDESCENT LAMPS WITH NEODYMIUM OXIDE VITREOUS COATINGS

William G. James, Cleveland Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 28, 1981, Ser. No. 334,803

Int. Cl.^{3} H01J *5/16, 61/40;* **H01K** *1/26, 1/30*

U.S. Cl. 313—112 **6 Claims**

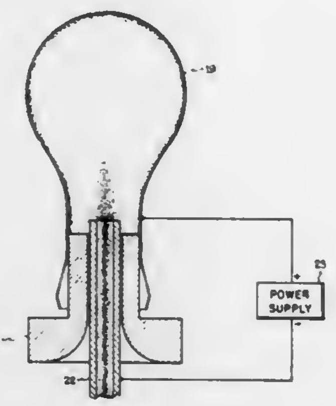


1. An incandescent lamp comprising a sealed glass envelope, a pair of lead-in wires hermetically sealed within said envelope, and a resistive filament connected to said lead-in wires, the improvement which consists of an electrostatically deposited light diffusion coating on the inner surface of said glass envelope sufficient to hide the resistive filament and to absorb light in the green and yellow wavelength region of the spectrum without reducing the light output of said lamp more than approximately 15%, said coating comprising in parts by weight approximately 55–65 parts of a vitreous frit containing neodymium oxide dispersed therein, approximately 10–25 parts flux calcined diatomaceous silica, approximately 10–25 parts fumed silica, and approximately 2–10 parts colloidal hydrophobic silica, all of said silica materials not having a moisture content exceeding about 1 percent by weight.

4,441,047
ELECTROSTATIC SILICA COATING FOR ELECTRIC LAMPS

Clifford B. Collins, Euclid, and William G. James, Cleveland Heights, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 7, 1981, Ser. No. 328,040
Int. Cl.³ H01K *1/32*
U.S. Cl. 313—116 **6 Claims**

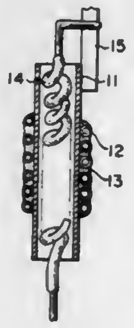


1. An electric lamp comprising a bulb having a light diffusing coating on the inside surface thereof comprising an electrostatically deposited powder comprising in parts by weight approximately 35–65 parts flux calcined diatomaceous silica, approximately 35–65 parts fumed silica, and approximately 5–15 parts colloidal hydrophobic silica, said powder having a Coulter particle size between 1 and 6 microns with electrical conductivity in the range from 1×10^{-4} to 2.3×10^{-7} amperes at an applied voltage of 7 kilovolts and 3×10^{-4} to 4×10^{-9} amperes at 2 kilovolts applied voltage.

4,441,048
CATHODE FOR A GAS DISCHARGE TUBE

Hidetugu Takaoka, and Yuji Shimazu, both of Hamamatsu, Japan, assignors to Hamamatsu TV Co., Ltd., Hamamatsu, Japan

Filed Feb. 3, 1982, Ser. No. 345,374
Claims priority, application Japan, Mar. 6, 1981, 56-32900
Int. Cl.³ H01J *1/13, 17/06*
U.S. Cl. 313—346 R **6 Claims**



1. A cathode of a gas discharge tube comprising:

a cylinder having outer and inner surfaces;

a double coil surrounding the outer surface of said cylinder, said double coil having an inner diameter which is smaller than the diameter of the outer surface of said cylinder and having a relatively high thermal conductivity;

a cathode material deposited on said double coil; and

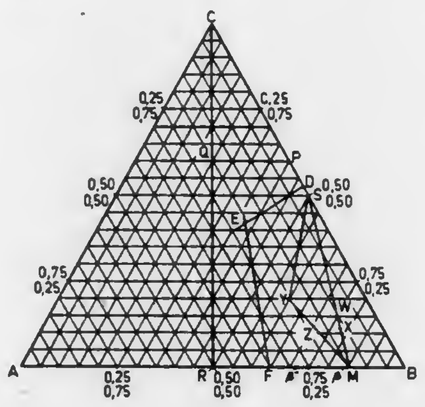
a heater positioned within said cylinder surrounded by the inner surface thereof.

4,441,049
LUMINESCENT MATERIAL AND DISCHARGE LAMP CONTAINING THE SAME

Judicus M. P. J. Verstegen; Johannus G. Verlijsdonk; Emiel P. J. De Meester; Willebrordus H. M. M. Van de Spijker, and Johannes G. Verriet, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 144,731, Apr. 28, 1980, Pat. No. 4,382,207, which is a division of Ser. No. 876,826, Feb. 10, 1979, abandoned, which is a continuation of Ser. No. 699,344, Jun. 24, 2976, abandoned, which is a continuation of Ser. No. 410,184, Oct. 26, 1973, abandoned. This application Dec. 16, 1982, Ser. No. 450,488

Claims priority, application Netherlands, Nov. 3, 1972, 7214862
Int. Cl.³ C09K *11/463*
U.S. Cl. 313—486 **4 Claims**



1. A cerium activated luminescent material having a hexagonal crystal structure corresponding to β-alumina,β″-alumina or the hexagonal ferrites, said luminescent material comprising a compound of the oxides MeO, Ce_2O_3, MgO and Al_2O_3, wherein Me represents one of the elements calcium and strontium, and having a composition of the formula

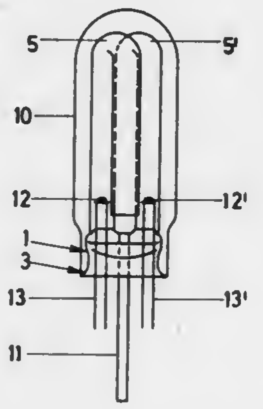
$$Me_{1-x}Ce_xMg_xAl_{12-x}O_{19},$$

wherein $0.01 \leqq X \geqq 1.0$.

4,441,050
SINGLE-ENDED LOW PRESSURE DISCHARGE LAMP AND METHOD OF MANUFACTURE

Gerhard Steeger, and Josef Plischke, both of Augsburg, Fed. Rep. of Germany, assignors to Patent-Treuhand-Gesellschaft Für elektrische Glühlampen mbH, Munich, Fed. Rep. of Germany

Filed Sep. 7, 1982, Ser. No. 415,451
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1981, 3139732
Int. Cl.³ H01J *1/92, 9/26*
U.S. Cl. 313—493 **17 Claims**



1. A single-ended low-pressure discharge lamp comprising:

a preshaped stem member (1);

an outer envelope (10) which contains a gas and/or metal vapor filling and which is hermetically sealed to said preshaped stem member (1);

two preheatable electrodes (12, 12′) arranged within said outer envelope (10) at said stem member (1); and

at least one generally U-shaped inner tube (5, 5′) of glass which is also arranged within said outer envelope (10), said at least one U-shaped inner tube having substantially straight legs (6, 7), a first end (8) of one of said straight legs (6) of each inner tube (5, 5′) hermetically surrounding one of said preheatable electrodes (12, 12′) and the end of the other straight legs (7) of each inner tube (5, 5′) having an aperture (9) open to the interior of said outer envelope (10), said apertures (9) being arranged adjacent said stem member (1);

said stem member (1) comprising a preshaped flare (1) of glass which comprises:

an upper reception section (2) facing the interior of said outer envelope (10) of the lamp and in which are sealingly mounted said two preheatable electrodes (12, 12′), said respective first ends (8) of each U-shaped inner tube (5, 5′) also being sealed to said upper reception section (2) of said preshaped flare (1),

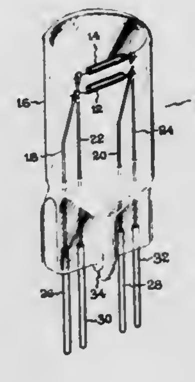
a lower, outwardly facing rim (3) which is concentric with the longitudinal axis of the lamp and which is fused to said outer envelope (10); and

a substantially hollow cylindrical middle section (4) connected between said reception section (2) and said rim (3).

4,441,051
LAMP SEAL GLASS

George L. Thomas, Chesterland, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 22, 1982, Ser. No. 350,678
Int. Cl.³ H01J *17/00*
U.S. Cl. 313—579 **3 Claims**

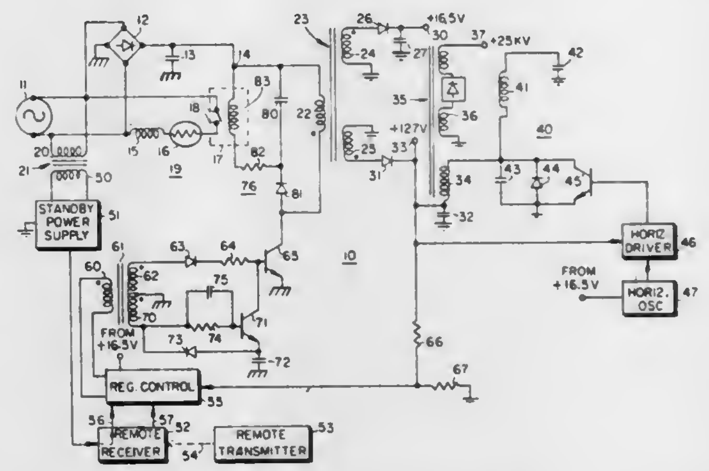


1. An improved regenerative cycle halogen lamp operating at temperatures of at least 500° C. having a transparent glass envelope which includes a resistive incandescent filament connected to a pair of molybdenum inlead wires that are hermetically sealed to the glass envelope, said molybdenum inlead wires being joined to larger diameter inlead wires having greater thermal expansion characteristics in the hermetic seal region, and an inert gas filling which further includes a halogen, wherein the improvement comprises a glass which consists essentially of oxides in approximate percent by weight 52–60 SiO_2, 11–17 Al_2O_3, 11–16 BaO, 8–12 CaO, and 3–7 B_2O_3, along with minor amounts of incidental impurities, residual fluxes, and refining agents, said glass having a liquidus temperature no greater than about 1170° C., a softening point in the approximate range 900°–930° C., a strain point in the approximate range 650°–680° C., a working point in the approximate range 1180°–1240° C., and an average coefficient of linear thermal expansion in the 0°–300° C. temperature range between about $45\text{–}50\times10^{-7}$ cm/cm/°C., to reduce both expansion mismatch and thermal stresses otherwise occuring in said hermetic seal region at the lamp operating temperatures.

4,441,052
DEGAUSSING CIRCUIT FOR TELEVISION RECEIVER HAVING SWITCHED MODE POWER SUPPLY

Donald H. Willis, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 26, 1982, Ser. No. 444,542
Int. Cl.³ H04N *9/29*
U.S. Cl. 315—8 **7 Claims**



1. In a television receiver incorporating a degaussing circuit for demagnetizing the picture tube of said receiver, a switched mode power supply comprising:

a transformer incorporating first and second windings, said first winding coupled to a source of voltage, said second winding coupled to at least one load circuit of said receiver;

switch means coupled to said first winding for energizing said first winding from said source of voltage when said switch means is conductive, said second winding responsive to energization of said first winding for developing a voltage across said second winding for producing a voltage to be applied to said load circuit;

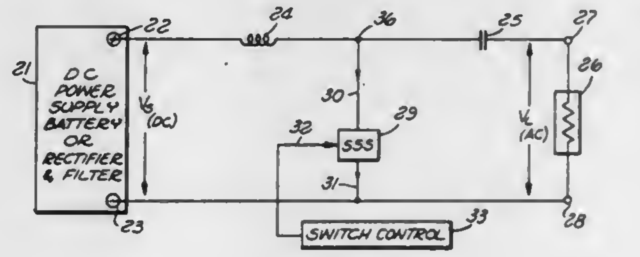
means for controlling the conduction of said switch means; and

switch means protection means coupled to said first winding and to said degaussing circuit for removing energy from said first winding and applying at least a portion of said energy to said degaussing circuit.

4,441,053
SWITCHED MODE ELECTRODE BALLAST

John I. Daspit, Santa Monica, Calif., assignor to Data-Design Laboratories, Cucamonga, Calif.

Filed Nov. 27, 1981, Ser. No. 325,306
Int. Cl.³ H05B *37/00*
U.S. Cl. 315—206 **27 Claims**



1. In an electronic ballast circuit for operating gaseous discharge lamps, the combination of:

means defining first and second load terminals;

a dc power supply having first and second supply terminals;

an inductance;

a capacitance;

circuit means connecting said inductance and capacitance in series at a junction, with said inductance connected to said first supply terminal and with said capacitance connected to said first load terminal and with said second supply terminal connected to said second load terminal;

a solid state switch having input and output terminals connected between said junction and said second supply and load terminals, and having a control terminal for opening and closing a circuit between said input and output terminals in response to a switching voltage on said control terminal;

a switch control circuit providing voltage pulses as an output, with said output connected to said control terminal as said switching voltage;

means defining third and fourth load terminals, with said second and fourth load terminals interconnected;

a second inductance;

a second capacitance;

second circuit means connecting said second inductance and second capacitance in series at a second junction, with said second inductance connected to said first supply terminal and said second capacitance connected to said third load terminal;

a first diode connected between said first junction and said solid state switch; and

a second diode connected between said second junction and said solid state switch.

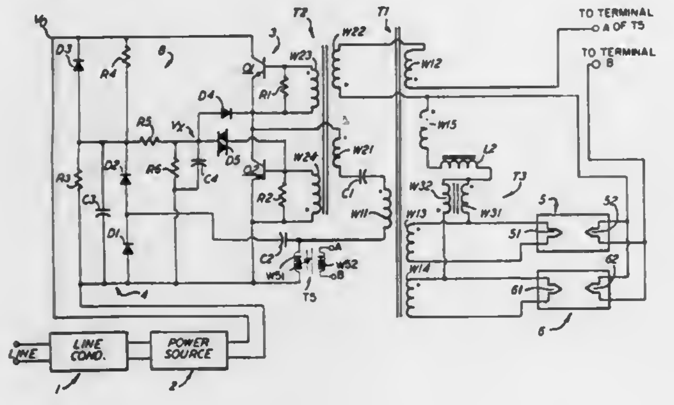
4,441,054
STABILIZED DIMMING CIRCUIT FOR LAMP BALLASTS

David L. Bay, Beverly, Mass., assignor to GTE Products Corporation, Stamford, Conn.

Filed Apr. 12, 1982, Ser. No. 367,308

Int. Cl.^{3} H05B *37/02*

U.S. Cl. 315—219 **10 Claims**



1. In an electronic ballast circuit for a lamp, said circuit having an output transformer including a primary winding and at least one secondary winding adapted for coupling to a lamp filament, a circuit for stabilized dimming of the lamp, said circuit comprising a dimming transformer having a variable inductance primary winding coupled to the primary winding of the output transformer and secondary winding coupled to the secondary winding of the output transformer and adapted for coupling to a lamp filament.

4,441,055
LIGHTING SYSTEM

Povilas I. Balchjunas, Vilnjus; Ionas J. Martinaitis, Kaunas; Sauljus A. Tulaba, Kaunas, and Alfredas B. Pilkauskas, Kaunas, all of U.S.S.R., assignors to Kaunassky Politekhnichesky Institut, Kaunas, U.S.S.R.

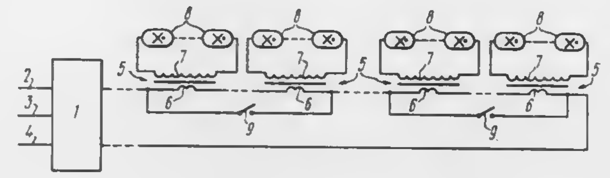
PCT No. PCT/SU81/00048, § 371 Date Feb. 4, 1982, § 102(e) Date Feb. 4, 1982, PCT Pub. No. WO81/03731, PCT Pub. Date Dec. 24, 1981

PCT Filed May 29, 1981, Ser. No. 354,095

Claims priority, application U.S.S.R., Jun. 10, 1980, 2938331; Jun. 10, 1980, 2938327; Jun. 10, 1980, 2937598

Int. Cl.^{3} H05B *37/00*

U.S. Cl. 315—288 **7 Claims**



1. A lighting system comprising a source of regulated alternating current and gaseous discharge lamps connected to said source through current transformers, whose primary windings are serially connected and coupled to said source, characterized in that said source (1) comprises frequency converting means whose input terminals are connected to an alternating current power network to convert the power network voltage to a regulated alternating current having a frequency at least three times greater than the network voltage frequency, whereas the series-connected primary windings (6) of said current transformers (5) are connected to output terminals of said frequency converting means.

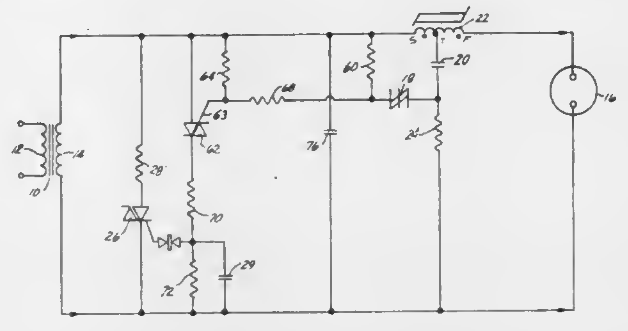
4,441,056
HIGH PRESSURE SODIUM LAMP BALLAST CIRCUIT

John V. Siglock, Sierra Madre, Calif., assignor to Unicorn Electrical Products, Anaheim, Calif.

Continuation-in-part of Ser. No. 156,766, Jun. 5, 1980, Pat. No. 4,339,695. This application Jun. 1, 1982, Ser. No. 383,468

Int. Cl.^{3} H05B *41/16*

U.S. Cl. 315—290 **7 Claims**



1. A circuit for driving a gas discharge lamp from a constant current alternating voltage source, comprising:

a transformer having a magnetic core and windings on the core for coupling the voltage source to the lamp, a starting pulse generating circuit coupled to said voltage source by the transformer and having its output connected across the lamp for applying a high voltage starting pulse across the lamp to initiate ionization, the pulse generating circuit being triggered by the rise in voltage during each half cycle of the alternating voltage source, a voltage limiting circuit including a switching element connected across one of the transformer windings for limiting the rise in voltage across the transformer during each half cycle of the voltage source when the switching element is on, and circuit means activated by the starting pulse from said generating circuit for triggering on the switching element during any half cycle of the voltage source when the impedance of the lamp remains at a high level following the generation of the starting pulse, the switching element being turned off when the voltage goes to zero at that end of a half cycle.

4,441,057
CORRECTION APPARATUS FOR A CATHODE RAY TUBE

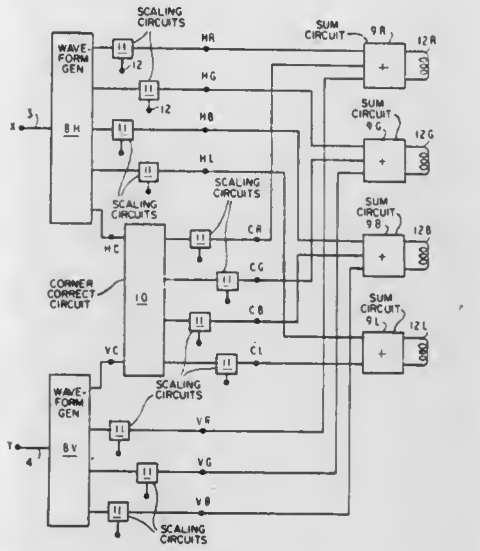
Stanislaw Wrona, Winchester, England, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 8, 1980, Ser. No. 214,145

Claims priority, application United Kingdom, Dec. 15, 1979, 7943293

Int. Cl.^{3} H01J *29/70, 29/76*

U.S. Cl. 315—368 **13 Claims**



1. Correction apparatus for a cathode ray tube, comprising circuitry adapted to generate correction waveforms in accordance with the position of an electron beam, wherein the circuitry comprises hybrid circuitry which computes the correction waveforms as functions of digital value, and

wherein the circuitry comprises analog circuitry arranged in operation to generate correction waveforms in accordance with the positions of the electron beams, the correction waveforms being shaped analog waveforms modified in accordance with the said digital values, and

wherein the correction apparatus is arranged to correct misconvergence in a shadow mask color cathode ray tube, and

wherein the analog circuitry arranged in operation to generate parabolic waveforms, characterized in that the sizes of the waveforms are determined by at least some of the said digital values.

4,441,058
DEFLECTION CIRCUIT WITH LINEARITY CORRECTION

David W. Luz, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 21, 1981, Ser. No. 304,162

Int. Cl.^{3} H01J *29/56*

U.S. Cl. 315—371 **10 Claims**

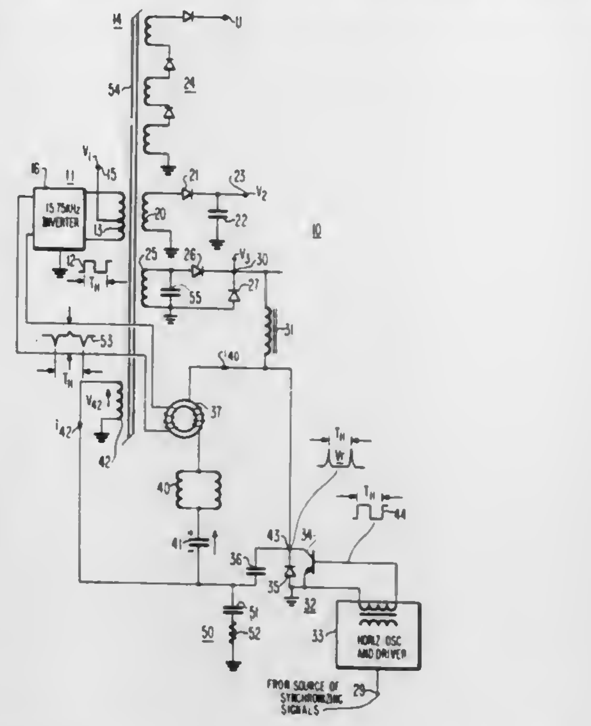
1. A deflection circuit with linearity correction, comprising:

a deflection winding;

a deflection generator including a source of trace voltage and a trace switch coupled to said deflection winding and responsive to a deflection rate switching signal for applying said trace voltage across said deflection winding each deflection cycle to generate scanning current during a trace and a retrace interval of each deflection cycle in said deflection winding, said trace switch incorporating a capacitor for resonating with said deflection winding during said retrace interval;

a source of deflection rate alternating polarity voltage coupled to said resonant capacitor and said deflection winding; and

phasing means for applying said alternating polarity voltage to said deflection winding during said trace interval in proper phase relation to said scanning current in order to provide linearity correction to said scanning current, said source of alternating polarity voltage being so coupled to be excluded from said retrace resonance such that said alternating polarity voltage is not applied to said deflection winding during said retrace interval.



4,441,059
CUTTING FEED SENSING DEVICE

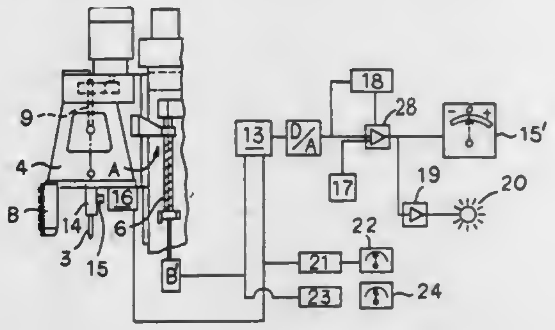
Mitsuru Watanabe, Takata, Japan, assignor to Fuji Seiki Machine Works, Ltd., Shizuoka, Japan

Filed Nov. 16, 1981, Ser. No. 321,959

Claims priority, application Japan, Dec. 12, 1980, 55-177667

Int. Cl.^{3} G05B *19/24*

U.S. Cl. 318—39 **9 Claims**



1. A feed rate sensing system for a drilling machine or the like and which is equipped for comparison of two potential values, one of which values represents the real value of the feed rate and the other of which values represents the desired value of the feed rate, the drilling machine having a linearly movable cutting tool supporting block carrying a rotatable tool spindle by which it drives taps, drills, and other kinds of cutting tools and makes said tools advance and retract with respect to a workpiece, the linear motion of said supporting block being converted to rotation of a screw by a ball screw appliance, the system comprising:

a pulse generating encoder driven by said screw and spindle for generating feed pulses;

proximity switch means including a segment on said tool spindle and a proximity switch fixed on said tool spindle support and actuated by said actuating segment on the tool spindle for generating a rotation pulse every time the proximity switch is actuated by rotation of said actuating segment past the switch at every turn of the spindle;

counting means receiving said feed pulses and rotation pulses for producing a digital output representing the real feed rate of the tool supporting block per revolution of the tool spindle;

a digital/analog converter for converting said digital output to an electrical potential value;

an electronic device having one input to which said converted potential value is applied;

a circuit including a potentiometer for converting the desired feed rate of the cutting tool per revolution to an electric potential value which is applied to the other input of said electronic device such that the output of said electronic device represents the difference between the desired and real feed rate values; and

a synchronism meter for displaying the output of said electronic device.

4,441,060

VIBRATORY CONVEYOR CONTROL ARRANGEMENT

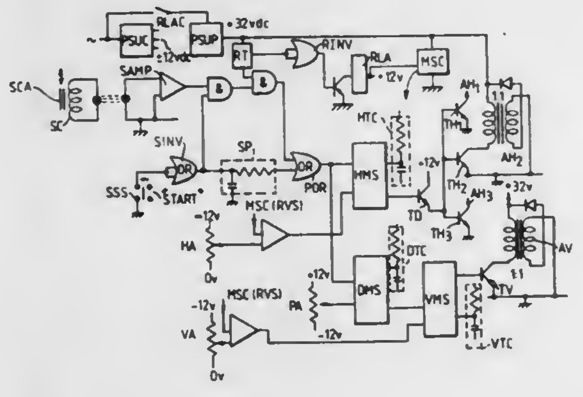
Arthur Hamer, Oldham, and Beverley H. Pardoe, Manchester, both of England, assignors to National Research Development Corporation, London, England

Filed Mar. 17, 1981, Ser. No. 244,795

Claims priority, application United Kingdom, Mar. 19, 1980, 8009177

Int. Cl.³ H02K *33/02*

U.S. Cl. 318—114 **15 Claims**



14. A vibratory conveyor control arrangement for a vibratory conveyor of a load-supporting surface defining a load-path and including resilient mounting means permitting vibration of the surface substantially along and normal to said path and respective first and second electrical driving means to bring about said vibrations, the control arrangement including means responsive to the motion of the load supporting surface to produce a motion signal, a control circuit means having a motion signal input, user controls, driving means and energization outputs, means responsive to the motion signal input to produce a first time reference signal edge repeated at intervals in time representing cycles of the conveyor motion along said path and means to produce from the first signal a further signal adjustable in phase from the first signal, means respectively responsive to the first and further signals to produce driving means energization pulses at said outputs at respective times and of independent durations set by said user controls to determine vibration amplitude, the circuit supplying in operation the energizing outputs in a manner determined by the control circuit with reference to the signal representing motion and the settings of the user controls, the control circuit including a start control and means responsive to the operation of the start control to determine the energization for a particular load in accordance with user controls setting only vibration amplitudes substantially along and normal to said path and the relative phase of said vibrations.

4,441,061

MOTOR SPEED CONTROL SYSTEM

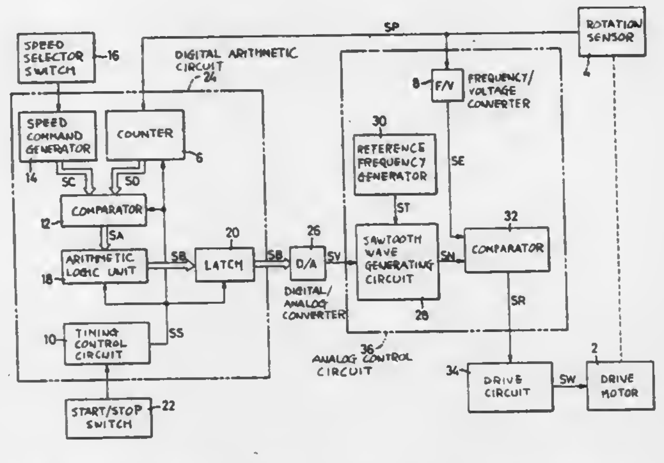
Noriyuki Yoshida, and Yoshimi Asai, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jul. 1, 1982, Ser. No. 394,431

Claims priority, application Japan, Jul. 18, 1981, 56-112562

Int. Cl.³ G05B *5/00*

U.S. Cl. 318—329 **2 Claims**



1. A motor speed control system for controlling the drive current to a motor through a semiconductor element in response to a drive control signal applied to said element, comprising:

a digital control circuit including first detecting means for detecting the actual speed of said motor at a predetermined time interval and generating a digital speed detection signal representative of the detected actual speed, speed commanding means for generating a digital speed command signal corresponding to a predetermined speed of said motor, means for preparing a digital control signal based on a difference between said digital speed detection signal and said digital speed command signal, and latch means for storing said digital control signal in a timed relation with the detection of said actual speed,

a converter for generating an analog control signal corresponding to the digital control signal stored in said latch means, and

an analog control circuit including second detecting means for constantly detecting the actual speed of said motor and generating an analog speed detection signal representative of the detected actual speed, said analog circuit generating said drive control signal in response to said analog control signal and said analog speed detection signal.

4,441,062

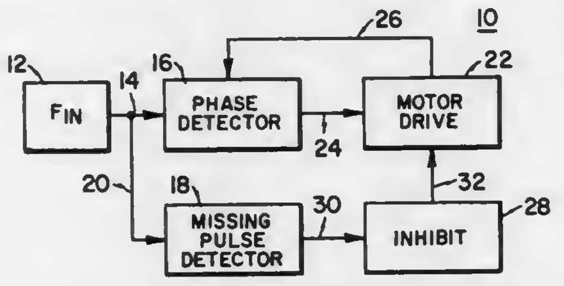
MISSING PULSE DETECTOR FOR A SYNCHRONOUS MOTOR DRIVE

William E. Evans, and Jimmie D. Gillett, both of Garland, Tex., assignors to Varo, Inc., Garland, Tex.

Filed Jan. 29, 1982, Ser. No. 343,749

Int. Cl.³ H02P *3/18*

U.S. Cl. 318—703 **15 Claims**



1. A method for terminating operation of a synchronous motor upon detecting excessive acceleration, missing pulses and undesired pulses in the synchronous motor which is an integral part of a phase lock loop that is referenced to a driving frequency source, comprising:

receiving an input signal which is the output of the driving frequency source and having a frequency corresponding to the synchronous speed of the motor;

generating a variable frequency reference signal;

adjusting the phase and frequency of the reference signal to provide a constant phase difference between the reference signal and the input signal;

comparing the phase of the input signal to the phase of the reference signal to provide a phase difference signal when the phase between the input and reference signals deviates from the constant phase difference;

outputting a control signal after the difference signal has been present for a predetermined duration of time wherein excessive acceleration results in the presence of the control signal and a missing or undesired pulse also results in the presence of the control signal;

and

inhibiting operation of the synchronous motor in response to the presence of the control signal.

4,441,063

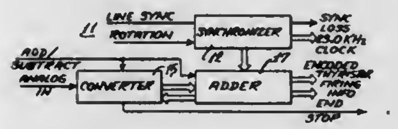
PULSE GENERATING SYSTEM

Richard W. Roof, Lexington, S.C., and Kenneth S. Berton, Monroeville, Pa., assignors to Square D Company, Palatine, Ill.

Filed May 6, 1980, Ser. No. 147,415

Int. Cl.³ H02P *7/42*

U.S. Cl. 318—722 **4 Claims**



1. In a pulse generating system for a variable speed motor driven from a power source feeding a three-phase A.C. power line system, said motor having primary and secondary windings and with said source connected to said primary winding and solid state rectifier bridge means connected to said secondary winding to produce a D.C. voltage, said bridge means having solid state switch means for each power line, a solid state inverter connected to receive said D.C. voltage and provide an A.C. voltage output connected to transmit power back to said power source, an inductive reactor connected intermediate said bridge means and said inverter, control means for energizing said switch means and controlling said inverter, the improvement of said control means including a pulse generator connected to receive a synchronizing signal from said power lines dependent of the A.C. frequency, means for receiving a phase reference signal of a magnitude dependent on the difference in phase between the A.C. line voltage and a selected phase angle, logic means for determining the selected advance and retard of said phase angle of said reference signal relative to said synchronizing signal, and adder means for processing and converting said signals to digital outputs for initiating firing pulses to said solid state switch means in selected relation.

4,441,064

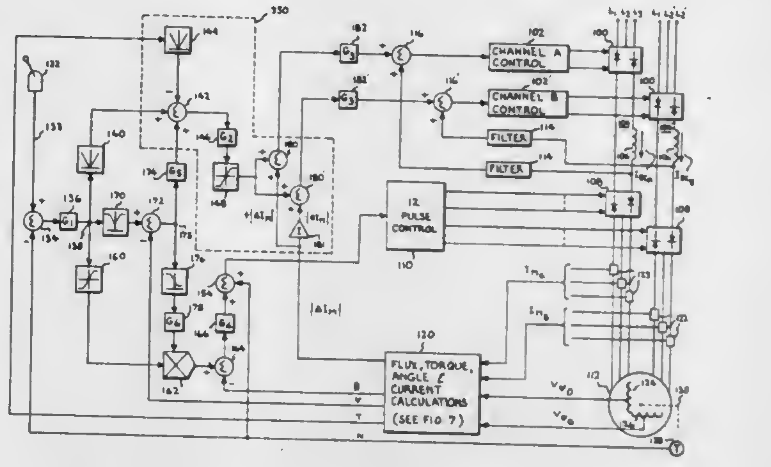
TWELVE-PULSE OPERATION OF A CONTROLLED CURRENT INVERTER MOTOR DRIVE

John H. Cutler, Roanoke, and Loren H. Walker, Salem, both of Va., assignors to General Electric Company, Salem, Va.

Filed Dec. 18, 1981, Ser. No. 332,180

Int. Cl.³ H02P *5/40*

U.S. Cl. 318—798 **11 Claims**



1. An ac motor drive for use with an ac motor having a stator and a rotor spaced from said stator by a gap across which gap flux is produced in response to electrical currents supplied to said motor comprising;

(a) a source of variable dc current;

(b) first and second sources of variable frequency polyphase ac current connected to said source of dc current for furnishing a motor current to the motor;

(c) means to develop direct and quadrature flux signals proportional to direct and quadrature components of motor gap flux;

(d) means to develop phase current signals representing, respectively, the current in each phase of the current furnished to the motor;

(e) means responsive to said phase current signals and said flux signals to develop first and second torque signals representing the torque developed by the motor from each of said sources of ac current;

(f) means to sum said first and second torque signals to provide a total torque signal;

(g) means responsive to said total torque signal to develop a single angle signal representative of the instantaneous angle between the gap flux and motor current; and,

(h) means responsive to said angle signal to generate a frequency error signal operative to control the frequency of operation of said first and second sources of variable frequency, polyphase electrical power.

4,441,065

METHOD AND APPARATUS FOR DETERMINING THE ROTOR RESISTANCE OF AN ASYNCHRONOUS MACHINE

Karl-Heinz Bayer, and Felix Blaschke, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens AG, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 13, 1981, Ser. No. 292,724

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1980, 3034251

Int. Cl.³ H02P *5/40*

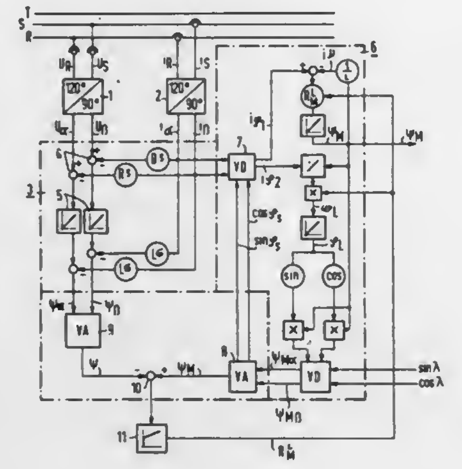
U.S. Cl. 318—808 **15 Claims**

1. A method to detect the rotor resistance of an asynchronous machine, wherein

a first vector attached to the emf of the machine is determined by computing the emf-vector or the flux vector from the stator voltages and the stator currents;

a flux attached to an arithmetic model circuit is determined, whereas the arithmetic model circuit uses the stator currents and the rotor position of the machine and an adjustable model parameter for the rotor resistance as basic quantities and imitates the dynamic events leading to the magnetic flux of the machine;

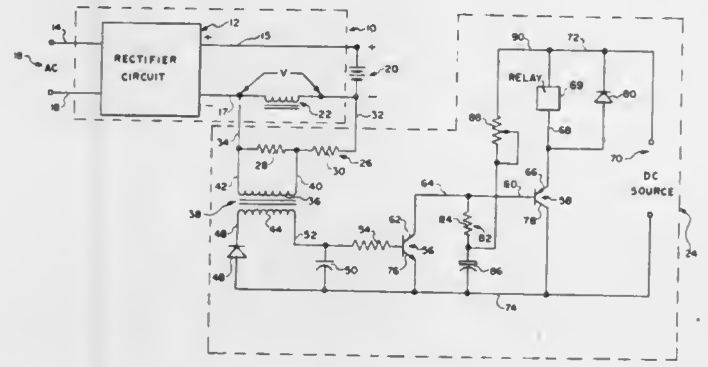
a difference of two quantities is determined, wherein the first quantity represents a defining quantity of the first vector attached to the machine and the second quantity represents a respective defining quantity of a second vector derivable from the imitated flux and that



the setting of a model parameter is varied until the value of the difference is a minimum, whereas the model parameter corresponding to the minimum of the difference is regarded as the resulting rotor resistance of the machine.

4,441,066
BATTERY CHARGER FAILURE ALARM CIRCUIT

Mark Burmenko, Fairlawn, N.J., assignor to McGraw-Edison Company, Rolling Meadows, Ill.
Filed Sep. 28, 1982, Ser. No. 425,873
Int. Cl.³ H02J *7/04*
U.S. Cl. 320—48 **11 Claims**



1. In a battery charger circuit including a source of rectified A.C. voltage coupled for charging a battery connected to said circuit and inductor means, serially connected between said source of rectified A.C. voltage and said battery, for filtering the rectified A.C. voltage prior to application of said battery, A.C. voltage being present across said inductor so long as said battery charger circuit is functioning to charge said battery, a battery charger failure alarm circuit including in combination:

voltage divider means, electrically coupled to said inductor means, for dividing the voltage drop across said inductor means into at least two voltages including a first voltage;

isolation transformer means, electrically coupled to said voltage divider means, for transforming said first voltage into a second voltage;

rectifier means, electrically coupled to said isolation transformer means, for rectifying said second voltage;

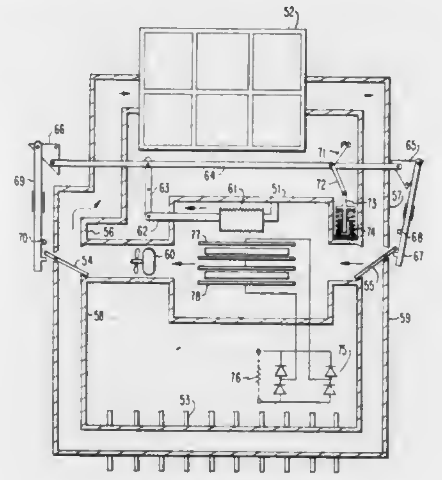
a first transistor, said rectified second voltage being applied to the base of said first transistor for switching said transistor means to a conducting state;

a second transistor, the base of which is electrically coupled to said first transistor, said second transistor being switched from a non-conducting state to a conducting state in response to said first transistor being switched to a conducting state; and

alarm means, operating in response to said second transistor, for producing a sensory perceptive signal in the event that said first and second transistors are switched to a non-conducting state in response to the absence of A.C. volt age across said inductor means.

4,441,067
THERMAL DIELECTRIC ELECTRIC POWER GENERATOR

Louis R. O'Hare, 1700 Banyan #3, Fort Collins, Colo. 80526
Filed Oct. 20, 1980, Ser. No. 198,359
Int. Cl.³ H02N *1/00*
U.S. Cl. 322—2 A **11 Claims**



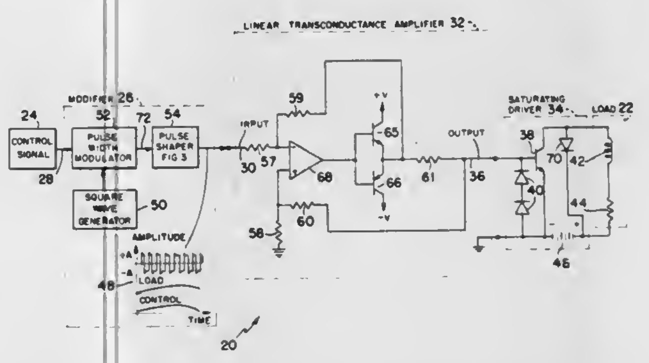
1. An electric power generator comprising:

capacitive charge cycling means in the form of two sets of temperature variable capacitors, a bridge rectifier and an electric load, said bridge rectifier comprising an array of four rectifier elements connected in a series and forming a closed loop in such a manner that two of the rectifier elements have cathodes connected together and the other two elements have anodes at a common connection point, the remaining two junctions of the four rectifier elements being formed by connections between an anode and a cathode, and said capacitor sets and the bridge rectifier being serially connected in such a way that each of the two rectifier element junctions connecting the cathode of one rectifier element with the anode of another is connected to a different capacitor set and each capacitor set is connected to the other, the electric load being connected across the rectifier junction connecting the cathodes of the two rectifier elements and the rectifier junction connecting the anodes of the other two rectifier elements, said capacitive charge cycling means thereby being capable of receiving and of having shared on the sets of capacitors an electric charge which can be placed on them and of having a portion of the charge move back and forth from one capacitor set to the other through the bridge rectifier and the load as the capacitance of the capacitors is made to change repeatedly by temperature variations of the capacitors, and

a fluid heating means in the form of a heat exchanger capable of contacting fluid to be heated with a thermal energy source, and a fluid cooling means providing a source of cooling fluid and being in the form of ducting with cooling fins and located in a cool place, and a temperature alternation means in the form of a fluid impeller having valving and ducting, said impeller being capable of moving a column of fluid, and said valving and ducting being capable of providing alternating fluid flow communication first between the capacitors of the capacitive charge cycling means and the fluid heating means and then in an alternate time period between capacitors of the capacitive charge cycling means and the fluid cooling means to thereby alternately heat and then cool the capacitors by means of thermal contact with the capacitors by the heated fluid and then by the cooled fluid flowing respectively from the fluid heater and then from the fluid cooler to the capacitors.

4,441,068
BIPOLAR LINEAR CURRENT SOURCE DRIVER AMPLIFIER FOR SWITCHING LOADS

James F. Smith, Smithtown, N.Y., assignor to Kollmorgen Technologies Corporation, Dallas, Tex.
Filed Oct. 22, 1981, Ser. No. 314,010
Int. Cl.³ G05F *1/56*
U.S. Cl. 323—351 **15 Claims**



1. A system for electrically driving a load, said system comprising:

a linear driver;

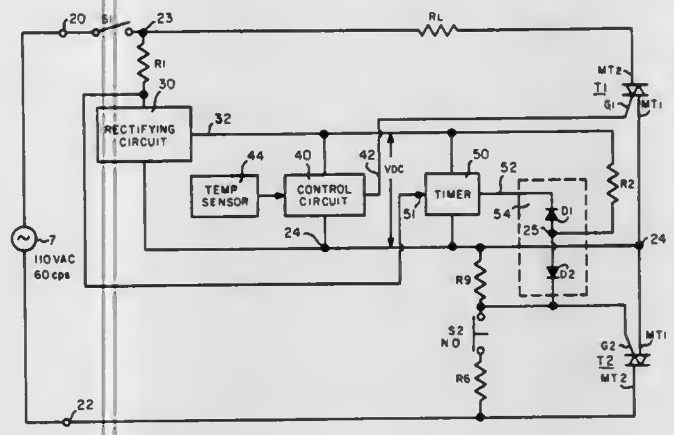
a nonlinear driver for applying power to said load, said nonlinear driver being driven by a current having a regulated amplitude put out by said linear driver,

said nonlinear driver comprising means saturable to an extent dependent on the level of said amplitude,

said linear driver comprising a linear transconductance amplifier for applying said current to said nonlinear driver so that said saturable means operates at a predetermined level of saturation, means for adjusting said amplitude of said current, and means for feeding back a portion of said current to said adjusting means, said adjusting means using said fed back current to regulate said amplitude of said current so that said saturable means operates at said predetermined level of saturation when applying power to the load.

4,441,069
SELF-EXTINGUISHING LOAD DRIVING SYSTEM

Robert M. Mendelson, Murray Hill, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Dec. 28, 1981, Ser. No. 334,818
Int. Cl.³ G05F *5/00*
U.S. Cl. 323—239 **7 Claims**



1. The combination comprising:

first and second power terminals for the application therebetween of an AC operating voltage;

first and second control switches, each one of said control switches having a control gate, and first and second main electrodes defining the ends of the main conduction path of the control switch, and each one of said first and second control switches capable of conducting current in either direction along its main conduction path in response to a voltage greater than a given threshold applied between its gate and its first main electrode, each one of said first and second control switches being of the type which can be turned-on only by a turn-on signal applied between its control gate and its first main electrode;

a load;

means connecting the first main electrode of said first control switch and the first main electrode of said second control switch to a common node;

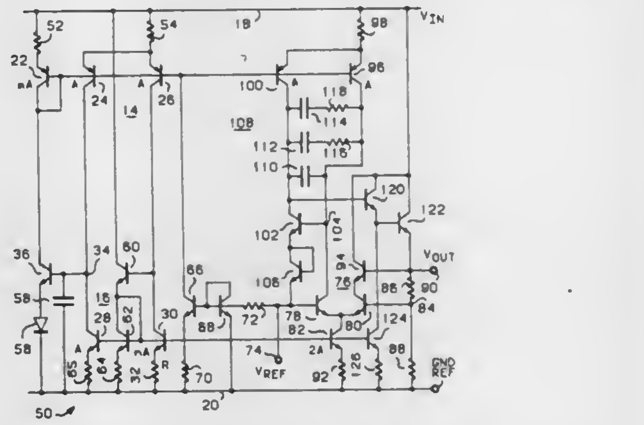
means connecting the main conduction paths of said first and second switches and said load in series between said first and second power terminals;

a first control means coupled between said control gate of said first control switch and said common node for controlling the turn-on and turn-off of said first control switch; and

a second control means independent from, and different than, said first means coupled between said control gate of said second control switch and said common node for controlling the conductivity of said second control switch independently of the turn-on and turn-off of said first control switch.

4,441,070
VOLTAGE REGULATOR CIRCUIT WITH SUPPLY VOLTAGE RIPPLE REJECTION TO TRANSIENT SPIKES

Robert B. Davies, Tempe, and Eric D. Joseph, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Feb. 26, 1982, Ser. No. 352,902
Int. Cl.³ G05F *1/56*
U.S. Cl. 323—268 **21 Claims**



1. A voltage regulator for providing a substantially constant voltage supply at an output thereof, comprising:

first and second power supply conductors across which a power supply voltage is connected;

current source means coupled between said first and second power supply conductors for providing first and second currents at respective outputs the magnitudes of each being substantially independent to power supply ripples;

comparator amplifier means including a differential stage having first and second inputs and an output, and a gain stage coupled between said output of said differential stage and said first input thereof and having an output, said outputs of said differential stage and said gain stage being coupled to respective ones of said outputs of said current source means, said first input of said differential stage receiving a reference potential;

amplifier means coupled with said output of said gain stage and said second input of said differential stage to the output of the regulator; and

compensation means coupled between said respective outputs of said differential stage and said gain stage for introducing frequency domain zeros and poles into the transfer characteristics of the regulator to provide ripple rejection performance of the regulator.

4,441,071

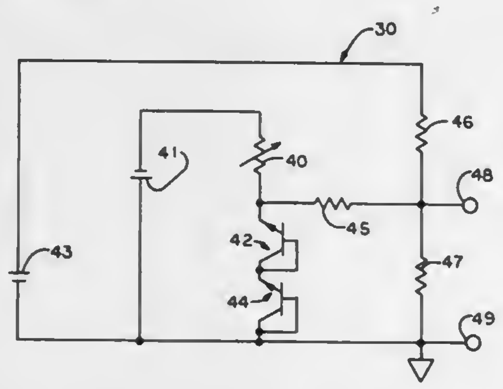
TEMPERATURE COMPENSATION CIRCUIT FOR THERMOCOUPLES

Robin D. Houseman, La Habra, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Mar. 31, 1982, Ser. No. 364,080

Int. Cl.^{3} G01R *17/02*

U.S. Cl. 323—365 **5 Claims**



1. A circuit for generating a voltage for compensating the output of a thermocouple having at least one reference junction and a measuring junction, when said thermocouple is operated with its reference junction at ambient temperature, wherein said compensation voltage varies linearly with changes in ambient temperature and passing through zero volts at 0° C. comprising:

a first source of constant potential;

at least one semiconductor rectifying device;

a variable resistor connected intermediate said first source of potential and said semiconductor device;

said first source of constant potential and said variable resistor causing a constant but adjustable current to flow in said semiconductor device developing a voltage thereacross in a forward biased direction;

first voltage dividing means for dividing said voltage developed across said semiconductor device;

a second source of constant potential opposite in polarity to said first source of potential;

second voltage dividing means for dividing said second source of potential;

an output terminal wherein the divided voltage of said first voltage dividing means and the divided voltage of said second voltage dividing means are combined at said output terminal and wherein said combined voltage having a voltage temperature coefficient corresponding to a selected thermocouple type over a selected temperature range;

said variable resistor being adjustable to set the combined voltage at said output terminal to a level corresponding to the output of said selected thermocouple type when the measuring junction thereof is at an equivalent temperature and at least one reference junction thereof is at 0° C.

4,441,072

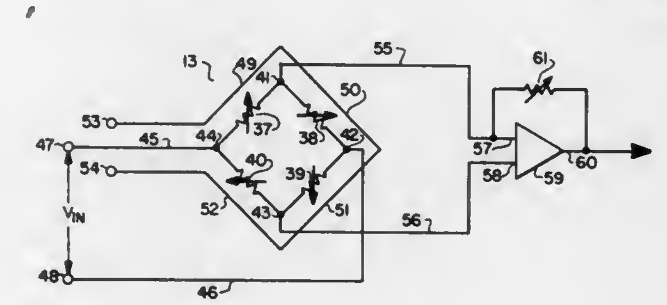
MULTIPLE INPUT OUTPUT ELECTRICAL ISOLATION FOR USE WITH ELECTRONIC INTEGRATED CIRCUITS

Mona A. Rahman, Minnetonka, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 12, 1982, Ser. No. 397,649

Int. Cl.^{3} H03H *1/00*

U.S. Cl. 323—368 **12 Claims**



1. Apparatus having a plurality of electrical isolation means provided on a monolithic integrated circuit, each of said electrical isolation means being adapted to receive an input signal at an electrical isolation means input terminating region and to provide an output signal at an electrical isolation means output terminating region, said output signal being representative of said input signal, said electrical isolation means input terminating region and said electrical isolation means output terminating region being electrically isolated from one another and each of said isolation means comprising a first electrical impedance means having first and second terminating regions and being capable of changing in electrical impedance in response to a change in a first magnetic field, said first electrical impedance means being adapted to have a first electrical current established therethrough, and a first electrical conductor means proximate to said first electrical impedance means, said first electrical conductor means being electrically connected to said electrical isolation means input terminating region and being adapted to conduct a second electrical current representative of said input signal.

4,441,073

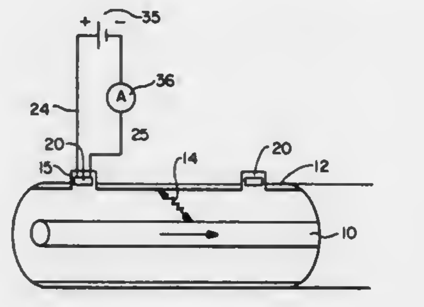
RESISTIVITY SENSOR SYSTEM FOR DETECTING FAULTS IN SEALED GAS-INSULATED ELECTRICAL APPARATUS

William D. Davis, Ballston Spa, N.Y., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Dec. 22, 1980, Ser. No. 218,785

Int. Cl.^{3} G01R *31/08;* **H02G** *15/28;* **H01L** *7/00*

U.S. Cl. 324—52 **20 Claims**



1. A resistivity sensor system for use with sealed gas-insulated electrical power apparatus to detect faults, comprising:

a plurality of resistivity sensors positioned within a housing of said electrical power apparatus wherein said sensors are spaced from one another and include

(i) an electrically insulating substrate,

(ii) a pair of spaced apart electrodes located on said substrate, and

(iii) a polymer film in the space between said electrodes wherein the occurrence of a fault in the vicinity of said sensor produces arc by-products that cause a reaction at said polymer film to change the electrical resistivity across said polymer film in accordance with the distance that said sensor is from the location of the fault;

means for applying a voltage across said electrodes;

means for measuring current flowing through said electrodes; and

means responsive to changes in said current flowing through said sensors to indicate which of said sensors is nearest said fault.

4,441,074

APPARATUS FOR SIGNATURE AND/OR DIRECT ANALYSIS OF DIGITAL SIGNALS USED IN TESTING DIGITAL ELECTRONIC CIRCUITS

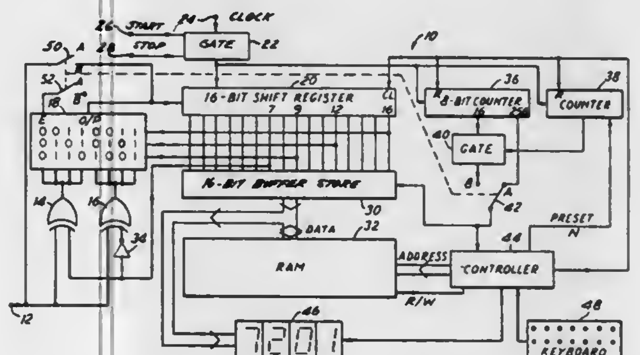
Charles P. Bockett-Pugh, Bracknell, and Brian L. Kett, Poole, both of England, assignors to The Solartron Electronic Group Limited, Farnborough, England

Filed Feb. 24, 1981, Ser. No. 238,384

Claims priority, application United Kingdom, Feb. 28, 1980, 8006829

Int. Cl.^{3} G01R *31/28, 15/12;* **G06F** *11/00*

U.S. Cl. 324—73 R **5 Claims**



1. Apparatus for testing a digital electronic circuit comprising:

input means for receiving a digital signal from a selected location in the digital electronic circuit;

means for delivering a series of clock pulses, each pulse being coincident with a bit of the digital signal;

switch means for selecting first or second operative modes of the apparatus;

signature generation means connected to the input means to receive said digital signal therefrom and to the clock pulse means to receive said clock pulses to synchronise operation of the signature generation means with said digital signal, and having combining means responsively coupled to said switch means, said combining means being enabled in said first operative mode for combining each of a selected plurality of bits of the digital signal with preselected other ones of the selected plurality of bits of the digital signal, whereby said signature generation means generates successive signature words from the digital signal in said first operative mode, and said combining means being disabled in said second operative mode, whereby said signature generation means receives and temporarily stores said digital signal unchanged in said second operative mode;

counter means connected to the clock pulse means for generating a trigger signal each time a predetermined number of clock pulses has been delivered by said clock pulse means;

storage means connected to the signature generation means and the counter means for responding to a plurality of said trigger signals to store the corresponding contents of the signature generation means; and

additional counter means connected to said clock pulse means and said storage means and responsively coupled to said switch means for inhibiting said storage means from responding to said trigger signals in said second operative mode until a preselected number of clock pulses has been delivered by said clock pulse means;

whereby, in said first operative mode, said apparatus generates and stores successive signature words from said digital signal to permit approximate time of occurrence of any fault in said signal to be determined, and, in said second operative mode, said apparatus stores successive sections of said digital signal starting at the time of fault occurrence determined in said first operative mode, to permit the signal to be analysed.

4,441,075

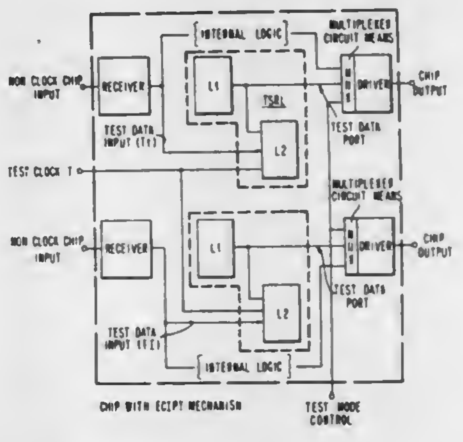
CIRCUIT ARRANGEMENT WHICH PERMITS THE TESTING OF EACH INDIVIDUAL CHIP AND INTERCHIP CONNECTION IN A HIGH DENSITY PACKAGING STRUCTURE HAVING A PLURALITY OF INTERCONNECTED CHIPS, WITHOUT ANY PHYSICAL DISCONNECTION

Maurice T. McMahon, both of Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 2, 1981, Ser. No. 280,050

Int. Cl.^{3} G01R *31/28;* **G06F** *11/00*

U.S. Cl. 324—73 R **12 Claims**



1. An integrated circuit packaging structure said packaging structure comprising:

a substrate having a first planar surface and a second planar surface oppositely disposed from said first planar surface, said first planar surface containing n arrays of closely spaced contact pads, said second planar surface of said substrate containing an array of package contacts, said package contacts of said array contained on said second planar surface of said substrate being more widely spaced apart, one from another, than said contact pads of each of said n arrays of contact pads;

first passive wiring circuit means contained at least in part in said substrate for interconnecting said contact pads of said n arrays of contact pads contained on said first planar surface of said substrate and said package contacts of said array of package contacts contained on said second planar surface of said substrate;

n interconnected integrated circuit chips, each of said n interconnected integrated circuit chips having a first planar surface and a second planar surface oppositely disposed from said first planar surface; each of said n interconnected integrated circuit chips having an array of chip contact pads on said first planar surface thereof, said array of chip contact pads of each of said n interconnected integrated circuit chips respectively corresponding to, and electrically connected to one of said n arrays of contact pads contained on said first planar surface of said substrate, each of said n arrays of chip contact pads providing electrical contact to the integrated circuits contained on the chip corresponding thereto;

each of said n integrated circuit chips containing test circuitry thereon, said test circuitry contained on each of said n integrated circuit chips including at least first and second serially connected test shift register latches (TSRLs), each said Test Shift Register Latch (TSRL) including a Test Data Port having a test data input (TI) and a test clock input (T);

circuit means serially interconnecting at least a portion of said test circuitry contained on each of said chips, said circuit means connecting said at least first and second Test Shift Register latches (TSRLs) of each of said n integrated circuit chips into a single multi-stage shift register, said circuit means including scan input means of said single multi-stage shift register, scan output means of said single multi-stage shift register and at least A and B clock control means of said single multi-stage shift register, said scan input means, said scan output means and said at least A and B clock control means being respectively accessible via a predetermined limited number of said package contacts of said array of package contacts contained on said second planar surface of said substrate;

n additional wiring circuit means, each of said n additional wiring circuit means being connected between the test clock inputs (T) of the test Shift Register latches (TSRLs) on one of said n integrated circuit chips, and a single test clock input package contact on said second planar surface of said substrate.

4,441,076

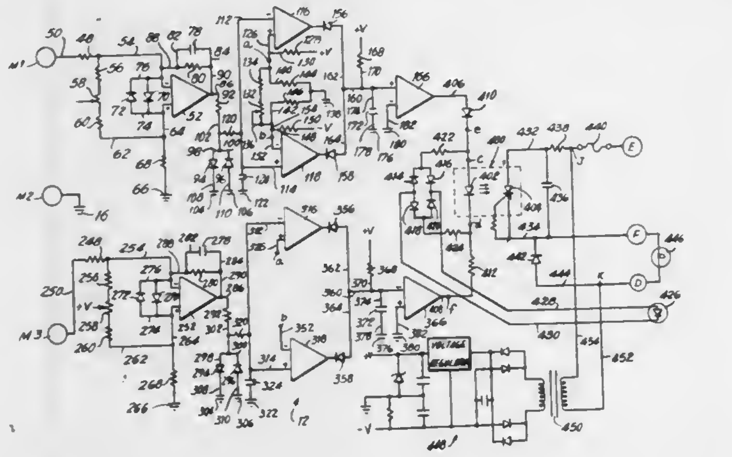
MOTION DETECTION APPARATUS FOR ELECTRIC MOTORS

Matthew C. Baum, 861 Washington Ave., Washington Township, Bergen County, N.J. 07675

Filed Oct. 14, 1980, Ser. No. 196,834

Int. Cl.³ G01R ***31/02;*** **G08B** ***21/00;*** **H02H** ***7/09***

U.S. Cl. 324—158 MG **14 Claims**



1. An apparatus for detecting and indicating the motion of an electric motor, comprising: a first channel including

electrical connection means for connecting to a power terminal of said electric motor,

overvoltage protection, input amplifier and broken wire detection means connected to said electrical connection means,

spike rejection means connected to the output of said overvoltage protection, input amplifier and broken wire detection means,

window discriminator means disposed to pass voltages falling between a selected high limit and a selected low limit, with said window discriminator means connected to the output of said spike rejection means,

output detector and time delay means connected to the output of said window discriminator means and disposed to detect output from said window discriminator means and provide an output after a preselected time delay,

output terminal means having at least one pair of output terminals with said output terminal means connected to the output of said output detector and time delay means with said output terminal means disposed to complete a circuit between said output terminals responsive to an output from said output detector and time delay means,

power supply means connected to said output terminal means and output display means connected to said output terminal means and disposed to provide an indication responsive to a lack of voltage present at said power terminals of said electric motor.

4,441,077

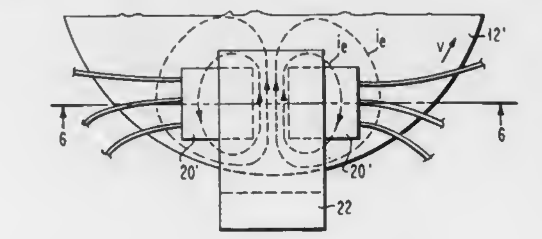
REAL TIME EDDY CURRENT RESPONSIVE HALL EFFECT DEVICE TACHOMETER

David F. Dodgen, Boca Raton, and Ludwig R. Siegl, Highland Beach, both of Fla., assignors to International Business Machines, Armonk, N.Y.

Filed Nov. 23, 1981, Ser. No. 323,778

Int. Cl.³ G01D ***3/48, 3/54***

U.S. Cl. 324—164 **2 Claims**



1. A tachometer for providing an analog electrical voltage signal whose amplitude indicates in real time the velocity of a flat, moving, nonmagnetic, electrically conductive member and whose polarity indicates the direction of movement of said member comprising in combination:

(1) a pair of permanent magnets and a C-shaped yoke of material for providing a magnetic circuit including an air gap defined by first and second opposed parallel pole faces corresponding to opposite poles of said pair of permanent magnets;

(2) means for moving said member through said air gap in a plane parallel to said faces so as to induce eddy currents in the surface of said flat member which flow generally in closed loop paths that include parallel segments disposed substantially normal to the direction of movement of said member, said eddy currents causing an eddy current flux field which at the mid-point of said air gap includes lines of induced eddy current flux which are substantially parallel to the lines of permanent magnetic flux in said air gap, said induced eddy current lines of flux disposed on opposite sides of said mid-point of said air gap being in opposite directions whereby the net value of flux at any point in said air gap varies as a function of (a) the velocity of said member; (b) the location of said point relative to said center point; and (c) the distance of said member from each of said parallel faces corresponding to said pole faces;

(3) a first pair of Hall effect sensing devices positioned between said moving member and one said pole face and disposed in spaced apart relationship relative to each other on opposite sides of said mid-point;

(4) a second pair of Hall effect sensing devices positioned between said moving member and said other pole face and disposed in correspondingly spaced apart relationship on opposite sides of said mid-point; and

(5) circuit means for (a) first, differentially combining the outputs of said Hall effect sensing device of each pair to provide potential output signals which are indicative of the velocity and direction of movement of said member, and (b) secondly, differentially combining said potential signals from said first and second pair of Hall effect devices to eliminate errors in said indication of velocity resulting from any wobble type movement of said member in said air gap in a direction parallel to said flux lines.

4,441,078

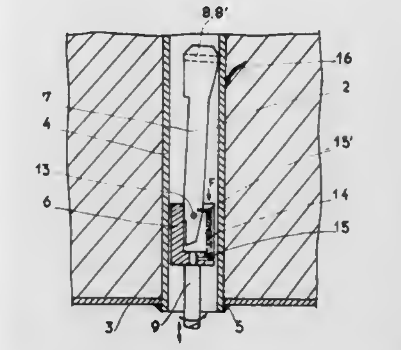
EDDY CURRENT APPARATUS INCLUDING A PROBE ARM PIVOTED FOR MOVEMENT BY CENTRIFUGAL FORCE FOR DETECTING FAULTS IN A METAL PLATE

Jean-Claude Lecomte, Buxy, France, assignor to Framatome, Courbevoie, France

Filed Aug. 26, 1980, Ser. No. 182,410

Int. Cl.³ G01N ***27/90***

U.S. Cl. 324—219 **3 Claims**



1. Apparatus for detecting, by means of eddy currents, faults (16) in a metal plate (1) having at least one bore (2), comprising

(a) a differential probe comprising a probe body (6) having two ends, and two coils (8, 8') having their axes located in planes parallel to the plane of said plate (1) and electrically connected to an apparatus for producing and processing eddy current signals;

(b) means for moving said probe in said bore (2) in translation along the axis of said bore (2) and in rotation about the latter, said means comprising a transmission shaft (9) connected to one end of said probe body inside said bore (2),

(c) said probe body (6) including an arm (7) having a free end and a pivot end, said arm (7) extending from the other end of said probe body along the axis of said bore and being pivotally articulated to said probe body at its pivot end so as to be movable about an axis parallel to the plane of said plate, said arm (7) having said two coils (8, 8') mounted at its free end, the centrifugal force produced by the rotational movement transmitted to said probe, and consequently to said arm (7), causing said free end of said arm (7) to move against the inner wall of a tube (4) inserted in said bore (2).

4,441,079

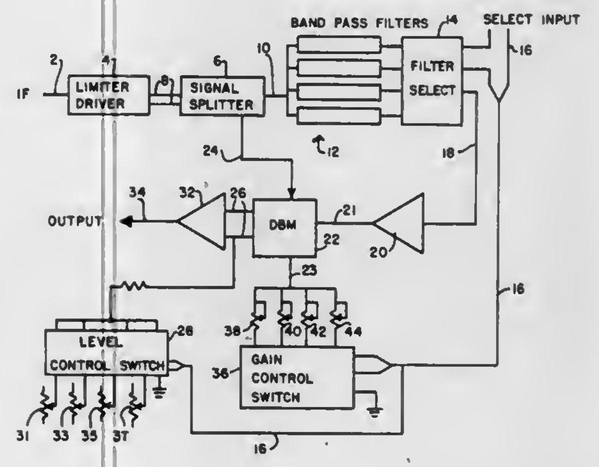
MULTIPLE BANDWIDTH FM DEMODULATOR

Donald J. Woodworth, Ocala, Fla., assignor to Microdyne Corporation, Ocala, Fla.

Filed Oct. 13, 1981, Ser. No. 311,111

Int. Cl.³ H03D ***3/06***

U.S. Cl. 329—131 **7 Claims**



1. A selectable bandwidth detector for frequency modulated signals comprising,

a signal splitter for deriving a pair of signals from an input signal,

a double-balanced mixer,

a plurality of filters each having a different bandwidth from each other filter,

each said filter having a 90° phase shift therethrough at the carrier frequency of the frequency modulated signals and having a linear phase shift-frequency characteristic,

means for applying one of said pair of signals through a selected one of said filters to said double-balanced mixer,

means for applying the other of said pair of signals to said double-balanced mixer, and

means for selecting the one of said filters to be inserted between said signal splitter and said double-balanced mixer.

4,441,080

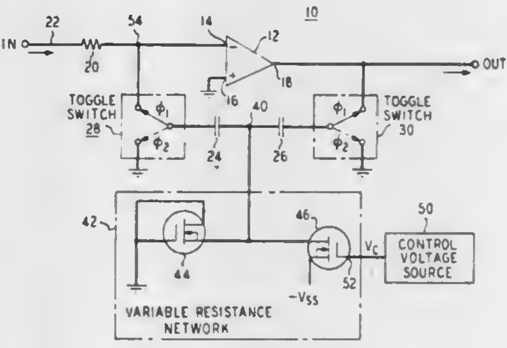
AMPLIFIER WITH CONTROLLED GAIN

Veikko R. Saari, Spring Lake Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 17, 1981, Ser. No. 331,513

Int. Cl.³ H03G ***3/20***

U.S. Cl. 330—86 **6 Claims**



1. A controlled gain amplifier of the type having a first operational amplifier with an inverting input port for receiving a signal from a signal source, a non-inverting input port, an output port, and a negative feedback network connected between one of said input ports and said output port, said feedback network changing its transconductance in response to a control voltage from a control voltage source, characterized in that said feedback network is a switched capacitor network comprising:

first and second capacitors connected in series between one of said input ports and said output port;

a first switch means responsive to a pair of non-overlapping pulse trains corresponding to first and second phase periods to connect one side of said first capacitor to said one input port of said first amplifier during said first phase period and to a reference potential during said second phase period;

a second switch means responsive to said pulse trains to connect one side of said second capacitor to said output port of said first amplifier during said first phase period and to a reference potential during said second phase period; and

variable resistance means responsive to said control voltage and providing at least one current path from a common node of said first and second capacitors to a reference potential.

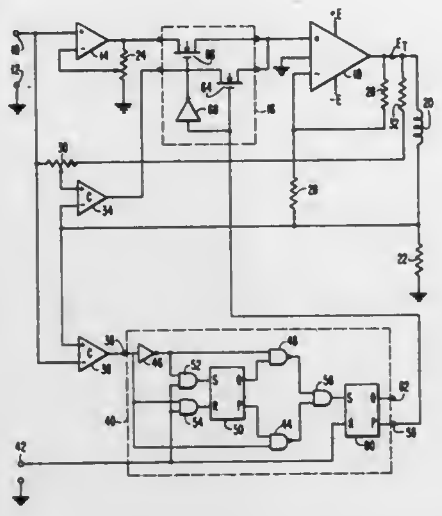
4,441,081
SWITCHING POWER DRIVING CIRCUIT ARRANGEMENT

Michael O. Jenkins, San Jose, Calif., assignor to International Business Machines, Armonk, N.Y.

Filed Dec. 22, 1981, Ser. No. 333,548

Int. Cl.^{3} H03F *1/34*

U.S. Cl. 330—110 **7 Claims**



1. A switching power driving circuit arrangement for driving a given load device in response to a driving control signal, comprising

- an amplifying circuit arrangement having an input subcircuit, having an output subcircuit, and having two energizing potential terminals,
- a source of direct energizing potential connected across said energizing potential terminals,
- a load current sensing element connected in series circuit with said load device to said output subcircuit of said amplifying circuit arrangement,
- a negative feedback circuit connected between said output and said input subcircuits,
- a switching circuit having an output terminal coupled to said input subcircuit, having one input terminal to which said driving control signal is applied, having another input terminal and having
- a control input terminal, a positive feedback circuit connected between said sensing device and said other terminal of said switching circuit,
- circuitry connected to said switching circuit control input terminal for selectively applying said driving control signal to said input subcircuit and said positive feedback circuit thereto for overdriving said input subcircuit and effecting said output subcircuit to alternate between the limits of said direct energizing potential.

4,441,082
SWITCHED CAPACITOR AUTOMATIC GAIN CONTROL LOOP

Yusuf A. Haque, San Jose, Calif., assignor to American Microsystems, Inc., Santa Clara, Calif.

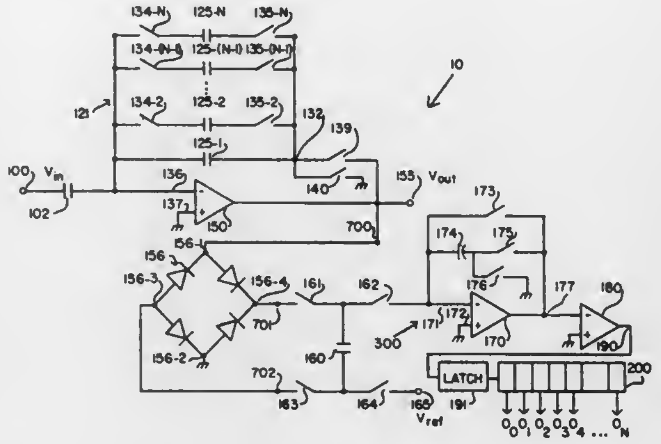
Filed Oct. 9, 1981, Ser. No. 310,160

Int. Cl.^{3} H03G *3/10*

U.S. Cl. 330—129 **13 Claims**

1. An automatic gain control circuit having an input terminal and an output terminal comprising:

- amplifier means having an inverting input lead, a noninverting input lead connected to a reference voltage, and an output lead connected to said terminal output for providing an automatic gain control circuit output;
- a first capacitor connected between said input terminal and said inverting input lead of said amplifier means;
- means for controlling the gain of said automatic gain control circuit;
- means for rectifying the output voltage of said automatic gain control circuit;
- means for alternately integrating the rectified output voltage of said automatic gain control circuit and a reference voltage;
- a digital counter operating in response to the output signal from said means for integrating;
- a plurality of N capacitors, where N is a positive integer; and
- a plurality of switch means for selectively connecting desired ones of said N capacitors in parallel between said inverting input lead and said output lead of said amplifier means;



wherein said digital counter increases its count in response to an output signal of a first polarity from said integrator, and descreases its count in response to an output signal from said means for integrating of a second polarity opposite said first polarity from said integrator stage, and wherein the plurality of switch means is controlled by the count stored in said counter, and wherein the gain of said automatic gain control circuit is controlled by the ratio of the capacitance of said first capacitor to the capacitance of said selected ones of said plurality of capacitors.

4,441,083
NOISE REDUCTION CIRCUIT

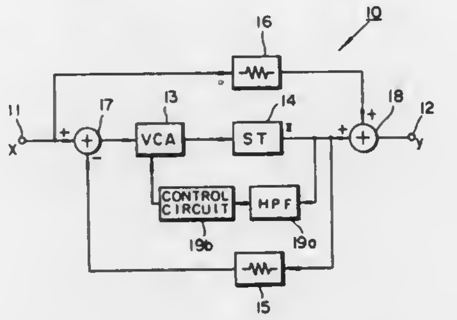
Kenzo Akagiri; Masayuki Katakura, both of Yokohama, and Motomi Ookouchi, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 8, 1981, Ser. No. 300,387

Claims priority, application Japan, Sep. 9, 1980, 55-123967

Int. Cl.^{3} H03F *1/26;* H03G *3/18*

U.S. Cl. 330—149 **16 Claims**



1. A circuit for noise reduction comprising:

- a first signal path including variable gain amplifier means with controllable gain for amplifying a signal supplied thereto, and differentiating means for differentiating at least a portion of the signal passing through said variable gain amplifier means;
- means for controlling the gain of said variable gain amplifier means in response to the level of a signal in said first signal path;
- first means connected with said first signal path for providing an upper limit to the gain imparted to a signal supplied to said circuit; and
- second means connected with said first signal path for providing a lower limit to the gain imparted to said signal supplied to said circuit.

4,441,084
NOISE REDUCTION CIRCUIT

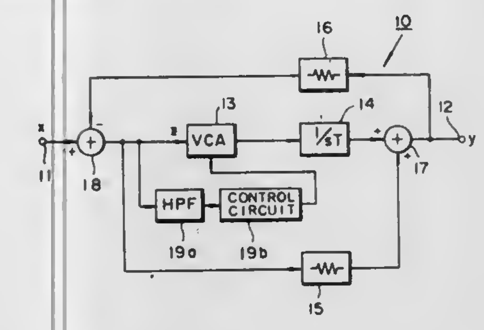
Kenzo Akagiri; Masayuki Katakura, both of Yokohama, and Motomi Ookouchi, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 8, 1981, Ser. No. 300,432

Claims priority, application Japan, Sep. 9, 1980, 55-123966

Int. Cl.^{3} H03F *1/26;* H03G *3/18*

U.S. Cl. 330—149 **16 Claims**



1. A circuit for noise reduction comprising:

- a first signal path including variable gain amplifier means with controllable gain for amplifying a signal supplied thereto, and integrating means for integrating at least a portion of the signal passing through said variable gain amplifier means;
- means for controlling the gain of said variable gain amplifier means in response to the level of a signal in said first signal path;
- first means connected with said first signal path for providing a lower limit to the gain imparted by said variable gain amplifier means to a signal supplied to said circuit; and
- second means connected with said first signal path for providing an upper limit to the gain imparted by said variable gain amplifier means to said signal supplied to said circuit.

4,441,085
SIGNAL AMPLIFYING APPARATUS

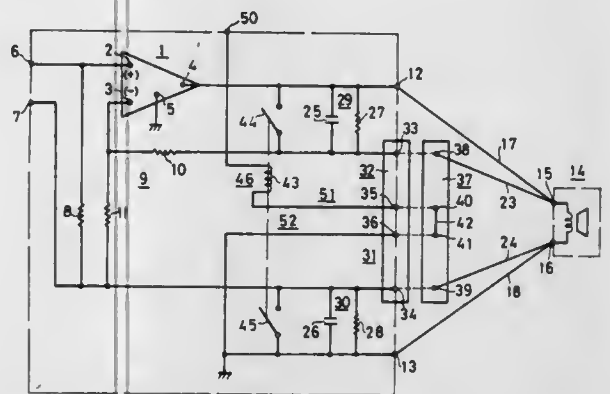
Hideto Sakamoto, Tokyo, Japan, assignor to Trio Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 18, 1981, Ser. No. 293,840

Claims priority, application Japan, Aug. 20, 1980, 55-117616[U]

Int. Cl.^{3} H03F *1/34*

U.S. Cl. 330—293 **7 Claims**



1. In a signal amplifying apparatus which is provided with an amplifier, a feedback circuit having its input and output connected with the output and input of the amplifier, a first terminal connected with the output of the amplifier for connection with a first cord connected with the input of a load, and a second terminal connected with the input of the feedback circuit for connection with a second cord connected with the input of the load, the improvement comprising:

- means for detecting whether the second cord is connected with the second terminal; and
- means for coupling the output of the amplifier with the input of the feedback circuit by the detected output from the detecting means.

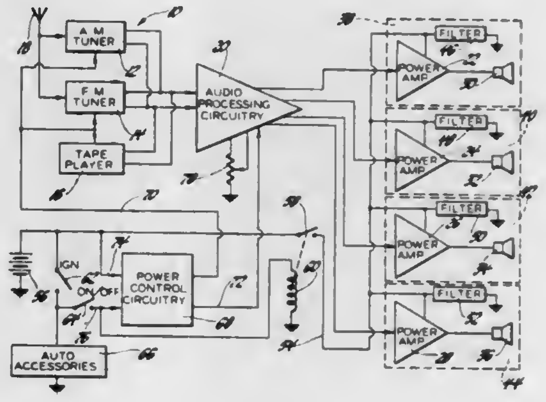
4,441,086
AUDIO SYSTEM WITH ORDERLY SHUTDOWN SEQUENCE

James P. Karlow, Noblesville, and Gary A. Hunt, Kokomo, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed May 13, 1982, Ser. No. 377,828

Int. Cl.^{3} H03F *1/26*

U.S. Cl. 330—297 **4 Claims**



1. An audio system including a source of direct current potential, a manually operable on/off switch, a source of audio signals, power amplifier means, audio processing circuit means connected between said source of audio signals and said power amplifier means, first controlled switching means for connecting said source of direct current potential to said power amplifier means in response to closure of said on/off switch, power control circuit means including second and third controlled switching means for connecting said source of direct current to said source of radio signals and said audio processing circuit means respectively in response to closure of said on/off switch, said power amplifier means including filter means which delay the shutdown of said power amplifier means for a first predetermined time interval following opening of said on/off switch, said third controlled switching means including time delay means for maintaining the connection between said source of direct current potential and said audio processing circuit means for a second predetermined time interval after the opening of said on/off switch, said second predetermined time interval being greater than said first predetermined time interval whereby said power amplifier means is deenergized prior to said audio processing circuit means to eliminate audible disturbances originating as a result of shutdown of said audio processing circuit means.

4,441,087
HIGH EFFICIENCY INVERTER & BALLAST CIRCUITS

Ole K. Nilssen, Caesar Dr. - Rte. 4, Barrington, Ill. 60010

Continuation of Ser. No. 973,741, Dec. 28, 1978, abandoned, which is a continuation-in-part of Ser. No. 890,586, Mar. 20, 1978, Pat. No. 4,184,128. This application Dec. 14, 1981, Ser. No. 330,599

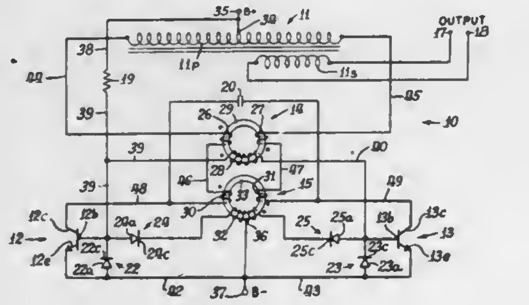
Int. Cl.^{3} H02M *7/53;* H03K *3/30*

U.S. Cl. 331—113 A **35 Claims**

26. For an inverter operable to produce a periodic AC voltage at an output from a DC voltage provided at an input, where said inverter comprises at least one semiconductor switch means with a control terminal, where a positive current provided to said control terminal tends to cause said switch means to conduct and a negative current provided to said

control terminal tends to cause said switch means to prevent conduction, where a complete period of said AC voltage is characterized by having four substantially different portions: a first portion of relatively low and substantially constant magnitude, a second portion of relatively rapidly increasing magnitude, a third portion of relatively high and substantially constant magnitude, and a fourth portion of relatively rapidly decreasing magnitude, and where said output is connected in circuit with an energy-storing inductor means, an improved drive circuit comprising:

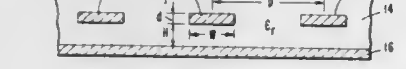
first drive means connected in circuit between the output and the control terminal and operative to provide positive feedback from the output to the control terminal, said positive feedback being operative to provide a positive current to the control terminal only during part of the first portion of said complete period, this positive current being terminated before the onset of the second portion of said complete period; and

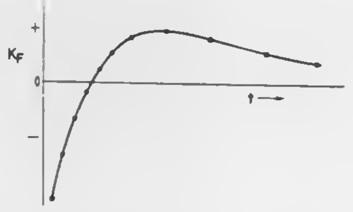


second drive means connected in circuit between the output and the control terminal and operative to provide intermittent negative feedback from the output to the control terminal, said negative feedback being operative to provide only negative current to the control terminal, this negative current being provided immediately after the positive current has been terminated and lasting at least until the onset of the second portion of said complete period.

4,441,088
STRIPLINE CABLE WITH REDUCED CROSSTALK

Carl J. Anderson, Peekskill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 31, 1981, Ser. No. 336,205
Int. Cl.³ H01P ***3/08***
U.S. Cl. 333—1 **5 Claims**





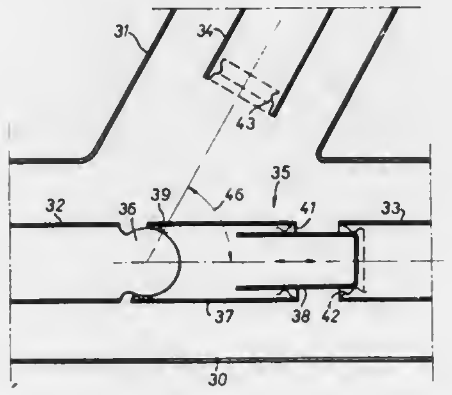
1. A transmission line for carrying high speed signals with substantially reduced forward wave crosstalk, consisting essentially of a ground plane layer comprised of a plane of electrically conductive material:

a layer of dielectric material, having a single dielectric constant ϵ_r, located on said ground plane;

a plurality of signal carrying conductors located in said layer of dielectric and separated from said ground plane layer by a thickness of dielectric underlayer H, there being a thickness of said dielectric material above said plurality of conductors forming a dielectric overlayer of a thickness t, the thickness H being chosen to yield a transmission line having a desired impedance, and said thickness t of dielectric overlayer being chosen for the value of H such that the forward wave crosstalk components (mutual capacitance and mutla inductance) between adjacent signal carrying conductors are substantially equal and opposite.

4,441,089
CHANGE-OVER SWITCH FOR COAXIAL CONDUCTORS

Gianni Olgiati, Nussbaumen, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland
Filed Jul. 2, 1981, Ser. No. 279,755
Claims priority, application Switzerland, Jul. 15, 1980, 5402/80
Int. Cl.³ H01P ***1/10***
U.S. Cl. 333—105 **5 Claims**



1. A change-over switch for high-power coaxial conductors, comprising:

a branched outer conductor; a plurality of inner conductors which end in the region of the branch; a connecting element, one end of said connecting element being articulated to one said plurality of inner conductors and the other end of said connecting element pivoting between the ends of others of said plurality of inner conductors; a first electrical contact between the one of said plurality of inner conductors and the articulated end of said connecting element, said first electrical contact having the form of a tulip-shaped contact; second electrical contacts associated with said others of said plurality of inner conductors and the pivotable end of said connecting element, said second electrical contacts having the form of tulip-shaped contacts, and wherein said connecting element for opening and closing said second electrical contacts further comprises an extendable telescopic tube.

4,441,090
CROSSTALK FILTERING ARRANGEMENT WITH VARIABLE FREQUENCY FILTERING TO REMOVE EFFECTS OF FM CARRIER

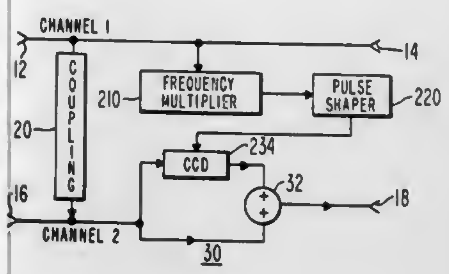
Henry R. Warren, Belle Mead, N.J., assignor to RCA Corporation, New York, N.Y.
Division of Ser. No. 105,111, Dec. 19, 1979, Pat. No. 4,335,394. This application Feb. 4, 1982, Ser. No. 345,914
Int. Cl.³ H03H ***21/00, 15/02, 17/06***
U.S. Cl. 333—165 **1 Claim**

1. A tracking filter for tracking a signal, comprising:

signal combining means including first and second input terminals and a signal output terminal;

controllable delay means including a signal input terminal coupled in parallel with said first input terminal of said signal combining means, a delayed signal terminal coupled to said second input terminal of said combining means and a clock input terminal for controlling the delay between

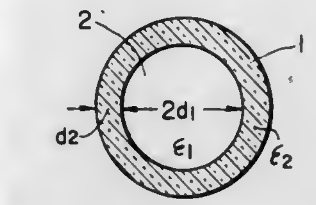
said signal input terminal and said delayed signal terminal of said controllable delay means so as to form a tracking filter the output terminal of which is said output terminal of said combining means; and



clock signal supply means continuously responsive to the instantaneous frequency of the signal to be tracked for supplying clock signals to said clock input terminal which continuously maintains the delay of said controllable delay means to be an integral multiple of one-half a cycle of the frequency of said signal to be tracked.

4,441,091
LOW LOSS LEAKAGE TRANSMISSION LINE

Shigeo Nishida; Mitsunobu Miyagi, both of Sendai, and Koichi Mikoshiba, Hitachi, all of Japan, assignors to Hitachi Cable Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 170,232, Jul. 18, 1980, abandoned. This application Jul. 22, 1982, Ser. No. 400,818
Claims priority, application Japan, Jul. 18, 1979, 54-91822
Int. Cl.³ H01P ***3/12***
U.S. Cl. 333—242 **5 Claims**



1. A low loss leakage transmission line comprising: a cylindrical dielectric tube having a wall thickness d_2 defined by:

$$d_2 \cong \sqrt{\frac{\epsilon_1}{\epsilon_2 - \epsilon_1}} \cdot \frac{n\lambda_0}{4},$$

where:

ϵ_1 is the dielectric constant of the space internal to the tube,

ϵ_2 is the dielectric constant of the tube,

λ_0 is the wavelength of the supported electromagnetic waves in free space, and

n is a positive odd integer.

4,441,092
VARIABLE INDUCTANCE WITH VARIABLE PICKOFF AND VARIABLE-FLUX MEDIUM PERMEABILITY

Jack C. Thornton, Satellite Beach, Fla., and Randy G. Russell, Arlington Hts., Ill., assignors to Rockwell International Corporation, El Segundo, Calif.
Filed May 3, 1982, Ser. No. 373,946
Int. Cl.³ H01F ***21/06***
U.S. Cl. 336—130 **11 Claims**

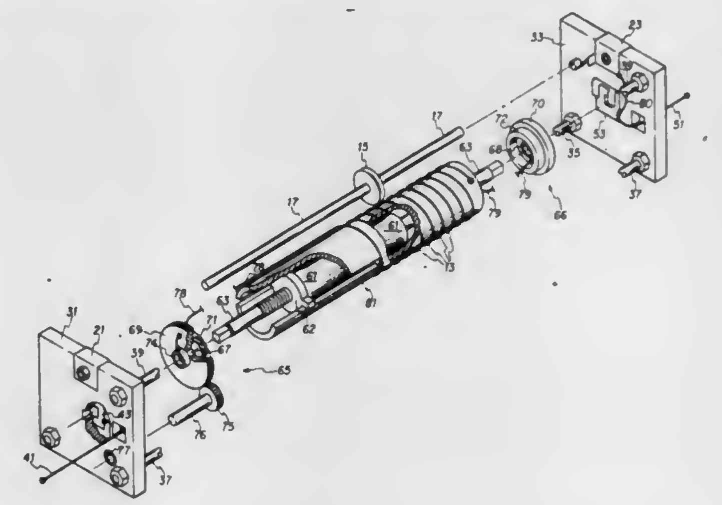
1. A variable inductor comprising:

a coil comprising multiple turns of electrical conductor, said coil having first and second coil ends;

a moveable contactor comprising conductive means for electrically contacting said coil and suitable for being moved to one or more selectable locations on the coil so as to provide electrical contact at the selected location on the coil, said moveable contactor establishing first and second coil portions, the first coil portion comprising the portion of the coil between the first coil end and said moveable contactor, and said second coil portion comprising the portion of the coil between said moveable contactor and said second coil end;

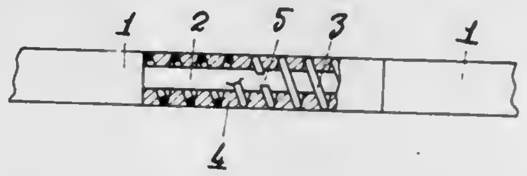
magnetic material having relative permeability greater than the relative permeability of air, said material being located proximate said coil and being moveable;

means for causing said magnetic material to move simultaneously with location selection movement of said moveable contactor such that for each selected location of the contactor there is automatically effected a coordinated location of the magnetic material, the locations of contactor and material being coordinated so as to cause the first coil portion to have a substantially greater inductance than it would have were the magnetic material not proximate the coil, while permitting the second coil portion to have an inductance not substantially different from what it would have were the magnetic material not proximate the coil.



4,441,093
THERMAL FUSE AND THE METHOD OF MANUFACTURING THE SAME

Tasuku Okazaki, 535-81, Nishi 3-chome, Nakayama-cho, Nara City, Nara Prefecture, Japan
Filed Apr. 8, 1982, Ser. No. 366,674
Claims priority, application Japan, Apr. 28, 1981, 56-64420; Feb. 9, 1982, 57-20567
Int. Cl.³ H01H ***37/76***
U.S. Cl. 337—404 **8 Claims**



1. A thermal fuse comprising:

two wire-shaped conductors formed of electrically conductive metal material, said two conductors being axially aligned with respective confronting end surfaces being spaced and defining therebetween a space;

a coiled spring having opposite ends fixed to respective confronting ends of said two conductors with said spring being under tension within said space;

a rod member of heat resistant and electrically insulating material positioned within said coiled spring and extending between said end surfaces of said two conductors;

said spring and said rod member being embedded in a solid fusible metal alloy material which has the property of melting at a predetermined temperature, said solid metal alloy material extending between said two conductors and thereby forming a current path therebetween; and

said spring being cut, thereby defining two spring portions held in a tensioned condition by said solid fusible metal alloy material, whereby upon reaching said predetermined temperature said metal alloy material melts, thereby releasing said spring portions from said tensioned condition, such that said spring portions contract and instantaneously separate said metal alloy material and interrupt said current path.

4,441,094

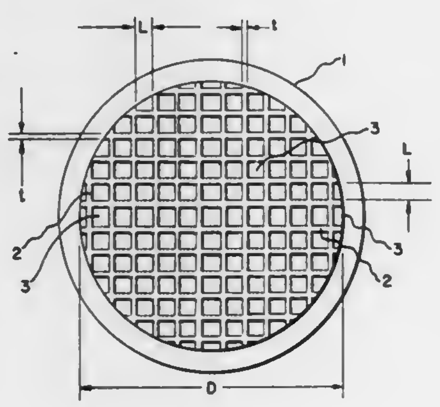
SOLDERABLE LARGELY BASE METAL ELECTRODES FOR METAL OXIDE VARISTORS

Lionel M. Levinson, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 2, 1981, Ser. No. 239,246

Int. Cl.^{3} H01C *7/12*

U.S. Cl. 338—21 **5 Claims**



1. A metal oxide varistor having electrodes attached to at least one major surface thereof, comprising:

at least one base metal electrode bonded to said metal oxide varistor and forming therewith an electrically conductive contact; and

a distributed noble metal pattern disposed on said base metal electrode and forming an electrically conductive contact with said base metal electrode, said noble metal pattern covering a selected fraction of said base metal electrode whereby is formed a multi-layered low resistivity contact.

4,441,095

CODE TRANSLATOR

Walter R. Widmer, Niederhasli, and Marcel Baschong, Staufen, both of Switzerland, assignors to Gretag Aktiengesellschaft, Regensdorf, Switzerland

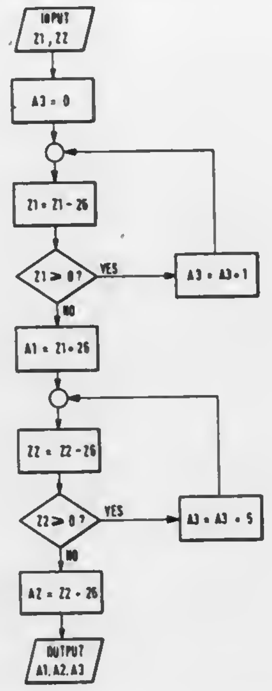
Filed Dec. 8, 1978, Ser. No. 967,580

Claims priority, application Switzerland, Dec. 16, 1977, 15514/77

Int. Cl.^{3} G06F *3/00*

U.S. Cl. 340—347 DD **14 Claims**

1. A crypto-converter for unambiguously converting characters of a first 128-character alphabet into characters of a second 26-character alphabet and vice-versa, comprising a conversion stage and a reconversion stage; the conversion stage including input means for a pair of characters of said first alphabet, means converting said pair of characters into three characters of said second alphabet and output means for said three characters; and the reconversion stage including input means for a triple of characters of said second alphabet, means reconverting said triple of characters into a pair of characters of said first alphabet and output means for said pair of characters.



4,441,096

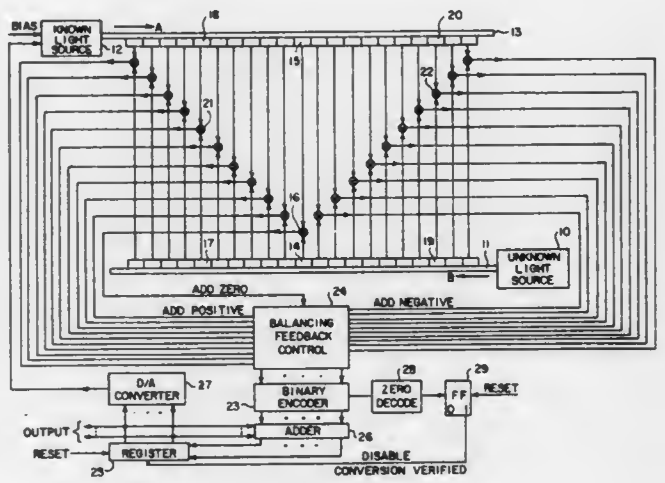
OPTICAL ANALOG-TO-DIGITAL CONVERTER

Vincent L. Evanchuk, Sherman Oaks, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Continuation of Ser. No. 161,934, Jun. 23, 1980, abandoned. This application Aug. 13, 1982, Ser. No. 407,830

Int. Cl.^{3} H03K *13/02*

U.S. Cl. 340—347 AD **8 Claims**



1. A method for analog-to-digital conversion of an unknown optical signal into an electrical signal in digital form by comparison with a known optical signal comprising the steps of transmitting the known and unknown optical signals separately through two displaced and parallel light paths of substantially equal attenuation per unit length, independently detecting the intensity of light along said two light attenuating paths to determine the points along said two light attenuating paths at which the light intensity in the path for said unknown optical signal is substantially equal to the known signal along said path for said known signal, and producing an output signal in digital form representative of the position of the point where said unknown signal is equal to said known light signal.

4,441,097

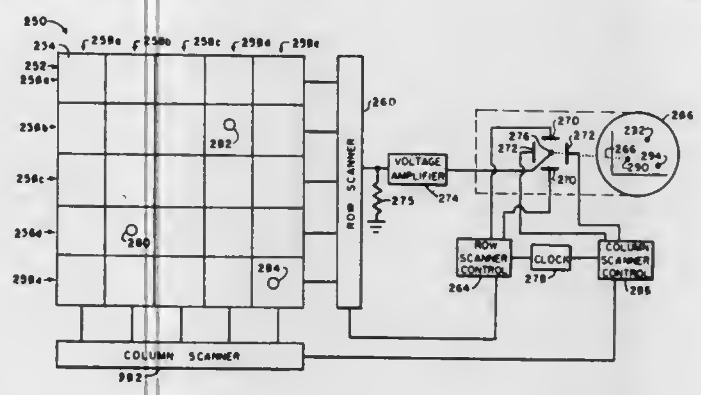
DEVICE FOR CONTROLLING A CIRCUIT

Gary B. Anderson, Tahoe City, Calif., assignor to Antroy Enterprises, Inc., San Francisco, Calif.

Division of Ser. No. 7,411, Jan. 29, 1979. This application Nov. 20, 1981, Ser. No. 323,267

Int. Cl.^{3} G08C *9/00*

U.S. Cl. 340—365 A **7 Claims**



1. A pressure detecting device comprising

a thin resiliently deformable sheet of semiconductor material having an internal electrical conductivity generally invariable according to applied pressure, the surface of said semiconductor having microscopic ridges and depressions therein,

a first electrode connected to said circuit comprising a flexible sheet of electrically conductive metal foil, selected from the group consisting of copper, steel and aluminum and alloys thereof, in mechanical contact with one side of said resiliently deformable semiconductor sheet material and electrically connected to said circuit,

a second electrode connected to said circuit comprising a flexible sheet of electrically conductive metal foil, selected from the group consisting of copper, steel, and aluminum and alloys thereof, in mechanical contact with the other side of said resiliently deformable semiconductor sheet material and electrically connected to said circuit, and

said circuit being responsive to deformation of said microscopic ridges and depressions in the presence of applied pressure on said first electrode, resiliently deformable semiconductor sheet and second electrode combination for providing an output signal that is a function of applied pressure.

4,441,098

MULTIPOSITION SWITCH WITH MINIMUM INTERCONNECTIONS

Jaime A. Borras, Hialeah, and Ruben J. Gonzalez, Miami, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 6, 1981, Ser. No. 251,640

Int. Cl.^{3} G08C *9/08*

U.S. Cl. 340—365 R **7 Claims**

5. An interface system for providing a minimum number of interconnections between a circuit and a multiposition switch, said switch having a selector terminal and a plurality of switch positions, comprising:

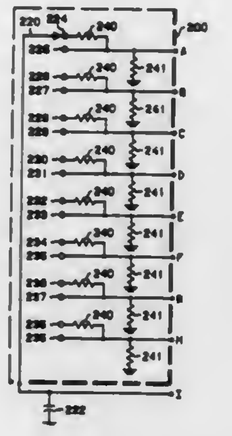
signal source means coupled to said selector terminal for supplying an electrical signal thereto;

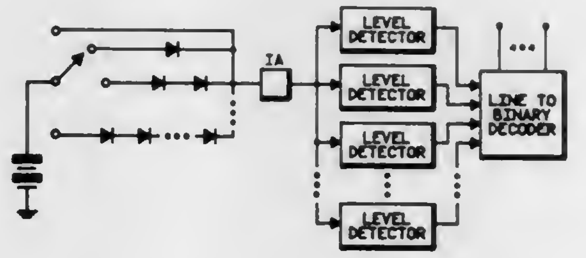
one interconnecting line coupled to said circuit;

a plurality of unique electrical circuits each having a first and a second circuit node, each of said first circuit nodes coupled to an unique one of said switch positions and each of said second circuit nodes coupled to said interconnecting line, each of said electrical circuits including an unique number of substantially identical electrical components arranged to provide a unique signal level at said interconnecting line for each of said switch positions; and

signal level detection means, coupled to said interconnecting line, for identifying which of said unique signal levels is present on said interconnecting line;

whereby the electrical signal applied by said signal source means is monitored by said signal level detection means to determine which of said plurality of electrical circuits is connected through the one interconnecting line and thereby determine which position of said multiposition switch has been selected.





4,441,099

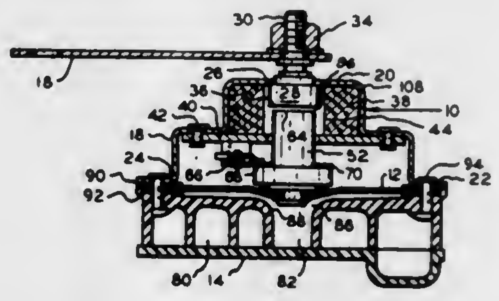
DIAPHRAGM HORN

James A. Neese, Flora, Ill., assignor to Sparton Corporation, Jackson, Mich.

Division of Ser. No. 236,662, Feb. 23, 1981, Pat. No. 4,361,952. This application Sep. 7, 1982, Ser. No. 414,651

Int. Cl.^{3} G08B *3/10*

U.S. Cl. 340—388 **5 Claims**



1. An electric horn comprising, in combination, a closed housing having a projector sealingly mounted thereon, a diaphragm mounted on said housing intermediate said housing and projector, said projector having a passage communicating with said diaphragm and the atmosphere, motor means within said housing adapted to vibrate said diaphragm, and vent means extending through said diaphragm venting said housing to the atmosphere through said projector passage.

4,441,100

ELECTRICAL CIRCUITS

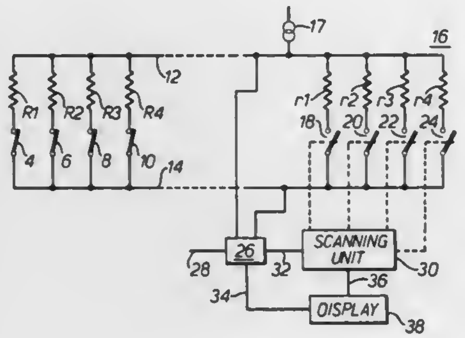
John L. Galloway, Edinburgh, Scotland, assignor to Racal Security Limited, Newbridge, Scotland

Filed Jan. 6, 1982, Ser. No. 337,433

Claims priority, application United Kingdom, Jan. 6, 1981, 8100217

Int. Cl.^{3} G08B *26/00*

U.S. Cl. 340—518 **18 Claims**



1. A circuit arrangement responsive to the operation of one of a plurality of normally inoperated switching elements which each have an inoperated and operated state and for identifying the operated switching element, comprising

a plurality of first impedances,

means connecting each of the switching elements in combination with a respective one of the first impedances,

means connecting the combinations in parallel with each other to form a first circuit bank,

the first impedances having predetermined and respectively different impedance values so that operation of any one of the switching elements changes the total impedance of the first circuit bank by a respective and predetermined amount,

a plurality of testing elements,

a plurality of normally inoperated test switch means each having an inoperated and an operated state,

means connecting each testing element in combination with a respective one of the first switch means, these combinations being connected in parallel with each other to form a second circuit bank,

monitoring means connected to compare the first and second circuit banks whereby to detect the change in impedance of the first circuit bank from a datum value and resulting from operation of one of the switching elements and responsive thereto to operate the test switch means in a predetermined sequence until the impedance of the first circuit bank is returned to the datum value,

the said testing elements being of such nature and having such respective electrical parameters that, when the impedance across the first circuit bank is returned to the said datum value, the identity of the operated one of the switching elements within the plurality of switching elements corresponds to the identity of the operated test switch means within the plurality of test switch means.

4,441,101

GRAIN SENSOR

James D. J. Robar, Saskatoon, Canada, assignor to SED Systems Inc., Saskatoon, Canada

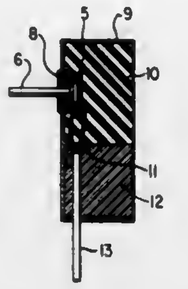
Filed Oct. 22, 1981, Ser. No. 313,565

Claims priority, application Canada, Nov. 7, 1980, 346228

Int. Cl.^{3} G01F *1/05*

U.S. Cl. 340—606 **16 Claims**

1. A grain sensor comprising a thin piezoelectric crystal having a pair of opposite faces, a pair of output wires connected to said faces, a pin fixed orthogonally to a central region of one of the faces, a housing including a front wall having a hole therethrough, a resilient grommet held in the hole in said wall, the pin passing through said grommet in peripheral and resilient contact therewith, said crystal being disposed within the housing, flexible adhesive material disposed between said one face of the crystal and the grommet, and closed cell resilient material disposed against the other face of the crystal within the housing, said closed cell resilient material acting as a high pass mechanical filter.



4,441,102

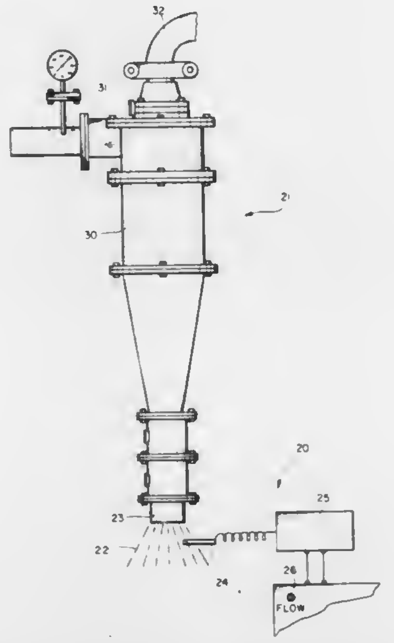
FLOW SENSING APPARATUS

Charles E. Webb, Canada, Ky., assignor to Basic American Industries, Indianapolis, Ind.

Filed Jan. 2, 1981, Ser. No. 222,121

Int. Cl.^{3} G08B *21/00*

U.S. Cl. 340—673 **9 Claims**



1. A flow sensing apparatus for providing an indication of the presence of an irregularly flowing stream from an outlet, said flow sensing apparatus comprising:

an electrical contact probe member disposed in said stream;

a sensing circuit cooperatively arranged with said probe member and adapted to rapidly provide a sequence of two different signals, a first signal being generated by said sensing circuit when the stream makes contact with said probe member, and a second signal being generated by said sensing circuit when said stream does not make contact with said probe member; and

a display light cooperatively arranged with said sensing circuit for indicating the presence of said irregularly flowing stream, said display light switching on in response to one of said first or second signals, and said display light switching off in response to the other of said signals so as to produce a flickering light indicating the dynamic conditions of said irregularly flowing stream.

4,441,103

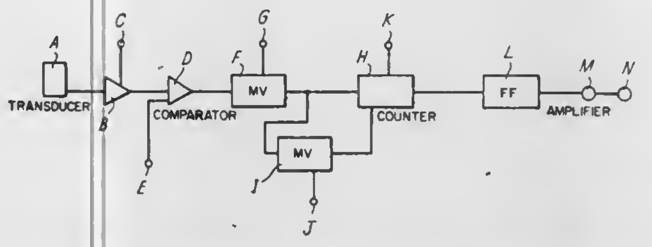
UNUSUAL VIBRATION TRANSDUCER APPARATUS IN MACHINE TOOLS

Hirokuni Urabe, Fukuyama, Japan, assignor to Shigiya-Machinery Works Ltd., Japan

Filed May 26, 1981, Ser. No. 266,763

Int. Cl.^{3} G08B *21/00*

U.S. Cl. 340—680 **4 Claims**



1. A detection apparatus for gap elimination of a grinding machine tool having a vibration transducer which comprises:

(a) a vibration sensor mounted on said grinding machine,

(b) an amplifier to amplify the output signal from said vibration sensor,

(c) a comparator to compare the output signals from said amplifier with a preset value to provide high-and-low output values,

(d) a first monostable multivibrator set by said high-and-low output signal and reset in a certain defined time,

(e) a second monostable multivibrator set by the output from said first monostable multivibrator and reset in a certain defined time to output a reset signal, and

(f) a preset counter to count the output of said first monostable multivibrator to output pulses when reaching the predetermined preset count and set by the reset signal from said second monostable multivibrator, whereby the rapid infeed rate of a tool is changed to optimum feed when a pulse is generated from said preset counter by vibrations during tool operation.

4,441,104

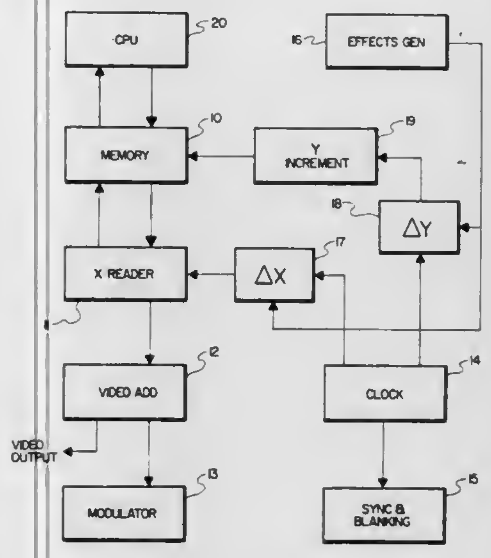
GRAPHIC EFFECTS GENERATOR

Harold T. Finney, II, Temple City, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Dec. 31, 1981, Ser. No. 336,210

Int. Cl.^{3} G09G *1/00*

U.S. Cl. 340—724 **4 Claims**



1. A graphic effects generator for use in a computer controlled raster scan display system comprising:

clock means providing raster scan reference signals;

display means coupled to said clock means and including an image forming surface and means for raster scan of said image forming surface in two directions responsive to said clock means;

a memory organized in a plurality of elements each corresponding to regions of said image forming surface and having therein stored information defining an image to be displayed;

reading means for reading said stored information from said memory and converting said stored information to a displayable image signal corresponding to said image;

timing means including start number generating means producing a start number for timing the operation of said reading means with respect to said display means to position said image upon said image forming surface and including scroll means coupled to said clock means introducing a delay of raster scan reference which varies as a function of said start number; and

displacement means operative upon said scroll means for abruptly altering the operation of said timing means by applying randomly varying start numbers to said scroll means to cause erratic shifts of said image with respect to said image forming surface.

4,441,105

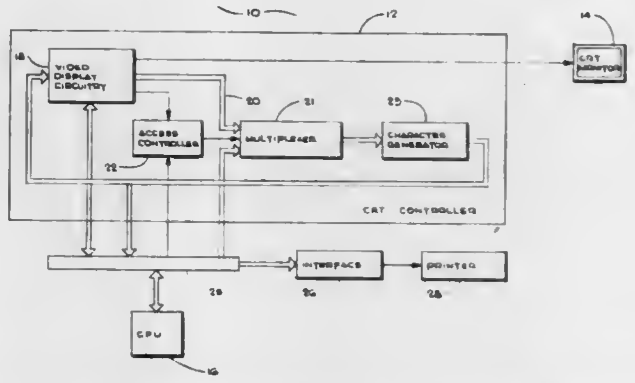
DISPLAY SYSTEM AND METHOD

James G. Van Vliet, La Habra, and Frank M. Aralis, Fountain Valley, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Dec. 28, 1981, Ser. No. 335,010

Int. Cl.^{3} G09G *1/24*

U.S. Cl. 340—750 **10 Claims**



1. A video display system adapted to provide control signals to display means and printer means wherein the display means is for providing visual representations of a plurality of picture elements arranged in a matrix and the printer means is for printing a plurality of picture elements arranged in a matrix, and where charcters to be displayed are formed by a cell of picture elements, the system comprising:

character generator means responsive to coded signals for providing a plurality of output bits corresponding to a predetermined portion of the cell of picture elements;

selector means for selecting between first and second coded signals to provide one of the first or second coded signals to the character generator means;

video controller means for generating the first coded signals and for responding to the character generator means output bits when the first coded signals are applied to the character generator means to generate the control signal for the display means including the output bits;

printer controller means for generating the second coded signals and for responding to the character generator means output bits when the second coded signals are applied to the character generator means to generate the control signal for the printer means, the control signal including the output bits; and

timing means for controlling the selector means.

4,441,106

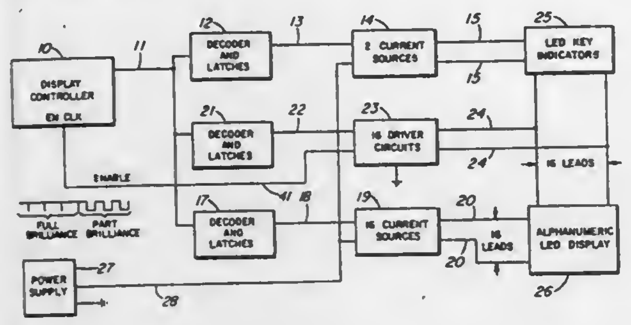
ELECTRICAL DISPLAY APPARATUS WITH REDUCED PEAK POWER CONSUMPTION

Prentiss W. Jackson, Livermore, Calif., assignor to Northern Telecom Limited, Montreal, Canada

Filed Jun. 4, 1982, Ser. No. 384,930

Int. Cl.^{3} G09G *3/14*

U.S. Cl. 340—811 6 Claims



6. A method of operating a display apparatus in which illuminating current pulses of a predetermined duration are periodically directed to selected ones of light emitting devices (LEDs), the method being characterized by the steps of :

(a) determining an operating condition wherein an average operating current requirement for the selected ones of the LEDs would normally exceed a predetermined limit; and

(b) reducing said predetermined duration of the current pulses to a lesser duration, to prevent the average operating current requirement from exceeding the predetermined limit.

4,441,107

MEASURING ARRANGEMENT HAVING A PLURALITY OF MEASURING POINTS CONNECTED TO ONE ANOTHER BY MEANS OF A CABLE

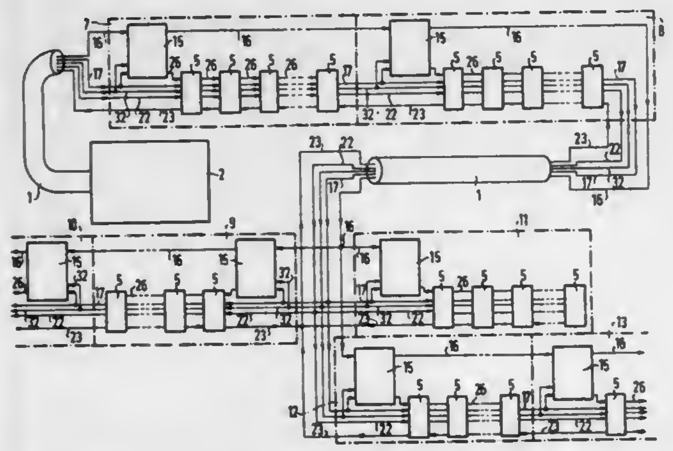
Hoiko Chaborski, Munich, and Walter Mehnert, Ottobrunn, both of Fed. Rep. of Germany, assignors to MITEC Moderne Industrietechnik GmbH, Ottobrunn, Fed. Rep. of Germany

Filed Jun. 4, 1981, Ser. No. 270,391

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1980, 3025837

Int. Cl.^{3} H04Q *5/00*

U.S. Cl. 340—870.16 30 Claims



1. In an arrangement for measuring variable ambient physical parameters having a plurality of measuring stations connected by means of a multiwire cable to one another and to a remote control and measuring centre, each of said measuring stations comprising at least one sensor (**20**) which changes its electric resistance dependent on the physical ambient parameter, at least one switch arrangement (**21**) which in its closed state connects the sensor via a first wire (**22**) of the cable to a common energy source from and via a second wire (**23**) back to the control and measuring centre (**2**), and a control circuit (**25, 45**) which closes the switch arrangement (**21**) for a short period for each measuring operation and then opens it, said stations being arranged along said cable in a plurality of sections (**7-13**), each section being provided with a selectable circuit (**15**) independently activated over a third wire (**16**) by the control and measuring centre (**2**), said control circuits (**25**) of each of said measuring stations within each cable section being triggered by said control and measuring centre sequentially one after another for closing the corresponding switch means (**21**) only after activation of the corresponding selectable circuit (**15**), by means of a clock signal commonly transferred by a fourth wire (**17**) to all measuring stations from the control and measuring centre (**2**).

4,441,108

OMNIDIRECTIONAL MULTIPLE-BAND ANTENNA

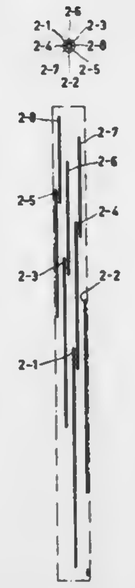
Jan L. Ten Pas, The Hague, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 21,863, Mar. 19, 1979, abandoned. This application Aug. 25, 1980, Ser. No. 180,711

Claims priority, application Netherlands, Mar. 22, 1978, 7803099

Int. Cl.^{3} H01Q *5/00, 21/06*

U.S. Cl. 343—857 8 Claims



1. An omnidirectional multiple-band antenna for use with a plurality of simultaneously operating transceivers, said multiple-band antenna comprising

a central mast conductor,

a plurality of elongated stub-elements spaced from said mast and extending in a direction parallel to the longitudinal axis of said mast, said stub-elements being arranged about the perimeter and distributed along the length of said mast conductor, each of said stub-elements being a quarter-wavelength long at a different frequency in an associated frequency band and having one end which is electrically connected to said mast conductor, and

means for connecting each stub-element to a transmission line at a point along said stub-element near said one end so that each of said stub-elements forms, with a portion of said mast conductor opposite thereto, a parallel resonant circuit that electromagnetically excites a half-wave portion of the mast above the opposite portion to radiate as a half-wave omnidirectional antenna for the respective frequency band.

4,441,109

PEN TYPE RECORDING DEVICE

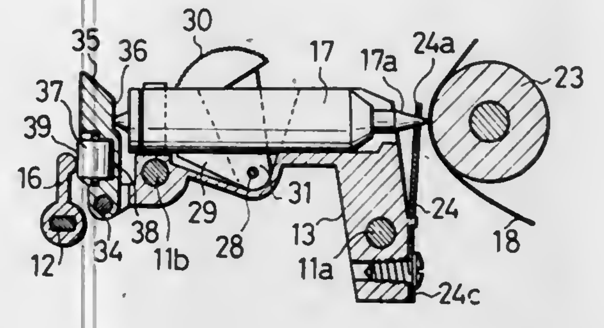
Kyuichi Fujisawa, Tonan, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Feb. 11, 1982, Ser. No. 348,145

Claims priority, application Japan, Feb. 17, 1981, 56-20090[U]

Int. Cl.^{3} G01D *15/16;* **B41J** *29/26*

U.S. Cl. 346—139 R 15 Claims



1. A pen type recording device for performing recording by relative movements of pen means and recording paper in the

state where the tip end of the pen means is brought into contact with the recording paper, comprising a pen holding member for holding the pen means in such a manner that the pen means can project toward the recording paper, and a rotary lift member rotatably supported on said pen holding member to lift up the rear side of the pen means held on said pen holding member by the rotation thereof.

4,441,110

PRINTING HEAD PROTECTING DEVICE IN INK JET PRINTER

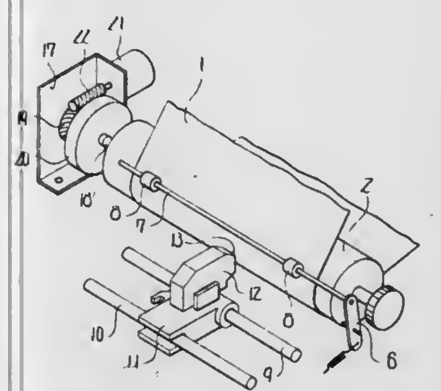
Siro Hatakeyama, Tokyo; Harutaro Oba, and Yoshitaka Ukai, both of Shizuoka, all of Japan, assignors to Tokyo Electric Co., Ltd. and Konishiroku Photo Industry Co., Ltd., both of Tokyo, Japan

Filed May 28, 1982, Ser. No. 383,274

Claims priority, application Japan, Jun. 4, 1981, 56-86136; Jun. 4, 1981, 56-86137; Jun. 4, 1981, 56-86138

Int. Cl.^{3} G01D *15/18*

U.S. Cl. 346—140 R 9 Claims



1. A printing head protecting device in an ink jet printer having a platen for guiding a printing paper and a reciprocable carriage which carries thereon a printing head along the platen, said printing head protecting device comprising an ink receiving member for cleaning positioned so as to project a little more than the surface of said platen, a protective member positioned at least on said ink receiving member side of said printing head and projecting toward said platen, and a parting member for moving said protective member in a direction away from said platen before said printing head is opposed to said ink receiving member through its movement along said platen.

4,441,111

METHOD AND APPARATUS FOR APPLYING SIGNAL VOLTAGES TO ELECTROSTATIC RECORDING MULTI-STYLUS ELECTRODE ASSEMBLY

Toshihiko Toyoshima, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Feb. 4, 1982, Ser. No. 345,901

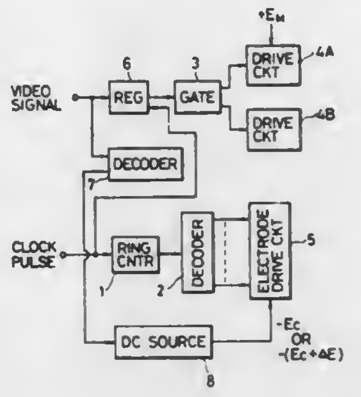
Claims priority, application Japan, Apr. 14, 1981, 56-55061

Int. Cl.^{3} G01D *15/06*

U.S. Cl. 346—154 6 Claims

4. An apparatus for applying signal voltages to an electrostatic recording multi-stylus electrode device of a type having a multi-stylus electrode assembly of a same-plane control type or a back-plane control type composed of main electrodes an control electrodes, circuit means for driving said main electrodes, and circuit means for driving said control electrodes with a voltage provided by a DC source, the improvement comprising:

decoding means receiving an input video signal, said decoder means producing an output signal indicative of the presence or absence of a discontinuous "black" bit signal in said video signal; and



a DC source for outputting a normal voltage applied to said control electrodes in response to an output signal from said decoder being in a logic state indicative of continuous "black" signals or the absence of "black" signals in said video signal and a control voltage higher than said normal control voltage when said output signal from said decoder means indicates the presence of a continuous "black" signal in said video signal.

4,441,112

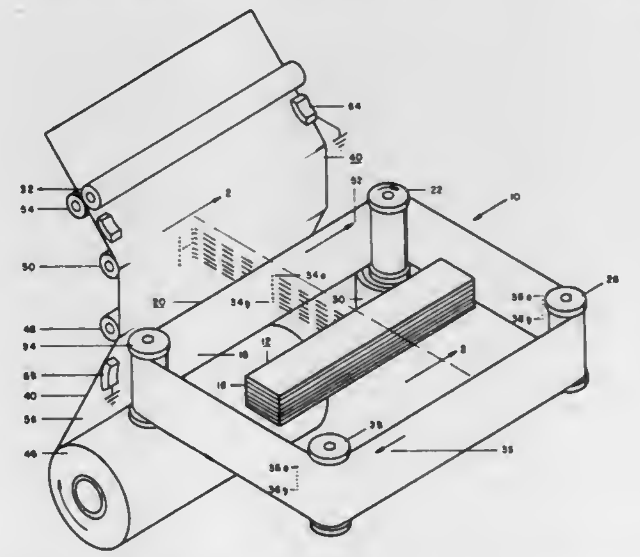
NON-IMPACT DOT MATRIX PRINTER

Michael I. Keller, 1935 Hawthorne, Alexandria, Va. 22311

Filed Mar. 5, 1982, Ser. No. 355,026

Int. Cl.^{3} G01D *15/08*

U.S. Cl. 346—163 5 Claims



1. A non-impact dot matrix printer, for recording complete alpha-numeric characters sequentially one at a time on a recording medium having an electrical conductive erosive surface, comprising

a laminar stack of a plurality of electrical conductors having edges that define a planar surface, and each conductor being separated from the other by an electrical insulator,

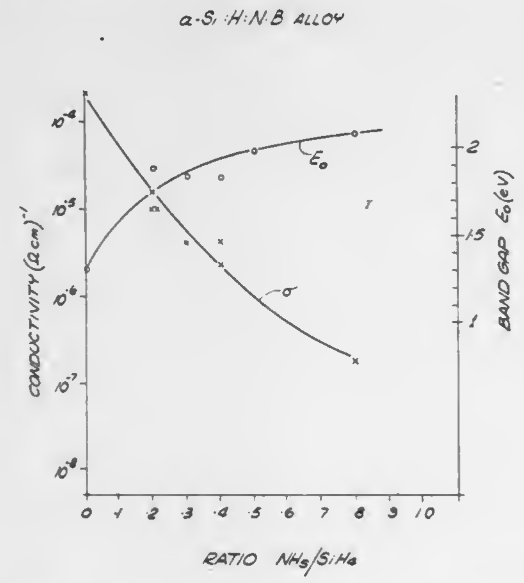
a dielectric endless belt having opposite surfaces and formed with a plurality of similar holes disposed transversely and linearly between the edges of said belt,

means to rotate said belt with one of its surfaces directly adjacent but spaced from said planar surface of said electrodes and each of said holes aligned with a separate edge of said conductors, respectively, means to dispose said conductive surface of said recording medium directly adjacent but spaced from the other of said surfaces of said belt, and

means including said conductive surface as an electrode to provide electric spark discharges between selected conductors of said stack and said conductive surface of said recording medium, through selected holes of said belt, in accordance with signals applied to said conductors through control circuitry whereby to erode said conductive surface selectively and to provide said complete alpha-numeric characters sequentially.

4,441,113
P-TYPE SEMICONDUCTOR MATERIAL HAVING A WIDE BAND GAP

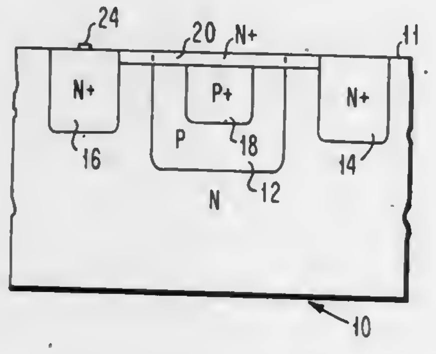
Arun Madan, Birmingham, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.
Filed Feb. 13, 1981, Ser. No. 234,287
Int. Cl.^{3} H01L *45/00, 27/14, 27/12*
U.S. Cl. 357—2 **19 Claims**



4. An improved photoresponsive device including an amorphous p-type semiconductor alloy having a composition comprising:
- a. silicon;
- b. a p-type dopant;
- c. at least one density of states reducing element, said element being hydrogen; and
- d. a band gap increasing element, said band gap increasing element being nitrogen.

4,441,114
CMOS SUBSURFACE BREAKDOWN ZENER DIODE

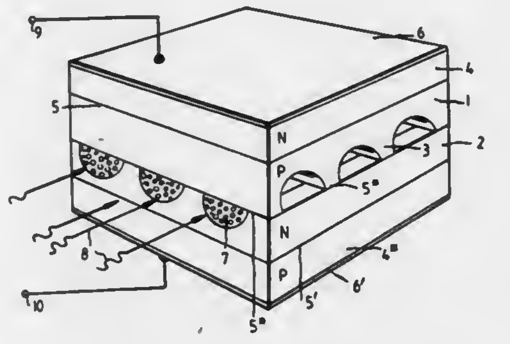
Raymond A. Muggli, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 22, 1981, Ser. No. 333,547
Int. Cl.^{3} H01L *29/90*
U.S. Cl. 357—13 **6 Claims**



1. A subsurface breakdown zener diode in a complimentary metal oxide semiconductor integrated circuit structure comprising,
- a semiconductor body of the first conductivity type material,
- a diffused region of a second conductivity type material formed from the surface of said semiconductor body to a predetermined depth in said body,
- a diffused anode region of enhanced material of said second conductivity type material formed centrally in said diffused region from the surface to a depth less than said predetermined depth,
- regions of enhanced material of said first conductivity type diffused in the surface of said semiconductor body at either side of the first said diffused region, and
- a further region comprising a layer of the same enhanced material of said first conductivity type diffused over said diffused anode region and constituting a cathode region and interconnecting said regions of enhanced material of said first conductivity type.

4,441,115
THYRISTOR HAVING A CENTER PN JUNCTION FORMED BY PLASTIC DEFORMATION OF THE CRYSTAL LATTICE

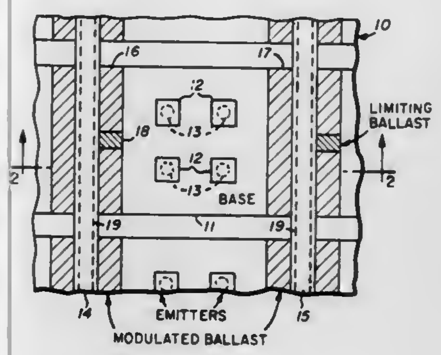
Reinhard Dahlberg, Flein, Fed. Rep. of Germany, assignor to Higratherm Electric GmbH, Heilbronn, Fed. Rep. of Germany
Filed Jul. 1, 1980, Ser. No. 165,106
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1979, 2926734
Int. Cl.^{3} H01L *29/06, 27/14, 29/74*
U.S. Cl. 357—38 **11 Claims**



1. A thyristor having a pn junction produced by plastic deformation of the crystal lattice comprising in combination: a first monocrystalline semiconductor disc of one conductivity type having a region of the opposite conductivity type on one major surface; a second monocrystalline semiconductor disc of said opposite conductivity type having a region of said first conductivity type on one major surface; a means for electrically contacting said one major surface of each said disc; a structure with parallel ridges with walls and with spaces therebetween formed in the opposite major surface of each of said first and second semiconductor discs; and said first and second semiconductor discs, assembled with their said structured opposite major surfaces facing and with said ridges intersecting and contacting one another, form a plurality of parallelly connected pn junctions due to plastic deformation of the semiconductor lattice at the areas of contact, and a sequence of four semiconductor regions of alternating opposite conductivity type.

4,441,116
CONTROLLING SECONDARY BREAKDOWN IN BIPOLAR POWER TRANSISTORS

Robert J. Widlar, Jalesco, Mexico, assignor to National Semiconductor Corporation, Santa Clara, Calif.
Filed Jul. 13, 1981, Ser. No. 282,490
Int. Cl.^{3} H01L *27/02, 29/72*
U.S. Cl. 357—43 **2 Claims**

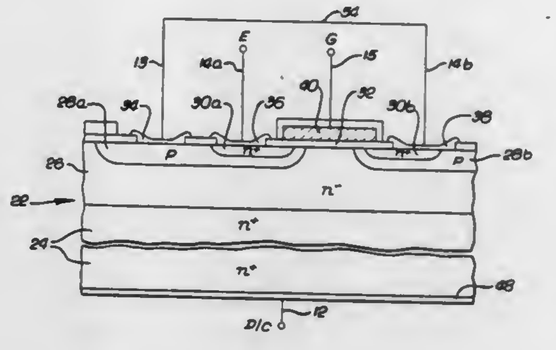


1. A power transistor cell comprising:
- a semiconductor substrate of one conductivity type having an upper surface and a resistivity suitable for a transistor collector function;
- a base region of opposite conductivity type extending from said surface into said substrate, said base region having a closed periphery defined at said surface;
- at least one emitter region of said one conductivity type located within said base region periphery and extending part way through said base region;
- a base contact region of said opposite conductivity type extending from said surface into said substrate spaced apart from and parallel to said base region over at least a portion of said periphery;
- a first resistor region of said opposite conductivity type spanning the space between said base region and said base contact region and extending into said surface of said substrate so as to form a pn junction with said substrate whereby said first resistor is variable in response to the voltage on the collector of said cell, the resistivity of said first resistor region being selected to produce a pinch off voltage below that of the collector to base voltage breakdown of said cell;
- a second resistor region confined to within a relatively small portion of said first resistor region, said second resistor region being more heavily doped than said first resistor region so as to have a pinch off voltage above that of said collector to base voltage breakdown of said cell; and
- means for making electrical contact with said emitter region, said base contact region and said substrate.

4,441,117
MONOLITHICALLY MERGED FIELD EFFECT TRANSISTOR AND BIPOLAR JUNCTION TRANSISTOR

Nathan Zommer, San Jose, Calif., assignor to Intersil, Inc., Cupertino, Calif.
Filed Jul. 27, 1981, Ser. No. 287,497
Int. Cl.^{3} H01L *27/02*
U.S. Cl. 357—43 **4 Claims**

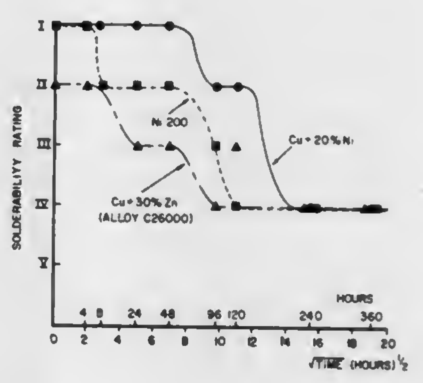
1. A monolithically merged field-effect transistor and bipolar junction transistor device comprising:
- a first semiconductor region of a first conductivity type;
- a second semiconductor region of said first conductivity type;
- a third semiconductor region of a second conductivity type opposite to that of said first and second regions, said third region being disposed between said first and second regions;
- a fourth semiconductor region of said first conductivity type;
- a fifth semiconductor region of said second conductivity type disposed between said fourth region and said first region;
- a base contact electrically connected to said third region;
- a gate electrode insulatively coupled to said third and fifth regions;
- an electrical connection connecting said fourth and third regions;



wherein said first region is a monolithically merged drain and collector, said second region is a monolithically merged source and emitter, said third region is a monolithically merged channel region and base, said fourth region is a second source and said fifth region is a second channel region, and wherein a signal applied to said gate electrode causes said device to function as a Darlington-connected field effect transistor and bipolar junction transistor pair.

4,441,118
COMPOSITE COPPER NICKEL ALLOYS WITH IMPROVED SOLDERABILITY SHELF LIFE

Julius C. Fister, Hamden, and John F. Breedis, Trumbull, both of Conn., assignors to Olin Corporation, New Haven, Conn.
Filed Jan. 13, 1983, Ser. No. 457,606
Int. Cl.^{3} H01L *23/48, 29/46, 29/54, 29/62*
U.S. Cl. 357—70 **15 Claims**



1. A composite structure having a reduced growth of copper-tin intermetallic compounds, said composite structure comprising:
- a substrate formed from a copper base alloy;
- said copper base alloy consisting essentially of 19% to about 28% nickel and the balance essentially copper;
- a coating covering at least a portion of said substrate;
- said coating being formed from a tin-containing material; and
- said nickel in said alloy retarding the growth of said copper-tin intermetallic compounds and diffusion of said copper through said coating and thereby improving the solderability shelf life and contact resistance of said structure.

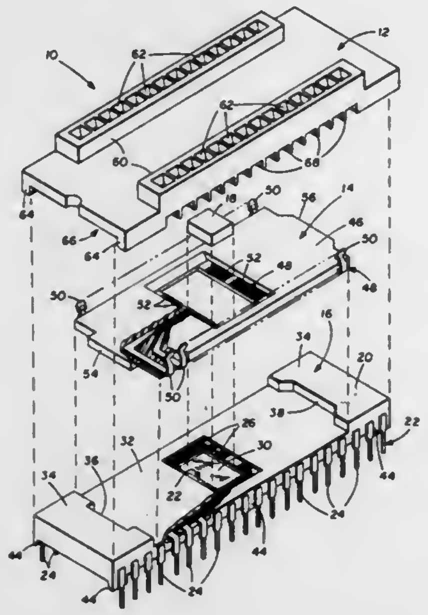
8. An integrated circuit assembly for electrical applications, said assembly comprising:
- a lead frame formed from a composite structure;
- said composite structure having a substrate formed from a copper alloy consisting essentially of 19% to about 28% nickel and the balance essentially copper and a coating covering at least a portion of said substrate;

said coating being formed from a tin-containing material; and

said nickel in said alloy retarding the growth of copper-tin intermetallic compounds and diffusion of said copper through said coating.

4,441,119
INTEGRATED CIRCUIT PACKAGE

Joseph Link, Carrollton, Tex., assignor to Mostek Corporation, Carrollton, Tex.
PCT No. PCT/US81/00059, § 371 Date Jan. 15, 1981, § 102(e) Date Jan. 15, 1981, PCT Pub. No. WO82/02458, PCT Pub. Date Jul. 22, 1982
PCT Filed Jan. 15, 1981, Ser. No. 273,848
Int. Cl.^{3} H01L *23/02, 39/02;* **H02G** *13/08*
U.S. Cl. 357—74 **18 Claims**



17. A package for an integrated circuit chip, comprising:

structure defining a first lead frame with plural bonding fingers and lead pins;

a first member formed around said first lead frame such that the bonding fingers thereof terminate internally within an opening in said first member and the lead pins terminate externally thereof;

structure defining a second lead frame with plural bonding fingers and corresponding contacts;

a second member formed around said second lead frame such that the bonding fingers thereof terminate internally within an opening in said second member and the contacts terminate externally thereof;

said first and second members being secured together such that the openings therein cooperate to define a cavity for receiving the integrated circuit chip;

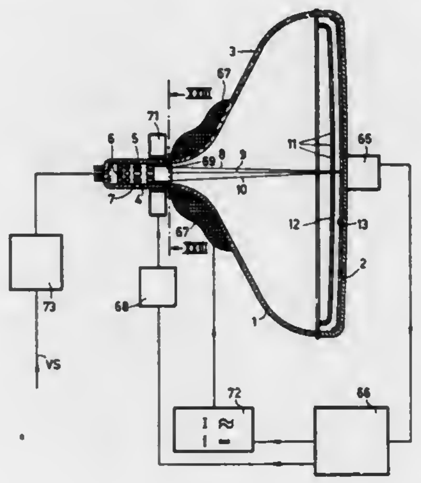
means secured within the opening in said first member for closing one end of the cavity and providing a base for the integrated circuit chip;

the lead pins on the first lead frame extending downward from the first member with the contacts of said second lead frame extending upward from the second member; and

a third member interconnected with said second member, said third member including predetermined openings therein adapted for receiving the upward contacts of said second lead frame and cooperating therewith to define plural integrated socket connections.

4,441,120
DEVICE FOR MEASURING AND METHODS FOR ADJUSTING THE CONVERGENCE OF THE ELECTRON BEAMS IN COLOR DISPLAY TUBES

Jan Gerritsen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 18, 1980, Ser. No. 141,515
Claims priority, application Netherlands, May 3, 1979, 7903468
Int. Cl.^{3} H04N *9/62*
U.S. Cl. 358—10 **10 Claims**



1. In a color display system having a color display tube for forming a color image from three controllable electron beams on a display screen, said beams having a convergence control for positioning said beams to converge at a desired position, a device for determining the proper convergence of said beams comprising:

a light detector including a photosensitive cell for receiving light from said color display tube having at least two separate photosensitive surface parts symmetrical about a center line of said detector, the photosensitivity of said surface parts increasing substantially as the distance from said center line, and optical elements for coupling a portion of a displayed image from said color display tube to said photosensitive surface parts; and

means for measuring the difference in light intensity on each of said photosensitive parts whereby the convergence controls for said beams can be adjusted to establish a zero difference in light intensity from said detector surfaces to establish a convergence condition.

4,441,121
ADJUSTABLE CORING CIRCUIT

Leopold A. Harwood, Bridgewater, N.J., and Robert L. Shanley, II, Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 363,868, Mar. 31, 1982, abandoned. This application Jan. 25, 1983, Ser. No. 460,985
Int. Cl.^{3} H04N *9/535, 5/14*
U.S. Cl. 358—36 **4 Claims**

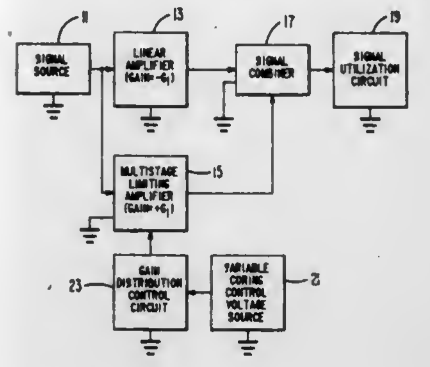
1. A system for effecting an adjustable amount of coring of signals derived from a source comprising:

first signal translating means, having an input coupled to said source, for linearly translating said signals;

second signal translating means, having an input coupled to said source, for non-linearly translating said signals; said second signal translating means comprising a multistage limiting amplifier for developing a limited version of said signals, said limiting amplifier including first and second signal amplifying stages coupled in cascade, and exhibiting an overall gain substantially equal to the gain exhibited by said first signal translating means;

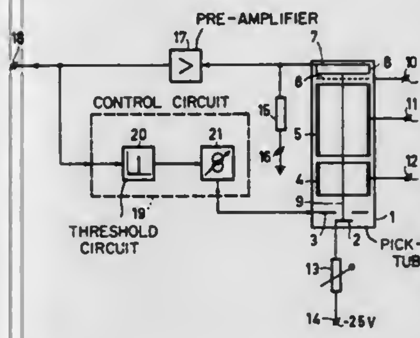
means, responsive to the outputs of said first and second signal translating means, for developing a cored version of said signals corresponding to the difference between a linearly translated version of said signals and a limited version of said signals; and

means, coupled to said first and second signal amplifying stages, for selectively altering the distribution of gain between said first and second signal amplifying stages substantially without disturbance of said overall gain of said limiting amplifier.


11
SIGNAL SOURCE
13
LINEAR AMPLIFIER (GAIN=-G1)
17
SIGNAL COMBINER
19
SIGNAL UTILIZATION CIRCUIT
MULTISTAGE LIMITING AMPLIFIER (GAIN=+G1)
15
23
GAIN DISTRIBUTION CONTROL CIRCUIT
VARIABLE CORING CONTROL VOLTAGE SOURCE
21

4,441,122
BEAM CURRENT CONTROL FOR TELEVISION CAMERA

Louis M. Swart, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jan. 18, 1982, Ser. No. 340,164
Claims priority, application Netherlands, Feb. 9, 1981, 8100600
Int. Cl.^{3} H04N *5/34*
U.S. Cl. 358—41 **3 Claims**

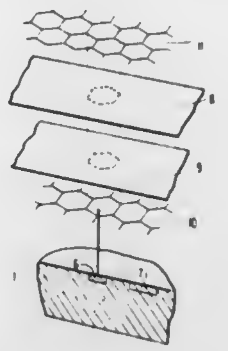


1. A television camera comprising a control circuit for controlling the electron beam current intensity in at least one pick-up tube of said camera, the pick-up tube comprising a current-controlled electron gun having at least a cathode connected to a voltage terminal and a control electrode, the control circuit having a controllable current source an output of which is connected to the control electrode and a control input of which is coupled to a pick-up tube output for producing a picture signal, wherein an electrostatic focussing means is employed at the pick-up tube and the cathode of the electron gun is connected to the voltage terminal via a resistor.

4,441,123
PHOTOSENSOR PATTERN OF SOLID-STATE IMAGING SENSORS

Shigeharu Ochi, San Jose, Calif., assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Sep. 30, 1981, Ser. No. 307,146
Int. Cl.^{3} H04N *9/07*
U.S. Cl. 358—44 **8 Claims**

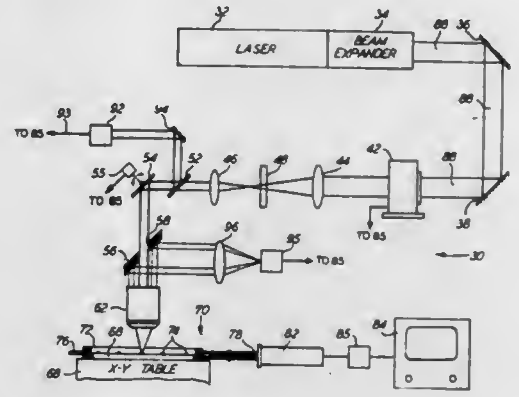
1. A solid-state color imager of the type having an array of solid-state pixels arranged in columns and rows and each adapted to produce an electrical signal representing light intensity, said pixels being of the type having the light sensitive part separate from and electrically connected to the signal switching part, each said pixel light sensitive area being defined by the pattern of the bottom electrode on said light-sensitive part which connects to said signal switching part, the improvement comprising, said bottom electrodes forming a pattern whereby adjacent pixels overlap in both the column and row direction,



and a multicolor filter overlaying said pixels and being patterned corresponding to said bottom electrode pattern.

4,441,124
TECHNIQUE FOR INSPECTING SEMICONDUCTOR WAFERS FOR PARTICULATE CONTAMINATION

Richard W. Heebner, Solebury Township, Bucks County, Pa., and Randal L. Schmitt, Plainsboro Township, Middlesex County, N.J., assignors to Western Electric Company, Inc., New York, N.Y.
Filed Nov. 5, 1981, Ser. No. 318,523
Int. Cl.^{3} H04N *7/18*
U.S. Cl. 358—106 **6 Claims**



1. An apparatus for detecting particulate material on the surface of a semiconductor wafer having a pattern thereon, comprising:

means for scanning a beam of light over the patterned surface of the wafer at an angle normal thereto; and

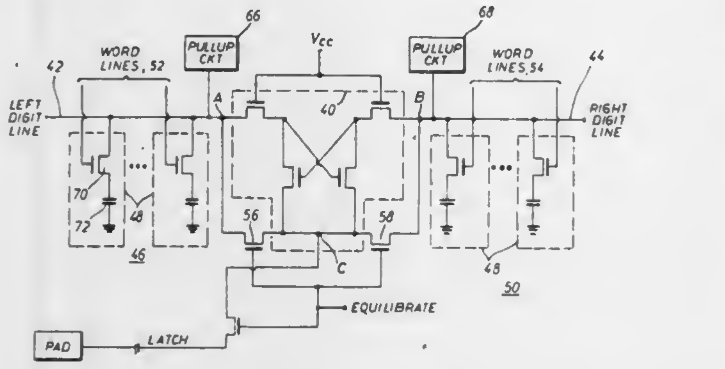
a plurality of detectors mounted circumferential of the wafer and substantially coplanar with the surface thereof for detecting light scattered substantially along the surface of the wafer by the particulate material and not the pattern.

4,441,125
IMAGE SENSOR USING DYNAMIC RANDOM ACCESS MEMORY

Ward D. Parkinson, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.
Filed Nov. 3, 1981, Ser. No. 317,876
Int. Cl.^{3} H04N *3/14*
U.S. Cl. 358—213 **11 Claims**

1. A solid state image sensor comprising:

(a) a dynamic random access memory system having one or more arrays of dynamic random access memory cells adapted to have at least two data states, said memory cells including one or more MOSFETs, one or more sense amplifiers for comparing the data states of the memory cells to a threshold value, a dummy-cell-capacitor free threshold generator for providing a relatively light-stable threshold value to the one or more sense amplifiers, means for refreshing the memory cells to restore the data states, and means coupled to the one or more sense amplifiers for writing out an indication of the data states of the memory cells; and



(b) one or more lenses for directing and focusing a light image onto said dynamic random access memory cells thereby to alter the data states of the memory cells in response to the light image.

4,441,126

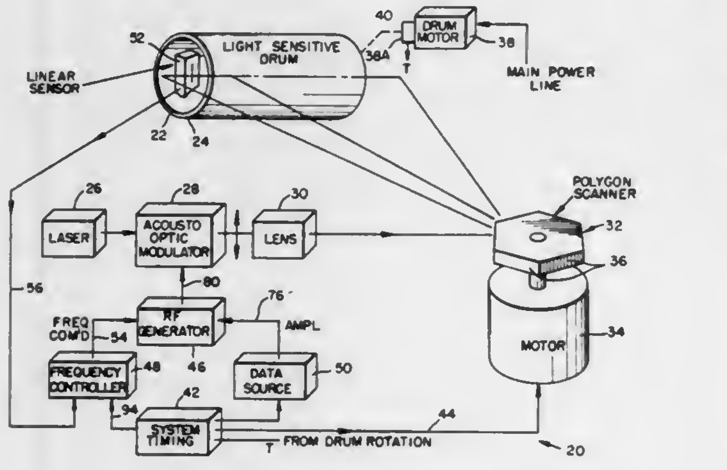
ADAPTIVE CORRECTOR OF FACET ERRORS IN MIRROR SCANNING SYSTEMS

Nelson L. Greenig, Norristown; John R. Taylor, North Wales, and Richard S. Schwartz, Willow Grove, all of Pa., assignors to Sperry Corporation, New York, N.Y.

Filed May 6, 1982, Ser. No. 375,593

Int. Cl.³ H04N *1/30*

U.S. Cl. 358—293 **19 Claims**



17. A beam deflection system comprising means responsive to the frequency of a drive signal for deflecting a beam of radiant energy, means for sensing the position of said beam, said sensing means including a circuit for developing electric signals designating said position; means responsive to said signals of said sensing means for altering the value of said frequency; means coupled to said altering means for generating a signal proportional to the average of a succession of frequency values; and means coupled between said generating means and the circuit of said sensing means for altering component parameters of said circuit in response to the signal of said generating means to compensate for drift in said component parameters.

4,441,127

TAPE DRIVE DEVICE IN RECORDING AND REPRODUCING DEVICE

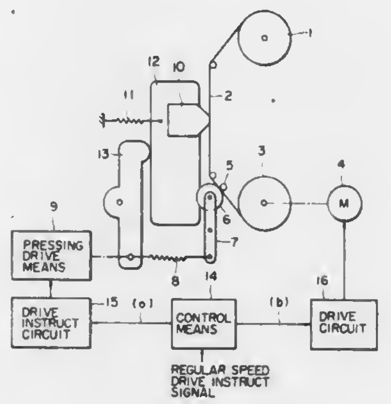
Yoshiharu Ueki, and Shouzaburou Sakaguchi, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 25, 1982, Ser. No. 352,435

Claims priority, application Japan, Feb. 27, 1981, 56-27285

Int. Cl.³ G11B *15/18*

U.S. Cl. 360—71 **6 Claims**



1. In a magnetic tape recording and/or reproducing device, a tape drive device comprising:

a reel motor for winding a magnetic tape;

a capstan and a pinch roller operative, when actuated, for holding and running said magnetic tape at a regular speed;

pressing drive means for pressing said pinch roller against said capstan under a predetermined pressure;

a magnetic head which is moved to a predetermined position in association with the operation of said pressing drive means; and

control means for starting said pressing drive means in response to a regular speed drive instruction signal, and starting said reel motor after the lapse of a predetermined time.

4,441,128

ROTARY TRANSDUCER HEAD ASSEMBLY

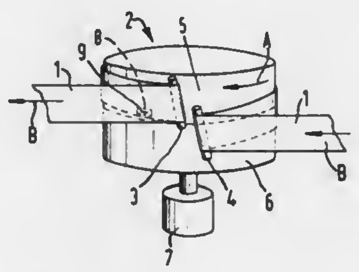
Takeo Ohba, and Hirohisa Koga, both of Atsugi, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 156,490, Jun. 4, 1980, abandoned. This application Mar. 29, 1982, Ser. No. 363,086

Claims priority, application Japan, Jun. 9, 1979, 54-72541; Jun. 9, 1979, 54-72542

Int. Cl.³ G11B *21/02*

U.S. Cl. 360—75 **7 Claims**



1. A rotary magnetic head assembly for a helical scan video tape recorder, comprising:

a tape guide arrangement including a cylindrical drum having a rotary head support associated therewith and rotating about the central axis of said drum, and means for helically guiding a video tape about said drum,

first and second bi-morph leaves disposed in substantially parallel, spaced apart planes and extending generally in radial directions in respect to said axis of the drum, said bi-morph leaves being both deflectable in the same direction out of said planes in response to the application of a control signal thereof,

means rigidly securing radially inner end portions of said first and second bi-morph leaves to said rotary head support so that said planes of the bi-morph leaves, when the latter are at rest, are substantially perpendicular to said axis,

a transducer head, and

a deflectable member carrying said head and being connected to the radially outer ends of said bi-morph leaves for positioning said head in proper contacting relation to the tape guided about said drum, said deflectable member having first and second end portions secured to said radially outer ends of the first and second bi-morph leaves, respectively, and a connecting portion extending between said first and second end portions and carrying said heat at a radial distance from said radially outer ends of the bi-morph leaves which is short relative to the extent of said bi-morph leaves, said deflectable member having elastically flexible portions at least at junctions of said first and second end portions with said connecting portion, and said elastically flexible portions deflecting in response to deflection of said bi-morph leaves for maintaining said head in said proper contacting relation to the tape.

4,441,129

EJECT DEVICE OF MAGNETIC RECORDING TAPE DRIVING APPARATUS FOR TAPE CASSETTE

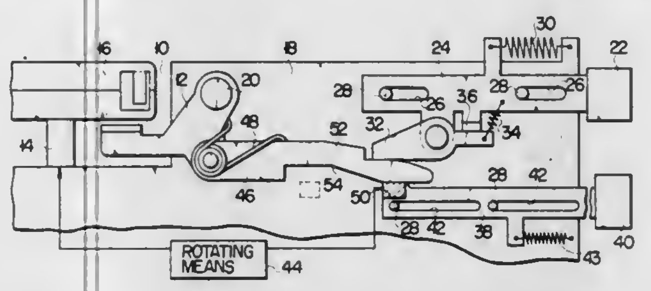
Toshihiro Nakao, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 6, 1981, Ser. No. 309,079

Claims priority, application Japan, Oct. 16, 1980, 55-147731[U]

Int. Cl.³ G11B *15/24*

U.S. Cl. 360—96.5 **16 Claims**



1. An eject device used in a magnetic recording tape driving apparatus having a reel shaft on which a tape cassette is mounted, rotating means for rotating the reel shaft, and an eject member which is free to rotate about a rotating center between a first position in which the eject member is spaced apart from the tape cassette mounted on the reel shaft and a second position in which the eject member comes in contact with the tape cassette to disengage the tape cassette from the reel shaft, said eject device comprising:

a first movable member which is free to move between a first position and a second position;

a second movable member which is free to move between a first position and a second position, said second movable member prohibiting said rotating means from rotating said reel shaft at the first position of said second movable member, and said second movable member permitting said rotating means to rotate said reel shaft at the second position of said second movable member;

a rotating member which is connected to the eject member at a position spaced apart from said rotating center of said eject member, said rotating member being free to move between a first position located within a path of movement between said first position and said second position of said first movable member and a second position located within a path of movement between said first position and said second position of said second movable member, said rotating member being located at said first position thereof when said second movable member moves to said first position thereof, and said rotating member being located at said second position thereof when said second movable member moves to said second position thereof; and

engaging means coupled to said rotating member, and which engages with said first movable member when said rotating member is located at said first position thereof, so that said eject member moved from a first position to a second position thereof when said first movable member moves from said first position to said second position thereof, and said engaging means disengaging from said first movable member when said rotating member is located at said second position thereof.

4,441,130

CARRIAGE FOR A SCANNING HEAD IN RECORDING AND/OR PLAYBACK APPARATUS FOR DISK RECORDS

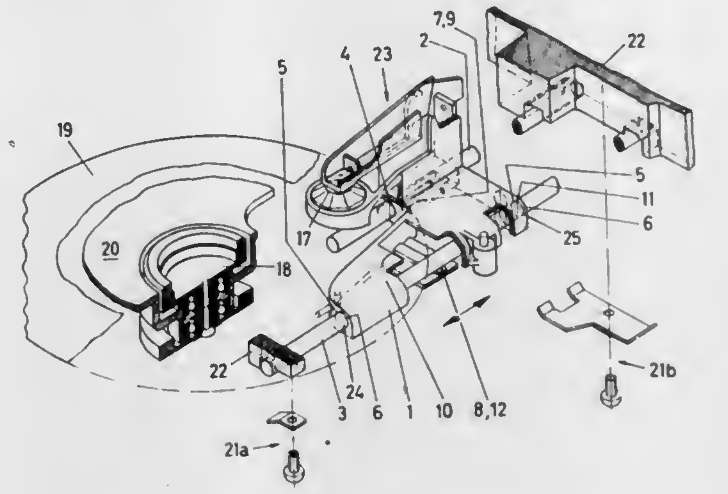
Udo Boehm; Klaus Schulze-Berge, both of Ludwigshafen, and Roland Brotzler, Hochdorf-Assenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 117,130, Jan. 31, 1980, abandoned. This application Dec. 3, 1981, Ser. No. 327,101

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1979, 7903033[U]

Int. Cl.³ G11B *21/08*

U.S. Cl. 360—106 **5 Claims**



1. In a recording and/or playback apparatus for recording disks, especially flexible magnetic disks in cartridges, said apparatus having a scanning head mounted for translational movement relatively to said disk by means of a carriage,

a guiding arrangement for said carriage, comprising:

two parallel cylindrical guide rods, the first supporting and guiding said carriage longitudinally and the second supporting the carriage and guiding the carriage against movement about the axis of the first rod,

said carriage having for the guidance thereof relatively to said first rod, two coaxially, longitudinally spaced bearing apertures with at least two planar faces extending in cross-section at an angle to each other,

said carriage having, for the guidance thereof relatively to said second rod, an aperture with a planar surface, and

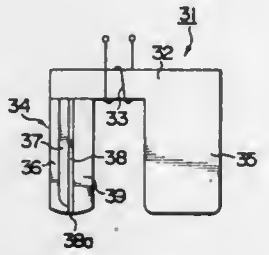
said carriage having a first and a second leaf spring urging said faces and said surface against said two rods, respectively,

said first leaf spring urging the carriage with said two planar faces into engagement with said first rod along two parallel lines of contact corresponding to generatrices of said first rod and located generally opposite to, and symmetrically on the two sides, respectively, of the central plane of flexing movement of the first spring, and

the carriage and both of the leaf springs being integrally molded of plastic material.

4,441,131
MAGNETIC HEAD

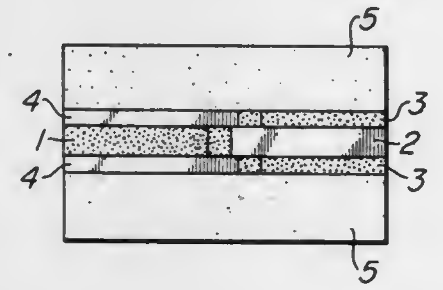
Akira Osanai, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 13,267, Feb. 21, 1979. This application Jun. 25, 1981, Ser. No. 277,122
Claims priority, application Japan, Mar. 8, 1978, 53/26201
Int. Cl.^{3} G11B *5/25, 5/22, 5/12*
U.S. Cl. 360—119 **1 Claim**



1. A magnetic head for use in record/playback of a magnetic tape having a longitudinal axis extending along the length of the tape, said tape including a first magnetizable layer having high permeability and a second magnetizable layer which includes an axis of magnetization perpendicular to said longitudinal axis and which is attached to said first magnetizable layer, said magnetic head comprising a first member and a second member magnetically coupled, said first member having a low reluctance and a first free end facing close to said magnetic tape, said second member having a second free end formed as a record/playback pole, said second member being a laminated structure including two outer layers of non-magnetic material and first and second internal layers having a high permeability disposed between said two outer layers and cooperating to prevent saturation of the recording flux, said first internal layer being covered by one of said two outer layers, said second internal layer being a thin layer narrower than said first layer and formed on one surface of one of said two outer layers by sputtering or evaporation, said second internal layer extending to said second free end of said second member to form said record/playback pole, said first internal layer being shorter than said second internal layer, with the free end of said first internal layer being formed on the free end of said first internal layer.

4,441,132
MAGNETIC HEAD DEVICE

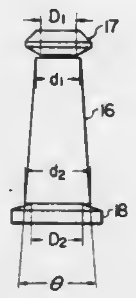
Shigetoshi Morita, and Hirohide Yamada, both of Kumagaya, Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan
Filed Apr. 26, 1982, Ser. No. 371,580
Claims priority, application Japan, Apr. 30, 1981, 56-65723
Int. Cl.^{3} G11B *5/16, 5/22*
U.S. Cl. 360—126 **2 Claims**



1. A magnetic head device comprising a recording playback magnetic head and erasing magnetic head, each of which consisting of cores made from a ferrite of Mn-Zn system and a reinforcement plate made from a non-magnetic ceramic material and bonded to respective cores; and sliders made from a non-magnetic ceramic material and united with said magnetic heads; wherein said non-magnetic ceramic material for said reinforcement plate and said non-magnetic ceramic material for said sliders have thermal expansion coefficients different from each other.

4,441,133
TAPE GUIDE OF MAGNETIC RECORDING AND REPRODUCING APPARATUS

Tsuneo Ogawa; Manabu Ikeda; Seii Miyakawa, all of Yokohama; Kazunori Iijima, Ibaraki; Takao Terayama, Kashiwa, and Takeshi Matsui, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jul. 13, 1981, Ser. No. 282,806
Claims priority, application Japan, Jul. 11, 1980, 55/96935[U]
Int. Cl.^{3} G11B *15/60;* **B65H** *23/04*
U.S. Cl. 360—130.22 **13 Claims**

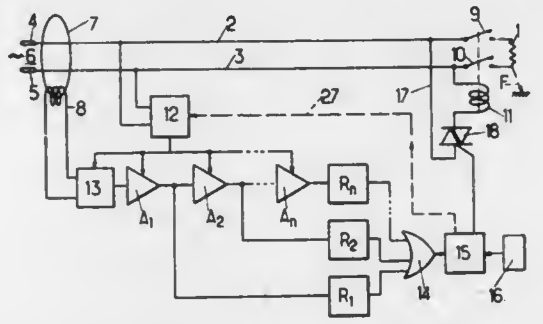


1. A guide roller suitable for use in a tape traveling system of a magnetic recording and reproducing apparatus, the guide roller comprising:

- a roller body means for guiding a tape during a travel thereof through a magnetic recording and reproducing apparatus, said roller body means having a diameter smoothly increasing axially from a first end to a second end of the roller body means;
- at least one flange means disposed at the end of said roller body means having a greater diameter for regulating a position of the tape on the roller body means; and
- a tape guide surface means on said flanges means which is tapered with respect to a longitudinal center axis of the roller body means for engaging an edge of the tape.

4,441,134
CIRCUIT BREAKERS SENSITIVE TO LEAKAGE CURRENTS

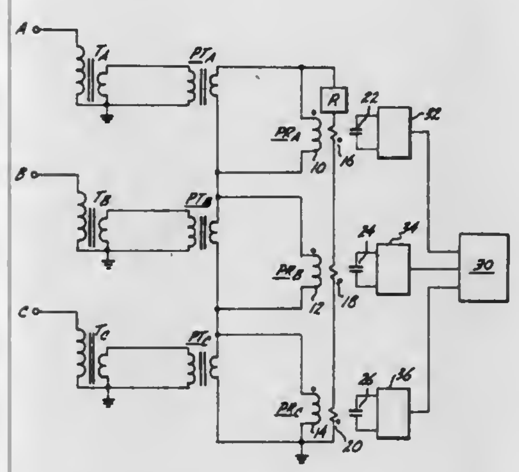
Jacques Lewiner, 5, rue Bory d'Arnex, 92210 Saint-Cloud; Didier Perino, 10, rue Bellevue, 92150 Suresnes, and Claude Hennion, 18, rue Flatters, 75005 Paris, all of France
Filed Mar. 18, 1982, Ser. No. 359,494
Claims priority, application France, Mar. 18, 1981, 81 05451
Int. Cl.^{3} H02H *3/28*
U.S. Cl. 361—45 **11 Claims**



1. Circuit breaker for automatically cutting off the alternating current supply of an electrical receiver on the appearance of a leakage current between any point of this receiver and ground, said circuit breaker comprising a differential transformer for sensing the current flow in supply wires joining the receiver to an electrical supply source, said transformer being arranged so as to generate automatically in another conductor wire an electrical voltage V_O when there is an unbalance between the current flowing in said supply wires, and means responsive to said voltage said voltage V_O for automatically opening a switch connected to one at least of said supply wires after the amplitude of the voltage V_O has reached at least a predetermined threshold, the abovesaid switch being constituted by the contact of a relay arranged to be open as long as said relay is not supplied electrically, said voltage responsive means being connected between the source and the switch, and comprising a circuit of n amplifiers connected in a series and supplied with said voltage V_O after rectification thereof, n being an integer greater than 1, a number n of delay circuits supplied respectively by the output voltages from the n amplifiers, each delay circuit being adapted to produce, after each generation of a voltage signal V_O starting at a moment t_O, a voltage pulse U_i delay by a time delay t_i with respect to t_O, only those pulses being produced which correspond to delays t_i less than the actual duration of the signal V_O, means, with n inputs and one output, for receiving the pulses U_i at the various inputs thereof and for generating a control signal at its output as soon as the amplitude of one of these pulses reaches or exceeds a predetermined threshold W, and electronic means connected to said output and arranged so as to cut off automatically the supply of the relay at the time a control signal is generated at said output.

4,441,135
THREE-PHASE POWER TRANSMISSION LINE PHASE-TO-GROUND FAULT RESPONDER

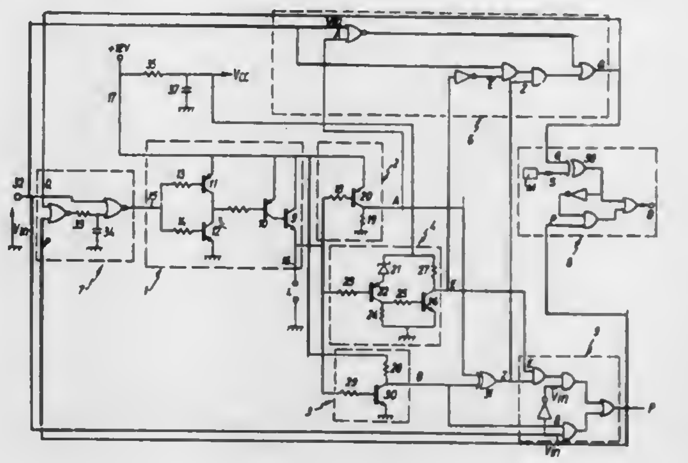
Robert E. Drain, Butte, Mont., assignor to The Montana Power Company, Butte, Mont.
Filed Aug. 6, 1982, Ser. No. 405,926
Int. Cl.^{3} H02H *3/16*
U.S. Cl. 361—47 **11 Claims**



1. A three-phase power transmission system phase-to-ground fault responder comprising individual phase-energized elements producing output voltages related to the respective system phase-to-ground voltages and being serially interconnected to produce a net voltage representing the vector sum of such voltages, individual fault-to-ground sensors individual to the respective phases, each such sensor having first and second control elements requiring cophased energization for actuation of that sensor, the first control elements being individually connected for energization by voltage related in amplitude and phase to the respective said system phase-to-ground voltages, the second control elements being connected across the series of serially interconnected phase-energized elements and each sustaining current flow related in phase and amplitude to said net voltage, whereby said sensors remain unactuated with the system three-phase voltages in balance, and whereby occurrence of a phase-to-ground fault of one phase of the system produces substantially cophased energization of the first and second control elements of the sensor associated with that phase for actuating that sensor, and respective phase-associated responder means responsive selectively to actuation of the individual sensors.

4,441,136
SWITCHING CIRCUIT

Michael J. Hampshire, Liversedge, England, assignor to Salplex Limited, London, England
Continuation of Ser. No. 85,289, Oct. 16, 1979, abandoned. This application Jun. 4, 1982, Ser. No. 384,943
Claims priority, application United Kingdom, Oct. 21, 1978, 41475/78
Int. Cl.^{3} H02H *7/20*
U.S. Cl. 361—88 **10 Claims**



1. A switching circuit comprising a solid state switch having an input and output, a load connected to the output of the solid state switch, switch sensing circuitry means connected to the load for indicating current therein, drive circuitry means for driving the solid state switch which, in turn activates, the switch sensing circuitry means so that the switch sensing circuitry means senses an operating characteristic of the solid state switch, said switch sensing circuitry means comprising at least three individual circuits, said at least three individual circuits being connected to the load for measuring the the voltage across the solid state switch and issuing signals indicating whether operating values of said at least three individual circuits are greater or less than given threshold values for said at least three individual circuits, and digital logic circuit means connected to said at least three individual circuits for receiving said signals issued by said at least three individual circuits and for producing two digital output signals from the signals received from said at least three individual circuits, one of said two signals indicating whether or not a fault in the solid state switch or in the load is present, and another of said two signals indicating the seriousness of said fault.

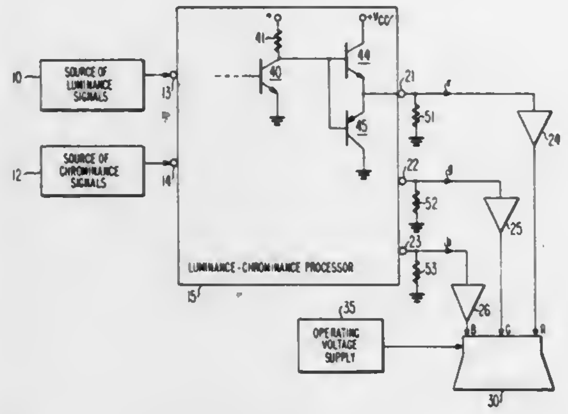
4,441,137
HIGH VOLTAGE PROTECTION FOR AN OUTPUT CIRCUIT

Leopold A. Harwood, Bridgewater, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Aug. 30, 1982, Ser. No. 412,899
Int. Cl.^{3} H02H *7/20*
U.S. Cl. 361—91 **6 Claims**

1. In a signal processing system comprising an output terminal at which spurious high voltage transients may appear; and a semiconductor device susceptible of damage from electrical stress caused by high voltage transients; a protection circuit comprising:

- a normally conductive first transistor of one conductivity type having an input first electrode coupled to said semiconductor device, a low impedance second electrode coupled to said output terminal, and a third electrode coupled to a first operating potential and with said second electrode determining a main current conduction path of said first transistor; said first transistor being normally operative for coupling signals from said semiconductor device to said output terminal, and being operative for diverting current transients associated with high voltage transients of one polarity to said first operating potential via said main current path of said first transistor; and

a second, normally non-conductive, transistor of an opposite conductivity type with a first electrode coupled to said first electrode of said first transistor, a low impedance second electrode coupled to said second electrode of said second transistor and to said output terminal, and a third electrode coupled to a second operating potential and with said second electrode determining a main current conduction path of said second transistor; said second transistor being rendered conductive in response to transients appearing at said output terminal with an opposite polarity for diverting associated transient currents to said second operating potential via said main current path of said second transistor.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SOURCE OF LUMINANCE SIGNALS
12
SOURCE OF CHROMINANCE SIGNALS
13
14
41
40
44
45
+VCC
21
22
23
51
52
53
24
25
26
LUMINANCE - CHROMINANCE PROCESSOR
15
35
OPERATING VOLTAGE SUPPLY
30
B
G
R

4,441,138

CHARGE CELL

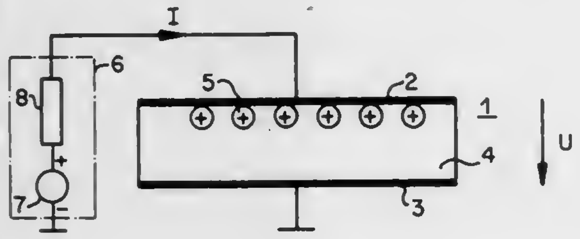
Jean-Frederic Moser, Oberwil, and Heinrich P. Baltes, Zug, both of Switzerland, assignors to LGZ Landis & Gyr Zug A.G., Zug, Switzerland

Filed Jan. 20, 1982, Ser. No. 340,841

Claims priority, application Switzerland, Jan. 26, 1981, 468/81

Int. Cl.^{3} H01G *1/08, 4/06*

U.S. Cl. 361—274 **12 Claims**



1. A charge cell, for use in measuring charge values, free of any electrolyte and free of any glassy or amorphous composition, and arranged to transfer charges between two electrodes, so that at the end of said transfer the potential difference across sais charge cell will suddenly increase,

comprising in combination,

two electrically conducting electrodes spaced apart from one another, and

a single layer of one single solid dielectric material disposed between said electrodes, and including a predetermined quantity of carriers of a positive charge trapped and remaining trapped therein.

4,441,139

PROCESS FOR PRODUCING A WOUND CAPACITOR AN APPARATUS FOR IMPLEMENTING THE PROCESS AND A CAPACITOR THUS OBTAINED

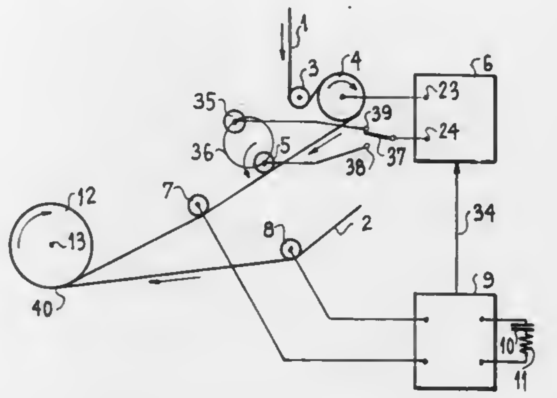
Daniel Bernard, Bagnolet, France, assignor to L.C.C.-C.I.C.E.-Compagnie Europeenne de Composants Electroniques, Bagnolet, France

Filed Feb. 19, 1982, Ser. No. 350,155

Claims priority, application France, Feb. 27, 1981, 81 03991

Int. Cl.^{3} H01G *1/015, 4/06, 7/00*

U.S. Cl. 361—304 **8 Claims**



1. In a process for producing a wound capacitor of capacity C, in which at least two films of metal coated dielectric materials are wound one on the other, the metal layers forming the plates of said capacitor, the instantaneous capacity Cx of the capacitor being measured at all times by capacity measuring means, when Cx is close to but less than C, partial metal stripping of one of the metal coated films is carried out so as to maintain thereon a metal coated strip, connected electrically to the corresponding plate of the capacitor and allowing the value of capacity Cx to be adjusted accurately to the value C, without slowing down the winding speed of said capacitor.

4,441,140

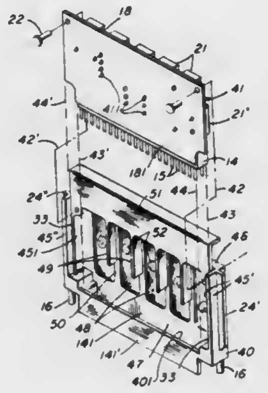
PRINTED CIRCUIT BOARD HOLDER

Maurice Richard, New Bedford, Mass., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 208,713, Nov. 20, 1980, abandoned. This application Jan. 3, 1983, Ser. No. 454,924

Int. Cl.^{3} H05K *7/20*

U.S. Cl. 361—386 **11 Claims**



1. A printed circuit board and holder wherein the holder comprises a thermally conductive frame having a peripheral boundary, a first portion of the peripheral boundary having an integrally formed thermal transfer guide along a portion of the outermost periphery of said frame;

said frame having a circuit board supporting shoulder which supports a planar printed circuit board having connector pins at one end of said board such that said connector pins are disposed adjacent to and within a second portion of the peripheral boundary disposed opposite said first portion of said peripheral boundary;

said peripheral boundary of said frame defining within said frame a volume substantially equal to the product of area within said boundary and the thickness of said frame;

said printed circuit board having heat producing electrical elements mounted thereon which in combination with said board have a volume disposed within the volume of said frame and having said heat producing elements mounted on one side thereof within the volume of said frame, said board and said heat producing elements having a combined thickness less than the thickness of said frame, wherein the improvement comprises:

said frame includes additionally a thermally conducting flat non-perforated plate integrally formed with and unitary with said frame and adjacent to said heat producing elements to provide a high thermal conductance path with said frame along at least the portion of the peripheral boundary of said frame having said integrally formed thermal transfer guide, said thermally conducting plate being substantially planar and having a surface which is coplanar with a surface of the periphery of said frame and parallel with said planar printed circuit board; said plate having plural depressions at the locations of said heat producing elements whereby said elements extend into said depressions, and

a thermally conductive material in contact with and between said heat producing elements and said plate.

4,441,141

LIGHT REFLECTOR UNIT FOR A PHOTOGRAPHIC CAMERA

Anthony T. S. Lo, 'Woodgreen' 62 Conduit Rd., Hong Kong, Hong Kong

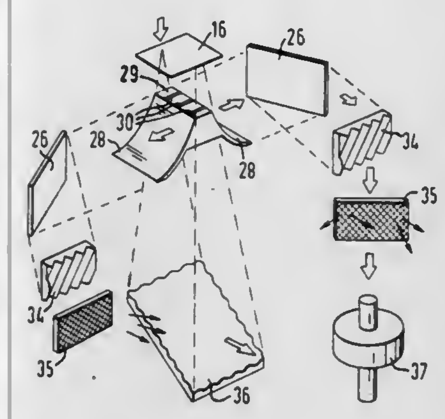
PCT No. PCT/GB81/00193, § 371 Date May 24, 1982, § 102(e) Date May 24, 1982, PCT Pub. No. WO82/01258, PCT Pub. Date Apr. 15, 1982

PCT Filed Sep. 17, 1981, Ser. No. 385,404

Claims priority, application United Kingdom, Mar. 16, 1981, 8108102

Int. Cl.^{3} G03B *15/02*

U.S. Cl. 362—17 **12 Claims**



1. A light reflector unit for use with a photographic camera for reflecting light from a light source towards a subject to be photographed, said unit comprising a hollow casing which can be positioned on a camera between a light source and the lens unit of the camera, a window in the casing for admitting light from said light source into the casing, at least one light emitting outlet from the casing, means for positioning the casing with said outlets facing the same direction as the lens unit of said camera, means within the casing for splitting the admitted light, means for condensing at least some of the admitted light into at least two beams of light, and light reflective surfaces within the casing for reflecting each beam of light to said light emitting outlet, said outlet being provided with a lens or a diffuser.

4,441,142

UNDERWATER FLASHLIGHT

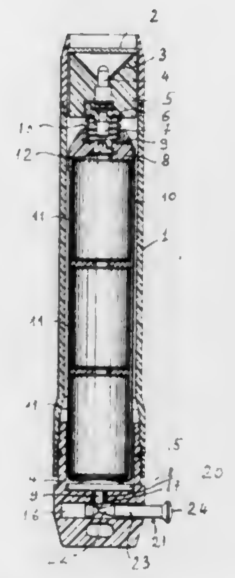
Giovanni Garofalo, Rapallo, Italy, assignor to AMF Inc., White Plains, N.Y.

Filed Jul. 19, 1982, Ser. No. 399,566

Claims priority, application Italy, Jul. 21, 1981, 15185/81[U]

Int. Cl.^{3} F21L *7/00*

U.S. Cl. 362—158 **3 Claims**



1. In a flashlight of the type wherein spring loaded battery means are mounted in a casing assembly for displacement along the longitudinal axis to close the normally open electrical bulb-battery circuit in one direction and the displacement in the opposite direction opens said circuit, wherein the improvement comprises:

plug means fastened to and closing the casing assembly, said plug means having an aperture through one side transverse to said casing axis and an axial aperture connecting the transverse aperture with the casing interior;

shaft means extending through the transverse aperture for displacement transverse to said axis and having a camming portion within the plug and an operating portion outside of the plug;

cam follower means extending from the shaft means through the axial aperture to the battery means and co-operating with the shaft means camming portion to transmit shaft transverse displacement to battery means axial displacement whereby shaft displacement in one direction connects the bulb-battery circuit and displacement in the opposite direction disconnects it; and

means for preventing leakage into the casing assembly.

4,441,143

PHOTO VOLTAIC LIGHTING FOR OUTDOOR TELEPHONE BOOTH

Charles T. Richardson, Jr., Norcross, Ga., assignor to Gladwin, Inc., Oakwood, Ga.

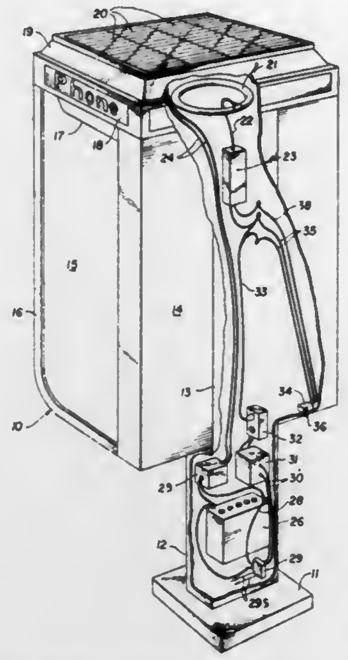
Continuation-in-part of Ser. No. 177,243, Aug. 11, 1980, abandoned. This application Feb. 5, 1982, Ser. No. 346,272

Int. Cl.^{3} F21L *7/00*

U.S. Cl. 362—183 **6 Claims**

1. An illumination system for a public telephone facility comprising in combination, an illumination means including one or more fluorescent lamps, a photo voltaic electrical energy generating means, an electrical storage battery means, temperature compensated battery charge controller regulator means for controlling the maximum electrical energy stored in said electrical storage battery means, means for limiting the minimum charge remaining in the storage battery means and preventing operation of said illumination means when said minimum charge is reached, means for detecting the level of ambient light conditions, control circuit means connected to

said means for detecting the level of ambient light for causing said one or more fluorescent lamps to be energized from said



electrical storage battery means when the ambient light falls below a predetermined level.

4,441,144
AUXILIARY HEAD LAMP DEVICE FOR CAR EQUIPPED WITH COVER

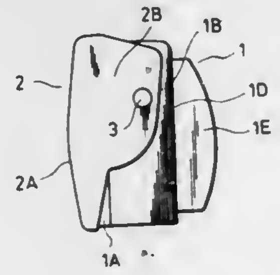
Tatsuo Horiuchi, and Kazushige Kiyota, both of Tatebayashi, Japan, assignors to Ushio Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 30, 1982, Ser. No. 363,515

Claims priority, application Japan, Apr. 17, 1981, 56-57018

Int. Cl.³ F21V ***17/00***

U.S. Cl. 362—375 **7 Claims**



1. An auxiliary lamp device equipped with a cover for a vehicle, comprising: an auxiliary lamp for a vehicle, said lamp including an enclosed casing and a lens attached to said casing, said auxiliary lamp attachable to a body portion of a vehicle; a cover rotatably mounted on said casing for rotation between a closed position where it covers said lens of said auxiliary lamp and an open position where it uncovers said lens of said auxiliary lamp; and a cover driving mechanism for rotating said cover from the closed position to the open position, including a solenoid in circuit with a switch; wherein the switch of said solenoid is for disposition inside the interior cabin of the vehicle.

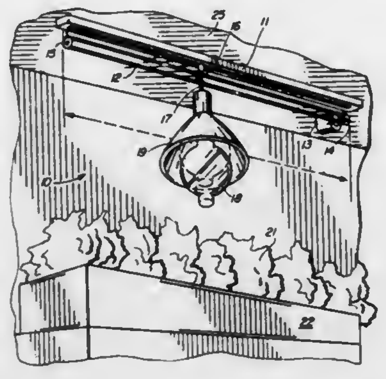
4,441,145
TRACKING MEANS FOR MOVING A LIGHT SOURCE ACROSS A PLANTER SURFACE TO SIMULATE SUNLIGHT

Russell J. Antkowiak, Tempe, Ariz., assignor to Aqua Culture, Inc., Tempe, Ariz.

Filed Aug. 23, 1982, Ser. No. 410,405

Int. Cl.³ B60Q ***1/12***

U.S. Cl. 362—384 **4 Claims**



1. Apparatus for sustaining indoor plant growth comprising:
- an elongated rail,
- said rail comprising a ceiling mountable, hollow, tubular member slotted along its bottom surface,
- a carriage means supported on said rail for guided movement therealong,
- said carriage means comprising an elongated arm extending at one end through the slot in said bottom surface,
- roller means mounted on said one end of said arm inside of said tubular member for support and guided movement of said arm along said rail,
- means connected to said carriage means for moving said carriage means in a reciprocating manner along said rail,
- said means comprising an electric motor driven conveyor supported on said rail and attached to said carriage means for moving said carriage means continuously in a straight line along a closed loop path,
- said conveyor comprising a pair of sprockets one mounted at each end of said rail and an endless chain mounted over said sprockets to form said closed loop path,
- linkage means pivotally attached to said chain at one end and to said carriage means at the other end to provide continuous movement of said carriage means along said rail, and
- a light means suspended from said carriage means for moving in a reciprocating manner back and forth over an associated planter.

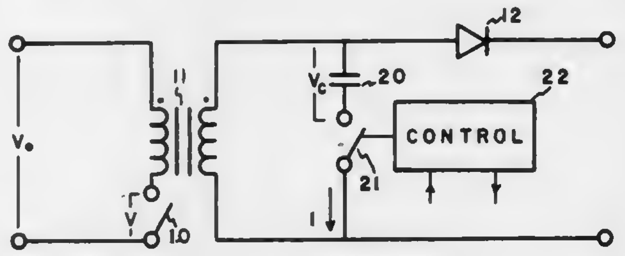
4,441,146
OPTIMAL RESETTING OF THE TRANSFORMER'S CORE IN SINGLE ENDED FORWARD CONVERTERS

Patrizio Vinciarelli, Skillman, N.J., assignor to Vicor Corporation, Westford, Mass.

Filed Feb. 4, 1982, Ser. No. 345,799

Int. Cl.³ H02M ***3/335***

U.S. Cl. 363—20 **6 Claims**



1. In a single ended forward converter in which energy is transferred from a primary winding to a secondary winding of a transformer during the ON period of a primary switch, circuitry for recycling the magnetizing energy stored in said transformer to reset it during the OFF period of said primary switch, comprising:
- a storage capacitor;
- an auxiliary switch connected in series with said storage capacitor:
- a switch control circuit operating said auxiliary switch in accordance with a control logic such that (a) said auxiliary switch is opened prior the ON period of said primary switch, (b) said auxiliary switch remains open throughout the ON period of said primary switch, (c) said auxiliary switch is closed after the ON period of said primary switch.

4,441,147
CIRCUIT ARRANGEMENT FOR THE CONTROLLED SUPPLY TO A LOAD

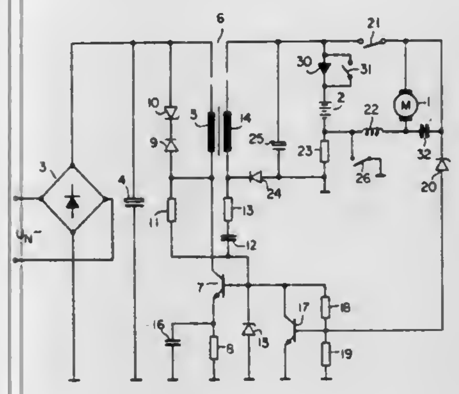
Gerhard E. Schwarz, Altena, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany

Filed Jan. 11, 1982, Ser. No. 338,745

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1981, 3101375

Int. Cl.³ H02M ***3/335***

U.S. Cl. 363—21 **6 Claims**



1. A circuit for supplying a constant DC voltage to an electrical load and, alternatively, a relatively constant DC current to an electrical storage battery, connected in parallel with said electrical load from an input voltage source of relatively varying voltage potential, comprising:
- a blocking oscillator including a transformer having a primary winding and a secondary winding, a switching transistor having first and second load terminals and a control terminal, and a first resistor;
- said primary winding, said first and second load terminals of said switching transistor and said first resistor being connected in series across said input voltage source;
- rectifier means connected in series with said electrical load across said secondary winding;
- a controlling transistor having first and second load terminals and a control terminal;
- a reference voltage element connected across said first and second load terminals of said controlling transistor and connected to said control terminal of said switching transistor; and
- a Zener diode having an anode connected to the control terminal of said controlling transistor and a cathode connected to said parallel arrangement of said electrical load and said storage battery.

4,441,148
POWER CONVERTING DEVICE AND A PROTECTION DEVICE FOR THE SAME

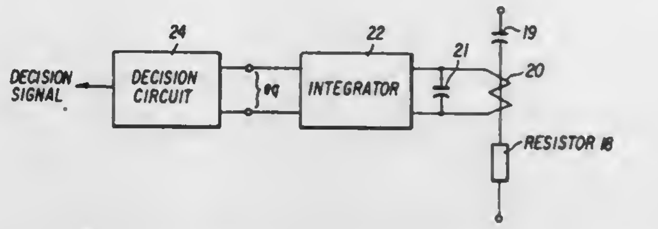
Akio Hirata, Fuchuu, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Feb. 9, 1982, Ser. No. 347,168

Claims priority, application Japan, Feb. 26, 1981, 56-27421

Int. Cl.³ H02H ***7/125***

U.S. Cl. 363—54 **17 Claims**



1. A power converting device, comprising:
- at least one power converting element;
- first means, coupled to said at least one power converting element, for detecting a reverse voltage;
- second means, coupled to said first means, for receiving said detected reverse voltage and for integrating said detected reverse voltage to produce a reverse voltage/time integral signal; and
- third means coupled to said second means for receiving said reverse voltage/time integral signal and for producing a decision signal only when the amplitude of said reverse voltage/time integral signal exceeds a first prescribed value, said decision signal indicating that said at least one power converting element is extinguished.

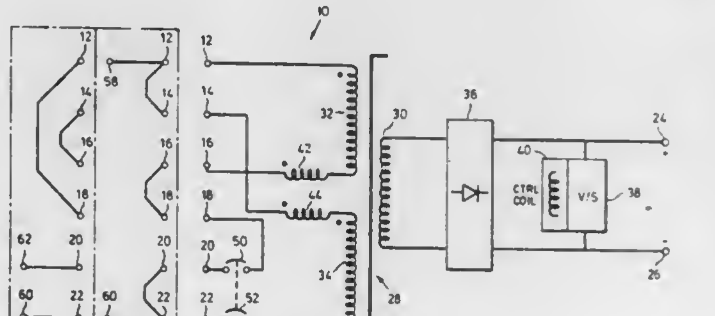
4,441,149
MULTI-VOLTAGE TRANSFORMER INPUT CIRCUITS WITH PRIMARY REACTOR VOLTAGE CONTROL

Alfred M. Hase, 390 Tapscott Rd., Scarborough, Ontario, Canada MIB 3Z9

Filed Feb. 16, 1982, Ser. No. 349,386

Int. Cl.³ H02P ***13/24***

U.S. Cl. 363—91 **9 Claims**



1. An input circuit for a transformer in a regulated power supply, whereby the throughput power of the transformer is controlled by synchronous operating current control means, wherein:
- the primary winding of said transformer has at least first and second sections that are bifilar wound on a single core, each of said first and second sections having a polarity of winding;
- said synchronous operating current control means comprises a pair of first and second like devices having polarity;
- the first of said pair of synchronous operating devices being connected in series with said first primary winding section, and in opposite polarity thereto;
- the second of said pair of synchronous operating devices being connected in series with said second primary winding section, and in the same polarity therewith;
- said first and second primary winding sections and their

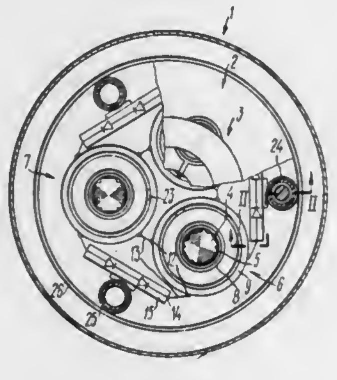
respective synchronous operating devices in series therewith being arranged so that each series connected primary winding section and synchronous operating device may be connected either in series or parallel with the other series connected primary winding section and synchronous operating device.

4,441,150
HIGH-VOLTAGE RECTIFIER UNIT

Boris I. Albertinsky, Nevsky prospekt 84, kv. 19, Leningrad; Nina M. Dmitrieva, Pavlovskaya ulitsa, 84, kv. 11, Kolpino; Anatoly K. Evseev, Bukharestskaya ulitsa, 33, korpus 1, kv. 25, Leningrad; Ivan P. Zotov, poselok Metallostroi, Pushkinskaya ulitsa, 8, kv. 50, Leningrad; Andrei S. Ivanov, ulitsa Kuznetsovskaya ulitsa, 8, kv. 33, Leningrad; Mikhail P. Sviniin, poselok Metallostroi ulitsa Bogaichuka, 4, kv. 25, Leningrad; Valentin A. Suslov, ulitsa Petra Smorodina, 12, kv. 130, Leningrad, and Mikhail T. Fedotov, poselok Metallostroi, Polevaya ulitsa, 22, kv. 58, Leningrad, all of U.S.S.R.

PCT No. PCT/SU80/00066, § 371 Date Dec. 21, 1981, § 102(e) Date Dec. 21, 1981, PCT Pub. No. WO81/03093, PCT Pub. Date Oct. 29, 1981

PCT Filed Apr. 25, 1980, Ser. No. 336,395
Int. Cl.^{3} H02M *7/06*
U.S. Cl. 363—126 **4 Claims**



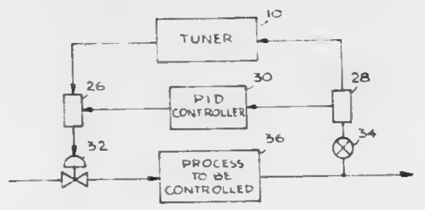
1. A high-voltage rectifier unit comprising
a vessel filled with an electrically insulating fluid;
a transformer accommodated in said vessel and having a sectionalized secondary winding, each section of which is provided with a metallic shield and includes two coils connected in series by said shield, each coil having an inner and an outer lead;
rectifier devices mounted on supporting insulators, each section of the secondary winding of the transformer being connected with one of the rectifier devices by means of one of the outer leads and forming a rectification stage, the metallic shield of each section of the secondary winding of the transformer being made as an open metallic ring, the metallic rings of adjacent sections being separated by insulating rings, and each coil of each section of the secondary winding being secured on the outer surface of one of the metallic rings and being connected with the metallic ring by its inner lead, said metallic and said insulating rings being joined together to form a single stiff structure.

4,441,151
APPARATUS FOR TUNING PID CONTROLLERS IN PROCESS CONTROL SYSTEMS

Shuji Hayashibe, Tokyo, Japan, assignor to Toyo Systems, Ltd., Tokyo, Japan

Continuation of Ser. No. 198,185, Oct. 17, 1980, which is a continuation-in-part of Ser. No. 115,197, Jan. 25, 1980, abandoned. This application Aug. 29, 1983, Ser. No. 515,801
Claims priority, application Japan, Nov. 4, 1977, 52-131511
Int. Cl.^{3} G05B *13/02*
U.S. Cl. 364—157 **5 Claims**

1. Apparatus for intermittent use in a control loop having a sensor and a driver and having a process value of a first magnitude to determine the optimum setting for a controller in such control loop;
said apparatus having an input terminal for connection to said sensor when the transfer function of said control loop is to be determined and an output terminal for connection to said driver during determination of the transfer function of said control loop;
said apparatus including a bi-polar-pulse generator coupled to said output terminal;
a manually operated switch electrically coupled to said bi-polar-pulse generator, said bi-polar-pulse generator being responsive to each actuation of said manually operated switch to produce at said output terminal a pulse combination comprising a single set of a positive and a negative-going rectangular pulse each having a magnitude which is small with respect to said first magnitude;
timing means;
said bi-polar-pulse generator being coupled to said timing means;



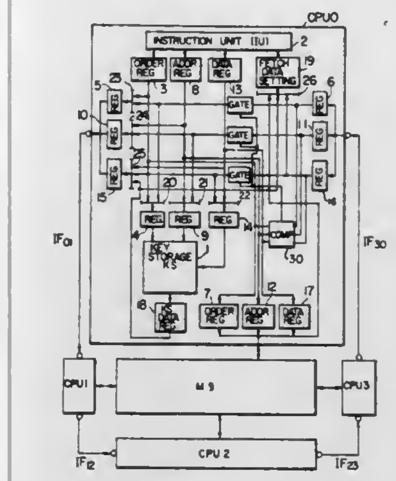
time-and-amplitude-sampling-and-storage means coupled to said input terminal of said apparatus and to said timing means to sample and store, as a function of time, the loop-response voltage appearing at said input terminal of said apparatus as a result of the application of said pulse combination to said driver from said apparatus, whereby a loop response curve corresponding to said pulse combination is effectively derived and stored;
first calculating means coupled to said time-and-signal-amplitude-sampling-and-storing means and to said timing means and responsive to signals from said timing means to calculate the area between said process response curve and a reference voltage level and to produce an electrical signal representative of such area; and,
further calculating means coupled to said first calculating means and responsive to the area-representative electrical signal therefrom to calculate the transfer function of said process.

4,441,152
DATA PROCESSING SYSTEM HAVING RING-LIKE CONNECTED MULTIPROCESSORS RELATIVE TO KEY STORAGE

Tsuguo Matsuura, Hadano; Shunichi Torii, Kokubunji, and Tsuguo Shimizu, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 11, 1981, Ser. No. 233,447
Claims priority, application Japan, Feb. 14, 1980, 55-16973
Int. Cl.^{3} G06F *13/00*
U.S. Cl. 364—200 **17 Claims**

1. A data processing system comprising:
(a) a main storage (MS):
(b) a plurality of central processing units (CPU) having said main storage in common;
(c) key storage (KS) means provided in each of said central processing units, for storing control information for the main storage;
(d) connecting means for connecting said central processing units in cascade in a circular path; and
(e) key processing control means provided in each of said central processing units, for accessing said key storage means provided in one of said central processing units when a key access request is issued in said central processing unit, and for supplying the content of said key access request including an address, an order and data via said

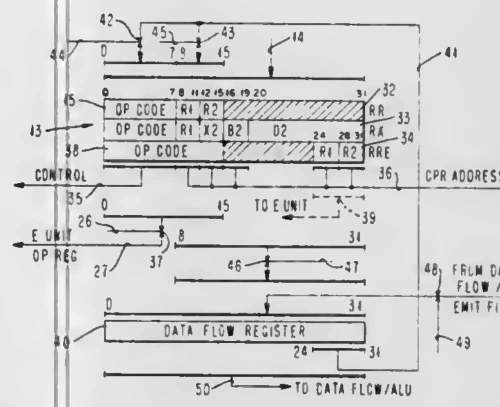


connecting means to all of the other central processing units to access said key storage means provided in said other central processing units, and for preventing the content of said key access request generated by said one of said central processing units from being transferred back to the same unit.

4,441,153
INSTRUCTION REGISTER CONTENT MODIFICATION USING PLURAL INPUT GATES AND A DATA FLOW REGISTER

Robert J. Bullions, III, Poughkeepsie, and Thomas A. Enger, Wappingers Falls, both of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Apr. 3, 1981, Ser. No. 250,812
Int. Cl.^{3} G06F *9/00, 9/22, 9/30*
U.S. Cl. 364—200 **5 Claims**

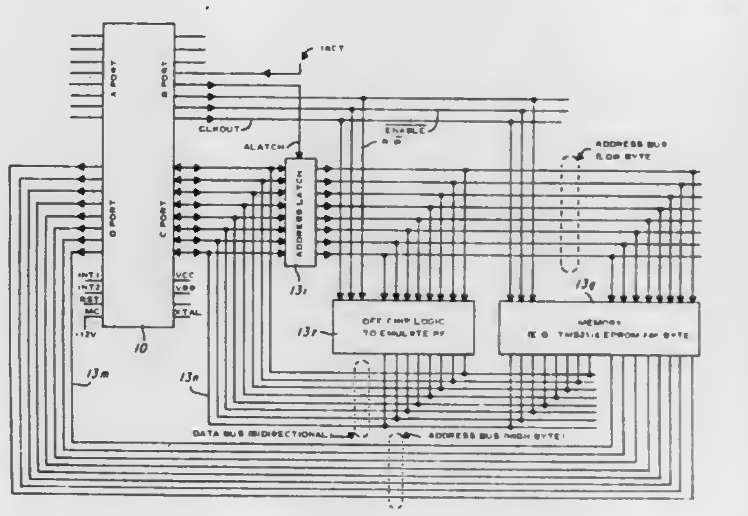


1. A data processing machine including:
an instruction register for storing a program instruction transferred from a program storage device, each instruction, and therefore said instruction register, including at least a first field including an operation code, and a second field;
a data flow register;
input gate means, having inputs connected to said data flow register and outputs connected to said instruction register;
output gate means, having inputs connected to said second field of said instruction register and outputs connected to said data flow register;
control means for controlling the central processing unit in accordance with an operation specified by said first field, including an input control signal means connected to said input gate means, and output control signal means connected to said output gate means for selectively gating data from said data flow register to said instruction register or from said instruction register to said data flow register.

4,441,154
SELF-EMULATOR MICROCOMPUTER

Kevin C. McDonough; John W. Hayn; Jeffrey D. Bellay, and Robert C. Thaden, all of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 13, 1981, Ser. No. 253,644
Int. Cl.^{3} G06F *11/22, 9/44*
U.S. Cl. 364—200 **3 Claims**



1. A microprocessor system comprising:
(a) a microprocessor device formed in a single semiconductor integrated circuit, including:
first internal memory means for storage of data, and second internal memory means for storage of commands which define operations in the device on said data;
arithmetic and logic means for performing said operations on said data;
register means for temporary storage of said data and temporary storage of addresses for accessing said first and second internal memory means;
a plurality of bus means interconnecting said first and second internal memory means, said arithmetic and logic means, and said register means;
control and timing circuitry having outputs coupled to said internal memory means, said arithmetic and logic means, said register means, and said bus means, for receiving said commands from said second internal memory means via said bus means and causing execution of said commands;
interrupt control circuitry receiving an input from a terminal of said device and coupled to said control and timing circuitry to interrupt the execution of a sequence of said commands,
a plurality of input/output registers and coupling means connecting said input/output registers to said bus means for access by addresses in said register means,
a plurality of input/output terminals for the device coupled to said input/output registers,
emulator control means receiving an input from a terminal of said device and coupled to said control and timing circuitry to disable said second internal memory means, whereby addresses are output to said input/output registers, and said interrupt control circuitry and to disable said coupling means whereby said input/output registers are not accessed by addresses from said register means; and
(b) external memory means for storage of commands which define operations in the device on said data, having an address input and a data output,
(c) external bus means coupled to said address input and said data output of said external memory means, and coupled to said input/output terminals for receiving addresses

from said register means and for transferring data from the external memory means to said register means.

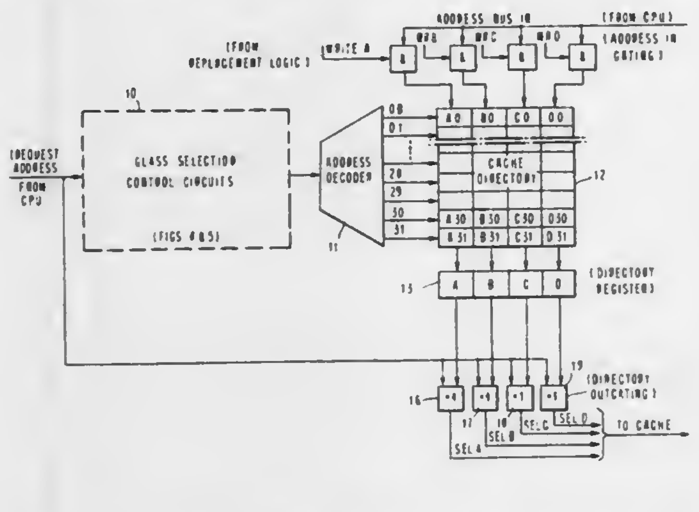
4,441,155
PAGE CONTROLLED CACHE DIRECTORY ADDRESSING

Robert P. Fletcher, and Daniel B. Martin, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 23, 1981, Ser. No. 324,165

Int. Cl.³ G06F *13/00*

U.S. Cl. 364—200 **9 Claims**



1. A method of modifying the addressing of a cache directory with a virtual addres requested by a CPU for accessing a page frame in main storage, the virtual address including an external page address field and an internal page address field, the external page address field being used for addressing the page frame in main storage, a page component field at the high-order end of the internal page address field, a congruence class selection field being taken from the virtual address and including the page component field, the modified cache addressing method comprising the steps of:

- selecting a group of contiguous bit positions from the requested virtual address including at least the congruence class selection field and a control bit position which is the lowest-order bit position in the external page address field,
- inverting the content of a sub-page bit position in the page component field of the congruence class selection field when the control bit position has one state and not changing the content of the sub-page bit position when the control bit position has another state,
- addressing the cache direction with a modified congruence class selection field derived by the inverting step being applied to the congruence class selection field obtained by the selecting step,
- whereby improved cache utilization can be obtained by the inverting step redistributing the congruence classes in the cache directory.

4,441,156
INTEGRATED FUEL MANAGEMENT SYSTEM

Dennis E. Barbeau, Temperance, Mich., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

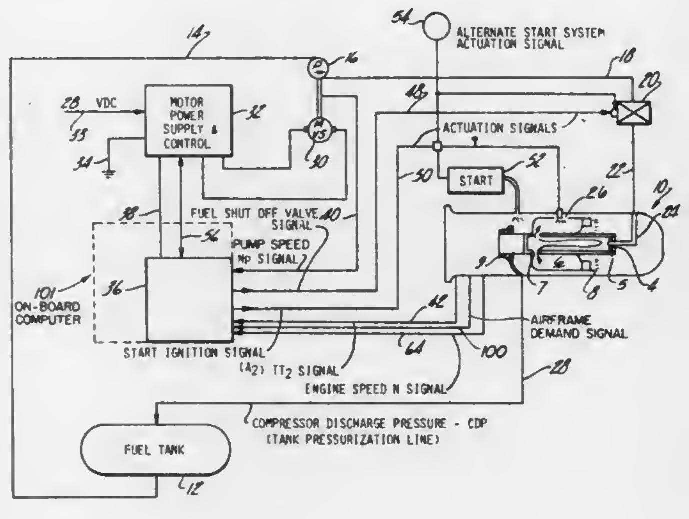
Filed Jan. 21, 1981, Ser. No. 226,632

Int. Cl.³ G06F *15/20*

U.S. Cl. 364—431.02 **11 Claims**

1. An aircraft fuel management system for an aircraft with an on-board aircraft guidance control system, said fuel management system comprising: an aircraft turbine engine having a combustor providing propulsion for the aircraft;

- a compressor driven by said turbine engine;
- a fuel reservoir;
- means operatively connected with said compressor for maintaining said fuel reservoir under constant pressure;
- a fuel pump receiving fuel from said fuel reservoir;
- a motor controlling said pump so as to provide fuel to said turbine engine;
- means for sensing at least one engine condition; and



- means for controlling said motor, said controlling means responsive to said sensing means.

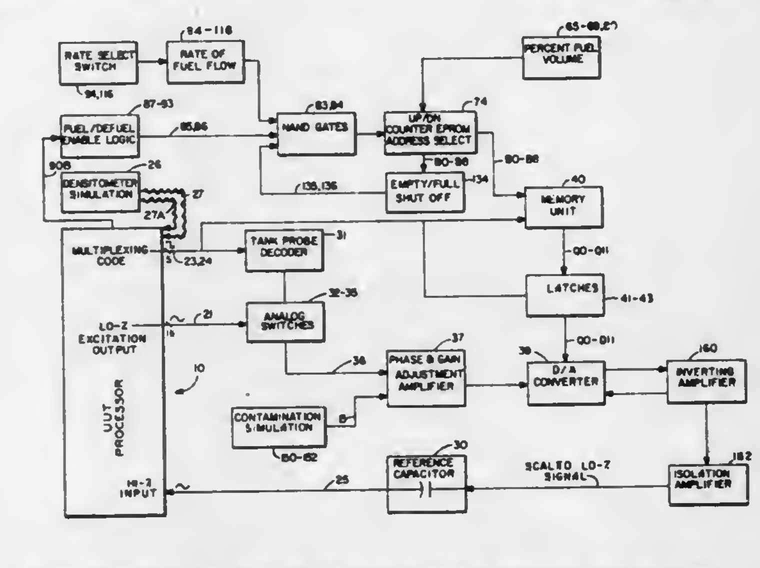
4,441,157
TEST UNIT FOR AIRCRAFT FUEL GAGING SYSTEM

Robert D. Gerchman, New Brighton; Ronald L. Newport, Fridley, and Martin J. van Dyke, Minneapolis, all of Minn., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed Nov. 13, 1981, Ser. No. 321,199

Int. Cl.³ G06G *7/50*

U.S. Cl. 364—551 **17 Claims**



1. A test unit for a liquid gaging system having probe lines for connection to sensors responsive to the depth of a liquid in a tank at particular locations and a common return line connected to said sensors, said system having means for supplying excitation signals to said probe lines and means for reading said sensors via said common lines return for liquid depth information at each of said sensors, said system having means for processing said information to calculate the liquid fuel volume in said tank; said test unit being connected to said probe lines and said return line in lieu of said sensors, said test unit comprising, storage means for storing characterization parameters simulating said sensors based on tank shape and volume and the location of said sensors in said tank with said parameters representing said depth information over a range of simulated tank fill conditions from zero to full, a reference element connected to said return line, control means for setting desired simulated tank levels, and means for processing said excitation signals via said storage means and said reference element to place current values on said return line which correspond to simulated levels set by said control means.

4,441,158
ARITHMETIC OPERATION CIRCUIT

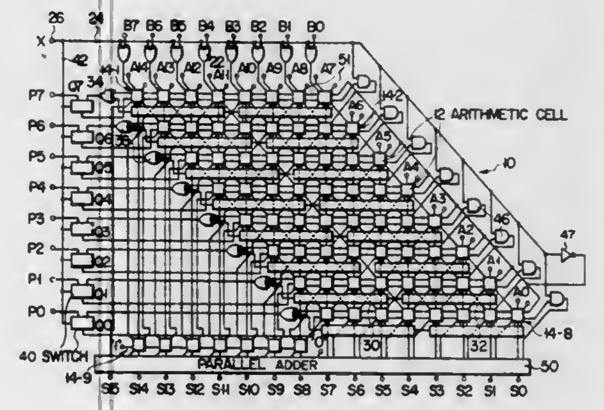
Akira Kanuma, Palo Alto, Calif., assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jul. 23, 1981, Ser. No. 285,980

Claims priority, application Japan, Jul. 31, 1980, 55-105749

Int. Cl.³ G06F *7/52;* **G05F** *7/50*

U.S. Cl. 364—758 **7 Claims**



1. A circuit for performing arithmetic operations on at least one operand, said circuit comprising:

- a first number of arithmetic cell groups each corresponding to a different stage of said arithmetic operations circuit and each including a second number of cascade-connected arithmetic cells, said first and second numbers being related to the number of bits in said at least one operand, and each of said arithmetic cells including an adder consisting substantially of complementary MOS transistors and a carry signal output; and
- a plurality of carry circuits, each including two carry circuit means cascade-connected to each other and respectively connected to the carry signal output of a third number of cells and to said arithmetic cell groups for performing carry skip processing, each of said carry circuits consisting substantially of enhancement/depletion type MOS transistors.

4,441,159
DIGITAL ADDER CIRCUIT FOR BINARY-CODED NUMBERS OF RADIX OTHER THAN A POWER OF TWO

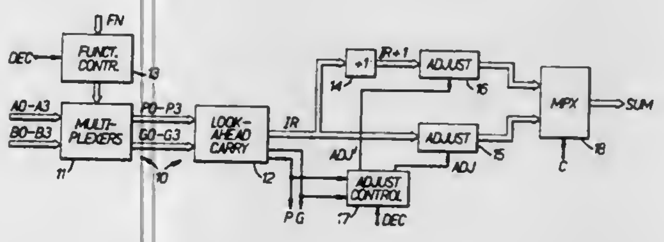
Peter A. Hart, Cheadle, England, assignor to International Computers Ltd., Stevenage, England

Filed Jul. 7, 1981, Ser. No. 281,300

Claims priority, application United Kingdom, Jul. 10, 1980, 8022572

Int. Cl.³ G06F *7/50*

U.S. Cl. 364—771 **6 Claims**



1. A digital adder circuit operable to form the sum of two n-bit operands representing binary-coded numbers of radix other than a power of two, comprising

- (a) a plurality of multiplexers each having two selection control inputs, four data inputs, and a data output,
- (b) means for feeding corresponding pairs of bits of the two operands to the selection control inputs of the respective multiplexers, and
- (c) means for applying a predetermined pattern of bits to the data inputs of the multiplexers to condition the multiplexers to produce, at their data outputs, inter-bit carry generate and carry propagate signals corresponding to the binary addition of the two operands plus a correction value equal to the difference between 2^n and said radix.

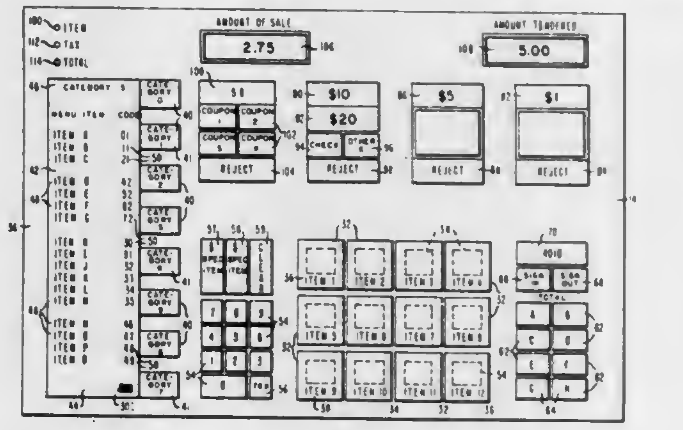
4,441,160
POINT OF SALE TERMINAL HAVING PROMPTING DISPLAY

Noris S. Azcua, Huntington Beach; George D. Margolin, Newport Beach, and Audrey Miller, Claremont, all of Calif., assignors to Auto-Register, Inc., Placentia, Calif.

Continuation of Ser. No. 957,912, Nov. 6, 1978, abandoned. This application Mar. 9, 1981, Ser. No. 242,054

Int. Cl.³ G06F *15/21*

U.S. Cl. 364—900 **33 Claims**



1. In a point of sale device for ordering a number of items having a computer electronically interconnected to a keyboard, a memory device and a display device such that actuation of said keyboard causes the retrieval from memory of stored information and the display of the information on the display device comprising:

- key members organized into a first and second hierarchy; said first hierarchy known as item keys wherein each key is uniquely identified with a single unit; said second hierarchy known as category keys wherein each key is uniquely identified with a group of single units;
- each of said item keys depicting a single unit for being ordered;
- each of said category keys depicting a group of single units which can be individually ordered;
- the item ordered by the actuation of an item key is constant with respect to the actuation of a category key;
- the keyboard containing enough category key members to display substantially all of the units which can be ordered at the device;
- actuation of an item key member causes said point of sale device to order a unit;
- actuation of a category key member causes said display to show a group of units for sale and the code necessary to order any unit in the group displayed.

4,441,161
PROGRAMMABLE SEQUENCE CONTROL METHOD AND DEVICES

Junichi Sasaki, and Yoshihiko Okayama, both of Numazu, Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 9, 1981, Ser. No. 252,586

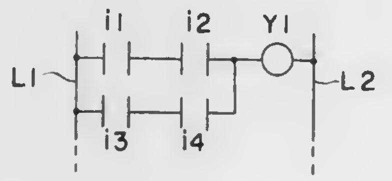
Claims priority, application Japan, Apr. 17, 1980, 55-50713

Int. Cl.³ G06F *9/00*

U.S. Cl. 364—900 **3 Claims**

1. A programmable sequence control apparatus comprising a

first memory device for storing sequence program instructions, an input/output device for introducing input data and delivering output data therethrough, a relay ladder operation device for executing logic operations for a relay ladder circuit having n rows and m columns (n and m are positive integers) in accordance with said program instructions, and a control device for delivering control signals to the relay ladder operation device, the improvement wherein said input/output device includes a second memory device for storing the addresses and the logic conditions of input/output elements, said control device includes a third memory device for storing temporarily contact data fetched out of the second memory device such that the contact data corresponding to each column can be read-out consecutively, and also for storing temporarily branch data fetched out of the first memory device such that the branch data corresponding to each column can be read out consecutively, said relay ladder operation device comprises a first shift register of a series-in and parallel-out type which receives and stores the contact data corresponding to one column j (j=1, 2, . . . , m) read-out of the third memory device consecutively, a second shift register of a series-in and parallel-out type which receives and stores the branch data corresponding to said column j read-out of the third memory device, a third shift register normally operable in a parallel input/parallel output mode, the contents of which are all initially set to logic "1", and a gate circuit including logic element groups each executing logic operation for one row of said column j of said relay ladder circuit based on the parallel delivered output of said first and second shift registers corresponding to the column j and the parallel delivered output of said third shift register corresponding to the column (j−1), the results of the logic operation for said column j executed in said gate circuit replacing the contents for the column (j−1) of said third register, and said relay ladder operation device, under the control of the control device, repeats said operation for all the columns of said relay ladder circuit starting from the first column to the last column.



4,441,162
LOCAL NETWORK INTERFACE WITH CONTROL PROCESSOR & DMA CONTROLLER FOR COUPLING DATA PROCESSING STATIONS TO COMMON SERIAL COMMUNICATIONS MEDIUM

Terrance L. Lillie, Palo Alto, Calif., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Apr. 22, 1981, Ser. No. 256,332

Int. Cl.^{3} G06F *15/16, 3/04*

U.S. Cl. 364—900 **7 Claims**

1. A local network interface for interface for connecting a common serial communications medium to a data processing station, said station including at least one station processor, comprising;

(a) communications control means for monitoring and formatting the flow of data to and from said interface;

(b) a buffer memory for storing data upon receipt from said medium and for storing data to be transmitted to said medium;

(c) a direct memory access (DMA) controller operatively connected to said communications control means and said buffer memory for controlling the flow of data between said communications control means and said buffer memory;

(d) a control processor operatively connected to said communications controller means, said DMA controller and said buffer memory for controlling the operation of said interface;

(e) an interprocessor communications means for transferring data between said buffer memory and said data processing station;

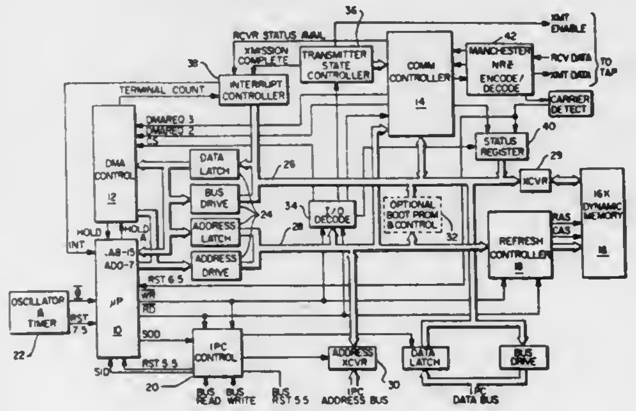
(f) whereby to receive data;

  (f1) said control processor initializes said communications control means for receipt of data;

  (f2) said communications control means signals said control processor upon detection of a message intended for said interface;

  (f3) said control processor initializes said DMA controller;

  (f4) said message is received and is formatted by said communications control means and transferred to said buffer memory by said DMA controller;



  (f5) said control processor signals said station processor and said message is transferred to said data processing station by said interprocessor communications means; and,

(g) whereby to transmit data:

  (g1) said station processor signals said control processor and a message is transferred to said buffer memory by said interprocessor communications means;

  (g2) said DMA controller is initialized by said control processor and said communications control means is initialized by said control processor to transmit data;

  (g3) when said medium is free, said message is transmitted from said buffer memory to said communications control means by said DMA controller;

  (g4) said data reformatted and transmitted by said communications control means.

4,441,163
DYNAMIC SEND QUEUE MODIFICATION SYSTEM

Gary E. Leikam, Austin; Robert L. Wierwille, Leander, and Rebecca S. Wood, Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 16, 1981, Ser. No. 274,352

Int. Cl.^{3} G06F *3/04, 3/14*

U.S. Cl. 364—900 **19 Claims**

1. A data communication system for enabling one data transmitting display terminal to communicate with at least one data receiving terminal, the improvement wherein the data transmitting display terminal comprises:

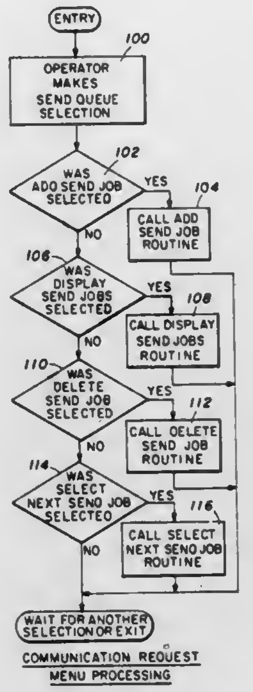
means for forming a queue of entries identifying documents to be transmitted, each of said documents identified by an entry in said queue;

means for sequentially transmitting the documents identified by the entries in said queue;

means operative during said transmission for accessing entries from said queue prior to the transmission of the documents identified by said accessed entries;

means responsive to said means for accessing for completing the transmission of a document being transmitted;

means operative during said transmission for displaying said accessed entries; and


ENTRY
100
OPERATOR MAKES SEND QUEUE SELECTION
102
WAS ADD SEND JOB SELECTED
YES
104
CALL ADD SEND JOB ROUTINE
NO
106
WAS DISPLAY SEND JOBS SELECTED
YES
108
CALL DISPLAY SEND JOBS ROUTINE
NO
110
WAS DELETE SEND JOB SELECTED
YES
112
CALL DELETE SEND JOB ROUTINE
NO
114
WAS SELECT NEXT SEND JOB SELECTED
YES
116
CALL SELECT NEXT SEND JOB ROUTINE
NO
WAIT FOR ANOTHER SELECTION OR EXIT
COMMUNICATION REQUEST MENU PROCESSING

means operative during said transmission for altering said accessed entries prior to the transmission of said documents identified thereby.

4,441,164
ELECTRONIC TELEPRINTING APPARATUS INCLUDING A REMOVABLE PROGRAMMED EPROM

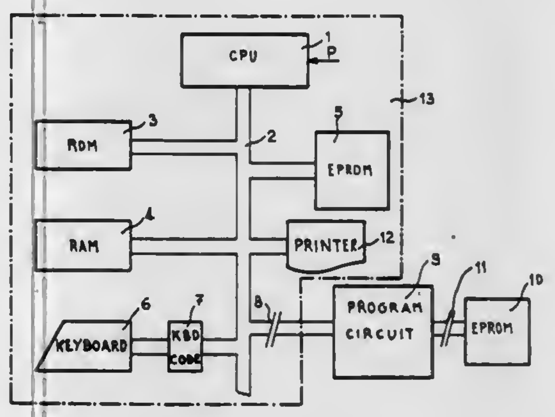
Gianni Pavan, and Mario Lorenzi, both of Ivrea, Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Jul. 1, 1981, Ser. No. 279,580

Claims priority, application Italy, Jul. 3, 1980, 68050 A/80

Int. Cl.^{3} G06F *15/16*

U.S. Cl. 364—900 **10 Claims**



1. An electronic teleprinting apparatus including a removable programmed EPROM and comprising a central processor, a keyboard for entering commands and data for said processor, and a printer controlled by said processor for printing telegraphic messages, said programmed EPROM being recorded with operating routines for said processor, as well as with telegraphic indentification data, wherein the improvement comprises an EPROM programming circuit included in the apparatus and conditionable for programming a fresh EPROM, connecting means adapted to be rendered effective for connecting said fresh EPROM to said programming circuit and for so conditioning said programming circuit, said programming circuit including means controlled by said processor for reading data from said programmed EPROM and for selectively supplementing and selectively modifying the data so read in combination with said data entered from said keyboard in accordance to said commands and data entered from said keyboard, said processor including control means for conditioning said printer to print the data read from said programmed EPROM and the data so supplemented and modified for checking purpose, and command means operable for conditioning said programming circuit to permanently record said supplemented and modified data on said fresh EPROM, whereby the programmed EPROM can be functionally replaced by the fresh EPROM so recorded, and thus may be removed.

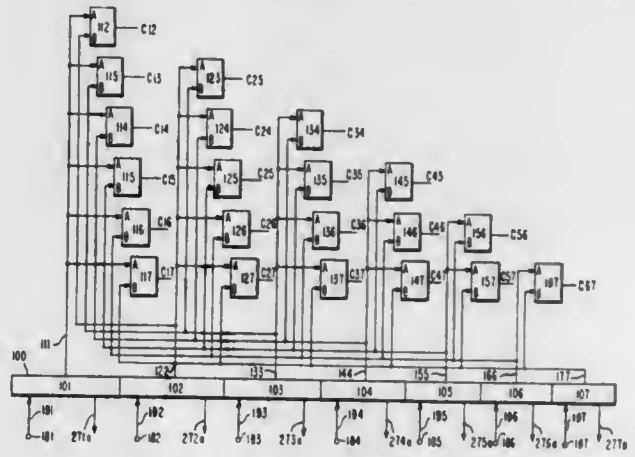
4,441,165
REAL-TIME ORDINAL-VALUE FILTERS UTILIZING COMPLETE INTRA-DATA COMPARISONS

Guy B. Coleman, Northridge; James W. Henderson, Woodland Hills, and Jacob M. Sacks, Thousand Oaks, all of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Sep. 28, 1981, Ser. No. 306,251

Int. Cl.^{3} G06F *7/06;* G06K *9/64*

U.S. Cl. 364—900 **27 Claims**



1. An apparatus for determining which one of a set of R applied data signals is the Mth-largest, this apparatus comprising:

(A) Input Storage Means, for receiving and accessibly storing the subject set of R data signals;

(B) Comparison Means, responsive to these stored data signals,

  (1) for comparing each of the R data signals with every other data signal in the set, and

  (2) for providing, as the output results of these comparisons, comparison-output signals indicative of the relative magnitude of the compared signals;

(C) Detector Means, responsive to these comparison-output signals,

  (1) for testing at least (R-1) selected common-element subsets,

    (a) where each of the subsets consists essentially of all comparison-output results obtained from the comparison between a given one of the data signals and each of the other (R-1) data signals, and where the common-data element of each of the at least (R-1) subsets is different from that of any of at least (R-2) other selected subsets,

    (b) this testing being so as to determine, for each of at least (R-1) of such subsets, whether the comparison-output signals indicate that the associated common data element is smaller than exactly (M-1) of the other (R-1) data signals, thus making such a signal the desired Mth-largest, and

  (2) for generating a detector-output signal indicative of which of the R applied data signals satisfies this (M-1) condition.

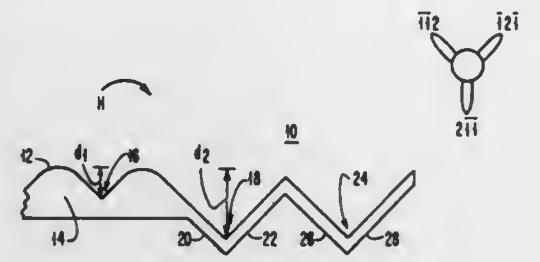
4,441,166
PASSIVE ANNIHILATOR FOR CONTIGUOUS-DISK BUBBLE DEVICES

William J. Kabelac, Morgan Hill, and Ian L. Sanders, Sunnyvale, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 24, 1982, Ser. No. 381,473

Int. Cl.³ G11C *19/08*

U.S. Cl. 365—36 **8 Claims**



1. A passive annihilator for ion-implanted contiguous-disk bubble devices comprising:

a non-implanted pattern having a plurality of first cusps and forming a propagation path, said first cusps having a first depth, and

a narrow non-implanted region connected to said pattern to form a second cusp therebetween, said region having a width that provides a poor propagation path, said second cusp having a second depth that is of the order of at least four times the depth of said first cusps wherein the bubbles entering said second cusp have difficulty propagating out of said second cusp, and are collapsed during a subsequent rotating field cycle.

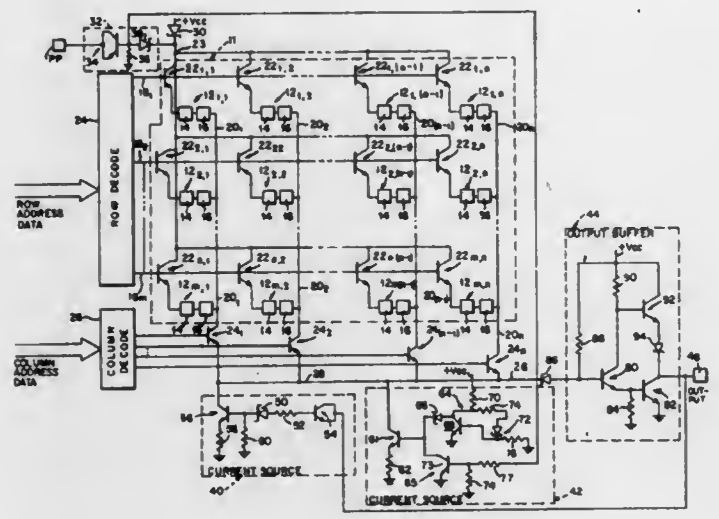
4,441,167
REPROGRAMMABLE READ ONLY MEMORY

Fabio Principi, San Jose, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Dec. 3, 1981, Ser. No. 327,144

Int. Cl.³ G11C *17/00*

U.S. Cl. 365—94 **6 Claims**



1. A memory circuit, comprising:

a plurality of addressable non-volatile memory elements each one thereof having a first non-volatile programmable device electrically coupled to a second non-volatile programmable device, the first programmable device having a normally relatively low resistance characteristic which, when programmed, is changed to a relatively high resistance characteristic, and the second programmable device having a normally relatively high resistance characteristic which, when programmed, is changed to a relatively low resistance characteristic.

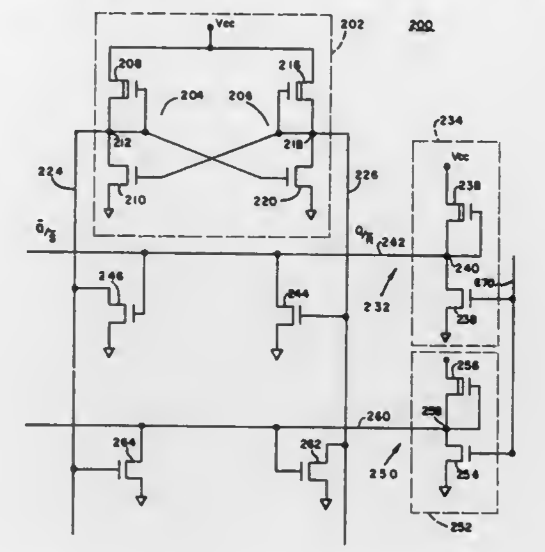
4,441,168
STORAGE LOGIC/ARRAY (SLA) CIRCUIT

Wolodymyr Luciw, Norristown, Pa., assignor to Sperry Corporation, New York, N.Y.

Filed Jan. 13, 1982, Ser. No. 339,022

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—154 **6 Claims**



1. A storage logic array circuit comprising:

a column circuit including,

a storage cell having only two terminals for storing a set state and a reset state, said set state being represented by a signal of a first level at a first of said terminals and a signal of a second level at a second of said terminals, and said reset state being represented by a signal of said second level at said first terminal and a signal of said first level at said second terminal, said storage cell including means responsive to a signal of said second level at said first terminal for switching from said set state to said reset state;

first and second column leads connected to said first and second terminals, respectively;

a source providing a continuous reference signal of said second level;

first and second row conductors;

a means for simultaneously applying pulses to said first and second row conductors; and

row circuit means including a first gated transistor connected to said column lead, said first row conductor and said source for connecting said first row conductor to said source when a pulse is applied to said first row conductor and said storage cell is in said set state, and a second gated transistor connected to said second row conductor, said first column lead and said source for connecting said first column lead to said source when a pulse is applied to said second row conductor and said storage cell is in said set state,

whereby said source is connected to said first terminal to switch said storage cell from said set state to said reset state.

4,441,169
STATIC RANDOM ACCESS MEMORY HAVING A READ OUT CONTROL CIRCUIT CONNECTED TO A MEMORY CELL

Itsuo Sasaki, Kawasaki, and Hiroaki Suzuki, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 23, 1982, Ser. No. 351,518

Claims priority, application Japan, Feb. 25, 1981, 56-26361

Int. Cl.³ G11C *11/40, 13/00*

U.S. Cl. 365—190 **13 Claims**

1. A static Random Access Memory comprising:

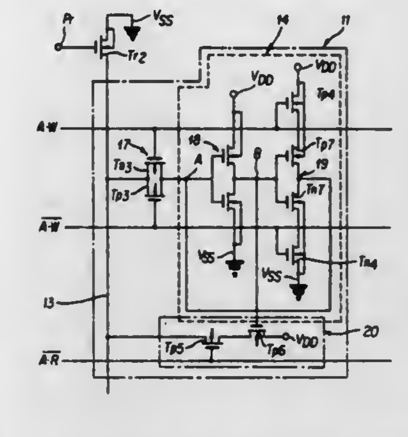
a flip-flop circuit having a first inverter circuit with a first input node and a first output node and a second inverter circuit with a second input node and second output node, said first output node being connected to the second input node and said second output node being connected to the first input node;

a first power source and an address read line;

a data line having a voltage setting means;

a write-in switching means connected between the data line and the first input node for forming a memory cell with the flip-flop circuit; and

a read-out control circuit having first and second switching means connected in series between the first power source and the data line, said first switching means controlled by data stored in the memory cell, said second switching means coupled to the address read line and controlled by an address read signal.



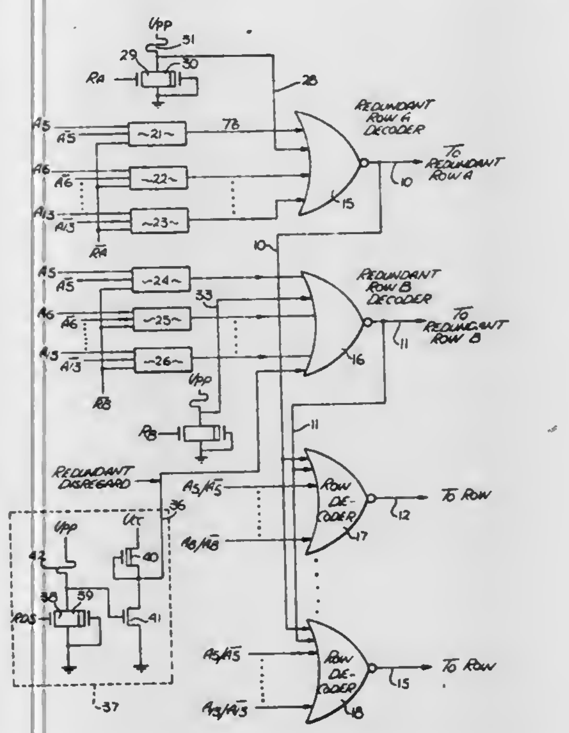
4,441,170
MEMORY REDUNDANCY APPARATUS FOR SINGLE CHIP MEMORIES

Alan C. Folmsbee, Santa Clara; Kim Kokkonen, Campbell, and William J. Spaw, Moss Beach, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 192,494, Sep. 30, 1980, Pat. No. 4,358,833. This application Nov. 12, 1981, Ser. No. 320,600

Int. Cl.³ G11C *7/00*

U.S. Cl. 365—200 **17 Claims**



1. In a memory which includes first lines selected by first address signals and second lines selected by second address signals, an improved redundancy apparatus comprising:

a plurality of redundant first lines;

programmable decoder means for selecting said redundant first lines upon receipt of predetermined ones of said first address signals, said decoder means being programmed to recognize said predetermined first address signals and, wherein said decoder means includes fuses which are coupled in series with parallel combinations of two transistors one of which has a threshold voltage of substantially zero volts;

selection means coupled to receive at least a portion of said second address signals for selection of said decoder means during said programming and for disabling programming of said decoder means upon receipt of certain signals;

whereby said memory is programmed to use said redundant lines, and then programmed to prevent inadvertent programming.

4,441,171
MONOLITHICALLY INTEGRATED SEMICONDUCTOR MEMORY

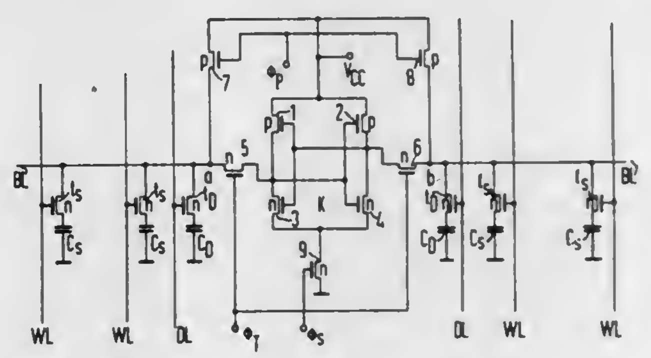
Kurt Hoffmann, Taufkirchen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jan. 13, 1982, Ser. No. 339,156

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1981, 3101520

Int. Cl.³ G11C *11/24, 7/00*

U.S. Cl. 365—205 **6 Claims**



1. Monolithically integrated semiconductor memory, comprising:

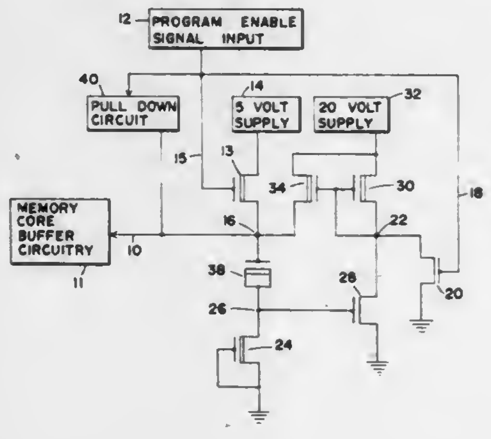
a reference potential source, a supply potential source, a matrix of identical one-transistor memory cells disposed in a set of row members and a set of column members, identical comparators constructed in CMOS technology, and comparison cells, one of said comparators and one of said comparison cells being assigned to each of said members of one of said sets;

said comparators each including: a first MOS-field effect transistor of a given first channel conductivity type having a gate electrode controlled by a first clock signal, a first current-carrying terminal connected to said reference potential source, and a second current-carrying terminal, a flip-flop formed of first and second pairs of MOS-field effect transistors each having current-carrying terminals, said transistors of one of said pairs being of the n-channel type and said transistors of the other of said pairs being of the p-channel type, said first pair of transistors having said given channel conductivity type of said first transistor, one of said current-carrying terminals of each of said transistors of said first pair forming a first supply terminal connected to said second current-carrying terminal of said first transistor for receiving reference potential from said reference potential source, one of said current-carrying terminals of each of said transistors of said second pair forming a second supply terminal directly connected to said supply potential source, two second MOS-field effect transistors of a channel conductivity type opposite said given type, each of said second MOS-field effect transistors having gate electrodes controlled by a common second clock signal, first current-carrying terminals connected to said second supply terminal and second current-carrying terminals, two third MOS-field effect transistors each having a gate electrode controlled by a common third clock signal, a first current-carrying terminal connected to a respective one of said second current-carrying terminals of said second transistors, and a second current-carrying terminal, and two terminals of said flip-flop for receiving information each being connected to a respective one of said second current-carrying terminals of said third transistors;

said one-transistor memory cells and said comparison cells being connected to said first current-carrying terminals of said third transistors for acting on said comparators.

4,441,172
SEMICONDUCTOR MEMORY CORE PROGRAM CONTROL CIRCUIT

Mark S. Ebel, Santa Clara, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.
Filed Dec. 28, 1981, Ser. No. 334,697
Int. Cl.^{3} G11C *7/00*
U.S. Cl. 365—226 10 Claims



1. A control circuit for regulating the programming pulse presented to the core of an electrically alterable read-only semiconductor memory, said memory being of the type in which a selected bit is read by introducing a low voltage on a program line from a low voltage supply and said selected bit is programmed by introducing a high voltage on the same program line from a high voltage supply, said control circuit being formed on the semiconductor chip and comprising:

a first circuit node electrically coupled to the program line;

first switching means connected to said first node and adapted for connection to said low voltage supply, operable in response to the reception of a first input signal to connect said first node to the low voltage supply and in response to a second input signal to disconnect said first node from said low supply;

a second circuit node;

second switching means connected to said first node and adapted for connection to said high voltage supply and also controllably coupled to said second node, operable in response to the voltage at said second node to increase the voltage at said first node toward the high voltage of said high voltage supply and thereby produce said programming pulse;

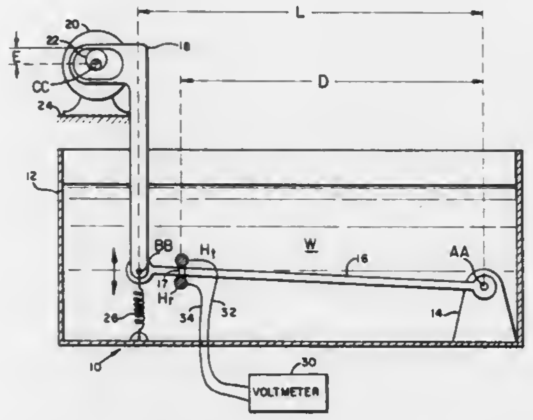
a voltage increasing means connected to said second node, operable in response to the reception of said first input signal to hold said second node at a voltage such that said second switching means does not change the first node voltage and operable in response to the reception of said second input signal to increase the second node voltage;

a voltage decreasing means connected to said second node operable in response to a control signal to control the voltage increase on said second node; and

control signal generating means coupled to said first node and to said decreasing means, operable to produce said control signal in response to excessively fast increases in the first node voltage so as to activate said decreasing means.

4,441,173
VERY LOW FREQUENCY HYDROPHONE CALIBRATION

James F. McEachern, State College, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Mar. 17, 1982, Ser. No. 358,982
Int. Cl.^{3} H04R *29/00*
U.S. Cl. 367—13 8 Claims



1. A system for calibrating a hydrophone in water operable at very low frequencies using a reference hydrophone of known response characteristics, comprising:

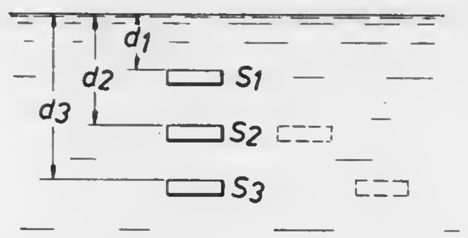
an elongated arm pivotal in the water about a substantially horizontal axis;

means for mounting the hydrophones in aligned proximity to each other along said arm at substantially the same longitudinal distance from said pivotal axis; and

drive means for moving said arm about its pivotal axis in substantially vertical oscillations so that the hydrophones are subjected to equivalent changes in hydrostatic pressure at the same frequency.

4,441,174
STACKED MARINE SEISMIC SOURCE

Clifford H. Ray, and Neil A. Moore, both of Houston, Tex., assignors to Fairfield Industries, Inc., Houston, Tex.
Filed Aug. 10, 1981, Ser. No. 291,269
Int. Cl.^{3} G01V *1/36, 1/38*
U.S. Cl. 367—23 17 Claims



1. A marine seismic wave source, including a plurality of individual gas expansible sources, each of said sources producing a primary shock wave into the water from the location where said source is positioned, each of said sources also producing an after shock wave into the water a predetermined time after said primary shock wave, comprising;

a first of said individual sources located at a first depth below the surface of the water, the negative portion of said primary wave from said first source being separated from the positive portion thereof dependent on the round-trip acoustical travel time of the source impulse to the water surface, the positive portion of the after shock wave therefrom occurring at a time after the primary shock wave dependent on the pressure of the water at said first depth, the negative portion of said after shock wave being separated from its positive portion by the same time separation that the negative portion of the primary wave is separated from its positive portion,

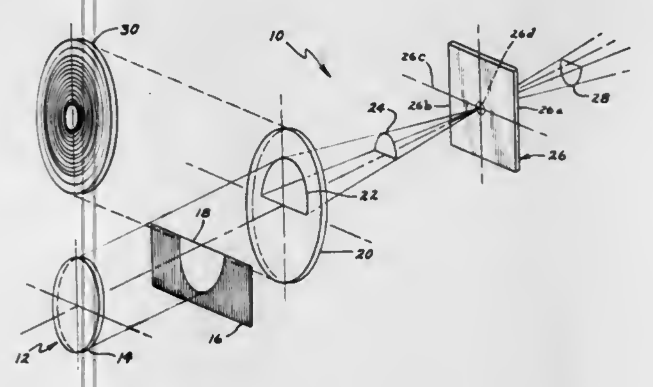
a second of said individual sources located at a second depth below the surface of the water greater than said first depth, the negative portion of said primary wave from said second source being separated from the positive portion thereof dependent on the round-trip acoustical travel time of the source impulse to the water surface, the positive portion of the after shock wave therefrom occurring at a time after the primary shock wave dependent on the pressure of the water at said second depth, the negative portion of said after shock wave being separated from its positive portion by the same time separation that the negative portion of the primary wave is separated from its positive portion,

the round-trip time for said second source being longer than the round-trip time for said first source, the pressure for said second source being greater than the pressure for said first source, thereby causing the relative time of arrival of said after shock for said second source to be shorter than for said first source,

said positive portions of the primary waves from said first and second sources occurring at a location below said second source before the negative portions of the primary waves from said first and second sources occur at said location, said negative portion of the after shock wave from said first source occurring before the positive portion of the after shock wave from said second source occurs at said location, whereby, the primary shock wave energy accumulates in a frequency spectrum range lower than the frequency spectrum for said individual first and second sources.

4,441,175
PARTIAL BEAM FOCUS SENSING IN AN OPTICAL RECORDING SYSTEM

Curtis A. Shuman, Colorado Springs, Colo., assignor to Magnetic Peripherals Inc., Minneapolis, Minn.
Filed Jan. 25, 1982, Ser. No. 342,459
Int. Cl.^{3} H04N *5/76;* G11B *7/00*
U.S. Cl. 369—45 4 Claims



1. A partial beam focus sensing system in optical recording comprising:

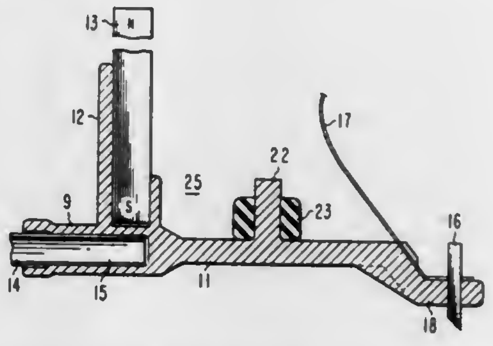
a Fresnel lens element for receiving a collimated light beam in an optical recording system representative of light reflected from optical recording media and not for receiving any light transmitted to said media,

a centrally symmetric mask element proximate to said lens element for eliminating a portion of said light beam and transmitting a partial light beam, and

a light detector array comprising at least two light detecting elements matched to said mask element and disposed to receive said partial beam from said lens element.

4,441,176
DAMPING MECHANISM FOR A VIDEO DISC STYLUS HOLDER

Stephen T. Newell, Danville, Ind., assignor to RCA Corporation, New York, N.Y.
Filed Apr. 8, 1982, Ser. No. 366,643
Int. Cl.^{3} G11B *3/50*
U.S. Cl. 369—170 13 Claims



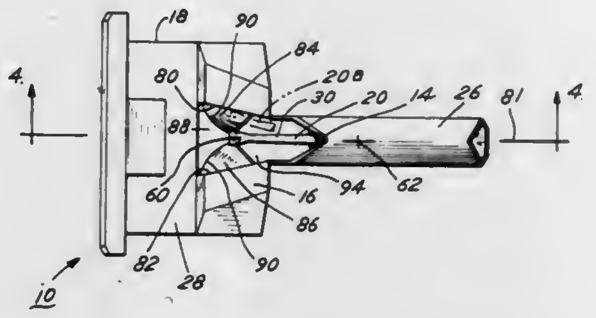
1. In a stylus holder for holding a disc record signal pickup stylus, said holder being of the type having a longitudinal center section separating first and second end sections, said first end section being adapted to receive and secure said pickup stylus, said second end section being adapted for securing the stylus holder to a support arm and said center section exhibiting compliance for limited decoupling of motion of said first end section from the support arm, and wherein said stylus holder has resonant modes at which it is subject to be excited into objectionable mechanical oscillation normal to said longitudinal center section and wherein said center section is mechanically damped to reduce the amplitude of said oscillation, an improved damping apparatus comprising:

an extension perpendicular to the long axis of the center section located between the ends of said center section;

an annular shaped mass circumferentially mounted on said extension, said annular shaped mass being supported by said extension and said longitudinal center section only, to afford vertical compliance to said holder so that said signal pickup stylus reliably tracks said disc record to provide added mass whose inertia tends to maintain said mass in some average position effecting frictional forces which damp said objectionable mechanical oscillation.

4,441,177
STYLUS PROTECTION MECHANISM

Allen R. Groh, Buffalo Grove, and Joseph D. Kehl, Chicago, both of Ill., assignors to Shure Brothers, Inc., Evanston, Ill.
Continuation of Ser. No. 154,087, May 28, 1980, abandoned.
This application Oct. 12, 1982, Ser. No. 433,985
Int. Cl.^{3} G11B *3/52*
U.S. Cl. 369—170 9 Claims



1. A phonograph stylus protection mechanism in a stylus assembly having a stylus with a tip and a shank, the stylus being pivotably mounted to the assembly at a pivot point along the shank and being deflectable into and out of operating and non-operating positions by external forces, the mechanism comprising:

a zone defining member on the assembly including limiting surfaces adjacent the operating position and defining a protective zone for the stylus in which the stylus is protected from external forces; and

means on the assembly for guiding the stylus to the protective zone during lateral deflection of the stylus away from the operating position, the means including angled deflection edges positioned (1) to be physically contacted by the stylus during the lateral deflection and (2) to guide the stylus to the protective zone through the physical contact;

whereby the stylus is protected from damage during lateral deflection.

4,441,178
METHOD OF CORRECTING A POSITION OF A DISK RECORD ON A TURNTABLE

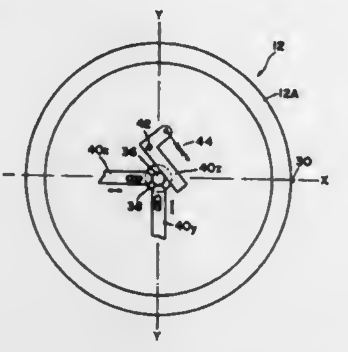
Kozo Kobayashi, and Hiromu Meguro, both of Kodaira, Japan, assignors to Nakamichi Corporation, Tokyo, Japan

Filed Jan. 29, 1982, Ser. No. 343,878

Claims priority, application Japan, Feb. 2, 1981, 56-14081; Feb. 3, 1981, 56-14860; Mar. 10, 1981, 56-34213

Int. Cl.³ G01B *7/00;* G11B *25/04*

U.S. Cl. 369—270 **12 Claims**



1. A method of correcting a position of a record on a turntable comprising the steps of:

tracing a groove of said record by a stylus mounted on a pickup arm so that said pickup arm is angularly displaced in accordance with the eccentricity of said record relative to the rotational center of said turntable;

detecting an angular displacement of said pickup arm while said groove is traced and obtaining eccentric information of said record relative to said rotational center of said turntable; and

correcting said position of said record in accordance with said eccentric information whereby said record on said turntable is placed in a concentric manner relative to said rotational center of said turntable.

4,441,179
OPTICAL VIDEO DISC STRUCTURE

Gary G. Slaten, Fountain Valley, Calif., assignor to Discovision Associates, Costa Mesa, Calif.

Continuation of Ser. No. 3,148, Jan. 15, 1979, Pat. No. 4,310,919. This application Jun. 19, 1981, Ser. No. 322,500

The portion of the term of this patent subsequent to Jan. 12, 1998, has been disclaimed.

Int. Cl.³ G11B *7/24;* H04N *5/85*

U.S. Cl. 369—275 **2 Claims**

2. An information storage member structure comprising:

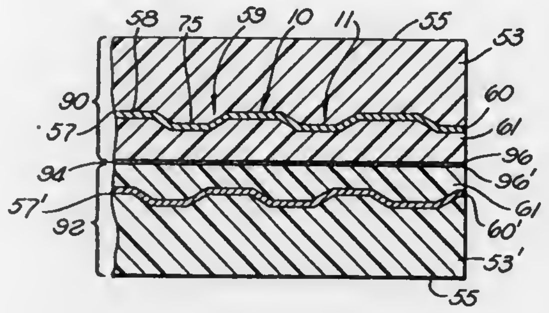
a first disc-shaped information storage member formed of a plastic material having a relatively low resistance to the absorption of moisture and carrying information on an information-bearing surface thereof;

a second disc-shaped information storage member formed of a plastic material having a relatively low resistance to the absorption of moisture and carrying information on an information-bearing surface thereof;

a thin, moisture impervious reflective layer overlying the information-bearing surface of each of said first and second information storage members;

a thin protective layer overlying each of said reflective layers;

each of said first and second information storage members having a thickness greater than the combined thicknesses of its corresponding reflective layer and protective layer; and



means for joining together said protective layers in facing adjacent relationship, to form said storage member structure.

4,441,180
SERVICE INTEGRATED COMMUNICATION TRANSMISSION AND INTERCHANGE SYSTEM

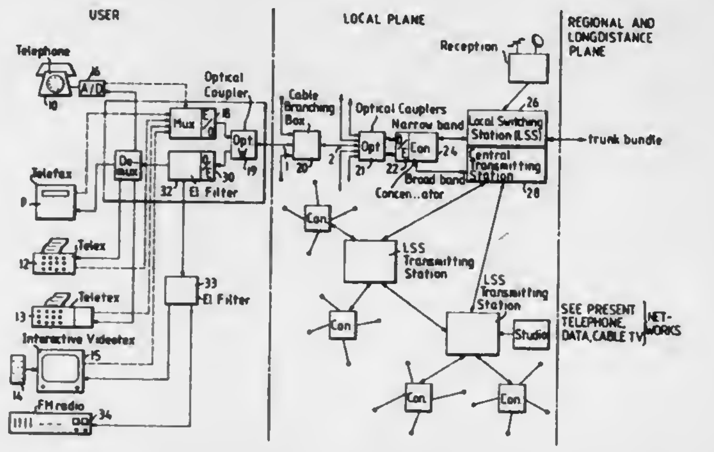
Hans Schüssler, Backnang, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed May 30, 1980, Ser. No. 155,132

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1979, 2922418

Int. Cl.³ H04B *9/00*

U.S. Cl. 370—3 **7 Claims**



1. In a service integrated communications transmission and switching system for audio, video and data between a user terminal and a local switching station of a telephone system wherein said user terminal includes, in addition to a telephone device with an associated code converter for the transmission and reception of telephone signals in digital form, at least one device for a narrowband service for digital data and at least one device for a broadband service with analog data signals such as video or audio broadcasting, and wherein means are provided for connecting said user terminal to said local switching station so that signals may be transmitted in both directions between said user terminal and said local switching station, the improvement wherein: said means for connecting said user terminal to said local station comprises a single light-conductive fiber having one end connected to said user terminal, and a preliminary field concentration means, connected between the other end of said single light-conductive fiber and said local switching station, for connecting signals from and to a plurality of user terminals to said local switching station; said user terminal includes respective means connected to said light-conductive fiber for transmitting and receiving an optical carrier signal modulated with the data to be transmitted via said light-conductive fiber in wave multiplex duplex operation, with said means for transmitting and receiving an optical signal at said user terminal receiving only a modulated optical signal in a first optical region and transmitting only an optical signal in a second optical region; and said concentrator means includes: first means for coupling signals to be transmitted to said user terminal and decoupling received signals from said user terminal to and from said light-conductive fiber; second means, connected to said first means, for separating analog signals for said broadband services and digital signals for said narrowband and telephone services received from said user terminal into the individual services and for combining analog and digital signals to be transmitted to said user terminal in said first optical region; third means, connected between said second means and said local station, for time multiplexing digital signals for said narrowband and telephone services received from said second means and for transmitting these signals to said local station, and for time demultiplexing digital signals for said narrowband and telephone services received from said local station and supplying the time demultiplexed signals to said second means for transmission to said user terminal; and fourth means, connected to said second means, and for directly establishing a connection for the analog signals for said broadband services between said user terminal and said local station by switching in space multiplex.

4,441,181
OPTICAL WAVELENGTH-DIVISION MULTIPLEX SYSTEM

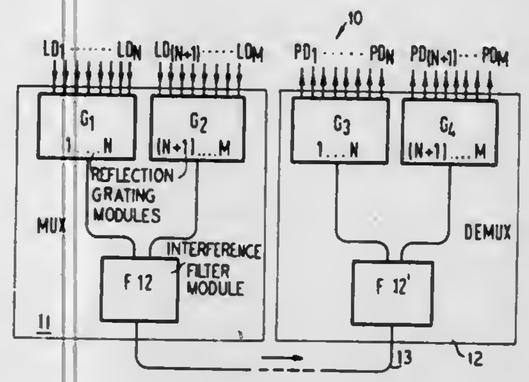
Gerhard Winzer, Munich; Hans Mahlein, and Achim Reichelt, both of Unterhaching, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 17, 1981, Ser. No. 303,093

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1980, 3037712

Int. Cl.³ H04J *1/02*

U.S. Cl. 370—3 **16 Claims**



1. In an optical wavelength-division multiplex system with a multiplexer unit, a demultiplexer unit, and means for forming a transmission path between the two units, the improvement comprising both the multiplexer unit and the demultiplexer unit each having a plurality of modules including at least a reflection grating module and an interference filter module, the reflection grating modules and interference filter modules of each unit being matched to one another and each unit having at least one reflection grating module and at least one interference filter module being connected in series in a randem sequence.

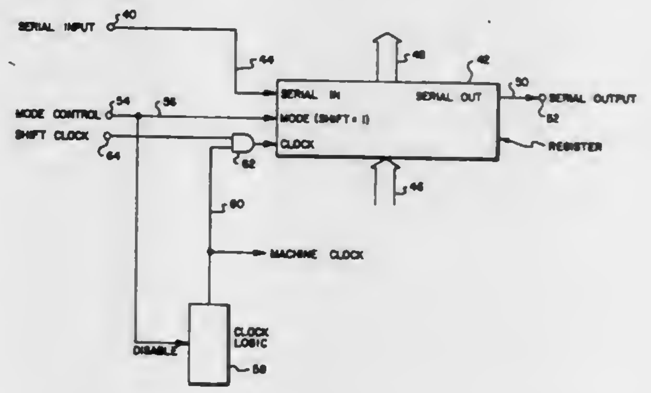
4,441,182
REPETITIOUS LOGIC STATE SIGNAL GENERATION APPARATUS

David W. Best, Marion, and Jeffrey D. Russell, Cedar Rapids, both of Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed May 15, 1981, Ser. No. 264,178

Int. Cl.³ G06F *11/00, 11/14, 11/22*

U.S. Cl. 371—25 **2 Claims**



1. Apparatus for testing portions of a register based state machine, other than random access memory, which are affected by the clocking of the state machine by using a predefined control bit pattern comprising in combination:

instruction register means including serial control signal input means and serial data output means;

state responsive machine apparatus including said instruction register means;

first means, connected to said instruction register means, for serially loading a predefined control bit pattern into said instruction register means through said serial control signal input means;

second means, connected to said serial control signal input means of said instruction register means, for inhibiting said instruction register means from changing said predefined control bit pattern contained therein until a given test is complete;

third means, including clock means, operating as part of said state machine apparatus for iteratively executing said predefined control bit pattern in said instruction register means through a clocking procedure over a predetermined period of time causing the repetitious execution of logical operations in the remaining portions of said state machine apparatus until said given test is complete;

fourth means, for detecting in said remaining portions of said state machine, the resulting repetitiously occurring signals due to the repeated execution of said predefined control bit pattern in said instruction register by monitoring logic level values and associated lengths of time at each logic level value, said values being continuously altered by the clocking of said clock means until said given test is complete, and wherein said fourth means comprises cyclical input signal detection test equipment having no active part in the operation of said state machine apparatus.

4,441,183
APPARATUS FOR TESTING DIGITAL AND ANALOG CIRCUITS

Jean A. Dussault, Plainsboro, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Mar. 22, 1982, Ser. No. 369,302

Int. Cl.³ G06F *31/28*

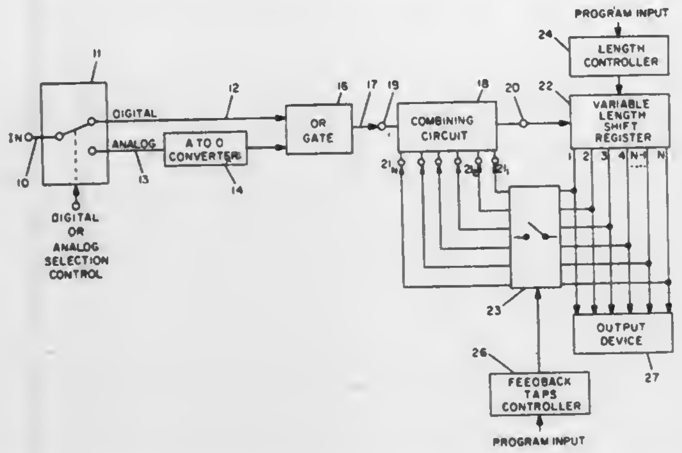
U.S. Cl. 371—25 **7 Claims**

1. Apparatus for testing an electronic circuit comprising:

input means connectable to the electronic circuit under test for receiving data signals characteristic of said circuit;

a shift register having a plurality of successive stages defining an overall register length;

means for selectively varying said overall register length under program control;
means coupling said input means to said shift register including means for combining said data signals with predetermined feedback signals out of said shift register;

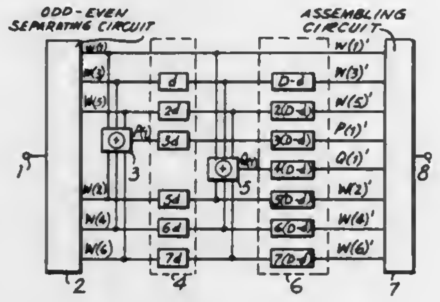


means for selecting said predetermined feedback signals under program control; and
output means coupled to all the stages of said shift register for indicating the status of said circuit under test.

4,441,184
METHOD AND APPARATUS FOR TRANSMITTING A DIGITAL SIGNAL

Takenori Sonoda; Nobuhiko Watanabe, and Masato Tanaka, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 7, 1981, Ser. No. 290,850
Claims priority, application Japan, Aug. 12, 1980, 55-110674
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—40 **8 Claims**

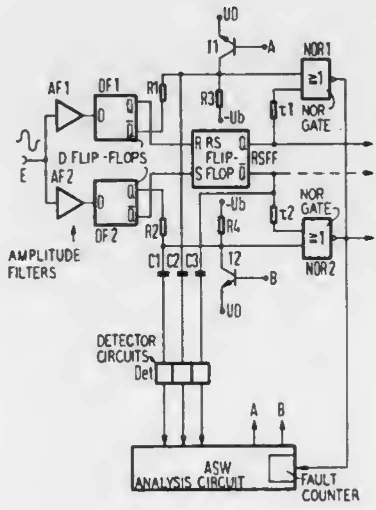


1. An encoder for preparing a digital signal for transmission so as to protect against errors occurring as a result of transmission, comprising:
means for receiving said digital signal as a series of successive data words;
separating circuit means for alternately distributing said data words of said series into a first group of sequences of data words and a second group of sequences of data words;
encoder circuit means for providing at least one error correction word sequence, generating elements of which are formed of respective words of said sequence of data words;
interleaving means imparting different respective delays to said sequences of data words so that the shortest delay time for any word sequence in the second group is longer than the greatest delay time for any word sequence in the first group, and also imparting to said at least one error correction word sequence a delay that is intermediate said greatest delay time of the first group and said shortest delay time of the second group; and
assembly circuit means for forming a series of transmission blocks of the words of the respective data word sequences and said at least one error correction word sequence delayed by their respective delay times.

4,441,185
MONITORING METHOD AND DEVICE FOR A PCM REGENERATOR HAVING A CODE RULE VIOLATION CHECKING DEVICE

Hans G. Jungmeister, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 21, 1981, Ser. No. 285,547
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1980, 3027735; Jan. 21, 1981, 3101797
Int. Cl.³ G06F *11/30*
U.S. Cl. 371—56 **11 Claims**

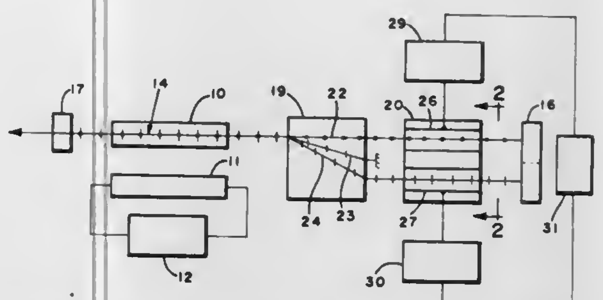


1. An arrangement for monitoring a regenerator for pseudoternary digital signals of positive and negative input pulses and which produces two amplitude-wise and time-wise regenerated unipolar pulse trains one of which represents the positive input pulses and the other of which represents the negative input pulses, comprising:
an input terminal for receiving the input pulses;
first and second D flip-flops each including a D input, a Q output and a Q output;
amplitude filter means connecting said D inputs to said input terminal and operable to feed the positive input pulses to said first D flip-flop and the negative input pulses to said second D flip-flop;
an RS flip-flop including an S input connected to said Q output of said second D flip-flop, an R input connected to said Q output of said first D flip-flop and Q and Q outputs for providing a push-pull output for the regenerated unipolar pulse trains, each of said pulse trains containing all of the information of the input pulses;
first and second NOR gates each including an output connected to the like output of the other for an OR function for providing error indication signals, a first input connected to a respective output of said RS flip-flop and a second input connected to a respective output of said first and second D flip-flops;
voltage detector means connected to respective selected outputs of said first and second D flip-flops;
an analysis circuit connected to said voltage detector means and to said outputs of said NOR gates, said analysis circuit including two control signal outputs and operable to produce control signals for checking the operation of said NOR gates in response to the voltage detected; and first and second transistors each including a collector-emitter circuit connected between the respective second input of a respective NOR gate and a predetermined potential and a base connected to a respective control signal output of said analysis circuit, and operable in response to the control signals to place said second input at the predetermined potential.

4,441,186
ELECTRONICALLY SWITCHABLE MULTIWAVELENGTH LASER SYSTEM

Edward G. Erickson, Sunnyvale, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Filed Dec. 31, 1981, Ser. No. 336,195
Int. Cl.³ H01S *3/10*
U.S. Cl. 372—19 **10 Claims**

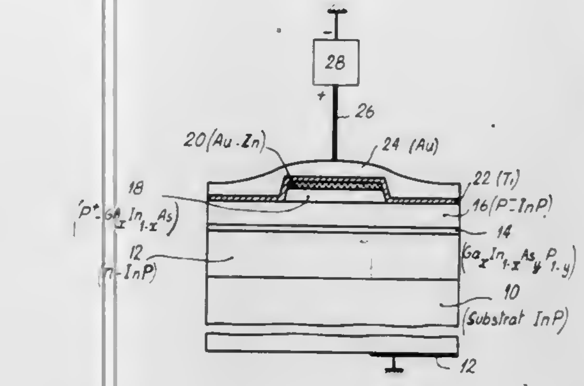


1. A laser system comprising
a lasing medium capable of generating a beam of coherent light having at least two different wavelengths,
means for optically pumping said medium,
first and second optical reflectors optically aligned with and spaced from opposite ends of said medium and defining therebetween an optical cavity of the laser system, one of said reflectors being highly reflective at said two wavelengths, the other of said reflectors being partially transmissive at said two wavelengths whereby to couple an output from said cavity.
a birefringent component and an electrooptically active element in optical alignment with said medium and said one of said reflectors,
said component refracting said beam into orthogonally polarized rays having said first and second wavelengths,
said element having electrode means aligned with said rays and having the property of rotating the polarization of said rays when said electrode means are energized, and
means for selectively energizing said electrode means to inhibit propagation of the ray at said first wavelength and to permit propagation of the ray at said second wavelength whereby the laser oscillates and produces an output at said second wavelength.

4,441,187
A SEMICONDUCTOR LASER LIGHT SOURCE

Jean-Claude Bouley, 35, Avenue du Docteur Durand, 94110 Arcueil; Josette Charil, 61, Avenue Victor Hugo, 92140 Clamart, and Guy Chaminant, 64bis, rue de Paris, 91570 Bievres, all of France

Filed Jul. 15, 1981, Ser. No. 283,631
Claims priority, application France, Jul. 31, 1980, 80 16947
Int. Cl.³ H01S *3/19*
U.S. Cl. 372—46 **7 Claims**

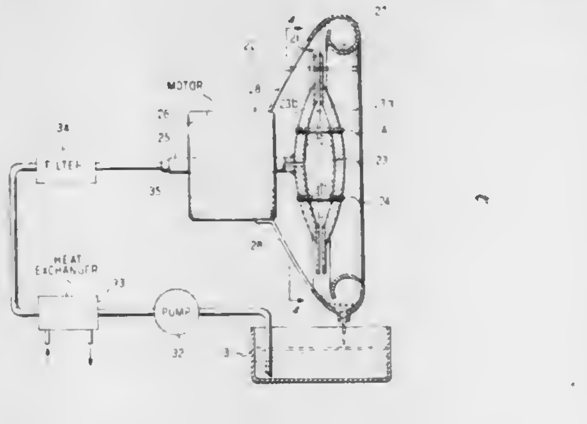


1. A light source with a semiconductor junction comprising a substrate on which are successively deposited a first and second semiconductor layer having opposite doping, a highly doped contact layer partly covered by an alloyed metal layer forming an ohmic contact and a metal layer covering the alloyed layer, together with the remainder of said second semiconductor layer, said metal layer being connected to a power supply, wherein the semiconductor constituting the second layer is chosen from among those which form a Schottky diode in contact with said metal layer, said Schottky diode being reverse polarized under the normal operating conditions of the light source, a charge injection taking place in a zone limited to said single ohmic contact excluding the zones in which there is a Schottky diode.

4,441,188
DYE LASERS

Julian Stone, Rumson, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 8, 1981, Ser. No. 299,655
Int. Cl.³ H01S *3/20*
U.S. Cl. 372—54 **8 Claims**

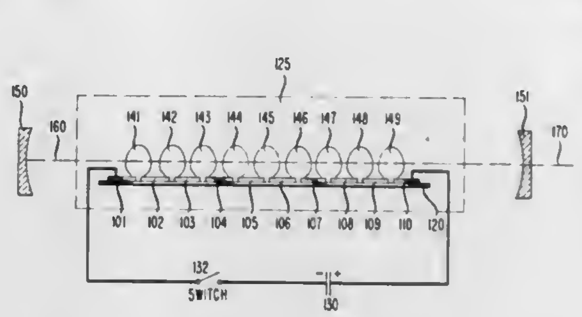


1. In a dye laser (FIGS. 1, 5 or 6) which comprises a pumping laser source (e.g., **11**), an optical resonator (e.g., **13–15**), and a dye solution flowing through a dye cell (e.g., **12**) disposed in the path of the pumping laser light in said resonator, said dye cell being characterized by a pair of closely spaced transparent discs (**21**), means (**26**) for spinning said discs at a high rate of speed, a pumping laser light spot being focused on the discs at a predetermined angle, and means (**32** and **25**) for injecting said dye solution axially with respect to said discs so that a radial flow of the dye solution is caused by the spin force.

4,441,189
FOIL ELECTRODE SPER LIGHT SOURCE

John J. Macklin, Highlands; William T. Silfvast, Holmdel, both of N.J., and Obert R. Wood, II, New York, N.Y., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 9, 1982, Ser. No. 367,216
Int. Cl.³ H01S *3/097*
U.S. Cl. 372—76 **12 Claims**



1. In a recombination light source, apparatus comprising:
excitation means (**130**) for producing radiation;
said excitation means comprising at least two strips (**101–110**) having at least one gap, which at least one gap provides at least one intervening discharge path; and

means for applying an electrical pulse to said at least two strips;

at least a portion of said at least two strips being fabricated from a material which is converted into a plasma as a result of the application of said electrical pulse, which plasma cools and recombines to generate said radiation; characterized in that

said portions comprise a material having a figure of merit M much less than unity and are sufficiently thin so that said discharge path occurs only between adjacent ones of said at least two strips.

4,441,190
COUPLING DEVICE FOR ARC FURNACE ELECTRODES

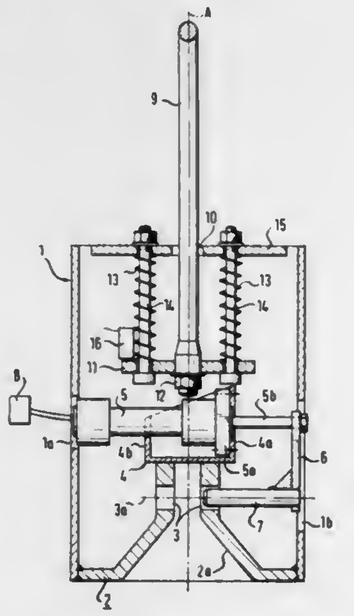
Günther Vielstich, Witten; Hanns-Georg Bauer, Witten-Bommern; Josef Mühlenbeck; Josef Otto, both of Wetter; Horst Feldhoff, Witten; Dieter H. Zöllner, Schwaig b. Nürnberg, and Friedrich Rittmann, Rückersdorf b. Nürnberg, all of Fed. Rep. of Germany, assignors to Arc Technologies Systems Ltd., Grand Cayman, Cayman Islands

Filed Dec. 18, 1981, Ser. No. 332,158

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1980, 3047620

Int. Cl.³ H05B *7/101*

U.S. Cl. 373—94 **16 Claims**



1. In an arc furnace having at least one arc electrode removably retained within the arc furnace and including a connector element for use in lifting the electrode from the arc furnace employing a lifting appliance, and having a coupling for interconnecting the arc electrode and the lifting appliance, the coupling comprising: a lock configured for detachably engaging the connector element of the arc electrode; a guiding means configured to guide said connector element along an insertion axis into a position for engagement by the lock; and a suspension means interposed between the arc electrode and said lifting appliance including means for shockabsorbing and for accommodating relative motion in a direction parallel to said insertion axis between said suspension means and said lock.

4,441,191
APPARATUS FOR HEATING A CONTINUOUS FLOW OF MOLTEN METAL

Bengt Fredrikson, and Bertil Hans, both of Västerås, Sweden, assignors to Asea AB, Västerås, Sweden

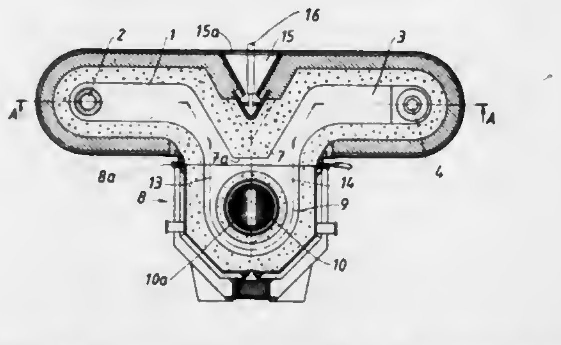
Filed Oct. 14, 1981, Ser. No. 311,442

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1980, 8008136

Int. Cl.³ H05B *5/14*

U.S. Cl. 373—161 **2 Claims**

1. An apparatus for heating a continuous flow of molten metal and comprising a horizontally elongated furnace adapted to contain the flow and having opposite ends of which one is provided with an inlet for the flow and the other end is provided with an outlet for the flow, the furnace having a side wall, the side wall having an opening below the level of the flow in the furnace and an inductor having an induction heating channel connecting with the opening, the inductor and side wall opening being positioned substantially at the middle of the furnace and the furnace having a side wall opposite to the one having the opening and which has a central side wall portion which inwardly projects horizontally towards the side wall opening and inductor.



4,441,192
SIGNAL PROCESSING SYSTEM HAVING IMPULSE RESPONSE DETECTING CIRCUIT

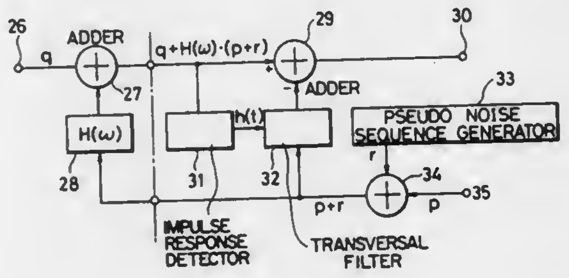
Yasuhiro Kita, Hachioji; Nobuo Tsukamoto, Tachikawa; Masahiro Koya, Kodaira, and Narimichi Maeda, Tachikawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 19, 1981, Ser. No. 294,229

Claims priority, application Japan, Aug. 29, 1980, 55-118311

Int. Cl.³ H04B *3/04*

U.S. Cl. 375—14 **2 Claims**



1. A signal processing system comprising:

code sequence generating means for generating a selected code sequence including a plurality of coefficients and having a discernible auto-correlation characteristic;

transmission means connected to the output of said generating means for transmitting signals, including said selected code sequence, including a hybrid circuit for coupling a two-wire line to a four-wire output line and for coupling a four-wire input line to said two-wire line, said code sequence generating means being coupled to said four-wire input line;

impulse response detecting means coupled to said four-wire output line for determining the impulse response of said transmission means by detecting the correlation between the output signal of said transmission means and said selected code sequence, including delay means having a plurality of taps at which are fed out a plurality of continuous sample values of said selected code sequence received from said transmission means, means for producing the coefficients of said selected code sequence, a plurality of multipliers connected to said plural taps of said delay means for effecting multiplications of said sample values by the produced coefficients of said code sequence, and means for adding the outputs of said multipliers; and

means coupled to said transmission means for optimizing the transmission waveform of the signals transmitted by said transmission means in response to the output of said impulse response detecting means, including a transversal filter connected to be driven by the output of said impulse response detecting means and to be receptive of the signal of said four-wire input line and means for subtracting the output of said filter from the signal of said four-wire output line.

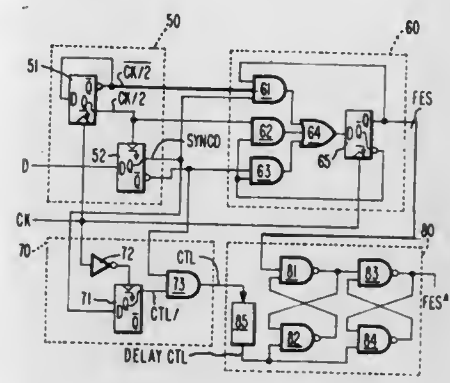
4,441,193
FREQUENCY-ENCODING CIRCUIT FOR REDUCING DISTORTION

John L. Bell, Escondido, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed May 3, 1982, Ser. No. 374,506

Int. Cl.³ H04L *27/10*

U.S. Cl. 375—36 **11 Claims**



1. An electronic circuit for generating a modified frequency-encoded signal that is less suceptible to transmission line distortion than a conventional frequency-encoded signal of the type that includes a serial sequence of a relatively low and a relatively high frequency with symmetrical half-cycles, said circuit comprising:

means fo receiving a signal from an external source that is representative of the signal which is to be modified frequency-encoded, and for generating a control signal indicating when a transition occurs in the corresponding conventional frequency-encoded signal from said relatively low to said relatively high frequency; and

means responsive to said control signal for receiving said corresponding conventional frequency-encoded signal from another external source, and modifying the same such that the duration of the half-cycle that immediately follows said transition is longer than one-half the period of said relatively high frequency by a predetermined amount of time and the duration of the next half-cycle is shorter by a like amount of time.

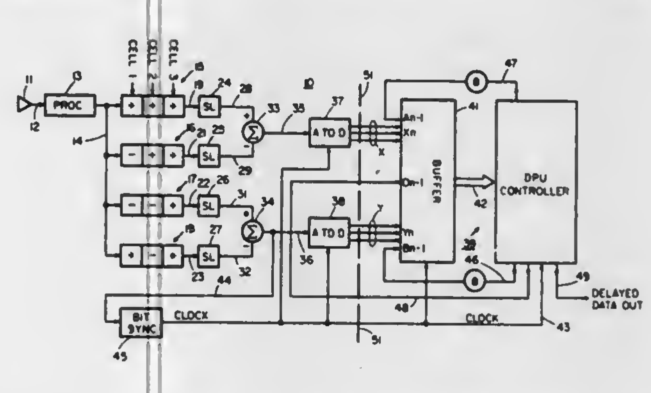
4,441,194
TRIPLE BIT NON-COHERENT MATCHED FILTER RECEIVING SYSTEM

Samuel C. Kingston, Salt Lake City; Billie M. Spencer, Bountiful; John W. Zscheile, Jr., Farmington, all of Utah, and Robert Price, Lexington, Mass., assignors to Sperry Corporation, New York, N.Y.

Filed May 19, 1982, Ser. No. 379,597

Int. Cl.³ H03D *3/06*

U.S. Cl. 375—96 **10 Claims**



1. A system for refining the non-coherent detection of data bits in a stream of data bits modulated onto a carrier signal, comprising:

means for receiving said data bits,

a plurality of matched filters coupled to said received data bits,

detector means coupled to the outputs of each of said matched filters for providing an absolute value voltage output,

a first summing device coupled to a first predetermined pair of said matched filters for providing a voltage value of a best soft decision of the data bit being detected,

a second summing device coupled to a second predetermined pair of said matched filters for providing a voltage value of a second best soft decision of the data bit being detected,

first and second analog to digital converter means for converting the voltage value outputs of said first and second summing devices to digital values X and Y,

storage means for storing the digital values of X and Y,

storage means for storing the best decision of digital values A of the stream of data bits previously detected,

storage means for storing the second best decision of digital values B of the stream of data bits previously detected,

storage means for storing a digital value D representative of a calculated probability factor, and

controller means, including clock means and comparison means for making predetermined sets of calculations employing X, Y, D, A and B to provide new digital values of D, A and B and for changing the lower order bits of the values of A and B to provide a final hard decision of the value of the highest order bit of A which is representative of the best hard decision of the value of a bit detected before the X and Y bits were detected.

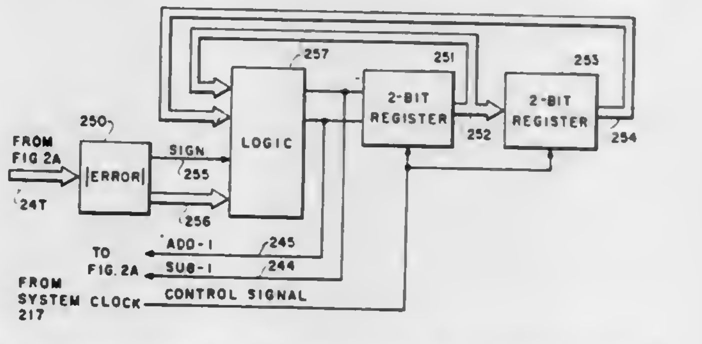
4,441,195
SHORT TERM RESPONSE ENHANCEMENT FOR DIGITAL PHASE-LOCKED LOOP

David R. Baldwin, and Nicholas S. Lemak, both of Phoenix, Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Jul. 10, 1981, Ser. No. 251,846

Int. Cl.³ H03L *7/18*

U.S. Cl. 377—2 **2 Claims**



1. In a phase-locked loop circuit with an enhancement circuit, for producing an output signal having a phase difference which is constant with respect to an input signal, said input signal having a time period subject to fluctuations, said phase-locked loop circuit including a timing element for generating clock pulses, a register element for storing a total number of said clock pulses which occur in a predetermined number of time periods of said input signal to generate a first and a second output signal, said first output signal representative of the average number of said clock pulses which occur in a time period over said predetermined number of time periods of said input signal, and said second output signal representative of a predicted number of said clock pulses which are expected to occur between said output signal and said input signal, a counter element operatively connected to said timing element for counting said clock pulses whereby said counter element contains a value of counter clock pulses, a compare element

operatively connected to said counter element and further operatively connected to said register element, for comparing the value of counted clock pulses to said first output signal to generate said output signal, said output signal operatively coupled to said counter element for resetting said counter element, and a subtractor element operatively coupled to the output terminal of said counter element and further operatively coupled to said register element, for generating a difference signal between the value of counted clock pulses and said second output signal in response to said input signal, said difference signal operatively coupled to said register element, wherein said enhancement circuit comprises:

(a) first means, having an input terminal adapted to receive an error signal, the input terminal of said first means operatively connected to said register element and to said subtractor element, for generating a numeric absolute value of said error signal and an algebraic sign of said error signal; and

(b) logic means, having an input terminal adapted to receive the numeric absolute value of said error signal and the algebraic sign of said error signal, for generating a first signal and a second signal, said first and second signal being operatively coupled to said counter element, wherein the value of the counted clock pulses contained in said counter element is modified in response to said first and second signal.

4,441,196

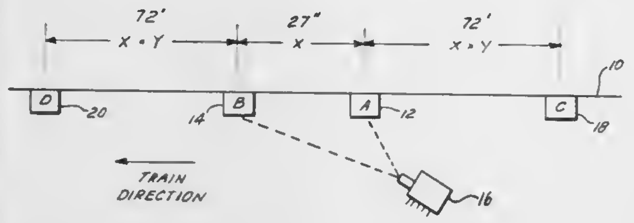
SPEED INDEPENDENT SYSTEM FOR OBTAINING PRESELECTED NUMBERS OF SAMPLES FROM OBJECT MOVING ALONG FIXED PATH

W. Woodward Sanville, Brentwood, N.Y., assignor to Servo Corporation of America, Hicksville, N.Y.

Filed Feb. 28, 1980, Ser. No. 125,487

Int. Cl.³ G06M *3/02*

U.S. Cl. 377—9 11 Claims



1. A method for obtaining a predetermined number of data samples of equal time intervals from an object passing through a sensing zone independent of the speed at which the object passes through the sensing zone by dividing the time in which the object passes through the sensing zone into said predetermined number of equal time intervals regardless of the speed of the object and samping the object during each of the intervals, said method comprising the steps of:

(a) establishing a first reference distance upstream of said sensing zone which is a known multiple of the length of said sensing zone;

(b) measuring the time required for the object to pass through said reference distance;

(c) dividing the aforementioned time by a divisor comprising the product of said known multiple and the predetermined number whereby to obtain a single time interval;

(d) consecutively counting off single time intervals during the time said object passes through the sensing zone; and,

(e) obtaining a data sample from said object during each of said single intervals whereby to obtain said predetermined number of data samples regardless of the speed of the object.

4,441,197

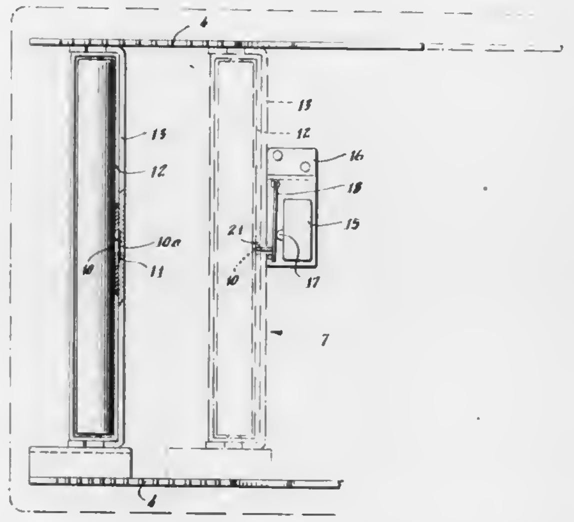
VALUE PRINTING DEVICE WARNING FUNCTION FOR REPLACING AN INKING MEMBER

Danilo P. Baun, Easton, and Alton B. Eckert, Jr., Norwalk, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 28, 1981, Ser. No. 334,934

Int. Cl.³ G06M *3/02*

U.S. Cl. 377—15 4 Claims



1. In a value printing device, a system for automatically indicating to an operator thereof that an inking member therein should be replaced after a fixed number of inking cycles has been run, said system comprising:

(a) first electrical means capable of storing said fixed cycle number and comparing it to the number of cycles actually run at any given time, and which will generate a first electrical impulse when the last cycle of said fixed cycle number has been run;

(b) second electrical means for generating a second electrical impulse when a new inking member has been placed in said device, wherein said second electrical impulse causes said first electrical means to commence a count of inking cycles;

(c) third electrical means automatically activatable by said first electrical means for generating a signal which is sensible to an operator of said printing device when the last inking cycle of said fixed number has been run;

(d) a cartridge having a housing for receiving an inking member, said cartridge housing having an opening therein covered by a pierceable membrane;

(e) piercing means mounted within said value printing device in substantial alignment with said housing opening; and

(f) means for causing relative movement between said cartridge and said piercing means; wherein,

(g) said relative movement causes said piercing means to enter said cartridge housing opening to pierce said membrane, and wherein the piercing force causes said second electrical means to generate said second electrical impulse.

4,441,198

SHIFT REGISTER CIRCUIT

Jun Shibata, Sakai; Haruyasu Yamada, Hirakata; Toshiki Mori, Ibaraki, and Toyoki Takemoto, Yawata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 22, 1981, Ser. No. 275,848

Claims priority, application Japan, Jun. 26, 1980, 55-87290; Jun. 26, 1980, 55-87291

Int. Cl.³ G11C *19/28;* H03K *19/173*

U.S. Cl. 377—78 6 Claims

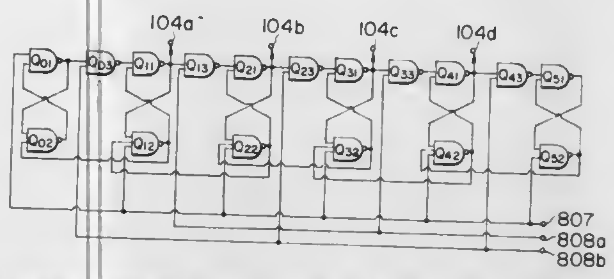
1. A shift register circuit comprising:

means for supplying a pair of clock pulse signals having different phases;

a first flip-flop having an input and an output;

a second flip-flop having first and second inputs and first and second outputs which are 180° out-of-phase, one of said outputs being directly connected to the input of said first flip-flop;

a third flip-flop having first and second inputs and first and second outputs which are 180° out-of-phase, one of said outputs being directly connected to the first input of said second flip-flop;



a first gate coupling the output of said first flip-flop to the second input of said second flip-flop;

a second gate coupling the other of the outputs of said second flip-flop to one of the inputs of said third flip-flop;

said first and second gates being suitably controlled on and off by the different phases of said clock pulse signals; and

said first flip-flop being set and said second and said third flip-flops being reset by a reset signal.

4,441,199

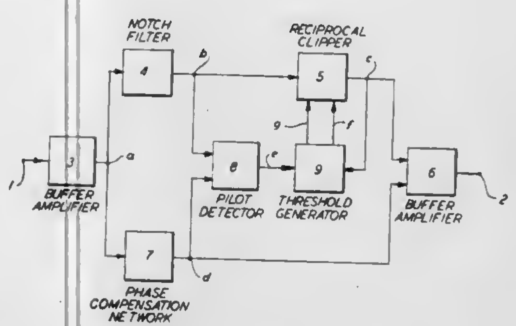
METHOD AND APPARATUS FOR AMPLITUDE LIMITING A COMPOSITE SIGNAL

John K. Chester, 99 Myrtle Ave., Brooklyn, N.Y. 11201; Eric Small, 331 Clinton St., Brooklyn, N.Y. 11231, and Eric D. Stoll, 117 Hillside Ave., Teaneck, N.J. 07666

Filed Jun. 24, 1982, Ser. No. 391,845

Int. Cl.³ H04H *5/00*

U.S. Cl. 381—14 13 Claims



12. The method of amplitude limiting a composite signal having a narrow-band component without impairing said narrow-band component comprising the steps of:

producing a remainder signal from the composite signal, said remainder signal comprising the composite signal with the narrow-band component substantially removed;

providing a peak signal from said remainder signal, said peak signal comprising peaks in said remainder signal beyond a given amplitude range; and

combining said peak signal and said composite signal to produce an amplitude limited signal whereby said peaks in said peak signal and corresponding peaks in said composite signal substantially cancel and said narrow-band component is substantially unimpaired.

4,441,200

DIGITAL VOICE PROCESSING SYSTEM

Bruce Fette, Mesa; Rose M. Gibson, Phoenix, and Donald P. McCabe, Mesa, all of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Oct. 8, 1981, Ser. No. 309,640

Int. Cl.³ G10L *1/00*

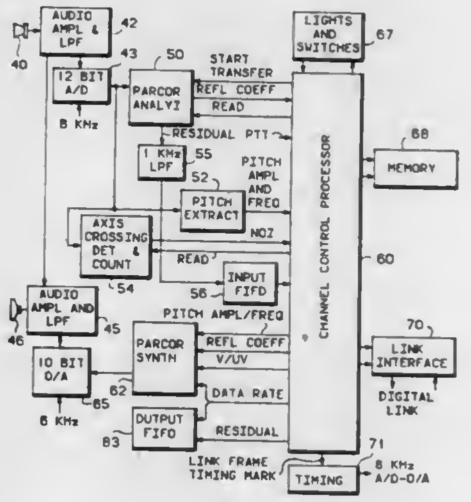
U.S. Cl. 381—36 10 Claims

1. A digital voice processing system incorporating a complete vocoder algorithm and including means for converting audio signals to digital electrical signals comprising:

(a) a first integrated circuit semiconductor chip including pitch extraction means connected to receive the digital electrical signals for providing a first plurality of signals representing a plurality of different audio characteristics;

(b) a second integrated circuit semiconductor chip including partial correlation voice analyzer means connected to receive the digital electrical signals for providing a plurality of signals representing a second plurality of different audio characteristics;

(c) a third integrated circuit semiconductor chip including partial correlation audio synthesizer means for receiving a plurality of signals representing different audio characteristics and synthesizing audio signals therefrom;



(d) transmission and receiving means;

(e) a fourth integrated circuit semiconductor chip including a microprocessor coupled to said transmission and reciving means; and

(f) means coupling the first and second pluralities of signals from said first and second chips to said fourth chip and coupling a plurality of signals representing different audio characteristics from said fourth chip to said third chip for duplex operation, the complete vocoder algorithm being partitioned among the first, second, third and fourth chips so that only low data rate signals are coupled by said coupling means.

4,441,201

SPEECH SYNTHESIS SYSTEM UTILIZING VARIABLE FRAME RATE

Alva E. Henderson, Lubbock, and Richard H. Wiggins, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 118,366, Feb. 4, 1980, abandoned. This application Jan. 25, 1982, Ser. No. 342,311

Int. Cl.³ G10L *1/00*

U.S. Cl. 381—51 18 Claims

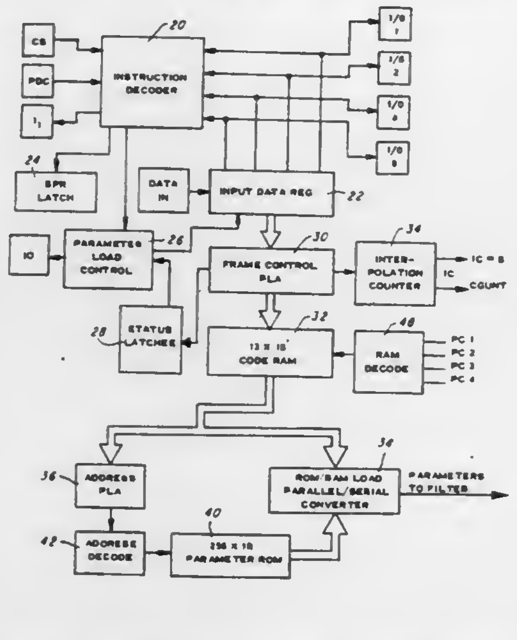
1. A speech synthesis system comprising:

input means for receiving frames of speech data, said frames of speech data comprising binary representations of pitch data, energy data, reflection coefficient data and coded frame rate data, wherein said coded frame rate data is indicative of a variable time interval between the start of a current frame of speech data and the start of the next successive frame of speech data;

decoding means coupled to said input means for decoding said frame rate data;

interpolator means coupled to said input means and to said decoding means for providing a variable number of interpolation calculations to define interpolated speech values between adjacent frames of speech data from last implemented speech data in which the number of interpolation calculations and the time interval between the respective starts of adjacent frames of speech data in a given instance are determined by said frame rate data;

speech synthesizer means coupled to said interpolator means for selectively converting said frames of speech data and



interpolated values thereof into analog speech signals representative of human speech; and

audio means coupled to said speech synthesizer means for converting said analog signals representative of human speech into audible sounds.

4,441,202
SPEECH PROCESSOR

Yit C. Tong, Burwood; Peter M. Seligman, Essendon; Graeme M. Clark, Eltham; James F. Patrick, North Melbourne, and John B. Millar, Hawker, all of Australia, assignors to The University of Melbourne, Melbourne, Australia

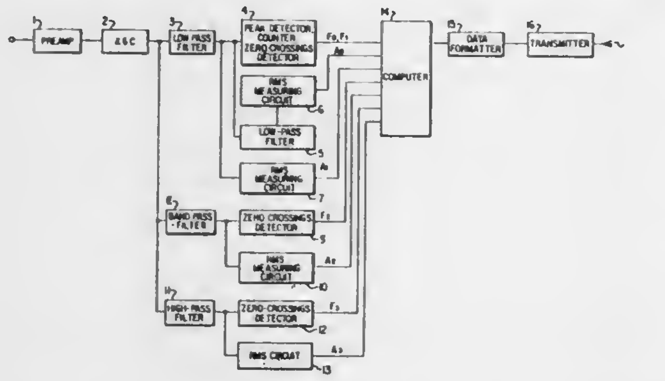
PCT No. PCT/AU80/00016, § 371 Date Jan. 27, 1981, § 102(e) Date Jan. 27, 1981, PCT Pub. No. WO80/02767, PCT Pub. Date Dec. 11, 1980

PCT Filed May 28, 1980, Ser. No. 233,585

Claims priority, application Australia, May 28, 1979, PD8973; Dec. 19, 1979, PE1775

Int. Cl.³ G10L *1/00;* H04R *29/00*

U.S. Cl. 381—68 19 Claims



1. A signal processing system for converting a speech signal into a data signal for controlling a hearing prosthesis including an implanted electrode array adapted to stimulate the auditory nerve fibres of a patient by the application of electrical currents to selected electrodes in said array, said processing system comprising means (**1,2;20,21**) for generating an input signal corresponding to a received speech signal, means (**3-6;30-36**) for estimating the amplitude and frequency of the fundamental voicing component of said speech signal, means (**8-10; 22-26, 27, 28**) for estimating the amplitude and frequency of the second formant component of said speech signal, means (**14;37**) for determining whether said speech signal is voiced or unvoiced, programmable means (**14;40**) for producing instruction data which in use causes the application of said electrical currents to selected electrodes in said array, said programmable means being programmed with data (FIG. 2) defining a predetermined relationship between each electrode and a selected range of said second formant frequencies based on psychophysical testing of the patient and causing selection of said electrodes based on the estimated frequency of said second formant component such as to produce the desired percepts in the auditory-like sensations generated in the patient, means (**14;38**) for causing stimulation of said selected electrode at a frequency dependent on the estimated frequency of said fundamental voicing component for voiced speech signals and at a lower substantially constant frequency for unvoiced speech signals, said programmable means (**14;40**) further being programmed to produce data (FIG. 4) which determines the level of stimulation of each selected electrode dependent on said estimated amplitude of said second formant component of said speech signal as well as on predetermined data relating to the sensitivity of each electrode implanted in the patient.

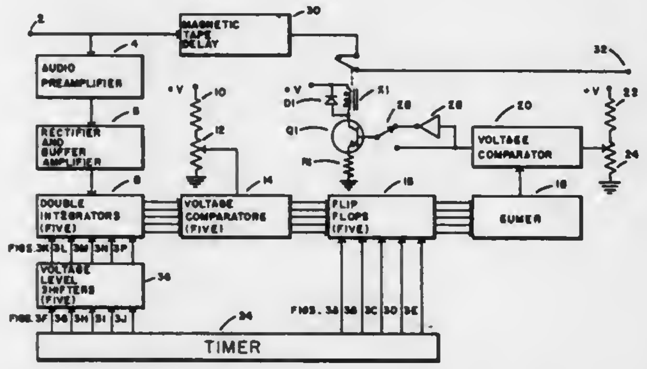
4,441,203
MUSIC SPEECH FILTER

Mark C. Fleming, 145 S. 7th St., Zanesville, Ohio 43701

Filed Mar. 4, 1982, Ser. No. 260,007

Int. Cl.³ G10L *1/04*

U.S. Cl. 381—110 5 Claims


MAGNETIC TAPE DELAY
30
AUDIO PREAMPLIFIER
RECTIFIER AND BUFFER AMPLIFIER
DOUBLE INTEGRATORS (FIVE)
VOLTAGE LEVEL SHIFTERS (FIVE)
VOLTAGE COMPARATORS (FIVE)
FLIP FLOPS (FIVE)
VOLTAGE COMPARATOR
SUMER
TIMER

1. An automatic programmable Music/Speech filter, having an input and an output, which identifies electrical signals applied to said input as representing either music or speech and selectively passes to said output only music signals or only speech signals comprising:

(a) preamplifier means for amplifying and filtering signals applied to said input, wherein the frequency response of said preamplifier means is such that signals corresponding in frequency to most speech energy are inhibited and signals corresponding in frequency to much music energy are amplified providing amplified audio signals;

(b) rectifier means which rectify said amplified audio signals thus providing pulsating DC signals;

(c) integrator means for integrating said pulsating DC signals, said integrator means comprising two or more cycled integrators;

(d) two or more adjustable comparators which compare the outputs of the cycled integrators to an adjustable reference;

(e) means for storing digital output signals from said comparators;

(f) sumer means which sums the digital signals stored by said means for storing;

(g) a timer which generates sequences of pulses to cycle operation of the integrators and operation of the means for storing;

(h) a signal level comparator which compares the output of the sumer with an adjustable reference and provides a digital control signal identifying the signals applied to said input as representing either music or speech;

(i) means for delaying signals applied to said input;

(j) an audio control circuit responsive to said digital control signal to selectively apply delayed audio signals output by the delaying means to the output of the Music/Speech filter; and

(k) switch means for setting operation of said audio control circuit such that it applies the delayed audio signals to said output exclusively when they have been identified as music or exclusively when they have been identified as speech.

4,441,204
APPARATUS FOR RECOGNITION OF STYLIZED CHARACTERS

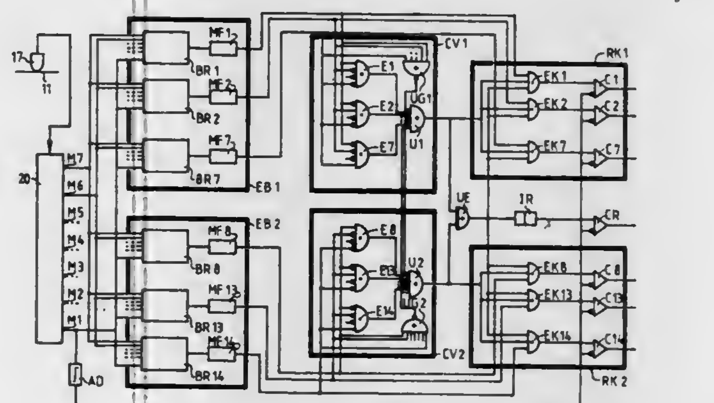
Charas Hanna, Belfort, France, assignor to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

Filed Dec. 2, 1981, Ser. No. 326,702

Claims priority, application France, Dec. 15, 1980, 80 26568

Int. Cl.³ G06K *9/00*

U.S. Cl. 382—7 13 Claims



1. Character recognition apparatus for the recognition of stylized characters on a document, wherein the characters to be recognized are a part of a group comprising K different characters, a reading station (**17, 18, 20**) for reading the characters, driving means (**13, 14**) to cause a relative displacement between the document and said station, in a direction of displacement permitting each character to pass before said reading station, said station including reading means disposed such that each time a character passes before it, the character is read, and a group of N elementary analogic signals is generated, each resulting from the reading of a respective one of N portions of a character obtained by dividing each character to be read along a direction perpendicular to the direction of displacement;

K operator-generator blocks of logic signals (OG1, OG2, OG3 etc.) to be associated with a respective one of the K characters to be read each of these blocks comprising, on the one hand, N multiplier elements (EM1, EM2, EM3, etc.), each connected to the reading station to receive a respective one of the N elementary analogic signals of a group generated by this station and to multiply this elementary signal by a specific coefficient of said multiplier element;

and a summing element (ES) connected to the N multiplier elements to receive the N elementary signals thus multiplied and delivering at its output a single signal having an amplitude equal to the algebraic sum of the amplitudes of the N multiplied signals, and a generator element for generating a logic circuit connected to said summing element (ES) to receive said single signal, said generator element generating at its output one or the other of two logic signals "1" or "0" in accordance with whether the amplitude of said single signal is positive or not, respectively, the operator-generator blocks being divided in p different assemblies (EB1, EB2), p being a whole number such that:

$$\frac{K}{N} \leq p < \frac{K+N}{N}$$

the specific coefficients of said multiplier elements having a value chosen such that, in response to the reading of a character, the operator-generator block which is associated with this character delivers a logic signal "1", the other operator-generator blocks which appertain to the same assembly as this operator-generator block each delivers a logic signal "0" while, in each of the other assemblies at least two operator-generator blocks each deliver a logic signal "1";

p validation means (CV1, CV2) each associated with a respective one of the p assemblies of operator-generator blocks (EB1, EB2) and each generating in response to the reading of a character, a single validation signal in the case where one only of the operator-generator blocks of the associated assembly delivers a logic signal "1"; and

K character identification elements (EK1, EK2, EK3, etc.) each connected to the output of a respective one of the K operator-generator blocks (OG1, OG2, OG3, etc.), said K identification elements being divided in p different assemblies (RK1, RK2) each associated with a respective one of the p validation means (CV1, CV2), each of these identification elements being connected further to the output of the validation means which is associated with it, and generating a single character recognition signal when it receives at the same time, on the one hand, a validation signal generated by the said validation means, and, on the other hand, a logic signal "1" generated by the operator-generator block to which it is connected.

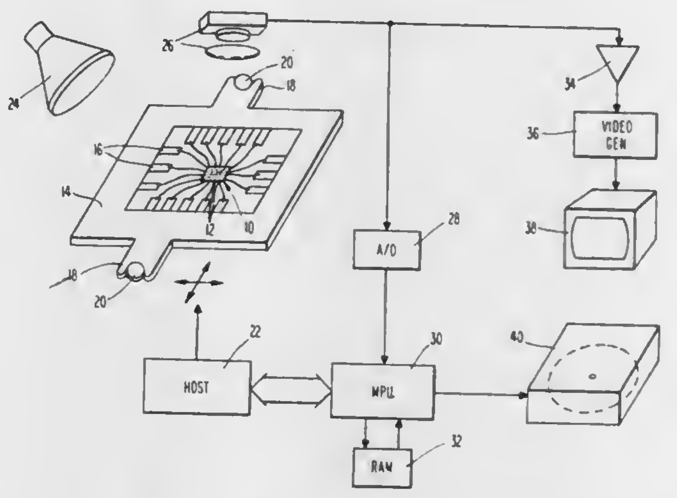
4,441,205
PATTERN RECOGNITION SYSTEM

George M. Berkin, Yardley, Pa., and Michael Negin, Cinnaminson, N.J., assignors to Kulicke & Soffa Industries, Inc., Horsham, Pa.

Filed May 18, 1981, Ser. No. 264,481

Int. Cl.³ G06K *9/32*

U.S. Cl. 382—8 37 Claims



1. A system for comparing groups of digitized data, comprising:

a. means for processing a first group to obtain a first signature representative of a first information portion of said first group of data;

b. means for selecting a set of subsignatures from said signature, said subsignatures representing selected respective portions of said first signature;

c. means for selecting one of the set of said subsignatures which has the maximum relative information content, by successive comparison of the members of said set of subsignatures to said group;

d. means for processing a second group to obtain a second signature representative of a corresponding first information portion of said second group; and

e. means for comparing said selected subsignature to respective portions of said second signature in order to determine a comparison error for each said portion of said second group, and for designating the respective portion of said second group with respect to which the lowest comparison error is determined, as being the portion of said second group to which said selected subsignature corresponds.

4,441,206

PATTERN DETECTING APPARATUS

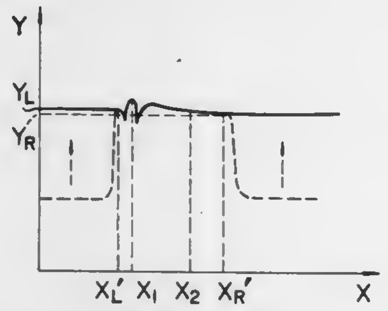
Shinji Kuniyoshi, Tokyo; Akihiro Takanashi, Kokubunji; Toshiei Kurosaki, Tokyo; Sumio Hosaka, Hachioji; Yoshio Kawamura, Tokyo, and Tsuneo Terasawa, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 14, 1981, Ser. No. 330,778

Claims priority, application Japan, Dec. 17, 1980, 55-177282

Int. Cl.³ G06K *9/20, 9/00;* **H04N** *7/00*

U.S. Cl. 382—08 **3 Claims**



1. A pattern detecting apparatus comprising:

means for illuminating a positioning pattern formed on a sample with illumination light;

means for defining a range illuminated with said illumination light, said positioning pattern being illuminated in said range;

means for optically focusing reflected light from said positioning pattern on a predetermined image plane;

means for electrically detecting a bright and dark image on said image plane in accordance with positions on said image plane;

means for removing a signal corresponding to a region outside said illumination range from a detection signal and for holding, in place of said removed signal, a level of said detection signal produced within said illumination range of said illumination light, said detection signal being obtained by said detecting means; and

means for detecting a position of the center of said positioning pattern from an output signal of the holding means.

4,441,207

DESIGN RULE CHECKING USING SERIAL NEIGHBORHOOD PROCESSORS

Robert M. Lougheed, and Trevor N. Mudge, both of Ann Arbor, Mich., assignors to Environmental Research Institute of Michigan and Regents of the University of Michigan, both of Ann Arbor, Mich.

Filed Jan. 19, 1982, Ser. No. 340,609

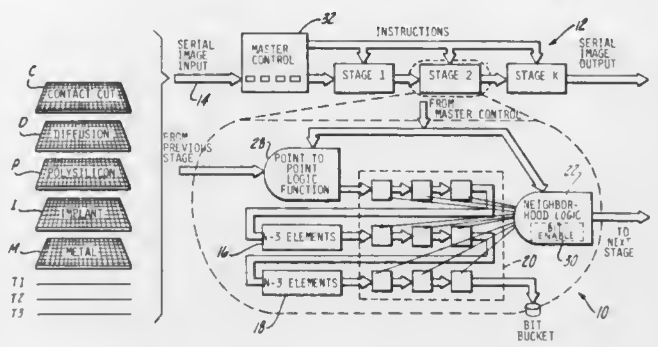
Int. Cl.³ G06K *9/36*

U.S. Cl. 382—8 **10 Claims**

1. A method of checking bit-map representations of an article for compliance with preselected geometrical constraints, said method comprising:

feeding said bit-map in a raster scan line format to an input of a pipeline of serial neighborhood transformation stages;

performing a series of neighborhood transformations in said pipeline to detect regions in the bit-map not complying with said geometrical constraints; and



generating a transformed bit map at the output of the pipeline flagging said detected regions in noncompliance.

4,441,208

PICTURE INFORMATION PROCESSING AND STORING DEVICE

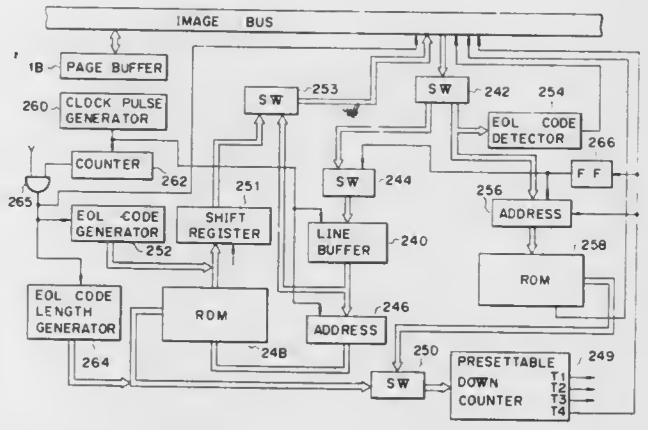
Kazuhiko Iida, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 20, 1981, Ser. No. 312,980

Claims priority, application Japan, Oct. 22, 1980, 55-147914

Int. Cl.³ H04N *7/12*

U.S. Cl. 382—56 **5 Claims**



1. A picture information processing and storing device comprising:

first buffer memory means for storing original picture information read out through two-dimensional scanning of an original picture or coded picture information obtained through high efficiency coding of said original picture information;

second buffer memory means;

means for transferring the original picture information stored in said first buffer memory one scanning line after another to said second buffer memory means; and

high efficiency coding means for high efficiency coding the original picture information for one scanning line stored in said second buffer means and storing the coded picture information thus obtained together with a specified code provided at the end thereof in said first buffer memory means in the memory location thereof from which said original picture information for one scanning line has been read out.

4,441,209

PLASTIC BAG COMPRISING VENTING MEANS

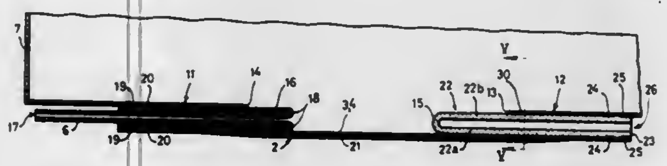
Willem Lunshof, De Enschede, and Leonardus H. M. Beukers, Hardenberg, both of Netherlands, assignors to Wavin B.V., Zwolle, Netherlands

Filed Mar. 5, 1982, Ser. No. 355,233

Claims priority, application Netherlands, Mar. 9, 1981, 8101126

Int. Cl.³ B65D *30/24*

U.S. Cl. 383—45 **9 Claims**



1. A plastic bag with a filling valve and a gas permeable pocket consisting of dust filtering filtering layers (22*a*, 22*b*) situated at the same bag end as the filling valve (16) and forming a gas permeable connection between the inner side of the bag and the outer side of the bag in order to permit gases to escape from the interior of the bag during and after the filling of the bag with filling material, said filtering pockets being at least partially covered by at least one second corner flap part (12) and a bottom layer of the bag, the bag being provided with means (31, 32) for maintaining the venting capacity of the filtering layer consisting of a disconnectable connection between a corner flap part which partially covers the filtering layer and an opposite portion of the wall of the bag preventing the opposite filtering layers from being pressed upon each other during the filling of the bag.

4,441,210

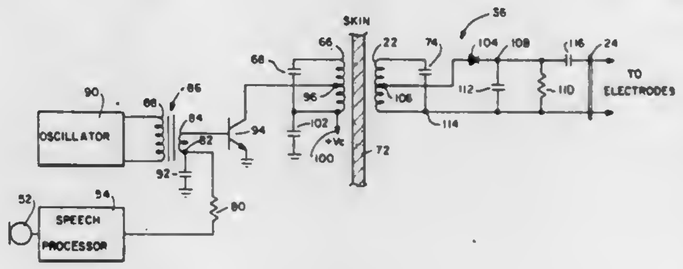
TRANSCUTANEOUS SIGNAL TRANSMISSION SYSTEM AND METHODS

Erwin S. Hochmair, and Ingeborg J. Hochmair, both of A-1130 Wien Jaunerstrasse 27, Vienna, Austria

Filed Sep. 18, 1981, Ser. No. 303,590

Int. Cl.³ H04B *5/00;* **H04R** *25/00*

U.S. Cl. 455—41 **11 Claims**



4. A transcutaneous signal transmission system in which auditory signals are transmitted from a transmitter means outside of a patient to a receiver means implanted in the patient characterized by a first tuned circuit of said transmitter means and a second tuned circuit of said receiver means being positioned to achieve essentially critical coupling with optimal displacement tolerance of said first and second tuned circuits.

DESIGNS

APRIL 3, 1984

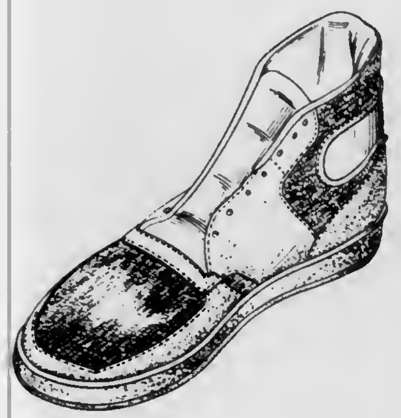
273,244

ATHLETIC SHOE

Edward J. Norton, Kingston; Paul Oparowski, Derry, and Alphonse L. Belavitch, Salem, all of N.H., assignors to New Balance Athletic Shoe, Inc., Boston, Mass.

Filed Jun. 4, 1982, Ser. No. 384,940

U.S. Cl. D2—310



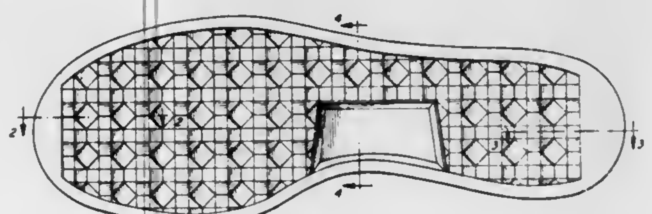
273,245

SHOE OUTSOLE

Raymond Tonkel, Exeter, N.H., assignor to Nike, Inc., Beaverton, Oreg.

Filed Jan. 29, 1982, Ser. No. 344,009

U.S. Cl. D2—320



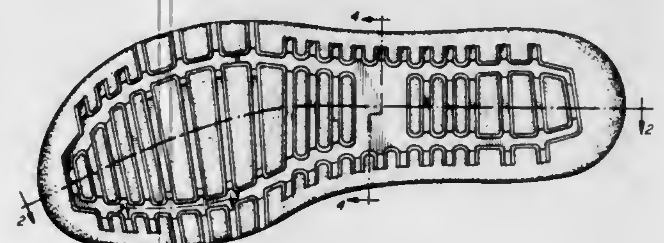
273,246

SHOE OUTSOLE

Raymond Tonkel, Exeter, N.H., assignor to Nike, Inc., Beaverton, Oreg.

Filed Jan. 29, 1982, Ser. No. 344,010

U.S. Cl. D2—320



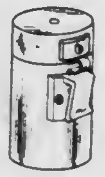
273,247

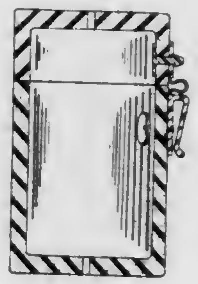
BELT ATTACHABLE INSULATED HOLDER FOR A BEVERAGE CAN

James M. Pigott, 1711 N. Trinity, San Antonio, Tex. 78208

Filed Dec. 18, 1981, Ser. No. 332,229

U.S. Cl. D2—400





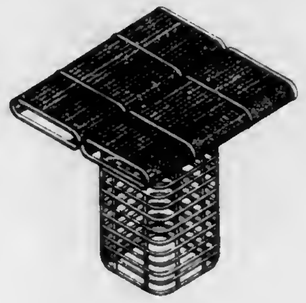
273,248

CONVERTIBLE TABLE OR SIMILAR ARTICLE

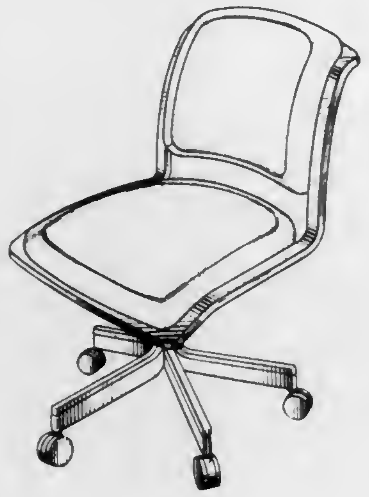
Edward Secon, Trumbull, Conn., assignor to The Sherwood Corporation, Spring City, Tenn.

Filed Oct. 2, 1981, Ser. No. 307,743

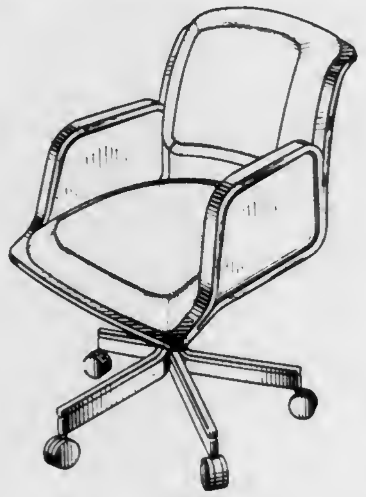
U.S. Cl. D6—3



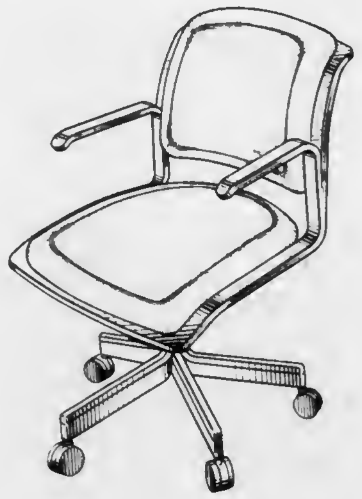
273,249
CHAIR
Donald C. Petitt, 207 W. 86th St., New York, N.Y. 10024
Filed Nov. 10, 1981, Ser. No. 320,040
U.S. Cl. D6—30



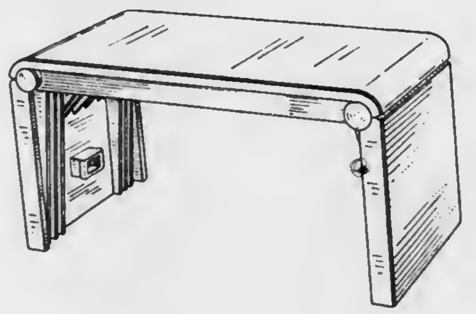
273,250
ARM CHAIR
Donald C. Petitt, 207 W. 86th St., New York, N.Y. 10024
Filed Nov. 9, 1981, Ser. No. 319,548
The portion of the term of this patent subsequent to Feb. 28, 1998, has been disclaimed.
U.S. Cl. D6—31



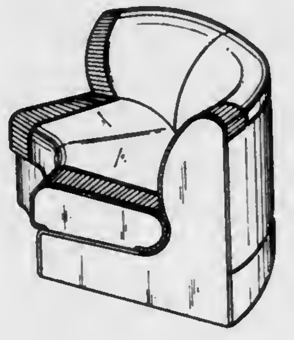
273,251
ARM CHAIR
Donald C. Petitt, 207 W. 86th St., New York, N.Y. 10024
Filed Nov. 10, 1981, Ser. No. 320,041
The portion of the term of this patent subsequent to Feb. 28, 1998, has been disclaimed.
U.S. Cl. D6—31



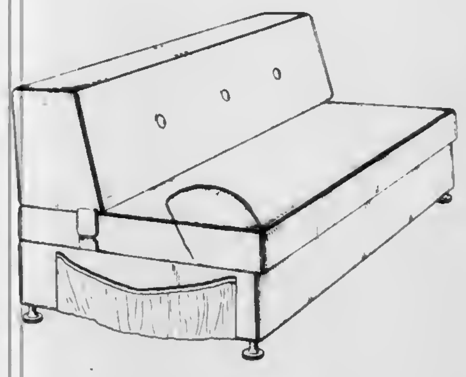
273,252
FOOTSTOOL
Morley Markson, Toronto, Canada, assignor to Yorkvest Limited, Toronto, Canada
Filed Mar. 29, 1982, Ser. No. 363,312
Claims priority, application Canada, Oct. 30, 1981, 30-10-81-3
U.S. Cl. D6—32



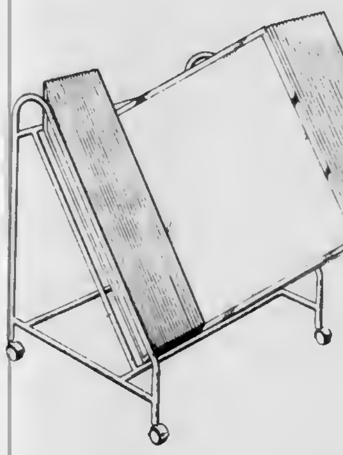
273,253
CLOSED CURVED SOFA
Barbara Dubbin, and Jackie Caputo, both of Miami, Fla., assignors to Casa Bella Imports, Inc., Miami, Fla.
Filed Jan. 8, 1982, Ser. No. 338,127
U.S. Cl. D6—61



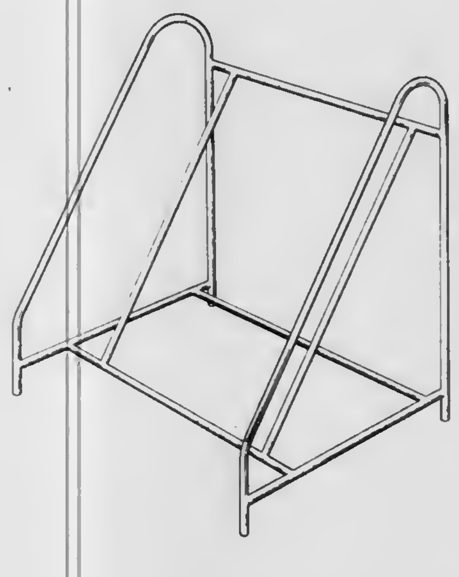
273,254
CONVERTIBLE SOFA
Igal Fairaizen, 58 Eilat Rd., Tel Aviv, Israel
Filed Feb. 13, 1981, Ser. No. 234,554
U.S. Cl. D6—64



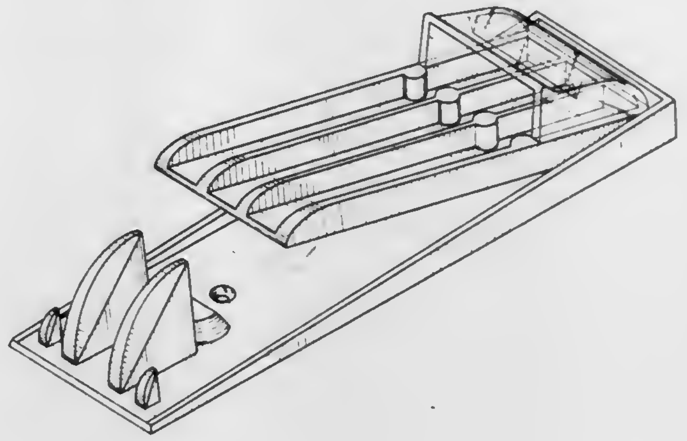
273,255
SHEET DISPLAY STAND
Cory Marcus, 455 Powell St., San Francisco, Calif. 94102
Filed Aug. 3, 1981, Ser. No. 289,272
U.S. Cl. D6—85



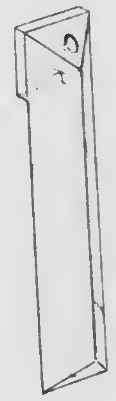
273,256
FRAME FOR A SHEET DISPLAY STAND
Cory Marcus, 455 Powell St., San Francisco, Calif. 94102
Filed Aug. 3, 1981, Ser. No. 289,273
U.S. Cl. D6—85



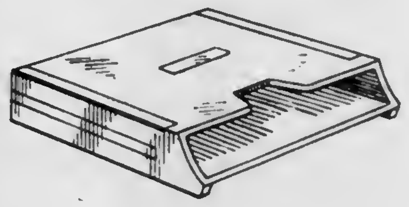
273,257
COMBINED TOOTHPASTE DISPENSER AND TOOTHBRUSH HOLDER
Gilbert E. Barrera, 11354 Vance Jackson, San Antonio, Tex. 78230
Filed Jul. 22, 1981, Ser. No. 285,865
U.S. Cl. D6—87



273,258
BUD VASE
William R. Richmond, Shelbyville, Ind., assignor to Williams Industries, Inc., Shelbyville, Ind.
Filed Mar. 8, 1982, Ser. No. 355,902
U.S. Cl. D6—137



273,259
MAGAZINE HOLDER OR THE LIKE
Teresa G. Gullett, 27132 Via Burgos, Mission Viejo, Calif. 92691
Filed Nov. 27, 1981, Ser. No. 325,271
U.S. Cl. D6—184



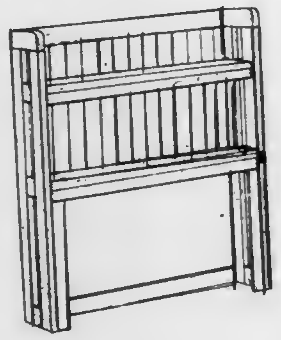
273,260

COMBINED HEADBOARD AND HUTCH UNIT

William P. Kemp, III, Goldsboro, and Clarence R. Duncan, Jr., Greensboro, both of N.C., assignors to Kemp Furniture Industries, Inc., Goldsboro, N.C.

Filed Mar. 7, 1983, Ser. No. 473,114

U.S. Cl. D6—198



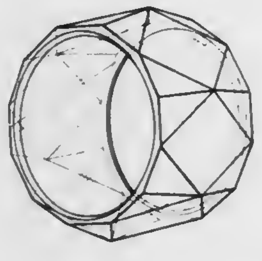
273,261

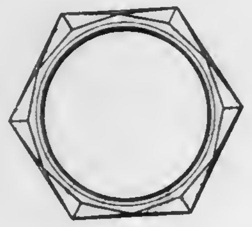
NAPKIN RING

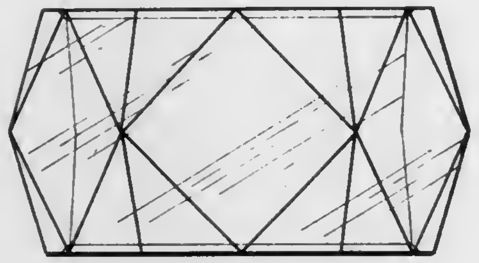
George C. Sun, 530 Rhode Island Ave., Cherry Hill, N.J. 08002

Filed Jul. 27, 1981, Ser. No. 286,861

U.S. Cl. D7—72







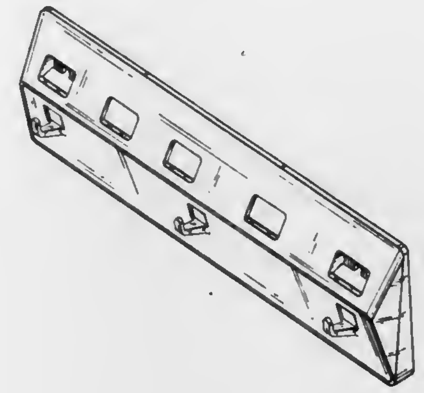
273,262

RACK FOR UTENSILS OR THE LIKE

Martin J. Wolff, North Providence, R.I., assignor to Dart Industries Inc., Northbrook, Ill.

Filed Jan. 12, 1982, Ser. No. 338,948

U.S. Cl. D7—74



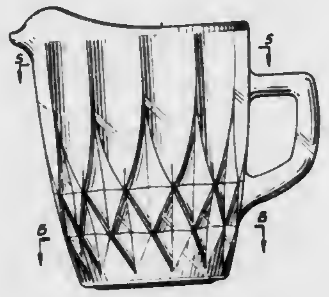
273,263

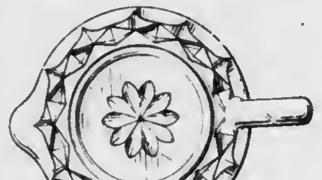
CREAM PITCHER OR SIMILAR ARTICLE

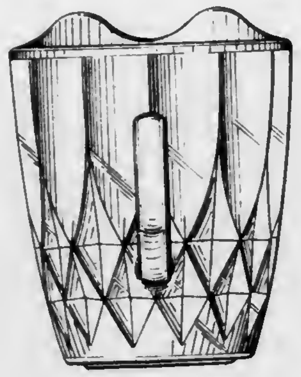
James L. Thrush, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

Division of Ser. No. D140,180, Apr. 14, 1980, Pat No. 267,697. This application Apr. 30, 1982, Ser. No. 393,026

U.S. Cl. D7—319







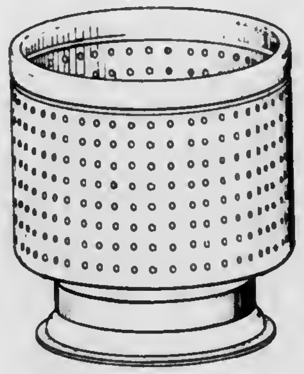
273,264

FIRE PIT OR THE LIKE

Murray L. Elliston, 7064 Hillsboro St., San Diego, Calif. 92120

Filed Aug. 26, 1981, Ser. No. 296,980

U.S. Cl. D7—332



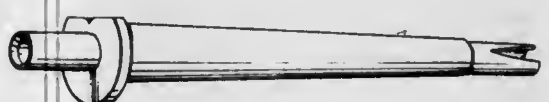
273,265

FEEDER TUBE FOR PLANT INJECTION DEVICE

Dale I. Dodds, Pasadena, Calif., assignor to J. J. Mauget Co., Burbank, Calif.

Filed Sep. 14, 1981, Ser. No. 301,939

U.S. Cl. D8—1



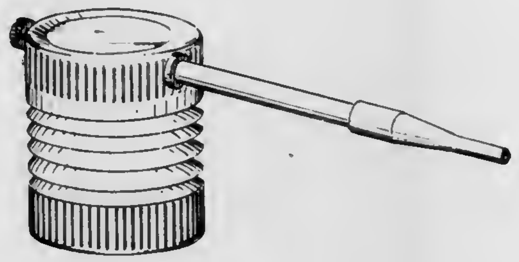
273,266

PESTICIDE DUSTER

Anthony J. Souza, Lancaster, Pa., assignor to Woodstream Corporation, Lititz, Pa.

Filed Nov. 30, 1981, Ser. No. 325,631

U.S. Cl. D8—2



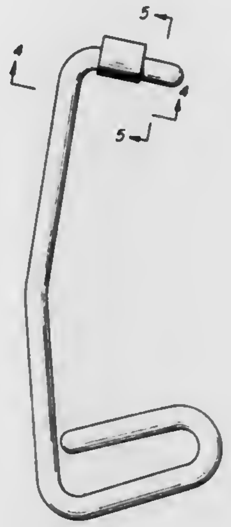
273,267

MULTI-PURPOSE STOVE TOOL

Paul B. Bortz, North Ferrisburg, Vt., assignor to Vermont Stove Co., Inc., Shelburne, Vt.

Filed Nov. 30, 1981, Ser. No. 325,962

U.S. Cl. D8—14



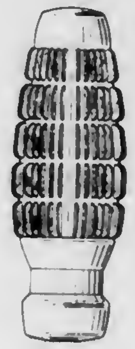
273,268

HAND GRIP FOR TORQUE APPLYING TOOLS

Lloyd T. Smith, Newton, Kans., assignor to Fiskars Manufacturing Corporation, Wausau, Wis.

Filed Nov. 16, 1981, Ser. No. 321,675

U.S. Cl. D8—83

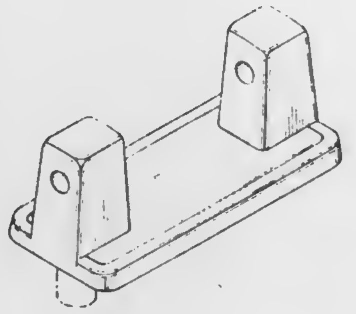


273,269
HANDLE STUD FOR AN ARTICLE OF LUGGAGE OR THE LIKE

Edward M. Stolarz, Yorktown Heights, N.Y., assignor to Presto Lock, Inc., Garfield, N.J.

Division of Ser. No. 233,637, Feb. 12, 1981. This application Jun. 8, 1983, Ser. No. 502,249

U.S. Cl. D8—321

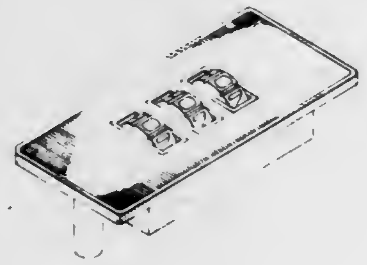


273,270
CONTROL PANEL ASSEMBLY FOR A COMBINATION LOCK AND THE LIKE

Edward M. Stolarz, Yorktown Heights, N.Y., assignor to Presto Lock, Inc., Garfield, N.J.

Division of Ser. No. 219,957, Dec. 24, 1980. This application Mar. 28, 1983, Ser. No. 479,320

U.S. Cl. D8—341

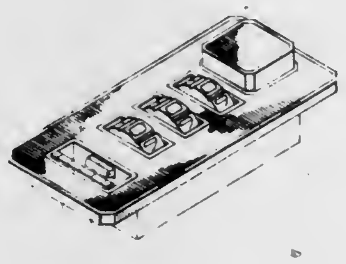


273,271
CONTROL PANEL ASSEMBLY FOR A COMBINATION LOCK AND THE LIKE

Edward M. Stolarz, Yorktown Heights, N.Y., assignor to Presto Lock, Inc., Garfield, N.J.

Division of Ser. No. 219,957, Dec. 24, 1980. This application Mar. 28, 1983, Ser. No. 479,319

U.S. Cl. D8—341

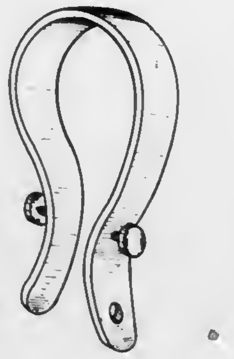


273,272
SHOWER CURTAIN HOLDER

Evelyn Roeser, Corapolis, Pa.

Filed Jul. 9, 1981, Ser. No. 281,862

U.S. Cl. D8—367



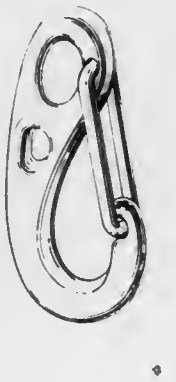
273,273
SAFETY HOOK

Christian Faidide, Maringues, France, assignor to S.A.R.L. Wichard, Thiers, France

Filed Jul. 14, 1981, Ser. No. 283,294

Claims priority, application France, Jan. 14, 1981, 810118

U.S. Cl. D8—367

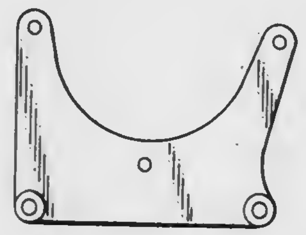


273,274
BRACKET FOR AUTOMOBILE AIR CONDITIONING COMPRESSOR

Shelton E. Taylor, 4112 Oakellar St., Tampa, Fla. 33611

Filed May 13, 1981, Ser. No. 263,159

U.S. Cl. D8—380

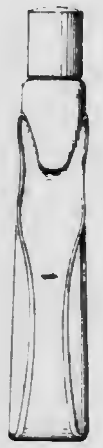


273,275
DESIGN FOR COMBINED BOTTLE AND CAP

Beverly L. Markis, Boston, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Dec. 23, 1981, Ser. No. 334,031

U.S. Cl. D9—381

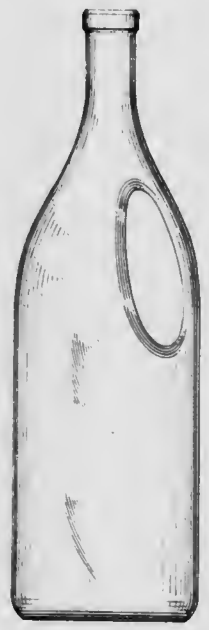


273,276
WINE BOTTLE

Matthew J. Klim, New Hartford, Conn., assignor to Matthew Klim Associates, Inc., Avon, Conn.

Filed Apr. 17, 1981, Ser. No. 255,259

U.S. Cl. D9—383

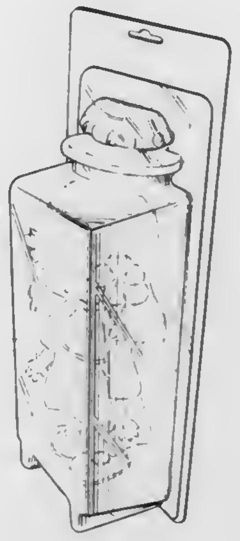


273,277
PACKAGING CONTAINER FOR A DOLL

Steven Strauss, Scarsdale, N.Y., assignor to Eugene Doll & Novelty Co., Inc., New York, N.Y.

Filed Jun. 8, 1981, Ser. No. 271,140

U.S. Cl. D9—415



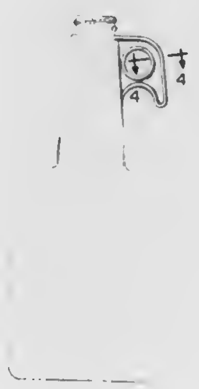
273,278
CONTAINER HANDLE OR SIMILAR ARTICLE

Thomas H. Hayes, Westport, Conn., assignor to Ethyl Corporation, Richmond, Va.

Filed Jun. 3, 1981, Ser. No. 269,541

The portion of the term of this patent subsequent to Dec. 2, 1994, has been disclaimed.

U.S. Cl. D9—434

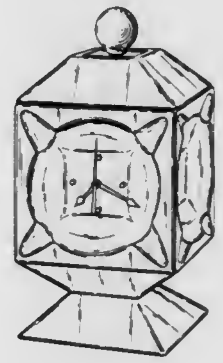


273,279
CLOCK

Stephen E. Drummond, 5252 Bixby Rd., Canal Winchester, Ohio 43110

Filed Jul. 1, 1981, Ser. No. 280,771

U.S. Cl. D10—1



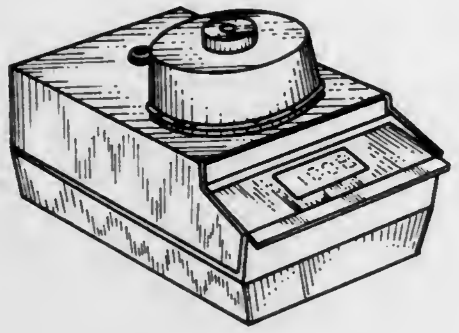
273,280

ELECTRONIC BALANCE

Richard B. Haigh, Buchanan, and Philip M. Parker, Stevensville, both of Mich., assignors to Leco Corporation, St. Joseph, Mich.

Filed Mar. 2, 1981, Ser. No. 239,680

U.S. Cl. D10—91



273,281

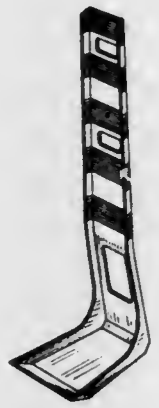
ROAD HAZARD MARKER

Jerrold Mihailoff, 12 Cottonwood Dr., Don Mills, Ontario M3C 2B4, Canada

Continuation-in-part of Ser. No. 929,206, Jul. 28, 1978, Pat. No. Des. 260,742. This application Jun. 19, 1980, Ser. No. 161,206

Claims priority, application Canada, Feb. 3, 1978, 0302787

U.S. Cl. D10—109



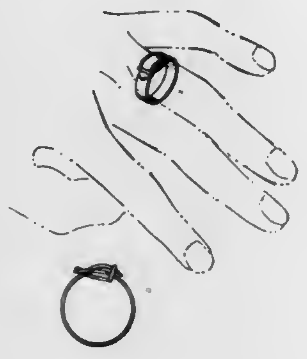
273,282

BELT RING

Joseph B. Matt, 464 Pine, Wyandotte, Mich. 48192

Filed Jun. 10, 1981, Ser. No. 272,322

U.S. Cl. D11—30



273,283

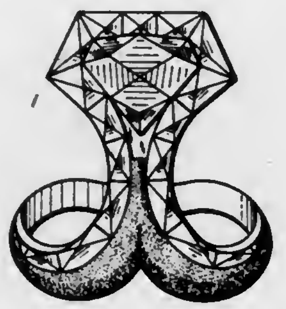
RING

Marina Bulgari, Athens, Greece, assignor to Zoldia Anstalt (NOW) Marina B Creation S.A., Vaduz, Liechtenstein

Filed Feb. 26, 1981, Ser. No. 238,578

Claims priority, application Italy, Sep. 2, 1980, 35977 B/80

U.S. Cl. D11—34



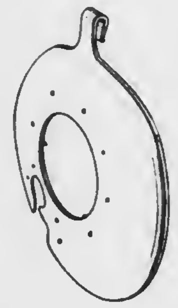
273,284

PENDANT

Andrea A. E. Szabo, 1626 Wentwood Dr., Pasadena, Tex. 77504

Filed Dec. 17, 1981, Ser. No. 331,543

U.S. Cl. D11—45



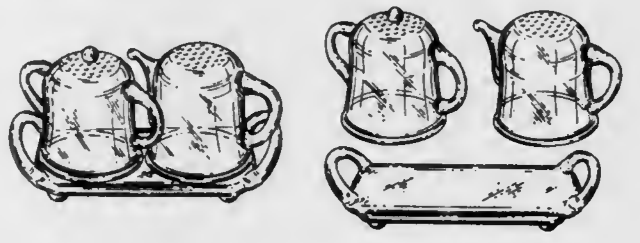
273,285

CREAMER AND SUGAR BOWL SIMULATING THIMBLE SET

William B. Shane, and Claudia A. Shane, both of 2845 N. Albany, Chicago, Ill. 60614

Filed Jan. 18, 1982, Ser. No. 340,314

U.S. Cl. D11—157



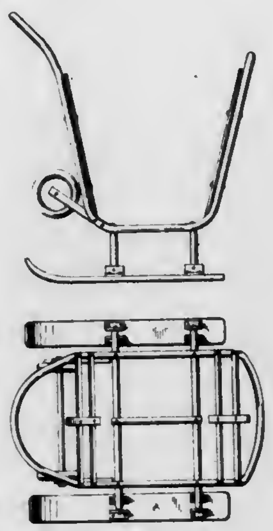
273,286

WOOD HAULER

William A. Jacobsen, F1691 Hwy. yF, Minocqua, Wis. 54548

Filed Oct. 22, 1981, Ser. No. 313,724

U.S. Cl. D12—6



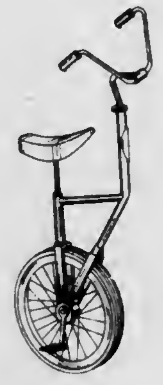
273,287

UNICYCLE

Joseph M. Evans, 4506 Garden Dr., Baltimore, Md. 21215

Filed Aug. 13, 1981, Ser. No. 292,616

U.S. Cl. D12—107



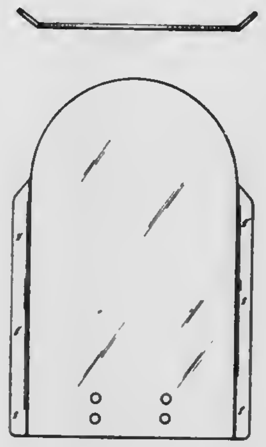
273,288

MOTORCYCLE WINDSHIELD

Stanley A. Johnson, Brookfield, Wis., assignor to Harley-Davidson Motor Co., Inc., Milwaukee, Wis.

Filed Dec. 29, 1982, Ser. No. 454,494

U.S. Cl. D12—182



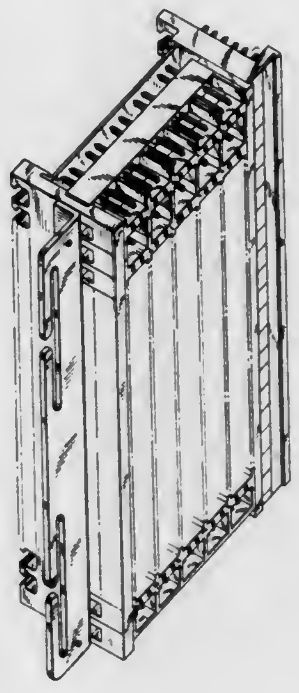
273,289

TELEPHONE CONNECTOR BLOCK

Thomas A. Hollfelder, Huntington, N.Y., assignor to Porta Systems Corp., Syosset, N.Y.

Filed Mar. 6, 1981, Ser. No. 241,109

U.S. Cl. D13—24



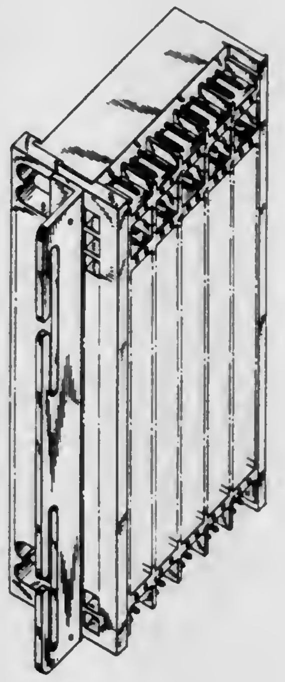
273,290

TELEPHONE CONNECTOR BLOCK

Thomas A. Hollfelder, Huntington, N.Y., assignor to Porta Systems Corp., Syosset, N.Y.

Filed Mar. 6, 1981, Ser. No. 241,110

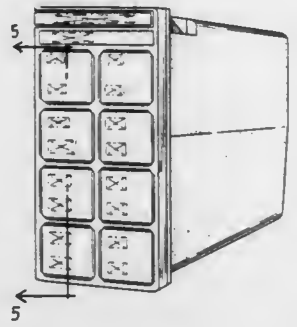
U.S. Cl. D13—24



273,291

DIGITAL LOGIC MODULE FOR MOUNTING IN A CONTROL PANEL

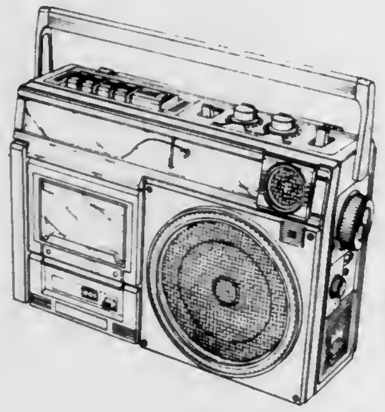
Thomas R. Bean, Concord Township; Edward F. Stockmaster, Mentor, and George S. Whaley, Eastlake, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.
Filed Apr. 30, 1980, Ser. No. 258,981
U.S. Cl. D13—40



273,292

COMBINED PORTABLE RADIO AND CASSETTE TAPE RECORDER

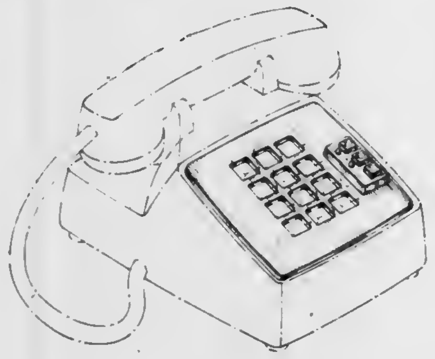
Teruyuki Nishimoto, Osaka, and Kikuo Ohta, Nara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Oct. 28, 1981, Ser. No. 316,026
Claims priority, application Japan, Apr. 30, 1981, 56-18948
U.S. Cl. D14—5



273,293

TELEPHONE FACE PLATE

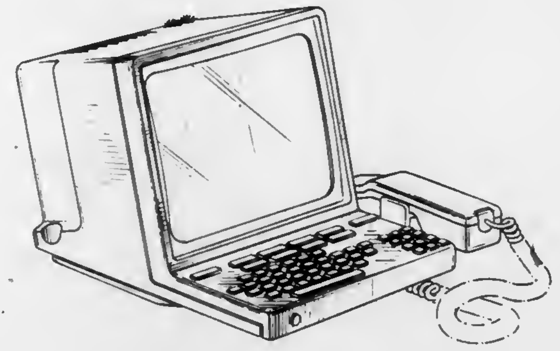
Harry R. Rasmussen, Tacoma, Wash., assignor to Crest Industries, Inc., Puyallup, Wash.
Filed Jun. 4, 1981, Ser. No. 270,576
U.S. Cl. D14—66



273,294

DIRECTORY TERMINAL

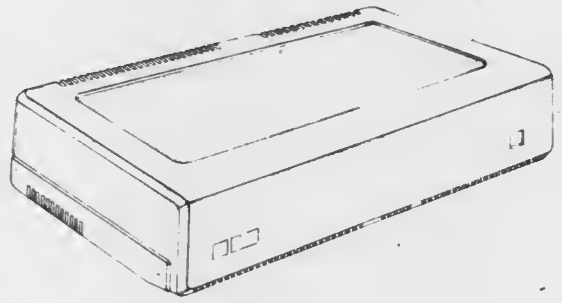
Michel Moraine, Boersch, France, assignor to La Telephonie Industrielle et Commerciale, Strasbourg, France
Filed Feb. 27, 1981, Ser. No. 239,037
Claims priority, application France, Aug. 29, 1980, 80 2725
U.S. Cl. D14—101



273,295

HARD DISK DRIVE

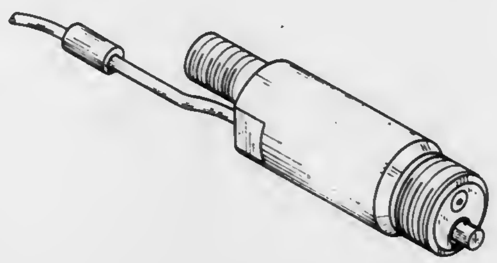
James R. Stewart, San Jose, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.
Filed Nov. 19, 1981, Ser. No. 322,922
U.S. Cl. D14—109



273,296

COMBINED FUEL INJECTOR AND THERMAL HEATER

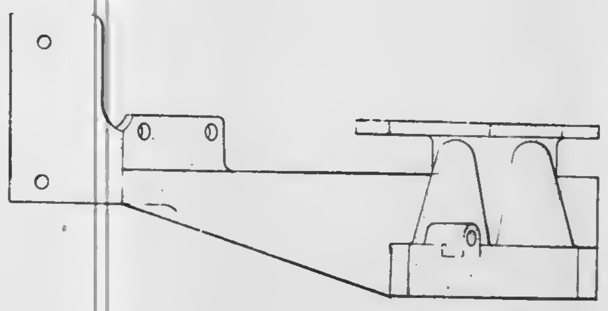
Monte M. Dilliner, Lineville, Iowa, assignor to Oscar E. Jones; Ted Lowe, both of Des Moines, Iowa and Robert H. Robinson, Fairfield, Ill., a part interest
Filed Jun. 4, 1981, Ser. No. 270,230
U.S. Cl. D15—05

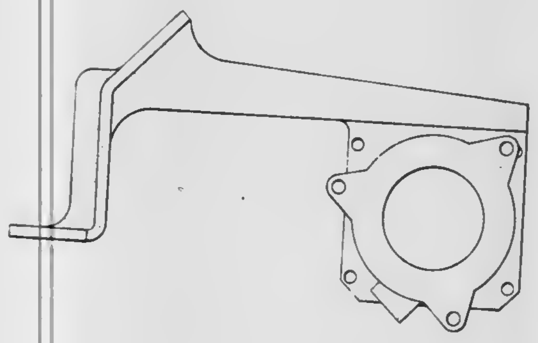


273,297

BRACKET FOR SUPPORTING A LOW PRESSURE GAS CONVERTER

Robert L. Nolff, Romulus, Mich., assignor to Propane Carburetion Company, Inc., Romulus, Mich.
Filed Jan. 4, 1982, Ser. No. 336,831
U.S. Cl. D15—5

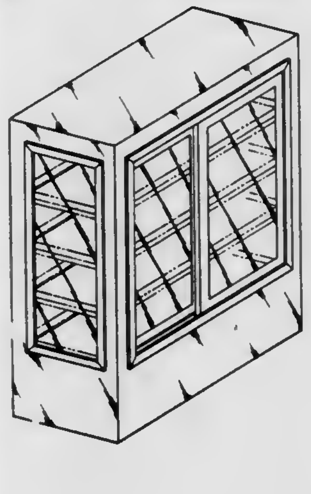




273,298

BEVERAGE COOLER

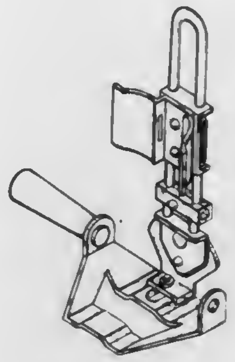
Arthur W. Trulaske, Frontenac, Mo., assignor to True Manufacturing Co., Inc., O'Fallon, Mo.
Filed Mar. 23, 1981, Ser. No. 246,244
The portion of the term of this patent subsequent to Jul. 6, 1996, has been disclaimed.
U.S. Cl. D15—81



273,299

ADJUSTABLE PORTABLE HAND DRILL PRESS HOLDER

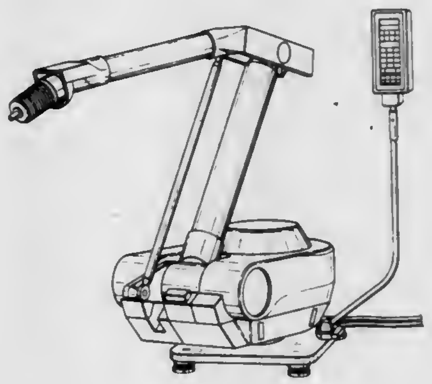
Joseph R. Archeskie, 402 Miracle La., Chambersburg, Pa. 17201
Filed May 29, 1981, Ser. No. 268,269
U.S. Cl. D15—132



273,300

ROBOT FOR AUTOMATIC PAINT SPRAYING OR THE LIKE

Ole Molaug, Jernbanegt. 4, 4340 Bryne, Norway
Filed Dec. 22, 1981, Ser. No. 333,289
Claims priority, application Norway, Jun. 24, 1981, 62079
U.S. Cl. D15—199

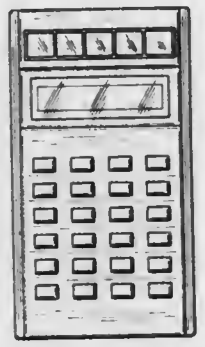


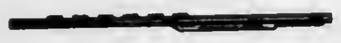
273,301
ELECTRONIC CALCULATOR WITH SOLAR BATTERIES

Masaji Sawada, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan

Filed Dec. 14, 1981, Ser. No. 330,229

U.S. Cl. D18—7





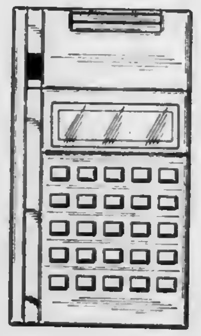
273,302
ELECTRONIC CALCULATOR

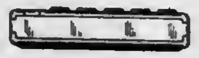
Masaji Sawada, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan

Filed Dec. 14, 1981, Ser. No. 330,232

Claims priority, application Japan, Jun. 26, 1981, 56-28312

U.S. Cl. D18—7





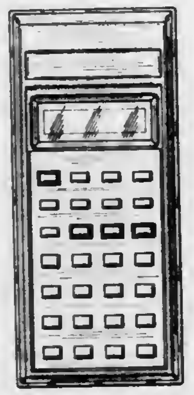
273,303
ELECTRONIC CALCULATOR

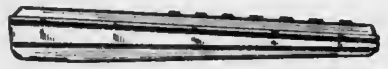
Harumi Sakamoto, Osaki, Japan, assignor to Sharp Corporation, Osaka, Japan

Filed Dec. 14, 1981, Ser. No. 330,233

Claims priority, application Japan, Jun. 26, 1981, 56-28313

U.S. Cl. D18—7





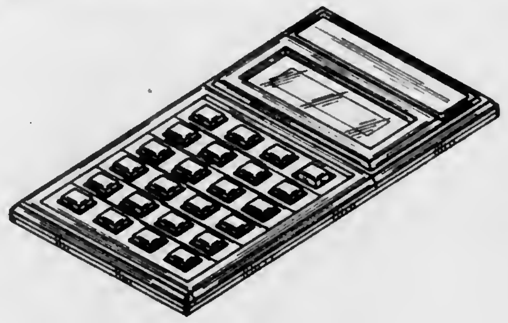
273,304
ELECTRONIC CALCULATOR

Keiji Sakata, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan

Filed Feb. 24, 1982, Ser. No. 351,663

Claims priority, application Japan, Aug. 25, 1981, 56-37883

U.S. Cl. D18—7



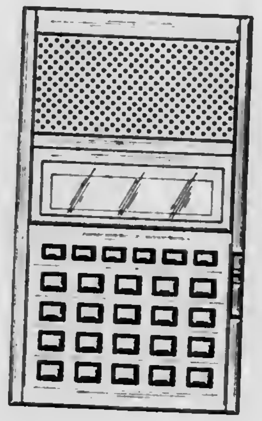
273,305
ELECTRONIC CALCULATOR

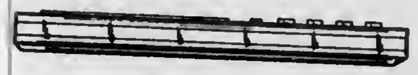
Shigeru Kurozumi, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan

Filed Apr. 21, 1982, Ser. No. 370,461

Claims priority, application Japan, Oct. 23, 1981, 56-47307

U.S. Cl. D18—7





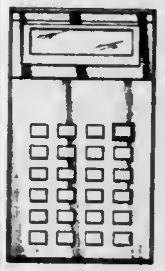
273,306
ELECTRONIC CALCULATOR

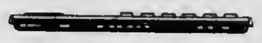
Masafumi Yamagami, and Keiji Sakata, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan

Filed Jun. 18, 1982, Ser. No. 389,990

Claims priority, application Japan, Dec. 26, 1981, 56-58608

U.S. Cl. D18—7





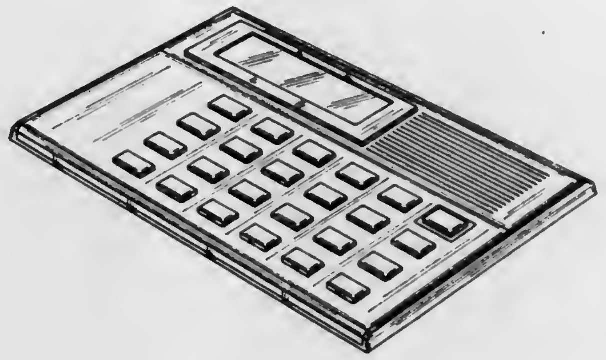
273,307
ELECTRONIC CALCULATOR

Masafumi Yamagami, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan

Filed Jun. 18, 1982, Ser. No. 389,989

Claims priority, application Japan, Dec. 26, 1981, 56-58609

U.S. Cl. D18—7



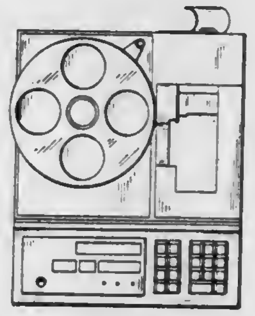
273,308
TAG PRINTING MACHINE

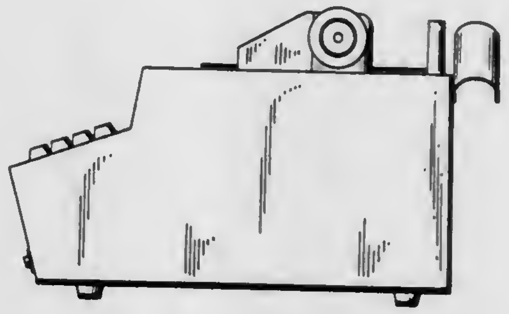
Yasuhiko Matsuda, and Kouichi Konda, both of Iwate, Japan, assignors to Kabushiki Kaisha Sato, Japan

Filed Nov. 19, 1981, Ser. No. 322,870

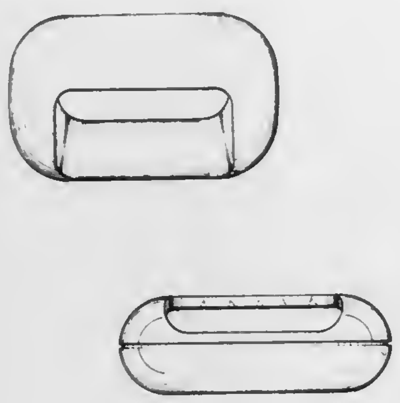
Claims priority, application Japan, Jul. 15, 1981, 56-30813

U.S. Cl. D18—13

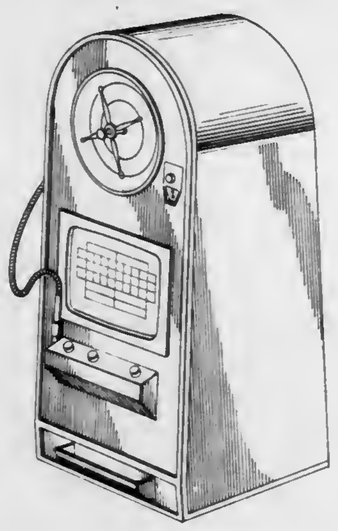




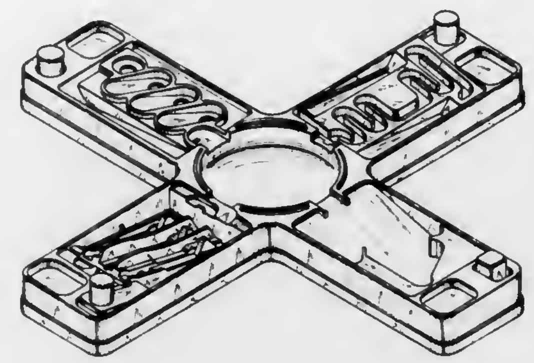
273,309
PAPER CLIP HOLDER
Mel Evenson, San Pedro, Calif., assignor to Eldon Industries, Inc., Hawthorne, Calif.
Filed Sep. 25, 1981, Ser. No. 305,518
U.S. Cl. D19—75

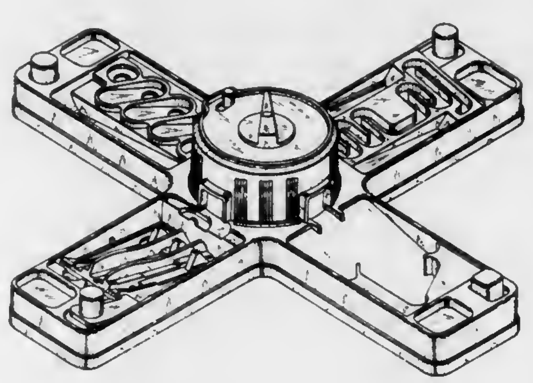


273,310
ELECTRONIC VIDEO ROULETTE GAME HOUSING
Christian Pohanka, Buchengasse 89, A-1100 Vienna, Austria
Continuation-in-part of Ser. No. 305,695, Sep. 25, 1981. This application Jan. 22, 1982, Ser. No. 341,878
U.S. Cl. D21—13

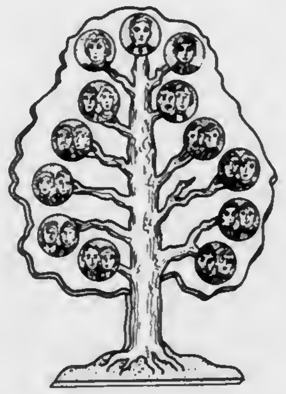


273,311
BALL TRANSFERING GAME BOARD
Masaaki Yoshimura, Tokyo, Japan, and Hitoshi Itakura, Torrance, Calif., assignors to Tomy Kogyo Co., Inc., Japan
Filed May 14, 1981, Ser. No. 263,498
Claims priority, application Japan, Nov. 20, 1980, 55-48576
U.S. Cl. D21—19

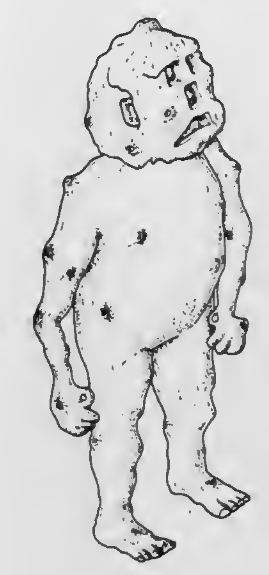




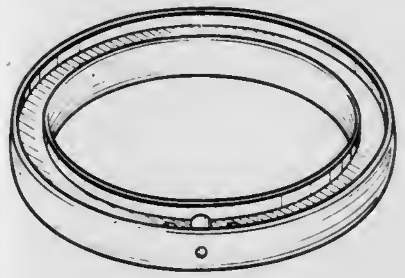
273,312
AMERICAN FAMILY TREE GAME PANEL OR SIMILAR ARTICLE
Joseph G. Guertin, 233 Benedict Rd., Pittsfield, Mass. 01201
Filed Jun. 22, 1981, Ser. No. 267,513
U.S. Cl. D21—25



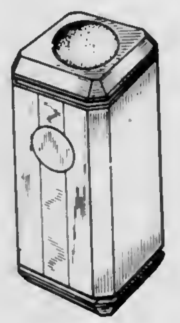
273,313
BLEEDING MONSTER TOY FIGURE
Ivan G. Callais, Jr., 3413 Bissonet Dr., Metairie, La. 70002
Filed Jun. 11, 1981, Ser. No. 272,726
U.S. Cl. D21—166



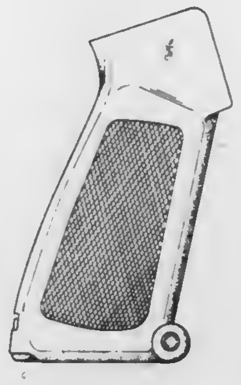
273,314
HANDLE FOR PHYSICAL EXERCISER OR SIMILAR ARTICLE
Kenneth H. McCoy, 3107-17th St., Santa Monica, Calif. 90405, and John Romain, 1629 Veteran Ave., Los Angeles, Calif. 90024
Filed Feb. 12, 1981, Ser. No. 233,633
U.S. Cl. D21—191



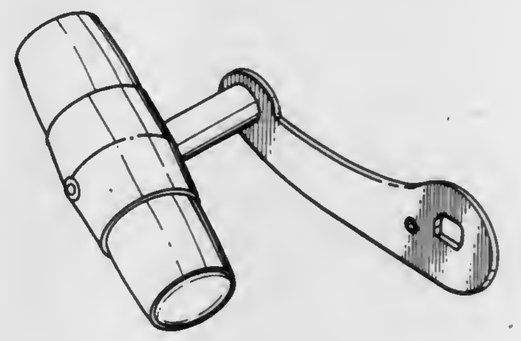
273,315
POOL CUE CHALK CONTAINER
Dale R. Matteson, West Allis, Wis., assignor to Pro Chalker, Inc., West Allis, Wis.
Filed Mar. 30, 1982, Ser. No. 363,541
U.S. Cl. D21—232



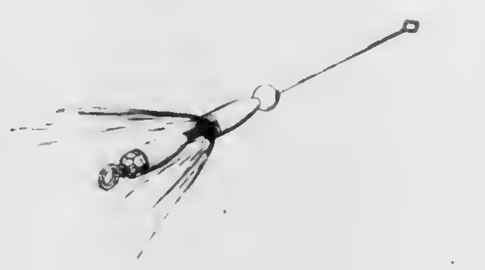
273,316
PISTOL GRIP
Lonnie B. Lambert, P.O. Box 29404, San Antonio, Tex. 78229
Filed Mar. 15, 1982, Ser. No. 357,995
U.S. Cl. D22—1



273,317
HANDLE FOR FISHING REEL
William Purcell, Philadelphia, Pa., assignor to Penn Fishing Tackle Mfg. Co., Philadelphia, Pa.
Filed Mar. 12, 1982, Ser. No. 357,627
U.S. Cl. D22—25



273,318
FISH LURE
Thomas A. Abberger, 19171 Greenacre Rd., South Bend, Ind. 46637
Filed Jan. 22, 1982, Ser. No. 341,814
U.S. Cl. D22—27

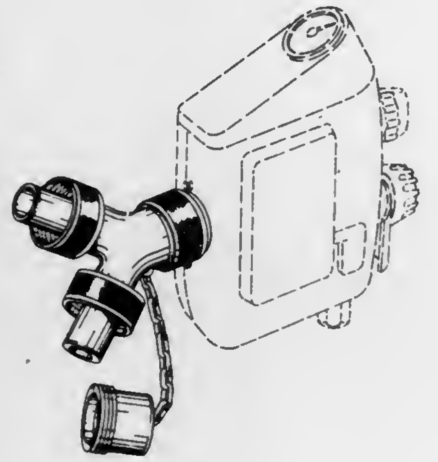


273,319
CONNECTOR FOR AIR-BREATHING APPARATUS

Glen R. Mattingly, 950 E. Lockwood St., and Joseph A. Quintanares, 650 W. 1st Pl., both of Mesa, Ariz. 85201

Filed Feb. 23, 1981, Ser. No. 236,751

U.S. Cl. D23—40

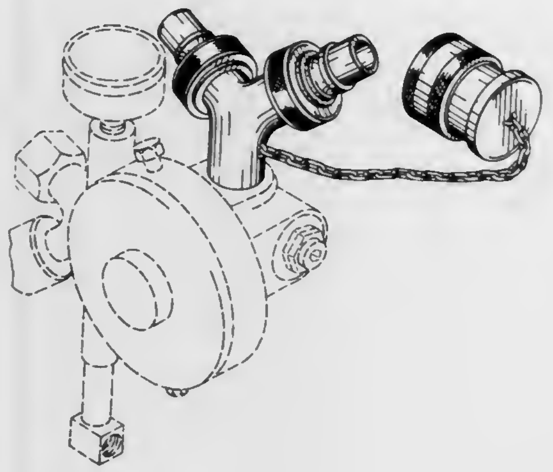


273,320
CONNECTOR FOR AIR-BREATHING APPARATUS

Glen R. Mattingly, 950 E. Lockwood St., and Joseph A. Quintanares, 650 W. 1st Pl., both of Mesa, Ariz. 85201

Filed Feb. 23, 1981, Ser. No. 236,752

U.S. Cl. D23—40

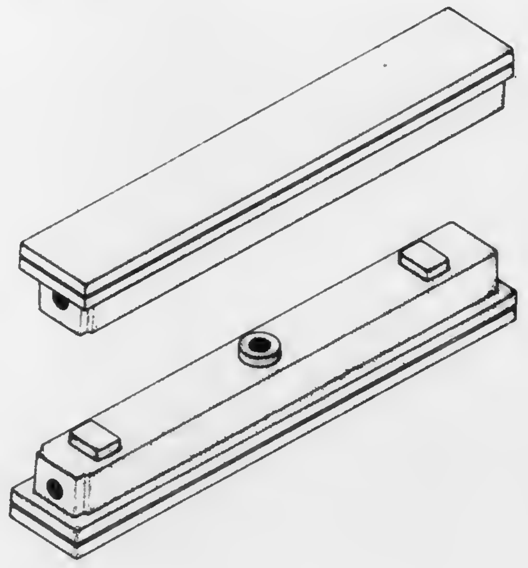


273,321
GAS PIPE TYPE FIREPLACE LOG LIGHTER

John A. Cosper, P.O. Box 5325, Birmingham, Ala. 35207

Filed Dec. 17, 1981, Ser. No. 331,559

U.S. Cl. D23—90.1

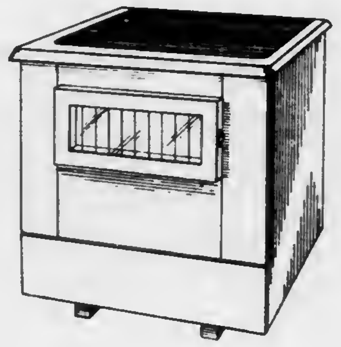


273,322
STOVE FOR BURNING COAL OR WOOD

Norman Fleisler, Laval, Canada, assignor to Powrmatic du Canada LTEE/Powrmatic of Canada Ltd., Terrebonne, Canada

Filed Mar. 31, 1982, Ser. No. 363,667

U.S. Cl. D23—97



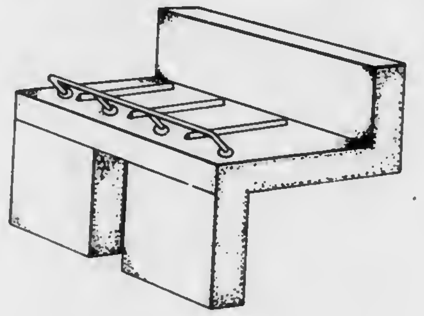
273,323
FIREPLACE HEAT EXCHANGER

Keith J. Davidson, Dorchester, Canada, assignor to 432698 Ontario Ltd., Dorchester, Canada

Filed Aug. 7, 1981, Ser. No. 290,834

Claims priority, application Canada, Feb. 9, 1981, 09-02-81-5

U.S. Cl. D23—135

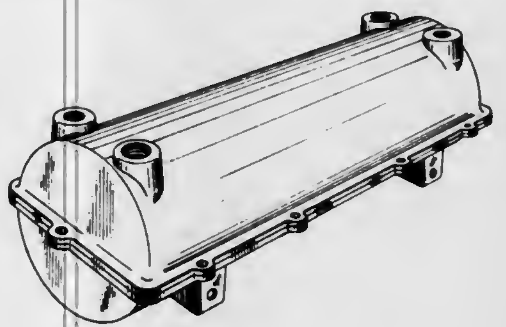


273,324
HEAT EXCHANGER HOUSING

Jerome E. Brownlee, Inglis, Fla., assignor to Dallas Fuel Laboratories, Inc., Marianna, Fla.

Filed Apr. 13, 1981, Ser. No. 253,699

U.S. Cl. D23—136

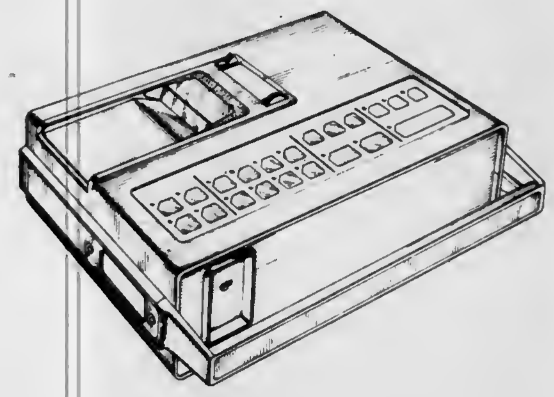


273,325
ELECTROCARDIOGRAPH

Claude Macquignon, Lake Peekskill, N.Y., assignor to Cambridge Instruments, Inc., Ossining, N.Y.

Filed Mar. 4, 1981, Ser. No. 240,570

U.S. Cl. D24—17



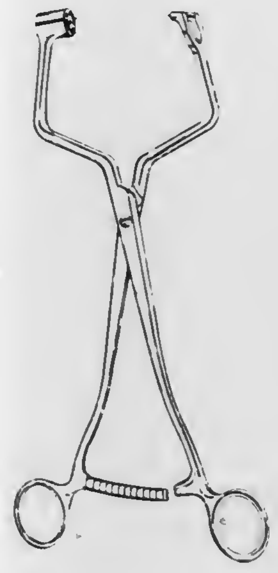
273,326
SURGICAL INSTRUMENT FOR GUIDING A DRILL BIT FOR DRILLING THROUGH BONE SECTIONS

Lars G. B. Peterson, Gothenburg, and Gerhard Schneider, Älta, both of Sweden, assignors to AB Stille-Werner, Stockholm, Sweden

Filed Aug. 10, 1981, Ser. No. 291,380

Claims priority, application Sweden, Feb. 27, 1981, 810517

U.S. Cl. D24—27

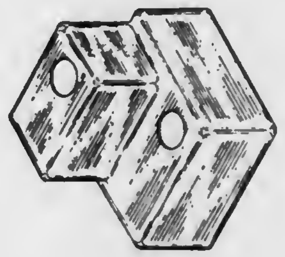


273,327
CONTAINER FOR A HYPODERMIC NEEDLE DISPOSAL DEVICE

Esperanto J. Simicich, 4673 S. Friday Cir., Cocoa, Fla. 32922

Filed Dec. 29, 1980, Ser. No. 221,037

U.S. Cl. D24—29

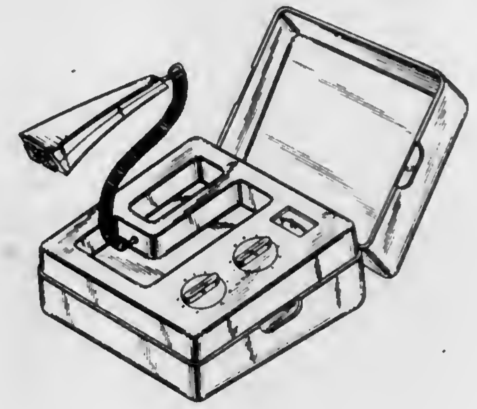


273,328
PORTABLE ELECTRONIC FACIAL AND HAND MUSCLE TONER

Amy Hastings, Santa Ana, and Douglas Patton, Irvine, both of Calif., assignors to Firm-A-Face, Inc., New York, N.Y.

Filed Apr. 6, 1981, Ser. No. 251,212

U.S. Cl. D24—41

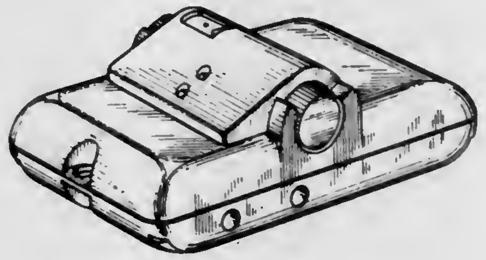


273,329
HOUSING FOR A TRANSCUTANEOUS ELECTRONIC NERVE STIMULATOR

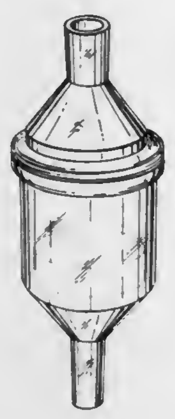
Richard L. Walus, Norwell, Mass., assignor to Codman & Shurtleff, Inc., Randolph, Mass.

Filed Aug. 7, 1981, Ser. No. 290,916

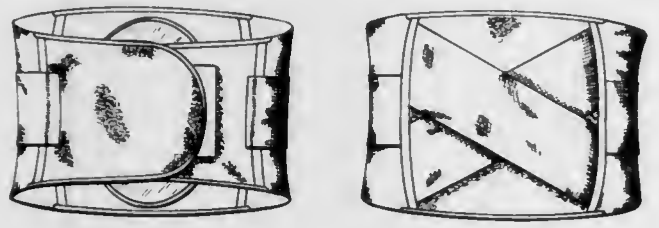
U.S. Cl. D24—41



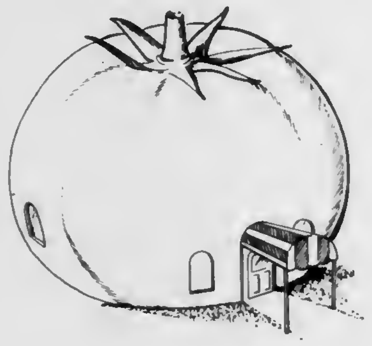
273,330
MEDICAL FLUID FILTER
Ellen A. Rouch, Gurnee, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
Filed Sep. 28, 1981, Ser. No. 306,619
U.S. Cl. D24—51



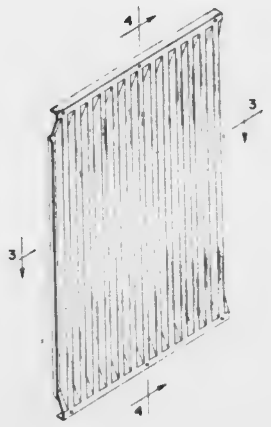
273,331
LUMBO-SACRAL ORTHOSIS
Robert Gruber, Cincinnati, Ohio, assignor to Surgical Appliance Industries, Inc., Cincinnati, Ohio
Filed Feb. 10, 1982, Ser. No. 347,516
U.S. Cl. D24—64



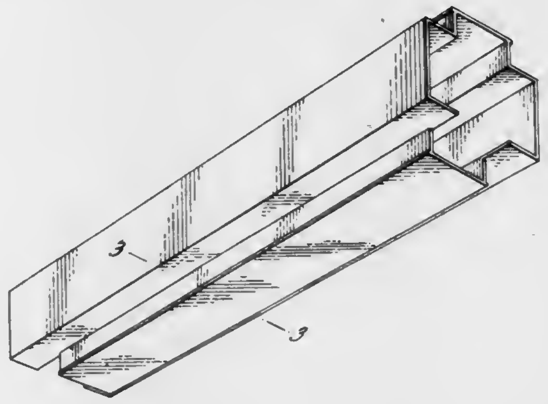
273,332
RESTAURANT BUILDING
James V. Tedesco, 1045 N. Azusa Ave., Space 12-A, Covina, Calif. 91722
Filed May 22, 1981, Ser. No. 266,193
U.S. Cl. D25—10



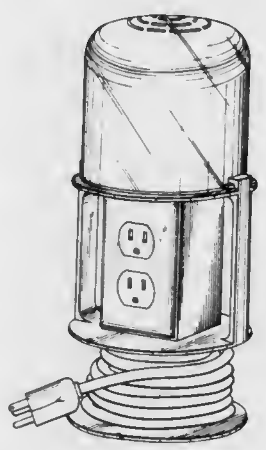
273,333
FENCE PANEL OR THE LIKE
Stanley C. Wilder, 7920 Buford, Dallas, Tex. 75241
Filed Jul. 6, 1981, Ser. No. 280,306
U.S. Cl. D25—38



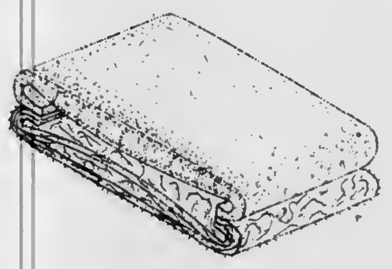
273,334
BEAM
George B. A. Young, Sturmer, Nr. Haverhill, England, assignor to Acrow (Engineers) Limited, London, England
Filed Nov. 20, 1981, Ser. No. 323,449
Claims priority, application United Kingdom, Jun. 8, 1981, 1000862
U.S. Cl. D25—73



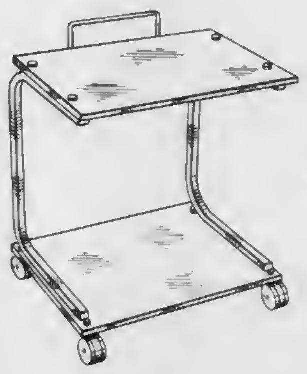
273,335
COMBINED LAMP AND POWERBOARD
Francis R. Bannigan, 64 Duerdin St., North Clayton, Victoria, 3168, Australia
Filed Jan. 22, 1981, Ser. No. 227,206
U.S. Cl. D26—51



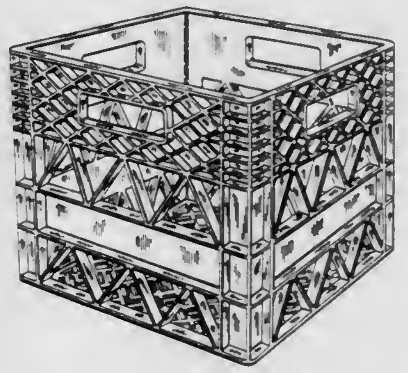
273,336
TWO SIDED ABRADING MIT WITH DUAL SOAP COMPARTMENTS FOR FACE AND BODY USE
Aaron Zutler, 22 Stauber Dr., Plainview, N.Y. 11803
Filed Sep. 7, 1982, Ser. No. 415,736
U.S. Cl. D28—63



273,337
DOCUMENT CART
Joseph K. Semerjian, Franklin Park, and James P. Crowley, Glenview, both of Ill., assignors to Wilson Jones Company, Chicago, Ill.
Filed May 27, 1981, Ser. No. 267,433
U.S. Cl. D34—21



273,338
CRATE
Howard M. Walton, Don Mills, Canada, assignor to Piper Industries, Inc., Memphis, Tenn.
Filed Jul. 9, 1981, Ser. No. 281,651
U.S. Cl. D34—43



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 3RD DAY OF APRIL, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A. E. Staley Manufacturing Company: *See—*
  - Bradford, Marion M.; Orthoefer, Frank T.; and Wright, Kenneth N., 4,440,792, Cl. 426-271.000.
- A. H. Robins Company, Inc.: *See—*
  - Walsh, David A., 4,440,785, Cl. 424-317.000.
- A/S Niro Atomizer: *See—*
  - Lunghofer, Eugene P.; Mortensen, Sten; and Ward, Aubrey P., 4,440,866, Cl. 501-127.000.
- Abbott Laboratories: *See—*
  - DeBernardis, John F.; and Winn, Martin, 4,440,769, Cl. 424-251.000.
  - Zomorodi, Mostafa; and Trieber, Alan J., 4,440,815, Cl. 428-35.000.
- Abel, Edward P.: *See—*
  - Bailey, David B.; and Abel, Edward P., 4,440,848, Cl. 430-215.000.
- Abermeth, Hubert; Deckert, Andreas; Muller, Helmut; and Wahnschaffe, Jurgen, to Klockner-Humboldt-Deutz Aktiengesellschaft. Braking device for a valve controlled internal combustion engine. 4,440,126, Cl. 123-321.000.
- Abouchar, John W.; and Doyle, Michael J. Mass flow meter with reduced attitude sensitivity. 4,440,021, Cl. 73-204.000.
- ACF Industries, Incorporated: *See—*
  - Behle, Gunter R.; and Hillstead, David P., 4,440,379, Cl. 251-144.000.
  - Behle, Gunter R.; and Hrinsin, John A., 4,440,380, Cl. 251-144.000.
- Achelpohl, Fritz, to Windmoller & Holscher. Apparatus for forming stacks ready to be packaged from flat workpieces. 4,440,386, Cl. 271-70.000.
- Achille, Jean R., to Illinois Tool Works Inc. Integrally formed resilient clip and extension. 4,440,374, Cl. 248-544.000.
- Adachi, Yoshiharu, to Aisin Seiki Kabushiki Kaisha. Hydraulic system for a vehicle. 4,440,453, Cl. 303-50.000.
- Adams, Gary E., to International Business Machines Corp. Gas chromatograph, Fourier transform, infrared spectroscopy system. 4,440,013, Cl. 73-23.100.
- Adams, Jack C., to Energy Recovery Group, Inc. Waste material incineration system and method. 4,440,098, Cl. 110-215.000.
- Adams, Jeffry D.: *See—*
  - Gerace, Michael J.; and Adams, Jeffry D., 4,440,829, Cl. 428-343.000.
- Adamski, Joseph R.: *See—*
  - Teich, Wesley W.; Freedman, George; and Adamski, Joseph R., 4,441,002, Cl. 219-10.55B.
- Adamson, Jerome E. Ski pole grip with electrical heating. 4,440,421, Cl. 280-821.000.
- Adamson, Ronald B.: *See—*
  - Cheng, Bo-Ching; and Adamson, Ronald B., 4,440,862, Cl. 436-6.000.
- Adrian Marsh Limited: *See—*
  - Knight, Peter E., 4,440,298, Cl. 206-216.000.
- Aeritalia Societa Aerospaziale Italiana p.A.: *See—*
  - D'Apuzzo, Sebastiano, 4,440,532, Cl. 408-229.000.
- Aerofoam Industries (Proprietary) Limited: *See—*
  - Blackwood-Murray, Thomas J.; and Evans, David, 4,440,295, Cl. 198-843.000.
- Agarwal, Suresh C., to Babcock & Wilcox Company, The. Detection of hot and cold spots in chemical reactors. 4,440,509, Cl. 374-166.000.
- Agfa-Gevaert AG: *See—*
  - Linke, Gerda; Engelsmann, Dieter; Maas, Dieter; Bassler, Alfred; and Hackenberg, Hubert, 4,440,483, Cl. 354-212.000.
- Agfa-Gevaert Aktiengesellschaft: *See—*
  - Greiner, Joachim; and Gartner, Eberhard, 4,440,106, Cl. 118-640.000.
  - Krafft, Werner, 4,440,849, Cl. 430-239.000.
- Ahlm, Lars, to Timmele Laminering AB. Means for an elastic body with protective layer. 4,440,817, Cl. 428-71.000.
- Aisin Seiki Kabushiki Kaisha: *See—*
  - Adachi, Yoshiharu, 4,440,453, Cl. 303-50.000.
- Aizawa, Bunji: *See—*
  - Amano, Kazunori; Aizawa, Bunji; Ibe, Akio; and Sekikawa, Yoichi, 4,440,147, Cl. 126-201.000.
- Akagiri, Kenzo; Katakura, Masayuki; and Ookouchi, Motomi, to Sony Corporation. Noise reduction circuit. 4,441,083, Cl. 330-149.000.
- Akagiri, Kenzo; Katakura, Masayuki; and Ookouchi, Motomi, to Sony Corporation. Noise reduction circuit. 4,441,084, Cl. 330-149.000.
- Akamine, Takenori: *See—*
  - Miyano, Ryuzo; Uenishi, Haruyuki; Akatani, Hisashi; and Akamine, Takenori, 4,441,001, Cl. 200-308.000.
- Akashi, Kazuo: *See—*
  - Nakamura, Teruo; Kiyoto, Michio; Akashi, Kazuo; and Hasegawa, Isao, 4,440,560, Cl. 71-24.000.
- Akatani, Hisashi: *See—*
  - Miyano, Ryuzo; Uenishi, Haruyuki; Akatani, Hisashi; and Akamine, Takenori, 4,441,001, Cl. 200-308.000.
- Akatsu, Yosuke: *See—*
  - Shibahata, Yasuji; Irie, Namio; Ikawa, Kazuo; and Akatsu, Yosuke, 4,440,254, Cl. 180-140.000.
- Akiyama, Hiroyuki; Hirosawa, Kuninori; and Kuwabara, Hideki, to Japan Styrene Paper Corporation. Process for producing foamed and molded article of polypropylene resin. 4,440,703, Cl. 264-50.000.
- Akkerman, Neil H., to AVA International Corporation. Well slip assemblies. 4,440,223, Cl. 166-217.000.
- Aksamit, Frank J. Chain saw sharpener. 4,440,045, Cl. 76-25.00A.
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  - Broberg, Hans, 4,440,595, Cl. 159-13.00A.
  - Hallstrom, Stig, 4,440,360, Cl. 244-3.280.
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  - Bergstrom, Hans R.; and Malmborg, Rolf, 4,440,495, Cl. 356-155.000.
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  - Gerlach, Klaus; Lange, Wolfgang; and Loh, Dieter, 4,440,648, Cl. 210-759.000.
  - Ostertag, Karl, 4,440,641, Cl. 210-321.300.
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  - Shelton, William E. A.; and Corby, David C., 4,440,353, Cl. 242-47.010.
- Albanesi, Giancarlo; and Rinaldi, Gianfranco, to Saffa S.p.A. Process for stabilizing by encapsulation red phosphorus to be used as flame retardant of polymeric materials and product so obtained. 4,440,880, Cl. 523-205.000.
- Albertinsky, Boris I.; Dmitrieva, Nina M.; Evseev, Anatoly K.; Zotov, Ivan P.; Ivanov, Andrei S.; Sviniin, Mikhail P.; Suslov, Valentin A.; and Fedotov, Mikhail T. High-voltage rectifier unit. 4,441,150, Cl. 363-126.000.
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  - Mather, Douglas E.; Messenger, Edward T.; and Phillips, Brinley M., 4,440,665, Cl. 252-356.000.
- Aldinger, Fritz: *See—*
  - Bussard, Adrien; Aldinger, Fritz; and Sperner, Franz, 4,440,178, Cl. 128-784.000.
- Alitalia Linee Aeree Italiane S.p.A.: *See—*
  - Spagnoli, Giulio, 4,440,265, Cl. 182-129.000.
- Allan, Kenneth N.; Worringer, Thomas J.; and Baugh, Robert T., to Allis-Chalmers Corporation. Sling belt bulk material conveyor. 4,440,293, Cl. 198-813.000.
- Allcock, Harry R.; Neenan, Thomas X.; and Kossa, Walter C., to Research Corporation. Coupling of polyorganophosphazenes to carboxylic acid. 4,440,921, Cl. 528-168.000.
- Allen, J. Warren: *See—*
  - Lilley, George M., 4,440,636, Cl. 209-10.000.
- Allen, James O. Fuel treating apparatus for internal combustion engines and method of operating same. 4,440,115, Cl. 123-1.00A.
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  - Cheh, Ernest; and Allen, William, 4,439,919, Cl. 29-861.000.
- Alles, Alfred H. Building module having internal tubes for carrying electrical wires. 4,439,966, Cl. 52-221.000.
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  - Ivory, Dawn M.; Miller, Granville G.; Chance, Ronald R.; and Baughman, Ray H.,.4,440,669, Cl. 252-518.000.
  - Kwon, Young D.; Kavesh, Sheldon; and Prevorsek; Dusan C., 4,440,711, Cl. 264-185.000.
  - Libowitz, George G.; Lynch, James F.; and Maeland, Arnulf J., 4,440,737, Cl. 423-644.000.
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  - Ramun, Michael; and Ramun, John, 4,439,921, Cl. 30-134.000.
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  - Allan, Kenneth N.; Worringer, Thomas J.; and Baugh, Robert T., 4,440,293, Cl. 198-813.000.
  - Novotny, Carl F., 4,440,351, Cl. 241-41.000.
- Allison, Debra L.: *See—*
  - Doberty, James B.; Dorn, Conrad P.; Witzel, Bruce E.; Allison, Debra L.; and Shen, Tsung-Ying, 4,440,779, Cl. 424-274.000.
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  - Hillinger, George, 4,440,205, Cl. 145-2.00R.
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  - Fujisawa, Kyuichi, 4,441,109, Cl. 346-139.00R.
- Alt, Gerhard H.: *See—*
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- Altier, Anthony L. Booster springs for coil spring trap. 4,439,946, Cl. 43-81.000.
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  - Dawless, Robert K.; LaCamera, Alfred F.; and Klingensmith, Chester H., 4,440,610, Cl. 204-67.000.
  - Powers, John H.; and Dang, Hang T., 4,440,606, Cl. 204-33.000.
- AM General Corp.: *See—*
  - Goodell, Fred L.; and Ellison, Michael J., 4,440,451, Cl. 301-105.00R.
- AM International, Inc.: *See—*
  - Whittemore, Jesse E., Jr., 4,440,847, Cl. 430-146.000.
- Amano, Kazunori; Aizawa, Bunji; Ibe, Akio; and Sekikawa, Yoichi, to Toshiba Netsukigu Kabushiki Kaisha; and Shin Foa Koeki Kabushiki Kaisha. Room-heating stove with a retractable fire-prevention spacer. 4,440,147, Cl. 126-201.000.
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  - Fogelman, H. Frank; and Ambrose, Arnum, 4,440,457, Cl. 312-7.200.
- AMCEC Corporation: *See—*
  - Girard, Maurice V.; Worrall, Michael J.; and Seguy, Bernard R., 4,440,549, Cl. 55-59.000.
- American Analytic Technology, Inc.: *See—*
  - Masreliez, Carl J., 4,441,013, Cl. 219-231.000.
- American Cyanamid Company: *See—*
  - Shepherd, Robert G., 4,440,940, Cl. 560-19.000.
  - Upeslacis, Janis; Schaub, Robert E.; and Bernstein, Seymour, 4,440,758, Cl. 424-180.000.
- American Home Products Corporation: *See—*
  - Sarantakis, Dimitrios, 4,440,904, Cl. 525-54.110.
- American Hospital Supply Corporation: *See—*
  - Intengan, Franklin S., 4,440,301, Cl. 206-456.000.
- American Microsystems, Inc.: *See—*
  - Haque, Yusuf A., 4,441,082, Cl. 330-129.000.
- American Optical Corporation: *See—*
  - Chu, Nori Y. C., 4,440,672, Cl. 252-586.000.
- American Photo-Graphics Corporation: *See—*
  - Edhlund, Ronald D., 4,440,842, Cl. 430-11.000.
- Ames, Jack D.; and Smith, David W., to Mead Corporation, The. Sheet registration device. 4,440,389, Cl. 271-251.000.
- AMF Inc.: *See—*
  - Engelder, Paul D., 4,440,219, Cl. 166-57.000.
  - Garofalo, Giovanni, 4,441,142, Cl. 362-158.000.
- AMP Incorporated: *See—*
  - Desmarais, Mark R., 4,440,992, Cl. 200-340.000.
  - Schumacher, William L., 4,440,469, Cl. 350-96.200.
- Ampex Corporation: *See—*
  - Ryan, Dennis M.; and Hursey, Robert, 4,440,358, Cl. 242-189.000.
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- Anderson, Carl J., to International Business Machines Corporation. Stripline cable with reduced crosstalk. 4,441,088, Cl. 333-1.000.
- Anderson, Catherine A.: *See—*
  - Anderson, Stephen T.; and Anderson, Catherine A., 4,440,177, Cl. 128-719.000.
- Anderson Cornelius Company, The: *See—*
  - Anderson, Terry M., 4,440,066, Cl. 91-459.000.
- Anderson, David F., to United States of America, Energy. Wide range radioactive gas concentration detector. 4,441,024, Cl. 250-380.000.
- Anderson, Gary B., to Antroy Enterprises, Inc. Device for controlling a circuit. 4,441,097, Cl. 340-365.00A.
- Anderson, Stephen T.; and Anderson, Catherine A., to Medical Graphics Corporation. Respiratory analyzer system. 4,440,177, Cl. 128-719.000.
- Anderson, Terry M., to Anderson Cornelius Company, The. Digital pneumatic modulator. 4,440,066, Cl. 91-459.000.
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  - Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,440,757, Cl. 424-180.000.
- Anelva Corporation: *See—*
  - Suzuki, Toshiyuki; and Nakamura, Kazuo, 4,440,618, Cl. 204-298.000.
- Anestos, Themistocles C.: *See—*
  - Sickles, James E.; and Anestos, Themistocles C., 4,440,349, Cl. 239-698.000.
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- Antkowiak, Russell J., to Aqua Culture, Inc. Tracking means for moving a light source across a planter surface to simulate sunlight. 4,441,145, Cl. 362-384.000.
- Antroy Enterprises, Inc.: *See—*
  - Anderson, Gary B., 4,441,097, Cl. 340-365.00A.
- Aono, Tetsuya: *See—*
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- Appenzeller, Valentin, to Kusters, Eduard. Support rod steamer rod lock. 4,440,335, Cl. 226-107.000.
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- Aquila, Werner: *See—*
  - Sauer, Wolfgang; Aquila, Werner; Hoffmann, Wolfgang; Brenner, Karl; and Halbritter, Klaus, 4,440,960, Cl. 568-471.000.
- Arai, Yoshio: *See—*
  - Kataoka, Hiroyuki; and Arai, Yoshio, 4,440,513, Cl. 400-165.100.
- Arakawa, Hiroshi: *See—*
  - Suzuki, Hajime; Suzuki; and Arakawa, Hiroshi, 4,440,198, Cl. 139-435.000.
- Aralis, Frank M.: *See—*
  - Van Vliet, James G.; and Aralis, Frank M., 4,441,105, Cl. 340-750.000.
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  - Vielstich, Gunther; Bauer, Hanns-Georg; Muhlenbeck, Josef; Otto, Josef; Feldhoff, Horst; Zollner, Dieter H.; and Rittmann, Friedrich, 4,441,190, Cl. 373-94.000.
- Arena, Alan J.: *See—*
  - Pounder, Edwin; Arena, Alan J.; Pawlowski, Michael; and Totten, Adrian M., 4,440,030, Cl. 73-861.870.
- Arichi, Isao; Waniisi, Tetuya; and Koh, Takuji, to Omron Tateisi Electronics Co. Electronic timer. 4,440,503, Cl. 368-107.000.
- Arikata, Kazuyoshi: *See—*
  - Takeshige, Kenji; Hirabe, Kenji; Ogawa, Yukifumi; Arikata, Kazuyoshi; Yako, Kazunori; Sakai, Kenichi; Matsuo, Toshinori; and Kamio, Hiroshi, 4,440,584, Cl. 148-128.000.
- Ariki, Yutaka: *See—*
  - Katsumi, Ikuo; Kondo, Hideo; Yamashita, Katsuji; Hidaka, Takayoshi; Hosoe, Kazunori; Ariki, Yutaka; Yamashita, Toshiaki; and Watanabe, Kiyoshi, 4,440,784, Cl. 424-308.000.
- Arita, Setsuo: *See—*
  - Sato, Takao; Ito, Tetsuo; and Arita, Setsuo, 4,440,715, Cl. 376-210.000.
- Arlt, Dieter, to Bayer Aktiengesellschaft. Preparation of substituted alpha-halogeno-propionic acids and their derivatives. 4,440,947, Cl. 560-226.000.
- Arlt, Dieter: *See—*
  - Jautelat, Manfred; and Arlt, Dieter, 4,440,955, Cl. 568-419.000.
- Armstrong World Industries, Inc.: *See—*
  - Lyall, Joseph G., 4,440,080, Cl. 101-129.000.
  - Witman, Jack H., 4,440,826, Cl. 428-327.000.
- Arney, Jonathan S.: *See—*
  - Sanders, Frederick W.; Hillenbrand, Gary F.; Arney, Jonathan S.; and Wright, Richard F., 4,440,846, Cl. 430-138.000.
- Arnold, Michael B.: *See—*
  - Giddens, Marian S.; and Arnold, Michael B., 4,440,436, Cl. 296-107.000.
- Arvai, Tibor, to Verdol S.A. Double open-shed Jacquard machine for the lifting of warp yarns of a loom. 4,440,196, Cl. 139-59.000.
- Asada, Hideki: *See—*
  - Matsui, Kanenobu; Uchiumi, Shinichiro; Asada, Hideki; and Umezu, Takashi, 4,440,928, Cl. 544-309.000.
- Asahi Glass Company, Ltd.: *See—*
  - Oda, Yoshio; Uchida, Keiichi; Morimoto, Takeshi; and Kumai, Seisaku, 4,440,948, Cl. 562-532.000.
- Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
  - Fujiwara, Takashi; Kajita, Shuji; Matsushita, Tetsuo; and Manabe, Seiichi, 4,440,710, Cl. 264-184.000.
- Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
  - Komoto, Shinsuke; and Haneishi, Yasuyuki, 4,440,484, Cl. 354-286.000.
  - Urano, Fumio; and Umetsu, Junji, 4,440,403, Cl. 277-81.00R.
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  - Yoshida, Noriyuki; and Asai, Yoshimi, 4,441,061, Cl. 318-329.000.
- Asakura, Toshiyuki; Kobayashi, Hiroaki; and Noguchi, Yukio, to Toray Industries, Inc. Stabilized polyphenylene sulfide and method for producing same. 4,440,915, Cl. 525-537.000.
- Asami, Toshiaki, to Diesel Kiki Co., Ltd. Fuel injection system provided with fuel injection valves having controllable valve opening pressure. 4,440,135, Cl. 123-467.000.
- Asea AB: *See—*
  - Fredrikson, Bengt; and Hans, Bertil, 4,441,191, Cl. 373-161.000.
- Aseltine, Clifford L.: *See—*
  - Howe, Philip M.; Gibbons, Gould; Aseltine, Clifford L.; and Williams, Frank, 4,440,296, Cl. 206-3.000.
- Ashland Oil, Inc.: *See—*
  - Hettinger, William P., Jr.; Beck, Hubert W.; and Kovach, Stephan M., 4,440,868, Cl. 502-65.000.
- Assaf, Gad, to Solmat Systems Ltd. Method of and means for maintaining a halocline in an open body of salt water. 4,440,148, Cl. 126-415.000.
- Astle, William H., to Tri Tool Inc. Reaming and counterboring cutting tool. 4,440,531, Cl. 408-82.000.
- Atlantic Richfield Company: *See—*
  - Fisher, Edwin N., 4,440,520, Cl. 404-72.000.
  - Go, Ting S. L.; and Miller, Richard F., 4,440,625, Cl. 208-48.0AA.
  - Miller, Richard F.; Go, Tony S.; and Wilson, George R., III, 4,440,666, Cl. 252-392.000.
- Atlantic Richfield Company, Inc.: *See—*
  - Kaehler, James A., 4,440,150, Cl. 126-425.000.
- Atomel Products Corporation: *See—*
  - Bowers, Gerald M., 4,440,538, Cl. 414-183.000.
- Aubert, Jean-Pierre P. A.; and Tirole, Jacques P. H., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, S.N.E.C.M.A. Process for the manufacture of turbine blades cooled by means of a porous body and product obtained by the process. 4,440,834, Cl. 428-554.000.

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- Auracher, Franz; and Stockmann, Michael, to Siemens Aktiengesellschaft. Planar waveguide bragg lens and its utilization. 4,440,468, Cl. 350-96.120.
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  - de Vincentiis, Leonardo, 4,440,786, Cl. 424-319.000.
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- Australian National University, The: *See—*
  - Rainsford, Kim D.; and Whitehouse, Michael W., 4,440,762, Cl. 424-230.000.
- Auto-Register, Inc.: *See—*
  - Azcua, Noris S.; Margolin, George D.; and Miller, Audrey, 4,441,160, Cl. 364-900.000.
- Automotive Products Limited: *See—*
  - Nioloux, Raymond, 4,440,283, Cl. 192-106.200.
- AVA International Corporation: *See—*
  - Akkerman, Neil H., 4,440,223, Cl. 166-217.000.
- Avallone, William J.: *See—*
  - Smith, Noel A.; and Avallone, William J., 4,440,582, Cl. 148-6.15R.
- Avdel Limited: *See—*
  - Saxon, John W. C., 4,440,286, Cl. 198-380.000.
- Aviram, Ari; Mayne-Banton, Veronica I.; and Srinivasan, Rangaswamy, to International Business Machines Corporation. Method for depositing a metal layer on polyesters. 4,440,801, Cl. 427-54.100.
- Aykut, Kurt, to E.C.H. Will (GmbH & Co.). Apparatus for cutting and transporting sheets of paper or the like. 4,440,051, Cl. 83-72.000.
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  - Ross, Roderick A. L., 4,440,270, Cl. 188-264.0AA.
- B-W Health Products, Inc.: *See—*
  - Werner, Lester W., 4,439,879, Cl. 5-60.000.
- Babcock & Wilcox Company, The: *See—*
  - Agarwal, Suresh C., 4,440,509, Cl. 374-166.000.
  - Tuttle, Douglas J., 4,440,114, Cl. 122-451.200.
- Bacchus, Richard E.: *See—*
  - Bacchus, Rockney D.; Bacchus, Richard E.; and Bacchus, Ronald A., 4,440,000, Cl. 62-310.000.
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- Bacchus, Ronald A.: *See—*
  - Bacchus, Rockney D.; Bacchus, Richard E.; and Bacchus, Ronald A., 4,440,000, Cl. 62-310.000.
- Bader, Bernard R.: *See—*
  - Wallace, John A.; and Bader, Bernard R., 4,440,088, Cl. 104-7.00A.
- Bailey, Clayton G. Novelty cup for forcibly ejecting liquid. 4,440,390, Cl. 272-27.00N.
- Bailey, David B.; and Abel, Edward P., to Eastman Kodak Company. Vinyl-ester polymeric timing layer for color transfer assemblages. 4,440,848, Cl. 430-215.000.
- Bailey, John C., to Union Carbide Corporation. Nonaqueous cell employing an anode having a boron-containing surface film. 4,440,836, Cl. 429-48.000.
- Baird, William C., Jr.; Eberly, Paul E., Jr.; and Balinsky, George J., to Exxon Research and Engineering Co. Catalyst regeneration in a catalytic reforming process. 4,440,667, Cl. 502-53.000.
- Baker, Paul V.; and Vehovic, David. Mobile adjustable curtain apparatus for use in room and pillar coal mining ventilation system. 4,440,070, Cl. 98-50.000.
- Baker, Steven F., to General Motors Corporation. Fuel cap valve structure. 4,440,308, Cl. 220-204.000.
- Baker, Wallace L.: *See—*
  - Helmus, Martin C.; and Baker, Wallace L., 4,440,553, Cl. 55-126.000.
- Bakker, Pieter, to U.S. Philips Corporation. Overvoltage protection for a line circuit. 4,440,980, Cl. 179-81.00R.
- Bakunin, Vladimir A.: *See—*
  - Kostylev, Alexandr D.; Gileta, Vladimir P.; Grigoraschenko, Vladimir A.; Tkach, Khaim B.; Bakunin, Vladimir A.; Frenkel, Valery Y.; Kozlov, Valery A.; Reifisov, Jury B.; Chepurnoi, Nikolai P.; Bondar, Mikhail J.; Drobyazko, Vladimir F.; Stazhevsky, Stanislav B.; Ratskevich, Gerald I.; Fedorov, Alexandr A.; Polyakov, Anatoly S.; Bobylev, Leonid M.; Tsvetkov, Evgeny N.; and Petreev, Anatoly M., 4,440,240, Cl. 175-20.000.
- Bakx, Martinus C. M., to Mead Corporation, The. Fully enclosed wrap-around carton. 4,440,340, Cl. 229-40.000.
- Balchjunas, Povilas I.; Martinaitis, Ionas J.; Tulaba, Sauljus A.; and Pilkauskas, Alfredas B., to Kaunassky Politekhnichesky Institut. Lighting system. 4,441,055, Cl. 315-288.000.
- Baldwin, David R.; and Lemak, Nicholas S., to Honeywell Information Systems Inc. Short term response enhancement for digital phase-locked loop. 4,441,195, Cl. 377-2.000.
- Baldwin, John J., to Merck & Co., Inc. 3-Amino-2-hydroxypropoxyaryl imidazole derivatives. 4,440,774, Cl. 424-267.000.
- Balinsky, George J.: *See—*
  - Baird, William C., Jr.; Eberly, Paul E., Jr.; and Balinsky, George J., 4,440,667, Cl. 502-53.000.
- Bally Manufacturing Corporation: *See—*
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- Baltes, Heinrich P.: *See—*
  - Moser, Jean-Frederic; and Baltes, Heinrich P., 4,441,138, Cl. 361-274.000.
- Balthazor, Terry M.: *See—*
  - Chupp, John P.; Alt, Gerhard H.; and Balthazor, Terry M., 4,440,964, Cl. 568-30.000.
- Baltz, Richard H.: *See—*
  - Seno, Eugene T.; and Baltz, Richard H., 4,440,857, Cl. 435-118.000.
- Bando, Yukio: *See—*
  - Matsui, Ichiro; Tanaka, Tsutomu; Bando, Yukio; and Ohashi, Kiyonobu, 4,440,778, Cl. 424-274.000.
- Banerji, Samir K.: *See—*
  - Staggers, John O.; Banerji, Samir K.; and Lalich, Michael J., 4,440,568, Cl. 75-53.000.
- Banks, James C. Pipe hanger. 4,440,369, Cl. 248-62.000.
- Barbe, Pierre L., to Pont-a-Mousson S.A. Control mechanism for a fire hydrant. 4,440,190, Cl. 137-272.000.
- Barbeau, Dennis E., to Teledyne Industries, Inc. Integrated fuel management system. 4,441,156, Cl. 364-431.020.
- Barbee, Robert B.; and Wicker, Thomas H., Jr., to Eastman Kodak Co. Polyester containers having improved gas barrier properties. 4,440,922, Cl. 528-194.000.
- Bardwell, Allen E. Gravity percussion drill with upper end cocking spring and method of assembly. 4,440,245, Cl. 175-293.000.
- Barho, Hans: *See—*
  - Denz, Helmut; and Barho, Hans, 4,440,136, Cl. 123-491.000.
- Barnett, Mark L.; and Owens, John C., to Telematic Products, Inc. Universal measured service interface for step-by-step telephone exchanges. 4,440,978, Cl. 179-5.500.
- Barre, Guy: *See—*
  - Kortbeek, Andras G. T. G.; Barre, Guy; and Durel, Jean M., 4,440,875, Cl. 518-728.000.
- Bartels, Herbert D.; and Maliszewski, Leonard A., to Continental Group, Inc., The. Container assembly. 4,440,307, Cl. 220-4.00B.
- Bartholme, Louis G.: *See—*
  - Shimotake, Hiroshi; and Bartholme, Louis G., 4,440,837, Cl. 429-112.000.
- Bartlett, Gary F. Device for affixing panels in abutting relationship to a support structure. 4,439,969, Cl. 52-461.000.
- Bartlett, Robert L., to Shopsmith, Inc. Planer mounting system. 4,440,204, Cl. 144-130.000.
- Bartmann, Martin; Bax, Hanns-Jorg; Burzin, Klaus; and Ribbing, Wilfried, to Chemische Werke Huls AG. Method of producing high-molecular weight polyphenylene oxides. 4,440,923, Cl. 528-216.000.
- Barton, Sterling C.; and Pitoniak, Joseph E., to General Electric Company. Hydrogen leak monitor for a turbine-generator. 4,440,017, Cl. 73-40.50R.
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  - Widmer, Walter R.; and Baschong, Marcel, 4,441,095, Cl. 340-347.0DD.
- Base, Terence E.: *See—*
  - Bleiweiss, Arthur F.; and Base, Terence E., 4,440,104, Cl. 116-63.00T.
- BASF Aktiengesellschaft: *See—*
  - Boehm, Udo; Schulze-Berge, Klaus; and Brotzler, Roland, 4,441,130, Cl. 360-106.000.
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  - Wilson, Joe C.; Hirozawa, Stanley T.; and Conville, John J., 4,440,721, Cl. 422-16.000.
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  - Webb, Charles E., 4,441,102, Cl. 340-673.000.
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- Bassett, James H.; Christensen, Timothy F.; and Pearson, Mark L., to Deere & Company. Stone trap for an axial flow rotary separator. 4,440,179, Cl. 130-27.0JT.
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  - Chromecek, Richard C.; Friends, Gary D.; Wissman, Lawrence Y.; and Yourd, Raymond A., III, 4,440,919, Cl. 526-263.000.
  - Clark, James A.; and Emmel, Henry J., 4,440,317, Cl. 222-103.000.
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- Baxter Travenol Laboratories, Inc.: *See—*
  - Genatempo, Vince; and Karrasch, Frank, 4,440,207, Cl. 150-52.00R.
  - Richardson, Gerry D.; and Cairo, Joseph A., 4,441,027, Cl. 250-577.000.
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  - Krimm, Heinrich; and Buysch, Hans-Josef, 4,440,937, Cl. 549-228.000.
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  - Muller, Rudolf, 4,440,420, Cl. 280-691.000.
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  - Van Vliet, James G.; and Aralis, Frank M., 4,441,105, Cl. 340-750.000.
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- Beisel, Hermann, to Heidelberger Druckmaschinen. Dampening-inking unit for offset printing machines. 4,440,081, Cl. 101-148.000.
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- Beitler, Bruce; and Ostendorf, Irene. Folio and notebook display stand. 4,440,373, Cl. 248-461.000.
- Belart, Juan; Burgdorf, Jochen; Kircher, Dieter; and Weise, Lutz, to ITT Industries, Inc. Pressure control arrangement for vehicle braking system with antiskid control equipment. 4,440,454, Cl. 303-114.000.
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  - Stone, Julian, 4,441,188, Cl. 372-54.000.
- Bellamy, Norman W., to Sea Energy Associates, Limited. Energy conversion apparatus. 4,441,030, Cl. 290-53.000.
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- Bellows, Alfred H., to GTE Laboratories Incorporated. Solar energy collecting apparatus. 4,440,154, Cl. 126-438.000.
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- Bendtsen, Randall R., to Caterpillar Tractor Co. Winch apparatus. 4,440,041, Cl. 74-753.000.
- Benecke, Herman P.; and Sherwood, Bob E., to Vinoxen Company, Inc., The. Oxyoctadecanoates as psychotropic agents. 4,440,781, Cl. 424-285.000.
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- Bennett, Percy J., to Clemtex, Inc. Spin blast tool. 4,439,954, Cl. 51-411.000.
- Benson, Gustav E. V., to Patra AG. Device for dispensing metered quantities of fluid from a container. 4,440,323, Cl. 222-209.000.
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  - Gordon, Lucas S., 4,440,723, Cl. 422-47.000.
- Berger, Irving. Beverage dispenser. 4,440,318, Cl. 222-129.100.
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  - Gappa, Gunther; Degel, Josef; and Juntgen, Harald, 4,439,932, Cl. 34-57.00D.
  - Handrick, Kurt; Kolling, Georg; and Kiedel, Paul, 4,440,957, Cl. 585-323.000.
  - Henning, Klaus-Dirk; Klein, Jurgen; and Harder, Burkhard, 4,440,551, Cl. 55-73.000.
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- Berkley, George A., to Thiokol Corporation. Acceleration actuated lanyard device. 4,440,060, Cl. 89-1.50D.
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- Berkman, Joseph L., to Berkman Industries, Inc. Holder for video game and computer cartridges, video film cartridges, audio/video cassettes and their storage cases. 4,440,458, Cl. 312-9.000.
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- Bernard, Daniel, to L.C.C.-C.I.C.E.-Compagnie Europeenne de Composants Electroniques. Process for producing a wound capacitor an apparatus for implementing the process and a capacitor thus obtained. 4,441,139, Cl. 361-304.000.
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- Betts, Edmund D., to Gregor Jonsson Associates, Inc. Spring cam for shrimp clamp. 4,439,893, Cl. 17-72.000.
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- Black & Decker Inc.: *See—*
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- Blackburn, Charles M.: *See—*
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- Blackwood-Murray, Thomas J.; and Evans, David, to Aerofoam Industries (Proprietary) Limited. Idler roller. 4,440,295, Cl. 198-843.000.
- Blakeslee, Marybelle C.; Olsen, Judith D.; and Romankiw, Lubomyr T., to International Business Machines Corporation. Method of electrodepositing a low coercine force, corrosion-resistant alloy of nickel, iron and boron. 4,440,609, Cl. 204-43.00T.
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- Blaser, Hans-Ulrich: *See—*
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- Bloomer, Ivan. Apparatus for ensuring heat exchange between a gas flow and a heat exchanger. 4,440,698, Cl. 261-148.000.
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- Bocci, Paul M.; Sumner, Terence E.; and Wojnarowski, James R., to Motorola, Inc. Automatic selection of decryption key for multiple-key encryption systems. 4,440,976, Cl. 179-1.50R.
- Bochan, John, to General Electric Company. Wobble washer. 4,440,004, Cl. 68-23.00R.
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- Bockett-Pugh, Charles P.; and Kett, Brian L., to Solartron Electronic Group Limited, The. Apparatus for signature and/or direct analysis of digital signals used in testing digital electronic circuits. 4,441,074, Cl. 324-73.00R.
- Bockris, John O.: *See—*
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- Boden, Richard M., to International Flavors & Fragrances Inc. Branched chain olefinic alcohols, thiols, esters and ethers, organoleptic uses thereof, processes for preparing same and intermediates therefor. 4,440,961, Cl. 568-840.000.
- Boeckmann, Eduard F. B.: *See—*
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- Boehm, Udo; Schulze-Berge, Klaus; and Brotzler, Roland, to BASF Aktiengesellschaft. Carriage for a scanning head in recording and/or playback apparatus for disk records. 4,441,130, Cl. 360-106.000.
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- Borgen, Robert H.; Reindl, Harold J.; and Pickering, Vernon L., to General Motors Corporation. Ball joint manufacture. 4,439,909, Cl. 29-453.000.
- Borne, Andre; Vallod, Joseph; and Curvat, Rene, to CGEE Alsthom. Fail-safe electrical connection terminal and tightening tool. 4,440,049, Cl. 81-467.000.
- Borras, Jaime A.; and Gonzalez, Ruben J., to Motorola, Inc. Multiposition switch with minimum interconnections. 4,441,098, Cl. 340-365.00R.
- Bose, Ajay K.; Fernandez, Isabel F.; and Gala, Kanti J., to Laboratorio Farmaceutico Quimico "LaFarquim, S.A.". Stereospecific synthesis of isocephalosporins and 2-oxa isocephalosporins. 4,440,682, Cl. 260-239.00A.
- Bott, John A. Article carrier for automotive vehicles. 4,440,333, Cl. 224-324.000.
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- Boutemy, Yves L.; and Edmundson, Henry N., to Schlumberger Technology Corporation. Well log depth zoning. 4,440,020, Cl. 73-152.000.
- Bowers, Gerald M., to Atomel Products Corporation. Apparatus for loading and unloading a furnace. 4,440,538, Cl. 414-183.000.
- Boyer, Stanton L.; and Schulz, Charles A., to Procter & Gamble Company, The. Alkaline aqueous liquid detergent compositions containing normally unstable ester perfumes. 4,440,663, Cl. 252-174.110.
- Boyle, William G.: *See—*
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- Bradford, Marion M.; Orthoefer, Frank T.; and Wright, Kenneth N., to A. E. Staley Manufacturing Company. Method for preventing gelation of corn steep liquor. 4,440,792, Cl. 426-271.000.
- Bradshaw, John, to Glaxo Group Limited. Process for the preparation of a furan derivative. 4,440,938, Cl. 549-495.000.
- Bradshaw, Larry R. Hopper for containing drywall joint compound. 4,440,410, Cl. 280-47.260.
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- Brakhage, Rodney D. Recoil reducer. 4,439,943, Cl. 42-74.000.
- Bramer, Charles, to Lacks Industries, Inc. Remote control mirror. 4,440,039, Cl. 74-501.00M.
- Brand, Werner, to Estel Hoesch Werke AG. Landing mat or the like. 4,440,363, Cl. 244-114.00R.

- Brandl, Adrian: *See—*
  - Honolke, Friedrich; Brandl, Adrian; Schibilla, Eduard; and Hohne, Gerhard, 4,440,544, Cl. 44-51.000.
- Brandstetter, Franz; Hambrecht, Juergen; and Echte, Adolf, to BASF Aktiengesellschaft. Thermoplastic molding material. 4,440,906, Cl. 525-68.000.
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- Breedis, John F.: *See—*
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  - Sauer, Wolfgang; Aquila, Werner; Hoffmann, Wolfgang; Brenner, Karl; and Halbritter, Klaus, 4,440,960, Cl. 568-471.000.
- Brenner, Norbert: *See—*
  - Ambros, Rainer; Brenner, Norbert; and Fischer, Jurgen, 4,440,673, Cl. 252-632.000.
- Breslow, Jeffrey D.: *See—*
  - Hicks, Alan A.; and Breslow, Jeffrey D., 4,440,394, Cl. 273-157.00R.
- Brighoff, John C. Furniture and drawer therefor. 4,440,460, Cl. 312-320.000.
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  - Montzka, Thomas A., 4,440,933, Cl. 546-193.000.
- British Petroleum Company Limited, The: *See—*
  - Gregory, Reginald; and Westlake, David J., 4,440,958, Cl. 560-247.000.
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  - Cadogan, John I. G.; Gosney, Ian; and Yaslak, Salih, 4,440,676, Cl. 260-112.50R.
- Broberg, Hans, to Aktiebolaget Bofors. Apparatus for concentrating mineral acids. 4,440,595, Cl. 159-13.00A.
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  - Yoshida, Noriyuki; and Asai, Yoshimi, 4,441,061, Cl. 318-329.000.
- Brotherton, Carl R.; and Rendek, Peter M., to Motorola Inc. Impact arming device for a fuze. 4,440,086, Cl. 102-254.000.
- Brotzler, Roland: *See—*
  - Boehm, Udo; Schulze-Berge, Klaus; and Brotzler, Roland, 4,441,130, Cl. 360-106.000.
- Brown Boveri Electric Inc.: *See—*
  - Garzon, Ruben D., 4,440,997, Cl. 200-148.00A.
  - McConnell, Lorne D.; and Spencer, Edward M., 4,440,998, Cl. 200-148.00R.
- Brown, Dennis N. Orthotic insert. 4,439,934, Cl. 36-44.000.
- Brown Manufacturing Company: *See—*
  - Brown, William P.; and Harden, Jerrell W., 4,439,948, Cl. 47-1.700.
- Brown, Richard E.: *See—*
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- Bruchas, Edward R. Sectionalized paperback book. 4,440,422, Cl. 281-15.00R.
- Bruck, Heinz. Tubular furnace for performance of gas reactions. 4,440,727, Cl. 422-197.000.
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  - Koch, Werner, 4,440,003, Cl. 68-22.00R.
- Bruno, Salvatore A., to Du Pont de Nemours, E. I., and Company. Nonsludging complexes of chromium and stearic acid. 4,440,574, Cl. 106-2.000.
- Bryan, Deborah L.: *See—*
  - Gleason, John G.; Kinzig, Charles M.; and Bryan, Deborah L., 4,440,939, Cl. 549-548.000.
- Buchan, Walter; Cardin, Paul P.; and Fain, Norman M., to Teknor Apex Company. Floor mat connector device. 4,440,818, Cl. 428-99.000.
- Buchmuller, Gunter, to Volkswagenwerk AG. Engine block for a water-cooled internal combustion engine. 4,440,117, Cl. 123-41.720.
- Budavari, John, to Merck & Co., Inc. Crystalline diastereomeric L-alpha-methyldopa POE ester and process for its preparation. 4,440,942, Cl. 560-40.000.
- Budnick, Edward G., to Plains Chemical Development Co. Chelation. 4,440,646, Cl. 210-699.000.
- Bugaj, Joseph E.: *See—*
  - Fawzi, Mahdi B.; Benedict, James J.; Bugaj, Joseph E.; Degenhardt, Charles R.; and Van Duzee, Barry F., 4,440,738, Cl. 424-1.100.
- Buljan, Sergej-Tomislav: *See—*
  - Sarin, Vinod K.; and Buljan, Sergej-Tomislav, 4,440,547, Cl. 51-295.000.
- Bullard, Haran W., Jr.: *See—*
  - Cantavespre, Samuel J., 4,440,600, Cl. 202-248.000.
- Bulle, Marshall. Trailer hitch ring lock. 4,440,005, Cl. 70-14.000.
- Bullions, Robert J., III; and Enger, Thomas A., to International Business Machines Corp. Instruction register content modification using plural input gates and a data flow register. 4,441,153, Cl. 364-200.000.
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- Burch, Julius G. Oil well servicing processes. 4,440,229, Cl. 166-311.000.
- Burckhardt, Manfred, to Daimler-Benz Aktiengesellschaft. Hydraulic brake system for two-wheeled vehicles. 4,440,452, Cl. 303-6.00A.
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  - Belart, Juan; Burgdorf, Jochen; Kircher, Dieter; and Weise, Lutz, 4,440,454, Cl. 303-114.000.
- Burger, Joseph M.: *See—*
  - Bevilacqua, Frank; and Burger, Joseph M., 4,440,717, Cl. 376-247.000.
- Burgess, James: *See—*
  - Milgram, Jerome H.; and Burgess, James, 4,440,523, Cl. 405-60.000.
- Burgess, John A. Guideway control apparatus. 4,440,091, Cl. 104-139.000.
- Burgio di Aragona, Antonio, to Fiat Auto S.p.A. Fuel injection device for diesel engines with precombustion chambers. 4,440,348, Cl. 239-533.120.
- Burlington Industries, Inc.: *See—*
  - Koncelik, Joseph A.; Chaney, David B.; Lockard, Walter G.; and Hontz, Thomas D., 4,439,880, Cl. 5-429.000.
- Burmenko, Mark, to McGraw-Edison Company. Battery charger failure alarm circuit. 4,441,066, Cl. 320-48.000.
- Burndy Corporation: *See—*
  - Cheh, Ernest; and Allen, William, 4,439,919, Cl. 29-861.000.
- Burroughs Corporation: *See—*
  - Bell, John L., 4,441,193, Cl. 375-36.000.
  - Gaertner, Gregory E.; and Wu, Ta-Ming, 4,441,037, Cl. 307-265.000.
- Burrows, Janine P.: *See—*
  - Tabb, David L.; and Burrows, Janine P., 4,440,724, Cl. 422-56.000.
- Burstell, Helmut: *See—*
  - Willms, Lothar; Mildenberger, Hilmar; Gunther, Dieter; Bauer, Klaus; Burstell, Helmut; and Bieringer, Hermann, 4,440,565, Cl. 71-93.000.
- Burton Delingpole & Company Limited: *See—*
  - Lowe, Jack G., 4,439,900, Cl. 24-248.0SA.
- Burzin, Klaus: *See—*
  - Bartmann, Martin; Bax, Hanns-Jorg; Burzin, Klaus; and Ribbing, Wilfried, 4,440,923, Cl. 528-216.000.
- Bush Boake Allen: *See—*
  - Ferber, Gerald J.; and Goddard, Peter J., 4,440,966, Cl. 585-415.000.
- Bussard, Adrien; Aldinger, Fritz; and Sperner, Franz, to Kontron AG; and W. C. Heraeus GmbH. Implantable electrode. 4,440,178, Cl. 128-784.000.
- Bussey, Harry, Jr. Method for making expandable filling elements of billowed configuration for packaging. 4,440,704, Cl. 264-51.000.
- Butler, James R.: *See—*
  - Watson, James M.; and Butler, James R., 4,440,650, Cl. 252-8.55D.
- Butler, Paul E., to General Motors Corporation. Compact ram tube engine air intake manifold. 4,440,120, Cl. 123-52.0MV.
- Butler, William S., to Halliburton Company. Aeration preventing shock absorber. 4,440,273, Cl. 188-315.000.
- Butner, Alfred N. Tax board game. 4,440,397, Cl. 273-256.000.
- Buysch, Hans-Josef: *See—*
  - Krimm, Heinrich; and Buysch, Hans-Josef, 4,440,937, Cl. 549-228.000.
- Buzbee, James M. Method of testing telephone cable pairs. 4,440,984, Cl. 179-175.30A.
- Bycasin AB: *See—*
  - Holm, Kurt A., 4,439,882, Cl. 15-77.000.
- Cadogan, John I. G.; Gosney, Ian; and Yaslak, Salih, to British Petroleum Company p.l.c., The. Process for the production of a dipeptide, a polypeptide or a protein. 4,440,676, Cl. 260-112.50R.
- Cahannes, Paul: *See—*
  - Rossmann, Rudolf; and Cahannes, Paul, 4,440,085, Cl. 102-235.000.
- Cairns, Gerald K.: *See—*
  - Saenz, Arsenio B., Jr.; and Cairns, Gerald K., 4,440,391, Cl. 272-93.000.
- Cairo, Joseph A.: *See—*
  - Richardson, Gerry D.; and Cairo, Joseph A., 4,441,027, Cl. 250-577.000.
- Calgon Carbon Corporation: *See—*
  - Hill, Joel D., 4,440,548, Cl. 55-26.000.
- California Institute of Technology: *See—*
  - Evanchuk, Vincent L., 4,441,096, Cl. 340-347.0AD.
  - Lawson, Daniel D.; and England, Christopher, 4,440,733, Cl. 423-437.000.
- Calvino, Ben J., to Westinghouse Electric Corp. Dead tank gas-insulated puffer-type circuit interrupter having interrupting unit in insulated casing. 4,440,996, Cl. 200-148.00A.
- Campbell, John, to Cosworth Research and Development Limited. Chemically bondable foundry sand. 4,440,864, Cl. 501-95.000.
- Campbell, Robert G.; and Campbell, Warren A., III, to Hilldale Enterprises. Debris receptacle, cover, and contents compressor and discharge assembly. 4,440,321, Cl. 222-153.000.
- Campbell, Warren A., III: *See—*
  - Campbell, Robert G.; and Campbell, Warren A., III, 4,440,321, Cl. 222-153.000.

- Canada, Her Majesty the Queen in right of: *See—*
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- Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*
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- Cannan, Thomas R.: *See—*
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- Cannella, Vincent: *See—*
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- Canon Kabushiki Kaisha: *See—*
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  - Ikeda, Takeshi; Yamamoto, Atsuko; and Kasai, Masanao, 4,440,735, Cl. 423-561.00B.
  - Isaka, Kazuo; and Kan, Fumitaka, 4,440,486, Cl. 355-3.0FU.
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  - Cicin-Sain, Yvo; and Deliyski, Yvan, 4,440,089, Cl. 104-12.000.
- Cantavespre, Samuel J., to Bullard, Haran W., Jr., a part interest. Spring adjusting device for a self-sealing coke oven door. 4,440,600, Cl. 202-248.000.
- Cantley, Robert J. Energy management system for multi stage refrigeration systems. 4,439,997, Cl. 62-175.000.
- Caputo, William R.; and Trivedi, Jitendra K., to Westinghouse Electric Corp. Tachogenerator. 4,440,024, Cl. 73-529.000.
- Card, Joseph L.: *See—*
  - Card, Roy T.; and Card, Joseph L., 4,440,102, Cl. 112-266.200.
- Card, Roy T.; and Card, Joseph L. Tufting machine and method of tufting for producing multiple rows of tufts with single lengths of yarn. 4,440,102, Cl. 112-266.200.
- Cardin, Paul P.: *See—*
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- Carey, Glen A.; and Hydo, Steven J., to Corning Glass Works. Combination absorbance fluorescence aspirating thermal cuvette. 4,440,497, Cl. 356-246.000.
- Carey, Richard D.; and Berlin, Bruce E., to Dayco Corporation. Electrostatically assisted printing system. 4,440,082, Cl. 101-170.000.
- Carlingswitch, Inc.: *See—*
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  - Block, Aleck; and Carlson, Arthur F., 4,439,907, Cl. 29-432.100.
- Carr, Dale D.: *See—*
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- Carroll, Arthur E., II; Lewis, Basil C., Jr.; and Yeazel, Howard T., to Western Electric Co., Inc.; and Bell Telephone Laboratories, Inc. Methods of packaging an electronic device. 4,439,918, Cl. 29-840.000.
- Carstab Corporation: *See—*
  - Taylor, Jack D.; and Smith, Kenneth V., 4,440,891, Cl. 524-177.000.
- Case, James L., to General Motors Corporation. Diesel engine combustion chamber. 4,440,125, Cl. 123-293.000.
- Casio Computer Co., Ltd.: *See—*
  - Ishibashi, Masanori, 4,440,057, Cl. 84-1.010.
- Casperovich, John J., to Ingersoll-Rand Co. Pavement breaker. 4,440,237, Cl. 173-134.000.
- Cassella Aktiengesellschaft: *See—*
  - Tappe, Horst; Lowenfeld, Rudolf; Kosubek, Uwe; and Kallay, Maria, 4,440,681, Cl. 260-207.100.
- Caterpillar Tractor Co.: *See—*
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  - Grob, Robert J., 4,440,209, Cl. 152-397.000.
- Celanese Corporation: *See—*
  - Conciatori, Anthony B.; Choe, Eui W.; and Farrow, Gerald, 4,440,945, Cl. 560-86.000.
  - Summerville, Richard H., deceased; and Summerville, James E., Jr., administrator, 4,440,946, Cl. 560-210.000.
- Celli, Aldo. Vehicle body construction. 4,440,434, Cl. 296-185.000.
- Centrale des Equipements Mobiliers et Immobiliers (CEMI): *See—*
  - Pennel, Jean-Francois; and Vesnier, Patrick H., 4,440,519, Cl. 403-391.000.
- Ceraver: *See—*
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- Chaborski, Hoiko; and Mehnert, Walter, to MITEC Moderne Industrietechnik GmbH. Measuring arrangement having a plurality of measuring points connected to one another by means of a cable. 4,441,107, Cl. 340-870.160.
- Chalberg, Philip E. Clamp assembly for flexible pipe installations primarily for therapy baths. 4,439,876, Cl. 4-542.000.
- Chaminant, Guy: *See—*
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- Champlain Cable Corporation: *See—*
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- Chan, David C. K., to Chevron Research Company. Fungicidal 3-(N-acyl-N-arylamino)-and 3-(N-thionoacyl-N-arylamino)-gamma-butyrolactones and gamma-thiobutyrolactones. 4,440,780, Cl. 424-275.000.
- Chan, Uck I., to Ford Motor Company. Method of drilling ultrafine channels through glass. 4,441,008, Cl. 219-121.0LL.
- Chance, Ronald R.: *See—*
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- Chaney, David B.: *See—*
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- Chang, Clarence D.; and Perkins, Patrick D., to Mobil Oil Corporation. Catalyst for the conversion of synthesis gas to higher alcohols. 4,440,668, Cl. 502-331.000.
- Chang, Ifay F.: *See—*
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- Chang, Paul P. H.; and Chu, Cheng-hsiang. Instant push-button fastener for fishing reel seat. 4,439,945, Cl. 43-22.000.
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  - Bouley, Jean-Claude; Charil, Josette; and Chaminant, Guy, 4,441,187, Cl. 372-46.000.
- Charles Stark Draper Laboratory, The: *See—*
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- Charles Stark Draper Laboratory, Inc., The: *See—*
  - Whitney, Daniel E.; and De Fazio, Thomas L., 4,439,926, Cl. 33-185.00R.
- Charon, Alfred G., to Cha-Du-Ke. Card game and method of playing same. 4,440,398, Cl. 273-292.000.
- Cheh, Ernest; and Allen, William, to Burndy Corporation. Automatic lead making apparatus. 4,439,919, Cl. 29-861.000.
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  - Weiss, Joern-Volker; and Riemer, Heinz, 4,440,882, Cl. 523-401.000.
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- Cheng, Bo-Ching; and Adamson, Ronald B., to General Electric Company. Method of determining corrosion properties of zirconium alloys. 4,440,862, Cl. 436-6.000.
- Chepurnoi, Nikolai P.: *See—*
  - Kostylev, Alexandr D.; Gileta, Vladimir P.; Grigoraschenko, Vladimir A.; Tkach, Khaim B.; Bakunin, Vladimir A.; Frenkel, Valery Y.; Kozlov, Valery A.; Reifisov, Jury B.; Chepurnoi, Nikolai P.; Bondar, Mikhail J.; Drobyazko, Vladimir F.; Stazhevsky, Stanislav B.; Ratskevich, Gerald I.; Fedorov, Alexandr A.; Polyakov, Anatoly S.; Bobylev, Leonid M.; Tsvetkov, Evgeny N.; and Petreev, Anatoly M., 4,440,240, Cl. 175-20.000.
- Chester, John K.; Small, Eric; and Stoll, Eric D. Method and apparatus for amplitude limiting a composite signal. 4,441,199, Cl. 381-14.000.
- Chevron Research Company: *See—*
  - Chan, David C. K., 4,440,780, Cl. 424-275.000.
  - Eidem, Penny K., 4,440,579, Cl. 106-274.000.
  - Luo, Tatao, 4,440,566, Cl. 71-98.000.
  - Sweeney, William A., 4,440,449, Cl. 299-11.000.
  - Sweeney, William A., 4,440,969, Cl. 585-851.000.
  - Wallman, P. Henrik, 4,440,623, Cl. 208-11.00R.
- Chichester, Willard L., to Clark Equipment Company. Engine compartment and air cleaner. 4,440,555, Cl. 55-385.00B.
- Children's Medical Center Corporation, The: *See—*
  - Klagsbrun, Michael, 4,440,860, Cl. 435-240.000.
- Childs, William V., to Phillips Petroleum Company. Production of MTBE and ETBE. 4,440,963, Cl. 568-697.000.
- Chirgwin, John: *See—*
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- Chiyoda Chemical Engineering & Construction Co., Ltd.: *See—*
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- Christensen, Inc.: *See—*
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- Christensen, Timothy F.: *See—*
  - Bassett, James H.; Christensen, Timothy F.; and Pearson, Mark L., 4,440,179, Cl. 130-27.0JT.
- Christie, William C., to Goodyear Tire & Rubber Company, The. Tire sidewall deformation detection techniques. 4,440,018, Cl. 73-146.000.
- Christine, William C., to Trinity Associates. Combined piercer and valve for flexible bag. 4,440,316, Cl. 222-83.500.
- Chromecek, Richard C.; Friends, Gary D.; Wissman, Lawrence Y.; and Yourd, Raymond A., III, to Bausch & Lomb Incorporated. Low N-vinyl lactam content based biomedical devices. 4,440,919, Cl. 526-263.000.
- Chu, Cheng-hsiang: *See—*
  - Chang, Paul P. H.; and Chu, Cheng-hsiang, 4,439,945, Cl. 43-22.000.
- Chu, Nori Y. C., to American Optical Corporation. Photochromic composition resistant to fatigue. 4,440,672, Cl. 252-586.000.
- Chu, Young Y. Interior storm window. 4,439,964, Cl. 52-202.000.

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Bellus, Daniel; Blaser, Hans-Ulrich; Kabas, Guglielmo; Reinehr, Dieter; Spencer, Alwyn; and Weber, Kurt, 4,440,694, Cl. 260-465.00D.
Helfand, David; and Sellers, Ralph F., 4,440,914, Cl. 525-482.000.
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Paul, John G.; Stark, Bernard P.; and Losert, Ewald, 4,440,850, Cl. 430-325.000.
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Cicin-Sain, Yvo; and Deliyski, Yvan, to Canron Inc. Railway track ballast tamping device. 4,440,089, Cl. 104-12.000.
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Clark, James A.; and Emmel, Henry J., to Bausch & Lomb Incorporated. Sterile liquid storing and dispensing apparatus. 4,440,317, Cl. 222-103.000.
Clark, Mark J. Portable high-rise escape device. 4,440,261, Cl. 182-3.000.
Clark, Michael T.; and Gilmore, Ian J., to Shell Oil Company. Heterocyclic pentalenes as herbicides. 4,440,564, Cl. 71-90.000.
Clarke, Thomas E.; Peterson, William R.; and Parker, Mark G., to Nike, Inc. Shock attenuating outer sole. 4,439,936, Cl. 36-102.000.
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Clingan, William R.; Derrenbacker, Edward L.; and Dunn, Thomas J., to Mallinckrodt, Inc. Process for the purification of p-aminophenol. 4,440,954, Cl. 564-439.000.
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Kappel, Joseph; and Goldberg, Richard, 4,440,334, Cl. 224-258.000.
Cochran, Phillip E. Veterinary appliance for use on a front leg of a small animal. 4,440,159, Cl. 128-84.00R.
Coe Manufacturing Company, The: *See—*
McMahon, Irven J., Jr., 4,439,930, Cl. 34-15.000.
Cohen, Jonathan D., to United States of America, National Security Agency. Space integrating ambiguity processor. 4,440,472, Cl. 350-162.120.
Cohen, Stanley N.: *See—*
Michaels, Alan S.; Robertson, Channing R.; and Cohen, Stanley N., 4,440,853, Cl. 435-68.000.
Cole, Clinton W.: *See—*
Roach, James D.; and Cole, Clinton W., 4,440,404, Cl. 277-124.000.
Coleman, Guy B.; Henderson, James W.; and Sacks, Jacob M., to Hughes Aircraft Company. Real-time ordinal-value filters utilizing complete intra-data comparisons. 4,441,165, Cl. 364-900.000.
Colgate-Palmolive Company: *See—*
Hauschild, John P.; and Principe, Joseph R., 4,440,877, Cl. 523-105.000.
Marschner, Frank W., 4,440,741, Cl. 424-65.000.
Marschner, Frank W., 4,440,742, Cl. 424-65.000.
Colistro, Vincent, to Schulte Industries Ltd. Rock windrower. 4,440,235, Cl. 171-63.000.
Collagen Corporation: *See—*
Glowacki, Julianne; and Pharriss, Bruce B., 4,440,750, Cl. 424-95.000.
Colliaux, Daniel, to Compagnie d'Applications Mecaniques a l'Electronique, au Cinema et a l'Atomistique (C.A.M.E.C.A.). Electron probe microanalyzer comprising an observation system having double magnification. 4,440,475, Cl. 350-502.000.
Collins, Clifford B.; and James, William G., to General Electric Company. Electrostatic silica coating for electric lamps. 4,441,047, Cl. 313-116.000.
Collins, Ronald B.; Dowzall, Martin E.; Smith, Brian J.; and Taylor, Geoffrey R., to Letraset Corp. Manufacture of signs. 4,440,590, Cl. 156-234.000.
Collurafici, Francisco A.; and Lee, Ralph L., to Fairchild Industries, Inc. Handie and fastening apparatus. 4,440,431, Cl. 294-27.00H.
Colonna, William J.: *See—*
Horwath, Robert O.; and Colonna, William J., 4,440,855, Cl. 435-105.000.
Colwell, Robert, to Univeral Electric Company. Electric motor. 4,441,042, Cl. 310-42.000.
Combustion Engineering, Inc.: *See—*
Bevilacqua, Frank; and Burger, Joseph M., 4,440,717, Cl. 376-247.000.
Commissariat a l'Energie Atomique: *See—*
Cornu, Jean; Detriche, Jean-Marie; Gil, Pierre; Marchal, Paul; and Vertut, Jean, 4,441,010, Cl. 219-124.340.
Gourdon, Pierre; Goutard, Rene; and Piry, Pierre, 4,439,905, Cl. 29-402.040.
Pruvot, Jean; and Roquefort, Andre, 4,440,382, Cl. 251-248.000.
Commonwealth of Australia: *See—*
Keeler, Arthur A.; Rice, William M.; and Tremayne, Edward C., 4,440,366, Cl. 244-138.00R.
Commonwealth Scientific and Industrial Research: *See—*
Morton, David H.; Szirmai, Stephen G.; and Potter, Edmund C., 4,440,800, Cl. 427-13.000.
Compagnie d'Applications Mecaniques a l'Electronique, au Cinema et a l'Atomistique (C.A.M.E.C.A.): *See—*
Colliaux, Daniel, 4,440,475, Cl. 350-502.000.
Compagnie Francaise des Petroles: *See—*
Le Therisien, Louis, 4,440,524, Cl. 405-154.000.
Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme): *See—*
Hanna, Charas, 4,441,204, Cl. 382-7.000.
Completion Services, Inc.: *See—*
Farley, David L., 4,440,218, Cl. 166-51.000.
Composite Container Corporation: *See—*
Bonis, Laszlo J., 4,440,824, Cl. 428-216.000.
Conciatori, Anthony B.; Choe, Eui W.; and Farrow, Gerald, to Celanese Corporation. Anisotropic heat-curable acetylene-terminated monomers and thermoset resins produced therefrom. 4,440,945, Cl. 560-86.000.
Cone, Steven S.; Jones, David E.; and Serkland, Richard C. Retractable aircraft step. 4,440,364, Cl. 244-129.600.
Conoco Inc.: *See—*
Echtler, J. Paul, 4,440,543, Cl. 44-51.000.
Lancet, Michael S.; and Gorin, Everett, 4,440,546, Cl. 48-202.000.
Martin, Albert E., 4,440,231, Cl. 166-373.000.
Shannon, Mark L.; and Mack, Mark P., 4,440,869, Cl. 502-104.000.
Conpaten, Ltd.: *See—*
Neuberger, Manfred, 4,440,400, Cl. 273-411.000.
Conrad Scholtz AG: *See—*
Blattermann, Karl-Gunther; and Paelke, Jurgen, 4,440,537, Cl. 414-139.000.
Consolidated Papers, Inc.: *See—*
Jeltema, Paul A., 4,440,105, Cl. 118-410.000.
Vreeland, William C., 4,440,809, Cl. 427-356.000.
Conti, Raul J., to Lockheed Missiles & Space Company, Inc. Finned heat exchanger tube. 4,440,216, Cl. 165-117.000.
Continental Group, Inc., The: *See—*
Bartels, Herbert D.; and Maliszewski, Leonard A., 4,440,307, Cl. 220-4.00B.
Heyn, William M., 4,440,310, Cl. 220-270.000.
Conville, John J.: *See—*
Wilson, Joe C.; Hirozawa, Stanley T.; and Conville, John J., 4,440,721, Cl. 422-16.000.
Cook, Mary J.; and Hyche, Kenneth W., to Eastman Kodak Company. Fire resistant hot-melt adhesives containing modified polyethylene. 4,440,888, Cl. 524-139.000.
Cooper, Adrianus A. G.: *See—*
Marrujo, Ralph G.; and Cooper, Adrianus A. G., 4,440,441, Cl. 297-216.000.
Cooper, Ernest B.: *See—*
Risbeck, James D.; and Cooper, Ernest B., 4,441,012, Cl. 219-137.00R.
Coquillart, Michel, to Mavilor Systemes. Method and means for manufacturing frontal commutators of electric motors, more particularly of the type having an insulation between the commutator bars. 4,439,913, Cl. 29-597.000.
Corby, David C.: *See—*
Shelton, William E. A.; and Corby, David C., 4,440,353, Cl. 242-47.010.
Cordova, Robert A., to Kayser-Roth Corporation. Woman's garment. 4,440,174, Cl. 128-455.000.
Corning Glass Works: *See—*
Carey, Glen A.; and Hydo, Steven J., 4,440,497, Cl. 356-246.000.
Flannery, James E.; Mach, Joseph F.; and Wexell, Dale R., 4,440,576, Cl. 106-85.000.
Forker, Ray B., Jr., 4,440,810, Cl. 427-376.200.
Lock, William E., 4,440,589, Cl. 156-232.000.
Cornu, Jean; Detriche, Jean-Marie; Gil, Pierre; Marchal, Paul; and Vertut, Jean, to Commissariat a l'Energie Atomique. Process and apparatus for the lateral positioning of a member relative to a joint. 4,441,010, Cl. 219-124.340.

Cosden Technology, Inc.: *See—*
Watson, James M.; and Butler, James R., 4,440,650, Cl. 252-8.55D.
Cosworth Research and Development Limited: *See—*
Campbell, John, 4,440,864, Cl. 501-95.000.
Coulson, Dale M. Apparatus for electrochemical detection and coulometric titration. 4,440,726, Cl. 422-89.000.
Couture, Paul A.: *See—*
Jentoft, Arthur P.; and Couture, Paul A., 4,439,962, Cl. 52-200.000.
Couvillion, Mark C., to Dow Chemical Company, The. Selective hydrogenation of acetylenes in the presence of butadiene and catalyst used in the hydrogenation. 4,440,956, Cl. 585-260.000.
Cox Hobbies Inc.: *See—*
Theobald, Roger D., 4,440,122, Cl. 123-185.00D.
Crano, John C.; and Haynes, Ronald L., to PPG Industries, Inc. Blends of bis(allyl carbonate) monomers with polymers and polymer blends produced therefrom. 4,440,909, Cl. 525-277.000.
Creusot-Loire: *See—*
Pere, Gerard, 4,440,615, Cl. 204-253.000.
Cronan, Charles L.: *See—*
Goldstein, Henry; Hoff, Joseph T.; Cronan, Charles L.; and Rao, Ch. S., 4,440,795, Cl. 426-592.000.
Crosby Group, Inc., The: *See—*
Goris, Hugo M. J., 4,440,432, Cl. 294-82.00R.
Crossley, Roger; and Dickinson, Kay H., to John Wyeth & Brother Limited. Pyridylalkylenethiopridyl, -tetrahydropyridyl and -pyridinium compounds. 4,440,773, Cl. 424-263.000.
Crown Zellerbach Corporation: *See—*
Weis, Rudolf R., 4,440,289, Cl. 198-448.000.
Cummins Engine Company, Inc.: *See—*
Matheson, Charles L., 4,440,193, Cl. 137-558.000.
Stang, John H.; and Cusick, Steven M., 4,440,118, Cl. 123-41.840.
Cunningham, William B., Jr.: *See—*
Nitchman, Harold L.; and Cunningham, William B., Jr., 4,440,319, Cl. 222-131.000.
Curtis & Marble Corp.: *See—*
Laing, Robert, 4,439,975, Cl. 53-399.000.
Curvat, Rene: *See—*
Borne, Andre; Vallod, Joseph; and Curvat, Rene, 4,440,049, Cl. 81-467.000.
Cusick, Steven M.: *See—*
Stang, John H.; and Cusick, Steven M., 4,440,118, Cl. 123-41.840.
Cutler, John H.; and Walker, Loren H., to General Electric Company. Twelve-pulse operation of a controlled current inverter motor drive. 4,441,064, Cl. 318-798.000.
Cutter Laboratories, Inc.: *See—*
Fernandes, Peter M.; and Lundblad, John L., 4,440,679, Cl. 260-122.000.
Dahlberg, Reinhard, to Higratherm Electric GmbH. Thyristor having a center pn junction formed by plastic deformation of the crystal lattice. 4,441,115, Cl. 357-38.000.
Dai-Nghia, Huynh: *See—*
Jacquin, Yves; Gimenez-Coronado, Manuel; and Dai-Nghia, Huynh, 4,440,633, Cl. 208-309.000.
Dai Nippon Insatsu Kabushiki Kaisha: *See—*
Tabuchi, Kazuhiro, 4,440,841, Cl. 430-5.000.
Daikin Kogyo Co., Ltd.: *See—*
Kawachi, Shoji; Yamamoto, Katsutoshi; and Kai, Shinichiro, 4,440,879, Cl. 523-200.000.
Daimler-Benz AG: *See—*
Steinecke, Rudolf; and Hensche, Karl-Heinz, 4,440,252, Cl. 180-89.150.
Daimler-Benz Aktiengesellschaft: *See—*
Burckhardt, Manfred, 4,440,452, Cl. 303-6.00A.
Dainippon Screen Seizo Kabushiki Kaisha: *See—*
Mizuta, Masaji, 4,439,931, Cl. 34-44.000.
Sakamoto, Takashi; Sano, Tetsuo; and Kodama, Eiji, 4,441,020, Cl. 250-202.000.
Daiwa Can Company, Limited: *See—*
Konagaya, Takeshi; and Yagi, Yukinao, 4,440,016, Cl. 73-40.000.
Dale, Steinar J., to United States of America, Energy. Vertically aligned gas-insulated transmission line having particle traps at the inner conductor. 4,440,970, Cl. 174-14.00R.
Dana Corporation: *See—*
Foulk, Donald H., 4,440,035, Cl. 74-89.150.
Schaus, Jerome E.; and Danek, Daniel, 4,440,405, Cl. 277-134.000.
Danckert, Hermann, to Volkswagenwerk Aktiengesellschaft. Vibration-insulating bearing arrangement for a drive unit. 4,440,257, Cl. 180-300.000.
Danek, Daniel: *See—*
Schaus, Jerome E.; and Danek, Daniel, 4,440,405, Cl. 277-134.000.
Dang, Hang T.: *See—*
Powers, John H.; and Dang, Hang T., 4,440,606, Cl. 204-33.000.
Daniel, Jean-Claude: *See—*
Schuppiser, Jean-Luc; and Daniel, Jean-Claude, 4,440,896, Cl. 524-458.000.
D'Apuzzo, Sebastiano, to Aeritalia Societa Aerospaziale Italiana p.A. Drill bit for drilling holes in composite fiber/resin laminates. 4,440,532, Cl. 408-229.000.
Daringer, Ronald G., to Maryland Wire Belts, Inc. Barrier-type metal wire fabric and its manufacture. 4,440,367, Cl. 245-6.000.
Dark, Richard C. G. Fluid dispensing closure with integral valve. 4,440,327, Cl. 222-530.000.
Daroczy, Janos; Erdelyi, Janos; Havas, Jeno; Kecskes, Lajos; Muller, Henrik; Nyiro, Katalin; and Takacs, Ferenc, to Radelkis Elektrokemiai Muszergyarto Szovetkezet. Electro-analytical measuring equipment with measuring cell, comprising integral sensing element and several reference electrodes. 4,440,619, Cl. 204-401.000.
Dart Industries Inc.: *See—*
Dieckmann, Dale J.; and Fletcher, Charles W., 4,440,674, Cl. 524-177.000.
Dart, John R. Universal hammer having interchangeable heads. 4,440,206, Cl. 145-29.00R.
Daspit, John I., to Data-Design Laboratories. Switched mode electrode ballast. 4,441,053, Cl. 315-206.000.
Daswick, Alexander C. Integrally cast shoe sole containing stiffener member. 4,439,937, Cl. 36-107.000.
Data-Design Laboratories: *See—*
Daspit, John I., 4,441,053, Cl. 315-206.000.
Data Packaging Corporation: *See—*
Ocko, Stephen, 4,439,949, Cl. 47-61.000.
Daussan, Andre: *See—*
Daussan, Jean-Charles; Daussan, Gerard; and Daussan, Andre, 4,440,575, Cl. 106-38.220.
Daussan, Gerard: *See—*
Daussan, Jean-Charles; Daussan, Gerard; and Daussan, Andre, 4,440,575, Cl. 106-38.220.
Daussan, Jean-Charles; Daussan, Gerard; and Daussan, Andre. Granular insulation product and process for its preparation. 4,440,575, Cl. 106-38.220.
Davidson, James P.; Rosenberg, Barnett; and Hinz, Ronald W., to Research Corporation. Method of treating viral infections. 4,440,782, Cl. 424-287.000.
Davies, David L., to General Foods Corporation. Instant rice pudding mix. 4,440,794, Cl. 426-578.000.
Davies, Robert B.; and Joseph, Eric D., to Motorola, Inc. Voltage regulator circuit with supply voltage ripple rejection to transient spikes. 4,441,070, Cl. 323-268.000.
Davis, Bryan T.: *See—*
Chen, Jackson C.; Baylerian, Marguerite S.; Davis, Bryan T.; and Rifkin, Ellis B., 4,440,659, Cl. 252-51.50A.
Davis, Edward L.: *See—*
Mowatt-Larssen, Erling; and Davis, Edward L., 4,440,528, Cl. 406-90.000.
Davis, William D., to Electric Power Research Institute, Inc. Resistivity sensor system for detecting faults in sealed gas-insulated electrical apparatus. 4,441,073, Cl. 324-52.000.
Davlantes, George N. Tubing coupling. 4,440,518, Cl. 403-297.000.
Dawless, Robert K.; LaCamera, Alfred F.; and Klingensmith, Chester H., to Aluminum Company of America. Molten salt bath for electrolytic production of aluminum. 4,440,610, Cl. 204-67.000.
Dayco Corporation: *See—*
Carey, Richard D.; and Berlin, Bruce E., 4,440,082, Cl. 101-170.000.
Mathieu, Julien C., 4,440,095, Cl. 105-225.000.
Dayger, Douglas A.; Hryck, Michael D.; Skinner, Dean W.; and Westcott, Gerald R., to International Business Machines Corporation. Control system for timing hammers of impact printers. 4,440,079, Cl. 101-93.030.
Dean, Donald E.: *See—*
Stevenson, Edward J.; and Dean, Donald E., 4,440,588, Cl. 156-157.000.
Dearman, Timothy C. Pipe cutting apparatus. 4,440,383, Cl. 266-54.000.
DeBernardis, John F.; and Winn, Martin, to Abbott Laboratories. 2-(4-Phenylalkanoylpiperazin-1-yl) quinazoline compounds, pharmaceutical compositions and method of producing α_1 antagonistic activity. 4,440,769, Cl. 424-251.000.
DeCesare, Dominic. Compound interaction/induction electric rotating machine. 4,441,043, Cl. 310-46.000.
Decker, Dalton L.: *See—*
VanEffen, Richard M.; McLean, James D.; and Decker, Dalton L., 4,440,603, Cl. 204-1.00T.
Deckert, Andreas: *See—*
Abermeth, Hubert; Deckert, Andreas; Muller, Helmut; and Wahnschaffe, Jurgen, 4,440,126, Cl. 123-321.000.
Deere & Company: *See—*
Bassett, James H.; Christensen, Timothy F.; and Pearson, Mark L., 4,440,179, Cl. 130-27.0JT.
Hahm, Gunter; Pauli, Klaus; and Schleicher, Walter, 4,440,437, Cl. 296-190.000.
Kittle, Carl E.; and Roach, James E., 4,440,040, Cl. 74-527.000.
Wykhuis, Lloyd A.; and Kuhn, John B., 4,440,415, Cl. 280-460.00A.
De Fazio, Thomas L., to Charles Stark Draper Laboratory, The. Force detecting system for remote center compliance device. 4,440,031, Cl. 73-862.040.
De Fazio, Thomas L.: *See—*
Whitney, Daniel E.; and De Fazio, Thomas L., 4,439,926, Cl. 33-185.00R.
De Freitas, Elias M., to Termolar S/A. Wide-mouthed isothermal container with integrated handle equipped with immersed pump. 4,440,328, Cl. 222-538.000.
Degel, Josef: *See—*
Gappa, Gunther; Degel, Josef; and Juntgen, Harald, 4,439,932, Cl. 34-57.00D.
Degenhardt, Charles R.: *See—*
Fawzi, Mahdi B.; Benedict, James J.; Bugaj, Joseph E.; Degenhardt, Charles R.; and Van Duzee, Barry F., 4,440,738, Cl. 424-1.100.
Degussa Aktiengesellschaft: *See—*
Baudis, Ulrich; Biberbach, Peter; and Weber, Wolfgang, 4,440,581, Cl. 148-6.110.
Effenberger, Franz; and Zoller, Gerhard, 4,440,686, Cl. 260-34.000.

- Deinhammer, Wolfgang, to Wacker-Chemie GmbH. Process for the manufacture of chloroacetaldehyde dimethyl acetal. 4,440,959, Cl. 568-604.000.
- De Jonge, Jelis: *See—*
  - Lippits, Gerardus J. M.; Van Den Broek, Arnoldus J. M.; Op Het Veld, Adriaan J. G.; Dijkstra, Rinse; and De Jonge, Jelis, 4,440,586, Cl. 156-151.000.
- Deliyski, Yvan: *See—*
  - Cicin-Sain, Yvo; and Deliyski, Yvan, 4,440,089, Cl. 104-12.000.
- Del Rosso, Victor, to Hi-Speed Checkweigher Co., Inc. Motorized weighing conveyor. 4,440,249, Cl. 177-145.000.
- De Meester, Emiel P. J.: *See—*
  - Verstegen, Judicus M. P. J.; Verlijsdonk, Johannus G.; De Meester, Emiel P. J.; Van de Spijker, Willebrordus H. M. M.; and Verriet, Johannes G., 4,441,049, Cl. 313-486.000.
- Demetriou, Andreas, to Mitel Corporation. CMOS Turn-on circuit. 4,441,035, Cl. 307-200.00B.
- Denz, Helmut; and Barho, Hans, to Robert Bosch GmbH. Electronically controlled fuel metering system for an internal combustion engine. 4,440,136, Cl. 123-491.000.
- Derbyshire, Francis J.; Varghese, Philip; and Whitehurst, Darrell D., to Mobil Oil Corporation. Integration of short-contact-time liquefaction and critical solvent deashing with gasification through methanol-to-gasoline. 4,440,622, Cl. 208-8.0LE.
- Derrenbacker, Edward L.: *See—*
  - Clingan, William R.; Derrenbacker, Edward L.; and Dunn, Thomas J., 4,440,954, Cl. 564-439.000.
- Deryk, George. Display bracket and attachment. 4,439,940, Cl. 40-10.00R.
- Desmarais, Mark R., to AMP Incorporated. Low profile keyboard switch actuating assembly. 4,440,992, Cl. 200-340.000.
- DeSoto, Inc.: *See—*
  - Zychowski, Edwin A.; Jasenof, Kenneth E.; and Jimenez, Artemio L., 4,440,894, Cl. 524-390.000.
- Detriche, Jean-Marie: *See—*
  - Cornu, Jean; Detriche, Jean-Marie; Gil, Pierre; Marchal, Paul; and Vertut, Jean, 4,441,010, Cl. 219-124.340.
- Dettmers, Michael; and Weirich, Walter, to Gewerkschaft Eisenhutte Westfalia. Hydraulic control arrangement for a roof support unit of a mineral mining installation. 4,440,522, Cl. 405-293.000.
- DeVale, Donald P.; and Wieser, Joseph, to Everpure, Inc. Liquid dispenser with timing circuit. 4,440,200, Cl. 141-95.000.
- de Vincentiis, Leonardo, to Ausonia Farmaceutici s.r.l. Compounds with antiinflammatory and analgesic activity, process for the preparation thereof and pharmaceutical compositio ns therefrom. 4,440,786, Cl. 424-319.000.
- de Vincentiis, Leonardo, to Ausonia Farmaceutici s.r.l. Compounds with antiinflammatory and analgesic activity, process for the preparation thereof and pharmaceutical compositions therefrom. 4,440,787, Cl. 424-319.000.
- DeWoolfson, Bruce H., to Environmental Products Corporation. Automated aluminum can redemption center for direct return deposit payout. 4,440,284, Cl. 194-4.00R.
- Dextomat Machinery Limited: *See—*
  - Hodges, Michael J., 4,440,329, Cl. 223-43.000.
- Dhar, Hari P.; Bockris, John O.; and Lewis, Donald H., to Texas A & M University System, The. Cathodic electrochemical process for preventing or retarding microbial and calcareous fouling. 4,440,611, Cl. 204-147.000.
- Diamond, Julius; and Douglas, George H., to William H. Rorer, Inc. Amidinoureas. 4,440,765, Cl. 424-244.000.
- Diamond Shamrock Corporation: *See—*
  - Marcellis, Alphonso W.; and Johnson, Grannis S., 4,440,577, Cl. 106-90.000.
  - Solomon, Frank, 4,440,617, Cl. 204-290.00R.
- Dickinson, Kay H.: *See—*
  - Crossley, Roger; and Dickinson, Kay H., 4,440,773, Cl. 424-263.000.
- Dideco S.p.A: *See—*
  - Luppi, Libero, 4,440,722, Cl. 422-46.000.
- Dieckmann, Dale J.; and Fletcher, Charles W., to Dart Industries Inc. Synergistic vinyl halide stabilizer compositions of antimony organic sulfur-containing compounds, alkaline earth carboxylates and alkali metal carbonates. 4,440,674, Cl. 524-177.000.
- Dielenberg, Olif F., to Isorast Thermacell (U.S.A.), Inc. Apparatus in and relating to building formwork. 4,439,967, Cl. 52-309.120.
- Diery, Helmut; and Mees, Bernhard, to Hoechst Aktiengesellschaft. Bisesters of alkenylsuccinic acids and ethylene oxide/propylene oxide block polymers and their use. 4,440,902, Cl. 525-404.000.
- Diesel Kiki Co., Ltd.: *See—*
  - Asami, Toshiaki, 4,440,135, Cl. 123-467.000.
  - Terada, Tomohiko; and Komada, Hideaki, 4,440,132, Cl. 123-446.000.
- Dieterich, Dieter: *See—*
  - Reiff, Helmut; and Dieterich, Dieter, 4,440,901, Cl. 524-591.000.
- Dietrich, Ernst; Guenther, Ernst; Hoerauf, Werner; Kissel, Ernst, deceased (Kissel, Gerd, legal representative); Linge, Hermann; Neumann, Eckart; and Schaefer, Eberhard, to BASF Aktiengesellschaft. Apparatus for drying and heating nylon granules. 4,439,933, Cl. 34-65.000.
- Dietz, Peter W.; and Wood, Ralph T., to General Electric Company. Apparatus and method for coating with an atomizable material. 4,440,350, Cl. 239-703.000.
- Dijkstra, Rinse: *See—*
  - Lippits, Gerardus J. M.; Van Den Broek, Arnoldus J. M.; Op Het Veld, Adriaan J. G.; Dijkstra, Rinse; and De Jonge, Jelis, 4,440,586, Cl. 156-151.000.
- Discovision Associates: *See—*
  - Slaten, Gary G., 4,441,179, Cl. 369-275.000.
- Divoux, Michel; and Dorez, Michel, to Hotchkiss-Brandt Sogeme H.B.S. Apparatus for stacking thin flexible objects. 4,440,388, Cl. 271-195.000.
- Djordjevic, Nebojsa; Rucman, Rudolf; Jovanovic, Suncica; Bole-Vunduk, Breda; Lavric, Tone; Lavric, Boza; Gruskovnjak, Cvetka; Kocjan, Ana; and Krmelj, Hermina, to LEK, tovarna farmacevtskih in kemicnih izdelkov, n.sol.o. Acid addition salts of dextrorotatory ergot alkaloids, a process for the preparation thereof as well as their use as medicines. 4,440,772, Cl. 424-261.000.
- DLlama-Gabilondo y Cia, S.A.: *See—*
  - M^a Gabilondo, Jose, 4,439,942, Cl. 42-66.000.
- Dmitrieva, Nina M.: *See—*
  - Albertinsky, Boris I.; Dmitrieva, Nina M.; Evseev, Anatoly K.; Zotov, Ivan P.; Ivanov, Andrei S.; Sviniin, Mikhail P.; Suslov, Valentin A.; and Fedotov, Mikhail T., 4,441,150, Cl. 363-126.000.
- Dobek, Arthur S.: *See—*
  - Scovill, John P.; Klayman, Daniel L.; Massie, Samuel P.; Grant, Steven D.; Gonzalez, Armando; Morrison, Norman E.; and Dobek, Arthur S., 4,440,771, Cl. 424-258.000.
- Dobson, John V., to National Research Development Corporation. Apparatus and method for measuring the concentration of ions. 4,440,602, Cl. 204-1.00T.
- Doctor, Alan P.; and Oettel, Friedrich H., to Eltec Instruments, Inc. High output differential pyroelectric sensor. 4,441,023, Cl. 250-338.000.
- Dr. C. Otto & Comp. G.m.b.H.: *See—*
  - Struck, Carl-Heinz; Schumacher, Ralf; and Thubeauville, Heinz, 4,440,599, Cl. 202-141.000.
- Dr. Ing. h.c.F. Porsche AG: *See—*
  - Eyb, Wolfgang, 4,440,429, Cl. 293-120.000.
- Doddi, Namassivaya: *See—*
  - Mattei, Frank V.; and Doddi, Namassivaya, 4,440,789, Cl. 424-78.000.
- Dodgen, David F.; and Siegl, Ludwig R., to International Business Machines. Real time eddy current responsive Hall effect device tachometer. 4,441,077, Cl. 324-164.000.
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  - Douglas, George H.; Studt, William L.; and Dodson, Stuart A., 4,440,949, Cl. 564-48.000.
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  - Shapiro, Elliot L.; and Finkenor, Lawrence E., 4,440,690, Cl. 260-397.450.
- Finney, Harold T., II, to Mattel, Inc. Graphic effects generator. 4,441,104, Cl. 340-724.000.
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  - Hergenrother, William L.; and Doshak, John M., 4,440,889, Cl. 524-143.000.
- Fischell, Robert E.; Fountain, Glen H.; and Blackburn, Charles M., to Johns Hopkins University, The. Self-injurious behavior inhibiting system. 4,440,160, Cl. 128-132.00R.
- Fischer, Jurgen: *See—*
  - Ambros, Rainer; Brenner, Norbert; and Fischer, Jurgen, 4,440,673, Cl. 252-632.000.
- Fischer, Peter; Rauthmann, Axel; and Pietryk, Erwin, to Ford Motor Company. Wiper arm with washer nozzle for motor vehicle windows. 4,439,887, Cl. 15-250.040.
- Fisher, Edwin N., to Atlantic Richfield Company. Ice aggregate road and method and apparatus for constructing same. 4,440,520, Cl. 404-72.000.
- Fister, Julius C.; and Breedis, John F., to Olin Corporation. Composite copper nickel alloys with improved solderability shelf life. 4,441,118, Cl. 357-70.000.
- Fix, Joseph A.; and Pogany, Stefano A., to Merck & Co., Inc. α-Keto aldehydes as enhancing agents of gastro-intestinal drug absorption. 4,440,740, Cl. 424-1.100.
- Flagg, Edward E., to Dow Chemical Company, The. Phenoxiodinin-5-ium antimicrobial compounds. 4,440,943, Cl. 560-65.000.
- Flagg, Rodger H. Heat dispersing thermal barrier. 4,440,342, Cl. 237-50.000.
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  - Lok, Brent M.; Messina, Celeste A.; Patton, Robert L.; Gajek, Richard T.; Cannan, Thomas R.; and Flanigen, Edith M., 4,440,871, Cl. 502-214.000.
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  - Hunt, Harlley L.; and Fletcher, Ansel T., 4,440,262, Cl. 182-114.000.
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- Fletcher, Robert P.; and Martin, Daniel B., to International Business Machines Corporation. Page controlled cache directory addressing. 4,441,155, Cl. 364-200.000.
- Fliri, Hans; and Hamberger, Helmut, to Sandoz Ltd. Derivatives of cephalosporanic acid, processes for their production and their use. 4,440,767, Cl. 424-246.000.
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  - Fretz, Edward R., Jr.; and Green, Joseph, 4,440,944, Cl. 560-76.000.
- Fochler, Helmut P.: *See—*
  - Pate, Harold T.; and Fochler, Helmut P., 4,440,425, Cl. 285-161.000.
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- Fogelman, H. Frank; and Ambrose, Arnum, to Sega Electronics, Inc. Universal electronic video game cabinet. 4,440,457, Cl. 312-7.200.
- Foley, Lary L., to Clorox Company, The. Controlled delivery of immiscible materials into an aqueous system. 4,440,542, Cl. 8-523.000.
- Folmsbee, Alan C.; Kokkonen, Kim; and Spaw, William J., to Intel Corporation. Memory redundancy apparatus for single chip memories. 4,441,170, Cl. 365-200.000.
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  - Staggers, John O.; Banerji, Samir K.; and Lalich, Michael J., 4,440,568, Cl. 75-53.000.
- Forcier, Mitchell D. Daisy wheel printer having low mass carriage. 4,440,512, Cl. 400-144.200.
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  - Chan, Uck I., 4,441,008, Cl. 219-121.0LL.
  - Fischer, Peter; Rauthmann, Axel; and Pietryk, Erwin, 4,439,887, Cl. 15-250.040.
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- Foulk, Donald H., to Dana Corporation. Slip clutch speed change mechanism. 4,440,035, Cl. 74-89.150.
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  - Masumoto, Hakaru; and Murakami, Yuetsu, 4,440,720, Cl. 420-459.000.
- Fountain, Glen H.: *See—*
  - Fischell, Robert E.; Fountain, Glen H.; and Blackburn, Charles M., 4,440,160, Cl. 128-132.00R.
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  - Morrison, Michael W.; Fracker, Clarence E., Jr.; and Marra, Jerome F., 4,440,557, Cl. 65-3.100.
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  - Lecomte, Jean-Claude, 4,441,078, Cl. 324-219.000.
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  - Naarmann, Herbert; Penzien, Klaus; Muench, Volker; and Franz, Klaus-Dieter, 4,440,693, Cl. 260-439.00R.
- Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung e.V.: *See—*
  - Schmidt, Helmut; and Kaiser, Alfred, 4,440,745, Cl. 424-78.000.
- Frederiksen, Nils: *See—*
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  - Golstein, Leon; Sokolovsky, Mordechai; and Freeman, Amihay, 4,440,903, Cl. 525-54.100.
- Freiborg, Bennie. Asphalt composition hip and ridge cover. 4,439,955, Cl. 52-57.000.
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  - Kostylev, Alexandr D.; Gileta, Vladimir P.; Grigoraschenko, Vladimir A.; Tkach, Khaim B.; Bakunin, Vladimir A.; Frenkel, Valery Y.; Kozlov, Valery A.; Reifisov, Jury B.; Chepurnoi, Nikolai P.; Bondar, Mikhail J.; Drobyazko, Vladimir F.; Stazhevsky, Stanislav B.; Ratskevich, Gerald I.; Fedorov, Alexandr A.; Polyakov, Anatoly S.; Bobylev, Leonid M.; Tsvetkov, Evgeny N.; and Petreev, Anatoly M., 4,440,240, Cl. 175-20.000.
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  - Kagerer, Franz, 4,440,050, Cl. 82-21.00B.
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- Frudakis, Rosalie. Method for encouraging self improvement. 4,440,396, Cl. 273-242.000.
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  - Seki, Masao, 4,440,793, Cl. 426-549.000.
- Fuji Jukogyo Kabushiki Kaisha: *See—*
  - Yamakawa, Toru, 4,439,989, Cl. 60-718.000.
- Fuji Kasei Co., Ltd.: *See—*
  - Takeuchi, Shoji; Nishiyama, Kozaburo; and Gomi, Tadashi, 4,440,661, Cl. 252-89.100.
- Fuji Photo Film Co., Ltd.: *See—*
  - Ochi, Shigeharu, 4,441,123, Cl. 358-44.000.
- Fuji Seiki Machine Works, Ltd.: *See—*
  - Watanabe, Mitsuru, 4,441,059, Cl. 318-39.000.
- Fuji Xerox Co., Ltd.: *See—*
  - Kataoka, Hiroyuki; and Arai, Yoshio, 4,440,513, Cl. 400-165.100.
  - Sekimoto, Souichi, 4,440,473, Cl. 350-342.000.
  - Toyoshima, Toshihiko, 4,441,111, Cl. 346-154.000.
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  - Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,440,757, Cl. 424-180.000.
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- Fujimori, Shinichiro: *See—*
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- Fujioka, Kazuyoshi: *See—*
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- Fujisaki, Shigemi; Fujisaki, Takashi; Yoshida, Junichi; and Fujisaki, Yasuhiro, to Kaken Pharmaceutical Co., Ltd. Preventive and treating agent for blood lipids abnormality and/or arteriosclerosis. 4,440,749, Cl. 424-94.000.
- Fujisaki, Takashi: *See—*
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- Fujitsu Limited: *See—*
  - Shiho, Masahiko; and Sato, Yasunori, 4,440,820, Cl. 428-120.000.
- Fujiwara, Takashi; Kajita, Shuji; Matsushita, Tetsuo; and Manabe, Seiichi, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for the preparation of high Young's modulus poly-p-phenylene-terephthalamide. 4,440,710, Cl. 264-184.000.
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  - Hayakawa, Yoshihiro; Yano, Tsutomu; Tachita, Ryobun; Fukukita, Hiroshi; Irioka, Kazuyoshi; and Fukumoto, Akira, 4,440,025, Cl. 73-642.000.
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- Funakoshi, Takashi: *See—*
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- Furukawa, Toshihiko, to Sodick Co., Ltd. EDM Pulse generator with a variable output inductor for producing pulse with gradually rising edges. 4,441,005, Cl. 219-69.00C.
- Fypon Inc.: *See—*
  - Feiss, Stephen W., 4,439,963, Cl. 52-201.000.
- G. D. Searle & Co.: *See—*
  - Dryden, Hugh L.; and Hill, John B., 4,440,677, Cl. 260-112.50R.
- G. Dusterloh GmbH: *See—*
  - Klie, Jurgen; and Stoll, Hans-Wolfgang, 4,440,067, Cl. 91-491.000.
- Gaeddert, Melvin V., to Hesston Corporation. Round baler having wrapping twine cutter. 4,440,075, Cl. 100-5.000.
- Gaertner, Gregory E.; and Wu, Ta-Ming, to Burroughs Corporation. Internally gated variable pulsewidth clock generator. 4,441,037, Cl. 307-265.000.
- Gagas, Michael. Manhole cover gasket seal. 4,440,407, Cl. 277-212.00F.
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- Gajek, Richard T.: *See—*
  - Lok, Brent M.; Messina, Celeste A.; Patton, Robert L.; Gajek, Richard T.; Cannan, Thomas R.; and Flanigen, Edith M., 4,440,871, Cl. 502-214.000.
- Gala, Kanti J.: *See—*
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- Gallagher-Kaiser Corp.: *See—*
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- Galloway, John L., to Racal Security Limited. Electrical circuits. 4,441,100, Cl. 340-518.000.
- Galuska, Charles W. Universal magnetic angled strainer. 4,440,639, Cl. 210-222.000.
- Ganellin, Charon R.: *See—*
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- Gappa, Gunther; Degel, Josef; and Juntgen, Harald, to Bergwerksverband GmbH. Method and apparatus for thermal treatment, especially drying, of finely comminuted bulk material. 4,439,932, Cl. 34-57.00D.
- Garofalo, Giovanni, to AMF Inc. Underwater flashlight. 4,441,142, Cl. 362-158.000.
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  - Greiner, Joachim; and Gartner, Eberhard, 4,440,106, Cl. 118-640.000.
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  - Feldmann, Hugo; Hollmann, Friedrich; Beisemann, Gerd; and Gartner, Horst, 4,440,012, Cl. 72-201.000.
- Garzon, Ruben D., to Brown Boveri Electric Inc. Puffer interrupter with arc energy assist. 4,440,997, Cl. 200-148.00A.
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- Gehrmann, Klaus: *See—*
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- Gelfand, Daniel. Mat cutting device. 4,440,055, Cl. 83-525.000.
- Gellert, Jobst U. Heater installation in molding members. 4,439,915, Cl. 29-611.000.
- Gemmill, Robert M., Jr.; and Horodysky, Andrew G., to Mobil Oil Corporation. Sulfur-containing mannich bases and lubricants containing same. 4,440,655, Cl. 252-47.500.
- Genatempo, Vince; and Karrasch, Frank, to Baxter Travenol Laboratories, Inc. Antibacterial protective cap for connectors. 4,440,207, Cl. 150-52.00R.
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  - Mowatt-Larssen, Erling; and Davis, Edward L., 4,440,528, Cl. 406-90.000.
- General Dental Inc.: *See—*
  - Houseman, Kenneth R., 4,440,616, Cl. 204-272.000.
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  - Henslee, Samuel P.; Noronha, Pascal J.; and Logan, John B., 4,440,529, Cl. 408-1.00R.
- General Electric Company: *See—*
  - Barton, Sterling C.; and Pitoniak, Joseph E., 4,440,017, Cl. 73-40.50R.
  - Bochan, John, 4,440,004, Cl. 68-23.00R.
  - Cheng, Bo-Ching; and Adamson, Ronald B., 4,440,862, Cl. 436-6.000.
  - Collins, Clifford B.; and James, William G., 4,441,047, Cl. 313-116.000.
  - Cutler, John H.; and Walker, Loren H., 4,441,064, Cl. 318-798.000.
  - Dietz, Peter W.; and Wood, Ralph T., 4,440,350, Cl. 239-703.000.
  - Eichelberger, Charles W.; Wojnarowski, Robert J.; and Ryckman, William D., Jr., 4,441,015, Cl. 219-411.000.
  - Fox, Daniel W.; Kaduk, Bruce A.; and Starr, John B., Jr., 4,440,912, Cl. 525-439.000.
  - Horvay, Julius B.; and Prada, Luis E., 4,439,998, Cl. 62-199.000.
  - Howard, Robert W., 4,440,719, Cl. 376-372.000.
  - James, William G., 4,441,046, Cl. 313-112.000.
  - Levinson, Lionel M., 4,441,094, Cl. 338-21.000.
  - Levy, Samuel, 4,440,094, Cl. 105-166.000.
  - McCarty, William J., 4,439,995, Cl. 62-156.000.
  - Risbeck, James D.; and Cooper, Ernest B., 4,441,012, Cl. 219-137.00R.
  - Thomas, George L., 4,441,051, Cl. 313-579.000.
  - Wandler, Richard A.; and Renkes, Kenneth R., 4,440,993, Cl. 200-38.00R.
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  - Davies, David L., 4,440,794, Cl. 426-578.000.
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  - Baker, Steven F., 4,440,308, Cl. 220-204.000.
  - Borgen, Robert H.; Reindl, Harold J.; and Pickering, Vernon L., 4,439,909, Cl. 29-453.000.
  - Butler, Paul E., 4,440,120, Cl. 123-52.0MV.
  - Case, James L., 4,440,125, Cl. 123-293.000.
  - Clancy, Terence J.; and Kokochak, David G., 4,440,121, Cl. 123-90.390.
  - Drouillard, James R.; and Rees, Richard W. A., 4,440,442, Cl. 297-341.000.
  - Harriott, Paul J., 4,440,269, Cl. 188-196.00F.
  - Hoffman, James S., 4,440,706, Cl. 264-56.000.
  - Karlow, James P.; and Hunt, Gary A., 4,441,086, Cl. 330-297.000.
  - Klusman, Steven A., 4,440,456, Cl. 308-184.00R.
  - Landenberger, Ulric, 4,440,023, Cl. 73-490.000.
  - Tsai, Lung-Wen, 4,440,123, Cl. 123-192.00B.
- General Technology Applications, Inc.: *See—*
  - Waters, Paul F.; and Scambos, Thomas T., 4,440,916, Cl. 525-54.200.
- Gerace, Michael J.; and Adams, Jeffry D., to Protective Treatments, Inc. Coated bonding tapes having improved peel strength combined with low temperature flexibility. 4,440,829, Cl. 428-343.000.
- Gerace, Robert E.: *See—*
  - Hordon, Monroe J.; and Gerace, Robert E., 4,440,803, Cl. 427-74.000.
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- Gerlach, Klaus; Lange, Wolfgang; and Loh, Dieter, to Akzo NV. Process and an apparatus for enriching liquids with oxygen. 4,440,648, Cl. 210-759.000.
- Gerritsen, Jan, to U.S. Philips Corporation. Device for measuring and methods for adjusting the convergence of the electron beams in color display tubes. 4,441,120, Cl. 358-10.000.
- Gertz, David C. Inlet turbine powered exhaust extractor for internal combustion engines. 4,439,983, Cl. 60-273.000.
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  - Dettmers, Michael; and Weirich, Walter, 4,440,522, Cl. 405-293.000.
- Gibb, William D., to Northern Telecom Limited. Key telephone area voice paging circuit and method. 4,440,989, Cl. 179-99.00P.
- Gibbons, Gould: *See—*
  - Howe, Philip M.; Gibbons, Gould; Aseltine, Clifford L.; and Williams, Frank, 4,440,296, Cl. 206-3.000.
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- Giddens, Marian S.; and Arnold, Michael B. Convertible top for motorcycles and snowmobiles. 4,440,436, Cl. 296-107.000.
- Gil, Pierre: *See—*
  - Cornu, Jean; Detriche, Jean-Marie; Gil, Pierre; Marchal, Paul; and Vertut, Jean, 4,441,010, Cl. 219-124.340.
- Gileta, Vladimir P.: *See—*
  - Kostylev, Alexandr D.; Gileta, Vladimir P.; Grigoraschenko, Vladimir A.; Tkach, Khaim B.; Bakunin, Vladimir A.; Frenkel, Valery Y.; Kozlov, Valery A.; Reifisov, Jury B.; Chepurnoi, Nikolai P.; Bondar, Mikhail J.; Drobyazko, Vladimir F.; Stazhevsky, Stanislav B.; Ratskevich, Gerald I.; Fedorov, Alexandr A.; Polyakov, Anatoly S.; Bobylev, Leonid M.; Tsvetkov, Evgeny N.; and Petreev, Anatoly M., 4,440,240, Cl. 175-20.000.

- Gillett, Jimmie D.: *See—*
  - Evans, William E.; and Gillett, Jimmie D., 4,441,062, Cl. 318-703.000.
- Gilmore, Ian J.: *See—*
  - Clark, Michael T.; and Gilmore, Ian J., 4,440,564, Cl. 71-90.000.
- Gimenez-Coronado, Manuel: *See—*
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- Giorni, Gastone. Container with bristles for cleaning instruments. 4,439,884, Cl. 15-104.920.
- Girard, Maurice V.; Worrall, Michael J.; and Seguy, Bernard R., to AMCEC Corporation. Method for reducing peak vapor emissions in solvent recovery systems. 4,440,549, Cl. 55-59.000.
- Girgis, Mikhail M., to PPG Industries, Inc. Aqueous, adhesive coating composition with a non-selfcrosslinkable elastomer for use with filamentary materials. 4,440,881, Cl. 523-206.000.
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  - Palmer, Bertram J., 4,440,256, Cl. 180-254.000.
- Gladwin, Inc.: *See—*
  - Richardson, Charles T., Jr., 4,441,143, Cl. 362-183.000.
- Glaser, Robert L., to L. M. Becker & Co., Inc. Vending machine with front display area. 4,440,312, Cl. 221-24.000.
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  - Sarin, Vinod K.; and Buljan, Sergej-Tomislav, 4,440,547, Cl. 51-295.000.
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  - Jannusch, Leonard C., 4,440,884, Cl. 524-26.000.
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  - Perla, Henry L., 4,440,525, Cl. 405-186.000.
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- Hallgren, Charles G., to Keystone Consolidated Industries, Inc. Rotatable shelf hardware. 4,440,459, Cl. 312-238.000.
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  - Steinecke, Rudolf; and Hensche, Karl-Heinz, 4,440,252, Cl. 180-89.150.
- Henslee, Samuel P.; Noronha, Pascal J.; and Logan, John B., to General Dynamics Corporation. Method and means for operating a drill for eliminating axial scratches during retraction. 4,440,529, Cl. 408-1.00R.
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  - Wells, Edward R.; and Hensler, Thomas A., 4,440,597, Cl. 162-111.000.
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  - Piotrowski, Alfred B.; and Herd, Richard S., 4,440,658, Cl. 252-51.50A.
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  - Olschewski, Armin; Herrmann, Gerhard; and Bauer, Bernhard, 4,440,401, Cl. 277-50.000.
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- Hess, Walter R. Vehicle hub step. 4,440,411, Cl. 280-165.000.
- Hesston Corporation: *See—*
  - Gaeddert, Melvin V., 4,440,075, Cl. 100-5.000.
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  - Del Rosso, Victor, 4,440,249, Cl. 177-145.000.
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  - Katsumi, Ikuo; Kondo, Hideo; Yamashita, Katsuji; Hidaka, Takayoshi; Hosoe, Kazunori; Ariki, Yutaka; Yamashita, Toshiaki; and Watanabe, Kiyoshi, 4,440,784, Cl. 424-308.000.
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  - Takeda, Tsuneshi; Otsuji, Kazuya; Tamura, Junichi; Morii, Yoshikazu; Higashiwaki, Michio; and Nakatani, Yoshitaka, 4,440,732, Cl. 423-415.00P.
- Higratherm Electric GmbH: *See—*
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  - Dryden, Hugh L.; and Hill, John B., 4,440,677, Cl. 260-112.50R.
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  - Sanders, Frederick W.; Hillenbrand, Gary F.; Arney, Jonathan S.; and Wright, Richard F., 4,440,846, Cl. 430-138.000.
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  - Miyazaki, Haruhiko; Uda, Taizo; Hirai, Koichi; Nakamura, Yasuo; Ikezawa, Harumi; and Tsuchie, Takanori, 4,440,873, Cl. 502-244.000.
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  - Karras, Matti R.; and Hirsimaki, Olavi, 4,440,507, Cl. 374-39.000.
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  - Yamamoto, Takanobu; Sumida, Isao; Tsukamoto, Moriaki; Imani, Kazutake; and Watahiki, Naohisa, 4,440,151, Cl. 126-433.000.
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  - Kakehi, Yutaka; Terada, Katsuyuki; Kasai, Kenjiro; and Iwasaki, Fumio, 4,440,093, Cl. 105-164.000.
  - Kita, Yasuhiro; Tsukamoto, Nobuo; Koya, Masahiro; and Maeda, Narimichi, 4,441,192, Cl. 375-14.000.
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  - Sakurai, Takeichi; Goto, Kiyoshi; Konishi, Hiroo; and Kawai, Tadao, 4,441,032, Cl. 307-82.000.
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  - Uchiya, Tsuneo; Yabuta, Hiroaki; and Hikizi, Seizi, 4,440,552, Cl. 55-114.000.
- Hitachi Shipbuilding & Engineering Company Limited: *See—*
  - Ono, Kuniaki, 4,440,211, Cl. 164-442.000.
- Hitaka, Yosatomi; and Namiki, Takemasa, to Konishiroku Photo Industry Co., Ltd. Method for coating and an apparatus for coating. 4,440,811, Cl. 427-402.000.
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- Hochmair, Erwin S.; and Hochmair, Ingeborg J. Transcutaneous signal transmission system and methods. 4,441,210, Cl. 455-41.000.
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  - Hochmair, Erwin S.; and Hochmair, Ingeborg J., 4,441,210, Cl. 455-41.000.
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- Hodges, Michael J., to Dextomat Machinery Limited. Apparatus for unloading hosiery machinery. 4,440,329, Cl. 223-43.000.
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  - Diery, Helmut; and Mees, Bernhard, 4,440,902, Cl. 525-404.000.
  - Erpenbach, Heinz; Gehrmann, Klaus; Lork, Winfried; and Prinz, Peter, 4,440,570, Cl. 75-121.000.
  - Ohorodnik, Alexander; Keuper, Hans W.; Semmler, Horst; Hardel, Joachim; Vierling, Hermann; and Willms, Robert, 4,440,925, Cl. 528-487.000.
  - von der Eltz, Hans-Ulrich; and Oppitz, Peter, 4,439,881, Cl. 8-151.000.
  - Willms, Lothar; Mildenberger, Hilmar; Gunther, Dieter; Bauer, Klaus; Burstell, Helmut; and Bieringer, Hermann, 4,440,565, Cl. 71-93.000.
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- Hoffman, Louis S.; and Kurlander, Susan L., to H. P. Hood Inc. Sealed moistureproof container. 4,440,311, Cl. 220-306.000.
- Hoffmann, Horst, to Wilhelm Ruf KG. Printed board for electrical circuits. 4,440,823, Cl. 428-209.000.
- Hoffmann, Kurt, to Siemens Aktiengesellschaft. Monolithically integrated semiconductor memory. 4,441,171, Cl. 365-205.000.
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  - Walser, Armin; and Fryer, Rodney I., 4,440,685, Cl. 260-245.600.
- Hoffmann, Wolfgang: *See—*
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  - Annen, Klaus; Laurent, Henry; Hofmeister, Helmut; and Wiechert, Rudolf, 4,440,684, Cl. 260-239.570.
- Hohne, Gerhard: *See—*
  - Honolke, Friedrich; Brandl, Adrian; Schibilla, Eduard; and Hohne, Gerhard, 4,440,544, Cl. 44-51.000.
- Holdeman, John W., to Borg-Warner Corporation. Helical planetary gear assembly. 4,440,042, Cl. 74-785.000.
- Hollmann, Friedrich: *See—*
  - Feldmann, Hugo; Hollmann, Friedrich; Beisemann, Gerd; and Gartner, Horst, 4,440,012, Cl. 72-201.000.
- Holm, Harold K. Sander for artificial nails. 4,440,182, Cl. 132-75.600.
- Holm, Kurt A., to Bycasin AB. Device for cleaning objects by scrubbing in the presence of solvent. 4,439,882, Cl. 15-77.000.
- Holmes, Billy G., to Mobil Oil Corporation. Well completion for injecting high purity oxygen in a fire flooding process. 4,440,227, Cl. 166-261.000.
- Holmes, Russell C.: *See—*
  - Foxton, Robert J.; Kappheim, David A.; and Holmes, Russell C., 4,440,037, Cl. 74-331.000.
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- Holzel, Thomas M. Closed-circuit breathing apparatus. 4,440,165, Cl. 128-205.280.
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  - Mudder, Terrence I.; and Whitlock, James L., 4,440,644, Cl. 210-611.000.
- Honda Giken Kogyo Kabushiki Kaisha: *See—*
  - Kamiya, Tadashi, 4,440,412, Cl. 280-281.00B.
  - Kurihara, Norimitsu; Kinoshita, Katsuharu; Watanabe, Masao; Sato, Toyohiro; and Kawazoe, Takashi, 4,440,033, Cl. 74-7.00A.
  - Miyakoshi, Shinichi; and Yamamoto, Kazuhiro, 4,440,413, Cl. 280-284.000.
  - Shinozaki, Takashi, 4,440,255, Cl. 180-225.000.
  - Yagasaki, Akio; and Watanabe, Masaki, 4,439,886, Cl. 15-250.200.
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  - Gerchman, Robert D.; Newport, Ronald L.; and van Dyke, Martin J., 4,441,157, Cl. 364-551.000.
  - Kitchen, Robert D., 4,440,368, Cl. 248-27.100.
  - Rahman, Mona A., 4,441,072, Cl. 323-368.000.
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  - Baldwin, David R.; and Lemak, Nicholas S., 4,441,195, Cl. 377-2.000.
- Hong, Rong-Fu. Electric soldering iron temperature adjustable by changing handle position during use. 4,441,014, Cl. 219-240.000.
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- Hooker, Donald E.; and Tojza, Roman A., to Bally Manufacturing Corporation. Gaming apparatus having manually controllable operating speed. 4,440,036, Cl. 74-153.000.
- Hoopengardner, Merle C.; and Wenzel, William B., to Orcon Corporation. Carpet seaming roller tool. 4,439,904, Cl. 29-110.500.
- Hooper, Clinton E., to Pitney Bowes Inc. Disposable inking cartridge. 4,440,083, Cl. 101-348.000.

- Horan, Ann C.: *See—*
  - Waitz, Jay A.; Marquez, Joseph A.; Patel, Mahesh G.; and Horan, Ann C., 4,440,751, Cl. 424-114.000.
- Hordon, Monroe J.; and Gerace, Robert E., to Xerox Corporation. Process for preparing arsenic-selenium photoreceptors. 4,440,803, Cl. 427-74.000.
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- Horiuchi, Tatsuo; and Kiyota, Kazushige, to Ushio Denki Kabushiki Kaisha. Auxiliary head lamp device for car equipped with cover. 4,441,144, Cl. 362-375.000.
- Horodysky, Andrew G., to Mobil Oil Corporation. Borated alkoxylated alcohols and lubricants and liquid fuels containing same. 4,440,656, Cl. 252-49.600.
- Horodysky, Andrew G.: *See—*
  - Gemmill, Robert M., Jr.; and Horodysky, Andrew G., 4,440,655, Cl. 252-47.500.
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- Horvay, Julius B.; and Prada, Luis E., to General Electric Company. Apparatus and method of controlling air temperature of a two-evaporator refrigeration system. 4,439,998, Cl. 62-199.000.
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  - Kuniyoshi, Shinji; Takanashi, Akihiro; Kurosaki, Toshiei; Hosaka, Sumio; Kawamura, Yoshio; and Terasawa, Tsuneo, 4,441,206, Cl. 382-08.000.
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- Hosoe, Kazunori: *See—*
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- Houle, Raymond T., to Silchor. Shower arrangement for bathing units. 4,439,877, Cl. 4-596.000.
- House, David C., to Prawl Engineering Corporation. Press lock fasciacant system. 4,439,956, Cl. 52-60.000.
- Houseman, Kenneth R., to General Dental Inc. Metal collector. 4,440,616, Cl. 204-272.000.
- Houseman, Robin D., to Beckman Instruments, Inc. Temperature compensation circuit for thermocouples. 4,441,071, Cl. 323-365.000.
- Houseworth, Burt B.: *See—*
  - Downing, Harry M., 4,440,783, Cl. 424-302.000.
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- Howard, Robert W., to General Electric Company. Steam driven water injection. 4,440,719, Cl. 376-372.000.
- Howe, Philip M.; Gibbons, Gould; Aseltine, Clifford L.; and Williams, Frank, to United States of America, Army. Anti-propagation explosive packaging. 4,440,296, Cl. 206-3.000.
- Howeth, D. Franklin. Drill cuttings conveying head with wet cuttings diverter. 4,440,243, Cl. 175-209.000.
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  - Behle, Gunter R.; and Hrinsin, John A., 4,440,380, Cl. 251-144.000.
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  - Dayger, Douglas A.; Hryck, Michael D.; Skinner, Dean W.; and Westcott, Gerald R., 4,440,079, Cl. 101-93.030.
- Huang, Emil A., to Nabisco Brands, Inc. Low cost texturized vegetable protein. 4,440,798, Cl. 426-656.000.
- Huang, Fu-chih, to USV Pharmaceutical Corporation. Bicycloimidazoles. 4,440,935, Cl. 548-326.000.
- Hudziak, Lawrence C.; and Hartlaub, Jerome T., to Medtronic. Programmable body stimulation system. 4,440,173, Cl. 128-419.0PG.
- Hughes Aircraft Company: *See—*
  - Coleman, Guy B.; Henderson, James W.; and Sacks, Jacob M., 4,441,165, Cl. 364-900.000.
  - Rosser, Robin W.; and Keller, Leon B., 4,440,819, Cl. 428-107.000.
  - Vasudev, Prahalad K., 4,439,910, Cl. 29-569.00L.
- Hughes Tool Company: *See—*
  - Baugh, John L.; and Hardy, Melvin J., 4,440,233, Cl. 166-382.000.
- Hujik, Ladislav. Mold for footwear sole. 4,440,377, Cl. 249-119.000.
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  - Karlow, James P.; and Hunt, Gary A., 4,441,086, Cl. 330-297.000.
- Hunt, Harlley L.; and Fletcher, Ansel T., to Ingersoll-Rand Company. Delayed deployment platform. 4,440,262, Cl. 182-114.000.
- Hunter, Gray H., to Egolf, Daniel Lee, a part interest. Sound responsive lighting device with VCO driven indexing. 4,440,059, Cl. 84-464.00R.
- Hunter, Walter D., to Texaco Development Corporation. Process for secondary recovery. 4,440,652, Cl. 252-8.55D.
- Hupp, Gerhard, to Mauser-Werke Oberndorf GmbH. Breech mechanism for automatic firearms. 4,440,065, Cl. 89-191.00R.
- Hursey, Robert: *See—*
  - Ryan, Dennis M.; and Hursey, Robert, 4,440,358, Cl. 242-189.000.
- Hutchins, Ned M., to Occidental Oil Shale, Inc. Fluid outlet at the bottom of an in situ oil shale retort. 4,440,445, Cl. 299-2.000.
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- Huth, Wolfgang: *See—*
  - Berkes, Klaus; Forster, Helmut; Huth, Wolfgang; Ritschel, Gunter; Schebiella, Georg; Scholz, Norbert; and Thomas, Frank-Gerhard, 4,440,797, Cl. 426-613.000.
- Huxtable, Peter J. Clip for securing around a member such as a pipe. 4,439,902, Cl. 24-278.000.
- Hybrid Energy Systems, Inc.: *See—*
  - Briley, Patrick B., 4,439,994, Cl. 62-101.000.
- Hyche, Kenneth W.: *See—*
  - Cook, Mary J.; and Hyche, Kenneth W., 4,440,888, Cl. 524-139.000.
- Hydo, Steven J.: *See—*
  - Carey, Glen A.; and Hydo, Steven J., 4,440,497, Cl. 356-246.000.
- Hyland, Joseph F.; Wetherell, Joseph J.; and Setteducati, Mark. Variable geometric board game. 4,440,395, Cl. 273-241.000.
- Ibe, Akio: *See—*
  - Amano, Kazunori; Aizawa, Bunji; Ibe, Akio; and Sekikawa, Yoichi, 4,440,147, Cl. 126-201.000.
- Ibrahim, Fayez F., to Tyler Refrigeration Corporation. Open top refrigerated case with defrost air intake and colliding band air defrost. 4,439,992, Cl. 62-82.000.
- ICI Americas inc.: *See—*
  - Shapiro, Howard S., 4,440,768, Cl. 424-248.400.
- Ihara, Keisuke; Hoshino, Shozi; and Tanioka, Susumu, to Tokyo Denki Kabushiki Kaisha. Juice extractor. 4,440,074, Cl. 99-510.000.
- Ihlenfeld, Jay V.: *See—*
  - Rice, David E.; and Ihlenfeld, Jay V., 4,440,918, Cl. 526-246.000.
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- Iida, Kazuhiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Picture information processing and storing device. 4,441,208, Cl. 382-56.000.
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- Iizuka, Syogo: *See—*
  - Suzuki, Yoshitsugu; Iizuka, Syogo; Kajiyama, Shigeo; Usui, Kenji; and Kobayashi, Masahiro, 4,440,053, Cl. 83-282.000.
- Ikawa, Kazuo: *See—*
  - Shibahata, Yasuji; Irie, Namio; Ikawa, Kazuo; and Akatsu, Yosuke, 4,440,254, Cl. 180-140.000.
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  - Miyazaki, Haruhiko; Uda, Taizo; Hirai, Koichi; Nakamura, Yasuo; Ikezawa, Harumi; and Tsuchie, Takanori, 4,440,873, Cl. 502-244.000.
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  - Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,440,757, Cl. 424-180.000.
- Illinois Tool Works Inc.: *See—*
  - Achille, Jean R., 4,440,374, Cl. 248-544.000.
  - Edwards, Bryant; Krogman, Stanley R.; and McArdle, Edward J., 4,440,101, Cl. 111-2.000.
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  - Yamamoto, Takanobu; Sumida, Isao; Tsukamoto, Moriaki; Imani, Kazutake; and Watahiki, Naohisa, 4,440,151, Cl. 126-433.000.
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  - Melchior, Bernd, 4,440,153, Cl. 126-438.000.
- Imgram, Friedrich. Process for the preparation of shaped articles. 4,440,712, Cl. 264-209.500.
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- Inami, Sumio: *See—*
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  - Pate, Harold T.; and Fochler, Helmut P., 4,440,425, Cl. 285-161.000.
- Ing. C. Olivetti & C., S.p.A.: *See—*
  - Pavan, Gianni; and Lorenzi, Mario, 4,441,164, Cl. 364-900.000.
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  - Casperovich, John J., 4,440,237, Cl. 173-134.000.
  - Hunt, Harlley L.; and Fletcher, Ansel T., 4,440,262, Cl. 182-114.000.
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  - Nitta, Issei; Fujimori, Shinichiro; Haruyama, Toshio; and Inoue, Shinya, 4,440,689, Cl. 260-397.400.
- Institut Francais du Petrole: *See—*
  - Jacquin, Yves; Gimenez-Coronado, Manuel; and Dai-Nghia, Huynh, 4,440,633, Cl. 208-309.000.
- Institut Gornogo Dela Sibirskogo Otdelenia Akademii Nauk SSSR: *See—*
  - Kostylev, Alexandr D.; Gileta, Vladimir P.; Grigoraschenko, Vladimir A.; Tkach, Khaim B.; Bakunin, Vladimir A.; Frenkel, Valery Y.; Kozlov, Valery A.; Reifisov, Jury B.; Chepurnoi, Nikolai P.; Bondar, Mikhail J.; Drobyazko, Vladimir F.; Stazhevsky, Stanislav B.; Ratskevich, Gerald I.; Fedorov, Alexandr A.; Polyakov, Anatoly S.; Bobylev, Leonid M.; Tsvetkov, Evgeny N.; and Petreev, Anatoly M., 4,440,240, Cl. 175-20.000.
- Intel Corporation: *See—*
  - Folmsbee, Alan C.; Kokkonen, Kim; and Spaw, William J., 4,441,170, Cl. 365-200.000.
- Intengan, Franklin S., to American Hospital Supply Corporation. Self-stacking reagent slide. 4,440,301, Cl. 206-456.000.
- International Business Machines: *See—*
  - Dodgen, David F.; and Siegl, Ludwig R., 4,441,077, Cl. 324-164.000.
  - Jenkins, Michael O., 4,441,081, Cl. 330-110.000.
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  - Adams, Gary E., 4,440,013, Cl. 73-23.100.
  - Anderson, Carl J., 4,441,088, Cl. 333-1.000.
  - Aviram, Ari; Mayne-Banton, Veronica I.; and Srinivasan, Rangaswamy, 4,440,801, Cl. 427-54.100.
  - Blakeslee, Marybelle C.; Olsen, Judith D.; and Romankiw, Lubomyr T., 4,440,609, Cl. 204-43.00T.
  - Brownlow, James M.; and Chang, Ifay F., 4,440,831, Cl. 128-404.000.
  - Bullions, Robert J., III; and Enger, Thomas A., 4,441,153, Cl. 364-200.000.
  - Dayger, Douglas A.; Hryck, Michael D.; Skinner, Dean W.; and Westcott, Gerald R., 4,440,079, Cl. 101-93.030.
  - Fletcher, Robert P.; and Martin, Daniel B., 4,441,155, Cl. 364-200.000.
  - Kabelac, William J.; and Sanders, Ian L., 4,441,166, Cl. 365-36.000.
  - Leikam, Gary E.; Wierwille, Robert L.; and Wood, Rebecca S., 4,441,163, Cl. 364-900.000.
  - McMahon, Maurice T., 4,441,075, Cl. 324-73.00R.
  - Muggli, Raymond A., 4,441,114, Cl. 357-13.000.
  - Nassimbene, Ernie G., 4,440,515, Cl. 400-479.000.
  - Rigby, Eugene B., 4,440,713, Cl. 264-325.000.
  - Schuster, Stanley E., 4,441,039, Cl. 307-475.000.
  - Wrona, Stanislaw, 4,441,057, Cl. 315-368.000.
- International Computers Ltd.: *See—*
  - Hart, Peter A., 4,441,159, Cl. 364-771.000.
- International Flavors & Fragrances Inc.: *See—*
  - Boden, Richard M., 4,440,961, Cl. 568-840.000.
- International Telephone and Telegraph Corporation: *See—*
  - Nath, Dilip K.; Pureza, Pablo C.; and Oh, Shin M., 4,440,558, Cl. 65-3.120.
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  - van Rijs, Gerrit A.; Kardol, Arie D.; and Hinze, Adrien G., 4,440,660, Cl. 252-56.00S.
- Intersil, Inc.: *See—*
  - Zommer, Nathan, 4,441,117, Cl. 357-43.000.
- Inventio AG: *See—*
  - Iten, Thomas, 4,441,034, Cl. 307-117.000.
- Iquad Company Incorporated: *See—*
  - Potter, John T., 4,440,038, Cl. 74-424.80R.
- Irie, Namio: *See—*
  - Shibahata, Yasuji; Irie, Namio; Ikawa, Kazuo; and Akatsu, Yosuke, 4,440,254, Cl. 180-140.000.
- Irioka, Kazuyoshi: *See—*
  - Hayakawa, Yoshihiro; Yano, Tsutomu; Tachita, Ryobun; Fukukita, Hiroshi; Irioka, Kazuyoshi; and Fukumoto, Akira, 4,440,025, Cl. 73-642.000.
- Irving, Edward, to Ciba-Geigy Corporation. Preparation of prepregs from cellulosic fibers using water-borne resin compositions. 4,440,802, Cl. 427-54.100.
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- Isaka, Kazuo; and Kan, Fumitaka, to Canon Kabushiki Kaisha. Fixing apparatus. 4,440,486, Cl. 355-3.0FU.
- Ishibashi, Junya; Miyazaki, Shigeru; and Tanaka, Shoichi, to Toshiba Kikai Kabushiki Kaisha. Multishaft supporting devices. 4,440,511, Cl. 384-278.000.
- Ishibashi, Masanori, to Casio Computer Co., Ltd. Electronic musical instrument with improved input device. 4,440,057, Cl. 84-1.010.
- Ishii, Noboru: *See—*
  - Shiihara, Takeo; Niihara, Toshihiro; Iwata, Hidemi; and Ishii, Noboru, 4,440,236, Cl. 173-8.000.
- Ishikawa, Toshikatsu; Tanaka, Junichi; Teranishi, Haruo; Okamura, Tatsuya; and Hayase, Tokuji, to Nippon Carbon Co., Ltd. Process for the surface treatment of inorganic fibers for reinforcing titanium or nickel and product. 4,440,571, Cl. 75-229.000.
- Ishimaru, Wataru; and Fujioka, Kazuyoshi, to Nissan Motor Co., Ltd. Clutch drum for automatic automotive transmission. 4,440,282, Cl. 192-70.200.
- Ishizuka, Hiroshi. Method for producing diamond compact. 4,440,573, Cl. 75-243.000.
- Isida, Tosio: *See—*
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- Isobe, Toshiaki: *See—*
  - Kobayashi, Nobuyuki; and Isobe, Toshiaki, 4,440,119, Cl. 123-492.000.
- Isoi, Masaaki: *See—*
  - Inoue, Hiroshi; Isoi, Masaaki; and Sei, Kazuo, 4,440,911, Cl. 525-301.000.
- Isorast Thermacell (U.S.A.), Inc.: *See—*
  - Dielenberg, Olif F., 4,439,967, Cl. 52-309.120.
- Itek Corporation: *See—*
  - Hardy, John W., 4,441,019, Cl. 250-201.000.
- Itemadani, Eiji: *See—*
  - Mori, Kazuhiro; Misawa, Yoshihiko; Itemadani, Eiji; and Kabeshita, Akira, 4,440,355, Cl. 242-55.000.
- Iten, Thomas, to Inventio AG. Contact-controlled capacitive switching apparatus. 4,441,034, Cl. 307-117.000.
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  - Sato, Takao; Ito, Tetsuo; and Arita, Setsuo, 4,440,715, Cl. 376-210.000.
- Itou, Kazuo: *See—*
  - Naito, Mitikatu; Yano, Kiyotosi; Itou, Kazuo; and Tsuzuki, Kunihiro, 4,440,139, Cl. 123-569.000.
- ITT Industries, Inc.: *See—*
  - Belart, Juan; Burgdorf, Jochen; Kircher, Dieter; and Weise, Lutz, 4,440,454, Cl. 303-114.000.
  - Gahle, Hans-Juergen, 4,440,580, Cl. 148-1.500.
- Ivanov, Andrei S.: *See—*
  - Albertinsky, Boris I.; Dmitrieva, Nina M.; Evseev, Anatoly K.; Zotov, Ivan P.; Ivanov, Andrei S.; Sviniin, Mikhail P.; Suslov, Valentin A.; and Fedotov, Mikhail T., 4,441,150, Cl. 363-126.000.
- Ivory, Dawn M.; Miller, Granville G.; Chance, Ronald R.; and Baughman, Ray H., to Allied Corporation. Electrically conducting compositions of doped polyphenylenes and shaped articles comprising the same. 4,440,669, Cl. 252-518.000.
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  - Kakehi, Yutaka; Terada, Katsuyuki; Kasai, Kenjiro; and Iwasaki, Fumio, 4,440,093, Cl. 105-164.000.
- Iwata, Hidemi: *See—*
  - Shiihara, Takeo; Niihara, Toshihiro; Iwata, Hidemi; and Ishii, Noboru, 4,440,236, Cl. 173-8.000.
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- J. M. Voith GmbH: *See—*
  - Schiel, Christian, 4,440,077, Cl. 100-162.00B.
- J & W Scientific, Inc.: *See—*
  - Jenkins, Rand G.; and Wohlers, Norman W., 4,440,550, Cl. 55-67.000.
- Jackson, Prentiss W., to Northern Telecom Limited. Electrical display apparatus with reduced peak power consumption. 4,441,106, Cl. 340-811.000.
- Jacobsen, Preben, to Jamo Hi-Fi A/S. Bass-reflex loudspeaker system. 4,440,260, Cl. 181-172.000.
- Jacobson, Andrew G. Optical device for an intensifier tube. 4,440,476, Cl. 350-538.000.
- Jacquin, Yves; Gimenez-Coronado, Manuel; and Dai-Nghia, Huynh, to Institut Francais du Petrole. Process for solvent deasphalting heavy hydrocarbon fractions. 4,440,633, Cl. 208-309.000.
- Jakubczak, Eugene R.: *See—*
  - Henley-Cohn, Julian L.; and Jakubczak, Eugene R., 4,439,872, Cl. 3-1.300.
- James, William G., to General Electric Company. Incandescent lamps with neodymium oxide vitreous coatings. 4,441,046, Cl. 313-112.000.
- James, William G.: *See—*
  - Collins, Clifford B.; and James, William G., 4,441,047, Cl. 313-116.000.
- Jamo Hi-Fi A/S: *See—*
  - Jacobsen, Preben, 4,440,260, Cl. 181-172.000.
- Jannusch, Leonard C., to H. B. Fuller Company. Caustic sensitive, water resistant labeling adhesive. 4,440,884, Cl. 524-26.000.
- Janome Sewing Machine Co., Ltd.: *See—*
  - Nomoto, Reishi; Takahashi, Masayoshi; and Ebata, Yoshikazu, 4,440,171, Cl. 128-335.500.
- Japan Metals and Chemicals Co., Ltd.: *See—*
  - Nakamura, Teruo; Kiyoto, Michio; Akashi, Kazuo; and Hasegawa, Isao, 4,440,560, Cl. 71-24.000.
- Japan Styrene Paper Corporation: *See—*
  - Akiyama, Hiroyuki; Hirosawa, Kuninori; and Kuwabara, Hideki, 4,440,703, Cl. 264-50.000.
- Jasenof, Kenneth E.: *See—*
  - Zychowski, Edwin A.; Jasenof, Kenneth E.; and Jimenez, Artemio L., 4,440,894, Cl. 524-390.000.

- Jautelat, Manfred; and Arlt, Dieter, to Bayer Aktiengesellschaft. Process for the preparation of 2,2-dimethyl-3-vinyl-cyclopropanecarboxylic acids and esters. 4,440,955, Cl. 568-419.000.
- Jeltema, Paul A., to Consolidated Papers, Inc. Paper coating apparatus having a replaceable orifice plate. 4,440,105, Cl. 118-410.000.
- Jenkins, Michael O., to International Business Machines. Switching power driving circuit arrangement. 4,441,081, Cl. 330-110.000.
- Jenkins, Rand G.; and Wohlers, Norman W., to J & W Scientific, Inc. On-column injector. 4,440,550, Cl. 55-67.000.
- Jenkins, Richard C., to Owens-Corning Fiberglas Corporation. Composite insulation panel. 4,439,960, Cl. 52-99.000.
- Jentoft, Arthur P.; and Couture, Paul A., to Wasco Products, Inc. Skylight construction. 4,439,962, Cl. 52-200.000.
- Jessup, Frank L.; and Kaiser, Robert S. Apparatus for delaying the closing of a door. 4,440,428, Cl. 292-251.500.
- Jimenez, Artemio L.: *See—*
  - Zychowski, Edwin A.; Jasenof, Kenneth E.; and Jimenez, Artemio L., 4,440,894, Cl. 524-390.000.
- Joffe, Boris B.; Spongr, Jerry J.; and Sawyer, Byron E., to Twin City International Inc. Coating thickness measuring device. 4,441,022, Cl. 250-308.000.
- John Wyeth & Brother Limited: *See—*
  - Crossley, Roger; and Dickinson, Kay H., 4,440,773, Cl. 424-263.000.
- Johns Hopkins University, The: *See—*
  - Fischell, Robert E.; Fountain, Glen H.; and Blackburn, Charles M., 4,440,160, Cl. 128-132.00R.
- Johnson, David D.: *See—*
  - Biller, Cleveland J.; and Johnson, David D., 4,440,305, Cl. 212-90.000.
- Johnson, Grannis S.: *See—*
  - Marcellis, Alphonso W.; and Johnson, Grannis S., 4,440,577, Cl. 106-90.000.
- Johnson, Van W. Fishing rod casting device for a disabled person. 4,439,944, Cl. 43-19.000.
- Johnson, Warren E.; and Maliszewski, Andrzej, to Sherwood Tool, Incorporated. Receptacle forming apparatus having split receiver. 4,440,290, Cl. 198-479.000.
- Jones, David E.: *See—*
  - Cone, Steven S.; Jones, David E.; and Serkland, Richard C., 4,440,364, Cl. 244-129.600.
- Jones, Faber B.: *See—*
  - Kallenback, Lyle R.; and Jones, Faber B., 4,440,893, Cl. 524-305.000.
- Jones, Howard: *See—*
  - Suh, John T.; Menard, Paul R.; and Jones, Howard, 4,440,941, Cl. 560-20.000.
- Jonsson, Gunther, to Lumalampan Aktiebolag. Procedure for chemical, automatic dissolution of molybdenum core wire in tungsten filament coil and a device for implementing the procedure. 4,440,729, Cl. 423-55.000.
- Jordan, Ernst G., to OBO Bettermann OHG, Firma. Electrical stud-welding apparatus. 4,441,007, Cl. 219-98.000.
- Joseph, Eric D.: *See—*
  - Davies, Robert B.; and Joseph, Eric D., 4,441,070, Cl. 323-268.000.
- Jourde, Jean-Pierre, to Regie Nationale des Usines Renault. Device for premetered pressure-time injection. 4,440,133, Cl. 123-446.000.
- Jovanovic, Suncica: *See—*
  - Djordjevic, Nebojsa; Rucman, Rudolf; Jovanovic, Suncica; Bole-Vunduk, Breda; Lavric, Tone; Lavric, Boza; Gruskovnjak, Cvetka; Kocjan, Ana; and Krmelj, Hermina, 4,440,772, Cl. 424-261.000.
- Judy, Millard M.; and Sutko, John L., to U.T. Board of Regents. Surface field-effect device for manipulation of charged species. 4,440,638, Cl. 210-198.200.
- Jungmeister, Hans G., to Siemens Aktiengesellschaft. Monitoring method and device for a PCM regenerator having a code rule violation checking device. 4,441,185, Cl. 371-56.000.
- Juntgen, Harald: *See—*
  - Gappa, Gunther; Degel, Josef; and Juntgen, Harald, 4,439,932, Cl. 34-57.00D.
- Jurgens, Rainer, to Christensen, Inc. Cutting member for rotary drill bits. 4,440,246, Cl. 175-329.000.
- Juy, Henry, to Etablissements le Simplex. Saddle rod for bicycles and like vehicles. 4,440,440, Cl. 297-195.000.
- Kaanders, Johannes M. G. M.; van Rijsewijk, Cornelis H. M.; and Smerecnik, Antoon F., to U.S. Philips Corporation. Hearing aid. 4,440,982, Cl. 179-107.00R.
- Kabas, Guglielmo: *See—*
  - Bellus, Daniel; Blaser, Hans-Ulrich; Kabas, Guglielmo; Reinehr, Dieter; Spencer, Alwyn; and Weber, Kurt, 4,440,694, Cl. 260-465.00D.
- Kabelac, William J.; and Sanders, Ian L., to International Business Machines Corporation. Passive annihilator for contiguous-disk bubble devices. 4,441,166, Cl. 365-36.000.
- Kabeshita, Akira: *See—*
  - Mori, Kazuhiro; Misawa, Yoshihiko; Itemadani, Eiji; and Kabeshita, Akira, 4,440,355, Cl. 242-55.000.
- Kabushiki Kaisha Komatsu Seisakusho: *See—*
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- Kabushiki Kaisha Sato: *See—*
  - Sato, Yo; and Kashiwaba, Tadao, 4,440,592, Cl. 156-384.000.
- Kabushiki Kaisha Suwa Seikosha: *See—*
  - Miyazaki, Hajime, 4,440,504, Cl. 368-255.000.
- Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
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- Kabushikikaisha Yoshida: *See—*
  - Takehisa, Shigeru, 4,440,167, Cl. 128-303.100.
- Kaczerginski, Alexandre, to Ceraver. Electrical insulator including a molded one-piece cover having plate-like fins with arcuately displaced mold line segments. 4,440,975, Cl. 174-209.000.
- Kaduk, Bruce A.: *See—*
  - Fox, Daniel W.; Kaduk, Bruce A.; and Starr, John B., Jr., 4,440,912, Cl. 525-439.000.
- Kaehler, James A., to Atlantic Richfield Company, Inc. Heliostat control. 4,440,150, Cl. 126-425.000.
- Kagerer, Franz, to Friedrich Deckel Aktiengesellschaft. Drive mechanism for a feed screw. 4,440,050, Cl. 82-21.00B.
- Kai, Shinichiro: *See—*
  - Kawachi, Shoji; Yamamoto, Katsutoshi; and Kai, Shinichiro, 4,440,879, Cl. 523-200.000.
- Kaiser, Alfred: *See—*
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- Kaiser, Robert S.: *See—*
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- Kaiser Steel Corporation: *See—*
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- Kajita, Shuji: *See—*
  - Fujiwara, Takashi; Kajita, Shuji; Matsushita, Tetsuo; and Manabe, Seiichi, 4,440,710, Cl. 264-184.000.
- Kajiyama, Shigeo: *See—*
  - Suzuki, Yoshitsugu; Iizuka, Syogo; Kajiyama, Shigeo; Usui, Kenji; and Kobayashi, Masahiro, 4,440,053, Cl. 83-282.000.
- Kakehi, Yutaka; Terada, Katsuyuki; Kasai, Kenjiro; and Iwasaki, Fumio, to Hitachi, Ltd. Vehicle tilt control apparatus. 4,440,093, Cl. 105-164.000.
- Kaken Pharmaceutical Co., Ltd.: *See—*
  - Fujisaki, Shigemi; Fujisaki, Takashi; Yoshida, Junichi; and Fujisaki, Yasuhiro, 4,440,749, Cl. 424-94.000.
- Kakitani, Yohtaro: *See—*
  - Ikoma, Tadashi; Hirose, Akira; and Kakitani, Yohtaro, 4,440,387, Cl. 271-245.000.
- Kalbacher, Hubert; and Voelter, Wolfgang. Substituted carbonic acid esters. 4,440,692, Cl. 260-463.000.
- Kallay, Maria: *See—*
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- Kallenback, Lyle R.; and Jones, Faber B., to Phillips Petroleum Company. Molding of polymers. 4,440,893, Cl. 524-305.000.
- Kamio, Hiroshi: *See—*
  - Takeshige, Kenji; Hirabe, Kenji; Ogawa, Yukifumi; Arikata, Kazuyoshi; Yako, Kazunori; Sakai, Kenichi; Matsuo, Toshinori; and Kamio, Hiroshi, 4,440,584, Cl. 148-128.000.
- Kamiya, Masashi: *See—*
  - Moriwaki, Yoshinaga; Horike, Masaki; and Kamiya, Masashi, 4,441,026, Cl. 250-561.000.
- Kamiya, Tadashi, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle. 4,440,412, Cl. 280-281.00B.
- Kamiya, Takashi; Tanaka, Kunihiko; Nakai, Yoshiharu; and Sakane, Kazuo, to Fujisawa Pharmaceutical Co., Ltd. 3,7-Disubstituted-3-cephem-4-carboxylic acid compounds. 4,440,766, Cl. 424-246.000.
- Kamiyama, Takashi: *See—*
  - Ono, Noriaki; and Kamiyama, Takashi, 4,440,620, Cl. 204-403.000.
- Kan, Fumitaka: *See—*
  - Isaka, Kazuo; and Kan, Fumitaka, 4,440,486, Cl. 355-3.0FU.
- Kanazawa, Tatsuo; and Suyama, Tsuneo, to Kubota, Ltd. Molding device for nested pipes. 4,440,300, Cl. 206-446.000.
- Kanebo, Ltd.: *See—*
  - Kawahara, Haruyuki; Makita, Teruo; Kudo, Shozo; and Funakoshi, Takashi, 4,440,878, Cl. 523-116.000.
- Kanegafuchi Chemical Industry Company, Ltd.: *See—*
  - Katsumi, Ikuo; Kondo, Hideo; Yamashita, Katsuji; Hidaka, Takayoshi; Hosoe, Kazunori; Ariki, Yutaka; Yamashita, Toshiaki; and Watanabe, Kiyoshi, 4,440,784, Cl. 424-308.000.
- Kanehira, Jun, to Olympus Optical Co., Ltd. Amorphous magnetic alloy. 4,440,585, Cl. 148-403.000.
- Kanno, Fumio, to Citizen Watch Co., Ltd. Electronic timepiece. 4,440,502, Cl. 368-80.000.
- Kansai Paint Co., Ltd.: *See—*
  - Sugiura, Shinji; Fujii, Yasuhiro; Sato, Katsunori; Nezu, Tuguo; and Okumura, Yasumasa, 4,440,913, Cl. 525-443.000.
- Kanuma, Akira, to Tokyo Shibaura Denki Kabushiki Kaisha. Arithmetic operation circuit. 4,441,158, Cl. 364-758.000.
- Kao, David T., to University of Kentucky Research Foundation, The. Hydropower turbine system. 4,441,029, Cl. 290-52.000.
- Kao Soap Co., Ltd.: *See—*
  - Takeda, Tsuneshi; Otsuji, Kazuya; Tamura, Junichi; Morii, Yoshikazu; Higashiwaki, Michio; and Nakatani, Yoshitaka, 4,440,732, Cl. 423-415.00P.
- Kappel, Joseph; and Goldberg, Richard, to Coast Manufacturing Co., Inc. Adjustable camera strap construction. 4,440,334, Cl. 224-258.000.
- Kappheim, David A.: *See—*
  - Foxton, Robert J.; Kappheim, David A.; and Holmes, Russell C., 4,440,037, Cl. 74-331.000.
- Kardol, Arie D.: *See—*
  - van Rijs, Gerrit A.; Kardol, Arie D.; and Hinze, Adrien G., 4,440,660, Cl. 252-56.00S.

Karlow, James P.; and Hunt, Gary A., to General Motors Corporation. Audio system with orderly shutdown sequence. 4,441,086, Cl. 330-297.000.
Karlsson, Sven I. K., to SAB Automotive AB. Brake lever for an S-cam automotive drum brake. 4,440,268, Cl. 188-79.50K.
Karras, Matti R.; and Hirsimaki, Olavi, to Valmet Oy. Procedure for measuring thermal energy transported by fluid flow. 4,440,507, Cl. 374-39.000.
Karrasch, Frank: *See—*
Genatempo, Vince; and Karrasch, Frank, 4,440,207, Cl. 150-52.00R.
Karubian, Ralph. Stunning gun. 4,439,889, Cl. 17-1.00B.
Kasai, Kenjiro: *See—*
Kakehi, Yutaka; Terada, Katsuyuki; Kasai, Kenjiro; and Iwasaki, Fumio, 4,440,093, Cl. 105-164.000.
Kasai, Masanao: *See—*
Ikeda, Takeshi; Yamamoto, Atsuko; and Kasai, Masanao, 4,440,735, Cl. 423-561.00B.
Kashiwaba, Tadao: *See—*
Sato, Yo; and Kashiwaba, Tadao, 4,440,592, Cl. 156-384.000.
Katakura, Masayuki: *See—*
Akagiri, Kenzo; Katakura, Masayuki; and Ookouchi, Motomi, 4,441,083, Cl. 330-149.000.
Akagiri, Kenzo; Katakura, Masayuki; and Ookouchi, Motomi, 4,441,084, Cl. 330-149.000.
Kataoka, Hiroyuki; and Arai, Yoshio, to Fuji Xerox Co., Ltd. Character shaping device. 4,440,513, Cl. 400-165.100.
Kato, Osamu: *See—*
Uemura, Seiichi; Yamamoto, Shunichi; Hirose, Takao; Takashima, Hiroaki; and Kato, Osamu, 4,440,624, Cl. 208-22.000.
Katsumi, Ikuo; Kondo, Hideo; Yamashita, Katsuji; Hidaka, Takayoshi; Hosoe, Kazunori; Ariki, Yutaka; Yamashita, Toshiaki; and Watanabe, Kiyoshi, to Kanegafuchi Chemical Industry Company, Ltd. Anti-inflammatory, analgesic, and antipyretic pharmaceutical composition. 4,440,784, Cl. 424-308.000.
Katz, Jerome; and Fogel, Sidney J. Method and apparatus for high voiume fractional distillation of liquids. 4,440,601, Cl. 203-24.000.
Kauff, Helmut: *See—*
Felger, Gunter; Glockler, Otto; Kauff, Helmut; Kiencke, Uwe; Knapp, Heinrich; and Stocker, Herbert, 4,440,131, Cl. 123-440.000.
Kaunassky Politekhnichesky Institut: *See—*
Balchjunas, Povilas I.; Martinaitis, Ionas J.; Tulaba, Sauljus A.; and Pilkauskas, Alfredas B., 4,441,055, Cl. 315-288.000.
Kavesh, Sheldon: *See—*
Kwon, Young D.; Kavesh, Sheldon; and Prevorsek, Dusan C., 4,440,711, Cl. 264-185.000.
Kawachi, Shoji; Yamamoto, Katsutoshi; and Kai, Shinichiro, to Daikin Kogyo Co., Ltd. Process for preparing filler-containing polytetrafluoroethylene fine powder. 4,440,879, Cl. 523-200.000.
Kawadoko, Shinichi: *See—*
Kinumoto, Namio; Nakao, Takashi; Murase, Hiroshi; Okada, Shigemitsu; and Kawadoko, Shinichi, 4,440,194, Cl. 138-89.000.
Kawagoe, Michio; and Tanaka, Masaaki, to Toyota Jidosha Kabushiki Kaisha. Diesel engine exhaust gas recirculation control system. 4,440,140, Cl. 123-571.000.
Kawahara, Haruyuki; Makita, Teruo; Kudo, Shozo; and Funakoshi, Takashi, to Kanebo, Ltd. Resin-forming material, implant material and compositions for restorative material suitable for medical or dental use. 4,440,878, Cl. 523-116.000.
Kawai, Tadao: *See—*
Sakurai, Takeichi; Goto, Kiyoshi; Konishi, Hiroo; and Kawai, Tadao, 4,441,032, Cl. 307-82.000.
Kawamata, Motoo: *See—*
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Kawamura, Yoshio: *See—*
Kuniyoshi, Shinji; Takanashi, Akihiro; Kurosaki, Toshiei; Hosaka, Sumio; Kawamura, Yoshio; and Terasawa, Tsuneo, 4,441,206, Cl. 382-08.000.
Kawazoe, Takashi: *See—*
Kurihara, Norimitsu; Kinoshita, Katsuharu; Watanabe, Masao; Sato, Toyohiro; and Kawazoe, Takashi, 4,440,033, Cl. 74-7.00A.
Kayser-Roth Corporation: *See—*
Cordova, Robert A., 4,440,174, Cl. 128-455.000.
Kazaitis, Michael P., to Union Carbide Corporation. Synthetic food casing article employing a rigid hollow tubular core member with integral casing retention element. 4,439,890, Cl. 17-1.00R.
Kecskes, Lajos: *See—*
Daroczy, Janos; Erdelyi, Janos; Havas, Jeno; Kecskes, Lajos; Muller, Henrik; Nyiro, Katalin; and Takacs, Ferenc, 4,440,619, Cl. 204-401.000.
Keeler, Arthur A.; Rice, William M.; and Tremayne, Edward C., to Commonwealth of Australia. Parachute control apparatus. 4,440,366, Cl. 244-138.00R.
Kehl, Joseph D.: *See—*
Groh, Allen R.; and Kehl, Joseph D., 4,441,177, Cl. 369-170.000.
Keiter, Alfred; Mudder, Wolfgang; and Tappehorn, Bernd, to Olympia Werke AG. Adjustable ribbon feed rates dependent upon ribbon type for ink ribbon cassettes. 4,440,514, Cl. 400-208.000.
Keller, Leon B.: *See—*
Rosser, Robin W.; and Keller, Leon B., 4,440,819, Cl. 428-107.000.
Keller, Michael I. Non-impact dot matrix printer. 4,441,112, Cl. 346-163.000.
Kelley, Albert W. Integral plant container and cover. 4,439,950, Cl. 47-85.000.
Kelly, Celeste. Convertible high style footwear. 4,439,935, Cl. 36-101.000.
Kelsey Hayes Company: *See—*
El-Sheikh, Kamal, 4,440,267, Cl. 188-73.350.
Kennecott Corporation: *See—*
Richmond, Wesley Q., 4,439,895, Cl. 23-305.00A.
Keogh, Michael J., to Union Carbide Corporation. Process of producing a water-curable, silane modified alkylene-alkyl acrylate copolymer by reacting an alkylene-alkyl acrylate copolymer with a polysiloxane predispersed in a thermoplastic resin matrix. 4,440,907, Cl. 525-106.000.
Kernforschungsanlage Julich GmbH: *See—*
Forster, Siegfried; Schindler, Stefan R.; and Pohlmann, Hans-Jurgen, 4,440,113, Cl. 122-16.000.
Kett, Brian L.: *See—*
Bockett-Pugh, Charles P.; and Kett, Brian L., 4,441,074, Cl. 324-73.00R.
Keuper, Hans W.: *See—*
Ohorodnik, Alexander; Keuper, Hans W.; Semmler, Horst; Hardel, Joachim; Vierling, Hermann; and Willms, Robert, 4,440,925, Cl. 528-487.000.
Keystone Consolidated Industries, Inc.: *See—*
Hallgren, Charles G., 4,440,459, Cl. 312-238.000.
Khoe, Giok D., to U.S. Philips Corporation. Optical transmission system coupling a semiconductor laser diode to a multimode optical fiber. 4,440,470, Cl. 350-96.200.
Kibe, Takeo: *See—*
Tsuzuki, Akira; Kibe, Takeo; and Hioki, Shunichi, 4,440,662, Cl. 252-106.000.
Kidde Recreation Products, Inc.: *See—*
Simonds, Gary, 4,440,142, Cl. 124-23.00R.
Kiedel, Paul: *See—*
Handrick, Kurt; Kolling, Georg; and Kiedel, Paul, 4,440,957, Cl. 585-323.000.
Kiekert GmbH & Co. Kommanditgesellschaft: *See—*
Kleefeldt, Frank, 4,440,006, Cl. 70-264.000.
Kiencke, Uwe: *See—*
Felger, Gunter; Glockler, Otto; Kauff, Helmut; Kiencke, Uwe; Knapp, Heinrich; and Stocker, Herbert, 4,440,131, Cl. 123-440.000.
Kifor, Harry T., to Goodyear Tire & Rubber Company, The. Apparatus for attaching fasteners to belts 4,440,336, Cl. 227-4.000.
Killgo, Ronald W.: *See—*
Ehrman, Charles R.; Killgo, Ronald W.; and Piper, Paul P., Jr., 4,440,302, Cl. 206-506.000.
Kim, Chang J.: *See—*
Grenoble, Dane C.; Kim, Chang J.; and Murrell, Lawrence L., 4,440,872, Cl. 502-242.000.
Kim, Sung J.; Um, Ik W.; and Park, Won J., to Pacific Chemical Ind. Co., Ltd. 5-(4-Hydroxyphenyl) hydantoin derivatives. 4,440,934, Cl. 548-312.000.
Kimball, David V. Vibration apparatus with flexure means. 4,440,026, Cl. 73-663.000.
Kimball International, Inc.: *See—*
Bass, Steven C.; and Goeddel, Thomas W., 4,440,058, Cl. 84-1.260.
Kimberly-Clark Corporation: *See—*
Pomplun, William S.; and Grube, Herbert E., 4,440,898, Cl. 524-503.000.
Schmidt, George F., 4,440,838, Cl. 429-250.000.
Kimchi, Yigal: *See—*
Vardi, Isaih; Kimchi, Yigal; and Ben-Dror, Jonathan, 4,440,001, Cl. 62-475.000.
Kindel, Robert S., to Preformed Line Products Company. Dead-end appliance for linear bodies. 4,439,897, Cl. 24-115.00N.
King-Seeley Thermos Co.: *See—*
Seager, Richard H., 4,440,303, Cl. 206-509.000.
Kingery, Dan W. Cutting board with funneling effect. 4,440,385, Cl. 269-13.000.
Kingston, Samuel C.; Spencer, Billie M.; Zscheile, John W., Jr.; and Price, Robert, to Sperry Corporation. Triple bit non-coherent matched filter receiving system. 4,441,194, Cl. 375-96.000.
Kinoshita, Katsuharu: *See—*
Kurihara, Norimitsu; Kinoshita, Katsuharu; Watanabe, Masao; Sato, Toyohiro; and Kawazoe, Takashi, 4,440,033, Cl. 74-7.00A.
Kinumoto, Namio; Nakao, Takashi; Murase, Hiroshi; Okada, Shigemitsu; and Kawadoko, Shinichi, to Osaka Gas Company, Limited. Moving body and method of performing work within pipes with use of same. 4,440,194, Cl. 138-89.000.
Kinzig, Charles M.: *See—*
Gleason, John G.; Kinzig, Charles M.; and Bryan, Deborah L., 4,440,939, Cl. 549-548.000.
Kipela, Tauno B.: *See—*
Haataja, Bruce A.; Kipela, Tauno B.; Lund, Anders E.; and Hamilton, James F., 4,440,708, Cl. 264-109.000.
Kircher, Dieter: *See—*
Belart, Juan; Burgdorf, Jochen; Kircher, Dieter; and Weise, Lutz, 4,440,454, Cl. 303-114.000.
Kirchner, Jerry K. Hitch assembly. 4,440,417, Cl. 280-478.00R.
Kishimoto, Shoji: *See—*
Kuzuna, Seiji; Kishimoto, Shoji; and Aono, Tetsuya, 4,440,691, Cl. 260-429.900.
Kissel, Ernst, deceased: *See—*
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Kissel, Gerd, legal representative: *See—*
Dietrich, Ernst; Guenther, Ernst; Hoerauf, Werner; Kissel, Ernst, deceased; Linge, Hermann; Neumann, Eckart; and Schaefer, Eberhard, 4,439,933, Cl. 34-65.000.
Kita, Yasuhiro; Tsukamoto, Nobuo; Koya, Masahiro; and Maeda, Narimichi, to Hitachi, Ltd. Signal processing system having impulse response detecting circuit. 4,441,192, Cl. 375-14.000.
Kitagawa Industries, Co., Ltd.: *See—*
Matsui, Kazuhiro, 4,439,896, Cl. 24-16.0PB.
Kitagawa, Jiro; and Mizutani, Isao, to NGK Insulators, Ltd. Apparatus for drying a ceramic green honeycomb body. 4,439,929, Cl. 34-1.000.
Kitahara, Tsuyoshi; Uchida, Masaaki; and Sone, Kohki, to Nissan Motor Company, Ltd. System for detection of air/fuel ratio in IC engine by using oxygen sensor operated with supply of current. 4,440,621, Cl. 204-406.000.
Kitasato Institute, The: *See—*
Kojima, Yasuhiko; Konno, Seishi; and Hashimoto, Takashi, 4,440,761, Cl. 424-195.000.
Kitchen, Robert D., to Honeywell Inc. Mounting system for panel mounted devices. 4,440,368, Cl. 248-27.100.
Kite, Oliver A., to BOC Group plc, The. Dissolving gas in a liquid. 4,440,645, Cl. 210-626.000.
Kittle, Carl E.; and Roach, James E., to Deere & Company. Multiple mode control lever assembly. 4,440,040, Cl. 74-527.000.
Kiyota, Kazushige: *See—*
Horiuchi, Tatsuo; and Kiyota, Kazushige, 4,441,144, Cl. 362-375.000.
Kiyoto, Michio: *See—*
Nakamura, Teruo; Kiyoto, Michio; Akashi, Kazuo; and Hasegawa, Isao, 4,440,560, Cl. 71-24.000.
Klagsbrun, Michael, to Children's Medical Center Corporation, The. Stimulating cell growth. 4,440,860, Cl. 435-240.000.
Klayman, Daniel L.: *See—*
Scovill, John P.; Klayman, Daniel L.; Massie, Samuel P.; Grant, Steven D.; Gonzalez, Armando; Morrison, Norman E.; and Dobek, Arthur S., 4,440,771, Cl. 424-258.000.
Kleefeldt, Frank, to Kiekert GmbH & Co. Kommanditgesellschaft. Antitheft central lock system for a motor vehicle. 4,440,006, Cl. 70-264.000.
Klein, Jurgen: *See—*
Henning, Klaus-Dirk; Klein, Jurgen; and Harder, Burkhard, 4,440,551, Cl. 55-73.000.
Klein, Martin. Lock position indicator. 4,440,011, Cl. 70-438.000.
Klie, Jurgen; and Stoll, Hans-Wolfgang, to G. Dusterloh GmbH. Hydrostatic actuator. 4,440,067, Cl. 91-491.000.
Klingensmith, Chester H.: *See—*
Dawless, Robert K.; LaCamera, Alfred F.; and Klingensmith, Chester H., 4,440,610, Cl. 204-67.000.
Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Abermeth, Hubert; Deckert, Andreas; Muller, Helmut; and Wahnschaffe, Jurgen, 4,440,126, Cl. 123-321.000.
Eckert, Rolf, 4,440,337, Cl. 228-173.00C.
Klotz, Warren C. Sponge mop with wringer. 4,439,885, Cl. 15-119.00A.
Klusman, Steven A., to General Motors Corporation. Squeeze film bearing mount. 4,440,456, Cl. 308-184.00R.
Knabe, Uwe, to Holstein & Kappert GmbH. Liquid discharge nozzle for container filling valves. 4,440,201, Cl. 141-286.000.
Knapp, Heinrich: *See—*
Felger, Gunter; Glockler, Otto; Kauff, Helmut; Kiencke, Uwe; Knapp, Heinrich; and Stocker, Herbert, 4,440,131, Cl. 123-440.000.
Knight, Peter E., to Adrian Marsh Limited. Greeting cards. 4,440,298, Cl. 206-216.000.
Knoke, Silas J.; and Stamper, James F., to Lear Siegler, Inc. Locking assembly for a folding seat. 4,440,264, Cl. 182-126.000.
Knowles, Robert G., to Litton Systems, Inc. Fiber optic connectors. 4,440,471, Cl. 350-96.200.
Kobayashi, Atsushi: *See—*
Moriya, Yoshiaki; Mitani, Ryo; and Kobayashi, Atsushi, 4,441,031, Cl. 307-66.000.
Kobayashi, Hiroaki: *See—*
Asakura, Toshiyuki; Kobayashi, Hiroaki; and Noguchi, Yukio, 4,440,915, Cl. 525-537.000.
Kobayashi, Kozo; and Meguro, Hiromu, to Nakamichi Corporation. Method of correcting a position of a disk record on a turntable. 4,441,178, Cl. 369-270.000.
Kobayashi, Masahiro: *See—*
Suzuki, Yoshitsugu; Iizuka, Syogo; Kajiyama, Shigeo; Usui, Kenji; and Kobayashi, Masahiro, 4,440,053, Cl. 83-282.000.
Kobayashi, Nobuyuki; and Isobe, Toshiaki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Electronic fuel injecting method and device for internal combustion engine. 4,440,119, Cl. 123-492.000.
Kobayashi, Tetuo; and Hirai, Syoichi, to Nippon Cable System Inc. Automatic tension-adjusting mechanism for window regulators. 4,440,354, Cl. 242-54.00R.
Koch, Gerhard: *See—*
Frese, Elmar; and Koch, Gerhard, 4,440,642, Cl. 210-387.000.
Koch, Werner, to Bruckner Apparatebau GmbH. Apparatus for wet treatment of a length of textile material in hank form. 4,440,003, Cl. 68-22.00R.
Kocjan, Ana: *See—*
Djordjevic, Nebojsa; Rucman, Rudolf; Jovanovic, Suncica; Bole-Vunduk, Breda; Lavric, Tone; Lavric, Boza; Gruskovnjak, Cvetka; Kocjan, Ana; and Krmelj, Hermina, 4,440,772, Cl. 424-261.000.
Kockums Industri AB: *See—*
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Kodama, Eiji: *See—*
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Koepnick, Siegfried: *See—*
Franz, Arnold; and Koepnick, Siegfried, 4,440,833, Cl. 428-425.100.
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Ohba, Takeo; and Koga, Hirohisa, 4,441,128, Cl. 360-75.000.
Koh, Takuji: *See—*
Arichi, Isao; Waniisi, Tetuya; and Koh, Takuji, 4,440,503, Cl. 368-107.000.
Kohashi, Mamoru: *See—*
Tsujimura, Masakuni; Miyagi, Hideo; Kohashi, Mamoru; and Kurii, Masaaki, 4,440,141, Cl. 123-609.000.
Kohata, Mamoru: *See—*
Nakanishi, Toshihide; Kohata, Mamoru; and Sakurai, Minoru, 4,440,856, Cl. 435-111.000.
Kohler, Ulf, to Linden Alimak AB. Rack and pinion lift system. 4,440,266, Cl. 187-29.00R.
Kojima, Shigezo: *See—*
Okada, Tokio; Kojima, Shigezo; Tani, Haruhisa; Kurihara, Kazuhiko; and Yazawa, Hiroshi, 4,440,700, Cl. 264-8.000.
Kojima, Yasuhiko; Konno, Seishi; and Hashimoto, Takashi, to Kitasato Institute, The. Interferon inducer, a process for producing the same and pharmaceutical composition containing the same. 4,440,761, Cl. 424-195.000.
Kokkonen, Kim: *See—*
Folmsbee, Alan C.; Kokkonen, Kim; and Spaw, William J., 4,441,170, Cl. 365-200.000.
Kokochak, David G.: *See—*
Clancy, Terence J.; and Kokochak, David G., 4,440,121, Cl. 123-90.390.
Kolling, Georg: *See—*
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Kollmorgen Technologies Corporation: *See—*
Smith, James F., 4,441,068, Cl. 323-351.000.
Komada, Hideaki: *See—*
Terada, Tomohiko; and Komada, Hideaki, 4,440,132, Cl. 123-446.000.
Komeno, Taichiro: *See—*
Tsuji, Teruji; Hahashima, Yoshio; Yoshioka, Mitsuru; Narisada, Masayuki; Tanida, Hiroshi; Komeno, Taichiro; and Nagata, Wataru, 4,440,683, Cl. 260-239.00A.
Komoto, Shinsuke; and Haneishi, Yasuyuki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera lens barrel having retractable movable contacts. 4,440,484, Cl. 354-286.000.
Komura, Minoru; and Moriyama, Yasuhiro, to Nitto Electric Industrial Co., Ltd. Heat shrinkable material. 4,440,821, Cl. 428-195.000.
Konagaya, Takeshi; and Yagi, Yukinao, to Daiwa Can Company, Limited. Method for high speed leak test for metallic cover with a pull tab. 4,440,016, Cl. 73-40.000.
Konan Camera Research Institute: *See—*
Takahama, Sho, 4,440,491, Cl. 355-75.000.
Koncelik, Joseph A.; Chaney, David B.; Lockard, Walter G.; and Hontz, Thomas D., to Burlington Industries, Inc. Geriatric bed construction with sideguards. 4,439,880, Cl. 5-429.000.
Kondo, Hideo: *See—*
Katsumi, Ikuo; Kondo, Hideo; Yamashita, Katsuji; Hidaka, Takayoshi; Hosoe, Kazunori; Ariki, Yutaka; Yamashita, Toshiaki; and Watanabe, Kiyoshi, 4,440,784, Cl. 424-308.000.
Kondo, Hirokazu: *See—*
Murai, Masasumi; Kondo, Hirokazu; and Takino, Shigekatzu, 4,440,090, Cl. 104-127.000.
Konishi, Hiroo: *See—*
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Konishiroku Photo Industry Co., Ltd.: *See—*
Hatakeyama, Siro; Oba, Harutaro; and Ukai, Yoshitaka, 4,441,110, Cl. 346-140.00R.
Hitaka, Yosatomi; and Namiki, Takemasa, 4,440,811, Cl. 427-402.000.
Onishi, Akira; and Fujimori, Noboru, 4,440,852, Cl. 430-522.000.
Tosaka, Yasuo; and Ogi, Keiji, 4,440,851, Cl. 430-378.000.
Konno, Seishi: *See—*
Kojima, Yasuhiko; Konno, Seishi; and Hashimoto, Takashi, 4,440,761, Cl. 424-195.000.
Konopko, Matthew S., to Stone Container Corporation. Protective pads with self-locking panels and blank therefor. 4,440,304, Cl. 206-586.000.
Kontron AG: *See—*
Bussard, Adrien; Aldinger, Fritz; and Sperner, Franz, 4,440,178, Cl. 128-784.000.
Koomey, Inc.: *See—*
LeMoine, Joseph L., 4,440,232, Cl. 166-373.000.
Koppers, Manfred; Bohnes, Karlheinz; and Stephan, Bernhard, to Bochumer Eisenhutte Heintzmann GmbH & Co. Rock anchoring arrangement. 4,440,526, Cl. 405-260.000.
Kortbeek, Andras G. T. G.; Barre, Guy; and Durel, Jean M., to Shell Oil Company. Catalytic process for the production of hydrocarbons from syngas. 4,440,875, Cl. 518-728.000.
Kosak, Werner; and Matschinsky, Wolfgang, to Bayerische Motoren Werke Aktiengesellschaft. Individual wheel suspension for non-steered motor vehicle wheels exhibiting a change in camber when sprung, especially on automobiles. 4,440,419, Cl. 280-661.000.

- Koski, Erkki; and Tapio, Olli, to Valmet Oy. Press section in a paper machine. 4,440,598, Cl. 162-305.000.
- Kossa, Walter C.: *See—*
  - Allcock, Harry R.; Neenan, Thomas X.; and Kossa, Walter C., 4,440,921, Cl. 528-168.000.
- Kostylev, Alexandr D.; Gileta, Vladimir P.; Grigoraschenko, Vladimir A.; Tkach, Khaim B.; Bakunin, Vladimir A.; Frenkel, Valery Y.; Kozlov, Valery A.; Reifisov, Jury B.; Chepurnoi, Nikolai P.; Bondar, Mikhail J.; Drobyazko, Vladimir F.; Stazhevsky, Stanislav B.; Ratskevich, Gerald I.; Fedorov, Alexandr A.; Polyakov, Anatoly S.; Bobylev, Leonid M.; Tsvetkov, Evgeny N.; and Petreev, Anatoly M., to Institut Gornogo Dela Sibirskogo Otdelenia Akademii Nauk SSSR. Method of making holes in the soil and apparatus for performing this method. 4,440,240, Cl. 175-20.000.
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  - Berkin, George M.; and Negin, Michael, 4,441,205, Cl. 382-8.000.
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  - Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,440,757, Cl. 424-180.000.
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- Kurlander, Susan L.: *See—*
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  - Bernard, Daniel, 4,441,139, Cl. 361-304.000.
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  - Michelfelder, Sigfrid; and Chughtai, M. Yaqub, 4,440,100, Cl. 110-343.000.
- L. M. Becker & Co., Inc.: *See—*
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- LaBate, Micheal D. Ceramic insert. 4,440,534, Cl. 411-82.000.
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  - Bose, Ajay K.; Fernandez, Isabel F.; and Gala, Kanti J., 4,440,682, Cl. 260-239.00A.
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  - Bramer, Charles, 4,440,039, Cl. 74-501.00M.
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- Laing, Robert, to Curtis & Marble Corp. Method of and apparatus for wrapping products. 4,439,975, Cl. 53-399.000.

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- Lamb, Gerald P. Power transmission for a Stirling hot gas engine. 4,439,985, Cl. 60-518.000.
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- Lange, William J.; and Gosser, Robert B., to Westinghouse Electric Corp. Vacuum circuit interrupter with on-line vacuum monitoring apparatus. 4,440,995, Cl. 200-144.00B.
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  - Messineo, Salvatore B.; Lasswell, Don L.; and Yee, Joe, 4,440,607, Cl. 204-35.00N.
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  - Knoke, Silas J.; and Stamper, James F., 4,440,264, Cl. 182-126.000.
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- Le Carrou, Joseph. Process and devices for controlling the level of a liquid. 4,440,188, Cl. 137-2.000.
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- Lee, Thomas D.; and Brown, Richard E., to USV Pharmaceutical Corporation. Imidazoquinoxaline compounds. 4,440,929, Cl. 544-346.000.
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- Leland Stanford Junior University, Board of Trustees of the: *See—*
  - Michaels, Alan S.; Robertson, Channing R.; and Cohen, Stanley N., 4,440,853, Cl. 435-68.000.
- Leloux, Arnoldus W., to Wavin B.V. Method and device for cooling molds. 4,439,990, Cl. 62-63.000.
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- LeMoine, Joseph L., to Koomey, Inc. Well pressure compensation for blowout preventers. 4,440,232, Cl. 166-373.000.
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  - Sauerwein, William D.; and Lentino, Lynn E., 4,440,238, Cl. 173-170.000.
- Lenz, Michael: *See—*
  - Mundel, Gerald; and Lenz, Michael, 4,441,040, Cl. 307-491.000.
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- Lewiner, Jacques; Perino, Didier; and Hennion, Claude. Circuit breakers sensitive to leakage currents. 4,441,134, Cl. 361-45.000.
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  - Dhar, Hari P.; Bockris, John O.; and Lewis, Donald H., 4,440,611, Cl. 204-147.000.
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  - Moser, Jean-Frederic; and Baltes, Heinrich P., 4,441,138, Cl. 361-274.000.
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  - Schroder, Ernst, 4,441,041, Cl. 307-494.000.
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- Lilyerd, J. R. Freeze-proof livestock watering device and method. 4,440,112, Cl. 119-73.000.
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  - Kohler, Ulf, 4,440,266, Cl. 187-29.00R.
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  - Dietrich, Ernst; Guenther, Ernst; Hoerauf, Werner; Kissel, Ernst, deceased; Linge, Hermann; Neumann, Eckart; and Schaefer, Eberhard, 4,439,933, Cl. 34-65.000.
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- Linke, Gerda; Engelsmann, Dieter; Maas, Dieter; Bassler, Alfred; and Hackenberg, Hubert, to Agfa-Gevaert AG. Photographic roll film camera. 4,440,483, Cl. 354-212.000.
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  - Ruckenbauer, Friedrich; Claassen, Peter; and Krempl, Peter, 4,441,044, Cl. 310-338.000.
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  - Stevenson, Christopher T. S., 4,440,338, Cl. 228-2.000.
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  - Knowles, Robert G., 4,440,471, Cl. 350-96.200.
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- Lock, William E., to Corning Glass Works. Print transfer device for decorating machine. 4,440,589, Cl. 156-232.000.
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  - Koncelik, Joseph A.; Chaney, David B.; Lockard, Walter G.; and Hontz, Thomas D., 4,439,880, Cl. 5-429.000.
- Lockheed Missiles & Space Company, Inc.: *See—*
  - Conti, Raul J., 4,440,216, Cl. 165-117.000.
- Loctite Corporation: *See—*
  - O'Connor, John T., 4,440,910, Cl. 525-295.000.
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Waschulewski, Hans-Georg, 4,440,034, Cl. 74-61.000.

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Fernandes, Peter M.; and Lundblad, John L., 4,440,679, Cl. 260-122.000.

Lunder, Tito-Livio; and Nielsen, Corine-Madeleine, to Societe d'Assistance Technique pour Produits Nestle S.A. Cold soluble powdered tea extracts. 4,440,796, Cl. 426-597.000.

Lunghofer, Eugene P.; Mortensen, Sten; and Ward, Aubrey P., to A/S Niro Atomizer. Process for the production of sintered bauxite spheres. 4,440,866, Cl. 501-127.000.

Lunshof, Willem; and Beukers, Leonardus H. M., to Wavin B.V. Plastic bag comprising venting means. 4,441,209, Cl. 383-45.000.

Luo, Tatao, to Chevron Research Company. Herbicidal substituted 2-(1-(oxyamino)-alkylidene)-cyclohexane-1,3-diones. 4,440,566, Cl. 71-98.000.

Luppi, Libero, to Dideco S.p.A. Device for oxygenating blood circulating in an extracorporeal circuit with a heat exchanger. 4,440,722, Cl. 422-46.000.

Luz, David W., to RCA Corporation. Deflection circuit with linearity correction. 4,441,058, Cl. 315-371.000.

Lyall, Joseph G., to Armstrong World Industries, Inc. Screen registration device. 4,440,080, Cl. 101-129.000.

Lynch, James F.: *See—*

Libowitz, George G.; Lynch, James F.; and Maeland, Arnulf J., 4,440,737, Cl. 423-644.000.

Mª Gabilondo, Jose, to DLlama-Gabilondo y Cia, S.A. Revolver type firearms. 4,439,942, Cl. 42-66.000.

Maas, Dieter: *See—*

Linke, Gerda; Engelsmann, Dieter; Maas, Dieter; Bassler, Alfred; and Hackenberg, Hubert, 4,440,483, Cl. 354-212.000.

Mach, Joseph F.: *See—*

Flannery, James E.; Mach, Joseph F.; and Wexell, Dale R., 4,440,576, Cl. 106-85.000.

Machida, Kazumichi; and Inada, Yoshie, to Mitsubishi Denki Kabushiki Kaisha. Process of joining a contact. 4,441,006, Cl. 219-85.0CM.

Machizawa, Kenzi: *See—*

Mori, Akio; Watanabe, Shozo; Matsunaga, Mitsunobu; Machizawa, Kenzi; and Minowa, Ryohei, 4,439,999, Cl. 62-238.300.

Mack, Mark P.: *See—*

Shannon, Mark L.; and Mack, Mark P., 4,440,869, Cl. 502-104.000.

MacKenzie, Kenneth A., to Egg Marketing Board, The. Cultured egg-milk product. 4,440,791, Cl. 426-43.000.

Macklin, John J.; Silfvast, William T.; and Wood, Obert R., II, to Bell Telephone Laboratories, Incorporated. Foil electrode SPER light source. 4,441,189, Cl. 372-76.000.

Madan, Arun, to Energy Conversion Devices, Inc. P-Type semiconductor material having a wide band gap. 4,441,113, Cl. 357-2.000.

Madden, William M.; and Wiley, Walter H., to United Technologies Corporation. Simplified means for balancing the loads on a variable area nozzle. 4,440,347, Cl. 239-265.390.

Maeda, Narimichi: *See—*

Kita, Yasuhiro; Tsukamoto, Nobuo; Koya, Masahiro; and Maeda, Narimichi, 4,441,192, Cl. 375-14.000.

Maekawa, Takashi; Matsumoto, Shoji; and Matsui, Toshikazu, to Mita Industrial Company Limited. Cleaning device for an image-carrying member. 4,440,488, Cl. 355-15.000.

Maeland, Arnulf J.; Libowitz, George G.; and Rak, George, to Allied Corporation. Titanium-based body-centered cubic phase alloy compositions and room temperature hydride-forming reactions of same. 4,440,736, Cl. 423-644.000.

Maeland, Arnulf J.: *See—*

Libowitz, George G.; Lynch, James F.; and Maeland, Arnulf J., 4,440,737, Cl. 423-644.000.

Maglio, Michael J., to Pennwalt Corporation. Granular pesticide composition. 4,440,746, Cl. 424-78.000.

Magnetic Peripherals Inc.: *See—*

Shuman, Curtis A., 4,441,175, Cl. 369-45.000.

Magnuson, Roland A., to PACCAR Inc. Gun traverse apparatus. 4,440,061, Cl. 89-41.00H.

Mahlein, Hans: *See—*

Winzer, Gerhard; Mahlein, Hans; and Reichelt, Achim, 4,441,181, Cl. 370-3.000.

Maier, Franz; and Maier, Stephan, to BBC Brown, Boveri & Company, Limited. Process for the generation of high capacity pulses from an inductive energy storage device. 4,441,033, Cl. 307-107.000.

Maier, Stephan: *See—*

Maier, Franz; and Maier, Stephan, 4,441,033, Cl. 307-107.000.

Makabe, Toshiji: *See—*

Togari, Osamu; Matsuda, Masatoshi; Shimokawa, Kenji; and Makabe, Toshiji, 4,440,631, Cl. 208-112.000.

Makimura, Osamu: *See—*

Kuze, Katsuaki; Matsuyama, Yuziro; Hashimoto, Hiroshi; Ohta, Takeshi; and Makimura, Osamu, 4,440,924, Cl. 528-275.000.

Makino, Hiroshi; Kusuki, Yoshihiro; Harada, Takashi; Shimazaki, Hiroshi; and Isida, Tosio, to Ube Industries, Ltd. Process for producing aromatic polyimide composite separating membrane. 4,440,643, Cl. 210-500.200.

Makita, Teruo: *See—*

Kawahara, Haruyuki; Makita, Teruo; Kudo, Shozo; and Funakoshi, Takashi, 4,440,878, Cl. 523-116.000.

Maldonado, Robert; and Erickson, Raymond A., to Pennwalt Corporation. Apparatus for continuously automatically processing a plurality of dental X-ray films. 4,440,485, Cl. 354-322.000.

Maliszewski, Andrzej: *See—*

Johnson, Warren E.; and Maliszewski, Andrzej, 4,440,290, Cl. 198-479.000.

Maliszewski, Leonard A.: *See—*

Bartels, Herbert D.; and Maliszewski, Leonard A., 4,440,307, Cl. 220-4.00B.

Mallinckrodt, Inc.: *See—*

Clingan, William R.; Derrenbacker, Edward L.; and Dunn, Thomas J., 4,440,954, Cl. 564-439.000.

Fawzi, Mahdi B.; Benedict, James J.; Bugaj, Joseph E.; Degenhardt, Charles R.; and Van Duzee, Barry F., 4,440,738, Cl. 424-1.100.

Malmborg, Rolf: *See—*

Bergstrom, Hans R.; and Malmborg, Rolf, 4,440,495, Cl. 356-155.000.

Maloof, Ralph P.; and Reynolds, Roger R., Jr., to Reynolds & Taylor, Inc. Solar concentrating lens and receiver. 4,440,155, Cl. 126-440.000.

Manabe, Seiichi: *See—*

Fujiwara, Takashi; Kajita, Shuji; Matsushita, Tetsuo; and Manabe, Seiichi, 4,440,710, Cl. 264-184.000.

Mannesmann AG: *See—*

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Mannesmann Aktiengesellschaft: *See—*

Frese, Elmar; and Koch, Gerhard, 4,440,642, Cl. 210-387.000.

Mansfield, Pete W. System for improving efficiency of screw presses. 4,440,076, Cl. 100-117.000.

Manson, Morris. Self-aligning drawer and slide bracket arrangement therefor and associated method. 4,440,462, Cl. 312-348.000.

Marcellis, Alphonso W.; and Johnson, Grannis S., to Diamond Shamrock Corporation. Polyhydroxy polyphenyl compounds as additives for cementitious materials. 4,440,577, Cl. 106-90.000.

Marchal, Paul: *See—*

Cornu, Jean; Detriche, Jean-Marie; Gil, Pierre; Marchal, Paul; and Vertut, Jean, 4,441,010, Cl. 219-124.340.

Mardiguian, Jean S., to Pharmindustrie. Heparin esters and processes for their preparation. 4,440,926, Cl. 536-21.000.

Margison, Alan B. Boat transporter. 4,440,409, Cl. 280-47.13B.

Margolin, George D.: *See—*

Azcua, Noris S.; Margolin, George D.; and Miller, Audrey, 4,441,160, Cl. 364-900.000.

Marine Resources Company, The: *See—*

Hilbertz, Wolf H., 4,440,605, Cl. 204-16.000.

Markley, Gerald E., to Exxon Research and Engineering Co. Catalytic reforming process. 4,440,627, Cl. 208-65.000.

Markley, Gerald E.: *See—*

Winter, William E.; and Markley, Gerald E., 4,440,626, Cl. 208-65.000.

Winter, William E.; and Markley, Gerald E., 4,440,628, Cl. 208-65.000.

Marks, Christopher: *See—*

Gliha, Edward R., Jr.; and Marks, Christopher, 4,440,463, Cl. 339-14.00R.

Marquez, Joseph A.: *See—*

Waitz, Jay A.; Marquez, Joseph A.; Patel, Mahesh G.; and Horan, Ann C., 4,440,751, Cl. 424-114.000.

Marra, Jerome F.: *See—*

Morrison, Michael W.; Fracker, Clarence E., Jr.; and Marra, Jerome F., 4,440,557, Cl. 65-3.100.

Marrujo, Ralph G.; and Cooper, Adrianus A. G., to Fairchild Industries, Inc. Energy attenuating seat and leg therefor. 4,440,441, Cl. 297-216.000.

Marschner, Frank W., to Colgate-Palmolive Company. Bicarbonate-containing stick deodorant. 4,440,741, Cl. 424-65.000.

Marschner, Frank W., to Colgate-Palmolive Company. Bicarbonate-containing stick deodorant. 4,440,742, Cl. 424-65.000.

Marshall, W. Ray. Free point indicator. 4,440,019, Cl. 73-151.000.

Martin, Albert E., to Conoco Inc. Downhole pump with safety valve. 4,440,231, Cl. 166-373.000.

Martin, Barrie J., to Eaton Corporation. Fuel injector. 4,440,344, Cl. 239-102.000.

Martin, Daniel B.: *See—*

Fletcher, Robert P.; and Martin, Daniel B., 4,441,155, Cl. 364-200.000.

Martin, Francis, to Pall Corporation. Coaxial bidirectional spool valve. 4,439,984, Cl. 60-454.000.

Martinaitis, Ionas J.: *See—*

Balchjunas, Povilas I.; Martinaitis, Ionas J.; Tulaba, Sauljus A.; and Pilkauskas, Alfredas B., 4,441,055, Cl. 315-288.000.

Marvin Glass & Associates: *See—*

Hicks, Alan A.; and Breslow, Jeffrey D., 4,440,394, Cl. 273-157.00R.

Marx, Matthias: *See—*

Nissen, Dietmar; Straehle, Wolfgang; and Marx, Matthias, 4,440,705, Cl. 264-53.000.

Maryland Wire Belts, Inc.: *See—*

Daringer, Ronald G., 4,440,367, Cl. 245-6.000.

Masco Corporation of Indiana: *See—*

Schrock, Donald C., 4,439,874, Cl. 4-300.000.

Maska, Rudolf, to PPG Industries, Inc. Process of making substantially external surfactant-free vinyl polymer emulsion products. 4,440,897, Cl. 524-460.000.

Masom, Ronald A., to Smiths Industries Public Limited Company. Liquid-level detection. 4,440,022, Cl. 73-293.000.

Masreliez, Carl J., to American Analytic Technology, Inc. Dental instrument heater. 4,441,013, Cl. 219-231.000.

Massachusetts Institute of Technology: *See—*

Milgram, Jerome H.; and Burgess, James, 4,440,523, Cl. 405-60.000.

Massie, Samuel P.: *See—*

Scovill, John P., Klayman, Daniel L.; Massie, Samuel P.; Grant, Steven D.; Gonzalez, Armando; Morrison, Norman E.; and Dobek, Arthur S., 4,440,771, Cl. 424-258.000.

Master, Ian M.: *See—*

Weir, Donald R.; and Master, Ian M., 4,440,569, Cl. 75-120.000.

Masters, William E. Heater apparatus and method. 4,440,144, Cl. 126-61.000.

Masuda, Yoshinori, to Yoshida Kogyo K.K. Shuttleless loom. 4,440,197, Cl. 139-431.000.

Masumoto, Hakaru; and Murakami, Yuetsu, to Foundation: The Research Institute of Electric and Magnetic Alloys, The. Magnet alloy useful for a magnetic recording and reproducing head and a method of manufacturing thereof. 4,440,720, Cl. 420-459.000.

Mather, Douglas E.; Messenger, Edward T.; and Phillips, Brinley M., to Albright & Wilson Limited. Concentrated aqueous surfactant compositions. 4,440,665, Cl. 252-356.000.

Matheson, Charles L., to Cummins Engine Company, Inc. Valve assembly. 4,440,193, Cl. 137-558.000.

Mathieu, Julien C., to Dayco Corporation. Wear member for railway vehicle. 4,440,095, Cl. 105-225.000.

Matner, Martin: *See—*

Heins, Ferdinand; Matner, Martin; and Striegler, Hellmut, 4,440,895, Cl. 524-822.000.

Matschinsky, Wolfgang: *See—*

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Matsuda, Masatoshi: *See—*

Togari, Osamu; Matsuda, Masatoshi; Shimokawa, Kenji; and Makabe, Toshiji, 4,440,631, Cl. 208-112.000.

Matsui, Ichiro; Tanaka, Tsutomu; Bando, Yukio; and Ohashi, Kiyonobu, to Kowa Co., Ltd. Anti-inflammatory analgesic cataplasm and process for producing the same. 4,440,778, Cl. 424-274.000.

Matsui, Kanenobu; Uchiumi, Shinichiro; Asada, Hideki; and Umezu, Takashi, to Ube Industries, Ltd. Process for preparation of uracils. 4,440,928, Cl. 544-309.000.

Matsui, Kazuhiro, to Kitagawa Industries, Co., Ltd. Clamp for a bundle of cables. 4,439,896, Cl. 24-16.0PB.

Matsui, Takeshi: *See—*

Ogawa, Tsuneo; Ikeda, Manabu; Miyakawa, Seii; Iijima, Kazunori; Terayama, Takao; and Matsui, Takeshi, 4,441,133, Cl. 360-130.220.

Matsui, Toshikazu: *See—*

Maekawa, Takashi; Matsumoto, Shoji; and Matsui, Toshikazu, 4,440,488, Cl. 355-15.000.

Matsuki, Hideo: *See—*

Munakata, Tomohiko; Isagai, Katsuyoshi; Ikeda, Yoshifumi; Sakai, Junichi; and Matsuki, Hideo, 4,440,752, Cl. 424-118.000.

Matsumoto, Shoji: *See—*

Maekawa, Takashi; Matsumoto, Shoji; and Matsui, Toshikazu, 4,440,488, Cl. 355-15.000.

Matsumoto, Tadayuki; Imaeda, Kozo; Mineo, Masatoshi; and Nakagawa, Kiyoshi, to Toray Industries, Inc. Method for producing an interlaced multi-filament yarn. 4,439,903, Cl. 28-258.000.

Matsunaga, Kenichi: *See—*

Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,440,757, Cl. 424-180.000.

Matsunaga, Mitsunobu: *See—*

Mori, Akio; Watanabe, Shozo; Matsunaga, Mitsunobu; Machizawa, Kenzi; and Minowa, Ryohei, 4,439,999, Cl. 62-238.300.

Matsuo, Toshinori: *See—*

Takeshige, Kenji; Hirabe, Kenji; Ogawa, Yukifumi; Arikata, Kazuyoshi; Yako, Kazunori; Sakai, Kenichi; Matsuo, Toshinori; and Kainio, Hiroshi, 4,440,584, Cl. 148-128.000.

Matsuo, Yasushi: *See—*

Shimamori, Toru; Hattori, Yoshinori; and Matsuo, Yasushi, 4,440,707, Cl. 264-65.000.

Matsushita Electric Industrial Company, Limited: *See—*

Hayakawa, Yoshihiro; Yano, Tsutomu; Tachita, Ryobun; Fukukita, Hiroshi; Irioka, Kazuyoshi; and Fukumoto, Akira, 4,440,025, Cl. 73-642.000.

Miyano, Ryuzo; Uenishi, Haruyuki; Akatani, Hisashi; and Akamine, Takenori, 4,441,001, Cl. 200-308.000.

Mori, Kazuhiro; Misawa, Yoshihiko; Itemadani, Eiji; and Kabeshita, Akira, 4,440,355, Cl. 242-55.000.

Shibata, Jun; Yamada, Haruyasu; Mori, Toshiki; and Takemoto, Toyoki, 4,441,198, Cl. 377-78.000.

Matsushita, Tetsuo: *See—*

Fujiwara, Takashi; Kajita, Shuji; Matsushita, Tetsuo; and Manabe, Seiichi, 4,440,710, Cl. 264-184.000.

Matsuura, Tsuguo; Torii, Shunichi; and Shimizu, Tsuguo, to Hitachi, Ltd. Data processing system having ring-like connected multiprocessors relative to key storage. 4,441,152, Cl. 364-200.000.

Matsuyama, Yuziro: *See—*

Kuze, Katsuaki; Matsuyama, Yuziro; Hashimoto, Hiroshi; Ohta, Takeshi; and Makimura, Osamu, 4,440,924, Cl. 528-275.000.

Mattei, Frank V.; and Doddi, Namassivaya, to Ethicon, Inc. Synthetic absorbable hemostatic composition. 4,440,789, Cl. 424-78.000.

Mattel, Inc.: *See—*

Finney, Harold T., II, 4,441,104, Cl. 340-724.000.

Matthiessen, Hans: *See—*

Winkler, Jorg; Matthiessen, Hans; Warncke, Ernst; and Pasternack, Adalbert, 4,440,166, Cl. 128-204.220.

Maul, Rudolf; Otto, Eberhard; and Zinke, Horst, to Ciba-Geigy Corporation. Process for producing triarylphosphites. 4,440,696, Cl. 260-976.000.

Mauser-Werke Oberndorf GmbH: *See—*

Hupp, Gerhard, 4,440,065, Cl. 89-191.00R.

Mavilor Systemes: *See—*

Coquillart, Michel, 4,439,913, Cl. 29-597.000.

Mayfran GmbH: *See—*

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Mayne-Banton, Veronica I.: *See—*

Aviram, Ari; Mayne-Banton, Veronica I.; and Srinivasan, Rangaswamy, 4,440,801, Cl. 427-54.100.

Mazenod, Francois P.: *See—*

Whitesides, George M.; Mazenod, Francois P.; and Wong, Chi-Huey, 4,440,854, Cl. 435-94.000.

Mazzola, Massimo; and Cipriani, Aldo, to SNIA VISCOSA S.p.A. Societa Nazionale Industria Applicaziono Viscosa. Liquid foams of reinforced unsaturated polyester resins and process for making the same. 4,440,876, Cl. 521-123.000.

McArdle, Edward J.: *See—*

Edwards, Bryant; Krogman, Stanley R.; and McArdle, Edward J., 4,440,101, Cl. 111-2.000.

McArthur, James R. System for stabbing well casing. 4,440,220, Cl. 166-85.000.

McCabe, Donald P.: *See—*

Fette, Bruce; Gibson, Rose M.; and McCabe, Donald P., 4,441,200, Cl. 381-36.000.

McCarthy, Walton W., to Entropy Dynamics. Solar apparatus and process. 4,440,861, Cl. 435-306.000.

McCarty, William J., to General Electric Company. Air conditioning heat pump system having an initial frost monitoring control means. 4,439,995, Cl. 62-156.000.

McClain, Dorothee M., to National Distillers and Chemical Corporation. Finely divided ionomer coated thermoplastic resin. 4,440,908, Cl. 525-196.000.

McConnell, Lorne D.; and Spencer, Edward M., to Brown Boveri Electric Inc. Segmented circuit breaker housing with rotatably adjustable bushing positions. 4,440,998, Cl. 200-148.00R.

McCormick, Mack H.; and Wild, Gene M., to Eli Lilly and Company. Purification of glycopeptide antibiotics using non-functional resins. 4,440,753, Cl. 424-124.000.

McCoy, William J., Jr. Protective devices. 4,441,025, Cl. 250-516.100.

McCrery, David N., Jr.; Hoerner, Harry J.; and Purlee, John W. Adjustable electrically controlled livestock marking apparatus. 4,440,078, Cl. 101-4.000.

McDonald, Ernest. Method for stringing a racquet. 4,439,908, Cl. 29-446.000.

McDonough, Kevin C.; Hayn, John W.; Bellay, Jeffrey D.; and Thaden, Robert C., to Texas Instruments Incorporated. Self-emulator microcomputer. 4,441,154, Cl. 364-200.000.

McEachern, James F., to United States of America, Navy. Very low frequency hydrophone calibration. 4,441,173, Cl. 367-13.000.

McGann, Rodney. Aircraft structure. 4,440,361, Cl. 244-36.000.

McGean-Rohco, Inc.: *See—*

Opaskar, Vincent C.; Beach, Sidney C.; and Zellner, Robert J., 4,440,608, Cl. 204-43.00S.

- McGibbon, Gregor D.; and Yu, Kenneth K., to GTE Automatic Electric Incorporated. Current sink for DPT channel unit. 4,440,979, Cl. 179-16.0EA.
- McGill, Howard L., to Schlumberger Technology Corporation. Full-bore well tester with hydrostatic bias. 4,440,230, Cl. 166-321.000.
- McGraw-Edison Company: *See—*
  - Burmenko, Mark, 4,441,066, Cl. 320-48.000.
- McLean, James D.: *See—*
  - VanEffen, Richard M.; McLean, James D.; and Decker, Dalton L., 4,440,603, Cl. 204-1.00T.
- McMahon, Irven J., Jr., to Coe Manufacturing Company, The. Conveyor dryer and method of operation. 4,439,930, Cl. 34-15.000.
- McMahon, Maurice T., to International Business Machines Corporation. Circuit arrangement which permits the testing of each individual chip and interchip connection in a high density packaging structure having a plurality of interconnected chips, without any physical disconnection. 4,441,075, Cl. 324-73.00R.
- McQueen, Sidney J. Reversible bolt for firearms. 4,440,062, Cl. 89-128.000.
- Mead Corporation, The: *See—*
  - Ames, Jack D.; and Smith, David W., 4,440,389, Cl. 271-251.000.
  - Bakx, Martinus C. M., 4,440,340, Cl. 229-40.000.
  - Sanders, Frederick W.; Hillenbrand, Gary F.; Arney, Jonathan S.; and Wright, Richard F., 4,440,846, Cl. 430-138.000.
- Mechanical Technology Incorporated: *See—*
  - Pinkus, Oscar; and Walowit, Jed A., 4,440,402, Cl. 277-80.000.
- Medical Graphics Corporation: *See—*
  - Anderson, Stephen T.; and Anderson, Catherine A., 4,440,177, Cl. 128-719.000.
- Medtronic: *See—*
  - Hudziak, Lawrence C.; and Hartlaub, Jerome T., 4,440,173, Cl. 128-419.0PG.
- Meeker, Maurice R.: *See—*
  - Groteke, Daniel E.; and Meeker, Maurice R., 4,440,640, Cl. 210-237.000.
- Mees, Bernhard: *See—*
  - Diery, Helmut; and Mees, Bernhard, 4,440,902, Cl. 525-404.000.
- Meguro, Hiromu: *See—*
  - Kobayashi, Kozo; and Meguro, Hiromu, 4,441,178, Cl. 369-270.000.
- Mehnert, Walter: *See—*
  - Chaborski, Hoiko; and Mehnert, Walter, 4,441,107, Cl. 340-870.160.
- Meinard, Colette: *See—*
  - Herve, Jean-Jacques; Suglia, Jean-Claude; and Meinard, Colette, 4,440,756, Cl. 424-174.000.
- Meindl, Hubert: *See—*
  - Strasilla, Dieter; Meindl, Hubert; Moldovanyi, Laszlo; and Fearnley, Charles, 4,440,744, Cl. 424-70.000.
- Melchior, Bernd, to Imchemie Kunststoff GmbH. Solar concentrator. 4,440,153, Cl. 126-438.000.
- Meloy Laboratories, Inc.: *See—*
  - Braude, Irwin A., 4,440,675, Cl. 260-112.00R.
- Memorial Hospital for Cancer and Allied Diseases: *See—*
  - Miodownik, Saul, 4,440,176, Cl. 128-708.000.
- Menard, Paul R.: *See—*
  - Suh, John T.; Menard, Paul R.; and Jones, Howard, 4,440,941, Cl. 560-20.000.
- Mendelson, Robert M., to RCA Corporation. Self-extinguishing load driving system. 4,441,069, Cl. 323-239.000.
- Menoret, Philippe: *See—*
  - Facoetti, Hugues; Menoret, Philippe; Micheron, Francois; Petit, Patrick; and Ravinet, Pierre, 4,440,983, Cl. 179-110.00A.
- Merck & Co., Inc.: *See—*
  - Baldwin, John J., 4,440,774, Cl. 424-267.000.
  - Budavari, John, 4,440,942, Cl. 560-40.000.
  - Doherty, James B.; Dorn, Conrad P.; Witzel, Bruce E.; Allison, Debra L.; and Shen, Tsung-Ying, 4,440,779, Cl. 424-274.000.
  - Fix, Joseph A.; and Pogany, Stefano A., 4,440,740, Cl. 424-1.100.
  - Graham, Amy C., 4,440,748, Cl. 424-92.000.
  - Prugh, John D., 4,440,927, Cl. 549-292.000.
  - Zupan, Jacob A., 4,440,777, Cl. 424-274.000.
- Merillat Industries, Inc.: *See—*
  - Merillat, Orville D., 4,439,888, Cl. 16-286.000.
- Merillat, Orville D., to Merillat Industries, Inc. Substantially concealed hinge for door with recess. 4,439,888, Cl. 16-286.000.
- Merit Abrasive Products, Inc.: *See—*
  - Block, Aleck; and Carlson, Arthur F., 4,439,907, Cl. 29-432.100.
  - Block, Aleck; and Hasegawa, Hiroshi, 4,439,953, Cl. 51-389.000.
- Messenger, Edward T.: *See—*
  - Mather, Douglas E.; Messenger, Edward T.; and Phillips, Brinley M., 4,440,665, Cl. 252-356.000.
- Messina, Celeste A.: *See—*
  - Lok, Brent M.; Messina, Celeste A.; Patton, Robert L.; Gajek, Richard T.; Cannan, Thomas R.; and Flanigen, Edith M., 4,440,871, Cl. 502-214.000.
- Messineo, Salvatore B.; Lasswell, Don L.; and Yee, Joe, to Kaiser Steel Corporation. Method of producing tin plate for lithography with direct printed ultraviolet-cured inks. 4,440,607, Cl. 204-35.00N.
- Metro, Stephen J.; and Carr, Dale D., to Exxon Research and Engineering Co. Synthetic ester lubricating oil composition containing particular t-butylphenyl substituted phosphates and stabilized hydrolytically with particular long chain alkyl amines. 4,440,657, Cl. 252-49.900.
- Mettler Instrumente AG: *See—*
  - Kunz, Peter, 4,440,251, Cl. 177-187.000.
  - Sigg, Max, 4,440,250, Cl. 177-187.000.
- Meyer, Donald A., to Meyer's Manufacturing Corp. Mineral supplement distributor. 4,440,111, Cl. 119-61.000.
- Meyer, Jacques; and Scharen, Walter E., to Siegfried Aktiengesellschaft. Defoliant composition and method. 4,440,561, Cl. 71-70.000.
- Meyer's Manufacturing Corp.: *See—*
  - Meyer, Donald A., 4,440,111, Cl. 119-61.000.
- MIC Manufacturing and Machine Works Ltd.: *See—*
  - Stevens, Larry G. H.; Sweet, Edmund G. F.; and Vresk, Franklin V., 4,440,048, Cl. 81-440.000.
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  - Lund, Anders E.; Krueger, Gordon P.; and Sandberg, Lynn B., 4,440,287, Cl. 198-382.000.
- Microdyne Corporation: *See—*
  - Woodworth, Donald J., 4,441,079, Cl. 329-131.000.
- Micron Technology, Inc.: *See—*
  - Parkinson, Ward D., 4,441,125, Cl. 358-213.000.
- Midland-Ross Corporation: *See—*
  - Sarvis, Robert E., 4,440,213, Cl. 165-47.000.
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  - Takeuchi, Hirosato; and Mikiya, Toshio, 4,440,156, Cl. 126-443.000.
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  - Kotick, Michael P.; Leland, David L.; and Polazzi, Joseph O., 4,440,931, Cl. 546-44.000.
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  - Goldstein, Henry; Hoff, Joseph T.; Cronan, Charles L.; and Rao, Ch. S., 4,440,795, Cl. 426-592.000.
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  - Nelson, Norman E., 4,440,359, Cl. 242-199.000.
  - Packard, Thomas J., 4,440,258, Cl. 181-137.000.
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  - Sorlien, Mark D., 4,441,017, Cl. 219-528.000.
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  - Hoda, Takeo; Oyokota, Shigeru; Seigenji, Kiyoshi; and Taniguchi, Nobuyuki, 4,440,481, Cl. 354-171.000.
  - Yuasa, Yoshio, 4,440,489, Cl. 355-69.000.
- Minowa, Ryohei: *See—*
  - Mori, Akio; Watanabe, Shozo; Matsunaga, Mitsunobu; Machizawa, Kenzi; and Minowa, Ryohei, 4,439,999, Cl. 62-238.300.

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  - Langer, Alois A., 4,440,172, Cl. 128-419.00D.
- Misawa, Yoshihiko: *See—*
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  - Maekawa, Takashi; Matsumoto, Shoji; and Matsui, Toshikazu, 4,440,488, Cl. 355-15.000.
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- MITEC Moderne Industrietechnik GmbH: *See—*
  - Chaborski, Hoiko; and Mehnert, Walter, 4,441,107, Cl. 340-870.160.
- Mitel Corporation: *See—*
  - Demetriou, Andreas, 4,441,035, Cl. 307-200.00B.
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  - Nitta, Issei; Fujimori, Shinichiro; Haruyama, Toshio; and Inoue, Shinya, 4,440,689, Cl. 260-397.400.
  - Terayama, Hiroshi; Morita, Yoshiharu; and Umezu, Kohei, 4,440,788, Cl. 424-320.000.
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  - Iwata, Toshio, 4,440,129, Cl. 123-425.000.
  - Machida, Kazumichi; and Inada, Yoshie, 4,441,006, Cl. 219-85.0CM.
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  - Miyamoto, Shigehiko; and Watanabe, Yoshinobu, 4,440,827, Cl. 428-327.000.
- Mitsui Toatsu Chemicals, Inc.: *See—*
  - Fujikake, Shiro; Kawamata, Motoo; and Tsuboi, Hikotada, 4,440,920, Cl. 528-128.000.
- Mitter, Mathias. Method of uniformly applying liquid treating media to foraminous workpieces. 4,440,808, Cl. 427-244.000.
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  - Hattori, Tadashi; Ozaki, Tadashi; Ootsuka, Yoshinori; Miura, Kazuhiko; Hanaoka, Masanori; and Hashiguchi, Yukihide, 4,440,014, Cl. 73-35.000.
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- Miyakoshi, Shinichi; and Yamamoto, Kazuhiro, to Honda Giken Kogyo Kabushiki Kaisha. Rear wheel suspension for a motorcycle. 4,440,413, Cl. 280-284.000.
- Miyamoto, Shigehiko; and Watanabe, Yoshinobu, to Mitsubishi Paper Mills, Ltd. Process for producing recording paper for ink jet recording and optical bar code printing. 4,440,827, Cl. 428-327.000.
- Miyano, Ryuzo; Uenishi, Haruyuki; Akatani, Hisashi; and Akamine, Takenori, to Matsushita Electric Industrial Co., Ltd. Keyboard for inputting plural letters or symbols. 4,441,001, Cl. 200-308.000.
- Miyazaki, Hajime, to Kabushiki Kaisha Suwa Seikosha. Electronic timepiece including a piezoelectric alarm. 4,440,504, Cl. 368-255.000.
- Miyazaki, Haruhiko; Uda, Taizo; Hirai, Koichi; Nakamura, Yasuo; Ikezawa, Harumi; and Tsuchie, Takanori, to UBE Industries, Ltd. Process for producing ethylene glycol and/or glycolic acid ester, catalyst composition used therefor, and process for production thereof. 4,440,873, Cl. 502-244.000.
- Miyazaki, Shigeru: *See—*
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- Miyoshi, Takao; and Inami, Sumio, to Nissan Motor Company, Limited. Rear vehicle body structure of an automotive vehicle. 4,440,438, Cl. 296-195.000.
- Mizuta, Masaji, to Dainippon Screen Seizo Kabushiki Kaisha. Control means for a drier. 4,439,931, Cl. 34-44.000.
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  - Chang, Clarence D.; and Perkins, Patrick D., 4,440,668, Cl. 502-331.000.
  - Derbyshire, Francis J.; Varghese, Philip; and Whitehurst, Darrell D., 4,440,622, Cl. 208-8.0LE.
  - Gemmill, Robert M., Jr.; and Horodysky, Andrew G., 4,440,655, Cl. 252-47.500.
  - Holmes, Billy G., 4,440,227, Cl. 166-261.000.
  - Horodysky, Andrew G., 4,440,656, Cl. 252-49.600.
  - Oleck, Stephen M.; and Wilson, Robert C., Jr., 4,440,630, Cl. 208-111.000.
  - Piotrowski, Alfred B.; and Herd, Richard S., 4,440,658, Cl. 252-51.50A.
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  - Stormont, Richard W.; and Eriss, Lawrence, 4,440,728, Cl. 422-246.000.
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- Mode, Paul, to Nycoil Corporation. Releasable coupling device. 4,440,424, Cl. 285-39.000.
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  - Strasilla, Dieter; Meindl, Hubert; Moldovanyi, Laszlo; and Fearnley, Charles, 4,440,744, Cl. 424-70.000.
- Moller, Toste W.: *See—*
  - Reiniger, Haigh M., 4,440,635, Cl. 209-4.000.
- Monsanto Company: *See—*
  - Chupp, John P.; Alt, Gerhard H.; and Balthazor, Terry M., 4,440,964, Cl. 568-30.000.
  - Hobbs, Charles F., 4,440,967, Cl. 585-435.000.
  - Hobbs, Charles F., 4,440,968, Cl. 585-435.000.
  - Prill, Erhard J., 4,440,562, Cl. 71-86.000.
- Montana Power Company, The: *See—*
  - Drain, Robert E., 4,441,135, Cl. 361-47.000.
- Montgomery, Hugh S.: *See—*
  - Grantland, Gary; Montgomery, Hugh S.; Boeckmann, Eduard F. B.; and Woodworth, Larry A., 4,440,981, Cl. 179-81.00R.
- Montoriol, Bernard, to Etablissements F. Valentin. Method of forming wiring for bottle stoppers. 4,440,199, Cl. 140-71.00R.
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  - Gogniat, Paul, 4,440,505, Cl. 368-292.000.
- Montzka, Thomas A., to Bristol-Myers Company. Process for preparing 1,2,5-thiadiazoles. 4,440,933, Cl. 546-193.000.
- Moore Business Forms, Inc.: *See—*
  - Pennock, Thomas G., 4,440,341, Cl. 229-69.000.
- Moore, Michael H.; Moss, Brian F.; and Turner, George F. A. M., to Ciba-Geigy AG. Combined masking frame and photographic sheet material container. 4,440,490, Cl. 355-72.000.
- Moore, Neil A.: *See—*
  - Ray, Clifford H.; and Moore, Neil A., 4,441,174, Cl. 367-23.000.
- Mori, Akio; Watanabe, Shozo; Matsunaga, Mitsunobu; Machizawa, Kenzi; and Minowa, Ryohei, to Hitachi, Ltd.; and Toyota Jidosha Kabushiki Kaisha. Absorption type refrigeration system. 4,439,999, Cl. 62-238.300.
- Mori, Kazuhiro; Misawa, Yoshihiko; Itemadani, Eiji; and Kabeshita, Akira, to Matsushita Electric Industrial Co., Ltd. Electronic component supply apparatus. 4,440,355, Cl. 242-55.000.
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  - Shibata, Jun; Yamada, Haruyasu; Mori, Toshiki; and Takemoto, Toyoki, 4,441,198, Cl. 377-78.000.
- Morii, Yoshikazu: *See—*
  - Takeda, Tsuneshi; Otsuji, Kazuya; Tamura, Junichi; Morii, Yoshikazu; Higashiwaki, Michio; and Nakatani, Yoshitaka, 4,440,732, Cl. 423-415.00P.
- Morimoto, Takeshi: *See—*
  - Oda, Yoshio; Uchida, Keiichi; Morimoto, Takeshi; and Kumai, Seisaku, 4,440,948, Cl. 562-532.000.
- Morimoto, Tsuyoshi, to Totoku Co., Ltd. Hermetical stopper for liquid receptacle. 4,440,309, Cl. 220-235.000.
- Morinaga & Co., Ltd.: *See—*
  - Ohki, Katsumoto; Hirokawa, Tadahiko; and Sasaki, Hajime, 4,440,701, Cl. 264-15.000.
- Morita, Shigetoshi; and Yamada, Hirohide, to Hitachi Metals, Ltd. Magnetic head device. 4,441,132, Cl. 360-126.000.
- Morita, Yoshiharu: *See—*
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- Moriyama, Yasuhiro: *See—*
  - Komura, Minoru; and Moriyama, Yasuhiro, 4,440,821, Cl. 428-195.000.
- Morris, Charles H. F., Jr., to RCA Corporation. Method for the manufacture of lapping disc for forming keels on videodisc styli. 4,440,604, Cl. 204-5.000.
- Morris, Claude W.: *See—*
  - Thomson, Donald W., 4,440,277, Cl. 192-12.00D.
- Morrison, Michael W.; Fracker, Clarence E., Jr.; and Marra, Jerome F., to Owens-Corning Fiberglas Corporation. Method and apparatus for forming and collecting continuous glass filaments. 4,440,557, Cl. 65-3.100.
- Morrison, Norman E.: *See—*
  - Scovill, John P.; Klayman, Daniel L.; Massie, Samuel P.; Grant, Steven D.; Gonzalez, Armando; Morrison, Norman E.; and Dobek, Arthur S., 4,440,771, Cl. 424-258.000.
- Mortensen, Sten: *See—*
  - Lunghofer, Eugene P.; Mortensen, Sten; and Ward, Aubrey P., 4,440,866, Cl. 501-127.000.
- Morton, David H.; Szirmai, Stephen G.; and Potter, Edmund C., to Unisearch Limited; and Commonwealth Scientific and Industrial Research. Vapor coating of powders. 4,440,800, Cl. 427-13.000.

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- Mostek Corporation: *See—*
  - Link, Joseph, 4,441,119, Cl. 357-74.000.
- Motorola, Inc.: *See—*
  - Bocci, Paul M.; Sumner, Terence E.; and Wojnarowski, James R., 4,440,976, Cl. 179-1.50R.
  - Borras, Jaime A.; and Gonzalez, Ruben J., 4,441,098, Cl. 340-365.00R.
  - Brotherton, Carl R.; and Rendek, Peter M., 4,440,086, Cl. 102-254.000.
  - Davies, Robert B.; and Joseph, Eric D., 4,441,070, Cl. 323-268.000.
  - Fette, Bruce; Gibson, Rose M.; and McCabe, Donald P., 4,441,200, Cl. 381-36.000.
- Mottier, Francois M., to United Technologies Corporation. Method of forming laser diffraction grating for beam sampling device. 4,440,839, Cl. 430-2.000.
- Mowatt-Larssen, Erling; and Davis, Edward L., to General American Transportation Corporation. Container for pulverulent material. 4,440,528, Cl. 406-90.000.
- MTU Motoren-und Turbinen-Union Munchen GmbH: *See—*
  - Weiler, Wolfgang; and Trappmann, Klaus, 4,439,981, Cl. 60-39.320.
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- Mudder, Terrence I.; and Whitlock, James L., to Homestake Mining Company. Method for the biological removal of free and complex cyanides and thiocyanates from water. 4,440,644, Cl. 210-611.000.
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  - Keiter, Alfred; Mudder, Wolfgang; and Tappehorn, Bernd, 4,440,514, Cl. 400-208.000.
- Mudge, Trevor N.: *See—*
  - Lougheed, Robert M.; and Mudge, Trevor N., 4,441,207, Cl. 382-8.000.
- Mueller, Wolfgang: *See—*
  - Hinsken, Hans; Mueller, Wolfgang; and Schneider, Hermann, 4,440,887, Cl. 524-99.000.
- Muench, Volker: *See—*
  - Naarmann, Herbert; Penzien, Klaus; Muench, Volker; and Franz, Klaus-Dieter, 4,440,693, Cl. 260-439.00R.
- Muggli, Raymond A., to International Business Machines Corporation. CMOS Subsurface breakdown zener diode. 4,441,114, Cl. 357-13.000.
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  - Vielstich, Gunther; Bauer, Hanns-Georg; Muhlenbeck, Josef; Otto, Josef; Feldhoff, Horst; Zollner, Dieter H.; and Rittmann, Friedrich, 4,441,190, Cl. 373-94.000.
- Muller, Helmut: *See—*
  - Abermeth, Hubert; Deckert, Andreas; Muller, Helmut; and Wahnschaffe, Jurgen, 4,440,126, Cl. 123-321.000.
- Muller, Henrik: *See—*
  - Daroczy, Janos; Erdelyi, Janos; Havas, Jeno; Kecskes, Lajos; Muller, Henrik; Nyiro, Katalin; and Takacs, Ferenc, 4,440,619, Cl. 204-401.000.
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  - Hirtsiefer, Karl-Richard; Muller, Johann; Walterscheid, Kurt; and Wagner, Paul-Heinz, 4,440,046, Cl. 81-57.390.
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- Munakata, Tomohiko; Isagai, Katsuyoshi; Ikeda, Yoshifumi; Sakai, Junichi; and Matsuki, Hideo, to Yoshotomi Pharmaceutical Industries Ltd. Antibiotics Y-16482 α and/or Y-16482 β, a process for production thereof, and a pharmaceutical composition containing either or both of them. 4,440,752, Cl. 424-118.000.
- Mundel, Gerald; and Lenz, Michael, to Siemens Aktiengesellschaft GmbH. Integrable semiconductor circuit with a negatively fed-back, non-inverting operational amplifier. 4,441,040, Cl. 307-491.000.
- Murai, Masasumi; Kondo, Hirokazu; and Takino, Shigekatzu, to Tsubakimoto Chain Company. Storage arrangement for truck conveyor trolleys. 4,440,090, Cl. 104-127.000.
- Murakami, Yuetsu: *See—*
  - Masumoto, Hakaru; and Murakami, Yuetsu, 4,440,720, Cl. 420-459.000.
- Murase, Hiroshi: *See—*
  - Kinumoto, Namio; Nakao, Takashi; Murase, Hiroshi; Okada, Shigemitsu; and Kawadoko, Shinichi, 4,440,194, Cl. 138-89.000.
- Murata Kikai Kabushiki Kaisha: *See—*
  - Mima, Hiroshi, 4,439,978, Cl. 57-22.000.
- Muri, Georges, to Shell-O-Matic Inc. Rainfall sander. 4,440,806, Cl. 427-180.000.
- Murrell, Lawrence L.: *See—*
  - Grenoble, Dane C.; Kim, Chang J.; and Murrell, Lawrence L., 4,440,872, Cl. 502-242.000.
- Muzak, Nicholas, to Stelco Inc. Method and apparatus for treating elongate materials. 4,439,991, Cl. 62-63.000.
- Naarmann, Herbert; Penzien, Klaus; Muench, Volker; and Franz, Klaus-Dieter, to BASF Aktiengesellschaft. Preparation of electrically conductive products. 4,440,693, Cl. 260-439.00R.
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  - Horwath, Robert O.; and Colonna, William J., 4,440,855, Cl. 435-105.000.
  - Huang, Emil A., 4,440,798, Cl. 426-656.000.
- Nadkarni, Anil V.; and Samal, Prasanna K., to SCM Corporation. Metal modified dispersion strengthened copper. 4,440,572, Cl. 75-232.000.
- Nagata, Wataru: *See—*
  - Tsuji, Teruji; Hahashima, Yoshio; Yoshioka, Mitsuru; Narisada, Masayuki; Tanida, Hiroshi; Komeno, Taichiro; and Nagata, Wataru, 4,440,683, Cl. 260-239.00A.
- Nagira, Norichika: *See—*
  - Ikegami, Hiroshi; Nagira, Norichika; and Yui, Katsuhiko, 4,440,583, Cl. 148-128.000.
- Naito, Mitikatu; Yano, Kiyotosi; Itou, Kazuo; and Tsuzuki, Kunihiro, to Nippondenso Co., Ltd. Vacuum control valve. 4,440,139, Cl. 123-569.000.
- Nakada, Akira: *See—*
  - Kozuki, Koichi; Nakada, Akira; and Yamada, Shigeru, 4,440,056, Cl. 84-1.260.
- Nakagawa, Akira: *See—*
  - Omura, Satoshi; and Nakagawa, Akira, 4,440,759, Cl. 424-180.000.
- Nakagawa, Kiyoshi: *See—*
  - Matsumoto, Tadayuki; Imaeda, Kozo; Mineo, Masatoshi; and Nakagawa, Kiyoshi, 4,439,903, Cl. 28-258.000.
- Nakai, Yoshiharu: *See—*
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- Nakamichi Corporation: *See—*
  - Kobayashi, Kozo; and Meguro, Hiromu, 4,441,178, Cl. 369-270.000.
- Nakamura, Kazuo: *See—*
  - Suzuki, Toshiyuki; and Nakamura, Kazuo, 4,440,618, Cl. 204-298.000.
- Nakamura, Teruo; Kiyoto, Michio; Akashi, Kazuo; and Hasegawa, Isao, to Japan Metals and Chemicals Co., Ltd. Mixed phosphatic fertilizer and process for producing the same. 4,440,560, Cl. 71-24.000.
- Nakamura, Yasuo: *See—*
  - Miyazaki, Haruhiko; Uda, Taizo; Hirai, Koichi; Nakamura, Yasuo; Ikezawa, Harumi; and Tsuchie, Takanori, 4,440,873, Cl. 502-244.000.
- Nakanishi, Toshihide; Kohata, Mamoru; and Sakurai, Minoru, to Kyowa Hakko Kogyo Co., Ltd. Process for producing L-glutamic acid. 4,440,856, Cl. 435-111.000.
- Nakano, Jiro; and Watanabe, Yohei, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method and apparatus for controlling the idling rotational speed of an internal combustion engine. 4,440,128, Cl. 123-339.000.
- Nakao, Kiyoharu; and Sato, Fumihide, to Kabushiki Kaisha Komatsu Seisakusho. Fuel injection system for internal combustion engines. 4,440,134, Cl. 123-447.000.
- Nakao, Satoshi: *See—*
  - Taguchi, Yasuo; and Nakao, Satoshi, 4,440,130, Cl. 123-427.000.
- Nakao, Takashi: *See—*
  - Kinumoto, Namio; Nakao, Takashi; Murase, Hiroshi; Okada, Shigemitsu; and Kawadoko, Shinichi, 4,440,194, Cl. 138-89.000.
- Nakao, Toshihiro, to Olympus Optical Co., Ltd. Eject device of magnetic recording tape driving apparatus for tape cassette. 4,441,129, Cl. 360-96.500.
- Nakatani, Yoshitaka: *See—*
  - Takeda, Tsuneshi; Otsuji, Kazuya; Tamura, Junichi; Morii, Yoshikazu; Higashiwaki, Michio; and Nakatani, Yoshitaka, 4,440,732, Cl. 423-415.00P.
- Namiki, Takemasa: *See—*
  - Hitaka, Yosatomi; and Namiki, Takemasa, 4,440,811, Cl. 427-402.000.
- Narisada, Masayuki: *See—*
  - Tsuji, Teruji; Hahashima, Yoshio; Yoshioka, Mitsuru; Narisada, Masayuki; Tanida, Hiroshi; Komeno, Taichiro; and Nagata, Wataru, 4,440,683, Cl. 260-239.00A.
- Narita, Ryuho: *See—*
  - Oota, Hiroyuki; Aoshima, Terutaka; Yamamori, Kenji; and Narita, Ryuho, 4,441,016, Cl. 219-441.000.
- Nassimbene, Ernie G., to International Business Machines Corporation. Keybar keyboard. 4,440,515, Cl. 400-479.000.
- Nassof, Martin, to Simplex Ceiling Corp. Clip for metal planks. 4,439,973, Cl. 52-714.000.
- Nat, Gursharan P. S., to Eaton Corporation. Pivoted actuator off lock switch with operator key nonremovable in ON position. 4,440,994, Cl. 200-42.00T.
- Nath, Dilip K.; Pureza, Pablo C.; and Oh, Shin M., to International Telephone and Telegraph Corporation. Fabrication of optical preforms by axial chemical vapor deposition. 4,440,558, Cl. 65-3.120.
- Nath, Dilip K.: *See—*
  - Oh, Shin M.; Nath, Dilip K.; and Pureza, Pablo C., 4,440,556, Cl. 65-2.000.
- Nathansohn, Giangiacomo; and Winters, Giorgio, to Gruppo Lepetit S.p.A. Water soluble esters of steroid-oxazole and pharmaceutical compositions containing them. 4,440,764, Cl. 424-241.000.
- National Distillers and Chemical Corporation: *See—*
  - McClain, Dorothee M., 4,440,908, Cl. 525-196.000.
- National Research Development Corporation: *See—*
  - Dobson, John V., 4,440,602, Cl. 204-1.00T.
  - Hamer, Arthur; and Pardoe, Beverley H., 4,441,060, Cl. 318-114.000.
- National Semiconductor Corporation: *See—*
  - Ebel, Mark S., 4,441,172, Cl. 365-226.000.
  - Widlar, Robert J., 4,441,116, Cl. 357-43.000.
- Naudet, Jacques, to Les Cables de Lyon. Electromechanical cable for withstanding high temperatures and pressures, and method of manufacture. 4,440,974, Cl. 174-108.000.
- Nauheimer, Vincent J. Disposable razor. 4,439,920, Cl. 30-47.000.

- Neenan, Thomas X.: *See—*
  - Allcock, Harry R.; Neenan, Thomas X.; and Kossa, Walter C., 4,440,921, Cl. 528-168.000.
- Neese, James A., to Sparton Corporation. Diaphragm horn. 4,441,099, Cl. 340-388.000.
- Negin, Michael: *See—*
  - Berkin, George M.; and Negin, Michael, 4,441,205, Cl. 382-8.000.
- Nelson, Norman E., to Minnesota Mining and Manufacturing Company. Cassette roller guide. 4,440,359, Cl. 242-199.000.
- Nemoto, Kazuyuki, to Olympus Optical Co. Ltd. Reflex photometric assembly for camera. 4,440,479, Cl. 354-480.000.
- Netherwood, Shelley: *See—*
  - Blackwell, Bernie; Netherwood, Shelley; and Piccolo, Dominick J., 4,440,790, Cl. 426-3.000.
- Neuberger, Manfred, to Conpaten, Ltd. Playing or training device. 4,440,400, Cl. 273-411.000.
- Neumann, Eckart: *See—*
  - Dietrich, Ernst; Guenther, Ernst; Hoerauf, Werner; Kissel, Ernst, deceased; Linge, Hermann; Neumann, Eckart; and Schaefer, Eberhard, 4,439,933, Cl. 34-65.000.
- Neville Jr., David M.; and Youle, Richard J., to United States of America, Health and Human Services. Monoclonal antibody-ricin hybrids as a treatment of murine graft-versus-host disease. 4,440,747, Cl. 424-85.000.
- Newell, Stephen T., to RCA Corporation. Damping mechanism for a video disc stylus holder. 4,441,176, Cl. 369-170.000.
- Newnham, Rex E. Food supplement. 4,440,760, Cl. 424-184.000.
- Newport, Ronald L.: *See—*
  - Gerchman, Robert D.; Newport, Ronald L.; and van Dyke, Martin J., 4,441,157, Cl. 364-551.000.
- Neyenhouse, Peter A. Wet-based, wood-burning boiler. 4,440,145, Cl. 126-61.000.
- Nezu, Tuguo: *See—*
  - Sugiura, Shinji; Fujii, Yasuhiro; Sato, Katsunori; Nezu, Tuguo; and Okumura, Yasumasa, 4,440,913, Cl. 525-443.000.
- NGK Insulators, Ltd.: *See—*
  - Kitagawa, Jiro; and Mizutani, Isao, 4,439,929, Cl. 34-1.000.
- NGK Spark Plug Co., Ltd.: *See—*
  - Shimamori, Toru; Hattori, Yoshinori; and Matsuo, Yasushi, 4,440,707, Cl. 264-65.000.
- Nicolai, Franz: *See—*
  - Gotting, Otto; Hess, Walter; and Nicolai, Franz, 4,440,533, Cl. 409-299.000.
- Niedballa, Ulrich; and Bottcher, Irmgard, to Schering Aktiengesellschaft. Antiinflammatory 4,5-diphenyl-2-substituted-thio-imidazoles and their corresponding sulfoxides and sulfones. 4,440,776, Cl. 424-273.00R.
- Nielsen, Corine-Madeleine: *See—*
  - Lunder, Tito-Livio; and Nielsen, Corine-Madeleine, 4,440,796, Cl. 426-597.000.
- Nihon Medi-Physics Co., Ltd.: *See—*
  - Azuma, Makoto; and Hazue, Masaaki, 4,440,739, Cl. 424-1.100.
- Niihara, Toshihiro: *See—*
  - Shiihara, Takeo; Niihara, Toshihiro; Iwata, Hidemi; and Ishii, Noboru, 4,440,236, Cl. 173-8.000.
- Nike, Inc.: *See—*
  - Clarke, Thomas E.; Peterson, William R.; and Parker, Mark G., 4,439,936, Cl. 36-102.000.
- Nilssen, Ole K. High efficiency inverter & ballast circuits. 4,441,087, Cl. 331-113.00A.
- Nioloux, Raymond, to Automotive Products Limited. Friction clutch driven plate. 4,440,283, Cl. 192-106.200.
- Nippon Cable System Inc.: *See—*
  - Kobayashi, Tetuo; and Hirai, Syoichi, 4,440,354, Cl. 242-54.00R.
- Nippon Carbon Co., Ltd.: *See—*
  - Ishikawa, Toshikatsu; Tanaka, Junichi; Teranishi, Haruo; Okamura, Tatsuya; and Hayase, Tokuji, 4,440,571, Cl. 75-229.000.
- Nippon Gakki Seizo Kabushiki Kaisha: *See—*
  - Kozuki, Koichi; Nakada, Akira; and Yamada, Shigeru, 4,440,056, Cl. 84-1.260.
- Nippon Kokan Kabushiki Kaisha: *See—*
  - Nomura, Hirokazu; and Sugitani, Yuji, 4,441,011, Cl. 219-124.340.
  - Takeshige, Kenji; Hirabe, Kenji; Ogawa, Yukifumi; Arikata, Kazuyoshi; Yako, Kazunori; Sakai, Kenichi; Matsuo, Toshinori; and Kamio, Hiroshi, 4,440,584, Cl. 148-128.000.
- Nippon Oil Co., Ltd.: *See—*
  - Uemura, Seiichi; Yamamoto, Shunichi; Hirose, Takao; Takashima, Hiroaki; and Kato, Osamu, 4,440,624, Cl. 208-22.000.
- Nippon Soken, Inc.: *See—*
  - Hattori, Tadashi; Ozaki, Tadashi; Ootsuka, Yoshinori; Miura, Kazuhiko; Hanaoka, Masanori; and Hashiguchi, Yukihide, 4,440,014, Cl. 73-35.000.
- Nippon Steel Corporation: *See—*
  - Ikegami, Hiroshi; Nagira, Norichika; and Yui, Katsuhiko, 4,440,583, Cl. 148-128.000.
- Nippondenso Co., Ltd.: *See—*
  - Naito, Mitikatu; Yano, Kiyotosi; Itou, Kazuo; and Tsuzuki, Kunihiro, 4,440,139, Cl. 123-569.000.
  - Tsujimura, Masakuni; Miyagi, Hideo; Kohashi, Mamoru; and Kurii, Masaaki, 4,440,141, Cl. 123-609.000.
- Nishida, Shigeo; Miyagi, Mitsunobu; and Mikoshiba, Koichi, to Hitachi Cable Ltd. Low loss leakage transmission line. 4,441,091, Cl. 333-242.000.
- Nishikawa, Masaji, to Olympus Optical Company Ltd. Electrophotographic copying process for forming positive or negative images. 4,440,843, Cl. 430-55.000.
- Nishikawa, Masaji, to Olympus Optical Company Ltd. Electrophotographic copying process involving simultaneous charging and imaging. 4,440,844, Cl. 430-55.000.
- Nishioka, Jim Z. Archery bow. 4,440,143, Cl. 124-24.00R.
- Nishiyama, Kozaburo: *See—*
  - Takeuchi, Shoji; Nishiyama, Kozaburo; and Gomi, Tadashi, 4,440,661, Cl. 252-89.100.
- Nissan Motor Company, Limited: *See—*
  - Fukushima, Masao; and Yazaki, Komei, 4,440,375, Cl. 248-559.000.
  - Ikezawa, Kenji; Takao, Hiroshi; Ambe, Satoshi; and Uchida, Masaaki, 4,439,911, Cl. 29-570.000.
  - Ishimaru, Wataru; and Fujioka, Kazuyoshi, 4,440,282, Cl. 192-70.200.
  - Kitahara, Tsuyoshi; Uchida, Masaaki; and Sone, Kohki, 4,440,621, Cl. 204-406.000.
  - Miyoshi, Takao; and Inami, Sumio, 4,440,438, Cl. 296-195.000.
  - Shibahata, Yasuji; Irie, Namio; Ikawa, Kazuo; and Akatsu, Yosuke, 4,440,254, Cl. 180-140.000.
  - Tanino, Mikio; and Shimada, Yukio, 4,440,212, Cl. 165-12.000.
- Nissen, Dietmar; Straehle, Wolfgang; and Marx, Matthias, to BASF Aktiengesellschaft. Process for the preparation of cellular and noncellular polyurethane elastomers. 4,440,705, Cl. 264-53.000.
- Nitchman, Harold L.; and Cunningham, William B., Jr. System, apparatus, and method of dispensing a liquid from a semi-bulk disposable container. 4,440,319, Cl. 222-131.000.
- Nitro Nobel Aktiebolag: *See—*
  - Haglund, Ingemar B.; and Westerlund, Nils A. L., 4,440,087, Cl. 102-275.110.
- Nitta, Issei; Fujimori, Shinichiro; Haruyama, Toshio; and Inoue, Shinya, to Mitsubishi Chemical Industries, Limited. Acyloxysteroids and process for producing same. 4,440,689, Cl. 260-397.400.
- Nitto Chemical Industry Co., Ltd.: *See—*
  - Yamaguchi, Yasumasa; Watanabe, Ichiro; and Satoh, Yoshiaki, 4,440,858, Cl. 435-129.000.
- Nitto Electric Industrial Co., Ltd.: *See—*
  - Komura, Minoru; and Moriyama, Yasuhiro, 4,440,821, Cl. 428-195.000.
- Nitto Kohki Co., Ltd.: *See—*
  - Takeuchi, Hirosato; and Mikiya, Toshio, 4,440,156, Cl. 126-443.000.
- Noguchi, Yukio: *See—*
  - Asakura, Toshiyuki; Kobayashi, Hiroaki; and Noguchi, Yukio, 4,440,915, Cl. 525-537.000.
- Nomoto, Reishi; Takahashi, Masayoshi; and Ebata, Yoshikazu, to Janome Sewing Machine Co., Ltd. Suturing instrument and a method of holding a shuttle. 4,440,171, Cl. 128-335.500.
- Nomura, Hirokazu; and Sugitani, Yuji, to Nippon Kokan Kabushiki Kaisha. Rotary arc-welding method. 4,441,011, Cl. 219-124.340.
- Nordskog, Robert A. Headrest. 4,440,443, Cl. 297-397.000.
- Noren, Torsten: *See—*
  - Hoberstorfer, Gustav; and Noren, Torsten, 4,440,448, Cl. 299-11.000.
- Norlin, Stig I., to Saab-Scania Aktiebolag. Motor vehicle front section. 4,440,435, Cl. 296-188.000.
- Noronha, Pascal J.: *See—*
  - Henslee, Samuel P.; Noronha, Pascal J.; and Logan, John B., 4,440,529, Cl. 408-1.00R.
- Norrid, Kay L. Collapsible centerpiece. 4,440,812, Cl. 428-12.000.
- Northern Telecom Limited: *See—*
  - Gibb, William D., 4,440,989, Cl. 179-99.00P.
  - Jackson, Prentiss W., 4,441,106, Cl. 340-811.000.
  - Shannon, Michael A., 4,440,596, Cl. 162-106.000.
- Novatome: *See—*
  - Plagnard, Andre, 4,440,718, Cl. 376-269.000.
- Novotny, Carl F., to Allis-Chalmers Corporation. Apparatus for delivering fluid to a rotating body. 4,440,351, Cl. 241-41.000.
- Nozaki, Satoru, to SMK Electronics Corporation, USA. Membrane keyboard assembly. 4,440,990, Cl. 200-5.00A.
- Nycoil Corporation: *See—*
  - Mode, Paul, 4,440,424, Cl. 285-39.000.
- Nyiro, Katalin: *See—*
  - Daroczy, Janos; Erdelyi, Janos; Havas, Jeno; Kecskes, Lajos; Muller, Henrik; Nyiro, Katalin; and Takacs, Ferenc, 4,440,619, Cl. 204-401.000.
- Oakley, James C.: *See—*
  - Holtzberg, Matthew W.; Henke, Steven J.; Spaulding, Lawrence D.; and Oakley, James C., 4,440,069, Cl. 92-224.000.
- Oba, Harutaro: *See—*
  - Hatakeyama, Siro; Oba, Harutaro; and Ukai, Yoshitaka, 4,441,110, Cl. 346-140.00R.
- OBO Bettermann OHG, Firma: *See—*
  - Jordan, Ernst G., 4,441,007, Cl. 219-98.000.
- Occidental Oil Shale, Inc.: *See—*
  - Hutchins, Ned M., 4,440,445, Cl. 299-2.000.
  - Hutchins, Ned M., 4,440,446, Cl. 299-2.000.
  - Ricketts, Thomas E., 4,440,444, Cl. 299-2.000.
  - Ricketts, Thomas E.; and Shaler, John E., 4,440,447, Cl. 299-2.000.
- Ochi, Shigeharu, to Fuji Photo Film Co., Ltd. Photosensor pattern of solid-state imaging sensors. 4,441,123, Cl. 358-44.000.
- Ocko, Stephen, to Data Packaging Corporation. Bean sprouter. 4,439,949, Cl. 47-61.000.
- O'Connor, John T., to Loctite Corporation. Toughened cyanoacrylates containing elastomeric rubbers. 4,440,910, Cl. 525-295.000.
- Oda, Yoshio; Uchida, Keiichi; Morimoto, Takeshi; and Kumai, Seisaku, to Asahi Glass Company, Ltd. Process for preparing methacrylic acid. 4,440,948, Cl. 562-532.000.

Oehlke, Donald N., to Eaton Corporation. Sheet metal fastener. 4,440,535, Cl. 411-112.000.
Oesterreichische Salen-Kunststoffwerk Gesellschaft m.b.H.: *See—*
  Figwer, Eduard; and Schmitzberger, Franz, 4,440,345, Cl. 239-214.000.
Oettel, Friedrich H.: *See—*
  Doctor, Alan P.; and Oettel, Friedrich H., 4,441,023, Cl. 250-338.000.
Ogawa, Tsuneo; Ikeda, Manabu; Miyakawa, Seii; Iijima, Kazunori; Terayama, Takao; and Matsui, Takeshi, to Hitachi, Ltd. Tape guide of magnetic recording and reproducing apparatus. 4,441,133, Cl. 360-130.220.
Ogawa, Yukifumi: *See—*
  Takeshige, Kenji; Hirabe, Kenji; Ogawa, Yukifumi; Arikata, Kazuyoshi; Yako, Kazunori; Sakai, Kenichi; Matsuo, Toshinori; and Kamio, Hiroshi, 4,440,584, Cl. 148-128.000.
Ogi, Keiji: *See—*
  Tosaka, Yasuo; and Ogi, Keiji, 4,440,851, Cl. 430-378.000.
Oh, Shin M.; Nath, Dilip K.; and Pureza, Pablo C., to International Telephone and Telegraph Corporation. Optical fiber drawing using plasma torch. 4,440,556, Cl. 65-2.000.
Oh, Shin M.: *See—*
  Nath, Dilip K.; Pureza, Pablo C.; and Oh, Shin M., 4,440,558, Cl. 65-3.120.
O'Hare, Louis R. Thermal dielectric electric power generator. 4,441,067, Cl. 322-2.00A.
Ohashi, Kiyonobu: *See—*
  Matsui, Ichiro; Tanaka, Tsutomu; Bando, Yukio; and Ohashi, Kiyonobu, 4,440,778, Cl. 424-274.000.
Ohba, Takeo; and Koga, Hirohisa, to Sony Corporation. Rotary transducer head assembly. 4,441,128, Cl. 360-75.000.
Ohhara, Minoru: *See—*
  Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,440,757, Cl. 424-180.000.
Ohki, Katsumoto; Hirokawa, Tadahiko; and Sasaki, Hajime, to Morinaga & Co., Ltd. Method for forming viscous and plastically deformable food material into a globulin shape. 4,440,701, Cl. 264-15.000.
Ohmura, Yoshio: *See—*
  Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,440,757, Cl. 424-180.000.
Ohnishi, Haruo: *See—*
  Mochida, Ei; Ohnishi, Haruo; Yamaguchi, Kazuo; Suzuki, Yasuo; and Kosuzume, Hiroshi, 4,440,770, Cl. 424-258.000.
Ohorodnik, Alexander; Keuper, Hans W.; Semmler, Horst; Hardel, Joachim; Vierling, Hermann; and Willms, Robert, to Hoechst Aktiengesellschaft. Process for making fine particulate non-agglomerating chloropolyethylene. 4,440,925, Cl. 528-487.000.
Ohta, Takeshi: *See—*
  Kuze, Katsuaki; Matsuyama, Yuziro; Hashimoto, Hiroshi; Ohta, Takeshi; and Makimura, Osamu, 4,440,924, Cl. 528-275.000.
Okada, Shigemitsu: *See—*
  Kinumoto, Namio; Nakao, Takashi; Murase, Hiroshi; Okada, Shigemitsu; and Kawadoko, Shinichi, 4,440,194, Cl. 138-89.000.
Okada, Tokio; Kojima, Shigezo; Tani, Haruhisa; Kurihara, Kazuhiko; and Yazawa, Hiroshi, to Polymer Processing Research Institute Ltd. Process for collecting centrifugally ejected filaments. 4,440,700, Cl. 264-8.000.
Okamura, Tatsuya: *See—*
  Ishikawa, Toshikatsu; Tanaka, Junichi; Teranishi, Haruo; Okamura, Tatsuya; and Hayase, Tokuji, 4,440,571, Cl. 75-229.000.
Okayama, Yoshihiko: *See—*
  Sasaki, Junichi; and Okayama, Yoshihiko, 4,441,161, Cl. 364-900.000.
Okazaki, Tasuku. Thermal fuse and the method of manufacturing the same. 4,441,093, Cl. 337-404.000.
Okumura, Yasumasa: *See—*
  Sugiura, Shinji; Fujii, Yasuhiro; Sato, Katsunori; Nezu, Tuguo; and Okumura, Yasumasa, 4,440,913, Cl. 525-443.000.
Oldham, William G., to Siemens Aktiengesellschaft. Monolithically integrated circuit with connectible and/or disconnectible circuit portions. 4,441,036, Cl. 307-242.000.
Oleck, Stephen M.; and Wilson, Robert C., Jr., to Mobil Oil Corporation. Process for simultaneous hydrodesulfurization and hydrodewaxing with a catalyst of controlled pore size and metals content. 4,440,630, Cl. 208-111.000.
Olgiati, Gianni, to BBC Brown, Boveri & Company, Limited. Changeover switch for coaxial conductors. 4,441,089, Cl. 333-105.000.
Olin Corporation: *See—*
  Fister, Julius C.; and Breedis, John F., 4,441,118, Cl. 357-70.000.
  Reynolds, Don E.; and Pickering, James F., 4,440,614, Cl. 204-219.000.
Olschewski, Armin; Herrmann, Gerhard; and Bauer, Bernhard, to SKF Kugellagerfabriken GmbH. Seal assembly for bearing cups slidable in axial direction in bore. 4,440,401, Cl. 277-50.000.
Olsen, Judith D.: *See—*
  Blakeslee, Marybelle C.; Olsen, Judith D.; and Romankiw, Lubomyr T., 4,440,609, Cl. 204-43.00T.
Olson, Gene E.; Thompson, Jerome A.; Grover, Donald D.; Stout, Christopher B.; and Becker, Thomas P., to Snap-on Tools Corporation. Luminosity probe for diesel engine timing apparatus. 4,441,021, Cl. 250-227.000.
Olympia Werke AG: *See—*
  Keiter, Alfred; Mudder, Wolfgang; and Tappehorn, Bernd, 4,440,514, Cl. 400-208.000.
Olympus Optical Co., Ltd.: *See—*
  Kanehira, Jun, 4,440,585, Cl. 148-403.000.
  Nakao, Toshihiro, 4,441,129, Cl. 360-96.500.
  Nemoto, Kazuyuki, 4,440,479, Cl. 354-480.000.
  Nishikawa, Masaji, 4,440,843, Cl. 430-55.000.
  Nishikawa, Masaji, 4,440,844, Cl. 430-55.000.
  Ono, Noriaki; and Kamiyama, Takashi, 4,440,620, Cl. 204-403.000.
  Osanai, Akira, 4,441,131, Cl. 360-119.000.
  Shishido, Yoshio, 4,440,157, Cl. 128-6.000.
Omron Tateisi Electronics Co.: *See—*
  Arichi, Isao; Waniisi, Tetuya; and Koh, Takuji, 4,440,503, Cl. 368-107.000.
Omura, Satoshi; and Nakagawa, Akira. 20-Amino tylosin derivatives and pharmaceutical compositions containing same. 4,440,759, Cl. 424-180.000.
Onishi, Akira; and Fujimori, Noboru, to Konishiroku Photo Industry Co., Ltd. Silver halide photographic light-sensitive material containing oxonal dyes. 4,440,852, Cl. 430-522.000.
Ono, Kuniaki, to Hitachi Shipbuilding & Engineering Company Limited. Apparatus for hoisting roll segments in continuous casting equipment. 4,440,211, Cl. 164-442.000.
Ono, Noriaki; and Kamiyama, Takashi, to Olympus Optical Co., Ltd. Measuring electrode device. 4,440,620, Cl. 204-403.000.
Ookouchi, Motomi: *See—*
  Akagiri, Kenzo; Katakura, Masayuki; and Ookouchi, Motomi, 4,441,083, Cl. 330-149.000.
  Akagiri, Kenzo; Katakura, Masayuki; and Ookouchi, Motomi, 4,441,084, Cl. 330-149.000.
Oota, Hiroyuki; Aoshima, Terutaka; Yamamori, Kenji; and Narita, Ryuho, to Tokyo Shibaura Denki Kabushiki Kaisha. Electric rice cooker. 4,441,016, Cl. 219-441.000.
Ootsuka, Yoshinori: *See—*
  Hattori, Tadashi; Ozaki, Tadashi; Ootsuka, Yoshinori; Miura, Kazuhiko; Hanaoka, Masanori; and Hashiguchi, Yukihide, 4,440,014, Cl. 73-35.000.
Op Het Veld, Adriaan J. G.: *See—*
  Lippits, Gerardus J. M.; Van Den Broek, Arnoldus J. M.; Op Het Veld, Adriaan J. G.; Dijkstra, Rinse; and De Jonge, Jelis, 4,440,586, Cl. 156-151.000.
Opaskar, Vincent C.; Beach, Sidney C.; and Zellner, Robert J., to McGean-Rohco, Inc. Process and bath for the electrodeposition of tin-lead alloys. 4,440,608, Cl. 204-43.00S.
Oppelt, Peter; Uhlig, Uwe; Redeker, Werner; and Peschik, Werner, to Hauni-Werke Korber & Co. KG. Grinding machine. 4,439,951, Cl. 51-80.00R.
Oppitz, Peter: *See—*
  von der Eltz, Hans-Ulrich; and Oppitz, Peter, 4,439,881, Cl. 8-151.000.
Orcon Corporation: *See—*
  Hoopengardner, Merle C.; and Wenzel, William B., 4,439,904, Cl. 29-110.500.
Oretti, John E.: *See—*
  Bayly, Peter K.; and Oretti, John E., 4,440,326, Cl. 222-450.000.
Orthoefer, Frank T.: *See—*
  Bradford, Marion M.; Orthoefer, Frank T.; and Wright, Kenneth N., 4,440,792, Cl. 426-271.000.
Osaka Gas Company, Limited: *See—*
  Kinumoto, Namio; Nakao, Takashi; Murase, Hiroshi; Okada, Shigemitsu; and Kawadoko, Shinichi, 4,440,194, Cl. 138-89.000.
Osanai, Akira, to Olympus Optical Co., Ltd. Magnetic head. 4,441,131, Cl. 360-119.000.
Osnabrucker Metallwerke J. Kampschulte GmbH & Co. KG: *See—*
  Rossler, Kurt, 4,440,352, Cl. 241-152.00A.
Ostberg, Sven E., to Kockums Industri AB. Arrangement for inserting blocks of timber in a timber processing machine. 4,440,203, Cl. 144-39.000.
Ostendorf, Irene: *See—*
  Beitler, Bruce; and Ostendorf, Irene, 4,440,373, Cl. 248-461.000.
Ostertag, Karl, to Akzo NV. Hollow filament module and method and apparatus for production of the same. 4,440,641, Cl. 210-321.300.
Otis Engineering Corporation: *See—*
  Pullin, William H., 4,440,222, Cl. 166-117.500.
  Taylor, Donald F.; and Boyle, William G., 4,440,221, Cl. 166-106.000.
Otsuji, Kazuya: *See—*
  Takeda, Tsuneshi; Otsuji, Kazuya; Tamura, Junichi; Morii, Yoshikazu; Higashiwaki, Michio; and Nakatani, Yoshitaka, 4,440,732, Cl. 423-415.00P.
Otto, Eberhard: *See—*
  Maul, Rudolf; Otto, Eberhard; and Zinke, Horst, 4,440,696, Cl. 260-976.000.
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Pierre Guerin S.A.: *See—*
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Pilgrim, Chester. Electroplating machine. 4,440,613, Cl. 204-206.000.
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  Ehrman, Charles R.; Killgo, Ronald W.; and Piper, Paul P., Jr., 4,440,302, Cl. 206-506.000.
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  Shenk, Edwin K., 4,440,482, Cl. 354-195.100.
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  Crano, John C.; and Haynes, Ronald L., 4,440,909, Cl. 525-277.000.
  Girgis, Mikhail M., 4,440,881, Cl. 523-206.000.
  Krass, Dennis K.; and Richter, Sidney B., 4,440,930, Cl. 544-354.000.
  Maska, Rudolf, 4,440,897, Cl. 524-460.000.
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  Sickles, James E.; and Anestos, Themistocles C., 4,440,349, Cl. 239-698.000.
  Tamosauskas, Albert E., 4,440,885, Cl. 524-57.000.
  Valko, Joseph T., 4,440,612, Cl. 204-181.00C.
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  Wolters, Dennis R., 4,440,814, Cl. 428-31.000.
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Pruvot, Jean; and Roquefort, Andre, to Commissariat a l'Energie Atomique. Valve with a direct passage and rotary control. 4,440,382, Cl. 251-248.000.
Puchalski, Walter J., to Betz Laboratories, Inc. Paint spray booth detackification composition and method. 4,440,647, Cl. 210-712.000.
Pullin, William H., to Otis Engineering Corporation. Side pocket mandrel with improved orienting means. 4,440,222, Cl. 166-117.500.
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Quilliou, Guy, to Pierre Guerin S.A. Pressing plate for use in cheese making. 4,440,073, Cl. 99-458.000.
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  Faith, Thomas J., Jr., 4,440,799, Cl. 427-8.000.
  Harwood, Leopold A.; and Shanley, Robert L., II, 4,441,121, Cl. 358-36.000.
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  Newell, Stephen T., 4,441,176, Cl. 369-170.000.
  Susnjara, Kenneth J., 4,440,702, Cl. 264-37.000.
  Warren, Henry R., 4,441,090, Cl. 333-165.000.
  Willis, Donald H., 4,441,052, Cl. 315-8.000.
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  Winzer, Gerhard; Mahlein, Hans; and Reichelt, Achim, 4,441,181, Cl. 370-3.000.
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  Shea, Edward T., 4,440,234, Cl. 169-39.000.
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  Brotherton, Carl R.; and Rendek, Peter M., 4,440,086, Cl. 102-254.000.
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  Lanting, Richard J.; and Rentz, Bruce A., 4,440,455, Cl. 308-3.800.
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  Allcock, Harry R.; Neenan, Thomas X.; and Kossa, Walter C., 4,440,921, Cl. 528-168.000.
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Rice, David E.; and Ihlenfeld, Jay V., to Minnesota Mining and Manufacturing Company. Contact lens containing a fluorinated telechelic polyether. 4,440,918, Cl. 526-246.000.
Rice, Thomas E.; and Young, Peter T., to Haskell of Pittsburgh, Inc. Adjustable word processing table and the like. 4,440,096, Cl. 108-3.000.
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Richard, Maurice, to Raytheon Company. Printed circuit board holder. 4,441,140, Cl. 361-386.000.
Richardson, Charles T., Jr., to Gladwin, Inc. Photo voltaic lighting for outdoor telephone booth. 4,441,143, Cl. 362-183.000.
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Rigby, Eugene B.; to International Business Machines Corp. Process for making fine magnetic ferrite powder and dense ferrite blocks. 4,440,713, Cl. 264-325.000.
Riley, Dennis P., to Procter & Gamble Company, The. Rhodium-phosphine chiral hydrogenation catalysis of acetophenone, atropic acid,

and alpha-acylamidoacrylic acids and esters thereof. 4,440,936, Cl. 548-498.000.

- Rinaldi, Gianfranco: *See—*
  - Albanesi, Giancarlo; and Rinaldi, Gianfranco, 4,440,880, Cl. 523-205.000.
- Risbeck, James D.; and Cooper, Ernest B., to General Electric Company. Method and apparatus for controlling heating power during the application of molten filler material to a workpiece. 4,441,012, Cl. 219-137.00R.
- Ritschel, Gunter: *See—*
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- Roach, James D.; and Cole, Clinton W., to Halliburton Company. Packing arrangement. 4,440,404, Cl. 277-124.000.
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- Robar, James D. J., to SED Systems Inc. Grain sensor. 4,441,101, Cl. 340-606.000.
- Robbins, Christopher B. Uni-directional drive wrench. 4,440,047, Cl. 81-179.000.
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  - Virgilio, Gustav, 4,440,127, Cl. 123-325.000.
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- Robeson, Lloyd M., to Union Carbide Corporation. Flame retardant poly(aryl ketone). 4,440,890, Cl. 524-159.000.
- Rockwell International Corporation: *See—*
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  - Trcka, James S., 4,440,474, Cl. 350-345.000.
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- Rohm and Haas Company: *See—*
  - Dunkelberger, David L., 4,440,905, Cl. 525-66.000.
- Rolf Peddinghaus: *See—*
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- Rood, Robert M. Securing stake. 4,440,370, Cl. 248-75.000.
- Roof, Richard W.; and Berton, Kenneth S., to Square D Company. Pulse generating system. 4,441,063, Cl. 318-722.000.
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- Rose, Ronald P., to United States of America, Energy. Inertial confinement fusion method producing line source radiation fluence. 4,440,714, Cl. 376-104.000.
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- Rosenthal, Manfred; and Weber, Wendelin, to U.S. Philips Corporation. Transport device for transporting an endless form to and from the printing roller. 4,440,516, Cl. 400-616.100.
- Rosenthal Technik AG: *See—*
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- Roset, Pierre: *See—*
  - Resneau, Jean-Claude; Roset, Pierre; and Doyen, Jean, 4,440,828, Cl. 428-334.000.
- Rosner, Wolfgang. Retainer for the attachment of paneling elements, paneling structure produced by using the retainer and paneling strip suitable for use of the retainer. 4,439,970, Cl. 52-511.000.
- Ross, Roderick A. L., to B. F. Goodrich Company, The. Brake apparatus. 4,440,270, Cl. 188-264.0AA.
- Rosser, Robin W.; and Keller, Leon B., to Hughes Aircraft Company. Interconnection of unidirectional fiber arrays with random fiber networks. 4,440,819, Cl. 428-107.000.
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- Rossmann, Rudolf; and Cahannes, Paul, to Werkeugmaschinenfabrik Oerlikon-Buhrle AG. Safety apparatus for spinning projectile fuzes. 4,440,085, Cl. 102-235.000.
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  - Herve, Jean-Jacques; Suglia, Jean-Claude; and Meinard, Colette, 4,440,756, Cl. 424-174.000.
- Ruckenbauer, Friedrich; Claassen, Peter; and Krempl, Peter, to List, Hans. Transducer with a piezoelectric sensor element. 4,441,044, Cl. 310-338.000.
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- Runyan, James E.: *See—*
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- Russell, Randy G.: *See—*
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- Rutherford, John S., to Woodrite, Inc. Panel connector. 4,439,971, Cl. 52-584.000.
- Rutter, William J.; Goodman, Howard M.; Ullrich, Axel; Shine, John; Chirgwin, John; and Pictet, Raymond, to University of California, The Regents of the. Method for producing recombinant bacterial plasmids containing the coding sequences of higher organisms. 4,440,859, Cl. 435-172.000.
- Ryan, Dennis M.; and Hursey, Robert, to Ampex Corporation. Tape tensioning apparatus and method of assembly. 4,440,358, Cl. 242-189.000.
- Ryckman, William D., Jr.: *See—*
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- Saari, Veikko R., to Bell Telephone Laboratories, Incorporated. Amplifier with controlled gain. 4,441,080, Cl. 330-86.000.
- SAB Automotive AB: *See—*
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- Sabherwal, Inderjit H., to Ensotech, Inc. Calcined, high surface area, particulate matter, processes using this matter, and admixtures with other agents. 4,440,867, Cl. 502-62.000.
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- Saenz, Arsenio B., Jr.; and Cairns, Gerald K. Exercise device. 4,440,391, Cl. 272-93.000.
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- Sakaguchi, Shouzaburou: *See—*
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- Sakamoto, Hideto, to Trio Kabushiki Kaisha. Signal amplifying apparatus. 4,441,085, Cl. 330-293.000.
- Sakamoto, Takashi; Sano, Tetsuo; and Kodama, Eiji, to Dainippon Screen Seizo Kabushiki Kaisha. Method for tracing an object. 4,441,020, Cl. 250-202.000.
- Sakane, Kazuo: *See—*
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- Sakurai, Minoru: *See—*
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- Sakurai, Takeichi; Goto, Kiyoshi; Konishi, Hiroo; and Kawai, Tadao, to Hitachi, Ltd. Converter control apparatus for parallel connected multi-terminal direct current system. 4,441,032, Cl. 307-82.000.
- Sakurai, Yoshihiro, to Yamaha Hatsudoki Kabushiki Kaisha. Carburetor. 4,440,697, Cl. 261-34.00A.
- Salazar, Paul V. Refractory compositions and method. 4,440,865, Cl. 501-95.000.
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  - Hampshire, Michael J., 4,441,136, Cl. 361-88.000.
- Salyer, Ival O.: *See—*
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- Samal, Prasanna K.: *See—*
  - Nadkarni, Anil V.; and Samal, Prasanna K., 4,440,572, Cl. 75-232.000.
- Sandberg, Lynn B.: *See—*
  - Lund, Anders E.; Krueger, Gordon P.; and Sandberg, Lynn B., 4,440,287, Cl. 198-382.000.
- Sanders, Frederick W.; Hillenbrand, Gary F.; Arney, Jonathan S.; and Wright, Richard F., to Mead Corporation. Photocopy sheet employing encapsulated radiator sensitive composition and imaging process. 4,440,846, Cl. 430-138.000.
- Sanders, Ian L.: *See—*
  - Kabelac, William J.; and Sanders, Ian L., 4,441,166, Cl. 365-36.000.
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  - Hinsken, Hans; Mueller, Wolfgang; and Schneider, Hermann, 4,440,887, Cl. 524-99.000.
- Sangamo Weston, Inc.: *See—*
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- Sanitation Equipment Limited: *See—*
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- Sankyo Dengyo Co., Ltd.: *See—*
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- Sanville, W. Woodward, to Servo Corporation of America. Speed independent system for obtaining preselected numbers of samples from object moving along fixed path. 4,441,196, Cl. 377-9.000.
- Saran Protective Coating Company: *See—*
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- Sarantakis, Dimitrios, to American Home Products Corporation. Nonapeptide anti-secretory agents. 4,440,904, Cl. 525-54.110.
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- Sartor, Raymond W. Rotary earth drilling bit. 4,440,247, Cl. 175-393.000.
- Sarvis, Robert E., to Midland-Ross Corporation. Recuperator with floating interior housing. 4,440,213, Cl. 165-47.000.
- Sasaki, Hajime: *See—*
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- Sasaki, Itsuo; and Suzuki, Hiroaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Static random access memory having a read out control circuit connected to a memory cell. 4,441,169, Cl. 365-190.000.
- Sasaki, Junichi; and Okayama, Yoshihiko, to Toshiba Kikai Kabushiki Kaisha. Programmable sequence control method and devices. 4,441,161, Cl. 364-900.000.
- Sassano, Daniel R., to Westinghouse Electric Corp. Adhesive oil resistant insulated wire consisting of two layers including an uncatalyzed epoxy-phenoxy resin outer layer. 4,439,914, Cl. 29-605.000.
- Sassano, Salvatore. Take-down folding knife. 4,439,922, Cl. 30-161.000.
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- Sato, Katsunori: *See—*
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- Sato, Takao; Ito, Tetsuo; and Arita, Setsuo, to Hitachi, Ltd. Method of controlling nuclear power plant. 4,440,715, Cl. 376-210.000.
- Sato, Toyohiro: *See—*
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- Sato, Yasunori: *See—*
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- Sato, Yo; and Kashiwaba, Tadao, to Kabushiki Kaisha Sato. Portable type label applying apparatus. 4,440,592, Cl. 156-384.000.
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- Sauer, Herbert; and Gutlein, Gunter, to Fag Kugelfischer Georg Schafer & Co. Check valve for automotive braking system. 4,440,275, Cl. 188-352.000.
- Sauer, Wolfgang; Aquila, Werner; Hoffmann, Wolfgang; Brenner, Karl; and Halbritter, Klaus, to BASF Aktiengesellschaft. Continuous preparation of 3-alkyl-buten-1-als. 4,440,960, Cl. 568-471.000.
- Sauerwein, William D.; and Lentino, Lynn E., to Black & Decker Inc. Switch and handle construction for double-insulated electric tool. 4,440,238, Cl. 173-170.000.
- Sawyer, Byron E.: *See—*
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- Saxon, John W. C., to Avdel Limited. Orientating device. 4,440,286, Cl. 198-380.000.
- Scaggs, Orville C. Method and device for positioning and guiding pipe in a drilling derrick. 4,440,536, Cl. 414-22.000.
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- Scandpower, Inc.: *See—*
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- Schachar, Ronald A. Method and device for measuring the optical power of the cornea. 4,440,477, Cl. 351-212.000.
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- Scharen, Walter E.: *See—*
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- Schaub, Robert E.: *See—*
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- Schaus, Jerome E.; and Danek, Daniel, to Dana Corporation. Hydrodynamic shaft seal with continuously divergent seal element. 4,440,405, Cl. 277-134.000.
- Schebiella, Georg: *See—*
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- Scher, Herbert B., to Stauffer Chemical Company. Thiolcarbamate sulfoxides stabilized with butyrolactone and water. 4,440,563, Cl. 71-88.000.
- Scherer, John S. Nail polish remover kit. 4,440,181, Cl. 132-73.500.
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  - Akagiri, Kenzo; Katakura, Masayuki; and Ookouchi, Motomi, 4,441,084, Cl. 330-149.000.
  - Ohba, Takeo; and Koga, Hirohisa, 4,441,128, Cl. 360-75.000.
  - Sonoda, Takenori; Watanabe, Nobuhiko; and Tanaka, Masato, 4,441,184, Cl. 371-40.000.
- Sorenson, John R. J. Anti-inflammatory and anti-ulcer compounds and process. 4,440,754, Cl. 424-140.000.
- Sorenson, Richard W., to Carlingswitch, Inc. Electric switch with nested terminals. 4,440,991, Cl. 200-6.00R.
- Sorlien, Mark D., to Minnesota Mining and Manufacturing Company. Flexible strip heater. 4,441,017, Cl. 219-528.000.
- Spagnoli, Giulio, to Alitalia Linee Aeree Italiane S.p.A. Hydropneumatic positioner for removal/or installation of wing engines of aircrafts and the like. 4,440,265, Cl. 182-129.000.
- Sparton Corporation: *See—*
  - Neese, James A., 4,441,099, Cl. 340-388.000.
- Spaulding, Lawrence D.: *See—*
  - Holtzberg, Matthew W.; Henke, Steven J.; Spaulding, Lawrence D.; and Oakley, James C., 4,440,069, Cl. 92-224.000.
- Spaw, William J.: *See—*
  - Folmsbee, Alan C.; Kokkonen, Kim; and Spaw, William J., 4,441,170, Cl. 365-200.000.
- Spectrum Medical Industries, Inc.: *See—*
  - Eddleman, Roy T., 4,439,901, Cl. 24-248.00B.
- Spencer, Alwyn: *See—*
  - Bellus, Daniel; Blaser, Hans-Ulrich; Kabas, Guglielmo; Reinehr, Dieter; Spencer, Alwyn; and Weber, Kurt, 4,440,694, Cl. 260-465.00D.

Spencer, Billie M.: *See—*
  Kingston, Samuel C.; Spencer, Billie M.; Zscheile, John W., Jr.; and Price, Robert, 4,441,194, Cl. 375-96.000.
Spencer, Edward M.: *See—*
  McConnell, Lorne D.; and Spencer, Edward M., 4,440,998, Cl. 200-148.00R.
Spergel, Gabriel. Emergency escape breathing apparatus. 4,440,163, Cl. 128-205.130.
Sperner, Franz: *See—*
  Bussard, Adrien; Aldinger, Fritz; and Sperner, Franz, 4,440,178, Cl. 128-784.000.
Sperry Corporation: *See—*
  Greenig, Nelson L.; Taylor, John R.; and Schwartz, Richard S., 4,441,126, Cl. 358-293.000.
  Kingston, Samuel C.; Spencer, Billie M.; Zscheile, John W., Jr.; and Price, Robert, 4,441,194, Cl. 375-96.000.
  Luciw, Wolodymyr, 4,441,168, Cl. 365-154.000.
Spinner, Georg. Coaxial HF plug connector having alternate connecting means. 4,440,464, Cl. 339-33.000.
Spire Corporation: *See—*
  Little, Roger G.; and Shanfield, Stanley R., 4,440,108, Cl. 118-719.000.
Spongr, Jerry J.: *See—*
  Joffe, Boris B.; Spongr, Jerry J.; and Sawyer, Byron E., 4,441,022, Cl. 250-308.000.
Sprengers, Leo M., to U.S. Philips Corporation. Low-pressure sodium vapor discharge lamp. 4,441,045, Cl. 313-25.000.
Square D Company: *See—*
  Roof, Richard W.; and Berton, Kenneth S., 4,441,063, Cl. 318-722.000.
Srinivasan, Rangaswamy: *See—*
  Aviram, Ari; Mayne-Banton, Veronica I.; and Srinivasan, Rangaswamy, 4,440,801, Cl. 427-54.100.
Stach, Leonard J., to Velsicol Chemical Corporation. Composition of matter. 4,440,567, Cl. 71-105.000.
Staggers, John O.; Banerji, Samir K.; and Lalich, Michael J., to Foote Mineral Company. Boron alloying additive for continuously casting boron steel. 4,440,568, Cl. 75-53.000.
Stamicarbon B.V.: *See—*
  Peerlkamp, Erik R., 4,440,899, Cl. 524-528.000.
Stamper, James F.: *See—*
  Knoke, Silas J.; and Stamper, James F., 4,440,264, Cl. 182-126.000.
Stanadyne, Inc.: *See—*
  Smith, Arthur W., 4,440,138, Cl. 123-557.000.
Standard Oil Company: *See—*
  Weisrock, William P., 4,440,651, Cl. 252-8.55D.
Standard Oil Company (Indiana): *See—*
  Vasalos, Iacovos A.; and Wollaston, Eugene G., 4,440,632, Cl. 208-113.000.
Standard Oil Corporation (Indiana): *See—*
  Holtzberg, Matthew W.; Henke, Steven J.; Spaulding, Lawrence D.; and Oakley, James C., 4,440,069, Cl. 92-224.000.
Stang, John H.; and Cusick, Steven M., to Cummins Engine Company, Inc. Oil cooled internal combustion engine. 4,440,118, Cl. 123-41.840.
Stanwood, Phillip C.: *See—*
  Leflar, James A.; and Stanwood, Phillip C., 4,440,152, Cl. 126-435.000.
Starai, Rudolph: *See—*
  Mischenko, Nicholas; Parker, Robert R.; and Starai, Rudolph, 4,440,478, Cl. 353-25.000.
Stark, Bernard P.: *See—*
  Paul, John G.; Stark, Bernard P.; and Losert, Ewald, 4,440,850, Cl. 430-325.000.
Starr, John B., Jr.: *See—*
  Fox, Daniel W.; Kaduk, Bruce A.; and Starr, John B., Jr., 4,440,912, Cl. 525-439.000.
Staufer, Adolf, to TRAK Sportartikel GmbH. Ski base coating. 4,440,418, Cl. 280-604.000.
Stauffer Chemical Company: *See—*
  Robbins, Jeffrey D., 4,440,695, Cl. 260-502.50F.
  Scher, Herbert B., 4,440,563, Cl. 71-88.000.
Stazhevsky, Stanislav B.: *See—*
  Kostylev, Alexandr D.; Gileta, Vladimir P.; Grigoraschenko, Vladimir A.; Tkach, Khaim B.; Bakunin, Vladimir A.; Frenkel, Valery Y.; Kozlov, Valery A.; Reifisov, Jury B.; Chepurnoi, Nikolai P.; Bondar, Mikhail J.; Drobyazko, Vladimir F.; Stazhevsky, Stanislav B.; Ratskevich, Gerald I.; Fedorov, Alexandr A.; Polyakov, Anatoly S.; Bobylev, Leonid M.; Tsvetkov, Evgeny N.; and Petreev, Anatoly M., 4,440,240, Cl. 175-20.000.
Stearns, Charles F.: *See—*
  Donnelly, Brian G.; and Stearns, Charles F., 4,440,192, Cl. 137-501.000.
Stearns, Llewelyn B. Method and apparatus of chemical milling of chemical materials. 4,440,594, Cl. 156-664.000.
Steeger, Gerhard; and Plischke, Josef, to Patent-Treuhand-Gesellschaft Fur elektrische Gluhlampen mbH. Single-ended low pressure discharge lamp and method of manufacture. 4,441,050, Cl. 313-493.000.
Stehlik, Miroslva J., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Timing method for machine gun. 4,440,064, Cl. 89-136.000.
Stein, Alexander, to Exxon Research and Engineering Co. Pyrometric gas temperature measurement system. 4,440,510, Cl. 374-169.000.
Steinecke, Rudolf; and Hensche, Karl-Heinz, to Daimler-Benz AG. Truck cab hydraulic tilting mechanism. 4,440,252, Cl. 180-89.150.
Stelco Inc.: *See—*
  Muzak, Nicholas, 4,439,991, Cl. 62-63.000.
Stephan, Bernhard: *See—*
  Koppers, Manfred; Bohnes. Karlheinz; and Stephan, Bernhard, 4,440,526, Cl. 405-260.000.
Stern, Jonathan J.: *See—*
  Downing, Harry M., 4,440,783, Cl. 424-302.000.
Stevens, John E., to Leggett & Platt, Incorporated. Sofa sleeper with seat adjustment mechanism. 4,439,878, Cl. 5-29.000.
Stevens, Larry G. H.; Sweet, Edmund G. F.; and Vresk, Franklin V., to MIC Manufacturing and Machine Works Ltd. Fastener driving device with multiple bits. 4,440,048, Cl. 81-440.000.
Stevenson, Christopher T. S., to Litton Industrial Products, Inc. Friction welding machine. 4,440,338, Cl. 228-2.000.
Stevenson, David L.; and Seleno, Frank M., to Schmelzer Corporation. Coolant injector. 4,440,116, Cl. 123-25.00J.
Stevenson, Edward J.; and Dean, Donald E. Hot air welder for welding roofing material. 4,440,588, Cl. 156-157.000.
Stewart Engineering and Equipment Co.: *See—*
  Thomas, William M.; and Smith, Richard D., 4,440,288, Cl. 198-425.000.
Stewart, John M.; and Hewson, Clifford B., to Sanitation Equipment Limited. Toilet. 4,439,875, Cl. 4-321.000.
Stieler, Scott M. Counterflow heat exchanger. 4,440,217, Cl. 165-155.000.
Stine, Laurence O., to UOP Inc. Hydrocarbon hydrocracking process. 4,440,629, Cl. 208-111.000.
Stocker, Herbert: *See—*
  Felger, Gunter; Glockler, Otto; Kauff, Helmut; Kiencke, Uwe; Knapp, Heinrich; and Stocker, Herbert, 4,440,131, Cl. 123-440.000.
Stockmann, Michael: *See—*
  Auracher, Franz; and Stockmann, Michael, 4,440,468, Cl. 350-96.120.
Stocko Metallwarenfabriken Henkels und Sohn GmbH & Co.: *See—*
  Heinz, Manigel; and Hermann, Stroter, 4,439,906, Cl. 29-412.000.
Stoll, Eric D.: *See—*
  Chester, John K.; Small, Eric; and Stoll, Eric D., 4,441,199, Cl. 381-14.000.
Stoll, Hans-Wolfgang: *See—*
  Klie, Jurgen; and Stoll, Hans-Wolfgang, 4,440,067, Cl. 91-491.000.
Stone Container Corporation: *See—*
  Konopko, Matthew S., 4,440,304, Cl. 206-586.000.
Stone, Julian, to Bell Telephone Laboratories, Incorporated. Dye lasers. 4,441,188, Cl. 372-54.000.
Stork PMT B.V.: *See—*
  van Mil, Martinus P. G., 4.439,891, Cl. 17-11.000.
Stormont, Richard W.; and Eriss, Lawrence, to Mobil Solar Energy Corporation. Apparatus for growing tubular crystalline bodies. 4,440,728, Cl. 422-246.000.
Stout, Christopher B.: *See—*
  Olson, Gene E.; Thompson, Jerome A.; Grover, Donald D.; Stout, Christopher B.; and Becker, Thomas P., 4,441,021, Cl. 250-227.000.
Straehle, Wolfgang: *See—*
  Nissen, Dietmar; Straehle, Wolfgang; and Marx, Matthias, 4,440,705, Cl. 264-53.000.
Strasilla, Dieter; Meindl, Hubert; Moldovanyi, Laszlo; and Fearnley, Charles, to Ciba-Geigy Corporation. Quaternary, copolymeric, high molecular weight ammonium salts based on acrylic compounds, and their use in cosmetics. 4,440,744, Cl. 424-70.000.
Striegler, Hellmut: *See—*
  Heins, Ferdinand; Matner, Martin; and Striegler, Hellmut, 4,440,895, Cl. 524-822.000.
Strohbeen, John. Loudspeaker system for producing coherent sound. 4,440,259, Cl. 181-146.000.
Strong, Barry C.; and Brain, Herbert, to William Cotton Limited. Variable draw mechanism for straight bar knitting machines. 4,440,002, Cl. 66-126.00R.
Struck, Carl-Heinz; Schumacher, Ralf; and Thubeauville, Heinz, to Dr. C. Otto & Comp. G.m.b.H. Heating system for a coke oven battery having twin-heating flues. 4,440,599, Cl. 202-141.000.
Studt, William L.: *See—*
  Douglas, George H.; Studt, William L.; and Dodson, Stuart A., 4,440,949, Cl. 564-48.000.
Stultz, William H.: *See—*
  Trickel, Lorn L.; and Stultz, William H., 4,440,208, Cl. 152-314.000.
Stumpf, Walter, to Simmons U.S.A. Corporation. Method and apparatus for making a series of pocketed coil springs. 4,439,977, Cl. 53-428.000.
Sugitani, Yuji: *See—*
  Nomura, Hirokazu; and Sugitani, Yuji, 4,441,011, Cl. 219-124.340.
Sugiura, Shinji; Fujii, Yasuhiro; Sato, Katsunori; Nezu, Tuguo; and Okumura, Yasumasa, to Kansai Paint Co., Ltd. Coating composition for pliable substrates. 4,440,913, Cl. 525-443.000.
Suglia, Jean-Claude: *See—*
  Herve. Jean-Jacques; Suglia, Jean-Claude; and Meinard, Colette, 4,440,756, Cl. 424-174.000.
Suh, John T.; Menard, Paul R.; and Jones, Howard, to USV Pharmaceutical Corporation. Aroyl-aminoacids, amides and esters thereof. 4,440,941, Cl. 560-20.000.
Sukup, Eugene G.: *See—*
  Smit, Edward H.; and Sukup, Eugene G., 4,440,637, Cl. 209-241.000.
Sukup Manufacturing Co.: *See—*
  Smit, Edward H.; and Sukup, Eugene G., 4,440,637, Cl. 209-241.000.
Sullivan, Michael P. Flow control apparatus. 4,440,378, Cl. 251-117.000.

Sullivan, Thomas J. Method and apparatus for conveying particulate matter. 4,440,539, Cl. 414-300.000.
Suman, George O., Jr. Well completion method. 4,440,226, Cl. 166-250.000.
Sumida, Isao: *See—*
  Yamamoto, Takanobu; Sumida, Isao; Tsukamoto, Moriaki; Imani, Kazutake; and Watahiki, Naohisa, 4,440,151, Cl. 126-433.000.
Summerville, James E., Jr., administrator: *See—*
  Summerville, Richard H., deceased; and Summerville, James E., Jr., administrator, 4,440,946, Cl. 560-210.000.
Summerville, Richard H., deceased; and Summerville, James E., Jr., administrator, to Celanese Corporation. Production of esters from aldehydes using a silver/cadmium/zinc/zirconium catalyst. 4,440,946, Cl. 560-210.000.
Sumner, Terence E.: *See—*
  Bocci, Paul M.; Sumner, Terence E.; and Wojnarowski, James R., 4,440,976, Cl. 179-1.50R.
Suslov, Valentin A.: *See—*
  Albertinsky, Boris I.; Dmitrieva, Nina M.; Evseev, Anatoly K.; Zotov, Ivan P.; Ivanov, Andrei S.; Sviniin, Mikhail P.; Suslov, Valentin A.; and Fedotov, Mikhail T., 4,441,150, Cl. 363-126.000.
Susnjara, Kenneth J., to RCA Corporation. Method and apparatus for making thin-walled plastic articles. 4,440,702, Cl. 264-37.000.
Sutko, John L.: *See—*
  Judy, Millard M.; and Sutko, John L., 4,440,638, Cl. 210-198.200.
Suwa, Kaname, to Canon Kabushiki Kaisha. Slide switch mechanism. 4,441,000, Cl. 200-291.000.
Suyama, Tsuneo: *See—*
  Kanazawa, Tatsuo; and Suyama, Tsuneo, 4,440,300, Cl. 206-446.000.
Suzuki, Hajime; Suzuki; and Arakawa, Hiroshi, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Apparatus for guiding weft yarns in a jet loom. 4,440,198, Cl. 139-435.000.
Suzuki, Hiroaki: *See—*
  Sasaki, Itsuo; and Suzuki, Hiroaki, 4,441,169, Cl. 365-190.000.
Suzuki, Toshiyuki; and Nakamura, Kazuo, to Anelva Corporation. Gas discharge device comprising a pressure controller for controlling a pressure over a wide range. 4,440,618, Cl. 204-298.000.
Suzuki, Yasuo: *See—*
  Mochida, Ei; Ohnishi, Haruo; Yamaguchi, Kazuo; Suzuki, Yasuo; and Kosuzume, Hiroshi, 4,440,770, Cl. 424-258.000.
Suzuki, Yoshitsugu; Iizuka, Syogo; Kajiyama, Shigeo; Usui, Kenji; and Kobayashi, Masahiro, to Yazaki Corp. Wire-laying head. 4,440,053, Cl. 83-282.000.
Svendsen, Lars G., to Pentapharm, A.G. Tripeptide derivatives and their application in assaying enzymes. 4,440,678, Cl. 260-112.50R.
Sviniin, Mikhail P.: *See—*
  Albertinsky, Boris I.; Dmitrieva, Nina M.; Evseev, Anatoly K.; Zotov, Ivan P.; Ivanov, Andrei S.; Sviniin, Mikhail P.; Suslov, Valentin A.; and Fedotov, Mikhail T., 4,441,150, Cl. 363-126.000.
Swanson, Billy L., to Phillips Petroleum Company. Gelled compositions and well treating. 4,440,228, Cl. 166-274.000.
Swart, Louis M., to U.S. Philips Corporation. Beam current control for television camera. 4,441,122, Cl. 358-41.000.
Sweeney, William A., to Chevron Research Company. Molding pillars in underground mining of oil shale. 4,440,449, Cl. 299-11.000.
Sweeney, William A., to Chevron Research Company. Purification of olefins by boron trifluoride-alcohol treatment. 4,440,969, Cl. 585-851.000.
Sweet, Edmund G. F.: *See—*
  Stevens, Larry G. H.; Sweet, Edmund G. F.; and Vresk, Franklin V., 4,440,048, Cl. 81-440.000.
Swesey, Calvin M.: *See—*
  Roberts, Gary G.; and Swesey, Calvin M., 4,439,952, Cl. 51-93.000.
Swindell, Harold J.; and Thompson, Randall G., to Phillips Petroleum Company. Regenerator temperature control. 4,440,725, Cl. 422-62.000.
Szabo, George S. A. Convertible seats for transport. 4,440,439, Cl. 297-62.000.
Szirmai, Stephen G.: *See—*
  Morton, David H.; Szirmai, Stephen G.; and Potter, Edmund C., 4,440,800, Cl. 427-13.000.
Tabb, David L.; and Burrows, Janine P., to Helena Laboratories Corporation. Composition for detecting ketone bodies and method of preparation. 4,440,724, Cl. 422-56.000.
Tabuchi, Kazuhiro, to Dai Nippon Insatsu Kabushiki Kaisha. Photomask and photomask blank. 4,440,841, Cl. 430-5.000.
Tachita, Ryobun: *See—*
  Hayakawa, Yoshihiro; Yano, Tsutomu; Tachita, Ryobun; Fukukita, Hiroshi; Irioka, Kazuyoshi; and Fukumoto, Akira, 4,440,025, Cl. 73-642.000.
Tady Corporation: *See—*
  Heep, Jerry J.; and Schreiber, Paul, 4,440,987, Cl. 179-2.0DP.
Taguchi, Yasuo; and Nakao, Satoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Ignition control device. 4,440,130, Cl. 123-427.000.
Takacs, Ferenc: *See—*
  Daroczy, Janos; Erdelyi, Janos; Havas, Jeno; Kecskes, Lajos; Muller, Henrik; Nyiro, Katalin; and Takacs, Ferenc, 4,440,619, Cl. 204-401.000.
Takahama, Sho, to Konan Camera Research Institute. Photographic transparency supporting device. 4,440,491, Cl. 355-75.000.
Takahashi, Hiroshi: *See—*
  Tomikawa, Kouichi; and Takahashi, Hiroshi, 4,440,499, Cl. 366-3.000.
Takahashi, Masayoshi: *See—*
  Nomoto, Reishi; Takahashi, Masayoshi; and Ebata, Yoshikazu, 4,440,171, Cl. 128-335.500.
Takanashi, Akihiro: *See—*
  Kuniyoshi, Shinji; Takanashi, Akihiro; Kurosaki, Toshiei; Hosaka, Sumio; Kawamura, Yoshio; and Terasawa, Tsuneo, 4,441,206, Cl. 382-08.000.
Takao, Hiroshi: *See—*
  Ikezawa, Kenji; Takao, Hiroshi; Ambe, Satoshi; and Uchida, Masaaki, 4,439,911, Cl. 29-570.000.
Takaoka, Hidetugu; and Shimazu, Yuji, to Hamamatsu TV Co., Ltd. Cathode for a gas discharge tube. 4,441,048, Cl. 313-346.00R.
Takashima, Hiroaki: *See—*
  Uemura, Seiichi; Yamamoto, Shunichi; Hirose, Takao; Takashima, Hiroaki; and Kato, Osamu, 4,440,624, Cl. 208-22.000.
Takeda Chemical Industries, Ltd.: *See—*
  Kuzuna, Seiji; Kishimoto, Shoji; and Aono, Tetsuya, 4,440,691, Cl. 260-429.900.
Takeda, Tsuneshi; Otsuji, Kazuya; Tamura, Junichi; Morii, Yoshikazu; Higashiwaki, Michio; and Nakatani, Yoshitaka, to Kao Soap Co., Ltd. Hollow granular percarbonate. 4,440,732, Cl. 423-415.00P.
Takehisa, Shigeru, to Kabushikikaisha Yoshida. Anesthetizer for dental treatment. 4,440,167, Cl. 128-303.100.
Takemoto, Toyoki: *See—*
  Shibata, Jun; Yamada, Haruyasu; Mori, Toshiki; and Takemoto, Toyoki, 4,441,198, Cl. 377-78.000.
Takeshige, Kenji; Hirabe, Kenji; Ogawa, Yukifumi; Arikata, Kazuyoshi; Yako, Kazunori; Sakai, Kenichi; Matsuo, Toshinori; and Kamio, Hiroshi, to Nippon Kokan Kabushiki Kaisha. Method and apparatus for cooling steel sheet. 4,440,584, Cl. 148-128.000.
Takeshima, Kiyoshi; and Hasegawa, Akira, to Yoshida Kogyo K.K. Slide fastener stringer. 4,439,898, Cl. 24-401.000.
Takeuchi, Hirosato; and Mikiya, Toshio, to Nitto Kohki Co., Ltd. Solar heat collector. 4,440,156, Cl. 126-443.000.
Takeuchi, Shoji; Nishiyama, Kozaburo; and Gomi, Tadashi, to Fuji Kasei Co., Ltd.; and Yuho Chemicals Inc. Powdered cleaning composition. 4,440,661, Cl. 252-89.100.
Takino, Shigekatzu: *See—*
  Murai, Masasumi; Kondo, Hirokazu; and Takino, Shigekatzu, 4,440,090, Cl. 104-127.000.
Tamai, Yasumasa; and Koyama, Takaichi, to Hitachi, Ltd. Method of repairing housing of control rod driving system. 4,440,339, Cl. 228-119.000.
Tamosauskas, Albert E., to PPG Industries, Inc. Peroxide emulsions and sizing composition containing same. 4,440,885, Cl. 524-57.000.
Tamura, Junichi: *See—*
  Takeda, Tsuneshi; Otsuji, Kazuya; Tamura, Junichi; Morii, Yoshikazu; Higashiwaki, Michio; and Nakatani, Yoshitaka, 4,440,732, Cl. 423-415.00P.
Tanaka, Hiroaki: *See—*
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Tanaka, Junichi: *See—*
  Ishikawa, Toshikatsu; Tanaka, Junichi; Teranishi, Haruo; Okamura, Tatsuya; and Hayase, Tokuji, 4,440,571, Cl. 75-229.000.
Tanaka, Kunihiko: *See—*
  Kamiya, Takashi; Tanaka, Kunihiko; Nakai, Yoshiharu; and Sakane, Kazuo, 4,440,766, Cl. 424-246.000.
Tanaka, Masaaki: *See—*
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Tanaka, Masamichi; and Wada, Hiroto, to Tokyo Shibaura Denki Kabushiki Kaisha. Electret device. 4,441,038, Cl. 307-400.000.
Tanaka, Masato: *See—*
  Sonoda, Takenori; Watanabe, Nobuhiko; and Tanaka, Masato, 4,441,184, Cl. 371-40.000.
Tanaka, Shoichi: *See—*
  Ishibashi, Junya; Miyazaki, Shigeru; and Tanaka, Shoichi, 4,440,511, Cl. 384-278.000.
Tanaka, Tsutomu: *See—*
  Matsui, Ichiro; Tanaka, Tsutomu; Bando, Yukio; and Ohashi, Kiyonobu, 4,440,778, Cl. 424-274.000.
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Tanida, Hiroshi: *See—*
  Tsuji, Teruji; Hahashima, Yoshio; Yoshioka, Mitsuru; Narisada, Masayuki; Tanida, Hiroshi; Komeno, Taichiro; and Nagata, Wataru, 4,440,683, Cl. 260-239.00A.
Taniguchi, Nobuyuki: *See—*
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Tanino, Mikio; and Shimada, Yukio, to Nissan Motor Company, Limited. Air-conditioner for an automotive vehicle. 4,440,212, Cl. 165-12.000.
Tanioka, Susumu: *See—*
  Ihara, Keisuke; Hoshino, Shozi; and Tanioka, Susumu, 4,440,074, Cl. 99-510.000.
Tapio, Olli: *See—*
  Koski, Erkki; and Tapio, Olli, 4,440,598, Cl. 162-305.000.
Tappe, Horst; Lowenfeld, Rudolf; Kosubek, Uwe; and Kallay, Maria, to Cassella Aktiengesellschaft. Water-insoluble monoazo dyestuffs and their preparation. 4,440,681, Cl. 260-207.100.
Tappehorn, Bernd: *See—*
  Keiter, Alfred; Mudder, Wolfgang; and Tappehorn, Bernd, 4,440,514, Cl. 400-208.000.

- Taylor, Donald F.; and Boyle, William G., to Otis Engineering Corporation. Submergible pump installation. 4,440,221, Cl. 166-106.000.
- Taylor, Geoffrey R.: *See—*
  - Collins, Ronald B.; Dowzall, Martin E.; Smith, Brian J.; and Taylor, Geoffrey R., 4,440,590, Cl. 156-234.000.
- Taylor, Jack D.; and Smith, Kenneth V., to Carstab Corporation. Halogen-containing polymers stabilized with organic antimony compound and an ortho mercapto phenol compound. 4,440,891, Cl. 524-177.000.
- Taylor, John R.: *See—*
  - Greenig, Nelson L.; Taylor, John R.; and Schwartz, Richard S., 4,441,126, Cl. 358-293.000.
- Taylor, Michael J., to Rogers Corporation. Miniaturized bus bar with capacitors and method of making same. 4,440,972, Cl. 174-72.00B.
- Teich, Wesley W.; Freedman, George; and Adamski, Joseph R., to Raytheon Company. Cook-by-weight microwave oven. 4,441,002, Cl. 219-10.55B.
- Teknor Apex Company: *See—*
  - Buchan, Walter; Cardin, Paul P.; and Fain, Norman M., 4,440,818, Cl. 428-99.000.
- Teledyne Industries, Inc.: *See—*
  - Barbeau, Dennis E., 4,441,156, Cl. 364-431.020.
- Telematic Products, Inc.: *See—*
  - Barnett, Mark L.; and Owens, John C., 4,440,978, Cl. 179-5.500.
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  - Kuniyoshi, Shinji; Takanashi, Akihiro; Kurosaki, Toshiei; Hosaka, Sumio; Kawamura, Yoshio; and Terasawa, Tsuneo, 4,441,206, Cl. 382-08.000.
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  - De Freitas, Elias M., 4,440,328, Cl. 222-538.000.
- Teske, Lothar. Ash-removal conveyor for a coal-fired boiler. 4,440,097, Cl. 110-167.000.
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  - Hunter, Walter D., 4,440,652, Cl. 252-8.55D.
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  - Sanderson, John R.; Watts, Lewis W., Jr.; and Brader, Walter H., Jr., 4,440,870, Cl. 502-207.000.
- Texas A & M University System, The: *See—*
  - Dhar, Hari P.; Bockris, John O.; and Lewis, Donald H., 4,440,611, Cl. 204-147.000.
- Texas Instruments Incorporated: *See—*
  - Henderson, Alva E.; and Wiggins, Richard H., 4,441,201, Cl. 381-51.000.
  - McDonough, Kevin C.; Hayn, John W.; Bellay, Jeffrey D.; and Thaden, Robert C., 4,441,154, Cl. 364-200.000.
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- Thiokol Corporation: *See—*
  - Berkley, George A., 4,440,060, Cl. 89-1.50D.
- Thomas, Frank-Gerhard: *See—*
  - Berkes, Klaus; Forster, Helmut; Huth, Wolfgang; Ritschel, Gunter; Schebiella, Georg; Scholz, Norbert; and Thomas, Frank-Gerhard, 4,440,797, Cl. 426-613.000.
- Thomas, George L., to General Electric Company. Lamp seal glass. 4,441,051, Cl. 313-579.000.
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  - Resneau, Jean-Claude; Roset, Pierre; and Doyen, Jean, 4,440,828, Cl. 428-334.000.
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- Tipton, Robert G., Jr. Gate valve. 4,440,381, Cl. 251-214.000.
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  - Aubert, Jean-Pierre P. A.; and Tirole, Jacques P. H., 4,440,834, Cl. 428-554.000.
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  - Kostylev, Alexandr D.; Gileta, Vladimir P.; Grigoraschenko, Vladimir A.; Tkach, Khaim B.; Bakunin, Vladimir A.; Frenkel, Valery Y.; Kozlov, Valery A.; Reifisov, Jury B.; Chepurnoi, Nikolai P.; Bondar, Mikhail J.; Drobyazko, Vladimir F.; Stazhevsky, Stanislav B.; Ratskevich, Gerald I.; Fedorov, Alexandr A.; Polyakov, Anatoly S.; Bobylev, Leonid M.; Tsvetkov, Evgeny N.; and Petreev, Anatoly M., 4,440,240, Cl. 175-20.000.
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  - Inoue, Hiroshi; Isoi, Masaaki; and Sei, Kazuo, 4,440,911, Cl. 525-301.000.
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  - Yuji, Soeda; and Goto, Akio, 4,439,976, Cl. 53-403.000.
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  - Ihara, Keisuke; Hoshino, Shozi; and Tanioka, Susumu, 4,440,074, Cl. 99-510.000.
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  - Hirata, Akio, 4,441,148, Cl. 363-54.000.
  - Iida, Kazuhiko, 4,441,208, Cl. 382-56.000.
  - Kanuma, Akira, 4,441,158, Cl. 364-758.000.
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  - Moriya, Yoshiaki; Mitani, Ryo; and Kobayashi, Atsushi, 4,441,031, Cl. 307-66.000.
  - Oota, Hiroyuki; Aoshima, Terutaka; Yamamori, Kenji; and Narita, Ryuho, 4,441,016, Cl. 219-441.000.
  - Sasaki, Itsuo; and Suzuki, Hiroaki, 4,441,169, Cl. 365-190.000.
  - Taguchi, Yasuo; and Nakao, Satoshi, 4,440,130, Cl. 123-427.000.
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  - Langenhorst, Gunter, 4,439,965, Cl. 52-211.000.
- Toppan Printing Co., Ltd.: *See—*
  - Yamaguchi, Takashi, 4,440,840, Cl. 430-4.000.
- Toray Industries, Inc.: *See—*
  - Asakura, Toshiyuki; Kobayashi, Hiroaki; and Noguchi, Yukio, 4,440,915, Cl. 525-537.000.
  - Matsumoto, Tadayuki; Imaeda, Kozo; Mineo, Masatoshi; and Nakagawa, Kiyoshi, 4,439,903, Cl. 28-258.000.
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  - Sasaki, Junichi; and Okayama, Yoshihiko, 4,441,161, Cl. 364-900.000.
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  - Amano, Kazunori; Aizawa, Bunji; Ibe, Akio; and Sekikawa, Yoichi, 4,440,147, Cl. 126-201.000.
- Totoku Co., Ltd.: *See—*
  - Morimoto, Tsuyoshi, 4,440,309, Cl. 220-235.000.
- Totten, Adrian M.: *See—*
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  - Kuze, Katsuaki; Matsuyama, Yuziro; Hashimoto, Hiroshi; Ohta, Takeshi; and Makimura, Osamu, 4,440,924, Cl. 528-275.000.
- Toyo Contact Lens Co., Ltd.: *See—*
  - Tsuzuki, Akira; Kibe, Takeo; and Hioki, Shunichi, 4,440,662, Cl. 252-106.000.
- Toyo Kogyo Co. Ltd.: *See—*
  - Shiihara, Takeo; Niihara, Toshihiro; Iwata, Hidemi; and Ishii, Noboru, 4,440,236, Cl. 173-8.000.
- Toyo Systems, Ltd.: *See—*
  - Hayashibe, Shuji, 4,441,151, Cl. 364-157.000.
- Toyoda Koki Kabushiki Kaisha: *See—*
  - Yamakage, Tetsuro, 4,440,530, Cl. 408-3.000.
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- Toyota Jidosha Kabushiki Kaisha: *See—*
  - Kawagoe, Michio; and Tanaka, Masaaki, 4,440,140, Cl. 123-571.000.
  - Kubo, Seitoku; Kuramochi, Koujiro; and Kyushima, Tatsuo, 4,440,276, Cl. 192-3.290.
  - Mori, Akio; Watanabe, Shozo; Matsunaga, Mitsunobu; Machizawa, Kenzi; and Minowa, Ryohei, 4,439,999, Cl. 62-238.300.
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  - Kobayashi, Nobuyuki; and Isobe, Toshiaki, 4,440,119, Cl. 123-492.000.
  - Nakano, Jiro; and Watanabe, Yohei, 4,440,128, Cl. 123-339.000.
  - Tsujimura, Masakuni; Miyagi, Hideo; Kohashi, Mamoru; and Kurii, Masaaki, 4,440,141, Cl. 123-609.000.
- TRAK Sportartikel GmbH: *See—*
  - Staufer, Adolf, 4,440,418, Cl. 280-604.000.
- Trappmann, Klaus: *See—*
  - Weiler, Wolfgang; and Trappmann, Klaus, 4,439,981, Cl. 60-39.320.
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  - Keeler, Arthur A.; Rice, William M.; and Tremayne, Edward C., 4,440,366, Cl. 244-138.00R.
- Treuhaft, Martin B.; and Winquist, Knut L. Actuator. 4,440,325, Cl. 222-402.140.
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  - Astle, William H., 4,440,531, Cl. 408-82.000.
- Trickel, Lorn L.; and Stultz, William H., to Precured RDF Tirefill, Inc. Composite, solid, vehicle tire. 4,440,208, Cl. 152-314.000.
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- Trinity Associates: *See—*
  - Christine, William C., 4,440,316, Cl. 222-83.500.
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- Trivedi, Jitendra K.: *See—*
  - Caputo, William R.; and Trivedi, Jitendra K., 4,440,024, Cl. 73-529.000.
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  - Schwiers, Friedrich-Wilhelm; and Trutzschler, 4,439,894, Cl. 19-0.200.
- Trutzschler GmbH & Co. KG: *See—*
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  - Murai, Masasumi; Kondo, Hirokazu; and Takino, Shigekatzu, 4,440,090, Cl. 104-127.000.
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  - Naito, Mitikatu; Yano, Kiyotosi; Itou, Kazuo; and Tsuzuki, Kunihiro, 4,440,139, Cl. 123-569.000.
- Tsvetkov, Evgeny N.: *See—*
  - Kostylev, Alexandr D.; Gileta, Vladimir P.; Grigoraschenko, Vladimir A.; Tkach, Khaim B.; Bakunin, Vladimir A.; Frenkel, Valery Y.; Kozlov, Valery A.; Reifisov, Jury B.; Chepurnoi, Nikolai P.; Bondar, Mikhail J.; Drobyazko, Vladimir F.; Stazhevsky, Stanislav B.; Ratskevich, Gerald I.; Fedorov, Alexandr A.; Polyakov, Anatoly S.; Bobylev, Leonid M.; Tsvetkov, Evgeny N.; and Petreev, Anatoly M., 4,440,240, Cl. 175-20.000.
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- Tunzi, Burton R.: *See—*
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- Turbett, Robert J., to Union Carbide Corporation. Compositions of hydrocarbon-substituted diphenyl amines and high molecular weight polyethylene glycols; and the use thereof as water-tree retardants for polymers. 4,440,671, Cl. 252-573.000.
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- Turner, George F. A. M.: *See—*
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- Tyler Refrigeration Corporation: *See—*
  - Ibrahim, Fayez F., 4,439,992, Cl. 62-82.000.
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  - Judy, Millard M.; and Sutko, John L., 4,440,638, Cl. 210-198.200.
- Ube Industries, Ltd.: *See—*
  - Makino, Hiroshi; Kusuki, Yoshihiro; Harada, Takashi; Shimazaki, Hiroshi; and Isida, Tosio, 4,440,643, Cl. 210-500.200.
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- Uher, Edmond. Tumbler lock. 4,440,008, Cl. 70-364.00R.
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- UMC Industries, Inc.: *See—*
  - Heller, Werner H., 4,440,044, Cl. 74-804.000.
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- Umezu, Takashi: *See—*
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  - Siglock, John V., 4,441,056, Cl. 315-290.000.
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  - Bailey, John C., 4,440,836, Cl. 429-48.000.
  - Kazaitis, Michael P., 4,439,890, Cl. 17-1.00R.
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  - Robeson, Lloyd M., 4,440,890, Cl. 524-159.000.
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  - Weisbeck, Ralph L., 4,440,052, Cl. 83-140.000.
- Uniroyal, Inc.: *See—*
  - Paddock, Charles F., 4,440,825, Cl. 428-318.600.
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  - Morton, David H.; Szirmai, Stephen G.; and Potter, Edmund C., 4,440,800, Cl. 427-13.000.
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  - Agriculture: *See—*
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    - Witucki, Edward F.; and Flanagan, Joseph E., 4,440,687, Cl. 260-349.000.
  - Army: *See—*
    - Eitel, Frederick G., 4,440,506, Cl. 374-32.000.
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    - Pollard, John H.; and Ramsey, John B., Jr., 4,439,912, Cl. 29-572.000.
    - Scovill, John P.; Klayman, Daniel L.; Massie, Samuel P.; Grant, Steven D.; Gonzalez, Armando; Morrison, Norman E.; and Dobek, Arthur S., 4,440,771, Cl. 424-258.000.
    - Thompson, Richard J.; and Fruchtnicht, Ocke C., 4,440,587, Cl. 156-154.000.
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    - Dale, Steinar J., 4,440,970, Cl. 174-14.00R.
    - Rose, Ronald P., 4,440,714, Cl. 376-104.000.
    - Shimotake, Hiroshi; and Bartholme, Louis G., 4,440,837, Cl. 429-112.000.
  - Health and Human Services: *See—*
    - Neville Jr., David M.; and Youle, Richard J., 4,440,747, Cl. 424-85.000.
  - National Aeronautics and Space Administration: *See—*
    - Dunn, Thomas J., 4,439,968, Cl. 52-404.000.
  - National Security Agency: *See—*
    - Cohen, Jonathan D., 4,440,472, Cl. 350-162.120.
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    - Biblarz, Oscar; Miller, James A.; and Laib, Ronald J., 4,439,980, Cl. 60-39.060.
    - Holtrop, John W., 4,440,365, Cl. 244-137.00R.
    - McEachern, James F., 4,441,173, Cl. 367-13.000.
    - Sheem, Sang K., 4,440,498, Cl. 356-350.000.
- U.S. Philips Corporation: *See—*
  - Bakker, Pieter, 4,440,980, Cl. 179-81.00R.
  - Gerritsen, Jan, 4,441,120, Cl. 358-10.000.
  - Kaanders, Johannes M. G. M.; van Rijsewijk, Cornelis H. M.; and Smerecnik, Antoon F., 4,440,982, Cl. 179-107.00R.
  - Khoe, Giok D., 4,440,470, Cl. 350-96.200.
  - Lippits, Gerardus J. M.; Van Den Broek, Arnoldus J. M.; Op Het Veld, Adriaan J. G.; Dijkstra, Rinse; and De Jonge, Jelis, 4,440,586, Cl. 156-151.000.
  - Rosenthal, Manfred; and Weber, Wendelin, 4,440,516, Cl. 400-616.100.
  - Smid, Albert; and Haisma, Jan, 4,440,699, Cl. 264-1.400.
  - Sprengers, Leo M., 4,441,045, Cl. 313-25.000.
  - Swart, Louis M., 4,441,122, Cl. 358-41.000.
  - Ten Pas, Jan L., 4,441,108, Cl. 343-857.000.
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- United Technologies Corporation: *See—*
  - Donnelly, Brian G.; and Stearns, Charles F., 4,440,192, Cl. 137-501.000.
  - Haloburdo, Joseph J., Jr.; and Tommasini, Rocco M., 4,440,508, Cl. 374-144.000.
  - Hansen, Kenneth P., 4,440,191, Cl. 137-468.000.
  - Madden, William M.; and Wiley, Walter H., 4,440,347, Cl. 239-265.390.
  - Mottier, Francois M., 4,440,839, Cl. 430-2.000.
  - Wiley, Walter H., 4,440,346, Cl. 239-265.390.
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  - Colwell, Robert, 4,441,042, Cl. 310-42.000.
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  - Rutter, William J.; Goodman, Howard M.; Ullrich, Axel; Shine, John; Chirgwin, John; and Pictet, Raymond, 4,440,859, Cl. 435-172.000.
- University of Dayton: *See—*
  - Minardi, John E.; Lawson, Maurice O.; von Ohain, Hans P.; and Salyer, Ival O., 4,439,988, Cl. 60-649.000.
- University of Kentucky Research Foundation, The: *See—*
  - Kao, David T., 4,441,029, Cl. 290-52.000.
- University of Melbourne, The: *See—*
  - Tong, Yit C.; Seligman, Peter M.; Clark, Graeme M.; Patrick, James F.; and Millar, John B., 4,441,202, Cl. 381-68.000.
- University of Michigan, Regents of the: *See—*
  - Lougheed, Robert M.; and Mudge, Trevor N., 4,441,207, Cl. 382-8.000.
- University Patents, Inc.: *See—*
  - Wilkins, Ebtisam, 4,440,175, Cl. 128-635.000.
- UOP Inc.: *See—*
  - Stine, Laurence O., 4,440,629, Cl. 208-111.000.
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- Urabe, Hirokuni, to Shigiya-Machinery Works Ltd. Unusual vibration transducer apparatus in machine tools. 4,441,103, Cl. 340-680.000.
- Urano, Fumio; and Umetsu, Junji, to Asahi Kogaku Kogyo Kabushiki Kaisha. Drop-proof and dust-proof device in rotary operation section of camera. 4,440,403, Cl. 277-81.00R.
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  - Sobolewski, George, 4,440,092, Cl. 104-291.000.
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  - Horiuchi, Tatsuo; and Kiyota, Kazushige, 4,441,144, Cl. 362-375.000.
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  - Suzuki, Yoshitsugu; Iizuka, Syogo; Kajiyama, Shigeo; Usui, Kenji; and Kobayashi, Masahiro, 4,440,053, Cl. 83-282.000.
- USV Pharmaceutical Corporation: *See—*
  - Huang, Fu-chih, 4,440,935, Cl. 548-326.000.
  - Lee, Thomas D.; and Brown, Richard E., 4,440,929, Cl. 544-346.000.
  - Suh, John T.; Menard, Paul R.; and Jones, Howard, 4,440,941, Cl. 560-20.000.
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- Vallod, Joseph: *See—*
  - Borne, Andre; Vallod, Joseph; and Curvat, Rene, 4,440,049, Cl. 81-467.000.
- Valmet Oy: *See—*
  - Karras, Matti R.; and Hirsimaki, Olavi, 4,440,507, Cl. 374-39.000.
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- Van Buskirk, E. James; and Ennis, James, to Silver Industries. Tamper-evident closure. 4,440,306, Cl. 215-230.000.
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  - Verstegen, Judicus M. P. J.; Verlijsdonk, Johannus G.; De Meester, Emiel P. J.; Van de Spijker, Willebrordus H. M. M.; and Verriet, Johannes G., 4,441,049, Cl. 313-486.000.
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  - Fawzi, Mahdi B.; Benedict, James J.; Bugaj, Joseph E.; Degenhardt, Charles R.; and Van Duzee, Barry F., 4,440,738, Cl. 424-1.100.
- van Dyke, Martin J.: *See—*
  - Gerchman, Robert D.; Newport, Ronald L.; and van Dyke, Martin J., 4,441,157, Cl. 364-551.000.
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- van Mil, Martinus P. G., to Stork PMT B.V. Device for dividing slaughtered poultry. 4,439,891, Cl. 17-11.000.
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- van Rijsewijk, Cornelis H. M.: *See—*
  - Kaanders, Johannes M. G. M.; van Rijsewijk, Cornelis H. M.; and Smerecnik, Antoon F., 4,440,982, Cl. 179-107.00R.
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- Varghese, Philip: *See—*
  - Derbyshire, Francis J.; Varghese, Philip; and Whitehurst, Darrell D., 4,440,622, Cl. 208-8.0LE.
- Varo, Inc.: *See—*
  - Evans, William E.; and Gillett, Jimmie D., 4,441,062, Cl. 318-703.000.

- Vasalos, Iacovos A.; and Wollaston, Eugene G., to Standard Oil Company (Indiana). Catalytic cracking with reduced emission of noxious gas. 4,440,632, Cl. 208-113.000.
- Vasudev, Prahalad K., to Hughes Aircraft Company. Process for fabrication of monolithic transistor coupled electroluminescent diode. 4,439,910, Cl. 29-569.00L.
- Vaughan, Quentin D., to Visual Graphics Corporation. Mandrel and core assembly for large format cameras. 4,440,357, Cl. 242-68.500.
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  - Berkes, Klaus; Forster, Helmut; Huth, Wolfgang; Ritschel, Gunter; Schebiella, Georg; Scholz, Norbert; and Thomas, Frank-Gerhard, 4,440,797, Cl. 426-613.000.
- Vehovic, David: *See—*
  - Baker, Paul V.; and Vehovic, David, 4,440,070, Cl. 98-50.000.
- Velman, Boris A. Recreational sleigh. 4,440,408, Cl. 280-7.120.
- Velsicol Chemical Corporation: *See—*
  - Stach, Leonard J., 4,440,567, Cl. 71-105.000.
- Verdol S.A.: *See—*
  - Arvai, Tibor, 4,440,196, Cl. 139-59.000.
  - Winkelmann, Roland, 4,439,979, Cl. 57-58.860.
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  - Cornu, Jean; Detriche, Jean-Marie; Gil, Pierre; Marchal, Paul; and Vertut, Jean, 4,441,010, Cl. 219-124.340.
- Vesnier, Patrick H.: *See—*
  - Pennel, Jean-Francois; and Vesnier, Patrick H., 4,440,519, Cl. 403-391.000.
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  - Kreinin, Efim V.; Zvyagimtsev, Kirill N.; and Fedorov, Nikolai A., 4,440,224, Cl. 166-245.000.
- Vetco Offshore, Inc.: *See—*
  - Pfeifler, John R., II, 4,440,423, Cl. 285-25.000.
- Vetter, Kurt; and Schweiker, Werner. Method and apparatus for the automatic dynamic dosing at least of one fluid component of a mixed fluid. 4,440,314, Cl. 222-39.000.
- Vicor Corporation: *See—*
  - Vinciarelli, Patrizio, 4,441,146, Cl. 363-20.000.
- Vidal, Henri C. Marine structure. 4,440,527, Cl. 405-284.000.
- Vielstich, Gunther; Bauer, Hanns-Georg; Muhlenbeck, Josef; Otto, Josef; Feldhoff, Horst; Zollner, Dieter H.; and Rittmann, Friedrich, to Arc Technologies Systems Ltd. Coupling device for arc furnace electrodes. 4,441,190, Cl. 373-94.000.
- Vierling, Hermann: *See—*
  - Ohorodnik, Alexander; Keuper, Hans W.; Semmler, Horst; Hardel, Joachim; Vierling, Hermann; and Willms, Robert, 4,440,925, Cl. 528-487.000.
- Vignaud, Rene, to Societe Les Piles Wonder. Thin non-flat gas electrode, current collector and process of manufacture. 4,440,835, Cl. 429-42.000.
- Vinciarelli, Patrizio, to Vicor Corporation. Optimal resetting of the transformer's core in single ended forward converters. 4,441,146, Cl. 363-20.000.
- Vinoxen Company, Inc., The: *See—*
  - Benecke, Herman P.; and Sherwood, Bob E., 4,440,781, Cl. 424-285.000.
- Virgilio, Gustav, to Robert Bosch GmbH. Electronic control device for the fuel metering system of an internal combustion engine. 4,440,127, Cl. 123-325.000.
- Visual Graphics Corporation: *See—*
  - Vaughan, Quentin D., 4,440,357, Cl. 242-68.500.
- Voelter, Wolfgang: *See—*
  - Kalbacher, Hubert; and Voelter, Wolfgang, 4,440,692, Cl. 260-463.000.
- Volkswagenwerk AG: *See—*
  - Buchmuller, Gunter, 4,440,117, Cl. 123-41.720.
- Volkswagenwerk Aktiengesellschaft: *See—*
  - Danckert, Hermann, 4,440,257, Cl. 180-300.000.
- Vologni, Armando; and Vologni, Giorgio. Bulb socket and cover assembly. 4,440,467, Cl. 339-154.00L.
- Vologni, Giorgio: *See—*
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- von der Eltz, Hans-Ulrich; and Oppitz, Peter, to Hoechst Aktiengesellschaft. Process for the continuous uniform application of dye liquors to wet textile fabric webs. 4,439,881, Cl. 8-151.000.
- von Ohain, Hans P.: *See—*
  - Minardi, John E.; Lawson, Maurice O.; von Ohain, Hans P.; and Salyer, Ival O., 4,439,988, Cl. 60-649.000.
- Vreeland, William C., to Consolidated Papers, Inc. Method and apparatus for recirculating coating liquid in a paper coating apparatus. 4,440,809, Cl. 427-356.000.
- Vresk, Franklin V.: *See—*
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- W. C. Heraeus GmbH: *See—*
  - Bussard, Adrien; Aldinger, Fritz; and Sperner, Franz, 4,440,178, Cl. 128-784.000.
- W. F. Altenpohl, Inc.: *See—*
  - Altenpohl, Paul J., 4,439,892, Cl. 17-52.000.
- Waaben, Sigurd G.: *See—*
  - Federico, Joseph; and Waaben, Sigurd G., 4,440,985, Cl. 179-175.30F.
- Wacker-Chemie GmbH: *See—*
  - Deinhammer, Wolfgang, 4,440,959, Cl. 568-604.000.
- Wada, Hiroto: *See—*
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- Wadhwa, Rajinder K. Multipurpose nasal airway. 4,440,161, Cl. 128-202.130.
- Wadia, Darius A. Method and apparatus for processing raw meal having a high alkali chloride and/or sulfate content. 4,440,578, Cl. 106-100.000.
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  - Hirtsiefer, Karl-Richard; Muller, Johann; Walterscheid, Kurt; and Wagner, Paul-Heinz, 4,440,046, Cl. 81-57.390.
- Wahnschaffe, Jurgen: *See—*
  - Abermeth, Hubert; Deckert, Andreas; Muller, Helmut; and Wahnschaffe, Jurgen, 4,440,126, Cl. 123-321.000.
- Waitz, Jay A.; Marquez, Joseph A.; Patel, Mahesh G.; and Horan, Ann C., to Schering Corporation. Broad spectrum antibiotic complex produced by a novel micromonospora. 4,440,751, Cl. 424-114.000.
- Walker, Loren H.: *See—*
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- Walker, Robert A. Two-axis rudder trim for aircraft. 4,440,362, Cl. 244-87.000.
- Wallace, George E., to Emhart Industries, Inc. Wide island air defrost case utilizing air transfer circulating means. 4,439,993, Cl. 62-82.000.
- Wallace, John A.; and Bader, Bernard R., to Black Clawson, Inc. Fabric insertion system. 4,440,088, Cl. 104-7.00A.
- Wallman, P. Henrik, to Chevron Research Company. Recycle classifier for retorting oil shale. 4,440,623, Cl. 208-11.00R.
- Walowit, Jed A.: *See—*
  - Pinkus, Oscar; and Walowit, Jed A., 4,440,402, Cl. 277-80.000.
- Walser, Armin; and Fryer, Rodney I., to Hoffmann-La Roche Inc. Imidazodiazepines and processes therefor. 4,440,685, Cl. 260-245.600.
- Walsh, David A., to A. H. Robins Company, Inc. Methods of using 2-aminobiphenylacetic acids, esters, and metal salts thereof to treat inflammation. 4,440,785, Cl. 424-317.000.
- Walterscheid, Kurt: *See—*
  - Hirtsiefer, Karl-Richard; Muller, Johann; Walterscheid, Kurt; and Wagner, Paul-Heinz, 4,440,046, Cl. 81-57.390.
- Wandler, Richard A.; and Renkes, Kenneth R., to General Electric Company. Timer device and method of operating. 4,440,993, Cl. 200-38.00R.
- Wang, Fu-Chow. Foldable bicycle. 4,440,414, Cl. 280-287.000.
- Waniisi, Tetuya: *See—*
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- Ward, Aubrey P.: *See—*
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- Warncke, Ernst: *See—*
  - Winkler, Jorg; Matthiessen, Hans; Warncke, Ernst; and Pasternack, Adalbert, 4,440,166, Cl. 128-204.220.
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  - Blackwell, Bernie; Netherwood, Shelley; and Piccolo, Dominick J., 4,440,790, Cl. 426-3.000.
- Warren, Henry R., to RCA Corporation. Crosstalk filtering arrangement with variable frequency filtering to remove effects of FM carrier. 4,441,090, Cl. 333-165.000.
- Warren, Mark G. Surgical device. 4,440,168, Cl. 128-303.00B.
- Waschulewski, Hans-Georg, to Losenhausen Maschinenbau AG. Eccentric vibrator with shifting coupling. 4,440,034, Cl. 74-61.000.
- Wasco Products, Inc.: *See—*
  - Jentoft, Arthur P.; and Couture, Paul A., 4,439,962, Cl. 52-200.000.
- Watahiki, Naohisa: *See—*
  - Yamamoto, Takanobu; Sumida, Isao; Tsukamoto, Moriaki; Imani, Kazutake; and Watahiki, Naohisa, 4,440,151, Cl. 126-433.000.
- Watanabe, Ichiro: *See—*
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- Watanabe, Kiyoshi: *See—*
  - Katsumi, Ikuo; Kondo, Hideo; Yamashita, Katsuji; Hidaka, Takayoshi; Hosoe, Kazunori; Ariki, Yutaka; Yamashita, Toshiaki; and Watanabe, Kiyoshi, 4,440,784, Cl. 424-308.000.
- Watanabe, Masaki: *See—*
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- Watanabe, Masao: *See—*
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- Watanabe, Mitsuru, to Fuji Seiki Machine Works, Ltd. Cutting feed sensing device. 4,441,059, Cl. 318-39.000.
- Watanabe, Nobuhiko: *See—*
  - Sonoda, Takenori; Watanabe, Nobuhiko; and Tanaka, Masato, 4,441,184, Cl. 371-40.000.
- Watanabe, Shozo: *See—*
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- Watanabe, Yohei: *See—*
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- Watanabe, Yoshinobu: *See—*
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- Waters, Paul F.; and Scambos, Thomas T., to General Technology Applications, Inc. Process for solid state free radical reactions. 4,440,916, Cl. 525-54.200.
- Watson, James M.; and Butler, James R., to Cosden Technology, Inc. Process for enhancing recovery of oil from oil-bearing earth formations. 4,440,650, Cl. 252-8.55D.
- Watts, Lewis W., Jr.: *See—*
  - Sanderson, John R.; Watts, Lewis W., Jr.; and Brader, Walter H., Jr., 4,440,870, Cl. 502-207.000.
- Waukee Engineering Company Inc.: *See—*
  - Ramlow, Ralph W., 4,440,028, Cl. 73-861.550.
- Wavin B.V.: *See—*
  - Leloux, Arnoldus W., 4,439,990, Cl. 62-63.000.
  - Lunshof, Willem; and Beukers, Leonardus H. M., 4,441,209, Cl. 383-45.000.
  - van Dongeren, Jan P., 4,440,195, Cl. 138-115.000.
- Weathers, Edgar C. Special healing powder for livestock. 4,440,755, Cl. 424-150.000.
- Webb, Charles E., to Basic American Industries. Flow sensing apparatus. 4,441,102, Cl. 340-673.000.
- Weber, Heinz, to L. Schuler GmbH. Clutch and brake device for presses, punches and the like. 4,440,278, Cl. 192-18.00R.
- Weber, Kurt: *See—*
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- Weber, Wendelin: *See—*
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- Weber, Wolfgang: *See—*
  - Baudis, Ulrich; Biberbach, Peter; and Weber, Wolfgang, 4,440,581, Cl. 148-6.110.
- Wedel, Gregory L., to Beloit Corporation. Heat transfer roll and method. 4,440,214, Cl. 165-90.000.
- Weidig, Charles F., to Ethyl Corporation. Gasohol having corrosion inhibiting properties. 4,440,545, Cl. 44-56.000.
- Weiler, Wolfgang; and Trappmann, Klaus, to MTU Motoren-und Turbinen-Union Munchen GmbH. Arrangement for maintaining clearances between a turbine rotor and casing. 4,439,981, Cl. 60-39.320.
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- Weir, Donald R.; and Master, Ian M., to Sherritt Gordon Mines Limited. Recovery of zinc from zinc-containing sulphidic material. 4,440,569, Cl. 75-120.000.
- Weirich, Walter: *See—*
  - Dettmers, Michael; and Weirich, Walter, 4,440,522, Cl. 405-293.000.
- Weis, Rudolf R., to Crown Zellerbach Corporation. Discrete article transport and consolidating system. 4,440,289, Cl. 198-448.000.
- Weisbeck, Ralph L., to Unipunch Products, Inc. Punch assembly with unitary stripper spring assembly. 4,440,052, Cl. 83-140.000.
- Weise, Lutz: *See—*
  - Belart, Juan; Burgdorf, Jochen; Kircher, Dieter; and Weise, Lutz, 4,440,454, Cl. 303-114.000.
- Weisrock, William P., to Standard Oil Company. Use of peroxide in waterflood oil recovery. 4,440,651, Cl. 252-8.55D.
- Weiss, Bernard: *See—*
  - Downing, Harry M., 4,440,783, Cl. 424-302.000.
- Weiss, Joern-Volker; and Riemer, Heinz, to Chemische Werke Huels, AG. Emulsion based on epoxy resin and polyammonium salts and its preparation. 4,440,882, Cl. 523-401.000.
- Welker Engineering Company: *See—*
  - Welker, Robert H., 4,440,032, Cl. 73-863.840.
- Welker, Robert H., to Welker Engineering Company. Sampler incorporating a purge system. 4,440,032, Cl. 73-863.840.
- Wells, Edward R.; and Hensler, Thomas A., to Procter & Gamble Company, The. Wet-microcontracted paper and concomitant process. 4,440,597, Cl. 162-111.000.
- Wells, Thomas R., to Bell & Howell Company. Microfilm duplicator. 4,440,494, Cl. 355-100.000.
- Wempe, Lawrence K. Substrates coated with release composition based on polyvinyl alcohol and composites with pressure sensitive adhesives. 4,440,830, Cl. 428-352.000.
- Wenzel, William B.: *See—*
  - Hoopengardner, Merle C.; and Wenzel, William B., 4,439,904, Cl. 29-110.500.
- Werjefelt, Bertil. Life support system and method of providing fresh air to enclosed areas. 4,440,164, Cl. 128-205.250.
- Werkeugmaschinenfabrik Oerlikon-Buhrle AG: *See—*
  - Rossmann, Rudolf; and Cahannes, Paul, 4,440,085, Cl. 102-235.000.
- Werner, Lester W., to B-W Health Products, Inc. Adjustable bed with improved castor control assembly. 4,439,879, Cl. 5-60.000.
- Wernicke, Steven A. Foam dispensing apparatus. 4,440,320, Cl. 222-145.000.
- Wessel, Kenneth R., to Sealectro Corporation. Card reader with air passage cleaning structure. 4,441,018, Cl. 235-458.000.
- Westcott, Gerald R.: *See—*
  - Dayger, Douglas A.; Hryck, Michael D.; Skinner, Dean W.; and Westcott, Gerald R., 4,440,079, Cl. 101-93.030.
- Westerlund, Nils A. L.: *See—*
  - Haglund, Ingemar B.; and Westerlund, Nils A. L., 4,440,087, Cl. 102-275.110.
- Western Electric Co., Inc.: *See—*
  - Carroll, Arthur E., II; Lewis, Basil C., Jr.; and Yeazel, Howard T., 4,439,918, Cl. 29-840.000.
  - Dussault, Jean A., 4,441,183, Cl. 371-25.000.
  - Heebner, Richard W.; and Schmitt, Randal L., 4,441,124, Cl. 358-106.000.
- Western Solar Products, Inc.: *See—*
  - Leflar, James A.; and Stanwood, Phillip C., 4,440,152, Cl. 126-435.000.
- Westinghouse Electric Corp.: *See—*
  - Calvino, Ben J., 4,440,996, Cl. 200-148.00A.
  - Caputo, William R.; and Trivedi, Jitendra K., 4,440,024, Cl. 73-529.000.
  - Evans, Harmon A., 4,440,384, Cl. 266-149.000.
  - Lange, William J.; and Gosser, Robert B., 4,440,995, Cl. 200-144.00B.
  - Lanting, Richard J.; and Rentz, Bruce A., 4,440,455, Cl. 308-3.800.
  - Sassano, Daniel R., 4,439,914, Cl. 29-605.000.
- Westlake, David J.: *See—*
  - Gregory, Reginald; and Westlake, David J., 4,440,958, Cl. 560-247.000.
- Wetherell, Joseph J.: *See—*
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- Wexell, Dale R.: *See—*
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- Whitehurst, Darrell D.: *See—*
  - Derbyshire, Francis J.; Varghese, Philip; and Whitehurst, Darrell D., 4,440,622, Cl. 208-8.0LE.
- Whitesides, George M.; Mazenod, Francois P.; and Wong, Chi-Huey: Preparation of 6-deoxy-D-fructose and 6-deoxy-L-sorbose. 4,440,854, Cl. 435-94.000.
- Whitlock, James L.: *See—*
  - Mudder, Terrence I.; and Whitlock, James L., 4,440,644, Cl. 210-611.000.
- Whitney, Daniel E.; and De Fazio, Thomas L., to Charles Stark Draper Laboratory, Inc., The. Transferrable-center compliance system. 4,439,926, Cl. 33-185.00R.
- Whittemore, Jesse E., Jr., to AM International, Inc. Diazo material with waterborne drafting subbing composition of acrylic resin and aziridine and process of using. 4,440,847, Cl. 430-146.000.
- Wicker, Thomas H., Jr.: *See—*
  - Barbee, Robert B.; and Wicker, Thomas H., Jr., 4,440,922, Cl. 528-194.000.
- Widlar, Robert J., to National Semiconductor Corporation. Controlling secondary breakdown in bipolar power transistors. 4,441,116, Cl. 357-43.000.
- Widmer, Walter R.; and Baschong, Marcel, to Gretag Aktiengesellschaft. Code translator. 4,441,095, Cl. 340-347.0DD.
- Wiechert, Rudolf: *See—*
  - Annen, Klaus; Laurent, Henry; Hofmeister, Helmut; and Wiechert, Rudolf, 4,440,684, Cl. 260-239.570.
- Wierwille, Robert L.: *See—*
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- Wieser, Joseph: *See—*
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- Wiig, Erling O. Method and material for preparing a surface for winter sports. 4,440,832, Cl. 428-405.000.
- Wijsman, Dirk W., to Elho International B.V. Pot hanger. 4,440,371, Cl. 248-318.000.
- Wild, Gene M.: *See—*
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- Wiley, Walter H., to United Technologies Corporation. Axially translatable variable area convergent/divergent nozzle. 4,440,346, Cl. 239-265.390.
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- Wilhelm Ruf KG: *See—*
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- Wilkins, Ebtisam, to University Patents, Inc. Membrane electrode for non-ionic species. 4,440,175, Cl. 128-635.000.
- William Cotton Limited: *See—*
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  - Douglas, George H.; Studt, William L.; and Dodson, Stuart A., 4,440,949, Cl. 564-48.000.

- Williams, Eddie: *See—*
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- Williams, Frank: *See—*
  - Howe, Philip M.; Gibbons, Gould; Aseltine, Clifford L.; and Williams, Frank, 4,440,296, Cl. 206-3.000.
- Williams, Wallace W.; and Williams, Eddie. Air deflector and method of providing air deflector. 4,440,433, Cl. 296-15.000.
- Willis, Donald H., to RCA Corporation. Degaussing circuit for television receiver having switched mode power supply. 4,441,052, Cl. 315-8.000.
- Willms, Lothar; Mildenberger, Hilmar; Gunther, Dieter; Bauer, Klaus; Burstell, Helmut; and Bieringer, Hermann, to Hoechst Aktiengesellschaft. Heterocyclically substituted (halogeno)alkyl- and (halogeno-)alkoxysulfonylureas, and their use in agriculture. 4,440,565, Cl. 71-93.000.
- Willms, Robert: *See—*
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- Wilson, Joe C.; Hirozawa, Stanley T.; and Conville, John J., to BASF Wyandotte Corporation. Aqueous liquids containing metal cavitation-erosion corrosion inhibitors. 4,440,721, Cl. 422-16.000.
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- Wiltse, Dean P. Support stand for a food slicer. 4,440,185, Cl. 134-104.000.
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- Winkelmann, Roland, to Verdol S.A. Double twist spindle assembly. 4,439,979, Cl. 57-58.860.
- Winkler, Jorg; Matthiessen, Hans; Warncke, Ernst; and Pasternack, Adalbert, to Dragerwerk Aktiengesellschaft. Electrically and mechanically controllable closed cycle respirator. 4,440,166, Cl. 128-204.220.
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- Winter, William E.; and Markley, Gerald E., to Exxon Research and Engineering Co. Catalytic reforming process. 4,440,626, Cl. 208-65.000.
- Winter, William E.; and Markley, Gerald E., to Exxon Research and Engineering Co. Catalytic reforming process. 4,440,628, Cl. 208-65.000.
- Winters, Giorgio: *See—*
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- Winzer, Gerhard; Mahlein, Hans; and Reichelt, Achim, to Siemens Aktiengesellschaft. Optical wavelength-division multiplex system. 4,441,181, Cl. 370-3.000.
- Wiredal, Harry A. I., to Santrade Ltd. Drill tool. 4,440,244, Cl. 175-292.000.
- Wirstlin, Arthur N.: *See—*
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- Wiseman, John A., to Simplimatic Engineering Co. Guide mechanism and finger. 4,439,974, Cl. 53-248.000.
- Wisniewski, Joseph M., to Haworth, Inc. Bellows mounting arrangement for swivel chair. 4,440,372, Cl. 248-406.000.
- Wissman, Lawrence Y.: *See—*
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- Witman, Jack H., to Armstrong World Industries, Inc. Decorative surface covering. 4,440,826, Cl. 428-327.000.
- Witte, Donald H. Leveling and locating device and method of using. 4,439,961, Cl. 52-126.100.
- Wittern, Francis A.; and Wirstlin, Arthur N., to Fawn Engineering Co. Adjustable price setting mechanism for a vending machine. 4,440,285, Cl. 194-93.000.
- Witucki, Edward F.; and Flanagan, Joseph E., to United States of America, Air Force. Azido nitramino ethers. 4,440,687, Cl. 260-349.000.
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- Wolf, Gerhard D.; Bomer, Bruno; and Bierling, Robert, to Bayer Aktiengesellschaft. Agents having a tumor-inhibiting action and their use. 4,440,892, Cl. 524-283.000.
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- Wood, Obert R., II: *See—*
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- Wood, Ralph T.: *See—*
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- Wood, Rebecca S.: *See—*
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- Woodrite, Inc.: *See—*
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- Woodworth, Donald J., to Microdyne Corporation. Multiple bandwidth FM demodulator. 4,441,079, Cl. 329-131.000.
- Woodworth, Larry A.: *See—*
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- Worrall, Michael J.: *See—*
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- Wrona, Stanislaw, to International Business Machines Corporation. Correction apparatus for a cathode ray tube. 4,441,057, Cl. 315-368.000.
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- Yagasaki, Akio; and Watanabe, Masaki, to Honda Giken Kogyo Kabushiki Kaisha. Wiper device. 4,439,886, Cl. 15-250.200.
- Yagi, Yukinao: *See—*
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- Yamada, Hirohide: *See—*
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- Yamaguchi, Takashi, to Toppan Printing Co., Ltd. Photographic image-processing method. 4,440,840, Cl. 430-4.000.
- Yamaguchi, Yasumasa; Watanabe, Ichiro; and Satoh, Yoshiaki, to Nitto Chemical Industry Co., Ltd. Process for the continuous production of acrylamide or methacrylamide using microorganisms. 4,440,858, Cl. 435-129.000.
- Yamaha Hatsudoki Kabushiki Kaisha: *See—*
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- Yamakage, Tetsuro, to Toyoda Koki Kabushiki Kaisha. Machine tool with tool position compensating apparatus and contact detecting apparatus. 4,440,530, Cl. 408-3.000.
- Yamakawa, Toru, to Fuji Jukogyo Kabushiki Kaisha. Internal combustion engine provided with a plurality of power units. 4,439,989, Cl. 60-718.000.
- Yamamori, Kenji: *See—*
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- Yamamoto, Atsuko: *See—*
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- Yamamoto, Katsutoshi: *See—*
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- Yamamoto, Takanobu; Sumida, Isao; Tsukamoto, Moriaki; Imani, Kazutake; and Watahiki, Naohisa, to Hitachi, Ltd.; and Hitachi Chemical Co., Ltd. Solar heat collector. 4,440,151, Cl. 126-433.000.
- Yamashita, Katsuji: *See—*
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- Yamashita, Toshiaki: *See—*
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- Yano, Tsutomu: *See—*
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- Yazaki, Komei: *See—*
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- Yazawa, Hiroshi: *See—*
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- Yeazel, Howard T.: *See—*
  - Carroll, Arthur E., II; Lewis, Basil C., Jr.; and Yeazel, Howard T., 4,439,918, Cl. 29-840.000.
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- Yee, Lannie K.: *See—*
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  - Takeshima, Kiyoshi; and Hasegawa, Akira, 4,439,898, Cl. 24-401.000.
- Yoshida, Noriyuki; and Asai, Yoshimi, to Brother Kogyo Kabushiki Kaisha. Motor speed control system. 4,441,061, Cl. 318-329.000.
- Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, to Kureha Kagaku Kogyo Kabushiki Kaisha. Pharmaceutical composition comprising derivative of aminobenzoic acid for regulating prostaglandin. 4,440,757, Cl. 424-180.000.
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- Yoshotomi Pharmaceutical Industries Ltd.: *See—*
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- Youle, Richard J.: *See—*
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- Young, Peter T.: *See—*
  - Rice, Thomas E.; and Young, Peter T., 4,440,096, Cl. 108-3.000.
- Young, Rodney C.: *See—*
  - Durant, Graham J.; Ganellin, Charon R.; Owen, Geoffrey R.; and Young, Rodney C., 4,440,775, Cl. 424-269.000.
- Yourd, Raymond A., III: *See—*
  - Chromecek, Richard C.; Friends, Gary D.; Wissman, Lawrence Y.; and Yourd, Raymond A., III, 4,440,919, Cl. 526-263.000.
- Yu, Kenneth K.: *See—*
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- Yuasa, Yoshio, to Minolta Camera Kabushiki Kaisha. Exposure aiding device for an enlarger. 4,440,489, Cl. 355-69.000.
- Yuho Chemicals Inc.: *See—*
  - Takeuchi, Shoji; Nishiyama, Kozaburo; and Gomi, Tadashi, 4,440,661, Cl. 252-89.100.
- Yui, Katsuhiko: *See—*
  - Ikegami, Hiroshi; Nagira, Norichika; and Yui, Katsuhiko, 4,440,583, Cl. 148-128.000.
- Yuji, Soeda; and Goto, Akio, to Tokico Ltd. Method for filling gas into a metal container. 4,439,976, Cl. 53-403.000.
- Zahnradfabrik Friedrichshafen AG: *See—*
  - Bieber, Gerold, 4,440,272, Cl. 188-290.000.
  - Schreiner, Friedrich, 4,440,279, Cl. 192-30.00W.
- Zangrando, Roy A., to United States of America, Army. Gun operated electrical firing device. 4,440,063, Cl. 89-135.000.
- Zellner, Robert J.: *See—*
  - Opaskar, Vincent C.; Beach, Sidney C.; and Zellner, Robert J., 4,440,608, Cl. 204-43.00S.
- Zer, Eliezer: *See—*
  - Gottlieb, David; and Zer, Eliezer, 4,440,540, Cl. 414-462.000.
- Zimzik, Henry. Cooling emulsion and method of producing a cooling emulsion. 4,440,654, Cl. 252-34.700.
- Zinke, Horst: *See—*
  - Maul, Rudolf; Otto, Eberhard; and Zinke, Horst, 4,440,696, Cl. 260-976.000.
- Zoller, Gerhard: *See—*
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- Zollner, Dieter H.: *See—*
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- Zommer, Nathan, to Intersil, Inc. Monolithically merged field effect transistor and bipolar junction transistor. 4,441,117, Cl. 357-43.000.
- Zomorodi, Mostafa; and Trieber, Alan J., to Abbott Laboratories. Clear, autoclavable plastic formulation for medical liquid containers. 4,440,815, Cl. 428-35.000.
- Zotov, Ivan P.: *See—*
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- Zscheile, John W., Jr.: *See—*
  - Kingston, Samuel C.; Spencer, Billie M.; Zscheile, John W., Jr.; and Price, Robert, 4,441,194, Cl. 375-96.000.
- Zupan, Jacob A., to Merck & Co., Inc. Use of eucalyptol for enhancing skin permeation of bio-affecting agents. 4,440,777, Cl. 424-274.000.
- Zvyagimtsev, Kirill N.: *See—*
  - Kreinin, Efim V.; Zvyagimtsev, Kirill N.; and Fedorov, Nikolai A., 4,440,224, Cl. 166-245.000.
- Zychowski, Edwin A.; Jasenof, Kenneth E.; and Jimenez, Artemio L., to DeSoto, Inc. Thermosetting vinyl acetate tetrapolymer coatings. 4,440,894, Cl. 524-390.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 3RD DAY OF APRIL, 1984

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- Eastman Kodak Company: *See—*
  - Meyer, James W.; and Mooney, John E., Re. 31,547, Cl. 354-135.000.
- Meyer, James W.; and Mooney, John E., to Eastman Kodak Company. Exposure control mechanism for use with chemical flash. Re. 31,547, Cl. 354-135.000.
- Mooney, John E.: *See—*
  - Meyer, James W.; and Mooney, John E., Re. 31,547, Cl. 354-135.000.
- Takara Company, New York, Inc.: *See—*
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- Walker, Rocco D., to Zapata Industries, Inc. Anti-missiling bottle closure. Re. 31,546, Cl. 215-307.000.
- Watanabe, Tony, to Takara Company, New York, Inc. Dental operatory system. Re. 31,548, Cl. 433-77.000.
- Zapata Industries, Inc.: *See—*
  - Walker, Rocco D., Re. 31,546, Cl. 215-307.000.

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CERTIFICATES WERE ISSUED

- C. L. Frost & Son, Inc.: *See—*
  - Frost, Ruben E., B1 3,537,725, Cl. 308-187.200.
- Chenevard, Alexis, to SAPAL Societe Anonyme des Plieuses Automatiques. Method and apparatus for placing objects in boxes. B1 4,048,780, 4-3-84, Cl. 53-448.000.
- Frost, Ruben E., to C. L. Frost & Son, Inc. Trough-like seal for roller assembly. B1 3,537,725, 4-3-84, Cl. 308-187.200.
- SAPAL Societe Anonyme des Plieuses Automatiques: *See—*
  - Chenevard, Alexis, B1 4,048,780, Cl. 53-448.000.

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  - Peterson, Lars G. B.; and Schneider, Gerhard, 273,326, Cl. D24-27.000.
- Abberger, Thomas A. Fish lure. 273,318, 4-3-84, Cl. D22-27.000.
- Acrow (Engineers) Limited: *See—*
  - Young, George B. A., 273,334, Cl. D25-73.000.
- Anchor Hocking Corporation: *See—*
  - Thrush, James L., 273,263, Cl. D7-319.000.
- Apple Computer, Inc.: *See—*
  - Stewart, James R., 273,295, Cl. D14-109.000.
- Archeskie, Joseph R. Adjustable portable hand drill press holder. 273,299, 4-3-84, Cl. D15-132.000.
- Babcock & Wilcox Company, The: *See—*
  - Bean, Thomas R.; Stockmaster, Edward F.; and Whaley, George S., 273,291, Cl. D13-40.000.
- Bannigan, Francis R. Combined lamp and powerboard. 273,335, 4-3-84, Cl. D26-51.000.
- Barrera, Gilbert E. Combined toothpaste dispenser and toothbrush holder. 273,257, 4-3-84, Cl. D6-87.000.
- Baxter Travenol Laboratories, Inc.: *See—*
  - Rouch, Ellen A., 273,330. Cl. D24-51.000.
- Bean, Thomas R.; Stockmaster, Edward F.; and Whaley, George S., to Babcock & Wilcox Company, The. Digital logic module for mounting in a control panel. 273,291, 4-3-84, Cl. D13-40.000.
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  - Norton, Edward J.; Oparowski, Paul; and Belavitch, Alphonse L., 273,244, Cl. D2-310.000.
- Bortz, Paul B., to Vermont Stove Co., Inc. Multi-purpose stove tool. 273,267, 4-3-84, Cl. D8-14.000.
- Brownlee, Jerome E., to Dallas Fuel Laboratories, Inc. Heat exchanger housing. 273,324, 4-3-84, Cl. D23-136.000.
- Bulgari, Marina, to Zoldia Anstalt (NOW) Marina B Creation S.A. Ring. 273,283, 4-3-84, Cl. D11-34.000.
- Callais, Ivan G., Jr. Bleeding monster toy figure. 273,313, 4-3-84, Cl. D21-166.000.
- Cambridge Instruments, Inc.: *See—*
  - Macquignon, Claude, 273,325, Cl. D24-17.000.
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- Codman & Shurtleff, Inc.: *See—*
  - Walus, Richard L., 273,329, Cl. D24-41.000.
- Cosper, John A. Gas pipe type fireplace log lighter. 273,321, 4-3-84, Cl. D23-90.100.
- Crest Industries, Inc.: *See—*
  - Rasmussen, Harry R., 273,293, Cl. D14-66.000.
- Crowley, James P.: *See—*
  - Semerjian, Joseph K.; and Crowley, James P., 273,337, Cl. D34-21.000.
- Dallas Fuel Laboratories, Inc.: *See—*
  - Brownlee, Jerome E., 273,324, Cl. D23-136.000.
- Dart Industries Inc.: *See—*
  - Wolff, Martin J., 273,262, Cl. D7-74.000.
- Davidson, Keith J., to 432698 Ontario Ltd. Fireplace heat exchanger. 273,323, 4-3-84, Cl. D23-135.000.
- Dilliner, Monte M., to Jones, Oscar E.; Lowe, Ted; and Robinson, Robert H., a part interest. Combined fuel injector and thermal heater. 273,296, 4-3-84, Cl. D15-05.000.
- Dodds, Dale I., to J. J. Mauget Co. Feeder tube for plant injection device. 273,265, 4-3-84, Cl. D8-1.000.
- Drummond, Stephen E. Clock. 273,279, 4-3-84, Cl. D10-1.000.
- Dubbin, Barbara; and Caputo, Jackie, to Casa Bella Imports, Inc. Closed curved sofa. 273,253, 4-3-84, Cl. D6-61.000.
- Duncan, Clarence R., Jr.: *See—*
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- Eldon Industries, Inc.: *See—*
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- Elliston, Murray L. Fire pit or the like. 273,264, 4-3-84, Cl. D7-332.000.
- Ethyl Corporation: *See—*
  - Hayes, Thomas H., 273,278, Cl. D9-434.000.
- Eugene Doll & Novelty Co., Inc.: *See—*
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- Evans, Joseph M. Unicycle. 273,287, 4-3-84, Cl. D12-107.000.
- Evenson, Mel, to Eldon Industries, Inc. Paper clip holder. 273,309, 4-3-84, Cl. D19-75.000.
- Faidide, Christian, to S.A.R.L. Wichard. Safety hook. 273,273, 4-3-84, Cl. D8-367.000.

- Fairaizen, Igal. Convertible sofa. 273,254, 4-3-84, Cl. D6-64.000.
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- Fleisler, Norman, to Powrmatic du Canada LTEE/Powrmatic of Canada Ltd. Stove for burning coal or wood. 273,322, 4-3-84, Cl. D23-97.000.
- Gillette Company, The: *See—*
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- Gruber, Robert, to Surgical Appliance Industries, Inc. Lumbo-sacral orthosis. 273,331, 4-3-84, Cl. D24-64.000.
- Guertin, Joseph G. American family tree game panel or similar article. 273,312, 4-3-84, Cl. D21-25.000.
- Gullett, Teresa G. Magazine holder or the like. 273,259, 4-3-84, Cl. D6-184.000.
- Haigh, Richard B.; and Parker, Philip M., to Leco Corporation. Electronic balance. 273,280, 4-3-84, Cl. D10-91.000.
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- Hastings, Amy; and Patton, Douglas, to Firm-A-Face, Inc. Portable electronic facial and hand muscle toner. 273,328, 4-3-84, Cl. D24-41.000.
- Hayes, Thomas H., to Ethyl Corporation. Container handle or similar article. 273,278, 4-3-84, Cl. D9-434.000.
- Hollfelder, Thomas A., to Porta Systems Corp. Telephone connector block: 273,289, 4-3-84, Cl. D13-24.000.
- Hollfelder, Thomas A., to Porta Systems Corp. Telephone connector block. 273,290, 4-3-84, Cl. D13-24.000.
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- Johnson, Stanley A., to Harley-Davidson Motor Co., Inc. Motorcycle windshield. 273,288, 4-3-84, Cl. D12-182.000.
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  - Kemp, William P., III; and Duncan, Clarence R., Jr., 273,260, Cl. D6-198.000.
- Kemp, William P., III; and Duncan, Clarence R., Jr., to Kemp Furniture Industries, Inc. Combined headboard and hutch unit. 273,260, 4-3-84, Cl. D6-198.000.
- Klim, Matthew J., to Matthew Klim Associates, Inc. Wine bottle. 273,276, 4-3-84, Cl. D9-383.000.
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- Macquignon, Claude, to Cambridge Instruments, Inc. Electrocardiograph. 273,325, 4-3-84, Cl. D24-17.000.
- Marcus, Cory. Sheet display stand. 273,255, 4-3-84, Cl. D6-85.000.
- Marcus, Cory. Frame for a sheet display stand. 273,256, 4-3-84, Cl. D6-85.000.
- Markis, Beverly L., to Gillette Company, The. Design for combined bottle and cap. 273,275, 4-3-84, Cl. D9-381.000.
- Markson, Morley, to Yorkvest Limited. Footstool. 273,252, 4-3-84, Cl. D6-32.000.
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- Mattingly, Glen R.; and Quintanares, Joseph A. Connector for air-breathing apparatus. 273,320, 4-3-84, Cl. D23-40.000.
- McCoy, Kenneth H.; and Romain, John. Handle for physical exerciser or similar article. 273,314, 4-3-84, Cl. D21-191.000.
- Mihailoff, Jerrold. Road hazard marker. 273,281, 4-3-84, Cl. D10-109.000.
- Molaug, Ole. Robot for automatic paint spraying or the like. 273,300, 4-3-84, Cl. D15-199.000.
- Moraine, Michel, to La Telephonie Industrielle et Commerciale. Directory terminal. 273,294, 4-3-84, Cl. D14-101.000.
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  - Tonkel, Raymond, 273,246, Cl. D2-320.000.
- Nishimoto, Teruyuki; and Ohta, Kikuo, to Matsushita Electric Industrial Co., Ltd. Combined portable radio and cassette tape recorder. 273,292, 4-3-84, Cl. D14-5.000.
- Nolff, Robert L., to Propane Carburetion Company, Inc. Bracket for supporting a low pressure gas converter. 273,297, 4-3-84, Cl. D15-5.000.
- Norton, Edward J.; Oparowski, Paul; and Belavitch, Alphonse L., to New Balance Athletic Shoe, Inc. Athletic shoe. 273,244, 4-3-84, Cl. D2-310.000.
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  - Norton, Edward J.; Oparowski, Paul; and Belavitch, Alphonse L., 273,244, Cl. D2-310.000.
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- Peterson, Lars G. B.; and Schneider, Gerhard, to AB Stille-Werner. Surgical instrument for guiding a drill bit for drilling through bone sections. 273,326, 4-3-84, Cl. D24-27.000.
- Petitt, Donald C. Chair. 273,249, 4-3-84, Cl. D6-30.000:
- Petitt, Donald C. Arm chair. 273,250, 4-3-84, Cl. D6-31.000.
- Petitt, Donald C. Arm chair. 273,251, 4-3-84, Cl. D6-31.000.
- Pigott, James M. Belt attachable insulated holder for a beverage can. 273,247, 4-3-84, Cl. D2-400.000.
- Piper Industries, Inc.: *See—*
  - Walton, Howard M., 273,338, Cl. D34-43.000.
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- Porta Systems Corp.: *See—*
  - Hollfelder, Thomas A., 273,289, Cl. D13-24.000.
  - Hollfelder, Thomas A., 273,290, Cl. D13-24.000.
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  - Stolarz, Edward M., 273,270, Cl. D8-341.000.
  - Stolarz, Edward M., 273,271, Cl. D8-341.000.
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- Romain, John: *See—*
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- S.A.R.L. Wichard: *See—*
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- Sakamoto, Harumi, to Sharp Corporation. Electronic calculator. 273,303, 4-3-84, Cl. D18-7.000.
- Sakata, Keiji, to Sharp Corporation. Electronic calculator. 273,304, 4-3-84, Cl. D18-7.000.
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- Sawada, Masaji, to Sharp Corporation. Electronic calculator with solar batteries. 273,301, 4-3-84, Cl. D18-7.000.
- Sawada, Masaji, to Sharp Corporation. Electronic calculator. 273,302, 4-3-84, Cl. D18-7.000.
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  - Yamagami, Masafumi, 273,307, Cl. D18-7.000.

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- Smith, Lloyd T., to Fiskars Manufacturing Corporation. Hand grip for torque applying tools. 273,268, 4-3-84, Cl. D8-83.000.
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- Stewart, James R., to Apple Computer, Inc. Hard disk drive. 273,295, 4-3-84, Cl. D14-109.000.
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- Stolarz, Edward M., to Presto Lock, Inc. Control panel assembly for a combination lock and the like. 273,270, 4-3-84, Cl. D8-341.000.
- Stolarz, Edward M., to Presto Lock, Inc. Control panel assembly for a combination lock and the like. 273,271, 4-3-84, Cl. D8-341.000.
- Strauss, Steven, to Eugene Doll & Novelty Co., Inc. Packaging container for a doll. 273,277, 4-3-84, Cl. D9-415.000.
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- Surgical Appliance Industries, Inc.: *See—*
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- Szabo, Andrea A. E. Pendant. 273,284, 4-3-84, Cl. D11-45.000.
- Taylor, Shelton E. Bracket for automobile air conditioning compressor. 273,274, 4-3-84, Cl. D8-380.000.
- Tedesco, James V. Restaurant building. 273,332, 4-3-84, Cl. D25-10.000.
- Thrush, James L., to Anchor Hocking Corporation. Cream pitcher or similar article. 273,263, 4-3-84, Cl. D7-319.000.
- Tomy Kogyo Co., Inc.: *See—*
  - Yoshimura, Masaaki; and Itakura, Hitoshi, 273,311, Cl. D21-19.000.
- Tonkel, Raymond, to Nike, Inc. Shoe outsole. 273,245, 4-3-84, Cl. D2-320.000.
- Tonkel, Raymond, to Nike, Inc. Shoe outsole. 273,246, 4-3-84, Cl. D2-320.000.
- True Manufacturing Co., Inc.: *See—*
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- Trulaske, Arthur W., to True Manufacturing Co., Inc. Beverage cooler. 273,298, 4-3-84, Cl. D15-81.000.
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- Walton, Howard M., to Piper Industries, Inc. Crate. 273,338, 4-3-84, Cl. D34-43.000.
- Walus, Richard L., to Codman & Shurtleff, Inc. Housing for a transcutaneous electronic nerve stimulator. 273,329, 4-3-84, Cl. D24-41.000.
- Whaley, George S.: *See—*
  - Bean, Thomas R.; Stockmaster, Edward F.; and Whaley, George S., 273,291, Cl. D13-40.000.
- Wilder, Stanley C. Fence panel or the like. 273,333, 4-3-84, Cl. D25-38.000.
- Williams Industries, Inc.: *See—*
  - Richmond, William R., 273,258, Cl. D6-137.000.
- Wilson Jones Company: *See—*
  - Semerjian, Joseph K.; and Crowley, James P., 273,337, Cl. D34-21.000.
- Wolff, Martin J., to Dart Industries Inc. Rack for utensils or the like. 273,262, 4-3-84, Cl. D7-74.000.
- Woodstream Corporation: *See—*
  - Souza, Anthony J., 273,266, Cl. D8-2.000.
- Yamagami, Masafumi; and Sakata, Keiji, to Sharp Corporation. Electronic calculator. 273,306, 4-3-84, Cl. D18-7.000.
- Yamagami, Masafumi, to Sharp Corporation. Electronic calculator. 273,307, 4-3-84, Cl. D18-7.000.
- Yorkvest Limited: *See—*
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- Young, George B. A., to Acrow (Engineers) Limited. Beam. 273,334, 4-3-84, Cl. D25-73.000.
- Zoldia Anstalt (NOW) Marina B Creation S.A.: *See—*
  - Bulgari, Marina, 273,283, Cl. D11-34.000.
- Zutler, Aaron. Two sided abrading mit with dual soap compartments for face and body use. 273,336, 4-3-84, Cl. D28-63.000.
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- Armstrong Nurseries, Inc.: *See—*
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- Haight, George S.; and Swim, Herbert C., to Armstrong Nurseries, Inc. Rose cv. Climbing Ole'. 5,213, 4-3-84, Cl. 6.000.
- Monrovia Nursery Company: *See—*
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- Pottberg, Clifton F. Cuphea plant table top bonsai. 5,214, 4-3-84, Cl. 54.000.
- Swim, Herbert C.: *See—*
  - Haight, George S.; and Swim, Herbert C., 5,213, Cl. 6.000.
- Usrey, William B., to Monrovia Nursery Company. *Raphiolepis indica* cv. Monrey. 5,215, 4-3-84, Cl. 54.000.

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 3RD DAY OF APRIL, 1984

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

- Boles, Jeffrey L.; and Jones, Thomas M. Production of urea-ammonium nitrate suspension fertilizer. T104,101, 4-3-84, Cl. 71-30.000.
- Ho, Allen P.; and Horng, Cheng T. Polysilicon-base self-aligned bipolar transistor process and structure. T104,102, 4-3-84, Cl. 357-50.000.
- Horng, Cheng T.: *See—*
  - Ho, Allen P.; and Horng, Cheng T., T104,102, Cl. 357-50.000.
- Jones, Thomas M.: *See—*
  - Boles, Jeffrey L.; and Jones, Thomas M., T104,101, Cl. 71-30.000.

CLASSIFICATION OF PATENTS

ISSUED APRIL 3, 1984

NOTE.—First number, class; second number, subclass; third number, patent number

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446	4,439,908
453	4,439,909
569 L	4,439,910
570	4,439,911
572	4,439,912
597	4,439,913
605	4,439,914
611	4,439,915
623.4	4,439,916
825	4,439,917
840	4,439,918
861	4,439,919

CLASS 30

47	4,439,920
134	4,439,921
161	4,439,922
252	4,439,923
276	4,439,924

CLASS 33

172 D	4,439,925
185 R	4,439,926
189	4,439,927
494	4,439,928

CLASS 34

1	4,439,929
15	4,439,930
44	4,439,931
57 D	4,439,932
65	4,439,933

CLASS 36

44	4,439,934
101	4,439,935
102	4,439,936
107	4,439,937

CLASS 37

117.5	4,439,938
231	4,439,939

CLASS 40

10 R	4,439,940
124.1	4,439,941

CLASS 42

66	4,439,942
74	4,439,943

CLASS 43

19	4,439,944
22	4,439,945
81	4,439,946
96	4,439,947

CLASS 44

51	4,440,543
	4,440,544
56	4,440,545

CLASS 47

1.7	4,439,948
61	4,439,949
85	4,439,950

CLASS 48

202	4,440,546

CLASS 51

80 R	4,439,951
93	4,439,952
295	4,440,547
389	4,439,953
411	4,439,954

CLASS 52

57	4,439,955
60	4,439,956
79.1	4,439,957
86	4,439,958
90	4,439,959
99	4,439,960
126.1	4,439,961
200	4,439,962
201	4,439,963
202	4,439,964
211	4,439,965
221	4,439,966
309.12	4,439,967
404	4,439,968
461	4,439,969
511	4,439,970
584	4,439,971
651	4,439,972
714	4,439,973

CLASS 53

248	4,439,974
399	4,439,975
403	4,439,976
428	4,439,977
448	B1 4,048,780

CLASS 55

26	4,440,548
59	4,440,549
67	4,440,550
73	4,440,551
114	4,440,552
126	4,440,553
241	4,440,554
385 B	4,440,555

CLASS 57

22	4,439,978
58.86	4,439,979

CLASS 60

39.06	4,439,980
39.32	4,439,981
	4,439,982
273	4,439,983
454	4,439,984
518	4,439,985
547.1	4,439,986
641.11	4,439,987
649	4,439,988
718	4,439,989

CLASS 62

63	4,439,990
	4,439,991
82	4,439,992
	4,439,993
101	4,439,994
156	4,439,995
174	4,439,996
175	4,439,997
199	4,439,998
238.3	4,439,999
310	4,440,000
475	4,440,001

CLASS 65

2	4,440,556
3.1	4,440,557
3.12	4,440,558
99.5	4,440,559

CLASS 66

126 R	4,440,002

CLASS 68

22 R	4,440,003
23 R	4,440,004

CLASS 70

14	4,440,005
264	4,440,006
276	4,440,007
364 R	4,440,008
385	4,440,009
409	4,440,010
438	4,440,011

CLASS 71

24	4,440,560
70	4,440,561
86	4,440,562
88	4,440,563
90	4,440,564
93	4,440,565
98	4,440,566
105	4,440,567

CLASS 72

201	4,440,012

CLASS 73

23.1	4,440,013
35	4,440,014
39	4,440,015
40	4,440,016
40.5 R	4,440,017
146	4,440,018
151	4,440,019
152	4,440,020
204	4,440,021
293	4,440,022
490	4,440,023
529	4,440,024
642	4,440,025
663	4,440,026
861.24	4,440,027
861.55	4,440,028
861.73	4,440,029
861.87	4,440,030
862.04	4,440,031
863.84	4,440,032

CLASS 74

7 A	4,440,033
61	4,440,034
89.15	4,440,035
153	4,440,036
331	4,440,037
424.8 R	4,440,038
501 M	4,440,039
527	4,440,040
753	4,440,041
785	4,440,042
798	4,440,043
804	4,440,044

CLASS 75

53	4,440,568
120	4,440,569
121	4,440,570
229	4,440,571
232	4,440,572
243	4,440,573

CLASS 76

25 A	4,440,045

CLASS 81

57.39	4,440,046
179	4,440,047
440	4,440,048
467	4,440,049

CLASS 82

21 B	4,440,050

CLASS 83

72	4,440,051
140	4,440,052
282	4,440,053
390	4,440,054
525	4,440,055

CLASS 84

1.01	4,440,057
1.26	4,440,056
	4,440,058
464 R	4,440,059

CLASS 89

1.5 D	4,440,060
41 H	4,440,061
128	4,440,062
135	4,440,063
136	4,440,064
191 R	4,440,065

CLASS 91

459	4,440,066
491	4,440,067

CLASS 92

85 A	4,440,068
224	4,440,069

CLASS 98

50	4,440,070

CLASS 99

339	4,440,071
450.4	4,440,072
458	4,440,073
510	4,440,074

CLASS 100

5	4,440,075
117	4,440,076
162 B	4,440,077

CLASS 101

4	4,440,078
93.03	4,440,079
129	4,440,080
148	4,440,081
170	4,440,082
348	4,440,083
365	4,440,084

CLASS 102

235	4,440,085
254	4,440,086
275.11	4,440,087

CLASS 104

7 A	4,440,088
12	4,440,089
127	4,440,090
139	4,440,091
291	4,440,092

CLASS 105

164	4,440,093
166	4,440,094
225	4,440,095

CLASS 106

2	4,440,574
38.22	4,440,575
85	4,440,576
90	4,440,577
100	4,440,578
274	4,440,579

CLASS 108

3	4,440,096

CLASS 110

167	4,440,097
215	4,440,098
336	4,440,099
343	4,440,100

CLASS 111

2	4,440,101

CLASS 112

266.2	4,440,102

CLASS 114

61	4,440,103

CLASS 116

63 T	4,440,104

CLASS 118

410	4,440,105
640	4,440,106
718	4,440,107
719	4,440,108

CLASS 119

2	4,440,109
14.08	4,440,110
61	4,440,111
73	4,440,112

CLASS 122

16	4,440,113
451.2	4,440,114

CLASS 123

1 A	4,440,115
25 J	4,440,116
41.72	4,440,117
41.84	4,440,118
52 MV	4,440,120
90.39	4,440,121
185 D	4,440,122
192 B	4,440,123
261	4,440,124
293	4,440,125
321	4,440,126
325	4,440,127
339	4,440,128
425	4,440,129
427	4,440,130
440	4,440,131
446	4,440,132
	4,440,133
447	4,440,134
467	4,440,135
491	4,440,136
492	4,440,119
525	4,440,137
557	4,440,138
569	4,440,139
571	4,440,140
609	4,440,141

CLASS 124

23 R	4,440,142
24 R	4,440,143

CLASS 126

61	4,440,144
	4,440,145
77	4,440,146
201	4,440,147
415	4,440,148
425	4,440,149
	4,440,150
433	4,440,151
435	4,440,152
438	4,440,153
	4,440,154
440	4,440,155
443	4,440,156

CLASS 128

6	4,440,157
79	4,440,183
80 H	4,440,158
84 R	4,440,159
132 R	4,440,160
202.13	4,440,161
202.22	4,440,162
204.22	4,440,166
205.13	4,440,163
205.25	4,440,164
205.28	4,440,165
303 B	4,440,168
303.1	4,440,167
305	4,440,169
325	4,440,170
335.5	4,440,171
404	4,440,831
419 D	4,440,172
419 PG	4,440,173
455	4,440,174
635	4,440,175
708	4,440,176
719	4,440,177
784	4,440,178

CLASS 130

27 JT	4,440,179

CLASS 132

11 R	4,440,180
73.5	4,440,181
75.6	4,440,182
91	4,440,184

CLASS 134

104	4,440,185

CLASS 135

84	4,440,186
117	4,440,187

CLASS 137

2	4,440,188
116	4,440,189
272	4,440,190
468	4,440,191
501	4,440,192
558	4,440,193

CLASS 138

89	4,440,194
115	4,440,195

CLASS 139

59	4,440,196
431	4,440,197
435	4,440,198

CLASS 140

71 R	4,440,199

CLASS 141

95	4,440,200
286	4,440,201

CLASS 144

2 Z	4,440,202
39	4,440,203
130	4,440,204

CLASS 145

2 R	4,440,205
29 R	4,440,206

CLASS 148

1.5	4,440,580
6.11	4,440,581
6.15 R	4,440,582
128	4,440,583
	4,440,584
403	4,440,585

CLASS 150

52 R	4,440,207

CLASS 152

314	4,440,208
397	4,440,209

CLASS 156

151	4,440,586
154	4,440,587
157	4,440,588
232	4,440,589
234	4,440,590
309.6	4,440,591
384	4,440,592
441	4,440,593
664	4,440,594

CLASS 159

13 A	4,440,595

CLASS 162

106	4,440,596
111	4,440,597

305 4,440,598

CLASS 164

409 4,440,210
442 4,440,211

CLASS 165

12 4,440,212
47 4,440,213
90 4,440,214
104.21 4,440,215
117 4,440,216
155 4,440,217

CLASS 166

51 4,440,218
57 4,440,219
85 4,440,220
106 4,440,221
117.5 4,440,222
217 4,440,223
245 4,440,224
246 4,440,225
250 4,440,226
261 4,440,227
274 4,440,228
311 4,440,229
321 4,440,230
373 4,440,231
4,440,232
382 4,440,233

CLASS 169

39 4,440,234

CLASS 171

63 4,440,235

CLASS 173

8 4,440,236
134 4,440,237
170 4,440,238

CLASS 174

14 R 4,440,970
17 GF 4,440,971
72 B 4,440,972
107 4,440,973
108 4,440,974
209 4,440,975

CLASS 175

5 4,440,239
20 4,440,240
61 4,440,241
107 4,440,242
209 4,440,243
292 4,440,244
293 4,440,245
329 4,440,246
393 4,440,247

CLASS 177

4 4,440,248
145 4,440,249
187 4,440,250
4,440,251

CLASS 179

1.5 R 4,440,976
2 C 4,440,988
2 DP 4,440,977
4,440,986
4,440,987
5.5 4,440,978
16 EA 4,440,979
81 R 4,440,980
4,440,981
99 P 4,440,989
107 R 4,440,982
110 A 4,440,983
175.3 A 4,440,984
175.3 F 4,440,985

CLASS 180

89.15 4,440,252
116 4,440,253
140 4,440,254
225 4,440,255
254 4,440,256
300 4,440,257

CLASS 181

137 4,440,258
146 4,440,259
172 4,440,260

CLASS 182

3 4,440,261
114 4,440,262
121 4,440,263
126 4,440,264
129 4,440,265

CLASS 187

29 R 4,440,266

CLASS 188

73.35 4,440,267
79.5 K 4,440,268
196 F 4,440,269
264 AA 4,440,270
268 4,440,271
290 4,440,272
315 4,440,273
328 4,440,274
352 4,440,275

CLASS 192

3.29 4,440,276
12 D 4,440,277
18 R 4,440,278
30 W 4,440,279
36 4,440,280
48.8 4,440,281
70.2 4,440,282
106.2 4,440,283

CLASS 194

4 R 4,440,284
93 4,440,285

CLASS 198

380 4,440,286
382 4,440,287
425 4,440,288
448 4,440,289
479 4,440,290
488 4,440,291
774 4,440,292
813 4,440,293
838 4,440,294
843 4,440,295

CLASS 200

5 A 4,440,990
4,440,999
6 R 4,440,991
38 R 4,440,993
42 T 4,440,994
144 B 4,440,995
148 A 4,440,996
4,440,997
148 R 4,440,998
291 4,441,000
308 4,441,001
340 4,440,992

CLASS 202

141 4,440,599
248 4,440,600

CLASS 203

24 4,440,601

CLASS 204

1 T 4,440,602
4,440,603
5 4,440,604
16 4,440,605
33 4,440,606
35 N 4,440,607
43 S 4,440,608
43 T 4,440,609
67 4,440,610
147 4,440,611
181 C 4,440,612
206 4,440,613
219 4,440,614
253 4,440,615
272 4,440,616
290 R 4,440,617
298 4,440,618
401 4,440,619
403 4,440,620
406 4,440,621

CLASS 206

3 4,440,296
45.31 4,440,297
216 4,440,298
387 4,440,299
446 4,440,300
456 4,440,301
506 4,440,302
509 4,440,303
586 4,440,304

CLASS 208

8 LE 4,440,622
11 R 4,440,623
22 4,440,624
48 AA 4,440,625
65 4,440,626
4,440,627
4,440,628
111 4,440,629
4,440,630
112 4,440,631
113 4,440,632
309 4,440,633
310 R 4,440,634

CLASS 209

4 4,440,635
10 4,440,636
241 4,440,637

CLASS 210

198.2 4,440,638
222 4,440,639
237 4,440,640
321.3 4,440,641
387 4,440,642
500.2 4,440,643
611 4,440,644
626 4,440,645
699 4,440,646
712 4,440,647
759 4,440,648

CLASS 212

90 4,440,305

CLASS 215

230 4,440,306
307 Re.31,546

CLASS 219

10.55 A 4,441,003
10.55 B 4,441,002
69 C 4,441,005
69 E 4,441,004
85 CM 4,441,006
98 4,441,007
121 LL 4,441,008
124.03 4,441,009
124.34 4,441,010
4,441,011
137 R 4,441,012
231 4,441,013
240 4,441,014
411 4,441,015
441 4,441,016
528 4,441,017

CLASS 220

4 B 4,440,307
204 4,440,308
235 4,440,309
270 4,440,310
306 4,440,311

CLASS 221

24 4,440,312
213 4,440,313

CLASS 222

39 4,440,314
56 4,440,315
83.5 4,440,316
103 4,440,317
129.1 4,440,318
131 4,440,319
145 4,440,320
153 4,440,321
4,440,322
209 4,440,323
326 4,440,324
402.14 4,440,325
450 4,440,326
530 4,440,327
538 4,440,328

CLASS 223

43 4,440,329

CLASS 224

30 R 4,440,330
31 4,440,331
36 4,440,332
258 4,440,334
324 4,440,333

CLASS 226

107 4,440,335

CLASS 227

4 4,440,336

CLASS 228

2 4,440,338
119 4,440,339
173 C 4,440,337

CLASS 229

40 4,440,340
69 4,440,341

CLASS 235

458 4,441,018

CLASS 237

50 4,440,342
69 4,440,343

CLASS 239

102 4,440,344
214 4,440,345
265.39 4,440,346
4,440,347
533.12 4,440,348
698 4,440,349
703 4,440,350

CLASS 241

41 4,440,351
152 A 4,440,352

CLASS 242

47.01 4,440,353
54 R 4,440,354
55 4,440,355
56.5 4,440,356
68.5 4,440,357
189 4,440,358
199 4,440,359

CLASS 244

3.28 4,440,360
36 4,440,361
87 4,440,362
114 R 4,440,363
129.6 4,440,364
137 R 4,440,365
138 R 4,440,366

CLASS 245

6 4,440,367

CLASS 248

27.1 4,440,368
62 4,440,369
75 4,440,370
318 4,440,371
406 4,440,372
461 4,440,373
544 4,440,374
559 4,440,375

CLASS 249

18 4,440,376
119 4,440,377

CLASS 250

201 4,441,019
202 4,441,020
227 4,441,021
308 4,441,022
338 4,441,023
380 4,441,024
516.1 4,441,025
561 4,441,026
577 4,441,027

CLASS 251

117 4,440,378
144 4,440,379
4,440,380
214 4,440,381
248 4,440,382

CLASS 252

8.5 C 4,440,649
8.55 D 4,440,650
4,440,651
4,440,652
8.55 R 4,440,653
34.7 4,440,654
47.5 4,440,655
49.6 4,440,656
49.9 4,440,657
51.5 A 4,440,658
4,440,659
56 S 4,440,660
89.1 4,440,661
106 4,440,662
174.11 4,440,663
188.31 4,440,664
356 4,440,665
392 4,440,666
518 4,440,669
4,440,670
573 4,440,671
586 4,440,672
632 4,440,673

CLASS 260

34 4,440,686
112 R 4,440,675
112.5 R 4,440,676
4,440,677
4,440,678
122 4,440,679
123.7 4,440,680
207.1 4,440,681
239 A 4,440,682
4,440,683
239.57 4,440,684
245.6 4,440,685
349 4,440,687
397.1 4,440,688
397.4 4,440,689
397.45 4,440,690
429.9 4,440,691
439 R 4,440,693
463 4,440,692
465 D 4,440,694
502.5 F 4,440,695
976 4,440,696

CLASS 261

34 A 4,440,697
148 4,440,698

CLASS 264

1.4 4,440,699
8 4,440,700
15 4,440,701
37 4,440,702
50 4,440,703
51 4,440,704
53 4,440,705
56 4,440,706
65 4,440,707
109 4,440,708
145 4,440,709
184 4,440,710
185 4,440,711
209.5 4,440,712
325 4,440,713

CLASS 266

54 4,440,383
149 4,440,384

CLASS 269

13 4,440,385

CLASS 271

70 4,440,386
195 4,440,388
245 4,440,387
251 4,440,389

CLASS 272

27 N 4,440,390
93 4,440,391

CLASS 273

29 BB 4,440,393
73 C 4,440,392
157 R 4,440,394
241 4,440,395
242 4,440,396
256 4,440,397
292 4,440,398
346 4,440,399
411 4,440,400

CLASS 277

50 4,440,401
80 4,440,402
81 R 4,440,403
124 4,440,404
134 4,440,405
207 A 4,440,406
212 F 4,440,407

CLASS 280

7.12 4,440,408
47.13 B 4,440,409
47.26 4,440,410
165 4,440,411
281 B 4,440,412
284 4,440,413
287 4,440,414
460 A 4,440,415
473 4,440,416
478 R 4,440,417
604 4,440,418
661 4,440,419
691 4,440,420
821 4,440,421

CLASS 281

15 R 4,440,422

CLASS 285

25 4,440,423
39 4,440,424
161 4,440,425
239 4,440,426

CLASS 290

52 4,441,028
4,441,029
53 4,441,030
54 4,440,427

CLASS 292

251.5 4,440,428

CLASS 293

120 4,440,429

CLASS 294

1 R 4,440,430
27 H 4,440,431
82 R 4,440,432

CLASS 296

15 4,440,433
107 4,440,436
185 4,440,434
188 4,440,435
190 4,440,437
195 4,440,438

CLASS 297

62 4,440,439
195 4,440,440
216 4,440,441
341 4,440,442
397 4,440,443

CLASS 299

2 4,440,444
4,440,445
4,440,446
4,440,447
11 4,440,448
4,440,449
17 4,440,450

CLASS 301

105 R 4,440,451

CLASS 303

6 A 4,440,452
50 4,440,453
114 4,440,454

CLASS 307

66 4,441,031
82 4,441,032
107 4,441,033
117 4,441,034
200 B 4,441,035
242 4,441,036
265 4,441,037
400 4,441,038
475 4,441,039
491 4,441,040
494 4,441,041

CLASS 308

3.8 4,440,455
184 R 4,440,456
187.2 B1 53,537,725

CLASS 310

42 4,441,042
46 4,441,043
338 4,441,044

CLASS 312

7.2 4,440,457
9 4,440,458
238 4,440,459
320 4,440,460
330 R 4,440,461
348 4,440,462

CLASS 313

25 4,441,045
112 4,441,046
116 4,441,047
346 R 4,441,048
486 4,441,049
493 4,441,050
579 4,441,051

CLASS 315

8 4,441,052
206 4,441,053
219 4,441,054
288 4,441,055
290 4,441,056
368 4,441,057
371 4,441,058

CLASS 318

39 4,441,059
114 4,441,060
329 4,441,061
703 4,441,062
722 4,441,063
798 4,441,064
808 4,441,065

CLASS 320

48 4,441,066

CLASS 322

2 A 4,441,067

CLASS 323

239 4,441,069
268 4,441,070
351 4,441,068
365 4,441,071
368 4,441,072

CLASS 324

52 4,441,073
73 R 4,441,074
4,441,075
158 MG 4,441,076
164 4,441,077
219 4,441,078

CLASS 329

131 4,441,079

CLASS 330

86 4,441,080
110 4,441,081
129 4,441,082

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149 4,441,083
4,441,084
293 4,441,085
297 4,441,086

CLASS 331

113 A 4,441,087

CLASS 333

1 4,441,088
105 4,441,089
165 4,441,090
242 4,441,091

CLASS 336

130 4,441,092

CLASS 337

404 4,441,093

CLASS 338

21 4,441,094

CLASS 339

14 R 4,440,463
33 4,440,464
75 P 4,440,465
97 P 4,440,466
154 L 4,440,467

CLASS 340

347 AD 4,441,096
347 DD 4,441,095
365 A 4,441,097
365 R 4,441,098
388 4,441,099
518 4,441,100
606 4,441,101
673 4,441,102
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724 4,441,104
750 4,441,105
811 4,441,106
870.16 4,441,107

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857 4,441,108

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140 R 4,441,110
154 4,441,111
163 4,441,112

CLASS 350

96.12 4,440,468
96.20 4,440,469
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4,440,471
162.12 4,440,472
342 4,440,473
345 4,440,474
502 4,440,475
538 4,440,476

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212 4,440,477

CLASS 353

25 4,440,478

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110 4,440,480
135 Re.31,547
171 4,440,481
195.1 4,440,482
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286 4,440,484
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480 4,440,479

CLASS 355

3 FU 4,440,486
14 R 4,440,487
15 4,440,488
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274 4,441,138
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386 4,441,140

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183 4,441,143
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94 4,441,167
154 4,441,168
190 4,441,169
200 4,441,170
205 4,441,171
226 4,441,172

CLASS 366

3 4,440,499
177 4,440,500

CLASS 367

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23 4,441,174

CLASS 368

47 4,440,501
80 4,440,502
107 4,440,503
255 4,440,504
292 4,440,505

CLASS 369

45 4,441,175
170 4,441,176
4,441,177
270 4,441,178
275 4,441,179

CLASS 370

3 4,441,180
4,441,181

CLASS 371

25 4,441,182
4,441,183
40 4,441,184
56 4,441,185

CLASS 372

19 4,441,186
46 4,441,187
54 4,441,188
76 4,441,189

CLASS 373

94 4,441,190
161 4,441,191

CLASS 374

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144 4,440,508
166 4,440,509
169 4,440,510

CLASS 375

14 4,441,192
36 4,441,193
96 4,441,194

CLASS 376

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210 4,440,715
247 4,440,716
4,440,717
269 4,440,718
372 4,440,719

CLASS 377

2 4,441,195
9 4,441,196
15 4,441,197
78 4,441,198

CLASS 381

14 4,441,199
36 4,441,200
51 4,441,201
68 4,441,202
110 4,441,203

CLASS 382

7 4,441,204
8 4,441,205
4,441,207
08 4,441,206
56 4,441,208

CLASS 383

45 4,441,209

CLASS 384

278 4,440,511

CLASS 400

144.2 4,440,512
165.1 4,440,513
208 4,440,514
479 4,440,515
616.1 4,440,516

CLASS 403

24 4,440,517
297 4,440,518
391 4,440,519

CLASS 404

72 4,440,520
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CLASS 405

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154 4,440,524
186 4,440,525
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293 4,440,522

CLASS 406

90 4,440,528

CLASS 408

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3 4,440,530
82 4,440,531
229 4,440,532

CLASS 409

299 4,440,533

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82 4,440,534
112 4,440,535

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22 4,440,536
139 4,440,537
183 4,440,538
300 4,440,539
462 4,440,540

CLASS 420

459 4,440,720

CLASS 422

16 4,440,721
46 4,440,722
47 4,440,723
56 4,440,724
62 4,440,725
89 4,440,726
197 4,440,727
246 4,440,728

CLASS 423

55 4,440,729
74 4,440,730
228 4,440,731
415 P 4,440,732
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549 4,440,734
561 B 4,440,735
644 4,440,736
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CLASS 424

1.1 4,440,738
4,440,739
4,440,740
65 4,440,741
4,440,742
70 4,440,743
4,440,744
78 4,440,745
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4,440,789
85 4,440,747
92 4,440,748
94 4,440,749
95 4,440,750
114 4,440,751
118 4,440,752
124 4,440,753
140 4,440,754
150 4,440,755
174 4,440,756
180 4,440,757
4,440,758
4,440,759
184 4,440,760
195 4,440,761
230 4,440,762
4,440,763
241 4,440,764
244 4,440,765
246 4,440,766
4,440,767
248.4 4,440,768
251 4,440,769
258 4,440,770
4,440,771
261 4,440,772
263 4,440,773
267 4,440,774
269 4,440,775
273 R 4,440,776
274 4,440,777
4,440,778
4,440,779
275 4,440,780
285 4,440,781
287 4,440,782
302 4,440,783
308 4,440,784
317 4,440,785
319 4,440,786
4,440,787
320 4,440,788

CLASS 426

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43 4,440,791
271 4,440,792
549 4,440,793
578 4,440,794
592 4,440,795
597 4,440,796
613 4,440,797
656 4,440,798

CLASS 427

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13 4,440,800
54.1 4,440,801
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74 4,440,803
91 4,440,804
97 4,440,805
180 4,440,806
221 4,440,807
244 4,440,808
356 4,440,809
376.2 4,440,810
402 4,440,811

CLASS 428

12 4,440,812
15 4,440,813
31 4,440,814
35 4,440,815
40 4,440,816
71 4,440,817
99 4,440,818
107 4,440,819
120 4,440,820
195 4,440,821
209 4,440,823
216 4,440,822
4,440,824
318.6 4,440,825
327 4,440,826
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334 4,440,828
343 4,440,829
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405 4,440,832
425.1 4,440,833
554 4,440,834

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42 4,440,835
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250 4,440,838

CLASS 430

2 4,440,839
4 4,440,840
5 4,440,841
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138 4,440,846
146 4,440,847
215 4,440,848
239 4,440,849
325 4,440,850
378 4,440,851
522 4,440,852

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77 Re.31,548

CLASS 435

68 4,440,853
94 4,440,854
105 4,440,855
111 4,440,856
118 4,440,857
129 4,440,858
172 4,440,859
240 4,440,860
306 4,440,861

CLASS 436

6 4,440,862
539 4,440,863

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41 4,441,210

CLASS 501

95 4,440,864
4,440,865
127 4,440,866

CLASS 502

53 4,440,667
62 4,440,867
65 4,440,868
104 4,440,869
207 4,440,870
214 4,440,871
242 4,440,872
244 4,440,873
327 4,440,874
331 4,440,668

CLASS 518

728 4,440,875

CLASS 521

123 4,440,876

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105 4,440,877
116 4,440,878
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205 4,440,880
206 4,440,881
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402 4,440,883

CLASS 524

26 4,440,884
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68 4,440,886
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143 4,440,889
159 4,440,890
177 4,440,674
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283 4,440,892
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458 4,440,896
460 4,440,897
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569 4,440,900
591 4,440,901
822 4,440,895

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54.1 4,440,903
54.11 4,440,904
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106 4,440,907
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277 4,440,909
295 4,440,910
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246 4,440,918
263 4,440,919

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216 4,440,923
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309 4,440,928
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354 4,440,930

CLASS 546

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326 4,440,935
498 4,440,936

CLASS 549

228 4,440,937
292 4,440,927
495 4,440,938
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CLASS 560

19 4,440,940
20 4,440,941
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65 4,440,943
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86 4,440,945
210 4,440,946
226 4,440,947
247 4,440,958

CLASS 562

532 4,440,948

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305 4,440,950
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439 4,440,954

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419 4,440,955
471 4,440,960
604 4,440,959
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840 4,440,961
933 4,440,962

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260 4,440,956
323 4,440,957
415 4,440,966
435 4,440,967
4,440,968
851 4,440,969

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D2—	310	273,244
	320	273,245
		273,246
	400	273,247
D6—	3	273,248
	30	273,249
	31	273,250
		273,251
	32	273,252
	61	273,253
	64	273,254
	85	273,255
		273,256
	87	273,257
	137	273,258
	184	273,259
	198	273,260
D7—	72	273,261
	74	273,262
	319	273,263
	332	273,264
D8—	1	273,265
	2	273,266
	14	273,267
	83	273,268
	321	273,269
	341	273,270
		273,271
	367	273,272
		273,273
	380	273,274
D9—	381	273,275
	383	273,276
	415	273,277
	434	273,278
D10—	1	273,279
	91	273,280
	109	273,281
D11—	30	273,282
	34	273,283
	45	273,284
	157	273,285
D12—	6	273,286
	107	273,287
	182	273,288
D13—	24	273,289
		273,290
	40	273,291
D14—	5	273,292
	66	273,293
	101	273,294
	109	273,295
D15—	5	273,297
	05	273,296
	81	273,298
	132	273,299
	199	273,300
D18—	7	273,301
		273,302
		273,303
		273,304
		273,305
		273,306
		273,307
	13	273,308
D19—	75	273,309
D21—	13	273,310
	19	273,311
	25	273,312
	166	273,313
	191	273,314
	232	273,315
D22—	1	273,316
	25	273,317
	27	273,318
D23—	40	273,319
		273,320
	90.1	273,321
	97	273,322
	135	273,323
	136	273,324
D24—	17	273,325
	27	273,326
	29	273,327
	41	273,328
		273,329
	51	273,330
	64	273,331
D25—	10	273,332
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DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

01 : T104,101
36 : T104,102

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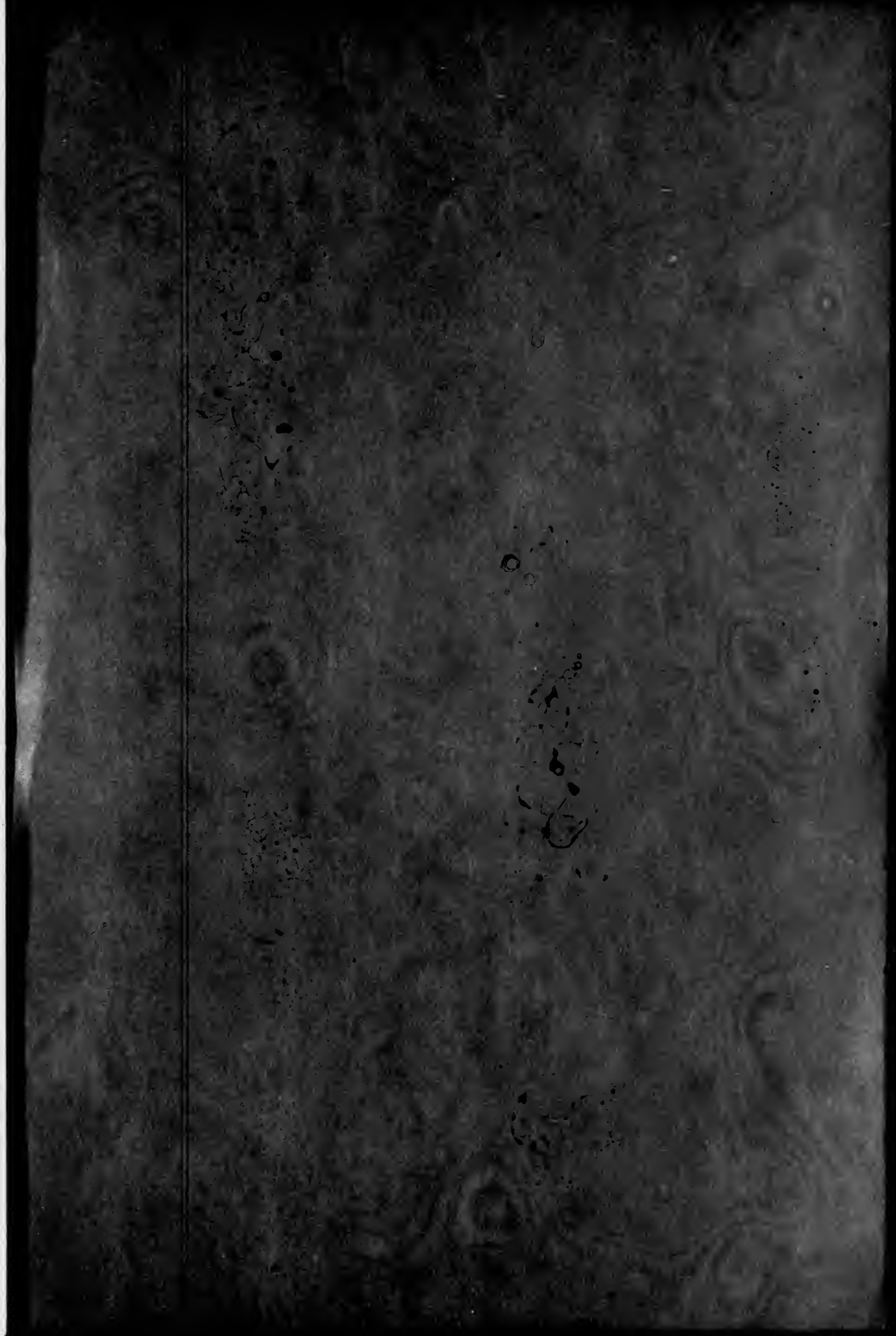

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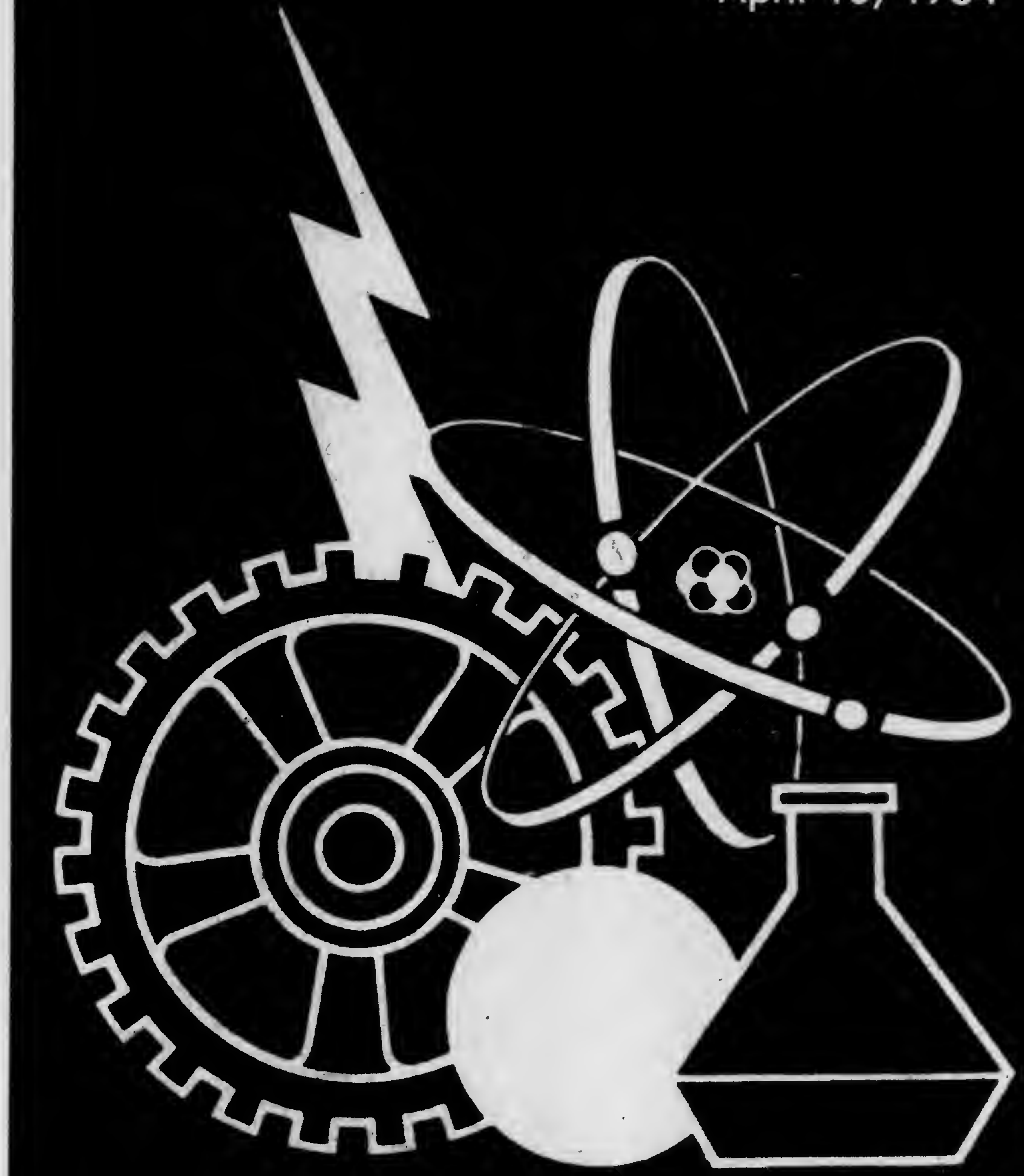
April 10, 1984



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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1037 O.G. 12 on Dec. 13, 1983. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. International PCT fees were changed by the PCT Assembly effective Jan. 1, 1984 and were announced at 1037 O.G. 12 on Dec. 13, 1983. The search fee for the European Patent Office was changed as of Feb. 14, 1984 and was announced at 1039 O.G. 142 on Feb. 21, 1984.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
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· No corresponding prior U.S. national application filed	500.00
· Prior corresponding U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	620.00
International Fees	
Basic fee (first 30 pages)	295.00
Basic Supplemental fee (for each page over 30)	6.00
Designation fee (for each national or regional office)	70.00

GERALD J. MOSSINGHOFF,
Jan. 30, 1984. *Commissioner of Patents and Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,171,386, Re. S.N. 573,981, Filed Jan. 26, 1984, Cl. 426/658, ANIMAL FEED BLOCK CONTAINING FERROUS SULFATE AND MAGNESIUM OXIDE, Leroy V. Skoch, et al., Owner of Record: *Ralston Purina Co., St. Louis, Mo.*, Attorney or Agent: Virgil B. Hill, Ex. Gp.: 172

4,276,601, Re. S.N. 509,769, Filed June 30, 1983, Cl. 364/431, ELECTRONIC ENGINE CONTROL APPARATUS, Hiroastu Tokuda, et al., Owner of Record: *Hitachi, Ltd., Tokyo, Japan*, Attorney or Agent: Gregory E. Montone, Ex. Gp.: 237

4,277,829, Re. S.N. 511,590, Filed July 7, 1983, Cl. 364/431, ERROR PREVENTING DEVICE FOR AN ELECTRIC ENGINE CONTROL APPARATUS, Hiroastu Tokuda, et al., Owner of Record: *Hitachi, Ltd., Tokyo, Japan*, Attorney or Agent: Donald R. Antonelli, Ex. Gp.: 236

4,287,218, Re. S.N. 528,021, Filed Aug. 31, 1983, Cl. 426/272, READY-TO-EAT MOLDED MEAT PRODUCT, Norman I. Rich, et al., Owner of Record: *Oscar Mayer Foods Corp., Madison, Wis.*, Attorney or Agent: Daniel J. Donovan, et al., Ex. Gp.: 172

4,313,912, Re. S.N. 574,802, Filed Jan. 30, 1984, Cl. 422/267, APPARATUS FOR THE CONTINUOUS EXTRACTION OF OILS AND SOLUBLE SUBSTANCES FROM SOLID MATERIALS, William M. Barger, Owner of Record: *French Oil Machinery Co., Piqua, Ohio*, Attorney or Agent: Nathaniel R. French, Ex. Gp.: 177

4,367,142, Re. S.N. 573,306, Filed Jan. 23, 1984, Cl. 210/163, GRATE FOR DRAINAGE DUCTS, Peter Blecher, Owner of Record: *TWB-Pressteile GmbH, Hagen, Germany*, Attorney or Agent: Ernest A. Beutler, Ex. Gp.: 176

4,382,301, Re. S.N. 575,296, Filed Jan. 30, 1984, Cl. 2/22, SNAKE PROOF CHAPS, George H. Hightower, Jr., Owner of Record: *Thomaston Mills, Inc., Thomaston, Ga.*, Attorney or Agent: Harold L. Stowell, et al., Ex. Gp.: 353

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,919,354, Reexam. No. 90/000,524, Requested: Mar. 5, 1984, Cl. 525/257, IMPACT RESISTANT POLYMERS OF A RESINOUS COPOLYMER OF AN ALKENYL AROMATIC MONOMER AND UNSATURATED DICARBOXYLIC ANHYDRIDE, Eugene R. Moore, et al., Owner of Record: *Dow Chemical Co., Midland, Mich.*, Attorney or Agent: Richard G. Waterman, Ex. Gp.: 142, Requester: Dow Chemical Co., Midland, Mich.

4,358,535, Reexam. No. 90/000,526, Requested: Mar. 12, 1984, Cl. 435/5, SPECIFIC DNA PROBES IN DIAGNOSTIC MICROBIOLOGY, Stanley Falkow, et al., Owner of Record: *Board of Regents of the University of Washington, Seattle, Wash.*, Attorney or Agent: Bertram I. Rowland, Ex. Gp.: 174, Requester: Cetus Corp., Emeryville, Calif.

Errata

"All reference to Patent No. 4,434,055 to Charles B. Nicholson of N.Y. for 'TWO PIECE SCREEN FILTER' appearing in the Official Gazette of Feb. 28, 1984 should be deleted since no patent was granted."

"All reference to Patent No. 4,435,335 to James M. Mayer of Mo. for 'SUBSTITUTED-BUTANEDIPEROXOIC ACIDS AND PROCESS FOR BLEACHING' appearing in the Official Gazette of Mar. 6, 1984 should be deleted since no patent was granted."

"All reference to Patent No. 4,435,515 to Oliver J. Zandona, et al. of Ky. for 'CATALYST FOR THE CONVERSION OF CARBO-METALLIC CONTAINING OILS' appearing in the Official Gazette of Mar. 6, 1984 should be deleted since no patent was granted."

"All reference to Patent No. 4,436,263 to Louis B. Gratzer, et al. of Wash. for 'AERODYNAMICALLY CONTOURED, LOW DRAG WING, ENGINE AND ENGINE NACELLE COMBINATION' appearing in the Official Gazette of Mar. 13, 1984 should be deleted since no patent was granted."

"All reference to Patent No. 4,437,185 to Yoichiro Sako, et al. of Japan for 'METHOD OF ERROR CORRECTION' appearing in the Official Gazette of Mar. 13, 1984 should be deleted since no patent was granted."

Genetics Engineering and Robotics Search Files Established

The Patent and Trademark Office has established special art collections covering Genetic Engineering and Robotics. These files are maintained in the Scientific Library of the Patent and Trademark Office located on the floor immediately above the Public Search Room for Patents. Both files are available for searching by the public Monday through Friday between the hours of 8:45 a.m. and 4:45 p.m. Both files contain a comprehensive collection of U.S. and foreign patents. The Robotics file also contains a limited collection of non-patent literature. The classification schedule and definitions for Robotics are contained in "Classification Order No. 926" and may be purchased for $3.90. The classification schedule and definitions for Genetic Engineering are contained in "Classification Order No. 927" and may be purchased for $2.90. Requests to purchase these Classification Orders should be sent to :

Documentation Practice and Systems Division
U.S. Patent and Trademark Office
Washington, D.C. 20231

WILLIAM S. LAWSON
Mar. 5, 1984 *Administrator for Documentation.*

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by registered mail to each registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

American Golfer, Inc., assignee of Straus, Royer & Strass, Inc., Baltimore, Md., Reg. No. 528,315, for the mark "TOM BOY", Canc. No. 13,491.

Power Plus Electronics, Inc., Hollywood, Calif., Reg. No. 1,080,243, for the mark "POWER PLUS", Canc. No. 13,722.

Maxine Anderson, assignee of the Du-Dad Lure Co., Dorchester, Wis., Reg. No. 947,545, for the mark "DAD", Canc. No. 13,784.

Xtravision Corp. of America, New York, N.Y., Reg. No. 1,146,491, for the mark "XTRAVISION", Canc. No. 13,865.

Rodalen, Inc., Clearwater, Fla., Reg. No. 1,161,416, for the mark "CALVIN MAGOO'S HAMBURGERS" and design, Canc. No. 13,882.

Emanuelle Industries, Inc., New York, N.Y., Reg. No. 1,090,382, for the mark "EMANUELLE", Canc. No. 13,888.

Victor Tabaco, Inc., Miami, Fla., Reg. No. 1,056,705, for the mark "NICA", Canc. No. 13,909.

Merrill Co. Publishers, Chicago, Ill., Reg. No. 786,440, for the mark "MERRILL COMPANY" and design, Canc. No. 13,921.

Pronto Oil Corp., Nashville, Tenn., Reg. No. 1,088,890, for the mark "PRONTO" and design, Canc. No. 13,929.

Martens Chemical Corp., Middle Village, N.Y., Reg. No. 860,802, for the mark "FLUF-DRI", Canc. No. 13,935.

The Eleventh Hour, Inc., Chattanooga, Tenn., Reg. No. 893,937, for the mark "THE ELEVENTH HOUR", Canc. No. 13,955.

Cambridge Casuals, Inc. (A New York Corp.), New York, N.Y., Reg. No. 775,431, for the mark "JOVI", Canc. No. 13,959.

United Coconut Corp., New York, N.Y., Reg. No. 839,209, for the mark "UNICO BRAND" and design, Canc. No. 13,965.

Regency Cosmetics, Inc., New City, N.Y., Reg. No. 1,154,392, for the mark "CRYSTALIC", Canc. No. 13,968.

Biscayne Manufacturing Corp., Miami, Fla., Reg. No. 890,365, for the mark "BODYGUARD", Canc. No. 13,977.

Cortez Enterprises, Inc., assignee by merger, change of name and mesne assignment of Clark Equipment Co., Kent, Ohio, Reg. No. 778,427, for the mark "CORTEZ", Canc. No. 13,986.

Jeremy Sportswear, Inc., Beaverton, Oreg., Reg. No. 1,139,255, for the mark "JEREMY SPORTSWEAR", Canc. No. 13,987.

National Newsstand Publications, Inc., New York, N.Y., Reg. No. 1,125,256, for the mark "ROCK", Canc. No. 13,988.

Big Four Automotive Equipment Corp., assignee of Studebaker Corp., South Bend, Ind., Reg. No. 872,940, for the mark "BIG FOUR", Canc. No. 14,002.

Eastern Boneless Beef Co., Philadelphia, Pa., Reg. No. 823,015, for the mark "NATURE'S DELIGHT BRAND", Canc. No. 14,003.

Haas-Davis Packing Co., Inc., Mobile, Ala., Reg. No. 792,338, for the mark "SATSUMA", Canc. No. 14,040.

Chimi's, Inc., Scottsdale, Ariz., Reg. No. 1,105,341, for the mark "CHIMI'S (STYLIZED)", Canc. No. 14,048.

Amco of Norvelt, Inc., New York, N.Y., Reg. No. 796,457, for the mark "WEATHER-OR-NOTS", Canc. No. 14,077.

Tarco, Inc., by change of name from the Tarrson Co., Chicago, Ill., Reg. No. 1,106,735, for the mark "PRESTOFIX CREATIVE SYSTEMS", Canc. No. 14,082.

Nichols Alley Co., Inc., Columbus, Ga., Reg. No. 1,155,135, for the mark "NICHOLS' ALLEY" and design, Canc. No. 14,089.

Sammy Tanner Distributing Co., Inc., Wilmington, Calif., Reg. No. 853,229, for the mark "ASCOT", Canc. No. 14,092.

ERMA S. BROWN,
Deputy Clerk,
Trademark Trial and Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

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Mar. 7, 1984.

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Assistant Commissioner
for Administration.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

3,206,722, Gustus and Potenza, TRAFFIC CONTROL SYSTEM FOR DRIVE-IN BANKS AND THE LIKE; **3,588,808,** Rolfe T. Gustus, IMPROVED TRAFFIC CONTROL SYSTEM FOR DRIVE-IN BANKS AND THE LIKE; **3,886,414,** Lach and Brier, DISPATCHING SYSTEM CIRCUIT; **3,893,097,** Lach and Brier, DISPATCHING SYSTEM CIRCUIT; **4,010,404,** Ronald Louis Lach, TRAFFIC ERROR CORRECTING CIRCUIT FOR TRAFFIC DISPATCHING SYSTEM, **filed** Sept. 27, 1979, D.C., N.D. Ill. (Chicago), Doc. 79 C 4056, *Elec-Tro-Tec, Inc.* v. *Actron, Inc., et al.* Cause dismissed without prejudice and on July 8, 1980 cause will be dismissed with prejudice. Filed June 17, 1980.

3,353,170, Cerberus AG, IONIZATION FIRE ALARM SYSTEM; **3,521,263, same,** IONIZATION FIRE ALARM AND IMPROVED METHOD OF DETECTING SMOKE AND COMBUSTION AEROSOLS; **4,074,341, same,** INTERLOCKED SEPARABLE FIRE SENSOR CONSTRUCTION, **filed** Aug. 12, 1982, D.C., S.D.N.Y., Doc. 82-Civ-5347 (GLG), *Baker Industries, Inc.* v. *Cerberus Ltd.*

3,521,263. (See 3,353,170.)

3,588,808. (See 3,206,722.)

3,615,087, Inventec Intl., Ltd., WORKBENCHES; **4,076,229, same, filed** Jan. 14, 1980, D.C. W.D.N.C. (Asheville), Doc. B-C-80-7, *The Black & Decker Mfg. Co. and Inventec Intl., Ltd.* v. *Emerson Electric Co.* Defendant is enjoined and restrained from further infringing Plaintiff's patent. Filed Aug. 31, 1982.

3,628,849, Flamand, Labeyrie and Pieuchard, DIFFRACTION GRATINGS; **3,909,134,** Pieuchard, Flamand and Cordelle, MONOCHROMATOR WITH A CONCAVE GRATING; **3,930,728,** Pieuchard, Flamand and Passereau, MONOCHROMATOR WITH CONCAVE GRATING; **4,063,818,** Didier Lepere, MONOCHROMATOR HAVING A TOROIDAL HOLOGRAPHIC DIFFRACTION GRATING AND UTILIZABLE IN THE ULTRAVIOLET BAND; **4,087,183,** Genevieve Passereau, SPECTROGRAPH; **4,191,474,** Genevieve Passereau, SPECTROGRAPH FOR AN EXTENDED SPECTRAL FIELD IN WHICH PARTIAL PLANAR DIFFRACTION SPECTRA ARE SUCCESSIVELY FORMED IN THE SAME PLANE, **filed** Mar. 6, 1981, D.C. Del. (Wilmington), Doc. 81-92, *Instruments SA, Inc.* v. *American Holographic, Inc.*

3,648,768, Gunter Scholl, HEAT-EXCHANGER COMPONENTS; **4,112,921,** Calvin Dodd MacCracken, METHOD AND SYSTEM FOR UTILIZING A FLEXIBLE TUBING SOLAR COLLECTOR; **4,176,654,** Zinn and Krulick, SOLAR HEATING APPARATUS; **4,270,596,** Zinn, Krulick and Leonard, TUBE MAT HEAT EXCHANGER, **filed** Feb. 23, 1982, D.C., S.D.N.Y., Doc. 82-Civ-1090, *Delford Industries, Inc.* v. *Bio-Energy Systems, Inc.*

3,659,294, Otto Bock Orthopadische Industries, KG, ADJUSTABLE LINK FOR PROSTHETIC LIMB; **4,007,496, same,** CONNECTION BETWEEN A COSMETIC COVER AND A PROSTHETIC PART, **filed** Aug. 9, 1982, D.C. Minn. (St. Paul), Doc. CV-3-82-1086, *Otto Bock Orthopadische Industries KG, et al.* v. *Daw Industries, Inc., et al.*

3,702,886 Mobil Oil Corp., CRYSTALLINE ZEOLITE ZSM-5 AND METHOD OF PREPARING THE SAME; **4,049,573, same,** ZEOLITE CATALYST CONTAINING OXIDE OF BORON OR MAGNESIUM, **filed** Apr. 15, 1983, D.C. Del. (Wilmington), Doc. 83-207, *Mobil Oil Corp.* v. *Amoco Chemicals Corp.*

3,886,414. (See 3,206,722.)

3,874,205, Hurco Mfg. Co., Inc., DIGITALLY CONTROLLED MULTIPLE DEPTH STOP AND RETURN STROKE LIMIT CONTROL FOR PRESS BRAKES; **4,074,350, same,** SOFT-WIRED MACHINE TOOL CONTROL, **filed** Dec. 14, 1982, D.C. Mass. (Boston), Doc. 82-3803-C, *Hurco Mfg. Co., Inc.* v. *Dynamics Research Corp.*

3,893,097. (See 3,206,722.)

3,909,134. (See 3,628,849.)

3,930,728. (See 3,628,849.)

3,942,544, Spiral Step Tool Co., HOPPER PAYOUT FOR VARIOUS COIN DENOMINATIONS; **4,036,242, same, filed** Apr. 26, 1983, D.C. Nev. (Reno), Doc. CV-R-83-126, *Spiral Step Tool Co.* v. *Summit Systems, Inc., et al.*

4,007,496. (See 3,659,294.)

4,008,458, Gerald J. Wensley, REMOTE AUTOMATIC READING SYSTEM, **filed** May 19, 1983, D.C. Neb. (Omaha), Doc. CV83-0-344, *George Risk, et al.* v. *Gerald J. Wensley.* Dismissal of Action filed Sept. 29, 1983.

4,009,063, Insituform (Pipes & Structures) Ltd., METHOD OF LINING A PIPE; **4,064,211, same,** LINING OF PASSAGEWAYS, **filed** May 20, 1981, D.C., E.D. Mich. (Flint), Doc. 81-40110, *Insituform of Mich.* v. *Insituform (Pipes & Structures) Ltd., et al.*

4,010,404. (See 3,206,722.)

4,010,824, Edward F. Bavis, CONVEYOR SYSTEM FOR DRIVE-IN BANKS AND THE LIKE, **filed** Feb. 11, 1983, D.C., N.D. Iowa (Cedar Rapids), Doc. 83-0022, *Kidde, Inc.* v. *E. F. Bavis Associates, Inc. and Edward F. Bavis.* Action dismissed per Judgment filed Oct. 25, 1983.

4,010,976, William D. Shields, MOTORCYCLE FAIRING, **filed** Jan. 29, 1980, D.C., N.D. Ill. (Chicago), Doc. 80 C 0486, *Product Design Corp.* v. *National Cycle, Inc.* Plaintiff's complaint and Defendants counterclaim are dismissed with prejudice per Judgment Order dated Dec. 13, 1983.

4,011,962, Donald G. Favell, TWO PIECE CLOSURE FOR CONTAINERS, **filed** June 27, 1980, D.C. Del. (Wilmington), Doc. 80-316, *Ethyl Products Co.* v. *Risdon Corp.* Rule 41 Dismissal without prejudice dated Feb. 2, 1981.

4,013,864, Tiegel Mfg. Co., APPARATUS FOR FABRICATING THROUGH-THE-WALL BATTERY CONNECTORS, **filed** July 9, 1981, D.C., M.D. Fla. (Tampa), Doc. 81-633 Civ T K, *Tiegel Mfg Co.* v. *Farmer Mold & Machine Works, Inc.*

4,013,965, James A. Scharfe, Jr., CIRCUIT FOR PREVENTING ERRORS IN DECODING INFORMATION FROM DISTORTED PULSES; **4,229,698, same,** TUNING INDICATOR, **filed** Sept. 20, 1983, D.C., S.D. Calif. (San Diego), Doc. 83-1761-K (H), *James A. Scharfe, Jr.* v. *Trans World Electronics, Inc.*

4,015,706, Chemcut Corp., CONNECTING MODULES FOR AN ETCHING SYSTEM, **filed** June 25, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82 3201, *Chemcut Corp.* v. *Gebr. Schmid Maschinenfabrik GmbH & Co., et al.*

4,016,977, The Cooperative Marketing Co., ASSEMBLAGE WITH DUAL SUPPORT, **filed** Jan. 19, 1983, D.C., S.D.N.Y., Doc. 83-Civ-0574, *The Cooperative Marketing Co.* v. *Sandy Alexander Alexander, Inc.*

4,017,970, Ann Williams, TILE AND TUB SCRAPER, **filed** Aug. 23, 1983, D.C., N.D. Ill. (Chicago), Doc. 83 C 5833, *Ann Williams, et al.* v. *The Gillette Co.* Case dismissed for failure to state a cause of action on Oct. 12, 1983.

4,021,092, Ericson Mfg. Co., ELECTRICAL CONNECTOR, **filed** Mar. 26, 1982, D.C., N.D. Ill. (Chicago), Doc. 82 C 1876, *Daniel Woodhead* v. *Ericson Mfg. Co.*

4,022,009, Akzo N.V., METALLIC CABLE; **4,030,248, same,** METHOD AND APPARATUS FOR MAKING FILAMENT CABLES, **filed** Apr. 23, 1982, D.C. District of Columbia (Wash. D.C.), Doc. 82-1122, *Bekaert Steel Wire Corp.* v. *Akzo N.V.* Notice of voluntary dismissal of action without prejudice filed by plaintiff on Nov. 9, 1982.

4,027,431, National Gypsum Co., SINGLE HUNG WINDOW WITH REMOVABLE FIXED LITE, **filed** Aug. 16, 1983, D.C., M.D. Tenn. (Nashville), Doc. 3-83-0648, *National Gypsum Co.* v. *Gallatin Aluminum Products Co., Inc.*

4,027,613, Donald L. Wollard, PLANING BOAT HULL, **filed** Sept. 26, 1983, D.C., E.D.N.C. (New Bern), Doc. 83-134-CIV-4, *Donald L. Wollard* v. *Fountain Powerboats, Inc., et al.*

4,030,248. (See 4,022,009.)

4,030,939, Southwest Research Institute, CEMENT COMPOSITION, **filed** Nov. 14, 1983, D.C., S.D. Tex. (Houston), Doc. H-83-6708, *Southwest Research Institute, et al.* v. *M. O. Fulton, Inc., et al.*

4,036,242, Spiral Step Tool Co., HOPPER PAYOUT FOR VARIOUS COIN DENOMINATIONS, **filed** Apr. 29, 1983, D.C.N.J. (Camden), Doc. 83-1543, *Spiral Step Tool Co.* v. *International Game Technology.* Stipulation of Dismissal without prejudice and costs filed Feb. 1, 1984.

4,036,242. (See 3,942,544.)

4,037,337, Charles Wayne Hemphill, EXCAVATING BUCKET AND TEETH FOR A BACKHOE; **4,117,611, same,** DIGGING TEETH FOR AN EXCAVATING BUCKET; **4,123,861, same,** METHOD OF EXCAVATING EARTH WITH A BUCKET, **filed** May 1, 1981, D.C., N.D. Tex. (Dallas), Doc. CA3-81-0713-D, *GH Hensley Industries, Inc.* v. *Kirkpatrick & O'Donnell Construction Equipment Co.*

4,037,418, Phillips Stamping Co., Inc. LOAD SUPPORTING BEARING PLATE, **filed** May 11, 1978, D.C., W.D. Pa. (Pittsburgh), Doc. 78-523, *Jennmar Corp.* v. *Phillips Stamping Co., Inc.,* Case closed without prejudice per Order dated Jan. 22, 1981.

4,040,098, Convergence Corp., EDITING SYSTEM FOR CONTROLLING THE TRANSFER OF SELECTED VIDEO INFORMATION FROM A VIDEO SOURCE TO A VIDEO TAPE RECORDER, **filed** Mar. 10, 1980, D.C., C.D. Calif. (Los Angeles), Doc. 80 00903, *Convergence Corp.* v. *United Media, Inc.* **Same, filed** Mar. 10, 1980, D.C., C.D. Calif. (Los Angeles), Doc. 80 00904, *Convergence Corp.* v. *Bell & Howell Co.* **Same, filed** Mar. 10, 1980, D.C., C.D. Calif. (Los Angeles), Doc. 80 00905, *Convergence Corp.* v. *Whittaker Corp. (Dynasciences Unit).* **Same, filed** Mar. 13, 1980, D.C., N.D. Calif. (San Francisco), Doc. 80-786 WHO, *Convergence Corp.* v. *Videomedia.* **Same, filed** Mar. 13, 1980, D.C., N.D. Calif. (San Francisco) Doc. C-80-0787-SAW, *Convergence Corp.* v. *Cezar Intl., Inc.* **Same, filed** Mar. 13, 1980, D.C., N.D. Calif. (San Francisco), Doc. C80-788 WWS, *Convergence Corp.* v. *EMS, Inc.* **Same, filed** Mar. 13, 1980, D.C., N.D. Calif. (San Francisco), Doc. C 80-0789 WHO, *Convergence Corp.* v. *Harris Video Systems.* Stipulation and Order dismissing complaint without prejudice dated May 8, 1981.

4,040,303, FMC Corp., TWO MASS VIBRATORY MATERIAL HANDLING APPARATUS AND METHODS OF MANUFACTURING AND FINE TUNING THE SAME; **4,218,929,** William V. Spurlin, VIBRATORY DEVICE FOR FEEDERS AND THE LIKE, **filed** Apr. 18, 1983, D.C., W.D. Pa. (Pittsburgh), Doc. 83-906, *FMC Corp.* v. *William V. Spurlin, et al.*

4,043,449, Mida Mfg. Co., GIFT PACKAGE CONTAINING MESSAGE BEARING UNIT AND USEFUL ARTICLE IN ASSOCIATION THEREWITH, **filed** July 26, 1982, D.C., S.D.N.Y., Doc. 82-Civ-4860 (JES), *Mida Mfg. Co.* v. *S. Axelrod Co., Inc.*

4,044,523, Eberhard Layher, FRAME STRUCTURE, PARTICULARLY SCAFFOLDING; **4,180,342, same,** ARRANGEMENT FOR CONNECTING STRUCTURAL MEMBERS, **filed** Dec. 17, 1982, D.C.N.J. (Newark), Doc. 82-4271, *Patent Scaffolding Co.* v. *Wilhelm Layher, GmbH, et al.*

4,047,197, Semikron, Gesellschraft fur Gleichrichterbau und Electronik m.b.H., HOUSING AND LEAD STRUCTURE FOR A SERIES CONNECTED SEMICONDUCTOR RECTIFIER ARRANGEMENT, **filed** Sept. 23, 1983, D.C., C.D. Calif. (Los Angeles), Doc. CV 83 6152 CHH (Jrx), *Semikron, Gesellschraft fur Gleichrichterbau und Electronik m.b.H.* v. *Silicon Power Cube Corp.*

4,049,573. (See 3,702,886.)

4,049,942, Ateliers des Charmilles, S.A., IMPROVEMENTS IN AND RELATING TO ELECTRIC DISCHARGE MACHINING METHOD AND DEVICE WITH PRESET ELECTRODE FEED; **4,057,703, same,** METHOD OF MACHINING BY EROSIVE ELECTRICAL DISCHARGES, **4,104,500, same,** DEVICE FOR ELECTRICAL DISCHARGE MACHINING WITH SIMULTANEOUS RELATIVE ADVANCE AND CYCLIC TRANSLATIONAL MOVEMENT OF THE ELECTRODES; **4,104,501, same,** METHOD OF ELECTRICAL DISCHARGE MACHINING WITH SIMULTANEOUS RELATIVE ADVANCE AND CYCLIC TRANSLATIONAL MOVEMENT OF THE ELECTRODES, **filed** Mar. 11, 1980, D.C.N.J. (Newark), Doc. 80-656, *Ateliers des Charmilles, S.A.* v. *System 3R USA, Inc.* Order of dismissal of Action filed Jan. 15, 1981.

4,051,683, Jennmar Corp., METHOD AND APPARATUS FOR SUPPORTING A MINE ROOF; **Reg. No. 1,165,222** (COMBINATION), Jennmar Corp., **filed** Oct. 26, 1982, D.C., W.D. Pa. (Pittsburgh), Doc. 82-2254, *Jennmar Corp.* v. *Republic Corp., et al.* Stipulation of Dismissal without prejudice filed Aug. 19, 1983.

4,057,703. (See 4,049,942.)

4,059,215, Lamons Metal Gasket Co., CIRCULAR DOUBLE-JACKETED GASKET WITH SINGLE JOINT, **filed** Mar. 29, 1982, D.C., S.D. Tex. (Houston), Doc. H-82-0885, *Lamons Metal Gasket Co.* v. *Sepco Corp.*

4,063,818. (See 3,628,849.)

4,064,206, Gerhard Seufert, PROCESS FOR FORMING FLEXIBLE FOLD LINES IN THERMOPLASTIC SHEETS; **4,179,252, same,** APPARATUS FOR FORMING FLEXIBLE FOLD LINES IN THERMOPLASTIC SHEETS AND ARTICLE SO FORMED, **filed** Dec. 14, 1983, D.C., N.D. Ill. (Chicago), Doc. 83 C 9172, *Klearfold, Inc.* v. *Transparent Container Co., Inc.*

4,064,211, Insituform, Ltd., LINING OF PASSAGEWAYS, **filed** June 19, 1981, D.C., W.D.N.Y. (Buffalo), Doc. Civ-81-495B (E), *Insituform of North America, Inc.* v. *Sewer Specialists of Owosso, Inc., et al.*

4,064,211 (See 4,009,063.)

4,065,648, The Astatic Corp., MICROPHONE SCREEN, **filed** Jan. 13, 1984, D.C. Del. (Wilmington), Doc. 84-20, *The Astatic Corp.* v. *Peavey Electronics Corp., et al.*

4,066,847, Automation Electronics Corp., AUTOMATIC CALL ANSWERING AND SEQUENCING SYSTEM, **filed** Oct. 27, 1981, D.C., C.D. Calif. (Los Angeles), Doc. 81 5553 WMB, *Automation Electronics Corp.* v. *U.S. United Systems, et al.*

4,068,402, Yutaka Tanaka, TOY VEHICLE AND TRACKWAY; **D. 248,887, same,** TOY TRACKWAY, **filed** Aug. 13, 1979, D.C., S.D.N.Y., Doc. 79-Civ-4231 TPG, *Toybox Corp.* v. *Illfelder Toy Co., Inc.* U.S. Pat. No. 4,068,402's Claims 1-6 are invalid. U.S. Design No. 248,887 is invalid. Judgment is hereby entered against plaintiff on May 17, 1982.

4,068,433, J. Raymond Glover, WOOD-FRAME GLASS DOOR UNIT, **filed** June 18, 1982, D.C. Minn. (St. Paul), Doc. 6-81-771, *Marvin Lumber and Cedar Co.* v. *Moulding Products, Inc. and J. Raymond Glover.*

4,071,389, Frank E. Ives, CYLINDER-MAKING APPARATUS AND METHOD, **filed** Oct. 29, 1981, D.C., W.D. Okla. (Oklahoma City), Doc. CIV-81-1493, *Frank E. Ives, et al.* v. *Fiberglass Equipment Co., et al.* Judgment filed June 2, 1982.

4,074,341. (See 3,353,170.)

4,074,350. (See 3,874,205.)

4,074,447, Shivers, Jr., Shivers and Shivers, STUMP CUTTING AND PRECISION DIGGING APPARATUS, **filed** July 15, 1983, D.C., C.D. Calif. (Los Angeles), Doc. 83 4567 LEW (Gx), *Paul N. Shivers, et al.* v. *Arrowhead Continental, Inc., et al.*

4,076,229. (See 3,615,087.)

4,076,698, E. I. du Pont de Nemours & Co., HYDROCARBON INTERPOLYMER COMPOSITIONS, **filed** Nov. 13, 1981, D.C. Del. (Wilmington), Doc. 81-508, *E. I. du Pont de Nemours & Co.* v. *Phillips Petroleum Co.*

4,079,701, Westinghouse Electric Corp., STEAM GENERATOR SLUDGE REMOVAL SYSTEM, **filed** Nov. 18, 1983, D.C. Del. (Wilmington), Doc 83-816, *Westinghouse Electric Corp.* v. *Halliburton Industrial Services, Inc.* Defendant is permanently enjoined from further infringing Pat. No. 4,079,701 per Consent Judgment dated Feb. 2, 1984.

4,081,190, Daniel Itzler, PLUMBING DEVICE, **filed** Dec. 12, 1983, D.C., S.D.N.Y., Doc. 83-Civ-8979 KTD, *Daljack Industries, Inc.* v. *Nokman Menaker.*

4,084,381, Cain, Teague and Wright, STABILIZATION OF EARTH SUBSURFACE LAYERS; **4,233,015,** Teague and Wright, EMPLOYING QUICKLIME IN STABILIZING EARTH, **filed** Apr. 4, 1983, D.C., S.D. Tex. (Houston), Doc. H-83-2922, *Woodbine Corp.* v. *Holland Soil Stabilizers, Inc.*

4,084,539, Copar Corp., VOLTAGE TO AIR PRESSURE TRANSDUCER, **filed** Nov. 14, 1978, D.C., S.D. Ohio (Cincinnati), Doc. C-1-78-726, *Valco Cincinnati, Inc.* v. *Copar Corp.* Stipulation of Dismissal without prejudice filed Sept. 18, 1979.

4,087,124, Rudkin-Wiley Corp., ILLUMINATED DRAG REDUCING SYSTEM, **filed** Oct. 8, 1982, D.C., N.D. Ohio (Cleveland), Doc. 82-2719Y, *Rudkin-Wiley Corp.* v. *Premix, Inc.* Stipulation and Order dismissing complaint, without prejudice, filed Sept. 15, 1983.

4,087,183. (See 3,628,849.)

4,096,523, Belmares-Sarabia, Chayka and Lund, COLOR CORRECTION SYSTEM, **filed** May 27, 1981, D.C., S.D.N.Y., Doc. 81-Civ-2236, *Corporate Communications Consultants, Inc.* v. *Columbia Pictures Ind., Inc., et al.* **Same, filed** May 27, 1981, D.C.N.J. (Newark), Doc. 81-1608, *Corporate Communications Consultants, Inc.* v. *Dubner Computer Systems, Inc., et al.*

4,096,577, Ferber and Pavelle, THIN FLEXIBLE ELECTRONIC CALCULATOR, **filed** Nov. 15, 1983, D.C., S.D.N.Y., Doc. 83-Civ-8305 CES, *Leon Ferber and Richard Pavelle* v. *American Express Co.*

4,103,736, Anchor Hocking Corp., APPARATUS FOR HEATING A FOOD ITEM WHILE RETAINING ITS MOISTURE AND NUTRITIONAL COMPONENTS; **4,323,110, same,** FOOD PREPARATION PROCESS, **filed** Jan. 9, 1984, D.C. Del. (Wilmington), Doc. 84-11, *Anchor Hocking Corp.* v. *Aladdin Synergistics, Inc.*

4,104,500. (See 4,049,942.)

4,104,501. (See 4,049,942.)

4,109,343, C. L. Frost & Son, Inc., TROLLEY WHEEL ASSEMBLY, **filed** Aug. 22, 1983, D.C., N.D. Ga. (Atlanta), Doc. C83-1752A, *C.L. Frost & Son, Inc.* v. *Tri-II, Inc.* Defendant is perpetually enjoined from further infringing Plaintiff's patent. Consent Judgment and Decree filed Jan. 24, 1984.

4,112,921, Calvin Dodd MacCracken, METHOD AND SYSTEM FOR UTILIZING A FLEXIBLE TUBING SOLAR COLLECTOR; **4,270,596,** Zinn, Krulick and Leonard, TUBE MAT HEAT EXCHANGER, **filed** Mar. 5, 1982, D.C., S.D.N.Y., Doc. 82-Civ-1377, *Bio-Energy Systems, Inc.* v. *Insolar, Inc.*

4,112,921. (See 3,648,768.)

4,117,195, Etablissements Maillefer S.A., MANUFACTURE OF EXTRUDED PRODUCTS, **filed** Feb. 13, 1981, D.C.N.J. (Newark), Doc. 81-0459, *Etablissements Maillefer S.A.* v. *John Royle & Sons.* Order dismissing action without costs filed Mar. 22, 1983.

4,117,611. (See 4,037,337.)

4,123,861. (see 4,037,337.)

4,166,036, Environmental Elements Corp., FLOATING SKIMMING APPARATUS, **filed** July 13, 1983, D.C., N.D. Ill. (Chicago), Doc. 83 C 4811, *Environmental Elements Corp.* v. *Lakeside Equipment Corp.*

4,176,654. (See 3,648,768.)

4,179,252. (See 4,064,206.)

4,180,342. (See 4,044,523.)

4,182,586, Precision Metal Fabricators, Inc., AIR OPERATED CONVEYOR APPARATUS, **filed** Jan. 27, 1984, D.C. Wyoming (Cheyenne), Doc. C84-0040, *Precision Metal Fabricators, Inc.* v. *Crown Cork & Seal Co., Inc.*

4,188,825, James G. Farrar, MONITOR FOR DIVERS TO AVOID DECOMPRESSION, **filed** Jan. 18, 1984, D.C., N.D. Calif. (San Francisco), Doc. C84 0230 JPV, *Tekna* v. *Aquatechnology, Inc.*

4,191,474. (See 3,628,849.)

4,218,929. (See 4,040,303.)

4,229,698. (See 4,013,965.)

4,233,015. (See 4,084,381.)

4,250,787, Segan and Swarztrauber, MUSIC TONE GENERATOR, **filed** Feb. 17, 1981, D.C.N.J. (Newark), Doc. 81-477, *Calfax, Inc.* v. *Guilden Development Co., Inc.* Order terminating action administratively filed Sept. 16, 1981.

4,270,596. (See 3,648,768 and 4,112,921.)

4,295,532, Acra-Plant, Inc., PLANTER WITH COOPERATING TRASH CLEARING DISCS, **filed** Jan. 11, 1984, D.C. Neb. (Lincoln), Doc. CV84-L-26, *Acra-Plant, Inc.* v. *Orthman Mfg., Inc.*

4,302,043, Wahpeton Canvas Co., Inc., ROLL-UP TARP FOR TRAILERS, **filed** Apr. 20, 1982, D.C. N. Dak. (Fargo), Doc. A3-82-61, *Wahpeton Canvas Co., Inc.* v. *Frontier, Inc. et al.*

4,323,110. (See 4,103,736.)

4,325,152, Michael Carpenter, FLOTATION MATTRESS, **filed** Jan. 10, 1984, D.C. Md. (Baltimore), Doc. N-84-83, *Michael Carpenter* v. *U.S. Watermattress Corp.*

4,346,442, Merrill, Lynch, Pierce, Fenner & Smith, Inc., SECURITIES BROKERAGE-CASH MANAGEMENT SYSTEM, **filed** Oct. 19, 1982, D.C. Del. (Wilmington), Doc. 82-680, *Paine, Webber, Jackson & Curtis, Inc.* v. *Merrill, Lynch, Pierce, Fenner & Smith, Inc.*

4,363,959, E. R. Wagner Mfg. Co., STAND-OFF FOR RESISTANCE WIRES, **filed** Jan. 18, 1984, D.C., E.D. Mo. (St. Louis), Doc. 84-0168C(A), *Intertherm, Inc.* v. *E. R. Wagner Mfg. Co.*

4,378,953, Advanced Semiconductor Products, THIN, OPTICAL MEMBRANES AND METHODS AND APPARATUS FOR MAKING THEM, **filed** Apr. 25, 1983, D.C., S.D.N.Y., Doc. 83-Civ-3148, *Tau Laboratories, Inc.* v. *Advanced Semiconductor Products.* **Same, filed** May 26, 1983, D.C., N.D. Calif. (San Jose), Doc. C-83-20033 WAI, *Advanced Semiconductor Products, Inc.* v. *Micro Lithography, Inc.*

4,387,072, J. M. Ney Co., NOVEL PALLADIUM ALLOY AND DENTAL RESTORATIONS UTILIZING SAME, **filed** June 8, 1983, D.C. Conn. (Hartford), Doc. H-83-486, *J. M. Ney Co.* v. *Jeneric Industries, Inc.*

4,387,297, Symbol Technologies, Inc., PORTABLE LASER SCANNING SYSTEM AND SCANNING METHODS; **4,409,470, same,** NARROW-BODIED SINGLE-AND-TWIN-WINDOWED PORTABLE LASER SCANNING HEAD FOR READING BAR CODE SYMBOLS, **filed** Jan. 27, 1984, D.C., N.D. Calif. (San Jose), Doc. C 84 20051 RPA, *Symbol Technologies, Inc.* v. *Spectra-Physics, Inc.*

4,404,687, Markus Hager, CONVERTIBLE OUTERWEAR AND CARRYING BAG **filed** Nov. 14, 1983, D.C., S.D.N.Y., Doc. 83-Civ-8247, *Franconia Sportswear, Inc. and Markus Hager* v. *Anchas America Ltd., et al.* Plaintiff's U.S. Pat. No. 4,404,687 is valid and has been infringed by defendants. Defendants are permanently enjoined from making, importing, etc. any garment which infringes the aforesaid patent, per Final Judgment on Consent filed Jan. 20, 1984.

4,406,015, Toshiyuki Koga, FLUORESCENT X-RAY FILM THICKNESS GAUGE, **filed** Dec. 30, 1983, D.C., C.D. Calif. (Los Angeles), Doc. 83 8507, *Seiko Denshi Kogyo Kabushiki Kaisha* v. *UPA Technology, Inc.*

4,409,470. (See 4,387,297.)

D. 248,887. (See 4,068,402.)

DEPARTMENT OF COMMERCE
Patent and Trademark Office
37 CFR Parts 1, 2, and 10
Docket No. 40308-24
Practice Before the Patent and Trademark Office

Agency: Patent and Trademark Office, Commerce

Action: Advance Notice of Proposed Rulemaking

Summary: In Aug. 1983, the Patent and Trademark Office (PTO) proposed amendments to the rules governing standards of conduct and disciplinary proceedings for attorneys and agents who practice before the PTO. Two hearings were held. After reviewing written comments and oral presentations at the hearings, the PTO has decided to withdraw, and not adopt, the rules as then proposed. This advance notice of proposed rulemaking sets forth changes that the PTO is considering in the rules governing admission to practice before the PTO, standards of conduct for those representing applicants and others before the PTO, and conduct of disciplinary proceedings. Interested individuals are invited to comment on the proposed rules being considered. A formal notice of proposed rulemaking could be published as early as July 31, 1984. A hearing on any formal proposal could be held in Oct., 1984.

Date: Comments should be received on or before July 9, 1984.

Address: Address written comments to Box 8, Commissioner of Patents and Trademarks, Washington, D. C. 20231 marked to the attention of Fred E. McKelvey (703) 557-4025 (if no answer, message may be left at 703-557-4103).

For Further Information Contact: Fred E. McKelvey by telephone at (703)-557-4025 (if no answer message may be left at 703-557-4103) or by mail to his attention and addressed to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information: Attorneys and agents practice before the Patent and Trademark Office (PTO) in patent cases. 35 U.S.C. 31. Attorneys also practice before the PTO in trademark and other non-patent cases. 5 U.S.C. 500(b). A limited number of agents also practice before the PTO in trademark cases under rules in force prior to Jan. 1, 1957.

A notice of proposed rulemaking for attorney and agent conduct and disciplinary procedure was published on Aug. 11, 1983 in the Federal Register, 48 F.R. 36478, and on Sept. 20, 1983 in the *Official Gazette,* 1034 O.G. 39, 1034 TMOG 33. A notice extending the comment period and setting a second hearing was published on Oct. 5, 1983 in the Federal Register, 48 F.R. 45424, and on Oct. 18, 1983, in the *Official Gazette,* 1035 O.G. 19, 1035 TMOG 17. The PTO has decided to withdraw, and not adopt, the rules proposed in the Federal Register notice of Aug. 11, 1983. There were numerous objections to the proposed rules and the public indicated that a longer period for study and review of a code of conduct and disciplinary procedures was necessary.

Accordingly, the PTO is issuing this advance notice of proposed rulemaking to permit interested individuals sufficient time to study and review the rules being considered. After written comments are received in response to this advance notice, a notice of proposed rulemaking will be published. The PTO expects to be able to publish a notice of proposed rulemaking on or about July 31, 1984. The PTO also expects to hold a hearing sometime in Oct. of 1984 and that new rules governing admission to practice, conduct, and disciplinary procedures will be issued before the end of 1984.

This advance notice of proposed rulemaking sets out rules being considered in three areas:

(1) Rules governing practice of attorneys and agents before the PTO in patent, trademark, and other non-patent cases (§§10.2 through 10.19);

(2) Rules setting out a PTO Code of Professional Responsibility (§§10.20 through 10.112); and

(3) Rules governing (a) investigation of possible violations of the PTO Code of Professional Responsibility and (b) disciplinary proceedings to reprimand, suspend, or exclude (disbar) individuals practicing before the PTO who, after notice and opportunity for a hearing, are found to have violated a disciplinary rule of the PTO of Professional Responsibility (§§10.130 through 10.161).

Tables 1, 2, and 3 are included in this advance notice to assist readers in correlating present rules with the proposed rules being considered and to find the principal source for the rules being considered. An indication in Tables 1, 2, or 3 that a section is "new" means that a corresponding section does not currently appear in Title 37 of the Code of Federal Regulations.

Table 1 shows the principal sources of the rules being considered which relate to (1) admission to practice of attorneys and agents in patent cases and (2) practice in trademark and other non-patent cases.

Table 2 shows the principal sources of the rules being considered for the PTO Code of Professional Responsibility.

Table 3 shows the principal sources of the rules being considered for disciplinary proceedings and makes reference to corresponding sections in the notice of proposed rulemaking published in the Federal Register on Aug. 11, 1983.

Other sources for the rules being considered are set forth under the discussion of each rule being considered.

Section 1.8 would be amended to exclude from the application thereof papers filed in disciplinary proceedings under Part 10. Under the rule being considered, papers filed in a disciplinary proceeding would have to actually reach the PTO or an administrative law judge (ALJ) within the time set for filing the paper. A certificate of mailing could not be used. The rule is being considered because other rules being considered would call for the use of an ALJ. The PTO does not employ an ALJ. Accordingly, papers filed with the ALJ would not be filed in the PTO.

Section 1.31 would be amended to refer to Part 10.

Paragraph (a) of §1.34 would be amended to refer to Part 10.

The center heading preceding §1.341 and §§1.341 through 1.348 would be deleted.

Section 2.11 would be amended to refer to Part 10.

Paragraph (a) of §2.17 would be amended to refer to Part 10.

Section 2.19 would be amended by adding paragraph (b) which would require permission for a practitioner to withdraw from representing a party in a trademark case. Application to and approval by the Commissioner would be required. Attorneys representing parties in trademark cases before the Trademark Trial and Appeal Board often move for leave to withdraw. Section 602.03 of the Trademark Manual of Examining Procedure [1st Ed., Rev. 5, Dec., 1982] permits withdrawal in *ex parte* trademark cases, "but such withdrawal should not be done in a manner which would prejudice applicant." It would be expected that requests for withdrawal in *ex parte* trademark cases would be decided by the Director of the Trademark Operation or another appropriate PTO employee and that request for withdrawal in *inter partes* trademark cases would continue to be decided by the Trademark Trial and Appeal Board.

Section 10.1 would set out definitions for terms used in Part 10. Terms which are defined include affidavit, application, attorney, Canon, confidence, differing interests, Director (meaning Director of Enrollment and Discipline), Disciplinary Rule, employee of a tribunal (which would include PTO employees), law firm, lawyer, legal counsel, legal profession, legal service, legal system, non-lawyer, non-practitioner, Office (meaning PTO), person (which would include corporations, associations, trusts, partnerships, and other legal entities), practitioner, proceeding before the Office, professional legal corporation, registration (meaning registration to practice before the PTO in patent cases), respondent, secret, solicit, state, tribunal, and United States.

The word "individual" is used in the proposed rules being considered to mean a natural person and would not include juristic entities. The definition of "person" is similar to the definition of "person" in 1 U.S.C. 1. "Attorney" is defined to mean an individual who is a member in good standing of the bar of a United States court or the highest court of any State. This definition differs from the present definition in §2.12. The proposed definition being considered would include an attorney who may be a member of one bar in good standing and "under . . . [an] order of any court suspending, enjoining, restraining, disbarring, or otherwise restricting" the attorney from practice before the bar of another state. The broader definition being considered is believed necessary in view of 5 U.S.C. 500(b) which provides that "[a] n individual who is a member in good standing of the bar of the highest court of *a* State may represent a person before an agency * * * *." Thus, an attorney disbarred in one state and in good standing in a second state would appear to meet the requirements of 5 U.S.C. 500(b). Compare 31 CFR §10.2(b) (1983) defining attorney in the rules of practice before the Internal Revenue Service. The attorney nevertheless could be excluded to practice before the PTO, 5 U.S.C. 500(d) (2), after notice and opportunity for a hearing. See *Selling* v. *Radford,* 243 U.S. 46 (1917). "Affidavit" is defined to include affidavits, declarations under 35 U.S.C. 25 and 37 CFR §§1.68 or 2.20, and statutory declarations under 28 U.S.C. 1746.

Section 10.2 would provide for a Director of Enrollment and Discipline ("Director"). The duties of the Director are set out in the proposed rule being considered. Any final decision of the Director refusing to register an individual, specially recognize an individual, or reinstate a suspended or excluded practitioner would be reviewable by petition to the Commissioner on the record made before the Director. A fee would be charged; the amount of the fee has not been determined, but would be set out in any notice of proposed rulemaking which follows this advance notice.

Section 10.3 would provide for a Committee on Enrollment to assist the Director in connection with registration of attorneys and agents. One of the principal functions of the Committee on Enrollment would be assisting the Director prepare and grade an examination (see §10.7(b)).

Section 10.4 would add a new concept in disciplinary proceedings in the PTO. The section would provide for a Committee on Discipline. The Committee would comprise the Director and at least two Associate Solicitors in the Office of the Solicitor. As provided in paragraph (b) of §10.4, the Committee would meet at the request of the Director. The Committee would determine by majority vote whether there is probable cause to initiate a disciplinary proceeding against a practitioner. The two Associate Solicitors would act independently of the Solicitor. The rationale behind this latter provision is to leave the Solicitor and other members of the Solicitor's staff free to advise the Commissioner as to the proper disposition of a disciplinary proceeding after an appeal (§10.155) is filed following an initial decision (§10.154) of an ALJ. Under §1.348, the Solicitor presently files charges and thus cannot advise the Commissioner as to a proper disposition of a disciplinary proceeding. See 5 U.S.C. 557(d) (1). Accordingly, under the proposed rules being considered, the Solicitor and the staff of the Solicitor's Office which is not part of the Committee on Discipline would be insulated from the activities of the Director and the Committee on Discipline.

Under §10.4(c), discovery could not be had of deliberations of the Committee on Discipline. See *Morgan* v. *United States*, 313 U.S. 409, 422 (1941). The Committee on Discipline would function in the nature of a Grand Jury. Accordingly, under the proposed rules being considered, a disciplinary proceeding would not be a trial of whether the Committee on Discipline had a reasonable basis for its action; rather, the disciplinary proceeding would resolve whether the respondent has or has not committed the violations alleged in the complaint which the Committee on Discipline authorized to be filed under § 10.134.

Under §10.5, a single register of attorneys and agents registered to practice before the PTO would be kept. The proposed rule being considered would conform the rules to what actually occurs today inasmuch as only a single register of all registered attorneys and agents is kept in fact.

Section 10.6 would provide for registration of individuals to practice before the PTO in patent cases.

Paragraphs (a) and (b) of §10.6 would provide for registration of attorneys and agents, respectively. Citizens of the United States could be registered regardless of their residence. Resident aliens, under appropriate circumstances, *could* be registered by the Director. Registration of permanent resident aliens would be consistent with *In re Griffiths*, 413 U.S. 717 (1973) (permanent resident alien entitled to be admitted to Bar of Connecticut notwithstanding status as an alien). See also *Raffaelli* v. *Committee of Bar Examiners*, 496 P.2d 1264 (Cal. 1972) and *Application of Park*, 484 P.2d 690 (Alaska 1971). The PTO currently registers permanent resident aliens. See *In re Bhogaraju*, 178 USPQ 628 (Comm'r.Pat. 1973); *In re Bramham*, 181 USPQ 723 (Comm'r.Pat. 1974); and *In re Keen*, 187 USPQ 477 (Comm'r.Pat. 1975).

The proposed rules being considered would, however, restrict the circumstances under which an alien could be registered. Registration would be precluded if the practice of patent law before the PTO is inconsistent with the terms of any visa under which the alien was admitted to and continues to reside in the United States. See e.g., *In re Richardson*, 203 USPQ 959 (Comm'r.Pat. 1977) (alien admitted to U. S. with an H-3 visa for training could not practice patent law under the terms of the visa) and *In re Mikhail*, 202 USPQ 71 (Comm'r.Pat. 1976) (alien admitted to U. S. with B-1/B-2 visa and visiting the U. S. temporarily for business or pleasure could not practice patent law under terms of visa). While certain aliens should not be registered, it may nevertheless be appropriate to grant an alien limited recognition under §10.9. See e.g., *In re Messulam*, 185 USPQ 438 (Comm'r.Pat. 1975) (alien admitted to U. S. with L-1 visa for purpose of rendering service to a single company for whom the alien had previously worked abroad and who would remain in the U. S. temporarily could not practice, but could be given limited recognition). See also *In re Gresset*, 189 USPQ 350 (Comm'r.Pat. 1976).

An alien who is registered and who thereafter ceases to reside in the United States would be removed (after notice and opportunity for a hearing) unless the alien is otherwise qualified to be registered on the basis of reciprocity under paragraph (c) of §10.6.

Paragraph (c) of §10.6 would continue to provide for registration of foreigners who do not reside in the United States. A practitioner who is suspended from practice before the patent office in the country where he or she resides would also be suspended from practice before the PTO. See *In re Walton*, 956 *Official Gazette* 346 (Mar. 8, 1977) and *In re Cavanagh*, 979 *Official Gazette* 22 (Feb. 20, 1979).

Paragraph (d) of §10.6 would continue the practice under 37 CFR §1.341(f) of restricting registration of empolyees of the United States. See 41 Op. Att'y. Gen. 21 (1949), *reprinted in* 1949 Dec. Comm'r. Pat. 1.

Paragraph (e) of §10.6 would continue certain restrictions on practice of patent law before the PTO by former patent examiners and other former PTO empolyees. Every former employee who sought registration or reinstatement (if registered prior to becoming a PTO employee) would be required to sign a written statement indicating that he or she had read 18 U.S.C. 207.

Section 10.7 would provide for the requirements for registration. The requirements would be essentially the same as the present requirements under 37 CFR §1.341(c). The examination would not be administered as a mere academic exercise. See *In re Mikhail*, 202 USPQ 71 (Comm'r.Pat. 1976). Thus, the examination will not be administered to any individual who cannot be registered or given limited recognition. Paragraph (c) of §10.7 would provide in the rules for a procedure for seeking regrading of an examination failed by an applicant. A fee would be charged, the amount of which would be determined in the future and announced in a notice of proposed rulemaking.

Section 10.8 would continue the practice under 37 CFR §1.341(h) of requiring an oath and payment of a fee prior to registration.

Section 10.9 would continue to provide for limited recognition of individuals under appropriate circumstances. Paragraph (b) would codify in the Code of Federal Regulations the Commissioner's decisions in *In re Messulam* and *In re Gresset*, both of which are discussed above.

Section 10.10 would continue the present provisions of 37 CFR §1.343.

Section 10.11 would continue the present practice under 37 CFR §1.347. The PTO would continue the practice of requiring a registered practitioner to take and pass an examination if the registered practitioner is removed for a substantial period under §10.11. See Commissioner's Notice of Aug. 21, 1978, "Reinstatement of Patent Attorneys and Agents Registered to Practice before the U. S. Patent and Trademark Office," 974 *Official Gazette* 14 (Sept. 19, 1978).

Section 10.14 would set forth who may practice before the PTO in trademark and other non-patent cases. Section 10.14, in essence, would continue present practice under 37 CFR §2.12, except that the definition of attorney is changed. See the discussion above under §10.1. The change in the definition of attorney is believed necessary in view of 5 U.S.C. 500 (b) and the fact that an individual may be an attorney in good standing in one state even though suspended in another state. In other non-patent cases, e.g., disciplinary proceedings or proceedings to disqualify counsel in an *ex parte* or *inter partes* patent or trademark case, a party could be represented only by an attorney.

Section 10.15 would provide that practitioners (individuals who practice before the PTO in patent, trademark, or other non-patent cases) could be suspended or excluded.

The Commissioner has authority under 35 U.S.C. 32 to suspend or exclude practitioners registered to practice before the PTO in patent cases. See also 5 U.S.C. 500(e).

The Commissioner also has authority to suspend or exclude practitioners who practice before the PTO in trademark and other non-patent cases. 5 U.S.C. 500(d) (2); *Herman*, v. *Dulles* 205 F.2d 715 (D.C. Cir. 1953); and Attorney General's Manual on the Administrative Procedure Act, pp. 65-66 (1947). See also *Harary* v. *Blumenthal*, 555 F.2d 1113 (2d Cir. 1977) (certified public accountant disbarred from practice before IRS) and *Koden* v. *U. S. Department of Justice*, 564 F. 2d 228 (7th Cir. 1977) (attorney suspended from practicing before Immigration and Naturalization Service).

Section 10.18 would continue present practice under 37 CFR §1.346 and 37 CFR §2.15. The practice is similar to that under Rule 11 of the Federal Rules of Civil Procedure. See also §10.23(c) (15).

Sections 10.20 through 10.112 would establish a PTO Code of Professional Responsibility. Presently, practitioners representing parties in patent and trademark cases are required to conform to the standards of ethical and professional conduct set forth in the Code of Professional Responsibility of the American Bar Association as amended Feb. 24, 1970. The 1970 ABA Code is incorporated by reference into the PTO rules. See 37 CFR §1.344 and 37 CFR §2.13. The PTO believes that it may be more desirable to create a PTO Code of Professional Responsibility which would be applicable to those practicing before the PTO and to set forth the PTO Code in the Code of Federal Regulations. Many practitioners have advised the PTO that they do not have ready access to the 1970 ABA Code and would prefer that the rules governing standards of ethical and professional conduct be published in the Code of Federal Regulations as part of the PTO rules.

In addition to the 1970 ABA Code, practitioners have been subject to strict advertising standards (37 CFR §1.345 and 37 CFR §2.14) which have been outdated by decisions of the Supreme Court. See *Bates* v. *State Bar of Arizona*, 433 U.S. 350 (1977); *In re Primus*, 436 U.S. 412 (1978); and *In re R.M.J.*, 455 U.S. 191 (1982). Sections 1.345 and 2.14 have not been enforced since *Bates*.

Section 10.20 would define Canons and Disciplinary Rules. The Canons and Disciplinary Rules for the most part were derived from the Model Code of Professional Responsibility of the American Bar Association (1980). See Table 2 for the principal source of each section of the PTO Code being considered. Ethical considerations of the 1980 ABA Code have not been included because they are "aspirational" in character.

The "Disciplinary Rules" would be mandatory in character and would state the minimum level of conduct expected of practitioners before the PTO. Sections 10.21 through 10.112 would constitute the PTO Code of Professional Responsibility. The PTO Canons and Disciplinary Rules are for the most part self-explanatory and generally known by practitioners. A few additional comments will be made with respect to certain Disciplinary Rules to enable interested persons to better understand why the proposed Disciplinary Rules are being considered.

Section 10.23 would define misconduct.

Paragraph (a) of §10.23 is based on 35 U.S.C. 32 and would prohibit disreputable or gross misconduct. For an example where a practitioner was excluded for gross misconduct, see *In re Wedderburn*, 1897 Dec. Comm'r. Pat. 77 (Comm'r. Pat. 1897), *mandamus denied sub nom., United States ex rel. Wedderburn* v. *Bliss*, 1897 Dec. Comm'r. Pat. 750 (Sup.Ct. D.C. 1897), *aff'd*, 12 App.D.C. 485, 1898 Dec. Comm'r. Pat. 413 (D.C. Cir. 1898).

Paragraph (b) of §10.23 would be essentially the same as DR 1-102(A) of the 1980 ABA Code. Subparagraph (b) (3) of §10.23 (b) would prohibit a practitioner from engaging in illegal conduct involving moral turpitude. Members of the bar have expressed different views as to whether any PTO Code of Professional Responsibility should contain such a provision. The present rules contain such a provision. See 37 CFR §1.344, 37 CFR §2.13, and DR 1-102(A)(3) of the 1970 Code of Professional Responsibility of the American Bar Association. The PTO presently believes that a majority of practitioners would favor retaining such a provision. Several states have a similar provision and recently have taken disciplinary action based on violation of the provision. See e.g., *Florida Bar* v. *Lord*, 433 So.2d 983 (Fla. 1983) (attorney disciplined for failure for 22 years to file income tax returns); *Florida Bar* v. *Wilson*, 425 So.2d 2 (Fla. 1983) (attorney disciplined for solicitation to traffic in cocaine); *In re Robertson*, 429 A.2d 530 (D.C. App. 1981) (attorney disciplined for conspiring to sell narcotic drugs and to receive and conceal narcotic drugs); *In re Wines*, 660 P.2d 454 (Ariz. 1983) (attorney disciplined for willful failure to supply information relating to income tax); *In re Levinson*, 444 N.E. 2d 1175 (Ind. 1983) (attorney disbarred, inter alia, for indecent exposure and related acts—444 N.E.2d at 1176, col. 1); and *In re Phillips*, 452 A.2d 345 (D.C. App. 1982) (attorney disbarred based on rape and sodomy).

Paragraph (c) of §10.23 would define *some*, but not all, acts which would constitute violations of paragraphs (a) and (b) of §10.23. The PTO believes that it would be helpful to practitioners if some specific prohibitions were set out in the rules. The prohibitions set out in subparagraphs (1) through (18) of §10.23(c) represent violations which have occurred in the past or which the PTO specifically seeks to prevent. The specific acts set out in paragraph (c) would not constitute a complete description of all acts which would be violations of paragraphs (a) and (b) of §10.23.

Subparagraph (1) of §10.23(c) would provide that misconduct includes being convicted of a criminal offense involving moral turpitude, dishonesty, or breach of trust. This subparagraph would continue present practice. See *In re Castorina*, 975 *Official Gazette* 14 (Oct. 10, 1978) (attorney excluded from PTO practice upon conviction under 18 U.S.C. §201(f)).

Subparagraph (5) of §10.23 (c) would provide for suspension or exclusion from practice before the PTO after entry of an order suspending or excluding a practitioner by a duly constituted authority of the United States (e.g., a federal court of another federal agency) or a state (e.g., a state supreme court or a state bar). Suspension or exclusion from practice before the PTO based on disciplinary action by another tribunal would not occur prior to notice and opportunity for a hearing and would continue to be governed by the principles of *Theard* v. *United States*, 354 U.S. 278 (1957); *Selling* v. *Radford*, 243 U.S. 46 (1917); and *In re Thies*, 662 F.2d 771 (D.C. Cir. 1980). See *In re Davis*, 982 *Official Gazette* 2 (May 1, 1979), *aff'd. sub nom., Davis* v. *Commissioner*, No. 80-1036 (D.C. Cir. Mar. 31, 1981), *cert. denied*, 454 U.S. 1090 (1981) (attorney excluded by PTO based on disbarment in Minnesota, *Matter of Davis*, 264 N.W.2d 371 (Minn. 1977)); *In re Hodgson*, 1023 *Official Gazette* 13 (Oct. 12, 1982) (attorney excluded before the PTO after disbarment in Virginia); *In re Pattison*, 1023 *Official Gazette* 13 (Oct. 12, 1982) (attorney excluded by PTO after disbarment in Maryland, *Attorney Grievance Commission of Maryland* v. *Pattison*, 441 A.2d 328 (Md. 1982)); and *In re Kraft*, 954 *Official Gazette* 550 (Jan. 11, 1977), *aff'd. sub nom., Kraft* v. *Commissioner*, No. 77-0087 (D.D.C. Nov. 3, 1977) (attorney excluded from practice before PTO based on suspension order of the Supreme Court of Idaho).

Subparagraph (6) of §10.23(c) would include as misconduct aiding and abetting a practitioner, suspended or excluded from practice before the PTO, in engaging in the unauthorized practice of law before the PTO during a period of suspension or exclusion. See also §10.158.

Subparagraph (7) of §10.23(c) would include as misconduct knowingly withholding information identifying a patent or application of another from which one or more claims have been copied. This specific provision would provide a penalty for those knowingly violating the provisions of 37 CFR §1.205(b) or, if adopted, the provisions of §§1.604(b) and 1.607(c) of interference rules proposed Jan. 30, 1984, 49 F.R. 3768, 3787, 3788, 1039 *Official Gazette* 11, 83, 85 (Feb. 14, 1984).

Subparagraph (8) of §10.23(c) would address a problem which has occurred in at least one case in the PTO. Misconduct under this subparagraph would include failing to forward, or failing to notify the PTO of an inability to forward, to a client correspondence received from the PTO or the client's opponent in an *inter partes* proceeding before the PTO when the correspondence could have significant effect on a matter pending before the PTO under the conditions specified.

Subparagraph (9) of §10.23(c) would put practitioners on specific notice that misconduct includes misuse of a certificate of mailing under 37 CFR §1.8. See *In re Dula*, 1030 *Official Gazette* 20 (May 17, 1983) (attorney suspended for misusing certificate of mailing; see also BNA's Patent, Copyright, and Trademark Journal, Vol. 27, No. 658, p. 133 (Dec. 8, 1983)).

Subparagraph (10) of §10.23(c) would include as misconduct knowingly violating the duty of candor or good faith requirements of 37 CFR §1.56(a). See *In re Milmore*, 196 USPQ 628 (Comm'r. Pat. 1977) and *Kingsland* v. *Dorsey*, 338 U.S. 318 (1949).

Subparagraph (12) of §10.23(c) would provide that the following is misconduct: in the absence of information sufficient to establish a reasonable belief in the existence of probable cause that a practitioner is in violation of, or has violated, a Disciplinary Rule, causing a disciplinary investigation to be made, or a disciplinary proceeding to be brought, against the practitioner by a court, a state, or an administrative agency.

Subparagraph (15) of §10.23(c) is based on 37 CFR §1.346 and 37 CFR §2.15. The "scandalous and indecent matter" provision is based on Rule 11 of the Federal Rules of Civil Procedure.

Subparagraph (17) of §10.23(c) would include as misconduct representing before the PTO in a patent case either a joint venture comprising an inventor and an invention developer or an inventor referred to the registered practitioner when (i) the registered practitioner knows, or should have reasonably known, that a formal complaint filed by a federal or state agency, based on any violation of any law relating to securities, unfair methods of competition, unfair or deceptive acts or practices, mail fraud, or other civil or criminal conduct, is pending before a federal or state court or federal or state agency, or has been resolved unfavorably by such court or agency, against the invention developer in connection with invention development services and (ii) the registered practitioner fails to fully advise the inventor of the existence of pending complaint or unfavorable resolution thereof prior to undertaking or continuing representation of the joint venture or inventor. Federal agencies empowered to investigate and file charges relating to violations included within the rule being considered would include, for example, the Securities and Exchange Commission, the Federal Trade Commission, and the U.S. Department of Justice. See e.g., *Securities and Exchange Commission* v. *Lawrence Peska Associates, Inc.*, Civil Action 77-2436 (S.D.Fla. Filed: Aug. 8, 1977) and *United States* v. *Beecroft*, 608 F.2d 753 (9th Cir. 1979) (defendant officers in a company which helped inventors to promote and market their ideas convicted of mail fraud). State agencies which might file charges relating to violations included within the rule being considered would include an attorney general of a state. See e.g., Thomas, *Invention Development Service and Inventors: Recent Inroads on Caveat Inventors*, 60 J. Pat. Off. Soc'y. 355, 376 n. 75 (1978); Shemin, *Idea Promoter Control: The Time Has Come*, 60 J. Pat. Off. Soc'y. 261, 262 n. 7 (1978); and *Illinois* v. *Lawrence Peska Associates, Inc.*, Civil Action No. 77 CH 3771 (Cir.Ct. Cook County Filed: June 8, 1977). Thus a registered practitioner who (1) represents an inventor and an invention developer, (2) knows or should have known that the invention developer was charged by the FTC under the circumstances described in *In re the Matter of the Raymond Lee Organization, Inc.*, 92 F.T.C. 489 (1978), *aff'd. sub nom., Raymond Lee* v. *Federal Trade Commission*, 679 F.2d 905 (D.C. Cir. 1980), could be subject to disciplinary action under the proposed rule being considered if the practitioner does not advise the inventor of the existence of the charges.

In defining the terms "invention developer," "invention development services," "invention development," "customer," and "contract for invention development services," the PTO has relied on the Virginia Code, §59.1-208 (1982) (Repl. Vol. 1982) and has adopted suggestions made by Thomas, *supra* at pp. 388–389.

Paragraph (d) of §10.23 would provide that a practitioner who acts with reckless indifference to whether a representation is true or false would be chargeable with knowledge of its falsity. Likewise, deceitful statements of half-truths or concealment of material facts would be deemed actual fraud within the meaning of the Disciplinary Rules. See e.g., *United States* v. *Beecroft*, 608 F.2d 753 (9th Cir. 1979).

Section 10.24 would require a practitioner possessing unprivileged knowledge of a violation of a PTO Disciplinary Rule to report the violation to the Director. This section would also require practitioners to cooperate with tribunals, including the PTO, in connection with investigations of practitioners by those tribunals. See also §10.23(c) (16).

Section 10.31 would set out prohibited advertising. Paragraph (a) of §10.31 is based on 35 U.S.C. 32 and prohibits advertising which is specifically precluded by statute. Paragraph (b) of §10.31 is based on 5 U.S.C. 501 which prohibits the use of the name of a Member of Congress or of an individual in the service of the United States in advertising the practitioner's practice before the PTO. Paragraph (c) of §10.31 would continue the present practice of 37 CFR §1.345(c) by prohibiting registered patent agents from holding themselves out as qualified to practice general law or practice before the PTO in trademark cases.

Section 10.32 would provide guidelines relating to advertising. Paragraph (a) of §10.32 would indicate certain types of advertising in which a practitioner could engage. Paragraph (a) is not all inclusive. Any advertising which is not contrary to 35 U.S.C. 32 and which meets the standards announced in *Bates* would be proper. Paragraphs (b) and (d) of §10.32 would impose a record keeping requirement when a practitioner advertises. The record keeping requirement does not compel a practitioner to create a record. The record keeping requirement is believed proper in the event it would become necessary to investigate whether advertising violates the provisions of 35 U.S.C. 32 or §10.31.

Section 10.33 is based on Rule 7.3 of the Model Rules of Professional Conduct of the American Bar Association (1983). Section 10.33 would be designed to prohibit "ambulance-chasing" in accordance with *Ohralik* v. *Ohio State Bar Ass'n.* 436 U.S. 447 (1978) (attorney disciplined for soliciting clients in person for pecuniary gain under circumstances evidencing undue influence, intimidation, or overreaching).

Section 10.34 would continue to authorize registered patent attorneys to use the designation "patent attorney" or similar designation. Likewise, registered patent agents could continue to use the designation "patent agent" or similar designation.

Section 10.40 would provide for the circumstances under which a practitioner could or should withdraw from employment. The section continues present practice.

Section 10.47(a) would provide that a practitioner shall not aid a non-practitioner in the unauthorized practice of law before the PTO. Paragraph (b) of §10.47 would further prohibit a practitioner from aiding a suspended or excluded practitioner in the unauthorized practice of law. See also §10.23(c) (6). Paragraph (c) of §10.47 would prohibit a practitioner from aiding a nonlawyer in the unauthorized practice of law. Thus, a registered patent practitioner who aids an invention developer under the circumstances outlined in *Lefkowitz* v. *Lawrence Peska Associates, Inc.*, 393 N.Y.S.2d 650 (Sup.Ct. N.Y. 1977) could be subject to discipline for violating this section.

Section 10.49 would continue present practice. An attorney who practices before the PTO and another attorney who does not practice before the PTO could form a partnership to practice law in a state, because the other attorney falls within the definition of practitioner. See §10.1(c).

Section 10.57 would continue present practice with respect to preservation of "confidences" and "secrets." Under §10.57(a), a "confidence" is information protected by the attorney-client or agent-client privilege under applicable law. The privilege is applicable in certain cases to communications between agents registered to practice before the PTO in patent cases and their clients. See *In re Ampicillin antitrust Litigation,* 81 F.R.D. 377, 392–394 (D.D.C. 1978). Nothing in §10.57 would alter the obligation of a practitioner to report and reveal information required under §§10.23 and 10.24 or any other Disciplinary Rule.

Sections 10.62 and 10.63 would continue present practice with respect to refusing or continuing employment when the interests of a practitioner may impair his or her independent professional judgment. Under §10.62(b) (3), a registered practitioner representing an inventor could normally sign and file a Rule 131 (37 CFR §1.131) affidavit describing his or her attorney diligence. Likewise, the registered practitioner could normally testify in an interference proceeding when his or her attorney diligence is an issue in the interference. The PTO would continue to assess on a case-by-case basis the weight to be given testimony by a registered practitioner who also represents a party in the proceeding in which the registered practitioner gives testimony. See *Wilder* v. *Snyder,* 201 USPQ 927, 934 (Bd.Pat.Int. 1979).

Section 10.66 would continue present practice. Paragraph (c) of §10.66 would further support the requirements of §10.23(c) (17).

Section 10.68 would continue present practice. Paragraph (b) of §10.68 would also support the requirements of §10.23(c) (17).

Section 10.77 would continue present practice. The PTO has disciplined practitioners for neglecting legal matters entrusted to them and for incompetence. See e.g., *In re Frank,* 1023 *Official Gazette* 13 (Oct. 12, 1982) (agent suspended for neglecting to file a response to an examiner's action and for misstating facts in a request for an extension of time); *In re Wyden,* 973 *Official Gazette* 40 (Aug. 22, 1978) (agent suspended for general incompetence in handling patent applications); and *In re Paley,* 961 *Official Gazette* 48 (Aug. 30, 1977) (agent suspended for improper handling of patent application). Under paragraph (c) of §10.77, "neglect" could include a single instance of neglect. Thus, the PTO would not adopt Informal Opinion 1273 (1973) of the American Bar Association or suggestions such as that in Manson, *Helping Lawyers Who Need Help (But Won't Ask for It!),* 25 Va. Bar News 27 (June 1977).

Section 10.84 would continue present policy. Under §10.84(b) (1) it should be noted that a practitioner could continue to exercise professional judgment to waive or fail to assert a right or position of a client. Such a policy is believed to be entirely consistent with *Link* v. *Wabash R.R.*, 370 U.S. 626, 633-34 (1962); *Johnson* v. *Department of the Treasury,* No. 83-684, slip op. at 8 (Fed. Cir. Nov. 18, 1983)

Section 10.85 would continue present practice. Subparagraph (3) of §10.85(a) would continue to prohibit a practitioner from concealing or knowingly failing to disclose that which he or she is required by law to reveal. See e.g., §10.23(a), (b)(4), (c)(2)(ii) (setting forth a practitioner's duty of candor and good faith under 37 CFR §1.56(a)), and (c)(16); §10.24; and §10.85(b). The PTO has disciplined practitioners for failing to reveal evidence required by law to be disclosed. See *In re Milmore,* discussed above.

Subparagraph (5) of §10.85(a) would continue to prohibit a practitioner from knowingly making a false statement of law or fact. The PTO has disciplined practitioners for making false statements of fact. See *In re Dubno,* 1959 *Official Gazette* 25 (June 21, 1977) (attorney disciplined for making false statements in attempting to secure filing date of application under 37 CFR §1.47).

Under Subparagraph (7) of §10.85(a), a practitioner would not be able to destroy a document or other material that the practitioner knows or should know is relevant to a pending proceeding in the Office or a proceeding in the Office that is reasonably forseeable. Likewise, a practitioner would not be able to counsel, advise, or assist another in destroying such a document. This provision does not appear in the 1980 Model Code of Professional Responsibility of the American Bar Association, but would be included in the PTO Code of Professional Responsibility. The provision is based in part on *In re Williams,* 23 N.W.2d 4, 9 (Minn. 1946). See also *In re Osofsky,* 18 N.Y.S.2d 8 (App. Div. 1940), *reinstatement denied,* 43 N.Y.S.2d 273 (App. Div. 1943). Subparagraph (7) of §10.85(a) would make explicit in the PTO Code a provision which some maintain is implicit in the 1980 ABA Code. See e.g., Fedders, *Document Retention and Destruction: Practical, Legal, and Ethical Considerations,* 56 Notre Dame Law. 5, 59-60 (1980).

Section 10.89(b) would provide for standards of conduct in proceedings before the PTO. Paragraph (a) of §10.89 would prohibit a practitioner from disregarding or advising a client to disregard either (1) the rules of practice in patent or trademark cases or (2) orders entered by the PTO in particular cases or proceedings in which the practitioner participates in a representative capacity.

Subparagraph (1) of §10.89(b) would require a practitioner to reveal to the PTO known authority directly adverse to the position of a client unless the authority is cited by opponent or an employee of the PTO on the record of the proceeding. Some states seemingly have relaxed their disciplinary codes in this area. See e.g. DR 7-105 of the Virginia Code of Professional Responsibility (1984) and compare Virginia's 1976 version of DR 7-106(B)(1), 216 Va. 1120 (1976). All of the decisions made by the PTO in patent and trademark cases affect the public interest. *Lear* v. *Atkins,* 395 U.S. 653 (1969); *In re E.I. duPont de Nemours & Co., Inc.,* 476 F.2d 1357, 177 USPQ 563 (CCPA 1973); and 41 Op. Att'y Gen. 21 (1949). Many of the decisions made by the PTO are made *ex parte.* Accordingly, the PTO feels that practitioners should cite to the PTO known authority which is contrary to a position being taken by the practitioner in the PTO. The practitioner could, of course, argue in good faith that any cited authority should not be followed or should be overruled.

Subparagraph (6) of §10.89 would prohibit a practitioner from engaging in undignified or discourteous conduct which is degrading to a tribunal. A tribunal includes the Office, courts, and other adjudicatory bodies. The PTO has disciplined a practitioner for engaging in undignified and discourteous conduct. See *In re Paley,* 1961 *Official Gazette* 48 (Aug. 30, 1977) (agent suspended for making unfounded and scandalous allegations against employees of the PTO and two judges of the United States Court of Appeals for the District of Columbia Circuit). See also 37 CFR §1.3.

The provisions of DR 7-107 of the Code of Professional Responsibility which were held unconstitutional in *Hirschkop* v. *Snead,* 594 F.2d 356 (4th Cir. 1979), have not been included in the proposed PTO Code of Professional Responsibility being considered.

Section 10.111 would provide that a practitioner should avoid an appearance of impropriety. Paragraph (b) of §10.111 would provide that a practitioner should not accept private employment in a matter in which he or she had substantial responsibility while a public employee. See 18 U.S.C. 207. Appropriate insulation of a newly hired practitioner who joins a firm would be appropriate under §10.111. In applying §10.111 the PTO would continue to follow the principles announced in *AH JU Steel Co., Ltd.* v. *Armco, Inc.*, 680 F.2d 751 (CCPA 1982); *Sierra Vista Hospital, Inc.* v. *United States,* 639 F.2d 749 (Ct. Cl. 1981); *Armstrong* v. *McAlpin* 625 F.2d 433 (2d Cir. 1980) (en banc), *vacated,* 449 U.S. 1106 (1981); *General Electric Co.* v. *United States,* 215 Ct. Cl. 928 (1977); and *Kesselhaut* v. *United States,* 555 F.2d 791 (Ct. Cl. 1977).

Section 10.112 would continue present policy under 37 CFR §1.344.

During the comment period after publication of the Aug. 11, 1983, Federal Register notice proposing to amend the attorney disciplinary rules, there were some who questioned whether the proposed rules would be made to apply to PTO personnel. The proposed Code of Professional Responsibility would not be applicable to employees of the PTO. PTO employees are governed by a code of employee responsibilities and conduct of the Department of Commerce. See Part O of Title 15 of the Code of Federal Regulations, 15 CFR §§0.735-1 through 0.735-41 (1984).

Sections 10.130 through 10.161 would establish a procedure for handling disciplinary proceedings.

In the past responsibility for investigating and prosecuting disciplinary proceedings has been with the Solicitor and the staff of the Office of the Solicitor. See 37 CFR §1.348. Since the Solicitor has been the investigator and the individual filing charges, the Solicitor and his staff have not been available to give legal advice to the Commissioner with respect to particular disciplinary cases. See 5 U.S.C. 557(d) (1).

While there is currently a defined procedure for handling disciplinary cases, it is very broad. Attorneys defending practitioners in disciplinary cases have complained that the procedure is not sufficiently defined. Procedure has been developed on a case-by-case basis. Officials appointed to preside at the hearing of disciplinary cases have included the Commissioner, Deputy Commissioner, and others, such as examiners-in-chief of the Board of Appeals. More recently, the PTO has used an administrative law judge (ALJ) of the Department of Commerce.

There are approximately 12,500 registered patent attorneys and agents. Numerous other attorneys practice before the PTO in trademark and other non-patent cases. The bar which practices before the PTO is nationwide. The large nationwide bar and small size of the Solicitor's staff has made it difficult to devote sufficient time to reasonably investigate complaints and, where appropriate, prosecute disciplinary proceedings.

Table 4 and the discussion immediately following Table 4 summarize the PTO disciplinary proceedings since 1976, which resulted in disciplinary action. Despite the size of the bar practicing before the PTO, the number of disciplinary proceedings is relatively small given the nationwide PTO bar. The geographic nature of the PTO bar makes it difficult for the PTO to investigate complaints with a part-time staff. Accordingly, the proposed rules being considered would create investigating authority in the Director of Enrollment and Discipline. The proposed rules being considered would also (1) insulate the Solicitor from duties of investigating and prosecuting disciplinary matters, thus rendering the Solicitor free to provide legal advice to the Commissioner, (2) establish procedure for handling disciplinary proceedings, and (3) provide for record keeping of disciplinary proceedings.

Paragraph (a) of §10.130 would provide for reprimands, suspensions, and exclusions. The term "exclude," rather than "disbar," is used throughout the proposed rules being considered, because "exclude" is used in 35 U.S.C. 32. Paragraph (a) of §10.130 is based on 35 U.S.C. 32 and 5 U.S.C. 500(d) (2). Paragraph (b) of §10.130 would provide that motions to disqualify counsel in PTO proceedings would continue to be handled on a case-by-case basis. *SEC* v. *Chenery Corp.*, 332 U.S. 194, 203 (1974). For a discussion of PTO disqualification proceedings, see "Attorney Disqualification Cases in the PTO," 62 J. Pat. Off. Soc'y 625 (1980). See also Note, Developments in the Law—Conflicts of Interest in the Legal Profession, 94 Harv. L. Rev. 1244 (1981) and the cases cited above in connection with the discussion of §10.111.

Section 10.131 would authorize the Director to investigate possible violations of PTO Disciplinary Rules. Paragraph (b) of §10.131 would require practitioner to report and reveal certain knowledge and evidence to the Director and to cooperate with the Director in connection with any disciplinary proceeding. Paragraph (c) of §10.131 would provide that non-practitioners could report violations to the Director. The Director would have discretion to require a non-practitioner to make a report of a violation in the form of an affidavit.

Section 10.132 would provide for a procedure for initiating a disciplinary proceeding and for referring the proceeding to an ALJ.

Under paragraph (2) of §10.132, when the Director would be of the opinion that there is probable cause to believe that a Disciplinary Rule had been violated, the Director would determine whether a practitioner should be given a notice under 5 U.S.C. 558(c). Section 558(c) provides, in part, "Except in cases of willfulness or those in which public health, interest, or safety requires otherwise, the withdrawal, suspension, revocation, or annulment of a license is lawful only if, before the institution of agency proceedings therefor, the licensee has been given—(1) notice by the agency in writing of the facts or conduct which may warrant the action; and (2) opportunity to demonstrate or achieve compliance with all lawful requirements." The provisions of 5 U.S.C. 558(c) do not apply to disciplinary proceedings in the PTO involving practitioners who are not registered inasmuch as the PTO does not issue a license to such practitioners. Likewise, where a practitioner willfully violates a Disciplinary Rule, notice and opportunity to demonstrate compliance is not needed. In certain cases, the public interest may require suspension of an incompetent practitioner or a practitioner who has been found guilty of a crime and committed to the custody of the Attorney General or has otherwise been incarcerated.

After giving notice under 5 U.S.C. 558(c), or if no notice is needed, the Director would call a meeting of the Committee on Discipline. The Committee on Discipline, comprising the Director and two Associate Solicitors, would determine by a majority vote whether there is probable cause to believe that a practitioner has violated a PTO Disciplinary Rule. If the Committee on Discipline determines that a violation has occurred, the Director would institute a disciplinary proceeding by filing a "complaint" under §10.134. Upon the filing of a complaint, an Associate Solicitor who is a member of the Committee on Discipline, normally would prosecute the disciplinary proceeding on behalf of the Director. Upon the filing of a complaint, the disciplinary proceeding would be referred to an ALJ. A copy of the complaint would be forwarded to the ALJ. All papers filed in the disciplinary proceeding thereafter would be filed with the ALJ.

An ALJ would be used in disciplinary proceedings brought under 35 U.S.C. 32. The use of an ALJ is not required in disciplinary proceedings to suspend or exclude individuals from practice before the PTO in trademark and other non-patent cases. *Herman* v. *Dulles,* 205 F.2d 715 (D.C. Cir. 1958). Nevertheless, an ALJ is particularly qualified to handle disciplinary proceedings. Accordingly, as a matter of policy the PTO is currently using, and would continue to use, ALJs in handling all disciplinary cases.

Section 10.133 would permit conferences between practitioners and the Director. Paragraph (a) would provide for general conferences. Paragraph (b) would permit resignation from practice before the PTO to avoid institution or conclusion of a disciplinary proceeding. Paragraph (c) of §10.133 would permit settlement conferences. Past experience indicates that settlement conferences are desirable. Settlement of any controversy, particularly a disciplinary matter, is desirable. Accordingly, to permit both the Director and a respondent to discuss frankly and openly the possibility of settlement, no offer of settlement or refusal of an offer of settlement will be admissible in evidence unless both the Director and the respondent agree in writing.

Section 10.134 would set out the requirements of a complaint. A complaint would be deemed sufficient if it fairly informs the respondent of any violation of the Disciplinary Rules which form the basis for the disciplinary proceeding so that the respondent is able to answer. See *In re Ruffalo,* 390 U.S. 540 (1968).

Section 10.135 would provide for a method of serving a complaint. Service of complaints has been a problem in the past. Use of certified and registered mail has not always been satisfactory, because receipts are returned signed by individuals other than the respondent. Moreover, the PTO may have to resort to proving who signed a particular receipt. Accordingly, §10.135 provides that service may be accomplished by handing the complaint to the respondent. When service is by hand, the party serving the respondent shall file an affidavit with the Director. An alternative method for serving the complaint is to mail the complaint first-class or "Express Mail" to the last known address of the respondent. Although the proposed rule being considered does not so specify, under this rule the Director would probably attempt to contact the respondent shortly after mailing to determine whether the complaint had been received. A third method of service would be any method mutually agreeable to the Director and a respondent.

Under paragraph (b) of §10.135, if a complaint is returned by the Postal Service, a second complaint would be mailed. If the second complaint is returned, a notice would be published in the *Official Gazette* for four consecutive weeks. Any time for answering would run from the fourth publication of the notice.

Under paragraph (c) of §10.135, a letter under §10.11(b) could be served with the complaint. This practice has been used lately by the PTO and is the most satisfactory method of serving complaints. If a response is not timely submitted to a letter under §10.11(b), a registered practitioner is removed from the register. Such removal moots any disciplinary proceedings. Reinstatement after such removal would not be automatic. A respondent would have to demonstrate that he or she should be reinstated in light of the complaint filed under §10.134.

Under paragraph (d) of §10.135, if a respondent is represented by an attorney at the time a complaint is filed, a copy of the complaint would be served on the respondent's attorney. This practice is currently followed in the PTO. See also 5 U.S.C. 500(f).

Section 10.136 would provide for an answer to a complaint. Under paragraph (a) of §10.136, an answer would be due within thirty (30) days unless extended for up to no more than thirty (30) additional days by the ALJ. Under Paragraph (c) of §10.136 the content of the answer would be the same as under the current practice. See 37 CFR §1.348(c).

Under §10.137, false statements in an answer could be made the basis of supplemental charges. This section would continue the practice under the last sentence of 37 CFR §1.348(c).

Section 10.138 would provide that on the filing of an answer, a disciplinary proceeding would become a contested case within the meaning of 35 U.S.C. 24. However, evidence obtained by a subpoena issued under 35 U.S.C. 24 would not be admissible in evidence or considered unless leave to proceed under 35 U.S.C. 24 is first obtained from the ALJ. Ordinarily, a subpoena under 35 U.S.C. 24 is needed when a witness will not voluntarily appear. Often subpoenas are issued to be sure that a witness appears—particularly if both counsel and the ALJ have to travel to hear the testimony of a witness. The PTO believes that approval by the ALJ prior to issuing subpoenas is highly desirable. Initially, the ALJ can determine whether the evidence is relevant and/or whether a third-party should be subjected to the inconvenience of a subpoena. In this respect, if the ALJ does not believe any proferred evidence is admissible, the ALJ may refuse to permit a party to proceed under 35 U.S.C. 24. If a party nevertheless caused a subpoena to issue, a motion to quash the subpoena would lie in the District Court which issued the subpoena. The proposed rule being considered would adopt the policy of *Sheehan* v. *Doyle,* 513 F.2d 895, 898, 185 USPQ 489, 492 (1st Cir.), *cert. denied,* 423 U.S. 874 (1975) and *Sheehan* v. *Doyle,* 529 F.2d 38, 40, 188 USPQ 545, 546 (1st Cir.), *cert. denied,* 429 U.S. 879 (1976), *rehearing denied,* 429 U.S. 987 (1976), while rejecting the policy announced in *Brown* v. *Braddick,* 595 F.2d 961, 967, 203 USPQ 95, 101–102 (5th Cir. 1979).

Section 10.139 would provide authority for the ALJ to take action. Paragraph (a) would define the ALJ. Paragraph (b) of §10.139 would set out the authority of the ALJ.

Under subparagraph (2) of §10.139(b), the ALJ would make rulings on motions. See also §10.143. The time for filing motions and oppositions would be set on a case-by-case basis. Obviously, if respondent and his or her attorney are located in the Washington, D. C. metropolitan area, less time is needed for filing oppositions than a case where a respondent and his or her attorney are located in Los Angeles, California. It should be noted that, under §10.142(e), an ALJ could require papers to be served by "Express Mail."

Under subparagraph (4) of §10.139(b), the ALJ may authorize the taking of depositions in lieu of personal appearance at a hearing. Whether such a deposition would be authorized would be within the discretion of the ALJ. If demeanor is an issue with a particular witness, the ALJ could exercise discretion and deny a request to take a deposition in lieu of appearance. When a deposition would be authorized by the ALJ, notice and taking of the deposition would be governed by §10.151(a).

Under subparagraph (8) of §10.139(b), the ALJ could adopt procedures for the orderly disposition of disciplinary proceedings. For example, the ALJ could require the Director and the respondent to file a pre-hearing brief setting out the names of the witnesses to be called, a summary of their expected testimony, and any factual issues believed to be in dispute. The ALJ could also require the parties to serve copies of the exhibits to be used in their respective cases-in-chief.

Under paragraph (c) of §10.139, the ALJ would exercise such control over the disciplinary proceeding as to normally issue an initial decision within six (6) months from the filing of the complaint. The ALJ, however, could issue an initial decision after six months if in his or her opinion there exist unusual circumstances which preclude issuance of the initial decision within the six month period. The purpose of this provision would be to put parties on notice that the ALJ has authority to complete his or her work within six months and that the parties should plan to meet any time schedules set by the ALJ. In the past, delays in disciplinary proceedings have considerably delayed final decisions. This provision would be designed to minimize delays. Inasmuch as it would be expected that the ALJ would consult with the parties prior to setting times, it is not expected that the six months provision of this rule will work undue hardship on either the Director or the respondent.

Paragraphs (d) and (e) of §10.139 would preclude interlocutory appeals by the Director or respondent from an order of the ALJ except under limited conditions. Under subparagraph (1) of §10.139(d), the ALJ could permit interlocutory review of his or her order when the interlocutory order involves a controlling question of procedure or law as to which there is a substantial ground for a difference of opinion and an immediate decision by the Commissioner would materially advance the ultimate termination of a disciplinary proceeding. The standard would be the same as that of 28 U.S.C. 1292(b). There would be no stay of proceedings before the ALJ when an appeal is taken of an interlocutory order unless a stay is granted by the ALJ or the Commissioner. The PTO would intend under this section that stays would be granted only in the most compelling of circumstances. Parties would not be permitted to render the ALJ ineffective by filing appeals or requests for review of interlocutory orders.

Section 10.140 provides for representation of respondents and the Director.

Section 10.141 provides for the filing of papers. Paragraph (a) makes clear that the certificate of mailing practice under 37 CFR §1.8 is not applicable in disciplinary proceedings. Paragraph (b) provides that papers filed after the complaint and prior to entry of an initial decision would be filed with the ALJ. The ALJ would designate the address to which he or she would want papers mailed. The ALJ, however, could require in an appropriate circumstance, that papers be hand-delivered to his or her office. All papers filed after the initial decision would be filed with the Director and the Director would transmit to the Commissioner any paper which requires action by the Commissioner.

Section 10.142 would provide for the method of serving papers in disciplinary cases.

Section 10.143 would provide for filing of motions. No motion could be filed unless supported by a written statement that the moving party conferred with the other party for the purpose of resolving the issue raised in the motion and that agreement could not be reached. If an issue raised in a motion is resolved prior to decision on the motion by the ALJ, the parties would be required to notify the judge. This provision would save the ALJ time.

Section 10.144 would provide for hearings before the ALJ. The hearing would be transcribed and a copy of the transcript of the hearing would be provided, at PTO expense, to the Director and the respondent. If a respondent fails to appear at a hearing, the ALJ would be authorized to proceed in respondent's absence. Under paragraph (c), disciplinary hearings are normally not open to the public. The need for closed hearings in cases involving patent applications is occasioned in part by 35 U.S.C. 122. Apart from the PTO obligation to keep information concerning patent applications secret, until an attorney or agent is disciplined, it is believed that opening the hearings to the public would constitute a clearly unwarranted invasion of personal privacy. The fact that disciplinary proceedings are held in confidence, however, would not preclude the Director or respondent from approaching witnesses and providing those witnesses with sufficient information to determine whether they can give relevant testimony.

Section 10.145 would provide for a procedure for handling cases where there is a variance between the allegations in pleadings and the evidence. Any party would be given reasonable opportunity to meet any allegations in an amended complaint or answer. See *In re Ruffalo,* 390 U.S. 544 (1968).

Section 10.150 would provide for rules governing evidence. Under paragraph (a) of §10.150, the rules of evidence prevailing in courts of law and equity would not be controlling. This provision is bottomed on 5 U.S.C. 556(d) which provides, in part, that "[a]ny oral or documentary evidence may be received, but the agency as a matter of policy shall provide for the exclusion of irrevelant, immaterial, or unduly repetitious evidence." Thus, evidence in a disciplinary proceeding is not controlled by the Federal Rules of Evidence. *Klinestiver* v *Drug Enforcement Administration,* 606 F.2d 1128, 1130 (D.C. Cir. 1979). While most evidence admissible under the Federal Rules of Evidence would be admissible in a disciplinary proceeding, there is evidence which is not admissible under the Federal Rules of Evidence which may be admissible in a disciplinary proceeding. Paragraph (b) of §10.150 provide for admission into evidence of depositions taken under §10.151. Any deposition under§10.151(a) would have prior approval of the ALJ. A deposition under §10.151(b) would not have prior approval, but may or may not be admissible. Admissibility of the latter deposition is within the discretion of the ALJ. Under paragraph (c) of §10.150, PTO documents, records, and papers would not have to be certified to be admissible.

Section 10.151 provides for depositions. Under paragraph (a) of §10.151, either the Director or the respondent may move for leave to take a deposition of a witness in lieu of personal appearance of the witness before the ALJ. The ALJ is authorized to grant leave to take the deposition upon a showing of good cause. The taking of depositions under paragraph (a) would *not* be for the purpose of discovery. A deposition would be taken only when it is not possible or desirable for the ALJ to hear the witness in person. Under paragraph (b) of §10.151, the Director and the respondent could agree to take a deposition. Often depositions are desirable during settlement. The testimony of a witness may be "locked-in" through a deposition. Several disciplinary matters have been settled by the PTO in the past by using mutually agreed to depositions. However, under paragraph (b) of §10.151 the parties could not take depositions for use at a hearing without prior approval of the ALJ. This provision is deemed to be necessary to maintain control over the proceeding with the ALJ.

Section 10.152 provides for limited discovery. Considerable thought has been given to discovery. There are cases which hold that discovery is not necessary in disciplinary proceedings. See e.g., *In re Murray,* 362 N.E.2d 128 (Ind. 1977); *In re Wireman,* 367 N.E.2d 1368 (Ind. 1977). There are those who advocate that discovery should be similar to that under the Federal Rules of Civil Procedure. Both views have been considered. The PTO believes that some discovery should be permitted. On the other hand, the wide scope of discovery under the Federal Rules of Civil Procedure, and the delays caused thereby are well-known. Under §10.152, the ALJ could require parties to file and serve, prior to any hearing, a pre-hearing statement which lists all proposed exhibits to be used in connection with the party's case-in-chief, a list of proposed witnesses, the identity of any government employee who investigated the case, and copies of memoranda reflecting respondent's own statements. This provision is patterned after *Silverman* v. *Commodity Futures Trading Commission,* 549 F.2d 28 (7th Cir. 1977).

The ALJ could determine when the discovery authorized by paragraph (a) of §10.152 should be made.

Subparagraph (1) of §10.152 would limit discovery to exhibits which a party intends to use as part of his or her case-in-chief. Exhibits not used in a party's case-in-chief, but which might be used to impeach or cross-examine the other party's witnesses would not have to be produced. If a document were to be used both in a case-in-chief and to impeach, it would have to be produced. Subparagraph (3) of §10.152(a) would provide for identifying any government witness who investigated the matter. Respondent could then call the government witness. Subparagraph (4) of §10.152(a) would provide for producing copies of any statement made by a respondent.

Under paragraph (b) of §10.152 a party would be entitled to see any written statement made by a witness prior to cross-examination of the witness. Compare 18 U.S.C. 3500.

Under §10.153, the ALJ would afford the parties a reasonable opportunity to submit proposed findings and conclusions and a post-hearing memorandum. See 5 U.S.C. 557(c).

Under §10.154, the ALJ would file an "initial" decision. In rendering an initial decision, it would be expected that the ALJ would make appropriate reference to the administrative record in explaining an initial decision. See e.g., *Food Marketing Institute* v. *Interstate Commerce Commission*, 587 F.2d 1285, 1292 n. 20 (D.C. Cir. 1978). In the absence of an appeal to the Commissioner (see §10.155), the decision of the ALJ would become the final decision in the disciplinary proceeding. 5 U.S.C. 557(b).

Paragraph (b) of §10.154 would require the ALJ to explain the reason for any penalty. Four factors would guide the ALJ and the Commissioner in setting and approving penalties. The factors are the public interest, the seriousness of the violation of the Disciplinary Rule, the deterrent effects deemed necessary, and the integrity of the bar. These factors have been derived from numerous cases, including *Silverman* v. *Commodity Futures Trading Commission*, 562 F.2d 432, 439 (7th Cir. 1977) and *In re Merritt*, 363 N.E.2d 961, 971 (Ind. 1977). See also *Florida Bar* v. *Murrell*, 74 So.2d 221 (Fla. 1954). Past PTO disciplinary cases generally are not helpful in determining penalties. Often the penalties have not been explained in light of the factors which would be set out in paragraph (b) of §10.154. Moreover, there have been very few disciplinary proceedings in the PTO. Under the proposed rules being considered, a penalty would be a matter within the discretion of the ALJ with ultimate decision being with the Commissioner. The discipline in each disciplinary proceeding would be tailored for the individual case. *In re Wines*, 660 P.2d 454 (Ariz. 1983). Manifestly, the PTO would not expect perfection or absolute uniformity. *Id.* Likewise the PTO would not propose to permit relitigation of penalties imposed in prior cases. *Id.* Any case concluded in which the penalty is not explained (e.g. a settlement) would not serve as precedent.

Section 10.155 would provide for an appeal from an initial decision of the ALJ to the Commissioner. If an appeal is not taken, the initial decision of the ALJ would become the decision of the Commissioner. See §10.154(a). An appeal would be taken within 30 days of the initial decision of the ALJ. Any party opposing the appeal could file a brief in support of the opposition. Under paragraph (b) of §10.155, the Commissioner would decide the appeal on the record made before the ALJ.

Section 10.156 would provide for a decision by the Commissioner. The Commissioner could affirm, reverse, or modify an initial decision of an ALJ or remand the disciplinary proceeding to the ALJ for such further proceedings as the Commissioner may deem appropriate. The Commissioner's decision would be transmitted to the Director who in turn would forward a copy of the decision to respondent.

Section 10.157 would set out how judicial review could be had of any final decision of the Commissioner.

Section 10.158 would set out the limitations on a practitioner who is suspended or excluded from the practice of law before the PTO.

Paragraph (b) of §10.158 sets out what a practitioner would be required to do. Subparagraph (1) of §10.158(b) would require a suspended or excluded practitioner to notify all clients of the suspension and to file a copy of each notice to a client with the Director. Subparagraph (2) of §10.158(b) would require a practitioner, within thirty (30) days, to surrender a client's active case file to the client or another practitioner designated by the client. Under subparagraph (3) of §10.158(b), a suspended or excluded practitioner could not hold himself or herself out as authorized to practice law before the PTO. Subparagraph (4) of §10.158(b) would require a suspended or excluded practitioner to remove from directories published after suspension or exclusion any advertisement which would reasonably suggest to the public that the practitioner is authorized to practice before the PTO. The practitioner would be required to inform the Director of any action taken in this respect.

Subparagraph (5) of §10.158(b) would preclude certain advertising. Under subparagraph (6) of §10.158(b), a suspended or excluded practitioner would not render legal advice or services to any person having immediate, prospective, or pending business before the PTO as to that business. Subparagraph (7) of §10.158(b) would require a suspended or excluded practitioner to take steps to change signs and/or stationery to eliminate any suggestion that the practitioner is authorized to practice law before the PTO. Subparagraph (8) of §10.158(b) would require a suspended or excluded practitioner to return to any client any unearned funds, including any unearned retainer fee, and any securities and property of the client.

Paragraph (c) of §10.158 would provide the conditions under which a suspended or excluded practitioner could aid another practitioner in the practice of law before the PTO. Paragraph (d) of §10.158 would provide for affidavits and statements which would have to be made and filed by a suspended or excluded practitioner to be reinstated.

In the past, the conditions of a suspension or exclusion may not have been clear. Section 10.158 would make clear the restrictions for suspended or excluded practitioners. The provisions of §10.158 were derived from several cases, including *In re Christianson*, 215 N.W.2d 920 (N.D. 1974); *In re Hawkins*, 503 P.2d 95 (Wash. 1972); *Florida Bar* v. *Davis*, 397 So.2d 690 (Fla. 1981); *Florida Bar* v. *Thomson*, 310 So.2d 300 (Fla. 1975); *Florida Bar* v. *Thomson*, 354 So.2d 872 (Fla. 1978); *In re Kraus*, 670 P.2d 1012 (Ore. 1983); *In re Easler*, 272 S.E.2d 32 (S.C. 1980); *Crawford* v. *State Bar of California*, 7 Cal. Rptr. 746 (Cal. 1960); and *Ohio State Bar Ass'n.* v. *Hart*, 375 N.E.2d 1246 (Ohio 1978). Specifically considered, and rejected, was Guideline X of Provisional Order No. 18 of the Supreme Court of Rhode Island, 454 A.2d 1222 (1983), to the extent Guideline X is inconsistent with §10.158.

The PTO agrees with the Supreme Court of North Dakota to the extent that it holds a suspended or disbarred attorney "is not the same as a layman." 215 N.E.2d at 925, column 2. The same is true of a practitioner who is suspended or excluded from practice before the PTO. Accordingly, while §10.158 would permit a suspended or excluded practitioner to be employed by a practitioner, the suspended or excluded practitioner would nevertheless be precluded from taking some action which properly might be taken by a layperson or a para-legal. A suspended or excluded practitioner would have to be a salaried employee of the practitioner for whom he or she works and could not share profits. A suspended or excluded practitioner could not communicate directly with clients, render any legal advice, or meet with witnesses. A suspended or excluded practitioner could research the law, write patent or trademark applications (provided he or she did not interview clients or witnesses), or conduct patent or trademark searches. The provisions of §10.158 are considered appropriate if a suspension or exclusion is to have any significance.

Section 10.159 would provide for notice of suspension or exclusion. Under paragraph (a) of §10.159, upon issuance of an unfavorable final decision, the Director would give appropriate notice to employees of the PTO, United States courts; and the appropriate authorities of any State in which a suspended or excluded practitioner is known to be a member of the bar. In the case of a practitioner registered under §10.6(c), the Director would also notify the patent office of the country where the practitioner resides. Under paragraph (b) of §10.159, the Director would publish an appropriate notice in the *Official Gazette*. Under paragraph (c) of §10.159, the Director would maintain records which would be available to the public concerning disciplinary proceedings. The files of most disciplinary proceeding which result in imposition of a reprimand, suspension, or exclusion are presently available for public inspection in the Office of the Director of Enrollment and Discipline. Public availability would continue under the proposed rules being considered subject to the removal of any information required by law to be maintained in secrecy.

Section 10.160 would provide for a petition for reinstatement. A petition for reinstatement of a practitioner suspended for less than five years would not be considered until the period of suspension had passed. Under paragraph (b) of §10.160, a petition for reinstatement of an excluded practitioner would not be considered until five years after entry of the order excluding the practitioner. Paragraph (c) of §10.160 would set out some of the conditions which the Director might impose upon a suspended or excluded practitioner seeking reinstatement. One of those conditions could include taking and passing the examination of §10.7(b). Another condition could be a requirement that the practitioner seeking reinstatement pay up to $1,500 of the costs of the disciplinary proceeding leading to suspension or exclusion.

Under paragraph (c) of §10.160, a suspended or excluded practitioner who had violated the provisions of §10.158 would not be reinstated prior to serving a suspension free of any violation. Under paragraph (d) of §10.160, proceedings for reinstatement would be open to the public and an appropriate notice that a suspended or excluded practitioner had applied for reinstatement would appear in the *Official Gazette*. Any comments from the public would be considered prior to reinstatement.

Section 10.161 would contain savings clauses.

Table 1

Principal Source of Sections 10.2 through 10.19

Sec.	
10.2(a)	New
10.2(b) (1)	New, but see 37 CFR 1.341(i) (1983)
10.2(b) (2)	New, but see 37 CFR 1.348(a) (1983)
10.2(c)	New, but see 37 CFR 1.341(i) (1983)
10.3	37 CFR 1.341(i) (1983)
10.4(a)	New
10.4(b)	New, but see 37 CFR 1.348(a) (1983)
10.5	37 CFR 1.341 (1983)
10.6(a)	37 CFR 1.341(a) (1983)
10.6(b)	37 CFR 1.341(b) (1983)
10.6(c)	37 CFR 1.341(e) (1983)
10.6(d)	37 CFR 1.341(f) (1983)
10.6(e)	37 CFR 1.341(g) (1983)
10.7(a), (b)	37 CFR 1.341(c) (1983)
10.7(c)	New
10.8	37 CFR 1.341(h) (1983)
10.9(a)	37 CFR 1.342 (1983)
10.9(b)	New
10.10	37 CFR 1.343 (1983)
10.11	37 CFR 1.347 (1983)
10.12	[reserved]
10.13	[reserved]
10.14	5 USC 500(b) and 37 CFR 2.12 (1983)
10.15	35 USC 32; 5 USC 500(d) (2); 37 CFR 1.343 (1983); and 37 CFR 2.12(f) (1983)
10.16	[reserved]
10.17	[reserved]
10.18(a)	37 CFR 1.346 (1983) and 37 CFR 2.15 (1983), see also Rule 11, FRCP
10.18(b)	35 USC 32 & Rule 11, FRCP
10.19	[reserved]

Table 2

Principal Source of Sections of 10.20 through 10.112, the PTO Code of Professional Responsibility

Sec.	
10.20	Preamble to MCPR (1980)
10.21	MCPR Canon 1 (1980)
10.22	MCPR DR 1-101 (1980)
10.23(a)	35 U.S.C. 32
10.23(b) (1)	35 U.S.C. 32 and MCPR DR 1-102(A) (1) (1980)
10.23(b) (2)–(6)	MCPR DR 1–102(A) (2)–(6) (1980)
10.23(c) (1)–(14)	PTO created
10.23(c) (15)	Rule 11, FRCP
10.23(c) (16)–(18)	PTO created
10.24	MCPR 1–103 (1980)
10.25 through 10.29	(reserved)
10.30	MCPR Canon 2 (1980)
10.31(a)	35 U.S.C. 32
10.31(b)	5 U.S.C. 501
10.31(c)	37 CFR 1.345(c) (1983)
10.32	MRPC Rule 7.2 (1983)
10.33	MRPC Rule 7.3 (1983)
10.34	MRPC Rule 7.4 (1983)
10.35(a)	5 U.S.C. 501 and MRPC Rule 7.5 (1983)
10.35(b)	MRPC Rule 7.5 (1983)
10.36	MCPR DR 2–106 (1980)
10.37	MCPR DR 2–107 (1980)
10.38	MCPR DR 2–108 (1980)
10.39	MCPR DR 2–109 (1980)
10.40	MCPR DR 2–110 (1980)
10.41 through 10.45	(reserved)
10.46	MCPR Canon 3 (1980)
10.47(a), (c)	MCPR DR 3–101 (1980)
10.47(b)	New (but see e.g., *Crawford* v. *State Bar of California*, 7 Cal. Rptr. 746, 355 P.2d 490 (Cal. 1960))
10.48	MCPR DR 3–102 (1980)
10.49	MCPR DR 3–103 (1980)
10.50 through 10.55	(reserved)
10.56	MCPR Canon 4 (1980)
10.57	MCPR DR 4–101 (1980)
10.58 through 10.60	(reserved)
10.61	MCPR Canon 5 (1980)
10.62	MCPR DR 5–101 (1980)
10.63	MCPR DR 5–102 (1980)
10.64	MCPR DR 5–103 (1980)
10.65	MCPR DR 5–104 (1980)
10.66	MCPR DR 5–105 (1980)
10.67	MCPR DR 5–106 (1980)
10.68	MCPR DR 5–107 (1980)
10.69 through 10.75	(reserved)
10.76	MCPR Canon 6 (1980)
10.77	MCPR DR 6–101 (1980)
10.78	MCPR DR 6–102 (1980)
10.79 through	

(Continued)

Table 2 (cont.)

Sec.		*Sec.*	
10.82	(reserved)	10.94 through 10.99	(reserved)
10.83	MCPR Canon 7 (1980)	10.100	MCPR Canon 8 (1980)
10.84	MCPR DR 7-101 (1980)	10.101(a)	MCPR DR 8-101 (1980)
10.85	MCPR DR 7-102 (1980)	10.101(b)	37 CFR 1.341(f) (1983) and 41 Op. Att'y Gen. 21 (1949), *reprinted in* 1949 Dec. Comm'r. Pat. 1
10.86	(reserved)	10.102	MCPR DR 8-102 (1980)
10.87	MCPR DR 7-104 (1980)	10.103	MCPR DR 8-103 (1980)
10.88	MCPR DR 7-105 (1980)	10.104 through 10.109	(reserved)
10.89(a) (1)-(6), (8), (9), and (b)	MCPR DR 7-106 (1980)	10.110	MCPR Canon 9 (1980)
10.89(a) (7)	*In re Williams*, 23 N.W.2d 4,9 (Minn. 1946)	10.111	MCPR DR 9-101 (1980)
10.90	(reserved)	10.112(a)	MCPR DR 9-102(A) (1980)
10.91	(reserved)	10.112(b)	MCPR DR 9-102(B) (1980)
10.92	MCPR Dr 7-109 (1980)		
10.93	VCPR DR 7-109 (1984)		

Abbreviations:

FRCP means Federal Rules of Civil Procedure
MCPR means Model Code of Professional Responsibility of the ABA (1980)
MRPC means Model Rules of Professional Conduct of the ABA (1983)
VCPR means the Virginia Code of Professional Responsibility (1984)

Table 3
Principal Source of Sections 10.130 through 10.161

Section	*Source*	*Reference to Proposed Rules 48 F.R. 36480 (Aug. 11, 1983)*	*Section*	*Source*	*Reference to Proposed Rules 48 F.R. 36480 *Aug. 11, 1983)*
10.130	35 U.S.C. 32	§1.360	10.139(d)	New	§1.372(b) (2)
10.131(a)	New, but see 37 CFR 1.348(a)	§1.363(a)	10.139(e)	New	New
10.131(b)	MCPR 1-103 (1980)	§1.363(b)	10.140(a)	5 USC 500(b)	§1.371
10.131(c)	New	§1.363(a)	10.140(b)	New	§1.371
10.132(a)	New	New	10.141	New	§1.366(c)
10.132(b)	New, but see 37 CFR 1.348(b) (1983)	§1.363(c)	10.142	New	§1.366(b)
10.133	New	§1.364	10.143	New	§1.370
10.134	37 CFR 1.348(b) (1983)	§1.365	10.144	New	§§1.373 and 1.374
10.135(a) (1)	New	§1.366	10.145	New	§1.369
10.135(a) (2)	37 CFR 1.348(b) (1983)	§1.366	10.146–10.149	[reserved]	
10.135(a) (3)	New	§1.366	10.150(a)	5 USC 556(d)	§1.375(a)
10.135(b)	New	New	10.150(b)	37 CFR 1.348(d) (3) (1983)	§1.375(b)
10.135(c)	New	§1.366	10.150(c)	New	§1.375(c)
10.135(d)	5 USC 500(f)	New	10.150(d)	New	§1.375(d)
10.136(a)	37 CFR 1.348(c) (1983)	§1.365(b)	10.151	37 CFR 1.348(d) (3) (1983)	§1.376
10.136(b)	New	§1.367(a)	10.152	New, see *Silverman* v. *CFTC*, 549 F.2d 28 (7th Cir. 1977)	§1.377
10.136(c)	37 CFR 1.348(c) (1983)	§1.367(b)	10.153	New, but see 5 USC 557(c)	§1.378
10.336(d)	37 CFR 1.348(c) (1983)	§1.367(c)	10.154	See 5 USC 557(b) and 35 USC 32	§1.379
10.136(e)	New	§1.367(d)	10.155	New	§1.380
10.137	37 CFR 1.348(c) (1983)	§1.368	10.156	New	§1.381
10.138	New	§1.367(e)	10.157	35 USC 32, Local Rule 1-26 (D.D.C.)	§1.381
10.139(a)	5 USC 3105	§1.372(a)	10.158	New	§1.382
10.139(b)	5 USC 556(c)	§1.372(b)	10.159	New	§1.382(d) & (e)
10.139(c)	New	§1.379	10.160	New	§1.383
			10.161	New	§1.384

Table 4
Disciplinary Proceedings in PTO (1976–1983)

Name	*Location*	*Date of Order of Suspension or Exclusion*	*Official Gazette Citation*	*Nature of Charges*
Kraft, John W.	Id.	12-16-76	954 O.G. 550 (01-11-77)	Based on suspension in Idaho
Walton, John N.	Canada	02-01-77	956 O.G. 346 (03-08-77)	Based on revocation of license to practice before the Canadian Patent Office
Paley, Lewis A.	Ill.	02-16-77	961 O.G. 48 (08-30-77)	Improper handling of patent application and making unfounded and scandalous allegations against PTO employees and judges of the U.S. Court of Appeals for the D.C. Circuit
Molasky, Joseph W.	Pa.	04-12-77	958 O.G. 12 (05-10-77)	Misconduct for attempting to remove property belonging to the PTO from the Public Search Room for Patents
Dubno, Herbert	N.Y.	05-25-77	959 O.G. 25 (06-21-77)	Misrepresenting facts to PTO in connection with applicatiion under 37 CFR §1.47
Milmore, Oswald H.	Calif.	06-22-77	962 O.G. 2 (09-06-77)	Knowingly concealing relevant prior art during prosecution of patent application. See also 196 USPQ 628 (Comm'r. Pat. 1977)
Wyden, Stephen	N.Y.	07-27-78	973 O.G. 40 (08-22-78)	Incompetently handling patent applications
Castorina, Anthony J.	Va.	08-02-78	975 O.G. 14 (10-10-78)	Based on conviction of E.D.Va. for violation of 18 U.S.C. 201(f)
Cavanagh, J. Richard	Canada	01-18-79	979 O.G. 22 (02-20-79)	Based on revocation of license to practice before Canadian Patent Office
Davis, Keith B.	Minn.	04-06-79	982 O.G. 2 (05-01-79)	Based on disbarment in Minnesota which included charges on mishandling patent matters
Hodgson, Albert C.	Va.	05-17-82	1023 O.G. 13 (10-12-82)	Based on disbarment in Va.
Pattison, William H.	Md.	08-30-82	1023 O.G. 13 (10-12-82)	Based on disbarment in Md. which included charge of mishandling patent application
Frank, William F.	Va.	08-30-82	1023 O.G. 13 (10-12-82)	Neglecting to file a response to PTO action and misrepresenting fact in request for extension of time
Dula, Arthur M., III	Tex.	04-18-83	1030 O.G. 20 (05-17-83)	Misusing certificate of mailing under 37 CFR §8. See also BNA's Patent, Copyright & Trademark Journal, Vol. 27, No. 658, p. 133 (12-08-83)

In addition to the disciplinary proceedings set out in Table 4, there have been at least eight other disciplinary proceedings since 1976 which have been terminated. One was dismissed on the merits by the Commissioner after a hearing. Three were dismissed on motion of the Solicitor after a hearing. One was dismissed after the respondent resigned while the disciplinary proceeding was pending. Three resulted in private discipline. There are three disciplinary proceedings presently pending before the PTO. The respondents in the above-mentioned eleven disciplinary proceedings are distributed geographically as follows: Calif. (1); Conn. (1); District of Columbia (1); Md. (1); N.M. (1); N.Y. (5); and Tenn. (1). Table 4 and the geographical distribution of the eleven other disciplinary proceedings which have taken place since 1976 demonstrate the nationwide nature of investigations which need to be made by the PTO.

Other Considerations: The proposed rules being considered would not have a significant impact on the quality of the human environment or the conservation of energy resources.

The proposed rules being considered are in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96-354), Executive Order 12291, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq.

The Patent and Trademark Office believes that this proposed rule change being considered would not be a major rule under Executive Order 12291. The annual effect on the economy would be less than $100 million. There would be no major increase in costs or prices for consumers, individual industries, federal state, or local government agencies, or geographic regions. There would be no significant adverse effects on competition, empolyment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

List of Subjects in 37 CFR Parts 1, 2 and 10

Administrative practice and procedure, Authority delegations, Conflict of interests, Courts, Inventions and patents, Trademarks, Lawyers.

The proposed rules being considered would make the following proposed revisions to Parts 1 and 2 and would add Part 10 as follows wherein deletions are indicated by brackets and additions by arrows:

Part 1—Rules of Practice in Patent Cases

1. Section 1.8 would be amended by adding to paragraph (a) a new subparagraph (xii) to read as follows:

§1.8 Certificate of mailing.

(a) * * *

(xii) Papers filed in connection with a disciplinary proceeding under Part 10 of this Subchapter.

* * * * *

2. Section 1.31 would be revised to read as follows:

§1.31 Applicants may be represented by [an] ►a registered◄ attorney or agent.

An applicant for patent may file and prosecute his ► or her◄ own case, or he ►or she◄ may be represented by [an] ►a registered◄ attorney ►,◄ [or] agent, ►or other individual◄ authorized to practice before the Patent and Trademark Office in patent cases. ►See §§10.6 and 10.9 of this Subchapter.◄ The Patent and Trademark Office cannot aid in the selection of [an] ►a registered◄ attorney or agent.

3. Section 1.34 would be amended by revising paragraph (a) as follows:

§1.34 Recognition for representation

(a) When a registered attorney or agent acting in a representative capacity appears in person or signs a paper in practice before the Patent and Trademark Office in a patent case, his or her personal appearance or signature shall constitute a representation to the Patent and Trademark Office that under the provisions of this [part] ► Subchapter ◄ and the law, he or she is authorized to represent the particular party in whose behalf he or she acts. In filing such a paper, the ► registered ◄ attorney or agent should specify his or her registration number with his or her signature. Further proof of authority to act in a representative capacity may be required.

* * * * *

4. The center heading preceding §1.341 would be deleted.

5. Sections 1.341 through 1.348 would be deleted. Part 2--Rules of Practice in Trademark Cases

6. Section 2.11 would be revised to read as follows:

§2.11 Applicants may be represented by an attorney

The owner of a trademark may file and prosecute his ► or her ◄ own application for registration of such trademark, or he ► or she ◄ may be represented by an attorney or other [person] ► individual ◄ authorized to practice in trademark cases ► under §10.14 of this Subchapter ◄. The Patent and Trademark Office cannot aid in the selection of an attorney or other representative.

7. Sections 2.12 through 2.16 would be deleted.

8. Section 2.17 would be amended by revising paragraph (a) as follows:

§2.17 Recognition for representation

(a) When an attorney [at law] ► as defined in §10.1(c) of this Subchapter ◄ acting in a representative capacity appears in person or signs a paper in practice before the Patent and Trademark Office in a trademark case, his ► or her ◄ personal appearance or signature shall constitute a representation to the Patent and Trademark Office that ►, ◄ under the provisions of [these rules] ► §10.14 ◄ and the law ►, ◄ he ► or she ◄ is authorized [, and qualified under §2.12(a)] to represent the particular party in whose behalf he ► or she ◄ acts. Further proof of authority to act in a representative capacity may be required.

* * * * *

9. Section 2.19 would be revised to read as follows:

§2.19 Revocation of power of attorney or of other authorization to represent ►, withdrawal ◄.

► (a) ◄ Authority to represent an applicant or a party to a proceeding may be revoked at any stage in the proceedings of a case upon notification to the Commissioner; and when it is so revoked, the Office will communicate directly with the applicant or party to the proceeding or with such other qualified person as may be authorized. The Patent and Trademark Office will notify the person affected of the revocation of his ► or her ◄ authorization.

► (b) An individual authorized to represent an applicant or party in a trademark case may withdraw upon application to and approval by the Commissioner. ◄

Part 10--Representation of others before the Patent and Trademark Office

10. The following Part 10 would be added:

Sec.
10.1 Definitions
10.2 Director of Enrollment and Discipline
10.3 Committee on Enrollment
10.4 Committee on Discipline
10.5 Register of attorneys and agents in patent cases
10.6 Registration of attorneys and agents
10.7 Requirements for registration
10.8 Oath and registration fee
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10.10 Individuals not registered or recognized to practice in patent cases
10.11 Removing names from the register
10.12–10.13 [reserved]
10.14 Individuals who may practice before the Office in trademark and other non-patent cases
10.15 Refusal to recognize a practitioner
10.16 –10.17 [reserved]
10.18 Signature and certificate of practitioner
10.19 [reserved]
10.20 Canons and Displinary Rules
10.21 Canon 1
10.22 Maintaining integrity and competence of the legal profession
10.23 Misconduct
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10.31 Communications concerning a practitioner's services
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10.35 Firm names and letterheads
10.36 Fees for legal services
10.37 Division of fees among practitioners
10.38 Agreements restricting the practice of a practitioner
10.39 Acceptance of employment
10.40 Withdrawal from employment
10.41–10.45 [reserved]
10.46 Canon 3
10.47 Aiding unauthorized practice of law
10.48 Sharing legal fees
10.49 Forming a partnership with a non-practitioner
10.50–10.55 [reserved]
10.56 Canon 4
10.57 Preservation of confidences and secrets of a client
10.58–10.60 [reserved]
10.61 Canon 5
10.62 Refusing employment when the interest of the practitioner may impair the practitioner's independent professional judgment
10.63 Withdrawal when the practitioner becomes a witness
10.64 Avoiding acquisition of interest in litigation or proceeding before the Office
10.65 Limiting business relations with a client
10.66 Refusing to accept or continue employment if the interests of another client may impair the independent professional judgment of the practitioner
10.67 Settling similar claims of clients
10.68 Avoiding influence by others than the client
10.69–10.75 [reserved]
10.76 Canon 6
10.77 Failing to act competently
10.78 Limiting liability to client
10.79–10.82 [reserved]
10.83 Canon 7

10.84 Representing a client zealously
10.85 Representing a client within the bounds of the law
10.86 [reserved]
10.87 Communicating with one of adverse interest
10.88 Threatening criminal prosecution
10.89 Conduct in proceedings
10.90–10.91 [reserved]
10.92 Contact with witnesses
10.93 Contact with officials
10.94–10.99 [reserved]
10.100 Canon 8
10.101 Action as a public official
10.102 Statements concerning officials
10.103 Practitioner candidate for judicial office
10.104–10.109 [reserved]
10.110 Canon 9
10.111 Avoiding even the appearance of impropriety
10.112 Preserving identity of funds and property of client
10.113–10.129 [reserved]
10.130 Reprimand, suspension or exclusion
10.131 Investigations
10.132 Initiating a disciplinary proceeding; reference to an administrative law judge
10.133 Conference between Director and practitioner; resignation
10.134 Complaint
10.135 Service of complaint
10.136 Answer to complaint
10.137 Supplemental complaint
10.138 Contested case
10.139 Administrative law judge; appointment; responsibilities; review of interlocutory orders; stays
10.140 Representative for Director or respondent
10.141 Filing of papers
10.142 Service of papers
10.143 Motions
10.144 Hearings
10.145 Proof; variance; amendment of pleadings
10.146–10.149 [reserved]
10.150 Evidence
10.151 Depositions
10.152 Discovery
10.153 Proposed findings and conclusions; post-hearing memorandum
10.154 Initial decision of administrative law judge
10.155 Appeal to the Commissioner
10.156 Decision of the Commissioner
10.157 Review of Commissioner's final decision
10.158 Suspended or excluded practitioner
10.159 Notice of suspension or exclusion
10.160 Petition for reinstatement
10.161 Savings clause

Authority: 5 U.S.C. 500, 35 U.S.C. 6, 31, 32

Part 10 -- Representation of others before the Patent and Trademark Office

§10.1 Definitions

This part governs practice of patent, trademark, and other law before the Patent and Trademark Office. Unless otherwise clear from the context, the following definitions apply to this part:

(a) "Affidavit" means affidavit, declarations under 35 U.S.C. §25 (see §1.68 and §2.20 of this Subchapter), or statutory declaration under 28 U.S.C. §1746.

(b) "Application" includes an application for a design, plant, or utility patent, an application to reissue any patent, and an application to register a trademark.

(c) "Attorney" or "lawyer" means an individual who is a member in good standing of the bar of any United States court or the highest court of any State. A "non-lawyer" is a person who is not an attorney or lawyer.

(d) "Canon" is defined in §10.20(a).

(e) "Confidence" is defined in §10.57(a).

(f) "Differing interests" include every interest that may adversely affect either the judgment or the loyalty of a practitioner to a client, whether it be a conflicting, inconsistent, diverse, or other interest.

(g) "Director" means the Director of Enrollment and Discipline.

(h) "Disciplinary Rule" is defined in §10.20(b).

(i) "Employee of a tribunal" includes all employees of courts, the Office, and other adjudicatory bodies.

(j) "Giving information" within the meaning of §10.23(c) (2) includes making (1) a written statement or representation or (2) an oral statement or representation.

(k) "Law firm" includes a professional legal corporation or a partnership.

(l) "Legal counsel" means practitioner.

(m) "Legal profession" includes the individuals who are lawfully engaged in practice of patent, trademark, and other law before the Office.

(n) "Legal service" means any legal service which may lawfully be performed by a practitioner before the Office.

(o) "Legal System" includes the Office and courts and adjudicatory bodies which review matters on which the Office has acted.

(p) "Office" means Patent and Trademark Office.

(q) "Person" includes a corporation, an association, a trust, a partnership, and any other organization or legal entity.

(r) "Practitioner" means an attorney or agent registered to practice before the Office in patent cases or an individual authorized under 5 U.S.C. §500(b), or as otherwise provided by this Subchapter, who practices before the Office in trademark cases or other non-patent cases. A "suspended or excluded practitioner" is a practitioner who is suspended or excluded under §10.156. A "non-practitioner" is an individual who is not a practitioner.

(s) A "proceeding before the Office" includes an application, a reexamination, a protest, a public use proceeding, a patent interference, an *inter partes* trademark proceeding, or any other proceeding which is pending before the Office.

(t) "Professional legal corporation" means a corporation, authorized by law to practice law for profit.

(u) "Registration" means registration to practice before the Office in patent cases.

(v) "Respondent" is defined in §10.134(a) (1).

(w) "Secret" is defined in §10.57(a).

(x) "Solicit" is defined in §10.33.

(y) "State" includes the District of Columbia, Puerto Rico, and other federal territories and possessions.

(z) "Tribunal" includes courts, the Office, and other adjudicatory bodies.

(aa) "United States" means the United States of America, its territories and possessions.

§10.2 Director of Enrollment and Discipline

(a) *Appointment*. The Commissioner shall appoint a Director of Enrollment and Discipline. In the event of the absence of the Director or a vacancy in the office of the Director, the Commissioner may designate an employee of the Office to serve as acting Director of Enrollment and Discipline.

(b) *Duties*. The Director shall:

(1) Receive and act upon applications for registration, prepare and grade the examination provided for in §10.7(b), maintain the register, and perform such other duties in connection with enrollment and recognition of attorneys and agents as may be necessary.

(2) Conduct investigations into possible violations by practitioners of Disciplinary Rules, with the consent of the Committee on Discipline initiate disciplinary proceedings under §10.132(b), and perform such other duties in connection with investigations and disciplinary proceedings as may be necessary.

(c) *Review of Director's decision.* Any final decision of the Director refusing to register an individual under §10.6, recognize an individual under §§10.9 or 10.14(c), or reinstate a suspended or excluded petitioner under §10.160, may be reviewed by petition to the Commissioner upon payment of the fee set forth in §1.___. A petition filed more than 30 days after the date of the decision of the Director may be dismissed as untimely. Any petition shall contain (1) a statement of the facts involved and the points to be reviewed and (2) the action requested. Briefs or memoranda, if any, in support of the petition shall accompany or be embodied therein. The petition will be decided on the basis of the record made before the Director and no new evidence will be considered by the Commissioner in deciding the petition. Copies of documents already of record before the Director shall not be submitted with the petition. An oral hearing on the petition will not be granted except when considered necessary by the Commissioner. The Commissioner may delegate to appropriate Office employees the determination of a petition under this section.

§10.3 Committee on Enrollment

(a) The Commissioner may establish a Committee on Enrollment composed of one or more employees of the Office

(b) The Committee on Enrollment shall, as necessary, advise the Director in connection with the Director's duties under §10.2(b) (1).

§10.4 Committee on Discipline

(a) The Commissioner shall appoint a Committee on Discipline. The Committee on Discipline shall consist of the Director and at least two Associate Solicitors from the Office of the Solicitor.

(b) The Committee on Discipline shall meet at the request of the Director and after reviewing evidence presented by the Director shall, by majority vote and without involving in any way the Solicitor or any other professional employee on the staff of the Office of the Solicitor, determine whether there is probable cause to bring charges under §10.132 against a practitioner. When charges are brought against a practitioner:

(1) No member of the Committee on Discipline or employee under the direction of the Director shall participate in rendering a decision on the charges and

(2) The Associate Solicitors on the Committee on Discipline, or such other employee of the Office as may be designated by the Commissioner, shall act as the prosecuting attorneys in presenting any charges.

(c) No discovery shall be authorized of, and no member of the Committee on Discipline shall be required to testify about, deliberations of the Committee on Discipline.

Individuals Entitled to Practice Before the Patent and Trademark Office Office

§10.5 Register of attorneys and agents in patent cases

A register of attorneys and agents is kept in the Office on which are entered the names of all individuals recognized as entitled to represent applicants before the Office in the preparation and prosecution of applications for patent. Registration in the Office under the provisions of this part shall only entitle the individuals registered to practice before the Office in patent cases.

§10.6 Registration of attorneys and agents

(a) *Attorneys.* Any citizen of the United States who is an attorney and who fulfills the requirements of this part may be registered as a patent attorney to practice before the Office. When appropriate, any alien who is an attorney, who lawfully resides in the United States, and who fulfills the requirements of this part may be registered as a patent attorney to practice before the Office, *provided:* registration is not inconsistent with the terms upon which the alien was admitted to, and resides in, the United States and *further provided:* the alien may remain registered only (1) if the alien continues to lawfully reside in the United States and registration does not become inconsistent with the terms upon which the alien continues to lawfully reside in the United States or (2) if the alien ceases to reside in the United States, the alien is qualified to be registered under paragraph (c) of this section. See also §10.9(b).

(b) *Agents.* Any citizen of the United States who is not an attorney and who fulfills the requirements of this part may be registered as a patent agent to practice before the Office. When appropriate, any alien who is not an attorney, who lawfully resides in the United States, and who fulfills the requirements of this part may be registered as a patent agent to practice before the Office, *provided:* registration is not inconsistent with the terms upon which the alien was admitted to, and resides in, the United States, and *further provided:* the alien may remain registered only (1) if the alien continues to lawfully reside in the United States and registration does not become inconsistent with the terms upon which the alien continues to lawfully reside in the United States or (2) if the alien ceases to reside in the United States, the alien is qualified to be registered under paragraph (c) of this section. See also §10.9(b).

Note: All individuals registered prior to Nov. 15, 1938, were registered as attorneys, whether they were attorneys or not, and such registrations have not been changed.

(c) *Foreigners.* Any foreigner not a resident of the United States who shall file proof to the satisfaction of the Director that he or she is registered and in good standing before the patent office of the country in which he or she resides and practices and who is possessed of the qualifications stated in §10.7, may be registered as a patent agent to practice before the Office for the limited purpose of presenting and prosecuting patent applications of applicants located in such country, *provided:* the patent office of such country allows substantially reciprocal privileges to those admitted to practice before the United States Patent and Trademark Office. Registration as a patent agent under this paragraph shall continue only during the period that the conditions specified in this paragraph obtain.

(d) *Government employees.* Any officer or employee of the United States who is disqualified by statute (18 U.S.C. 203, 205) from practicing as an attorney or agent in proceedings or other matters before Government departments or agencies, may not be registered to practice before the Office. If any registered attorney or agent becomes an officer or employee of the United States who is disqualified by statute from practicing as an attorney or agent in proceedings and other matters before Government department or agencies, his or her name shall be endorsed as inactive on the register during the period of any employment by the United States. An officer or employee of the United States whose official duties require the preparation and prosecution of applications for patent and who fulfills the requirements of this part may be registered to practice before the Office to the extent necessary to carry out his or her official duties. A written statement describing the official duties of the officer or employee and signed on behalf of the agency employing the officer or employee may be required by the Director.

(e) *Former Office employees.* No individual who has served in the Office will be registered after termination of his or her services, nor if registered before such service, be reinstated, unless he or she signs a written statement indicating that he or she has read 18 U.S.C. 207. No individual who has served in the patent examining corps of the Office will be registered after termination of his or her services, nor if registered before such service, be reinstated, unless he or she signs a written undertaking (1) not to prosecute or aid in any manner in the prosecution of any patent application pending in any patent examining group during his or her period of service therein and (2) not to prepare or prosecute or to assist in any manner in the preparation or prosecution of any patent application of another (i) assigned to such group for examination and (ii) filed within two years after the date he or she left such group, without written authorization of the Director. Associated and related classes in other patent examining groups may be required to be included in the undertaking or designated classes may be excluded from the undertaking. When an application for registration or reinstatement is made after resignation from the Office, the applicant will not be registered or reinstated if he or she has prepared or prosecuted or assisted in the preparation or prosecution of any any patent appliation as indicated in this paragraph.

§10.7 Requirement for registration

(a) No individual will be registered to practice before the Office unless he or she shall:

(1) apply to the Commissioner in writing on a form supplied by the Director and furnish all requested information and material and

(2) establish to the satisfaction of the Director that he or she is:

(i) of good moral character and repute;

(ii) possessed of the legal, scientific, and technical qualifications necessary to enable him or her to render applicants for patents valuable service; and

(iii) is otherwise competent to advise and assist applicants for patents in the presentation and prosecution of their applications before the Office.

(b) In order that the Director may determine whether an individual seeking to have his or her name placed upon the register has the qualifications specified in paragraph (a) of this section, satisfactory proof of good moral character and repute and of sufficient basic training in scientific and technical matters must be submitted to the Director. Except as provided in this paragraph, each applicant for registration must take and pass an examination which is held from time to time. Each application for admission to take the examination for registration must be accompanied by the fee set forth in §1.21(a) (1) of this Subchapter. The taking of an examination may be waived in the case of any individual who has actively served for at least four years in the examining corps of the Office. The examination will not be administered as a mere academic exercise.

(c) Within two months from the date an applicant is notified that he or she failed an examination, the applicant may request regrading of the examination upon payment of the fee set forth in §1. ______. Any applicant requesting regrading shall particularly point out the errors which the applicant believed occurred in the grading of his or her examination.

§10.8 Oath and registration fee

Before an individual may have his or her name entered on the register of attorneys and agents, the individual must, after his or her application is approved, subscribe and swear to an oath or make a declaration prescribed by the Commissioner and pay the registration fee set forth in §1.21(a) (2) of this Subchapter.

§10.9 Limited recognition in patent cases

(a) Any individual not registered under §10.6 may, upon a showing of circumstances which render it necessary or justifiable, be given limited recognition by the Director to prosecute as attorney or agent a specified application or specified applications, but limited recognition under this paragraph shall not extend further than the application or applications specified.

(b) When registration of an alien under paragraphs (a) or (b) of §10.6 is not appropriate, the alien may be given limited recognition as may be appropriate under paragraph (a) of this section.

§10.10 Individuals not registered or recognized to practice in patent cases

Only practitioners who are registered under §10.6 or individuals given limited recognition under §10.9 will be permitted to prosecute patent applications of others before the Office.

§10.11 Removing names from the register

(a) Registered attorneys and agents shall notify the Director of any change of address. Any notification to the Director of any change of address shall be separate from any notice of change of address filed in individual applications.

(b) A letter may be addressed to any individual on the register, at the address of which separate notice was last received by the Director, for the purpose of ascertaining whether such individual desires to remain on the register. The name of any individual failing to reply and give any information requested by the Director within a time limit specified will be removed from the register and the names of individuals so removed will be published in the *Official Gazette.* The name of any individual so removed may be reinstated on the register as may be appropriate and upon payment of the fee set forth in §1.21(a) (3) of this Subchapter.

§§10.12–10.13 [reserved]

§10.14 Individuals who may practice before the Office in trademark and other non-patent cases

(a) *Attorneys.* Any individual who is an attorney may represent others before the Office in trademark and other non-patent cases. An attorney is not required to apply for registration or recognition to practice before the Office in trademark and other non-patent cases.

(b) *Non-lawyers.* Individuals who are not attorneys are not recognized to practice before the Office in trademark and other non-patent cases, except that individuals not attorneys who were recognized to practice before the Office in trademark cases under this chapter prior to Jan. 1, 1957, will be recognized as agents to continue practice before the Office in trademark cases.

(c) *Foreigners.* Any foreigner not a resident of the United States who shall prove to the satisfaction of the Director that he or she is registered and in good standing before the patent or trademark office of the country in which he or she resides and practices, may be recognized for the limited purpose of representing applicants located in such country before the Office in the presentation and prosecution of trademark applicants, *provided*: the patent or trademark office of such country allows substantially reciprocal privileges to those permitted to practice in trademark cases before the United States Patent and Trademark Office. Recognition under this paragraph shall continue only during the period that the conditions specified in this paragraph obtain.

(d) Recognition of any individual under this section shall not be construed as sanctioning or authorizing the performance of any act regarded in the jurisdiction where performed as the unauthorized practice of law.

(e) No individual other than those specified in paragraphs (a), (b), and (c) of this section will be permitted to practice before the Office in trademark cases. Any individual may appear in a trademark or other non-patent case in his or her own behalf. Any individual may appear in a trademark, case for (1) a firm of which he or she is a member or (2) a corporation or association of which he or she is an officer and which he or she is authorized to represent, if such firm, corporation, or association is a party of a trademark proceeding pending before the Office.

§10.15 Refusal to recognize a practitioner

Any practitioner authorized to appear before the Office may be suspended or excluded in accordance with the provisions of this part. Any practitioner who is suspended or excluded under §10.156(b) or removed under§10.11(b) shall not be entitled to practice before the Office.

§§10.16–10.17 [reserved]

§10.18 Signature and certificate of practitioner

(a) Every paper filed by a practitioner representing an applicant or party to a proceeding in the Office must bear the signature of, and be personally signed by, such practitioner except those papers which are required to be signed by the applicant or party. The signature of practitioner to a paper filed by him or her, constitutes a certificate that:

(1) the paper has been read;

(2) the paper's filing is authorized;

(3) to the best of his or her knowledge, information, and belief, there is good ground to support the paper, including any allegations of improper conduct contained or alleged therein; and

(4) it is not interposed for delay.

(b) Any practitioner knowingly violating the provisions of this section is subject to disciplinary action. See §10.23(c) (15).

§10.19 [reserved]

Patent and Trademark Office Code of Professional Responsibility

§10.20 Canons and Disciplinary Rules

(a) Canons are set out in §§10.21, 10.30, 10.46, 10.56, 10.61, 10.76, 10.83, 10.100, and 10.110. Canons are statements of axiomatic norms, expressing in general terms the standards of professional conduct expected of practitioners in their relationships with the public, with the legal system, and with the legal profession.

(b) Disciplinary Rules are set out in §10.22–10.24, 10.31–10.40, 10.47–10.57, 10.62–10.68, 10.77, 10.78, 10.84, 10.85, 10.87–10.89, 10.92, 10.93, 10.101–10.103, 10.111, and 10.112. Disciplinary Rules are mandatory in character and state the minimum level of conduct below which no practitioner can fall without being subjected to disciplinary action.

§10.21 Canon 1

A practitioner should assist in maintaining the integrity and competence of the legal profession.

§10.22 Maintaining integrity and competence of the legal profession.

(a) A practitioner is subject to discipline if the practitioner has made a materially false statement in, or if the practitioner has deliberately failed to disclose a material fact requested in connection with, the practitioner's application for registration or membership in the bar of any United States court or any State or his or her authority to otherwise practice before the Office in trademark and other non-patent cases.

(b) A practitioner shall not further the application for registration or membership in the bar of any United States court, State, or administrative agency of another person known by the practitioner to be unqualified in respect to character, education, or other relevant attribute.

§10.23 Misconduct

(a) A practitioner shall not engage in disreputable or gross misconduct.

(b) A practitioner shall not:

(1) Violate a Disciplinary Rule.

(2) Circumvent a Disciplinary Rule through actions of another.

(3) Engage in illegal conduct involving moral turpitude.

(4) Engage in conduct involving dishonesty, fraud, deceit, or misrepresentation.

(5) Engage in conduct that is prejudicial to the administration of justice.

(6) Engage in any other conduct that adversely reflects on the practitioner's fitness to practice before the Office.

(c) Conduct which constitutes a violation of paragraphs (a) and (b) of this section includes, but is not limited to:

(1) Conviction of a criminal offense involving moral turpitude, dishonesty, or breach of trust.

(2) Knowingly giving false or misleading information or knowingly participating in a material way in giving false or misleading information, to:

(i) A client in connection with any immediate, prospective, or pending business before the Office.

(ii) The Office or any employee of the Office.

(3) Misappropriation of, or failure to properly or timely remit, funds received by a practitioner or the practitioner's firm from a client to pay a fee which the client is required by law to pay to the Office.

(4) Directly or indirectly improperly influencing, attempting to improperly influence, offering or agreeing to improperly influence, or attempting to offer or agree to improperly influence an official action of any employee of the Office by:

(i) use of threats, false accusations, duress, or coercion,

(ii) an offer of any special inducement or promise of advantage, or

(iii) bestowing of any gift, favor, or thing of value.

(5) Suspension or disbarment from practice as an attorney or agent by any duly constituted authority of a State or the United States or, in the case of a practitioner who resides in a foreign country or is registered under§10.6(c), suspension or disbarment as an attorney or agent by any duly constituted authority of:

(i) a State,

(ii) the United States, or

(iii) the country in which the practitioner resides.

(6) Knowingly aiding or abetting a practitioner, suspended or excluded from practice before the Office in engaging in unauthorized practice before the Office under §10.158.

(7) Knowingly withholding from the Office information identifying a patent or application of another from which one or more claims have been copied.

(8) Failing to forward, or failing to notify the Office of an inability to forward, to a client correspondence received from the Office or the client's opponent in an *inter partes* proceeding before the Office which could have a significant effect on a matter pending before the Office and received by a practitioner on behalf of a client or former client when:

(i) responsibility of the practitioner for the pending matter has not been terminated pursuant to §§1.36 or 2.19 of the Subchapter or

(ii) the practitioner has not been authorized to withdraw pursuant to §§1.36 or 2.19, of this Subchapter. See §§10.40, 10.63, and 10.66.

(9) Knowingly misusing a certificate of mailing under §1.8 of this Subchapter or a certificate of "Express Mail" under §1.10 of this Subchapter.

(10) Violating the duty of candor or good faith requirements of §1.56(a) of this Subchapter.

(11) Knowingly filing, or causing to be filed, an application which is subject to being stricken under §1.56(c) of this Subchapter.

(12) In the absence of information sufficient to establish a reasonable belief in the existence of probable cause that a practitioner is in violation of, or has violated, a Disciplinary Rule, causing a disciplinary investigation to be made, or a disciplinary proceeding to be brought, against the practitioner by a court, a state, or an administrative agency.

(13) Knowingly preparing or prosecuting a patent application in violation of an undertaking signed under §10.6(e).

(14) Knowingly failing to advise the Director in writing of any change which would preclude continued registration under §10.6.

(15) Knowingly signing a paper filed in the Office in violation of the provisions of §10.18 or including scandalous or indecent matter in a paper filed in the Office.

(16) Willfully refusing to reveal or report knowledge or evidence to the Director contrary to §10.24 or paragraph (b) of §10.131.

(17) Representing before the Office in a patent case either a joint venture comprising an inventor and invention developer or an inventor referred to the registered practitioner by an invention developer when (i) the registered practitioner knows, or should have reasonably known, that a formal complaint filed by a federal or state agency, based on any violation of any law relating to securities, unfair methods of competition, unfair or deceptive acts or practices, mail fraud, or other civil or criminal conduct, is pending before a federal or state court or federal or state agency, or has been resolved unfavorably by such court or agency, against the invention developer in connection with invention development services and (ii) the registered practitioner fails to fully advise the inventor of the existence of the pending

complaint or unfavorable resolution thereof prior to undertaking or continuing representation of the join venture or inventor. "Invention developer" means any person, and any agent, employee, officer, partner, or independent contractor thereof, who is not a registered practitioner and who advertises invention development services in media of general circulation or who enters into contracts for invention development services with customers as a result of such advertisement. "Invention development services" means acts of invention development required or promised to be performed, or actually performed, or both, by an invention developer for a customer. "Invention development" means the evaluation, perfection, marketing, brokering, or promotion of an invention on behalf of a customer by an invention developer, including a patent search, preparation of a patent application, or any other act done by an invention developer for consideration toward the end of procuring or attempting to procure a license, buyer, or patent for an invention. "Customer" means any individual who has made an invention and who enters into a contract for invention development services with an invention developer with respect to the invention by which the inventor becomes obligated to pay the invention developer less than $5,000 (not to include any additional sums which the invention developer is to receive as a result of successful development of the invention). "Contract for invention development services" means a contract for invention development services with an invention developer with respect to an invention made by a customer by which the inventor becomes obligated to pay the invention developer less than $5,000 (not to include any additional sums which the invention developer is to receive as a result of successful development of the invention).

(18) In the absence of information sufficient to establish a resonable belief that fraud or inequitable conduct has occurred, alleging before a tribunal that anyone has committed a fraud on the Office or engaged in inequitable conduct in a proceeding before the Office.

(d) A practitioner who acts with reckless indifference to whether a representation is true or false is chargeable with knowledge of its falsity. Deceitful statements or half-truths or concealment of material facts shall be deemed actual fraud within the meaning of this part.

§10.24 Disclosure of information to authorities

(a) A practitioner possessing unprivileged knowledge of a violation of a Disciplinary Rule shall report such knowledge to the Director.

(b) A practitioner possessing unprivileged knowledge or evidence concerning another practitioner, employee of the Office, or a judge shall reveal fully such knowledge or evidence upon proper request of a tribunal or other authority empowered to investigate or act upon the conduct of practitioners, employees of the Office, or judges.

§10.30 Canon 2

A practitioner should assist the legal profession in fulfilling its duty to make legal counsel available.

§10.31 Communications concerning a practitioner's services.

(a) No practitioner shall with respect to any prospective business before the Office, by word, circular, letter, or advertising, with intent to defraud in any manner, deceive, mislead, or threaten any prospective applicant or other person having immediate or prospective business before the Office.

(b) A practitioner may not use the name of a Member of either House of Congress or of an individual in the service of the United States in advertising the practitioner's practice before the Office.

(c) Unless a practitioner is an attorney, the practitioner shall not hold himself or herself out to be an attorney or lawyer or as authorized to practice before the Office in trademark and other non-patent cases.

§10.32 Advertising

(a) Subject to §10.31, a practitioner may advertise services through public media, including a telephone directory, legal directory, newspaper, or other periodical, radio, or television, or through written communications not involving solicitation as defined by §10.33.

(b) A copy or recording of an advertisement or written communication shall be kept for two years after its last dissemination along with a record of when and where it was used. Upon a written request by the Director, a practitioner shall make the copy or recording available to the Director.

(c) A practitioner shall not give anything of value to a person for recommending the practitioner's services, except that a practitioner may pay the reasonable cost of advertising or written communication permitted by this section and may pay the usual charges of a not-for-profit lawyer referral service or other legal service organization.

(d) Any communication made pursuant to this section shall include the name of at least one practitioner responsible for its content.

§10.33 Direct contract with prospective clients

A practitioner may not solicit professional employment from a prospective client with whom the practitioner has no family or prior professional relationship, by mail, in-person or otherwise, when a significant motive for the practitioner's doing so is the practitioner's pecuniary gain under circumstances evidencing undue influence, intimidation, or overreaching. The term "solicit" includes contact in person, by telephone or telegraph, by letter or other writing, or by other communication directed to a specific recipient, but does not include letters addressed or advertising circulars distributed generally to persons not specifically known to need legal services of the kind provided by the practitioner in a particular matter, but who are so situated that they might in general find such services useful.

§10.34 Communication of fields of practice

A registered practitioner may state or imply that the practitioner is a specialist as follows:

(a) A registered practitioner who is an attorney may use the designation "Patents," "Patent Attorney," "Patent Lawyer," "Registered Patent Attorney," or a substantially similar designation.

(b) A registered practitioner who is not an attorney may use the designation "Patents," "Patent Agent," "Registered Patent Agent," or a substantially similar designation.

§10.35 Firm names and letterheads

(a) A practitioner shall not use a firm name, letterhead, or other professional designation that violates §10.31. A trade name may be used by a practitioner in private practice if it does not imply a current connection with a government agency or with a public or charitable legal services organization and is not otherwise in violation of §10.31.

(b) Practitioners may state or imply that they practice in a partnership or other organization only when that is the fact.

§10.36 Fees for legal services

(a) A practitioner shall not enter into an agreement for, charge, or collect an illegal or clearly excessive fee.

(b) A fee is clearly excessive when, after a review of the facts, a practitioner of ordinary prudence would be left with a definite and firm conviction that the fee is in excess of a reasonable fee. Factors to be considered as guides in determining the reasonableness of a fee include the following:

(1) The time and labor required, the novelty and difficulty of the questions involved, and the skill requisite to perform the legal service properly.

(2) The likelihood, if apparent to the client, that the acceptance of the particular employment will preclude other employment by the practitioner.

(3) The fee customarily charged in the locality for similar legal services.

(4) The amount involved and the results obtained.

(5) The time limitations imposed by the client or by

the circumstances.

(6) The nature and length of the professional relationship with the client.

(7) The experience, reputation, and ability of the practitioner or practitioners performing the services.

(8) Whether the fee is fixed or contingent.

§10.37 Division of fees among practitioners

(a) A practitioner shall not divide a fee for legal services with another practitioner who is not a partner in or associate of the practitioner's law firm or law office, unless:

(1) The client consents to employment of the other practitioner after a full disclosure that a division of fees will be made.

(2) The division is made in proportion to the services performed and responsibility assumed by each.

(3) The total fee of the practitioners does not clearly exceed reasonable compensation for all legal services rendered to the client.

(b) This section does not prohibit payment to a former partner or associate pursuant to a separation or retirement agreement.

§10.38 Agreements restricting the practice of a practitioner

(a) A practitioner shall not be a party to or participate in a partnership or employment agreement with another practitioner that restricts the right of a practitioner to practice before the Office after the termination of a relationship created by the agreement, except as a condition to payment of retirement benefits.

(b) In connection with the settlement of a controversy or suit, a practitioner shall not enter into an agreement that restricts the practitioner's right to practice before the Office.

§10.39 Acceptance of employment

A practitioner shall not accept employment on behalf of a person if the practitioner knows or it is obvious that such person whishes to:

(a) Bring a legal action or commence a proceeding before the Office, or conduct a defense, or assert a position in litigation or any proceeding pending before the Office, or otherwise have steps taken for the person, merely for the purpose of harassing or maliciously injuring any other person.

(b) Present a claim or defense in litigation or any proceeding before the Office that is not warranted under existing law, unless it can be supported by good faith argument for an extension, modification, or reversal of existing law.

§10.40 Withdrawal from employment

(a) A practitioner shall not withdraw from employment in a proceeding before the Office without permission from the Office (see §§1.36, and 2.19 of this Subchapter). In any event, a practitioner shall not withdraw from employment until the practitioner has taken reasonable steps to avoid foreseeable prejudice to the rights of the client, including giving due notice to another practitioner, delivering to the client all papers and property to which the client is entitled, and complying with applicable laws and rules. A practitioner who withdraws from employment shall refund promptly any part of a fee paid in advance that has not been earned.

(b) *Mandatory withdrawal.* A practitioner representing a client before the Office shall withdraw from employment if:

(1) the practitioner knows or it is obvious that the client is bringing a legal action, commencing a proceeding before the Office, conducting a defense, or asserting a position in litigation or any proceeding pending before the Office, or is otherwise having steps taken for the client, merely for the purpose of harassing or maliciously injuring any person;

(2) the practitioner knows or it is obvious that the practitioner's continued employment will result in violation of a Disciplinary Rule;

(3) the practitioner's mental or physical condition renders it unreasonably difficult for the practitioner to carry out the employment effectively; or

(4) the practitioner is discharged by the client.

(c) *Permissive withdrawal.* If paragraph (b) of this section is not applicable, a practitioner may not request permission to withdraw in matters pending before the Office, and may not withdraw in other matters, unless such request or such withdrawal is because:

(1) the petitioner's client:

(i) insists upon presenting a claim or defense that is not warranted under existing law and cannot be supported by good faith argument for an extension, modification, or reversal of existing law;

(ii) personally seeks to pursue an illegal course of conduct;

(iii) insists that the practitioner pursue a course of conduct that is illegal or that is prohibited under a Disciplinary Rule.

(iv) by other conduct renders it unreasonably difficult for the practitioner to carry out the employment effectively;

(v) insists, in a matter not pending before a tribunal, that the practitioner engage in conduct that is contrary to the judgment and advice of the practitioner but not prohibited under the Disciplinary Rule; or

(vi) deliberately disregards an agreement or obligation to the practitioner as to expenses or fees;

(2) the practitioner's continued employment is likely to result in a violation of a Disciplinary Rule;

(3) the practitioner's inability to work with co-counsel indicates that the best interests of the client likely will be served by withdrawal;

(4) the practitioner's mental or physical condition renders it difficult for the practitioner to carry out the employment effectively;

(5) the practitioner's client knowingly and freely assents to termination of the employment; or

(6) the practitioner believes in good faith, in a proceeding pending before the Office, that the Office will find the existence of other good cause for withdrawal.

§10.46 Canon 3

A practitioner should assist in preventing the unauthorized practice of law.

§10.47 Aiding unauthorized practice of law

(a) A practitioner shall not aid a non-practitioner in the unauthorized practice of law before the Office.

(b) A practitioner shall not aid a suspended or excluded practitioner in the practice of law before the Office.

(c) A practitioner shall not aid a non-lawyer in the unauthorized practice of law.

§10.48 Sharing legal fees

(a) A practitioner or a firm of practitioners shall not share legal fees with a non-practitioner except that:

(1) An agreement by a practitioner with the practitioner's firm, partner, or associate may provide for the payment of money, over a reasonable period of time after the practitioner's death, to the practitioner's estate or to one or more specified persons.

(2) A practitioner who undertakes to complete unfinished legal business of a deceased practitioner may pay to the estate of the deceased practitioner that proportion of the total compensation which fairly represents the services rendered by the deceased practitioner.

(3) A practitioner or firm of practitioner's may include non-practitioner employees in a compensation or retirement plan, even though the plan is based in whole or in part on a profit-sharing arrangement, providing such plan does not circumvent another Disciplinary Rule.

§10.49 Forming a partnership with a non-practitioner

A practitioner shall not form a partnership with a non-practitioner if any of the activities of the partnership consist of the practice of patent, trademark, or other law before the Office.

§10.56 Canon 4

A practitioner should preserve the confidences and secrets of a client.

§10.57 Preservation of confidences and secrets of a client

(a) "Confidence" refers to information protected by the attorney-client or agent-client privilege under applicable law. "Secret" refers to other information gained in the professional relationship that the client has requested be held inviolate or the disclosure of which would be embarrassing or would be likely to be detrimental to the client.

(b) Except when permitted under paragraph (c) of this section, a practitioner shall not knowingly:

(1) Reveal a confidence or secret of a client.

(2) Use a confidence or secret of a client to the disadvantage of the client.

(3) Use a confidence or secret of a client for the advantage of the practitioner or of a third person, unless the client consents after full disclosure.

(c) A practitioner may reveal:

(1) Confidences or secrets with the consent of the client affected but only after a full disclosure to the client.

(2) Confidences or secrets when permitted under Disciplinary Rules or required by law or court order.

(3) The intention of a client to commit a crime and the information necessary to prevent the crime.

(4) Confidences or secrets necessary to establish or collect the practitioner's fee or to defend the practitioner or the practitioner's employees or associates against an accusation of wrongful conduct.

(d) A practitioner shall exercise reasonable care to prevent the practitioner's employees, associates, and others whose services are utilized by the practitioner from disclosing or using confidences or secrets of a client, except that a practitioner may reveal the information allowed by paragraph (c) of this section through an employee.

§10.61 Canon 5

A practitioner should exercise independent professional judgment on behalf of a client.

§10.62 Refusing employment when the interest of the practitioner may impair the practitioner's independent professional judgment.

(a) Except with the consent of a client after full disclosure, a practitioner shall not accept employment if the exercise of the practitioner's professional judgment on behalf of the client will be or reasonably may be affected by the practitioner's own financial, business, property, or personal interests.

(b) A practitioner shall not accept employment in contemplated or pending litigation or a proceeding in the Office if the practitioner knows or it is obvious that the practitioner or another practitioner in the practitioner's firm ought to sign an affidavit to be filed in the Office or be called as a witness, except that the practitioner may undertake the employment and the practitioner or another practitioner in the practitioner's firm may testify:

(1) If the testimony will relate solely to an uncontested matter.

(2) If the testimony will relate solely to a matter of formality and there is no reason to believe that substantial evidence will be offered in opposition to the testimony.

(3) If the testimony will relate solely to the nature and value of legal services rendered in the case by the practitioner or the practitioner's firm to the client.

(4) As to any matter, if refusal would work a substantial hardship on the client because of the distinctive value of the practitioner or the practitioner's firm as counsel in the particular case.

§10.63 Withdrawal the practitioner becomes a witness

(a) If, after undertaking employment in contemplated or pending litigation or a proceeding in the Office, a practitioner learns or it is obvious that the practitioner or another practitioner in the practitioner's firm ought to sign an affidavit to be filed in the Office or be called as a witness on behalf of a practitioner's client, the practitioner shall withdraw from the conduct of the trial or proceeding and the practitioner's firm, if any, shall not continue representation in the trial or proceeding, except that the practitioner may continue the representation and the practitioner or another practitioner in the practitioner's firm may testify in the circumstances enumerated inparagraphs (1) through (4) of §10.62(b).

(b) If, after undertaking employment in contemplated or pending litigation or a proceeding in the Office, a practitioner learns or it is obvious that the practitioner or another practitioner in the practitioner's firm may be asked to sign an affidavit to be filed in the Office or be called as a witness other than on behalf of the practitioner's client, the practitioner may continue the representation until it is apparent that the practitioner's affidavit or testimony is or may be prejudicial to the practitioner's client.

§10.64 Avoiding acquisition of interest in litigation or proceeding before the Office.

(a) A practitioner shall not acquire a proprietary interest in the subject matter of a proceeding before the Office which the practitioner is conducting for a client, except that the practitioner may:

(1) Acquire a lien granted by law to secure the practitioner's fee or expenses.

(2) Contract with a client for a reasonable contingent fee.

(b) While representing a client in connection with a contemplated or pending proceeding before the Office, a practitioner shall not advance or guarantee financial assistance to a client, except that a practitioner may advance or guarantee the expenses of going forward in a proceeding before the Office including fees required by law to be paid to the Office, expenses of investigation, expenses of medical examination, and costs of obtaining and presenting evidence, provided the client remains ultimately liable for such expenses.

§10.65 Limiting business relations with a client

(a) A practitioner shall not enter into a business transaction with a client if they have differing interests therein and if the client expects the practitioner to exercise professional judgment therein for the protection of the client, unless the client has consented after full disclosure.

(b) Prior to conclusion of all aspects of the matter giving rise to a practitioner's employment, a practitioner shall not enter into any arrangement or understanding with a client or a prospective client by which the practitioner acquires an interest in publication rights with respect to the subject matter of the practitioner's employment or proposed employment.

§10.66 Refusing to accept or continue employment if the interests of another client may impair the independent professional judgment of the practitioner

(a) A practitioner shall decline proffered employment if the exercise of the practitioner's independent professional judgment in behalf of a client will be or is likely to be adversely affected by the acceptance of the proffered employment, or if it would be likely to involve the practitioner in representing differing interests, except to the extent permitted under paragraph (c) of this section.

(b) A practitioner shall not continue multiple employment if the exercise of the practitioner's independent professional judgment in behalf of a client will be or is likely to be adversely affected by the practitioner's representation of another client, or if it would be likely to involve the practitioner in representing differing interests, except to the extent permitted under paragraph (c) of this section.

(c) In the situations covered by paragraphs (a) and (b) of this section a practitioner may represent multiple clients if it is obvious that the practitioner can adequately represent the interest of each and if each consents to the representation after full disclosure of the possible effect of such representation on the exercise of the practitioner's independent professional judgment on behalf of each.

(d) If a practitioner is required to decline employment or to withdraw from employment under a Disciplinary Rule, no partner, or associate, or any other practitioner affiliated with the practitioner or the practitioner's firm, may accept or continue such employment unless otherwise ordered by the Director or Commissioner.

§10.67 Settling similar claims of clients

A practitioner who represents two or more clients shall not make or participate in the making of an aggregate settlement of the claims of or against the practitioner's clients, unless each client has consented to the settlement after being advised of the existence and nature of all the claims involved in the proposed settlement, of the total amount of the settlement, and of the participation of each person in the settlement.

§10.68 Avoiding influence by others than the client

(a) Except with the consent of the practitioner's client after full disclosure, a practitioner shall not:

(1) Accept compensation from one other than the practitioner's client for the practitioner's legal services to or for the client.

(2) Accept from one other than the practitioner's client any thing of value related to the practitioner's representation of or the practitioner's employment by the client.

(b) A practitioner shall not permit a person who recommends, employs, or pays the practitioner to render legal services for another to direct or regulate the practitioner's professional judgment in rendering such legal services.

(c) a practitioner shall not practice with or in the form of a professional corporation or association authorized to practice law for a profit, if:

(1) A non-practitioner owns any interest therein, except that a fiduciary representative of the estate of a practitioner may hold the stock or interest of the practitioner for a reasonable time during administration;

(2) A non-practitioner is a corporate director or officer thereof; or

(3) A non-practitioner has the right to direct or control the professional judgment of a practitioner.

§10.76 Canon 6

A practitioner should represent a client competently

§10.77 Failing to act competently

A practitioner shall not:

(a) Handle a legal matter which the practitioner knows or should know that the practitioner is not competent to handle, without associating with the practitioner another practitioner who is competent to handle it.

(b) Handle a legal matter without preparation adequate in the circumstances.

(c) Neglect a legal matter entrusted to the practitioner.

§10.78 Limiting liability to client

A practitioner shall not attempt to exonerate himself or herself from, or limit his or her liability to, a client for his or her personal malpractice.

§10.83 Canon 7

A practitioner should represent a client zealously within the bounds of the law.

§10.84 Representing a client zealously

(a) A practitioner shall not intentionally:

(1) Fail to seek the lawful objectives of a client through reasonably available means permitted by law and the Disciplinary Rules, except as provided by paragraph (b) of this section. A practitioner does not violate the provisions of this section, however, by acceding to reasonable requests of opposing counsel which do not prejudice the rights of the client, by being punctual in fulfilling all professional commitments, by avoiding offensive tactics, or by treating with courtesy and consideration all persons involved in the legal process.

(2) Fail to carry out a contract of employment entered into with a client for professional services, but a practitioner may withdraw as permitted under §§10.40, 10.63, and 10.66.

(3) Prejudice or damage a client during the course of a professional relationship, except as required under §10.85.

(b) In representation of a client, a practitioner may:

(1) Where permissible, exercise professional judgment to waive or fail to assert a right or position of the client.

(2) Refuse to aid or participate in conduct that the practitioner believes to be unlawful, even through there is some support for an argument that the conduct is legal.

§10.85 Representing a client within the bounds of the law

(a) In representation of a client, a practitioner shall not:

(1) Initiate or defend any proceeding in the Office, assert a position, conduct a defense, delay a trial or proceeding in the Office, or take other action on behalf of the practitioner's client when the practitioner knows or when it is obvious that such action would serve merely to harass or maliciously injure another.

(2) Knowingly advance a claim or defense that is unwarranted under existing law, except that a practitioner may advance such claim or defense if it can be supported by good faith argument for an extension, modification, or reversal of existing law.

(3) Conceal or knowingly fail to disclose that which the practitioner is required by law to reveal.

(4) Knowingly use perjured testimony or false evidence.

(5) Knowingly make a false statement of law or fact.

(6) Participate in the creation or preservation of evidence when the practitioner knows or it is obvious that the evidence is false.

(7) Destroy a document or other material that the practitioner knows or should know is relevant to a pending proceeding in the Office or a proceeding in the Office that is reasonably foreseeable or counsel, advise, or assist another person to do so.

(8) Counsel or assist a client in conduct that the practitioner knows to be illegal or fraudulent.

(9) Knowingly engage in other illegal conduct or conduct contrary to a Disciplinary Rule.

(b) A practitioner who receives information clearly establishing that:

(1) A client has, in the course of the representation, perpetrated a fraud upon a person or tribunal shall promptly call upon the client to rectify the same, and if the client refuses or is unable to do so the practitioner shall reveal the fraud to the affected person or tribunal, except when the information is protected as a privileged communication.

(2) A person other than a client has perpetrated a fraud upon a tribunal shall promptly reveal the fraud to the tribunal.

§10.87 Communicating with one of adverse interest

During the course of representation of a client, a practitioner shall not:

(a) Communicate or cause another to communicate on the subject of the representation with a party the practitioner knows to be represented by another practitioner in that matter unless the practitioner has the prior consent of the other practitioner representing such other party or is authorized by law to do so.

(b) Give advice to a person who is not represented by a practitioner other than the advice to secure counsel, if the interests of such person are or have a reasonable possibility of being in conflict with the interests of the practitioner's client.

10.88 Threatening criminal prosecution

A practitioner shall not present, participate in presenting, or threaten to present criminal charges solely to obtain an advantage in any prospective or pending proceeding before the Office.

§10.89 Conduct in proceedings

(a) A practitioner shall not disregard or advise a client to disregard any provision of this Subchapter or a decision of the Office made in the course of a proceeding before the Office, but the practitioner may take appropriate steps in good faith to test the validity of such provision or decision.

(b) In presenting a matter to the Office, a practitioner shall disclose:

(1) Legal authority known to the practitioner to be directly adverse to the position of the client and which is not disclosed by opposing counsel or an employee of the Office.

(2) Unless privileged or irrelevant, the identities of the client the practitioner represents and of the persons who employed the practitioner.

(c) In appearing in a professional capacity before a tribunal, a practitioner shall not:

(1) State or allude to any matter that the practitioner has no reasonable basis to believe is relevant to the case or that will not be supported by admissible evidence.

(2) Ask any question that the practitioner has no reasonable basis to believe is relevant to the case and that is intended to degrade a witness or other person.

(3) Assert the practitioner's personal knowledge of the facts in issue, except when testifying as a witness.

(4) Assert the practitioner's personal opinion as to the justness of a cause, as to the credibility of a witness, as to the culpability of a civil litigant, or as to the guilt or innocence of an accused; but the practitioner may argue, on the practitioner's analysis of the evidence, for any position or conclusion with respect to the matters stated herein,

(5) Fail to comply with known customs or courtesy or practice of the Office without giving to opposing counsel timely notice of the practitioner's intent not to comply.

(6) Engage in undignified or discourteous conduct which is degrading to a tribunal.

(7) Intentionally or habitually violate any provision of this Subchapter or established rule of evidence.

§10.92 Contact with witnesses

(a) A practitioner shall not suppress any evidence that the practitioner or the practitioner's client has a legal obligation to reveal or produce.

(b) A practitioner shall not advise or cause a person to be secreted or to leave the jurisdiction of a tribunal for the purpose of making the person unavailable as a witness therein.

(c) A practitioner shall not pay, offer to pay, or acquiesce in the payment of compensation to a witness contingent upon the content of the witness' affidavit, testimony or the outcome of the case. But a practitioner may advance, guarantee, or acquiesce in the payment of:

(1) Expenses reasonably incurred by a witness in attending, testifying, or making an affidavit.

(2) Reasonable compensation to a witness for the witness' loss of time in attending, testifying, or making an affidavit.

(3) A reasonable fee for the professional services of an expert witness.

§10.93 Contact with officials

(a) A practitioner shall not give or lend anything of value to a judge, official, or employee of a tribunal under circumstance which might give the appearance that the gift or loan is made to influence official action.

(b) In an adversary proceeding, including any *inter partes* proceeding in the Office, a practitioner shall not communicate, or cause another to communicate, as to the merits of the cause with a judge, official, or Office employee before whom the proceeding is pending, except:

(1) In the course of official proceedings in the cause.

(2) In writing if the practitioner promptly delivers a copy of the writing to opposing counsel or to the adverse party if practitioner is not represented by a practitioner.

(3) Orally upon adequate notice to opposing counsel or to the adverse party if the adverse party is not represented by a practitioner.

(4) As otherwise authorized by law.

§10.100 Canon 8

A practitioner should assist in improving the legal system.

§10.101 Action as a public official

(a) A practitioner who holds public office shall not:

(1) Use the practitioner's public position to obtain, or attempt to obtain, a special advantage in legislative matters for the practitioner or for a client under circumstances where the practitioner knows or it is obvious that such action is not in the public interest.

(2) Use the practitioner's public position to influence, or attempt to influence, a tribunal to act in favor of the practitioner or of a client.

(3) Accept any thing of value from any person when the practitioner knows or it is obvious that the offer is for the purpose of influencing the practitioner's action as a public official.

(b) A practitioner who is an officer or employee of the United States shall not practice before the Office in patent cases except as provided in §10.6(d).

§10.102 Statements concerning officials

(a) A practitioner shall not knowingly make false statements of fact concerning the qualifications of a candidate for election or appointment to a judicial office or to a position in the Office.

(b) A practitioner shall not knowingly make false accusations against a judge, other adjudicatory officer, or employee of the Office.

§10.103 Practitioner candidate for judicial office

A practitioner who is a candidate for judicial office shall comply with applicable provisions of law.

10.110 Canon 9

A practitioner should avoid even the appearance of professional impropriety.

§10.111 Avoiding even the appearance of impropriety

(a) A practitioner shall not accept private employment in a matter upon the merits of which he or she has acted in a judicial capacity.

(b) A practitioner shall not accept private employment in a matter in which he or she had personal responsibility while a public employee.

(c) A practitioner shall not state or imply that the practitioner is able to influence improperly or upon irrelevant grounds any tribunal, legislative body, or public official.

§10.112 Preserving identity of funds and property of client

(a) All funds of clients paid to a practitioner or a practitioner's firm, other than advances for costs and expenses, shall be deposited in one or more identifiable bank accounts maintained:

(1) in the case of a practitioner whose office is located in the United States, in the State in which the practitioner's office is situated or

(2) in the case of a practitioner having an office in a foreign country or registered under §10.6(c) in the United States or the foreign country.

(b) No funds belonging to the practitioner or the practitioner's firm shall be deposited in the bank accounts required by paragraph (a) of this section except as follows:

(1) Funds reasonably sufficient to pay bank charges may be deposited therein.

(2) Funds belonging in part to a client and in part presently or potentially to the practitioner or the practitioner's firm must be deposited therein, but the portion belonging to the practitioner or the practitioner's firm may be withdrawn when due unless the right of the practitioner or the practitioner's firm to receive it is disputed by the client, in which event the disputed portion shall not be withdrawn until the dispute is finally resolved.

(c) A practitioner shall:

(1) Promptly notify a client of the receipt of the client's funds, securities, or other properties.

(2) Identify and label securities and properties of a cli-

ent promptly upon receipt and place them in a safe deposit box or other place of safekeeping as soon as practicable.

(3) Maintain complete records of all funds, securities, and other properties of a client coming into the possession of the practitioner and render appropriate accounts to the client regarding the funds, securities, or other properties.

(4) Promptly pay or deliver to the client as requested by a client the funds, securities, or other properties in the possession of the practitioner which the client is entitled to receive.

Disciplinary Proceedings

§10.130 Reprimand, suspension or exclusion

(a) The Commissioner may, after notice and opportunity for a hearing, (a) reprimand or (b) suspend or exclude, either generally or in any particular case, any individual, attorney, or agent shown to be incompetent or disreputable, who is guilty of gross misconduct, or who violates a Disciplinary Rule.

(b) Petitions to disqualify a practitioner in *ex parte* or *inter partes* cases in the Office are not governed by §§10.130 through 10.161 and will be handled on a case-by-case basis under such conditions as the Commissioner deems appropriate.

§10.131 Investigations

(a) The Director is authorized to investigate possible violations of Disciplinary Rules by practitioners. See §10.2(b) (2). The investigation shall be such as to determine whether there is probable cause to believe that a violation of a Disciplinary Rule by a practitioner has occurred.

(b) Practitioners shall report and reveal to the Director any knowledge or evidence required by §10.24. A practitioner shall cooperate with the Director in connection with any investigation under paragraph (a) of this section and with officials of the Office in connection with any disciplinary proceeding instituted under §10.132(b).

(c) Any non-practitioner possessing knowledge or information concerning a violation of a Disciplinary Rule by a practitioner may report the violation to the Director. The Director may require that report be presented in the form of an affidavit.

§10.132 Initiating a disciplinary proceeding; reference to an administrative law judge

(a) If after conducting an investigation under §10.131(a) the Director is of the opinion that there is probable cause to believe that a practitioner has violated a Disciplinary Rule, the Director shall, after complying where necessary with the provisions of 5 U.S.C. 558(c), call a meeting of the Committee on Discipline. The Committee on Discipline shall then determine as specified in §10.4(b) whether a disciplinary proceeding shall be instituted under paragraph (b) of this section.

(b) If the Committee on Discipline determines that probable cause exists to believe that a practitioner has violated a Disciplinary Rule, the Director shall institute a disciplinary proceeding by filing a complaint under §10.134. The complaint shall be filed in the Office of the Director. A disciplinary proceeding may result in:

(1) a reprimand or

(2) suspension or exclusion of a practitioner from practice before the Office.

(c) Upon the filing of a complaint under §10.134, the Commissioner will refer the disciplinary proceeding to an administrative law judge.

§10.133 Conference between Director and practitioner; resignation

(a) *General.* The Director may confer with a practitioner concerning possible violations by the practitioner of a Disciplinary Rule whether or not a disciplinary proceeding has been instituted.

(b) *Resignation.* A practitioner may avoid institution or conclusion of a disciplinary proceeding by resigning from practice before the Office. Any practitioner who resigns from practice before the Office after a complaint has been filed under §10.134 and who thereafter applies for reinstatement must comply with the provisions of §10.158.

(c) *Settlement.* Before or after a complaint is filed under§10.134, a settlement conference may occur between the Director and a practitioner for the purpose of settling any disciplinary matter. If an offer of settlement is made by the Director or the practitioner and is not accepted by the other, no reference to the offer of settlement or its refusal shall be admissible in evidence in the disciplinary proceeding unless both the Director and the practitioner agree in writing.

§10.134 Complaint

(a) A complaint instituting a disciplinary proceeding shall:

(1) Name the practitioner, who may then be referred to as the "respondent."

(2) Give a plain and concise description of the violations of the Disciplinary Rules by the practitioner.

(3) State the place and time for filing an answer by the respondent.

(4) State that a decision by default may be entered against the respondent if an answer is not timely filed.

(5) Be signed by the Director.

(b) A complaint will be deemed sufficient if it fairly informs the respondent of any violation of the Disciplinary Rules which form the basis for the disciplinary proceeding so that the respondent is able to adequately prepare a defense.

§10.135 Service of complaint

(a) A complaint may be served on a respondent in any of the following methods:

(1) By handing a copy of the complaint personally to the respondent, in which case the individual handing the complaint to the respondent shall file an affidavit with the Director indicating the time and place the complaint was handed to the respondent.

(2) By mailing a copy of the complaint by "Express Mail" or first-class mail to:

(i) a registered practitioner at the address for which separate notice was last received by the Committee on Enrollment or

(ii) a non-registered practitioner at the last address for the respondent known to the Director.

(3) By any method mutually agreeable to the Director and the respondent.

(b) If a complaint served by mail under paragraph (a) (2) of this section is returned by the U.S. Postal Service, the Director shall mail a second copy of the complaint to the respondent. If the second copy of the complaint is also returned by the U.S. Postal Service, the Director shall serve the respondent by publishing an appropriate notice in the *Official Gazette* for four consecutive weeks, in which case the time for answer shall be at least thirty days from the fourth publication of the notice.

(c) If a respondent is a registered practitioner, the Director may serve simultaneously with the complaint a letter under §10.11(b). The Director may require the respondent to answer the §10.11(b) letter within a period not less than 15 days. An answer to the §10.11(b) letter shall constitute proof of service. If the respondent fails to answer the §10.11(b) letter, his or her name will be removed from the register as provided by §10.11(b).

(d) If the respondent is represented by an attorney under§10.140(a), a copy of the complaint shall also be served on the attorney.

§10.136 Answer to complaint

(a) *Time for answer.* An answer to a complaint shall be filed within a time set in the complaint which shall be not less than thirty days.

(b) *With whom filed.* The answer shall be filed in writing with the administrative law judge. The time for filing an answer may be extended once for a period of no more than thirty days by the administrative law judge upon a showing of good cause provided a motion requesting an extension of time is filed within thirty days after the date the complaint is filed by the Director. A copy of the answer shall be served on the Director.

(c) *Content.* The respondent shall include in the answer a statement of the facts which constitute the grounds of defense and shall specifically admit or deny each allegation set forth in the complaint. The respondent shall not deny a material allegation in the complaint which the respondent knows to be true or state that respondent is without sufficient information to form a belief as to the truth of an allegation when in fact the respondent possesses that information. The respondent shall also state affirmatively special matters of defense.

(d) *Failure to deny allegations in complaint.* Every allegation in the complaint which is not denied by a respondent in the answer is deemed to be admitted and may be considered proven. No further evidence in respect of that allegation need be received by the administrative law judge at any hearing. Failure to timely file an answer will constitute an admission of the allegations in the complaint.

(e) *Reply by Director.* No reply to an answer is required by the Director and any new matter in the answer shall be deemed to be denied. The Director may, however, file a reply if he or she chooses or if ordered by the administrative law judge.

§10.137 Supplemental complaint

False statements in an answer may be made the basis of a supplemental complaint.

§10.138 Contested case

Upon the filing of an answer by the respondent, a disciplinary proceeding shall be regarded as a contested case within the meaning of 35 U.S.C. 24. Evidence obtained by a subpoena issued under 35 U.S.C. 24 shall not be admitted into the record or considered unless leave to proceed under 35 U.S.C. 24 was previously authorized by the administrative law judge.

§10.139 Administrative law judge; appointment; responsibilities; review of interlocutory orders; stays

(a) *Appointment.* an administrative law judge, appointed under 5 U.S.C. 3105, shall conduct disciplinary proceedings as provided by this part.

(b) *Responsibilities.* The administrative law judge shall have authority to:

(1) Administer oaths and affirmations;

(2) Make rulings upon motions and other requests;

(3) Rule upon offers of proof, receive relevant evidence, and examine witnesses;

(4) Authorize the taking of a deposition of a witness in lieu of personal appearance of the witness before the administrative law judge;

(5) Determine the time and place of any hearing and regulate its course and conduct;

(6) Hold or provide for the holding of conferences to settle or simplify the issues;

(7) Receive and consider oral or written arguments on facts of law;

(8) Adopt procedures and modify procedures from time to time as occasion requires for the orderly disposition of proceedings;

(9) Make initial decisions under §10.154; and

(10) Perform acts and take measures as necessary to promote the efficient and timely conduct of any disciplinary proceeding.

(c) *Time for making initial decision.* The administrative law judge shall set times and exercise control over a disciplinary proceeding such that an initial decision under §10.154 is normally issued within six months of the date a complaint is filed. The administrative law judge may, however, issue an initial decision more than six months after a complaint is filed if in his or her opinion there exist unusual circumstances which preclude issuance of an initial decision within six months of the filing of the complaint.

(d) *Review of interlocutory orders.* An interlocutory order of administrative law judge will not be reviewed by the Commissioner except:

(1) when the administrative law judge shall be of the opinion (i) that the interlocutory order involves a controlling question of procedure or law as to which there is a substantial ground for a difference of opinion and (ii) that an immediate decision by the Commissioner may materially advance the ultimate termination of the disciplinary proceeding or

(2) in an extraordinary situation where justice requires review.

(e) *Stays pending review of interlocutory order.* If the Director or a respondent seek review of an interlocutory order of an administrative law judge under paragraph (b) (2) of this section, any time period set for taking action by the administrative law judge shall not be stayed unless ordered by the Commissioner or the administrative law judge.

§10.140 Representative for Director or respondent

(a) A respondent may be represented before the Office in connection with an investigation or disciplinary proceeding by an attorney. The attorney shall file a written declaration that he or she is an attorney within the meaning of §10.1(c) and shall state:

(1) the address to which the attorney wants correspondence related to the investigation or disciplinary proceeding sent and

(2) a telephone number where the attorney may be reached during normal business hours.

(b) In disciplinary proceedings, the Director shall be represented as provided in §10.4(b) (2).

§10.141 Filing of papers

(a) The provisions of §1.8 of this Subchapter do not apply to disciplinary proceedings.

(b) All papers filed after the complaint and prior to entry of an initial decision by the administrative law judge shall be filed with the administrative law judge at an address or place designated by the administrative law judge. All papers filed after entry of an initial decision by the administrative law judge shall be filed with the Director. The Director shall promptly forward to the Commissioner any paper which requires action under this part by the Commissioner.

§10.142 Service of papers

(a) All papers other than a complaint shall be served on a respondent represented by an attorney by:

(1) delivering a copy of the paper to the office of the attorney;

(2) mailing a copy of the paper by first-class mail or "Express Mail" to the attorney at the address provided by the attorney under §10.140(a) (1);

(3) any other method mutually agreeable to the attorney and a representative for the Director.

(b) All papers other than a complaint shall be served on a respondent who is not represented by an attorney by:

(1) delivering a copy of the paper to the respondent; or

(2) mailing a copy of the paper by first-class mail or "Express Mail" to the respondent at the address to which a complaint may be served or such other address as may be designated in writing by the respondent; or

(3) any other method mutually agreeable to the respondent and a representative of the Director.

(c) A respondent shall serve on the representative for the Director one copy of each paper filed with the administrative law judge or the Director. A paper may be served on the representative for the Director by:

(1) delivering a copy of the paper to the representative;

(2) mailing a copy of the paper by first-class mail or "Express Mail" to an address designated in writing by the representative; or

(3) any other method mutually agreeable to the respondent and the representative.

(d) Each paper filed in a disciplinary proceeding shall contain therein a certificate of service indicating:

(1) the date on which service was made and

(2) the method by which service was made.

(e) The administrative law judge or the Commissioner may require that a paper be served by hand or by "Express Mail."

(f) Service by mail is completed when the paper mailed in the United States is placed into the custody of the U. S. Postal Service.

§10.143 Motions

Motions may be filed with the administrative law judge. The administrative law judge will determine on a case-by-case basis the time period for response to a motion and whether replies to responses will be authorized. No motion shall be filed with the administrative law judge unless such motion is supported by a written statement by the moving party that the moving party or attorney for the moving party has conferred with the opposing party or attorney for the opposing party in an effort in good faith to resolve by agreement the issues raised by the motion and has been unable to reach agreement. If issues raised by a motion are resolved by the parties prior to a decision on the motion by the administrative law judge, the parties shall promptly notify the administrative law judge.

§10.144 Hearings

(a) The administrative law judge shall preside at hearings in disciplinary proceedings. Hearings will be stenographically recorded and transcribed and the testimony of witnesses will be received under oath or affirmation. The administrative law judge shall conduct hearings in accordance with 5 U.S.C. 556. A copy of the transcript of the hearing shall become part of the record. A copy of the transcript shall be provided to the Director and the respondent at the expense of the Office.

(b) If the respondent to a disciplinary proceeding fails to appear at the hearing after a notice of hearing has been given by the administrative law judge, the administrative law judge may deem the respondent to have waived the right to a hearing and may proceed with the hearing in the absence of the respondent.

(c) A hearing in a disciplinary proceeding will not be open to the public except that the Director may grant a request by a respondent to open his or her hearing to the public and make the record of the disciplinary proceeding available for public inspection, *provided* agreement is reached in advance to exclude from public disclosure information which is privileged or confidential under applicable laws or regulations. If a disciplinary proceeding results in disciplinary action against a practitioner, the record of the entire disciplinary proceeding will be available for public inspection.

§10.145 Proof; variance; amendment of pleadings

In case of a variance between the evidence and the allegations in a complaint, answer, or reply, if any, the administrative law judge may order or authorize amendment of the complaint, answer, or reply to conform to the evidence. Any party who would otherwise be prejudiced by the amendment will be given reasonable opportunity to meet the allegations in the complaint, answer, or reply, as amended, and the administrative law judge shall make findings on any issue presented by the complaint, answer, or reply as amended.

§§10.146–10.149 [reserved]

§10.150 Evidence

(a) *Rules of evidence.* The rules of evidence prevailing in courts of law and equity are not controlling in hearings in disciplinary proceedings. However, the Administrative Law Judge shall exclude evidence which is irrelevant, immaterial, or unduly repetitious.

(b) *Depositions.* Depositions of witnesses taken pursuant to §10.151 may be admitted as evidence.

(c) *Government documents.* Official documents, records, and papers of the Office are admissible without extrinsic evidence of authenticity. These documents, records and papers may be evidenced by a copy certified as correct by an employee of the Office.

(d) *Exhibits.* If any document, record, or other paper is introduced in evidence as an exhibit, the administrative law judge may authorize the withdrawal of the exhibit subject to any conditions the administrative law judge deems appropriate.

(e) *Objections.* Objections to evidence will be in short form, stating the grounds of objection and the record may not include arguments thereon, except as ordered by the administrative law judge. Rulings on objections will be a part of the record. No exception to the ruling is necessary to preserve the rights of the parties.

§10.151 Depositions

(a) Depositions for use at the hearing in lieu of personal appearance of a witness before the administrative law judge may be taken by respondent or the Director upon a showing of good cause and with the approval of, and under such conditions as may be deemed appropriate by, the administrative law judge. Depositions may be taken upon oral or written questions, upon not less than ten days written notice to the other party, before any officer authorized to administer an oath or affirmation in the place where the deposition is to be taken. The requirement of ten days notice may be waived by the parties and depositions may then be taken of a witness and at a time and place mutually agreed to by the parties. When a deposition is taken upon written questions, copies of the written questions will be served upon the other party with the notice and copies of any written cross-questions will be served by hand or "Express Mail" within five days of the date of the taking of the deposition unless the parties mutually agree otherwise. A party on whose behalf a deposition is taken shall file a copy of a transcript of the deposition signed by a court reporter with the administrative law judge and shall serve one copy upon the opposing party. Expenses for a court reporter and preparing, serving, and filing depositions shall be borne by the party at whose instance the disposition is taken.

(b) When the Director and the respondent agree in writing, a deposition of any witness who will appear voluntarily may be taken under such terms and conditions as may be mutually agreeable to the Director and the respondent. The deposition shall not be filed with the administrative law judge and may not be admitted in evidence before the administrative law judge unless he or she orders the deposition admitted in evidence. The admissibility of the deposition shall lie within the discretion of the administrative law judge who may reject the deposition on any reasonable basis including the fact that demeanor is involved and that the witness should have been called to appear personally before the administrative law judge.

§10.152 Discovery

Discovery shall not be authorized except as follows:

(a) The administrative law judge may require parties to file and serve, prior to any hearing, a pre-hearing statement which contains

(1) A list (together with a copy) of all proposed exhibits to be used in connection with a party's case-in-chief,

(2) a list of proposed witnesses,

(3) the identity of government employees who have investigated the case and,

(4) copies of memoranda reflecting respondent's own statements to administrative representatives;

(b) After a witness testifies for a party, if the opposing party requests, the party may be required to produce, prior to cross-examination, any written statement made by the witness.

§10.153 Proposed findings and conclusions; post hearing memorandum

Except in cases when the respondent has failed to answer the complaint, the administrative law judge, prior to making an initial decision, shall afford the parties a reasonable opportunity to submit proposed findings and conclusions and a post-hearing memorandum in support of the proposed findings and conclusions.

§10.154 Initial decision of administrative law judge

(a) The administrative law judge shall make an initial decision in the case. The decision will include (a) a statement of findings and conclusions, as well as the reasons or basis therefor with appropriate references to the record, upon all the material issues of fact, law, or discretion presented on the record, and (b) an order of suspension or exclusion from practice, an order of reprimand, or an order dismissing the complaint. The administrative law judge shall file the decision with the Director and shall transmit a copy to the representative of the Director and respondent or the respondent's attorney of record. In the absence of an appeal to the Commissioner, the decision of the administrative law judge will, without further proceedings, become the decision of the Commissioner of Patents and Trademarks thirty (30) days from the date of the decision of the administrative law judge.

(b) The initial decision of the administrative law judge shall explain the reason for any penalty of suspension or exclusion. In determining any penalty, the following should normally be considered:

(1) the public interest;

(2) the seriousness of the violation of the Disciplinary Rule;

(3) the deterrent effects deemed necessary; and

(4) the integrity of the legal profession.

§10.155 Appeal to the Commissioner

(a) Within thirty (30) days from the date of the initial decision of the administrative law judge under §10.154, either party may appeal to the Commissioner. An appeal by the respondent will be filed with the Director in duplicate and will include expectations to the decisions of the administrative law judge and supporting reasons for those exceptions. If the Director files the appeal, the Director shall serve a copy of the appeal on the respondent. Within thirty (30) days after receipt of an appeal or copy thereof, the other party may file a reply brief in duplicate with the Director. If the Director files the reply brief, the Director shall serve a copy of the reply brief on the respondent. Upon the filing of an appeal and a reply brief, if any, the Director shall transmit the entire record to the Commissioner.

(b) The appeal will be decided by the Commissioner on the record made before the administrative law judge.

§10.156 Decision of the Commissioner

(a) An appeal from an initial decision of the adminstrative law judge shall be decided by the Commissioner. The Commissioner may affirm, reverse, or modify the initial decision or remand the matter to the administrative law judge for such further proceedings as the Commissioner may deem appropriate. Entry of a decision by the Commissioner is a final agency action in a disciplinary proceeding. In making a final decision, the Commissioner shall review the record or those portions of the record as may be cited by the parties in order to limit the issues. The Commissioner shall transmit a copy of the final decision to the Director. The Director shall transmit a copy of the Commissioner's final decision to respondent.

(b) A final decision of the Commissioner may dismiss a disciplinary proceeding, reprimand a practitioner, or may suspend or exclude the practitioner from practice before the Office.

§10.157 Review of Commissioner's final decision

Review of the Commissioner's final decision in a disciplinary case may be had by a petition filed in the United States District Court for the District of Columbia. See 35 U.S.C. 32 and Local Rule 1-16 of the United States District Court for the District of Columbia.

§10.158 Suspended or excluded practitioner

(a) A practitioner who is suspended or excluded from practice before the Office under §10.156(b) shall not engage in unauthorized practice of patent, trademark and other non-patent law before the Office.

(b) Unless otherwise ordered by the Commissioner, any practitioner who is suspended or excluded from practice before the Office under §10.156 (b) shall:

(1) Within 30 days of entry of the order of suspension or exclusion, notify all clients of the practitioner or the practitioner's firm in separate written communications of the suspension or exclusion and shall file a copy of each written communication with the Director.

(2) Within 30 days of entry of the order of suspension or exclusion, surrender a client's active case files to (i) the client or (ii) another practitioner designated by the client.

(3) Not hold himself or herself out as authorized to practice law before the Office.

(4) Promptly take any necessary and appropriate steps to remove from any telephone, legal, or other directory any advertisement, statement, or representation which would reasonably suggest that the practitioner is authorized to practice patent, trademark or other non-patent law before the Office and, within 30 days of taking those steps, file with the Director an affidavit describing the precise nature of the steps taken.

(5) Not advertise the practitioner's availability or ability to perform or render legal services for any person having immediate, prospective, or pending business before the Office.

(6) Not render legal advice or services to any person having immediate, prospective, or pending business before the Office as to that business.

(7) Promptly take steps to change any sign identifying a practitioner's or the practitioner's firm's office and the practitioner's or the practitioner's firm's stationery to delete therefrom any advertisement, statement, or representation which would reasonably suggest that the practitioner is authorized to practice law before the Office.

(8) Within 30 days, return to any client any unearned funds, including any unearned retainer fee, and any securities and property of the client.

(c) A practitioner who is suspended or excluded from practice before the Office and who aides another practitioner in any way in the other practitioner's practice of law before the Office, may, under the direct supervision of the other practitioner, act as a para-legal for the other practitioner or perform other services for the other practitioner which are normally performed by lay-persons, *provided*: (1) the practitioner who is suspended or excluded is (i) a salaried employee of the other practitioner or the other practitioner's law firm and (ii) does not share profits with the other practitioner or the other practitioner's law firm; (2) the other practitioner assumes full professional responsibility to any client and the Office for any work performed by the suspended or excluded practitioner for the other practitioner; (3) the suspended or excluded practitioner, in connection with any immediate, prospective, or pending business before the Office, does not (i) communicate directly in writing, orally, or otherwise with a client of the other practitioner, (ii) render any legal advice, or any legal services, to a client of the other practitioner, or (ii) meet in person or in the presence of the other practitioner, with any client of the other practitioner or the other practitioner's law firm or any witness or potential witness which the other practitioner or the other practitioner's law firm may or intends to call as a witness in any proceeding before the Office. The term "witness" includes individuals who will testify orally in a proceeding before, or sign an affidavit or any other document to be filed in, the Office.

(d) When a suspended or excluded practitioner acts as a para-legal or performs services under paragraph (c) of this section, the suspended or excluded practitioner shall not thereafter be reinstated to practice before the Office unless:

(1) the suspended or excluded practitioner shall have filed with the Director an affidavit which (i) explains in detail the precise nature of all para-legal or other services performed by the suspended or excluded practitioner and (ii) shows by clear and convincing evidence that the suspended or excluded practitioner has complied with the provisions of this section and all Disciplinary Rules and

(2) the other practitioner shall have filed with the Director a written statement which (i) shows that the other

practitioner has read the affidavit required by subparagraph (d) (1) of this section and that the other practitioner believes every statement in the affidavit to be true and (ii) states why the other practitioner believes that the suspended or excluded practitioner has complied with paragraph (c) of this section.

10.159 Notice of suspension or exclusion

(a) Upon issuance of a final decision reprimanding a practitioner or suspending or excluding a practitioner from practice before the Office, the Director shall give notice of the final decision to appropriate employees of the Office and to interested departments, agencies, and courts of the United States. The Director shall also give notice to appropriate authorities of any State in which a practitioner is known to be a member of the bar.

(b) The Director shall cause to be published in the *Official Gazette* the name of any practitioner suspended or excluded from practice. Unless otherwise ordered by the Commissioner, the Director shall publish in the *Official Gazette* the name of the practitioner reprimanded by the Commissioner.

(c) The Director shall maintain records, which shall be available for public inspection, of every disciplinary proceeding where a practitioner is reprimanded, suspended, or excluded unless the Commissioner orders that the proceedings be kept confidential.

10.160 Petition for reinstatement

(a) A petition for reinstatement of a practitioner suspended for a period of less than five years will not be considered until the period of suspension has passed.

(b) A petition for reinstatement of a practitioner excluded from practice will not be considered until five years after the effective date of the exclusion.

(c) A practitioner who has been suspended or excluded may file a petition for reinstatement. The Director may grant a petition for reinstatement if the Director is satisfied that the suspended or excluded practitioner will conduct himself or herself in accordance with the regulations of this part and that granting a petition for reinstatement is not contrary to the public interest. As a condition to reinstatement, the Director may require a practitioner to

(1) meet the requirements of §10.7, including taking and passing an examination under §10.7(b) and

(2) pay all or a portion of the costs and expenses, not to exceed $1,500, of the disciplinary proceeding which lead to suspension or exclusion.

(d) Any suspended or excluded practitioner who has violated the provisions of §10.158 during his or her period of suspension or exclusion shall not be entitled to reinstatement until such time as the Director is satisfied that a period of suspension equal in time to that ordered by the Commissioner or exclusion for five years has passed during which the suspended or excluded practitioner has complied with the provisions of §10.158.

(e) Proceedings on any petition for reinstatement shall be open to the public. Before reinstating any suspended or excluded practitioner, the Director shall publish in the *Official Gazette* a notice of the suspended or excluded practitioner's petition for reinstatement and shall permit the public a reasonable opportunity to comment or submit evidence with respect to the petition for reinstatement.

§10.161 Savings clause

(a) A disciplinary proceeding based on conduct engaged in prior to the effective date of these regulations may be instituted subsequent to such effective date, if such conduct would continue to justify suspension or exclusion under the provisions of this part.

(b) No practitioner shall be subject to a disciplinary proceeding under this part based on conduct engaged in before the effective date hereof if such conduct would not have been subject to disciplinary action before such effective date.

DONALD J. QUIGG
Mar. 8, 1984. *Deputy Commissioner of*
Patents and Trademarks

PATENT NOTICES

Certificates of Correction for the Week of Apr. 10, 1984

PP. 5,167
D. 270,884
4,245,865
4,261,172
4,307,143
4,321,028
4,335,754
4,339,990
4,346,195
4,349,509
4,350,777
4,355,512
4,371,286
4,386,073
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4,406,754
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4,423,247
4,423,310
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4,425,955
4,425,956
4,426,917
4,427,079
4,427,642
4,427,720
4,427,742
4,427,781
4,428,075

Disclaimers

3,430,731.—*Gebhard Satzinger,* Bad Kissingen, Germany. LUBRICATOR. Patent dated Mar. 4, 1969. Disclaimer filed Feb. 2, 1984, by the assignee, *Gebhard Satzinger Metallwarenfabrik,* Bad Kissingen, Germany.

Hereby enters this disclaimer to all claims of said patent.

3,437,747.—*Edward E. Sheldon,* New York, N.Y. DEVICES FOR INSPECTION USING FIBEROPTIC MEMBERS. Patent dated Apr. 8, 1969. Disclaimer filed Feb. 2, 1984, by the *inventor.*

The term of this patent subsequent to Nov. 15, 1983 has been disclaimed.

3,842,939.—*Roland Satzinger,* Euerdorf, Germany. GREASE BOX FOR DISPENSING LUBRICANT. Patent dated Oct. 22, 1974. Disclaimer filed Feb. 2, 1984, by the assignee, *Gebhard Satzinger Metallwarenfabrik,* Bad Kissingen, Germany.

Hereby enters this disclaimer to claims 1 and 4–6 of said patent.

4,255,612.—*Michael A. Grundfest,* Forest Hills, N.Y. INSULATOR FOR COVERING ELECTRIC CABLES. Patent dated Mar. 10, 1981. Disclaimer filed Aug. 5, 1983, by the assignee, *Thomas & Betts Corp.*

Hereby enters this disclaimer to claims 1 through 34 and 38 through 40 of said patent.

4,391,866.—*Robert C. Pickens, Jr.,* Gurnee; *Reese R. Thomas,* Libertyville and *Ronald Somerville,* Gurnee, all of Ill. CUT PILE FABRIC WITH TEXTURIZED LOOPS. Patent dated July 5, 1983. Disclaimer filed Feb. 4, 1984, by the assignee, *Ozite Corp.*

The term of this patent subsequent to June 21, 2000 has been disclaimed.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7140
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis—Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 704-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390, Ext. 391
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
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Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF March 3, 1984

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-28-82
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	5-12-76
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	1-05-83
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	7-26-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-16-76
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	3-22-82
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	6-01-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	7-06-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	6-18-82
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	9-30-80
DESIGN, GROUP 290—KENNETH L. CAGE, Director Industrial Arts; Household, Personal and Fine Arts.	1-14-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	3-16-82
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—STEPHEN G. KUNIN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	6-30-82
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	11-04-76
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-20-81
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	7-23-81

Expiration of patents: The patents within the range of numbers indicated below expire during March 1984, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 3,307,200 to 3,311,920, inclusive
Plant Patents	Numbers 2,723 to 2,729 inclusive

REISSUES

APRIL 10, 1984

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,549

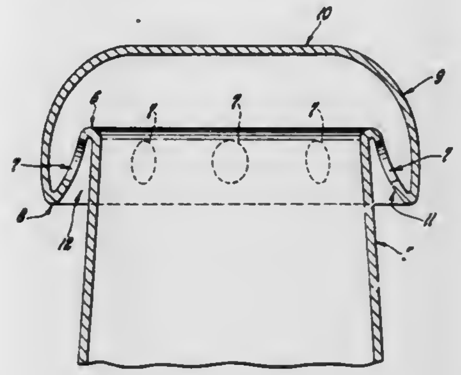
ONE-PIECE ROOF VENT DEVICE AND METHODS OF CONSTRUCTING AND UTILIZING SAME

James W. Ballard, Livonia, and Larry R. Ballard, Redford Township, Marquette County, both of Mich., assignors to Charles Bonnici, Mich.

Original No. 42,145,136, dated Jul. 29, 1980, Ser. No. 968,192, Dec. 11, 1978. Application for reissue Oct. 3, 1980, Ser. No. 193,711

Int. Cl.³ F24F *13/08*

U.S. Cl. 98—42 R **12 Claims**



9. A one-piece ventilation apparatus, comprising:
a substantially horizontal flat annular base portion;
a substantially hollow, substantially vertically elongated portion extending integrally upwardly from said annular base portion;
said substantially hollow elongated portion having a generally circular cross-sectional shape which decreases in diameter upwardly along at least a portion of the length of said hollow elongated portion;
a first bend portion extending integrally radially outwardly and downwardly from the upper end of said hollow portion;
a vent-hole portion formed integrally with said first bend portion;
a second bend portion extending integrally radially outwardly from said vent-hole portion;
an arcuate cap side portion extending integrally upwardly from said second bend portion;
a substantially horizontal cap top portion extending integrally above said arcuate cap side portion;
said vent-hole portion having a plurality of vent holes provided therein; and
said apparatus being entirely integrally and unitarily formed from a single piece of deformable material.

Re. 31,550

N-(2-CHLORO-4-PYRIDYL) UREAS

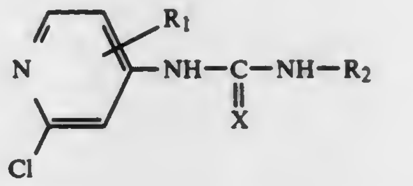
Koichi Shudo, 2000-10-2-116, Kosugayacho, Totsukaku, Yokohamashi, Kanagawa; Toshihiko Okamoto, 1-7-21, Shinoharakita, Kohokuku, Yokohamashi, Kanagawa; Yo Isogai, 1-1-2-609, Kamiyoga, Setagayaku, Tokyo, and Soshiro Takahashi, 904-10, Oaza, Kamiokubo, Urawashi, Saitama, all of Japan, assignors to Koichi Shudo; Toshihiko Okamoto, both of Yokohama; Yo Isogai, Tokyo and Soshiro Takahashi, Saitama, all of, Japan

Original No. 4,193,788, dated Mar. 18, 1980, Ser. No. 947,468, Oct. 2, 1978. Application for reissue Sep. 25, 1981, Ser. No. 305,768

Int. Cl.³ A01N *9/22;* **C07D** *401/12, 213/46, 213/52*

U.S. Cl. 71—94 **17 Claims**

1. A compound selected from the group consisting of N-(2-chloro-4-pyridyl)ureas of the following formula



wherein R_1 represents hydrogen or alkyl of from 1 to 3 carbon atoms, inclusive; R_2 represents aryl selected from the group consisting of phenyl, which may be substituted by alkyl of from 1 to 3carbon atoms, inclusive; alkoxy; of from 1 to 3 carbon atoms, inclusive; or halogen; and X stands for oxygen or sulfur; and acid addition salts thereof.

Re. 31,551

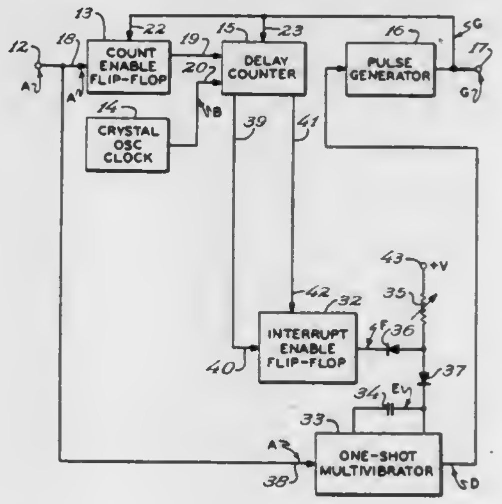
DIGITAL DELAY GENERATOR

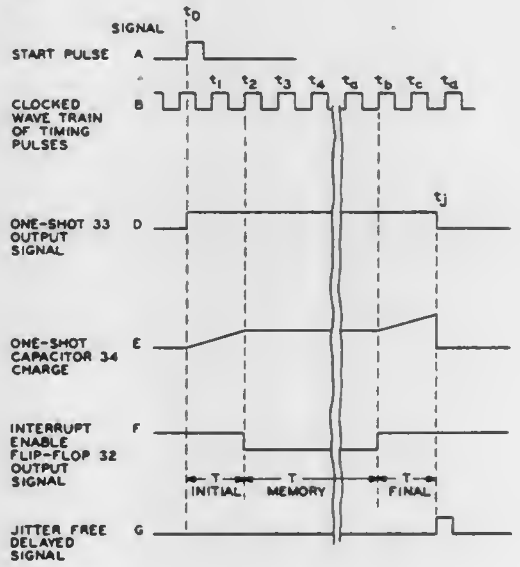
Merlin D. Bjorke, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Original No. 4,260,912, dated Apr. 7, 1981, Ser. No. 968,535, Dec. 11, 1978. Application for reissue Dec. 30, 1981, Ser. No. 336,009

Int. Cl.³ H03K *17/296, 17/28, 5/05*

U.S. Cl. 307—597 **19 Claims**





1. A digital delay generator for generating a virtually jitter free delay relative to a start pulse and for generating such a delay over any practicable multiple of the time interval be-

tween timing pulses, such multiple including a non-integer, comprising:

delay means responsive to the start pulse and to the timing pulses for generating first and second signal edges, the second signal edge occurring later in time than the first signal edge, both signal edges occurring following the start pulse and in timed relation to the timing pulses; and

signal generating means connected to the delay means and having an output for generating an output signal which includes a timing cycle of a fixed known duration, the signal generating means [being] *comprising means* responsive to (*1*) the start pulse for initiating the timing cycle *in timed relation to the start pulse,* (*2*) the first signal edge for interrupting the timing cycle [for an indefinite period] *to initiate a hold thereon,* and (*3*) the second signal edge for reestablishing the timing cycle and permitting the timing cycle to continue, [the output signal] *the signal generating means further comprising means for* beginning *the output signal* in timed relation to the [start pulse] *beginning of the timing cycle* and *for* terminating *the output signal* in timed relation to the end of the timing cycle following interruption, so that a virtually jitter free delay with respect to the start pulse is generated.

Re. 31,552

ELECTRON BEAM AND DEFLECTION YOKE ALIGNMENT FOR PRODUCING CONVERGENCE OF PLURAL IN-LINE BEAMS

Robert L. Barbin, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Original No. 3,789,258, dated Jan. 29, 1974, Ser. No. 245,862, Apr. 20, 1972. Application for reissue Dec. 19, 1980, Ser. No. 218,367

Claims priority, application United Kingdom, Jan. 14, 1972, 01779/72

Int. Cl.³ H01J *29/50*

U.S. Cl. 315—13 C **9 Claims**

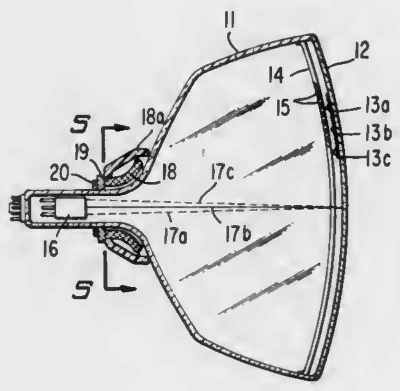
1. A method of mounting a beam deflection yoke relative to a color picture tube comprising an envelope containing a color phosphor screen, an electron gun assembly for projecting a plurality of electron beams toward said screen and a deflection region for said beams, said method comprising:

supporting said tube in a predetermined position;

temporarily supporting said deflection yoke loosely assembled around said picture tube adjacent said deflection region;

operating said tube and yoke to project said beams toward said screen and to scan said beams in separate rasters on said screen, and simultaneously adjusting the transverse position of said yoke relative to said picture tube while maintaining [substantial] parallelism of the longitudinal axes of said yoke and picture tube to achieve substantial convergence of said beams and coincidence of said rasters on said screen *without the use of dynamic convergence correction means*; and

fixedly attaching said yoke to said picture tube in said adjusted position.



PLANT PATENTS

GRANTED APRIL 10, 1984

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,216

MINIATURE CARNATION

Angelo J. Siri, San Francisco, Calif., assignor to Siri Brothers Nursery, Inc., East Palo Alto, Calif.

Filed Jul. 12, 1982, Ser. No. 397,113

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—70 **1 Claim**

1. A new and distinct variety of miniature carnation plant, substantially as herein shown and described.

5,217

MINIATURE CARNATION

Angelo J. Siri, San Francisco, Calif., assignor to Siri Brothers Nursery, Inc., East Palo Alto, Calif.

Filed Jul. 12, 1982, Ser. No. 397,115

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—70 **1 Claim**

1. A new and distinct variety of miniature carnation plant, substantially as herein shown and described.

5,218

MINIATURE CARNATION

Angelo J. Siri, San Francisco, Calif., assignor to Siri Brothers Nursery, Inc., East Palo Alto, Calif.

Filed Jul. 12, 1982, Ser. No. 397,116

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—70 **1 Claim**

1. A new and distinct variety of miniature carnation plant, substantially as herein shown and described.

PATENTS

GRANTED APR. 10, 1984

ERRATA

For CLASS	See PATENT NO.
292–336	4,441,236
604–415	4,441,538
222–324	4,441,629
417–282	4,441,872
502–150	4,442,022
502–222	4,442,023
502–334	4,442,024
346–208	4,442,176
204–159	4,442,302

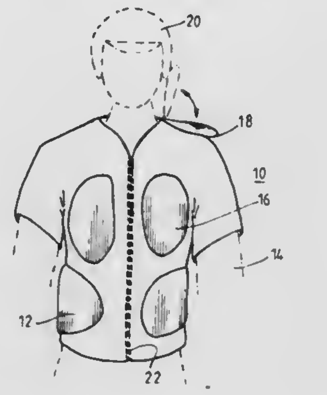
PATENTS

GRANTED APRIL 10, 1984

GENERAL AND MECHANICAL

4,441,211
PROTECTIVE BATTING JACKET

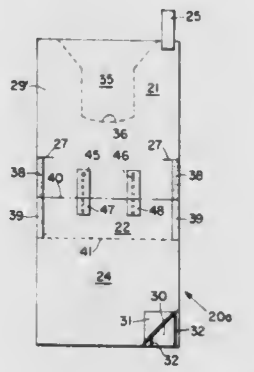
Byron A. Donzis, Houston, Tex., assignor to Houston Protective Equipment, Inc., Houston, Tex.
Continuation-in-part of Ser. No. 478,681, Mar. 25, 1983, which is a continuation-in-part of Ser. No. 357,588, Mar. 12, 1982, abandoned. This application Jul. 11, 1983, Ser. No. 512,238
Int. Cl.^{3} A41D *13/00*
U.S. Cl. 2—2 **12 Claims**



1. A garment adapted to be worn by a person such as a batter to protect said person from infliction of an externally applied force occasioned by a pitched ball or the like, said garment comprising:
jacket structure adapted to be worn by said person, said jacket structure including:
a collar region adapted to be disposed proximate the collar bone of said person;
a shoulder region adapted to be disposed adjacent a shoulder of said person; and
at least one shock absorbing structure selectively positioned to be adjacent at least one predetermined body location of said person, said at least one shock absorbing structure including:
a neck protector pad depending from said jacket structure proximate said collar region, said neck protector pad being selectively positionable in a first position proximate the shoulder region of said jacket structure, and in a second position angled approximately ninety degrees from said first position wherein said neck protector pad is adapted to protect the neck of said person;
wherein at least one of said shock absorbing structures comprises:
a flexible enclosure having first and second faces and a periphery defining a chamber, said first and second faces being air impermeable and said periphery having at least one air impermeable region and at least one air permeable region such that said chamber is in continuous fluid communication with the atmosphere outside the shock absorbing structure;
a flexible open-celled foam portion having first and second faces disposed adjacent to and bonded at least in part to said first and second faces, respectively, of the flexible enclosure, and having a periphery disposed adjacent said periphery of the flexible enclosure, the cells of said foam portion releasably holding a volume of air selectively varied between first and second volumes differing by a volume differential in response to application and removal of the force on the shock absorbing structure, said volume differential being transferred between the foam portion and the atmosphere outside the shock absorbing structure through said at least one air permeable region of the periphery of the flexible enclosure; and
shield structure disposed adjacent one of said first and second faces of the foam portion to distribute the applied force across at least a portion of said one face.

4,441,212
BIB

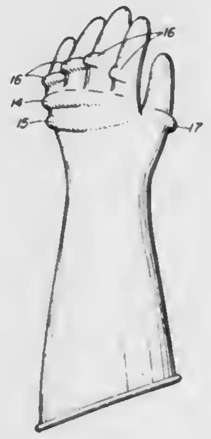
Nicholas A. Ahr, and David M. Moret, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Sep. 30, 1982, Ser. No. 431,897
Int. Cl.^{3} A41B *13/10;* **A41D** *13/04*
U.S. Cl. 2—49 R **9 Claims**



1. A bib comprising a top panel, a substantially full-width pocket panel disposed at the bottom end of said top panel, an apron panel which extends downward below said pocket panel, and means for securing said bib on a user, said pocket panel having a transverse upper edge, and the upper edge of said apron panel being secured to said transverse upper edge so that said apron panel pendulously depends from said transverse upper edge of said pocket, said top panel being cut adjacent each of the top corners of said pocket to promote gravitational opening of said pocket when said bib is applied to a wearer thereof.

4,441,213
FLEXIBLE TEAR RESISTANT PROTECTIVE GLOVE FOR USE ON HIGH VOLTAGE SYSTEMS

William P. Trumble, Kanata; Ivan E. Martin, and Clement E. Berthiaume, both of Ottawa, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada
Filed Jun. 7, 1982, Ser. No. 385,431
Int. Cl.^{3} A41D *19/00*
U.S. Cl. 2—161 R **6 Claims**



1. A seamless, flexible, tear resistant protective glove comprising:
an inner layer of natural rubber of a thickness of at least about 0.040 inches;

an outer layer of a urethane elastomer bonded to said inner layer and of a thickness of at least about 0.003 inches;

a plurality of bulges extending laterally across the back of the glove, said bulges defined by seamless extensions of said layers from the normal contour of the glove and molded integrally therewith, the glove having a back portion, fingers and thumb;

said bulges comprising; a first bulge extending transversely across the back portion of the glove at a position substantially aligned with the junction of metacarpal bones and phalanges of a user;

a second bulge extending transversely across the back portion of the glove, spaced from and substantially parallel to said first bulge at a position substantially overlying the upper part of the metacarpus of the user;

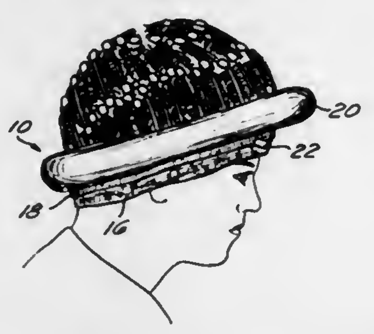
an individual bulge across the back of each finger and positioned at the first joint from the metacarpus;

a bulge extending across the back of the thumb and positioned at the second joint from the thumb tip;

said bulges extending to be flush with the sides of the back portion of the glove and the sides of the fingers and thumb respectively, and including a transition portion at each end of each bulge.

4,441,214
PROTECTIVE HEAD SHIELD

Linda B. Werner, and William A. Werner, both of Salem, Oreg., assignors to Custom Stamping Mfg. Co., Portland, Oreg.
Filed Sep. 28, 1982, Ser. No. 425,560
Int. Cl.^{3} A42B *1/18*
U.S. Cl. 2—174 **1 Claim**



1. A head shield for protection of the face and clothing during application of hair treatment liquid comprising;

a multiple-ply strip of moisture absorbent fabric having an extended length substantially greater than the distance around the head of the user;

a flexible non-permeable sheet having one edge thereof longer than the distance around the users head but substantially shorter than the extended length of the absorbent fabric;

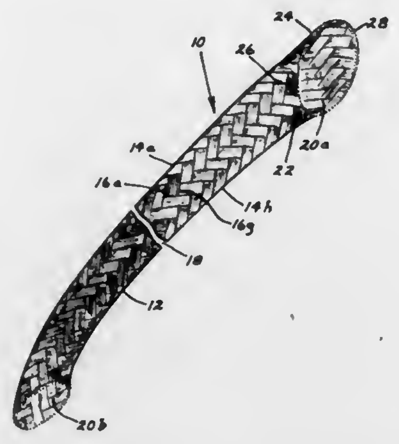
an elastic band expansible to substantially the length of the aforesaid one edge of said non-permeable sheet;

means securing the absorbent fabric and the elastic band to said non-permeable sheet along said one edge thereof to form along said one edge a highly puckered expansible band of said absorbent fabric, said one edge of said non-permeable sheet being normally in puckered configuration and being expansible by stretching the elastic strip secured thereto to extend around the head of the user; and

means for securing the respective ends of said one edge together thereby fixing the puckered absorbent fabric around and against the user's head and permitting the non-permeable sheet to drape down over the face and clothing of the user or to be wrapped upwardly about the hair of the user, the puckered absorbent fabric around and against the user's head effectively absorbing excess hair treating liquid during use.

4,441,215
VASCULAR GRAFT

Robert L. Kaster, 2730 Vagabond La., Plymouth, Minn. 55447
Continuation of Ser. No. 207,678, Nov. 17, 1980, abandoned. This application Feb. 23, 1983, Ser. No. 469,174
Int. Cl.^{3} A61F *1/00, 1/24*
U.S. Cl. 3—1.4 **9 Claims**



1. Non-corrugated vascular graft implantable prosthesis comprising:

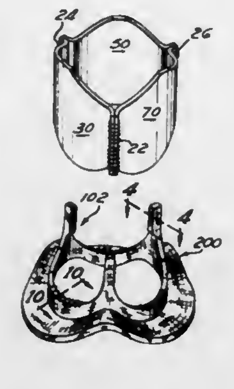
a. tubular member including an inner layer comprising a plurality of filament arrays, each said filament array including at least three filaments that are disposed as a group substantially parallel and coplanar with respect to one another, and a compliant outer covering of material, said plurality of filament arrays being braided together to form a non-corrugated inner braided tube;

b. inflow and outflow orifices at each end of said tubular member; and,

c. means securing said filaments at said orifices to adjacent filaments and filament ends whereby said tubular member provides a flexible vascular graft thereby providing for passage of blood through said vascular graft.

4,441,216
TISSUE HEART VALVE AND STENT

Marian I. Ionescu, Leeds, England; Jay A. Lenker, Laguna Beach, and Robert F. Rosenbluth, Laguna Niguel, both of Calif., assignors to Shiley, Inc., Irvine, Calif.
Filed Dec. 3, 1981, Ser. No. 327,081
Claims priority, application European Pat. Off., Oct. 29, 1981, 81305122.4
Int. Cl.^{3} A61F *1/22*
U.S. Cl. 3—1.5 **17 Claims**



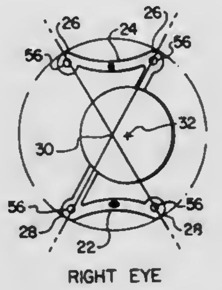
1. A stent for a tissue heart valve having tissue cusps and coaptation stitches, said stent for reducing stress in the tissue of the cusps comprising:

a ring with scallops formed therein defining an aperture with inflow and outflow ends; and

a plurality of legs coupled to said ring and extending upwardly toward said outflow end each said leg dimensioned such that the radius of curvature of mobile tissue around and near the stent measured at the point of greatest curvature divided by the thickness of the tissue is greater than or equal to five at all points of contact between said tissue and said stent.

4,441,217
INTRAOCULAR LENSES

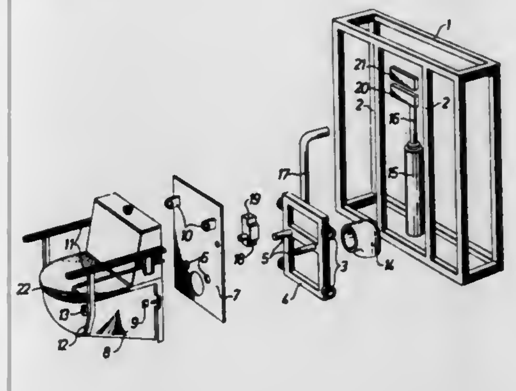
Charles H. Cozean, Jr., 937 Broadway, Cape Girardeau, Mo. 63701
Filed Dec. 21, 1981, Ser. No. 332,533
Int. Cl.^{3} A61F *1/16, 1/24*
U.S. Cl. 3—13 **9 Claims**



1. An intraocular lens structure suitable for use as an artificial lens implant which comprises a light focusing lens body and a plurality of oppositely disposed support members for supporting said intraocular lens structure upon implantation in the eye, said oppositely disposed support members terminating with a plurality of oppositely disposed contact lobes having intersecting axis lines that define the geometric center of said support members and which are adapted to contact natural regions of the eye upon implantation, to position the intersection of the axis lines which are defined by the oppositely disposed contact lobes in alignment with and corresponding to the geometric center axis of the cornea, said light focusing lens body being affixed to said support members at a position whereby the optical axis of said light focusing lens is offset from said support members geometric center and the geometric center axis of the cornea and whereby said optical axis corresponds with and is in alignment with the pupillary axis.

4,441,218
POSITION ADJUSTING DEVICE FOR SANITARY AND PLUMBING UNITS USING WATER UNDER PRESSURE

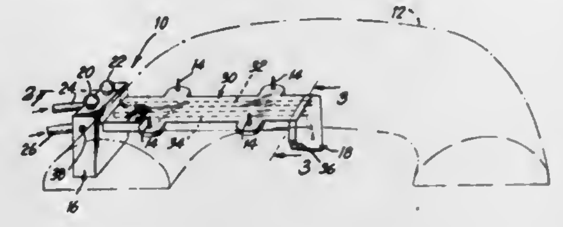
Stig H. E. Trybom, Pampusvägen 59, S-60365 Norrköping, Sweden
Continuation of Ser. No. 188,133, Sep. 17, 1980, abandoned. This application Aug. 17, 1982, Ser. No. 408,809
Claims priority, application Sweden, Sep. 18, 1979, 7907709
Int. Cl.^{3} E03D *11/00*
U.S. Cl. 4—252 R **3 Claims**



2. The device of claim 1 wherein said water pressure control means further comprises means extending from said position near the hands of the user to valve means connected to control a supply of said water.

4,441,219
LAVATORY ACCESSORY

Harry Epstein, 687 Kildare Crescent, Seaford, N.Y. 11783
Filed Jul. 26, 1982, Ser. No. 402,006
Int. Cl.^{3} A61H *35/00;* **E03D** *9/08*
U.S. Cl. 4—448 **28 Claims**



1. A lavatory accessory for use with a toilet having a seat, a bowl, and a water source, comprising:

a secondary fluid source;

a manually operable fluid valve means having a first inlet and outlet corresponding to the water source and a second inlet and outlet corresponding to said secondary fluid source;

first and second fluid conduit means connecting the water source and said secondary fluid source to the corresponding first and second inlets of said valve means;

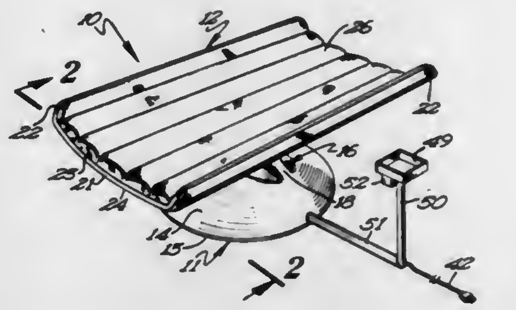
head means having a water inlet and a secondary fluid inlet both connected through internally arranged fluid passages to an outlet jet formed therein;

third and fourth conduit means connecting said first and second outlets of said valve means to the corresponding inlets of said head means; and

said fluid passages in said head means including a venturi tube between said water inlet and said outlet jet, for forming a low pressure zone thereat upon passage of water therethrough, said fluid passages further including a passage connecting said secondary fluid inlet in said head means to said venturi tube, whereby secondary fluid is drawn from said secondary fluid source, mixed with the water and expelled from said outlet jet.

4,441,220
RECREATIONAL APPARATUS

Lester W. Peterson, Lafayette, Minn. 56054
Filed Jan. 15, 1982, Ser. No. 339,484
Int. Cl.^{3} A47G *9/00*
U.S. Cl. 5—431 **6 Claims**



1. An article of furniture for supporting a user in a reclining position during sunning and being operable to permit the user to obtain an even suntan, comprising:

a base structure for engaging the ground surface;

an elongate, generally horizontal support adapted to support a user thereon in a reclining position during sunning, said support having an upper surface, a lower surface, end edges and longitudinal side edges;

pivot means interconnecting the support with said base to permit limited lateral tilting movement of said support about an axis extending longitudinally of the latter, means interconnecting the support with said base to permit longitudinal tilting movement of said support about an axis extending transversely of the latter, and means interconnecting said support with said base permitting rotation of the support relative to the base;

power means drivingly connected with the support for rotating the latter approximately two revolutions per hour whereby a user lying on said support will obtain an even tan on that surface of the user's body exposed to the sun.

4,441,221
CHILD SUPPORT WEDGE

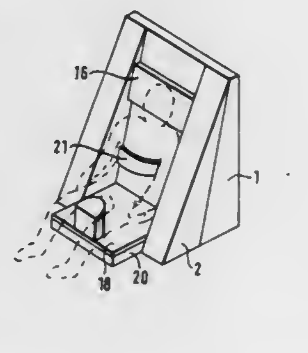
Klemens Enste, Hitchinstrasse 36, 6530 Bingen, Fed. Rep. of Germany, and Sigrun Giessmann, Rockenhausen, Fed. Rep. of Germany, assignors to Klemens Enste, Bingen, Fed. Rep. of Germany

Filed Jun. 15, 1982, Ser. No. 388,645

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1981, 3123632

Int. Cl.³ A61G *7/02*

U.S. Cl. 5—431 **15 Claims**



1. A gymnastic and support wedge for multiple and severely handicapped children of kindergarten and school age, comprising:

a wedge-like base plate member, said base plate member being rectangular and having an upper side and two longitudinal sides and having two longitudinally-extending flaps on its upper side which are each disposed along and spaced at a predetermined distance from an opposite longitudinal side of said base plate;

a pair of lateral trough wedge members mountable on said base plate member, each having a width equal to the predetermined distance of the disposition of each of said flaps from an opposite longitudinal side of said base plate;

a plurality of differently shaped individual members mountable between said trough wedge members in any desired position, wherein said individual members comprise a head wedge, two flat pillows for reducing the trough between said trough wedge members, a semi-cylindrical roll, a flat pillow having an integrated abduction wedge and a lower pillow associated therewith and two fixation belts; and

means for detachably connecting said members to one another comprising a multiplicity of stick-on and padded belts which are arrangeable such that the person using the gymnastic and support wedge comes in contact with only the partially freely-exposed padded belts.

4,441,222
AUTOMATIC BED MAKER

Peter J. Tascarella, 2526 Brookdale Ave., Roslyn, Pa. 19001

Filed Jul. 30, 1981, Ser. No. 288,614

Int. Cl.³ A47C *21/00, 21/02*

U.S. Cl. 5—488 **15 Claims**

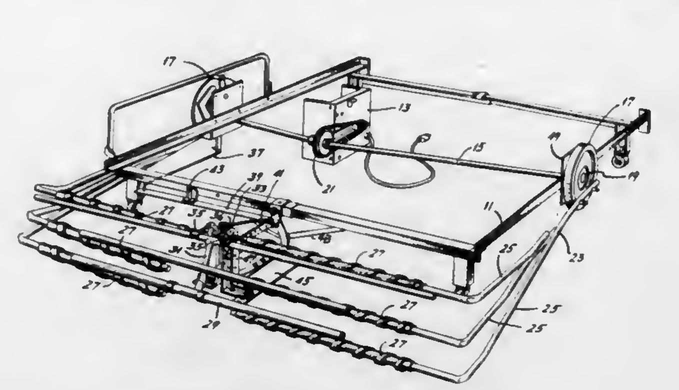
1. An automatic bed maker apparatus, comprising:

a bed frame;

at least one bed covering;

means for securing each said bed covering individually at the foot of said bed frame, said securing means being connected to said bed frame; and

means for extending each said individual bed covering up from the bottom of the bed frame while simultaneously making it smooth from the center toward the sides of said bed frame by helical screw action, said extending and making smooth means being connected to said securing means.



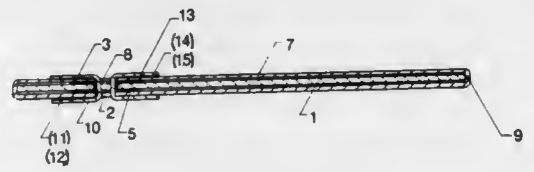
4,441,223
HEALTHFUL QUILT

Ling-Kuo Yang, No. 1, Lane 23, Hsien Cheng St., Tainan, Taiwan

Filed Mar. 30, 1982, Ser. No. 363,478

Int. Cl.³ A47G *9/02*

U.S. Cl. 5—494 **1 Claim**



1. A kind of quilt consisting of a cotton sheet and a cover wrapping around the cotton sheet; both the cotton sheet and the cover equipped with a long head hole on one end of them, of the same size and at the same location for a user's head to pass through; the cotton sheet having two bands and two buttons and two button holes sewn on the upper and under sides near the head hole; the cover having two flaps and two hooks and two eyes sewn both on the upper and under sides near the head hole; the bands, the buttons, the button holes, the flaps, the hooks, and the eyes, all serving for covering or uncovering the head hole for two ways of use.

4,441,224
METHOD OF CONTINUOUSLY TREATING A FIBROUS SUSPENSION

Oliver A. Laakso, Haralyn (West), #2 Middle Rd., Smith Parish, Bermuda 3-18

Division of Ser. No. 374,763, May 4, 1982. This application May 27, 1983, Ser. No. 498,801

Int. Cl.³ D21D *1/40*

U.S. Cl. 8—156 **7 Claims**

1. A method of continuously treating a suspension of comminuted cellulosic fibrous material in a cylindrical vessel utilizing stationary screens and movable treatment-fluid introduction structures and minimizing the potential for screen clogging, comprising the steps of continuously:

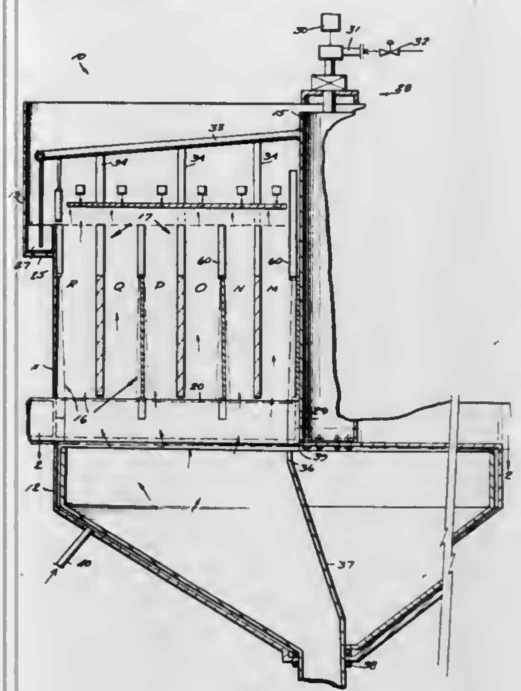
(a) defining a plurality of radial segments, and a plurality of vertical channels in each radial segment, in the vessel;

(b) introducing the suspension, adjacent the vessel bottom to flow upwardly in the vessel in a moving suspension column, into a cross-sectional area in the vessel corresponding to that of approximately one of the radial segments;

(c) introducing treatment liquid with the movable fluid introducing structures so that shock waves acting on the stationary screens as a result of liquid introduction are minimized;

(d) substantially continuously withdrawing liquid from the majority of the stationary screens area;

(e) terminating extraction from the screens in each radial segment approximately when the suspension is being introduced therein; and



(f) continuously removing from a top portion of the vessel, above the level of the screens, a portion of the entire radial extent of the suspension at the top of the column preceding the radial segment into which the suspension is being introduced at the bottom of the column.

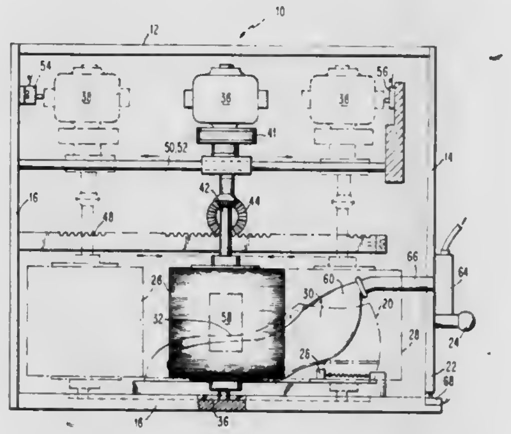
4,441,225
SHOESHINING MACHINE AND METHOD OF SUPPORTING SHOE DURING SHINING

Frank Ferrara, 659 East 187th St., Bronx, N.Y. 10458

Filed Dec. 7, 1981, Ser. No. 328,142

Int. Cl.³ A47L *23/02*

U.S. Cl. 15—34 **5 Claims**



1. A portable shoe shining machine comprising:

(a) an elongated housing having front and rear ends and sides;

(b) a shoe entry means on the front end for inserting the shoe into the housing;

(c) a shoe support means for supporting the shoe in a stationary manner in the housing, the elongated axis of the shoe substantially parallel to the elongated axis of the housing;

(d) a plurality of cylindrical rotating buffing brushes movable along the axis of the housing and surrounding and in contact with the sides and top of the shoe;

(e) means for moving the brushes back and forth along the length of the housing and simultaneously rotating the brushes;

(f) means for applying shoe polish to the brushes; and

(g) an interior shoe support means for insertion into the shoe for supporting the sides and top of the shoe during shoe shining, wherein the interior shoe support means is an inflatable bladder which is inflated to an effective pressure to support the sides and top of the shoe and to protect the inside of the shoe from polish.

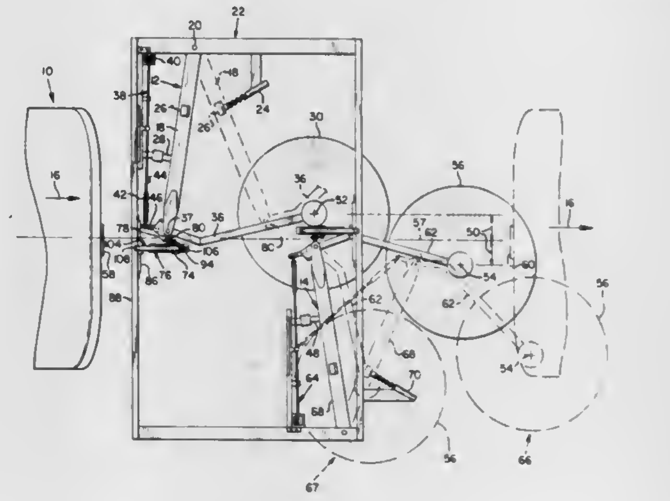
4,441,226
CAR WASHING APPARATUS

Daniel C. Hanna, 1133 SW. Rivington Dr., Portland, Oreg. 97201

Filed Aug. 2, 1982, Ser. No. 404,287

Int. Cl.³ B60S *3/06*

U.S. Cl. 15—53 AB **14 Claims**



1. Apparatus for detecting a predetermined location on the exterior of a car during the washing thereof, comprising:

a rotary brush,

means to rotate the brush,

control means to control the speed of brush rotation,

means to move the brush and car relative to each other,

support means to support and hold the brush rotating at a first speed against the exterior of the car while permitting relative movement of the brush and the car to move the brush along the exterior of the car,

detecting means to detect the predetermined location on the exterior of the car, and

means to actuate the control means to change the speed of brush rotation to a second speed as the brush encounters the predetermined location.

4,441,227
BRUSHES AND THE MANUFACTURE THEREOF

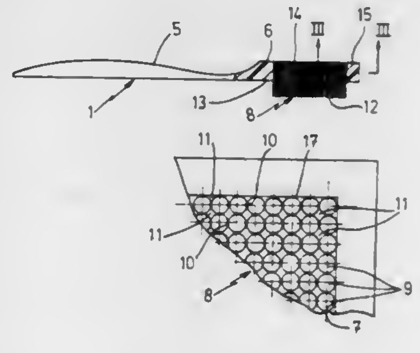
Etienne Y. d'Argembeau, 24 Rue de Belle-Vue, B-1050 Brussels, Belgium

Filed Mar. 10, 1982, Ser. No. 356,703

Claims priority, application Luxembourg, Mar. 18, 1981, 83225

Int. Cl.³ A46B *9/04*

U.S. Cl. 15—167 R **3 Claims**



1. A brush comprising a handle and a head carrying protruding bristles made of an organic thermoplastic synthetic material, and wherein said head is provided with an aperture de-

fined by edges, through which aperture extends a first end of a plurality of monofilaments forming said bristles, said monofilaments being substantially tangent to each other all along their length so as to form between them a plurality of capillary channels which are open, on the one hand, at said first end of the filaments and, on the other hand, at the free or other end of the monofilaments, the latter being welded at said first end, to each other along their tangent contacting lines within said aperture as well as to the edges of said aperture, said first end of the filaments being substantially flush with a side of the head opposite to the side thereof from which the filaments protrude.

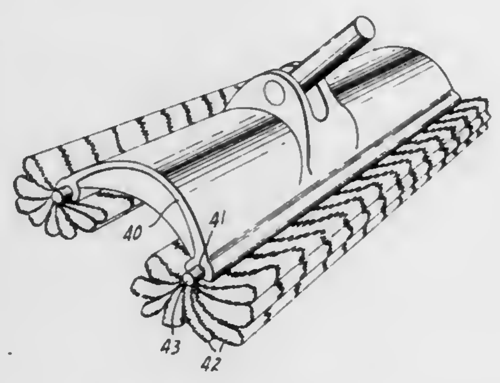
4,441,228
DUST MOP

Vernon W. Marquart, Hammond, Wis., and Walter W. Pawlikowski, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 12, 1982, Ser. No. 441,115

Int. Cl.^{3} A47L ***13/252***

U.S. Cl. 15—229 BP **7 Claims**



1. A mop especially adapted for collecting and pushing dust and fine dirt on and from smooth surfaces, said mop comprising:

(a) a plurality of dusting elements, each dusting element comprising a substantially continuous elongate array of repeating segments of at least three dusting fabric ribbon loops;
(b) a mop frame including a handle; and
(c) fastening means for securing said dusting elements in a side-by-side relationship to said mop frame.

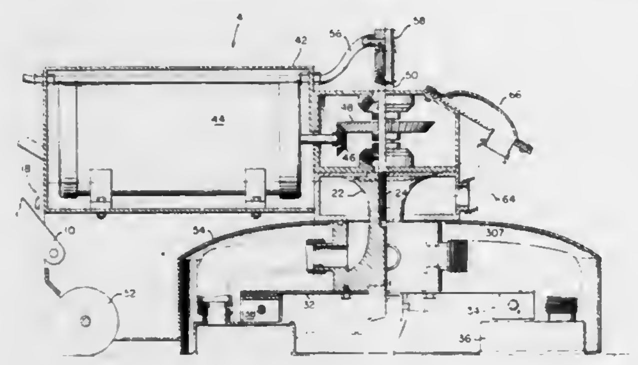
4,441,229
ROTARY CLEANER-POLISHER

Clifford L. Monson, #280 1765 Ala Moana Blvd., Honolulu, Hi. 96815

Continuation-in-part of Ser. No. 251,118, Apr. 6, 1981, Pat. No. 4,339,840. This application Jun. 11, 1982, Ser. No. 387,705

Int. Cl.^{3} A47L ***11/30, 11/292***

U.S. Cl. 15—322 **3 Claims**



1. A rotatable cleaning head for use in a carpet cleaner or the like comprising:

a hub member including a quick release means for securement to a hollow drive shaft including means for conducting a negative pressure air flow and a means for conducting fluid under positive pressure;

a plurality of radially outwardly extending resilient arms secured to the hub member and rotatable therewith;

vacuum head means pivotably secured to each resilient arm member, said vacuum head means including a lower surface designed to be in contact with the surface to be cleaned and including a radially extending slot in fluid communication with the negative pressure airflow conducting means;

nozzle means in communication with the positive fluid flow conducting means whereby fluid may be sprayed upon the surface to be treated, and the vacuum head means, always in total surface contact, agitate the surface and extract the fluid.

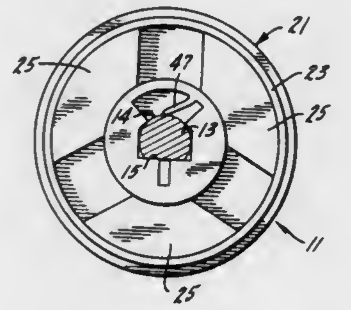
4,441,230
MOLDED KNOB WITH RESILIENT FRICTION FIT FINGER

Robert K. Howie, Jr., Decatur, Ill., assignor to The Grigoleit Company, Decatur, Ill.

Filed Feb. 5, 1982, Ser. No. 346,178

Int. Cl.^{3} F16D ***1/06***

U.S. Cl. 16—121 **1 Claim**



1. A molded knob of the type which frictionally engages and slips over the end of a shaft of generally circular cross section with a curved outer surface and having at least one longitudinally extending flat surface,

a hub formed as part of the knob,

a shaft receiving walled socket formed in the hub,

said socket having a flat wall adapted to engage the shaft, said walls extending from the flat wall and positioned to contact the curved surface of the shaft, abutments located at the ends of the side walls distal from the flat wall and positioned to engage the shaft, and a curved wall located opposite to the flat wall, and

a resilient finger extending from the curved wall and having a tip with only the tip positioned to engage and apply pressure to the curved surface of the shaft, the resilient finger being located out of contact with the abutments, said resilient finger extends obliquely to the flat wall of the socket,

said abutments dimensioned to engage the shaft to limit deflection of the resilient finger beyond that necessary to apply a force to the shaft.

4,441,231
MASSAGER FOR LARGE MEAT SECTIONS

Valerio A. Baccetti, San Leandro, Calif., assignor to American Food Equipment Co., Hayward, Calif.

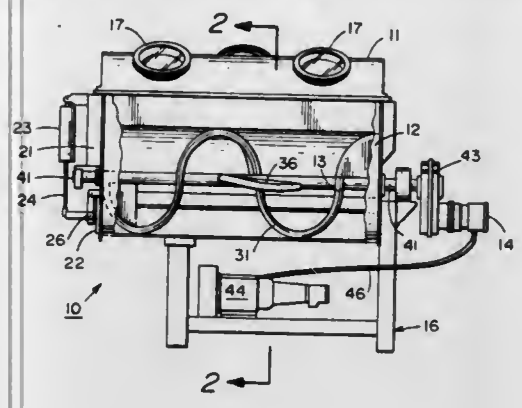
Filed Dec. 7, 1981, Ser. No. 328,206

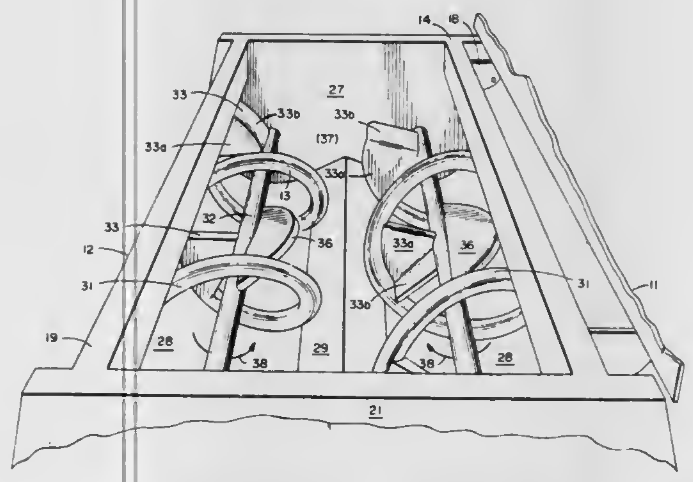
Int. Cl.^{3} A22C ***9/00***

U.S. Cl. 17—25 **9 Claims**

1. Apparatus for massaging meat in pieces containing large muscle sections comprising, a tub having at one end a product discharge, means serving selectively to open and to close said product discharge, a spaced apart pair of agitators including shafts extending longitudinally and mounted for rotation in said tub, drive means coupled to each shaft adjacent the end of said tub opposite from the discharge end and operative to drive

said pair of shafts in upward counter-rotation, each agitator including a ribbon extending about each shaft in a helix coaxially with such shaft, said helix being circular in transverse cross section and having a smooth peripheral surface, the ribbon on one shaft being spaced apart from the ribbon on the other shaft so that during rotation of such shafts the respective ribbons are not overlapped but are freely spaced from each other, the inside wall surfaces of such tub being curved to enshroud each said helical ribbon over a rotational angle greater than 180°, first and second baffles arranged on each shaft, said first baffle extending from said shaft to said ribbon and including a portion extending generally axially of said shaft and another portion extending generally radially of said shaft, each shaft adjacent to the end walls of said tub being equipped with said first baffle, said second baffle being arranged on said shaft generally centrally along its length and extending generally axially of said shaft to project outwardly therefrom into a gap of the ribbon helix, said baffles and said ribbons serving to urge the meat product away from the sidewalls of said tub towards the medial portion of the tub in a motion wherein the product is urged upwardly to maximize the massaging action of the product pieces upon each other and to minimize and reduce pinching action of the product against the sidewalls of the tub.





4,441,232
METHOD AND APPARATUS FOR REMOVING A FIBER FRACTION FROM SEED COTTON

Gary L. Underbrink, Kingsville; Lambert H. Wilkes, College Station, both of Tex., and Joseph K. Jones, Raleigh, N.C., assignors to Cotton, Incorporated, New York, N.Y.

Filed Dec. 21, 1981, Ser. No. 332,845

Int. Cl.^{3} D01B ***1/06***

U.S. Cl. 19—48 R **23 Claims**

1. Apparatus for removing a fiber fraction from seed cotton comprising:

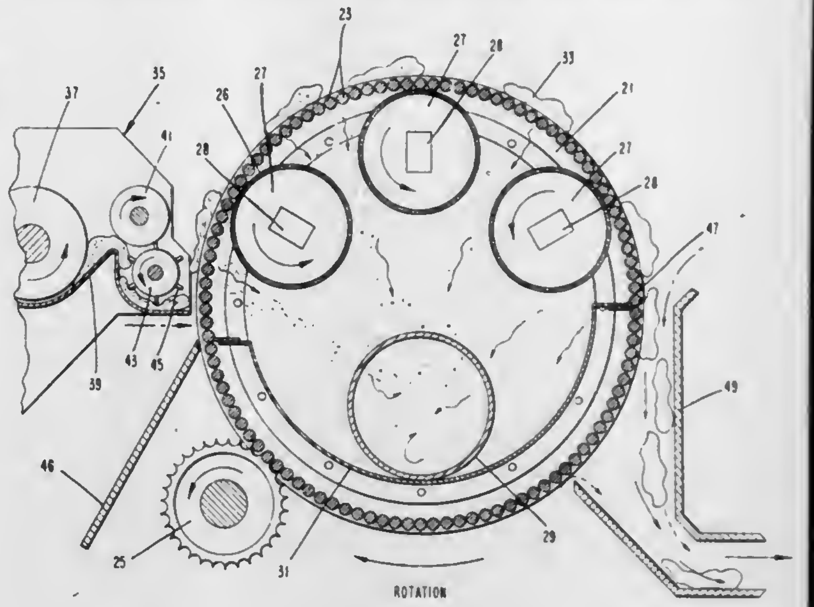
a plurality of closely spaced substantially parallel rollers, each of the rollers being freely rotatable about its axis;

means for driving said plurality of rollers in a continuous path substantially perpendicular to the axes of the rollers;

means for depositing seed cotton on a first side of the continuous path;

at least one relatively large diameter nip roll, a continuous outer peripheral surface portion of the nip roll being arranged in abutting engagement with the rollers on a second side of the continuous path opposite said first side, said at least one nip roll being fixed relative to the continuous path of the rollers;

suction means for drawing air from the first side to the second side of the path of the rollers, said air aiding in extending a portion of the fiber fraction between adjacent ones of said rollers, said suction means drawing a substantially constant quantity of air substantially straight between the rollers in an area at least immediately upstream of the nip roll relative to the direction of movement of the continuous path; and



means for driving said at least one nip roll about an axis thereof for separating the fiber fraction extended between the rollers by the suction means from the seed.

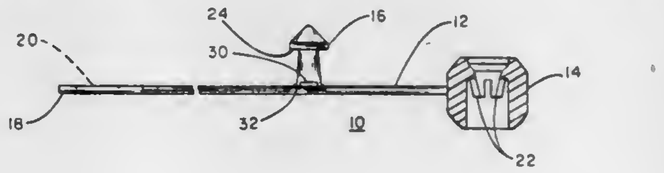
4,441,233
SECURITY SEAL WITH WEAKENED PORTION IN STUD

Allan W. Swift, Denville, N.J., assignor to E. J. Brooks Company, Newark, N.J.

Filed Jan. 31, 1983, Ser. No. 461,731

Int. Cl.^{3} B65D ***63/10***

U.S. Cl. 24—16 PB **7 Claims**



7. A security seal formed of a single piece of molded plastic, comprising an elongated shackle, a first integral snap fastener portion formed at one end of the shackle, and a second integral snap fastener portion formed at a radial portion of the shackle spaced from both ends thereof, said snap fastener portion being shaped and dimensioned for locking non-removable engagement, the second snap fastener portion being spaced from the first snap fastener portion far enough to allow the portion of the shackle therebetween to be bent back on itself to enable the snap fastener portions to become engaged, the portion of the shackle extending from the second snap fastener portion away from the first snap fastener portion having an aperture at a distance from the second snap fastener portion such that said portion of the shackle may be passed through an aperture of a closure member to be sealed and then folded back on itself with one of said snap fastener portions being received in the aperture, said portion having the aperture being retained in assembly on said snap fastener portion by the assembled other snap fastener portion.

4,441,234
DECORATIVE CUFFLINK

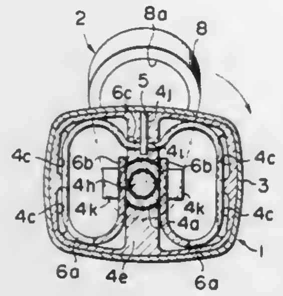
Hideo Kurashima, 5-12, Negishi 1-chome, Taito-ku, Tokyo, Japan

Filed Aug. 18, 1982, Ser. No. 409,172

Claims priority, application Japan, Apr. 10, 1982, 57-52487[U]

Int. Cl.^{3} A44B *5/02*

U.S. Cl. 24—41 **4 Claims**



1. In a cufflink which is disassemblably assembled of two sub-assemblies constituted by a decorative head element and a shank and keeper unit, wherein:

(a) the decorative head element includes:

  (i) a decorative, oblong shell having a front wall and a perimetrical rearwardlyprojecting sidewall,

  (ii) a body having a rear wall centrally provided with an axially-directed opening, the shell sidewall being perimetrically secured to the body to define within the decorative head element between said front wall, said rear wall and said sidewall an internal cavity;

  (iii) a spectacles frame-shaped spring clip having a pair of laterally spaced, generally U-shaped legs having respective free end portions located nearest one another and having respective opposite ends joined by a rim; said rim in the vicinity of said free end portions having an arcuate bridge portion; all of said spring clip but for said bridge portion lying generally in a common plane, and said bridge portion, when free, extending at an acute angle which intersects said common plane where said bridge portion joins the remainder of said rim;

  (iv) the body rear wall including means mounting said spring clip by the jamming of said bridge portion into a limited-thickness gap, this gap being capable of receiving said bridge portion only when said rim is resiliently torsionally stressed by an amount sufficient to cause said bridge portion to lie substantially in said common plane, whereby said spring clip is resiliently loaded against the interior of said rear wall of said body;

  (v) said spring clip free end portions being juxtaposed with said hole for normally blanking-off two diametrically-opposed perimetrical segments of the hole;

  (vi) a securement plate disposed within the cavity in line with said hole, said securement plate having a central, round-tipped projection formed thereon, which projection projects coaxially rearwardly within said hole so as to define an annular well between said projection and said body rear wall within said hole;

(b) the shank and keeper unit includes:

  (i) a shank having a head end and a keeper end;

  (ii) a keeper secured to the keeper end of the shank;

  (iii) the head end having a convexly curved head provided with a diametrically-opposed pair of grooves which extend angularly of the shank, so that when the head end of the shank is thrust into the hole in the rear wall of the body of the decorative head element, the head first deflects the spring clip legs away from the rear wall and their free end portions laterally away from one another, until the free end portions snap into the respective said grooves in said shank head end as torsional stresses stored in said spring clip rim force the spring clip legs back against said rear wall of said body of said decorative head element;

  (iv) said shank head end having means defining an axially-opening socket formed therein, which socket receives said projection as said shank head end is inserted through said hole into said annular well;

the improvement wherein:

said means mounting said spring clip includes:

a vertical rib integrally formed medially on said rear wall of said body in said cavity of said decorative head element, said hole opening laterally of said rib by intersection at two laterally spaced sites;

means defining a forwardly opening generally horizontal groove in said rib at an intermediate level between said hole and the perimeter of said rear wall and forming part of said limited-thickness gap for said bridge portion of said rim of said spring clip;

mechanical means received across said groove in front of said bridge portion of said rim of said spring clip for further forming said limited-thickness gap and for retaining said bridge portion of said rim of said spring clip resiliently torsionally stressed so as to lie in said common plane; and said securement plate being formed as an integral, relatively thin portion of said rib.

4,441,235
SLIDE FASTENER WITH BOTTOM STOP

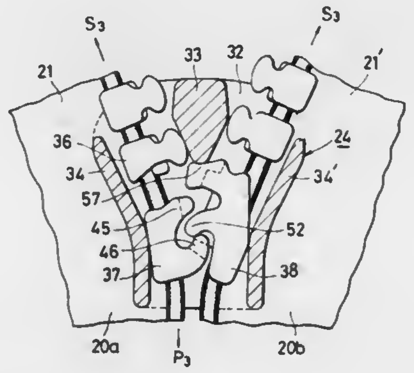
Masahiro Kusayama, Kurobe, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Jan. 22, 1981, Ser. No. 227,469

Claims priority, application Japan, Feb. 1, 1980, 55-11182[U]

Int. Cl.^{3} A44B *19/36*

U.S. Cl. 433 **1 Claim**



1. A slide fastener, comprising:

(a) a pair of stringers having interlocking fastener elements carried on marginal beads thereof;

(b) a slider cooperable with said fastener elements to interlock and to disengage them in response to opposite directions of movement along said pair of stringers, said slider having a diamond disposed between a pair of flaring flanges; and

(c) a 3-piece bottom end stop including

  (1) a first member mounted on a first of said beads and engageable with the lowermost fastener element on a second of said beads,

  (2) a second member mounted on said first bead in spaced relation to said first member, and having spaced upper and lower protruberances extending obliquely upwardly towards said second bead, and

  (3) a third member mounted on said second bead opposite to said second member, and having upper and lower tongues extending obliquely downwardly towards said first bead, said upper tongue being fixedly trapped between said first member and said upper protruberence and said lower tongue being fixedly trapped between said upper and lower protruberence, and said third member having a longitudinal edge facing that one of said slider flanges associated with said second bead, said edge having a first planar portion parallel to said second bead, said third member having an effective width taken at said first planar portion exceeding the distance between said diamond and said one slider flange, said edge having a second planar portion disposed at an angle with respect to said second bead, said third member having a width at said second planar portion less than said distance, whereby said third member can be inserted into said slider only by first temporarliy distorting said second bead adjacent to said third member, whereupon after insertion said third member is movable to its normal non-bead-distorted position to place an end thereof into blocking position with respect to said diamond.

4,441,236
SAFETY LOCK

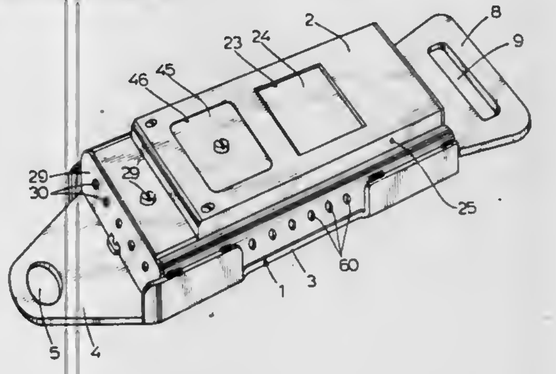
Jose Bron, Hemsterhuisstraat 159, 1065 JX Amsterdam, Netherlands

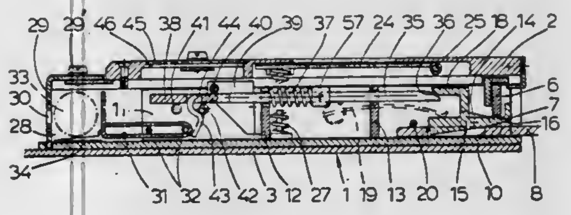
Filed Jan. 19, 1981, Ser. No. 226,534

Claims priority, application Netherlands, Jan. 18, 1980, 8000322

Int. Cl.^{3} A44B *11/25*

U.S. Cl. 292—336.3 **14 Claims**





1. A lock having a locking member displaceable between a locking position and a release position, characterized in that said lock is provided with a safety device for automatically unlocking the locking member upon a critical change of a given ambient condition, said device comprised of at least one usually unloaded feeler member responsive to a change of ambient condition and provided with a spring loaded unlocking element, movable from a retracted rest position to an operative position, said unlocking element displacing said locking member from said locking position to said release position, a catch member retaining said unlocking element in said rest position, said catch member co-acting with said feeler member and actuated by said feeler member in response to a change of condition to release said unlocking element thereby displacing said locking member.

4,441,237
INHOMOGENOUS ANISOTROPIC KINETIC ENERGY PENETRATORS

Chulho Kim, Alexandria, and Raymond J. Weimer, Burke, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 1, 1980, Ser. No. 132,462

Int. Cl.^{3} B21K *21/06*

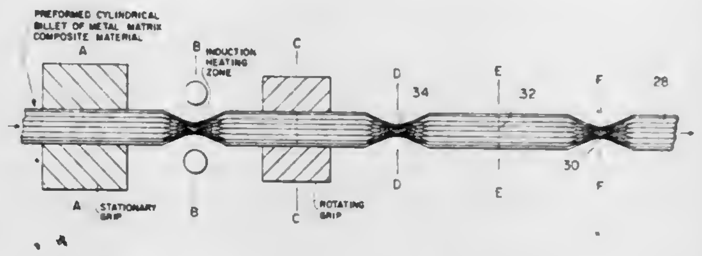
U.S. Cl. 29—1.2 **4 Claims**

1. A method of forming projectiles which comprises:

feeding a rod of fiber-reinforced composite material through a stationary gripper, through a heater region and a rotatable gripper such that the distance between the center of the heater region and the center of the rotatable gripper is equal to the length of one projectile to be formed; and the distance between the center of the heater region and the center of the stationary gripper is equal to the length of a second projectile to be formed;

activating said stationary gripper to hold said rod in place against rotation and activating the rotatable gripper to grip said rod therein for rotation therewith;

heating said rod along a desired length with the heat centered in the heater region and concentrated on said rod section until said rod is soft;



rotating said rotatable gripper through a desired number of degrees of rotation thereby rotating said rod along with said rotatable gripper and thereby deforming said rod in the heated region;

inactivating said heater to stop heating said rod, releasing the rod from the grip of said stationary and rotatable grippers, feeding the rod relative to said grippers and said heater zone for a distance sufficient to form two projectiles, and

repeating the cycle of heating, gripping, and rotating said rod in order to deform said rod in another desired length of said rod.

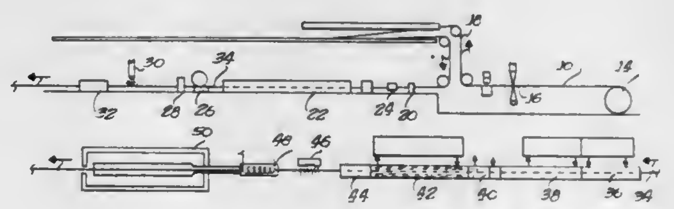
4,441,238
CONTINUOUS PRODUCTION OF POLISHED AND BUFFED TUBING

Humberto Hijuelos, East Hazelcrest; Giulio Scartozzi, Chicago Heights; Lawrence P. Vollmuth, Wheaton, and Raffaele Basile, Chicago Heights, all of Ill., assignors to Allied Tube & Conduit Corporation, Harvey, Ill.

Filed Feb. 9, 1981, Ser. No. 232,469

Int. Cl.^{3} B08B *9/02;* **B21C** *37/00*

U.S. Cl. 29—33 D **5 Claims**



1. Apparatus for continuously forming tubing from metal strip and providing a decorative finish thereto as it travels along a straight-line path including, in sequence,

means for continuously supplying metal strip,

forming rolls,

a seam welder,

scarfing means for treating said seam weld,

alkali wash means for cleaning the surface of said tubing,

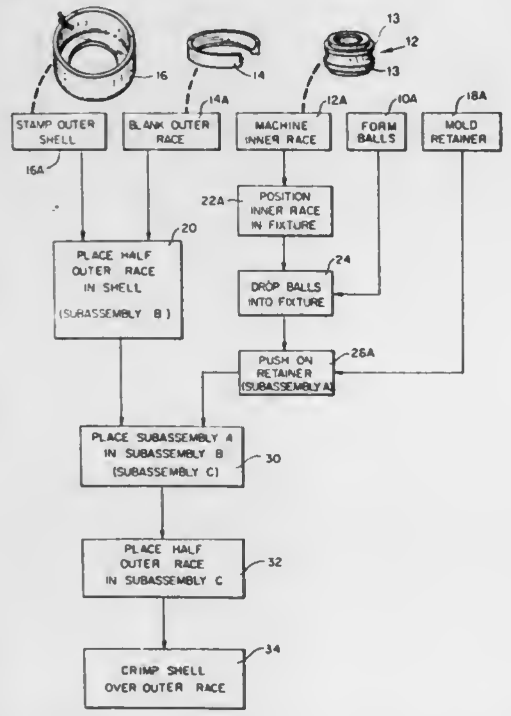
means to prepare the surface of said tubing by exposing it to an acidic pickling solution,

rinse means to remove said pickling solution from the tubing,

means to dry said tubing and preheat the same,

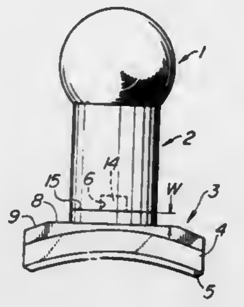
means for applying molten metal onto the surface of said formed tubing,
means to cool said tubing to solidify said molten metal,
a plurality of brushing means mounted adjacent the path of travel of said tubing at a location where said molten metal has solidified, said plurality of brushing means including a plurality of brushes mounted for tangential contact with said tubing and disposed around the path of said tubing to polish all portions of the surface of said tubing and a plurality of brushes mounted for radial contact with said tubing and disposed around the path of said tubing to polish all portions of the surface of said tubing, means to supply polishing abrasives to said rotating polishing brushes, and a means for rotating said polishing brushes in contact with the solidified metal surface of said traveling tubing for polishing the same,
buffing means adjacent the path of travel of said tubing for contact with said traveling tubing, means to continuously supply a fine abrasive to said buffing means, and means for rotating said buffing means circumferentially around said traveling tubing for buffing said polished surface to a lustrous finish,
cleaning means to clean polishing abrasives from the lustrous finish on said polished surface,
chromate passivating means for rendering the lustrous surface less chemically active,
means for applying a coating to said lustrous finish,
means for curing said coating, and
means for cutting said tubing into lengths.

4,441,239
METHOD FOR MANUFACTURE OF BEARINGS
Gerald H. Mullen, Burlington, Conn., assignor to Virginia Industries, Inc., Rocky Hill, Conn.
Division of Ser. No. 973,544, Dec. 26, 1978, Pat. No. 4,292,717. This application Jul. 6, 1981, Ser. No. 280,930
Int. Cl.³ B21D *53/10*
U.S. Cl. 29—148.4 A **17 Claims**


13
12
13
16
14
14A
12A
10A
18A
STAMP OUTER SHELL
BLANK OUTER RACE
MACHINE INNER RACE
FORM BALLS
MOLD RETAINER
16A
22A
POSITION INNER RACE IN FIXTURE
20
PLACE HALF OUTER RACE IN SHELL (SUBASSEMBLY B)
24
DROP BALLS INTO FIXTURE
26A
PUSH ON RETAINER (SUBASSEMBLY A)
PLACE SUBASSEMBLY A IN SUBASSEMBLY B (SUBASSEMBLY C)
30
PLACE HALF OUTER RACE IN SUBASSEMBLY C
32
34
CRIMP SHELL OVER OUTER RACE

1. A method for the manufacture of a bearing comprising the steps of:
placing an inner raceway defining member in a fixture, the inner raceway defining member having an axis and a pair of spaced lands having a raceway defining groove therebetween, said lands extending outwardly from a body portion;
delivering balls to the fixture;
directing the balls downwardly about the outwardly facing end of an upper land on the inner raceway defining member and then directing the balls downwardly and inwardly toward the axis of the member to establish contact between the balls and a plurality of evenly spaced locations on the raceway surface between the lands;
impeding circumferential movement of the balls after contact with the raceway surface is established;
inserting a retainer over the balls to prevent radial movement thereof, the retainer engaging each of the balls and maintaining the circumferential spacing thereof;
positioning the subassembly comprising the retainer, balls, and inner raceway defining member in a first annular member which defines a first portion of the bearing outer raceway;
placing a second annular member which defines the remainder of the bearing outer raceway over the said subassembly; and
securing the annular members together.

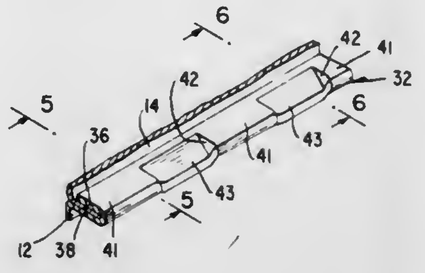
4,441,240
METHOD OF PRODUCING CONNECTING ROD OF A RADIAL PISTON MOTOR
Sanae Mori, Nagoya, Japan, assignor to Daido Metal Company, Ltd., Nagoya, Japan
Division of Ser. No. 165,328, Jul. 2, 1980, Pat. No. 4,376,393. This application May 5, 1982, Ser. No. 375,166
Claims priority, application Japan, Dec. 28, 1979, 54-181683; Dec. 28, 1979, 54-181684
Int. Cl.³ B23P *15/00;* **F16C** *9/04*
U.S. Cl. 29—156.5 A **1 Claim**



1. A method of producing a connecting rod of a radial piston motor including a spherical portion, a rod portion, and a pad, said method comprising the steps of
forming a pad with a metallic backing layer separately from an attached spherical portion and rod portion and forming a large projection of diameter substantially equal to the diameter of said rod portion and a projection extending from said large projection on said backing layer and forming a recess in said rod portion opposite from where said spherical portion is attached for fitting on said projection,
forming a bearing alloy layer on a face of said pad on one side of said metallic backing layer away from said interfitting portion on said pad to form a composite pad,
interfitting said composite pad and said rod portions to each other by said projection and recess on each to form a joint between said rod portion and said pad,
and welding by electron beam welding at said joint of said rod portion and said pad for a short period of time with a local concentration of heat for deep weld penetration without degradation of said bearing alloy layer on the opposite side of said metallic backing layer.

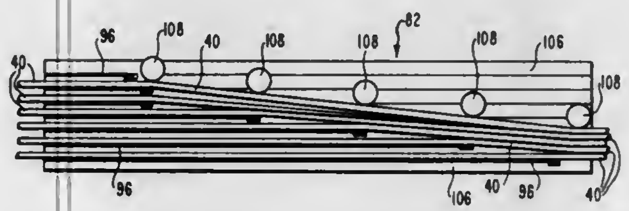
4,441,241
METHOD OF MANUFACTURING A HEAT EXCHANGER UNIT
Russell W. Hoeffken, Belleville, Ill., assignor to Snyder General Corporation, Dallas, Tex.
Division of Ser. No. 178,338, Aug. 15, 1980, Pat. No. 4,298,061. This application Aug. 21, 1981, Ser. No. 295,041
Int. Cl.³ B23P *15/26;* **F24H** *3/00*
U.S. Cl. 29—157.3 R **8 Claims**

1. A method of joining complementary sides of a heat exchanger unit, said heat exchanger unit comprising a pair of opposed sheet metal heat exchanger sides, each of said sides including a planar flange extending in a longitudinal plane when said sides are placed adjacent each other along said flanges, said method comprising:
placing said sides adjacent each other with the respective flanges of each side extending in said longitudinal plane and contiguous with each other;



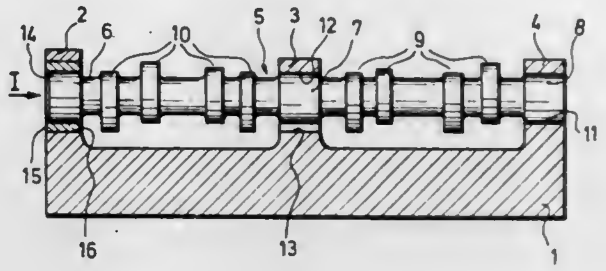
folding the flange on one of said sides over the flange on the other of said sides; and
crimping said flanges together to form a plurality of first planar edge portions of both of said flanges spaced apart lengthwise along said flanges and extending in a first plane, and a plurality of second planar edge portions of both of said flanges extending between said first planar edge portions and extending in a second plane to securely clamp and seal said sides to each other.

4,441,242
SPENT FUEL CONSOLIDATION SYSTEM
Michael G. Hicken, Murrysville; Fred Kirschensteiner, Forest Hills; Duane A. True, Pittsburgh, and Alexander Taleff, Churchill Boro, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed May 29, 1981, Ser. No. 268,311
Int. Cl.³ B23P *19/00*
U.S. Cl. 29—419 R **16 Claims**



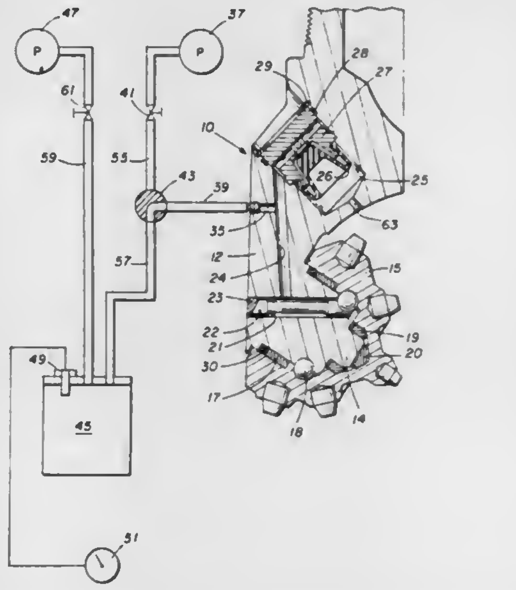
1. Apparatus for remotely consolidating nuclear fuel rods comprising:
row ordering means arranged to simultaneously accept a plurality of nuclear fuel rods for rearranging said fuel rods into a different configuration without damaging said fuel rods;
first consolidation means associated with said row ordering means for simultaneously compacting individual rows of said fuel rods without damaging said fuel rods; and
second consolidation means associated with said row ordering means for simultaneously compacting a plurality of said fuel rods without damaging said fuel rods.

4,441,243
CAMSHAFT BEARING AND METHOD FOR MOUNTING THE CAMSHAFT
Dieter Stojek, Bergisch Gladbach, Fed. Rep. of Germany, assignor to Ford Motor Company, Dearborn, Mich.
Filed Jul. 1, 1982, Ser. No. 394,391
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1981, 3126280
Int. Cl.³ B23P *19/04;* **F16C** *33/04*
U.S. Cl. 29—433 **3 Claims**



1. A camshaft mounting for a one-piece camshaft supported in three undivided bearing blocks of a cylinder head, in which the bearing bore in a bearing block at one end of the camshaft has a diameter which corresponds to the diameter of a bearing portion on the camshaft, the middle bearing block has a bore of which the diameter corresponds to the diameter of a middle bearing portion of the camshaft and an additional cut-out longitudinal groove on the unloaded side of the bearing shaped to permit passage of the cams of the camshaft during assembly, and the bearing block at the other end of the camshaft has a diameter sufficiently large to envelope all the cam vertices.

4,441,244
SEALED BEARING ROTARY ROCK BIT ASSEMBLY
George A. Cason, Jr., Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Oct. 29, 1981, Ser. No. 316,179
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—434 **4 Claims**

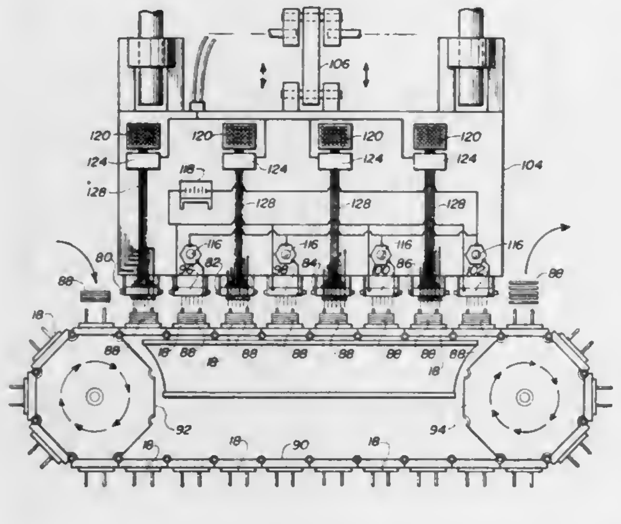


1. A method of manufacturing a sealed bearing rotary rock bit comprising the steps of:
assembling a seal and cone on a bearing pin of a rock bit arm;
locking the cone and pin together with a retaining means so that the cone may rotate about the axis of the pin on cooperating engaging bearing structure forming a sealed bearing system;
evacuating gases from said sealed bearing system to an initial pressure;
evacuating a vacuum chamber to a pressure lower than said

initial pressure and measuring the relative humidity therein to define an initial relative humidity;
ducting said sealed bearing system to said vacuum chamber to evacuate additional gases from said system into said chamber and measuring the relative humidity of gases therein to define a resultant relative humidity; and
injecting lubricant into said bearing system upon said resultant relative humidity being at or less than a maximum accepted value greater than said initial relative humidity.

4,441,245
GANG CUTTING TOOL ASSEMBLY

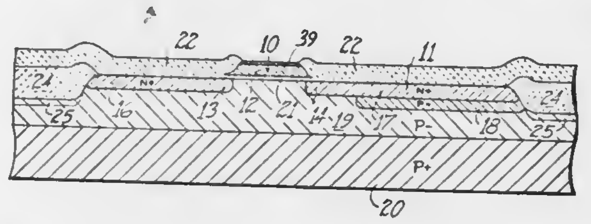
Henry M. Thornton, and John S. Thornton, both of York, Pa., assignors to Ashcombe Products Company, Dover, Pa.
Division of Ser. No. 231,340, Feb. 4, 1981, Pat. No. 4,397,074. This application Nov. 26, 1982, Ser. No. 444,672
Int. Cl.^{3} B23Q *3/00;* **B23B** *39/18*
U.S. Cl. 29—564 **1 Claim**



1. Mechanism for drilling in one or a stack of a limited number of similar product sheets a pattern of holes comprising:
(a) a frame supporting along a path a plurality of vertically reciprocable heads each adapted respectively to mount a support plate and the plurality of plates respectively having partial patterns of powered tool heads comprising a set thereof to drill in sequence said partial patterns of holes in said product sheets ultimately to form a complete pattern of holes in each sheet,
(b) a plurality of additional reciprocably mounted heads supported by said frame individually between each successive pair of said reciprocable heads having powered tool heads thereon and said additional heads having respectively attached thereto a testing support plate each having a partial pattern of test probes corresponding to the partial pattern of tool heads on the reciprocable heads immediately preceding said testing support plates,
(c) an endless conveyor operable to support and convey along said path a series of base plates each holding one or a limited stack of product sheets uniform in number to be drilled and said base plates each having identically positioned aligning pins for reception in corresponding identically aligned holes in said product sheets,
(d) power means operable to advance said conveyor sequentially to position said base plates stepwise beneath said reciprocable heads supporting said powered tool heads to effect the drilling of said partial patterns of holes respectively in said single or limited stacks of product sheets and subsequently position said progressively drilled product sheets sequentially beneath said reciprocable heads to which said testing support heads and probes are connected to test the drilling of said holes for completeness,
(e) indicating means associated respectively with said testing support heads operable to produce a signal in the event unsatisfactory drilling of said product sheets has occurred, and
(f) said support plates further including spring-pressed pads yieldable upwardly and adapted to facilitate withdrawal of drills from said product sheets by pressing said sheets against said support plates while drills and/or test probes are being withdrawn from said sheets to maintain said sheets in accurate position upon said base plates, and also keep them flat.

4,441,246
METHOD OF MAKING MEMORY CELL BY SELECTIVE OXIDATION OF POLYSILICON

Donald J. Redwine, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed May 7, 1980, Ser. No. 147,433
Int. Cl.^{3} B01J *17/00;* **H01L** *27/04, 21/306*
U.S. Cl. 29—571 **14 Claims**



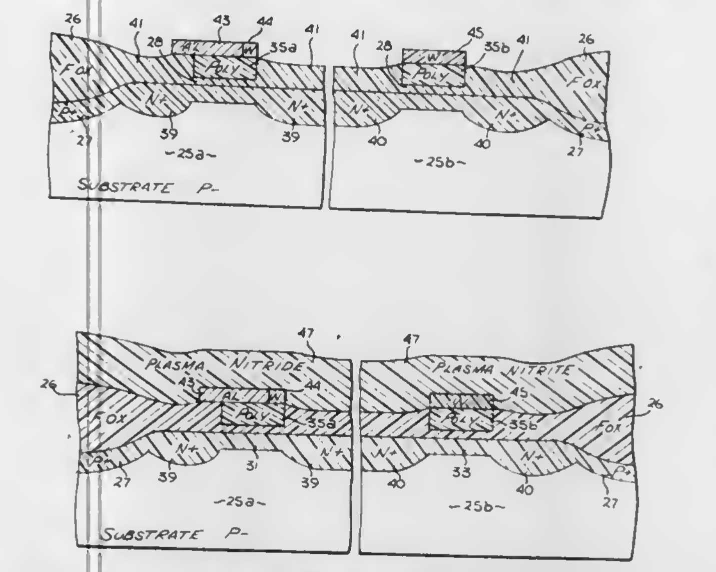
1. A method of making a dynamic semiconductor memory cell of the one-transistor type comprising the steps of:
forming a first doped region in a face of a body of semiconductor material to provide part of a capacitor,
applying a layer of polycrystalline silicon doped with impurity on said face overlying the first doped region and overlying a channel region in the face but separated therefrom by thin insulator,
applying an oxidation mask over said layer of polycrystalline silicon over said channel region but not over said first doped region,
subjecting said face to a thermal oxidation atmosphere to oxidize said polycrystalline silicon and to cause impurity doping of the face beneath the layer of polycrystalline silicon but not in said channel region, thereby creating source and drain regions for a transistor and another part of said capacitor overlying said first doped region, the polycrystalline silicon beneath the oxidation mask remaining relatively unoxidized by said atmosphere, and
applying conductive means to the face making electrical connection to a gate area of the unoxidized polycrystalline silicon over said channel region.

4,441,247
METHOD OF MAKING MOS DEVICE BY FORMING SELF-ALIGNED POLYSILICON AND TUNGSTEN COMPOSITE GATE

Paolo Gargini, Palo Alto; Israel Beinglass, Santa Clara, and Norman Ahlquist, Menlo Park, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.
Filed Jun. 29, 1981, Ser. No. 278,656
Int. Cl.^{3} H01L *29/72, 21/26*
U.S. Cl. 29—571 **21 Claims**

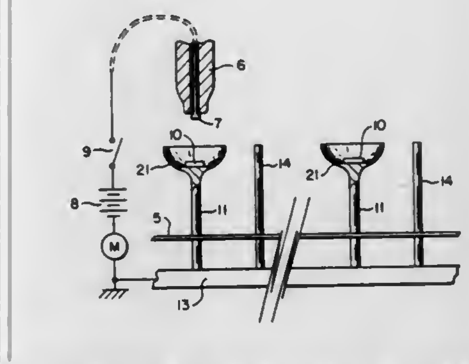
1. A process for fabricating a metal-oxide-semiconductor (MOS) integrated circuit on a silicon substrate including the steps of:
growing a first oxide on said substrate;
forming a polysilicon layer over said first oxide layer;
forming a silicon nitride layer over said polysilicon layer;
defining a plurality of circuit members from said polysilicon layer employing masking members formed from said silicon nitride layer;
forming a plurality of source and drain regions in said substrate in alignment with at least some of said circuit members;
growing a second oxide layer on said substrate, said silicon nitride members preventing growth of oxide on said circuit members;

removing said silicon nitride members;
forming metal members on said polysilicon circuit members, said metal members for increasing the conductivity of said circuit members;
covering said substrate with a protective layer, said layer being processed at a sufficiently low temperature to prevent deterioration of said metal members; and,
forming metal interconnections and contacts over said protective layer, to interconnect at least some of said circuit whereby low resistance polysilicon/metal buried contact members are formed in an MOS circuit.



4,441,248
ON-LINE INSPECTION METHOD AND SYSTEM FOR BONDS MADE TO ELECTRONIC COMPONENTS

Rand C. Sherman, Columbus, and Van E. Wood, Delaware, both of Ohio, assignors to Stanley Electric Company, Ltd., Yokahama, Japan
Filed Dec. 2, 1982, Ser. No. 446,174
Int. Cl.^{3} H01L *49/00*
U.S. Cl. 29—574 **9 Claims**

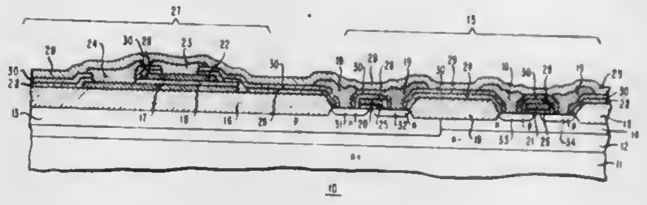


1. A method of making on-line inspection of electric characteristics of a semiconductor device during a step of bonding a lead wire to a chip surface of said semiconductor device in the process of fabricating an electronic component, comprising:
applying an electric power across said lead wire which is to be bonded to said chip, and bonded to connectors which serve as electric terminals when said semiconductor device is assembled into an electronic component.

6. A system for making on-line inspection of electric characteristics of a semiconductor device during a step of bonding a lead wire to a chip surface of said semiconductor device in the process of fabricating an electronic component, comprising:
a. an electroconductive base means;
b. an electroconductive cathode connector means projecting from one surface of said base means and carrying, at its free end, a reflector means securely receiving a semiconductor chip bearing on its surface an ohmic contact metal electrode;
c. an electroconductive anode connector means projecting from a surface of the base mans adjacent to said cathode connector means and forming a pair therewith;
d. a capillary means movably positionable above said cathode connector means and said chip and positionable over said anode connector means for feeding a lead wire to be bonded to said connector means; and
e. an electric circuit means formed between said base means and said lead wire via said capillary means and connected to a power supply and having an on/off switching means for applying and cutting an electric power across said lead wire and said base means.

4,441,249
SEMICONDUCTOR INTEGRATED CIRCUIT CAPACITOR

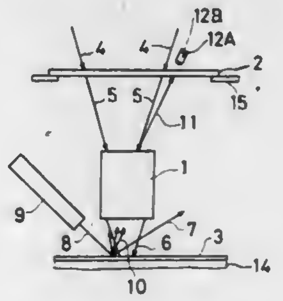
Joshua Alspector, Westfield; Eliezer Kinsbron, Highland Park, both of N.J., and Marek A. Sternheim, Livermore, Calif., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed May 26, 1982, Ser. No. 382,403
Int. Cl.^{3} H01L *21/70*
U.S. Cl. 29—577 C **10 Claims**



1. The method of making a polyoxide capacitor in a silicon semiconductor integrated circuit comprising forming an insulating layer on a surface of a silicon semiconductor body, depositing on a portion of the insulating layer a first polysilicon layer by a pyrolytic process at a temperature in the range from 570 degrees C. to about 595 degrees C., which includes the addition of a conductivity-enhancing element, heating the semiconductor body in the presence of oxygen to grow on the surface of the first polysilicon layer an intermediate layer of silicon oxide, depositing upon at least a portion of the intermediate layer of oxide a second layer of conductive polysilicon, and providing electrical contacts to the first and second polysilicon layers.

4,441,250
APPARATUS FOR REGISTERING A MASK PATTERN IN A PHOTO-ETCHING APPARATUS FOR SEMICONDUCTOR DEVICES

Issei Imahashi, Yamanashi, Japan, assignor to Telmec Co., Ltd., Nirasaki, Japan
Division of Ser. No. 213,960, Dec. 8, 1980, Pat. No. 4,377,028. This application Jan. 28, 1983, Ser. No. 461,694
Claims priority, application Japan, Feb. 29, 1980, 55-25007
Int. Cl.^{3} H01L *21/68, 21/312*
U.S. Cl. 29—578 **5 Claims**



1. An apparatus for registering a pattern on a mask plate with a pattern already formed on a semiconductor wafer; characterized in that said apparatus comprises means for holding said semiconductor wafer, means for holding said mask plate, an optical system including a lens for focusing an image of the pattern of said mask plate on said semiconductor wafer, a light source for irradiating a wafer held by said wafer holding

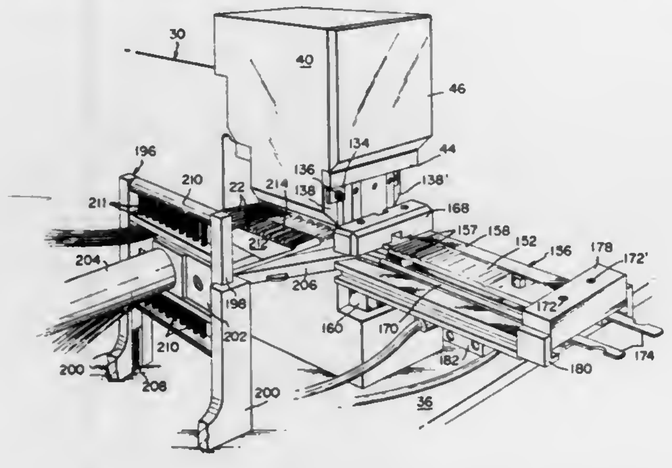
means, said mask plate having a plurality of windows having a predetermined shape, aligned at a predetermined pitch along a predetermined direction, said wafer having a plurality of reflectors of a predetermined shape aligned at a predetermined pitch along a predetermined direction, one of said windows and said reflectors being directed into first and second groups, said first and second groups being provided with a staggered phase relationship equal to a multiple of one half of said predetermined pitch, means for moving one of said wafer and said mask plate relative to the other, and first and second photo-sensitive means adapted to receive light emitted from said light source, reflected by reflectors formed on said semiconductor wafer and passed through said windows formed on said mask plate, said first photo-sensitive means being responsive to light received from said first group and said second photo-sensitive means being responsive to light received from said second group, whereby the relative position of said wafer and said mask plate are determined when the detected quantities of light received by said first and second photo-sensitive means take a predetermined proportion to thereby register the pattern on said mask plate with the pattern already formed on said semiconductor wafer.

4,441,251

METHOD AND APPARATUS FOR SERIALLY PRODUCING HARNESS ASSEMBLIES

Daniel B. Grubb, Hummelstown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 157,692, Jun. 9, 1980, abandoned. This application Jun. 22, 1982, Ser. No. 391,025
Int. Cl.^{3} H01P *43/04;* **B23R** *23/00*
U.S. Cl. 29—861 **21 Claims**



1. A method of serially manufacturing electrical harness assemblies of the type comprising a first and second electrical connector, each of said connectors having two parallel rows of contact terminals therein, each of said terminals having a wire-receiving portion, said wire-receiving portions of said two rows facing in opposite directions, and wires extending between said connectors, the ends of said wires being received in said wire-receiving portions of said terminals in said first and second connectors, said method comprising the steps of:
(1) feeding wires extending from endless sources along a feed path in two parallel spaced-apart planes which feed path extends through and beyond an insertion zone with the wires in each plane being spaced apart by distances equal to the distance between adjacent wire-receiving portions of terminals in the rows of terminals in said connectors,
(2) positioning a first and a second connector in said insertion zone between said planes with the wire-receiving portions of said terminals in said first and second connectors in alignment with each other and in alignment with the wires in said two planes and with said second connector being downstream, relative to the direction of wire feed along said path, from said first connector,
(3) moving said wires in said two planes laterally of their axes, towards said connectors and into said wire-receiving portions of said terminals and severing said wires at locations between said first and second connectors,
(4) removing the second connector with wires extending beyond said insertion zone,
(5) moving said first connector along said path completely through, and for a predetermined distance beyond, said insertion zone and thereby feeding wire from said sources along said feed path towards said insertion zone, maintaining said wires in said two planes during feeding of said wires, and

repetitively carrying out steps (2), (3), (4), and (5) to produce said harness assemblies serially.

4. Apparatus for serially manufacturing harness assemblies of the type comprising a first and second electrical connector, each of said connectors having at least one row of contact terminals therein, each of said terminals having a wire-receiving portion, and wires extending between said connectors, the ends of said wires being received in said wire-receiving portions of said terminals in said first and second connectors, said apparatus comprising:

an insertion zone having first and second side-by-side adjacent insertion stations therein, first and second connector locating means at said first and second insertion stations for locating a first connector and a second connector at said stations in parallel aligned relationship with said wire-receiving portions of said terminals in said first and second connectors in alignment,

wire positioning and retaining means in said insertion zone, said wire positioning and retaining means being effective to locate a plurality of wires in a common plane with the axes of said wires in alignment with said wire-receiving portions of said terminals in said first and second connectors in said first and second connector locating means, said wire positioning and retaining means being effective releasably to retain said wires until said wires are moved towards said first and second connector locating means,

wire guide means for guiding wires which extend from substantially endless sources of wire to said wire positioning and retaining means,

first and second insertion tooling means, each of said insertion tooling means comprising inserters which are normally spaced from said first and second locating means, said inserters being movable relatively towards said connector locating means and being effective during movement to move wires from said positioning and retaining means towards said connector locating means and into said wire receiving portions of said terminals, and,

severing means in said insertion zone between said first and second insertion tooling means for severing said wires at locations between said connector locating means whereby,

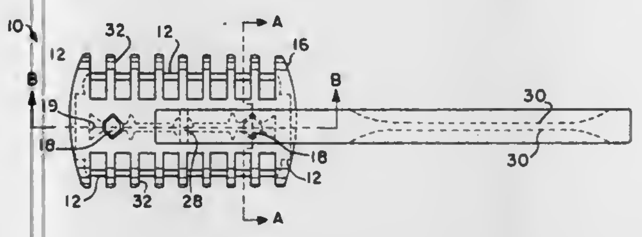
said harness assemblies are produced serially by feeding wires extending from the endless sources of wire along a wire feed path which extends through said guide means to said insertion zone, locating said wires in said wire positioning and retaining means, placing connectors in said locating means in said first and second insertion. stations, moving said inserters towards said connectors, severing said wires by means of said severing means, removing said second connector from said apparatus, moving said first connector and the wires connected thereto through and beyond said insertion zone and thereby withdrawing wire from said endless sources of wire, and repeating the foregoing steps.

4,441,252

HAIR TRIMMING DEVICES

Thomas J. Caves, 223 Island Way, Clearwater, Fla. 33515
Filed Jun. 21, 1982, Ser. No. 390,278
Int. Cl.^{3} B26B *21/12*
U.S. Cl. 30—30 **3 Claims**

1. A hair trimming device, comprising,
a double-edged razor blade means,
a base plate member of rectangular configuration having a length corresponding to the length of said razor blade means, said base plate member having an outer surface and an inner surface,
a pair of longitudinally spaced, longitudinally aligned upstanding peg members disposed coincident with the longitudinal axis of symmetry of said base plate member, on the inner surface thereof,
said peg members in registration with associated openings formed astride the longitudinal axis of symmetry of said razor blade means when said razor blade means is disposed atop said inner surface of said base plate means,
a base plate capping member corresponding in configuration and dimension to said base plate member, said base plate capping member having an inner surface and an outer surface,
said base plate capping member having peg-receiving recesses formed in said inner surface; said recesses disposed in registration with said peg members to releasably receive the same when said base plate member and said base plate capping member are disposed in sandwiching relation to said razor blade means,
an elongate handle member,
said handle member terminating in a yoke means,
said yoke means including a pair of transversely spaced, substantially parallel arm members,



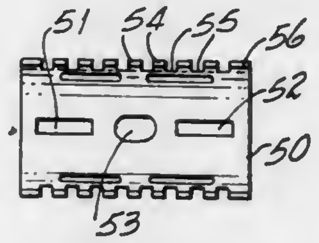
a notch-like recess formed in each of said arm members in transversely spaced relation to one another for releasably retaining said base plate member and said base plate capping member in abutting relation to one another when the device is in use,
a longitudinally aligned slot means formed on the respective outer surfaces of said base plate member and said base plate capping member, said slot means adapted to slidingly receive opposed, inwardly facing surfaces of said arm members,
an outwardly projecting ridge-like means formed in the outwardly facing respective surfaces of said slot means to engage said notch-like recess of said arm members,
a plurality of transversely aligned, longitudinally spaced cut away portions formed in the respective transverse edges of said base plate and base plate capping members to expose the transverse edges of said razor blade means to the hair to be cut,
the depths of the transversely opposite cut away portions being different so that a first edge of said razor blade means is employed to cut hair at a first length, and so that a second edge of said razor blade means is employed to cut hair at a second length.

4,441,253

TWO CYCLE SAFETY RAZOR

Charles H. Sacks, 18100 N. Atlantic Blvd., North Miami Beach, Fla. 33160
Filed May 19, 1983, Ser. No. 496,282
Int. Cl.^{3} B26B *21/00*
U.S. Cl. 30—32 **1 Claim**

1. A safety razor comprising in combination
(a) a platform having its length greater than its width, said platform having a series of alternating slots and teeth along the edges of its longer sides, the width of each of said teeth being equal to the width of each of said slots;
(b) a cover plate substantially the same size as said platform to cooperate with said platform, having horizontal guides and a center screw;
(c) a razor blade substantially the same size as said platform to cooperate with said platform and said cover plate;
(d) an elongated handle to receive said center screw, releasably connecting to said platform, said razor blade and said cover plate;

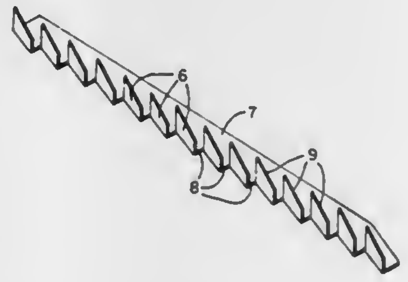


(e) a means to manually shift said razor blade a length of one of said teeth relative to said platform, exposing said lengths of said razor blade's edge previously unused, and the previously used lengths covered by said teeth of said platform; and
(f) said means to shift said razor blade relative to said platform includes an oblong center opening in said platform having its larger diameter equal to the diameter of said center screw plus the width of one of said teeth of said platform, whereby said razor assembly is loosened such that said platform is shifted relative to said center screw.

4,441,254

KITCHEN UTENSIL FOR CUTTING FRUIT, VEGETABLES AND THE LIKE INTO STRIPS AND A BLADE THEREFOR

Alfred Börner, Industriegebiet, 5561 Landscheid-Niederkail, Fed. Rep. of Germany
Filed Jun. 5, 1981, Ser. No. 271,009
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1980, 3022021
Int. Cl.^{3} B26B *3/04*
U.S. Cl. 30—124 **7 Claims**

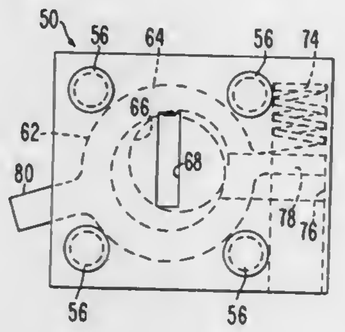


1. A blade member for a utensil for cutting foodstuffs, comprising:
(a) a generally rectangular strip of metal which is sharpened along one longitudinally extending edge and which has a portion adapted to form a base for a plurality of cutting blades;
(b) a plurality of parallel slits which extend from said sharpened edge transversely to the length of said strip; and
(c) a plurality of spaced cutting blades lying at right angles to the plane of said base portion of the strip of metal and transversely to the length of the strip, each blade of said plurality of cutting blades being constituted by a portion of said generally rectangular strip of metal located adjacent to the sharpened edge of the strip and between adjacent slits, the metal of each blade merging with said base portion of the strip along a line which intersects one of the adjacent slits intermediate the length thereof and the other

of said adjacent slits at an end thereof remote from said sharpened edge, each blade having its greatest height nearer to one end of the blade than to the other.

4,441,255
HOLDER FOR SABER SAW BLADE

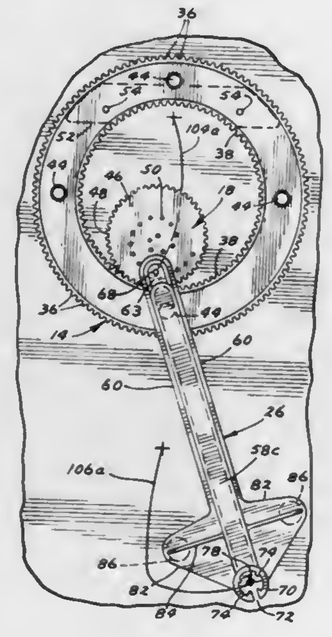
Simon J. Hoffman, P.O. Box 75821, Los Angeles, Calif. 90075
Division of Ser. No. 62,606, Aug. 1, 1979, Pat. No. 4,285,129. This application Feb. 2, 1981, Ser. No. 230,966
Int. Cl.^{3} B27B *19/09*
U.S. Cl. 30—392 **1 Claim**



1. A holder for a saber blade comprising: a support having means defining a recess for receiving one end of a saber saw blade; and means shiftably mounted on the support for releasably holding the saber saw blade in the recess, the holding means including spring structure biasing the holding means into a blade holding position, the blade having a notch extending into the same from one marginal edge thereof, said support having a slot defining said recess, said support including a main body and a plate spaced forwardly from the body to form a gap, the body and the plate having aligned, respective slots therein defining said recess, said holding means including a cam member rotatably mounted in the gap and having an eccentric cam portion movable into an operative position in alignment with the slots in the body and the plate and thereby into the notch when the blade is in the slots, said spring structure biasing the cam portion into said operative position.

4,441,256
MANIPULATOR FOR CREATING A MULTIPLICITY OF VARIED LINE DESIGNS

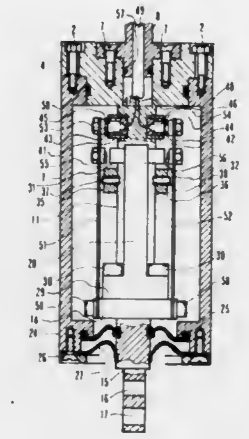
Charles A. Cummings, and William R. La Dow, both of Cincinnati, Ohio, assignors to CPG Products Corp., Minneapolis, Minn.
Filed Nov. 23, 1982, Ser. No. 444,262
Int. Cl.^{3} B43L *11/00*
U.S. Cl. 33—27 L **15 Claims**



1. A manipulator for creating primary and secondary line designs comprising master means including first and second members for guiding a first marking implement to form said primary design, said first member being provided with an inner edge having a relatively large radius of curvature and said second member being provided with an outer edge having a relatively small radius of curvature and said second member having a plurality of holes at different distances from its said outer edge, said inner and outer edges being engageable with each other, and slave means controlled by said master means for guiding a second marking implement to form said secondary design, said slave means including an elongated cam arm having a hole near one end thereof registrable with a selected one of the plurality of holes in said second member so that one end of said first marking implement can be received in the hole of said cam arm and in the selected hole of said second member to interconnect said cam arm with said second member so that said cam arm is controlled through the agency of said one end of said first marking implement.

4,441,257
PROBE FOR CHECKING LINEAR DIMENSIONS

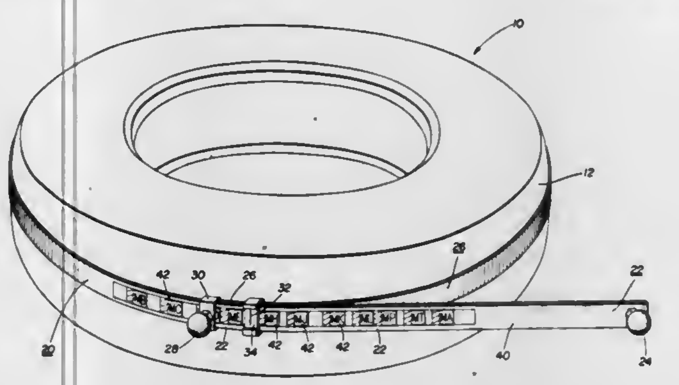
Guido Golinelli, Bologna, and Narciso Selleri, Monteveglio, both of Italy, assignors to Finike Italiana Marposs S.p.A., S. Marino di Bentivoglio, Italy
Filed Sep. 16, 1982, Ser. No. 418,628
Claims priority, application Italy, Nov. 20, 1981, 3579 A/81
Int. Cl.^{3} G01B *7/02*
U.S. Cl. 33—174 L **10 Claims**



1. A probe for checking linear dimensions, like dimensions of mechanical pieces, including support means, an arm movable with respect to the support means and having a portion defining a longitudinal geometrical axis, connection means for connecting the arm to the support means for allowing the arm to displace with respect to the support means in two opposite directions, feeler means for touching the surface of the piece to be checked, coupled to an end of the movable arm, and switch means with electrical contacts, that are closed in rest condition, associated with the arm and the support means, wherein said switch means comprise two flexible laminae with a first end coupled to the movable arm and a second end free; a control device coupled to the movable arm including first reference surfaces; and second reference surfaces coupled to the laminae; said electrical contacts including two movable contacts fixed to the laminae next to the free ends of the laminae and to the second reference surfaces and corresponding fixed contacts fastened to the support means; said first reference surfaces being adapted for cooperating, further to the displacements of the movable arm from a rest position, with the second reference surfaces, for resiliently deflecting either of the laminae and separating either of the movable electrical contacts from the corresponding fixed contact.

4,441,258
CODED TAPE FOR DETERMINING TIRE SIZE

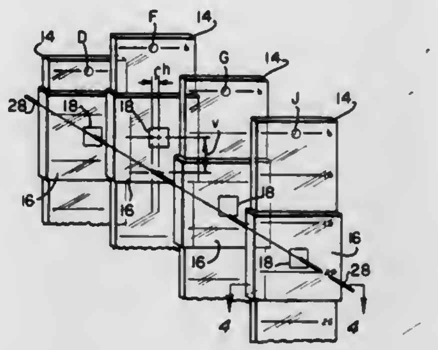
Charles R. McDaniel, Wadsworth, Ohio, and H. Richard Baumgardner, Prospect, Ky., assignors to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Jul. 5, 1983, Ser. No. 510,697
Int. Cl.^{3} G01B *3/10*
U.S. Cl. 33—179 **10 Claims**



1. A measuring device for a tire, said device comprising a length of flexible tape having two ends and being adapted to circumferentially surround and overlap an annular portion of the outer peripheral surface of a tire, said device including means for adjusting said tape to said annular portion, the improvement comprising a plurality of transversely extending discrete bands located adjacent to one end of an outer surface of said tape, each of said discrete bands having an individual code marked thereon, each of said codes comprising an individual matrix code corresponding to a physical dimension of one of a plurality of matrices or molds used in the curing of new or retreaded tires, said matrix codes being arranged on said tape such that said codes represent decreasing mold dimensions in a direction away from said one end, said bands and said codes together comprising means for determining the appropriate matrix or mold in which a tire is to be positioned for curing by direct visual inspection of said tape when said tape surrounds said annular portion.

4,441,259
METHOD, AND MEANS, FOR IN SITU DETERMINATION OF ALIGNMENT OF A VEHICLE FRAME

Alfred Leitermann, 4 Lakewood Pl., Port Monmouth, N.J. 07758, and Gary B. Mason, 2164 Holly Hill Rd., Lakehurst, N.J. 08733
Filed Jan. 26, 1982, Ser. No. 342,825
Int. Cl.^{3} G01B *5/25*
U.S. Cl. 33—288 **10 Claims**



1. A method for in situ determination of alignment of a vehicle frame, which frame has a reference line and datum points, comprising the steps of:

attaching sighting targets to a plurality of at least three of the vehicle frame datum points at standardly-prescribed distances, for each of the sighting targets, from the vehicle frame reference line; and

taking a linear sighting, with sighting means which is (a) wholly independent of, (b) universally-movable in isolation from, and (c) freely emplaceable in a selected adjacency to said vehicle frame, along said targets to ascertain alignment and misalignment of any one of said targets relative to at least two others thereof; wherein

said attaching step comprises attaching sighting targets which are, at least in part, substantially planar;

said linear sighting step comprises taking a linear sighting along said targets, as aforesaid, which is perpendicular to said targets;

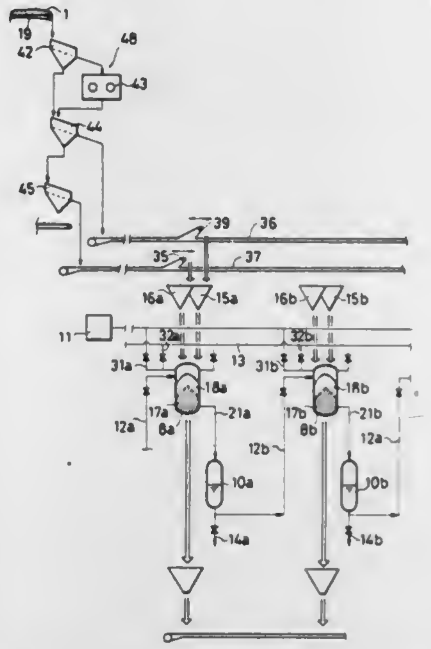
said attaching step further comprises attaching sighting targets which have alignment-tolerance frames visible thereon;

said linear sighting step further comprises moving said sighting means until linear sighting thereby establishes linear alignment of said frames of said two other targets; and

said attaching step further comprises attaching to said datum points translucent, dimensionally-graduated scales which have the aforesaid alignment-tolerance frames movable thereon.

4,441,260
PROCESS AND APPARATUS FOR DEHYDRATING ORGANIC SOLID MATERIAL

Yasuyuki Nakabayashi, Yokohama; Yoshio Matsura, Funabashi; Michio Kurihara, Mitaka; Takao Kamei, Ashiya; Akira Nakamura, Akashi; Keiichi Komai, Akashi; Akira Simotamari, Akashi, and Izumi Matsuno, Kobe, all of Japan, assignors to Electric Power Development Co. Ltd., Tokyo and Kawasaki Jukogyo Kabushiki Kaisha, Kobe, both of, Japan
Filed Jan. 28, 1982, Ser. No. 343,771
Int. Cl.^{3} F26B *3/04*
U.S. Cl. 34—15 **4 Claims**



1. In a process for dehydrating water-containing organic solid material comprising the steps of introducing the material into a pressure vessel, applying saturated steam to said vessel to heat the material so that water in the material is removed and mixed with condensate of the steam to be exhausted from the vessel as a waste water, the improvement comprising classifying the solid material into a first group of relatively larger size particles and a second group of relatively smaller size particles, charging the first group of relatively larger size particles into the pressure vessel so that a bottom portion of the vessel is composed of a layer of relatively larger size particles, then changing the second group of relatively smaller size particles on the layer of relatively larger size particles.

4,441,261
METHOD AND APPARATUS FOR COOLING HOT BULK MATERIAL

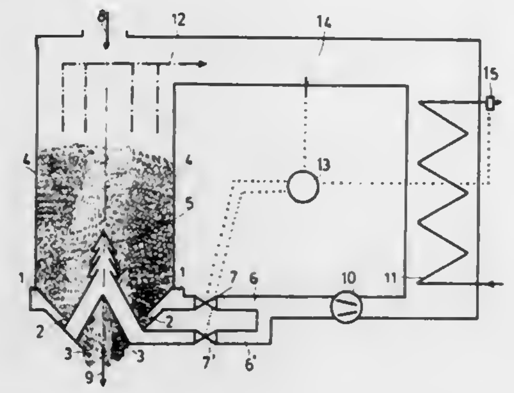
Georg Beckmann, Vienna, Austria, assignor to Waagner Biro Aktiengesellschaft, Austria

Filed Jun. 1, 1981, Ser. No. 268,828

Claims priority, application Austria, Jun. 6, 1980, 2983/80; Jun. 6, 1980, 2984/80

Int. Cl.^{3} F26B *3/14, 21/06*

U.S. Cl. 34—20 **16 Claims**



1. A method of cooling hot bulk material in a cooling bunker comprising the steps of:
passing a first cooling gas stream from a first feed line through a core zone of the hot bulk material within the bunker;
simultaneously passing a second cooling gas stream from a second feed line through a peripheral zone of the hot bulk material within the bunker;
collecting the heated first and second gas streams after the same have passed through the hot bulk material and directing the heated gas stream from the cooling bunker into gas cooling apparatus and recooling the same therein;
directing the recooled gas stream from the gas cooling apparatus into the first and second feed lines to form the first and second cooling gas streams; and
regulating the relative flows of the first and second gas streams with respect to each other through the first and second feed lines and through the hot bulk material in response to the temperature of the heated gas stream such that as the temperature of the heated gas stream increases, the flow of the first gas stream through the core zone of the hot bulk material is reduced and the flow of the second gas stream through the peripheral zone of the hot bulk material is increased.

4,441,262
DRIER, PARTICULARLY FOR PLASTIC MATERIAL

Domenico Gazzoni, Breccia, Italy, assignor to Sorema s.r.l., Italy

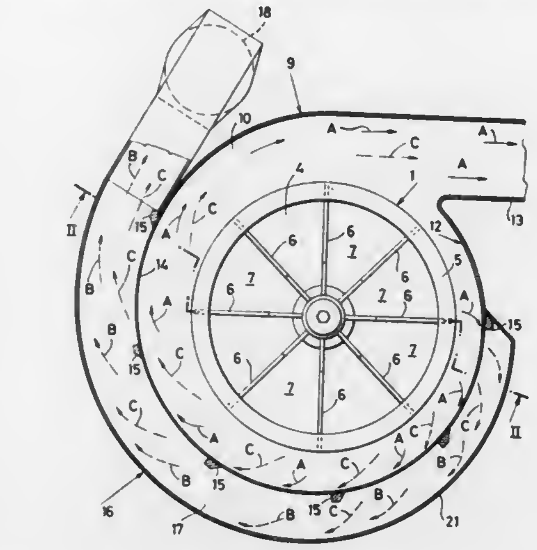
Filed Dec. 15, 1981, Ser. No. 330,852

Claims priority, application Italy, Mar. 17, 1981, 20371 A/81

Int. Cl.^{3} F26B *17/10*

U.S. Cl. 34—57 D **4 Claims**

1. Drier, particularly for plastic material, comprising a rotor rotating about a vertical axis means for directing wet material to be dried onto the rotor from above and means for rotating said rotor so as to centrifuge said material outwardly together with conveyance air generated by the rotor, a first scroll around said rotor to receive and convey towards an outlet said material and said conveyance air, a bored grating arranged in a lateral wall portion of said first scroll in such a position as to receive the impact of the material centrifugated by the rotor and to allow the outflow of a part of said conveyance air and of the liquid which separates from said material because of said impact and the crossing of the material by said conveyance air, and a second scroll which develops around said portion of the first one to receive and convey towards a discharge said conveyance air and said liquid passed through the grating.



4,441,263
DEVICE IN THE DRYING SECTION OF A PAPER MACHINE

Timo Vedenpää, Jyväskylä, Finland, assignor to Valmet Oy, Finland

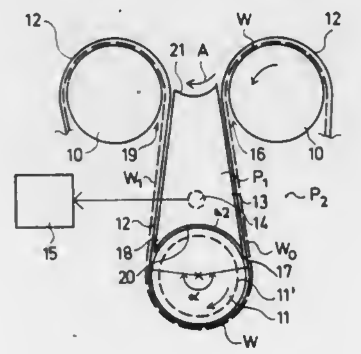
PCT No. PCT/FI80/00002, 371 Date Jul. 20, 1981, 102(e) Date Jun. 18, 1981, PCT Pub. No. WO81/01428, PCT Pub. Date May 28, 1981

PCT Filed Oct. 27, 1980, Ser. No. 276,334

Claims priority, application Finland, Nov. 20, 1979, 793643

Int. Cl.^{3} F26B *13/08*

U.S. Cl. 34—115 **6 Claims**



1. In a drying section of a paper machine including drying cylinders and a drying fabric loop arranged such that a first group of at least one of said cylinders is located outside of said drying fabric loop and a second group of at least one of said cylinders is located within said drying fabric loop, so that the web runs in a closed draw in a joint run with and supported by said fabric from a cylinder of one group to a cylinder of the other group, said joint run defining wedge-shaped spaces between said drying fabric and the shell of the drying cylinders, the improvement comprising
at least one suction box situated adjacent to a joint run of said web and drying fabric,
said suction box including suction apertures situated proximate to at least one of said wedge-shaped spaces to produce a suction effect mainly in said at least one of said wedge-shaped spaces,
said at least one suction box thereby constituting means for producing a suction effect mainly in at least one of said wedge-shaped spaces,
said suction effect being substantially higher than a suction effect, if any, produced by said suction box in the region of said closed draw run of said web between said wedge-shaped spaces,
wherein said at least one suction box includes a substantially closed, planar wall, situated adjacent to said closed draw run of said web between said wedge-shaped spaces,
wherein longitudinal seals are provided at each lateral side of said suction box in operative relation with and extending in the direction of the closed draw run of said web between said wedge-shaped spaces, and
wherein transverse seals project from said closed wall proximate to said wedge-shaped spaces in operative relation with and extending transverse to the direction of the closed draw run of said web between said wedge-shaped spaces,
said transverse seals acting to inhibit the production of a subatmospheric pressure in a central region of the closed draw run, and said seals guiding said drying fabric at a distance from said substantially planar wall.

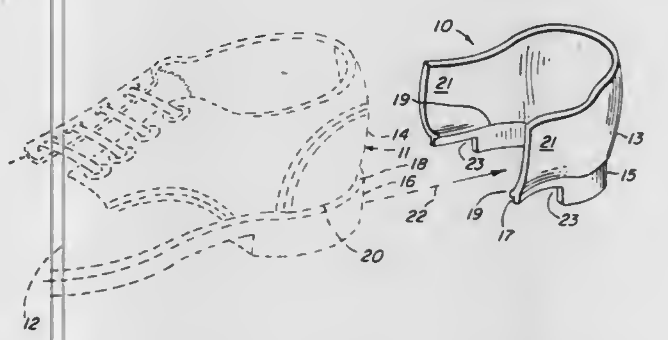
4,441,264
DRIVER'S HEEL GUARD

Diane Hantz-Guibas, and John C. Guibas, both of 164-08 85th Ave., Jamaica, N.Y. 11432

Filed Mar. 22, 1982, Ser. No. 360,344

Int. Cl.^{3} A43B *13/22, 13/26*

U.S. Cl. 36—72 B **3 Claims**



1. A driver's heel guard comprising, in combination a generally U-shaped body portion for clipping around a rear end of a shoe, a depending U-shaped skirt portion for shielding the shoe heel, the guard having an open bottom, an inwardly directed bead formed on the inner surface intermediate between said body portion and said skirt portion, a shoulder formed under said bead for locking onto a peripheral top surface of the heel of the shoe with the bead fitting into a recess of the shoe between the rear end of the shoe and the shoe heel, the distal ends of said skirt portion being notched so as to terminate in spaced relation prior to the distal ends of said body portion and said bead and shoulder, the distal ends of said body portion being outwardly flared, said body portion, skirt portion, bead and shoulder being molded of a semi-rigid plastic material and a spring steel clip being embedded inside the body portion above said head.

4,441,265
ATHLETIC SHOE WITH ANKLE SUPPORT STRAP

Christopher D. Burns, 415 Chapel St., Ottawa, Ontario, Canada K1N 7Z7; Guntis Obrascovs, 2 Sweetland Ave. Apt. 3, and Andrew L. Pipe, 3-47 First Ave., both of Ottawa, Ontario, Canada

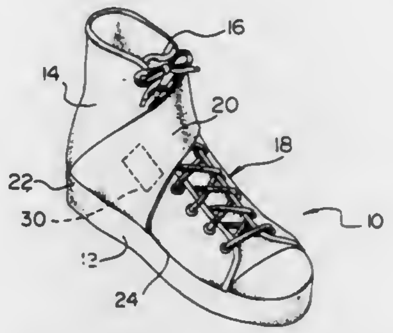
Filed Apr. 5, 1982, Ser. No. 365,514

Claims priority, application Canada, Apr. 14, 1981, 375455

Int. Cl.^{3} A43B *5/04*

U.S. Cl. 36—117 **7 Claims**

1. An athletic shoe of the ankle boot type having a substantially unstretchable band of flexible material secured to the boot to extend along the outside of the upper adjacent the sole from a position rearwardly of the calcaneo fibular ligament of a wearer to a position adjacent the transverse tarsal joint, said band being configured to extend in use from the outside of the upper over the dorsal surface of the boot to the inside of the ankle adjacent the distal tibia of a wearer, and fastener means for securing the band to the ankle of the boot.



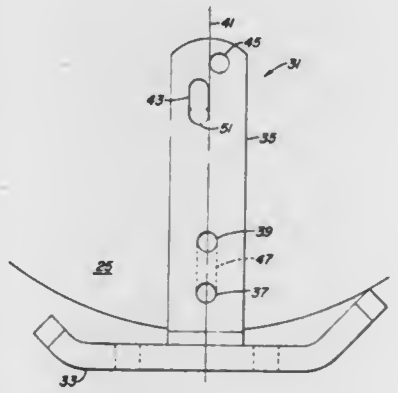
4,441,266
SKID SHOE MOUNTING ARRANGEMENT FOR SNOW BLOWER

David A. Westimayer, Horicon, Wis., assignor to Deere & Company, Moline, Ill.

Filed Nov. 29, 1982, Ser. No. 444,947

Int. Cl.^{3} E01H *5/09*

U.S. Cl. 37—244 **2 Claims**



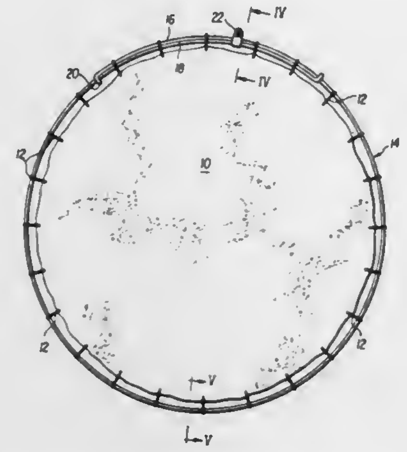
1. An improved skid shoe and mounting assembly for mounting said skid shoe to a respective sidewall of a snowblower auger housing said skid shoe having a base section extending generally horizontally and a strut section extending generally vertically from and fixably mounted to said base section, wherein the improvement comprises:
said strut section having sequentially aligned along the general vertical center line of said strut, a first hole, a second hole, a vertical slot and a third hole;
said slot being horizontally off-centered from said vertical center line in one direction and said third hole being horizontally offset from said vertical center line in another direction;
said sidewall having a generally vertical extending slot followed by a hole vertically spaced apart from said slot in said sidewall and horizontally displaced to one side from the vertical center line of said slot;
said strut being attachable to said sidewall in a plurality of vertical positions such that in a first of said vertical positions said first hole in said strut is aligned with said lower portion of said slot in said sidewall and said hole in said sidewall is aligned with said lower portion of said slot in said strut, in a second of said vertical positions said second hole in said strut is aligned with said upper portion of said slot in said sidewall and said hole in said wall is aligned with said upper portion of said slot in said strut, in a third of said vertical positions said second hole in said strut is aligned with said lower portion of said slot in said sidewall and said third hole in said strut is aligned with said hole in said sidewall, and
means for fixably and detachably mounting said skid shoe to

said sidewall such that said base of said skid shoe is below said sidewall in all of said plurality of vertical positions.

4,441,267

PELT STRETCHER

Albert S. Doss, Rte. 2, Box 532, Farmville, Va. 23901
Filed Aug. 18, 1981, Ser. No. 293,917
Int. Cl.^{3} D06C *3/08;* C14B *1/26*
U.S. Cl. 38—102.8 **3 Claims**

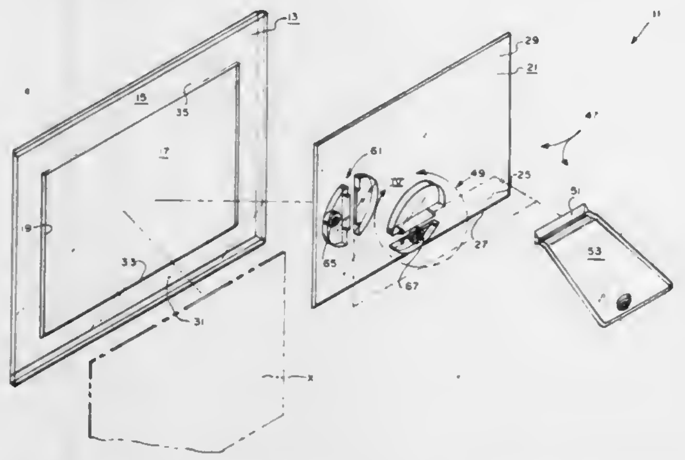


1. A pelt stretching device which comprises a frame in the form of an elongated resilient element extending in a circle of variable circumference and having a pair of overlapping end portions, each of said end portions having an element integral therewith adjacent its extremity, said integral element extending around and holding the other said end portions, but each end portion being slidable lengthwise through the integral element which holds it, whereby the integral elements hold the frame in a circular shape but are slidable along the frame to vary the circumference of the frame, a releasable clamp mounted on the overlapping end portions between the integral elements and adapted to lock the two end portions together when the frame has been adjusted to a desired stretching circumference, and means to connect the frame to a pelt surrounded by the frame.

4,441,268

PICTURE FRAMING DEVICE

Doug Scott, 7081 Great Oaks Rd., Germantown, Tenn. 38138
Filed Jul. 19, 1982, Ser. No. 399,315
Int. Cl.^{3} G09F *1/12*
U.S. Cl. 40—152.1 **21 Claims**



16. A picture framing device for displaying an enclosure, which device comprises:

(a) a clear plastic frame means for establishing a marginal border surrounding the enclosure to be displayed;

(b) a clear plastic lens-like means integrally formed and joined to the frame means to provide an obverse, protective, transparent cover for the enclosure to be displayed;

(c) confinement means comprising the frame means and lens-like means which together define a depression containing four marginal edges thereabout into which depression the enclosure is inserted for display through the lens-like means;

(d) a plastic rigid backplate means for nestled reception of the backplate means within the depression to retain the enclosure in the depression;

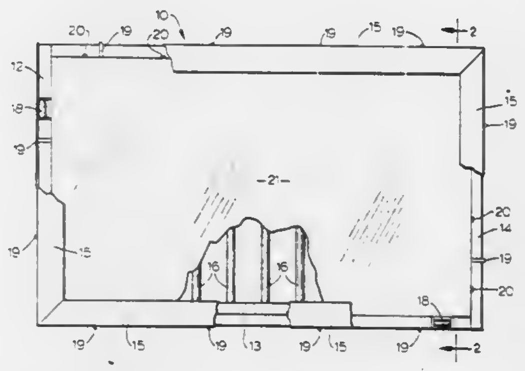
(e) interlocking means to retain the backplate means in a frictional, nestled relationship within the depression and into a close retaining contact with the back of the enclosure to be displayed, which interlocking means comprises an undercut marginal edge and a right angle wall portion extending therefrom and an opposite remotely-spaced straight edge in the confinement means and a chamfered marginal edge and a right angle wall portion extending therefrom and an opposite remotely-spaced straight edge in the backplate means, the undercut edge and the chamfered edge and the respective opposite edges in a close, cooperative, frictional engagement within the depression so as to retain the backplate means in a close, nestled, and frictional relationship within the depression; and

(f) support means to place the device in a displayable position.

4,441,269

SIGN FRAME

Byron M. Dahl, Watertown, S. Dak., assignor to Esco, Inc., Watertown, S. Dak.
Filed Mar. 9, 1982, Ser. No. 356,331
Int. Cl.^{3} G09F *1/12*
U.S. Cl. 40—156 **12 Claims**



1. A sign structure comprising:

a plurality of elongated sign frame elements each joined at its ends to an adjacent sign frame element to define a sign frame having a closed center portion;

a facing material having an edge corresponding to each edge of said sign frame and having a shape and size sufficient to cover one face of said sign frame;

a facing material gripping means associated with each edge of said facing material for gripping said facing material;

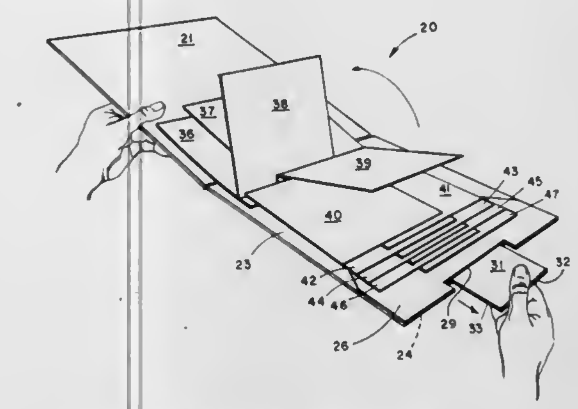
connection means for connecting each of said facing material gripping means to a corresponding sign frame element; and

wherein each of said sign frame elements includes an elongated, generally flat base having a pair of generally parallel longitudinal edges and being disposed at right angles with respect to said facing material, a first flange portion integrally formed with one of the longitudinal edges of said base and extending inwardly toward said center portion of said sign structure at right angles to and inwardly of the innermost portion of said base and a second flange portion integrally formed with the other of the longitudinal edges of said base and extending outwardly from said center portion of said sign structure in a direction opposite said first flange portion and at right angles to and outwardly of the outermost portion of said base.

4,441,270

STAGGERED FLIP-PAGE DISPLAY FOLDER

Christopher S. Crowell, Lyme, and Warren Dennison, East Lyme, both of Conn., assignors to Structural Graphics, Inc., Essex, Conn.
Filed Aug. 11, 1982, Ser. No. 407,103
Int. Cl.^{3} G09F *19/00*
U.S. Cl. 40—534 **6 Claims**



1. A multi-page folder comprising:

a back cover panel bounded by a right fold line,

a contiguous base panel joined to the back cover panel at the right fold line,

central slot means formed in at least one of said panels near the right fold line joining the back panel and the base panel,

a distal segmented tab extending from the base panel away from the right fold line,

means forming a plurality of substantially parallel fold lines traversing and subdividing the tab into plural segments,

an elongated drawstrip joined to the tab segment remote from the right fold line extending between the back cover panel and the base panel through the central slot means, longitudinally movable from a retracted position substantially flattening the segmented tab to an extended position protruding through the central slot means beyond the right fold line and curling the segmented tab under the base panel toward the slot means,

and a plurality of individual separate pages respectively secured to individual segments of the segmetned tab successively oppositely offset laterally in a direction substantially parallel to said parallel fold lines and thus being interleaved in staggered array,

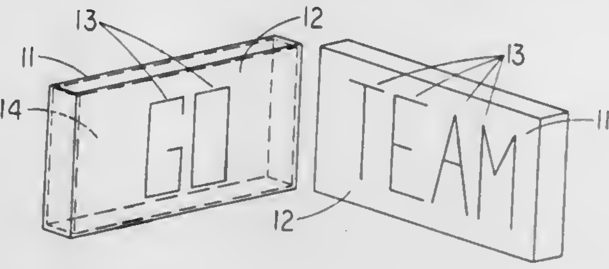
whereby progressive movement of the drawstrip from its retracted position towards its extended position causes progressive curling movement of the segmented tab, successively flipping over the individual staggered interleaved pages, while at all times displaying to view at least one full page and a substantial area of an underlying staggered page, thereby changing only part of the indicia displayed during each successive stage of the page-flipping operation.

4,441,271

COMBINATION PORTABLE SEAT CUSHION AND PENNANT

Earl Hutchinson, 110 Dellwood Ave., Lockport, Ill. 60441
Filed Jul. 19, 1982, Ser. No. 399,598
Int. Cl.^{3} G09F *21/02*
U.S. Cl. 40—584 **8 Claims**

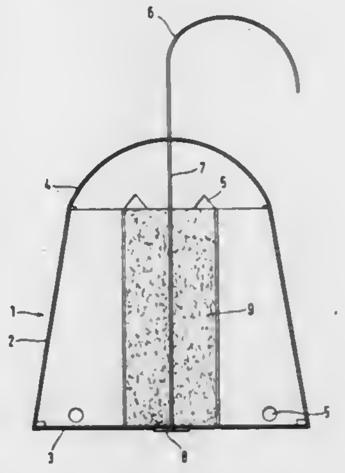
1. A portable seat cushion and pennant, comprising cushion means to provide a cushioned seat, said cushion means including multiple message completion and display means to display parts of a message in the form of different completed messages when so arranged, said cushion means including a first cushion and a second cushion, said first and second cushions being operatively connected for movement between a first position and a second position, said first position being substantially side-by-side relationship of said first and second cushions, said second position being one of said first and second cushions above the other to provide a double cushion seat, including operative connection means to receive said first and second cushions for movement between said first and second positions, said cushions being removable from said operative connection means for separated and associated use for at least one other purpose than as a cushion, said operative connection means including a carrying case, said carrying case including a first pocket and a second pocket, said first and second pockets each including an open end to receive respective ones of said first and second cushions in said pockets, said pockets being joined in side-by-side relationship along a common border, said pockets being foldable on said common border for operative movement of said pockets between a first position of substantially side-by-side relationship and a second position in which one of said pockets is above the other, wherein said first pocket includes a pair of hand grasp apertures formed in the side wall thereof near said open end, oppositely disposed and each aperture of said pair in substantial registration with each other, said second pocket includes a pair of hand grasp apertures formed in the side wall thereof near said open end, oppositely disposed and each aperture of said pair in substantial registration with each other, both of said pairs of hand grasp apertures being in substantial registration with each other when said first and second pockets are in said position one above the other.



4,441,272

METHOD AND APPARATUS FOR ATTRACTING USEFUL INSECTS

Gisela Bartz, Winnekendonker Str. 43, 4179 Kevelaer 2, Fed. Rep. of Germany
Continuation of Ser. No. 142,683, Apr. 22, 1980, abandoned. This application Dec. 10, 1981, Ser. No. 329,613
Claims priority, application Fed. Rep. of Germany, May 10, 1979, 2918852
Int. Cl.^{3} A01M *1/00*
U.S. Cl. 43—1 **9 Claims**



9. A method for controlling harmful insect pests populating a vegetated area by attracting beneficial insects, comprising the steps of:

(a) providing in said vegetated area a container having a plurality of openings therein for permitting free entry and exit of said beneficial insects;

(b) providing in said container an environment preferred by said beneficial insects by partially filling said container with a non-poisonous natural beneficial insect attracting substance;

(c) attracting said beneficial insects to said container;

(d) permitting said beneficial insects to freely enter said container for seeking shelter therein; and

(e) permitting said beneficial insects to freely exit said container for consuming said harmful insect pests for thereby controlling said harmful insect pests.

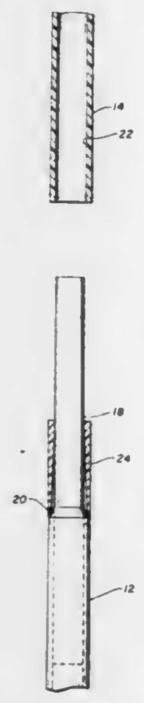
4,441,273
RESILIENT FERRULE COVER FOR FISHING RODS

Robert L. McMickle, and James T. Rumbaugh, both of Spirit Lake, Iowa, assignors to Berkley and Company, Inc., Spirit Lake, Iowa

Filed Mar. 1, 1982, Ser. No. 353,513

Int. Cl.^{3} A01K *87/00*

U.S. Cl. 43—18.1 **2 Claims**



1. A ferrule for connecting two tapered sections of fishing rod comprising:

a male ferrule portion projecting from a chamfered distal tip portion of a first tubular segment, said male ferrule having a diameter substantially less than the diameter of said first tubular segment and gently tapered to a reduced diameter at its distal end;

a second tubular segment having a tapered inner core constructed and arranged to receive a portion of said male ferrule therein with the remaining portion being exposed; and

a ferrule cover having an outside diameter substantially equal to the outside diameter of said second tubular segment and having an inside diameter at one end substantially equal to the inside diameter of said second tubular segment and tapered to a larger diameter at the other end thereof, said ferrule cover constructed from a resilient flexible material to permit the larger diameter portion of said ferrule cover to slide over the exposed portion of said male ferrule portion and abut the chamfered end of the first tubular segment and to slide up the chamfered end of the first tubular segment and over the distal end of said first tubular segment as increased wear between said ferrule and said core reduces the length of the exposed male ferrule portion.

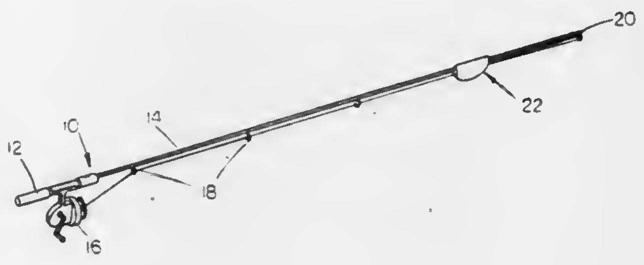
4,441,274
FISHING LURE HOLDER

John J. Masur, 4460 Bedford Ave., Omaha, Nebr. 68111

Filed Jul. 29, 1982, Ser. No. 403,033

Int. Cl.^{3} A01K *97/06*

U.S. Cl. 43—25.2 **5 Claims**



1. In combination with a fishing rod having a handle, a rod portion having a plurality of spaced line guides, a reel, a fishing line extending from said reel through said guides, and a fishing lure on the end of said line, comprising,

a closeable container comprising first and second container portions which are spaced apart when the container is in its open position and which are positioned adjacent each other when the container is in its closed position,

each of said container portions having an outer peripheral rim portion and an inner peripheral rim portion which define a storage compartment therebetween,

the inner peripheral rim portions of said container portions being spaced apart to permit the positioning of said rod portion therebetween,

at least one of said outer peripheral rim portions having a slit formed therein to permit the fishing line to be extended thereby so that the fishing lure may be stored within one of said storage compartments,

and means for maintaining said container in its closed position around said rod portion with said fishing lure within said one storage compartment,

each of said inner peripheral rim portions defining a V-shape to permit one of said line guides to be received thereby to prevent the rotation of said container with respect to said rod portion when said container is positioned on said rod portion in its closed position.

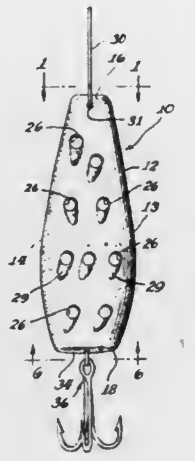
4,441,275
SWIMMING SPOON LURE

Edmund E. Leszkiewicz, 420 W. Camp McDonald Rd., Prospect Heights, Ill. 60070

Continuation of Ser. No. 947,341, Oct. 2, 1978, abandoned. This application Jun. 30, 1980, Ser. No. 164,032

Int. Cl.^{3} A01K *85/00*

U.S. Cl. 43—42.06 **3 Claims**



1. A fish lure capable of emulating a random swimming motion comprising

an elongate lure body having a forward end and a trailing end and opposed side edges, and having a substantially overall side to side arcuate configuration and including a convex bottom surface and a concave top surface,

each of said opposed side edges includes a recess disposed adjacent to said forward end of said lure, and a rise portion positioned rearward of said recess portion, the corresponding recess and rise portions of each of said side edges being asymmetrical along a horizontal axis measured from one side edge to the opposed side edge thereof,

said lure body provided with a plurality of apertures disposed through said lure body in a plurality of rows spaced apart along the length thereof,

each of said apertures being provided with a flared scoop disposed along a portion of the circumferential periphery of said corresponding aperture and extending outwardly from said convex bottom surface,

each of said flared scoops facing in the general direction of said forward end of said lure body and being positioned askew with respect to the adjacent flared scoops of the immediately adjacent rows such that none of the flared scoops in the immediately adjacent rows are in parallel alignment one with respect to the other, and said fish lure being completed by tie means at said forward end thereof to permit attachment to a fish line, and a hook assembly secured to said trailing end thereof, said trailing end further being provided with a flange positioned at approximately a ninety degree angle relative to said lure body and transverse to the path of water as it travels through said apertures and directed thereagainst by said flared scoops associated with each of the apertures,

whereby when said fish lure is in use, said flared scoops associated with each of said apertures will function to have the tendency to direct said fish lure body in different random directions, while said arcuate configuration of said lure body will cause said fish lure to travel in an up and down and side to side pathway such that said fish lure body will have the overall appearances emulating a random swimming motion thereby to function as a source of attraction to fish.

4,441,276
WINDOW REGULATING DEVICE FOR A WINDOW GLASS OF A VEHICLE DOOR OR THE LIKE

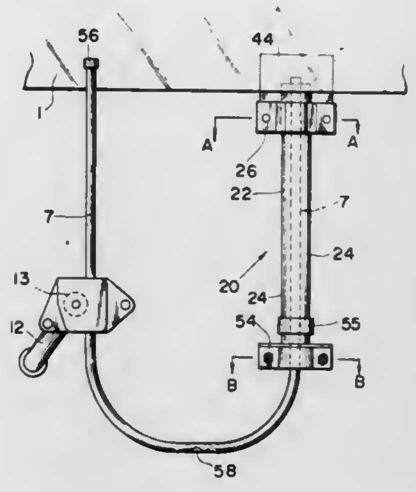
Takayo Chikaraishi, Tokyo, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 16, 1981, Ser. No. 283,804

Claims priority, application Japan, Jul. 26, 1980, 55-102663; Aug. 1, 1980, 55-106164

Int. Cl.^{3} E05F *11/48*

U.S. Cl. 49—352 **7 Claims**



1. In a vehicle door having a window glass, a window regulator mechanism for raising and lowering said window glass along a path from a predetermined position within said door comprising:

an elongate tube located on the outboard side of said path;

an elongate cable slidingly disposed within said tube;

a manually operated mechanism, operatively connected to said cable for moving said cable axially within said tube, including a handle having a shaft arranged to extend across the path of said window to limit the movement of the window away from said predetermined position, said shaft extending from the inboard side of said door toward the outboard side thereof;

a stationary guide rail disposed adjacent said tube on the outboard side of said path, said guide rail having a pair of acutely bent sides which extend on either side of said tube so as to partly enclose same; and

a slide member slidably received on said guide rail, said slide member having a pair of arms which embrace the sides of said guide rail, said slide member being attached to said window glass and to said cable for movement therewith.

4,441,277
INVERTIBLE PREFABRICATED DOOR

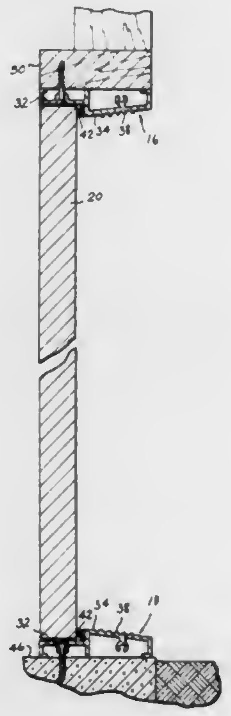
Donald B. Naylor, deceased, 1400 Pidco Dr., Plymouth, Ind. 46563 (Marshall County Bank & Trust, executor)

Continuation of Ser. No. 107,036, Dec. 26, 1979, Pat. No. 4,305,229, which is a continuation-in-part of Ser. No. 27,875, Apr. 6, 1979, abandoned, which is a continuation of Ser. No. 607,028, Aug. 22, 1975, Pat. No. 4,161,845. This application Aug. 10, 1981, Ser. No. 291,295

The portion of the term of this patent subsequent to Jul. 24, 1996, has been disclaimed.

Int. Cl.^{3} E06B *3/32*

U.S. Cl. 49—380 **1 Claim**



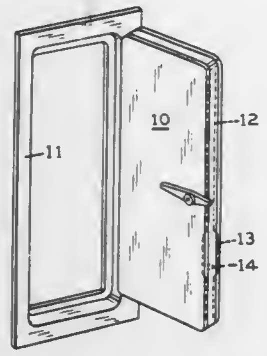
1. An invertible prefabricated door assembly for mounting within a wall opening defined by a foundation and overhead support, said door assembly comprising a panel, first and second jambs, a first combined header and threshold means, a second combined header and threshold means, said jambs and both combined header and threshold means forming a four-sided enclosed frame, said panel fitting within said frame and having opposite vertical side edges, and hinge means pivotally connecting said panelat one side edge to said first jamb, each of said first and second combined header and threshold means being mountable either to the foundation or the overhead support of said wall opening depending upon the desired location of said hinge means, and including a first part which said panel overlaps when closed and a second part extending substantially forwardly from said first part and defining a threshold when located adjacent said foundation and a header when located adjacent said overhead support, said first part being offset from said second part and separated therefrom by a

shoulder constituting a portion of each combined header and threshold means, and said shoulder being overlapped by said panel when the panel is closed.

4,441,278
MOUNTING FOR ENDLESS SEALING STRIPS

George H. Covey, III, Pawling, N.Y., assignor to The Presray Corporation, Pawling, N.Y.

Filed Nov. 12, 1981, Ser. No. 320,427
Int. Cl.^{3} E06B *7/16*
U.S. Cl. 49—477 **8 Claims**



1. A sealable closure, comprising
(a) a closure member having a substantially flat surface,
(b) an endless, continuous, elongated flexible sealing strip having a uniform, generally I-shaped cross section, with broad base and top portions interconnected by a neck having a narrow width, relative to said base and top portions,
(c) a continuous groove in said flat surface of the same length as the strip,
(d) two continuous fins, running on either side of and overhanging the bottom of said groove,
(e) said fins dividing said groove into a continuous inner channel and a continuous outer channel, separated by a throat, having a narrow width relative to the width of each of said inner and outer channels,
(f) the base portion and the neck of said strip being proportioned to fit closely but slidingly within said inner channel and said throat, respectively, of said groove,
(g) said continuous fins being arranged and configured to form an entrance slot-forming notch of limited length where said throat is wider than the base portion of said sealing strip,
(h) the base portion of said strip being formed to include a finite section of reduced width relative to the remaining sections of the base portion where the base portion is narrower than said throat,
(i) the notch being adapted to receive the base portion of said continuous strip, whereby the sealing strip may be inserted into the groove by initially placing the finite section of the base portion into the entrance slot-forming notch, sliding the base portion under the fins and into the inner channel, and sliding the sealing strip along the groove.

4,441,279
PORTABLE SHARPENER

Nelson Storm, Rossville, and Gregory A. Storm, Hoopeston, both of Ill., assignors to E-Z Products, Inc., Rossville, Ill., by said Nelson Storm

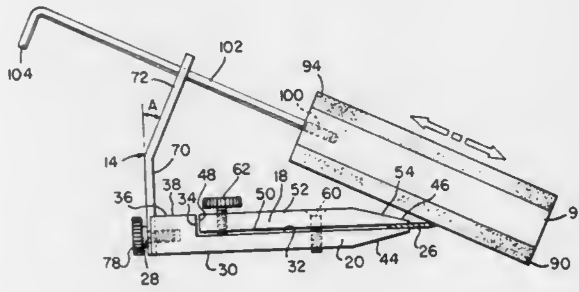
Filed Sep. 4, 1981, Ser. No. 299,569
Int. Cl.^{3} B24B *3/54*
U.S. Cl. 51—69 **5 Claims**

1. A portable hand held blade sharpening device comprising a vise having an upper and a lower jaw adapted to grip the blade to be sharpened therebetween, the lower jaw including a forward end and a rearward end, a bottom extending from end to end, a flat upper surface extending rearwardly from the front end and terminating in a vertical upstanding shoulder surface, a flat surface extending from the rear end forwardly to intersect the vertical shoulder above the flat upper surface thereby forming a positioning body portion bounded by the flat surface extending from the rear end, the bottom, the rearward end and the vertical upstanding shoulder, generally parallel sides connecting the bottom with the flat surface and the flat upper surface to form a generally rectangular vise lower jaw,

an upper jaw adjustably mounted on the lower jaw, said upper jaw comprising a forward end and a rearward end, a top extending from end to end, a flat bottom surface extending from end to end to form a bottom jaw surface generally coextensive with the flat upper surface of the lower jaw, generally parallel sides connecting the top and flat bottom surface to form a generally rectangular vise upper jaw,

screw means adjacent the forward ends of the upper and lower vise jaws to control and vary the space between the confronting jaw surfaces, screw means carried by one of the jaws adjacent the rearward end thereof to engage the confronting jaw surface of the other jaw to cause pivoting of one jaw with respect to the other about the screw means adjacent the forward ends of the jaws,

the rearward end of the lower jaw being provided with a central recess bounded by vertical shoulders extending throughout the height thereof, a guide bracket affixed to the rearward end of the lower jaw in said recess, said guide bracket comprising a rectangular guide arm sized to fit into the central recess in the rearward end of the lower jaw, said arm having a bottom and a top, a guide plate extending from the top of the guide arm, said guide plate being inclined toward the forward end of the lower jaw, said inclination commencing when the guide plate attaches to the guide arm, the guide plate being provided with two parallel guide slots extending transversely of the guide plate and parallel to the end of the lower jaw, screw means for affixing the guide bracket to the rear end of the lower jaw,

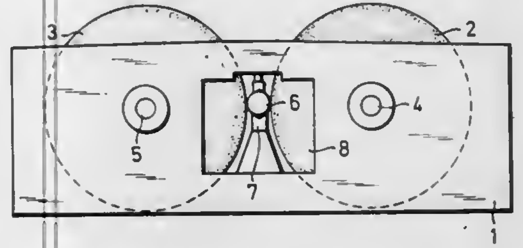


a sharpening tool cooperating with the vise and guide bracket, said tool comprising a longitudinally extending base having a square cross section thereby forming four equi-sized side faces, at least one of said faces being provided with an abrasive stone sized to be coextensive with said face, one end of the base being provided with a centrally threaded hole, a guide rod having a threaded end mounted in said threaded hole whereby every abrasive stone mounted on the side faces will be equi-distant from the center of the base, the guide rod fitting in and passing through one of the guide slots to control the angle of the abrasive stone with respect to a plane projected outwardly from between the confronting surfaces of the upper and lower jaws, whereby when a blade is held between the upper and lower jaws the blade will be positioned in the aforesaid plane so that the angle of sharpening will be determined by the transverse guide slot in which the guide rod is positioned.

4,441,280
DEVICE FOR CENTERLESS GRINDING OF ROTATION-SYMMETRICAL SURFACES ON WORK PIECES

Walter Wetzels, Aachen, Fed. Rep. of Germany; Kurt Crott, Eupen, Belgium, and Erich Voell, Roetgen, Fed. Rep. of Germany, assignors to Schumag GmbH, Aachen, Fed. Rep. of Germany

Filed Dec. 9, 1980, Ser. No. 214,760
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1979, 2949538
Int. Cl.^{3} B24B *41/00*
U.S. Cl. 51—103 R **13 Claims**

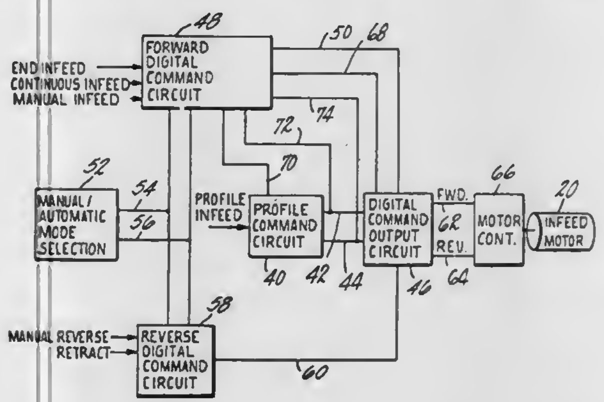


1. Device for centerless grinding of rotation-symmetrical surfaces on workpieces at a grinding station, comprising drive means for turning a workpiece about the axes of symmetry thereof during grinding, a support bar for supporting the workpiece during turning, a rotatable disc being perpendicular to and disposed on each side of the workpiece generating vibrations of operating frequencies at the grinding station during grinding, at least one of said discs being a grinding wheel operating under grinding pressure, mechanical bearing supports and feed means for said discs forming an oscillating system with said discs generating resonance frequencies, and rigid connecting means for forming a direct rigid linkage of forces between said bearing supports and for increasing the resonance frequencies of said oscillating system to the range of approximately 1000 Hz, said range being beyond said operating frequencies, said rigid connecting means being in the form of two side plates, said bearing supports being held in said side plates and said discs being disposed between said side plates.

4,441,281
PULSE CANCELLATION CIRCUITRY

Ronald J. Gordiski, Ansonia, Conn., assignor to USM Corporation, Farmington, Conn.

Filed Mar. 29, 1982, Ser. No. 362,597
Int. Cl.^{3} B24B *51/00*
U.S. Cl. 51—165.87 **20 Claims**



1. A roll grinding machine having a system for controlling the infeed positioning of a grinding wheel relative to the roll, said system comprising:

means for defining a grinding profile along the length of the roll;

means, responsive to the defining of a grinding profile for selectively producing first and second trains of pulses; the first train of pulses defining an inward motion of the grinding wheel relative to the roll and the second train of pulses defining an outward motion of the grinding wheel relative to the roll;

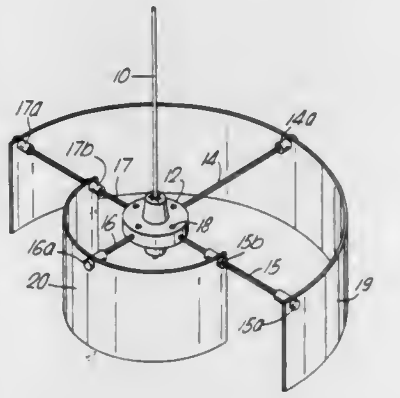
means for generating a pulse signal defining an additional inward motion of said grinding wheel relative to said roll; and

means for selectively processing the pulse signal defining the additional inward motion of said grinding wheel so as to either add a pulse to the first train of pulses or cancel a pulse occurring in the second train of pulses.

4,441,282
SUSPENDED CEILING

Jacques G. L. Thual, Paris, France, assignor to Hunter Douglas International N.V. Rooi Catootje, Curacao, Netherlands

Filed Apr. 21, 1982, Ser. No. 370,207
Claims priority, application United Kingdom, Apr. 24, 1981, 8112724
Int. Cl.^{3} E04F *19/00*
U.S. Cl. 52—39 **12 Claims**



1. A suspended ceiling comprising a carrying structure, a plurality of suspension units depending from said carrying structure, a plurality of slat assemblies each comprising a number of slats arranged to form a decorative pattern, each said slat assembly being mounted on one suspension unit, so as to be capable of at least limited rotation between a number of preselected different positions, and means to restrain the slat assemblies in each such position, whereby each slat assembly may have its orientation relative to its neighbouring slat assemblies varied, thereby varying the overall ceiling pattern.

4,441,283
STEEPLE

Heinz G. Schuette, Brevard, N.C., assignor to Horst Witt, Berkley, Mich.

Filed Jun. 23, 1982, Ser. No. 391,125
Int. Cl.^{3} E04B *7/00, 5/52*
U.S. Cl. 52—57 **19 Claims**

1. A steeple comprising:

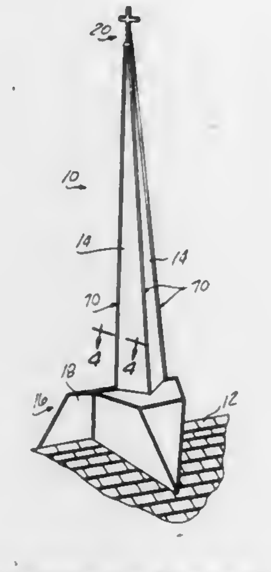
a plurality of inclined leg members, the lower ends of which are laterally spaced apart a greater distance than the corresponding upper ends, each of the leg members having a channel-shaped cross-sectional configuration opening outward from the steeple;

a plurality of vertically spaced means for connecting the leg members into a rigid frame with the leg members disposed at the corners thereof, each connecting means including a plurality of cross members, each extending between and joined to opposed ones of the leg members;

a plurality of planar outer panel members, each having a configuration complimentary to the configuration of the frame between adjacent corner leg members;

molding means for bending the side edges of the outer panel members around the outer ends of the leg members and into secure engagement with the inner surfaces of the leg members;

means for mounting the lower ends of the leg members to the roof of a building; and



an indicia bearing member receivable within and secured to the upper ends of the leg members.

4,441,284

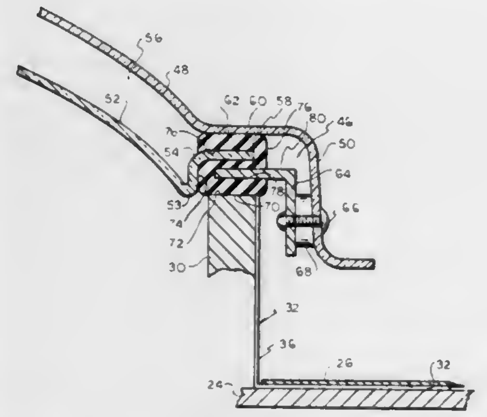
DOUBLE DOME SKYLIGHT ASSEMBLY

Stephen K. Bechtold, 28 Soundview Ave., East Northport, N.Y. 11731

Filed Jun. 10, 1982, Ser. No. 387,214

Int. Cl.^{2} E04B *7/18;* E04D *13/03*

U.S. Cl. 52—72 **8 Claims**



1. A skylight assembly adapted to be mounted to cover an opening in a roof structure comprising; a linear adapted to be mounted adjacent the edge of the opening in the roof structure around the periphery to surround the opening and to form a wall extending upward from the roof structure, an outer dome and an inner dome spaced from one another and with the outer dome overlying the inner dome, both of said domes engaging sealing means positioned on the liner wall, a supporting frame coupled to said dome and sealing means arrangement and the frame and arrangement being hinged to said liner to permit shifting thereof with respect to the liner between a closed position overlying the opening in the roof structure and an open position permitting access to the opening from the exterior of the roof structure, the domes being spaced from one another essentially a uniform distance over substantially their entire adjacent surfaces overlying the opening in the roof structure, the sealing means being a gasket positioned around the upper end peripheral surface of the wall of the liner, the inner side of the gasket having a slot therein adapted to receive and seal the peripheral edge of the inner dome, the outer side of the gasket having a slot therein to sealingly engage the frame attached to the outer dome, and a portion of the outer dome inwardly spaced from its outer peripheral edge resting on the upper surface of the gasket.

4,441,285

PREFABRICATED BALCONY UNIT

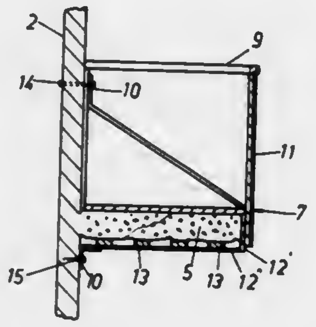
Bengt E. Fridolfsson, Onsala, Sweden, assignor to Foga System Bygg AB, Sweden

Filed Jul. 22, 1981, Ser. No. 286,045

Claims priority, application Sweden, Aug. 1, 1980, 8005506

Int. Cl.^{3} E04G *13/06;* E04F *19/00*

U.S. Cl. 52—73 **3 Claims**



1. In combination prefabricated balcony unit and a building structure having an existing balcony including a cantilevered reinforced concrete slab base, said balcony unit comprising: a box shaped platform structure being open toward said building structure and sized for and enclosing said slab and having sufficient strength to support normal loads intended to be carried by said slab and also the weight of said slab, attaching means for affixing said platform structure to said building structure, safety rails arranged around the periphery of said platform structure, and attaching means for securing said safety rails to at least one of said structures.

4,441,286

PREFABRICATED CUBE CONSTRUCTION SYSTEM FOR HOUSING AND CIVIC DEVELOPMENT

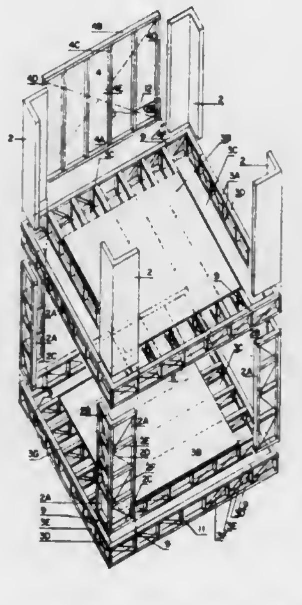
Joseph Skvaril, 4807 - 143rd St., Edmonton, Alberta, Canada T6H 4C9

Continuation-in-part of Ser. No. 66,544, Aug. 9, 1979, abandoned, which is a continuation-in-part of Ser. No. 816,526, Jul. 18, 1977, abandoned. This application Dec. 15, 1981, Ser. No. 331,007

Claims priority, application Canada, Oct. 11, 1977, 1018719

Int. Cl.^{3} E04H *1/00*

U.S. Cl. 52—79.1 **18 Claims**



1. A plurality of statically complete and independent cube skeleton structural unit components for detachable arrangement and securement together with adjacent surfaces being in interfacial flush relationship, each of said components comprising in combination a pair of similar square horizontal ceiling/-floor components each including a perimetrical frame and load bearing means for maintaining the components in spaced and parallel relationship with one another, said load bearing means consisting solely of four L-shaped cross sectioned corner bearing wall components each of which directly abuts and is secured at each end thereof to a corresponding corner of the associated frame of said horizontal components at the upper and lower edges of the bearing wall components, vertically extending means for operatively and detachably connecting said ceiling/floor components and said bearing wall components together, each of said bearing wall components including a pair of vertically situated flanges at right angles to one another for reducing the span of the roof component frame members, the thickness of the perimetrical frame and the thickness of the flanges of the L-shaped bearing wall components being similar to produce a flush fitting smooth inner and outer surface therebetween so that the vertical center line of the portions of the perimetrical frame overlying the flanges and the vertical center line of each of the flanges of the L-shaped bearing wall components are in corresponding vertically alignment thus developing the said statically-complete and independent cube skeleton structural unit, fill-in, non-bearing wall components detachably secured between the outer edges of said horizontal components and extending therebetween, the thickness of said non-bearing wall components being substantially equal to the thickness of the vertically situated flanges of said bearing wall components and at least one lateral edge of the non-bearing wall components being secured to a corresponding lateral edge of said vertically situated flange so that the non-bearing wall components form a flush continuation of said vertically situated flanges of said bearing wall components.

4,441,287

FRAMED BUILDING CONSTRUCTION

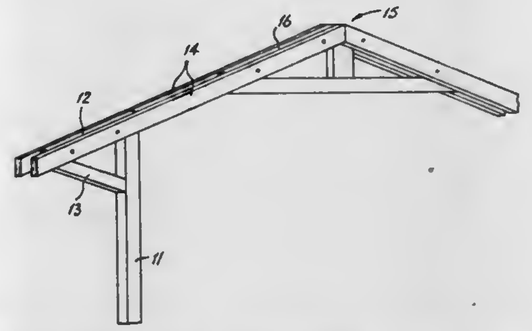
William Muir, Nedlands, Australia, assignor to Engineered Roof Trusses Pty. Ltd., Welshpool, Australia

Filed Jul. 22, 1981, Ser. No. 286,044

Claims priority, application Australia, Jul. 24, 1980, PE4675; Nov. 11, 1980, PE6349; Sep. 2, 1981, PE7999

Int. Cl.^{3} E04B *7/02;* E04C *3/36*

U.S. Cl. 52—93 **16 Claims**



1. Building construction comprising a plurality of pairs of upstanding posts, each pair of posts being mounted in opposed relation to each other, said pairs of posts supporting a roof structure comprising sets of parallel beams, wherein each beam extends between a respective pair of posts and is mounted to one side thereof, each post comprising a subassembly comprising a vertically extending member, a transversely extending strut directly fixed to the upper end of said vertically extending member and supported by a brace extending diagonally between said strut and an intermediate point of said vertically extending member and directly affixed to said strut and said vertically extending member to form a triangular reinforced area, said strut being located in parallel relationship to the respective beam and being fixed thereto.

4,441,288

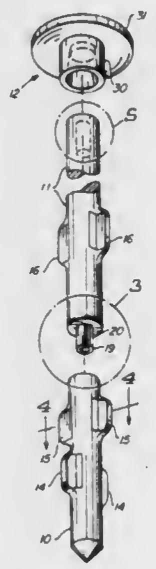
BREAK-AWAY SECTIONALIZED DRIVEN ROD

Gilbert J. Feldman, and Richard A. Feldman, both of Tucson, Ariz., assignors to Allied Surveyor Supplies Mfg. Company, Tucson, Ariz.

Filed Oct. 26, 1981, Ser. No. 315,254

Int. Cl.^{3} E01F *9/02*

U.S. Cl. 52—103 **8 Claims**



1. A break-away rod survey monument adapted to be driven into the ground including in combination:

first and second elongated cylindrical rod sections, with at least the upper end of said first rod section and at least the lower end of said second rod section having a cylindrical hole extending to a predetermined depth therein along the axis thereof;

a hollow cylindrical spring roll pin having a longitudinal slot therein and having an unstressed diameter which is slightly greater than the internal diameter of the cylindrical holes in said first and second rod sections for tightly but detachably connecting the upper end of said first rod section with the lower end of said second rod section in end-to-end relationship with said spring roll pin inserted into the holes in said rod sections, said spring roll pin pulling out of at least one of said rod sections in response to relative lateral displacement forces or axial pulling forces applied to said rod sections; and

said first rod section having means for retaining it in the ground and being terminated by a penetrating point at the lower end thereof.

4,441,289

EARTHQUAKE-RESISTANT REINFORCEMENT STRUCTURE FOR AN EXISTING BUILDING WITH COMPRESSION BRACES OR TENSION BRACES

Yamaguchi Ikuo; Higashibata Yasuo, and Fujimura Masaru, all of Tokyo, Japan, assignors to Takenaka Komuten Co., Ltd., Osaka, Japan

Filed May 7, 1980, Ser. No. 147,365

Int. Cl.^{3} E04H *9/02*

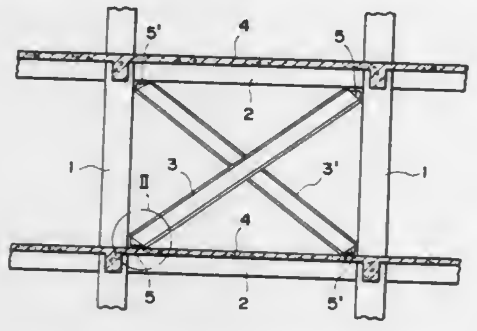
U.S. Cl. 52—167 **4 Claims**

3. An earthquake-resistant reinforcement structure for a building comprising:

(a) compression braces;

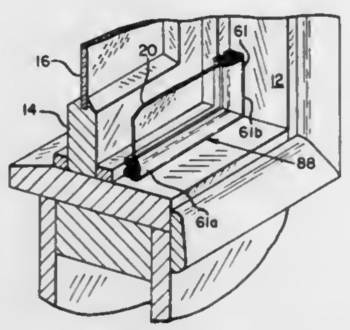
(b) connectors of right triangle shape connected to each end of the compression braces; and

(c) tap bolts having a cutting lip at the end thereof for screwing through the two perpendicular sides of the right triangle shaped connectors into pillars and beams of the building to connect the compression braces diagonally relative to a pillar-beam frame element of the building whereby a



precompression stress is applied on the compression braces.

4,441,290
GLAZING FASTENER FOR MOUNTING EITHER RIGID OR FLEXIBLE STORM WINDOWS
Irwin R. Abell, Portland, Oreg., assignor to Hartwig-Hartoglass, Inc., Woodstock, Ill.
Division of Ser. No. 14,149, Feb. 22, 1979, Pat. No. 4,320,609. This application Jan. 8, 1982, Ser. No. 338,441
Int. Cl.³ A47H ***13/00***
U.S. Cl. 52—202 **10 Claims**



1. Combination glazing and window sash apparatus, for securing a glazing sheet in a window opening, said apparatus comprising:

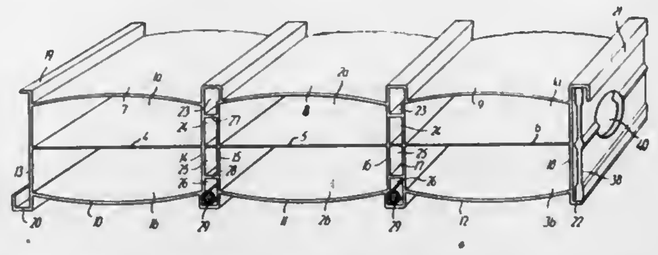
a channel strip including a first lengthwise-extending channel having two generally parallel, inwardly opposed side walls and a channel bottom wall connecting said side walls, one of said side walls including at least two spaced-apart lengthwise-extending channel ribs;

and a second lengthwise-extending channel adjacent to one of the side walls of said first channel, said second channel being narrower at a first depth than its width at a second depth;

assembly means for joining two of said channel strips together, said assembly means including a member adapted for lengthwise insertion into said second channel; and

a glazing strip for securing an edge of said glazing sheet to said channel strip, said glazing strip means having an insert flange adapted for insertion into said first channel; said insert flange having opposite sides and at least two flange ribs extending lengthwise therealong and positioned for engaging said channel ribs; and external flange means extending laterally from an outer portion of said insert flange for engaging said glazing sheet.

4,441,291
PANEL, IN PARTICULAR FOR SELF-SUPPORTING ROOF STRUCTURES AND SELF-SUPPORTING ROOF STRUCTURES ASSEMBLED OF SUCH PANELS
Henryk Sokoler, Roskilde, Denmark, and Poul H. Evers, Pura Tessin, Switzerland, assignors to Everlite A/A, Skaevinge, Denmark
Filed Sep. 9, 1981, Ser. No. 300,510
Claims priority, application Denmark, Jul. 20, 1981, 3236/81
Int. Cl.³ E04C ***1/00***
U.S. Cl. 52—309.1 **12 Claims**



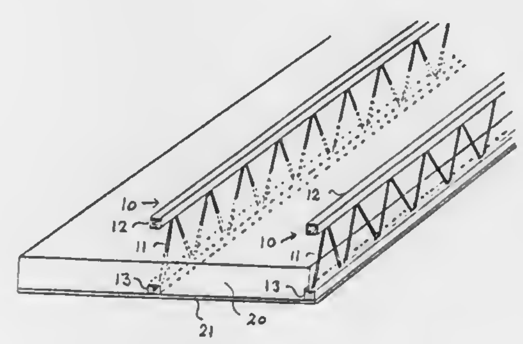
1. A panel for self-supporting roof structures of the type comprising elongated extruded profile elements of plastics material, each said element having at least two side-by-side longitudinal main ducts with external and internal convex outer surfaces and separated by a longitudinal extending secondary duct;

the outer sides of the profile elements having coupling members for securing one profile element side by side to adjacent similar profile elements so as to form a continuous surface requiring only support along two opposite ends;

an intermediate wall in each main duct dividing it into two subducts, said intermediary wall being situated approximately halfway between said external and internal convex outer surfaces; and

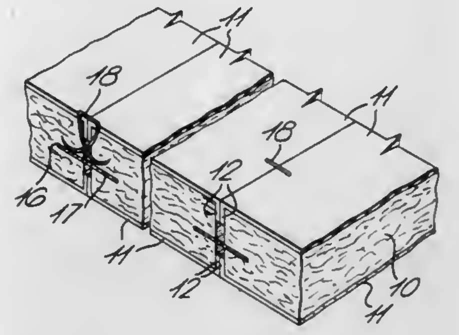
each secondary duct being divided into at least two subducts by at least one partition wall which lies in general alignment with said intermediary walls in the adjacent main ducts.

4,441,292
FLOOR
Axel B. R. Ericsson, Holmsund, Sweden, assignor to Profoment Utvecklings AB, Sweden
PCT No. PCT/SE80/00053, 371 Date Oct. 21, 1980, 102(e) Date Oct. 21, 1980, PCT Pub. No. WO80/01817, PCT Pub. Date Sep. 4, 1980
PCT Filed Feb. 27, 1980, Ser. No. 198,004
Claims priority, application Sweden, Feb. 27, 1979, 7901731
Int. Cl.³ E04C ***1/00***
U.S. Cl. 52—309.7 **10 Claims**



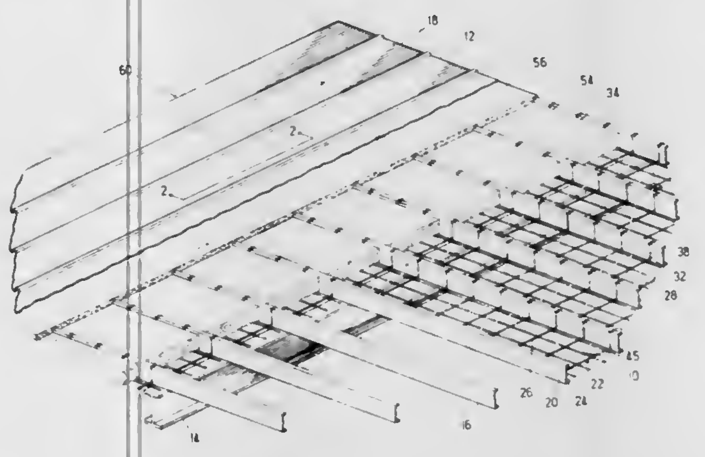
1. Floor component comprising joists and slabs arranged between the joists, each of the joists includes a web arranged between two flanges for supporting a load perpendicular to the flanges, the web having a lattice structure, the slabs being the sole interconnection between the joists, said slabs being self-supporting and consisting of a cast, light cellular foamed plastic material, a top surface of the slabs being lower than a top surface of the joists and extending through the lattice.

4,441,293
CONSTRUCTION PANELS
George McQueen, Paisley, Scotland, and Victor E. Barrable, Gerrards Cross, England, assignors to Cape Boards & Panels Limited, Middlesex, England
PCT No. PCT/GB81/00162, 371 Date Apr. 12, 1982, 102(e) Date Apr. 12, 1982, PCT Pub. No. WO82/00679, PCT Pub. Date Mar. 4, 1982
PCT Filed Aug. 21, 1981, Ser. No. 371,304
Claims priority, application United Kingdom, Aug. 13, 1980, 8026445
Int. Cl.³ E04B ***5/00***
U.S. Cl. 52—377 **3 Claims**



2. A floor comprising a plurality of construction panels assembled in edgewise abutting relationship, said panels each comprising a non-combustible fire-resistant board faced with metal on at least one of its major faces, edge grooves in each panel, splines inserted in the edge grooves of adjacent abutting panels, and staples driven into said adjacent abutting panels with their limbs deflected by contact with the splines.

4,441,294
SUPPORT FOR ROOF INSULATION IN METAL BUILDINGS AND METHOD FOR INSULATING THE ROOF OF SUCH BUILDINGS
Robert E. Riley, 5110 Hammersley Rd., Madison, Wis. 53711
Filed Jun. 7, 1982, Ser. No. 385,510
Int. Cl.³ E04B ***2/28***
U.S. Cl. 52—404 **8 Claims**

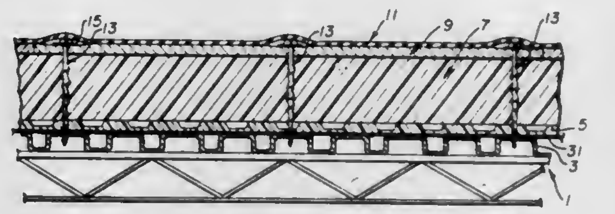


1. A support grid (10) in a roof insulation in a metal building having a roof (12) with rigid roofing material (18) fastened on top of spaced, substantially identical purlins (16), each purlin (16) having a substantially vertical web (20), an upper flange (22) extending laterally therefrom, and a lower flange (24) extending laterally therefrom and toward an adjacent purling (16), comprising:

(a) a plurality of cross members (26) adapted to extend transversely between adjacent spaced purlins (16), each cross member (26) having a bar (28) extending for substantially the distance between adjacent purlins (16), a first end (30) adapted to rest on the lower flange (24) of a first purlin (16), and a second end (32) adapted to be hooked, prior to the application of the rigid roofing material (18), over the upper flange (22) of the adjacent purlin (16) toward which the lower flange (24) of the first purlin (16) extends, the second end (32) of the cross member (26) including a hook (38) having a suspension portion (40) that extends upwardly from the bar (28) for a distance selected to be at least as great as the depth of insulation material (34) to be supported and a holding portion (42) extending from the end of the suspension portion (40) remote from the bar (28) substantially parallel to the bar (28) for a selected distance away from the first end (30) of the cross member (26), the holding portion (42) of the hook (38) adapted to rest on top of the upper flange (22) of said adjacent purlin (16) in supporting relation; and

(b) a selected number of support members (46) extending longitudinally at angles to the cross members (26) and rigidly engaged therewith, whereby the support grid (10) may be dropped easily into place on the purlins (16) as a pre-assembled unit from above prior to application of the rigid roofing material (18) the rigid engagement of the support members (46) to the cross members (26) causing the support grid (10) to be fixed in position without the need for fastening to the purlin so as to receive and support insulation material (34) within the space between the supporting purlins (16) in selected proximity to the rigid roofing material (18), support grid allowing insulation to fill the space entirely from the vertical web of one purlin to the vertical web of the adjacent purlin.

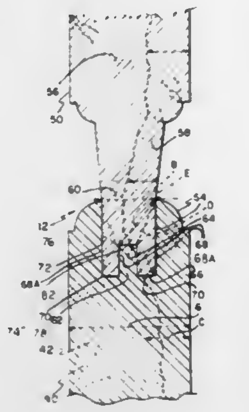
4,441,295
GRID SYSTEM ADHERING TECHNIQUE AND METHOD OF PRACTICING SAME
Thomas L. Kelly, 31 Sands St., Waterbury, Conn. 06723
Filed Apr. 30, 1981, Ser. No. 259,200
Int. Cl.³ E04B ***5/00***
U.S. Cl. 52—408 **17 Claims**



1. A roofing installation comprising a deck, a flexible membrane forming an upper roof surface and a plurality of substrates underlying the flexible membrane including the deck and blocks of insulation supported by the deck with each of the insulation blocks fixed relative to the deck in abutting relation to adjacent blocks of insulation, the substrate which is in direct underlying relation to the flexible membrane having a plurality of discrete abutting members, and adhesive means between the flexible membrane and said directly underlying substrate for securing the same, the adhesive means being applied in a predetermined pattern wherein the adhesive means covers and adheres preselected confronting areas of the flexible membrane and said directly underlying substrate in sealed engagement to provide adhesively sealed areas of high integrity between the flexible membrane and said directly underlying substrate, the adhesively sealed areas being in overlying, lapping relation to abutting perimeters of the substrate directly underlying the flexible membrane, the pattern of the adhesive means additionally providing selected adhesive-free zones between the flexible membrane and said directly underlying substrate completely free of the adhesive means.

4,441,296
FIRE RESISTANT WOOD DOOR STRUCTURE

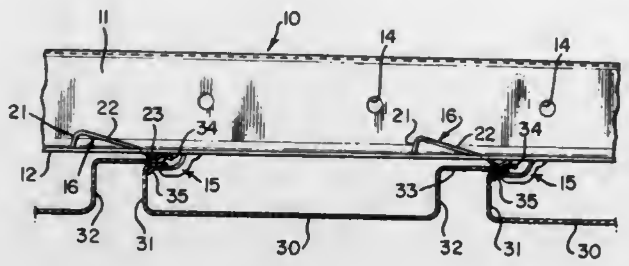
James F. Grabendike, and Donald E. Grabendike, both of Wichita, Kans., assignors to Sun-Dor-Co., Wichita, Kans.
Filed Dec. 14, 1981, Ser. No. 330,039
Int. Cl.^{3} E06B *3/72*
U.S. Cl. 52—456 4 Claims



1. A fire resistant door structure constructed of a wood material adapted to pass testing laboratories' fires resistant specification, comprising:
(a) a door assembly including a support frame assembly having a panel assembly connected thereto:
(b) said panel assembly including a plurality of panel members, each of said panel members secured at outer peripheral edges of an adjacent portion of said support frame assembly by a double connector assembly.
(c) said double connector assembly including a male connector assembly mounted within a female connector assembly;
(d) said male connector assembly includes a pair of projecting connector leg members;
(e) said female connector assembly includes a connector cavity to receive said connector leg members therein and a connector projection integral with said support frame assembly extended between said connector leg members; and
(f) an outer end of said connector projection not extended beyond an adjacent edge of said support frame assembly;
whereby a fire test applied to one side of said door structure may burn through one of said connector leg members but said panel members are held in place by the other one of said connector leg members.

4,441,297
PANELLING AND CARRIERS THEREFOR

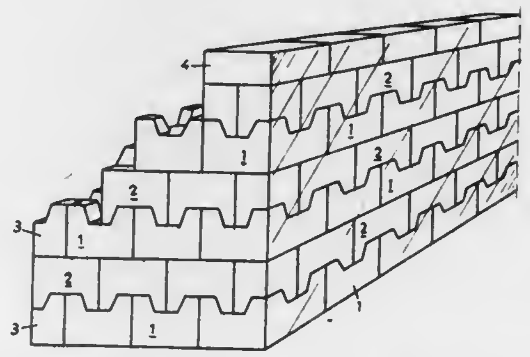
Willem Rijnders, Alblasserdam, Netherlands, assignor to Hunter Douglas International N.V., Curacao, Netherlands Antilles
Continuation-in-part of Ser. No. 267,527, May 27, 1981. This application Apr. 9, 1982, Ser. No. 367,106
Claims priority, application United Kingdom, Jun. 17, 1980, 8019715
Int. Cl.^{3} E04B *5/52*
U.S. Cl. 52—478 14 Claims



1. A carrier adapted to support adjacent panels of thin material in overlapping position where each of said panels has a main panel portion with an inturned side portion on each of two opposite sides; one side portion having a rim at its free edge turned towards the other side portion, and the other side portion having an arm at its free edge turned away from the one side portion, characterized in that said carrier comprises an elongate body adapted to be secured to a support structure and adapted to support said panels in their overlapping position, a plurality of lugs on said body, the lugs being arranged in pairs, with the pairs of lugs being spaced from one another along the length of said carrier and with the lugs of a pair being spaced from one another along the width of said carrier, the first lug of each pair being substantially rigid and including a tongue adapted to support the rim of one panel and the arm of an adjacent panel, the second lug of a pair being adapted to hold the arm and rim of said adjacent panels in position at the tongue of the first lug.

4,441,298
NESTING MODULAR ELEMENTS, AND THEIR METHOD OF ASSEMBLY

Louis Limousin, 3bis rue Nicolas Leblanc, 18000 Bourges, France
Filed Aug. 25, 1980, Ser. No. 180,831
Claims priority, application France, Aug. 24, 1979, 79 21718
Int. Cl.^{3} E04C *1/10*
U.S. Cl. 52—594 5 Claims

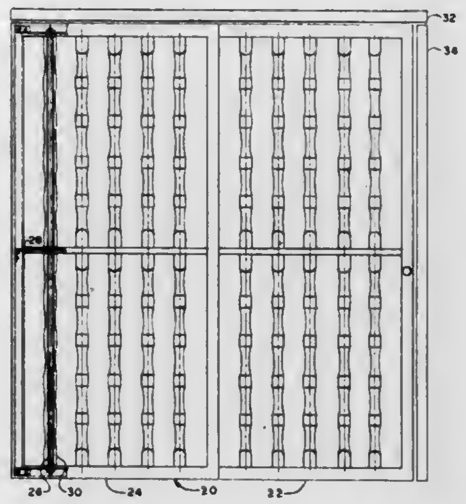


1. Nesting modular elements for use whole or divided into fractions thereof wherein the whole element comprises a solid central core; an upper face having at each corner of the face a symmetrical projecting frustopyramidal projection, the projections forming a cross-shaped recess in the central portion and upper plane of the core; a lower face having a closed recess internally thereof for the engagement of projecting portions of similar modular elements, the volume of the recess permitting engagement of not more than four projecting portions formed upon four different elements, the externally directed sides of the projections being parallel to the sides of the elements and the internal sides of the projections being slanted and directed towards the inside of the elements.

4,441,299
METALLIC SECURITY BAR SYSTEM FOR WINDOW AND PATIO DOORS

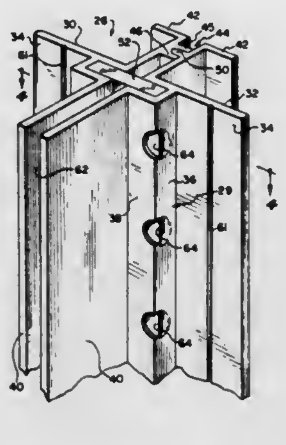
Richard C. Gries, 37 Freedom Ct., Baltimore, Md. 21220
Filed Jan. 28, 1982, Ser. No. 343,487
Int. Cl.^{3} E04H *3/08;* E04C *3/30*
U.S. Cl. 52—656 1 Claim

1. In a metal security bar system of the type used as patio door, window and the like, with top (**36**) and bottom (**38**) horizontal frame members and first and second vertical side frame members (**40, 42**), a plurality of laterally-spaced vertical rods (**26**) held thereby, a plurality of tubular wooden covers (**78, 80**) over each said vertical rods (**26**); and a perforate horizontal bar (**28**) holding a middle portion of said plurality of laterally-spaced vertical rods (**26**), the improvement comprising: means for improving the appearance and feel of said metal security bar system and retarding condensation thereon including: a substantially complete wood cover over said security bar system, said wood cover including: a first channel section cover (**70,72**) over each of said vertical side frame members (**40, 42**), a second channel-section cover (**66, 68**) over each of said top and bottom horizontal frame members (**36, 38**) first and second cover plates (**96**) respectively on said first (**70,72**) and second (**66,68**) channel-section covers, each said second channel-section cover (**66,68**) having in section a first leg and a second leg, the structure of each second leg defining a plurality of slots (**94**) in said second leg for receiving said plurality of laterally-spaced vertical rods (**26**) respectively in said slots (**94**) in the second leg, a third channel-section cover (**76**) over said perforate horizontal bar (**28**), the third channel-section cover (**76**) having a plurality of aligned slots (**82**) therethrough for respectively receiving said plurality of laterally-spaced vertical rods (**26**), a third cover plate (**104**), said third cover plate (**104**) on said third channel-section cover (**76**), each said tubular wooden cover (**78, 80**) having respective square-section ends thereof abutting a second channel-section cover (**66,68**) at a said slot (**94**) in the second channel-section cover and abutting the third channel-section cover (**76**) at a said aligned slot (**82**) in the third channel-section cover (**76**), means providing for said respective ends of said tubular wooden covers to cover said slots (**94**) in said second channel-section covers (**66,68**) and said aligned slots **82** in said third channel-section cover, comprising said first and second (**96**) and third (**104**) cover plates being on respective outside parts of said first (**70,72**), second (**66,68**) and third (**76**) channel-section covers, and each of said plurality of slots (**94**) and plurality of aligned slots (**82**) having a rounded-end offset co-acting with said first (**70,72**), second (**66,68**) and third (**76**) channel section covers and completely covering said plurality of slots (**94**) and plurality of aligned slots (**82**).



4,441,300
BRACKET SUPPORT FOR WALL STUDS

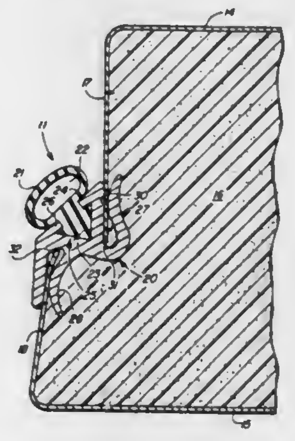
David S. Varon, Highland Park, and Burton L. Siegal, Skokie, both of Ill., assignors to Crown Metal Manufacturing Company, Chicago, Ill.
Filed Aug. 14, 1978, Ser. No. 933,496
Int. Cl.^{3} A47G *29/02;* A47F *5/08*
U.S. Cl. 52—732 10 Claims



1. A bracket retaining and support structure for use with wall studs and adapted for having a plurality of hook-ended brackets mounted thereto and comprising:
A. a pair of elongate extruded metal members secured together, each member having central wall structure defining a rectangular groove forming approximately half of a bar-receiving slot therein and the grooves being aligned, opening to one another and spaced apart to provide an intervening space therebetween,
B. cooperative friction interlocking means effective when engaged to secure the members together along the lengths thereof at the rear of said structure, the interlocking means being spaced from said bar-receiving slot,
C. a lateral wing formed integral with said respective member, outwardly extending therefrom and adapted to receive wallboard thereon, said wings being located at the center of said structure and defining a plane generally parallel with the plane of said bar-receiving slot,
D. a forwardly extending flange on the front of each member, said flanges being spaced apart, opening to said intervening space and adapted to straddle brackets inserted therein, and
E. a flat bar engaged within said bar-receiving slot and bridging the intervening space and tightly secured in said rectangular grooves along opposite, vertical, elongate edges thereof to cooperate with said interlocking means to maintain the structure in assembly as a unit, said bar having vertically disposed central spaced passageways aligned with the space formed between the forwardly extending flanges so as to be able to receive the hook ends of brackets which are inserted through said last-mentioned space, and the bar is provided with knurling along at least one flat surface thereof.

4,441,301
GARAGE DOOR PANEL APPARATUS AND METHOD

Henry E. Benson, Orlando, Fla., assignor to Architectural Specialties Co., Inc., Orlando, Fla.
Filed Aug. 30, 1982, Ser. No. 413,149
Int. Cl.^{3} E04B *2/28*
U.S. Cl. 52—804 7 Claims



1. A garage door panel comprising in combination:
a metal skin formed to a generally door panel shape and having elongated parallel edges along one edge side thereof;
an elongated, non-metallic barrier strip attached to each elongated parallel edge to hold said parallel edges together and to space said parallel edges from each other;
filler material filling said formed metal skin held together with said elongated barrier strip; and
an elongated weatherstrip attached to said barrier strip to form a weather seal between one garage door panel and an adjacent panel, said elongated non-metallic barrier strip being formed of a polymer material having a cross-section shaped to form a pair of gripping clips, each positioned to grip one metal edge for spacing the metal edges from each other, said barrier strip cross-section being shaped to form a hollow triangle having three walls, a slot through one

wall thereof having a slot therethrough and having a first clip portion extending generally parallel to a second triangular wall adjacent said second wall to form a clip therewith and a third said triangle wall having a flange and a second clip portion extending at an angle from said third wall barrier strip adjacent to form a second clip therewith.

4,441,302

CIGARETTE PACKAGING MACHINE CONTROL AND MONITORING SYSTEM

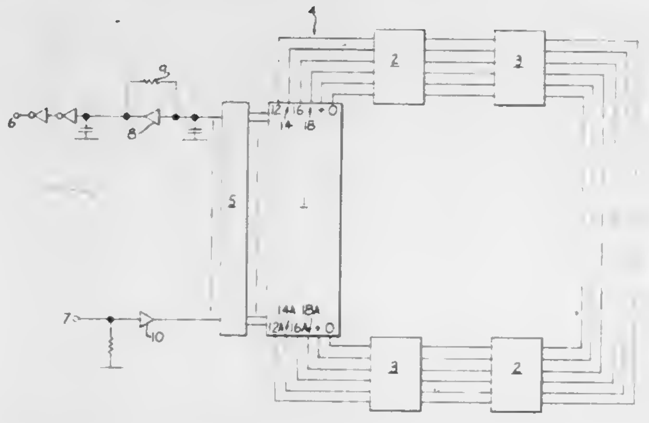
Denbigh M. Gabbitas, Orpington, and Peter J. Shawyer, London, both of England, assignors to Molins Limited, London, England

Filed Aug. 1, 1980, Ser. No. 174,505

Claims priority, application United Kingdom, Aug. 2, 1979, 7927003

Int. Cl.^{3} B65B *19/28;* **H04Q** *5/00*

U.S. Cl. 53—52 **31 Claims**



1. A packaging machine, for packaging cigarettes or other rod-like articles of the cigarette industry, comprising a plurality of machine parts for effecting respective operations associated with such packaging, a plurality of remote stations respectively connected to at least some of said parts, at least one of said remote stations comprising an input station arranged, when interrogated, only to receive signals from the respective part signifying the presence of a fault or other special condition, and at least another of said remote stations comprising an output station arranged, when interrogated, only to supply a machine control signal to the associated part, a control station connected with all of the remote stations in cascade and including means for interrogating the first remote station in the cascade, each station including means for relaying an interrogation signal to the next station so that the remote stations are sequentially interrogated in turn, and means including an information line connected to said remote stations and said control station for transferring fault and control signals between the remote stations and the control station.

4,441,303

CARTON-CLOSING MACHINE

Marinus J. M. Langen, Rexdale, Canada, assignor to H. J. Langen & Sons Limited, Mississauga, Canada

Filed Feb. 3, 1982, Ser. No. 345,549

Int. Cl.^{3} B65B *7/24*

U.S. Cl. 53—374 **8 Claims**

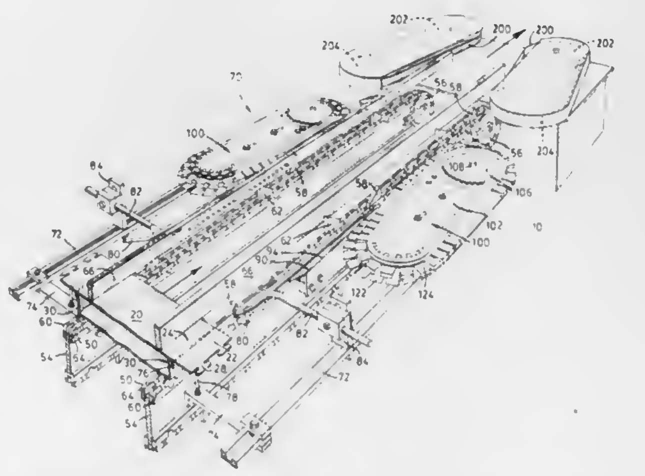
1. In a carton closing machine for closing a closure panel which is hingedly connected along a first hinge line to an open end of a carton, the closure panel having a closure tab hingedly connected thereto along a second hinge line, the closure tab being insertable within an opening in the open end of the carton to retain the closure panel in a closed position, said machine having a final closing station in first section of which the closure tabs are initially set by bending along the second hinge line and in a second section of which the tabs are tucked into the open end of the carton, said machine also having a primary conveyor for conveying cartons through the final closing station with the open ends of the cartons being continuously driven in a closure path in which the openings extend in a tucking plane, the improvement of;

(a) first plow means in said first section, said first plow means being arranged to fold the closure panel about said first hinge line to an intermediate position, folding edge means having a folding edge arranged to underlie said second hinge line when the closure panels are in the intermediate position,

(b) a dynamic setting and tucking mechanism for setting and tucking said tabs comprising;

(I) a plurality of setting members mounted for movement through the first section at a forward velocity substantially equal to that of the primary conveyor,

(II) a plurality of tucking members mounted for movement through the second section at a forward velocity substantially equal to that of the primary conveyor,



(III) first activating means adapted to activate the setting members as they ae driven through said first section to cause the setting members to initially move laterally toward the closure plane to engage a carton tab and bend it over said folding edge along its second hinge line to its set position in which it is directed toward the open end of its associated carton,

(IV) second activating means adapted to activate the tucking members as they are driven through the said second section to cause the tucking members to move laterally toward the closure plane to engage the closure panel and move it toward the closure plane and thereby cause the tab to be driven into said openings to close the carton.

4,441,304

APPARATUS FOR OPENING OUT THE FILLING OPENINGS OF BAGS OF FOIL MATERIAL OR THE LIKE WHICH ARE CONNECTED TOGETHER IN THE MANNER OF A BAND

Rudolf Douwenga, Dalen, Netherlands, assignor to Lockwood International B.V., Nieuw-Amsterdam, Netherlands

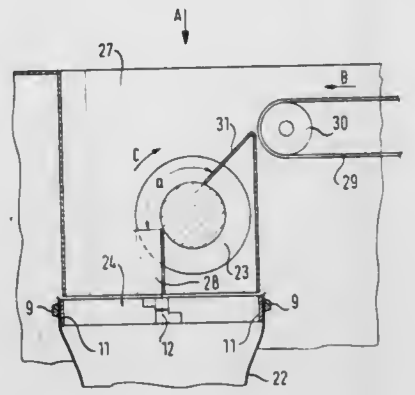
Filed Feb. 27, 1981, Ser. No. 238,672

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1980, 3007588

Int. Cl.^{3} B65B *9/08*

U.S. Cl. 53—568 **6 Claims**

1. Apparatus for opening the filling openings of bags connected together in the manner of a band, consisting of two conveyor belts between which the opening edges of the bags are guided, and each of which is guided around at least one compensating roller displaceable in the direction of movement of the bags, a spreader arrangement which engages between the opening edges of the bags and comprises two flexible elements each fixedly mounted at one end and displaceable at the other end, and which together with the associated conveyor belts grip the opening edges of the respective bag and are displaceable in an outward direction by adjuster means for the purpose of forming a filling opening, a filler duct adjusted to the cross-section of the filling opening is arranged above the latter providing a path for the filling material and is connected to a conveyor belt transverse to the direction of movement of the bags, a rotary symmetrical roller member mounted below said conveyor belt and under said filling material path so that the filling material is adapted to pass over said roller and arranged above at least one of the opening edges of the filling opening and rotatably mounted on a shaft extending substantially parallel to the direction of movement of the bag, said member being driven in opposition to the filling direction of the filling material, the surface contour of the roller being concave and adjusted to that of the filling opening and the filler duct connected thereto, and wherein a cover plate is arranged between the roller and said transverse conveyor belt and is fastened to said filler duct and partly covers the roller being adjusted to the contour of the latter.



4,441,305

MULTI-ROW CORN CUTTER FORAGE HARVESTER AND/OR CORN PICKER FORAGE HARVESTER

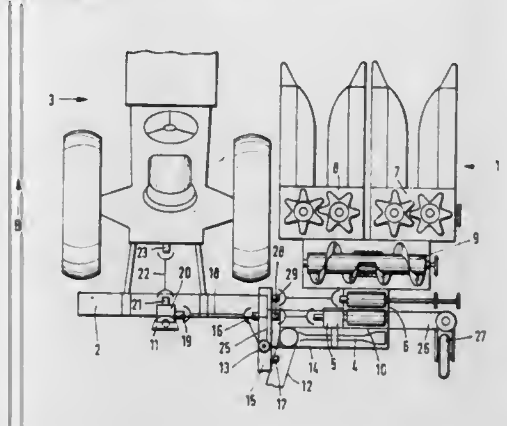
Wilhelm Lippl, Ichenhausen-Oxenbronn, Fed. Rep. of Germany, assignor to Karl Mengele & Söhne GmbH & Co., Günzburg, Fed. Rep. of Germany

Filed Sep. 2, 1982, Ser. No. 413,986

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1981, 3137115

Int. Cl.^{3} A01D *73/00, 69/00*

U.S. Cl. 56—15.6 **3 Claims**



1. A multi-row corn cutter forage harvester and/or corn picker forage harvester, such as a disk wheel forage harvester, comprising a first crossbar arranged to be connected to the three-point towing bracket of a tractor, a side-mountable device comprising a frame, a harvester device mounted on said frame, said frame including a lockable swivel hinge for pivotally moving the frame and harvester device into a first operating position located along one side of the tractor and a second operating-transporting position located behind the tractor, and means for driving said harvester device in the first and second operating positions, wherein the improvement comprises an angular gear (**20**) located on said first crossbar (**2**) and arranged to be positioned opposite the power take-off shaft of the tractor, said driving means including a stationary gearing (**15**) mounted on said frame (**14**) adjacent said swivel hinge (**13**), said frame is pivotally displaceable by said swivel hinge through 180° between the first operating position and the second operating position, said driving means includes a first shaft connection (**16**) for said stationary gearing, a second shaft connection (**28**), and a third shaft connection (**29**) each of said first, second and third shaft connections extend parallel to said first crossbar in the first and second operating positions, said frame includes a second crossbar (**26**) disposed in parallel relation with said first crossbar in the first and second operating positions, said angular gear (**20**) including a drive shaft connection (**19**), a drive shaft (**18**) extending between said drive shaft connection and said first shaft connection, said second shaft connection located aligned with said first shaft connection and said third shaft connection spaced laterally from said second shaft connection, said harvester device including take-in elements (**6**) and a cutter wheel (**4**), means connecting said second shaft connection to said cutter wheel, means connecting said third shaft connection to said take-in elements, said stationary gearing including a fourth shaft connection (**17**), said first and fourth shaft connections spaced apart in the direction extending transversely of said first crossbar and disposed in parallel relation, said first shaft connection (**16**) and said second shaft connection (**17**) connected to said stationary gearing, and in said second operating position said fourth shaft connection (**17**) is connected to said drive shaft connection (**19**) via said drive shaft (**18**), wherein in the displacement of said frame and harvester device from the first operating position to the second operating position only said drive shaft (**18**) is changed from its connection to said first shaft connection (**16**) to said fourth shaft connection (**17**).

4,441,306

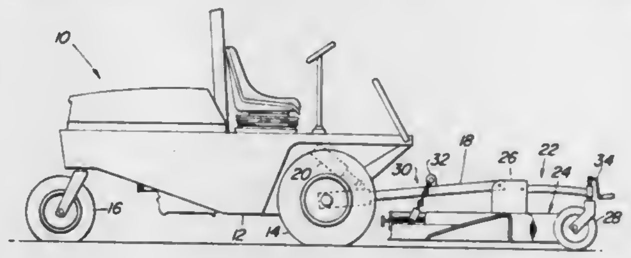
IMPLEMENT WORKING HEIGHT-ADJUSTMENT MECHANISM

John B. Kuhn, Mayville, Wis., assignor to Deere & Company, Moline, Ill.

Filed Sep. 1, 1982, Ser. No. 413,910

Int. Cl.^{3} A01D *35/26*

U.S. Cl. 56—15.9 **6 Claims**



1. In a mower blade housing and support therefor wherein the housing has one end supported by at least one vertically adjustable ground-engaging element and an opposite end suspended from at least one support member extending thereabove, an improved assembly for suspending said opposite end comprising: a lug fixed to one of said support member and said housing; a linear adjustment means fixed to another one of said support member and said housing; a first bracket connected to said linear adjustment means and the latter being selectively operable for moving the bracket relative to said lug; and link means connected between the lug and first bracket for causing said opposite end of the housing to be raised and lowered respectively in response to the linear adjustment means being operated for moving the first bracket away from and towards said lug.

4,441,307

HARVESTER HEADER WITH FLOATING CUTTER BAR

Michael H. Enzmann, Blue Springs, Mo., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

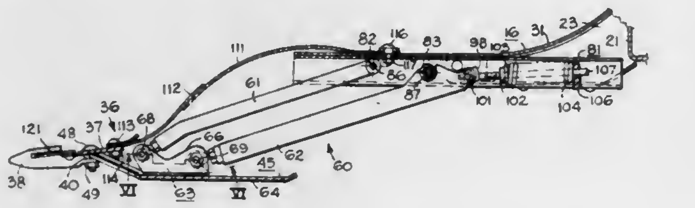
Filed Aug. 30, 1983, Ser. No. 412,953

Int. Cl.^{3} A01D *67/00*

U.S. Cl. 56—208 **4 Claims**

1. In a crop harvester header having a transverse rear wall, a pair of upstanding end walls and a bottom structure extend-

ing between said end walls and to said rear wall, the combination comprising:
- a flexible floating cutter bar extending transversely along the front of said bottom structure,
- a plurality of link supported ground engaging skids secured in supporting relation to said cutter bar at transversely spaced intervals therealong,
- at least one pair of fore and aft extending parallel links for each of said link supported skids,
- means pivotally connecting rear parts of said links to said bottom structure for predetermined vertical swinging movement about longitudinally spaced transverse axes between raised and lowered positions of said cutter bar,
- means pivotally connecting the front ends of each of said pair of links to the skid associated therewith,



- a lever arm on the rear of one of said links of each pair,
- a compression spring interposed between each of said lever arms and said header,
- a first series of sheet springs having their rear ends secured to the top of said bottom structure and disposed generally horizontally along the front end of the header; and
- a second series of generally horizontal sheet springs secured at their front ends to said cutter bar and extending rearwardly a substantial distance presenting rear ends in overlapping thrust transmitting engagement with the front ends of said first series of sheet springs, said sheet springs and compression springs complementally serving to at least partially support said cutter bar during the floating operation thereof permitted by said predetermined swinging movement of said links.

4,441,308
THREAD SPLICING DEVICE

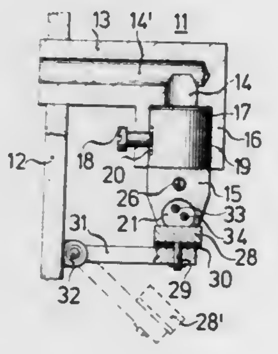
Joachim Rohner; Heinz Zumfeld, and Reinhard Mauries, all of Monchen-Gladbach, Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Feb. 8, 1982, Ser. No. 346,881

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1981, 3104367

Int. Cl.³ B65H *69/06;* **D01H** *15/00;* **D02J** *1/08*

U.S. Cl. 57—22 **10 Claims**



1. Thread splicing device, comprising a stationary base body having a compressed air conduction channel formed therein, a splicing head exchangeably connected to said base body and formed with an elongated splicing chamber wherein threads are insertable for joining, said elongated splicing chamber having a longitudinal axis, said splicing head having a compressed air conduction channel formed therein in communication with said compressed air conduction channel in said base body and terminating in said splicing chamber, and said splicing head having at least one air outlet slit formed therein at an inclination relative to the longitudinal axis of said splicing chamber and located at the terminus of said compressed air conduction channel in said splicing chamber, and a cover for temporarily covering said splicing chamber.

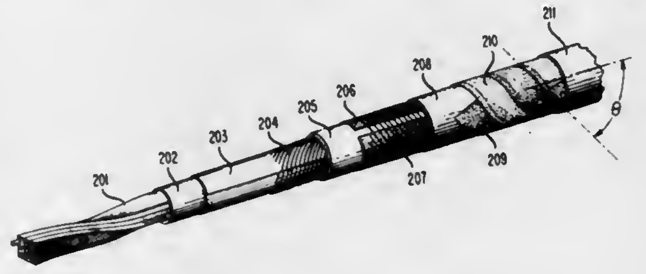
4,441,309
ZERO TORQUE HELICALLY WRAPPED CABLE

William C. L. Weinraub, Durham, N.C., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 284,499, Jul. 17, 1981, abandoned. This application Aug. 25, 1983, Ser. No. 526,386

Int. Cl.³ D07B *1/06*

U.S. Cl. 57—212 **9 Claims**



1. A cable comprising a substantially cylindrical core, the core having a torque response when a length of the core is stressed in axial tension, the cable further comprising a helical element surrounding the core substantially contactingly, with substantially constant lay angle, the lay angle being substantially equal to an angle θ

characterized in that

the angle θ is chosen in accordance with the formula

$$\theta = \tan^{-1}[N^{-\frac{1}{2}}],$$

where

$$N = \frac{-\Delta R_c/R_c}{\Delta L_c/L_c},$$

with R_c the radius of the core, L_c the length of a segment of the core, ΔL_c the change in the length of the segment upon application of a first axial stress to the core, and ΔR_c the change in the core radius upon application of the first axial stress, whereby the torque response of the helical-element-surrounded core is caused to be substantially the same as the torque response of the core.

4,441,310
FRICTION SPINNING APPARATUS

Alan Parker, Bolton, and Douglas O. Clough, Rossendale, both of England, assignors to Hollingsworth (U.K.) Limited, United Kingdom

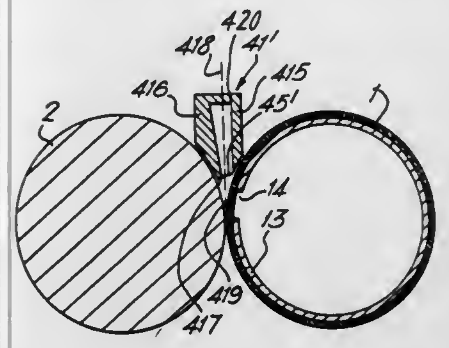
Continuation-in-part of Ser. No. 349,541, Feb. 17, 1982. This application May 20, 1983, Ser. No. 496,745

Claims priority, application United Kingdom, Feb. 21, 1981, 8105573

Int. Cl.³ D01H *7/892, 1/135*

U.S. Cl. 57—401 **5 Claims**

1. In an apparatus for open-end spinning of yarn, of the type comprising two rotatable bodies each having a surface and arranged such that the surfaces define an elongate gap which narrows toward a line of closest approach of the surfaces, means for rotating one of the bodies in a direction so that the surface moves into the gap and means for moving the other body in a direction so that the surface moves out of the gap to twist fibres in the gap to form a yarn, means for withdrawing the yarn along the gap, and a fibre feed duct having an elongate mouth within the gap and defining a fibre feed passage having opposite side walls to feed fibres substantially directly into the gap such that some fibres can fall directly on to the yarn, the improvement wherein the fibre feed duct is formed of first and second parts, said first part including a first planar portion defining a first planar jointing face between said first and second parts and also a first of said opposite side walls of said fibre feed passage, and said second part includes a second planar jointing face to contact sealingly said first planar jointing face when the said first and second parts are assembled together to form said fibre feed duct, and said second part further defining a second of said opposite side walls and also end walls of said fibre feed passage which extend between said first and second opposite side walls.



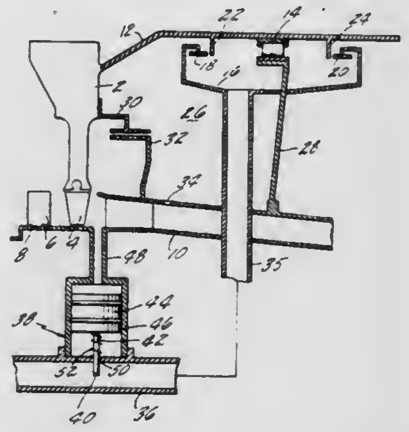
4,441,311
MEANS FOR CONTROLLING THE AIR SCAVENGE PRESSURE IN THE BEARING COMPARTMENT OF A GAS TURBINE ENGINE

Claude P. Rotondo, Middletown, and John D. Robinson, Jr., Tolland, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed May 13, 1982, Ser. No. 377,758

Int. Cl.³ F02C *7/06*

U.S. Cl. 60—39.08 **4 Claims**



1. In a gas turbine engine having a rotor and a compressor discharge passage:
- a bearing for the rotor;
- a compartment surrounding the bearing;
- seals cooperating with the compartment to prevent leakage or oil from said compartment;
- means for supplying compressor discharge air from said passage to said seals externally of the compartment;
- a vent duct for the compartment;
- a restrictive valve in said duct for controlling the air flow and;
- pressure actuated means responsive to compressor discharge pressure to actuate said valve.

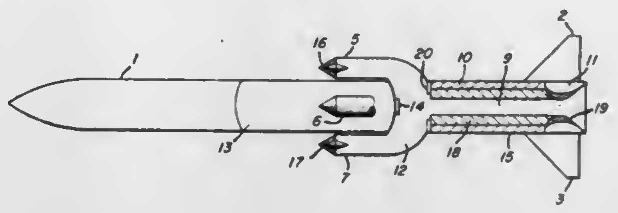
4,441,312
COMBINED CYCLE RAMJET ENGINE

John R. Smith, Kettering, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 22, 1979, Ser. No. 51,315

Int. Cl.³ F02C *9/78*

U.S. Cl. 60—245 **1 Claim**



1. In a combined ducted rocket ramjet engine for a missile having a duct serving as a combustion chamber the wall of which is lined with solid rocket fuel for burning during the boost phase of missile flight and which terminates in a nozzle through which gaseous combustion products exit to produce thrust, having a fuel rich gas generator operative during the cruise phase of missile flight to discharge gaseous fuel into said combustion chamber, and having ram air inlets communicating with said combustion chamber which are closed during the boost phase and open during the cruise phase of missile flight, the improvement wherein the solid rocket fuel lining the combustion chamber is replaced by a two-layer lining in which the inner layer in immediate contact with the chamber wall is solid ramjet fuel containing no oxidizer and the outer layer is solid rocket fuel containing an oxidizer, the inner layer acting as an isulator during the boost phase, and as a fuel by its ablation during the cruise phase, after the outer layer of rocket fuel has been consumed during the boost phase, to augment the fuel supplied to the chamber by the gas generator and at the same time to protect the wall of the combustion chamber from the high combustion temperature during the cruise phase.

4,441,313
MOUNTING DEVICES FOR MULTIPLE FLOW TURBOJET ENGINES

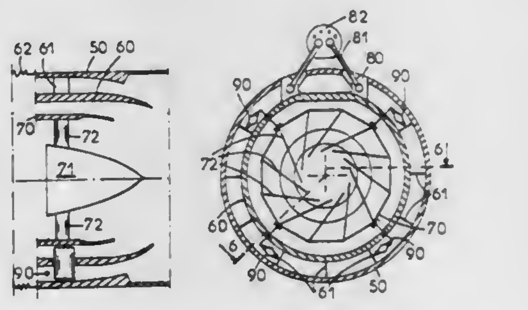
Raymond J. M. Joubert, Savigny sur Orge, and Jean G. Bouiller, Brunoy, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, "S.N.E.C.M.A.", Paris, France

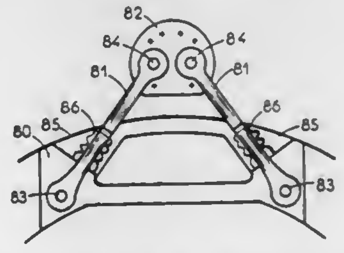
Filed Nov. 6, 1980, Ser. No. 204,582

Claims priority, application France, Nov. 12, 1979, 79 27771

Int. Cl.³ F02K *1/40, 3/02*

U.S. Cl. 60—262 **3 Claims**





1. A device for mounting to a rigid support structure (80) of an aircraft having a turbine, said turbine having an axis, a

turbine exhaust casing (**70**) in a turbojet engine of the type having at least two flows, i.e. a central primary flow in the exhaust casing (**70**) and a secondary flow in a first shroud (**60**) surrounding the exhaust casing (**70**) and fastened to said support structure (**80**), said device comprising a plurality of connecting elements around the exhaust casing (**70**) and each comprising an arm (**91**) oriented in a plane transverse to the axis of the turbine, first means attaching each arm (**91**) to said first shroud (**60**) and second means attaching each arm (**91**) to the exhaust casing (**70**), wherein the first means attaching each arm (**91**) comprise an articulated joint (**64-92**) linking an intermediate portion of each arm (**91**) to the first shroud (**60**) while leaving the arm (**91**) free to rotate in the transverse plane containing said arms (**91**) and a tie (**94** to **99**) variable in length and oriented in said transverse plane, consisting of an arrangement of a plurality of parallelograms, each formed by four tierods (**95**) of the same length pivoted in pairs at their ends around four axles of articulation (**66, 94, 96**) common to all of the parallelograms and determining respectively four edges of dihedrons of a parallelepiped, one (**66**) of the axles being linked by means of an attach spacer (**61**) with the first shroud (**60**) of the secondary flow and with a second shroud (**50**) external to the first shroud (**60**) and fixed to the said support structure (**80**) and to a portion of the arm by means of first and second articulated joints free to rotate in said transverse plane and another axle (**94**) being linked with the arm (**91**) of the connecting elements (**90**) permitting the arm (**91**) to rotate relative to the exhaust casing (**70**) in said transverse plane and to have freedom of relative translation in said plane and further having a channel (**73**) fixed relative to the exhaust casing (**70**) thereby leaving the arm (**91**) free to translate relative to the exhaust casing (**70**) in a direction parallel to said axis, said tie (**94** to **99**), and further means to adjust a value of the dihedron angle of the arrangement, said means to adjust a value of the dihedron angle comprising at least one bolt (**99**) linking two consecutive tierods of at least one of the parallelograms and which consecutive tierods (**95**) are articulated on one of the axles (**66, 94**) connected with the attach spacer (**61**) and the arm (**91**).

4,441,314

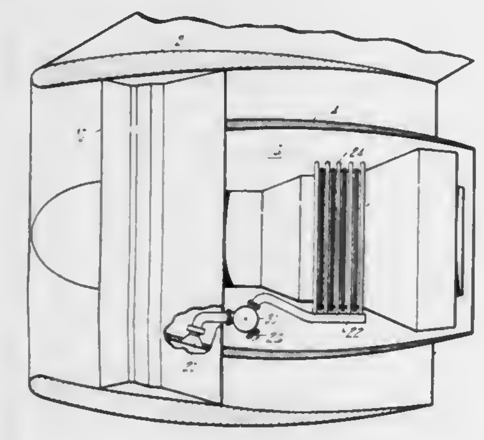
COMBINED TURBINE POWER PLANT BLADE TIP CLEARANCE AND NACELLE VENTILATION SYSTEM

David L. Fitton, South Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 191,185, Sep. 26, 1980, abandoned. This application Nov. 3, 1982, Ser. No. 439,019

Int. Cl.^{3} F02C *6/14;* **F02K** *3/06*

U.S. Cl. 60—266 **2 Claims**



1. A combined engine case cooling system and ventilation system adapted for aircraft having a nacelle housing the engine, a sheath surrounding the engine in said nacelle defining at least one compartment, a source of cooling air, at least one spray bar surrounding said engine case, a first conduit means interconnecting said spray bar and said source for conducting the cooling air from said source to impinge on the case of the engine through openings in said spray bar to cause it to shrink and second conduit means for conducting cooling air from said source to said compartment so as to ventilate said compartment, said combined engine case cooling system and ventilation system consisting of a single valve disposed in said first conduit means and said second conduit means and control means for controlling said single valve for rendering either said engine case cooling system or said ventilation system inoperative wihle the other is in the operating mode.

4,441,315

REACTION ASSEMBLY FOR A TORQUE CONVERTER AND A TORQUE CONVERTER COMPRISING SUCH A REACTION ASSEMBLY

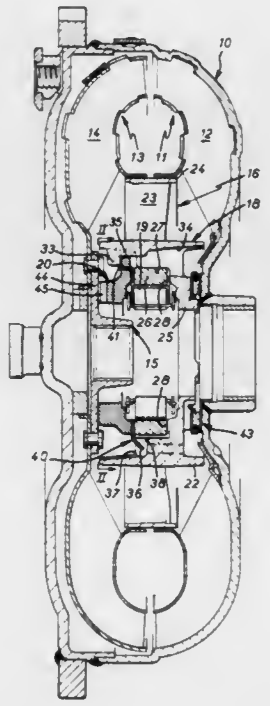
Jean C. Bochot, Claye-Souilly, France, assignor to Valeo, Paris, France

Filed Jan. 26, 1982, Ser. No. 343,107

Claims priority, application France, Jan. 27, 1981, 81 01452

Int. Cl.^{3} F16D *33/18*

U.S. Cl. 60—345 **11 Claims**



2. A reaction assembly for a torque converter, said reaction assembly comprising a reactor member having an axial bore and a transverse flange, an overrunning clutch having an outer race, said outer race of said overrunning clutch being engaged in said axial bore of the reactor member, said outer race bearing axially on one side against said transverse flange of said reactor member, and a keeper ring bearing against the other axial side of said outer race for axially maintaining the outer race with respect to said reactor member, the invention wherein bayonet mount means is provided between said keeper ring and said reactor member, and connecting means associated with said keeper ring for rotationally connecting said keeper ring to said reactor member.

4,441,316

WAVE ENERGY DEVICE

George W. Moody, Glasgow, Scotland, assignor to The Secretary of State for Energy in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland

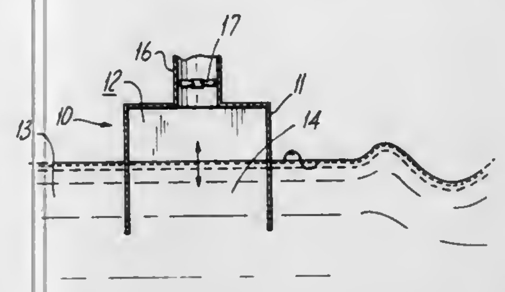
Filed Nov. 20, 1981, Ser. No. 323,699

Claims priority, application United Kingdom, Dec. 1, 1980, 8038510

Int. Cl.^{3} F03B *13/12*

U.S. Cl. 60—398 **18 Claims**

1. A device for extracting energy from waves on a liquid, the device having a chamber with an opening for the flow of the liquid into and out of the chamber to provide a quantity of the liquid which is arranged to oscillate in the chamber from an oscillatory force produced by the effect of the waves, and means for extracting energy from said oscillations, wherein the improvement comprises, means for determining the phase of said oscillatory force, means for determining the phase of the velocity of the oscillating liquid in the chamber, and means for shifting the phase of said velocity so that said velocity is substantially in phase with the phase of said oscillatory force.



4,441,317

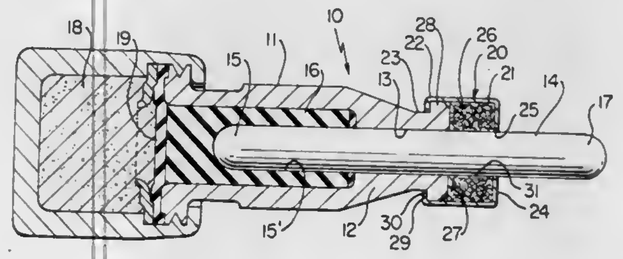
PISTON AND CYLINDER TYPE THERMAL DEVICE PART THEREFOR AND METHODS OF MAKING THE SAME

Denis G. Wolfe, Chesterfield County, Va., and Naohisa Wada, Kawasaki, Japan, assignors to Robertshaw Controls Company, Richmond, Va.

Filed Nov. 16, 1981, Ser. No. 321,550

Int. Cl.^{3} F03G *7/06*

U.S. Cl. 60—527 **10 Claims**



1. In a piston and cylinder type thermal device having a cylinder member carrying a piston stem that has an outer end that projects out of an opening of an end of said cylinder member to be extended and retracted relative thereto upon changes of sensed temperature of a charge of material disposed in said cylinder member that operatively acts on a resilient stem seat disposed in said cylinder member and having an opening in one end thereof that receives an inner end of said stem therein, said stem having a lubricant thereon to tend to prevent abrasion between said stem and said seat during said extended and retracted movement therebetween, lubricant storage means carried by said device and having therein porous means with said lubricant absorbed therein and being operatively associated with said stem for applying said lubricant to said stem external of said end of said cylinder member during said movement of said stem relative to said stem seat, the improvement wherein said lubricant storage means comprises a cup-shaped member having a closed end and an open end, said open end of said cup-shaped member being telescoped on said end of said cylinder member and having means securing said open end to said end of said cylinder member, said porous means being under axial compression between and against said end of said cylinder member and said closed end of said cup-shaped member.

4,441,318

METHOD AND APPARATUS FOR OBTAINING WORK FROM HEAT ENERGY

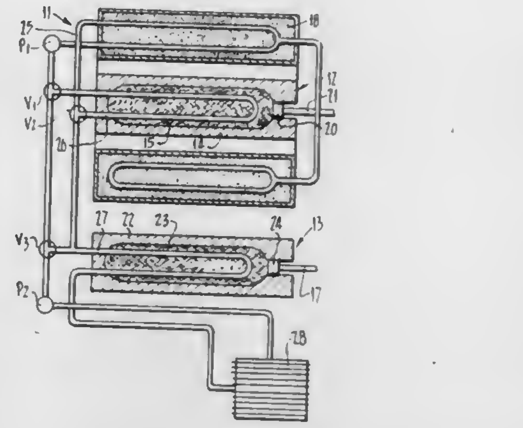
Alexander Theckston, 10 Emden Crescent, Mulgrave, 3170, Victoria, Australia

Continuation-in-part of Ser. No. 66,232, Aug. 13, 1979, abandoned. This application Jun. 16, 1982, Ser. No. 389,065

Claims priority, application Australia, Aug. 14, 1978, 5495

Int. Cl.^{3} F03G *7/06*

U.S. Cl. 60—527 **16 Claims**



1. A method of obtaining mechanical work from heat energy comprising heating a body of liquid metal or liquid metal alloy confined within, but thermally insulated from, a pressure vessel having a coefficient of volume expansion less than said body of metal or metal alloy contained therein thereby to generate a volumetric expansion of said body whereby to cause an increase in pressure within the vessel and causing the increased pressure to move a load thereby to do work.

4,441,319

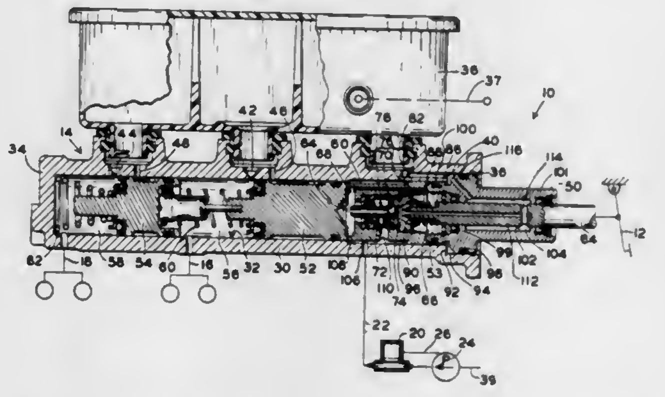
BRAKE BOOSTER

Arthur K. Brown, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Sep. 1, 1982, Ser. No. 413,866

Int. Cl.^{3} B60T *13/12*

U.S. Cl. 60—548 **10 Claims**



1. A brake booster having a housing with a bore therein, a piston movably disposed within the bore and cooperating therewith to partially define a pressure chamber communicating with a brake circuit and with a reservoir in a rest position, a valve assembly carried by the piston to move therewith within the bore, an end plug substantially closing one end of the bore and cooperating with the piston to define a work chamber therebetween, and an input member extending through the end plug to cooperate with the valve assembly, the input member being normally spaced from the valve assembly in the rest position and engageable therewith in an actuated position to open the valve assembly to communicate fluid pressure to the work chamber whereby the piston is moved to generate fluid pressure in the pressure chamber for communication with the brake circuit, characterized by said input member cooperating with said end plug to define an auxiliary cham-

ber, said input member including a first passage communicating the work chamber with the auxiliary chamber in the rest position, said end plug including a second passage communicating the auxiliary chamber with said housing bore, said housing including a third passage extending from said housing bore to said reservoir to communicate said work chamber with said reservoir in the rest position via said first, second and third passages, and said end plug including a first pair of sealing rings on opposite sides of said second passage cooperating with said housing bore whereby the communication from said work chamber to said reservoir is independent of said piston.

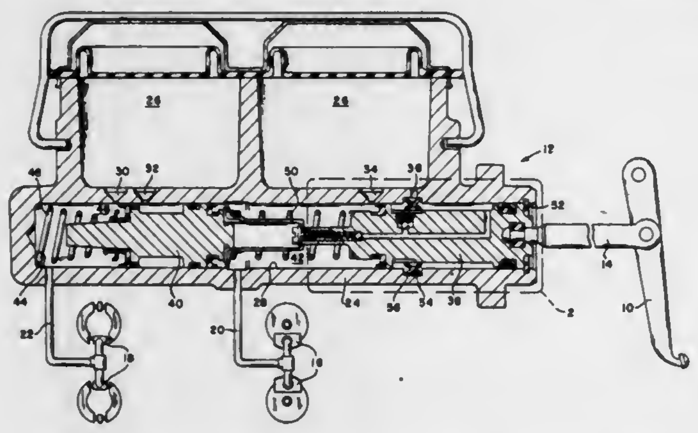
4,441,320
FAST-FILL MASTER CYLINDER

Robert F. Gaiser, Stevensville, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 42,699, May 25, 1979, abandoned. This application May 11, 1981, Ser. No. 262,075

Int. Cl.^{3} B60T *11/08*

U.S. Cl. 60—578 **5 Claims**



1. In a fast-fill master cylinder having a housing defining a bore for receiving fluid from a reservoir, a primary piston movably disposed within the bore and a secondary piston movably disposed within the bore and cooperating, respectively, with the primary piston to substantially define a primary chamber and with the housing to substantially define a secondary chamber, the improvement wherein a resilient member is disposed within the bore, the bore forming a recess to fixedly dispose the resilient member therein, said resilient member cooperating with the primary piston to substantially define an auxiliary chamber, the housing bore having the same uniform diameter apart from the recess for said primary pressure chamber, said secondary pressure chamber and said auxiliary chamber, the primary piston substantially defining passage means communicating said auxiliary chamber with said primary pressure chamber, the primary piston being movable relative to said resilient member during a braking application to contract said chambers to communicate fluid pressure from said auxiliary chamber to the primary chamber, and the resilient member cooperates with the recess to define a pair of separate passages, one of the passages communicating fluid from the auxiliary chamber to the reservoir during the initial braking application and the other passage communicating fluid from the reservoir to the auxiliary chamber upon termination of the braking application.

4,441,321
COMPACT MIST FLOW POWER GENERATOR

Stuart L. Ridgway, Santa Monica, Calif., assignor to R & D Associates, Marina del Rey, Calif.

Filed Mar. 25, 1982, Ser. No. 361,863

Int. Cl.^{3} F03G *7/04*

U.S. Cl. 60—641.7 **19 Claims**

1. An apparatus for generating power from thermal differences in water supplies comprising:

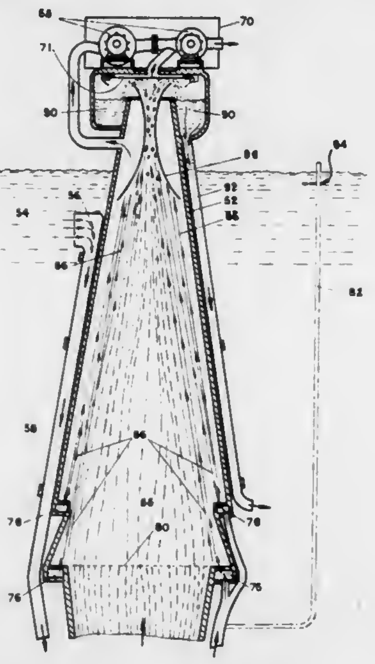
intake means for receiving water from a warm source of water;

dispersion means for producing a mist from said warm water in the form of warm water or brine droplets dispersed in water vapor formed by partial evaporation or boiling from the droplets, with vapor being the continuous phase;

guiding and containing means of substantial vertical extent for receiving the mist from the dispersing means and conducting it in an upward direction under the influence of a difference in vapor pressure between the main portion of said guiding and containing means and the lower end thereof adjacent the dispersion means;

means for condensing said water vapor coupled to said guiding and containing means at a point along its height following acceleration of the warm water droplets to a velocity sufficient to reach the upper end of the guiding and containing means;

collecting means for receiving the droplets of water at the higher elevation near the upper end of said guiding and containing means;



said guiding and containing means having a cross-sectional area near the upper end thereof approximately equal to or less than the cross-sectional area of said guiding and containing means near the center thereof;

evacuation means for removing noncondensable gases from the guiding and containing means;

power generating means for harnessing the difference of head produced by raising the water in said guiding and containing means; and

said apparatus including means for spraying water upward into said guiding and containing means at a significant angle inclined toward the axis thereof with said droplets initially having insufficient velocity along the axis of said guiding and containing means to reach the upper end thereof.

4,441,322
MULTI-STAGE, WET STEAM TURBINE

Emil W. Ritzi, Manhatten Beach, Calif., assignor to Transamerica Delaval Inc., Lawrenceville, N.J.

Continuation of Ser. No. 17,456, Mar. 5, 1979. This application Jan. 12, 1981, Ser. No. 224,180

The portion of the term of this patent subsequent to Mar. 31, 1998, has been disclaimed.

Int. Cl.^{3} F01D *1/18;* F01K *7/00*

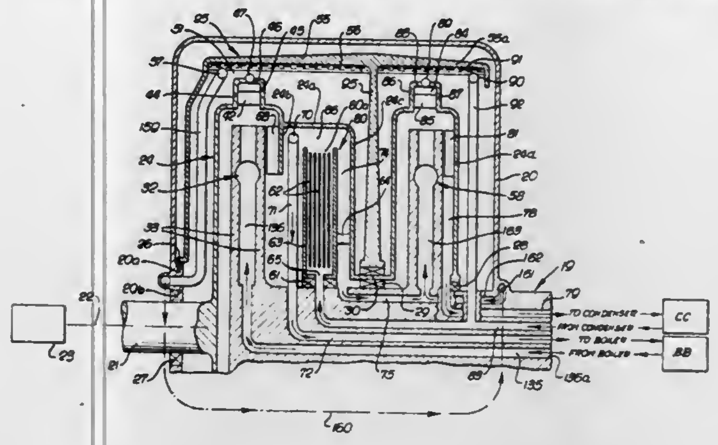
U.S. Cl. 60—649 **13 Claims**

10. In a turbine, the combination comprising

(a) first nozzle means to receive heated fluid for expansion therein to form a two-phase discharge of gas and liquid,

(b) a separator rotor having an axis, blades located to travel in the path of said discharge, and a rotating surface located radially outwardly of said blades for supporting a layer of separated liquid on said surface,

(c) the rotor having reaction nozzle means to communicate with said layer to receive liquid therefrom for discharge in a direction or directions developing torque acting to rotate the rotor.



4,441,323
COMBUSTION EQUIPMENT FOR A GAS TURBINE ENGINE INCLUDING A FUEL BURNER CAPABLE OF ACCURATE POSITIONING AND INSTALLATION AS A UNIT IN A FLAME TUBE

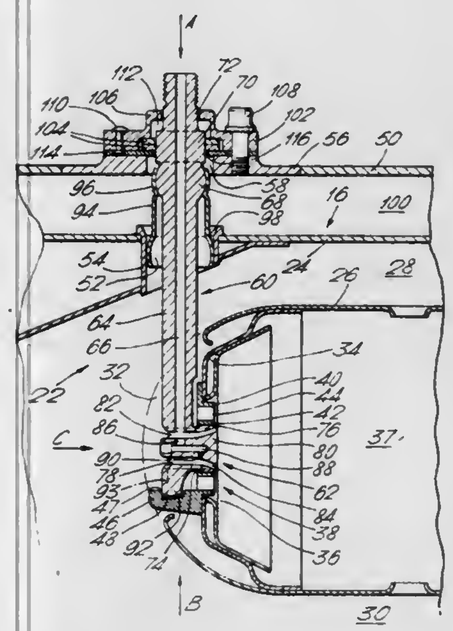
Rowan H. Colley, Sunnyhill, England, assignor to Rolls-Royce Limited, London, England

Filed Mar. 2, 1982, Ser. No. 354,047

Claims priority, application United Kingdom, Apr. 16, 1981, 8112098

Int. Cl.^{3} F02C *7/22*

U.S. Cl. 60—737 **5 Claims**



1. Combustion equipment for a gas turbine engine having an engine casing with at least one hole therethrough, said combustion equipment being positioned within said engine casing and comprising:

at least one flame tube having a head at an upstream end thereof, said head having at least one aperture therein;

an annular swirler assembly positioned coaxially in said at least one aperture in the head of said flame tube;

a fuel burner capable of being installed as a unit through said at least one hole in said engine casing and accurately positioned in said swirler assembly, said fuel burner including a fuel feed arm and a fuel injector joined together as a unit, said fuel feed arm and said fuel injector each being cylindrical for a major portion of their length and having axes at an angle to each other, said fuel feed arm having at least one fuel passage and said fuel injector having an air duct therethrough coaxial with an axis of the fuel injector and having at least one fuel passage communicating with said fuel feed arm passage for injecting fuel into said air duct; and

locating means for accurately positioning said fuel injector in said swirler assembly when said fuel burner is installed as a unit through said at least one hole in said casing, said locating means including an upstream extending projection attached to said swirler assembly and having a recess and a face, said fuel injector having a tongue attached thereto and extending in a direction normal to the axis of the fuel injector, said tongue having a face thereon for abutting the face on said projection when said fuel injector is accurately positioned in said swirler assembly, said fuel injector having a partially spherical outer surface on a downstream end thereof which is positioned in said annular swirler assembly whereby when said fuel burner is inserted as a unit through said hole in said engine casing and the partially spherical outer surface of said fuel injector is inserted into the annular swirler assembly, the fuel burner can be rotated about an axis passing through a center of a sphere of which the partially spherical outer surface of the fuel injector forms a part to cause the tongue on the fuel injector to engage in said recess in the upstream extending projection so that the faces of said tongue and the upstream extending projection abut each other to accurately position the fuel injector coaxially in the annular swirler assembly.

4,441,324
THERMAL SHIELD STRUCTURE WITH CERAMIC WALL SURFACE EXPOSED TO HIGH TEMPERATURE

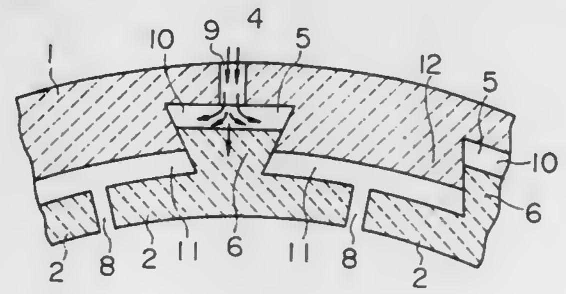
Toshio Abe, Komae; Hiroshi Ishikawa, Zama, and Shigeo Suhara, Hachioji, all of Japan, assignors to Kogyo Gijutsuin, Tokyo, Japan

Filed Mar. 11, 1981, Ser. No. 242,606

Claims priority, application Japan, Apr. 2, 1980, 55-42018

Int. Cl.^{3} F02G *1/00*

U.S. Cl. 60—753 **3 Claims**



1. For use in a thermal shield structure having ceramic blocks for protecting a high-temperature exposed wall surface in which supporting members having a wedge-shaped groove and wedge-shaped members on said ceramic blocks to be supportedly received in said wedge-shaped groove, respectively provided on the wall surface wherein said supporting members and ceramic blocks, defining a plurality of pairs of wedge-groove couplings, are engaged with each other to cover the wall surface with said ceramic blocks, the improvement comprising: the wedge-shaped groove in each of said supporting members and each said wedge-shaped members to be supported thereby being dimensioned to define therebetween a gap in said wedge-shaped groove small enough to prevent mutual disengagement of each pair of the wedge-shaped couplings of the supporting members and the wedge-shaped supported members and sufficient to permit movement of the ceramic blocks relative to the wall surface, and for each wedge-shaped supported member a passage for a cooling air supply from behind and into each wedge-shaped groove of each supporting member provided so that each wedge-shaped supported member is urged by the pressure of supplied cooling air so as to be retained and positioned in the wedge-shaped groove of the corresponding support member, whereby the

corresponding ceramic blocks are moved to and held on the wall surface at a position defined by the individual wedge-shaped grooves on the supporting members and the corresponding wedge-shaped members to be supported in response to pressure from the cooling air introduced into each wedge-shaped groove of a supporting member.

4,441,325

REFRIGERATING OR HEAT PUMPING PROCESS AND APPARATUS

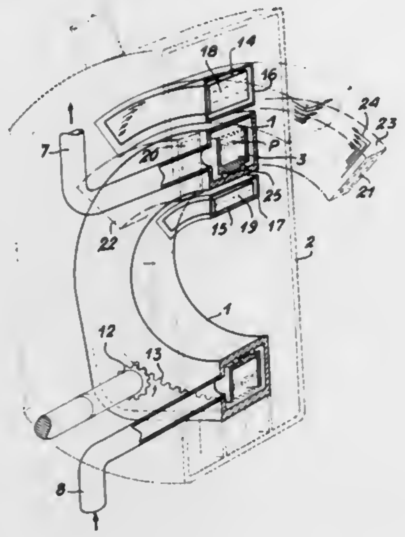
Gilbert Bon-Mardion, Eybens; Gerard Claudet, Grenoble, and Albert Lacaze, Meylan, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Nov. 24, 1982, Ser. No. 444,193

Claims priority, application France, Nov. 27, 1981, 81 22276

Int. Cl.³ F25B *21/02*

U.S. Cl. 62—3 **14 Claims**



1. A refrigerating or heat pumping process using a paramagnetic substance and a fluid in contact therewith, wherein it comprises performing:

a magnetization of the substance by a magnetic field, said magnetisation being performed thermally at a fluid temperature close to a first temperature T_1 of a heat source;

a cooling of the substance by heat exchange with the fluid between the first temperature T_1 and a second temperature of said fluid close to a second temperature T_2 of a cold source;

a demagnetization of the substance by a magnetic field, said demagnetization being performed isothermally, at a temperature close to the second temperature T_2;

a heating of the substance by heat exchange with the fluid between the second temperature T_2 and the first temperature T_1;

the isothermal magnetization of the substance being performed by removing the magnetization heat by means of the fluid, by relative displacements of the fluid and the substance, the fluid firstly displacing in the displacement direction of the substance and then in the direction opposite thereto, in such a way that the temperatures at the start and finish of magnetization are the same.

4,441,326

PROCESS FOR COOLING THE PASSENGER COMPARTMENTS OF VEHICLES WITH HYDROGEN-CONSUMING ENGINES BY MECHANICAL REFRIGERATING PROCEDURE

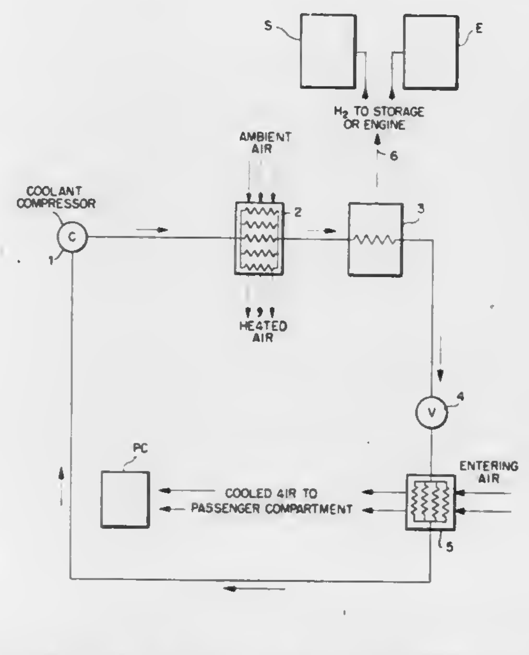
Otto Bernauer, Weinstadt; Hans-Peter Holzt, Esslingen, and Hermann Lenz, Stuttgart, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Dec. 9, 1981, Ser. No. 329,049

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1980, 3047023

Int. Cl.³ F25B *19/00*

U.S. Cl. 62—7 **6 Claims**



1. A process for cooling a passenger compartment of a vehicle comprising equipping a vehicle with a hydrogen-consuming engine, cooling using a mechanical refrigerating procedure wherein a gaseous coolant is compressed, condensing the resulting compressed and heated gaseous coolant with heat removal to liquefy the coolant, and evaporating the liquefied coolant under the action of a pressure relief valve, using the cold generated during the pressure relief to cool the passenger compartment, and at least partially implementing the heat removal by heat taken up by decomposition of a metal hydride.

4,441,327

TEMPERATURE ACTUATED VALVE AND PHASE SEPARATION METHOD

David J. Klee, Emmaus, and Peter C. Nelson, Macungie, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

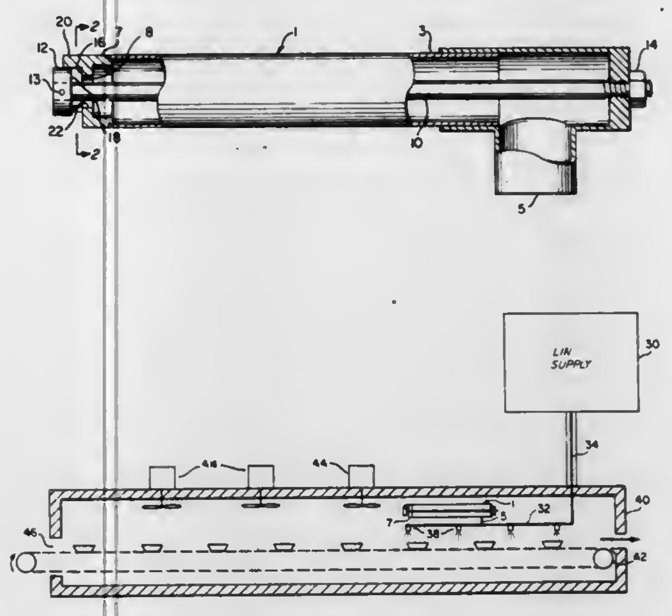
Filed Dec. 7, 1981, Ser. No. 328,052

Int. Cl.³ F17C *7/02*

U.S. Cl. 62—51 **6 Claims**

1. In a method of separating vaporized cryogen from its liquid phase in a liquid cryogen freezing system comprising a cryogen delivery system and a cryogen spray header system, which comprises the steps of allowing liquid cryogen to pass from a source of supply to a confined space comprising materials having different linear coefficients of expansion, releasing any vaporized cryogen through an opening in said confined space formed as a result of expansion of one of the materials of said space relative to the other, the improvement which comprises releasing the vapors from said confined space through an opening of a gradually increasing size in said confined space as said liquid cryogen vaporizes up to a temperature intermediate that of the liquid and room temperature, releasing the vapors through an opening of a constant size as said cryogen liquid continues to vaporize at temperatures above the intermediate temperature, wherein said intermediate temperature is selected to be that which produces a uniform flow rate of vaporized cryogen when the maximum liquid cryogen flow rate of the

cryogen delivery system is expanded to the maximum design pressure of the cryogenic freezing system, whereby a uniform flow of liquid cryogen is passed through said spray header system.



4,441,328

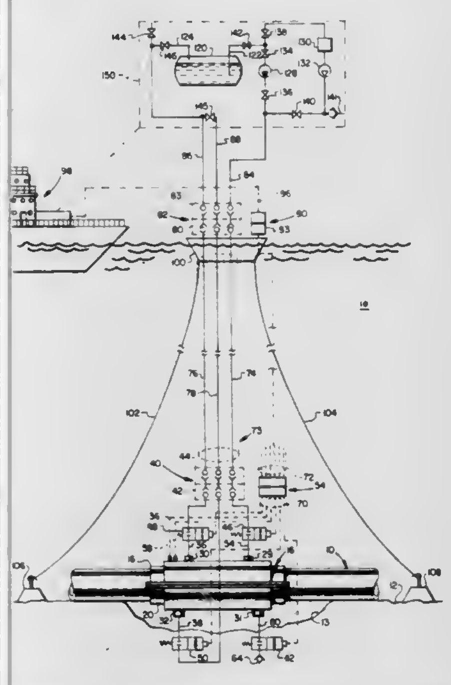
METHOD AND APPARATUS FOR FORMING A TEMPORARY PLUG IN A SUBMARINE CONDUIT

Beryle D. Brister, Amarillo, Tex., assignor to Brister, Incorporated, Amarillo, Tex.

Filed Dec. 8, 1981, Ser. No. 328,028

Int. Cl.³ F25D *3/00;* D03D *49/00*

U.S. Cl. 62—53 **24 Claims**



1. A method for forming a temporary plug in a submarine fluid pipeline or the like comprising the steps of:

providing a quantity of freezable liquid at a predetermined location within said pipeline;

providing a generally cylindrical housing having an interior portion forming an annular chamber between the exterior surface of said pipeline and said housing when said housing is placed on said pipeline, said housing being longitudinally divided into at least two sections and having means thereon for conducting fluid to and from said chamber, said means including a plurality of conduits and respective remotely operable valves connected to respective ones of said conduits;

providing a pressure sensing element disposed on said housing for measuring the fluid pressure within said chamber;

installing said housing around the exterior of said pipeline at said predetermined location on said pipeline;

connecting at least one of said conduits to a source of low temperature fluid;

remotely controlling said valves to conduct low temperature fluid to said chamber to freeze said quantity of liquid to form said plug; and

controlling the fluid pressure within said chamber in accordance with the pressure of the environment around the exterior of said housing.

4,441,329

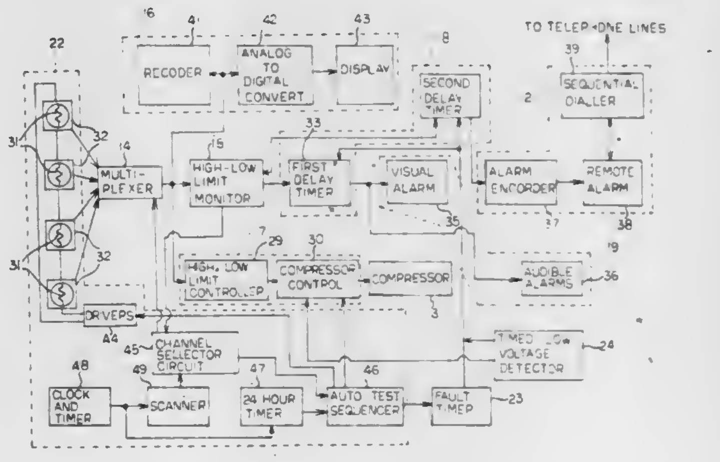
TEMPERATURE CONTROL SYSTEM

Robert E. Dawley, 123 Bacon St., Natick, Mass. 01760

Filed Jul. 6, 1982, Ser. No. 395,862

Int. Cl.³ F25B *49/00, 21/02;* G05D *23/30*

U.S. Cl. 62—126 **15 Claims**



1. A temperature control system comprising:

an enclosure defining a zone to be temperature controlled;

primary temperature conditioning means for changing the ambient temperature within said zone;

temperature sensing means for producing a temperature signal dependent on localized temperature within said zone;

controller means for controlling said temperature conditioning means in response to said temperature signal produced by said sensing means;

error detection means for monitoring said temperature signal, and for producing error signals in response to predetermined abnormal output conditions thereof;

auxiliary temperature conditioning means comprising thermoelectric means disposed in intimate heat exchanging contact with said sensing means and selectively energizable during a test period to substantially alter said localized temperature sensed by said sensing means without substantially changing said ambient temperature within said zone; and

fault means for producing fault signals in response to given defective output conditions of said temperature signal during said test periods.

4,441,330

REFRIGERANT RECOVERY AND RECHARGING SYSTEM

Ralph C. Lower, Bryan, and Roger D. Shirley, West Unity, both of Ohio, assignors to Robinair Manufacturing Corporation, Montpelier, Ohio

Division of Ser. No. 211,571, Dec. 1, 1980, Pat. No. 4,364,236.

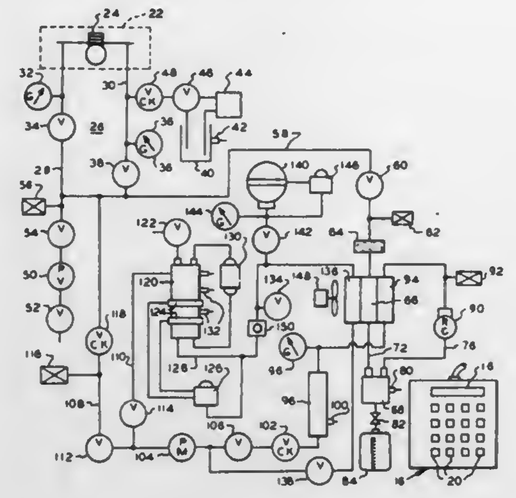
This application Jul. 29, 1982, Ser. No. 402,856

Int. Cl.³ F25B *45/00*

U.S. Cl. 62—149 **10 Claims**

1. A refrigeration circuit refrigerant processing system comprising, in combination, a manifold conduit adapted to be connected to the refrigeration circuit to be serviced, a pump circuit communicating with said manifold conduit for drawing refrigerant therefrom, a pump within said pump circuit, a condenser within said pump circuit liquifying refrigerant passing therethrough, a reservoir receiving said liquified refriger-

ant from said condenser, refrigerant purifying means selectively communicating with said reservoir for receiving refrigerant therefrom, heating means heating said refrigerant purifying means controlling the temperature of purified refrigerant,



control means controlling said heating means, and a metering gear pump selectively communicating with said purifying means and said manifold conduit transferring refrigerant from said purifying means to said manifold conduit.

4,441,331
AIRCONDITIONER WITH REFRIGERANT TEMPERATURE RESPONSIVE CONTROLLER FOR COMPRESSOR BYPASS VALVE

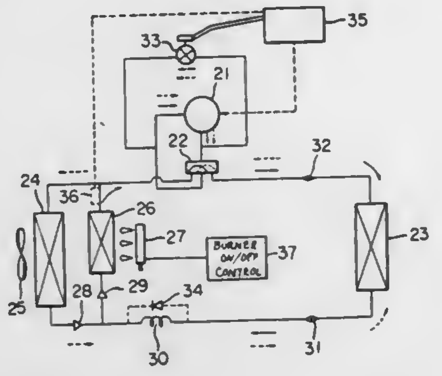
Hiroshi Yuyama, Shizuoka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 26, 1982, Ser. No. 372,239

Claims priority, application Japan, May 7, 1981, 56-68553

Int. Cl.^{3} F25B *41/00, 29/00*

U.S. Cl. 62—196.3 **3 Claims**



1. A heat pump type airconditioner comprising refrigerant compression means; a first heat exchanger disposed indoors and which functions as an evaporator during a cooling mode of operation and as a condenser during a warming mode of operation; a second heat exchanger disposed outdoors and which functions as a condenser during the cooling mode of operation; a third heat exchanger for heating the refrigerant during the warming mode of operation to increase the temperature thereof to a temperature higher than the outdoor air; heating means operatively associated with said third heat exchanger for providing heat to the third heat exchanger and having means for turning said heating means off when a higher predetermined refrigerant temperature is reached and turning said heater means on when a lower predetermined refrigerant temperature is reached; said compression means and heat exchangers being connected in a refrigeration circuit for operating in the cooling mode and the warming mode when refrigerant is circulated therethrough in the proper direction; a compression means bypass pipe connected between the higher pressure side and the lower pressure side of said compression means; valve means connected in said bypass pipe for controlling the flow of refrigerant through said bypass pipe; temperature sensing means on the outlet side of said third heat exchanger for sensing the temperature of the refrigerant from said third heat exchanger during the warming mode operation when said heating means is operating; and control means to which said temperature sensing means is connected and connected to said valve means for closing said valve means during normal cooling mode operation and keeping said valve means open at the start of the warming mode of operation and responsive to said temperature detecting means for closing said valve means when a higher predetermined sensed temperature of the refrigerant is reached and opening said valve means when a lower predetermined sensed temperature is reached.

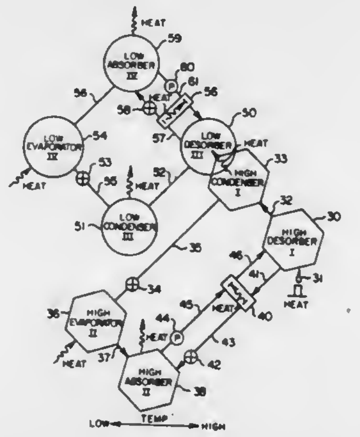
4,441,332
ABSORPTION REFRIGERATION AND HEAT PUMP SYSTEM

William H. Wilkinson, Upper Arlington, Ohio, assignor to Gas Research Institute, Chicago, Ill.

Filed Dec. 6, 1982, Ser. No. 446,885

Int. Cl.^{3} F25B *27/02*

U.S. Cl. 62—238.3 **10 Claims**



1. An absorption refrigeration and heating system in connection with a cooling or heating load and a heat sink or source to selectively provide heat to or remove heat from the load, comprising:

(a) at least one first subsystem for operation at higher temperature and at least one second subsystem for operation at lower temperature relative to the first subsystem;
(b) each subsystem having components of absorber means, desorber means, condenser means, and evaporator means operatively connected together;
(c) with the condenser means of the higher temperature subsystem in heat exchange relationship with the desorber means of the lower temperature subsystem; and
(d) means to selectively arrange heat exchange relationships between the load and at least two of the component means including the higher temperature absorber, higher temperature evaporator, lower temperature condenser, lower temperature evaporator, and lower temperature absorber; while arranging heat exchange relationships between at least one of the other component means and the heat sink or source.

4,441,333
TRANSPORT REFRIGERATION UNIT COMBINATION AIRFLOW STRAIGHTENER AND DEFROST DAMPER

Donald K. Mayer, Bloomington, Minn., assignor to Thermo King Corporation, Minneapolis, Minn.

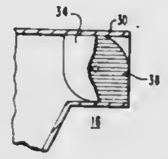
Filed Jul. 15, 1982, Ser. No. 398,528

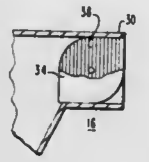
Int. Cl.^{3} B60H *3/04*

U.S. Cl. 62—239 **3 Claims**

1. A transport refrigeration unit serving a vehicle load space, including:

a refrigerant evaporator coil;
means for drawing air from said load space and passing said air through said coil and directing said air back to said space;
means defining a passage through which air is directed back into said load space from said unit, said passage means having a generally rectangular shape in planes parallel to the direction of airflow;
means for defrosting said coil periodically;
honeycomb-like air straightener means in assembly form located in said passage, said assembly form having a generally rectangular shape in cross-section parallel to the direction of airflow with two opposite corner portions rounded to permit rotation of said assembly 90° within said passage means;
means for moving said assembly between one position in which said air straightener means are oriented to direct air out of said passage into said load space and an opposite position in which said air straightener means are oriented to block airflow through said passage and function as an airflow damper.





4,441,334
ICE-CREAM MACHINE

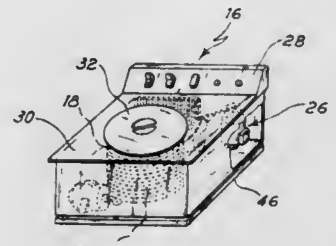
Alberto Cipelletti, Via Emilia, Guardamiglio, Italy

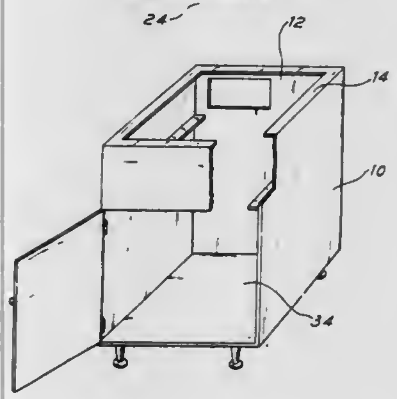
Filed Mar. 8, 1982, Ser. No. 355,293

Claims priority, application Italy, Mar. 10, 1981, 21032/81[U]

Int. Cl.^{3} F25D *23/12*

U.S. Cl. 62—258 **7 Claims**





1. A multiple use cooling apparatus comprising in combination:

(a) an enbloc ice cream machine having self contained refrigerating means, with a refrigerating circuit associated therewith, and with said enbloc ice cream machine having a support plate fixed to the top thereof, and said support plate having an opening therein providing communication with a mixing container of said enbloc ice cream machine;
(b) furniture means having an opening at the top thereof, with said enbloc ice cream machine arranged in said opening and supported on top of said furniture means to project into said furniture means, and to define, with the inside walls of said furniture means, a free space thereunder;
(c) door means provided on said furniture means to provide selective access to said free space;
(d) insulating means arranged in said free space associated with said furniture means to define an insulated free space;
(e) refrigerating plate means located in said free space connected in parallel with said refrigerating circuit of said self-contained refrigerating means; and
(f) valve means associated with said refrigerating plate means and with said refrigerating circuit for selectively connecting said refrigerating circuit to said refrigerating plate, for when said ice cream machine is not in use, for cooling said insulated free space.

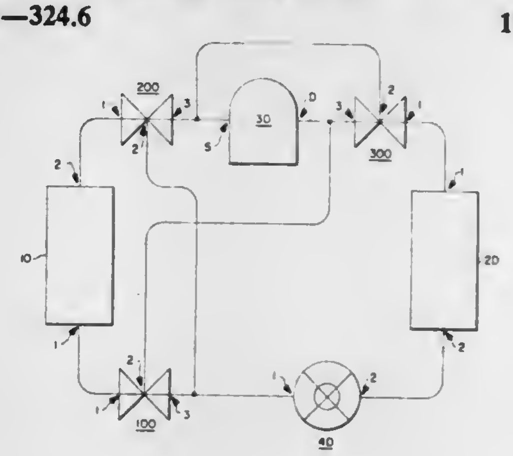
4,441,335
HEAT PUMP

Ulrich Bonne, Hopkins, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 19, 1982, Ser. No. 409,733

Int. Cl.^{3} F25B *13/00*

U.S. Cl. 62—324.6 **13 Claims**



1. A reversible refrigeration system comprising a compressor, first and second heat exchangers, an expansion valve, three three-way valves, and means for connecting the elements of the system so that the system will operate in a heating mode with the three three-way valves adjusted for heating operation, in a cooling mode with the three three-way valves adjusted for cooling operation, and in a defrost mode with the three three-way valves adjusted for defrost operation.

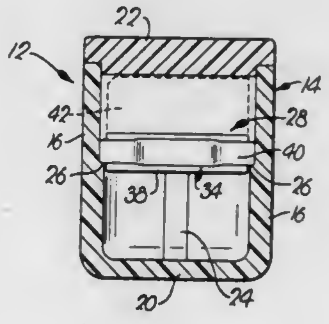
4,441,336
COOLER HAVING FREEZE BOTTLE INSERT

John P. Cannon, Overland Park, Kans., assignor to Plattner Industries, Inc., Ottawa, Kans.

Filed Aug. 23, 1982, Ser. No. 410,579

Int. Cl.^{3} F25D *3/08*

U.S. Cl. 62—457 **4 Claims**



1. A portable cooler including:
a hollow chest having a top lid adapted to be opened for rendering the interior of the chest accessible;
a closed, ice-filled bottle for local application of cold to the

contents of a plurality of individual containers to be placed in said chest; and

means in the chest for retaining the bottle in a preselected position within the chest,

said bottle having a corrugated, outer surface, presenting a series of spaced, elongated concavities,

each cavity conforming in shape with the outer configuration of a corresponding container to be placed in the chest, whereby the containers directly engage the bottle in the concavities both longitudinally and transversely of the concavities,

said bottle being waterproof whereby, as the ice melts in response to absorption of the heat of said container contents, the resultant liquid will be retained in the bottle,

said chest having upwardly-facing shoulder means intermediate said lid and the bottom of the chest for supporting the bottle horizontally in the chest,

said surface of the bottle facing upwardly when the bottle is resting on said shoulder means,

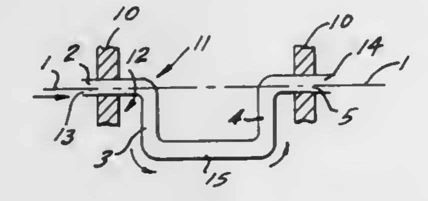
said chest having a pair of opposed walls,

each wall having an internal, upright, bottle-receiving groove for optional support of the bottle vertically in the chest.

4,441,337

ROTARY THERMODYNAMIC APPARATUS AND METHOD

Frederick W. Kantor, 523 W. 112 St., New York, N.Y. 10025
Division of Ser. No. 240,135, Mar. 3, 1981, Pat. No. 4,367,639, which is a continuation of Ser. No. 4,606, Jan. 18, 1979, abandoned, which is a division of Ser. No. 770,316, Feb. 18, 1977, Pat. No. 4,136,530, which is a division of Ser. No. 569,478, Apr. 18, 1975, Pat. No. 4,010,018, which is a continuation of Ser. No. 78,552, Oct. 6, 1970, abandoned, which is a continuation-in-part of Ser. No. 864,112, Oct. 6, 1969, Pat. No. 3,808,828. This application Jan. 10, 1983, Ser. No. 456,709
Int. Cl.³ F25B *3/00*
U.S. Cl. 62—499 **15 Claims**

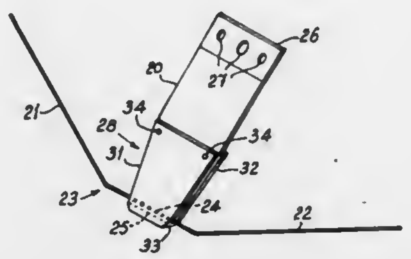


1. An absorptive rotary inertial thermodynamic compressor comprising, in combination, a rotor, means for admitting a gas into said rotor, a quantity of absorbent liquid in said rotor for absorbing said gas, an absorbing chamber for containing some of said liquid and for causing said incoming gas to be absorbed into said liquid, a heating chamber located radially outwardly from said absorbing chamber, first conduit means for conducting liquid from said absorbing chamber to said heating chamber, a separation chamber located radially inwardly from said heating chamber, second conduit means for conducting fluids from said heating chamber to said separating chamber, said separating chamber having a compressed gas outlet and a liquid outlet, said liquid outlet being located radially outwardly from said gas outlet, and third conduit means connecting said liquid outlet to said absorbing chamber.

4,441,338

PRESSER FOOT DEVICE FOR A KNITTING MACHINE

Max W. Betts, Falmouth, and Frank Robinson, Derby, both of England, assignors to Courtaulds PLC, London, England
Filed May 19, 1983, Ser. No. 496,096
Claims priority, application United Kingdom, May 19, 1982, 8214622
Int. Cl.³ D04B *7/04*
U.S. Cl. 66—64 **9 Claims**



1. A presser foot device for a knitting machine comprising:

(a) a blade-like support which, when mounted in the knitting machine, extends downwardly with respect to the needles of the machine,

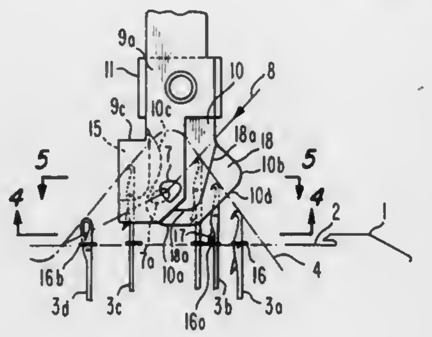
(b) a presser element carried by said support near its lower edge,

(c) and a channel-like protective element which enfolds the lower edges of the blade-like support to protect it.

4,441,339

TWO-PIECE YARN CARRIERS FOR CIRCULAR KNITTING MACHINES

Shozo Yorisue, Kobe, Japan, assignor to Precision Fukuhara Works, Ltd., Kobe, Japan
Filed Feb. 16, 1982, Ser. No. 348,704
Claims priority, application Japan, Apr. 6, 1981, 56-049489[U]
Int. Cl.³ D04B *15/08, 15/54*
U.S. Cl. 66—111 **10 Claims**



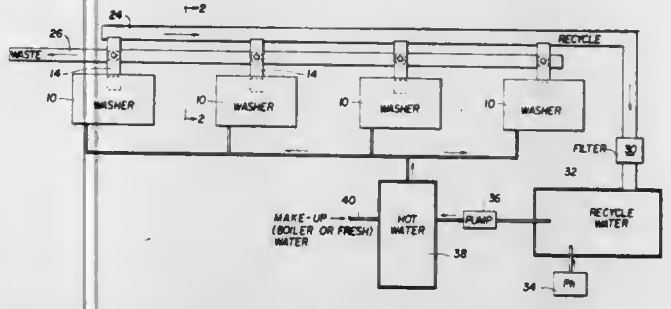
1. A yarn carrier to feed yarn to the circle of latch needles of a circular knitting machine, the carrier having a yarn guide provided with a yarn feeding aperture through which the yarn is fed to the needles and into which random ones of the needles are adapted to enter as the yarn continues to be fed, and the carrier having a guard plate in addition to the yarn guide, the guard plate being operatively related to the yarn guide and to the needles to prevent entry of the needles into the aperture as the yarn continues to be fed to the needles, the yarn being spaced from the guard plate as it is fed to the needles.

4,441,340

ENERGY SAVING LAUNDRY SYSTEM

Darryl Kaplan, P.O. Box 1, Woodridge, N.Y. 12789
Filed Feb. 18, 1982, Ser. No. 349,996
Int. Cl.³ D06F *31/00, 39/08*
U.S. Cl. 68—12 R **19 Claims**

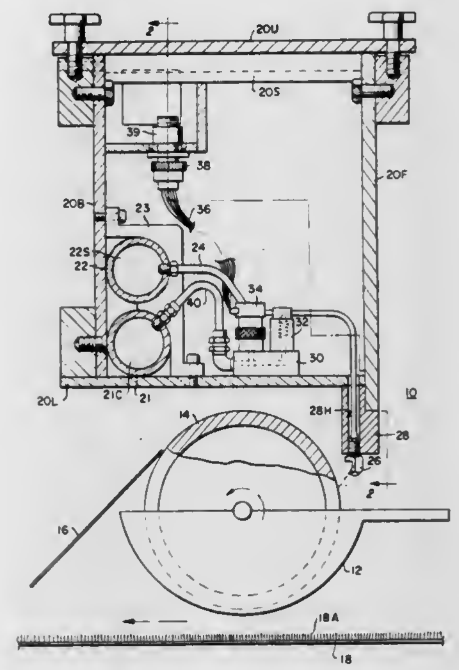
11. A water and heat energy conservation system for a laundry of the type which comprises a plurality of individual automatically operated washing machines and a single hot water supply for all of said machines, the combination comprising a modular substantially self-contained system comprising an array of a hot water storage tank, a recycle water tank, and a waste water storage tank, diverter valve means associated with the water effluent exit of each of said washing machines for selectively directing the water effluent from every bath during the cycle of the operation of each of said machines into either said recycle water tank or said waste water tank, said diverter valve means comprising a housing positioned over and overlying portions of both of said waste water tank and said recycle water tank, said diverter valve means further comprising an "L" shaped diverter valve member which in one position directs the effluent flow from the machine into one of said tanks and in the other position of said valve directs the effluent flow into the other of said waste water tank and said recycle water tank, means to supply water from said recycle water tank to said hot water storage tank, and means to supply hot water from said hot water storage tank to each of said washing machines.



4,441,341

APPARATUS FOR TREATING TEXTILE MATERIALS

Billy J. Otting, Lafayette, Ga., assignor to Otting International, Inc., Lafayette, Ga.
Filed Mar. 23, 1982, Ser. No. 361,037
Int. Cl.³ D06B *1/06*
U.S. Cl. 68—205 R **15 Claims**



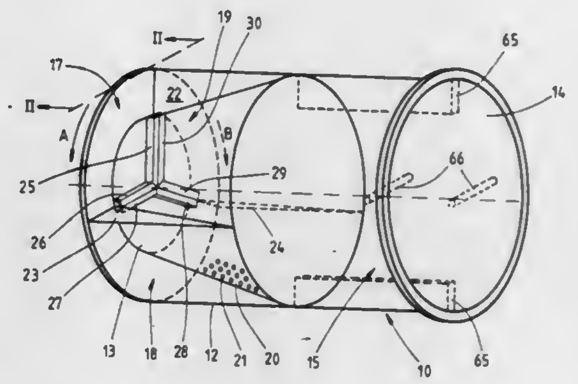
1. Apparatus for dyeing a continuously moving textile web comprising

a roll applicator extending the width of the moving textile web and adapted to be mounted above the moving textile web, said roll applicator including a trough for supplying liquid dye, a roller mounted for rotation in said trough and adapted to pick up the dye in a film on a surface of the roller upon rotation of the roller, a doctor blade adjacent said roller and inclined downwardly away from said roller for transferring dye from said roller to said web, and a plurality of spaced spray jets for spraying gaseous fluid on said roller to rearrange said dye film.

4,441,342

TANNING APPARATUS

Ludwig Dose, Vogesenstr. 8, and Werner Dose, Greffernerstr. 16, both of D-7585 Lichtenau, Fed. Rep. of Germany
Filed Jul. 15, 1981, Ser. No. 283,678
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1980, 3029856
Int. Cl.³ D06B *5/24, 23/14*
U.S. Cl. 69—30 **27 Claims**



1. An apparatus for tanning, dyeing and like treatment, comprising:

(a) a horizontal rotary drum having an axial front end and a circumferential surface;

(b) a treatment chamber defined in the rotary drum;

(c) a hollow axle which is in communication with the treatment chamber for carrying the drum and for admission and drainage of liquid treatment media, said hollow axle having an interior defining a plurality of axially extending channels;

(d) at least two ring-pocket sections provided along the circumferential surface of the drum, each of the two ring-pocket sections being in communication with the treatment chamber; and

(e) connecting lines communicating with the individual ring-pocket sections and provided only at the axial front end of the rotary drum for admission and drainage of the liquid treatment media so that the interior of the treatment chamber and of the other axial front end of the rotary drum are free of connecting lines, each of said connecting lines extending substantially radially between the drum center of the two axial front ends and the associated ring-pocket section and having one end opening into the interior of the associated ring-pocket section and another end arranged in the region of the center opening into the respectively associated axial channels in the interior of the hollow axle, wherein each ring-pocket section communicates with two connecting lines, the one of which being provided in the circumferential direction of the rotary drum at one end of the respective ring-pocket section and the other of which being provided in the circumferential direction at the other end thereof, so that regardless of the rotation of the drum, the liquid treatment media is admitted into one of the two connecting lines of the associated ring-pocket section.

4,441,343

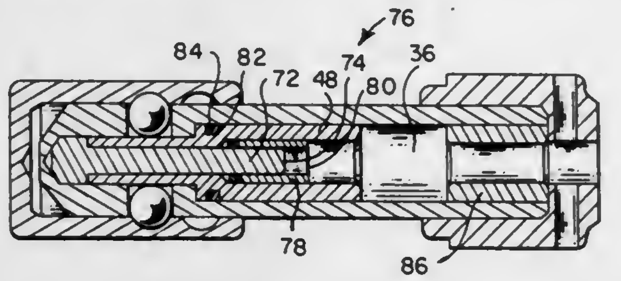
HIGH SECURITY LOCKS AND KEY

Anker J. Nielsen, Jr., Holden, and Richard E. Hoyt, Worcester, both of Mass., assignors to Omco Inc., Holden, Mass.
Filed Jul. 1, 1982, Ser. No. 394,446
Int. Cl.³ E05B *67/36, 25/00*
U.S. Cl. 70—34 **7 Claims**

7. A high security lock comprising:

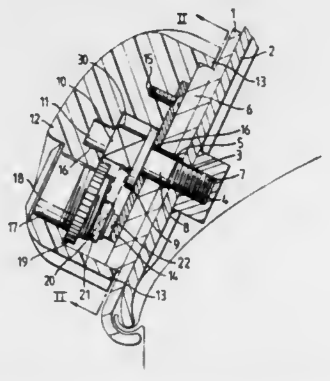
(a) a hollow cylindrical lock barrel having a closed front end

and an apertured rear end, said lock barrel having a stepped axially extending bore, the front bore having a relatively small diameter and the rear bore having a relatively large diameter;
(b) said stepped barrel bore having an annular shoulder forming the junction between said front bore and said rear bore, the surface of said annular shoulder extending at an angle to the axis of said barrel bore, said annular shoulder acting as a plunger seat;
(c) at least two radially extending passageways running from the exterior surface of said lock barrel to the front bore of said lock barrel, and a locking member movably mounted in each said passageway, the outer aperture of each said passageway having a small inwardly extending peripheral rim preventing said locking member from completely escaping through said outer aperture;
(d) a hollow cylindrical plunger having a stepped axially extending exterior surface sized and shaped to slidably fit and reciprocate within said stepped bore of said lock barrel, the forward movement of said plunger being limited by said barrel bore annular shoulder, the front exterior portion of said plunger moving across and closing the inner aperture of each said passageway forcing each said locking member outwardly to its locking position when said plunger moves forwardly, the front exterior portion of said plunger clearing and opening the inner aperture of each said passageway when said plunger moves rearwardly;
(e) said hollow plunger having open front and rear ends and a stepped axially extending bore, the front bore having a relatively small diameter and the rear bore having a relatively large diameter;



(f) said stepped plunger bore having an annular shoulder forming the junction between said front bore and said rear bore, the surface of said annular shoulder extending perpendicular to the axis of said plunger bore, and acting as a seat;
(g) resilient friction-producing means seated against said plunger bore annular shoulder, and a hollow cylindrical open-ended retainer sleeve fixed against axial movement within said rear bore of said plunger forcing and maintaining said friction-producing means against said plunger bore annular shoulder; and
(h) a center pin having an enlarged head at its front end and a rearwardly extending shaft, said center pin head having an outer diameter corresponding to the outer diameter of the front exterior portion of said plunger, said center pin shaft having an outer diameter corresponding to and being slightly smaller than the inner diameter of said front bore of said plunger, said center pin shaft extending rearwardly through said open front end of said plunger and reciprocating within said plunger bore;
(i) said resilient friction-producing means gripping the periphery of said center pin shaft and yieldably resisting center pin reciprocal movement within said plunger bore;
(j) said plunger moving to its forward position when an authorized key is fully inserted, said plunger forcing said locking members outwardly to their locking position; said plunger moving to its rearward position and said center pin being maintained in its forward position when the authorized key is fully inserted and operated, said rearwardly positioned plunger and said forwardly positioned center pin permitting said locking members to fall to their inward unlocking position; said plunger moving to its rearward position and said center pin following said plunger to the rearward position of said center pin when an unauthorized key or pick is inserted and operated, said rearwardly positioned center pin head maintaining said locking members in their outward locking position.

4,441,344
ATTACHMENT MEANS PROVIDED WITH A LOCK
Cornelis Kurpershoek, Bussum, Netherlands, assignor to Industri AB Thule, Hillerstorp, Sweden
Continuation of Ser. No. 213,195, Dec. 4, 1980, abandoned. This application Sep. 16, 1983, Ser. No. 533,041
Claims priority, application Netherlands, May 12, 1979, 7908770
Int. Cl.^{3} F16B *41/00*
U.S. Cl. 70—231 **8 Claims**

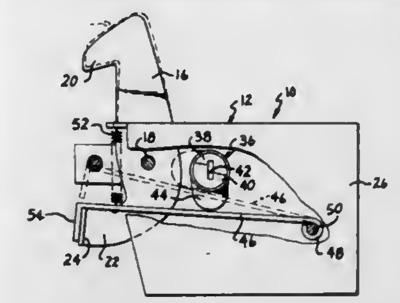


1. An attachment device including a lock and a rotatable member for attaching and releasing purposes, comprising:
a knob having outer and inner faces,
an attachment member having an end portion rotatably mounted in the inner face of said knob,
retaining means to retain said end portion in said knob,
a locking head on said end portion having a plurality of discrete locking faces,
a lock mounted in said knob accessible from the outer face thereof and eccentrically with respect to the axis of relative rotation of said attachment member and knob,
a locking member operated by said lock for movement relative to said locking head between locking and unlocking positions,
a locking face engaging part on said locking member engageable with and having a configuration substantially conforming with said locking face so that when said lock is in the unlocked position, said locking face engaging part coacts with at least one of said locking faces to positively prevent relative rotation between said knob and attachment member, and in the locked position said locking face engaging part is out of engagement with said locking faces to allow rotation of said knob relative to said attachment member, and
a leaf spring mounted in said knob to resiliently urge said head locking member into a position where said discrete locking faces releasably retain said knob from relative rotation with respect to said locking head.

4,441,345
LOCK DEVICE FOR VEHICLE HOODS
David A. Guarr, 6130 Westgate, Shawnee, Kans. 66216
Filed Jan. 19, 1982, Ser. No. 340,649
Int. Cl.^{3} E05B *65/12;* E05C *3/04*
U.S. Cl. 70—240 **8 Claims**

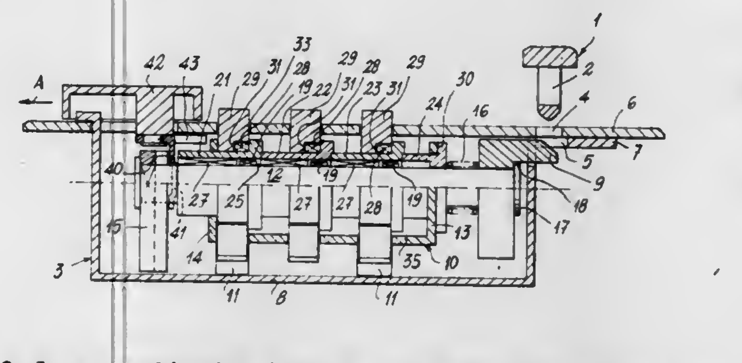
1. A locking device for a hood of a vehicle having a latch for releasably holding the hood closed and a movable release lever for releasing the latch to permit opening of the hood, said device comprising:
a bracket adapted to be mounted on the vehicle at a location adjacent the release lever;

lock means on said bracket including a plug supported on the bracket for rotational movement between a locked position wherein the plug is held against movement and an unlocked position;
key means for effecting movement of said plug between the locked and unlocked positions thereof; and



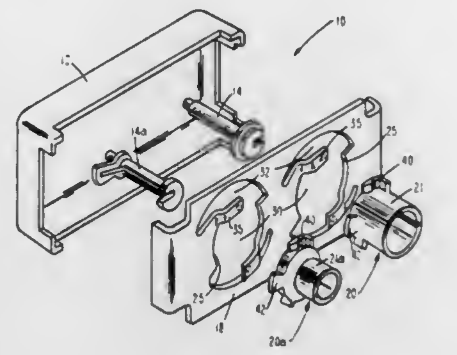
cam means associated with said plug and acting in camming fashion in response to rotation of said plug to physically hold said release lever against movement when said plug is rotated to the locked position, thereby preventing release of the latch, said cam means releasing the release lever when said plug is rotated to the release position to permit movement of the release lever, thereby permitting the latch to be released for opening of the hood.

4,441,346
COMBINATION LOCK WITH A SINGLE KNOB BOTH FOR CONTROLLING THE OPENING AND FOR CHANGING THE LOCK COMBINATION
Claudio Castiglioni, Varese, Italy, assignor to C.G.V. S.a.S. di Claudio Castiglioni & C., Italy
Filed Aug. 6, 1980, Ser. No. 175,903
Claims priority, application Italy, Sep. 7, 1979, 22488/79[U]
Int. Cl.^{3} E05B *37/02*
U.S. Cl. 70—312 **3 Claims**



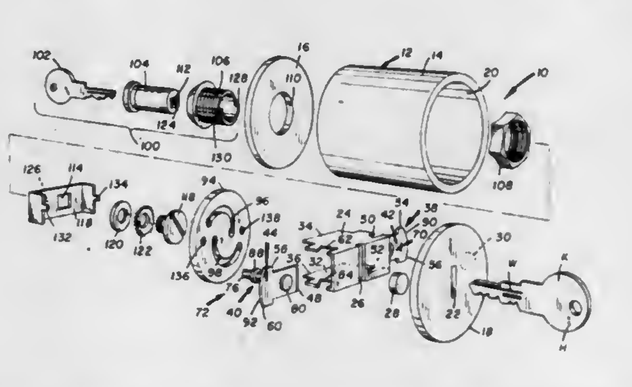
3. In a combination lock having setting discs which are arranged alongside of each other on a shaft, are turnable independently of each other and extend through slots in a front plate of a lock case, having a plurality of aligned locking sleeves associated with the setting discs, seated on the shaft and in spring-biased coupling engagement with the setting discs and formed with depressions which, when the combination number is correctly set, and located in a position opposite projections, and having an actuating handle arranged on the front plate, which handle can be displaced longitudinally from a basic position thereof in a direction toward an opening position of the lock in order to release a hasp which extends into inside of the lock case through an opening in the front plate and cooperates with a latch member, the actuating handle also for operatively displacing the locking sleeves out of their position of coupling engagement with the setting discs, the improvement comprising: said actuating handle is mounted displaceably from said basic position thereof in a displacement movement in a direction opposite the direction toward said opening position of the lock and constitutes means during said displacement movement for pushing the locking sleeves out of said position of coupling engagement.

4,441,347
LOCK ASSEMBLY WITH INTERCHANGEABLE NOSES FOR SAFE DEPOSIT BOXES
James L. Taylor, P.O. Box 4441, Lexington, Ky. 40544
Filed Jun. 8, 1981, Ser. No. 271,571
Int. Cl.^{3} E05B *9/08;* E04G *3/00*
U.S. Cl. 70—370 **14 Claims**



1. A lock mounting assembly for positioning different size insert lock guides of substantially cylindrical configuration in a safe deposit door or the like, comprising: a lock housing; a first lock guide having a substantially small diameter and a second lock guide having a relatively large diameter, a cover plate having cutout portions of substantially the same size for receiving the first and second insert lock guides; and retaining means for securing the guides to the cover plate including a universal mounting base on each guide and received in the corresponding cutout portions, each mounting base of the small and large lock guides having substantially the same size outer diameter to be received in said cutout portions, first and second locking elements spaced circumferentially from each other on each base, said first locking element engaging a top surface of the cover plate surrounding said cutout portion, said second locking element engaging a bottom surface of the cover plate.

4,441,348
KEY RETAINING DEVICE
Hildaur L. Neilsen, 2 Juniper St., Metuchen, N.J. 08840
Filed Nov. 17, 1981, Ser. No. 322,265
Int. Cl.^{3} E05B *11/00, 73/00*
U.S. Cl. 70—389 **14 Claims**



1. A key retaining device for capturing and selectively locking therein a portion of the working section of a key having a working section and a handle section, said device comprising:
housing means forming a chamber therein, a slot disposed through a wall of said housing means, said slot being in communication with said chamber and dimensioned to accomodate therethrough said portion of said working section of said key for insertion into said chamber; and
means for selectively securing said working portion of said key within said chamber, including
clamp means having an open and an engaging position, said clamp means comprising:
a plurality of key engaging members, each including a blade, the edge of which is engageable with said working section

of the key, and which by the resulting wedging action prevents withdrawal of said key from said slot, and

selective locking means comprising:

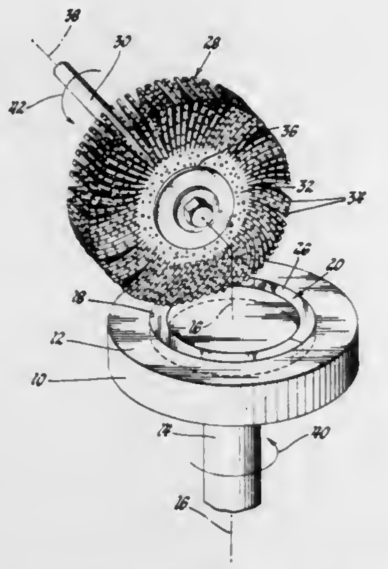
a master key and lock assembly mounted on said housing means, insertion of said master key into said lock assembly permitting the rotation of a member which moves the blades into and out of engagement with said working section of the key.

4,441,349
METHOD OF MAKING A CAST IRON SEALING RING

James D. Symons, Southfield, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 12, 1982, Ser. No. 440,963
Int. Cl.³ B21D *31/06*

U.S. Cl. 72—53 **2 Claims**



1. A method of manufacture for a cast iron annular sealing ring adapted to fit a groove on a rotating shaft with the outer peripheral surface in stationary sealing contact against a stationary housing surface and an annular face held by hydraulic fluid in rotary sealing contact with a side wall of the groove, said annular face having a predetermined hardness, the method comprising the steps of:

mounting said annular seal ring in an annular groove formed in a workpiece holder with the annular face thereof exposed;

rotating said workpiece holder in the range of 90 to 110 revolutions per minute;

rotating a work tool, having a plurality of flexible flaps with a plurality of cast shot embedded therein, at a predetermined constant speed on an axis disposed perpendicular to the axis of said workpiece holder;

moving said workpiece holder into the path of the flaps of said work tool a predetermined distance to effect cold-working of the annular face of said seal ring, while maintaining the axis of the tool perpendicular to the workpiece axis and cooperating with said work tool rotation and surface hardness to produce an angle of incidence in the surface in the range of 2° to 3° and asperities with a radius of curvature in the range of 0.2 to 0.3 mm; and

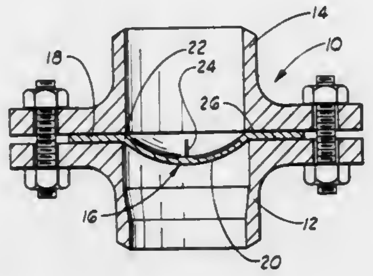
retracting said workpiece holder from the path of said flaps.

4,441,350
SCORED REVERSE BUCKLING RUPTURE DISK MANUFACTURING METHOD

Edward H. Short, III; Jerome D. Allen, both of Tulsa, Okla., and Loren E. Wood, deceased, Tulsa, Okla. (by Anna L. Wood, executrix), assignors to BS&B Safety Systems, Inc., Tulsa, Okla.

Filed Dec. 15, 1981, Ser. No. 330,809
Int. Cl.³ B21D *22/00*

U.S. Cl. 72—55 **8 Claims**



1. An improved method of manufacturing a group of scored reverse buckling rupture disks of desired reversal rupture pressure from sheet metal comprising the steps of:

(a) dividing said sheet metal into a plurality of sections;

(b) forming a concave-convex dome in each of said sheet metal sections; and

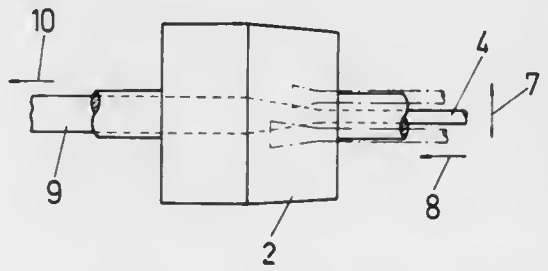
(c) forming identical scores of predetermined depth on a surface of each of said concave-convex dome portions of said sheet metal sections thereby creating identical lines of weakness therein, said scores radiating outwardly and having a greater depth, at the central portions of the radii of said concave-convex dome.

4,441,351
METHOD OF AND APPARATUS FOR PRODUCING METALLIC TAPE

Keiichiro Yoshida, No. 641, Mobara, Mobara City, Chiba Prefecture, 297, Japan

Division of Ser. No. 178,635, Aug. 15, 1980. This application Mar. 24, 1982, Ser. No. 361,489
Claims priority, application Japan, Oct. 31, 1979, 54-141881
Int. Cl.³ B21B *13/18*

U.S. Cl. 72—189 **3 Claims**



1. An apparatus for producing metallic tape, comprising:

a machine frame;

a pair of support shafts mounted on said machine frame and extending parallel with each other;

a pair of rolling and pressing members each having a base rotatably mounted on a corresponding support shaft and each having a peripheral portion projecting substantially radially outwardly from said base with a peripheral working surface on the radially outer end thereof, said peripheral working surfaces the radially outer end thereof, said peripheral working surfaces of said rolling and pressing members being opposed to each other;

a pair of power input members operable in synchronism with each other and connected to respective ones of said rolling and pressing members for reciprocally rotating said rolling and pressing members past a position in which the peripheral portions are aligned with each other between said parallel shafts;

a wire feed means for intermittently feeding a wire between said peripheral working surfaces parallel to said support shafts in a direction from an inlet side of said rolling and pressing members to an outlet side of said members;

a wire guiding member disposed on the inlet side of said rolling and pressing members; and

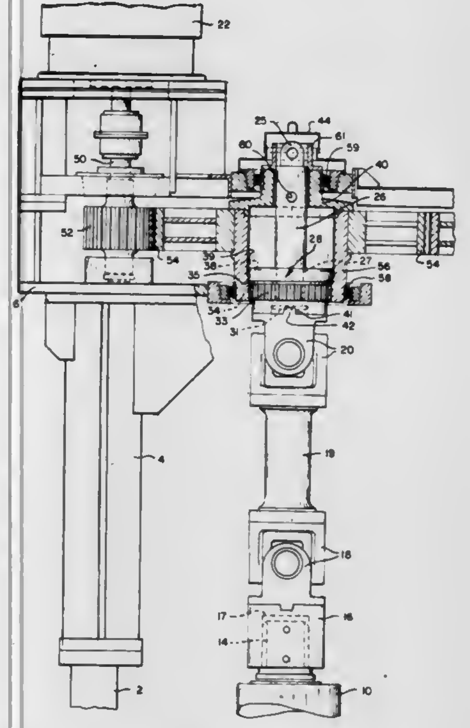
a product tape guiding member disposed on the outlet side of said rolling and pressing members, said guiding members being reciprocatingly movable in a direction perpendicular to a plane including the axes of said support shafts and in synchronism with the intermittent feeding of said wire for guiding the wire fed back and forth between said peripheral working surfaces in a direction perpendicular to said shafts, the distance between said peripheral working surface progressively decreasing at least part way across said peripheral working surfaces in the direction from said inlet side to said outlet side.

4,441,352
VERTICAL MILL

Andrew J. McDonagh, Pittsburgh, and Charles B. Duke, Clairton, both of Pa., assignors to Mesta Engineering Company, Pittsburgh, Pa.

Filed Jan. 21, 1982, Ser. No. 341,205
Int. Cl.³ B21B *35/14, 35/00, 31/08*

U.S. Cl. 72—249 **7 Claims**



1. A vertical rolling mill comprising:

(a) a housing,

(b) a plurality of mill rolls rotatably mounted on the housing in a substantially vertical position, and

(c) a drive means for each roll comprising

  (i) a rigid spindle,

  (ii) an upper joint and a lower joint attached to the spindle,

  (iii) a detachable coupling connected to the lower joint and movably attached to the roll,

  (iv) a substantially hollow cylindrical sleeve having longitudinal interior splines at one end and an interior shoulder about its interior,

  (v) a vertical spline shaft having a collar and splines at one end and sized so that the splines will fit into the sleeve and engage its splines, and the collar will rest on the sleeve shoulder and attached at splined end to the upper joint,

  (vi) a support member attached to the rolling mill, positioned substantially above the mill roll, and on which the sleeve rests, having an aperture sized so that the sleeve will not pass through the aperture and the spline shaft can be connected to the upper joint through the aperture, and

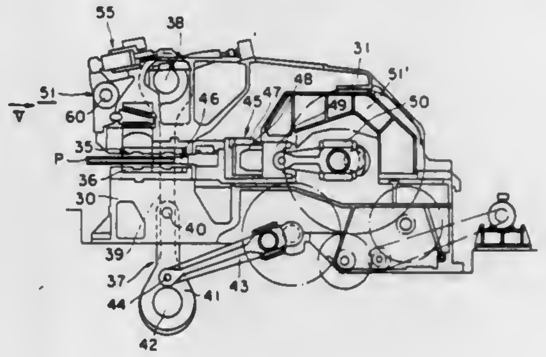
  (vii) means connected to said sleeve for rotating the spindle.

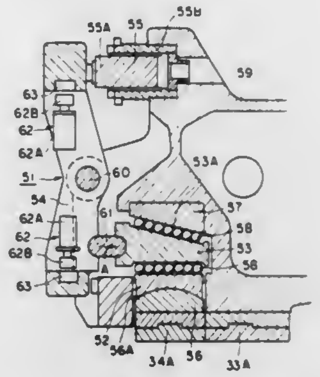
4,441,353
CLAMP MECHANISM FOR UPSETTER

Akira Asari, Osaka; Takashige Yamamura, Kobe, and Tsuneya Veno, Takasago, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jan. 27, 1982, Ser. No. 343,218
Claims priority, application Japan, Jan. 29, 1981, 56-13495
Int. Cl.³ B21D *7/06*

U.S. Cl. 72—316 **5 Claims**





1. An upsetter having a clamp mechanism comprising a row of a plural N-number of split dies where N is an integer greater than 1 and where each split die further comprises an upset die and a clamp die, a grip mechanism for opening and closing said dies by relative movement toward and away from each other, and an upset mechanism including a plurality of punches retractably protrudable into said dies, said clamp mechanism comprising:

a plural N-number of pressurizing cylinders, one cylinder positioned opposingly to each of the respective split dies;

operating link means which further comprise a plurality of like members for transmitting power, each of said like members transmitting the power one of said pressurizing cylinders separately to the clamp die of one of said respective split dies; and

(N−1) coupling means for selectively interlocking said operating link members to transmit the combined power of said N-number of pressurizing cylinders to up to N number of said clamp dies, each said coupling means being positioned and constructed for selectively interlocking two adjacent ones of said operating link members.

4,441,354

PROCESS FOR MANUFACTURING THIN UNITARY HOLLOW METAL BODIES

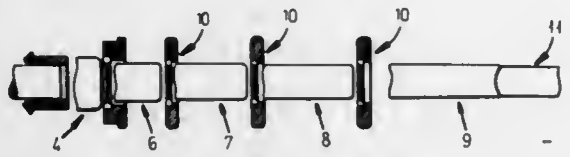
Sergio Bodega, Abbadia Lariana, Italy, assignor to Tubettificio Ligure S.p.A., Abbadia Lariana, Italy

Filed Oct. 22, 1981, Ser. No. 314,048

Claims priority, application Italy, Nov. 28, 1980, 26290 A/80

Int. Cl.^{3} B21B *22/00*

U.S. Cl. 72—342 **3 Claims**



1. A process for manufacturing a one-piece hollow body of an aluminum alloy, for use mainly as a pressure container, consisting of a cylindrical body having a concave dished bottom and of a dome-shaped head, said process comprising the steps of:

deep drawing and stretching said cylindrical body from an aluminum alloy metal plate; and

tapering said cylindrical body in a succession of dies, while subjecting the body to a thermal treatment capable of transforming the upper part of said cylindrical body into a dome-shaped head with a beaded opening, said tapering operation being effected by at least 12 successive tapering steps, each of said tapering steps involving a diameter reduction not exceeding 4 mm, said aluminum alloy being alloy 3004 H 19, such alloy being suited to assume, during said deep drawing and stretching operations, high strain-hardening and consequent high mechanical characteristics.

4,441,355

APPARATUS AND METHOD FOR DISPLAYING UNBALANCE OF ROTORS DURING MEASUREMENT

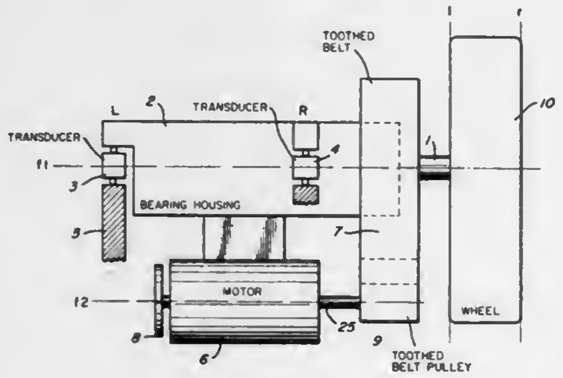
Karl Rothamel, Darmstadt, Fed. Rep. of Germany, assignor to Gebr. Hofmann GmbH & Co. KG, Maschinenfabrik, Darmstadt, Fed. Rep. of Germany

Filed Jul. 9, 1981, Ser. No. 281,784

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1980, 3026232

Int. Cl.^{3} G01M *1/22*

U.S. Cl. 73—1 R **12 Claims**



1. An apparatus for displaying the amount of unbalance during measurement of a rotor in two correction planes, said apparatus comprising:

measuring means for measuring unbalance forces of the rotor and for measuring unbalance forces of known magnitude during measuring of the unbalance forces of the rotor;

comparing means for comparing the measured unbalance forces of known magnitude with predetermined nominal data to obtain a comparison result; and

adjusting means for adjusting the measured amounts of unbalance of the rotor in accordance with the comparison result;

said measuring means comprising:

a motor-driven shaft on which said rotor is mounted for rotation at a first rotational speed;

a rotating unbalance exciter for generating said unbalance forces of known magnitude, said rotating unbalance exciter operating in accordance with a rotational frequency different from said first rotational frequency of said rotor;

a pair of transducers, one for each of said two correction planes, for receiving said unbalance forces of the rotor and said unbalance forces of known magnitude, and providing said unbalance forces of the rotor and said unbalance forces of known magnitude as outputs;

two pairs of measuring channels, one pair for each of said two correcting planes, a first measuring channel of each said pair of measuring channels receiving and measuring the unbalance forces of said rotor to provide to said adjusting means measured unbalance force outputs comprising the measured amounts of unbalance of the rotor, and a second measuring channel of each said pair of measuring channels receiving and measuring said unbalance forces of known magnitude to provide to said comparing means measured unbalance force outputs comprising said measured unbalance forces of known magnitude;

an auxiliary shaft parallel to the motor-driven shaft, said rotating unbalance exciter being mounted on said auxiliary shaft; and

a driving motor of said motor-driven shaft, and wherein said auxiliary shaft is a part of said driving motor.

4,441,356

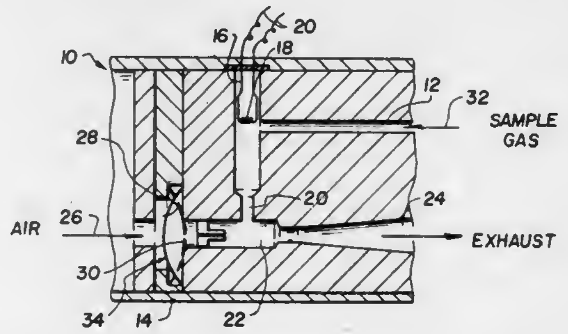
TEMPERATURE ACTUATED AIR FLOW CONTROL AND GAS SAMPLER

Thomas L. Bohl, Madison, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Mar. 29, 1982, Ser. No. 362,926

Int. Cl.^{3} G01N *1/24, 27/14*

U.S. Cl. 73—23 **6 Claims**



1. A temperature actuated fluid flow control, comprising a fluid inlet, an exhaust line for the fluid connected to said fluid inlet, a reduced flow area section in the connection of said exhaust line to said fluid inlet, an aspirating fluid connection line extending into the connection adjacent said reduced area for supplying aspirating fluid to induce flow of fluid into said inlet and out said exhaust line, said aspirator fluid connecting line having a throughflow chamber with an opening for the passage of the aspirating gas, a bimetallic valve plate disposed in said chamber and overlying the opening and being flexible and responsive to temperature change so that in a first flexed position it closes the opening to stop the flow of aspirating gas whenever the dewpoint temperature of the fluid is reached and movable to another flexed position by temperature change to open the opening whenever the fluid temperature is above the dewpoint of the fluid.

4. A temperature actuated fluid flow control comprising a housing defining a heated block, a gas sensor disposed in said housing, a fluid inlet, an exhaust line for fluid connected to said fluid inlet with said gas sensor being connected to both said fluid inlet and said fluid outlet, a reduced flow area section in the connection of said exhaust line to said fluid inlet, an aspirating fluid connection line extending into the connection adjacent said reduced area for supplying aspirating fluid to induce flow of fluid into said inlet and out said exhaust line, said aspirator fluid connecting line having a throughflow chamber with an opening for the passage of the aspirating gas, a bimetallic valve plate disposed in said chamber and overlying the opening and being flexible and responsive to temperature change so that in a first flexed position it closes the opening to stop the flow of aspirating gas and movable to another flexed position by temperature change to open the opening, and said aspirating gas comprising air.

4,441,357

PRESSURE MONITORING AND LEAK DETECTION METHOD AND APPARATUS

Alan R. Kahn, Madison; Kenneth R. Clark, Cottage Grove, and Dennis E. Bahr, Middleton, all of Wis., assignors to Meadox Instruments, Inc., Oakland, N.J.

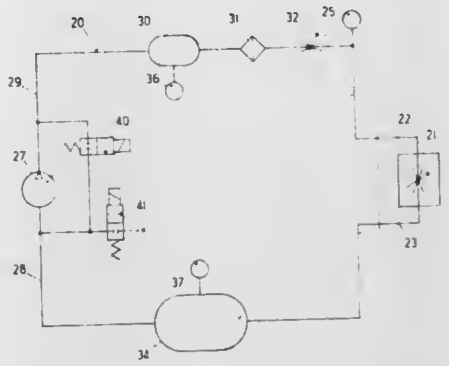
Filed Mar. 4, 1982, Ser. No. 354,610

Int. Cl.^{3} G01N *3/02;* A61B *5/00*

U.S. Cl. 73—40 **23 Claims**

MICROFICHE APPENDIX INCLUDED

(2 Microfiche, 68 Pages)



1. In a closed circulating gas system having a pump which draws gas at an inlet from a return line and delivers gas under pressure at an outlet to a supply line, and also having a load device which receives gas from the supply line and delivers it to the return line, apparatus for detecting leaks in the system comprising:

(a) a first accumulator chamber connected in the supply line;

(b) a second accumulator chamber connected in the return line;

(c) first pressure transducer means for measuring the pressure in the first accumulator chamber and providing an output signal indicative thereof;

(d) second pressure transducer means for measuring the pressure in the second accumulator chamber and providing an output signal indicative thereof;

(e) control means responsive to the output signals of the first and second pressure transducer means for comparing the pressure measured in the first accumulator chamber with the pressure measured in the second accumulator chamber and providing a leak warning output signal if the compared pressures change with respect to one another in excess of a selected range, thereby indicating that the flow through the two accumulator chambers is not equal and a leak in the system has occured;

(f) a load device comprising a pressure sensor connected between the supply and return lines which includes:

  (1) a cup-shaped housing having an open mouth and having an inlet and an outlet formed therein;

  (2) a flexible diaphragm sealed over the open mouth of the housing to define a plenum between the walls of the mouth in the housing and the diaphragm, and wherein the inlet formed in the housing is in communication with the plenum;

  (3) an exhaust tube centrally mounted in the housing within the plenum with an end thereof terminating adjacent the inner side of the diaphragm and connected to be in communication with the outlet from the housing, the supply line being connected to the inlet to the housing and the return line being connected to the outlet from the housing;

(g) a flow restrictor connected in the supply line between the first accumulator chamber and the pressure sensor;

(h) load pressure transducer means for measuring the pressure in the supply line between the restrictor and the pressure sensor and providing an output signal indicative thereof which is supplied to the control means; and

(i) the control means also providing a display to an operator of the pressure measured by the load pressure transducer means.

4,441,358

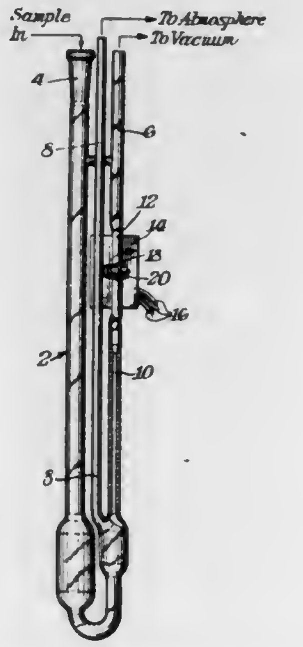
AUTOMATED ULTRASONIC SOLUTION VISCOMETER

Robert L. Osborne, 302 Chatham St., Avondale, Pa. 19311

Filed Dec. 7, 1981, Ser. No. 328,376

Int. Cl.^{3} G01N *11/06*

U.S. Cl. 73—55 **5 Claims**



1. Apparatus for automatically measuring the viscosity of a liquid comprising:

(a) a viscometer tube having an inlet and an outlet and a time-interval measuring zone,

(b) at least two sets of ultrasonic transducers, one sending transducer and one receiving transducer per set, mounted so as to transmit sound waves through said time-interval measuring zone and any liquid contained therein, one transducer set being mounted at a desired distance downstream in the flow path from the other transducer set, thereby to sense the passage or absence of liquid said measuring zone as a result of the variation in sound absorption by said liquid and air,

(c) sonic timing means connected to said transducers to measure the time-interval between the time a liquid meniscus in said tube passes one set of transducers and the time said meniscus passes the second set of transducers, and

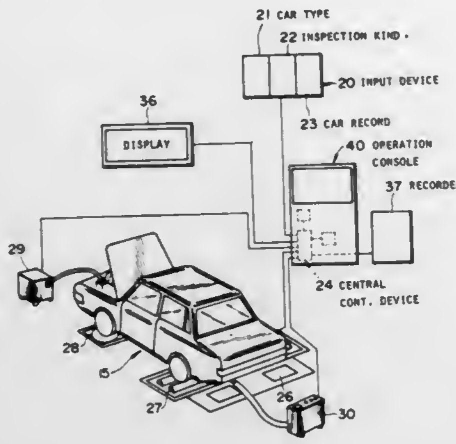
(d) sequence control means for automatically directing the flow of said liquid into and through said viscometer and energizing said sonic timing means.

4,441,359

METHOD AND APPARATUS FOR INSPECTING VEHICLES

Mitsuhiko Ezoe, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Mar. 3, 1982, Ser. No. 354,449
Claims priority, application Japan, Mar. 4, 1981, 56-29796
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—117 18 Claims



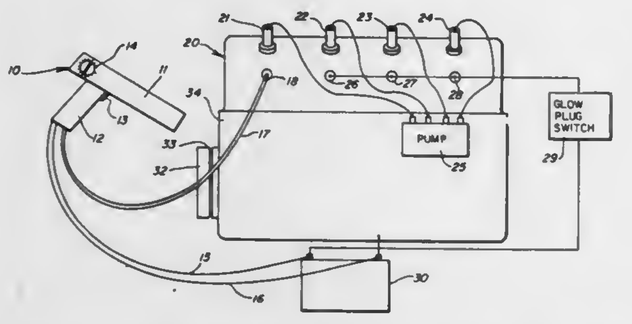
1. An apparatus for inspecting vehicles comprising:
- (a) means for generating vehicle type signals indicative of the type of vehicle being inspected,
- (b) means for measuring a plurality of vehicle parameters and generating vehicle measurement signals indicative thereof,
- (c) means for generating additional vehicle signals indicative of at least one of vehicle age and mileage,
- (d) means for generating a plurality of reference value signals in response to said vehicle type signals and said additional vehicle signals, said reference value signals indicating reference values for the measured vehicle parameters, said reference value signals depending on the additional vehicle signals so that the reference values vary in accordance with at least one of vehicle age and mileage,
- (e) means for comparing said vehicle measurement signals with said reference value signals for generating one of vehicle condition acceptable and vehicle condition unacceptable signals, and
- (f) means for providing a visual indication of said vehicle condition acceptable and vehicle condition unacceptable signals.

4,441,360

ENGINE TIMING INSTRUMENT

Daniel J. Dooley, Burr Ridge, Ill., and Warren L. Williamson, Mesa, Ariz., assignors to Creative Tool Company, Burr Ridge, Ill.

Filed Mar. 12, 1982, Ser. No. 357,638
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—119 A 22 Claims



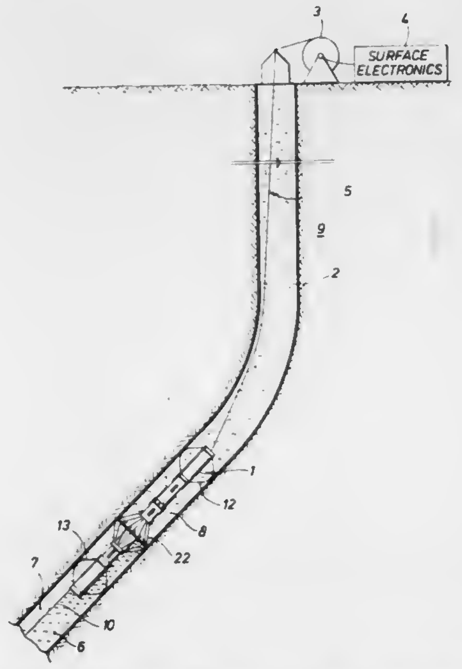
11. An instrument for timing of an engine which includes a crankshaft rotatable through a certain integer number of revolutions during an engine operating cycle, at least one cylinder, and a piston in said cylinder coupled to said crankshaft to be moved through a top dead center position during each revolution of said crankshaft, said instrument comprising: firing pulse means for developing a firing pulse during each engine operating cycle, reference pulse means for developing a reference pulse during each engine operating cycle and at a time in advanced relation to a corresponding firing pulse, and delay measuring means for measuring the elapsed time between one of said reference pulses and an immediately following one of said firing pulses, at least one of said pulse means comprising transducer means responsive to the pressure in said cylinder for producing a corresponding electrical signal.

4,441,361

METHOD AND APPARATUS FOR MEASUREMENT OF FLUID DENSITY AND FLOW RATES IN MULTI-PHASE FLOW REGIMES

Norman R. Carlson; Raymond E. Roesner, both of Houston, and Edward W. Lanuke, Spring, all of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 2, 1981, Ser. No. 307,714
Int. Cl.³ E21B *47/00;* **G01F** *13/00*
U.S. Cl. 73—155 16 Claims



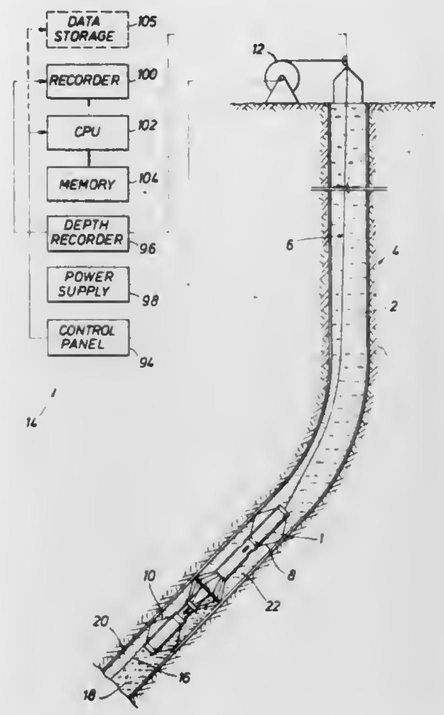
16. A method of measuring the flow rates of the individual phases of a fluid flow regime having at least two phases, comprising the steps of:
- mixing at least a portion of the flow to produce a mixture of substantially uniform composition;
- measuring the density of said mixture of substantially uniform composition;
- determining the volumetric fraction of each phase of said mixture of substantially uniform composition at least in accordance with the measured mixture density;
- measuring the flow rate of said mixture of substantially uniform composition; and
- determining the flow rate of each phase of the flow regime, said flow rate of each phase determined by;
- determining a correction term to account at least for the effect of slippage between the phases of said fluid flow regime in accordance with the measured density of the individual phases of said flow regime; and
- measuring the flow rates of the phases of said flow regime at least in accordance with the measured flow rate of said mixture, each phase's volumetric fraction of said mixture and the correction term accounting for at least the effect of slippage between the phases.

4,441,362

METHOD FOR DETERMINING VOLUMETRIC FRACTIONS AND FLOW RATES OF INDIVIDUAL PHASES WITHIN A MULTI-PHASE FLOW REGIME

Norman R. Carlson, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Apr. 19, 1982, Ser. No. 369,945
Int. Cl.³ E21B *47/00*
U.S. Cl. 73—155 26 Claims



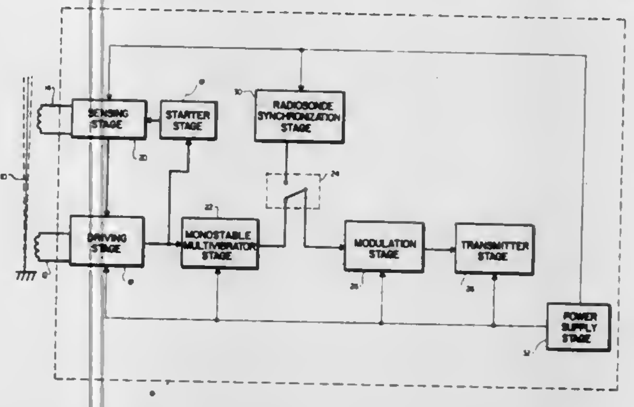
1. A method for determining characteristics of a multi-phase fluid flow regime, comprising the steps of:
- (a) measuring the density of said fluid flow regime;
- (b) measuring dielectric response characteristics of said fluid flow regime; and
- (c) establishing a functional relationship between said dielectric response characteristics measurement of said fluid flow regime and the volumetric fraction of at least one phase of said fluid flow regime, said functional relationship established in reference to said measured density of said fluid flow regime.

4,441,363

APPARATUS AND METHOD FOR MEASURING CONCENTRATIONS OF SUPERCOOLED LIQUID WATER

Geoffrey E. Hill; Duard S. Woffinden, both of Logan, and Duane G. Chadwick, North Logan, all of Utah, assignors to Utah State University Foundation, Logan, Utah

Filed Jul. 8, 1981, Ser. No. 281,435
Int. Cl.³ G01W *1/00, 1/08*
U.S. Cl. 73—170 R 20 Claims



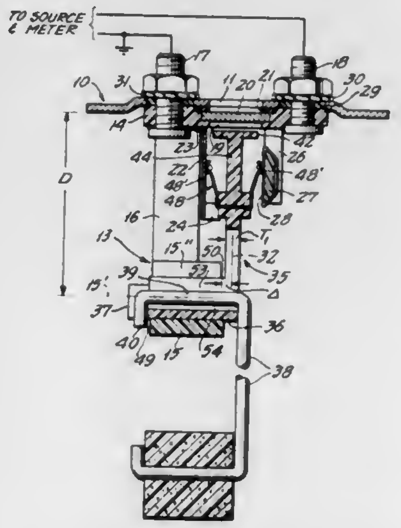
1. An apparatus for measuring concentrations of supercooled liquid water in an atmosphere comprising:
- a wire which is fixed at one end and free at the other end for collecting supercooled liquid water, said wire and collected supercooled water having a natural frequency which decreases in relation to an increase in mass of supercooled water collected on the wire, the mass of the supercooled water collected on the wire being substantially proportional to the concentration of supercooled liquid water in the surrounding atmosphere;
- means for vibrating the wire; and
- means for sensing the natural frequency of the wire in combination with the mass of the collected supercooled water.

4,441,364

LIQUID-LEVEL TRANSDUCER/INDICATOR

Douglas L. Montie, Norwich, Conn., assignor to Thomas G. Faria Corp., Uncasville, Conn.

Filed May 22, 1981, Ser. No. 266,598
Int. Cl.³ G01F *23/10*
U.S. Cl. 73—313 18 Claims



1. As an article of manufacture, a liquid-level sensing component comprising a baseplate having means for removably securing the same to close an opening in a tank within which liquid level is to be monitored, a bearing mount of insulating material having a base portion adapted to fit to the underside of said baseplate, two spaced terminal bolts extending through spaced openings in said plate and clamping said bearing mount thereto, at least one of said bolts being insulated from said plate, said bearing mount integrally including a journal-bearing formation establishing a pivot axis offset from and generally parallel to said plate, a conductive plate supported by said mount and having electrical connection to a first of said bolts, said conductive plate having an elongate substantially flat wiper-contact area in a first plane that is radial with respect to said axis, a second plate of insulating material carried by said mount and having an elongate substantially flat surface in a second plane that is radial with respect to said axis and in spaced confronting relation to said conductive plate, a float arm pivotally supported with a measure of axial-displacement accommodation at said journal-bearing formation and carrying a single compliant conductive wiper member within the space between said plates, said wiper member having separate wiper arms extending in oppositely diverging directions and in resiliently loaded wiping contact with both said plates, said insulating plate including a resistance element exposed to wiper contact, and an electrical connection from one end of said resistance element to the second of said bolts.

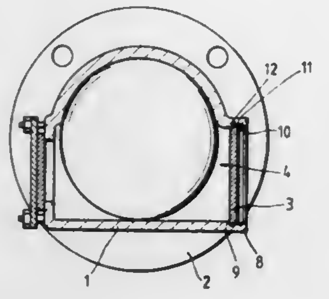
4,441,365
SIGHT-GLASS MOUNTING
Wilhelm Schulz, and Josef Kirchkamp, both of Krefeld, Fed. Rep. of Germany, assignors to Schulz & Co. KG, Krefeld, Fed. Rep. of Germany

Filed Feb. 18, 1982, Ser. No. 350,038

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1981, 3115833

Int. Cl.^{3} G01F *23/02*

U.S. Cl. 73—331 **9 Claims**



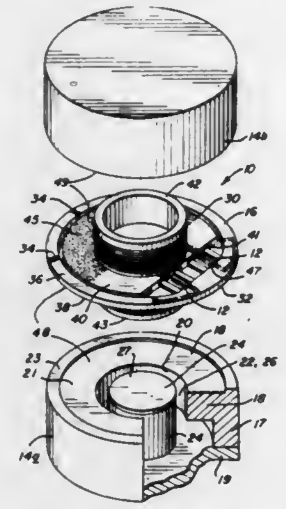
1. A sight-glass mounting comprising a section of pipe in which openings provided on diametrically opposite sides are sealingly covered by glass discs in which the openings covered over by the glass discs are arranged offset so far off-centre with respect to the axis of the section of pipe that a bulge necessary for the accommodation of the glass discs exists at only one side of the section of pipe.

4,441,366
FLEXURE WITH ELECTRICAL CONDUCTOR
Richard A. Hanson, Woodinville, Wash., assignor to Sundstrand Data Control, Inc., Redmond, Wash.

Filed Jul. 14, 1981, Ser. No. 283,341

Int. Cl.^{3} G01P *15/13*

U.S. Cl. 73—517 B **33 Claims**



1. In a force sensing transducer having a force sensing element and a mounting base, a flexure structure connecting the force sensing element to the mounting base, comprising:

a thin portion with oppositely facing surfaces for carrying electrical conductors, the strength of the thin portion being insufficient to afford the desired spring rate and support for said force sensing element;

a thick rib extending continuously between the force sensing element and the mounting base, the composite structure of said thin portion and rib providing sufficient strength to afford the desired spring rate and support for said force sensing element and having a neutral bending plane substantially equidistant from the surfaces of said thin portion; and

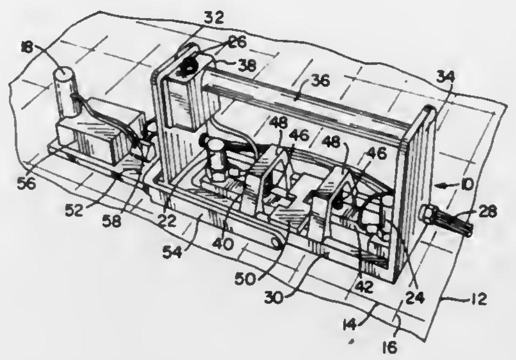
conductive layers on the faces of said thin portion interconnecting electrical circuit components on said force sensing element with circuits remote therefrom.

4,441,367
APPARATUS FOR DETERMINING FABRIC TENSION
John W. Daws; Hugh W. Bradley, Jr., and Sheldon A. Canfield, all of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Sep. 3, 1981, Ser. No. 299,234

Int. Cl.^{3} G01H *5/00;* G01L *5/10*

U.S. Cl. 73—597 **13 Claims**



12. An apparatus for measuring the propagation velocity of an acceleration wave in a stretched woven fabric comprising:

(a) a hand carryable articulated frame for being seated upon and contacting said fabric;

(b) a first means carried by a first pivotable arm of the frame for contacting said fabric and sensing at least the leading front of said wave and having a first output responsive thereto;

(c) a second means carried by a second pivotable arm of the frame for contacting said fabric and sensing at least the leading front of said wave and having a second output responsive thereto, said first means and second means separated by a distance S and said first pivotable arm and said second pivotable arm having a common axis of rotation; and

(d) a timing means coupled to said first and second outputs for measuring the time T it takes said wave to travel from said first sensing means to said second sensing means,

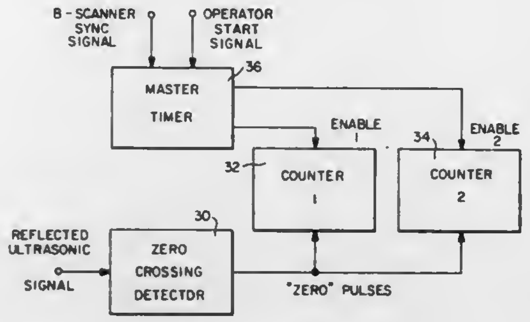
whereby the propagation velocity V of said acceleration wave can be computed from the equation $V=S/T$.

4,441,368
METHOD AND MEANS FOR DETERMINING ULTRASONIC WAVE ATTENUATION IN TISSUE
Stephen W. Flax, Waukesha, Wis., assignor to General Electric Company, Rancho Cordova, Calif.

Filed Apr. 19, 1982, Ser. No. 369,423

Int. Cl.^{3} A61B *10/00*

U.S. Cl. 73—599 **9 Claims**



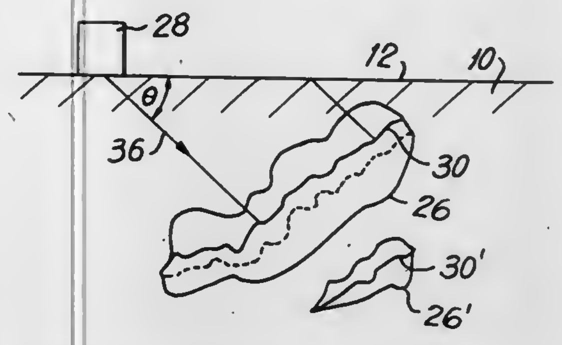
1. A method of determining the second moment frequency domain characteristics of a reflected ultrasonic wave passed through tissue by time domain analysis comprising the steps of detecting zero crossings of said wave, and comparing the detected zero crossings during one interval of time corresponding to a first tissue depth with the detected zero crossings during a second period of time corresponding to a second tissue depth thereby determining the change in the second moment frequency domain characteristics of said wave between the two depths.

4,441,369
ULTRASONIC DETECTION OF EXTENDED FLAWS
Dennis E. Lessard, Waterford, and Paul F. Sabourin, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 30, 1982, Ser. No. 429,710

Int. Cl.^{3} G01N *29/04*

U.S. Cl. 73—602 **15 Claims**



1. A method for defining an extended flaw in a body, comprising:

propagating a beam of pulses of vibratory energy from a plurality of points on a surface of said body at a predetermined angle into said body, said vibratory energy being of a type which may be reflected at said extended flaw;

detecting reflected vibratory energy at said plurality of points;

determining that a plurality of peaks of said reflected vibratory energy occur within a predetermined time at each of a plurality of adjacent ones of said plurality of points;

correlating said plurality of peaks at at least three adjacent ones of said plurality of points;

defining as a search point for said one of said peaks the one of said plurality of points at which a maximum amplitude of one of said peaks exists;

logging said search point and a range to a facet producing said maximum amplitude;

continuing the steps of defining and logging for a substantial number of others of said peaks; and

calculating locations of facets within said body producing said maximum amplitudes of said one and said substantial number of others of said peaks based on said predetermined angle, said search points and measured ranges from each of said search points.

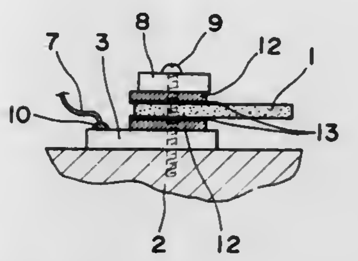
4,441,370
VIBRATION SENSOR
Okinobu Sakurada, Yokohama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka and Toyota Jidosha-Kogyo Kabushiki Kaisha, Aichi, both of, Japan

Filed Jan. 29, 1982, Ser. No. 344,226

Claims priority, application Japan, Jan. 30, 1981, 56-12947[U]

Int. Cl.^{3} G01L *23/22;* G01H *1/08*

U.S. Cl. 73—651 **7 Claims**



1. A vibration sensor which comprises a support plate, a generally elongated bivrator element mounted on and extending from the support plate in a cantilever fashion, and at least one plate-like metallic piece interposed between the vibrator element and the support plate and rigidly secured to that end portion of the vibrator where said vibrator is mounted on the support plate said plate-like metallic piece being secured to the vibrator element by soldering or a bonding agent.

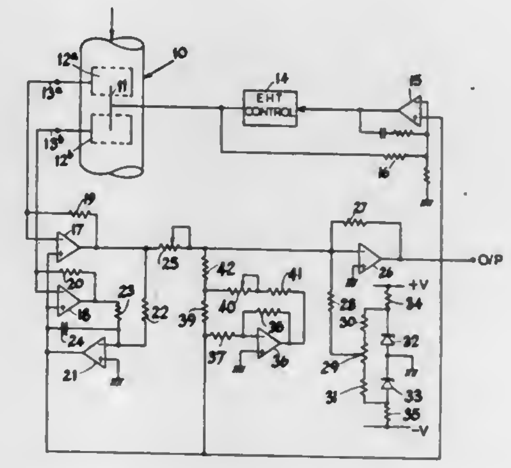
4,441,371
GAS FLOW METERS
Charles P. Cockshott, Balsall Common, and Kenneth S. Evans, Blackpool, both of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Mar. 15, 1982, Ser. No. 358,109

Claims priority, application United Kingdom, Apr. 4, 1981, 8110611

Int. Cl.^{3} G01F *1/64*

U.S. Cl. 73—861.09 **4 Claims**



1. A corona-discharge type gas flow meter having a discharge electrode, a split collecting electrode, means for maintaining a substantially constant impedance discharge between the discharge electrode and the collecting electrodes and a current difference circuit comprising amplifier means having inputs connected to the collecting electrodes and producing at a first output point a first output signal dependent on the current difference and also a second output signal at a second output point dependent on the sum of the currents derived from the terminals of the collecting electrodes, an output amplifier connected to said amplifier means to receive said first output signal, adjustable means for applying to said output amplifier a fixed offset nulling signal, and means sensitive to said second output signal for applying to said output amplifier a variable offset nulling signal.

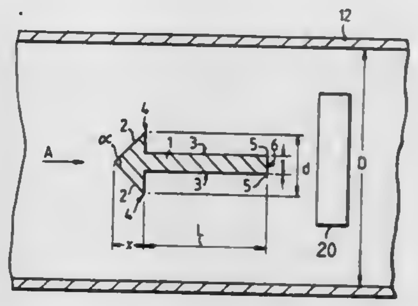
4,441,372
VORTEX FLOWMETER
Richard H. Barnard, St. Albans, England, assignor to ITT Industries, Inc., New York, N.Y.

Filed May 5, 1982, Ser. No. 375,350

Claims priority, application United Kingdom, May 14, 1981, 8114740; Feb. 23, 1982, 8205243

Int. Cl.^{3} G01F *1/32*

U.S. Cl. 73—861.22 **7 Claims**



1. Velocity measurement apparatus comprising: a passageway; an elongate vortex shedding bluff body extending across said passageway, said passageway being adapted to carry a flow of a fluid; and a sensor downstream of said bluff body to

sense vortices produced by said bluff body, said sensor producing an output signal directly proportional to the speed of said fluid relative to said bluff body, said bluff body having a cross-sectional shape including a tapered head with the taper pointing away from said sensor and a tail portion downstream of said head and having a width along the entire length thereof, said tail portion width being smaller than the width of said head, said head having an axial length not greater than half of said head width.

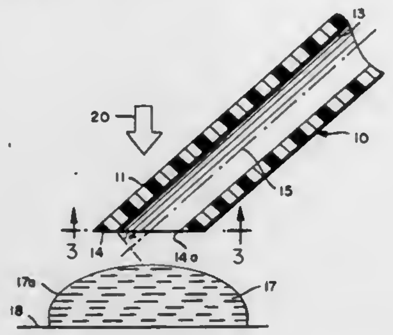
4,441,373
COLLECTION TUBE FOR DRAWING SAMPLES OF BIOLOGICAL FLUIDS

Fred K. White, Miami, Fla., assignor to American Hospital Supply Corporation, Evanston, Ill.

Continuation-in-part of Ser. No. 13,244, Feb. 21, 1979, Pat. No. 4,250,893. This application Feb. 13, 1981, Ser. No. 234,869

Int. Cl.³ B01L *2/03*

U.S. Cl. 73—864.02 **16 Claims**



1. A collecting tube for drawing samples of blood and other biological fluids, comprising an open-ended tube formed of rigid transparent material and having a cylindrical bore, said tube having a beveled tip formed by a planar end surface having an oval opening defining the entrance to said bore, said end surface being sloped so that a line extending therealong and defining the long axis of said oval intersects a plane normal to the longitudinal axis of said bore at an acute angle within the range of about 35° to 60°, whereby, said oval opening promotes the spontaneous entry of a fluid sample into the bore when brought into contact therewith.

4,441,374
DEVICE FOR DILUTING LIQUID SAMPLE

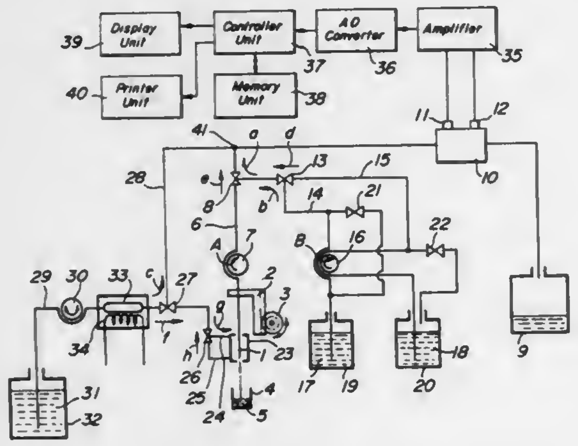
Nobuyoshi Suzuki, Hachioji, Japan, assignor to Olympus Optical Co. Ltd., Japan

Continuation of Ser. No. 195,062, Oct. 7, 1980, abandoned. This application Oct. 6, 1982, Ser. No. 433,036

Claims priority, application Japan, Oct. 17, 1979, 54-132796

Int. Cl.³ G01N *35/00*

U.S. Cl. 73—864.12 **5 Claims**



1. A device for diluting liquid sample comprising a first roller pump to suck and feed a liquid sample, a second roller pump to suck and feed a diluent solution, a liquid path tubing including a branch connected to outputs of said first and second roller pumps to feed the liquid sample and diluent solution thus sucked and fed to a predetermined position, and means to regulate a ratio of revolving speeds of said first and second roller pumps to control a rate of dilution of said liquid sample by said diluent solution, the improvement comprising a third roller pump having inputs connected to a plurality of standard solutions and outputs selectively connectable to said liquid path tubing, whereby a ratio of revolving speeds of said second and third roller pumps is changed to control a rate of dilution of one of said standard solutions by said diluent solution, wherein between the outputs of the third roller pump and said liquid path tubing is arranged a first valve having inputs connected to the outputs of the third roller pump and an output connected to the liquid path tubing.

4,441,375
GYROSCOPIC INSTRUMENT

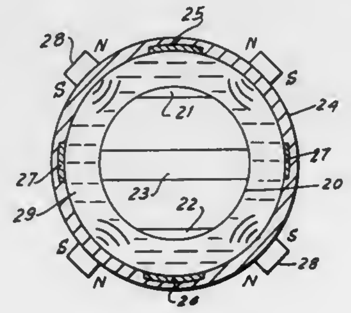
Kiyomi Minohara, Takarazuka, and Atsushi Abe, Suita, both of Japan, assignors to Furuno Electric Co., Ltd., Nishinomiya, Japan

Filed Jan. 14, 1981, Ser. No. 225,152

Claims priority, application Japan, Jan. 23, 1980, 55-7110; Feb. 8, 1980, 55-14932; Jul. 7, 1980, 55-92998; Jul. 24, 1980, 55-102193

Int. Cl.³ G01C *19/20, 19/24*

U.S. Cl. 74—5.46 **26 Claims**



1. A gyroscopic instrument, comprising:
a. a magnetic fluid,
b. an outer container encompassing said magnetic fluid,
c. an inner container enclosing at least one high speed rotating gyro rotor, being supplied with electric power from the outer container side and being positioned within said container, and
d. magnetic flux producing means adjustably mounted on the outer container so that magnetic fluxes produced thereby reach said magnetic fluid to support said inner container free of contact with said outer container, said magnetic flux producing means comprising a pair of magnets which are oriented adjacent to one another with the north pole of one magnet facing the south pole of an adjacent magnet.

4,441,376
MOTOR DRIVEN HINGE ASSEMBLY

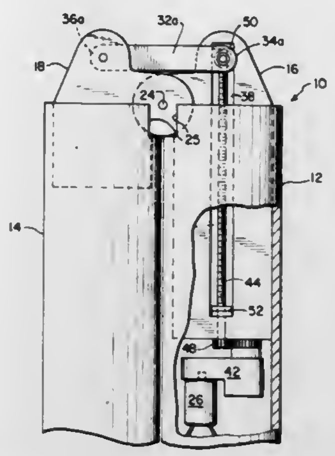
William H. Tobey, Littleton, Colo., assignor to Martin Marietta Corporation, Bethesda, Md.

Filed Apr. 30, 1982, Ser. No. 373,575

Int. Cl.³ F16H *29/20, 21/44;* **E05D** *7/04, 7/06*

U.S. Cl. 74—89.15 **6 Claims**

1. A motor driven hinge assembly for effecting pivotal motion of a second hollow tubular member relative to a first hollow tubular member comprising:
(a) said first member having an interior and said second member having an interior, said first and second members having first and second brackets, respectively, connected thereto near the top ends of said first and second members and said first and second members being hingedly connected with a hinge pin extending through said first and said second brackets, said hinge pin being positioned whereby when said first and said second members are in a folded position, sides of said first and second members being disposed closely adjacent each other with said first and second members being disposed in parallel relationship, and when in an unfolded position said ends thereof abut end-to-end, said first and said second members including recesses near said ends thereof below the hinge pin to accommodate portions of the first and second brackets;
(b) linking means always extending above the hinge pin and having a first end slidingly connected with said first bracket and a second end pivotally connected with said second bracket;



(c) a motor disposed within said interior of said first member; and
(d) coupling means between said motor and said first end of said linking means for effecting motion of said linking means into or out of said interior of said first member through the top end of the first member through the top end of the first member thereby effecting pivotal motion of said second member relative to said first member between said folded and said unfolded positions, said linking means, said coupling means and said first and said second brackets except for the portions thereof adjacent said hinge pin being configured and positioned for being contained entirely within said interior of said first and of said second members when in an unfolded position.

4,441,377
LINKAGE FOR ACTUATING A CARTON ERECTING APPARATUS

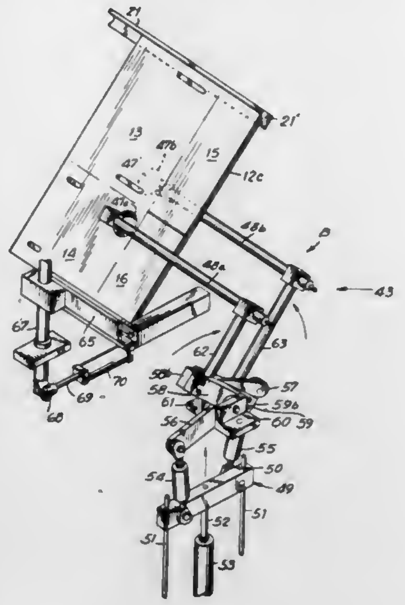
Ulrich G. Nowacki, Leisure City, Fla., assignor to International Paper Company, New York, N.Y.

Division of Ser. No. 100,402, Dec. 5, 1979, Pat. No. 4,331,435. This application Jan. 18, 1982, Ser. No. 339,999

Int. Cl.³ F16H *21/44*

U.S. Cl. 74—105 **2 Claims**

1. An apparatus for synchronizing the rotation of two separate elements in opposite directions in a plane about a point between them, comprising:
a double-acting air-operated cylinder having a piston traveling along a line of movement;
a guide bar, adapted to move with the piston of the cylinder;
a pair of first link rods, one end of each first link rod being rotatably connected to the guide bar and the other end of each first link rod extending away from the cylinder;
a pair of second link rods, one end of each second link rod being rotatably connected to the other end of a respective one of the first link rods and the other end of each second link rod extending away from the cylinder; and
a pair of blocks, each block being rigidly connected to the other end of the second link rod extending away from the cylinder, one end of each block having a pivotal connection to the other block along a common fixed line of rotation, perpendicular to the line of movement of the piston of the cylinder; the other end of each block being free to rotate about the pivotal connection of the blocks in opposite directions; the free end of each block being connected to one of the two elements; and the other ends of the second link rods converging towards the pivotal connection of the blocks;
the guide bar, the link rods and the blocks moving in a plane, parallel to the plane in which the two elements rotate about the point;
the free ends of the blocks rotating apart, about the pivotal connection of the blocks, from a first position to a second



position; the free ends of the blocks being about 90° further apart in their second position than in their first position; and the two elements rotating 90° towards each other with rotation of the free ends of the blocks from their first position to their second position; and
the free ends of the blocks being 90° apart in their first position and 180° apart in their second position; and the two elements rotating towards each other to a position 0° apart when the blocks rotate to their second position.

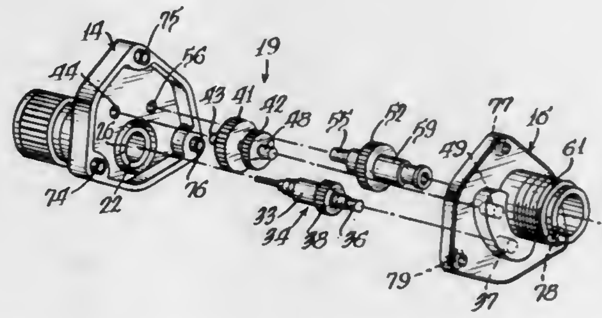
4,441,378
GEARBOX DRIVE FOR A SPEEDOMETER

George M. Ponczek, Chicago, Ill., assignor to Stewart-Warner Corporation, Chicago, Ill.

Filed Jan. 26, 1981, Ser. No. 228,329

Int. Cl.³ F16H *1/06, 1/20*

U.S. Cl. 74—414 **16 Claims**

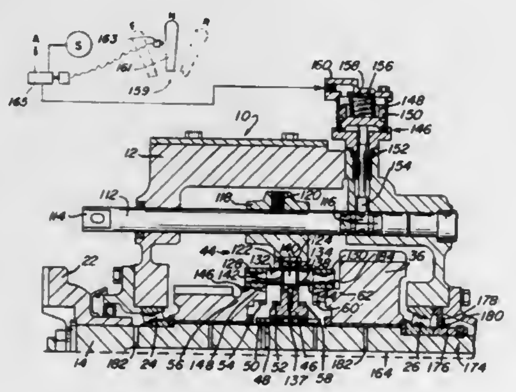


1. A gearbox for obtaining the proper drive ratio between an element in the drive train of a vehicle and a speedometer or odometer, comprising; housing means, an input gear mounted for rotation in the housing means, intermediate gear means engaging the input gear and the output gear to rotate the output gear in the same direction and at a predetermined drive ratio with respect to the input gear, said input gear and output gear being positioned with respect to each other to react in generally opposite directions on the intermediate gear means upon rotation of the input gear in one direction, and means for substantially balancing the radial forces acting on the intermediate gear means by the input gear and the output gear in both

directions of rotation of the input gear including said housing means being constructed to reverse the positions of the input and output gears relative to the intermediate gear means upon rotation of the input gear in the other direction so that the input gear and the output gear react in generally opposite directions against the intermediate gear means in either direction of rotation of the input gear.

4,441,379
INTERLOCK DEVICE FOR A TRANSMISSION SHIFT MECHANISM

Joseph L. Malkowski, Troy, and Calvin G. Wells, Warren, both of Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.
Filed Jul. 3, 1980, Ser. No. 165,612
Int. Cl.³ G05G ***5/10;*** **B60K** ***17/34***
U.S. Cl. 74—477 **5 Claims**



1. An interlock device for a shift mechanism of multi-speed power transmission device which receives an input from a torque transmitting power source which power source can be selectively operated in a power mode or a neutral mode, said multi-speed power transmission device being capable of operation in specific gear ratio operating conditions or a neutral non-operating condition, said interlock device comprising:

said shift rod being mounted within a housing of said multi-speed power transmission device and capable of selective axial positioning therein at a plurality of predetermined locations each of which is associated with one of said specific gear ratio operating conditions and said neutral non-operating condition;

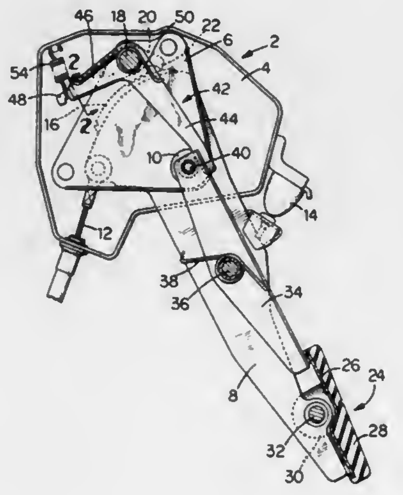
means for preventing said selective axial positioning of said shift rod from one of said predetermined locations to another of said predetermined locations when said torque power transmitting source is being operated in said power mode;

said means for preventing said selective axial positioning of said shift rod including a position locating device mounted relative to said housing for movement radially toward and away from said shift rod, said shift rod having a plurality of axially separated detents along the exterior surface thereof which are respectively aligned with said position locating device when said shift rod is positioned at said plurality of predetermined locations, and means for applying a predetermined force to said position locating device towards said shift rod to cause it to engage said detents associated with said one predetermined location when said torque transmitting power source is being operated in said power mode to prevent axial movement of said shift rod to said another predetermined location; and

said means for applying said predetermined force including a power cylinder mounted relative to said housing with a piston and a piston rod thereof being aligned with said position locating device to be capable of transmitting said predetermined force thereto and means for applying fluid pressure to said piston to generate said predetermined force when said torque transmitting power source is being operated in said power mode and for relieving said fluid pressure from said power cylinder when said torque transmitting power source is being operated in said neutral mode.

4,441,380
FOOT-OPERATED CONTROL DEVICE FOR PARKING BRAKE

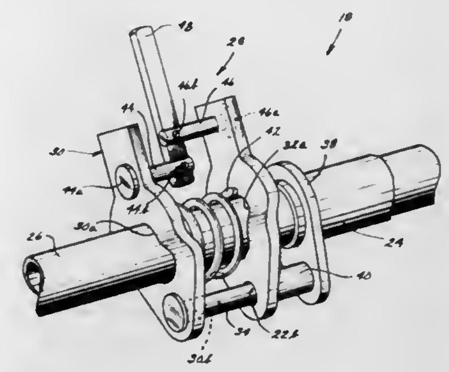
Hiroshi Kawaguchi, Mishima, and Shuho Nishina, Susono, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed Nov. 10, 1982, Ser. No. 440,600
Claims priority, application Japan, Nov. 11, 1981, 56-167925[U]; Nov. 19, 1981, 56-172437[U]; **Nov. 19, 1981, 56-172438[U]**
Int. Cl.³ G05G ***1/14***
U.S. Cl. 74—512 **14 Claims**



1. A foot-operated device for controlling a parking brake of a vehicle, comprising:
a bracket;
a parking brake pedal connected to said bracket pivotally about a first axis and having at one end thereof ratchet teeth formed along an arc of a circle a center thereof being located at said first axis;
a pedal pad connected to the other end of said parking brake pedal pivotally about a second axis parallel to said first axis, said pedal pad being pivoted between its original position and operated position;
a pawl member connected to and spaced from said bracket pivotally about a third axis parallel to said first axis, said pawl member including a pawl engageable with said ratchet teeth;
a lever connected to said bracket pivotally in proximity of said pawl member about a fourth axis aparllel to said first axis;
connecting means for linking said pedal pad to said lever to transmit a pivotal movement of the former to the latter such that a movement of said pedal pad incident to a pivotal movement of said parking brake pedal is not transferred to said lever; and
spring means, associated with said pawl member and said lever, for biasing said pawl member in a first direction that causes said pawl to engage said ratchet teeth while said pedal is placed in said original position, and biasing said pawl member in a second direction that causes said pawl to disengage from said ratchet teeth while said pedal pad is placed in said operated position, the direction of biasing said pawl member by said spring means being changed from said first direction to said second direction by a pivotal movement of said lever resulting from the pivotal movement of said pedal pad from said original position to said operated position, a biasing force of said spring means in said second direction being smaller than an engagement force existing between said pawl member and said ratchet teeth in engagement with said pawl member.

4,441,381
LOCKING AND POSITIONING APPARATUS FOR RECLINING SEATS

Charles A. Haugk, Fort Wayne, Ind., assignor to General Engineering & Manufacturing Corp., Andrews, Ind.
Filed Sep. 30, 1982, Ser. No. 431,391
Int. Cl.³ G05G ***5/06;*** **B60N** ***1/02***
U.S. Cl. 74—531 **4 Claims**

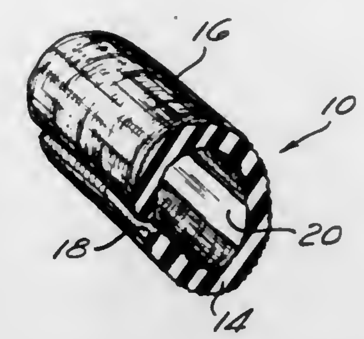


1. In a locking and positioning apparatus, comprising:
a. first and second tubular telescoping members adapted for longitudinal movement relative to one another;
b. gripping means operatively mounted on said first tubular member and rockable to a first position in frictional gripping engagement with said second tubular member for militating against relative longitudinal movement between said first and said second tubular members and to a second position for allowing relative longitudinal movement between said first and said second tubular members, said gripping means including a pair of gripping members adapted to be rocked away from each other for frictionally gripping said second tubular member in the first position, each said gripping member comprising a washer having a portion engageable with said second tubular member;
c. means operatively associated with said pair of gripping members for rocking said pair of members into the first position, said means comprising a spring surrounding said second tubular member and operatively disposed between said washers whereby the portions of said washers grip said second tubular member in the first position; and
d. lever means operatively associated with said pair of gripping members for rocking said pair of gripping members from the first position to the second position for releasing said second tubular member from said first tubular member, said lever means comprising a lever having an end disposed between said washers and a pair of cooperating pins, one of said pins being operatively associated with one of said washers and pivotally connected to the end of said lever and the other said pins being operatively associated with the other said washer and pivotally connected to the end of said lever in a longitudinally spaced relation to the first mention pivotal connection whereby said second tubular member may be positioned and retained in various extended telescope positions relative to said first tubular member.

4,441,382
STEERING WHEEL COVER

Laura K. Snooks, San Clemente, Calif., assignor to Alex S. Reinharcz Enterprises, Inc., San Clemente, Calif.
Filed Jul. 28, 1982, Ser. No. 402,755
Int. Cl.³ B62D ***1/06***
U.S. Cl. 74—558 **5 Claims**

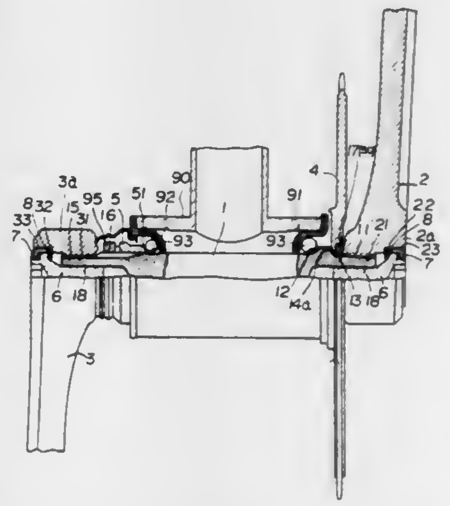
1. An improved steering wheel cover comprising:
a tubular elastromeric member sized to extend about the circumference of a steering wheel, said member formed having a substantially cylindrical cross-sectional configuration sized to tightly conform to the configuration of said steering wheel;
a circumferentially extending slot formed on the interior surface of said tubular elastromeric member adapted to permit said tubular elastromeric member to extend about and generally encircle the circumference of said steering wheel; and



a fabric covering disposed in a contiguous orientation to the exterior surface of said tubular elastromeric member, said tubular elastromeric member and said fabric covering being integrally molded together to form a continuous uninterrupted wheel cover member which is self-maintained upon said steering wheel.

4,441,383
GEAR CRANK FOR A BICYCLE

Takashi Segawa, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan
Division of Ser. No. 47,563, Jun. 11, 1979, Pat. No. 4,300,411.
This application Aug. 19, 1981, Ser. No. 294,412
Claims priority, application Japan, Jun. 12, 1978, 53-80968; Jun. 12, 1978, 53-80969
Int. Cl.³ G05G ***1/14***
U.S. Cl. 74—594.2 **1 Claim**



1. A gear crank for a bicycle, comprising a crank shaft having a first and a second end portion; a pair of crank arms respectively connected to the first and second end portion of said crank shaft; at least one chain gear mounted to said first end portion of said crank shaft, said crank shaft having at said first end portion a larger diameter portion separate from said first end portion and extending radially outward of said first end portion and a stepped portion having a retaining face directed axially outward of said first end portion, said larger diameter portion being positioned axially outward of said stepped portion and being spline connected with said first end portion, said chain gear having at its center an insertion bore fit onto said first end portion of said crank shaft and, around said insertion bore, a contact face contacting with said retaining face; a number of axially extending splines provided at the outer periphery of said larger diameter portion and projections respectively engageable with said splines provided at said chain gear at a position axially outward with respect to said insertion bore for restraining said chain gear from rotation

with respect to said crank shaft; and a first and second connecting means respectively provided between said crank arms and said first and second end portions of said crank shaft for connecting said crank arms to said first and second end portions, said first connecting means connecting one of said crank arms to said first end portion and biassing said one crank arm toward said retaining face to allow said contact face at said chain gear to contact with said retaining face, said chain gear being fixed rotatably and non-axially movably with respect to said crank shaft.

4,441,384
FREEWHEEL DEVICES

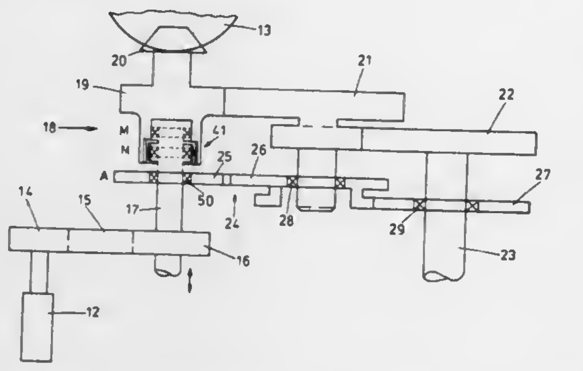
Kenneth Watson, Yeovil; Richard G. Buswell, and James E. Saunders, both of Sherborne, all of England, assignors to Westland plc, Yeovil, England

Filed Jul. 1, 1980, Ser. No. 164,905

Claims priority, application United Kingdom, Jul. 26, 1979, 7926018

Int. Cl.^{3} F16H *37/06*

U.S. Cl. 74—665 GA **6 Claims**



1. A transmission system for a multi-engined helicopter includes a freewheel device comprising an axially movable input shaft having a plurality of rollers retained around the shaft and adapted to transmit rotary motion from the shaft to a selected one of a plurality of axially spaced-apart output gears and to over-run when the speed of rotation of the selected output gear exceeds that of the shaft, each output gear having an internal cylindrical surface located concentrically of the shaft axis so that axial movement of the shaft engages the rollers with the selected output gear, said freewheel including a freely rotatable support means axially spaced-apart from the output gears, said support means comprising a ball bearing having inner and outer races, the inner race having an internal cylindrical surface located concentrically of the shaft and of a similar diameter to the internal surfaces of the output gears, whereby selective axial movement of the shaft to a neutral position engages the rollers with the support means so as to be rotationally disengaged from any of the output gears and isolated from independent rotary motion of any one of said output gears.

4,441,385
TRANSMISSION CONTROL SYSTEM WITH POSITIVE LOCKUP CLUTCH DISENGAGING SYSTEM

Yutaka Taga; Kazuaki Watanabe, and Shinya Nakamura, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jul. 10, 1981, Ser. No. 282,189

Claims priority, application Japan, Jul. 17, 1980, 55-97986

Int. Cl.^{3} B60K *41/16*

U.S. Cl. 74—867 **2 Claims**

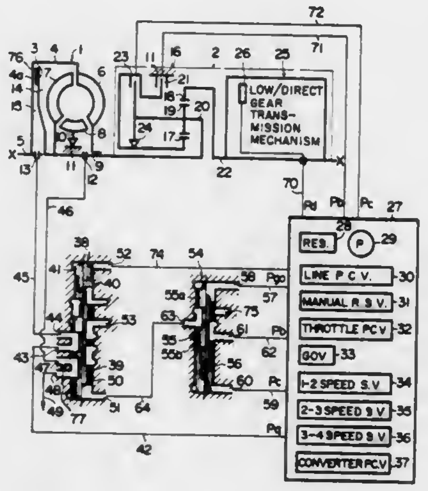
1. In an automatic transmission comprising:

(a) a gear transmission mechanism, which can provide a plurality of forward speed stages including a highest speed stage and a next to highest speed stage, and which comprises a plurality of hydraulic fluid pressure activated friction engaging mechanisms combinations of which are selectively actuated by selective supply of hydraulic fluid pressures thereto so as to engage said plurality of speed stages, said plurality of hydraulic fluid pressure activated friction engaging mechanisms including a first hydraulic fluid pressure thereto when and only when said gear transmission mechanism is providing its said highest speed stage and a second friction engaging mechanism which is engaged by supply of a second hydraulic fluid pressure thereto when said gear transmission mechanism is providing its said next to highest speed stage but which is not engaged when said gear transmission mechanism is providing its said highest speed stage, said second hydraulic fluid pressure not being present at that time;

(b) a torque converter, the interior of which is filled with hydraulic fluid, which comprises a lock up clutch and a first and a second hydraulic fluid channel, said lock up clutch being respectively selectively engaged or disengaged, according as to whether hydraulic fluid pressure is supplied to said first hydraulic fluid channel and is released from said second hydraulic fluid channel, or is supplied to said second hydraulic fluid channel and is released from said first hydraulic fluid channel: a transmission control system, comprising:

(c) a source of regulated torque converter hydraulic fluid pressure for filling the inside of said torque converter with hydraulic fluid;

(d) a hydraulic fluid pressure control system which controls said gear transmission mechanism by said selective supply of said combinations of said hydraulic fluid pressures including said first hydraulic fluid pressure and said second hydraulic fluid pressure thereto so as selectively to engage various ones of said plurality of speed stages, said first hydraulic fluid pressure and said second hydraulic fluid pressure being alternatively selected to be supplied, comprising a governor hydraulic fluid pressure control valve which produces a governor hydraulic fluid pressure which is representative of vehicle speed and which increases with increasing vehicle speed;



(e) a lock up clutch control valve which has a first switched position and a second switched position, which when in its said first switched position switches said first hydraulic fluid channel so as to supply thereto a supply of said torque converter hydraulic fluid pressure and switches said second hydraulic fluid channel so as to release hydraulic fluid therefrom, and which when in its said second switched position switches said second hydraulic fluid channel so as to supply thereto a supply of said torque converter hydraulic fluid pressure and switches said first hydraulic fluid channel so as to release hydraulic fluid therefrom; said lock up clutch control valve being switched to its said first switched position by supply of a control hydraulic fluid pressure thereto, and being otherwise switched to its said second switched position; and

(f) a lock up clutch interrupt valve which comprises a valve element shiftable between a first switched position and a second switched position, and a spring for biasing said valve element toward its said second switched position, which when said valve element is in its first switched position switches a supply of said first hydraulic fluid pressure so as to supply said first hydraulic fluid pressure to said lock up clutch control valve as said control hydraulic fluid pressure, and which when said valve element is in its said second switched position does not switch said supply of said first hydraulic fluid pressure so as to supply said first hydraulic fluid pressure to said lock up clutch control valve as said control hydraulic fluid pressure, so that said lock up clutch control valve in this case is not supplied with any such control hydraulic fluid pressure; said lock up clutch interrupt valve being supplied with said second hydraulic fluid pressure, when it is present, and said governor hydraulic fluid pressure by said hydraulic fluid pressure control system; said second hydraulic fluid pressure and said governor hydraulic fluid pressure being applied in opposite directions against said valve element of said lock up clutch interrupt valve, and, when said lock up clutch interrupt valve is not supplied with said second hydraulic fluid pressure, said valve element of said lock up clutch interrupt valve being switched between its said first switched position and its said second switched position by the balance of said governor hydraulic fluid pressure and the spring force of said spring so as to be switched to its said second switched position when the pressure value of said governor hydraulic fluid pressure is less than a critical pressure value, and being switched to its said first switched position when the pressure value of said governor hydraulic fluid pressure is greater than said critical pressure value, and when said lock up clutch interrupt valve is supplied with said second hydraulic fluid pressure, said valve element of said lock up clutch interrupt valve being switched to said second switched position irrespective of the value of said governor hydraulic fluid pressure.

4,441,386
WIRE CUTTER AND STRIPPER APPARATUS

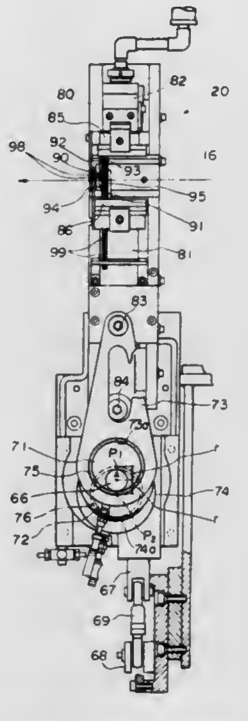
Akinori Hara, Akishima, Japan, assignor to Osawa Press Mfg., Co., Ltd., Tokyo, Japan

Filed Jan. 19, 1981, Ser. No. 226,075

Claims priority, application Japan, Oct. 28, 1980, 55-151072

Int. Cl.^{3} H02G *1/12*

U.S. Cl. 81—9.51 **3 Claims**



1. A wire cutter and stripper apparatus which comprises:

a frame;

a wire feed means on said frame for advancing an insulated wire by a predetermined length;

a cutter and stripper mechanism including (1) a crank means having a crank shaft rotatably mounted on said frame and a pair of identical crank arms in the form of discs fixedly mounted on said crank shaft in eccentric relation so that the centers of said discs are offset from the axis of said crank shaft by an equal distance, said eccentric discs being disposed in diametrically opposed relation, (2) a pair of elongated connecting members each having a circular aperture formed therethrough at one end thereof, said pair of eccentric discs being rotatably received in said circular apertures of said connecting members, (3) a pair of slide members having first and second ends and being mounted on said frame for movement along axes thereof, said first ends of said slide members being pivotally connected to the other ends of said connecting members, respectively, (4) a pair of opposed cutter and stripper holders mounted respectively on said second ends of said slide members, said cutter and stripper holders holding respective cutter blades and stripper blades, and (5) an actuator means operable to move said crank shaft through a predetermined angle and thereby to move said cutter and stripper holders towards each other with a nonuniform motion which has a low speed at the beginning and end thereof and a higher speed in the middle thereof so that said cutter blades and said stripper blades cut the wire and the insulation, respectively, to the same depth regardless of backlash and play in said apparatus.

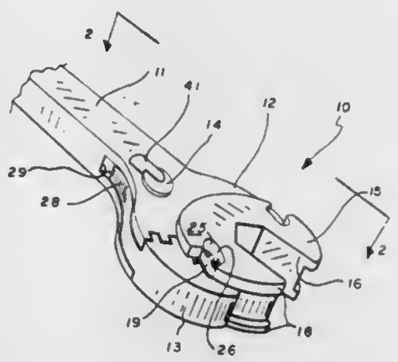
4,441,387
OPEN END RATCHET WRENCH

Bacel G. Hendricks, 1190 E. Beecher, Brigham City, Utah 84302

Filed Jun. 11, 1982, Ser. No. 387,543

Int. Cl.^{3} B25B *13/46, 13/00*

U.S. Cl. 81—61 **8 Claims**



1. An open ended ratchet wrench comprising:

an elongate handle member;

a jaw member fixed to the handle and having a concave arcuate side with ratchet teeth extending toward its geometric center;

a retractable jaw member having a concave arcuate side with ratchet teeth generally extending toward the ratchet teeth of the fixed jaw member;

a circular wrenching disc having an open ended nut receiving recess and being adapted to be retained by the jaw members between the arcuate faces thereof;

at least two spaced apart pawl members each mounted within one of at least two recesses within the wrenching disc;

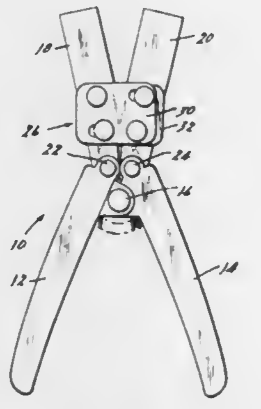
spring means urging each pawl member into engagement with the ratchet teeth;

releasable means connecting the retractable jaw to the handle in a disc retaining relationship with the fixed jaw, said releasable means comprising pivot pin means and bore means, said bore means being carried by the handle and, the pivot pin means being disposed rotatably in said bore means;

the pivot pin means has a longitudinal axis and further comprises cam means eccentric to the longitudinal axis; and

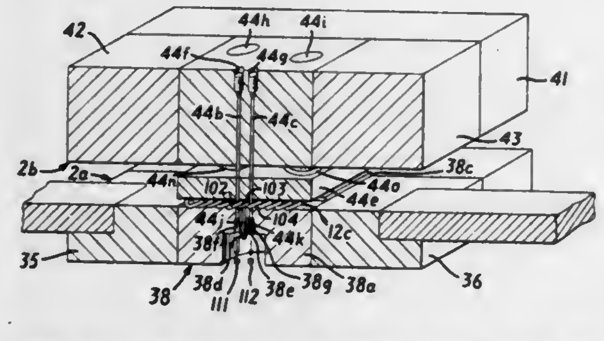
the movable jaw further comprises bore means accepting the cam portion of the pivot pin means therewithin, so that rotation of the pivot pin means causes the cam means to act against the bore means of the jaw to move the jaw out of the disc retaining relationship.

4,441,388
HAND TOOL LINKAGE
Henry A. Manor, Detroit, Mich., assignor to Balmar Crimp Tool Corp., Orlando, Fla.
Filed Oct. 28, 1981, Ser. No. 316,046
Int. Cl.^{3} B25B *7/06*
U.S. Cl. 81—300 **13 Claims**



4. In an apparatus having a pair of levers pivotally interconnected by at least a pair of cross link members, each of said cross link members being pivotally attached to said levers by pivot pins, the improvement wherein each of said cross link members is pivotally attached to both of said levers by separate pivot pins, each of said pivot pins of each cross link member extending through both of said cross link members and being attached to only one of said levers, said cross link members being movable relative to one another as said levers are pivoted with respect to one another, each of said cross link members further including guide means separate from said levers for reinforcing the pivot pins of the other of said cross link members, thereby tending to counter-balance the forces exerted on said pivot pins by said levers.

4,441,389
CHAIN SEVERING APPARATUS AND METHOD
George W. Graham, North Kingstown, R.I., and Richard P. McCally, Mansfield, Mass., assignors to Avon Products Inc., New York, N.Y.
Filed Aug. 4, 1981, Ser. No. 290,064
Int. Cl.^{3} B26D *7/06*
U.S. Cl. 83—140 **10 Claims**

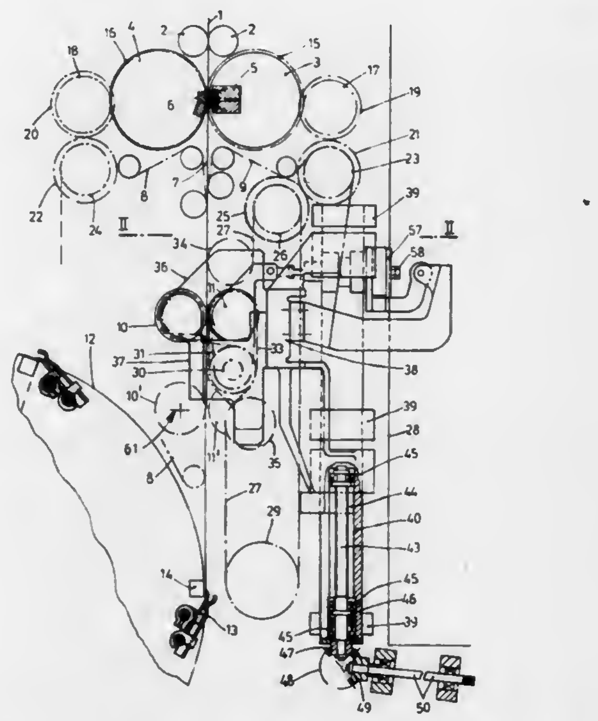


1. Apparatus for severing a length of chain, said chain comprising a succcession of interior annular links between first and second end links, each interior link passing from one side of the immediately preceding link to the other side of the immediately preceding link and having a first link portion passing through the central opening defined by that immediately preceding link and each interior linking passing from one side of the immediately succeeding link to the other side of the immediately succeeding link and having a second link portion passing through the central opening defined by that immediately succeeding link, said apparatus comprising:

means for supporting said chain, said support means including: a first member for supporting a section of said chain including said interior links; a pin depending outwardly from said first member and adapted to seat in the recess between first and second link portions, respectively, of succeeding and preceding interior links passing through the same central opening of an interior link of said chain section; and said first member having first and second bores disposed at preselected first and second distances, respectively, relative to said pin, said first and second distances being such that with said pin seated in said recess said first bore aligns with a first link portion of an interior link and said second bore aligns with a second link portion of an interior link;

and means for severing the link portion aligned with said first bore and the link portion aligned with sad second bore, said severing means including: a second member for moving relative to said first member between first and second positions; means affixed to said second member for engaging said chain section as said second member moves from said first to second positions; and first and second severing members carried by said second member and positioned to sever the link portion aligned with said first bore and the link portion aligned with said second bore, respectively, as said second member moves from said first to said second positions.

4,441,390
SHEET SEPARATING AND TRANSPORT APPARATUS
Hatto Hechler; Godber Petersen, both of Augsburg, and Alfons Frick, Königsbrunn, all of Fed. Rep. of Germany, assignors to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany
Filed Sep. 22, 1982, Ser. No. 421,392
Claims priority, application Fed. Rep. of Germany, Oct. 1, 1981, 3139117
Int. Cl.^{3} B65H *35/06*
U.S. Cl. 83—154 **12 Claims**



1. Sheet severing, separating and transport apparatus, particularly for use with a printing machine having

a frame (28);

feed roller means (2) for feeding a web of a substrate (1);

a pair of cutter cylinders (3, 4) cutting the web of substrate being fed thereto by said feed roller means into individual sheets (7);

a gripper cylinder (12, 13, 14) for receiving the cut sheets,

and operating at the circumferential speed higher than the speed of the feeding roller means (2);

a first and a second separating roller (10,11; 10*a*,11*a*);

belt transport means (8,9; 8*a*, 9*a*) to receive the cut sheets from said cutter cylinders and to deliver them to the gripper cylinder;

and means synchronizing operation of the cutter cylinders, the separating rollers and the belt transport means for timed delivery of cut sheets to said gripper cylinder, and adjustable for different lengths of the cut sheets

comprising, in accordance with the invention

a first carrier structure (38) longitudinally-with respect to the direction of transport of the sheets by said belt transport means (8, 9)-moveably mounted in the frame (28);

the first separating roller (10, 10*a*) being secured to the carrier for longitudinal movement therewith;

a second carrier structure (52, 53);

the second separating roller (11) being secured to said second carrier structure;

a shaft (32) rotatably secured in the second carrier structure and having an axis of rotation parallel to the first separating roller (10);

positioning means (55) adjustably securing the second carrier structure (52, 53) to the first carrier structure to adjust the spacing between the first and second separating rollers;

a gear belt (33) drivingly connecting the first and second separating rollers;

the belt transport means including

a first endless transport belt means (8,8*a*) being passed with one run adjacent the circumference of the first separating roller (10) and at one side of the substrate and then the cut sheet (1, 7), and

a second endless transport belt means (9, 9*a*) being passed with one run adjacent the circumference of the second separating roller (11) and at the other side of the substrate;

and positive drive means (27) positively driving one (10) of the separating rollers from the cutter cylinders (3, 4) with the same circumferential speed as the cutter cylinders; and

belt drive means for driving the endless belt means (8, 8*a*, 9, 9*a*) at essentially the same linear speed as the cutter cylinders,

so that the sheets (7) cut by the cutter cylinders (3, 4) from the web of substrate (1) will be transported to the separating rollers (10, 10*a*, 11, 11*a*) and gripped with the leading edge of the sheet by the separating rollers upon arival thereat, and accelerated to the speed of the cutter cylinders and hence of the gripper cylinder (12, 13, 14) while being maintained in stretched, taut, condition by the endless belt means,

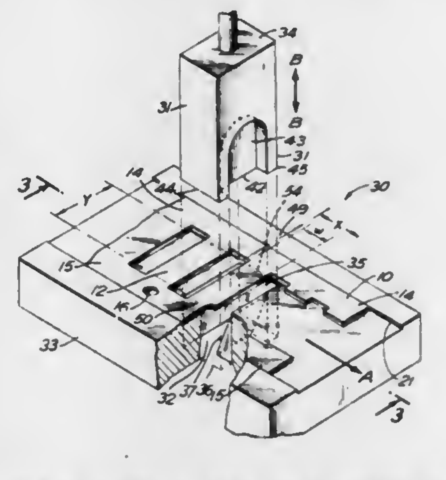
longitudinal movement of the first carrier structure (38) carrying said separating rollers (10, 11, 10*a*, 11*a*) along the length of the paths of the belt transport means permitting adjustment of the apparatus to accommodate sheets (7) of various lengths.

4,441,391
APPARATUS FOR SEVERING AN ARTICLE FROM A CARRIER AND FOR POSITIONING THE SEVERED ARTICLE
Gary G. Seaman, Broomfield, Colo., assignor to AT&T Technologies, Inc., New York, N.Y.
Filed Apr. 27, 1983, Ser. No. 488,899
Int. Cl.^{3} B65H *35/06*
U.S. Cl. 83—165 **2 Claims**

1. Apparatus for severing and then positioning articles supplied by a carrier comprising:

a die having an aperture extending axially therethrough between entrance and exit openings of the aperture, the aperture being bounded in its interior on longitudinally opposite sides of its axis by planar wall portions parallel to such axis and extending axially between such openings

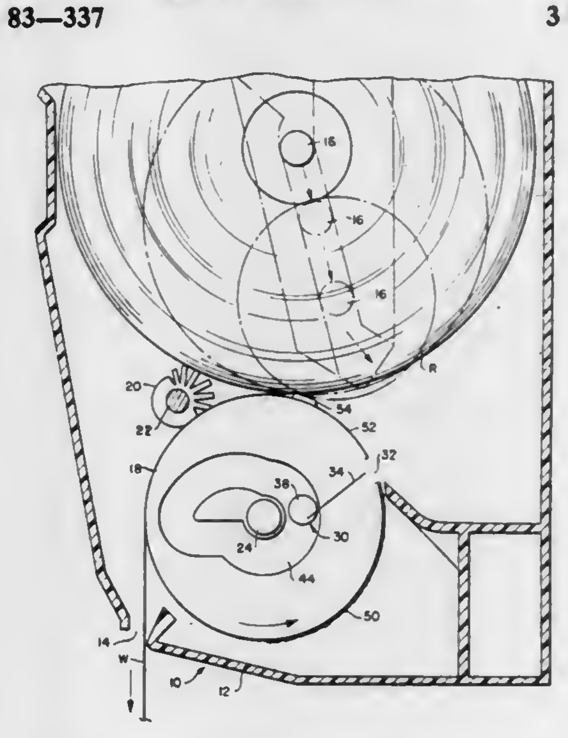
at least one guide ramp disposed in the aperture on one lateral side of the aperture, the ramp projecting laterally inward from that side towards the other lateral side of the aperture, and the ramp being positioned so as to be longitudinally spaced from each of the planar wall portions and to have at least its lower end lie in between them, the ramp having, for positioning severed articles, a guide surface disposed to face towards such other lateral side of said aperture and axially extending from a part of said ramp axially away from said exit opening to the exit opening to render the exit opening of rectangular "C" shape on said one lateral side, said guide surface having a slant to said



axis to approach closer to said other lateral side as said surface approaches closer to said exit opening; and

a punch movable coaxially with the axis to enter the aperture, the front face of the punch having longitudinally-spaced parallel article-severing edges receivable with an article-severing fit within the aperture's planar wall portions, and the punch having formed therein on said one lateral side of the aperture a cavity extending rearwardly from the front face and of a size and shape to receive the ramp so as to enable the front face of the punch to pass through the aperture to the exit opening.

4,441,392
CUT WEB MATERIAL DISPENSER WITH WEB CENTERING AND TENSION CONTROL
Raymond F. DeLuca, Stamford, Conn., assignor to Georgia-Pacific Corporation, Atlanta, Ga.
Filed Nov. 4, 1981, Ser. No. 318,278
Int. Cl.^{3} B26D *1/56*
U.S. Cl. 83—337 **3 Claims**



1. In a dispenser for rolled flexible sheet material having:

a chassis adapted to be attached to a wall;

means on said chassis for rotatably supporting a roll of flexible sheet material;

a feed roller rotatably mounted on said chassis providing guide means for a web of flexible sheet material drawn from the roll, said roller being disposed adjacent said supporting means to define a space between said roller and said supporting means for the roll carried by said supporting means to rest on said roller with said roller guide means guiding the web of flexible sheet material withdrawn from the roll to a user; and

cutter mechanism carried by said chassis in association with said feed roller for cutting the web at intervals along the web to divide the web into individual sheets;

the improvement wherein said feed roller has at least one protrusion on the peripheral surface near each end thereof for momentarily lifting the roll of flexible sheet material off the surface of said feed roller during rotation of said feed roller so as to jar the roll carried by said supporting means into parallelism with the feed roller and free the web momentarily to permit any loose loop of web to be pulled out by the user.

4,441,393

METERING APPARATUS

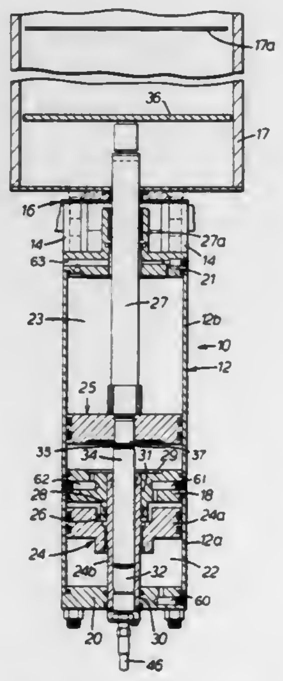
Michael P. Anderson, Park Orchards, Australia, assignor to Kovan Engineering Pty. Ltd., Australia

Filed Nov. 17, 1981, Ser. No. 322,177

Claims priority, application Australia, Nov. 24, 1980, PE1598

Int. Cl.³ B29F *1/06*

U.S. Cl. 83—360 **12 Claims**



1. Metering apparatus comprising: a casing defining spaced first and second chambers; respective first and second piston means sealingly slidable by applied fluid pressure in the said chambers; means coupled to and moveable with the second piston means, and projecting from the casing to receive a load to be metered; a third chamber within said first piston means; a plunger sealingly slidable in said third chamber; wherein said second and said third chambers are in communication whereby respective opposed transverse faces of said second piston means and said plunger are engageable to determine a limit position for the second piston means in said second chamber.

4,441,394

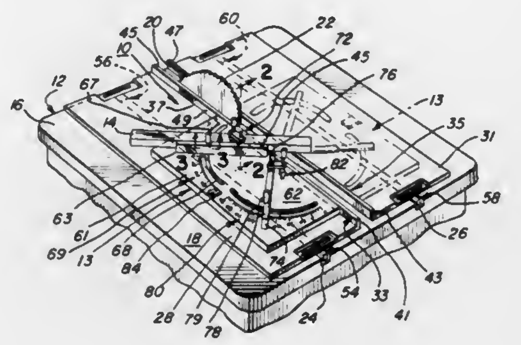
TABLE SAW GUIDE APPARATUS

Mario Barsotti, 3475 Burr St., Gary, Ind. 46406

Continuation-in-part of Ser. No. 327,822, Dec. 7, 1981. This application Aug. 30, 1982, Ser. No. 412,622

Int. Cl.³ B27B *27/06*

U.S. Cl. 83—409 **8 Claims**



1. Guide apparatus adapted for use with table saw equipment including a table having a table top and having a motor-driven upright saw blade, for cutting a workpiece, said table top including an upwardly facing groove extending parallel and spaced from the plane of the saw blade, comprising:

a generally flat guide plate adapted to overlie and directly engage the table top;

upstanding stop means connected to said plate and disposed adjacent to, and space laterally by a short distance from, the saw blade, said stop means having top edge surface means for resting the workpiece thereon and for guiding it therealong;

projection means being disposed on the underside of said plate and being adapted to fit securely within the table top groove for fixing said plate in place on the table top; and

a substantially flat workpiece carrier being on and overlying the upper surface of said plate, said carrier adapted to engage said stop means for slidable engagement therewith, the upper surface of said workpiece carrier being flush with said top edge surface means to permit the workpiece to rest on top of said top edge surface means and said upper surface of said carrier, said carrier including gauge means mounted on the upper surface thereof for engaging the workpiece and for helping position it angularly relative to the saw blade.

4,441,395

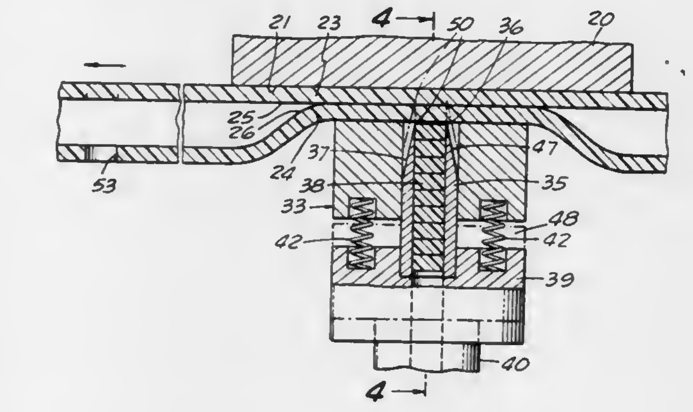
TUBE PUNCHING METHOD

Jack W. McRoskey, Los Angeles, Calif., assignor to Republic Tool & Manufacturing Corporation, Carlsbad, Calif.

Filed Jun. 29, 1981, Ser. No. 278,788

Int. Cl.³ B26F *1/02*

U.S. Cl. 83—862 **4 Claims**



1. A method of cutting a hole in the wall of a flexible or pliable tube of the steps of:

a. flattening said tube to form first and second sidewalls positioned adjacent to each other and having their surfaces in contact with each other,

b. cutting a plug in the first sidewall of said flat tube to form a hole therein by moving a plug cutting tool having a sharp cutting edge completely through said first wall and moving said plug cutting tool so that the cutting edge thereof will enter the surface of the second wall which acts as a back-up pad for said first wall, and

c. removing said plug cutting tool.

4,441,396

SLITTING MACHINE, MORE PARTICULARLY FOR HIDES AND LEATHER, UNWOVEN TEXTILE PRODUCTS, RUBBER PRODUCTS, PLASTICS IN PLATES OR ROLLS

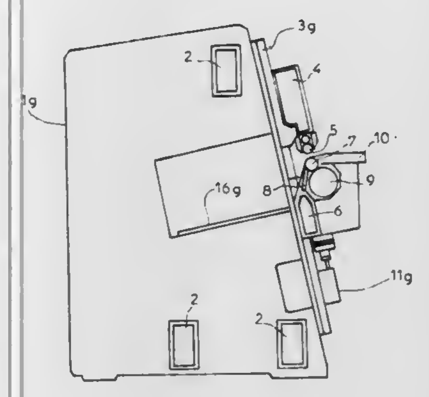
Georges Mercier, Annonay; Jacques Mercier, Andrezieux, and Pierre Buisson, Annonay, all of France, assignors to Societe MERCIER Freres, France

Filed Aug. 25, 1981, Ser. No. 296,001

Claims priority, application France, Sep. 3, 1980, 80 19375; Jul. 20, 1981, 81 14588

Int. Cl.³ C14B *1/18*

U.S. Cl. 83—871 **17 Claims**



1. Slitting machine, more particularly for hides and leather, unwoven textile products, rubber materials, plastics in plates, comprising a framework, a working table for presenting the materials or products to the slitting process, a driving device for said products or materials by means of two cylinders mounted in front of an endless cutting blade the upper and the driving of said cylinders being placed above and the lower cylinder, being a cylinder with elements, beneath the plane of the tensioned side of said endless cutting blade supported by two pulleys, at least one of which is motive and tensioning, the spacing between said cylinders being adjustable, a sharpening system constituted by two grinding wheels each one of which is acting on one of the two bevelled faces forming at the intersection thereof the cutting edge of said blade, said machine being characterized in that the bearing structure thereof is designed to divide parts of said machine in two distinct assemblies, namely: a fixed assembly carrying means for presenting, positioning and driving the products, disposed on either side of the cutting line and adjustable distinctly and separately with respect to this cutting line constituted by the cutting edge of the tensioned upper side of said endless blade; and an assembly which is mobile within the horizontal plane relative to the fixed assembly and includes a frame for the support of said blade, provided with means for guiding, positioning, driving and sharpening, said blade, the cutting edge of which is formed at the intersection of two sharpened bevelled faces and has an immutable position within the horizontal plane relative to said frame; said mobile assembly being movable relative to said fixed assembly of the structure to modify the spacing between the driving plane which is the imaginary plane passing through the axes of said upper driving cylinder and of said lower cylinder with elements supported by said blade positioned in an immutable manner within the horizontal plane relative to said mobile assembly.

4,441,397

Patent Not Issued For This Number

4,441,398

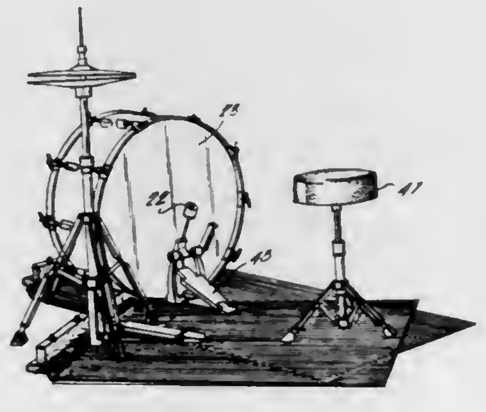
ANCHOR DEVICE FOR BASS DRUM

Newman T. Baker, 304 Catharine St., Philadelphia, Pa. 19147

Filed May 19, 1982, Ser. No. 379,603

Int. Cl.³ G10G *5/00*

U.S. Cl. 84—421 **4 Claims**



1. An anchor for a bass drum or other percussion instrument adapted for being repetitively struck by a player, comprising a flexible mat having barrier means at one end, an area adjacent the barrier means to receive the instrument, and an area at the end opposite the barrier means to receive the player, said barrier means including an upward extended barrier strip mounted on the upper surface of said flexible mat and transversely along and superimposed on an end edge thereof, a lower block positioned and extending along and below said barrier strip and mat, said block elevating said mat end edge and said barrier strip and thereby creating a resistive force to said barrier strip resisting tipping thereof by forces applied thereagainst by a said instrument, said mat being compactly foldable about the barrier means for transport, and unfolded on a floor when in use.

4,441,399

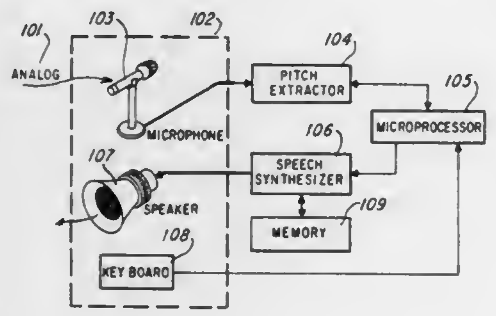
INTERACTIVE DEVICE FOR TEACHING MUSICAL TONES OR MELODIES

Richard H. Wiggins, Dallas; George Doddington, Richardson, both of Tex., and Craig J. Cato, Littleton, Colo., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 11, 1981, Ser. No. 301,089

Int. Cl.³ G09B *15/00*

U.S. Cl. 84—470 R **16 Claims**



1. An electronic learning aid for teaching musical tones comprising:

pitch indentifying means for determining at least a first pitch from an analog signal and producing a signal output indicative thereof;

memory means storing digital speech data and digital control data from which sythesized human speech relating to interaction between the electronic learning aid and an operator thereof may be derived, said memory means including storage in which the signal output from said pitch identifying means may be temporarily stored, and further including library means storing a plurality of pitch data representative of a plurality of different pitches and combinable into a plurality of different sequences of pitch data;

speech synthesizer means operably associated with said memory means for producing an analog signal alternatively representative of synthesized human speech or tones depending upon whether the data accessed from said memory means is digital speech data or pitch data;

operator input means for providing an operator input to said pitch identifying means as at least a tone in an analog signal representative thereof;

said pitch identifying means being responsive to an operator input from said operator input means as an analog signal for producing said signal output as determined by said operator input;

control means operably associated with said pitch identifying means, said memory means, and said speech synthesizer means and for selectively accessing digital speech data and pitch data from said memory means for input to said speech synthesizer means;

said memory means temporarily storing said signal output from said pitch identifying means as regulated by said control means for subsequent input to said speech synthesizer means upon selective access thereof by said control means,

audio means coupled to said speech synthesizer means for converting said analog signals produced thereby alternatively into audible tones or audible synthesized human speech depending upon whether the data accessed from said memory means is pitch data or digital speech data; and

said speech synthesizer means and said audio means cooperating with said control means and said memory means in audibly providing at least a tone as the response of the electronic learning aid corresponding to said operator input and audible synthesized human speech commenting upon the response of the electronic learning aid to the operator input.

4,441,400

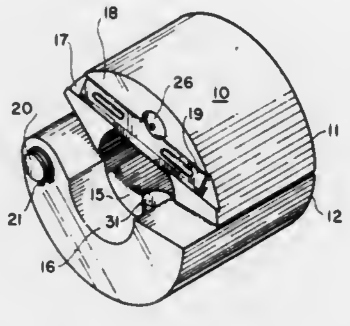
SHOTSHELL COMPONENT RECOVERY APPARATUS AND METHOD

Larry J. Sexton, 539 Wright St. Bldg. #3, Unit 204, Lakewood, Colo. 80228

Filed Jul. 26, 1982, Ser. No. 401,951

Int. Cl.³ C06B *21/00;* **F42B** *33/10*

U.S. Cl. 86—1 A **8 Claims**



1. A device for cutting open plastic or paper-walled shot shell ammunition comprising:

a plurality of rotatably connected semicylindrical body portions where at least one of said body portions extends axially beyond the other said body portion, said body portions being movable to define a first open position and a second closed position and when in the second closed position define a first bore therethrough, said one body portion containing at least two semicircular surfaces defining said first cylindrical bore of a predetermined diameter and a second cylindrical bore of a predetermined diameter smaller than the diameter of said first cylindrical bore, said second cylindrical bore being established on at least a portion of the extension of said one body portion,

cutting means located on one of said body portions positioned so that when said body portions are in the closed position, the cutting means extends into said second cylindrical bore a sufficient depth to cut through the wall of a shot shell placed in said second cylindrical bore, whereby a shotshell can be opened when inserted into said second cylindrical bore and rotated after closing said body portions.

4,441,401

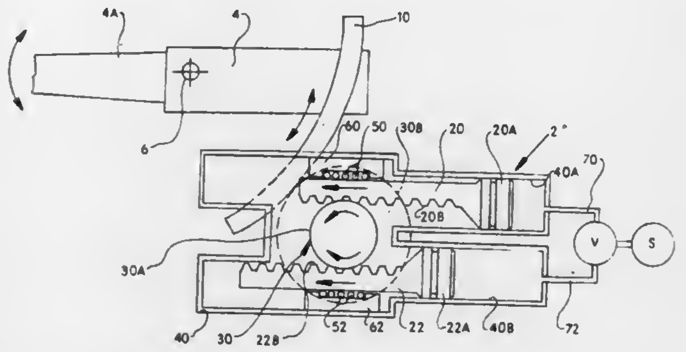
RACK AND PINION WEAPON ELEVATION MECHANISM

James C. Hobson, St. Clair Shores, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Sep. 27, 1982, Ser. No. 423,583

Int. Cl.³ F41F *21/16, 21/04, 23/06, 23/10*

U.S. Cl. 89—37 F **8 Claims**



1. An elevation mechanism for an unbalanced weapon having driven gear means, comprising a rotatably mounted pinion means in meshing engagement with the driven gear means to elevate or depress the weapon depending on the direction of pinion rotation, a pair of rack means in meshing engagement with said pinion means with one rack means slidably mounted on a side of the pinion means and the other rack means slidably mounted on a side thereof such that said one rack means causes elevation of the weapon and said other rack means causing depression of the weapon, means for moving said rack means past the pinion means to rotate same in one direction or the other, and further comprising a third rack means in meshing engagement with the pinion means and means for loading the third rack means against the pinion means to exert a torque thereon counter to a torque exerted on the pinion means by the unbalanced weapon.

4,441,402

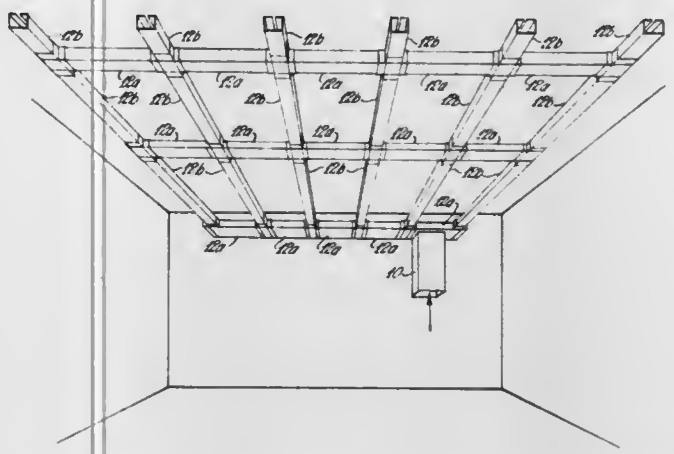
AESTHETIC ACOUSTICAL AIR DISTRIBUTION DUCT SYSTEM

David A. Harris, Sylvania, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 260,240, May 4, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 429,919

Int. Cl.³ F24F *7/06*

U.S. Cl. 98—40 C **4 Claims**



1. An air distribution duct system suitable as a retrofit air distribution system for a room of an existing building and also providing an aesthetic acoustical treatment for a ceiling of the room, the system comprising a plurality of parallel duct runs extending in a first direction and a plurality of parallel duct runs extending in a second direction perpendicular to the first direction, the duct runs extending in the first direction being at the same height as and being interconnected to the duct runs extending in the second direction, each of the duct runs including duct sections of rectangular shape suspended from the ceiling of the room in spaced relationship thereto and formed of fabricated sound absorbent fibrous board whereby a grid pattern of rectangular sound absorbent duct runs is provided in spaced relationship to the ceiling for absorbing sounds emanating from sources in the room outside of the duct sections, the rectangular duct sections surrounding each open area in the grid pattern forming a pocket for the trapping of sound thereafter absorbed in the sound absorbent fibrous board of the duct sections, and some of the duct sections of the duct runs extending in one of said directions having air distribution openings for distribution of conditioned air into the room.

4,441,403

AERATION FAN MOUNTING SYSTEM

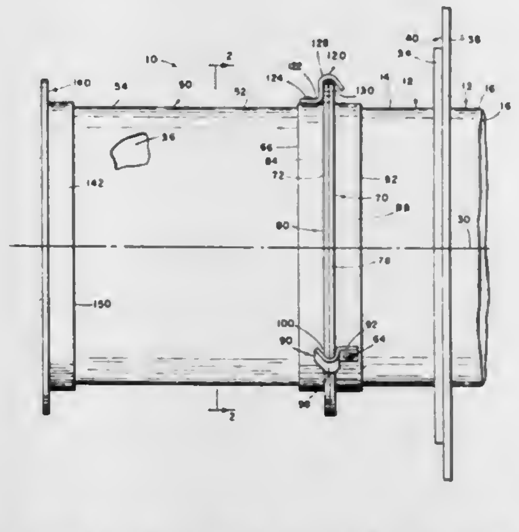
James L. Hansen, P.O. Box 233, Crofton, Nebr. 68730

Filed Apr. 7, 1980, Ser. No. 138,146

Int. Cl.³ F16L *37/26;* **E04H** *7/22*

U.S. Cl. 98—55 **1 Claim**

1. An aeration fan mounting system comprising a grain storage building, a wall adapter mounted on said building, a fan housing adapted to have a fan of a size suitable for grain aeration mounted therein, said adapter and fan housing having aligned cylindrical interior and exterior surfaces having a same horizontal axis, said wall adapter and said fan housing being arranged end-to-end adjacent each other, said wall adapter and said fan housing having on the cylindrical exterior surfaces thereof wall adapter-mounted and fan housing-mounted insertion rings thereon and protruding outwardly therefrom substantially radially of said axis and means retaining said wall adapter insertion ring and said fan housing mounted insertion ring on said wall adapter and fan housing, respectively, wall adapter-mounted support bracket means providing upwardly opening support recess means receiving said fan-mounted insertion ring and disposed on opposite sides of said horizontal axis as seen in top plan view at first and second horizontally spaced support points and means securing said support bracket means to said wall adapter mounted insertion ring, a holding bracket means providing a downwardly opening holding re-



cess means disposed above said upwardly opening support recess means and removably receiving said fan-mounted insertion ring whereby as said fan housing is lifted with respect to said wall adapter said fan housing-mounted bracket means is removed from the upper side of said adapter-mounted insertion ring, said support recess means of each of said bracket means being progressively narrower towards its radially outermost portion so as to guide said insertion rings toward each other whereby said fan housing is guided toward said adapter and whereby accuracy of initial placement of said rings in said recesses is not as critical and yet said rings are drawn into a close fit and in axial alignment with each other.

4,441,404

VENTILATION APPARATUS

Johnathan G. Simon, Great Torrington, England, assignor to R. W. Simon Limited, North Devon, England

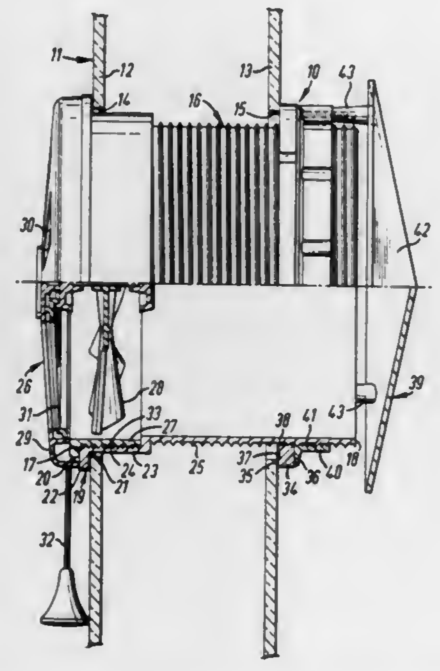
Continuation of Ser. No. 319,937, Nov. 10, 1981, abandoned. This application Jun. 13, 1983, Ser. No. 501,970

Int. Cl.³ E06B *7/02*

U.S. Cl. 98—96 **2 Claims**

1. Ventilating apparatus (**10**) for transferring air from one to another of a pair of spaces that are separated by a pair of spaced apart substantially parallel fixed panels (**12, 13**), said panels having aligned apertures (**14, 15**) therein and a substantially inaccessible air space therebetween, said apparatus (**10**) comprising: a one-piece hollow cylindrical rigid member (**16**) receivable in said aligned apertures (**14, 15**) in said panels (**12, 13**) to extend through both of said apertures (**14, 15**) and across said air space between said panels (**12, 13**), said cylindrical rigid member (**16**) having an external surface and an internal surface, said external surface comprising an external first screw thread (**25**) that extends along at least a part of the length of said cylindrical rigid member (**16**) from one end thereof, said internal surface comprising an internal second screw thread (**24**) that extends along at least a part of the length of said cylindrical rigid member (**16**) from the other end thereof, and said cylindrical rigid member (**16**) having near its said other end a radially outwardly projecting circumferential flange (**19**) for sealing engagement with the outer side of one (**12**) of said panels to prevent air flow between said cylindrical rigid member (**16**) and an edge of the aperture (**14**) in said one panel (**12**); a rotatable annular member (**34**) having an inner surface

formed as a third screw thread (38) complementary to and engageable with said external first screw thread (25) and axially adjustable by rotation on said cylindrical rigid member (16) for sealing engagement with the outer side of the other (13) of said panels to prevent air flow between said cylindrical rigid member (16) and an edge of the aperture (15) in said other panel (13) and cooperable with said flange (19) for securing the cylindrical rigid member (16) against displacement relative to said panels (12, 13); an air flow controlling component (26) comprising a housing (27) and having means (28, 29, 30, 31) on said housing (27) for controlling air flow through said hollow cylindrical rigid member (16), said housing (27) having a cylindrical external surface comprising an external fourth screw thread (33) that extends along at least a part of the length of said housing (27) and is complementary to and engageable with said internal second screw thread (24) in the cylindrical rigid member (16) whereby said component (26) is removably received in said cylindrical rigid member (16) near said other end thereof, and means on said housing (27) engageable with said cylindrical rigid member (16) to limit the extent to which said housing (27) is insertable into said cylindrical rigid member (16), said part of said cylindrical rigid member (16) along which said internal second screw thread (24) extends has a larger inside diameter than the remainder thereof, adhesive sealing means for disposition between said flange (19) and said one panel (12) and between said annular member (34) and said other panel (13), said means for controlling air flow comprises a fan (28) and a shutter mechanism (31) mounted on said housing (27).



4,441,405
SOLAR RADIATION HEAT INFLUX SENSOR FOR AN AUTOMOTIVE VEHICLE

Yasuhisa Takeuchi, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 22, 1982, Ser. No. 350,883

Claims priority, application Japan, Mar. 12, 1981, 56-34535; Mar. 18, 1981, 56-39184

Int. Cl.^{3} B60H *1/00;* G01K *17/00*

U.S. Cl. 98—201 **12 Claims**

1. A solar radiation heat influx sensor adapted to be mounted on an automotive vehicle having windows for determining heat influx into a passenger compartment due to sunlight, comprising:

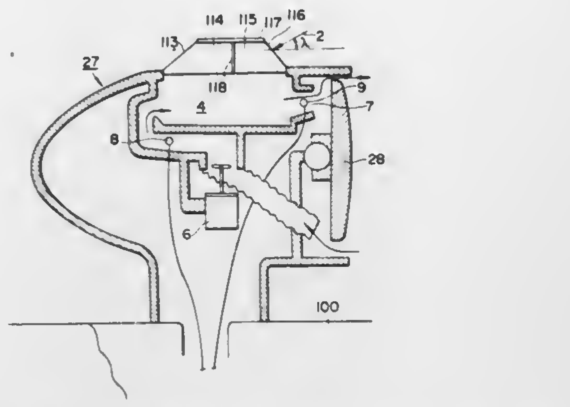
(a) a sensor body having an air inlet portion and an air outlet portion at opposite ends thereof and a model window having similar solar characteristics to the vehicle windows, said model window being disposed between the air inlet and outlet portions of said sensor body and operable to receive rays of sunlight incident on said vehicle;

(b) means for driving air through said sensor body from the air inlet portion to the air outlet portion;

(c) an outside-air temperature sensor disposed in the air inlet portion of said sensor body for detecting the temperature of air flowing into said sensor body;

(d) a warmed-air temperature sensor disposed in the air outlet portion of said sensor body for detecting the temperature of air flowing out of said sensor body; and

(e) a calculating unit, connected to said outside-air temperature sensor and said warmed-air temperature sensor, for calculating heat influx into the passenger compartment due to sunlight on the basis of signals generated by said outside-air temperature sensor and said warmed-air temperature sensor in accordance with a predetermined equation, and for outputting a command signal corresponding thereto.



11. The solar radiation heat influx sensor of claim 1 further comprising an air-conditioning system, mounted in said vehicle and asssociated with said solar radiation heat influx sensor, said air-conditioning system having an air mix door for controlling the temperature of the air admitted into said passenger compartment, and means for controlling the position of said air mix door, wherein said calculating unit is operable to generate said command signal to operate said means for controlling the position of the air mix door.

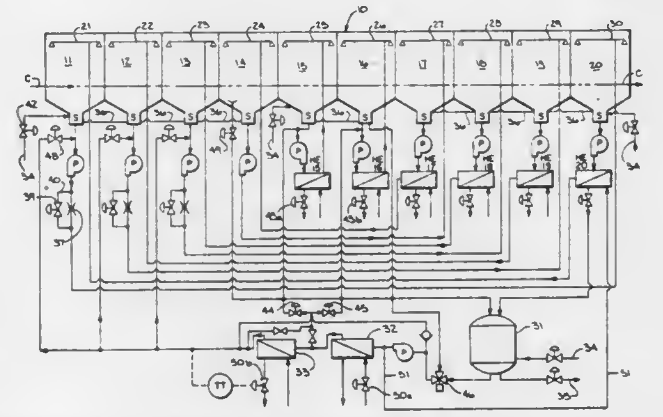
4,441,406
PASTEURIZATION APPARATUS

Kenneth W. Becker, Brookfield; Louis G. Friedrichs, Jr., Milwaukee; Lev Kropp, Glendale, and Richard B. Straka, Milwaukee, all of Wis., assignors to Miller Brewing Company, Milwaukee, Wis.

Filed Jun. 14, 1982, Ser. No. 388,211

Int. Cl.^{3} A61L *2/04*

U.S. Cl. 99—275 **12 Claims**



1. In a tunnel pasteurizer in which the product to be pasteurized is successively moved on a conveyor through a preheat zone, a pasteurizing zone and a precool zone, the improvement which comprises cooling means in the pasteurizing zone for cooling the product in the pasteurizing zone to a temperature at which no appreciable pasteurization occurs when the conveyor stops, thus preventing the overpasteurization of the product.

4,441,407
HORIZONTAL CONTAINER FOR PROCESSING WINE GRAPE MUST

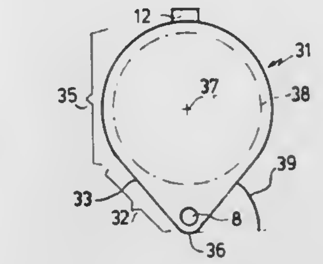
Herbert Rieger, Talstrasse 33, 7121 Ingersheim, Fed. Rep. of Germany

Filed Jan. 15, 1982, Ser. No. 339,302

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1981, 3101510; Apr. 18, 1981, 3115633

Int. Cl.^{3} C12G *1/02*

U.S. Cl. 99—277.2 **14 Claims**



1. A wine tank for stationary use in a winery, said tank comprising

an upper tank portion corresponding substantially in shape to a major portion of a circular cylinder having a substantially horizontal axis,

stationary supporting means for supporting said tank in a stationary position with said axis substantially horizontal,

a lower tank portion of a substantially tapered form and having a pair of side walls connecting smoothly with said upper tank portion and extending downwardly therefrom while converging toward each other,

said side walls ranging from zero curvature to a slight curvature having a radius of curvature which is substantially greater than the radius of curvature of said upper tank portion,

each of said side walls extending downwardly at an angle of at least 30° relative to the horizontal,

and a bottom wall portion substantially in the form of a circular cylindrical segment into which the lower portions of said side walls merge,

said bottom wall portion being connected between the lower portions of said side walls and constituting a discharge drainage trough,

said downward angle of at least 30° of said side walls being sufficiently great to cause discharge of wine pomace by gravity while minimizing the accumulation of wine pomace on said side walls.

4,441,408
MACHINE FOR FORMING CROISSANTS AND THE LIKE CONFECTIONERY PRODUCTS

Maurizio D. Costa, Via Trento, 36, 20090 Cesano Boscone (Milano), Italy

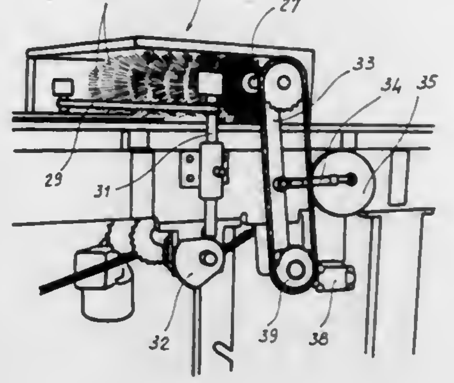
Filed May 3, 1982, Ser. No. 374,432

Claims priority, application Italy, Jan. 26, 1982, 19310 A/82

Int. Cl.^{3} A21C *9/08, 11/10;* A21J *11/00*

U.S. Cl. 99—450.2 **6 Claims**

1. A machine for forming croissants and like pastry products, comprising a holding device for temporarily holding a plurality of oncoming rolled up pastry pieces aligned across an oncoming direction, conveyor means for conveying baking pans under said holding device, said baking pans having a plurality of arcuate recesses for said pastry pieces and said holding device having means for causing said pastry pieces to fall onto said baking pans in corresponding relationship with said recesses, and a bending station arranged downstream of said holding device and having means for arcuately bending said pastry pieces to be received in said recesses of said baking pans, wherein said means for bending said pastry pieces comprise a shaft extending transverse to said oncoming direction of said pastry pieces, pairs of brushes arranged spaced apart from one another on said shaft, a rod extending transverse to said oncoming direction proximate to said shaft, a plurality of projecting lug portions provided on said rod such that each of said lug portions is arrnged between and below a respective one of said pairs of brushes, and means for rotating said shaft and translating said shaft relative to said lug portions for causing the brushes of each pair to bend a respective one of said pastry pieces when centrally engaged by a respective one of said lug portions.



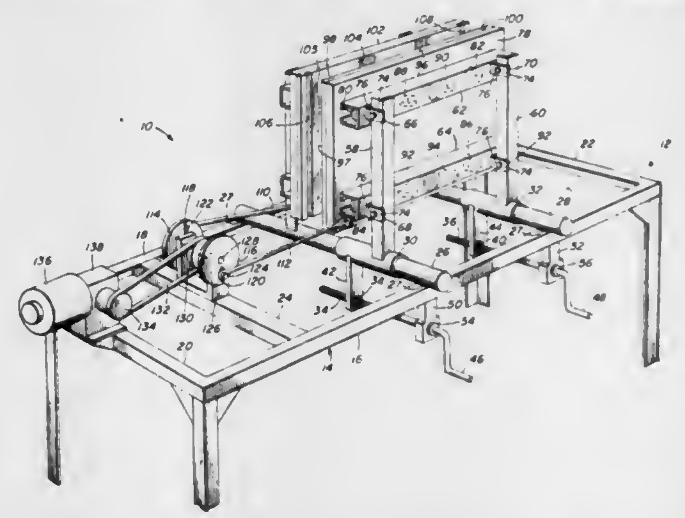
4,441,409
APPARATUS FOR BLANCHING PEANUTS

Lowell E. Weyant, Edenton, N.C., assignor to Seabrook Blanching Corporation, Albany, Ga.

Filed Sep. 20, 1982, Ser. No. 419,818

Int. Cl.^{3} B02B *3/00*

U.S. Cl. 99—523 **4 Claims**



1. Apparatus for blanching edible shelled nuts, comprising:

(a) a pair of members mounted in spaced opposed parallel relation to one another to define a gap therebetween, said gap being adjustable to the average thickness of said nuts;

(b) each of said members formed with a generally flat vertical face, both of said faces being generally coextensive with one another and in opposite facing relation to one another;

(c) both of said faces being of an abrasive character,

(d) means for mounting said pair of members for oscillating lengthwise movement along parallel paths and out of phase with one another;

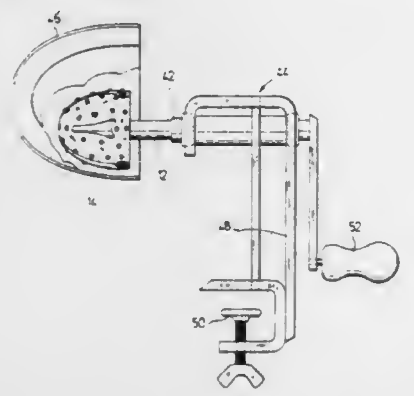
(e) drive means operatively connected to said pair of members for oscillating said members in parallel whereby nuts delivered into the upper end of said gap will be blanched as said nuts move downwardly through said gap for discharge from the lower end of said gap; and

(f) stroke adjustment means connected to said mounting

means and said drive means for selectively adjusting said oscillating lengthwise parallel movement of said pair of members;
(g) each of said flat vertical faces formed with a vertical groove along the marginal vertical edges thereof.

4,441,410
COCONUT GRATER

Noel A. Thompson, 8 E. Charlemont Dr., Kingston 6, Jamaica
Filed Jun. 1, 1982, Ser. No. 383,443
Int. Cl.^{3} A23N *5/03, 5/08*
U.S. Cl. 99—538 **9 Claims**

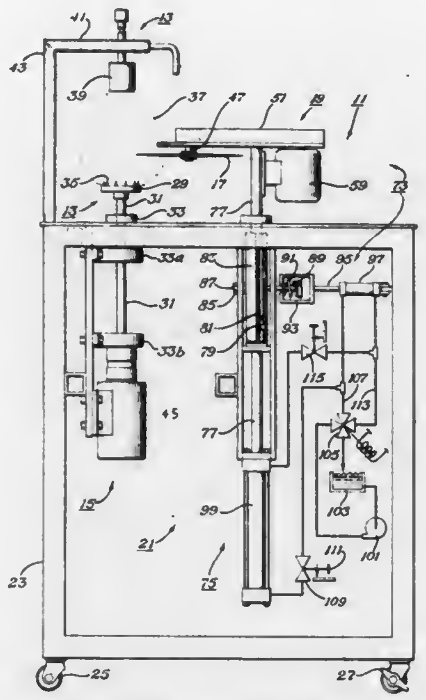


1. A coconut grater for grating and removing the coconut flesh from the interior of a coconut shell, comprising a rotatable shaft having a leading end, a plurality of separate curved grating members each having a front portion, securing means securing each front portion to the leading end of the shaft, each grating member curving outwardly and rearwardly from the front portion to extend in spaced relation to the shaft and form an interior area having an open back end, a plurality of angularly spaced struts extending radially from the shaft at a location rearwardly spaced from the leading end thereof, each grating member having a rear portion, further securing means securing each rear portion to at least one of the struts, and each grating member also having grating means formed by small apertures therein with outwardly projecting sharp edges.

4,441,411
SLICER FOR HAM OR THE LIKE

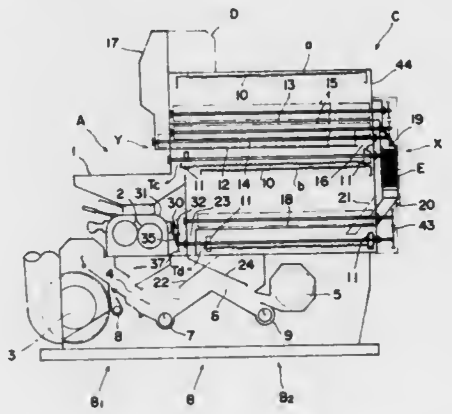
James N. Mullins, Jr., 2116 Williams Pl., Fort Worth, Tex. 76111
Filed Apr. 25, 1983, Ser. No. 488,034
Int. Cl.^{3} A23N *7/00;* **A47J** *17/00*
U.S. Cl. 99—538 **11 Claims**

1. Apparatus for slicing ham or the like comprising:
a. ham holder adapted to hold the ham to be sliced and journalled for rotation so as to spin the ham;
b. ham rotating means connected with said ham holder for rotating said ham holder and the ham therewithin;
c. rotary slicer blade journalled for rotation for slicing the ham when in cutting engagement therewith;
d. blade rotating means connected with said blade for rotating said blade;
e. lateral and upward moving means for moving said blade into and out of cutting engagement with the ham; said lateral and upward moving means having sufficient force to move the rotating blade in cutting engagement with the ham through the ham to its bone and adapted to reciprocate as necessary to accommodate said bone; said lateral and upward moving means having easily rate-adjustable upward moving means adapted for moving said blade upwardly in a proper direction slowly while simultaneously moving the blade into cutting engagement with the ham such that a continuous spiral slice is effected through the ham and about said bone; said lateral and upward moving means having the capability of an infinite number of adjustments of very small or large nature in the rate of movement of the upward moving means such that very small changes in thickness of the ham slices can be effected and different thickness slices can be cut.



4,441,412
DRIVING DEVICE OF SORTING CYLINDER FOR USE IN A ROTARY TYPE RICE HULLING AND SORTING DEVICE

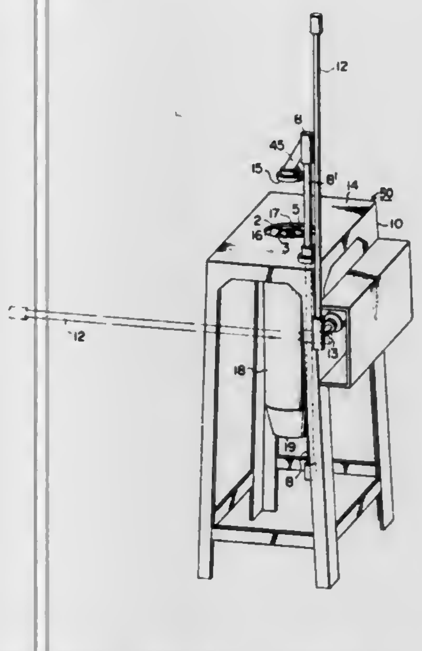
Ryuichi Imamura; Kanzo Shimazaki; Satoru Yahashi; Takashi Yamamoto, and Noriyuki Yano, all of Nangoku, Japan, assignors to Yanma Agricultural Equipment Company Limited, Osaka and Seirei Industry Company Limited, Okayama, both of, Japan
Filed Jan. 24, 1983, Ser. No. 460,636
Claims priority, application Japan, Jan. 25, 1982, 57-8889; Mar. 10, 1982, 57-34430
Int. Cl.^{3} B02B *3/00, 3/04, 7/02*
U.S. Cl. 99—601 **3 Claims**



1. A driving device of sorting cylinders for use in a rotary type rice hulling and sorting device, comprising: a means for hulling, a pneumatic means for sorting and a means for rotary sorting having at least two sorting cylinders rotatably mounted therein having two ends, with one end of said sorting cylinders being adapted to serve as the feeding side for rice grains to be sorted and the other end of said sorting cylinders being adapted to serve as the discharging side for rice grains which are to be hulled and sorted, the sorting cylinders having a large number of recesses formed on the internal surface thereof, and further having receiving troughs for taking out the rice grains scooped up by said recesses; said means for hulling, said pneumatic means for sorting and said means for rotary sorting being assembled together, the rotational speed of said sorting cylinders being selectively controllable regardless of the rate of revolution of said means for hulling and said pneumatic means for sorting, power from a prime mover being transmitted from a driving shaft of said hulling part to a drive axis of said means for rotary sorting, the drive axis of said means for rotary sorting also being operable to drive other devices;
said means for hulling and said means for rotary sorting being mounted in parallel on said pneumatic means for sorting;
said means for hulling and said pneumatic means for sorting being connectedly driven by a prime mover;
a driving shaft of said means for hulling being connected to a V-belt of said means for rotary sorting through a V-belt for transmitting power;
said means for rotary sorting further comprising a primary sorting cylinder mounted above, and arranged in parallel with, a secondary sorting cylinder;
said primary sorting cylinder being opened to an unhulled rice tank through a discharging end of said primary sorting cylinder;
said pneumatic means for sorting further comprising a trough for receiving hulled rice grains;
said secondary sorting cylinder being opened to said trough for receiving hulled rice grains through a discharging side of said secondary sorting cylinder.

4,441,413
PINEAPPLE CUTTER

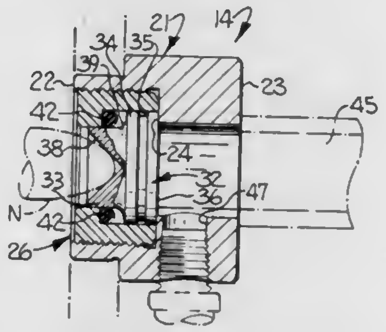
Kashichi Mori, Iwatsuki, Japan, assignor to Kowa Shoji Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 7, 1982, Ser. No. 385,952
Claims priority, application Japan, Aug. 1, 1981, 56-115130[U]
Int. Cl.^{3} A23N *4/00, 4/20, 7/08*
U.S. Cl. 99—542 **12 Claims**



1. A pineapple cutter for removing the peel and core of a pineapple, comprising:
a cylindrical body having a base disk at one end and being open at the other end;
a first tubular cutter for cutting the core of said pineapple, said tubular cutter being connected to said base disk and having a first diameter;
a second tubular cutter for peeling said pineapple, said second cutter having a second diameter larger than said first cutter and being mounted on the open circular edge of said cylindrical body, said first and second cutters being concentric;
an annular loading table, said first cutter passing through a central opening in said loading table with wide clearance, said loading table fitting with wide clearance within said second tubular cutter;
a rod connected to said loading table, said rod being adapted to move and translate said loading table within said cylindrical body in a direction parallel to the longitudinal axis of said cylindrical body and said tubular cutters, said rod passing through a slanting groove provided in the side wall of said cylindrical body, said groove being non-parallel to the longitudinal axis of said cylindrical body, said cylindrical body, said second tubular cutter and said first tubular cutter being rotated relative to said loading table when said rod moves and translates said loading table parallel to said longitudinal axis;
means for moving said rod;
a pressing disk connected to said rod at a position displaced from said loading table and moving with said rod, the spacing between said loading table and said pressing disk corresponding to the length of a pineapple prepared to be peeled and cored.

4,441,414
CRACKING DIE ASSEMBLY FOR HIGH PRODUCTION NUT CRACKING APPARATUS

James B. Quantz, Columbia, S.C., assignor to Machine Design Incorporated, Columbia, S.C.
Continuation-in-part of Ser. No. 372,305, Apr. 27, 1982, Pat. No. 4,418,617, which is a division of Ser. No. 199,743, Oct. 23, 1980, Pat. No. 4,332,827. This application Jul. 1, 1983, Ser. No. 509,917
Int. Cl.^{3} A23N *5/02*
U.S. Cl. 99—571 **12 Claims**



1. A cracking die assembly adapted for use in a nutcracking apparatus, and comprising
a mounting sleeve having an internal bore which includes a radial shoulder intermediate its ends,
a tubular retainer coaxially mounted in said sleeve bore, said retainer including an internal bore and a radial shoulder which is spaced oppositely from said sleeve shoulder,
a cracking die disposed coaxially within said bore of said sleeve and including a radial flange disposed between said retainer shoulder and said sleeve shoulder, with said flange having an axial dimension less than the distance between said shoulders for permitting limited axial movement of said die, and with said die having a first end surface which is adapted to engage the end of a nut to be cracked, and an opposite end surface, and
resilient annular gasket means disposed between said radial flange of said die and one of either said sleeve shoulder or said retainer shoulder, and so as to be disposed on the side of said flange toward said first end surface of said die,
whereby said cracking die is adapted to be impacted on said opposite end surface and be thrust forwardly a limited distance so as to impart a cracking force to a nut engaged by said first end surface of said die, and with the annular gasket means adapted to absorb at least a portion of the impacting force.

4,441,415
CRUSHER FOR SCRAP METAL AND THE LIKE

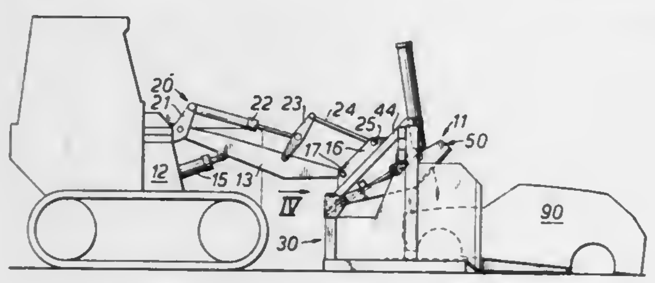
Peter A. T. Hawkins, White Cross Farm, Cholsey, Oxfordshire, England

Filed Dec. 1, 1981, Ser. No. 326,420

Claims priority, application United Kingdom, Dec. 5, 1980, 8039004; Jun. 26, 1981, 8119865

Int. Cl.^{3} B30B *9/32*

U.S. Cl. 100—35 **23 Claims**



1. A method of crushing scrap metal and the like, comprising:

(a) providing a jaw mechanism comprising a lower jaw member having a platform pivotally connected to an upper jaw member including a press plate which has a single generally planar operative surface, the axis of said pivotal connection being offset such that, when the platform is horizontal, the axis is above and entirely beyond one side of the platform, that side thereby being defined as the rear of the platform and the jaw mechanism including side pieces diverging towards the rear of the platform for guiding and containing scrap metal on either side of the jaw mechanism;

(b) loading a leading end of an object to be crushed on to the platform from a side opposite the above-defined rear thereof;

(c) urging the press plate towards the platform to crush the object until either the said single operative surface of the press plate has advanced to a position where it is parallel to the platform, is closer to the plane of the platform than is the said axis and, seen in plan view, does not extend across the said axis, or the rigidity of the object prevents the further advance of the press plate towards that position;

(d) moving the press plate away from the platform;

(e) loading a next portion of the object on to the platform while withdrawing the crushed end through the side pieces and from the rear of the platform; and

(f) repeating steps (c), (d) and (e) in sequence until the entire object has been crushed and withdrawn from the rear of the platform.

4,441,416
PRESSURE FIXING DEVICE

Teruo Tsutsumi, Tama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 14, 1982, Ser. No. 417,999

Claims priority, application Japan, Sep. 19, 1981, 56-147016; Dec. 11, 1981, 56-198659; May 11, 1982, 57-77510

Int. Cl.^{3} B30B *3/02*

U.S. Cl. 100—171 **8 Claims**

1. A pressure fixing device for a recording medium comprising:

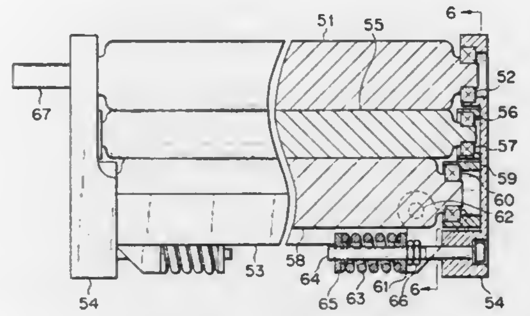
a pair of frames spaced and facing each other;

a first roll located between the frames so that both ends of the first roll are supported individually by the frames for rotation;

a pair of guide members attached individually to the frames to be movable at right angles to the axis of the first roll;

a second roll disposed along the first roll so that both ends of the second roll are supported individually by the guide members for rotation, the recording medium being passed between the first and second rolls; and

a mechanism for urging the second roll toward the first roll, the mechanism including a pair of compression coil springs extending along the axes of the rolls to apply an urging force in its extending direction, a pair of pressure levers rockable around an axis normal to the axes of the rolls and the moving direction of the guide members, the pressure levers receiving the urging force of the coil springs to urge the second roll toward the first roll, and adjusting means for adjusting the urging force of the compression coil springs.



4,441,417
PRESSURE FIXING DEVICE

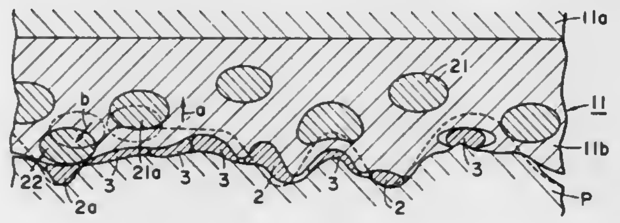
Masahiro Katayama, Kawasaki; Nobutoshi Yoshida, Yokohama, and Tsukasa Kuge, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 27, 1981, Ser. No. 315,517

Claims priority, application Japan, Oct. 30, 1980, 55-155350[U]

Int. Cl.^{3} B30B *3/04*

U.S. Cl. 100—176 **22 Claims**



1. A pressure fixing device comprising:

a pair of rotatable unheated members, which contact each other along a narrow band defining a nip, for pressing and transmitting a sheet bearing a toner image to fix the toner image on the sheet, at least one of said rotatable members including an elastic surface layer having particles of a hardness higher than that of said elastic layer dispersed therein so as to be present at least in the vicinity of the outer surface thereof, and when said toner image is fixed on the sheet between said rotatable unheated members, said particles deform said elastic so that the outer surface of said elastic layer follows the concave-convex surface of the sheet; and

means for applying sufficient linear pressure to said pair of rotatable members so that the pressure at the nip is at least at the required peak pressure to deform the toner in order to effectively adhere the toner to the sheet by pressure alone.

4,441,418
OVERVARNISH APPARATUS FOR DECORATOR MACHINE

Roger A. Hahn, Arvada, Colo., assignor to Adolph Coors Company, Golden, Colo.

Filed Feb. 3, 1982, Ser. No. 345,321

Int. Cl.^{3} B41F *17/08*

U.S. Cl. 101—38 R **11 Claims**

1. Apparatus for decorating cans or the like comprising:

a mandrel wheel means having a plurality of circumferentially spaced rotatable mandrel means for carrying cans in a generally circular path of movement past inking means for applying ink images to the peripheral surfaces of the cans;

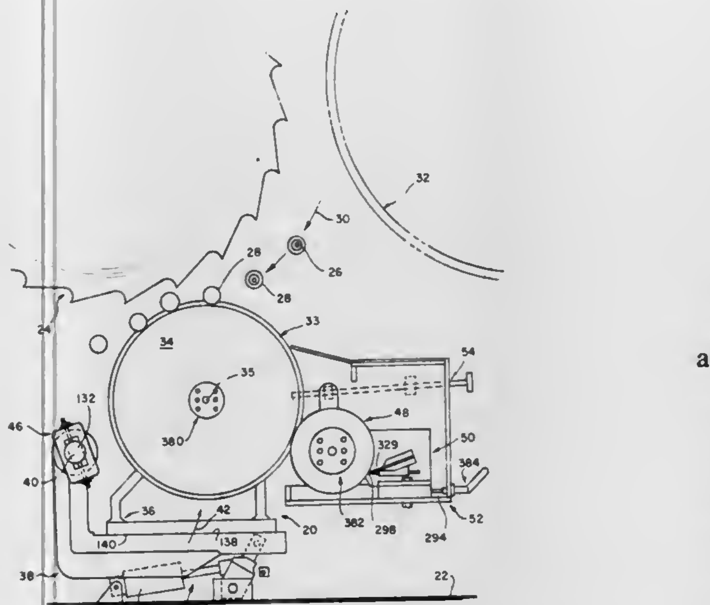
an applicator roll means located next adjacent and downstream of said inking means and being engageable with the peripheral surfaces of the cans for applying a coating material over the ink images on the peripheral surfaces of the cans;

a pre-spin wheel means operatively associated with said applicator roll means and being engageable with said rotatable mandrel means before said applicator roll means engages the peripheral surfaces of the cans for causing rotation of said rotatable mandrel means prior to engagement of said applicator roll means with the peripheral surfaces of the cans;

a single engraved meter roll means mounted in juxtaposition to and engaging said applicator roll means for applying a coating material to said applicator roll means;

a fountain means having a reservoir for holding a quantity of the coating material and metering blade means operably associated with said meter roll means for applying a predetermined quantity of coating material to said meter roll means;

drive means operably connected to said applicator roll means and said pre-spin wheel means and said meter roll means for causing synchronized rotation thereof;



a common movable support means for supporting said applicator roll means and said pre-spin wneel means and said meter roll means and said fountain means for movement between an operational position adjacent said mandrel wheel means whereat said applicator roll means engages the peripheral surfaces of the cans and an inoperative position whereat said applicator roll means is spaced from the peripheral surfaces of the cans;

actuating means operably associated with said common movable support means for selectively moving said common movable support means between the operative position and the inoperative position;

an applicator roll pressure adjustment means operably associated with said common movable support means for causing variable movement thereof in the operative position whereby the position and engaging pressure of said applicator roll means relative to the cans is selectively variably adjustable;

a meter roll pressure adjustment means mounted on said common movable support means and being operably associated with said meter roll means for selectively variably adjusting the position and engaging pressure of said meter roll means with said applicator roll means;

fountain adjustment means mounted on said common movable support means and being operably associated with said fountain means for selectively variably adjusting the position of said fountain means relative to said meter roll means to control the amount and distribution of coating material transferred from said fountain means to said meter roll means; and

support adjustment means operatively associated with said common movable support means for selectively variably adjusting the axis of rotation of said applicator roll means relative to the axis of rotation of said mandrel means to maintain substantial parallelism therebetween.

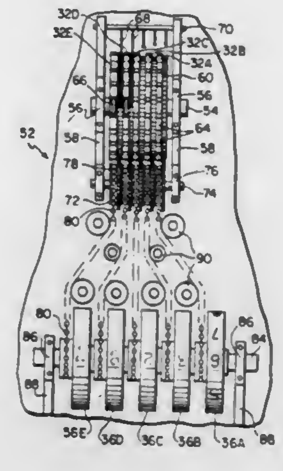
4,441,419
IMPRINTING DEVICE AND DIGIT WHEEL ASSEMBLY THEREFOR

William A Sours, Sauqoit, N.Y., assignor to National Business Systems, Inc., Mississauga, Canada

Continuation of Ser. No. 310,905, filed as PCT US /80/01418, Oct. 22, 1980, § 102(e) Sep. 9, 1981, publish as WO 82/01344, Apr. 29, 1982, abandoned. This application Dec. 1, 1982, Ser. No. 446,161

Int. Cl.^{3} B41F *3/04*

U.S. Cl. 101—45 **6 Claims**



1. A digit wheel assembly for use in connection with a variable imprinting device, comprising:

(a) a plurality of digit wheels rotatably mounted on a common fixed digit wheel shaft, each of said digit wheels having raised printing indicia spaced along the circumference thereof;

(b) a plurality of thumbwheels rotatably mounted on a common fixed thumbwheel shaft, said thumbwheels being equal in number to said plurality of digit wheels,

(c) a first plurality of sprockets equal in number to said plurality of digit wheels, each of said first plurality of sprockets having multiple adjacent semi-spherical recesses evenly spaced around the periphery thereof, and each of said first plurality of sprockets being operatively associated with one of said digit wheels so as to rotate therewith;

(d) a second plurality of sprockets equal in number to said plurality of digit wheels, each of said second plurality of sprockets having multiple adjacent semi-spherical recesses evenly spaced around the periphery thereof, each of said second plurality of sprockets being operatively associated with one of said thumbwheels so as to rotate therewith; and said second plurality of sprockets having different center-to-center spacing from the center-to-center spacing of said first plurality of sprockets,

(e) a plurality of endless bead chains equal in number to said plurality of digit wheels, each of said endless bead chains comprising a series of connected spherical segments,

and each endless bead chain connecting one of said first plurality of sprockets to one of said second plurality of sprockets by having spherical segments for each endless bead chain being retained in said semi-spherical recesses of said first and second plurality of sprockets; and,

(f) bosses mounted vertically with respect to said digit wheel shaft and said thumbwheel shaft for causing those endless bead chains which connect sprockets not aligned with one another to bend so that each of said endless bead chains is maintained in positions which result in the linear relationship of said spherical segments, at said sprockets, to be perpendicular to the rotational axes of said first and second plurality of sprockets;

whereby synchronization is maintained between the rotational position of said digit wheel operatively associated with said first sprocket and the rotational position of said thumbwheel operatively associated with said second sprocket.

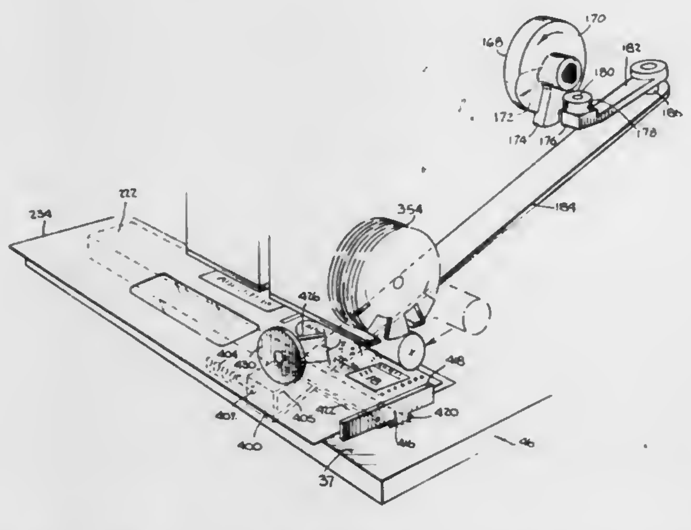
4,441,420
ENVELOPE EJECTION MECHANISM FOR A MAILING MACHINE

Danilo P. Buan, Easton, Conn., and Ezra Navok, New York, N.Y., assignors to Pitney Bowes, Stamford, Conn.

Filed Dec. 8, 1982, Ser. No. 447,811

Int. Cl.³ B41J *45/00*

U.S. Cl. 101—69 **9 Claims**



1. A mailing machine having an envelope ejection mechanism, comprising: a housing having a slot with a stationary deck, said deck having an opening therein, a movable platen receivable within said opening of said deck, a print head spaced from and addressing said platen, means for moving said platen into said slot toward and away from said print head, said stationary deck having a channel formed therein on one end of said opening and located adjacent said platen, means received within said channel for ejecting an envelope from said slot, means for moving said ejection means across said deck after said platen has been driven toward and away from said print head and means supported by said housing for applying pressure upon an envelope located upon said deck whereby upon said ejection means acting upon the envelope and said pressure means will cause the envelope and its contents to move in unison.

4,441,421
PRINT HAMMER APPARATUS

Hossein Khorsand, 33042 Commodore Ct., San Juan Capistrano, Calif. 92675

Filed Sep. 22, 1982, Ser. No. 421,236

Int. Cl.³ B41J *3/00*

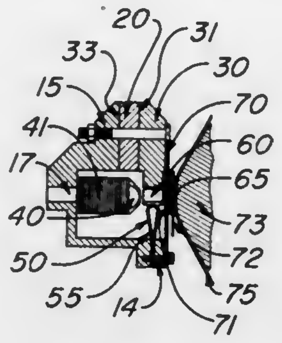
U.S. Cl. 101—93.04 **10 Claims**

1. Print hammer apparatus comprising:

a permanent magnet;

a first pole piece and a second pole piece in magnetic contact with opposing poles of said permanent magnet, one and only one of said pole pieces defining a slot for receiving a hammer head and effectively encompassing the hammer head for focusing magnetic flux onto said hammer head;

a hammer including a flexible mounting element having a fixed end and a free end, the free end provided with a magnetic hammer head and a stylus, said hammer head receivable within said slot of said pole piece, said slot consisting of a recess in said pole piece having the same general cross sectional shape as the cross sectional shape of said hammer head, and of a size so as to provide a minute air gap between said slot and said hammer head, each hammer normally being held in a retracted flexed position; and



an electromagnet, which when activated is operable to provide a magnetic flux of sufficient magnitude to cancel the magnetic flux of said permanent magnet to release the hammer head from its retracted position for printing.

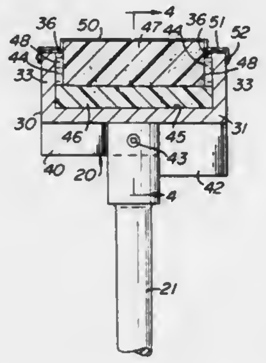
4,441,422
CAPILLARY STENCIL PRINTER WITH IMPROVED REPLENISHMENT OF THE PRINTING PAD AND RE-INKING OF THE RESERVOIR

Lionel Dreeben, 525 White Horse Pike, Atco, N.J. 08004

Filed Jan. 8, 1982, Ser. No. 337,976

Int. Cl.³ B41L *27/26*

U.S. Cl. 101—125 **3 Claims**



1. A stencil printer for printing the underside of a web, said printer comprising a receptacle mounted for vertical reciprocation beneath the web, said receptacle having an opening facing upwardly toward the web, two opposite sides of said opening having spacer elements projecting into said opening a reservoir pad consisting of glass beads in a lower interior region of said receptacle adaped to rapidly absorb a large quantity of ink, an ink absorbing capillary printing pad in an upper region of said receptacle between said spacer elements and in contacting fluid communication with said reservoir body and adapted to slowly absorb ink from the latter, gravitational ink replenishing means in said receptacle communicating downwardly between said spacer elements, said printing pad and the sides of said opening from exteriorly of and over said receptacle into said receptacle to said reservoir body for gravitationally replenishing ink to the reservoir body, and stencil holding means for holding a stencil on the upper surface of said printing pad to print through said stencil, said stencil holding means, when in place, closing said gravitational ink replenishing means.

4,441,423
COLLECT-PRINTING UNIT FOR SECURITY PRINTING FOR USE IN A ROTARY PRINTING PRESS

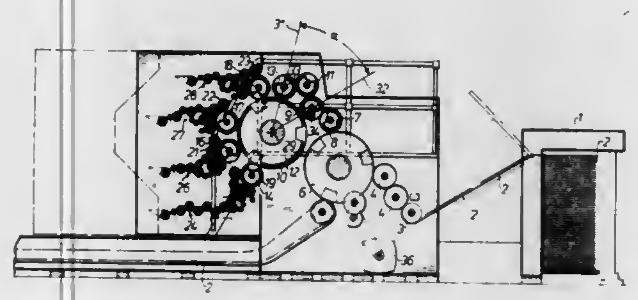
Albrecht J. Germann, Wurzburg, Fed. Rep. of Germany, assignor to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

Filed Mar. 8, 1982, Ser. No. 355,392

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1981, 3109964

Int. Cl.³ B41F *5/16*

U.S. Cl. 101—175 **12 Claims**



1. A collect-printing unit for the indirect security printing in dry-offset of a complete multi-color ink coating for use in printing on supports such as sheets and webs in a rotary printing press, said collect-printing unit comprising:

a plate cylinder having at least one letterpress printing plate affixed to the periphery of said plate cylinder;

a first blanket cylinder contacting said plate cylinder;

a second blanket cylinder contacting said plate cylinder and having a plurality of ink receiving blankets affixed to the periphery of said second blanket cylinder;

a plurality of sectorially cut-out rollers, each of said cut-out rollers having at least one hard cut-out ink contour plate affixed thereto, each of said ink contour plates, receiving one color of said multi-color ink coating, each of said cut-out rollers further having an inking unit coordinated thereto to supply said one color of said multi-color ink coating to said at least one ink contour plate affixed thereto, each of said plurality of cut-out rollers being in contact with each of said ink receiving blankets on said second blanket cylinder to impart said complete multi-color ink coating to each of said ink receiving blankets on said second blanket cylinder;

a first ink transfer cylinder contacting said plate cylinder, and a second ink transfer cylinder contacting both said first ink transfer cylinder and said second blanket cylinder, said plate cylinder receiving a double inking formed as a combination of partial ones of said complete multi-color ink coatings that are imparted to successive ones of said ink receiving blankets on said second blanket cylinder, said partial coatings being transferred in registry to said plate cylinder from both said first ink transfer cylinder and said second blanket cylinder, said plate cylinder transferring said complete multi-color ink coating to said first blanket cylinder; and

a counter-pressure cylinder cooperating with said first blanket cylinder so that the support to be printed is printed by being interposed between said first blanket cylinder and said counter-pressure cylinder.

4,441,424
CONTROL SYSTEM FOR CONTROLLING REGULATING MEMBERS OF PRINTING MACHINES

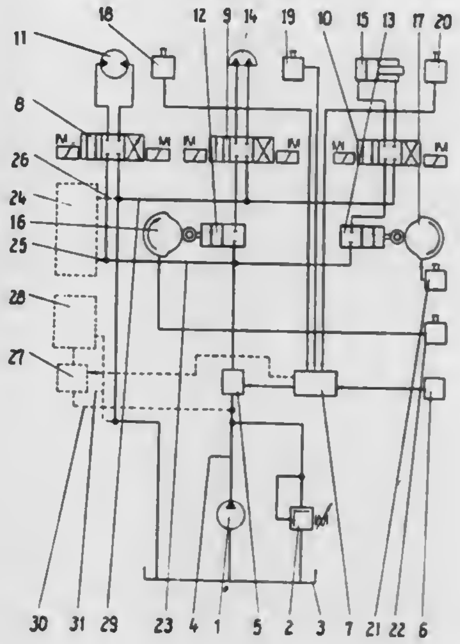
Johannes Naumann; Wolfgang Pohl, both of Coswig, and Karl-Heinz Förster, Dresden, all of German Democratic Rep., assignors to Veb Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, German Democratic Rep.

Continuation-in-part of Ser. No. 405,097, Aug. 4, 1982. This application Sep. 27, 1982, Ser. No. 424,983

Claims priority, application German Democratic Rep., Aug. 4, 1981, 232359

Int. Cl.³ B41F *13/24*

U.S. Cl. 101—248 **7 Claims**



1. A control system for a printing machine having a main shaft with a constant ratio of its rotary speed to a drive speed of the printing macnine, comprising

a plurality of translatorily, continuously rotatably and discontinuously rotatably movable regulating members controllable by a main shaft of the machine; and

a single supply system operating by hydraulic energy and associated with said regulating members, said supply system including a fixed displacement pump, an oil supply conduit connecting said fixed displacement pump with said regulating members, an electrically actuated flow regulating valve acting upon an oil stream, and a single transmitter with a signal processor arranged so that said flow regulating valve is connected with the main shaft via said signal processor.

4,441,425
PRINTING APPARATUS

Orville C. Huggins, Dayton, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

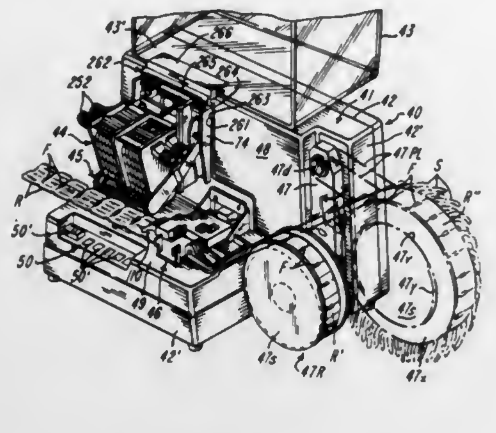
Filed Feb. 17, 1982, Ser. No. 349,498

Int. Cl.³ B41F *1/08*

U.S. Cl. 101—292 **16 Claims**

1. Printing apparatus, comprising: a platen, a print head cooperable with the platen, means for slidably mounting the print head, means for mounting a supply roll of record material, a feed finger engageable with the record material for feeding the record material to a printing position between the print head and the platen, a slide for slidably mounting the feed finger, a single rotatably mounted cam having a single cam follower path, means driven by the cam for moving the print head into and out of printing cooperation with the platen, the print head moving means including a first cam follower and a first lever connecting the first cam follower and the print head, means driven by the cam for moving the feed finger, the feed finger moving means including a second cam follower and a second lever connecting the second cam follower and the slide, the first cam follower being in the cam follower path at a first

location, the second cam follower being in the cam follower path at a second location spaced from the first location, and



means for rotating the cam to sequentially operate the print head and the feed finger during each revolution of the cam.

4,441,426
PRINTING APPARATUS

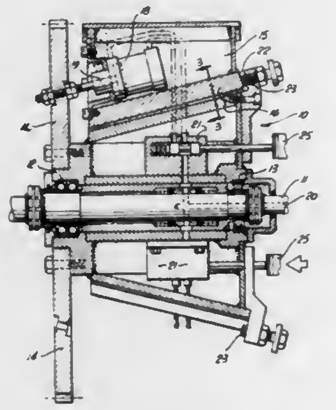
Dusan S. Lajovic, Cnr. Victoria & O'Connell Sts., Smithfield 2164, Australia

Continuation of Ser. No. 139,265, Apr. 11, 1980, abandoned. This application Mar. 10, 1982, Ser. No. 356,301

Claims priority, application Australia, Apr. 17, 1979, PD8427

Int. Cl.³ B41F *13/08*

U.S. Cl. 101—376 **4 Claims**



1. Printing apparatus comprising:

a rotatably mounted hub having an outer periphery and a central portion, a plurality of printing blankets carried on said hub; each said blanket being mounted for separately controllable movement between an inoperative position radially inward of the outer periphery and an operative printing position at the outer periphery of said hub which is radially outward and axially offset from said inoperative position;

means for holding and moving said blankets inwardly and outwardly along a path of travel on said hub comprising a carriage for each blanket mounted within said hub at circumferentially spaced positions, a slide for each carriage extending diagonally radially and axially outwardly from the central portion of the hub toward the outer periphery thereof;

means to bias said carriages outwardly and actuate said carriages inwardly along their respective paths of travel comprising a separate fluid operated cylinder and ram assembly for each blanket carriage, a separate control valve and valve actuating means for each cylinder and a stop means on said paths to limit the travel of the carriages, defining said operative printing position;

said fluid operated cylinder assemblies each having a cylinder connected to said carriage and a ram directly connected to a drive gear extending radially outwardly from said hub.

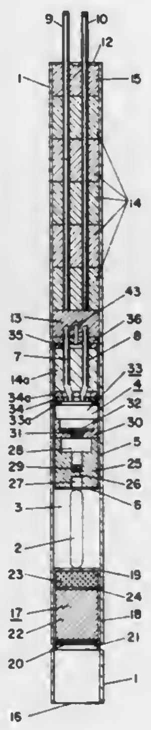
4,441,427
LIQUID DESENSITIZED, ELECTRICALLY ACTIVATED DETONATOR ASSEMBLY RESISTANT TO ACTUATION BY RADIO-FREQUENCY AND ELECTROSTATIC ENERGIES

Joseph A. F. Barrett, Collegeville, Pa., assignor to ICI Americas Inc., Wilmington, Del.

Filed Mar. 1, 1982, Ser. No. 353,321

Int. Cl.³ F42B *3/18*

U.S. Cl. 102—202.6 **6 Claims**



1. An electrically activated detonator assembly for use in perforation guns which fails to detonate when immersed in liquids which comprises an elongated cylindrical outer sleeve having centrally located therein a hermetically sealed donor explosive initiator means held within a first container to propel a sheared plate in its original planar configuration through said first container longitudinally within the bore of said sleeve to strike an acceptor explosive hermetically sealed within a second container fixed at a point within said sleeve and separated from said initiator means by an open space, said outer sleeve having at least two opposing elongated vent openings located adjacent said open space having a length and a width wherein said length is at least equivalent to the distance separating said first container from said second container to provide a continuous opening in the outer sleeve between said containers, the width of said vent openings being sufficient to admit passage of liquid into and completely fill said open space when fully immersed in liquid, whereby when said assembly is electrically activated and said open space is filled with liquid neither the force of the plate striking said acceptor explosive nor the shock wave created therein is sufficient to detonate said acceptor explosive.

4,441,428
CONICAL SHAPED CHARGE LINER OF DEPLETED URANIUM

Thomas A. Wilson, 1117 N. Luna Cir., Santa Fe, N. Mex. 87501

Filed Jan. 11, 1982, Ser. No. 338,284

Int. Cl.³ F42B *1/02*

U.S. Cl. 102—307 **1 Claim**

1. A shaped charge Blasting Device comprising a cylindrical charge of detonating explosive, a cavity disposed in one end of said charge, said cavity being in the shape of a cone, and a metal liner disposed in said cavity, said liner comprising depleted uranium.

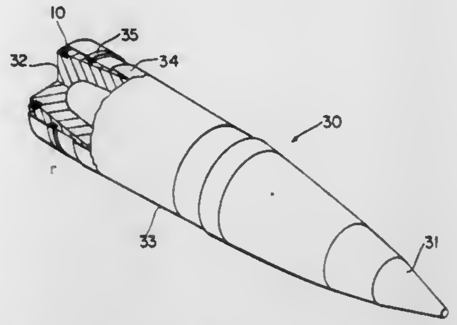
4,441,429
RETAINER FOR A PROJECTILE ROTATING BAND

Abner B. Price, King George, and William S. Burnley, III, Dahlgren, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 23, 1981, Ser. No. 333,607

Int. Cl.³ F42B *31/00*

U.S. Cl. 102—526 **11 Claims**



1. A retainer for securing a rotating band to a projectile comprising:

a first expandible split ring developing a hoop stress;

a second expandible split ring positioned inside of said first ring, said rings having limited relative movement therebetween from an orientation whereat the respective splits are positioned to allow simultaneous expansion of said rings over the projectile to be received in a groove thereon to an orientation whereat the splits are spaced apart when in the groove for applying the hoop stress developed by said first ring to oppose expansion of said second ring, said rings thereby defining a continuous single ring in the groove; and,

means associated with said rings for preventing the relative movement therebetween when the splits are spaced apart.

4,441,430
AERIAL MONOCABLE TRANSPORT INSTALLATION

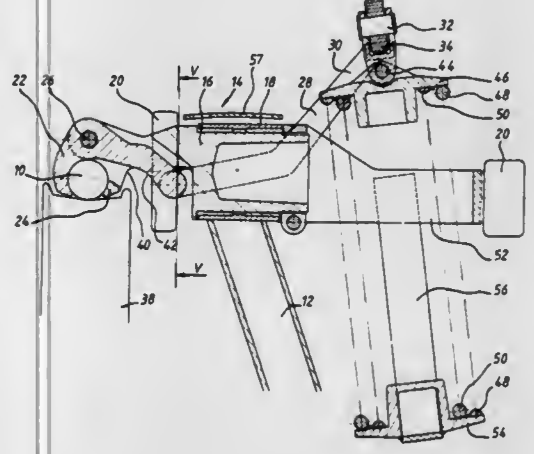
Max Brochand, Noyarey, France, assignor to Pomagalski S.A., Fontaine, France

Filed Dec. 24, 1981, Ser. No. 334,078

Claims priority, application France, Jan. 9, 1981, 81 00432

Int. Cl.³ B61B *12/12*

U.S. Cl. 104—209 **1 Claim**



1. An aerial monocable transport installation having a continuously operating cable, a horizontal wheel situated in the terminal station and guiding the cable around, a loading platform situated in the station along the travel path of the cable and detachable grips for clamping chairs or gondolas to the cable, each grip comprising:

an inner fixed jaw and an outer movable jaw the outer movable jaw engaging with said horizontal wheel when the grip travels around said wheel,

a spring urging the movable jaw towards the fixed jaw in a cable clamping position,

a grip body positioned when the grip is coupled on to the cable substantially horizontal and lateral on one side of the cable,

support wheels for supporting the uncoupled grip at said loading platform,

a hanger bar pivotally mounted on said grip body for supporting the chair or gondola,

and a control mechanism including an operating shank having one end rigidly secured to the movable jaw, said shank extending substantially parallel to the grip body and carrying control means on its opposite end, said jaws when closed being substantially flush with the bottom surface of said cable and forming only limited projections on the top and on the side opposite to the grip body of said cable, said spring being disposed laterally substantially parallel to the hanger bar and acting on said opposite end of the operating shank for producing sufficient clamping force and for allowing substantial opening of the jaws, said spring being a freely disposed coil spring extending through an opening provided in the grip body at a point located between the hanger bar pivot and a support wheel secured to the end of the grip body opposite to the jaws, said coil spring being inserted between the end of the operating shank and a support bracket rigidly secured to the grip body.

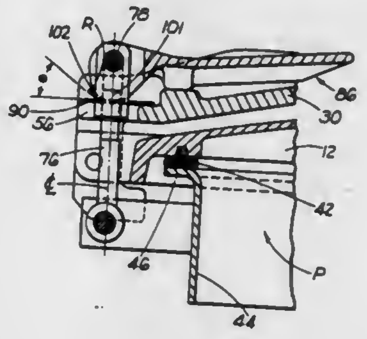
4,441,431
RAILWAY HATCH COVER AND STRAP SAFETY TAB LATCHING ASSEMBLY

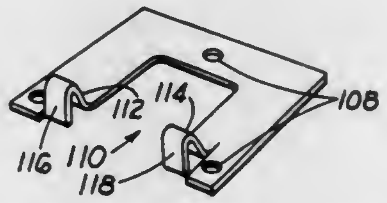
John L. Carney, Jr., St. Louis, and Richard L. Gilbert, Foley, both of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Jul. 23, 1981, Ser. No. 286,234

Int. Cl.³ B61D *17/12, 39/00;* **B65D** *45/08*

U.S. Cl. 105—377 **6 Claims**





1. In a hatch cover and strap assembly including a strap and hatch cover pivotably mounted upon a railway car roof in which the strap engages the cover at least at the midportion of the cover and at the distal end of the strap, an overcenter latch assembly pivotably mounted upon the car roof at a location opposite the strap pivot axis; said hatch assembly including an overcenter locking member which has at least one cam surface which in closed position engages a wear surface located on the strap, the improvement comprising: tab means formed in a removable wear plate located on said strap and preventing said handle from disengaging from said strap until pressure within said car has been relieved; wherein said tab means comprises at least one tab located adjacent, but outboard of, the cam surface on the operating handle; said tab making a sufficient angle with the horizontal and extending upwardly and outwardly from the cam surface a distance sufficient to prevent the cam portion

of the operating handle from moving longitudinally and disengaging from the strap until pressure within the car is dissipated, whereby the strap and cover are prevented from flying open; the outer end portion of said tab means being supported by a tab support extending vertically upwardly from a support surface below the end of the tab.

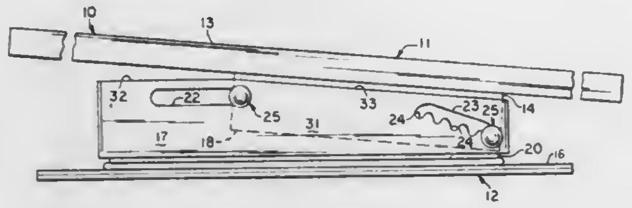
4,441,432
TILTING TABLE

Charles D. Carlton, Conway, Ark., assignor to Tiffany Industries, Inc., St. Louis, Mo.

Filed May 1, 1981, Ser. No. 259,552

Int. Cl.³ A47F *5/12*

U.S. Cl. 108—5 **10 Claims**



1. A tilting table comprising:

(a) table top means,

(b) base support means for supporting the table top means,

(c) one of said means including a pair of opposed side substantially horizontal slots,

(d) one of said means including a pair of opposed side angle slots,

(e) opposed side pin means carried by the others of said means, and engaging in bearing relation the first said one means in the substantially horizontal slots and engaging in bearing relation the second said one means in the angle slots for interconnecting the table top means and for supporting the table top means,

(f) the angle slots including lower margins having a plurality of spaced notches, and

(g) said opposed side pin means including pins selectively engaging the lower margin notches for retaining the table top means in a pre-selected tilted position.

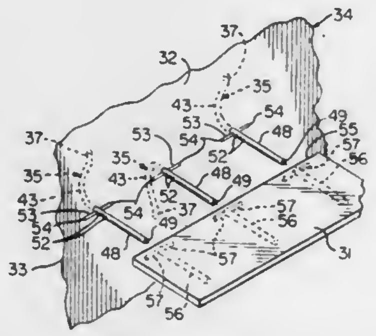
4,441,433
SHELF MOUNTING SYSTEM, PARTS THEREFOR AND METHOD OF MAKING THE SAME

Edward N. Caldwell, Knoxville, Tenn., assignor to Dalen Products, Inc., Knoxville, Tenn.

Division of Ser. No. 94,163, Nov. 14, 1979, Pat. No. 4,319,531. This application Sep. 14, 1981, Ser. No. 301,736

Int. Cl.³ A47F *5/08*

U.S. Cl. 108—152 **2 Claims**



1. In a mounting system wherein an object is mounted to one side of a wall means by at least one rigid hanger interconnected by one portion thereof to said object and having an installing portion thereof disposed in an opening of said wall means and bearing against the other side of said wall means, the improvement wherein said hanger comprises a one-piece rod-like member of a generally uniform cross-sectional configuration throughout its length and having a straight section and a curved section integrally interconnected thereto so as to define a generally J-shape, said straight section thereof being disposed in said opening and projecting generally horizontally from said one side of said wall means to define said one portion thereof and support at least part of said object thereon, said curved section being disposed adjacent said other side of said wall means in spaced relation thereto, said curved section having a substantially straight free end portion thereof disposed generally perpendicular to said straight section and engaging against said other side of said wall means in a load bearing manner, said installing portion of said hanger thereby comprising said curved section and the part of said straight section that is disposed in said opening, said opening being generally of the same cross-sectional size as said cross-sectional configuration of said hanger, said hanger having means carried thereby and bearing against said one side of said wall means adjacent said opening to tend to hold said straight section generally horizontally relative to said one side of said wall means, said object having an end surface for abutting said one side of said wall means, said end surface being interrupted by an opening means that receives said projecting straight section of said hanger therein to be supported thereby, said end surface being interrupted by recess means adjacent said opening means to receive said means of said hanger that bears against said one side of said wall means, said means of said hanger that bears against said one side of said wall comprising a pin disposed generally transverse to said straight section of said hanger, said object comprising a shelf that is disposed generally transverse to said one side of said wall means and generally horizontal, at least three said hangers being interconnected to said shelf, said wall means having three said openings passing therethrough and respectively having said straight sections of said hangers disposed therein, one of said hangers having said curved section extending generally vertically downwardly from its respective opening in said wall means to tend to resist upward pivoting movement of said shelf, the other of said hangers respectively having said curved sections extending generally vertically upwardly from their respective openings in said wall means to tend to resist downward pivoting movement of said shelf.

4,441,434
APPARATUS FOR DISPENSING PARTICULATE MATTER

Henry R. Howard, Rte. 1, Box 203, Lancaster, S.C. 29720

Filed Oct. 26, 1981, Ser. No. 314,822

Int. Cl.³ F23K *3/00*

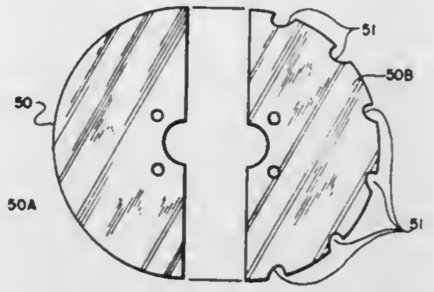
U.S. Cl. 110—101 R **8 Claims**

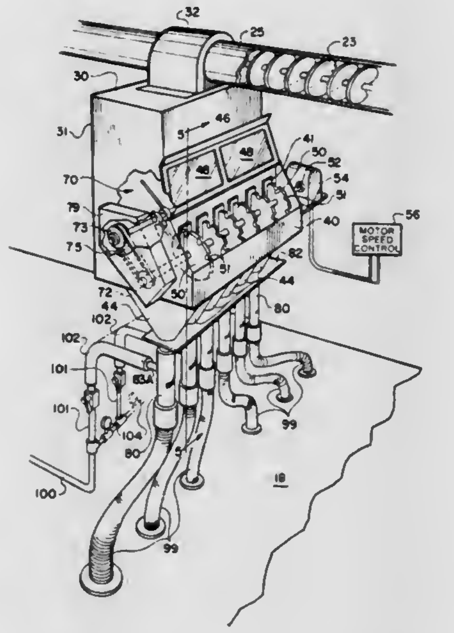
1. An apparatus for dispensing and injecting solid fuel in particulate form into a combustion chamber in measured quantities and at variable rates and intermittencies, and comprising:

(a) a fuel supply source;

(b) at least one circular disk for being mounted for rotation at a uniform and continuous speed and in particulate matter receiving relation to the fuel supply source the circumferential perpiphery of said disk defining first and second arcs; the circumferential periphery of said disk defining said first arc having a plurality of spaced-apart pockets therein for receiving and dispensing particulate matter from the supply source during the interval or rotation of said arc in particulate matter receiving relation to the fuel supply source, and said second arc having a continuous, uninterrupted circumferential periphery greater than any one of the spaces between the spaced-apart pockets of said first arc for passing in particulate matter receiving relation to the fuel supply source without receiving or dispensing particulate matter therefrom, whereby fuel is received and dispensed from said supply source at rates and intermittencies corresponding to the speed of rotation of said circular disk and the volumetric capacity and spacing of the pockets around the circumferential periphery of said first arc in relation to the continuous uninterrupted circumferential periphery defined by said second arc;

(c) each said disk defining at least two mateable disk segments having complementary, non-circumferential sides, at least one of said segments having a plurality of pockets therein at spaced-apart interval around its circumferential periphery;





(d) means for rotating said at least one circular disk; and,

(e) means for dispersing said fuel after being dispensed by said at least one circular disk in a stream of air and injecting said fuel into a combustion chamber.

4,441,435
FLUIDIZING GAS CONTROL SYSTEM IN FLUIDIZED-BED INCINERATOR

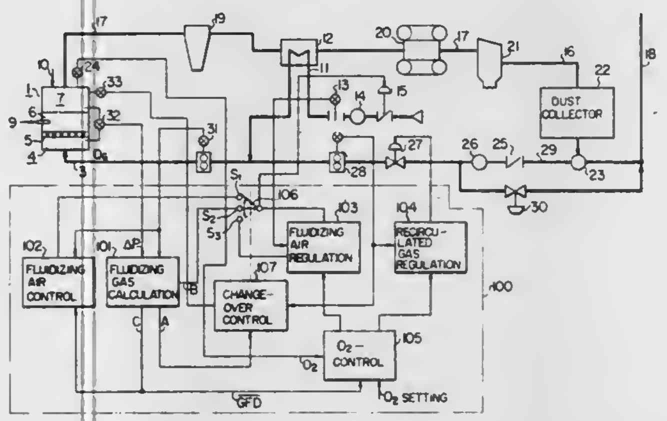
Akira Miyamoto, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 19, 1982, Ser. No. 435,275

Claims priority, application Japan, Oct. 21, 1981, 56-167129; May 14, 1982, 57-79870

Int. Cl.³ F23G *5/00*

U.S. Cl. 110—245 **7 Claims**



1. A fluidizing gas control apparatus for a fluidized-bed incinerator comprising:

a fluidized-bed incinerator igniting an object to be incinerated under formation of a fluidized-bed of a fluid-forming medium;

fluidizing air supplying means for supplying fluidizing air furnishing oxygen required for combustion and assisting in the formation of said fluidized bed by the fluid-forming medium in said fluidized-bed incinerator;

gas recirculating means for recirculating a portion of exhaust gases discharged from said fluidized-bed incinerator;

first means for determining the optimum value of the flow rate of fluidizing gas on the basis of a variation of the pressure loss of the fluidizing air flowing across said bed formed by the fluid-forming medium, while progressively increasing the flow rate of the fluidizing air supplied by said fluidizing air supplying means to said fluidized-bed incinerator in the combustion starting stage of said fluidized-bed incinerator; and

second means for controlling said fluidizing air supplying means and said gas recirculating means so that the sum of the flow rate of the fluidizing air supplied by said fluidizing air supplying means and the flow rate of the recirculated gases recirculated by said gas recirculating means attains said optimum value of the fluidizing gas flow rate.

5. A fluidizing gas control apparatus for a fluidized-bed incinerator comprising:

a fluidized-bed incinerator igniting an object to be incinerated under formation of a fluidized bed of a fluid-forming medium;

fluidizing air supplying means for supplying fluidizing air furnishing oxygen required for combustion and assisting in the formation of said fluidized bed by the fluid-forming medium in said fluidized-bed incinerator;

gas recirculating means for recirculating a portion of exhaust gases discharged from said fluidized-bed incinerator;

means for determining the optimum value of the flow rate of fluidizing gas on the basis of a variation of the pressure loss of the fluidizing air flowing across said bed formed by the fluid-forming medium, while progressively increasing the flow rate of the fluidizing air supplied by said fluidizing air supplying means to said fluidized-bed incinerator in the combustion starting stage of said fluidized-bed incinerator in which the object to be incinerated is not still charged into said incinerator and said gas recirculating means is not placed in operation;

first means for controlling said fluidizing air supplying means so that the flow rate of the fluidizing air attains said optimum value of the fluidizing gas flow rate;

second means for controlling said fluidizing air supplying means and said gas recirculating means so that the sum of the flow rate of the fluidizing air and the flow rate of the recirculated gases attains said optimum value of the fluidizing gas flow rate; and

change-over means for enabling said second means and disenabling said first means under the normal operating condition of said apparatus, while, on the other hand, disenabling said second means and enabling said first means in the event that said gas recirculating means is disabled.

4,441,436
SOLID FUEL BURNING METHODS AND APPARATUS

Nobuhiko Hayashi, Shozuoka, Japan, assignor to Takumi Noma, Orangevale, Calif.

Filed Oct. 27, 1982, Ser. No. 437,090

Int. Cl.³ F23B *7/00*

U.S. Cl. 110—315 **15 Claims**

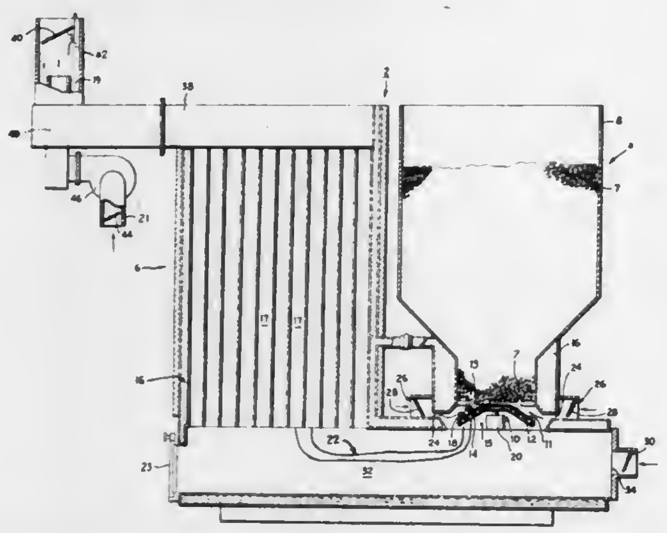
1. In a method of burning fuel from a supply of solid fuel positioned at one side of a grating, the improvement comprising in combination the steps of:

providing said grating as a primary grating;

increasing attainable temperature of said primary grating by providing a secondary grating spaced from said primary grating and located between said primary grating and a fire chamber;

lighting a layer of said solid fuel at said primary grating to discharge combustible gas;
drawing said gas downwardly through said primary and secondary gratings to said fire chamber; and
burning said drawn gas in said fire chamber.

8. In apparatus for burning fuel from a supply of solid fuel positioned at one side of a grating, the improvement comprising in combination:
a primary grating serving as said grating;



means for increasing attainable temperature of said primary grating, including a secondary grating spaced from said primary grating and located between said primary grating and a fire chamber;
means for lighting a layer of said solid fuel at said primary grating to discharge combustible gas; and
means for drawing said gas downwardly through said primary and secondary gratings to said fire chamber for combustion in said fire chamber.

4,441,437
PROCESS FOR THERMIC TREATMENT OF SLUDGES, PARTICULARLY TREATMENT OF CLARIFICATION SLUDGES

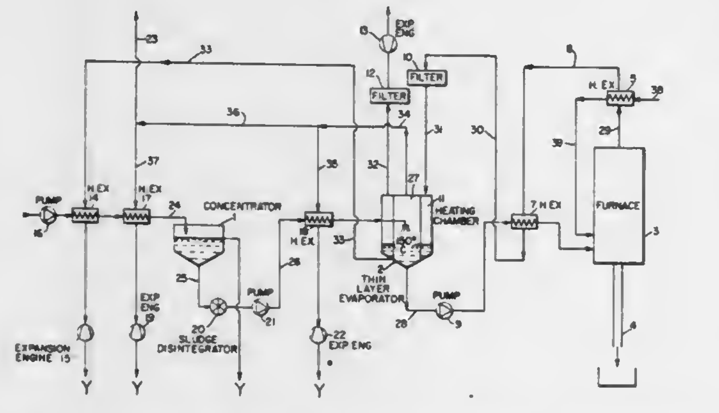
Gerhard Moskau, Saarbruecken-Dudweiler, Fed. Rep. of Germany, assignor to Saarberg-Fernwarme GmbH, Saarbrucken, Fed. Rep. of Germany

Continuation of Ser. No. 173,257, Jul. 29, 1980, abandoned, which is a continuation of Ser. No. 965,303, Dec. 1, 1978, abandoned. This application Oct. 23, 1981, Ser. No. 314,331

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1977, 2753537

Int. Cl.^{3} F23C *5/00;* **F23G** *7/00*

U.S. Cl. 110—346 **2 Claims**



1. An energy efficient process for thermic treatment of aqueous clarification sludge which contains oxidizable matter comprising pumping the sludge, flowing the sludge through a first heat exchanger and heating the sludge, flowing the sludge through a second heat exchanger and further heating the sludge, flowing the further heated sludge into a concentrator, settling concentrated sludge in the concentrator, removing heated water and dissolved materials from the concentrator, withdrawing concentrated sludge from the concentrator, disintegrating the concentrated sludge with a sludge disintegrator, pumping the disintegrated concentrated sludge to a higher pressure, heating the concentrated disintegrated sludge in a third heat exchanger, spraying the heated and pressurized concentrated and disintegrated sludge into a first heating chamber of a thin layer evaporator and evaporating the heated and pressurized disintegrated concentrated sludge in the first heating chamber of the thin layer evaporator, withdrawing a second portion of the sludge in the form of heated and pressurized steam from the first heating chamber of the thin layer evaporator, withdrawing a remainder of the evaporated heated pressurized concentrated and disintegrated sludge from the thin layer evaporator and increasing pressure of the remainder of the sludge with a third pump, heating the remainder of the sludge under increased pressure in a fourth heat exchanger and feeding the heated increased pressure sludge remainder to a furnace, introducing oxygen through a fifth heat exchanger, heating the oxygen and introducing the heated oxygen from the fifth heat exchanger to the furnace, removing ash from the furnace, and withdrawing a third steam and gas mixture from the furnace, passing the steam and gas mixture from the furnace through the fifth heat exchanger and heating the incoming oxygen, passing the steam and gas mixture from the fifth heat exchanger to the fourth heat exchanger and heating the pressurized sludge remainder on its way into the furnace, passing the steam and gas mixture through a filter and removing ashes, dust and sand, passing the filtered steam and gas mixture from the filter into a second heat chamber of the thin layer evaporator and heating the heated pressurized disintegrated concentrated sludge in the first chamber of the thin layer evaporator, removing gas from the second heat chamber of the thin layer evaporator, separately removing condensed steam from the second chamber of the thin layer evaporator, flowing the condensed steam through the first heat exchanger to heat the incoming aqueous sludge, flowing the steam withdrawn from the sludge in the first chamber of the thin layer evaporator through the second heat exchanger and further heating the incoming sludge, flowing the steam generated from the sludge in the first chamber of the thin layer evaporator through the third heat exchanger and heating the pressurized concentrated and disintegrated sludge.

4,441,438
APPARATUS FOR MANUFACTURING A CONTINUOUS SLIDE FASTENER STRINGER CHAIN WITH ELEMENT-FREE SPACE PORTIONS

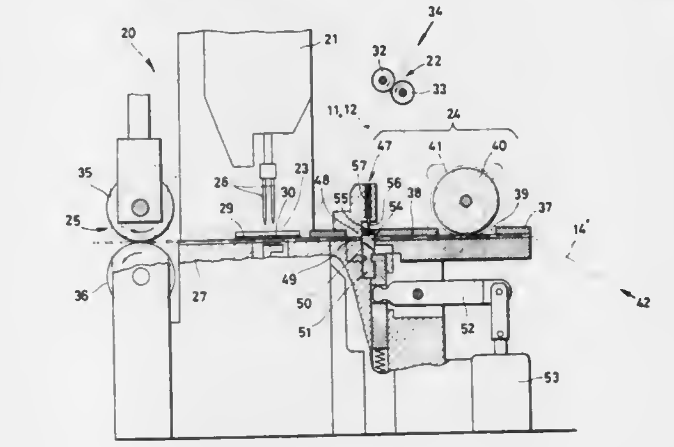
Kihei Takahashi, Uozu, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Jun. 23, 1982, Ser. No. 391,003

Claims priority, application Japan, Jun. 24, 1981, 56-93320[U]

Int. Cl.^{3} D05C *3/12*

U.S. Cl. 112—104 **5 Claims**



1. An apparatus for manufacturing a continuous slide fastener stringer chain including space portions devoid of coupling elements at longitudinal intervals, the apparatus comprising:
- (a) a sewing machine continuously drivable to sew a pair of interengaged rows of continuous coupling elements to a pair of continuous slide fastener stringer tapes along inner longitudinal edges, respectively;
- (b) means for continuously feeding said pair of continuous slide fastener stringer tapes, in synchronism with said sewing machine, to a sewing area of said sewing machine along a first longitudinal path;
- (c) a stationary guide member having a longitudinal guide channel for the passage therethrough of said pair of interengaged rows of coupling elements;
- (d) a wheel having on its periphery means projecting into said guide channel for engaging and feeding said pair of interengaged rows of coupling elements, said wheel being rotatable to intermittently feed said pair of interengaged rows of coupling elements, in synchronism with said sewing machine, to said sewing area along a second longitudinal path; and
- (e) a cutter assembly disposed between said sewing area and said wheel for cutting off a length of coupling elements then being sewn from said pair of rows of coupling elements each time the latter stops moving.

4,441,439
STITCH FUNCTION SWITCHING SYSTEM FOR SEWING MACHINES

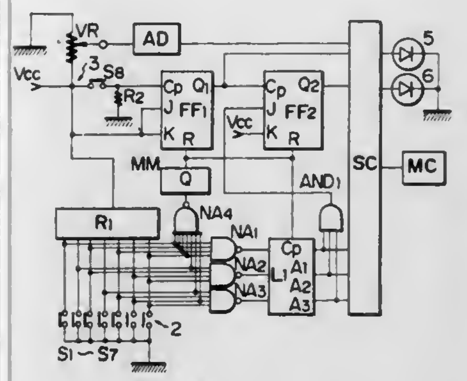
Susumu Hanyu, and Hideaki Takenoya, both of Tokyo, Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed Jun. 19, 1981, Ser. No. 275,236

Claims priority, application Japan, Jun. 27, 1980, 55-89370

Int. Cl.^{3} D05B *3/02*

U.S. Cl. 112—158 E **6 Claims**



1. A stitch function switching system for a new sewing machine having a housing, a drive shaft rotatably mounted on the housing to vertically reciprocate a laterally swingable needle relative to a fabric to be sewn, a fabric feeding device operated to feed a fabric relative to the needle, a machine drive motor driven to rotate the drive shaft, an operator-controlled switch (MC) operated to normally control the rotation speed of the machine drive motor, said stitch function switching system comprising a plurality of pattern selecting switches selectively operated to select a plurality of different stitch patterns; stitch control means (SC) including an electronic memory storing stitch control data which are made effective with a selective operation of the pattern selecting switches to control the lateral swinging amplitude of the needle and the fabric feed pitch of the fabric feeding device, in dependence upon a selected pattern, said stitch control means being electrically connected to the operator-controlled switch (MC); manually operated means including a knob (3) which is rotationally operated to adjust the lateral swinging amplitude of the needle and is axially operated to change the function of the sewing machine; function switching means (S_8, FF_1, FF_2) operated in association with the axial operation of the knob (3) to produce a code signal for making effective the operation of the operator-controlled switch (MC) to control the lateral swinging amplitude of the needle.

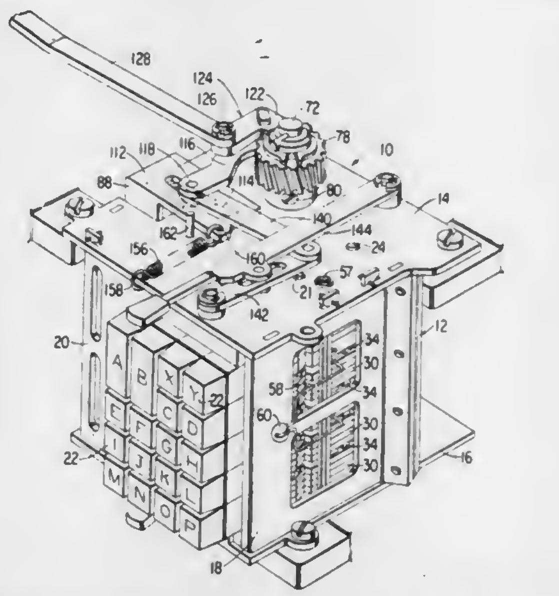
4,441,440
PUSH-BUTTON CONTROL MODULE FOR A SEWING MACHINE

William Weisz, Tenafly, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Dec. 14, 1982, Ser. No. 449,721

Int. Cl.^{3} D05B *3/02, 3/04*

U.S. Cl. 112—158 C **6 Claims**



1. A control module for a sewing machine, the said module including a structural frame, multiple rows of push-buttons slidably mounted for linear motion in the frame and including rear portions extending into a single row perpendicular to the linear direction of movement of the push-buttons, a plurality of stitch controlling cams mounted for rotation in said frame, a cam follower for each such cam slidably movable in the frame into engagement with its associated cam by the rear portion of a push-button in said row and movable in the frame by the engaged cam, and stitch controlling means operable by the cam followers, the stitch controlling means including a needle bight controlling plate and a feed controlling wobble plate mounted on the frame for pivotal movement about a common axis, the needle bight controlling wobble plate being engageable by certain of the cam followers and the feed controlling plate being engageable by other cam followers.

4,441,441
NEEDLE BAR DRIVE IN SEWING MACHINES

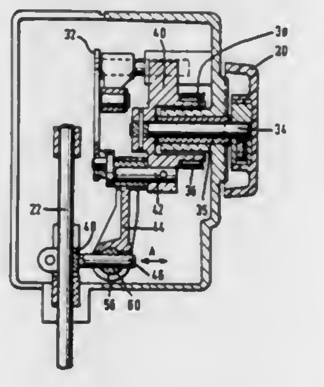
Nereo Bianchi, Pavia, Italy, assignor to NECCHI, Pavia, Italy

Filed May 27, 1982, Ser. No. 382,554

Claims priority, application Italy, Jun. 10, 1981, 42912 A/81

Int. Cl.^{3} D05B *55/14*

U.S. Cl. 112—221 **1 Claim**



1. Needle bar drive in sewing machines having a front and back in which the work is fed from front to back comprising a crank provided at the end of a main shaft of the sewing machine; a needle bar block having a pin extending therefrom; a connecting rod connected at one end to the crank and at the other end to the pin of the needle bar block, said connecting rod at the other end having a fork-shaped lower portion with

a bore therethrough; a control rod provided to impart transverse movement to a needle bar relative to the work feed direction; and a connection between the needle bar and the connecting rod, said connection being a roller shaped bush rotatably mounted in the bore in the fork shaped lower portion of the connecting rod, said bush having a bore therethrough with its axis perpendicular to the axis of the bore through the connecting rod, said pin sliding inside the bore of said bush to connect the bush and the connecting rod.

4,441,442
SELF-OILING PORTABLE BAG-CLOSING SEWING MACHINE WITH PUMP

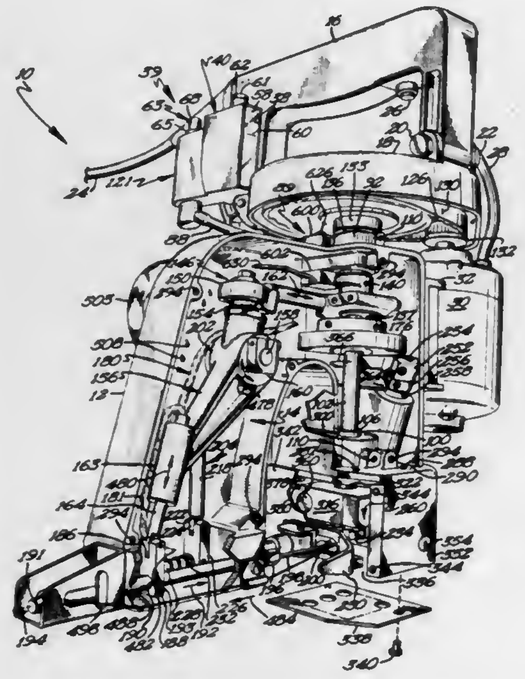
Robert J. Robinson, North Oaks; David B. Johnson, and Verdell H. Schroeder, both of Minneapolis, all of Minn., assignors to AXIA Incorporated, Oakbrook, Ill.

Filed Jun. 7, 1982, Ser. No. 385,921

The portion of the term of this patent subsequent to Sep. 14, 1999, has been disclaimed.

Int. Cl.^{3} D05B *71/00*

U.S. Cl. 112—256 11 Claims



1. A self-oiling portable bag-closing sewing machine energizable from a power source, and capable of using thread to stitch a bag closed comprising:

a housing having an internal drive train chamber and said housing including a handle for carrying the machine;

first and second main drive shaft bearings, each said bearing having a central axis, each being carried by said housing, said bearings being positioned substantially coaxially, and each said bearing having an inner and an outer periphery, and an upper and a lower end;

driving means selectively connectable to the power source, carried by said housing, and including a motor and a main drive shaft rotatably mounted in said first and second main drive shaft bearings for rotation about the longitudinal axis of said main drive shaft, and said main drive shaft extending within said drive train chamber and being drivingly connected with said motor to rotate said main drive shaft when the motor is energized;

a needle driving assembly including a needle having a longitudinal axis, said needle driving assembly being operatively movingly connected with said driving means to move said needle along said longitudinal axis of said needle in reciprocating movement in response to energizing of said driving means;

a feed dog assembly carried by said housing and operatively connected to said driving means to actuate said feed dog assembly for cooperation with said needle driving assembly in response to energizing of said driving means;

a presser foot unit carried by said housing and selectively bearing against said feed dog assembly and cooperating with said feed dog assembly to urge the bag against said feed dog assembly and thereby assist in moving the bag along a path past the needle;

a looper assembly carried by said housing and operatively connected with said driving means, said looper assembly cooperating with said reciprocating needle to form a stitch with the thread so as to cause the bag to be stitched closed as the bag moves along the path;

an oil reservoir capable of storing the oil and carried by said housing;

a selectively actuated pump having an inlet and outlet;

said inlet of said pump being connected in fluid flow relationship with said oil reservoir to receive oil from said reservoir; and

oil delivery means connected in fluid flow relationship with said outlet of said pump and to said housing to direct oil into said drive train chamber and into at least one of said main bearings to lubricate said bearing and to cause excess oil discharge from said bearing and onto said main drive shaft for dispersion of the oil by outward flinging from said driveshaft onto at least one of said assemblies during rotation of said driveshaft.

4,441,443
SEWING-MACHINE FRAME

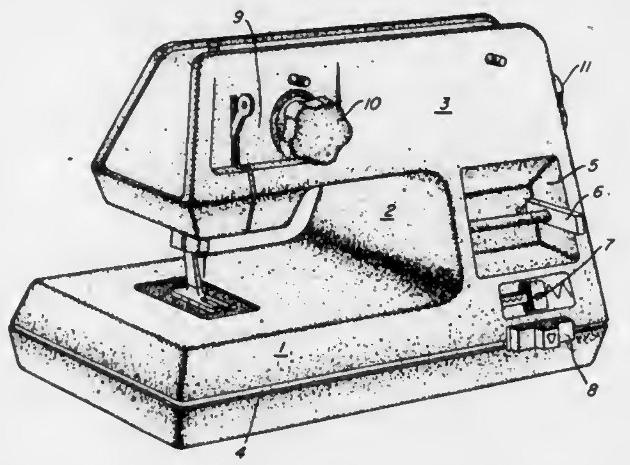
Albert Hrovatin, and Joze Brezec, both of Koper, Yugoslavia, assignors to Do-Mehanotehnika, Proizvodnja in Prodaja Igrac, Kovinskih in Plasticnih Izdelkov N.Sol.O., Izola, Yugoslavia

Filed Jun. 24, 1982, Ser. No. 391,695

Claims priority, application Yugoslavia, Dec. 25, 1981, M485/81

Int. Cl.^{3} D05B *73/00*

U.S. Cl. 112—258 1 Claim



1. Sewing-machine, characterized in that the basic form of the whole body is derived from a four-sided truncated pyramid; in that a pedestal plate has a rectangular shape, its side planes being convex so that the cross-section of the convexity is shaped as an isosceles triangle with a square cutout in the top, which appears in the plate as a channel running around it; in that a pillar is embodied as a truncated four-sided pyramid which on the front side has a prismatic hollow in which is embodied a carrier of a thread reel, the carrier being shaped as a lying letter T; in that under the hollow there is embodied a smaller prismatically shaped button, thereunder being embodied a button shaped as on oblong rectangular plate with a convexity formed in the middle of the front side, the convexity having a shape of a prism in which is embodied a hollow with an outline of an equilateral triangle turned downwards; in that an overhang beam is shaped as an oblong truncated four-sided pyramid with a smaller downwards directed truncated pyramid formed on the free end on the lower side, whereby on the front side near the free end there is embodied a shallow hollow, its outline having the form of a trapezoid with rounded off angles at its lower base-line, and whereon is arranged a first button, which has a shape of a cylinder with several coaxially running channels on the surface; in that the side planes and the upper plane of the overhang beam are concave; in that on the side plane of the overhang beam there is at the pillar arranged a second button, which has the same shape as said first button, it being, however, slightly larger; and finally characterized in that all edges and corners are rounded off.

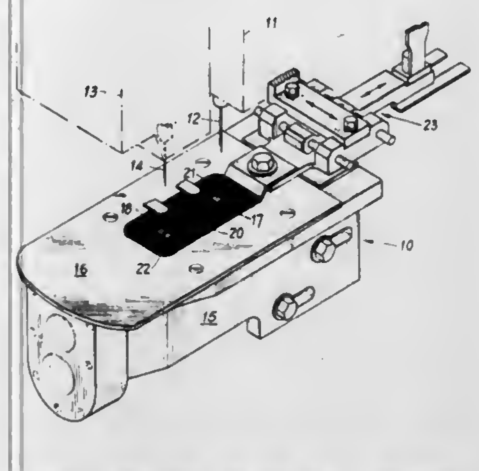
4,441,444
ANTI-FRICTION APPARATUS FOR CLOTH FEEDPLATE

Wilhelm H. Jung, Mechanicsville, Va., assignor to AMF Inc., White Plains, N.Y.

Filed Feb. 26, 1982, Ser. No. 352,819

Int. Cl.^{3} D05B *3/04*

U.S. Cl. 112—311 8 Claims



1. In a sewing machine having a throatplate with a needle hole and a feedplate disposed above said throatplate universally driven in accordance with a preprogrammed pattern and having an opening continuously exposing the needle hole, the improvement comprising an anti-friction means comprising

a plurality of openings in said throat plate in a spaced series around said needle hole;

a plurality of bearing and support means each disposed in close fitting relationship in a different one of said openings and extending outwardly therefrom engaging said feed plate from beneath to support same at a fixed distance above the throatplate and to provide a low friction connection beneath the throatplate and the feedplate;

said bearing means being of a better wear resistant material having a lower coefficient of friction than said throat and feedplates.

4,441,445
SELF-RIGHTING MULTIHULL BOAT

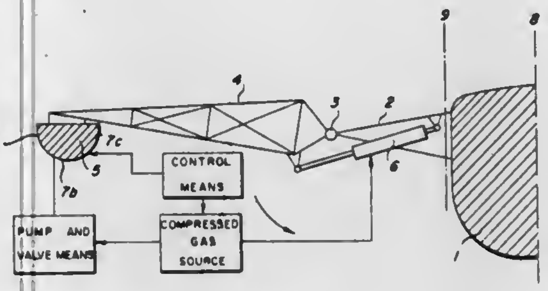
Roger De Weck, CH-1723 Villars-sur Marly, Switzerland

Filed Nov. 17, 1981, Ser. No. 322,199

Claims priority, application Switzerland, Nov. 24, 1980, 8671/80

Int. Cl.^{3} B63B *35/36*

U.S. Cl. 114—39 9 Claims



1. A multihull boat, comprising

(a) a main body portion (1) having a normal upright position relative to a body of water;

(b) at least one side hull member (5);

(c) articulation means (3) pivotally connecting said side hull member with said main body portion for pivotal movement about a horizontal pivot axis parallel with the longitudinal axis of said main body portion, said side hull member normally having a first position at water level when said main body portion is in its upright position;

(d) means (*7a, 7b, 7c*) for filling and draining said side hull member with water; and

(e) means (6) for pivoting said side hull member downwardly about said articulation pivot axis relative to said main body portion when the boat is in its normal upright position to a second position below said main body portion, thereby to create a moment for inducing rotation of said main body portion about the longitudinal axis thereof after the boat has been capsized by more than 90°.

4,441,446
IMPROVEMENTS IN WINDSURFING BOARDS

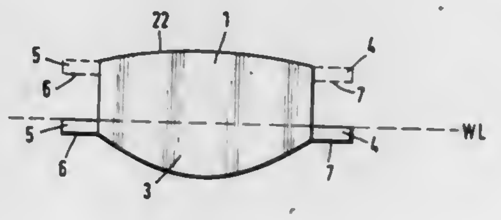
Hans Fichtner, Seeshaupt, Fed. Rep. of Germany, assignor to Mistral Windsurfing AG, Nurensdorf, Fed. Rep. of Germany

Continuation of Ser. No. 221,824, Dec. 31, 1980, abandoned. This application Nov. 15, 1982, Ser. No. 441,734

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1980, 8007676

Int. Cl.^{3} B63B *1/22*

U.S. Cl. 114—39 17 Claims



1. In a windsurfing board comprising a surfboard-like hull, means for joining a sail to the hull, fin plate means with stabilizing faces on at least two sides and the stern part of said hull, and single foot operated adjusting means for adjusting the level of said fin plate means by a person on top of the hull;

wherein said fin plate means are substantially horizontal when viewed in the direction normal to a median line of said hull and form a smooth-unbroken outline with said hull; and

wherein said adjustment means has a lever extending upwardly through a portion of said hull; said adjusting means further has two limiting end positions, an upper position for placing the fin plate means above the water line in a loaded condition and a lower position for placing the fin plate means below the water line, thereby enabling the hull shape to be changed between a displacement hull and a gliding hull.

4,441,447
REMOVABLE RUDDER ASSEMBLY

Hobart L. Alter; Lewis F. Wake, both of Capistrano Beach, and Myron G. Platten, Newport Beach, all of Calif., assignors to Coast Catamaran Corporation, Oceanside, Calif.

Filed Jul. 23, 1982, Ser. No. 401,373

Int. Cl.^{3} B63H *25/06*

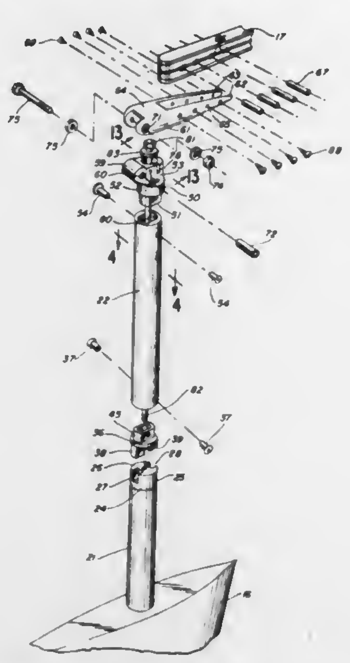
U.S. Cl. 114—167 9 Claims

1. A removable rudder assembly for a boat comprising:

a rudder,

a first rudder shaft extending upwardly from the rudder, a second rudder shaft extending upwardly from the first rudder shaft and extending coaxially with the first rudder shaft, and

means for detachably connecting the first and second rudder shafts, the connecting means including a first connecting plug on the first rudder shaft and a second connecting plug on the second rudder shaft, operably engaging the first connecting plug, and locking means on the first and

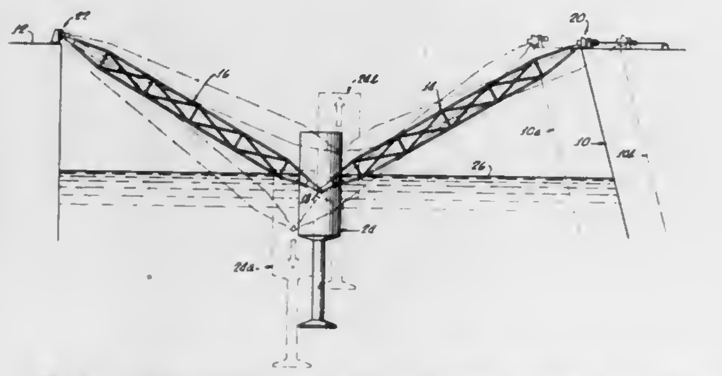


second connecting plugs for preventing relative rotation therebetween about the axis of the rudder shafts.

4,441,448

CONTROLLED MOORING

Ernest T. Hillberg, 1721 Sheffield Dr., La Habra, Calif. 90631
Filed Jul. 25, 1980, Ser. No. 172,279
Int. Cl.³ B63B *21/00*
U.S. Cl. 114—230 **25 Claims**



19. A method of towing a first vessel from a second vessel comprising

connecting a pair of pivotally interconnected compression links to and between said vessels, and

pivotally connecting a partly submerged buoy to said links between said vessels so as to cause said buoy to increase its submergence when said vessels approach one another and to cause said buoy to decrease its submergence when the distance between said vessels increases.

4,441,449

PORT RAMP FOR ACCESS TO A ROLL-ON ROLL-OFF SHIP

Jacques Biaggi, Sevres, France, assignor to MacGregor International, S.A., Basel, Switzerland
Continuation of Ser. No. 888,472, Mar. 20, 1978, abandoned. This application May 15, 1981, Ser. No. 263,891
Claims priority, application France, Mar. 22, 1977, 77 08565
Int. Cl.³ B63B *27/14*
U.S. Cl. 114—263 **5 Claims**

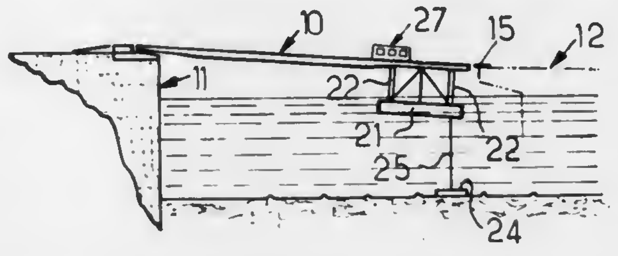
1. A method for using a port access ramp to a ship such as a roll-on roll-off ship, the method comprising:

supporting a first end of a ramp at a fixed level;

rigidly supporting the second end of the ramp from a float adjacent to a ship to provide a connecting path for loading and unloading the ship via said ramp;

anchoring the float by a line to anchoring blocks on the bottom;

ballasting or deballasting the float to achieve a buoyancy of the float at least equal to the sum of that part of the weight of the ramp which is carried by the float and a predetermined maximum useful load of the ramp, so that the said float exerts on the anchoring line a tension force at least equal to said maximum predetermined useful load of the ramp, whereby the height of the second end of said ramp above the surface of the water is independent of the load supported by the ramp up to said maximum useful load;



adjusting the length of the anchoring line with respect to variations of the draught of the ship and of the water level to allow the level of the second end of the ramp to conform to a deck level of the ship during the loading or unloading of the ship;

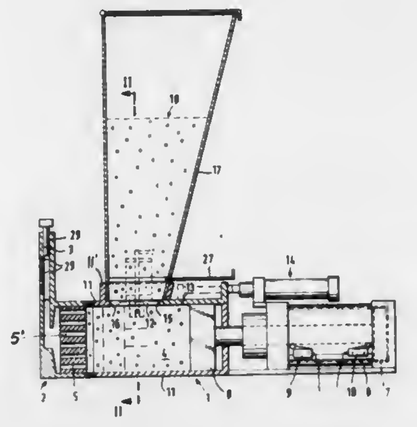
raising the anchoring blocks by deballasting the float to its maximum buoyancy; and

pivoting the ramp about a vertical axis at the first end of the ramp to move the second end of the ramp from one location to another.

4,441,450

APPARATUS FOR MELTING AND APPLYING A MELTABLE ADHESIVE

Alfred Dettelbach, Stuttgart, and Roland Henzler, Nuertingen-Raidwangen, both of Fed. Rep. of Germany, assignors to Reich Spezialmaschinen GmbH, Nuertingen, Fed. Rep. of Germany
Filed Mar. 2, 1982, Ser. No. 353,962
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1981, 3109369
Int. Cl.³ B05C *5/02*
U.S. Cl. 118—681 **11 Claims**

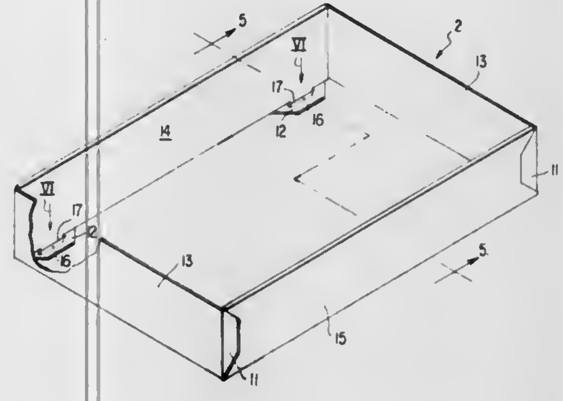


1. An apparatus for melting and applying a meltable granular adhesive to a work piece, comprising melting chamber means (4) including a heatable adhesive melting wall (5) provided with adhesive discharge openings (5'), first power driven feed advance piston drive means (6) slidably supported in said melting chamber means (4) for discharging melted adhesive through said openings (5') in response to movement of a work piece, an adhesive inlet port (12) in a port wall of said melting chamber means (4), adhesive supply container means (17) having an outlet operatively connectable to said inlet port (12), closure slide means (13) operatively arranged for sliding relative to said port wall for simultaneously closing or opening said inlet port (12) and said outlet of said supply container means, and second separate power driven piston drive means (14) operatively connected to said closure slide means (13) for power operating said closure slide means for supplying meltable adhesive into said melting chamber means (4) and for closing off the melting chamber means (4) from the supply container means (17), and control means operatively connected to said first and second driven piston drive means (6 and 14) for operating said slide means (13) separately of and prior to operation of said first feed advance piston drive means (6) so that said closing of the opening (12) and of the outlet of the supply container (17) is completed before the feed advance piston means (6) begins to move in a feed advance direction, said control means comprising limit switch means (9) operatively arranged for actuation by said power driven feed advance piston drive means (6), said limit switch means (9) controlling said second separate piston drive means (14) for the opening movement of said closure slide means (13).

4,441,451

DISPOSABLE KITTY LITTER BOX

Dennis E. Neal, 5322 O'Shea La., Stone Mountain, Ga. 30088
Filed Mar. 17, 1982, Ser. No. 359,056
Int. Cl.³ A01K *29/00*
U.S. Cl. 119—1 **4 Claims**



1. A disposable kitty litter box comprising:

a. a box bottom having its inside completely sealed against moisture by its bottom and side walls, and

b. a box top being sized such that the box bottom will fit inside the box top whenever said box top is turned upside down;

said box bottom has two sets of opposite side walls, one set of which has three moisture barriers, one of the barriers having first attachment means, communicating with second attachment means on another of the barriers, for holding the three moisture barriers in alignment while the box bottom is maintained completely sealed;

whereby said box top in its upside down position serves as an additional moisture barrier for the bottom and side walls of the box bottom.

4,441,452

METHOD AND APPARATUS FOR AERATING FISH PONDS

Ernest D. Strain, Jr., P.O. Box 1578, Greenwood, Miss. 38930
Filed Jan. 21, 1982, Ser. No. 341,308
Int. Cl.³ A01K *61/00*
U.S. Cl. 119—3 **6 Claims**

1. A portable fish pond aeration apparatus comprising, in combination,

pump means including a pump housing having a pump inlet and a pump outlet and impeller means mounted for rotation about a fixed axis within the housing,

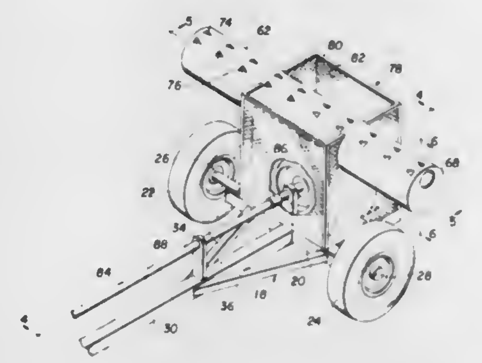
drive means for rotating said impeller means to draw water into the pump inlet and discharge the water from the pump outlet,

manifold means connected to said housing to receive water discharged from said outlet, said manifold means including an elongated pipe rigidly mounted at a location above said pump inlet,

closure means mounted on each end of said elongated pipe,

a pair of primary discharge openings formed one in each said closure means for discharging water from the manifold, said primary discharge openings being arranged to discharge water in generally colinear, oppositely directed streams,

a single axle trailer adapted to be towed along the ground by a tractor, said trailer including a frame supporting said pump means and said manifold means, wheel means mounting said frame for movement over the ground, and connecting means for connecting said frame to a tractor



for towing, said connecting means including an elongated tongue having one end connected to said frame and projecting forwardly therefrom and having its other end adapted to be connected to the drawbar of a tractor for towing,

said manifold means having its longitudinal axis extending generally parallel to the single axis of said trailer,

said pump means being operable when positioned in a pond of water adjacent the shoreline with the pump inlet below the water level to discharge said generally colinear streams generally parallel to the shoreline of the pond to aerate the water and to drive fish from the shallow water adjacent the shoreline of the pond in both directions from the pump.

4,441,453

ARTIFICIAL FISH HABITAT

Robert L. McMickle, and Danny R. Foote, both of Spirit Lake, Iowa, assignors to Berkley and Company, Inc., Spirit Lake, Iowa
Filed Feb. 10, 1982, Ser. No. 347,523
Int. Cl.³ A01K *61/00*
U.S. Cl. 119—3 **7 Claims**

1. An artificial fish habitat located in a natural body of water, such as a lake, having a bottom which is irregular so that the body of water is of variable depth, said habitat comprising:

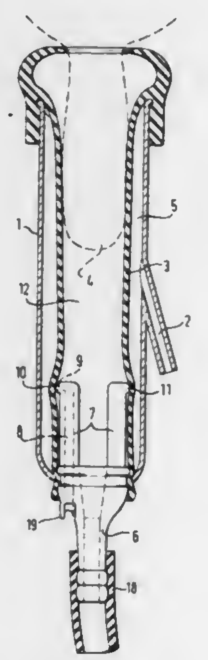
a plurality of separate self-weighted non-corrosive anchor members dropped in the body of water at spaced points;

a plurality of buoyant water impervious strands for each of the anchor members, said strands having a density of from 0.4 to 0.97 gms/cm³ and having a length of between a few inches and 30 feet or more depending upon the depth of the body of water in which they are to be placed;

means for connecting said strands to the associated anchor member; and each anchor member having sufficient mass to remain on the bottom at the area at which it has been dropped despite the buoyancy of the strands and regardless of the depth of the water at which it is placed.

4,441,454
MILKING APPARATUS

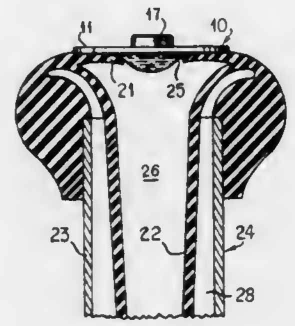
Fritz Happel, 8951 Baisweil 24, and Werner Happel, both of Baisweil, Fed. Rep. of Germany, assignors to Fritz Happel, Baisweil, Fed. Rep. of Germany
PCT No. PCT/EP81/00058, 371 Date Jan. 27, 1982, 102(e) Date Jan. 27, 1982, PCT Pub. No. WO81/03412, PCT Pub. Date Dec. 10, 1981
PCT Filed May 27, 1981, Ser. No. 346,033
Claims priority, application Fed. Rep. of Germany, May 28, 1980, 3020294; Jun. 16, 1980, 3022555
Int. Cl.³ A01J ***5/04, 5/08***
U.S. Cl. 119—14.36 **14 Claims**



14. Milking apparatus comprising a collection chamber; a connection for connecting said collection chamber to a vacuum source; four two-chamber milking cups each including a respective teat rubber, each said teat rubber having a wall, and defining, within the associated milking cup, an inner chamber including a teat reception zone and an intermediate chamber means for subjecting said intermediate chambers to periodically varying pressures to generate suction and massage phases; respective short milk lines for connecting said milking cups to mutually displaced collection chamber connections leading to respective openings into said collection chamber; each said milking cup further including a valve unit actuated in dependence on the pressure differences which occur in the suction and massage pulses to connect the inner chamber of the milking cup and the associated milk line to atmosphere during the massage phase; wherein each said valve unit is disposed within the associated teat rubber beneath the teat reception zone and is changed over between the closed and opened conditions by the wall of the teat rubber which moves in dependence on the pressure difference; wherein each said valve unit comprises movable and stationary parts, said movable part element being formed by a part of the wall of the teat rubber and said stationary part being formed by an insert, which extends from the lower end of the respective milking cup into the teat rubber inner chamber, each said insert having a passage which opens at one end to the atmosphere and at the other end faces the inner wall of the associated teat rubber, wherein said insert lightly spreads the teat rubber in the direction of an axial plane which extends at least substantially through the opening of the passage, whereby said wall part of said teat rubber closes said passage opening during said suction phase but frees said opening for the flow of air therethrough as said teat rubber collapses during said massage phase and wherein a removable filter is provided in the atmosphere end of the passage.

4,441,455
TEAT CUP STOPPER

Gary H. Lowry, 2700 Buford Hwy., Atlanta, Ga. 30324, and John A. Simmons, Rte. 4, Box 144, Pontotoc, Miss. 38863
Filed May 13, 1982, Ser. No. 377,957
Int. Cl.³ A01J ***5/00***
U.S. Cl. 119—14.47 **9 Claims**



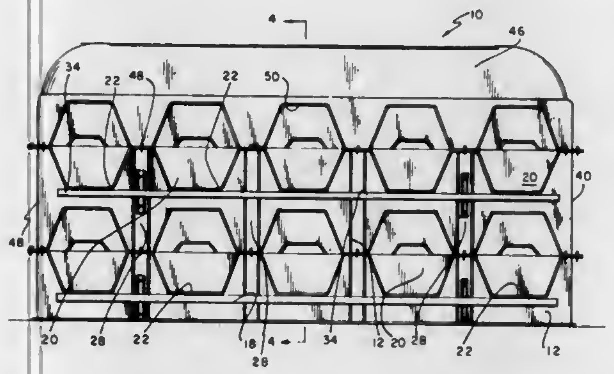
1. A closure for an unused teat cup of the type wherein a resilient liner with an outer lip is mounted within a hard outer shell of generally cylindrical shape proximate the lip and wherein the liner and said lip have a central passageway and an opening, respectively, which communicate with each other, comprising:

(a) a disk of sufficient area to cover the opening; and

(b) a downwardly tapering projection which is rigidly attached to the disk with the positions of the disk and of the projection being fixed with respect to each other, the projection being adapted to extend over the edge of the lip and into the central passageway of the liner when the disk is in position to cover the opening thereto, the greatest dimension of the opening and of a cross-section of the projection which is disposed generally parallel to the disk being generally equal so that said projection is not distorted upon insertion into said opening, said cross section thereby preventing the closure from slipping off the lip once the projection is positioned within the opening, so that a vacuum can be held within the passageway, facilitating the use of other teat cups fluidly connected thereto during a milking operation.

4,441,456
ROLL OUT NEST SYSTEM AND METHOD

Daniel J. Scheer, Goddard, Kans., assignor to Pawnee Products,Inc., Goddard, Kans.
Filed Sep. 20, 1982, Ser. No. 420,094
Int. Cl.³ A01K ***31/14***
U.S. Cl. 119—45 R **2 Claims**



1. A roll out nest system comprising a support frame means;

at least one integral tray means supported by said frame means and contoured to define individual nesting areas for a hen and individual egg nesting-gathering areas;

at least one integral back plate means separating each individual nesting area from each individual egg nesting-gathering area, each back plate means having a structure defining a plurality of egg apertures wherethrough the eggs gravity roll from the individual nesting area into the individual egg nesting-gathering area;

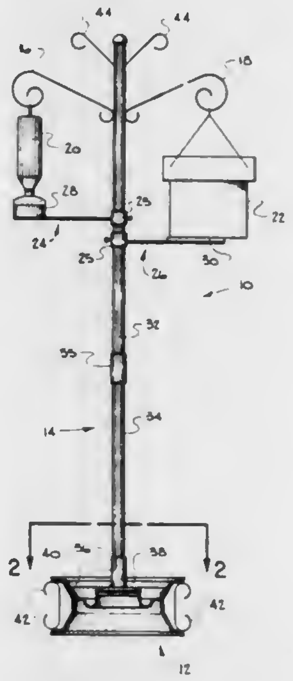
said support frame means having a base frame including a structure on one side defining a plurality of base flanges and base concave slots, said base flanges and said base concave slots, in order stated are in alternating sequence, and said at least one integral tray means comprising a plurality of tray flanges and concave nesting areas in alternating sequence in the order stated, said tray flange and said concave nesting areas of at least one integral tray register and mate with the base flanges and base concave slots respectively of the base frame and are supported by the same, and said support frame means additionally having at least one centerbrace frame having a structure on each of the two sides defining a plurality of centerbrace flanges and centerbrace concave slots, said centerbrace flanges and said centerbrace concave slots on one side of the centerbrace frame are in direct opposed relationship with the centerbrace flanges and the centerbrace concave slots of the other side of the same and are in alternating sequence in the order stated, said centerbrace flanges on one side of the at least one centerbrace frame mate with and connect to the base flanges of the base frame and sandwiches therebetween said tray flanges to stationarily attach the at least one tray means thereto, the available centerbrace flanges and centerbrace concave slots being opposed to centerbrace flanges and centerbrace concave slots attached to the base frame respectively providing support for the tray flanges and concave nesting area of another integral tray, the top of said back plate means additionally providing support for another integral tray imposed over a lower integral tray such that the underneath side of a concave nesting area of the top integral tray defines a roof for a concave nesting area of the lower integral tray;

at least one pair of end plates interconnecting the flanged sides of at least one integral tray means with the flanged sides of at least one other integral tray imposed over the lower integral tray to also provide support for the upper integral tray by the lower integral tray, the top integral tray imposed over at least one lower integral tray and over at least one centerbrace frame and over at least one pair of end plates comprises a plurality of egg hole plates having an egg hole opening, said egg hole plates individually separating individual concave nesting areas from the individual egg nesting-gathering areas while providing the egg hole opening through which the eggs gravity roll from the nesting area into the egg nesting-gathering area;

and a roof member having a structure defining a plurality of roof flanges and roof concave openings, said roof flanges and said roof concave openings, in order stated, are in alternating sequence, said roof flanges respectively mating with the centerbrace flange of the centerbrace frame supporting the top integral tray in order to sandwich therebetween said top integral tray and to secure same, and said roof concave openings and said centerbrace concave slots define and provide an arc overhead entrance for the hens to facilitate entrance into the nesting areas.

4,441,457
BIRD FEEDER STAND

Doyle M. Sanford, 867 Broadmoor St., El Paso, Tex. 79912
Filed May 21, 1982, Ser. No. 380,332
Int. Cl.³ A01K ***5/00***
U.S. Cl. 119—51 R **2 Claims**



1. A bird feeder stand which supports various types of feeders comprising:

a base member fabricated from an automobile wheel rim having a bowl-shaped top portion and a center opening therethrough;

a vertically and concentrically positioned support post with a sealing plate means attachable to the lower end thereof, the sealing plate means being attachable to the base member so as to seal the center opening and form a watertight top portion for retention of water; and

support arms attached to the support post extending outwardly therefrom adapted for cantilever support of hanging type bird feeders and watering devices.

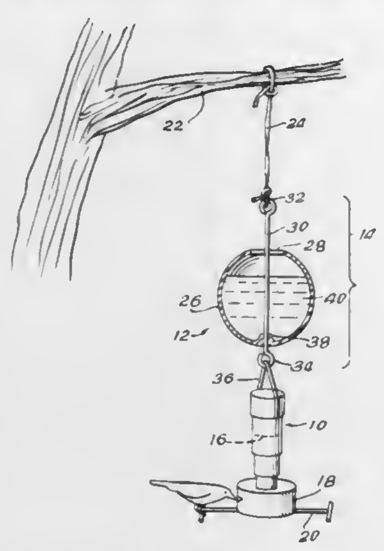
4,441,458
BIRD FEEDER CONSTRUCTION

Robert A. Mercil, Star Rte., Box 315, Wetmore, Mich. 49895
Continuation-in-part of Ser. No. 218,543, Dec. 22, 1980, abandoned. This application Aug. 12, 1982, Ser. No. 407,347
Int. Cl.³ A01K ***5/00***
U.S. Cl. 119—51 R **3 Claims**

1. In a hummingbird feeder construction including a bird feeder and a bail thereabove for securing it to an overhead support, the improvement comprising,

a cup-shaped container containing a liquid, having a top opening of reduced transverse dimensions relative to the main portion of the container,

a supporting element extending through the bottom wall of the container, and having means at its upper end for connection with a supporting means and means at its lower end for connection with said bail, and the supporting element being thereby operable, to the exclusion of the container, for entirely supporting the feeder,



the top opening being sufficiently large to prevent ants from reaching the margin of the opening from the supporting element, and being sufficiently small to prevent a bird as small as a hummingbird from reaching therethrough and drinking liquid from the container.

4,441,459

CHICK DRINKER APPARATUS WITH AUTOMATIC WATER LEVEL CONTROL

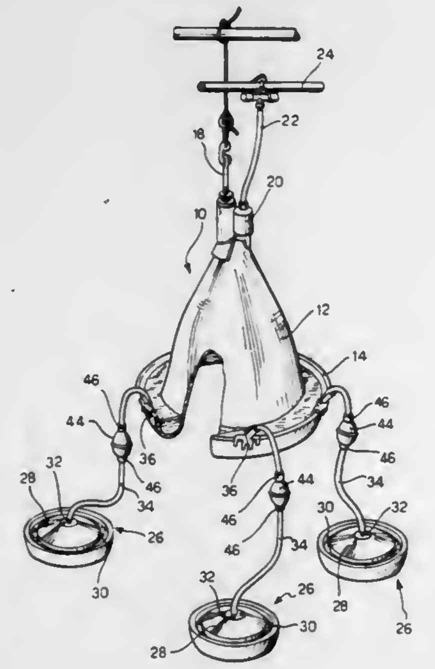
Sebastiano Giordano, Caraglio, Italy, assignor to Giordano Poultry-Plast S.p.A., Caraglio, Italy

Filed Jun. 14, 1982, Ser. No. 388,364

Claims priority, application Italy, Jun. 22, 1981, 67860 A/81

Int. Cl.^{3} A01K *7/00*

U.S. Cl. 119—72 **1 Claim**



1. A poultry drinking apparatus comprising a main drinking apparatus in the form of a bell-shaped member having an annular channel at the bottom thereof for holding the supply of drinking water, automatic water level control means for controlling the water level in said annular channel, means for supporting said main drinking apparatus above ground level at a height suitable for mature poultry, a plurality of chick drinkers each having an annular channel for holding a supply of drinking water, automatic water level control means for controlling the water level in the channels of said chick drinkers, flexible siphon tubes each connecting a respective chick drinker to said main drinking apparatus, detachable means for connecting one end of each flexible siphon tube to said main drinking apparatus with said one end being disposed below the water level in the annular channel of said main drinking apparatus and hand operated priming means associated with each tube for initiating transfer of water to said chick drinkers with the automatic water level control means associated with said chick drinkers limiting the amount of water being transferred.

4,441,460

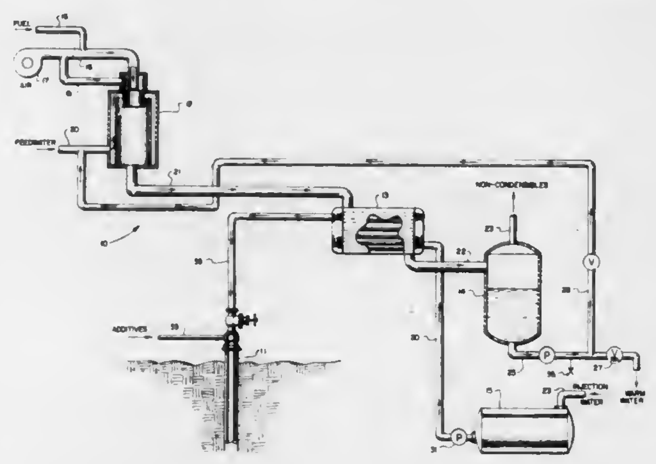
APPARATUS FOR HEATING AND UTILIZING FLUIDS

William G. Wyatt, Arlington, Tex., assignor to Vapor Energy, Inc., Arlington, Tex.

Filed May 8, 1981, Ser. No. 261,702

Int. Cl.^{3} F22B *1/02*

U.S. Cl. 122—31 R **7 Claims**



1. Apparatus for providing a hot water flood to a reservoir comprising:

means for generating a low pressure stream of steam and non-condensibles by combusting a flowing fuel/air mixture in the presence of a stream of feedwater;

pump means for delivering a stream of relatively cool water at high pressure from a source thereof;

a heat exchanger for effecting heat exchange between said low pressure stream of steam and non-condensibles and said stream of cool high pressure water to heat the water stream to a desired temperature without substantially reducing the pressure thereon, while condensing at least some of the steam from said stream of steam and non-condensibles; and

means for delivering said stream of heated high pressure water from said heat exchanger into the bore of a well communicating with said reservoir.

4,441,461

ALCOHOL DISSOCIATION AND WASTE HEAT RECOVERY PROCESS FOR AUTOMOBILES

Heeyoung Yoon, and Gerald D. Rutledge, both of McMurray, Pa., assignors to Conoco Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 414,984, Sep. 3, 1982, Pat. No. 4,425,876. This application Sep. 15, 1983, Ser. No. 532,257

Int. Cl.^{3} F02M *27/02*

U.S. Cl. 123—3 **3 Claims**

1. A method of fuel treatment and distribution for an automobile internal combustion engine comprising the steps as follows:

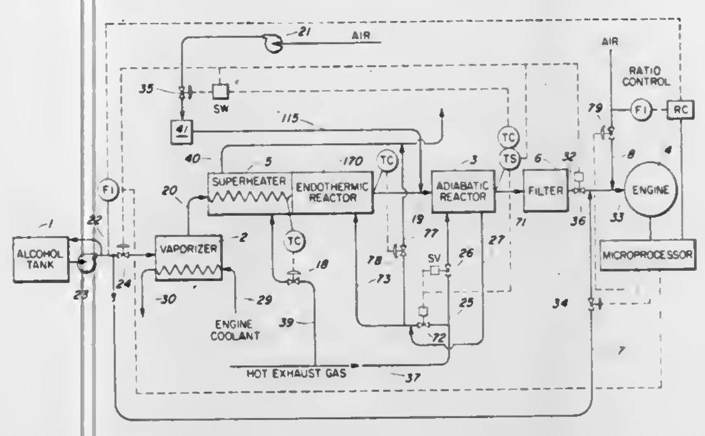
(a) vaporizing liquid alcohol to form alcohol vapor;

(b) providing a substantial amount of engine exhaust heat to an endothermic reactor having an endothermic dissociation catalyst therein,

(c) contacting said vapor and said endothermic dissociation catalyst for form a hydrogen-rich gaseous-vapor mixture,

(d) mixing said hydrogen-rich gaseous-vapor mixture with air to form a partial combustion mixture,

(e) operating an adiabatic reactor without a substantial amount of exhaust heat within an operational temperature range, said adiabatic reactor having a catalyst bed comprising a partial combustion catalyst and a dissociation catalyst,



(f) contacting said partial combustion mixture and said partial combustion catalyst and said dissociation catalyst whereby a fuel mixture is formed.

4,441,462

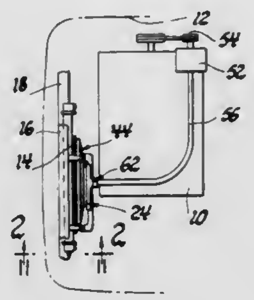
HYBRID MECHANICAL AND ELECTRICAL DRIVE AND ENGINE COOLING FAN ARRANGEMENT

John A. Budinski, Jamestown, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 28, 1982, Ser. No. 402,751

Int. Cl.^{3} F01P *5/04*

U.S. Cl. 123—41.11 **4 Claims**



1. An automotive engine cooling fan and drive assembly for maintaining airflow through a radiator in which coolant from an associated internal combustion engine is circulated comprising a support, primary motor means comprising an electric motor mounted on said support having a rotatable output, a bladed fan directly supported by said output and directly rotatably driven thereby for inducing the flow of air through said radiator, auxiliary fan drive means having an output drivingly connected to said bladed fan for the rotatable drive thereof, control means interposed in said auxiliary drive means establishing a first condition of operation in which said primary motor means powers said fan and a second condition of operation in which said auxiliary fan drive powers said fan.

4,441,463

CONTAINER FOR FLUIDS FOR OPERATING FUNCTIONS IN MOTOR VEHICLES

Heinz Rest, and Martin Ufrecht, both of Cologne, Fed. Rep. of Germany, assignors to Ford Motor Company, Dearborn, Mich.

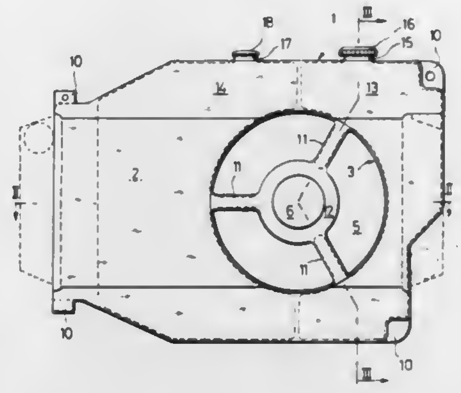
Filed Mar. 14, 1983, Ser. No. 475,005

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1982, 3210260

Int. Cl.^{3} F01P *3/18*

U.S. Cl. 123—41.27 **11 Claims**

1. A container for fluids for use in various operating functions in motor vehicles, such as for containing windshield washer fluid and engine coolant, the container being arranged in the engine compartment of the motor vehicle and having an outer contour adapted for attachment in an operative position to the radiator, characterized by an essentially hollow annular body having an inner contour forming an annular air guide surface defining an air guide duct for an air cooling fan for an



internal combustion engine cooperating therewith, and having the outer contour shaped to the contour of the radiator with which it is associated.

4,441,464

INTAKE SYSTEM OF A MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

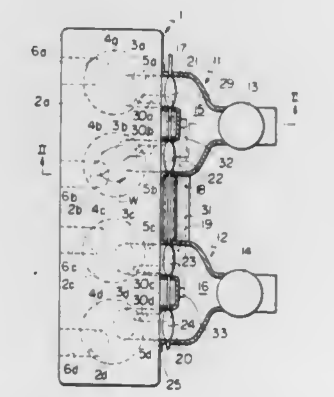
Shuhei Toyoda, and Toshio Tanahashi, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 35,390, May 2, 1979, abandoned. This application Sep. 8, 1981, Ser. No. 300,049

Claims priority, application Japan, Aug. 10, 1978, 53-97607

Int. Cl.^{3} F02B *31/00*

U.S. Cl. 123—52 MB **11 Claims**



1. A multi-cylinder internal combustion engine having a plurality of cylinders, each having a combustion chamber and an intake valve which has a valve head, said engine comprising:

at least two mixture passages, each mixture passage being common to at least two cylinders and comprising a collecting portion having an inlet, and at least two branch mixture passages branched off from said collecting portion of each mixture passage, each of said branch mixture passages being connected to a respective combustion chamber via a corresponding one of said intake valves;

fuel supply means arranged in an intake passage connected to the inlet of each of said collecting portions for delivering a metered flow of fuel from a fuel passage opening into the intake passage;

a common connecting channel;

at least four channel branches, each channel branch being connected to said common connecting channel and having an opening which opens into a corresponding one of said branch mixture passages, said common connecting channel opening only into said channel branches, and said channel branches opening only into said corresponding branch mixture passages, such that said branch mixture passages are continuously interconnected via said channel branches and common connecting channel;

throttle valve means arranged in said branch mixture passages at a position upstream of the openings of said channel branches and opened in accordance with an increase in the level of the load of said engine, there being no other valve means between the fuel passage openings and said throttle valve means, and;

a separate connecting conduit having at least two ports, each port opening into a corresponding mixture passage at a location between said valve means and said fuel supply means, said separate connecting conduit having no openings other than said ports, such that said separate connecting conduit is always open to said at least two mixture passages upstream of said valve means via said ports.

4,441,465
LASH ADJUSTER OIL-SUPPLYING DEVICE

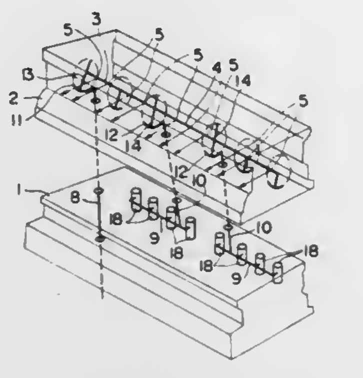
Yukio Nakamura, Aichi, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Nov. 12, 1981, Ser. No. 320,565

Claims priority, application Japan, Jun. 30, 1981, 56-101979

Int. Cl.³ F01M *1/06*

U.S. Cl. 123—90.34 **11 Claims**



1. A lash adjuster oil-supplying device for an overhead camshaft-type engine having a cylinder head, a camshaft and a camshaft housing, said device comprising:

means defining a first oil passage extending from said cylinder head through said camshaft housing to said camshaft;

means defining an oil path within said camshaft;

means defining an oil jet hole formed in said camshaft and communicating with said oil path;

means defining a second oil passage extending from said camshaft through said camshaft housing; and

means defining a third oil passage, disposed in said cylinder head and extending from said second oil passage, for supplying oil to lash adjusters, wherein oil passes from said first oil passage, to said oil path, to said second oil passage, and finally to said third oil passage, a part of the oil flowing along said oil path being ejected through said oil jet hole.

4,441,466
ENERGY ACCUMULATOR AND INTERNAL-COMBUSTION ENGINE STARTER COMPRISING SAID ACCUMULATOR

Giorgio Tangorra, Milan, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

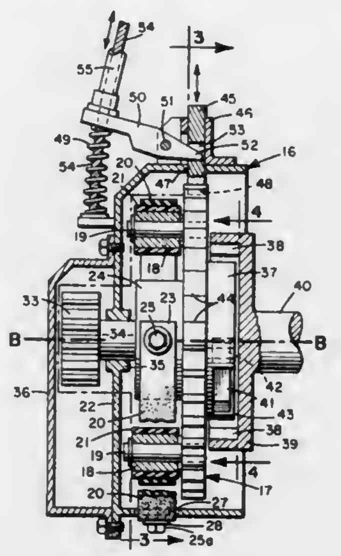
Filed Mar. 25, 1982, Ser. No. 361,759

Claims priority, application Italy, Mar. 31, 1981, 20828 A/81

Int. Cl.³ F02N *5/00;* F03G *1/04*

U.S. Cl. 123—179 S **7 Claims**

1. An apparatus for generating, storing and releasing mechanical energy for actuation of the shaft of an engine, said apparatus comprising a flat type accumulator, a first device for transferring power to the said accumulator, a second device for transferring the energy to the shaft of the engine, said accumulator comprising a ratchet wheel, a central hub, a plurality of rollers rotatably mounted on pins and circumferentially spaced on the wheel to form an open structure around said hub, a housing mounted coaxially with respect to the wheel, said wheel closing one end of said housing, a strip of elastomeric material connected at one end to the said central hub, wound around said rollers and supported thereby, and fixed at its opposite end to said housing; said first device comprising a shaft integral with the wheel and supported through a bearing in said housing, a first gear integral with said shaft, a second gear for meshing with said first gear, said two gears being located in a crank-case outside of said housing; said second device comprising a disk integral with said wheel on the side of the wheel opposite to the rollers, a cylindrical sleeve integral with said engine shaft, and means for connecting said disk and said sleeve when the wheel rotates in a predetermined sense of rotation.



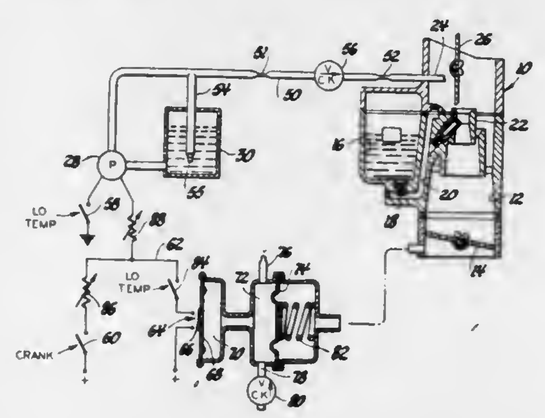
4,441,467
SUPPLEMENTARY FUEL SYSTEM FOR ENHANCING LOW TEMPERATURE ENGINE OPERATION

Thomas M. Powell, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 23, 1982, Ser. No. 401,076

Int. Cl.³ F02N *9/00;* F02M *7/00*

U.S. Cl. 123—179 G **4 Claims**



4. A supplementary fuel system for an engine having an induction passage for air flow to the engine, a throttle in said induction passage, and a primary fuel system adapted to deliver a low volatility fuel to the engine, said supplementary fuel system comprising a gasoline tank, a supplemental fuel line for delivering fuel into said induction passage, an electrically actuated pump for delivering gasoline from said tank through said line, said line having a restriction limiting gasoline delivery therethrough and a check valve preventing aspiration of gasoline therethrough and a drain for discharging excess gasoline from said line into said tank below the surface of the gasoline therein, means for operating said pump in response to cranking of the engine at temperatures below a certain level to thereby provide fuel which vaporizes sufficiently to enable starting of the engine, means for operating said pump in response to a rapid increase in the pressure in said induction passage downstream of said throttle at temperatures below a predetermined level less than said certain level, to thereby provide fuel which vaporizes sufficiently to enable acceleration of the engine, and means for reducing the gasoline delivery through said line as the engine operating temperature increases.

4,441,468
SECONDARY AIR SUPPLY SYSTEM

Kenji Yoneda, Fujisawa; Fumio Sanezawa, Yokosuka; Yasuo Takagi, and Yuji Ushijima, both of Yokohama, all of Japan, assignors to Nissan Motor Company, Ltd., Yokohama, Japan

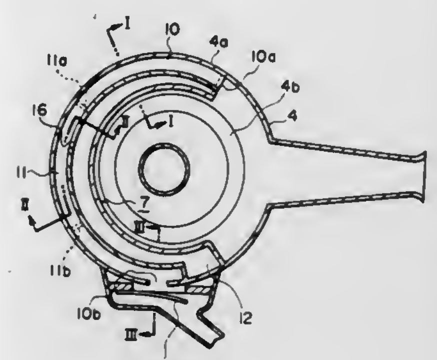
Continuation of Ser. No. 46,310, Jun. 7, 1979, abandoned. This application Sep. 2, 1981, Ser. No. 298,623

Claims priority, application Japan, Jun. 16, 1978, 53-72848

The portion of the term of this patent subsequent to Mar. 16, 1999, has been disclaimed.

Int. Cl.³ F02B *75/10*

U.S. Cl. 123—198 E **3 Claims**



1. A secondary air supply system for use with an internal combustion engine having an exhaust system, comprising:

an air filter casing for operatively positioning an intake air filter;

a reed valve, operative in response to exhaust pressure pulsations generated in the exhaust system of the engine to induct secondary air therethrough to the exhaust system;

means defining an air induction passage inside said engine air filter casing, said air induction passage being in communication with said reed valve so that air is inducted through said air induction passage into the exhaust system upon opening of said reed valve, said air induction passage comprising a first silencer means for attenuating exhaust noise in medium and high frequency ranges;

means defining a resonance chamber inside said air filter casing, said resonance chamber comprising a second silencer means for attenuating exhaust noises in a low frequency range;

means defining a communication passage through which said resonance chamber is in direct communication with said air induction passage, said communication passage being located inside said air filter casing;

wherein said means defining said resonance chamber comprises a first integrally formed member, and said means defining said air induction passage and communication passage comprises a second integrally formed member, said first and second integrally formed members being sealingly connectable to form a silencer assembly which is detachably disposed inside of and along an inner wall surface of said air filter casing, said second integrally formed member having an air outlet, open to said reed valve, to admit air from said air induction passage into the exhaust system of the engine through said reed valve.

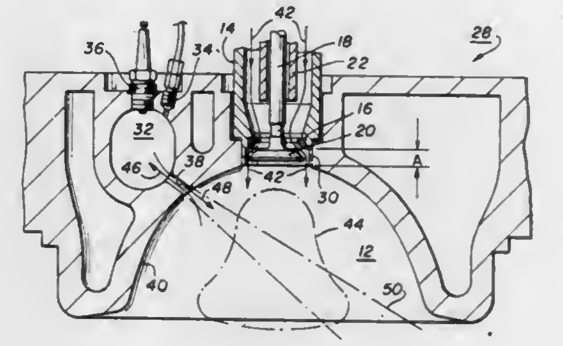
4,441,469
STRATIFIED FUEL INJECTION FOR GASEOUS FUEL INTERNAL COMBUSTION ENGINE

Charles F. Wilke, Allegany, N.Y., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Nov. 23, 1981, Ser. No. 323,786

Int. Cl.³ F02B *3/02*

U.S. Cl. 123—295 **11 Claims**



1. In a two cycle internal combustion engine having at least one power cylinder and a head secured in position opposite said cylinder defining a main combustion chamber relative to the power cylinder thereat, the combination of:

(a) at least one antechamber defined in said head at a location displaced from said main combustion chamber;

(b) orifice means defining a flow passage between said main combustion chamber and said at least one antechamber, said orifice means being sized to pass controlled quantities of air for combustion from said main combustion chamber to said at least one antechamber during the compression stroke of the engine and to provide controlled flame projection outward from said at least one antechamber into an air-fuel mixture in said main combustion chamber after an air-fuel mixture in said at least one antechamber has been ignited;

(c) gas injection means for injecting gaseous fuel separately into each of said main combustion chamber and said at lest one antechamber in timed relation to each other, said gas injection means being operative before the compression stroke of the engine to inject fuel into said main combustion chamber in a substantially concentrated mass distribution stratified therein at a location displaced from said orifice means and operative after the compression stroke of the engine to inject fuel into said at least one antechamber to effect a combustible air-fuel mixture therein; and

(d) spark ignition means associated in ignition relation with the combustible air-fuel mixture in said at least one antechamber and operative when energized to precipitate the expansion stroke of the engine.

4,441,470
DEVICE FOR USE WITH THE INTAKE MANIFOLD OF AN INTERNAL COMBUSTION ENGINE

John Brophy, Yonkers, N.Y., assignor to Cos Cob Research Associates, Cos Cob, Conn.

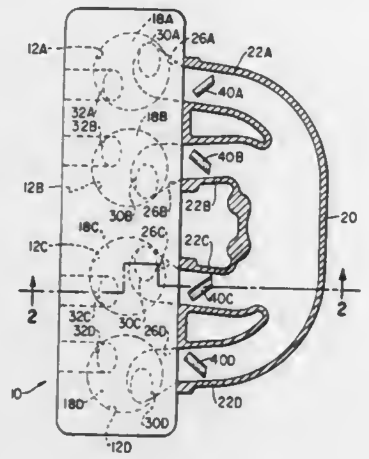
Filed Feb. 1, 1982, Ser. No. 344,317

Int. Cl.³ F02B *31/00*

U.S. Cl. 123—306 **7 Claims**

1. An internal combustion engine having a plurality of cylinders and an intake manifold including manifold branches for passing combustion air to each of the cylinders through an associated intake port and associated intake valve, wherein said associated intake port and a respective one of said manifold branches forms a passageway the improvement comprising a tube positioned diagonally in each passageway for the combustion air to the associated intake valve, each said tube being spaced from its associated intake valve, each said tube having a diameter substantially less than that of each manifold branch

in which such tube is located and being angularly disposed so as to direct a portion of the combustion air flowing in each of



the manifold branches through such tube away from the intake valve.

4,441,471

APPARATUS FOR REGULATING THE IDLING RPM OF INTERNAL COMBUSTION ENGINES

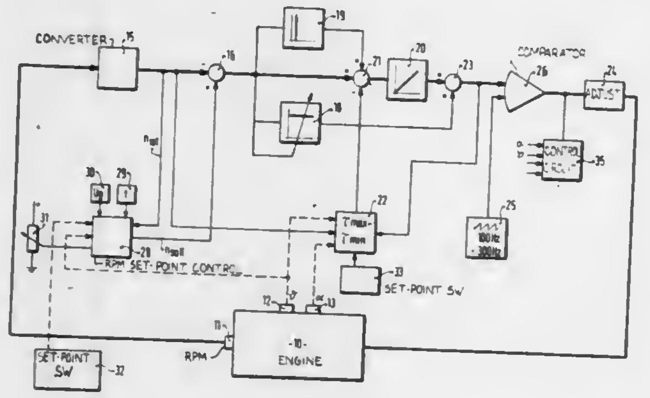
Alfred Kratt, Trossingen; Bernd Kraus, Gerlingen, and Günther Plapp, Filderstadt, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 19, 1981, Ser. No. 313,074

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1980, 3039435

Int. Cl.^{3} F02D *11/10*

U.S. Cl. 123—339 **10 Claims**



1. An apparatus for regulating the idling rpm of internal combustion engines whose rpm is controlled by a throttle means disposed in the intake tube, comprising:

an electromagnetically actuatable adjustment member for establishing the aspirated air quantity in the idling position of said throttle means,

means providing an actual rpm value,

means providing a desired idling rpm value,

means at least temperature responsive providing an rpm set-point value dependent on said desired idling rpm value and said actual rpm value, wherein said rpm set-point value is selected in accordance with said actual rpm value whenever an rpm threshold of approximately 100 revolutions per minute above a stationary set-point value has been attained, and the retraction of the normal value occurs in accordance with a selectable function,

a comparison means for said set-point rpm and actual rpm values, and

a subsequent regulator means connected to the output of said comparison means including means for processing at least one of proportional, integral, and differential functions of said output of said comparison means for controlling said adjustment member.

4,441,472

CHARGE-PRESSURE-DEPENDENT CONTROL APPARATUS FOR SUPERCHARGED FUEL-INJECTION ENGINES, IN PARTICULAR FOR DIESEL MOTOR VEHICLE ENGINES

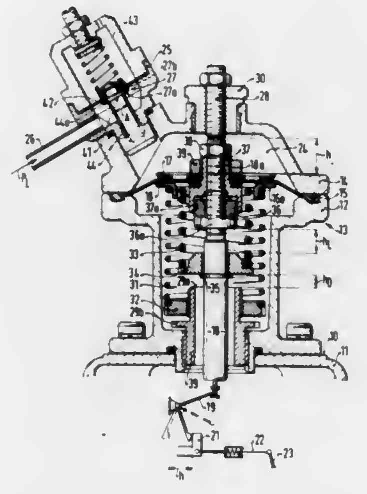
Peter Knorreck, Weissach, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 3, 1982, Ser. No. 404,806

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1981, 3137145

Int. Cl.^{3} F02D *1/04*

U.S. Cl. 123—383 **7 Claims**



1. A charge-pressure-dependent control apparatus for supercharged fuel injected diesel engines having a movable wall displaceable counter to the force of at least one first restoring spring in accordance with charge air pressure (P_L) in an air inlet tube of said engine, said movable wall arranged to control the stroke of an adjusting member which varies the adjusting range as well as the full-load position of a supply quantity adjusting member of a fuel injection pump, said apparatus further including a pressure chamber connected via a charge air line to said air inlet tube and defined by said movable wall, further wherein the stroke of said adjusting member is defined by a first adjustable end stop when said engine is shut off and/or is operating at idling rp m (n_L) and is defined by a second adjustable end stop at maximum charge air pressure (P_{Lmax}), characterized in that said stroke of said adjusting member is enlarged to a total stroke (h) comprising a damping stroke (h_D) which precedes an adjusting stroke (h_L) controlled solely in accordance with charge pressure, said damping stroke having a stroke/time characteristic which is determined by means of a throttling device inserted into a line connection from said charge air line to said pressure chamber, said device being switched off when said charge pressure is increasing, whereby the charge pressure flows undamped into said pressure chamber to act on said movable wall.

4,441,473

CLOSED LOOP MIXTURE CONTROL USING LEARNING DATA RESETTABLE FOR FUEL EVAPORATION COMPENSATION

Shigenori Isomura; Katsuhiko Kodama, both of Kariya; Toshio Kondo, Anjyo, and Akio Kobayashi, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 13, 1981, Ser. No. 243,514

Claims priority, application Japan, Mar. 28, 1980, 55-40866

Int. Cl.^{3} F02M *17/00*

U.S. Cl. 123—440 **16 Claims**

1. A method for supplying a mixture of air and fuel to an internal combustion engine at a variable air-fuel ratio in response to a concentration signal derived from an exhaust gas sensor located in an exhaust system of the engine, said signal representing the concentration of predetermined constituents of the exhaust emissions, comprising the steps of:

(a) generating a first corrective datum representing an amount of said air-fuel ratio to be corrected toward an optimum value and varying as a function of time in a direction depending on said concentration signal;

(b) generating second correction data representing an amount of said air-fuel ratio to be additionally corrected toward said optimum value and varying in a direction depending on the value of said first corrective datum;

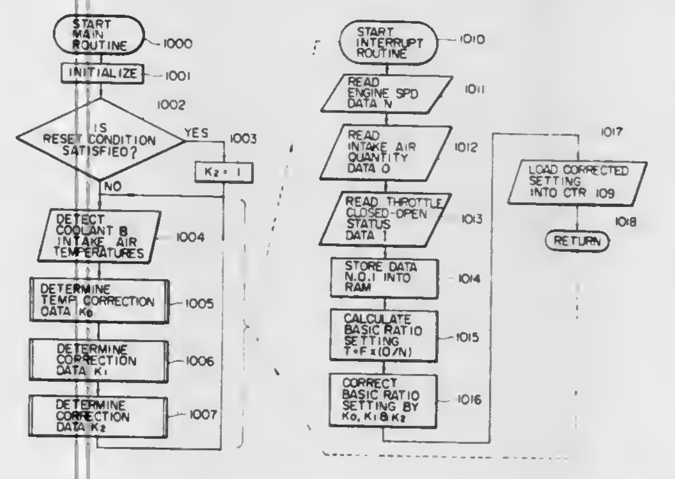
(c) detecting the air flow supplied to said engine;

(d) storing said second correction data in a selected one of first storage locations corresponding to said detected air flow when the throttle of said engine is closed, or storing said second corrective data in a selected one of second storage locations corresponding to said detected air flow when said throttle is open;

(e) retrieving a said stored datum from said first storage locations in response to said detected air flow when said throttle is closed, or retrieving a said stored datum from said second storage locations in response to said detected air flow when said throttle is open;

(f) detecting whether the stored second corrective data are greater than a first predetermined value; and

(g) resetting said stored second corrective data to a second predetermined value if said stored second data are detected as being greater than said first predetermined value in the step (f).


START MAIN ROUTINE
1000
INITIALIZE
1001
1002
IS RESET CONDITION SATISFIED?
YES
1003
K2 = 1
NO
DETECT COOLANT & INTAKE AIR TEMPERATURES
1004
DETERMINE TEMP CORRECTION DATA K0
1005
DETERMINE CORRECTION DATA K1
1006
DETERMINE CORRECTION DATA K2
1007
START INTERRUPT ROUTINE
1010
READ ENGINE SPD DATA N
1011
READ INTAKE AIR QUANTITY DATA Q
1012
READ THROTTLE CLOSED-OPEN STATUS DATA T
1013
STORE DATA N,Q,T INTO RAM
1014
CALCULATE BASIC RATIO SETTING T=F x (Q/N)
1015
CORRECT BASIC RATIO SETTING BY K0, K1 & K2
1016
1017
LOAD CORRECTED SETTING INTO CTR 109
1018
RETURN

4,441,474

FUEL INJECTION PUMPING APPARATUS

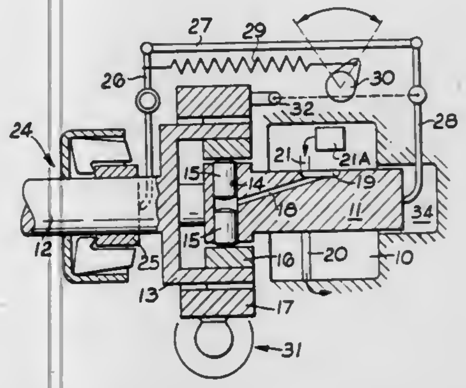
Boaz A. Jarrett, London, and Dorian F. Mowbray, Burnham, both of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Dec. 17, 1981, Ser. No. 331,824

Claims priority, application United Kingdom, Dec. 31, 1980, 8041540

Int. Cl.^{3} F04B *19/00*

U.S. Cl. 123—450 **5 Claims**



1. A fuel injection pumping apparatus for supplying fuel to a multiple cylinder internal combustion engine comprising a distributor member rotatable within a body part, a transverse bore formed in the distributor member and a plunger in the bore, a multi-lobed cam for effecting inward movement of the plunger as the distributor member rotates, said distributor member being axially movable within the body part, a passage in the distributor member, said passage communicating with said bore and opening into a recess on the periphery of the distributor member, said recess having a leading and a trailing edge in relation to the direction of rotation of the distributor member, said edges being mutually inclined, a plurality of outlet ports formed in the body part for connection in use to the injection nozzles of the associated engine, said outlet ports being equiangularly spaced about the distributor member, a plurality of inlet ports alternately arranged with said outlet ports, said recess registering with said ports as the distributor member rotates, a source of fuel under pressure connected to said inlet ports, means for varying the axial setting of said distributor member, the arrangement being such that when the distributor member is in the maximum fuel position all the fuel displaced by said plunger will be delivered through an outlet port and when the plunger is in the zero fuel position all the fuel displaced by said plunger will flow through an inlet port, part of the fuel flowing through an outlet port and the remainder through an inlet port when the distributor member is in an intermediate position, and means for varying the angular setting of said cam about the axis of rotation of said distributor member and further means responsive to the position of said cam for adjusting the axial setting of the distributor member to maintain the quantity of fuel delivered by the apparatus during adjustment of the cam substantially constant.

4,441,475

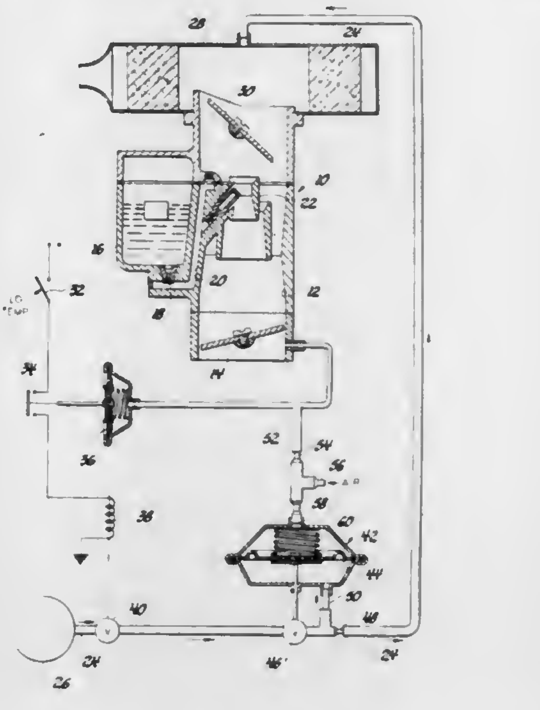
SUPPLEMENTARY FUEL SYSTEM FOR ENHANCING LOW TEMPERATURE ENGINE OPERATION

Patrick M. Bouchard, Sterling Heights, and Jack B. King, Troy, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 9, 1982, Ser. No. 396,858

Int. Cl.^{3} F02M *21/02*

U.S. Cl. 123—525 **1 Claim**



1. A supplementary fuel system for an engine having an induction passage for air flow to the engine, a throttle in said induction passage, and a primary fuel system adapted to deliver a low volatility fuel to the engine, said supplementary fuel system comprising a fuel passage adapted to deliver a gaseous fuel to said induction passage, a normally closed valve controlling gaseous fuel flow through said fuel passage, means for enabling opening of said valve at temperatures below a certain level, means responsive to the pressure in said induction passage downstream of said throttle for effecting closing of said valve to interrupt fuel flow through said fuel passage as said induction passage pressure increases above a predetermined

level and for effecting opening of said valve to admit fuel through said fuel passage as said induction passage pressure decreases below said predetermined level, whereby said valve cycles open and closed as said induction passage pressure varies while cranking the engine at temperatures below the certain level to limit the gaseous fuel flow as required for engine starting and whereby said valve remains open while the engine is running at temperatures below the certain level, and a pressure regulator controlling gaseous fuel flow through said fuel passage and adapted to maintain the pressure in said fuel passage proportional to the pressure in said induction passage downstream of said throttle whereby fuel flow through said fuel passage increases with air flow through said induction passage to operate the engine at temperatures below the certain level without stalling.

4,441,476

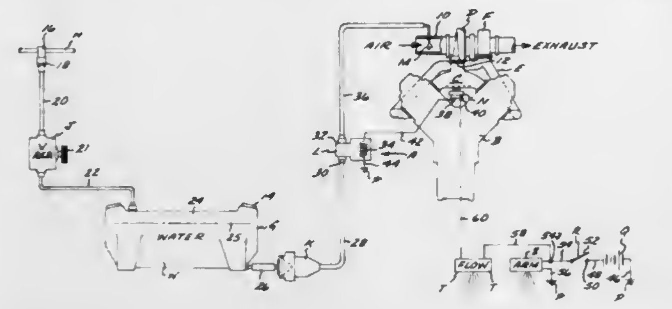
CHARGE AIR COOLING SYSTEM

James E. Roberts, 1345 Roycroft Ave., Long Beach, Calif. 90804, and Edward L. Lenarth, 7036 Schroll Ave., Lakewood, Calif. 90713

Filed Nov. 4, 1982, Ser. No. 439,116

Int. Cl.^{3} F02D *19/00*

U.S. Cl. 123—542 **4 Claims**



1. In an automotive vehicle powered by an internal combustion engine that has a turbine driven compressor that withdraws air from the ambient atmosphere and discharges said air at an elevated pressure to an intake manifold, said vehicle including a pressurized air actuated brake system and a battery, the improvement for intermittently increasing the density of air flowing to said intake manifold by cooling the same, said improvement comprising:

a. a reservoir that defines a confined space for storing water, said reservoir having a water outlet;
b. a normally closed, spring loaded, solenoid operated valve that has an inlet and an outlet;
c. a normally open pressure switch responsive to the pressure in said intake manifold, said switch closing when a predetermined pressure is reached in said intake manifold;
d. first means for pressuring said confined space with air from said air brake system to force pressurized water from said outlet;
e. second means for injecting pressurized water from said reservoir into air from said compressor prior to said air flowing to said intake manifold;
f. conduit means that connect said water outlet to said inlet of said solenoid operated valve and said outlet of said solenoid operated valve to said second means; and
g. an electrical circuit connected to said battery, said electrical circuit including said pressure switch and solenoid operated valve, said pressure switch when said predetermined pressure is reached assuming a closed position to electrically energize said solenoid operated valve to move to an open position whereupon pressurized water flows to said second means to cool said air flowing to said intake manifold, with said flow of pressurized water continuing only so long as the pressure in said intake manifold is at least said predetermined pressure.

4,441,477

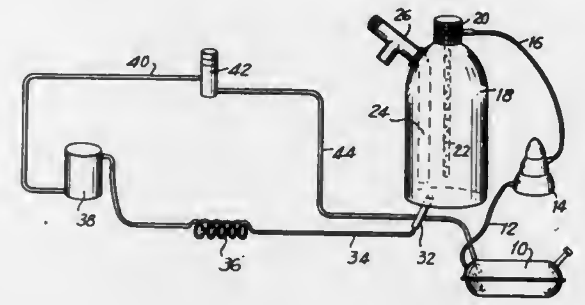
ECONOMIZER

George Holt, 1175 Grove Ave., Imperial Beach, Calif. 92032

Filed Jul. 29, 1981, Ser. No. 287,933

Int. Cl.^{3} F02M *31/00*

U.S. Cl. 123—557 **12 Claims**



1. An economizer system for use with an internal combustion engine having a fuel tank, a fuel pump, means for feeding fuel from the tank to the pump, an intake manifold, and at least one exhaust conduit, comprising a generally cylindrical fuel evaporation chamber in which fuel vapors are mixed with air including means admitting air into said chamber, the Springling means including a tube extending axially into the chamber and having a multiplicity of perforations. Therein such that the fuel is sprinkled through the perforations into the chamber and sprinkling means the fuel from the fuel pump into the chamber; a two-way safety valve including means permitting flow of fuel vapor and air from the evaporation chamber to the intake manifold for preventing backfire from reaching the chamber but rather venting off said backfire; means connecting said two-way safety valve to the intake manifold; and means for recycling fuel that accumulates in said chamber so that such fuel can be again sprinkled into the chamber, wherein the recycling means includes a secondary fuel tank, a secondary fuel pump, and fuel lines respectively connecting the evaporation chamber to the secondary fuel tank, the secondary fuel tank to the secondary fuel pump, and the secondary fuel pump to the first-mentioned fuel tank so that fuel is returned to the latter from the evaporation chamber.

4,441,478

CONTACTLESS MAGNETO IGNITION SYSTEM

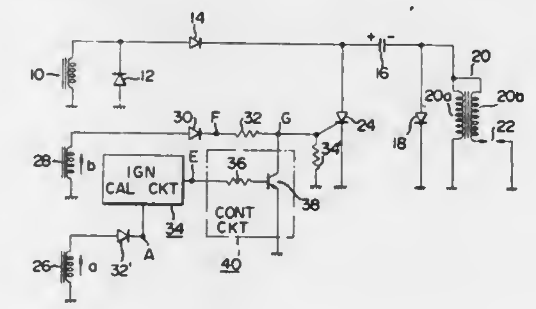
Takanori Fujimoto, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 227,977, Jan. 23, 1981, abandoned. This application Jan. 25, 1983, Ser. No. 460,875

Claims priority, application Japan, Feb. 8, 1980, 55-15202

Int. Cl.^{3} F02P *1/00*

U.S. Cl. 123—602 **4 Claims**



1. A magneto ignition system comprising electric source means for generating a positive and a negative output in synchronism with the rotation of an internal combustion engine, and ignition coil, a rectification means operatively connected to said electric source means for passing one of said positive and negative outputs to said ignition coil after the rectification thereof, a switching element for controlling the conduction of said rectified output to said ignition coil, a first angular position sensor means for generating a first angular signal in synchronism with the rotation of said engine and corresponding to a predetermined crank position of said engine, a second angular position sensor means for generating a second angular signal in synchronism with the rotation of said engine and corresponding to a crank position thereof delayed by a predetermined angle relative to said predetermined angle relative to said predetermined crank position, wherein said first and second sensor means are arranged such that said second angular signal is of a longer duration than said first angular signal and is supplied directly to said switching element, an ignition time calculating circuit for calculating an ignition time in accordance with the conditions for operating said engine with said first angular signal, and a control circuit connected to said switching element and responsive to a signal corresponding to a result of the calculation effected by said ignition time calculation circuit so as to bypass said second angular signal therethrough.

4,441,479

IGNITION SYSTEM FOR A MULTI-CYLINDER INTERNAL COMBUSTION ENGINE OF A VEHICLE

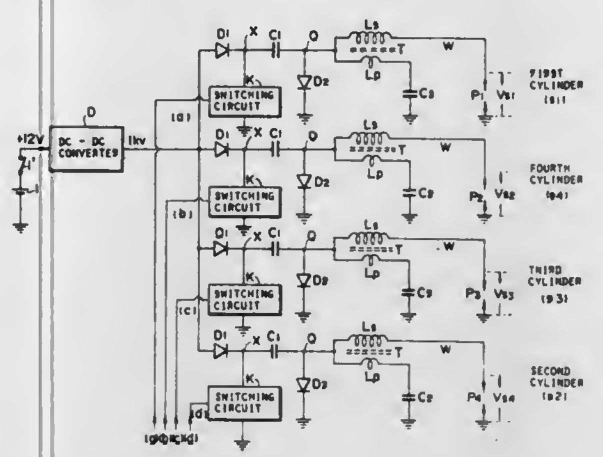
Hiroshi Endo, Yokosuka; Masazumi Sone, Tokyo; Iwao Imai, and Yasuki Ishikawa, both of Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jul. 30, 1982, Ser. No. 403,360

Claims priority, application Japan, Aug. 6, 1981, 56-122390

Int. Cl.^{3} F02P *5/00*

U.S. Cl. 123—605 **5 Claims**



1. An ignition system for a multi-cylinder internal combustion engine of an automotive vehicle having a plurality of spark plugs, each installed into the corresponding engine cylinder, comprising:

(a) a low DC voltage supply;
(b) a DC-DC converter which boosts a low DC voltage supply from said low DC voltage into a high DC voltage;
(c) a plurality of first capacitor sections each having a first diode connected to said DC-DC converter, a first capacitor one end thereof being connected to said first diode, and a second diode being connected between the other end of said first capacitor and ground, each of said first capacitors charged by said high DC voltage;
(d) a plurality of switching circuits, each connected between said one end of said first capacitor and ground which operatively grounds the end of said first capacitor so as to discharge the energy charged within said first capacitor;
(e) a plurality of boosting transformer sections, each connected between said corresponding first capacitor section and spark plug and having a primary winding and secondary winding, one end of said primary winding being connected to the other end of said first capacitor together with one end of said secondary winding thereof, the other end of said primary winding being grounded via a second capacitor so as to generate a damping oscillation when said corresponding switching circuit turns on to apply the charged high DC voltage thereacross, and the other end of said secondary winding being connected to the corresponding spark plug so as to boost the voltage applied across said primary winding so as to supply a discharge energy into the corresponding spark plug; and
(f) an ignition control circuit which receives ignition reference signals in synchronization with the engine speed from a crank angle sensing means attached around an engine crankshaft, an engine cooling water temperature signal corresponding to the engine cooling water temperature from an engine cooling water temperature sensing means, an engine fuel intake quantity signal corresponding to fuel intake flow rate from a fuel intake quantity sensing means, and a vehicle speed signal corresponding to vehicle speed from a vehicle speed sensing means and calculates an optimum output timing and a pulse width of each output signal therefrom into said corresponding switching circuit on a basis of input signals from said sensing means, the respective output signals being sent into said switching circuits sequentially according to the ignition order at the calculated optimum output timing and pulse width thereof corresponding to the interval of time during which said corresponding switching circuit is maintained on, whereby the discharge energy supplied into the respective spark plugs changes according to the engine operating conditions so as to provide an optimum discharge energy for the respective spark plugs.

4,441,480

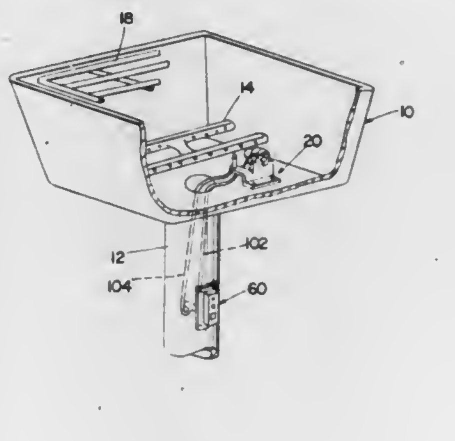
IGNITION INDICATOR FOR GAS GRILLS

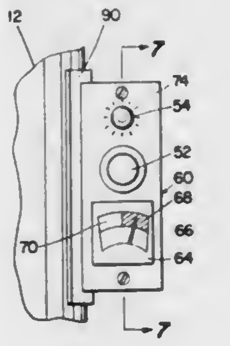
Mark A. Rickman, Lyndhurst, and Murray Leonard, Mayfield, both of Ohio, assignors to Vernitron Corporation, Lake Success, N.Y.

Continuation of Ser. No. 941,070, Sep. 11, 1978, abandoned. This application Jan. 5, 1981, Ser. No. 222,751

Int. Cl.^{3} F24J *3/02*

U.S. Cl. 126—42 **11 Claims**





1. In a covered gas grill having a dished housing which is supported by a support structure, a gas burner disposed in the dished housing, and a gas flow control means for controlling the flow of gas to the gas burner, the gas flow control means being mounted on said support structure, an igniter and indicator system to enable an operator to prevent gas explosions comprising:

a mounting bracket disposed within the dished housing contiguous to the gas burner;

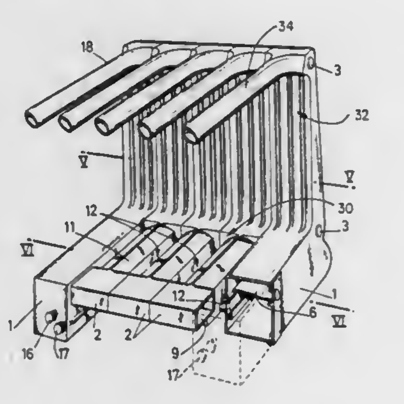
at least a first electrode for forming a spark gap with a

metallic element, said first electrode being mounted on said mounting bracket;
spark indicator means for indicating the passage of an electrical spark between said first electrode and said metallic element, said spark indicator means being mounted on said mounting bracket;
a housing disposed on said supporting structure;
an ignition control means including a piezoelectric device for selectively supplying an electrical potential to said first electrode to cause a spark to jump the spark gap, said ignition control means being mounted in said housing and being operatively connected with said first electrode; and
an ignition indicator means for providing visual indication of the ignition state of the burner, the ignition indicator being mounted in said housing and being operatively connected with the spark indicator means, wherein if ignition has not taken place, the state of said ignition indicator means serves as a warning to the operator that gas is accumulating in the grill and that the grill should be vented before an attempted relight of the gas burner to prevent an explosion on the attempted relight.

4,441,481

HEAT-RECOVERY DEVICE FOR OPEN HEARTH

Paul Verhaegen, Saastraat, 22, 9310 Lede, Belgium
Filed Oct. 15, 1980, Ser. No. 197,086
Claims priority, application Belgium, Oct. 17, 1979, 197681
Int. Cl.^{3} F24B *7/00*
U.S. Cl. 126—121 9 Claims

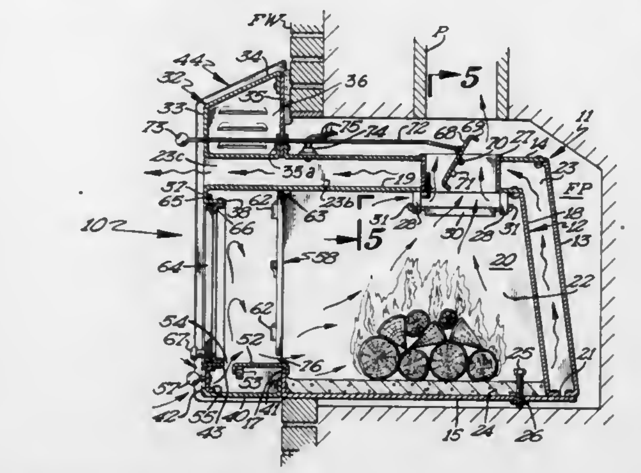


1. An apparatus for recovering heat in an open hearth comprising:
a plurality of elements including at least two side elements and a plurality of intermediate elements, each having a hollow pathway permitting the passage of air between an inlet and outlet end, said elements effecting heat exchange between a burning fuel and the air traversing the pathways said side elements each including:
a horizontal partition in the pathway defining an upper and lower chamber;
an inlet for the introduction of unheated air into the lower chamber;
a first opening in the partition and spaced from the inlet to the lower chamber for admitting air from the lower chamber into the upper chamber; and
a second opening for introducing air from the upper chamber into the intermediate elements at a position spaced from the wall, said second openings so situated as to be facing each other in a lateral direction;
whereby the air introduced to the lower chambers is admitted to the upper chambers from where it diffuses both through the second openings to the intermediate elements and through the upper chambers to the wall and is thereafter exhausted through the pipe;
means connecting said elements in such a manner as to define a grate for the placement of the fuel and a wall merging with and extending away from the grate;
at least one pipe in communication with said hollow pathways for exhausting heated air carried by the elements;
means communicating between an unheated air source and the inlets of the hollow pathways; and
means for intercommunicating air between the element pathways intermediate the inlet and outlet ends of the elements and thereby preventing an uneven heat distribution as might cause damaging thermalstresses within the apparatus.

4,441,482

FIREPLACE INSERT

Terry L. Luscombe, Box 108, Armstrong, Iowa 50514
Continuation-in-part of Ser. No. 57,413, Jul. 13, 1979, abandoned. This application Aug. 25, 1980, Ser. No. 181,122
Int. Cl.^{3} F24B *7/00*
U.S. Cl. 126—123 5 Claims

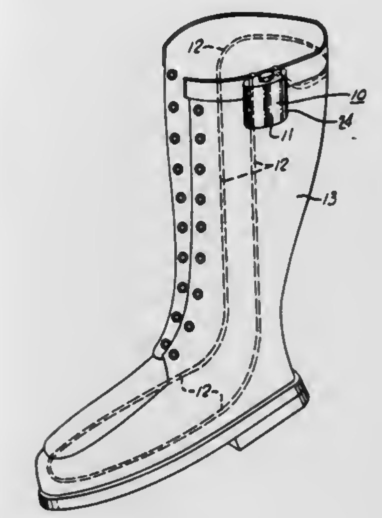


1. A fireplace insert heater,
an outer housing including upper, lower, rear and side walls,
an inner housing spaced inwardly from said outer housing and having an interior defining a combustion chamber, said inner housing including upper, rear and side walls, spaced inwardly of the respective upper, rear and side walls of the outer housing to thereby define upper, rear and side plenum chambers between the corresponding walls of said inner and outer housings, the walls of said inner housing separating said plenum chambers in non-communicating relation from the combustion chamber, said inner housing separating said plenum chambers in non-communicating relation from the combustion chamber, said inner housing having a forwardly facing opening, said inner and outer housings adapted to be positioned within a fireplace recess,
a horizontal top chamber structure secured to the top wall of the outer housing and adapted to be positioned exteriorly of the fireplace recess, a pair of laterally spaced apart side chamber structures located exteriorly of the fireplace recess and each having an interior communicating with said side plenum chambers, said side chamber structures having a common front wall extending between the side chamber structures,
an access opening in the front wall,
a pair of transparent doors hingedly mounted on said front wall,
a pair of vertically disposed metallic sectional doors hingedly connected with said inner housing and being swingable between closed and open positions, said metallic doors when in the closed position closing the forwardly facing opening in the inner housing, and when in the open position being disposed in the space between the inner housing and the front wall of the outer housing to completely expose the opening in the inner housing,
a plurality of laterally spaced apart openings in said front wall adjacent the lowe portion of the latter and extending between said side chambe structures, means for variously adjusting the size of said openings to vary the amount of air introduced into the combustion chamber,
a vertically disposed flue stack extending through the upper walls of the inner and outer housings to intercommunicate the combustion chamber with the chimmney of the fireplace, said flue stack being spaced laterally inwardly from the respective side walls of said inner and outer housing,
a baffle plate positioned in the combustion chamber below and in confronting relation with the flue stack,
fans in said side chamber structures for impelling air rearwardly into the side plenum chambers,
and a pair of substantially flat, horizontally disposed baffle plates each being positioned in one of said side plenum chambers for directing air impelled by said fans in a rearward direction.

4,441,483

PORTABLE FURNACE FOR WEARING APPAREL

Stanley Cieslak, 14 Creek Rd., and Leonard K. Cieslak, 15 Creek Rd., both of McKees Rocks, Pa. 15136
Continuation-in-part of Ser. No. 186,954, Sep. 15, 1980, Pat. No. 4,334,519, which is a continuation-in-part of Ser. No. 49,059, Jun. 18, 1979, Pat. No. 4,281,418, which is a continuation-in-part of Ser. No. 875,815, Feb. 7, 1978, Pat. No. 4,180,922. This application Jan. 27, 1982, Ser. No. 343,151
The portion of the term of this patent subsequent to Jan. 1, 1997, has been disclaimed.
Int. Cl.^{3} A61F *7/00*
U.S. Cl. 126—206 8 Claims



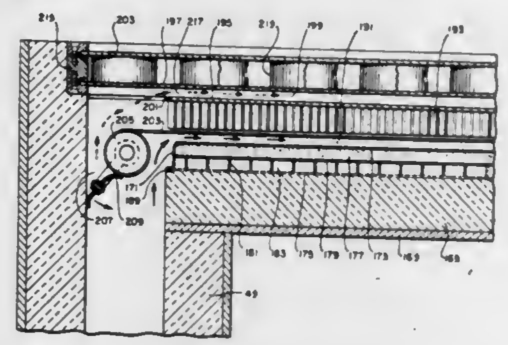
1. A portable furnace for heating wearing apparel or the like comprising, a compact closed container for containing a liquid therein and capable of being readily carried on a person, a second container received in said closed container and adapted to receive heating element means therein through an opening to the exterior and having at least a portion of the exterior walls of said second container exposed to the interior of said compact container for heat transfer through said walls to a liquid to be contained within said compact container, a flexible liquid conduit having both ends thereof connected for circulation of heated liquid from said compact container through said conduit, and positive displacement pump means connected to said conduit for hand manipulation to circulate heated liquid from said compact container through said conduit on demand.

4,441,484

CHEMICAL HEAT PUMP

Leonard Greiner, 2853-A Hickory Pl., Costa Mesa, Calif. 92626
Division of Ser. No. 135,726, Mar. 31, 1980, abandoned, which is a division of Ser. No. 958,507, Nov. 7, 1978, Pat. No. 4,224,803, which is a continuation-in-part of Ser. No. 842,702, Oct. 17, 1977, Pat. No. 4,272,268. This application Nov. 12, 1981, Ser. No. 320,332
Int. Cl.^{3} F24J *3/02*
U.S. Cl. 126—436 1 Claim

1. A solar collector, comprising:
a surface for absorbing solar radiations;
a pair of spaced transparent covers mounted over said absorbing surface, said solar radiation passing through said covers to impinge upon said absorbing surface, said pair of spaced, transparent covers forming a tapered heat exchange fluid duct, said duct being tapered sufficiently to maintain low thermal eddy current flow in said heat exchange fluid as the temperature thereof increases in passing through said duct while still maintaining said duct sufficiently thin to assure substantial heat transfer to said heat exchange fluid,
means for alternately ducting heat exchange fluid between one of said pair of spaced, transparent covers and said surface; and

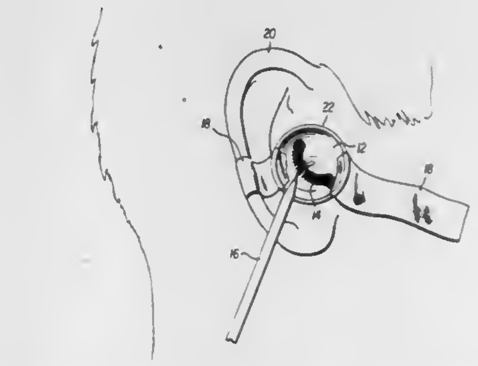


a reflective screen selectively positionable between said one of said pair of spaced, transparent covers and said surface, said screen reflecting radiant thermal energy when said heat exchange fluid is ducted between said one of said spaced, transparent covers and said surface, said screen, when positioned between one of said pair of spaced, transparent covers and said surface, defines one side of a flow channel for conducting said heat exchange fluid.

4,441,485

MOVEMENT DAMPENING EAR SPECULUM

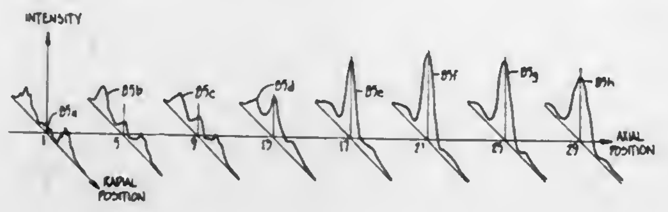
William V. Reynolds, 375 Main St., Oneonta, N.Y. 13820
Filed May 7, 1981, Ser. No. 261,364
Int. Cl.^{3} A61B *1/22*
U.S. Cl. 128—9 7 Claims



1. A surgical unit for the human ear, comprising:
a speculum for insertion into the human ear;
a coiled-spring attached to the inner wall of said speculum; said coiled-spring extending circumferentially within said speculum and conforming to the inner circular wall of said speculum;
means for securing the speculum in intimate contact with the human ear;
and
a surgical instrument extending through said speculum and inserted between the coils of said coiled-spring to an area of the ear where surgery is to be performed; said coils of said coiled-spring supporting said surgical instrument to impede sudden involuntary inward and lateral movements made by an operating surgeon to thereby prevent damage to the ear, and said coils of said coiled-spring controlling the voluntary movements of the operating surgeon to thereby enhance the operation and increase the success rate of the surgery.

4,441,486
HYPERTHERMIA SYSTEM

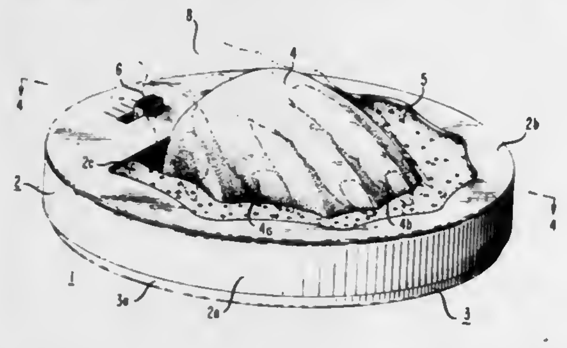
Douglas W. Pounds, Menlo Park, Calif., assignor to Board of Trustees of Leland Stanford Jr. University, Stanford, Calif.
Filed Oct. 27, 1981, Ser. No. 315,579
Int. Cl.³ A61B *5/00*
U.S. Cl. 128—24 A **19 Claims**



1. A method of ultrasonically heating a subject volume comprising the steps of:
providing a transducer;
acoustically coupling a surface of the transducer to the subject volume; and
exciting vibrations within the transducer so that compressional mode vibrations are suppressed over a generally central region of the surface;
the suppression of compressional mode vibrations providing an intensity pattern characterized by relatively low intensities in the regions of the subject volume at depths extending out to a transition distance, with a relatively high intensity on-axis peak in a region beyond the transition distance whereupon a discrete portion of the subject volume may be subjected to considerable heating without appreciable heating of the intervening portions.

4,441,487
COSMETIC AND THERAPEUTIC APPLIANCE

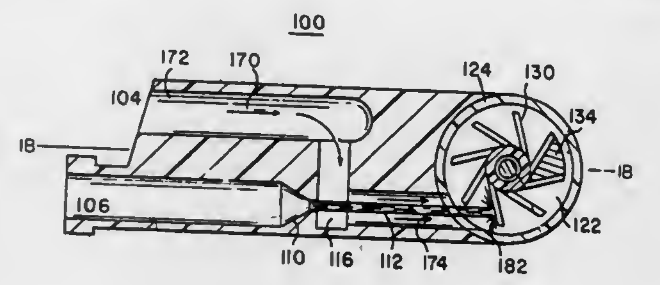
Carol A. Daugherty, Washington; Larry N. Siebens, Whippany, and Ronald R. Daugherty, Washington, all of N.J., assignors to R. D. Design Co., Inc., Washington, N.J.
Filed Jun. 15, 1981, Ser. No. 273,364
Int. Cl.³ A61H *21/00*
U.S. Cl. 128—24.2 **9 Claims**



1. An apparatus for hand treatment which comprises in combination:
A shallow container constructed to hold a quantity of treating oil therein and having a top edge surface, a bottom surface and peripheral wall surfaces having a central opening therein;
A handrest, said handrest being formed of substantially rigid material contoured in a convex curvature on its upper side, and substantially hollow on its underside, said convex curvature shaped to accomodate a hand for treatment with the fingers in outstretched separated positions so that the palm rests near the zenith of said curvature and the fingers depend against the sides with their respective ends near the lower periphery of said handrest;
said handrest being disposed in said central opening, the inner peripheral wall of said container being spread-apart from the outer periphery of said handrest and forming a semi-annular gap therebetween and said zenith of said curvature extending above said top surface;
a strip of sponge disposed in said gap to at least partially surround said inner peripheral wall of said container and being slightly spaced apart from the outer periphery of said handrest to accomodate the ends of the fingers of said treated hand in contact with said sponge;
means comprising an electrical heater disposed in heat transfer relation to said container for heating said oil to a temperature above room temperature;
vibrator means coupled to the hollow underside of said handrest and constructed to impose a vibratory motion on said handrest; and
electrical circuit means connectable in energy transfer relation between said heater and said vibrator means and a source of power for energizing said heater and said vibrator.

4,441,488
HYDRO-AIR VIBRATOR MASSAGE APPARATUS

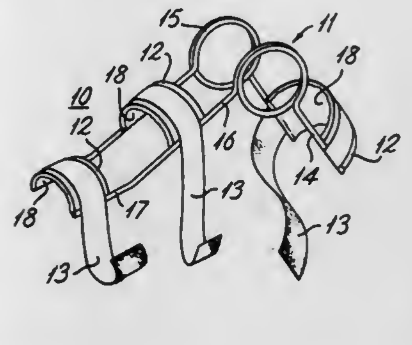
L. Cedric Macabee, Scotts Valley, Calif., assignor to David K. Macabee, Carlsbad, Calif.
Continuation of Ser. No. 121,363, Feb. 14, 1980, abandoned. This application Feb. 9, 1981, Ser. No. 232,952
Int. Cl.³ A61H *9/00*
U.S. Cl. 128—66 **27 Claims**



1. Water-air massage apparatus for combining a cyclic massage displacement generally parallel to the region under massage, with the pressure effect of compressing and releasing entrained air in the form of breaking air bubbles, comprising:
water source for providing a high velocity water jet flow in a direction generally parallel to the region under massage;
air source for exposing the water jet flow to air forming an sheath flow of air;
elongated channel means extending in a direction generally parallel to the region under massage, having a receiving end for receiving the water jet flow and the sheath air flow, and having an exit end for providing an exit flow of water and air;
housing means with a chamber therein for receiving and mixing the exit flow from the channel means;
rotor means rotatably mounted within the chamber and rotationally responsive to the exit flow about a rotation axis generally orthogonal to the region under massage, the rotor means having a center of mass offset from the rotation axis thereof for causing a rotational eccentricity sufficient to establish a circular counter action housing motion generally parallel to the region under massage;
perforated closure means across the housing generally parallel to the region under massage, forming a plurality of output streams of water-air mixture in a direction toward the region under massage;
baffle diversion means within the housing for receiving the water-air mixture from the chamber and redirecting the water-air mixture from a rotational flow within the chamber to a directional flow towards the region under massage, out the perforations of the closure means, the perforations restricting the flow of the output streams causing a back presure within the diversion means which compresses the air in the mixture, the compressed air expanding and rupturing after passing through the perferations creating temporary pressure bursts in the output streams;
an open ended massage chamber formed by a rim means extending from the closure means for defining the region under massage and receiving and intensifying the output streams; and
resilent means extending from the closure means for engaging and laterally disturbing the region under massage by the housing counter motion in a circular displacement pattern generally parallel to the region under massage.

4,441,489
ORTHOPAEDIC SPLINTS

David M. Evans, Farnham Common, and Barry O. Weightman, Thames Ditton, both of England, assignors to National Research Development Corporation, London, England
Filed Mar. 8, 1982, Ser. No. 355,623
Claims priority, application United Kingdom, Mar. 10, 1981, 8107537
Int. Cl.³ A61F *5/10*
U.S. Cl. 128—77 **9 Claims**

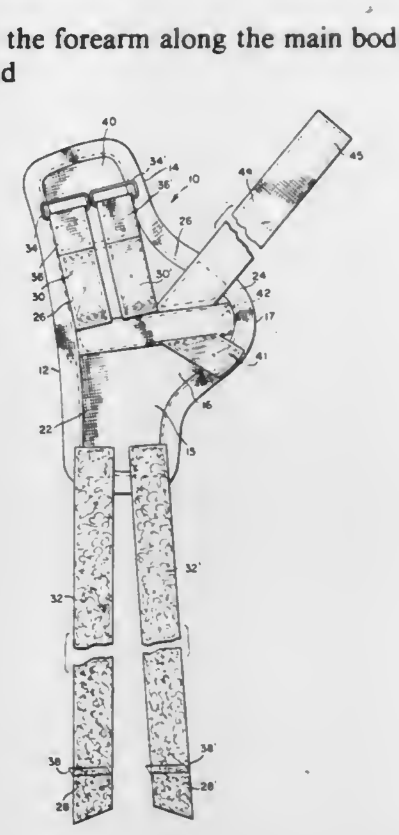


1. An orthopaedic splint for the finger comprising a first portion and a second portion respectively for location distally and proximally of the proximal interphalangeal joint; said first portion including two plates each curved to seat in one of palmar and dorsal dispositions round a phalanx, said plates each having a respective strap to hold the same releasably so seated, and said plates being interconnected in mutually inclined manner for respective location distally and proximally of the distal interphalangeal joint to hold this joint in hyperextension; and said first and second portions being resiliently and hingedly interconnected to hold the proximal interphalangeal joint in flexion while allowing restrained extension against the spring force of this last interconnection.

4,441,490
WRIST BRACE

Robert P. Nirschl, 4143 N. River St., Arlington, Va. 22207
Filed Sep. 23, 1982, Ser. No. 421,966
Int. Cl.³ A61F *5/10*
U.S. Cl. 128—77 **12 Claims**

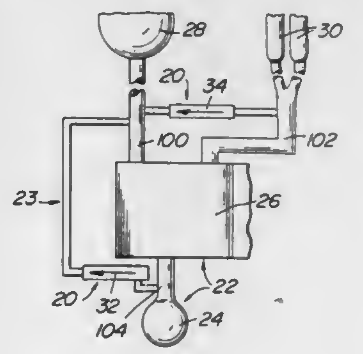
1. A brace capable of being wrapped about the wrist and dorsal area of the hand and capable of applying pressure to a wide area of the wrist and hand to thereby relieve internal tension of the wrist, comprising: an elongated pad, said paid being substantially flexible in all directions and having a laminate with an inner layer of resilient foamed material bonded to an outer layer of substantially inelastic flexible sheet; having,
(a) a main body with one long edge slightly convexly arcuately-shaped, an opposing long edge, a first end and a second end;
(b) a substantially triangular projection extending away from the main body having a rigid reinforcing member attached parallel to the forearm along the main body and the projection; and



(c) fastening means for securing the brace tightly about the wrist and dorsal area of the hand.

4,441,491
PRESSURE RELIEF VALVE SYSTEM FOR PENILE IMPLANT DEVICE

Alvin S. Evans, Sr., 234 Shubert Ave., Runnemede, N.J. 08078
Filed Aug. 13, 1982, Ser. No. 407,969
Int. Cl.³ A61F *5/00*
U.S. Cl. 128—79 **10 Claims**

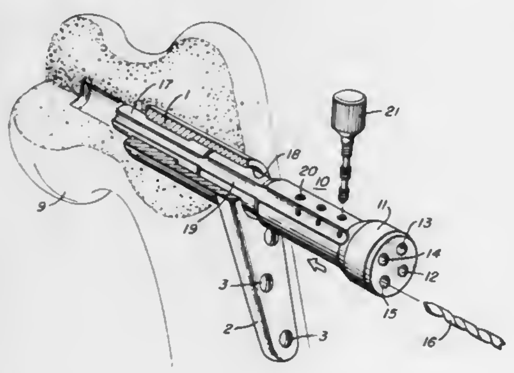


1. A pressure relief valve system for use in combination with a penile implant device which is used for simulating a natural erection, wherein said penile implant device includes bladder means which are implanted within the penis, a fluid containing reservoir and primary unidirectional valve means which are respectively, implanted at remote locations thereto and pump means which is implanted in the scrotum, said primary unidirectional valve means permitting fluid to pass from said pump means to said bladder means while precluding fluid from passing in the opposite direction, wherein said system comprises pressure relief valve means arranged to provide uni-directional fluid communication between said pump means and said reservoir, said pressure relief valve means being interposed in the path of fluid communication between said pump means and said primary unidirectional valve means, thus enabling fluid to bypass said primary unidirectional valve means and said bladder means by passing from said pump means to said reservoir whenever said fluid pressure adjacent said pump means is greater than a first predetermined amount and precluding fluid from passing therealong whenever said pressure is less than said first predetermined amount, said pressure relief valve means thus establishing a maximum amount of fluid pressure

which can be pumped into said bladder means with said pump means, yet not limiting the amount of pressure which can otherwise be maintained in said bladder means.

4,441,492
AID FOR TELESCOPIC NAIL FOR ORTHOPEDIC USE

Nils Rydell, Stenhammarsvägen 25, 161 52 Bromma, and Ragnar Kalen, Golfvägen 26, 181 31 Danderyd, both of Sweden
Filed Feb. 23, 1983, Ser. No. 468,967
Claims priority, application Sweden, Sep. 29, 1982, 8205544
Int. Cl.^{3} A61F *5/04*
U.S. Cl. 128—92 EB **10 Claims**



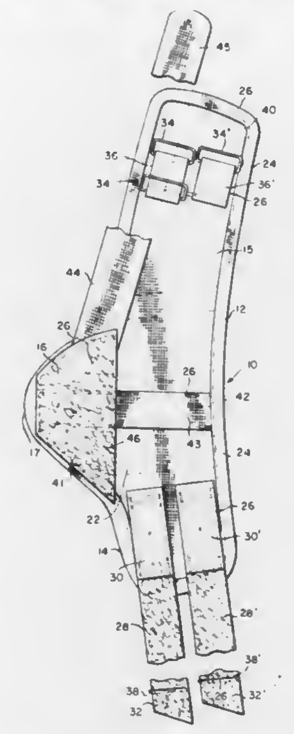
1. Auxiliary tool to be used with a telescopic compression system for orthopedic application, said telescopic system comprising a compression plate means having a hollow barrel member provided with means for coacting with a nail means to nonrotatably join said plate means and a bone fragment located on a side opposite the plate means across the fractured site, wherein said barrel member being provided on its inner surface with at least one longitudinal groove extending the length thereof to cooperate with a complementary longitudinal ridge formed on the exterior surface of said nail means;

said tool comprising an elongate rod designed to fit within said barrel member and said rod having at least one longitudinal groove formed on its exterior surface such that when the tool is properly aligned with the longitudinal groove of said barrel means, the two coacting grooves form an essentially cylindrical channel thereby providing guidance for a drill means along the length of said channel.

4,441,493
ELBOW BRACE

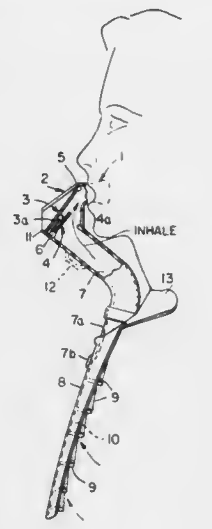
Robert P. Nirschl, 4143 N. River St., Arlington, Va. 22207
Filed Sep. 23, 1982, Ser. No. 422,349
Int. Cl.^{3} A61F *13/00*
U.S. Cl. 128—165 **12 Claims**

1. A brace device capable of being wrapped about the elbow and forearm and capable of applying pressure to a wide area of the elbow to thereby relieve internal musculo-tendonous tension about the elbow, comprising: a substantially curvilinear, elongated pad of a generally conical shape when wrapped about the elbow and forearm, the pad being substantially flexible in all directions and having a laminate with an inner layer of resilient foamed material bonded to an outer layer of substantially inelastic flexible sheet, the pad further having a main body, a substantially triangular projection extending therefrom, and fastening means for securing the support device tightly about the elbow and forearm; the main body having one long edge convexly arcuately-shaped, an opposing long edge, a first end and a second end; and the projection extending away from the main body and having a rigid reinforcing member extending parallel to the forearm along the projection and into the main body.



4,441,494
COLD WEATHER BREATHING DEVICE

Anthony P. Montalbano, 29 Hitching Post La., Glen Cove, N.Y. 11542
Filed Mar. 2, 1981, Ser. No. 239,497
Int. Cl.^{3} A61M *16/00*
U.S. Cl. 128—204.17 **21 Claims**

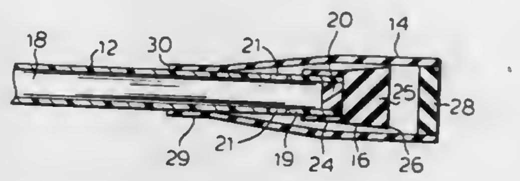


1. A cold weather device comprising:
- a mouthpiece (1) which is engageable only with the mouth area of a user and which is insertable in the mouth of the user and substantially provides a seal to the mouth of the user, said mouthpiece not extending to the nose of the user and leaving the nose of the user uncovered;
- a valve housing (2) coupled to said mouthpiece (1) and in air communication with only the mouth of the user via said mouthpiece (1), and being out of air communication with the nose of the user;
- a conduit (7) extending downwardly from said valve housing (2) and in selective air communication with said mouthpiece (1) via said valve housing (2);
- a first valve (4) in said valve housing (2) and in air communication with said conduit (7) and mouthpiece (1) for providing an air communication path between said conduit and said mouthpiece when the user inhales, and for blocking said air communication path between said conduit and mouthpiece when the user exhales;
- an exhaust opening in said valve housing (2) and being in selective air communication with said mouthpiece (1) for selectively exhausting exhaled air to the atmosphere;
- a second valve (3) in said valve housing (2) and coupled between said exhaust opening and said mouthpiece (1) for providing an air communication path between said mouthpiece and said exhaust opening when the user exhales, and for blocking said air communication path between said exhaust opening and mouthpiece when the user inhales; and
- a shield unit having a top end, opposite sides, a bottom end and a substantially central portion, said shield unit including a substantially air impervious shield member (8) coupled to an end portion of said conduit (7) remote from said mouthpiece (1) and a first and second plurality of spaced apart projecting ribs (9) extending from one side of said shield member (8), adjacent ribs defining with said shield member (8) a plurality of elongated, generally U-shaped, substantially unrestricted air passage channels (10), said first plurality of ribs being on one side of said substantially central portion of said shield unit and said ribs of said first plurality of ribs having one end located adjacent the periphery of said shield member (8) and an opposite end located adjacent said substantially central portion of said shield member, said second plurality of ribs being on the other side of said substantially central portion of said shield unit and said ribs of said second plurality of ribs having one end located adjacent the periphery of said shield member (8) and an opposite end located adjacent said substantially central portion of said shield member, a substantially central air passage (15) being defined between opposite ends of said first and second pluralities of ribs, said substantially central air passage (15) being in substantially unrestricted fluid communication with said generally U-shaped air passage channels (10), said substantially unrestricted air passage channels (10) substantially unrestrictedly opening to the periphery of said shield unit (8) and extending substantially unrestrictedly from at least said openings at said periphery of said shield unit to said substantially central air passage (15), said shield unit being coupled to said conduit (7) such that said substantially unrestricted air passage channels (10) are in substantially unrestricted air communication with the interior of said conduit (7) via said substantially central air passage (15) to provide substantially unrestricted flow of air from the periphery of said shield unit to the interior of said conduit (7) and to said mouthpiece (1), whereby said shield unit is adapted to be placed against a body portion of a user to provide substantially unrestricted open-ended air flow passages through said U-shaped air passage channels, said substantially central air passage and to said mouthiece via said conduit whereby the body heat of the user heats cold air passing therethrough.

4,441,495
DETACHABLE BALLOON CATHETER DEVICE AND METHOD OF USE

Daniel Hicswa, Saddle Brook, N.J., assignor to Becton, Dickinson and Company, Paramus, N.J.
Filed Aug. 16, 1982, Ser. No. 408,344
Int. Cl.^{3} A61B *17/12*
U.S. Cl. 128—325 **12 Claims**

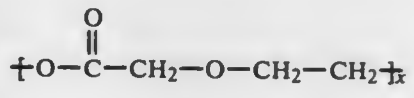
1. A detachable balloon catheter device comprising:
- a resilient tubular cannula with a lumen extending therethrough having a proximal portion adapted for connection to a source of external fluid and having its lumen closed at the distal end thereof, the distal portion of said cannula including fluid passage means through the circumferential wall thereof in communication with said lumen;
- a plug detachably connected to the distal portion of said cannula without blocking said fluid passage means; and
- an inflatable balloon detachably connected to the distal portion of said cannula covering said plug and said fluid passage means, said balloon having an opening normally in fluid-tight engagement around said cannula, said cannula being slidable proximally through said opening when the balloon is inflated to disengage said plug therefrom and position the plug in fluid-tight engagement in said opening interiorly of said balloon to thereby detach said cannula from said inflated balloon.



4,441,496
COPOLYMERS OF P-DIOXANONE AND 2,5-MORPHOLINEDIONES AND SURGICAL DEVICES FORMED THEREFROM HAVING ACCELERATED ABSORPTION CHARACTERISTICS

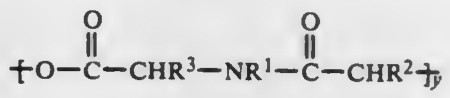
Shalaby W. Shalaby, and Donald F. Koelmel, both of Lebanon, N.J., assignors to Ethicon, Inc., Somerville, N.J.
Filed Feb. 8, 1982, Ser. No. 346,809
Int. Cl.^{3} A61L *17/00;* **A61F** *1/24*
U.S. Cl. 128—335.5 **18 Claims**

1. A copolymer, comprising a multiplicity of recurring A and B units, having the following general formula:



$$\left[\mathrm{O}-\overset{\mathrm{O}}{\overset{\|}{\mathrm{C}}}-\mathrm{CH_2}-\mathrm{O}-\mathrm{CH_2}-\mathrm{CH_2}\right]_x$$

A



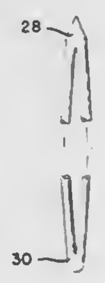
$$\left[\mathrm{O}-\overset{\mathrm{O}}{\overset{\|}{\mathrm{C}}}-\mathrm{CHR^3}-\mathrm{NR^1}-\overset{\mathrm{O}}{\overset{\|}{\mathrm{C}}}-\mathrm{CHR^2}\right]_y$$

B

wherein x and y are integers, such that the A units comprise 85–99 mole percent, and the B units comprise 1–15 mole percent of the copolymer and R^1, R^2 and R^3 are each hydrogen or lower alkyl and may be the same or different.

4,441,497
UNIVERSAL SUTURE PASSER

Franklin T. Paudler, 13820 Somerset La. Southeast, Bellevue, Wash. 98006
Filed Oct. 21, 1982, Ser. No. 435,731
Int. Cl.^{3} A61B *17/06, 17/04, 17/34*
U.S. Cl. 128—339 **9 Claims**



1. An apparatus for guiding sutures through body tissue or the like comprises:
- a plurality of elongated flexible members of approximately equal length, the members disposed alongside one another and joined together at each end to define an open space between each pair of members for receiving a suture

therethrough, each open space decreasing in size as it approaches one of the joined ends of the members to define a region adjacent such joined end for securing a suture between the members.

4,441,498

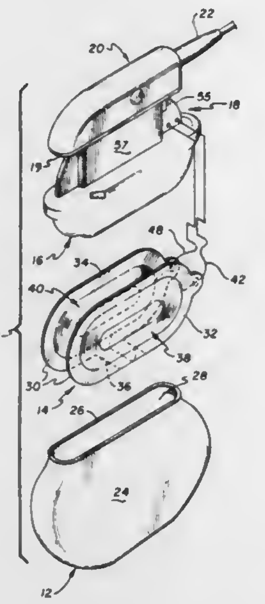
PLANAR RECEIVER ANTENNA COIL FOR PROGRAMMABLE ELECTROMEDICAL PULSE GENERATOR

Neal F. Nordling, White Bear Lake, Minn., assignor to Cardio-Pace Medical, Inc., St. Paul, Minn. and Cardio-Pace Medical, Inc., St. Paul, Minn.

Filed May 10, 1982, Ser. No. 376,300

Int. Cl.^{3} A61N *1/36*

U.S. Cl. 128—419 P **5 Claims**



1. An implantable, programmable, electromedical pulse generator for implanting in a body of a patient to provide an electrical pulse signal to body tissue of the patient via an electrode connected to the pulse generator, the pulse generator having programmable operating parameters based upon radio frequency (RF) signals from a transmitter located outside the patient, the pulse generator comprising:

- a hermetically sealed housing having first and second generally parallel side walls and a bottom;
- a terminal supported by the housing for connection to the electrode;
- a flexible resilient insulating substrate having a first zone, a second zone, and a third intermediate zone which connects the first and second zones, the flexible resilient insulating substrate being bent in a U-shape and being resiliently positioned within the housing with the first zone being resiliently urged into engagement with an inner surface of the first side wall, the second zone being resiliently urged into engagement with an inner surface of the second side wall, and the third intermediate zone being positioned adjacent an inner surface of the bottom of the housing;
- a first planar wire-wound air core coil antenna for receiving the RF signals, the first antenna being carried by the first zone of the flexible insulating substrate;
- a second planar wire-wound air core coil antenna for receiving the RF signals, the second antenna being carried by the second zone of the flexible insulating substrate, so that the first and second antennae are in generally parallel relationship;
- a battery contained within the housing between the first and second zones of the flexible insulating substrate; and
- programmable pulse generator means connected to the battery, the terminal and the first and second antennae for producing the electrical pulse signal based upon programmable operating parameters determined by the radio frequency (RF) signals received by the first and second antennae, the programmable pulse generator means being contained within the housing between the first and second zones of the flexible insulating substrate.

4,441,499

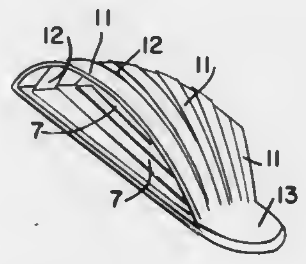
DYNAMIC ORTHOTIC PLATFORM

John E. Comparetto, P.O. Box 408, Chincoteague, Va. 23336, and Paul R. Glaser, 8 Ford Pl., Dix Hills, N.Y. 11746

Filed May 7, 1980, Ser. No. 147,675

Int. Cl.^{3} A61F *5/14*

U.S. Cl. 128—595 **6 Claims**



1. An orthotic platform apparatus to optimize biomechanical correction of the human foot comprising:

- upper element means forming a passive platform segment means with end and medial portions,
- lower element strap means with end and medial portions,
- said passive platform means extending from one end and longitudinally forming fan-like continuous ray members to correspond to first through fifth metatarsal bones of the human foot,
- passive platform segment means for each ray to support the human foot,
- elastomeric assisting strap means to comply with normal transverse parabola at metatarsal heads of the human foot,
- passive platform segment means secured to one another,
- elastomeric adjustable strap means to increase amplitude at the passive platform segment means to conform to foot arch while a human is in standing position,
- adjustable strap means being secured to the passive platform means at an end portion to form a heel seat.

4,441,500

EKG ELECTRODE

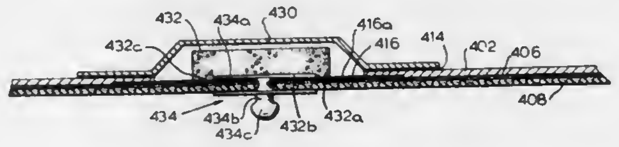
Robert W. Sessions, Burr Ridge; Jerome Jeslis, Chicago, and Richard A. Rodzen, Bolingbrook, all of Ill., assignors to Ferris Manufacturing Corp., Hinsdale, Ill.

Continuation-in-part of Ser. No. 141,057, Apr. 17, 1980, Pat. No. 4,353,373. This application Mar. 25, 1981, Ser. No. 247,560

The portion of the term of this patent subsequent to Oct. 12, 1999, has been disclaimed.

Int. Cl.^{3} A61B *5/04*

U.S. Cl. 128—641 **6 Claims**



1. An improved EKG electrode comprising:

- an annular plastic base liner with a centrally located hole therein;
- a circular plastic disk removably attached to a first side of said base liner covering said hole;
- a circular plastic fabric member with a layer of adhesive on a first surface concentrically positioned with respect to said disk and attached thereto by said layer of adhesive, said fabric member is removably attached at said first surface to said first side of said base liner;
- means for electrical connection, said means extends at least through said circular plastic disk with a first portion located adjacent a first side of said disk, and essentially centered with respect to said hole in said base liner, and a second portion which extends outwardly from on opposite side of said circular plastic disk,
- a jel impregnated foam cylinder essentially centered with respect to said hole and extending in part therethrough with a planar end surface covering said first portion of said means for electrical connection, a part of said planar end surface is attached to a portion of said first side of said disk;
- a layer of adhesive formed on a second side of said base liner, said layer of adhesive extending continuously across said base layer from edge to edge thereof and surrounding said centrally located hole;
- a plastic cover with integrally formed planar sealing members, said planar sealing members are sealingly affixed to said second side of said base liner by said continuous layer of adhesive with said cover, said liner and said disk forming a sealed moisture retaining region such that said jel in said disk is prevented from drying out and hardening.

4,441,501

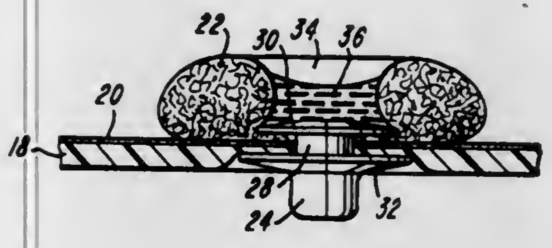
MEDICAL ELECTRODE

James R. Parent, Dayton, Ohio, assignor to NDM Corporation, Dayton, Ohio

Filed Mar. 8, 1982, Ser. No. 356,096

Int. Cl.^{3} A61B *5/04*

U.S. Cl. 128—641 **9 Claims**



1. A medical electrode of the type adapted to be adhered to the skin comprising:

- a flexible supporting sheet coated with adhesive on one side for adhesion to the skin of a patient and comprising a material which is substantially impervious to moisture and water vapor;
- an electrically conducting connector abutting said sheet on the side thereof opposite said one side for connection to external equipment;
- a gel pad engaging said adhesively coated surface of said sheet comprising a foam sponge having its outer margins spaced inwardly from the outer margins of said adhesively coated surface of said sheet;
- an electrolyte engaging conductor engaged with said gel pad having a first portion having one surface facing the same direction as said adhesively coated surface and an opposite surface facing toward said adhesively coated surface, having a second portion integral with the first portion extending through said gel pad and through said sheet into engagement with said connector, a portion of said gel pad being squeezed between said first portion of said conductor and said adhesively coated surface, the outer margin of said first portion being spaced inwardly from the outer margin of said gel pad so that only a portion of said gel pad is squeezed between said first portion and said adhesively coated surface, the portions of said gel pad surrounding said first portion of said conductor projecting substantially further from said adhesively coated surface than said first portion of said conductor and forming with said first portion of said conductor a cup-like cavity; and
- an electrolyte gel within said cavity and at least partially filling said gel pad.

4,441,502

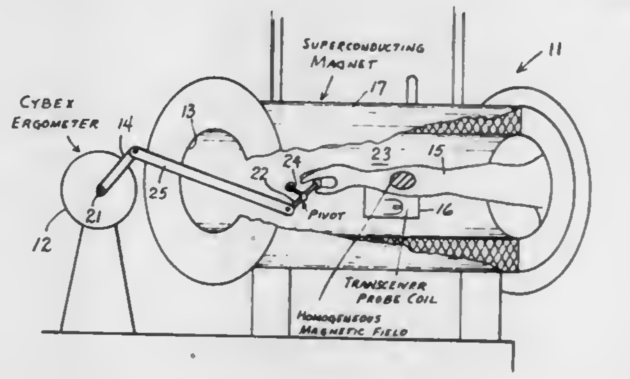
NMR SYSTEM FOR DETERMINING RELATIONSHIP BETWEEN WORK OUTPUT AND OXIDATIVE PHOSPHORYLATION CAPABILITY IN AN EXERCISING BODY MEMBER

Britton Chance, c/o Johnson Research Foundation, School of Medicine, University of Pennsylvania, Philadelphia, Pa. 19104

Filed Aug. 19, 1982, Ser. No. 409,554

Int. Cl.^{3} A61B *5/05*

U.S. Cl. 128—653 **8 Claims**



1. An apparatus for determining the relationship between work output of an exercising living body member and the capability of oxidative phosphorylation of said body member, comprising a NMR analytical devicc of the type including a hollow magnet provided with an internal radio frequency transceiver coupling element mounted to be in electrical coupling relation to a body member inserted in the magnet, for generating curves depicting the intensities of phosphorus-containing components in the body member, including phosphocreatine (PCr) and inorganic phosphate (P_i), whose intensity ratio varies in accordance with the amount of work performed by the body member, an ergometer mounted adjacent to the magnet, drive means movably mounted in the magnet and being drivingly operable by the body member when said body member is in said coupling relation to said coupling element, and linkage means coupling said movable drive means to the ergometer, for registering the work performed by the body member when it operates said drive means, enabling a comparison to be made between the intensity ratio with the body member at rest and the intensity ratio following the performance of a measured amount of work by said body member.

4,441,503

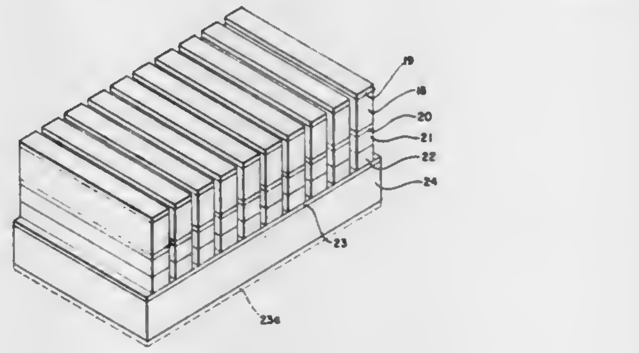
COLLIMATION OF ULTRASONIC LINEAR ARRAY TRANSDUCER

Matthew O'Donnell, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 18, 1982, Ser. No. 340,140

Int. Cl.^{3} A61B *10/00;* **H01L** *41/22*

U.S. Cl. 128—660 **5 Claims**



3. An improved ultrasonic phased array transducer for a sector scan imaging system comprising:

- a linear transducer array which transmits pulses of ultrasound at many scan angles to scan a sector of the human body and is comprised of a plurality of transducer elements each of which generates ultrasonic waves and to which are attached fully cut through impedance matching layers, a wear plate covering said elements and matching layers; and

a continuous collimator plate adjacent to said wear plate which exhibits critical angle effects and transmits and totally reflects ultrasonic waves emitted by every element whose angle of incidence of respectively less than and greater than the critical angle, said critical angle being approximately equal to the maximum scan angle;

whereby insignificant ultrasonic energy is generated outside of the sector scanned and imaged by the system.

4,441,504

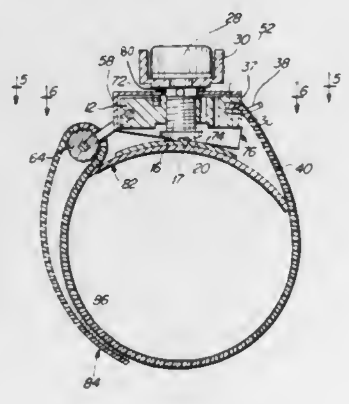
ELECTRONIC CUFF TO MONITOR BLOOD PRESSURE IN POLYGRAPH INSTRUMENTS

Donald A. Peterson, Berwyn, and Henry K. Skrzypczak, Westchester, both of Ill., assignors to Stoelting Company, Chicago, Ill.

Filed May 10, 1982, Ser. No. 376,675

Int. Cl.^{3} A61B *5/02*

U.S. Cl. 128—686 **8 Claims**



1. A non-invasive, non-pneumatic cuff for use in polygraph testing comprising a load cell, strain gauges on said load cell adapted to be connected to a polygraph instrument by a cable, a curved plate pivotally connected to said load cell, a combination screw and clutch to properly pressurize the plate and load cell against the arm of a subject to be examined, an arm band being adapted to secure said plate and load cell to the arm of the subject, said arm band having two ends, said load cell being provided with an end channel, one end of said arm band being securely anchored in said end channel.

4,441,505

SENSING DEVICE FOR HUMAN LUNG EXHALATION/INHALATION AIR FLOW MEASUREMENT

Raymond A. Edwards, and Keith F. Edwards, both of Tuxedo Park, N.Y., assignors to Kinetics Measurement Corp., Upper Saddle River, N.J.

Filed Jan. 11, 1982, Ser. No. 338,373

Int. Cl.^{3} A61B *5/08*

U.S. Cl. 128—726 **6 Claims**

1. A spirometer comprising:

a container having a top end cap and a bottom end cap;

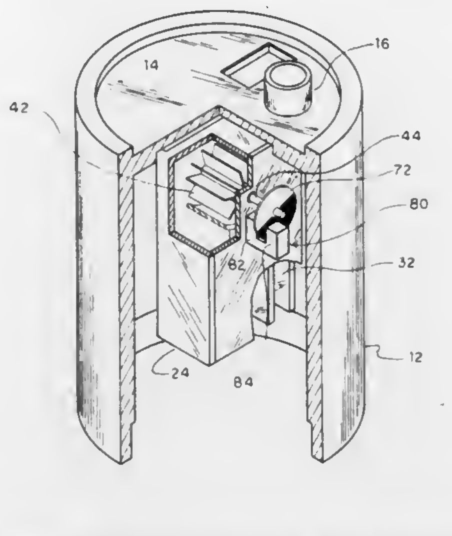
an opening in said top end cap and an opening in said bottom end cap;

an air flow housing positioned within said container extending between said end caps;

an air flow path extending longitudinally through said housing, said path terminating at one end in an air inlet communicating with said opening in said top end cap and at the opposite end in an outlet communicating with said opening in said bottom end cap;

an arcuate cavity in said housing communicating with said flow path and extending transversely thereto;

a multi-blade paddle wheel type rotor mounted coaxially with said cavity for rotation within said housing with the blades of said rotor extending partially across said flow path;



an air gap defined between the ends of the blades and the housing, the ratio of the cross-sectional area of said air gap to said inlet being approximately 1:3; and,

means for counting the rotations of said rotor when air is inhaled or exhaled through said top end cap opening.

4,441,506

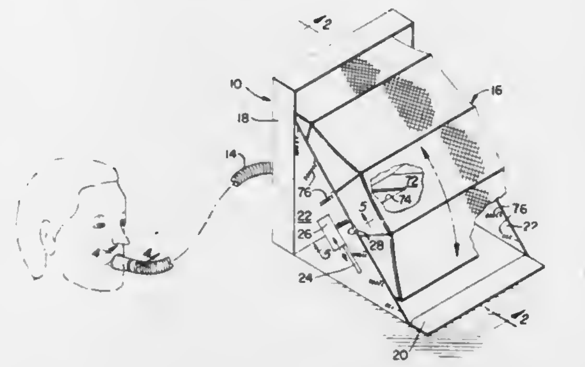
RESPIRATORY EXERCISER

Norman R. McCombs, 109 Millwood La., Tonawanda, N.Y. 14150, and Grace N. McCombs, Tonawanda, N.Y., assignors to Norman McCombs, Tonawanda, N.Y.

Filed May 18, 1981, Ser. No. 264,969

Int. Cl.^{3} A61B *5/08;* **A63B** *23/00*

U.S. Cl. 128—728 **52 Claims**



1. An air handling device comprising a bellows which expands and collapses in book-like fashion, said bellows comprising a pair of outer vanes and at least one other vane between said outer vanes, hinge means joining one corresponding portion of all of said vanes together to permit said book-like expanding and collapsing of said bellows, air impervious sheet material fixed to said corresponding portions of said pair of outer vanes to form a substantially air-tight space within the bellows defined by said pair of outer vanes and said sheet material, air flow means to provide access for air into and out of said bellows adapting said device to function as an incentive breathing exerciser; all of said vanes, said sheet material, said hinge means, and said access means being so selected that said bellows is sufficiently inexpensive that it may be disposed of after a single user is done using it, wherein one of said outer vanes is a moving vane and moves with respect to the other of said outer vanes during use of said device, said other of said outer vanes being a non-moving vane, and mounting means for mounting said non-moving vane substantially vertically during use of said exerciser with said hinge means at the lower end of said non-moving vane, whereby the force of gravity tends to pull said moving vane and re-expand said bellows after each user's inspirational breath collapses said bellows, and whereby each user's inspirational breath collapses said bellows by drawing said moving vane against the force of gravity towards said non-moving vane.

4,441,507

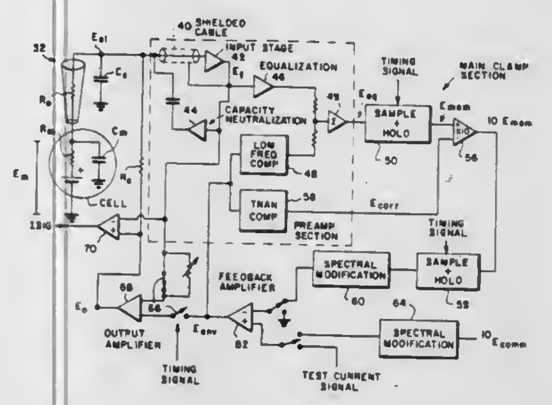
HIGH SPEED SINGLE ELECTRODE MEMBRANE VOLTAGE CLAMP

Morris Steffin, 27 Bell Canyon Rd., Bell Canyon, Calif. 91370

Filed Nov. 30, 1981, Ser. No. 325,977

Int. Cl.^{3} A61B *5/04*

U.S. Cl. 128—734 **23 Claims**



1. In a single electrode voltage clamp used to study neuronal cells, said clamp including voltage measurement circuitry for determining the membrane potential of a cell during a measurement interval and feedback circuitry for comparing the determined membrane potential with a command potential and injecting current into the cell during a current injection interval as a function of the difference between the membrane potential and command potential, wherein the value of command potential varies at a relatively low cell frequency and switching between voltage measurement and current injection occurs at a much higher frequency, wherein the voltage measurement circuitry includes an input section for amplifying the output of the electrode, the improvement for increasing the speed of the clamp circuit comprising capacitance compensation means for separately minimizing both low frequency and high frequency response aberrations of the input section caused by shunt capacitance of the electrode.

4,441,508

THERMOGRAPHIC CHOLESTERIC COATING COMPOSITIONS AND PLATES

William L. Buirley, Dayton; Donald E. Koopman, Miami Township, Miami County; David B. McQuain, Dayton, and William H. Reeves, Englewood, all of Ohio, assignors to Vectra International Corporation, Miamisburg, Ohio

Continuation-in-part of Ser. No. 45,276, Jun. 4, 1979, Pat. No. 4,301,054. This application Nov. 16, 1981, Ser. No. 321,620

The portion of the term of this patent subsequent to Nov. 17, 1998, has been disclaimed.

Int. Cl.^{3} A61B *10/00;* **C09K** *3/34*

U.S. Cl. 128—736 **18 Claims**

1. A thermographic plate particularly for medical investigation comprising a polymer film substrate sheet and a coat of about 1 to 6 mils thickness comprising single-droplet microcapsules having transparent wall material, and having core material consisting essentially of about 55 to about 75% of cholesteryl pelargonate, about 14 to about 35% of isostearyl cholesteryl carbonate, about 2.0 to about 6.0% of cholesteryl propionate and about 4.5 to about 7.2% of cholesteryl chloride.

4,441,509

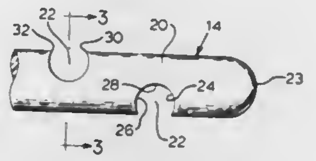
ENDOMETRIAL SAMPLING DEVICE

Peter N. Kotsifas, Lake St. Louis; Victor H. Wetzel, Bridgeton, and Richard W. Gilson, Dellwood, all of Mo., assignors to Sherwood Medical Company, St. Louis, Mo.

Filed May 21, 1981, Ser. No. 265,763

Int. Cl.^{3} A61B *1/00, 17/22*

U.S. Cl. 128—757 **7 Claims**



1. An endometrial sampler comprising an elongate, flexible, plastic specimen collection probe being solid in cross-section, and a handle connected to said probe for manually grasping the sampler and inserting said probe into the uterus of a patient and for retracting said probe from the uterus to obtain a specimen therefrom for clinical analysis, said probe having a groove therein adjacent the distal end thereof extending substantially normal to the longitudinal axis of said probe, said groove having a bottom wall and axially spaced opposed proximal and distal sidewalls, said distal sidewall intersecting the outer periphery of said probe at an acute angle to provide a sharp scraping edge at the periphery of said probe and having a distal sidewall portion extending proximally to overhang said groove, said edge extending circumferentially in a smoothly curving configuration, the minimum width of the mouth of said groove measured along a line parallel to the longitudinal axis of said probe being less than the maximum width dimension of the groove measured along a line parallel to the longitudinal axis of said probe.

4,441,510

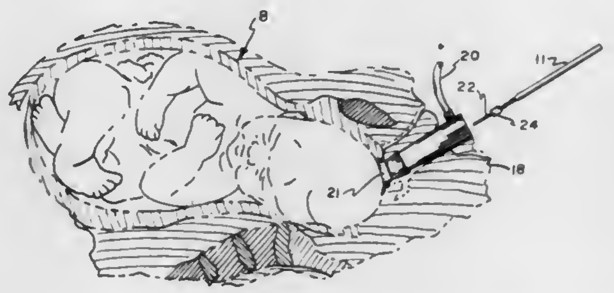
METHOD AND APPARATUS FOR FETAL PH SCALP STUDIES

Michael W. Worley, deceased, late of Salt Lake City, Utah, and by Shauna Worley, legal representative, 2021 Hollywood Ave., Salt Lake City, Utah 84101

Filed Jul. 25, 1980, Ser. No. 172,254

Int. Cl.^{3} G01N *33/16*

U.S. Cl. 128—763 **3 Claims**



1. Apparatus for obtaining blood for fetal pH scalp studies comprising

an elongate, substantially rigid, tubular handle;

an aspirator needle having its pointed end projecting from one end of the tubular handle and its other end opening into the handle;

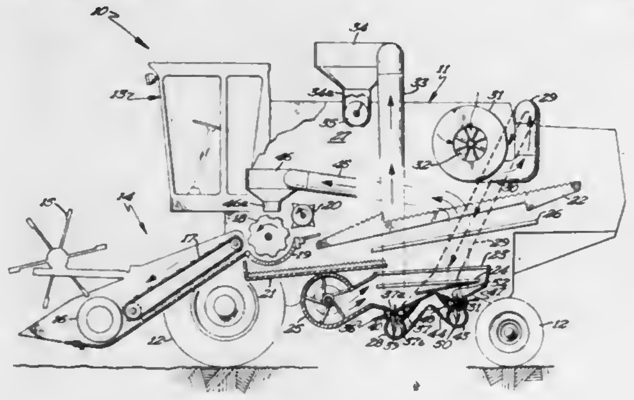
a capillary tube having a self-sealing cap on one end thereof through which the pointed end of the needle is inserted to extend into the capillary tube, and heparin on the inner wall thereof, and a metal flea therein;

a yieldable collar surrounding the capillary tube a spaced distance from the self sealing cap and adjacent the one end of the capillary tube; and

a magnet encircling the capillary tube between the self-sealing cap and the yieldable collar, said magnet having a bore dimensioned to slide over the collar upon application of sufficient force to said magnet and deformation of the collar the yieldable collar being spaced from the self-sealing cap a distance just greater than the length of the magnet along the capillary tube.

4,441,511
PNEUMATIC MATERIAL HANDLING SYSTEM FOR COMBINES

Douglas K. Schroeder, Rte. 1, Estherville, Iowa 51334
Filed Mar. 22, 1982, Ser. No. 360,611
Int. Cl.³ A01F *12/44*
U.S. Cl. 130—27 Z **2 Claims**



1. In a self-propelled combine of the type including a header, a feed mechanism for feeding crops into the combine, a threshing cylinder for separating grain crops and the like, chaff and straw, straw-walkers for removing straw from the combine, a chaffer sieve for receiving chaff and straw from the cylinder, a clean grain sieve positioned below the chaffer sieve for separating grain from chaff, a cleaning fan for directing air through the sieves to facilitate separation of the grain from the chaff, a grain tank in which grain is collected;

the improvement comprising an elongate clean grain collection tube extending transversely of the combine below the chaffer and clean grain sieves for receiving clean grain therein, said clean grain collection tube having an inlet and an outlet;

a fan for producing a stream of air, a conduit interconnecting said fan with the inlet of said clean grain collection tube for supplying air under pressure to the clean-grain collection tube;

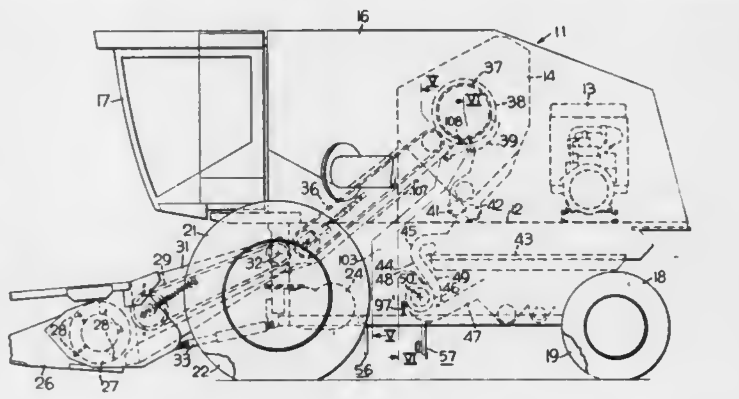
a cyclone structure on said combine and communicating with a grain tank, conduit means interconnecting the outlet of said clean grain collection tube with said cyclone whereby grain in the clean grain collection tube will be entrained in a stream of air and directed to said cyclone to permit grain to be discharged into the grain tank;

an airlock device including an elongate housing positioned above said clean grain collection tube and having an elongate outlet therein communicating with the clean grain collection tube, said housing having an inlet therein for receiving clean grain therethrough;

said airlock device including an elongate driven airlock mechanism positioned in the associated airlock housing and being revolvable relative thereto, said airlock mechanism including a shaft having a plurality of blades secured thereto and extending outwardly therefrom, each blade having a tip portion engaging the innner surface of the associated housing during rotation of the blade to form an airseal thereat, said airlock mechanism being operable to meter a predetermined amount of clean grain into the clean grain collection tube while preventing air under pressure from escaping from the clean grain tube.

4,441,512
COMBINED AIR INTAKE SCREEN AND ACCESS DOOR FOR COMBINE

Garry W. Busboom, Independence, Mo., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Mar. 29, 1982, Ser. No. 362,831
Int. Cl.³ A01F *12/48*
U.S. Cl. 130—27 Z **4 Claims**



1. In a harvester including a main frame with laterally spaced vertical side walls, a pair of drive wheels and associated change speed transmission on the forward end of the main frame, a pair of steerable wheels in supporting relation to the rear end of the main frame, a transverse header, a feeder operatively interconnecting the header and the front of the main frame and including a crop conveying means, a crop processor at an elevated position on said main frame and including a processor housing, a conveyor disposed above the transmission operable to move crop material from the crop conveying means to the crop processor, and a transverse fan and duct walls spaced rearwardly of said transmission and below the conveyor and processor with the fan disposed between and rotatably supported on the side walls for rotation about a transverse horizontal axis, the side walls, conveyor, processor housing, transverse fan and ductwork defining an interior air passageway and service cavity, the improvement comprising:

a combined intake air screen and access means to the interior cavity including

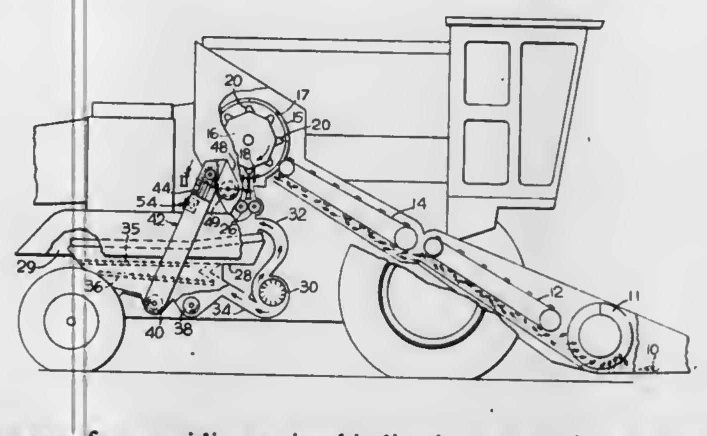
a pair of downwardly swingable foraminous doors disposed in side-by-side relation to one another in their closed positions wherein they are substantially horizontally coplanar, said doors being pivotally connected to the main frame on longitudinally spaced transverse axes for vertical swinging movement between their horizontal closed positions to downwardly extending vertical open positions, and

manually operable releasable retaining means operable to hold said doors in their closed positions, said doors swinging downwardly when said retaining means is released thereby exposing a bottom opening for human access to said cavity for inspection and servicing of components accessible from within said cavity.

4,441,513
TAILINGS MONITOR FOR COMBINE HARVESTER

Warren E. Herwig, Wind Lake, Wis., assignor to Allis-Chalmers Corp., Milwaukee, Wis.
Filed Jul. 30, 1982, Ser. No. 403,785
Int. Cl.³ A01F *12/00*; G01N *21/85*
U.S. Cl. 130—27 B **9 Claims**

1. In a combine harvester vehicle having crop cutting means and threshing and separating stages operative to separate the grain from the other crop material and a cleaning stage operative to substantially remove chaff and the like from the grain received from the threshing and separating stages and including a tailings portion operative to separate incompletely threshed and separated tailings from the grain, said harvester vehicle also having a tailings return elevator for conveying said tailings from said tailings portion to one of said stages for recycling, the improvement comprising means for transmitting a radiant energy beam internally of said elevator transversely across the path of said tailings being conveyed in said elevator,



and means for providing a visual indication proportional to the percentage of time that said beam is interrupted by said tailings being conveyed in said elevator, said last mentioned means including a detector in the path of said beam.

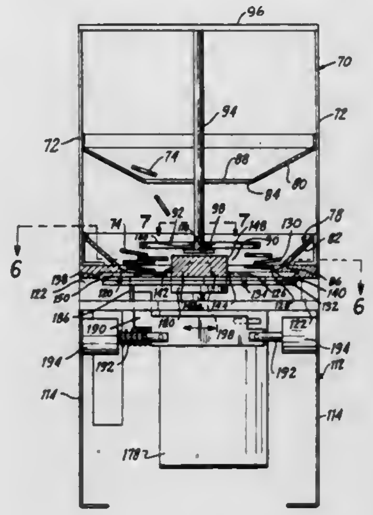
4,441,514
SMOKE FLAVOR ENHANCING AGENTS

Terence G. Mitchell, Romsey; Adrian G. Barnes, Fareham; Julia S. Jackson, and Peter C. Bevan, both of Southampton, all of England, assignors to British-American Tobacco Co., Ltd., London, England
Filed Jan. 12, 1982, Ser. No. 338,897
Claims priority, application United Kingdom, Jan. 19, 1981, 8101536
Int. Cl.³ A24B *3/12, 15/30*
U.S. Cl. 131—276 **10 Claims**

1. A method for enhancing the smoke flavour of a smoking material which comprises incorporating with the material a product comprising 3-hydroxysclareol.

4,441,515
GAMING DEVICE INCLUDING COIN DISPENSING MEANS

Siegfried E. Goepner, Carson City, Nev., assignor to Chance Manufacturing, Inc., Las Vegas, Nev.
Filed Jul. 10, 1981, Ser. No. 282,260
Int. Cl.³ G07D *9/04*
U.S. Cl. 133—5 R **42 Claims**



1. A coin dispensing device for dispensing coins of a predetermined width and thickness, said device comprising:

a hopper for storing a supply of coins to be dispensed, said hopper including bottom guide means for guiding of coins through the bottom of said hopper, said guide means including a lower edge portion defining a circular opening through which coins are to be guided, said circular opening being of a first predetermined diameter;

a rotatable feed disc arranged beneath said guide means for rotation about an axis substantially coinciding with the axis of said circular opening of said guide means, said feed disc including a circular hub element coaxially arranged with the axis of rotation of said feed disc and extending above the upper surface of said feed disc, said circular hub element being of a second predetermined diameter which is less than said first predetermined diameter by an amount which is approximately twice said predetermined width of said coins to be dispensed so as to define with said lower edge portion of said guide means an annular space above said feed disc for the receipt of coins to be dispensed, said upper surface of said feed disc being spaced from the lower surface of said lower edge portion of said guide means a distance which is less than twice said predetermined thickness of said coins to be dispensed, and said guide means and said feed disc defining a substantially annular coin passageway therebetween which is disposed radially outward from and around said annular space and into which coins supported by said feed disc in said annular space may pass beneath said lower edge portion of said guide means;

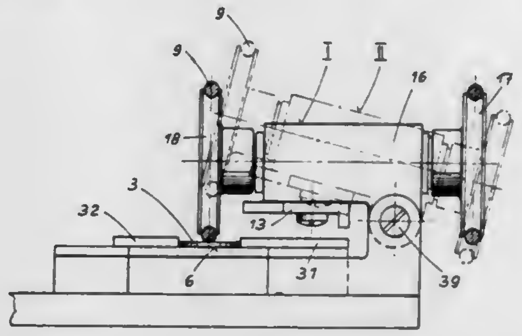
agitating and support means arranged in said hopper for supporting coins in said hopper above said agitating and support means and for directing coins in said hopper downwardly past said agitating and support means towards said annular space so as to be placed onto said feed disc;

means for rotating said feed disc to urge coins thereon in said annular space radially outward beneath said guide means into said coin passageway; and

closure means associated with said guide means and said feed disc for substantially enclosing the outer periphery of said substantially annular coin passageway between said feed disc and said guide means, said closure means including a lateral outlet slot communicating with said coin passageway through which coins in said coin passageway are directed upon rotation of said feed disc.

4,441,516
DEVICE FOR COUNTING COINS

Werner Stadler, Bruchsal, and Bernd Petri, Oftersheim, both of Fed. Rep. of Germany, assignors to Standardwerk Eugen Reis GmbH, Bruchsal, Fed. Rep. of Germany
Filed Dec. 8, 1981, Ser. No. 328,495
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1980, 3048561
Int. Cl.³ G07D *9/04*
U.S. Cl. 133—8 A **5 Claims**



1. In a coin counting machine having a centrifugal disc surrounded by a circular wall a portion of which is vertically movable to define a slot through which individual coins are permitted to pass into a passageway on to a counter, at least one side of said passageway being movable relative to the other side, adjusting means for simultaneously positioning the movable portion of the vertical containing wall and the side of passageway in accordance with the thickness and diameter of the coins, and an endless belt arranged above said passageway driven to transport said coins through the passageway, the improvement wherein said belt is mounted to a support swingable about a pivot axis extending parallel to its length and laterally offset therefrom, and said adjusting means includes

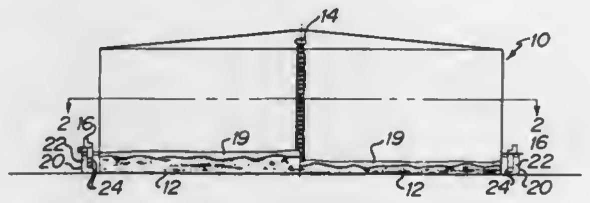
means for simultaneously positioning the belt to depend on the coins in said passageway with a constant pressure regardless of the diameter or thickness of the coins.

4,441,517
APPARATUS FOR SONICALLY FACILITATING THE CLEANING OF OIL STORAGE AND TRANSPORT VESSELS

Edward H. Phillips, Middletown, Calif., assignor to Hidden Valley Associates, Middletown, Calif.

Filed Aug. 13, 1982, Ser. No. 408,053
Int. Cl.^{3} B08B *3/12*

U.S. Cl. 134—113 **9 Claims**



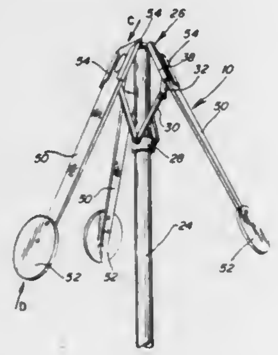
1. Apparatus for directing sonic energy into a vessel, said apparatus comprising:
- sonic transducer means, disposed outside the vessel, for directing one or more beams of sonic energy into the vessel; and
- scan control means, coupled to the sonic transducer means, for scanning said one or more beams of sonic energy to cyclically irradiate nongaseous materials in the vessel.

4,441,518
COLLAPSIBLE SUPPORT FIXTURE FOR CAMOUFLAGE SCREENS OR THE LIKE

Mark J. Hogan, Lake Helen, and Ernest R. Cooke, Deltona, both of Fla., assignors to Brunswick Corporation, Skokie, Ill.

Filed Mar. 26, 1982, Ser. No. 362,318
Int. Cl.^{3} A45F *1/16*

U.S. Cl. 135—98 **23 Claims**



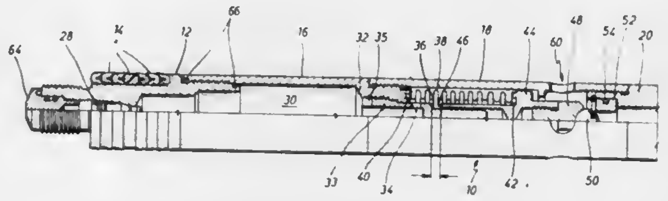
1. A collapsible support fixture for camouflage screen systems or the like, comprising:
- a shaft;
- batten spreader support means for readily releasably receiving and mounting a plurality of individual batten spreader support arms for supporting said camouflage screen, said support means being fixed to said shaft for pivotal movement relative thereto between a collapsed position generally alongside said shaft and a spread position generally radially of said shaft;
- slide means slidable on said shaft;
- link means connecting said slide means to said batten spreader support means for moving said batten spreader support means between said positions in response to sliding movement of said slide means on said shaft; and
- over-center means to hold said batten spreader support means in said spread position automatically when said slide means reaches a predetermined position along said shaft.

4,441,519
GAS LIFT VALVE AND METHOD OF PRESETTING

Ben D. Terral, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Feb. 8, 1982, Ser. No. 346,811
Int. Cl.^{3} F04F *1/20*

U.S. Cl. 137—15 **11 Claims**



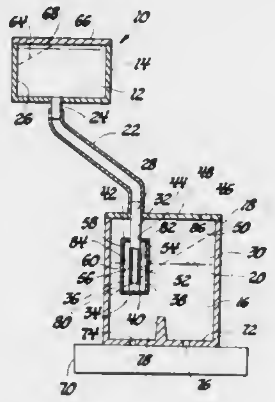
1. A method of presetting a bellows-type gas lift valve having a valve stem coupled to a bellows and operable upon retraction of the bellows to open a flow orifice in response to applied operating pressure, comprising the steps of:
- limiting the travel of said valve stem to a first distance sufficient to permanently partially retract the bellows;
- causing said valve stem to travel said first distance; and
- subsequently limiting the travel of said valve stem to a second distance which is less than said first distance, said second distance being such that said valve stem will travel said second distance upon application of a predetermined normal operating pressure.

4,441,520
HYDRAULIC FLUID RESERVOIR SYSTEM

Frederick G. Bruso, Hartland; Frank H. Walker, Grand Blanc, and Harry H. Lyon, Farmington Hills, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 27, 1982, Ser. No. 412,135
Int. Cl.^{3} G05D *9/02*

U.S. Cl. 137—44 **3 Claims**



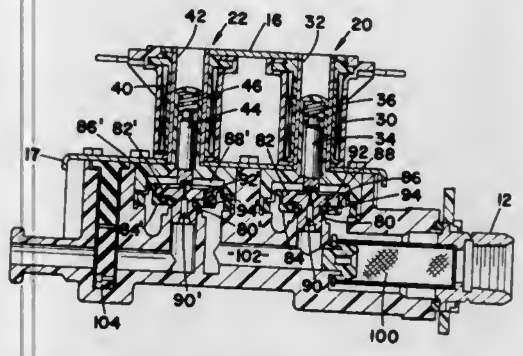
1. In a hydraulic fluid reservoir system for a hydraulic device such as a vehicle master cylinder adapted for operation at various vehicle attitudes with a condition of vehicle movement either steady, accelerating or decelerating, said system having a sealed first reservoir, a vented second reservoir in gravity flow communication with said first reservoir so that under certain conditions hydraulic fluid in said first reservoir may flow into said second reservoir and air from said second reservoir may flow to said first reservoir, a conduit extending into said second reservoir substantially fixed with respect thereto and having an opening located at a predetermined level of hydraulic fluid in said second reservoir when the condition of vehicle movement is steady sufficient to provide satisfactory operation of said hydraulic device at all vehicle operational attitudes and conditions of vehicle movement, the improvement comprising:
- a shroud around said conduit at said opening and defining with said conduit a fluid chamber into which said opening opens at said predetermined level, said shroud having a vent at the upper part thereof venting said chamber into said second reservoir and an aperture substantially in a horizontal plane with said opening at a level one of said various vehicle attitudes but spaced from said opening, said aperture providing communication between said chamber and said second reservoir for hydraulic fluid or air in accordance with vehicle attitude and condition of movement;
- said shroud cooperating with said conduit to prevent air from entering said conduit through said opening during all vehicle operational attitudes and conditions of movement so that a level of hydraulic fluid is always maintained in said fluid chambers in blocking relation to said opening irrespective of the level of hydraulic fluid in said second reservoir resulting from the attitude of the vehicle or its condition of movement, whereby to prevent the unnecessary depletion of hydraulic fluid in said first reservoir by reason of air flow from said second reservoir to said first reservoir because of such attitude or condition of movement.

4,441,521
APPLIANCE CONTROL VALVE ASSEMBLY WITH OPPOSITE MAGNETIC POLARITY SOLENOID COILS

Wade R. Brown, Saint Charles, and Thomas N. Gumble, Bartlett, both of Ill., assignors to Eaton Corporation, Cleveland, Ohio

Filed May 13, 1981, Ser. No. 263,215
Int. Cl.^{3} F16K *31/12*

U.S. Cl. 137—613 **14 Claims**



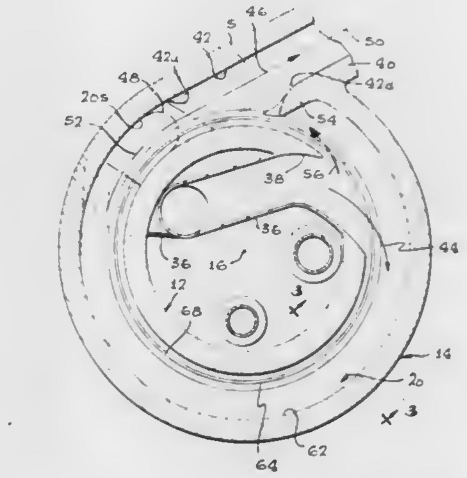
1. A solenoid actuated valve assembly for use in electrical applicances, the valve assembly comprising:
- a valve housing including a first ferromagnetic member, a second ferromagnetic member, at least one inlet port and at least one outlet port;
- a first solenoid actuated, pilot operated flow control valve including a first solenoid coil disposed in the valve housing mounted between the first and second ferromagnetic members in magnetic communication therewith, a first valve seat and a first valve closure which selectively permit and prohibit the flow of fluid through the first flow control valve, the first valve seat and first valve closure being disposed in the valve housing in fluid connection with the inlet port, and a first armature movably disposed at least partially within the first solenoid coil and operatively connected with the first valve closure such that movement of the first armature causes the first valve seat and first valve closure selectively to permit and prohibit fluid flow;
- a second solenoid actuated flow control valve including a second solenoid coil disposed in the valve housing mounted between the first and second ferromagnetic members in magnetic communication therewith, a second valve seat and a second valve closure which selectively permit and prohibit the flow of fluid through the second flow control valve, the second valve seat and second valve closure being disposed in the valve housing in fluid connection with the outlet port and, a second armature movably disposed at least partially within the second solenoid coil and operatively connected with the second valve closure such that movement of the second armature causes the second valve seat and closure selectively to permit and prohibit fluid flow, the second solenoid coil being disposed in sufficiently close proximity to the first solenoid coil that a magnetic flux path is formed through the first and second solenoid coils with sufficient strength to reduce electrical impedance of the first and second solenoid coils; and,
- connecting means for connecting an actuating potential to the first and second solenoid coils in such a manner that the first solenoid coil and the second solenoid coil generate magnetic fields which are 180° out of phase.

4,441,522
PIGGABLE MULTICHAMBER FLUID SWIVEL

Michael D. Griffin, Mission Hills, Calif., assignor to Amtel, Inc., Providence, R.I.

Filed Nov. 7, 1980, Ser. No. 204,801
Int. Cl.^{3} F16L *27/06*

U.S. Cl. 137—615 **10 Claims**



1. In an offshore installation which includes a rotatable vessel mooring device which moors a vessel while allowing drifting of the vessel under the influence of winds, currents and waves including prevailing winds and currents, and where fluid cargo can be transferred between an undersea conduit and a moored vessel through a fluid swivel that includes a nonrotatable part connected to the undersea conduit and a rotatable part rotatable about the nonrotatable part and connected by a conduit to the vessel, and wherein the fluid swivel is piggable and includes an annular chamber formed between the rotatable and nonrotatable parts, an inlet formed in the nonrotatable part through which fluid and a pig can enter the annular chamber and an outlet formed in the rotatable part through which the fluid and pig can exit the annular chamber, and wherein the rotatable part has a pig diverter means at or near the outlet to assure the entrance of the pig into the outlet, but with the diverter means extending into and at least partially blocking the annular chamber so that the diverter means can prevent a pigging operation when the rotatable part is oriented so the inlet and outlet are slightly past a position of alignment, the improvement wherein:
- means maintaining said rotatable fluid swivel part outlet oriented with respect to said mooring device and said nonrotatable fluid swivel part inlet so that the outlet axis lies substantially aligned with the inlet axis when the vessel lies at the least likely position which it would assume under the combined influence of prevailing winds and currents such that said pig entering said inlet will not directly encounter said diverter means and be blocked from exiting said outlet.

4,441,523
SEQUENCING VALVE

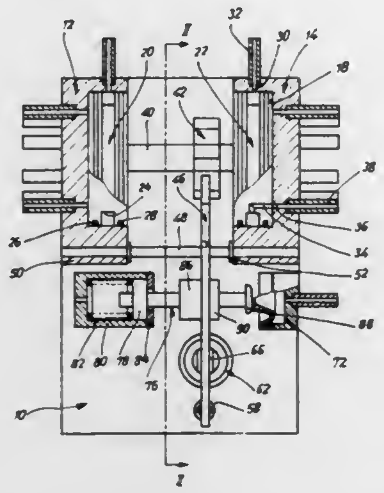
Kurt Stoll, Lenzhalde 72, D-7300 Esslingen a.N., Fed. Rep. of Germany

Filed Jul. 29, 1982, Ser. No. 403,166

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1981, 3130291

Int. Cl.^{3} F16K *11/02*

U.S. Cl. 137—624.18 **9 Claims**



1. In a pneumatic sequencing valve for producing connections one at the time between an input port and any desired one of a group of output ports, having a rotor with an output port therein, a stator joined with said rotor and having a number of output ports therein, said stator's output ports being on a line traced out by said rotor's output port if said rotor is turned, an intermittent driving unit for turning said rotor in half steps equal to half the pitch of said stator output ports, a driving toothed wheel as part of said motor, a rocking driving fork for stepping said toothed wheel, said fork having an axis of rocking and fork arms placed at different radial distances from said rocking axis, and a pneumatic actuator for moving said rocking driving fork, the invention residing in that said sequencing valve has two such stators and two such rotors, said rotors being so ganged with their output ports at an angle about the axis of said rotors that when one rotor output port is lined up with one stator output port, the output port of said other rotor is between two stator output ports, said sequencing valve furthermore having parts for mechanically locking said driving fork of said intermittent driving unit in all half-step positions thereof.

4,441,524
BALL VALVE

Hisayoshi Mese, Osaka, Japan, assignor to Fuji Kinzoku Kohsaku Co. Ltd., Osaka, Japan

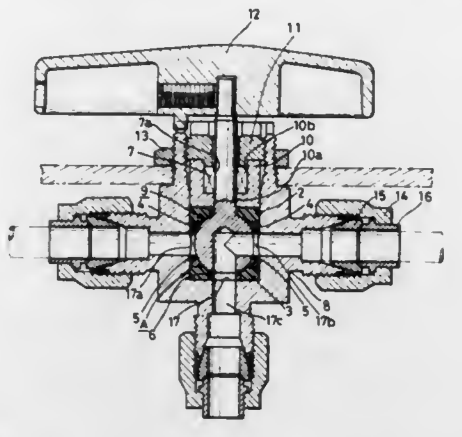
Filed Sep. 25, 1981, Ser. No. 305,851

Claims priority, application Japan, Oct. 2, 1980, 55-138576

Int. Cl.^{3} F16K *5/06*

U.S. Cl. 137—625.47 **3 Claims**

1. A ball valve comprising a valve seat assembly locatable within a valve box, the latter being provided with at least two fluid passages and with a valve chamber open at one end, the valve seat assembly comprising a rod-carrying ball provided with a through-hole for enabling communication between said passages, characterized by a lower valve seat having a concave surface for slidable contact with a lower portion of the ball and formed with semicircular packing insertion apertures on opposed upper side surfaces, an upper valve seat into which the rod is inserted to be assembled, the upper valve seat having a concave surface for slidable contact with an upper portion of the ball and formed with semicircular packing insertion apertures on opposed lower side surfaces, packings each being locatable in an opening formed by packing insertion apertures when the valve seats are assembled, and having a concave front surface for slidable contact with the ball as well as a convex rear surface for slidable contact with an outer peripheral surface of the valve chamber, and annular retainers locatable in retainer insertion holes of packings and each having a front concave surface for slidable contact with the ball as well as a convex rear surface for slidable contact with the outer peripheral surface of the valve chamber, the annular retainers being made of a harder material than the packings and the retainers together with the valve box, the upper and lower valve seats and the ball totally encasing the packings, the valve rod passing through the upper valve seat to bring an upper surface of the seat into butting relation with a packing gland fitted with a bearing packing, and the bearing packing and the packing gland being tightened by means of a packing gland screw.



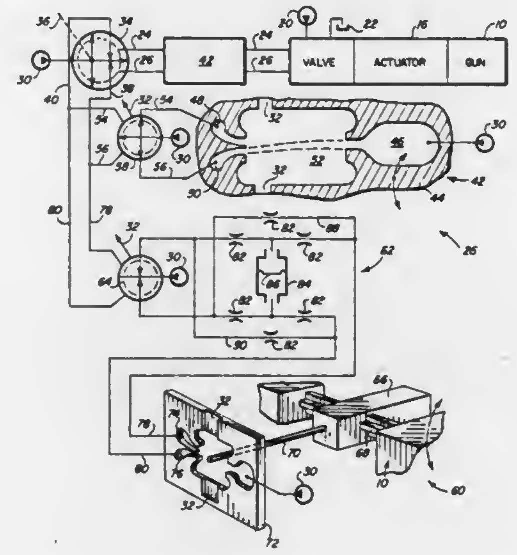
4,441,525
FLUIDIC STABILIZATION CONTROL

Thomas B. Tippetts, Mesa, Ariz., and Francis M. Manion, Rockville, Md., assignors to The Garrett Corporation, Los Angeles, Calif. and United States Government, Washington, D.C.

Division of Ser. No. 967,812, Dec. 8, 1978, Pat. No. 4,256,015. This application Jul. 24, 1980, Ser. No. 171,764

Int. Cl.^{3} F15C *1/12, 3/00*

U.S. Cl. 137—814 **9 Claims**



1. A circuit for adjusting the phase of a fluid pressure differential signal carried in first and second conduits, comprising:

first means, including feed forward circuit means in communication with said first and second conduits, and further including passive flow capacitive and flow resistance means in communication with said first and second conduits, for providing a transfer function for said signal of the form

$$\frac{1 - \tau S}{1 + \tau S},$$

where $\tau 0$ is the time constant of said circuit and S is the Laplace Transform operator, whereby said first means adjusts the phase of said signal in relation to the frequency of said signal without causing the gain of said signal to be dependent upon said frequency.

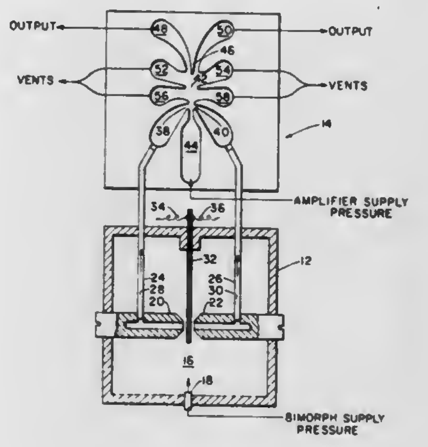
4,441,526
ANALOG ELECTRO-FLUIDIC SIGNAL TRANSDUCER

Charles K. Taft, 25 Woodridge Rd., Durham, N.H. 03824, and Benjamin M. Herrick, 23 Davis Rd., Apt. C3, Acton, Mass. 01720

Filed Nov. 16, 1981, Ser. No. 322,004

Int. Cl.^{3} F15C *1/04, 1/14, 1/06*

U.S. Cl. 137—831 **10 Claims**



1. An analog electro-fluidic signal transducer comprising, in combination,

a housing defining a first chamber adapted for connection to a first source of fluid pressure, a pair of input passages each having at one end thereof a nozzle open to said chamber, the nozzles being mutually opposed and a predetermined space within said first chamber separating said nozzles, a cantilever mounted piezoelectric bender having a portion thereof located in said predetermined space between the nozzles, said bender being bendable to move said portion toward and away from said nozzles respectively and means for connecting the bender to a voltage source, and

a laminar proportional amplifier defining a second chamber, means adapted for connection to a second source of fluid pressure and for directing a laminar jet into the second chamber, a pair of inlets on opposing sides of the jet and connected to said input passages, and a pair of output passages diverging from a flow divider in the path of the jet and downstream of said inlets.

4,441,527
CONCRETE PIPE REINFORCEMENT SPACER BAR

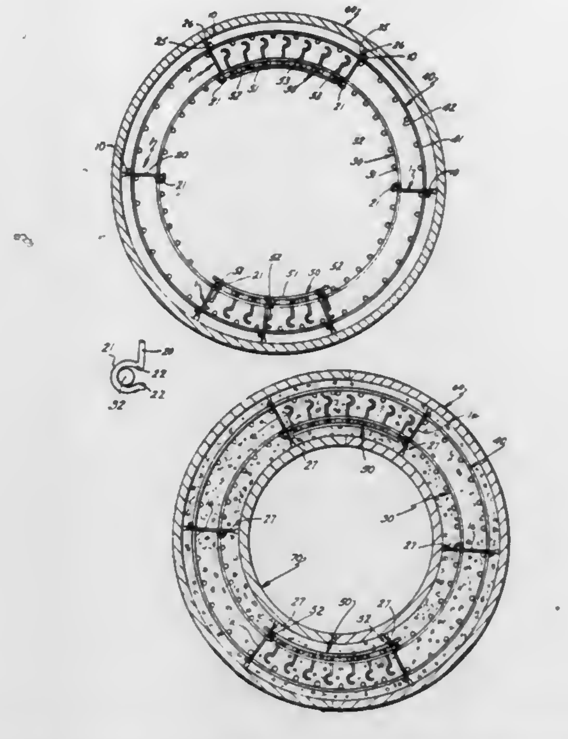
Wilbur E. Tolliver, 364 Hamilton Dr., Holland, Mich. 49423

Division of Ser. No. 56,592, Jul. 11, 1979, Pat. No. 4,270,583. This application May 27, 1981, Ser. No. 267,557

Int. Cl.^{3} F16L *55/00*

U.S. Cl. 138—175 **1 Claim**

1. A cage assembly of inner and outer, generally cylindrical pipe reinforcing cages, each cage including a plurality of longitudinal wire strands joined to a plurality of circumferential wire strands, said assembly comprising: a plurality of spacer bars each having a tie rod and a plurality of links joined to and spaced along the length of said tie rod, said links being generally parallel to one another and each including a hook spaced from said tie rod a distance approximately equal to the desired spacing between said inner and outer cages; each said tie rod engaging one of said inner and outer cages and said links projecting through said one cage toward the other, said hooks hooking over one or more wire strands in said other cage to thereby hold the two cages together; the entrance of said hook having two rounded cam surfaces, one on either side of said entrance of said hook, whereby said wire strand snaps easily into said hook; and a tail hook at one end of said tie rod for hooking over the circumferential wire of one of said cages, said tail hook having an entrance narrower than the circumferential strand which it hooks over whereby a snap fit therebetween is effected.



4,441,528
CLUTCH ARRANGEMENT FOR CONTROLLING THE HEDDLES OF A WEAVING MACHINE

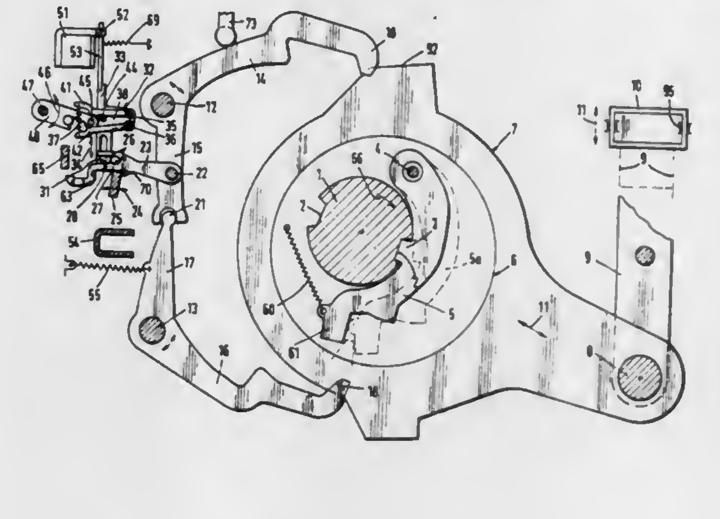
Werner Julich, Wallisellen, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

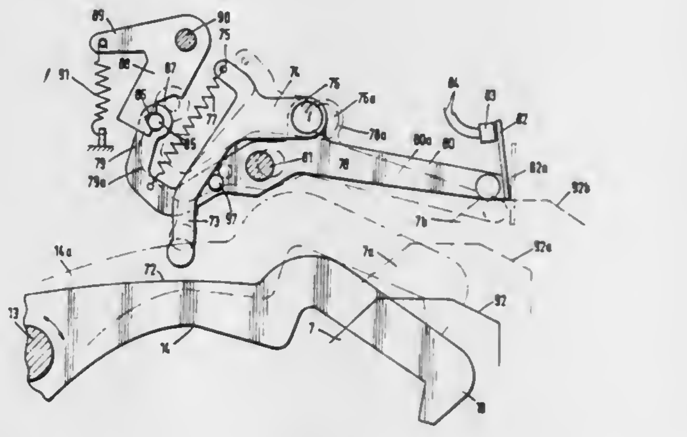
Filed Dec. 16, 1982, Ser. No. 450,438

Claims priority, application European Pat. Off., Dec. 28, 1981, 81 810517.3

Int. Cl.^{3} D03C *1/00;* **D03D** *51/46*

U.S. Cl. 139—66 R **16 Claims**





1. A clutch arrangement for controlling a heddle of a weaving machine, said arrangement comprising

- an intermittently rotatable drive shaft having at least one slot therein;
- an eccentric rotatably mounted on said shaft;
- a pawl mounted on said eccentric for engagement in said slot of said shaft;
- first means connected with said eccentric for moving the heddle between a low shed position and a high shed position;
- second means for selectively coupling and uncoupling said pawl with and from said shaft; and
- third means for automatically monitoring the position of the heddle.

4,441,529

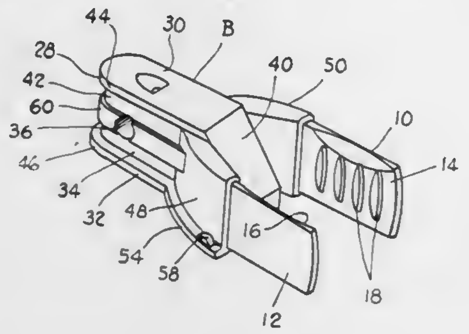
STABILIZED SHUTTLE GRIP

Charles F. Kramer, Greenville, S.C., assignor to Steel Heddle Manufacturing Company, Greenville, S.C.

Filed Nov. 29, 1982, Ser. No. 445,356

Int. Cl.^{3} D03J *5/16*

U.S. Cl. 139—207 **11 Claims**



1. An encapsulated shuttle grip for use in a shuttle for holding a bobbin in a properly aligned position during weaving, said shuttle having a shelf cut formed therein in which said shuttle grip is received for attachment to said shuttle by means of an attachment bolt, said shelf cut having a side under cut groove formed in a side wall of said shuttle, said shuttle grip comprising:

- a pair of opposed rigid leaves having spaced apart gripping jaws, end shank portions, and intermediate curved portions joining said gripping jaws and shank portions;
- a molded housing having a forward nose portion;
- said end shank portions being encapsulated in said nose portion of said molded housing with said gripping jaws extending outwardly from said molded housing being free from said molded housing; and
- said molded housing including arcuately extended side walls encapsulating at least a portion of said intermediate curved portions of said shuttle grip leaves;
- a molded bottom rib extending outwardly from said arcuately extended side walls along at least a portion of said side walls rearwardly from said nose portion; and
- said bottom rib being receivable in said side undercut groove of said shelf of said shuttle for interlocking engagement therein resisting rotational movement of said shuttle grip about said attachment bolt.

4,441,530

RIBBON LOOM OR THE LIKE

Robert R. Bucher, Frick, Switzerland, assignor to Jakob Müller Forschungs- und Finanz AG, Frick, Switzerland

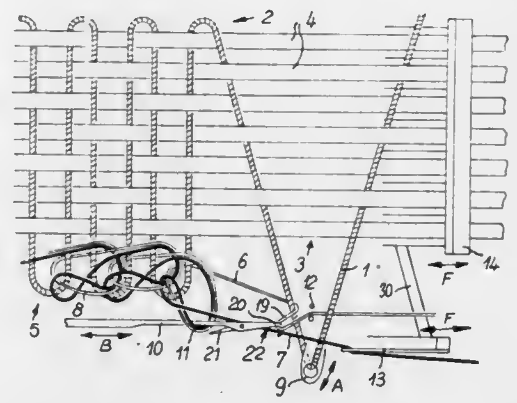
Continuation-in-part of Ser. No. 70,116, Aug. 27, 1980, abandoned, which is a division of Ser. No. 812,861, Jul. 5, 1977, Pat. No. 4,202,381. This application Jul. 20, 1981, Ser. No. 285,400

Int. Cl.^{3} D03D *47/44*

U.S. Cl. 139—432 **3 Claims**

1. A ribbon loom for manufacturing a ribbon tape or the like containing warp threads and weft thread loops inserted from one side of a warp shed, wherein a first auxiliary thread is drawn through the weft thread loops and a second auxiliary thread disposed outside of the weft thread loops is knitted with each n-th stitch of the first auxiliary thread in order to secure the same, said ribbon loom comprising:

- a weft thread insertion element;
- a knitting needle for tying the weft thread loops by means of at least one auxiliary thread;
- a thread guide for the second auxiliary thread constructed such that for knitting the second auxiliary thread it inserts such second auxiliary thread into said knitting needle, after the knitting needle has drawn a loop of the first auxiliary thread through the weft thread loop;
- wherein the thread guide of the second auxiliary thread is constructed such thread, with respect to a reference plane defined by the knitting needle and the ribbon tape to be produced, for the insertion into the knitting needle at one side of the reference plane and during the start of a forward stroke of the knitting needle at the other side of the reference plane;
- further including a reed, the thread guide of the second auxiliary thread being connected with the reed, said thread guide possessing a guide member which in a beat-up position of the reed is located at the side of the reference plane where there is guided the second auxiliary thread during the start of the forward stroke of the knitting needle;
- wherein said guide member comprises a lengthwise guide; and
- wherein the lengthwise guide possesses a guide slot.



4,441,531

WEFT DETAINING DEVICE OF SHUTTLELESS LOOM

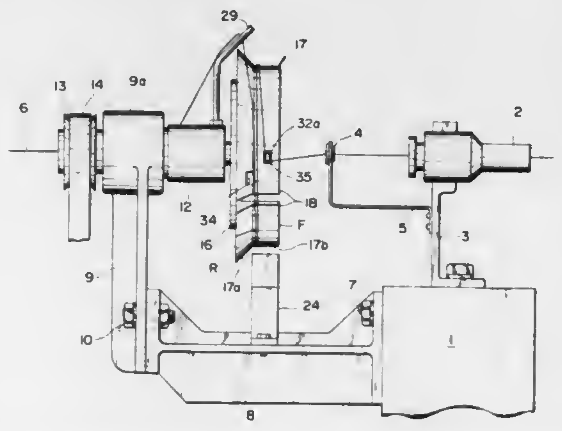
Hidetsugu Umezawa, Higashiyamato; Takashi Ogasawara, Tokyo, and Haruo Shimazaki, Tachikawa, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 15, 1981, Ser. No. 283,688

Claims priority, application Japan, Jul. 21, 1980, 55-98649; Sep. 9, 1980, 55-123998

Int. Cl.^{3} D03D *47/36*

U.S. Cl. 139—452 **28 Claims**



1. A weft detaining device of a shuttleless loom having a weft picking means, comprising:

- a drum on which a weft yarn is wound a predetermined number of times prior to a weft picking through the weft picking means, said drum being constituted by a plurality of separate and independent drum pieces, the peripheral surface of each separate drum piece forming part of the peripheral surface of said drum;
- stop means for maintaining said drum in a stationary state;
- a support member on which each separate drum piece is securely supportable;
- means defining first and second holes on the peripheral surface of said drum, said first and second holes being spaced from each other in the axial direction of said drum;
- first and second hook levers formed respectively with hook sections, said first and second hook levers being constructed and arranged such that their hook sections are projectable respectively into said first and second holes to catch the weft yarn on the peripheral surface of said drum;
- operating means for operating said first and second hook levers so as to project their respective hook sections at predetermined times in timed relation to an operational cycle of the loom;
- means for allowing the locations of said separate drum pieces to be moved independently of each other relative to said support member so as to adjust the outer diameter of said drum; and
- means for releasably fixing said separate drum pieces relative to said support member.

4,441,532

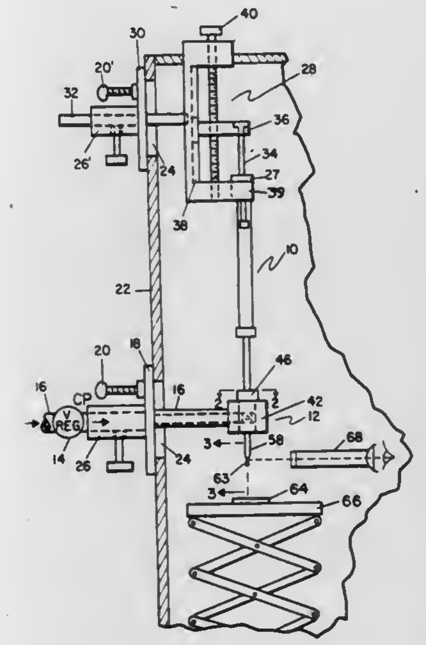
APPARATUS AND METHOD FOR GENERATING SINGLE DROPLETS

Charles F. Hrubesh, Fallston, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 3, 1982, Ser. No. 373,939

Int. Cl.^{3} B65B *3/04*

U.S. Cl. 141—1 **7 Claims**



1. A method for generating single droplets which includes the steps of

- selecting the diameter of a stainless steel wire so that it can be hard finger push-fit into a hypodermic needle of known bore to form a generator needle assembly;
- grinding the generator needle tip to a point having an included angle of approximately 15 degrees;
- assembling the ground generator needle to a hypodermic syringe;
- filling the syringe with a liquid to be dispensed from said generator needle;
- inserting the plunger of said hypodermic syringe into support means which provides adjustable horizontal support and calibrated adjustable vertical motion to the plunger;
- inserting the generator needle assembly into a pneumatic collet which allows regulated air to flow down the periphery of the generator needle with a minimum of turbulence;
- preparing a microscope slide with a coating of magnesium oxide;
- positioning the microscope slide so that it is in axial alignment with the longitudinal axis of the generator needle;
- adjusting a short focus telescope to be in optical alignment with the pointed end of the generator needle;
- advancing the plunger of the syringe while observing the droplet formation at the tip of the generator;
- adjusting a constant pressure flow regulator to deliver a desired flow rate to air strip the droplet from the generator;
- collecting the droplet on the microscope slide; and
- calculating the diameter of the droplet after observing the droplet diameter on the microscope slide.

4,441,533

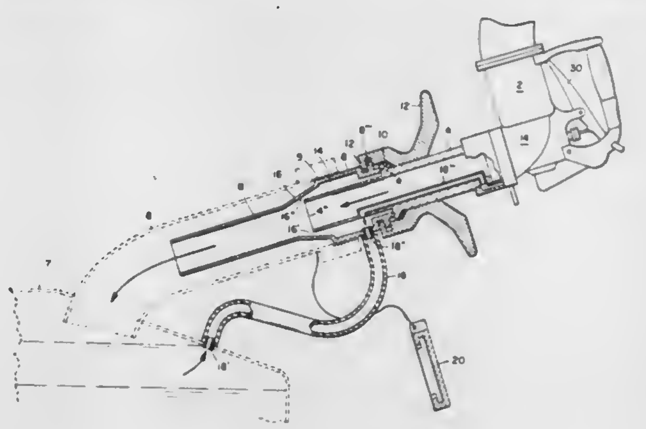
AUTOMATIC FUEL DISPENSER

George H. Snyder, Box 68-25, Rte. 2, Ozark, Mo. 65721; George H. Snyder, III, 2541 S. Collinson Ave., Springfield, Mo. 65804, and Joseph M. Nusbaumer, 2769 Village Ter., Springfield, Mo. 65807

Continuation-in-part of Ser. No. 966,387, Dec. 4, 1978, abandoned. This application Nov. 3, 1980, Ser. No. 203,228

Int. Cl.^{3} B65B *31/00*

U.S. Cl. 141—59 **5 Claims**



1. An improved filling system for moving a supply of liquid through an automatic nozzle for dispensing a liquid into a container including valve means, means including an operating lever for opening said valve means. pivotally mounted latch means, vacuum responsive means including a reciprocable member, trip means including a pivotally mounted lever connected to said reciprocable member and pivotally mounted concentrically with said latch means for engaging said latch means upon movement of said vacuum responsive means, means for biasing said latch means into automatic latching engagement with said operating lever upon actuation thereof to an open position, and means including conduit means for creating and supplying a vacuum to said vacuum responsive means for actuating said reciprocable member to trip and release said valve means when the liquid in said container reaches a preselected level, a fill pipe connected to said container, and a hollow adaptor for receiving the nozzle, the improvement comprising:

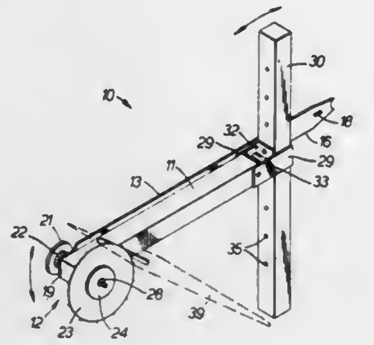
- a nozzle apout having separate liquid dispensing and air removal passages,
- said air removal passage being connected at one end to said vacuum responsive means,
- said fill pipe adaptor having first end and a second end, said first end being attached to said filler pipe and said second end extending into said filler pipe, said second end having a reduced diameter, and a frusto-conical section between said first end and said second end,
- an air conduit connected to said first end of said fill pipe adaptor and to the interior of said container to remove air from said container to the interior of said fill pipe adaptor,
- a vacuum chamber between said nozzle spout and said fill

pipe adaptor when said nozzle spout is inserted in said fill pipe adaptor, the length of said nozzle spout being of a length to extend into said frusto-conical section and to provide a narrow space between the end of the nozzle spout and the wall of the frusto-conical section, whereby the velocity of the liquid flowing out of the nozzle spout draws air through said narrow space between the end of said nozzle spout and the wall of said frusto-concial section to create a partial vacuum in said vacuum chamber to supply vacuum to said vacuum responsive means close said valve means.

4,441,534
APPARATUS FOR CUTTING AND/OR GRINDING OF TREE STUMPS

James Wilson, 45 Lucan Ave., Aspley, Queensland, 4034, Australia

Filed Jan. 29, 1982, Ser. No. 343,822
Int. Cl.^{3} A01G *23/06*
U.S. Cl. 144—2 N **9 Claims**



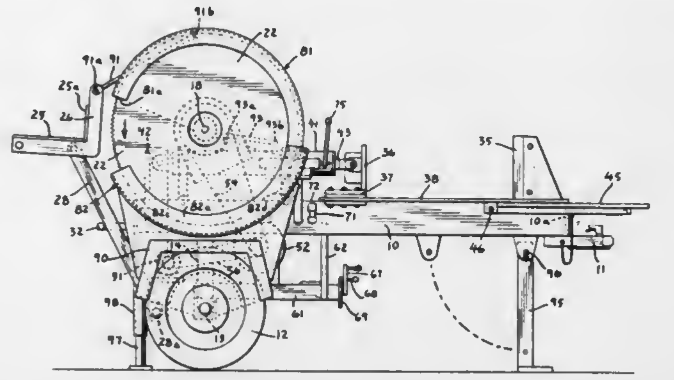
1. Apparatus for removing tree stumps including elongated support means, toothed circular blade means mounted at one end of said support means for rotary movement about an axis extending transversely of said support means, means at the opposite end of said support means for engaging and supporting a chain saw drive motor, said drive motor being adapted to be coupled to said blade means to cause rotation thereof and there being provided ground engageable means intermediate the ends of said elongated support means, said ground engageable means supporting said elongated support means for pivotal movement about an axis extending transversely of said support means and said elongated support means being substantially balanced in use about said axis, said ground engageable means and said chain saw drive motor being adapted to be manually gripped by an operator to permit selective manipulation of said blade means towards and away from a stump to be removed.

4,441,535
MOBILE LOG SAWING AND SPLITTING MACHINE

John W. Flinn, Brampton; James D. Johnson, and Ward L. Stiemert, both of Escanaba, all of Mich., assignors to Gafner Machine, Inc., Escanaba, Mich.

Filed Mar. 29, 1983, Ser. No. 479,875
Int. Cl.^{3} B27L *7/00*
U.S. Cl. 144—3 K **12 Claims**

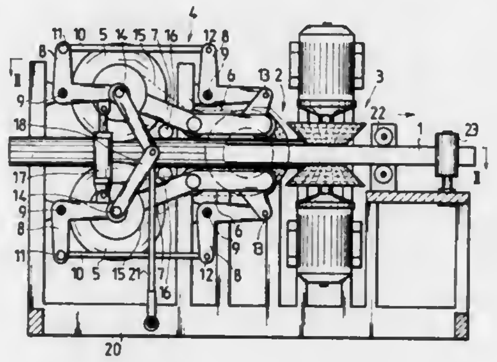
1. A mobile log sawing and splitting machine comprising a trailer frame including an elongated lengthwise extending beam having a vehicle engaging hitch at its forward end and a pair of ground engaging wheels mounted at relatively opposite sides of the beam adjacent the rear end of the trailer frame, a saw mandrel mounted on the trailer frame adjacent its rear end for rotation about a horizontal axis transverse to and spaced above the beam, a circular saw blade mounted on the mandrel and spaced from one side of the beam, an elongated horizontal log support extending crosswise of the trailer frame at the rear end thereof and mounted for movement between a rear position adjacent the rear side of the saw blade and a forward position adjacent the mandrel, a log splitting wedge mounted on the beam adjacent its forward end and a log pusher mounted for sliding movement lengthwise of the beam, a hydraulic ram including a cylinder extending lengthwise of the beam below the mandrel and a piston rod extending from the cylinder and connected to the log pusher for moving it toward and away from the wedge, hydraulic power means including a hydraulic pump and a hydraulic fluid reservoir and a control valve for reversibly supplying hydraulic fluid to the ram, the hydraulic pump being mounted on the trailer frame adjacent its rear end, an internal combustion engine, engine mounting means mounting the engine on the trailer frame at a location forwardly of the mandrel and hydraulic pump, the engine mounting means including an engine support frame and an engine mounting pad mounted on the support frame for sliding movement along an adjustment path having at least a substantial component lengthwise of the trailer frame, a first belt drive means connecting the engine to the saw mandrel and a second belt drive means connecting the engine to the hydraulic pump, screw means engaging the engine support frame and engine mounting pad for adjustably moving the engine mounting pad relative to the engine support frame, the screw means being operative in response to turning in one direction to release belt tension in the first and second belt drive means to facilitate starting the engine and being operative in response to turning in the other direction to tension the belts in the first and second belt drives, and means for selectively locking the screw in different anglular positions to lock the engine mounting pad and engine in an adjusted position.



4,441,536
MACHINE FOR HEWING SQUARE TIMBERS

Kauko Rautio, 52799 Mäntyharju, Finland

Filed Dec. 24, 1980, Ser. No. 220,249
Int. Cl.^{3} B27C *9/00*
U.S. Cl. 144—39 **10 Claims**



1. A machine for hewing straight squared timbers from round trunks using rotary cutters and guiding rollers for guiding the trunk being hewn, wherein the machine comprises:

(a) a main frame of the machine;

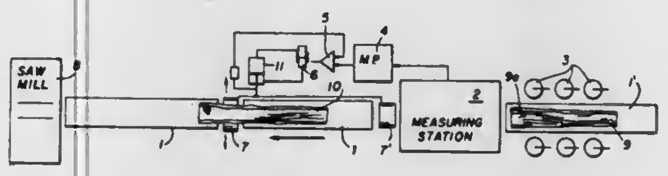
(b) two rotary cutter pairs disposed immediately after each other with their axes forming with each other an angle of about 90°, said cutters being structurally and rotatably attached to said main frame of the machine, so that round trunks fed through the cutters are hewn to form squared timber; and

(c) a set of trunk guiding rollers located before said cutter pairs and structurally attached to said main frame, said guiding rollers being centered relative to the trunk and being defined by at least one pair of pulling wheels each having padded circumference, with one pulling wheel being located above and one pulling wheel located below the trunk being hewn, and a pair of track-like pulling roller units, with one roller unit being located above and one roller unit being located below the trunk being hewn, each said roller unit comprising two rollers connected together by an endless track, said pulling roller units being disposed after said pulling wheels but before said cutter pairs, and means structurally interconnecting said pulling wheels and said pulling roller units so that said pulling wheels and pulling roller units all move together parallel to each other and in a transverse direction relative to the trunk being hewn, so that said pulling wheels and pulling roller units follow the thickness of the trunk being hewn, thereby feeding and guiding the trunk forwardly without changing its direction through said cutter pairs to produce straight hewn squared timbers.

4,441,537
APPARATUS AND METHOD FOR ALIGNING LUMBER

Jorma Vartiainen, Karhula, Finland, assignor to Plan-Sell Oy, Finland

Filed Nov. 12, 1981, Ser. No. 320,701
Claims priority, application Finland, Nov. 14, 1980, 80/3564
Int. Cl.^{3} B27B *1/00*
U.S. Cl. 144—357 **6 Claims**



1. A method for aligning lumber block from which a first pair of cants has been removed to leave upper and lower flat surfaces, comprising:

positioning the block with its lower surface on a longitudinal conveyor for transporting the block in a longitudinal feed direction;

feeding the block past a measuring station in the longitudinal direction which measures the outline of the lower surface and contour of the block to obtain a measurement thereof;

processing the measurement in a microprocessor to obtain a lateral shift amount for an upstream and a downstream end of the block in the longitudinal feed direction by which the block should be shifted to optimize wood production from the block;

laterally shifting the upstream end of the block using a lateral shift conveyor operable in a direction lateral to the longitudinal feed direction to momentarily lift and shift the upstream end by the lateral shift amount for the upstream end;

laterally shifting the downstream end of the block using a lateral shift conveyor operable in a direction lateral of the longitudinal feed direction to momentarily lift and shift the downstream end by the lateral shift amount of the downstream end;

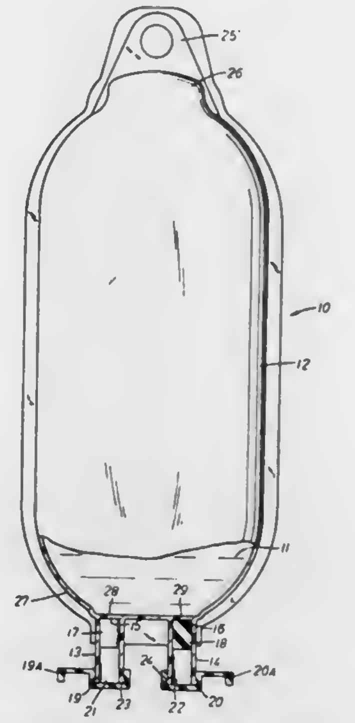
the lateral shifting of the up and downstream ends being spaced in at least one of time, amount and position; and

feeding the laterally shifted block in the longitudinal feed direction to a saw mill.

4,441,538
FLEXIBLE CONTAINER WITH INTEGRAL PORTS AND DIAPHRAGM

Mark E. Larkin, Lindenhurst, and Leonard J. Meyer, Antioch, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Division of Ser. No. 106,954, Dec. 26, 1979, Pat. No. 4,313,904.
This application Sep. 3, 1981, Ser. No. 298,987
Int. Cl.^{3} A61M *5/14*
U.S. Cl. 604—415 **8 Claims**

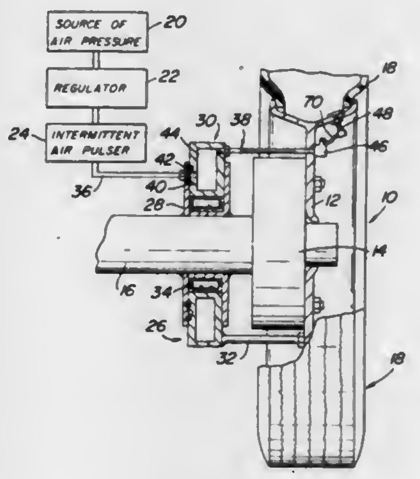


1. A container for liquids comprising a hollow body formed of a plastic material; said hollow body having a plurality of tubular ports integrally formed from said plastic material of said hollow body and extending therefrom; each of said ports having a quantity of said plastic material integrally formed as a diaphragm within said port from said plastic material of said tubular port so as to seal said port.

4,441,539
TIRE PRESSURIZATION CONTROL SYSTEM

David O. Hulse, Exton, Pa., assignor to The Budd Company, Troy, Mich.

Filed Jul. 29, 1982, Ser. No. 402,888
Int. Cl.^{3} B60C *23/10, 29/00*
U.S. Cl. 152—417 **5 Claims**



1. In a vehicle including a tire mounted to a rotatable wheel about an axle,

a tire pressurization system for maintaining uniform and constant pressure in said tire comprising:

(a) a source of regulated air pressure;

(b) a valve means connected to said wheel for receiving air pressure and applying it to said tire;

(c) means for connecting said regulated air pressure from said source to said valve means, said means for connecting including a member fixedly mounted with respect to said axle, a rotatable member secured to said member connected to rotate with said wheel, and sealing means providing an air chamber to connect air pressure from said fixedly mounted member to said rotatable member; and

(d) air pulsing means connected from said source of regulated air pressure to said means for connecting to apply intermittent air pressure to said means for connecting,

(e) said intermittent air pressure through said air pulsing means being controlled by the amount of added pressure required to bring said tire up to said predetermined pressure level;

(f) said air pulsing means comprising a piston disposed in a housing responsive to pressure from chambers on either side thereof to intermittently connect and disconnect the air pressure from said regulator to said means for connecting;

(g) tire pressure control means connected to said tire responsive to the air pressure in said tire, and

(h) means for applying the intermittent air pressure from said air pulsing means through said means for connecting to respond to the difference in air pressure in said tire and said intermittent air pressure to control the added pressure applied to said tire;

whereby air pressure is applied to said tire only when the pressure in the tire is below a predetermined pressure level.

4,441,540

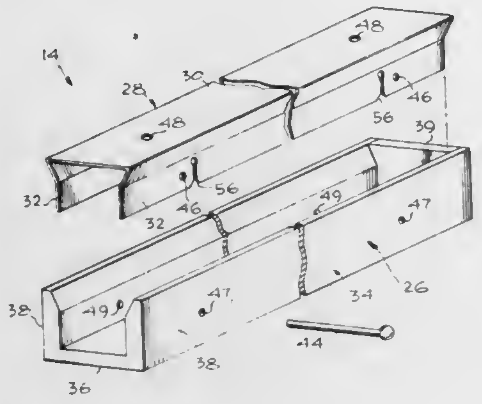
BOTTOM RAIL STRUCTURAL CONFIGURATION FOR A VENETIAN BLIND

Parker I. Tsuhako, Gardena, Calif., assignor to Ohline Corporation, Gardena, Calif.

Filed Apr. 30, 1982, Ser. No. 373,406

Int. Cl.^{3} E06B *9/303*

U.S. Cl. 160—168 R **10 Claims**



1. In a Venetian blind having:

(a) a plurality of thin horizontally disposed slats;

(b) a horizontal head rail above and a horizontal bottom rail below said slats;

(c) a plurality of horizontally spaced flexible string ladders connected between said head rail and said bottom rail for holding said slats in vertically spaced relation, one above another between said rails; and

(d) a plurality of lift cords extending from said head rail and connected to said bottom rail for movement of said bottom rail, ladders and slats toward and away from said head rail;

the improvement which comprises:

a bottom rail which is an openable box and which contains holding means for individually adjusting the effective lengths of said lift cords and ladder strings, said holding means being concealed from view when the box is closed; and

releasable means for maintaining the box in a closed position, said releasable means being invisible from the front side of the blind;

the bottom rail further comprising:

(e) a generally horizontally extending lower member having a closed bottom and upraised sides; and

(f) a generally horizontally extending upper member with closed top and depending sides;

wherein a plurality of spaced transverse pins releasably extend through aligned openings in said depending sides of the upper member and the upraised rear side of the lower member and into openings in the upraised front side of the lower member which do not extend entirely through said front side, thereby leaving the front face of the bottom rail unblemished.

4,441,541

METHOD OF AND APPARATUS FOR DETERMINING THE MELT LEVEL IN A CONTINUOUS-CASTING MOLD

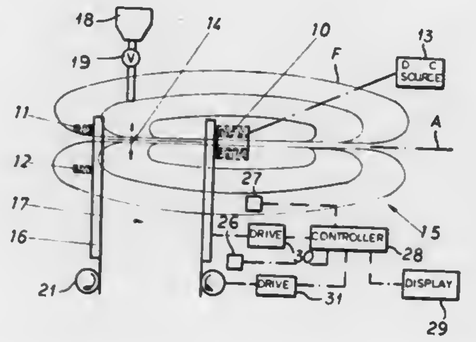
Franz-Rudolf Block, Roetgen, Fed. Rep. of Germany, assignor to Arbed S.A., Luxembourg, Luxembourg

Filed Mar. 11, 1982, Ser. No. 357,275

Claims priority, application Luxembourg, Mar. 18, 1981, 83 224; Aug. 3, 1981, 83 532

Int. Cl.^{3} B22D *11/16*

U.S. Cl. 164—453 **12 Claims**



1. A method of detecting the level of a melt in a vertically reciprocating continuous-casting mold, said method comprising the steps of concurrently:

forming a nonhomogeneous steady magnetic field extending horizontally through said mold into said melt generally at the melt level, said steady field not moving appreciably relative to the mold and generating substantially no eddy currents therein;

vertically reciprocating said field jointly and synchronously with said mold;

detecting the field strength of said field at a sensing location after said field passes through said mold;

vertically reciprocating said location jointly and synchronously with said mold; and

deriving said melt level from the detected field strength.

4,441,542

PROCESS FOR COOLING AND SOLIDIFYING CONTINUOUS OR SEMI-CONTINUOUSLY CAST MATERIAL

Michael J. Pryor, and Peter E. Sevier, both of Woodbridge, Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Jun. 10, 1981, Ser. No. 272,131

Int. Cl.^{3} B22D *11/124*

U.S. Cl. 164—485 **10 Claims**

1. A process for casting a molten material comprising:

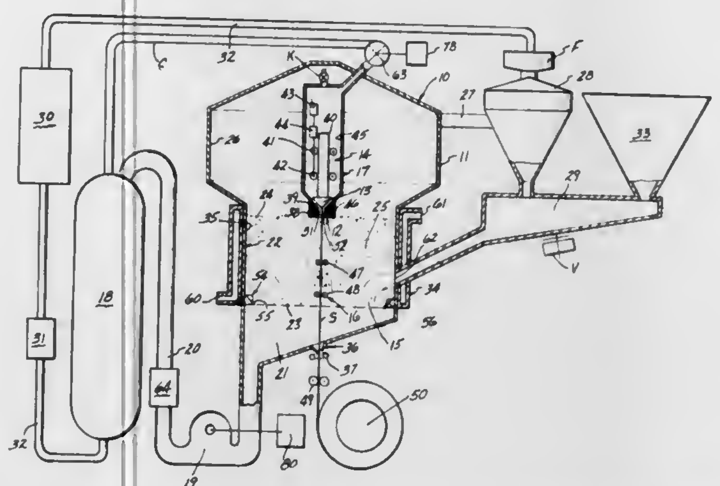
electromagnetically containing and forming said molten material into a desired casting shape; and

applying a primary coolant to said material to solidify it into said casting, the improvement wherein said primary coolant application step comprises:

applying a fluidized bed of particles to cool said material at a casting zone so that said fluidized bed of particles contacts said material in both the molten and solidified conditions, said step of applying said fluidized bed of particles comprising:

providing inert particles;

fluidizing said particles with an inert gas flow so that said particles are levitated by said flow of inert gas; and



cooling said fluidized bed of particles to remove heat build up due to the application of said fluidized bed of particles to said material.

4,441,543

METHOD OF ENLARGING WIDTH OF CONTINUOUSLY CAST STRAND

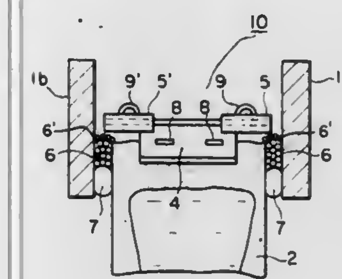
Yutaka Muranaka, Tokuyama, and Haruji Sadahiro, Shinnanyo, both of Japan, assignors to Nisshin Steel Co., Ltd., Japan

Filed Jun. 2, 1981, Ser. No. 269,565

Claims priority, application Japan, Jun. 10, 1980, 55-77111

Int. Cl.^{3} B22D *11/08*

U.S. Cl. 164—491 **3 Claims**



1. A method of enlarging the width of a continuously cast strand comprising the steps of partially burying a metallic joint having an I-shaped transverse cross-section in the tail end of a cast strand which is in a rectangular mold cavity defined by narrow and wide pairs of mold pieces so that the longitudinal axis of said joint is substantially horizontal and in parallel with walls of the side mold pieces, solidifying the tail end of the strand, outwardly moving the narrow mold pieces to define the desired enlarged width of the strand, filling the so-formed openings between the strand and the walls of the mold pieces with a refractory fibrous material and then with a metallic cushioning material in the form of power, tape, or fiber; restarting the continuous strand casting process, all the steps being carried out before said tail end of the strand leaves the mold cavity; and said metallic joint is provided on its top face with two metallic plates slidable along its longitudinal axis and wherein said plates are slidably moved on the top face of said joint towards the walls of the narrow mold pieces so that said plates partially extend beyond the longitudinal ends of said joint before the casting process is restarted.

4,441,544

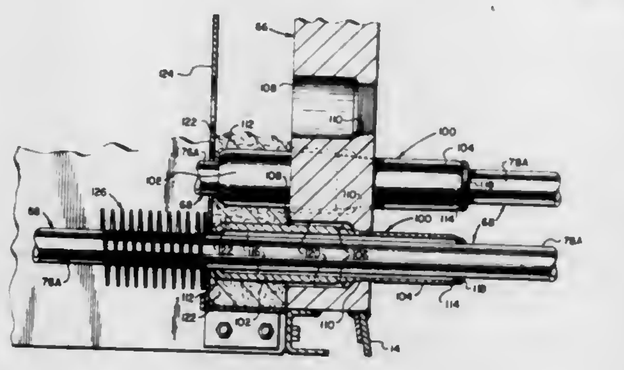
WASTE HEAT RECOVERY SYSTEM HAVING THERMAL SLEEVE SUPPORT FOR HEAT PIPE

Jack McCurley, Dallas, Tex., assignor to Q-dot Corporation, Garland, Tex.

Division of Ser. No. 165,059, Jul. 1, 1980. This application Mar. 4, 1982, Ser. No. 354,745

Int. Cl.^{3} F28F *9/10*

U.S. Cl. 165—1 **5 Claims**



1. A method for connecting the sealed interior of a boiler tank in thermal communication with a convection heat transfer chamber comprising:

installing a header plate having a heat pipe opening within the sidewall of the boiler tank;

extending the condenser end portion of a heat pipe through the heat pipe opening into the interior of the boiler tank with the evaporator end portion extending into the convection heat transfer chamber;

interposing a thermal support sleeve between the heat pipe and the header plate whereby the heat pipe is supported in radially spaced relation within the thermal sleeve;

connecting the midsection of the thermal support sleeve in sealed engagement with the header plate; and,

connecting an end portion of the thermal sleeve in sealed engagement with the condenser end of the heat pipe.

4,441,545

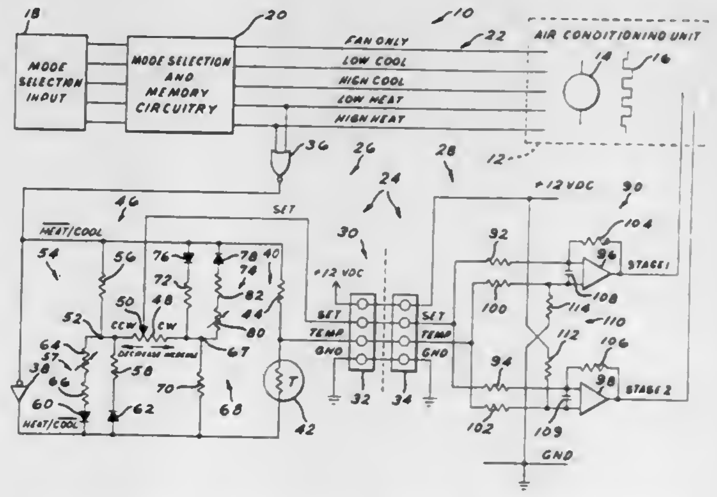
AIR CONDITIONING THERMOSTATIC CONTROL SYSTEM HAVING MODULAR INCLUSION OF REMOTE TEMPERATURE SET-BACK CAPABILITY

Robert P. Alley, Manlius; John W. Relyea, Warners, both of N.Y., and Donald L. Sidebottom, Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Jul. 26, 1982, Ser. No. 401,489

Int. Cl.^{3} G05D *23/00;* H03K *5/153*

U.S. Cl. 165—26 **8 Claims**



1. A thermostatic control system having auxiliary temperature setting capability, said system comprising:

a temperature-responsive source for producing a temperature-dependent voltage as a function of sensed temperature;

a reference voltage source having a relatively higher output impedance and producing a reference voltage for establishing a temperature setting;

a voltage comparator having a comparison input connected to said temperature-responsive source and a reference input connected to said reference voltage source for producing a control output signal for energizing a thermal conditioning element when the temperature-dependent voltage and the reference voltage have at least a predetermined relationship with respect to each other; and

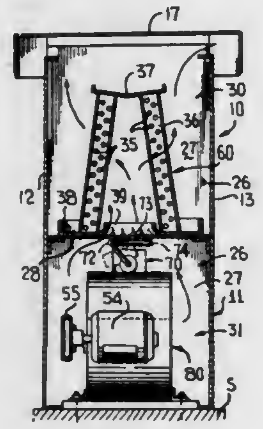
an adjustable auxiliary reference voltage source for auxiliary temperature setting, said auxiliary reference voltage source having a relatively lower output impedance and connected through a switching element to said voltage comparator reference input such that said auxiliary reference voltage source at least partly overrides said reference voltage source when said switching element is conducting, and said auxiliary reference voltage source including a source of command signals in digital form and a digital-to-analog converter.

4,441,546

METHOD OF OPERATING A HEAT-AUGMENTED HEAT PUMP SYSTEM

Gerry VanderVaart, Niagara Falls, Canada, assignor to Kool-Fire Limited, Niagara Falls, Canada

Division of Ser. No. 54,647, Jul. 3, 1979, Pat. No. 4,311,191.
This application Apr. 30, 1981, Ser. No. 259,357
Int. Cl.³ F25B *29/00*
U.S. Cl. 165—29 **4 Claims**



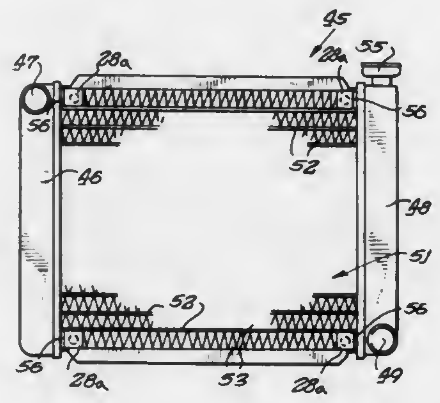
1. A method of heating and defrosting in a heat pump system which includes at least an outside heat exchange coil defining a substantially enclosed interior chamber and an open lower end portion, an inside heat exchange coil, a compressor, an expansion valve and a refrigerant line connecting an inlet and outlet of the compressor to an outlet and inlet of the outside heat exchange coil and the inside heat exchange coil, respectively, and connecting an outlet of the inside heat exchange coil through the expansion valve to an inlet of the outside heat exchange coil comprising the steps of; operating the compressor to deliver refrigerant vapor the inside heat exchange coil; blowing air across coils of the inside heat exchange coil whereby the inside heat exchange coil functions as a condenser with the refrigerant vapor giving off its heat to air blowing across the inside heat exchange coil so that refrigerant returned to the outside heat exchange coil, after passing through the expansion valve, tends to cause the formation of frost on the outside surface of said outside heat exchange coil; creating a source of heat in the form of a flame generally contiguous and below the outside heat exchange coil and introducing the flame upwardly and substantially entirely into the interior chamber; and preventing the formation of frost on the outside heat exchange coil solely through the utilization of the created flame and in the absence of reversing the operation of the heat pump system to its cooling mode.

4,441,547

RADIATOR MOUNTING FITTINGS

Charles S. Argyle, Willowdale; Richard P. Beldam, Mississauga, and Robert J. Hope, Oakville, all of Canada, assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Jan. 5, 1981, Ser. No. 222,414
Int. Cl.³ F28F *9/00*
U.S. Cl. 165—67 **11 Claims**



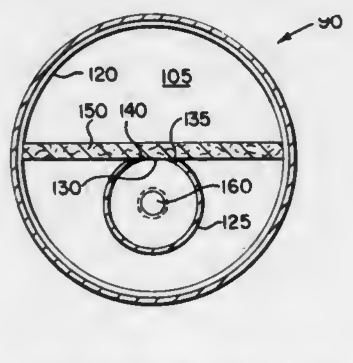
1. In a heat exchanger having inlet and outlet headers forming inlet and outlet chambers or tanks connected by a heat transfer core including a plurality of generally parallel fluid conduits spaced apart and having generally corrugated heat transfer fins therebetween, some of said fins terminating short of and providing a mounting space adjacent to said headers between adjacent conduits on the air side, and mounting means received in and extending through said mounting space, said mounting means being secured to said fluid conduits, said mounting means consisting of a solid member of a length to extend substantially through the core and of a height substantially equal to the spacing between adjacent conduits, each member having an opening extending axially at least partially therethrough to receive mounting screws or bolts extending from mounting brackets on an article to which the heat exchanger is secured.

4,441,548

HIGH HEAT TRANSPORT CAPACITY HEAT PIPE

James L. Franklin, Kent, and Dale F. Watkins, Sumner, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 28, 1981, Ser. No. 334,856
Int. Cl.³ F28D *15/00*
U.S. Cl. 165—104.26 **8 Claims**



1. An improved heat pipe of increased heat transport capacity, comprising:

a sealed envelope,

a working fluid contained within said envelope; said fluid being capable of undergoing a liquid/vapor phase change,

an evaporator section defined within said envelope for vaporizing said fluid,

a condenser section defined within said envelope for condensing said vaporized fluid, whereby a liquid is formed,

means forming a solid wall artery disposed within said envelope extending between said condenser section and said evaporator section for conducting said liquid by capillary action from said condenser section to said evaporator section,

a channel formed on the upper surface of said artery; said channel being provided with beveled surfaces,

means forming a liquid conducting wick; said wick means lying along the inner periphery of said envelope and extending within said evaporator and said condenser,

a liquid conducting means abuttingly contacting said beveled surfaces within said evaporator section for conducting liquid from said channel to said evaporator wick means, and

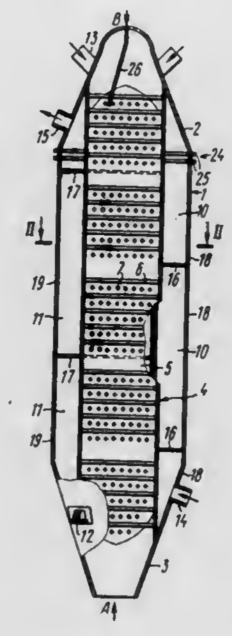
a liquid transporting means abuttingly contacting said beveled surfaces within said condenser section for transporting liquid from said condenser wick means to said channel.

4,441,549

HEAT EXCHANGER WITHIN DENSE GRAVITY LAYER

Boris P. Vasiliev; Nikolai L. Borisov; Mikhail K. Semenov; Ivan K. Ponomarev; Galina B. Tyryshkina, and Igor V. Gorbatenko, all of Belgorod, U.S.S.R., assignors to Belgorodsky Zavod Energeticheskogo Mashinostroenia, U.S.S.R.

Filed Oct. 29, 1981, Ser. No. 316,124
Int. Cl.³ F28F *9/22*
U.S. Cl. 165—145 **14 Claims**



1. A heat exchanger within a dense gravity layer, comprising:

a vertical cylindrical container provided with upper and lower end walls and forming a cavity therewith;

a heating surface mounted inside said container in spaced relation therewith and formed by a tubular housing opened at a lower end, said housing having a perforated surface, and a plurality of tubes mounted in tiers within said housing, said tubes being so disposed that the tubes of one tier are substantially transverse to the tubes of adjacent tiers;

opposite seals mounted between an inner surface of said container and the housing of said heating surface to vertically divide the cavity of said container into two portions;

an inlet for supplying a first heat carrier medium inside the housing of said heating surface, said inlet for supplying said first heat carrier medium being formed by a plurality of branch pipes and a baffle member substantially vertically and equally dividing said plurality of branch pipes, to prevent deflection of the flows of the first heat carrier medium;

a branch pipe for supplying a second heat carrier medium into a space between the inner surface of the container and the housing of said heating surface;

a branch pipe for discharging said second heat carrier medium from the space provided between the inner surface of the container and the housing of said heating surface;

a plurality of substantially horizontal baffle members mounted within the two portions of the cavity of said container in chessboard pattern relative to one another and dividing these portions of the cavity of said container into chambers disposed along the height in chessboard pattern to change the direction of flow of said second heat carrier medium; and

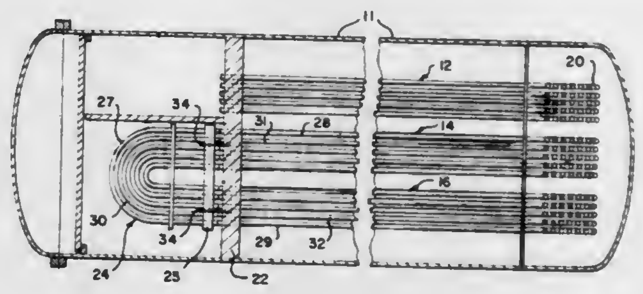
a plurality of support members.

4,441,550

CROSS-OVER BUNDLE FOR HEAT EXCHANGER

A. Timothy Chase, Warren, Pa., assignor to Struthers Wells Corporation, Warren, Pa.

Filed Jan. 14, 1983, Ser. No. 457,978
Int. Cl.³ F28D *7/06;* F28F *9/22*
U.S. Cl. 165—145 **4 Claims**



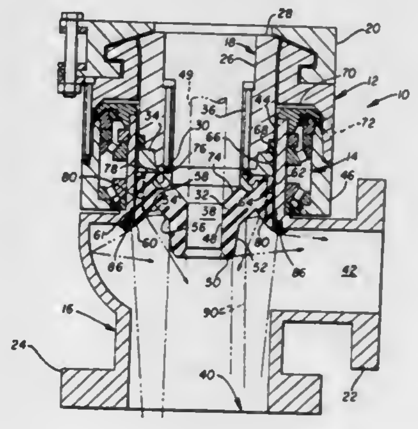
1. A cross-over bundle for connecting in series the corresponding tubes in adjoining tube side passes in multiple pass shell and tube heat exchangers in which each pass includes a bank of tubes having center-to-center spacing between tubes only slightly greater than the tube diameter, the tubes in each bank terminating in a first tube sheet, comprising a second tube sheet co-extensive with the ends of adjoining tube banks, a plurality of tube U-bends having their ends fixed in said second tube sheet, and fastening means for holding said first and second tube sheets against each other so that the U-bends are positioned to connect each tube end in one bank with its mirror image tube end in the adjoining bank.

4,441,551

MODIFIED ROTATING HEAD ASSEMBLY FOR ROTATING BLOWOUT PREVENTORS

Morris S. Biffle, 800 W. Front, Midland, Tex. 79761

Filed Oct. 15, 1981, Ser. No. 311,793
Int. Cl.³ E21B *33/06*
U.S. Cl. 166—84 **17 Claims**



1. A rotating blowout preventor having a main body; a lateral outlet leading from said main body, attachment means by which said main body can be connected to the upper end of a wellbore casing; an axial passageway formed through said main body through which a rotating member can be telescopingly received, said lateral passageway is in communication with said axial passageway;

an upwardly extending washpipe affixed to and forming part of said main body; a rotating head assembly rotatably mounted at the upper end of said main body, said rotating head assembly includes a stripper rubber assembly affixed thereto and positioned within said axial passageway; said stripper rubber assembly includes a stripper mount member and a stripper rubber; an axial passageway formed through said stripper assembly;

said stripper rubber has a large annular upper end attached to said mount member and spaced, concentrically arranged, lower annular marginal ends; said lower annular marginal ends are comprised of an inner annular body and an outer annular body separated from one another by a downwardly opening annular recess; the last said axial passageway is formed through said inner annular body for sealingly receiving a rotating member in a telescoping manner therethrough; said outer annular body has an outer circumferentially extending surface which slidably and sealingly engages an inner peripheral wall surface of the washpipe;

said annular recess includes an upwardly and outwardly inclined first wall portion which forms a lower outer marginal end of said inner annular body, an upwardly and inwardly inclined second wall portion which forms a lower inner marginal end of said outer annular body, and a sloped third wall portion which lies at an obtuse angle respective to said first wall and at an acute angle respective to said second wall and connects said first and second wall portions together;

a control sleeve positioned within said outer annular body, said control sleeve is cylindrical in form and concentrically arranged respective to the axial passageway so that reinforcement is provided within the rubber compound to prevent undue distortion of the outer peripheral surface of the outer annular body.

4,441,552

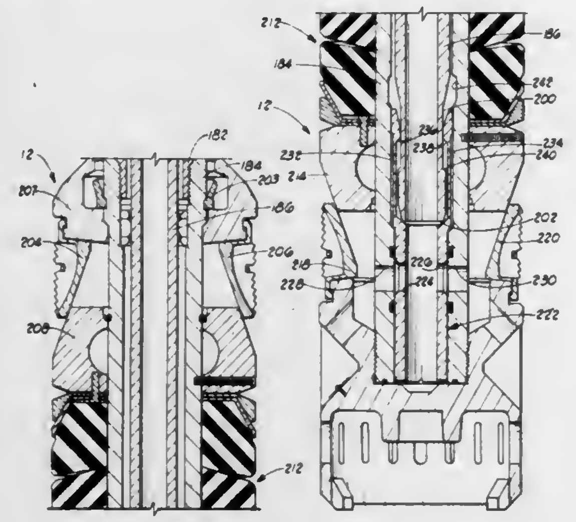
HYDRAULIC SETTING TOOL WITH FLAPPER VALVE

Reed K. Hamman, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Jun. 18, 1982, Ser. No. 389,592

Int. Cl.^{3} E21B ***23/00, 34/12***

U.S. Cl. 166—133 **23 Claims**



1. A hydraulic setting apparatus for use on the lower end of a tubing string for anchoring a well tool in a well bore responsive to pressurization of said tubing string, said tool being of the type having expandable anchor means for anchoring the tool in said well bore and a conduit for selectively permitting fluid flow through the tool, said apparatus comprising:

first and second tubular portions in telescopic engagement with each other, said first tubular portion being constructed for mounting on the tubing string and said second tubular portion being longitudinally slidable within said first portion;

means for mounting said portions on the end of the tubing string;

piston means disposed between said tubular portions for telescopically moving said portions relative to one another responsive to pressurization of the tubing string;

means for suspending such a tool mounted on the lower end of said tubular portions;

a mandrel received within said portions and being slidable between upper and lower positions; and

fluid pressure means mounted on said mandrel for maintaining said mandrel in its upper position.

4,441,553

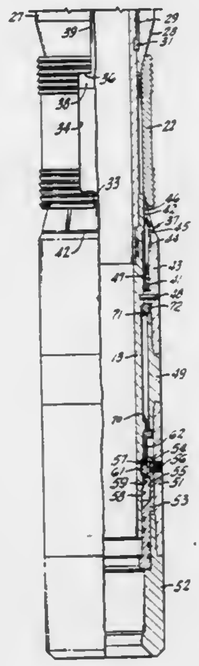
ANCHOR FOR USE IN A WELL

John R. Setterberg, Jr., Richardson, and Dhirajlal C. Patel, Carrollton, both of Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed Aug. 16, 1982, Ser. No. 408,454

Int. Cl.^{3} E21B ***33/129, 33/12, 23/00, 33/128***

U.S. Cl. 166—138 **6 Claims**



1. An anchor comprising

a mandrel,

a lower slip expander on the mandrel having an upwardly facing cone,

releasable latch means latching the lower expander to the mandrel,

an upper slip expander on the mandrel having a downwardly facing cone,

a C-ring slip positioned on the mandrel between said upper and lower expander,

means movable relative to said mandrel for moving said upper expander downward for setting said slip,

a slot in the C-ring slip extending to either side of the split portion of the slip with the slip providing shoulders at the upper end of the slot,

a lug carried by the upper expander and reciprocal in said slot and engageable with said slip shoulders to pull the slip off of the lower expander and support said slip, and

means carried by said mandrel for moving said upper expander from under said slip and pulling said slip off of said lower expander with said lug.

4,441,554

METHOD FOR THE UNDERGROUND GASIFICATION OF COAL OR BROWNCOAL

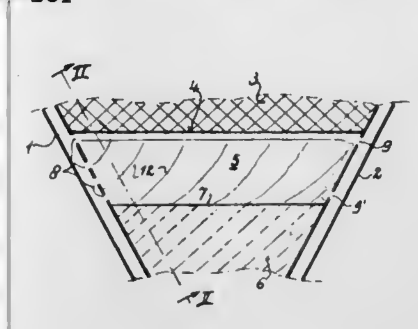
Arnold W. J. Grupping, Anjelierenlaan 3, Aerdenhout, Netherlands (2111 BP)

Filed Nov. 18, 1981, Ser. No. 322,476

Claims priority, application Netherlands, Nov. 28, 1980, 8006485

Int. Cl.^{3} C10J ***5/00;*** **E21B** ***43/243***

U.S. Cl. 166—261 **11 Claims**



1. A method for underground gasification of coal or browncoal in an inclined coal layer, in which two boreholes are drilled from the soil surface into the coal layer, which boreholes are continued downwards in the coal layer with the slope of this layer, and which boreholes are interconnected at their lower ends, after which the coal is ignited, supplying an oxygen containing gas through one of the boreholes and discharging the combustion gases through the other one, the combustion and gasification front thus moving upwards, and taking care that the boreholes remain in communication with the cavity behind the combustion front, and, intermittently filling the cavity with a filler supplied through one of the boreholes, said method comprising suspending the filler material in a carrier substance, leading the suspension through the boreholes and the cavity with such a concentration and flow velocity that the filler material, at the reduction of the flow velocity when entering the cavity, will precipitate from the suspension; and, continuing the suspension flow until the cavity has been completely filled with the filler material with the exception of a narrow channel at the upper side of this cavity near the coal front, the width of said channel being determined by the flow velocity therein at which an equilibrium between precipitation and dragging along of the filler material is reached.

4,441,555

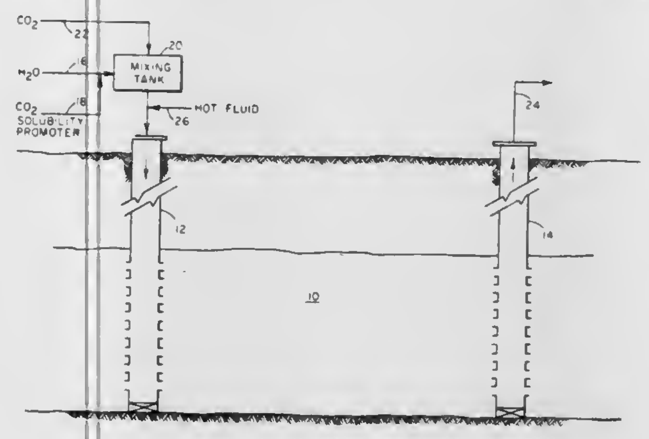
CARBONATED WATERFLOODING FOR VISCOUS OIL RECOVERY

Winston R. Shu, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 27, 1982, Ser. No. 372,401

Int. Cl.^{3} E21B ***43/24***

U.S. Cl. 166—272 **19 Claims**



1. A method for the recovery of viscous oil from a subterranean, viscous oil-containing formation penetrated by at least one injection well and at least one spaced-apart production well, said injection well and said production well in fluid communication with a substantial portion of the formation, comprising:

(a) injecting into the formation via said injection well a predetermined amount of a fluid comprising water containing a base that acts as a CO_2 solubility promoter and saturated at the injection pressure with carbon dioxide;

(b) injecting into the formation via said injection well a predetermined amount of a heated fluid; and

(c) recovering fluids including oil from the formation via said production well.

4,441,556

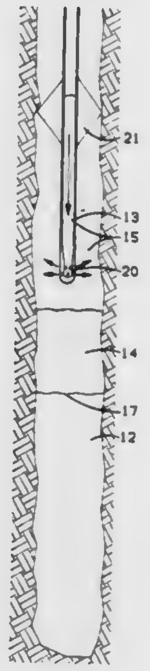
DIVERTER TOOL AND ITS USE

Charles A. Powers, and George B. Holman, both of Tulsa, Okla., assignors to Standard Oil Company, Chicago, Ill.

Filed Aug. 17, 1981, Ser. No. 293,808

Int. Cl.^{3} E21B ***33/13***

U.S. Cl. 166—290 **1 Claim**



1. An improved method for setting a cement plug in an open-hole section of a wellbore above the bottom thereof, said wellbore being filled above said section with liquid, including drilling mud, comprising:

lowering into said wellbore a string of pipe to the lower end of which is attached a diverter tool closing the lower end of said pipe, said diverter tool being provided with a closed lower end and a plurality of radially directed ports, whereby said ports are located essentially at the base of said section;

pumping through said pipe and through said ports into said wellbore, in order, a spacer liquid, a preselected volume of cement slurry to form a cement plug, and a follower liquid, until said slurry is in said wellbore, and

withdrawing said pipe string to permit undisturbed setting of said cement slurry to form said cement plug,

wherein the last of said spacer liquid before said cement slurry is made of a pumpable mixture of thickened drilling mud containing approximately 25–30 lbs/bbl of bentonite, whereby the plastic viscosity thereof is of the order of 60 and the yield point thereof is of the order of 120 to 130.

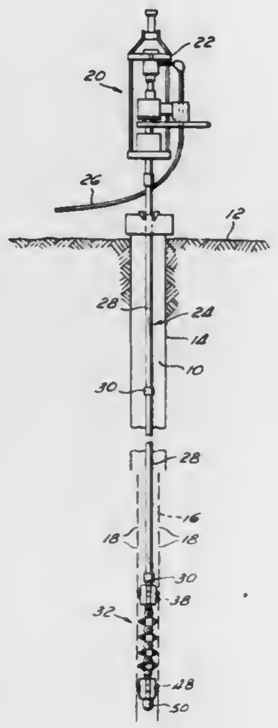
4,441,557
METHOD AND DEVICE FOR HYDRAULIC JET WELL CLEANING

Casper W. Zublin, Bakersfield, Calif., assignor to Downhole Services, Inc., Bakersfield, Calif.

Continuation-in-part of Ser. No. 195,303, Oct. 7, 1980, Pat. No. 4,349,073. This application Oct. 5, 1981, Ser. No. 308,582

Int. Cl.^{3} B08B *3/02, 9/00;* **E21B** *37/00*

U.S. Cl. 166—312 **18 Claims**



1. A device for washing pipes comprising:
- an elongate member having a plurality of jet nozzles mounted thereon, at least some of said jet nozzles being spaced along the length of said member,
- said nozzles being spaced such that when said member is moved at a preselected constant speed along the length of a preselected pipe to be cleaned and rotated at a preselected constant rotational speed jet tracks of fluid streams are provided whose center to center spacing is in the range of equal to or one-half the width of said fluid streams at the inner surface of the pipe producing stream coverage of all points on the pipe to be cleaned of at least once but not more than twice.

9. A method for washing undesirable material from pipes comprising:
- providing a jet carrier having a plurality of jet nozzles mounted thereon, at least some of said jet nozzles being spaced along the length of said jet carrier;
- forcing a fluid through each nozzle to produce streams of fluid which strike the pipe;
- moving said carrier lengthwise along said pipe at a selected speed;
- rotating said carrier within said pipe at a rotational speed;
- determining the velocity of movement of one of said streams of fluid across the inner surface of the pipe which will provide sufficient energy to remove the undesirable material from the pipe; and
- selecting said lengthwise and rotational speeds such that they provide jet streams which cover any given point on said pipe at least once and such that the velocity of movement of each jet stream across the inner surface of the pipe is substantially equal to the velocity determined to provide sufficient energy to remove the undesirable material from the pipe.

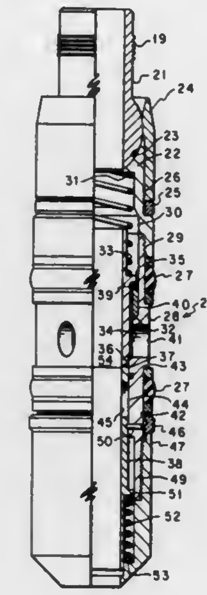
4,441,558
VALVE

William R. Welch, Carrollton, Tex., and Thomas J. Heard, Dubai, United Arab Emirates, assignors to Otis Engineering Corporation, Dallas, Tex.

Filed Apr. 15, 1982, Ser. No. 368,690

Int. Cl.^{3} E21B *34/08, 34/10*

U.S. Cl. 166—317 **14 Claims**



1. A valve for use in a well, comprising:
- a. a tubular housing with a bore therethrough;
- b. flow passage means in said housing communicating said housing bore with the exterior of said housing;
- c. upper valve means downwardly biased to sealingly engage said housing above said flow passage means and sealingly engage movable seat means in said housing, below said passage means, providing a lower valve cooperating with said upper valve means permitting flow through said passage means into said housing bore and preventing flow from said bore through said passage means; and
- d. said movable seat means being releasably positioned and upwardly biased in said housing and movable by said bias after release by predetermined pressure in said housing bore to open said flow passage means to flow.

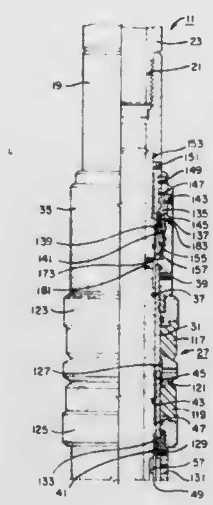
4,441,559
RETRIEVABLE WELL PACKER

Robert W. Evans, and James W. Montgomery, both of Huntsville, Tex., assignors to Hughes Tool Company, Houston, Tex.

Filed Nov. 17, 1982, Ser. No. 442,481

Int. Cl.^{3} E21B *33/128, 33/129*

U.S. Cl. 166—382 **9 Claims**



9. A method of retrieving a well packer of the type adapted for releasable setting within a well bore, comprising the steps of:
- providing said packer with a central mandrel extending within an outer assembly, said outer assembly having seal means for sealingly engaging the well conduit and anchoring means for grippingly engaging the well conduit;
- setting said packer in said well bore to sealingly and grippingly engage said well conduit;
- providing said packer with holding means for releasably connecting said mandrel to said outer assembly to maintain sealing and gripping engagement between said seal means and anchoring means and said conduit, said holding means including a piston-collet assembly, said collet being movable between a locking position in contact with said piston whereby said mandrel is connected to said outer assembly, and a release configuration out of contac. with said piston whereby said mandrel is released for longitudinal movement relative to said outer assembly;
- providing shear means for fixing said piston in said locking configuration in contact with said collet, said shear means having a preselected shear index whereby a predetermined increase in well annulus pressure over pressure inside said central mandrel shears said shear means to release said piston;
- increasing the annulus pressure to exceed said shear index to shear said shear means and release said piston;

and
- applying an upward pull to the central mandrel to release said sealing means and, in turn, said anchoring means to release said packer.

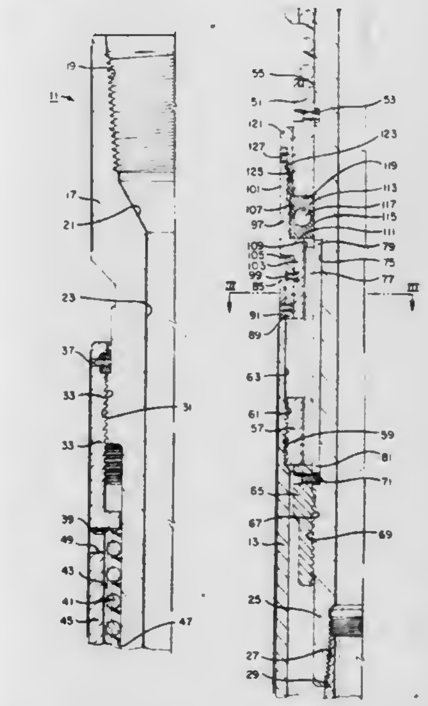
4,441,560
SETTING TOOL

John L. Baugh, and James W. Montgomery, both of Huntsville, Tex., assignors to Hughes Tool Company, Houston, Tex.

Filed May 13, 1983, Ser. No. 494,587

Int. Cl.^{3} E21B *23/02*

U.S. Cl. 166—382 **12 Claims**



1. A setting tool of the type adapted to be made up in a pipe string for releasably engaging a setting sleeve in a well bore, comprising:
- a mandrel having an upper end adapted to be connected in the pipe string and having a lower end;
- a setting nut carried on said mandrel having external connecting means for engaging mating connecting means located on the interior of a setting sleeve disposed about of said mandrel;
- said mandrel being slidably disposed within said setting nut when said setting nut is engaging said setting sleeve, said mandrel being slidable between an extended running-in position and a weight set-down position;
- latch means operably associated with said setting nut and said mandrel for preventing relative movement between said connecting means of said setting nut and said setting sleeve when said mandrel is in said extended running-in position and allowing relative movement between said connecting means when said mandrel is in said weight set down position; and
- biasing means for pre-loading said mandrel in said extended running-in position.

12. A method of releasing a setting tool of the type adapted to be made up in a pipe string in a well bore from a setting sleeve, comprising the steps of:
- running the setting tool into the well bore on the end of a pipe string with a setting sleeve disposed about and engaged below said setting tool;
- manipulating said setting sleeve to perform well bore operations by applying right hand torque to said pipe string from the surface;
- applying sufficient right hand torque to said pipe string to override a predetermined torque responsive latch means to release said setting tool from said setting sleeve without the application of downward force to said mandrel; and
- withdrawing said setting tool from said well bore.

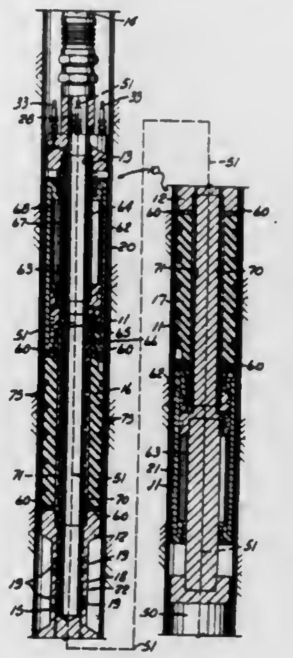
4,441,561
METHOD AND APPARATUS FOR TREATING WELL FORMATIONS

Victor H. Garmong, R.D. No. 1, Kennerdell, County of Venango, Pa. 16374

Filed Nov. 17, 1981, Ser. No. 322,220

Int. Cl.^{3} E21B *33/128, 43/00*

U.S. Cl. 166—387 **36 Claims**

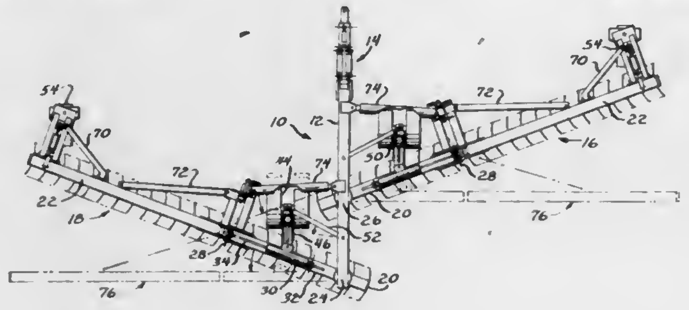


1. A well packer comprising,
- a resilient and radially expansible packer sleeve mounted on a packer body member,
- means for applying a force to said packer sleeve to cause it to expand radially outwardly for engagement with a surrounding well bore wall, and
- means other than the resiliency of said packer sleeve for applying a force to said packer sleeve to positively force it to contract radially inwardly out of engagement with a surrounding well bore wall,
- said means for expanding and means for contracting said packer sleeve including a supply of fluid under pressure and control means located above ground and flexible conduit means connecting said supply and control means with said packer to independently apply said expanding and contracting forces to said packer sleeve through fluid

under controlled pressure from said supply and control means.

4,441,562
FOLDABLE TILLAGE IMPLEMENT

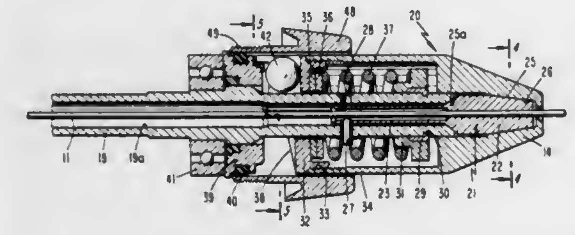
Hugh E. Cooper, 1253 Tilton Park Dr., Rochelle, Ill. 60168
Filed Sep. 4, 1981, Ser. No. 299,510
Int. Cl.^{3} A01B *73/00*
U.S. Cl. 172—311 9 Claims



1. A disk harrow comprising
a fore-and-aft extending generally horizontal center pole defining a longitudinal axis along the centerline thereof
a tractor hitch mounted on the forward end of said center pole symmetrically disposed with respect to said centerline and
a pair of vertical pivots spaced therebehind on the longitudinal axis of said center pole and normal thereto one behind the other;
a pair of laterally extending tool gang assembly units one on each side of said center pole and each said assembly unit comprising
a wheel-supported tool-gang-carrying inner beam connected intermediate its ends to one of said vertical pivots so as to be horizontally moveable thereabout between a working position in which the paired tool gang assembly units assume a vee-shape relative to the travel of the harrow under the pull of a tractor hitched to the center pole, and a transport position in which the tool gang assembly units are disposed generally normal to the center pole and parallel to each other;
a wheel-supported tool-gang-carrying outer beam having its inner end hingedly connected to the adjacent outer end of the inner beam so as to be foldable vertically over the inner beam and generally parallel thereto across the center pole when said assembly units are disposed normal to the center pole; and
means selectively locking said tool gang assembly units in their working and transport positions.

4,441,563
TOOL COLLET AND CONTROL MEANS

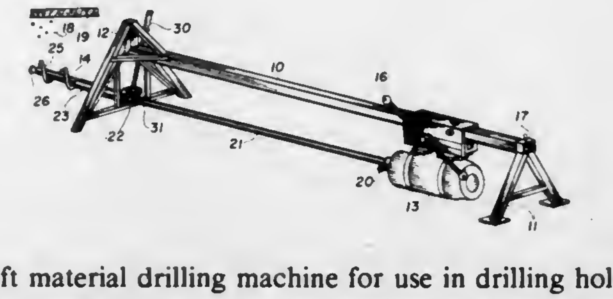
Richard E. Walton, II, Fallston, Md., assignor to Black & Decker Inc., Newark, Del.
Filed Nov. 2, 1981, Ser. No. 317,151
Int. Cl.^{3} A61B *17/18*
U.S. Cl. 173—163 27 Claims



1. In a tool having a housing with a spindle drivingly connected to a motor and journaled in the housing for rotation in a forward and reverse direction, respectively, the tool further having collet means for retaining a tool element driven by the spindle, and the collet means having an open position and a closed position, respectively, the improvement which comprises, in combination, frictional means for constantly urging the collet means in its closed position, the collet means remaining closed in the forward direction of rotation of the spindle corresponding to the driving mode of operation of the tool, and cam means, responsive to the motor rotating the spindle in the reverse direction, for moving the collet means from its closed position into its open position against the force of the frictional means, the cam means including a cam track and an antifriction cam follower operatively associated with the cam track, the antifriction cam follower being out of operative engagement with the cam track in the forward direction of rotation, and operatively engaging the cam track in the reverse direction of rotation, the cam means thereby being an overrunning clutch in the forward direction and a slip clutch in the reverse direction of rotation of the spindle.

4,441,564
PORTABLE VARIABLE ANGLE DRILLING MACHINE

Michael S. Castillo, 23011 Moulton Pkwy., #C-8, Laguna Hills, Calif. 92653
Filed Jul. 27, 1981, Ser. No. 280,128
Int. Cl.^{3} E22C *11/00*
U.S. Cl. 175—122 3 Claims



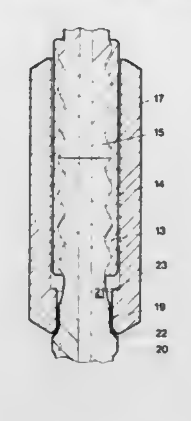
1. A soft material drilling machine for use in drilling holes under a hard surface comprising in combination a geared support shaft;
two sets of triangular legs;
one set moveably attached to the end opposite the hole drilling end;
a motor mounted to a geared rack attached to a support shaft;
a means to engage the geared rack to the support shaft; and,
the invention which consists of a long hollow, flexible plastic drive shaft means connected on one end to a motor and the other end to a hollow drill means;
a water jacket around the end closest to the motor with the water inlet;
a collar swivel axle assembly to contain the drill shaft;
a dual roller, one roller attached to each side of an inverted U-shaped collar-swivel axel assembly, and a handle frictionally mounted to the swivel axle and capable of moving the plastic drive shaft in two directions; and,
holes on the front end of the drill to exit the water.

4,441,565
GUIDING DEVICE FOR PERCUSSION DRILLS

Bernt S. Liljekvist, Storvik, Sweden, assignor to Santrade Ltd., Lucerne, Switzerland
Filed Mar. 2, 1982, Ser. No. 353,946
Claims priority, application Sweden, Mar. 19, 1981, 8101749
Int. Cl.^{3} E21B *17/10*
U.S. Cl. 175—325 9 Claims

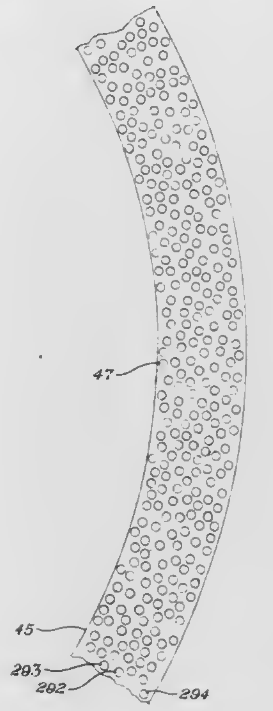
1. In combination a percussion drill string for rock drilling and a guide sleeve mounted coaxially upon said drill string for rotation relative thereto about a longitudinal axis of said drill string, said guide sleeve including outer surface means for engaging a wall of a bore hole to guide said drill string during drilling, said drill string including longitudinally spaced, generally radially disposed surfaces defining a longitudinal space therebetween, said guide sleeve including a radially inwardly projecting portion extending into said space such that said

surfaces and projecting portion being configured to longitudinally secure said guide sleeve to said drill string and permit relative rotation between said guide sleeve and said drill string about said longitudinal axis when said guide sleeve is in its lowermost position on said drill string.



4,441,566
DRILL BIT WITH DISPERSED CUTTER INSERTS

Rudolf C. O. Pessier, West University Place; Rodolfo M. Ippolito, Euless, and Billy E. Baker, Houston, all of Tex., assignors to Hughes Tool Company, Houston, Tex.
Continuation of Ser. No. 161,977, Jun. 23, 1980, abandoned. This application Aug. 9, 1982, Ser. No. 406,592
Int. Cl.^{3} E21B *10/52*
U.S. Cl. 175—374 8 Claims

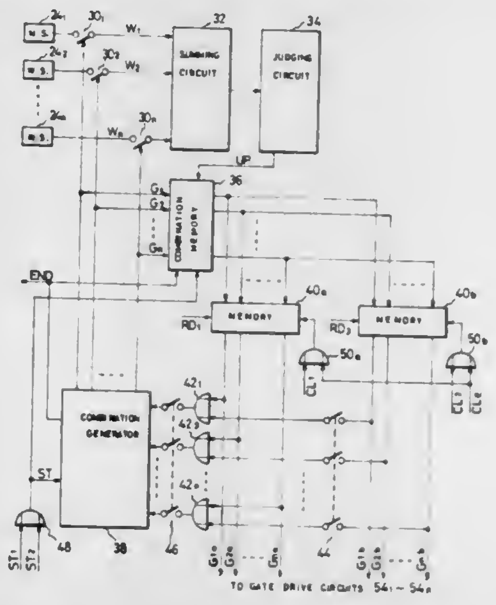


1. For an earth boring drill bit, an improved cutter comprising:
a cutter shell rotatably mounted on the drill bit; and
a cutting structure on the shell comprising a plurality of cutting elements, a selected region of the cutting structure having a pattern wherein all of the cutting elements are dispersed therein substantially free of all types of rows.

4,441,567
COMBINATION WEIGHING MACHINE

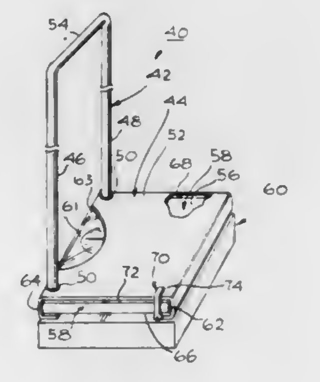
Takashi Hirano, Kobe, Japan, assignor to Yamato Scale Company, Limited, Akashi, Japan
Filed Aug. 9, 1982, Ser. No. 406,286
Claims priority, application Japan, Mar. 15, 1982, 57-41407
Int. Cl.^{3} G01G *19/32*
U.S. Cl. 177—25 7 Claims

1. A combination weighing machine, comprising a plurality of weighing units having individual loading and unloading means for an article or articles each for weighing said article or articles each to produce signals indicative of the measured weights, respectively; a plurality of normally-open switches having a control terminal each and corresponding to said weighing units, respectively; judging means coupled to receive said weight signals of the weighing units through said switches for producing an output signal when the sum of the incoming weight signals satisfies a predetermined weight condition; a combination generator having output terminals coupled respectively to said normally-open switches for producing output signals from said output terminals sequentially in accordance with a predetermined set of mathematical combinations to close the corresponding ones of said normally-open switches; a combination memory coupled to the output terminals of said combination generator for responding to the output signal of said judging means to store the current combined output signals of said combination generator; and control means for supplying the content of said combination memory to said loading and unloading means of the respective weighing units to control them at each end of said predetermined combination operation of said combination generator; characterized in that said control means comprises at least two auxiliary memories coupled to the output terminals of said combination memory for storing its combined output signals, a plurality of sub-control means corresponding respectively to said auxiliary memories for reading out their contents and supplying them separately to said loading and unloading means of the respective weighing units, and switch means for supplying said contents read out by said sub-control means selectively to said combination generator; and said combination generator includes means responsive to the contents of said auxiliary memories for inhibiting corresponding ones of its output signals.



4,441,568
WEIGHTING SCALE HAND SUPPORT DEVICE

Edna V. Heffner, 8808 Dempsey Ave., Sepulveda, Calif. 91343
Filed Sep. 22, 1981, Ser. No. 304,353
Int. Cl.^{3} G01G *19/00, 21/22*
U.S. Cl. 177—129 10 Claims



1. An improved weighing scale hand support device, acces-

sible to ambulatory patients from 3 sides, said device comprising, in combination:

a. an upright hand support having a generally lower vertical portion and a generally horizontal upper portion connected thereto and,
b. means for attaching said generally vertical portion of said hand support to the moveable weighing platform portion of a scale.

4,441,569
WEIGHING APPARATUS

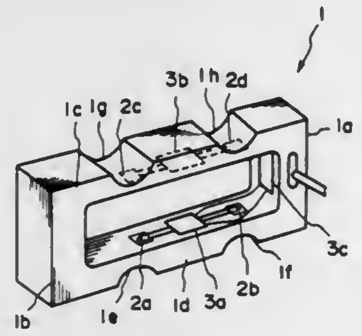
Takashi Sashiki, Nagaokakyo; Masaaki Matsuno, Kyoto; Noboru Kobayashi, Shiga, and Yoshiharu Mikami, Kyoto, all of Japan, assignors to Kabushiki Kaisha Ishida Koki Seisakusho, Japan

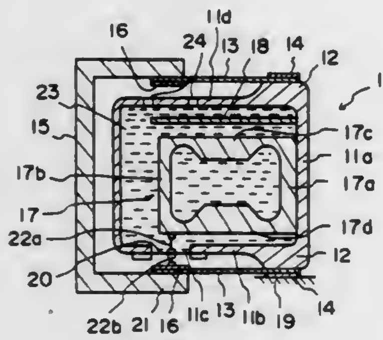
Filed Apr. 28, 1982, Ser. No. 372,706

Claims priority, application Japan, Apr. 28, 1981, 56-62474[U]

Int. Cl.^{3} G01G *3/14*

U.S. Cl. 177—211 **7 Claims**





1. A weighing apparatus for weighing articles through use of a weighing hopper and a load cell having strain gauges attached thereto, said weighing apparatus comprising:

- a load cell having a load-receiving portion;
- an amplifier substrate arranged adjacent to said load cell;
- a vessel for holding a liquid of a specific gravity greater than unity, and having the load cell and the amplifier substrate attached thereto, said vessel having an opening formed in a portion therof;
- a cover-portion disposed on said vessel so as to cover the opening;
- a supporting member for supporting the weighing hopper for holding the articles to be weighed; and
- a connecting member for operatively connecting said supporting member, said load-receiving portion of the load cell and said cover-portion.

4,441,570
CONNECTING A HUB TO THE DRIVE OF A TRACTION CHAIN VEHICLE, OR THE LIKE

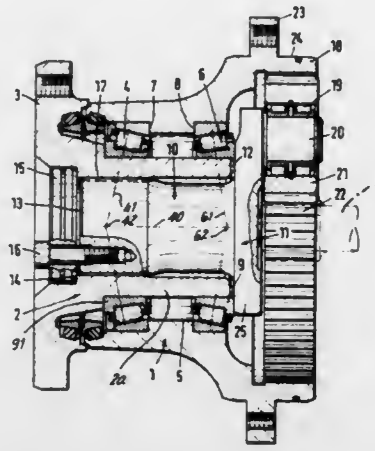
Horst Damm, Sprockhövel, and Hartwig Pfordt, Witten, both of Fed. Rep. of Germany, assignors to Mannesmann AG, Duesseldorf, Fed. Rep. of Germany

Filed Dec. 14, 1981, Ser. No. 330,327

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1980, 3048922

Int. Cl.^{3} B26D *55/12*

U.S. Cl. 180—9.62 **4 Claims**



1. A mounting structure comprising:

- a mounting sleeve for connection to, or being part of, a case or housing and having an annular gear being an internal ring gear for a planetary gearing;
- a shaft having on one end an enlarged portion to serve as planet gear carrier, the carrier journaling a plurality of planet gears meshing with the internal ring gear;
- a hub having a sleeve-like portion receiving said shaft in form-close relation, and having a mounting flange on its other end;
- a pair of bearings, each with conical rollers, the axes of the rollers of the two bearings being inclined toward each other, the bearings of the pair journaling the hub, on its outside, in the mounting sleeve; and
- a first one of the bearings having an inner race and an outer race, the inner race engaging a shoulder of the hub, the outer race engaging a shoulder of a radially inward oriented ridge separating the two bearings; and
- a second one of the bearings having an inner race and an outer race, the outer race of the second bearings engaging said ridge on its other side, axially in relation to the outer race of the first bearings, the inner race of the second bearings extending beyond the hub.

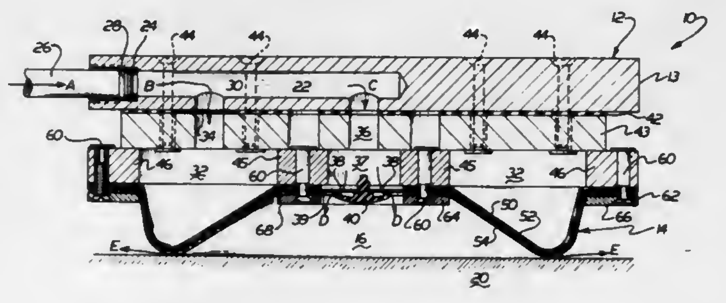
4,441,571
FLUID BEARING

Kenneth G. Wood, 429 SW. 116th Pl., Seattle, Wash. 98146

Continuation-in-part of Ser. No. 230,815, Feb. 2, 1981, abandoned. This application Jun. 22, 1981, Ser. No. 275,897

Int. Cl.^{3} B60V *1/16*

U.S. Cl. 180—128 **27 Claims**



1. A fluid bearing for supporting a load cell on a support surface, said bearing comprising a member having a first surface for receiving a load thereon and a second surface, a generally annular flexible membrane, connecting means for sealingly connecting said annular membrane with the second surface of said load receiving member along radially inner and radially outer perimeter portions of said membrane, fluid inlet means for connecting said fluid bearing with a supply of operating fluid under pressure, first fluid outlet means disposed in said second surface of said load receiving member between said perimeter portions of said membrane for introducing operating fluid under pressure from said inlet means to inflate said membrane to form a plenum chamber extending between said load receiving member and the support surface, said membrane being substantially impermeable by the operating fluid and including a plurality of independently replaceable layers with at least one of said layers being formed of a flexible and dimensionally stable material for limiting expansion of said membrane upon inflation of said membrane with said pressurized fluid.

4,441,572
METHOD AND A SYSTEM FOR STEERING A WHEELED VEHICLE

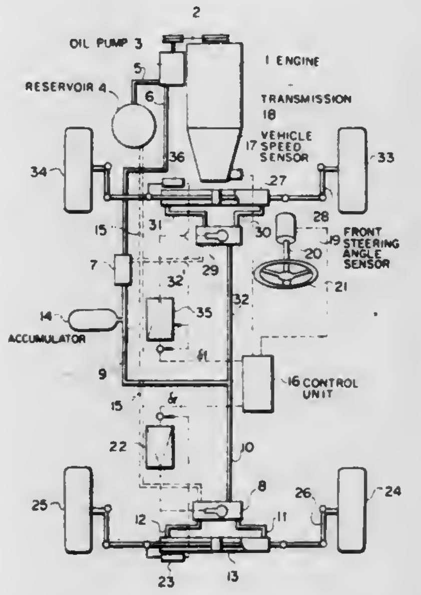
Hideo Ito, Zushi, and Namio Irie, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sep. 25, 1981, Ser. No. 305,794

Claims priority, application Japan, Nov. 18, 1980, 55-161327

Int. Cl.^{3} B62D *5/06*

U.S. Cl. 180—140 **7 Claims**



1. A method of steering a wheeled vehicle having a pair of rear steerable road wheels, a pair of front steerable road wheels, and a steering wheel for controlling a steering force applied to the pair of front steering road wheels, comprising the steps of:

- (a) sensing the vehicle speed;
- (b) sensing the angle δf_D through which said steering wheel is turned;
- (c) controlling the angle δf through which the pair of front steering road wheels is turned to $e \cdot \delta f_D/(1+k)$ where e is a constant and k is a function of a detected vehicle speed; and
- (d) controlling the angle δr through which the pair of rear steering road wheels is turned to $\delta f/k$.

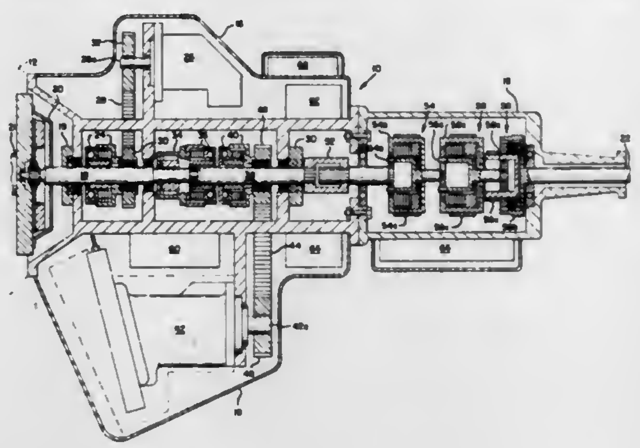
4,441,573
FUEL-EFFICIENT ENERGY STORAGE AUTOMOTIVE DRIVE SYSTEM

Vincent E. Carman; David H. Anderson, both of Portland, and Eugene F. Lucas, Lake Oswego, all of Oreg., assignors to Advanced Energy Systems Inc., Menlo Park, Calif.

Filed Sep. 4, 1980, Ser. No. 184,109

Int. Cl.^{3} B60K *9/00;* **F15B** *1/02*

U.S. Cl. 180—165 **9 Claims**



1. In a wheeled vehicle having an engine, a vehicle drive system comprising:

- (a) energy storage means for collecting and storing energy;
- (b) power transmission means mechanically coupled to at least one wheel of said vehicle for driving and being driven by said vehicle;
- (c) transmission control means for selectively connecting said power transmission means to said energy storage means for causing said power transmission means to deliver energy to said storage means for storage therein in response to the driving of said power transmission means by said vehicle to brake or decelerate said vehicle;
- (d) transmission control means for selectively connecting said power transmission means to said energy storage means for causing said power transmission means to receive energy from said storage means to drive said vehicle;
- (e) means for coupling said engine to said energy storage means for transmitting energy from said engine to said storage means for storage therein;
- (f) energy sensor means connected to said energy storage means for sensing the amount of energy stored therein;
- (g) control means connected responsively to said energy sensor means for stopping the transmission of energy from said engine to said storage means when the amount of energy in said storage means reaches a predetermined maximum value and for starting the transmission of energy from said engine to said storage means in response to a drop in the energy in said storage means to a predetermined minimum value;
- (h) vehicle speed sensor means for sensing the speed of said vehicle; and
- (i) means responsive to said vehicle speed sensor means for decreasing said predetermined maximum value in response to an increase in the speed of said vehicle from a predetermined speed.

4,441,574
REAR COVER DEVICE FOR MOTORCYCLES

Mikihiro Kohyama, and Kozo Ohta, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 21, 1982, Ser. No. 380,893

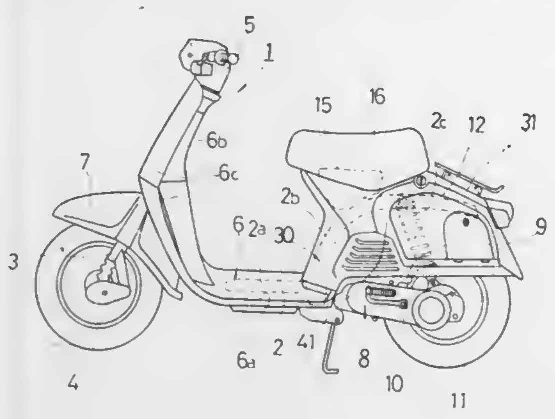
Claims priority, application Japan, May 21, 1981, 56-73946[U]; May 21, 1981, 56-73948[U]

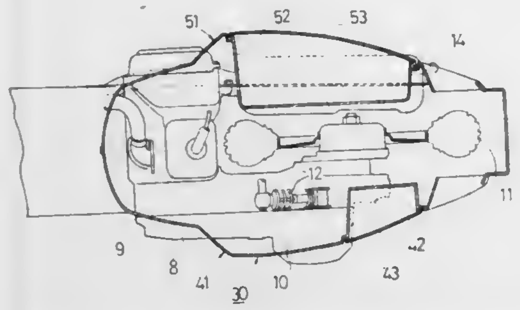
Int. Cl.^{3} B62D *39/00*

U.S. Cl. 180—219 **15 Claims**

1. In a motorcycle including: a power unit comprising an engine and a transmission case, said power unit having a front

portion thereof pivotably connected to a body frame of said motorcycle for swinging motion relative thereto, and said engine being disposed on the axis of said body frame; a rear wheel supported by a rear part of said transmission case; a single rear shock absorber which connects said transmission case to a body frame of said motorcycle; said transmission case and said rear shock absorber being disposed on a first side of said rear wheel; and an exhaust muffler disposed on a second side of said rear wheel, a rear cover device comprising:





- a cover member which covers said rear wheel from above and extends substantially downwardly while covering an outside portion of said shock absorber at said a first side and an outside portion of said rear wheel at said second side; and
- a container member formed integrally with and extending inwardly of said second side of said cover member, said container member being disposed above said exhaust muffler.

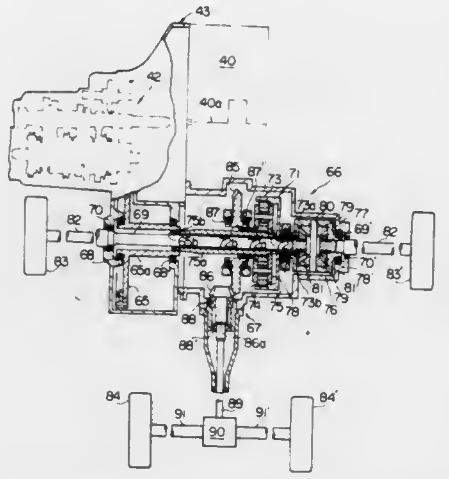
4,441,575

FOUR-WHEEL VEHICLE DRIVE SYSTEM

Kunihiko Suzuki, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan
Filed Apr. 20, 1982, Ser. No. 370,270
Claims priority, application Japan, May 11, 1981, 56-70346
Int. Cl.³ B60K ***17/04***
U.S. Cl. 180—248 **23 Claims**

1. A four-wheel drive system for a vehicle having at least first and second pairs of road wheels, comprising

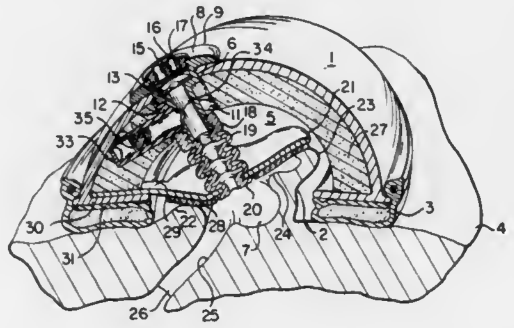
- a power unit having an output shaft rotatable about an axis in a lateral direction of the vehicle;
- a power transmission gear unit including transmission input and output shafts each having an axis of rotation parallel with an extension of the axis of rotation of the output shaft of said power unit;
- an intermediate drive gear rotatable about an axis parallel with the respective axes of rotation of the transmission input and output shafts, the transmission output shaft being held in driving engagement with said drive gear;
- a first wheel drive unit comprising differential-action power splitting means operative to split driving power from said drive gear into two power components and a differential gear assembly operative to transmit one of the two power components to the first pair of road wheels;
- a second wheel drive unit comprising right-angle power transfer gear means engaging said differential-action power splitting means and operative to transmit therethrough the other of said two driving power components in a fore-and-aft direction of the vehicle; and
- a driveline operatively intervening between said right-angle power transfer gear means and said second pair of road wheels and adapted to be driven by the driving power component tansmitted through the right-angle power transfer gear means;
- said differential-action power splitting means comprising a first planetary gear assembly which comprises an externally toothed sun gear rotatable about an axis parallel with the axis of rotation of said intermediate drive gear, an internally toothed ring gear coaxially encircling the sun gear and rotatable about the axis of rotation of the sun gear and a pinion carrier rotatable about the common axis of rotation of the sun and ring gears and carrying at least one planet pinion held in mesh with the sun gear and the ring gear and rotatable with respect to the pinion carrier about an axis parallel with said common axis, one of said sun gear and said ring gear being held in driving engagement with said differential gear assembly and the other of the sun and ring gears being held in driving engagement with said right-angle power transfer means, said right-angle power transfer gear means including a driven gear rotatable about an axis in a fore-and-aft direction of the vehicle, said driveline operatively intervening between the driven gear and said second pair of road wheels.



4,441,576

NONLINEAR PASSIVE ACOUSTIC FILTERING

Clayton H. Allen, 651 Concord Ave, Cambridge, Mass. 02138
Filed Apr. 19, 1982, Ser. No. 369,850
Int. Cl.³ H04R ***25/02***
U.S. Cl. 181—129 **21 Claims**



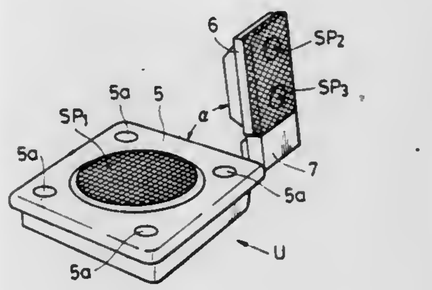
1. In a sound reducing or attenuating enclosure comprising a rigid, massive, shell, the improvement comprising passive means for continuously altering the effective sound reduction or attenuation of said enclosure as a function of the instantaneous amplitude of the pressure of the sound incident upon said enclosure over at least a portion of the audio frequency range between 20 and 20,000 Hz, said passive means comprises an orifice assembly defining at least one sharp-edged orifice and

arranged in acoustically sealed relation with a hole in said shell of said enclosure, thereby preventing the entrance of any significant amount of sound into said enclosure through said hole except for such supplemental sound as may be permitted through the small open area provided by said at least one sharp-edged orifice in said orifice assembly and admits air flow into and out of said enclosure in a nonlinear, amplitude sensitive relation for allowing supplemental sound to enter said enclosure and to combine with sound entering inside said enclosure by other paths and constraining the pressure amplitude of said supplemental sound to be in a substantially direct proportion to said incident sound pressure amplitude when said incident sound pressure amplitude is below a prescribed transition value within the range corresponding to a sound pressure level of 90 to 140 dB re 2×10^{-5} N/m^2 and constraining the pressure amplitude of said supplemental sound to approach a relationship substantially proportional to the square root of said incident sound pressure amplitude as said incident sound pressure amplitude rises above said prescribed transition value.

4,441,577

DIRECTION-VARIABLE SPEAKER SYSTEM

Masaki Kurihara, Tokyo, Japan, assignor to Clarion Co., Ltd, Tokyo, Japan
Filed Oct. 27, 1982, Ser. No. 437,764
Claims priority, application Japan, Oct. 30, 1981, 56-161238[U]
Int. Cl.³ H05K ***5/00***
U.S. Cl. 181—147 **5 Claims**



1. Speaker system which comprsies:

- first and second speaker cases for containing speaker units for different reproduction bands, respectively;
- intermediate case interposed between said first and second speaker cases;
- first connecting means for pivotally connecting said first speaker case and said intermediate case;
- rising angle setting means for raising said intermediate case with respect to said first speaker case;
- second connecting means for pivotally connecting said second speaker case and said intermediate case; and
- twisting angle setting means for twisting said second speaker case with respect to said intermediate case.

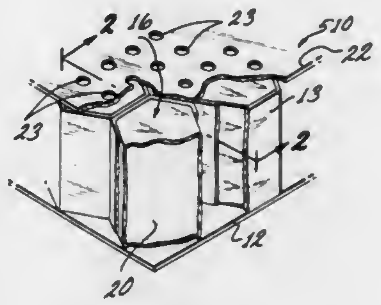
4,441,578

ENCAPSULATED BULK ABSORBER ACOUSTIC TREATMENTS FOR AIRCRAFT ENGINE APPLICATION

Philip M. Rose, Chula vista, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.
Continuation of Ser. No. 230,546, Feb. 2, 1981, abandoned. This application Jul. 19, 1982, Ser. No. 399,498
Int. Cl.³ F01N ***1/24***
U.S. Cl. 181—222 **7 Claims**

1. Acoustic absorber panels having sufficient mechanical strength for use in severe aircraft engine environments comprising:

- (a) a rigid imperforate backing sheet;
- (b) a central structure defined by side and end walls having a plurality of individual endwise directed cells defined by rigid divider walls;
- (c) a rigid perforated facing sheet having an effective open area not greater than 50%;
- (d) sound absorption material positioned within said cells; and

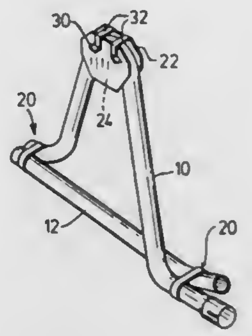


- (e) a thin limp membrane enclosing said sound absorption material;
- said rigid divider walls extend between said backing and facing sheets.

4,441,579

TAIL-PIPE REPLACEMENT KIT

Peter Roberts, Mississauga, Canada, assignor to Thrush Incorporated, Rexdale, Canada
Filed Apr. 23, 1982, Ser. No. 371,230
Int. Cl.³ F01N ***7/18***
U.S. Cl. 181—243 **12 Claims**

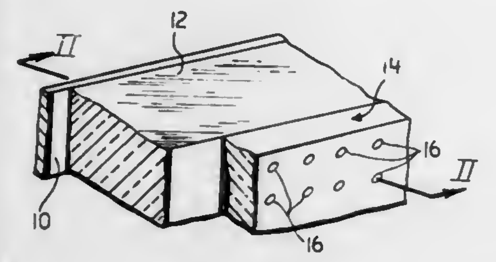


1. A replacement tail pipe kit suitable for use with either a first vehicle that was originally equipped with a first tubular tailpipe having an inlet end connected to a muffler, an arched region of predetermined first configuration adjacent the inlet end, and an outlet end spaced apart from the inlet end by a first distance, or a second vehicle that was originally equipped with a second tubular tail pipe having an inlet end connected to a muffler, an arched region of predetermined second configuration adjacent the inlet end, and an outlet end spaced apart from the inlet end by a second distance, said kit comprising:

- a first tubular section having an inlet end for connection to a muffler, an intermediate portion having an arch conforming to the overlapping spatial envelopes of both the first and second configurations, and an outlet end spaced apart from said inlet end by a third distance;
- a second tubular section having an inlet end and an outlet end spaced apart from the inlet end by a fourth distance, the fourth distance being approximately the same as the third distance and the sum of the third and fourth distances being at least as long as the larger of the first and second distances;
- means temporarily attaching the first and second tubular sections in overlapping relationship to provide a shipping package substantially shorter than either of said first and second distances; and
- means permitting said outlet end of said first tubular section to be operatively connected to said inlet end of said second tubular section in gas flow relationship when said replacement tail pipe kit is being permanently installed in one of said first and second vehicles.

4,441,580
ACOUSTICAL CONTROL MEDIA

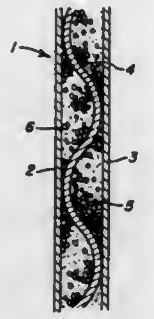
Michael P. Webster, Grand Rapids, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.
Filed Oct. 17, 1980, Ser. No. 197,817
Int. Cl.³ E04B *1/82*
U.S. Cl. 181—286 **17 Claims**



1. An acoustical panel comprising:
- a septum made of an air impervious material;
- a layer of low density sound absorbing material positioned adjacent to an exterior side of said septum, and constructed to absorb sound waves therein; and
- a layer of medium density material positioned adjacent to an exterior side of said low density layer, and constructed to absorb sound waves therein for absorption-type sound attenuation;
- said layer of medium density material having perforations extending laterally therethrough for Helmholtz-type sound attenuation.

4,441,581
COMPONENT FOR AIRBORNE-SOUND INSULATION

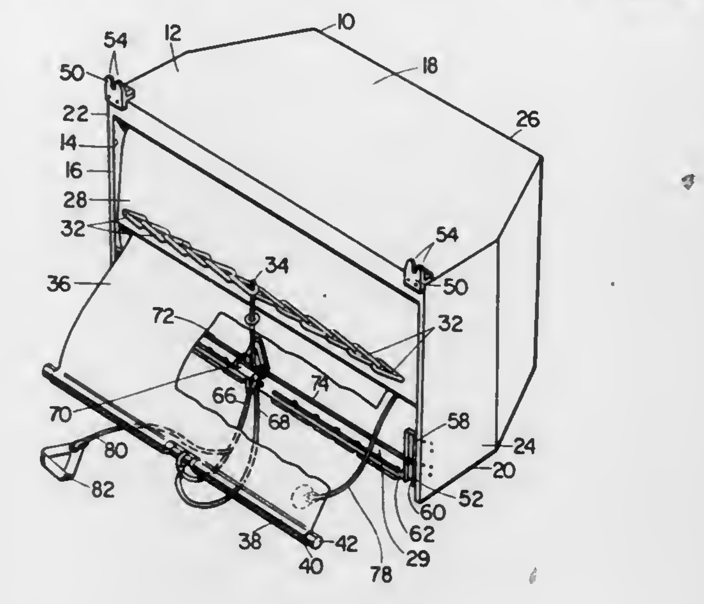
Rudolf Sommerhalder, Affoltern a.A., Switzerland, assignor to Hawa AG., Mettmenstetten, Switzerland
PCT No. PCT/CH79/00156, 371 Date Aug. 11, 1980, 102(e) Date Jul. 30, 1980, PCT Pub. No. WO80/01184, PCT Pub. Date Jun. 12, 1980
PCT Filed Dec. 10, 1979, Ser. No. 200,507
Claims priority, application Switzerland, Dec. 11, 1978, 12531/78
Int. Cl.³ E04B *1/82;* **C04B** *43/00*
U.S. Cl. 181—286 **7 Claims**



1. An airborne sound attenuating construction for use in walls, doors, and the like, comprising:
- means elongated in a vertical and a horizontal dimension for providing flexible walls defining a plurality of chambers spaced apart in at least said vertical dimension;
- a spherical metallic granular material consisting of a plurality of steel spheres;
- said spherical metallic granular material disposed in each of said chambers in close-packing relationship; and
- each of said chambers having a shape dimensiond to restrict settling movement of said spherical metallic granular material consisting of said plurality of steel spheres disposed therein in close-packing relationship, and wherein said walls defining said plurality of chambers are spaced apart approximately from 3 to 10 millimeters for forming said shape dimensioned to restrict settling movement of said spherical metallic granular material.

4,441,582
ESCAPE SLIDE SYSTEM AND METHOD OF OPERATION

James H. Ward, Jr., Plymouth, N.C., assignor to The B. F. Goodrich Company, New York, N.Y.
Filed Dec. 16, 1981, Ser. No. 331,438
Int. Cl.³ B64D *25/14*
U.S. Cl. 182—48 **8 Claims**

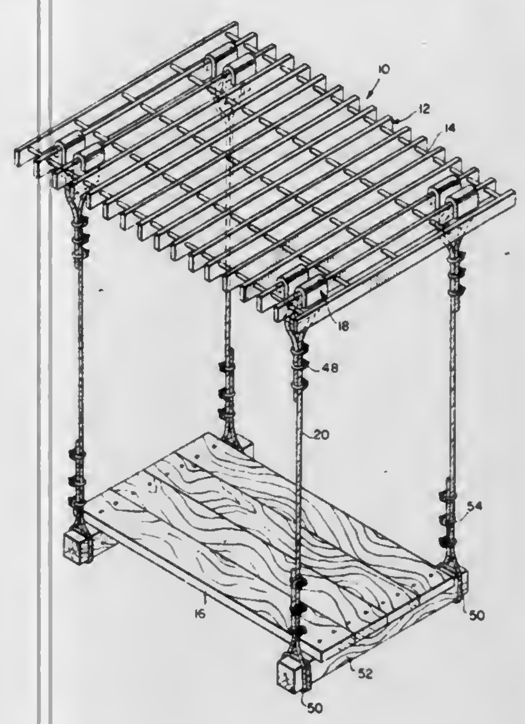


1. An escape slide system comprising a slide container, an opening in said container for receiving a slide in the deflated folded condition, a frame member, a door mounted for movement into and out of a doorway in said frame member with said container being mounted on the inside surface of said door for storage in said doorway, releasable mounting means connecting said slide container and said door, said mounting means including an upper bracket mounted on said container, said upper bracket having a bifurcated plate with flanges extending upwardly for engagement with a stud extending outwardly from said door toward said container, said slide having a girt member fastened to said frame member, and slide release means responsive to movement of said door relative to said frame member to actuate said releasable mounting means and disconnect said container from said door whereby said slide is released from said container as it falls away from said door and said frame member, said slide release means including lanyard means connecting said frame member and said releasable mounting means, said lanyard means having an automatic release cable for actuating said releasable mounting means in response to movement of said door out of said doorway, said releasable mounting means including a latch connected to said automatic release cable and supporting said container on said door in an installed position, said latch being actuated by said automatic release cable upon opening of said door to release said container, said latch including a slidable latch pin connected to said automatic release cable and supporting said door in said installed position, said latch pin being pulled from said installed position by said automatic release cable upon opening of said door, and said flanges being movable out of engagement with said stud when said pin is pulled out of said installed position.

4,441,583
GRATING CABLE HANGER

Ronald R. Vaught, 206 E. Pine, Bloomfield, N. Mex. 87413
Filed Mar. 28, 1983, Ser. No. 479,539
Int. Cl.³ E04G *3/14*
U.S. Cl. 182—150 **10 Claims**

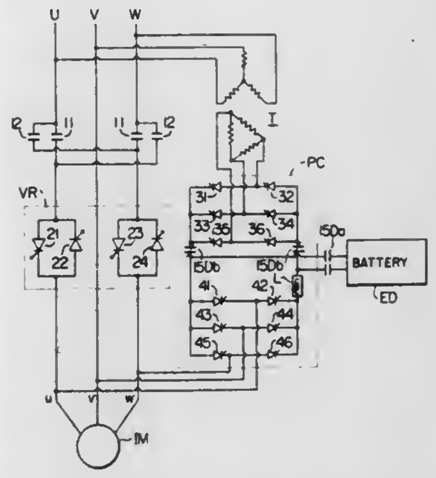
1. A grating cable hanger comprising:
- parallel side walls;
- a connecting bottom wall;
- U-type oppositely extending bends having depending walls, said U-type bends and defending walls for hanging over a plurality of steel gratings;
- a softener member positioned between said parallel side walls;



- a cable having a loop at one end, said loop positioned between said parallel side walls and supported on said softener; and
- a platform for workers and heavy equipment fasten to the opposite ends of said cable.

4,441,584
AC ELEVATOR CONTROL SYSTEM

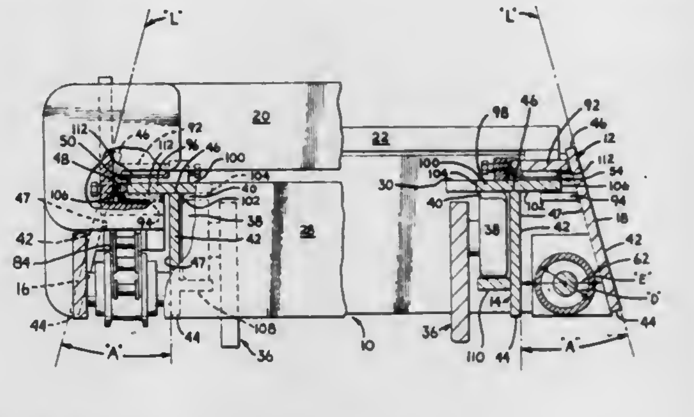
Nobuo Mitsui; Yasuyuki Maeda; Tomiaki Kurihara; Seiya Shima; Takanobu Hatakeyama, all of Katsuta, and Katsu Komuro, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jul. 31, 1981, Ser. No. 289,040
Claims priority, application Japan, Aug. 1, 1980, 55-105038
Int. Cl.³ B66B *1/28*
U.S. Cl. 187—29 R **21 Claims**



1. An AC elevator control apparatus for use in an AC elevator system including a three-phase AC power source, a three-phase induction motor, and an elevator car and a counterweight suspended from the opposite ends of a rope trained around a rotatable member driven by said induction motor, said apparatus comprising:
- means for supplying AC power from said AC power source to said induction motor to control the motoring torque thereof; and
- a power converting unit including means for supplying AC power having a frequency lower than that of said AC power source to said induction motor at least when said induction motor operates in a deceleration mode.

4,441,585
LIFT MAST ASSEMBLY

John E. Macnab, Dallas, Oreg., assignor to Towmotor Corporation, Mentor, Ohio
PCT No. PCT/US82/00354, 371 Date Mar. 22, 1982, 102(e) Date Mar. 22, 1982, PCT Pub. No. WO83/03406, PCT Pub. Date Oct. 13, 1983
PCT Filed Mar. 22, 1982, Ser. No. 375,114
Int. Cl.³ B66B *7/02*
U.S. Cl. 187—95 **23 Claims**



1. A lift mast assembly (10) comprising:
- a first movable elongate upright (**24**) and a first fixed elongate upright (**16**), said first movable upright (**24**) having a web (**42**) and a flange (**96**), and said first fixed upright (**16**) having a web (**42**) and a flange (**92**), said first movable upright (**24**) being mounted on the first fixed upright (**16**) and elevationally extensibly movable relative to the first fixed upright, said first movable upright (**24**) flange (**96**) being connected to the first movable upright (**24**) web (**42**) and projecting therefrom in a direction toward the web (**42**) of the first fixed upright (**16**), and said first fixed upright (**16**) flange (**92**) being connected to said first fixed upright (**16**) web (**42**) and projecting therefrom in a direction toward the web (**42**) of the first movable upright (**24**);
- bearing means (**48,50**) for guiding said movable upright (**24**) for movement along said first fixed upright (**16**) and maintaining the web (**42**) of said first movable upright (**24**) a preselected minimum distance ("E") spaced apart from the web (**42**) of the first fixed upright (**16**) at a preselected location spaced from the first movable and first fixed upright flanges (**96,92**); said bearing means (**48,50**) being connected to said first fixed and first movable uprights (**16,24**) and engageable with said flanges (**92,96**);
- a first lift jack (**60**) mounted on one of said first fixed and first movable uprights (**16,24**), said first lift jack (**60**) being nested between the webs (**42**) of the first fixed and first movable uprights (**16,24**) at said preselected location.

4,441,586
DEVICE FOR IMMOBILIZING A WHEELED VEHICLE

Jean P. Bernier, 2000 S. Eads St., Arlington, Va. 22202
Filed Oct. 19, 1981, Ser. No. 312,746
Int. Cl.³ E05B *73/00;* **B60T** *3/00*
U.S. Cl. 188—32 **8 Claims**

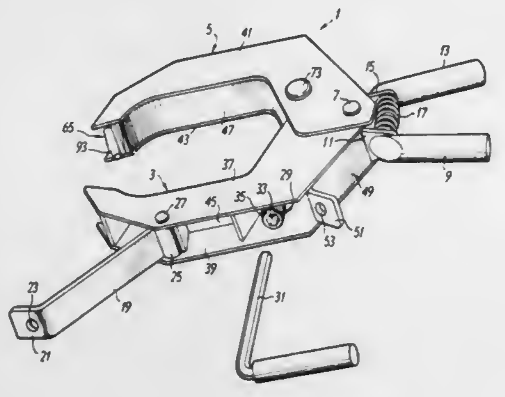
1. An improved device for immobilizing a vehicle having at least one wheel assembly, which device comprises:
- (a) an active jaw;
- (b) a passive jaw;
- (c) each jaw being in the configuration of a C-shaped housing;
- (d) means connecting the jaws for pivotal movement between open and closed positions;
- (e) adjustment means disposed within and enclosed by both

jaws for variably limiting the pivotal movement of the jaws;

(f) an elongate tooth carried by each jaw for engaging opposed portions of the wheel assembly; and

(g) locking means for preventing unauthorized removal of the device from the wheel assembly including:

1. a hasp carried by the active jaw and pivotable between open and closed positions for concealing the adjustment means,



2. a first flange carried by a free end of the hasp and provided with a first aperture therethrough,
3. an exterior cover plate carried by the active jaw and including a second flange provided with a second aperture therethrough, and
4. wherein when the hasp is disposed in its closed position, the hasp and the cover plate collectively define an exterior side wall of the active jaw, with the first and second apertures being aligned for receiving a padlock bale therethrough.

4,441,587

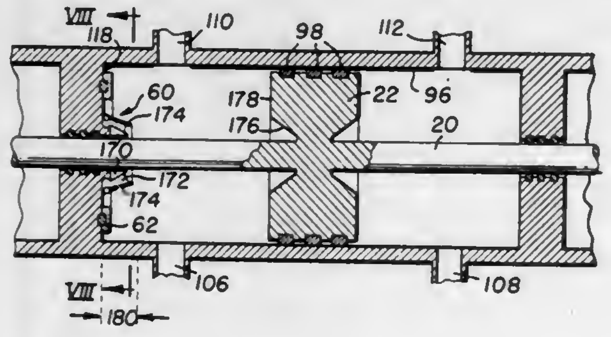
INTERNAL COMBUSTION ENGINE OR PUMPING DEVICE

Kenneth S. Patten, 1920 Latham St., #1, Mountain View, Calif. 96040

Division of Ser. No. 111,489, Jan. 14, 1980, Pat. No. 4,362,477. This application Aug. 2, 1982, Ser. No. 404,536

Int. Cl.³ F16D *55/02*

U.S. Cl. 188—70 R **4 Claims**



1. A mechanical, self-actuating brake for limiting relative longitudinal travel between first and second movable members along their axes, said first movable member being formed with a conical recess adjacent said second movable member and having a shaft extending toward said second movable member, said second movable member comprising a plurality of circumferentially arranged brake shoes in radial alignment with said shaft, a plurality of fingers being arranged radially about said brake shoes and including resilient means, said fingers being adapted for interaction with said conical recess and with said brake shoes through said resilient means for forcing said brake shoes into braking engagement with said shaft as said first member axially approaches said second member.

4,441,588

DISC BRAKE INCLUDING A SPRING FOR PRESSING A FRICTION PAD AGAINST A GUIDING PORTION

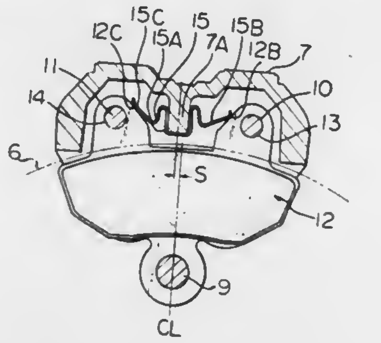
Kazuo Saito, Kanagawa, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Filed Oct. 29, 1981, Ser. No. 316,425

Claims priority, application Japan, Nov. 1, 1980, 55/154349

Int. Cl.³ F16D *65/40*

U.S. Cl. 188—73.38 **12 Claims**



1. A disc brake comprising:

a rotatable disc,

a guiding portion extended in the direction of the axis of the disc,

a friction pad disposed on one side of the rotatable disc and being supported on the guiding portion and being displaceable relative thereto in the direction of the axis of the disc,

a pad spring provided to press the friction pad against the guiding portion in the direction of the radius of the disc and in one direction along the circumference of the disc,

wherein the pad spring has two leg portions which respectively abut with abutting surface portions of the friction pad, with one leg portion pressing the friction pad in the direction of the radius of the disc and in one circumferential direction, and the other leg portion pressing the friction pad in the direction of the radius of the disc and in the other circumferential direction, and the pressing force in said one circumferential direction is larger than that in the other circumferential direction, and

wherein said abutting surface portions are provided on two inclined surfaces which are symmetrical with respect to the circumferential center line of the friction pad, said two leg portions are symmetrical with respect to the circumferential center line of the pad spring, and the center line of the pad spring is displaced from the center line of the friction pad in the direction of the circumference of the disc.

4,441,589

CONTROLLED WHEEL BRAKING SYSTEM

Fred C. Stevens, One Garrett Pl., Bronxville, N.Y. 10708

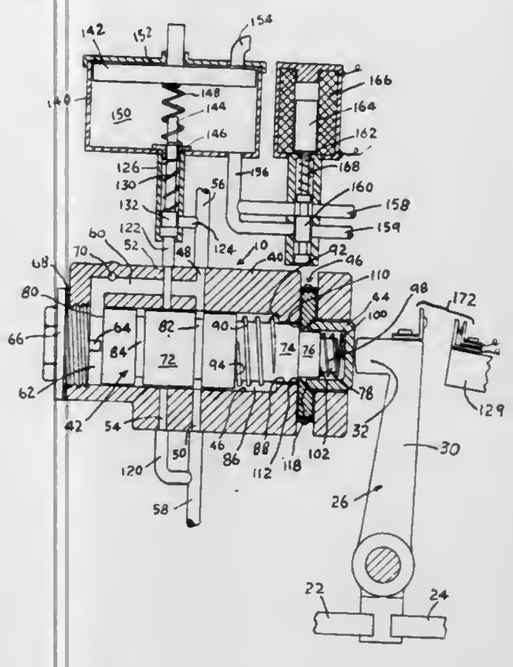
Filed Oct. 26, 1981, Ser. No. 314,879

Int. Cl.³ B60T *8/04*

U.S. Cl. 188—181 T **7 Claims**

1. A hydraulic braking system for a vehicle wheel comprising a rotatable member, brake means and a fluid brake cylinder, supply means for supplying fluid under pressure to said fluid brake cylinder for transmitting force to said brake means so as to bias said brake means against said rotatable member, valve means disposed between said fluid supply means and said fluid brake cylinder and movable between a first position and a second position for controlling the flow of fluid to and from said fluid brake cylinder, means for sensing vehicle wheel lock up and moving said valve means to said second position so as to block the flow of fluid to said fluid brake cylinder and drain fluid from said fluid brake cylinder at the instant of vehicle wheel lock up so as to unlock the vehicle wheel and means for continually sensing vehicle wheel unlock and lock up when

said valve means is in said second position and for alternately feeding and removing the drained brake fluid to and from said fluid brake cylinder so as to automatically pump said brake means.



4,441,590

BRAKING SYSTEM FOR MOTOR VEHICLE

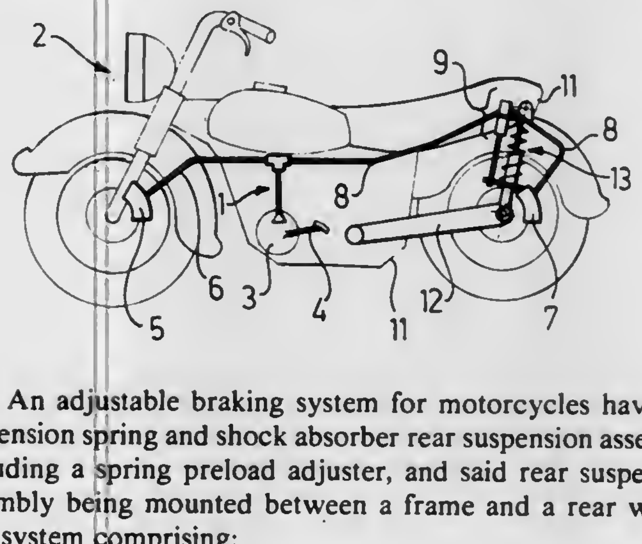
Alberto Giorgetti, Paladina, Italy, assignor to Brembo S.p.A., Paladina, Italy

Filed Mar. 21, 1979, Ser. No. 22,454

Claims priority, application Italy, Aug. 4, 1978, 26517 A/78

Int. Cl.³ B60T *8/18*

U.S. Cl. 188—195 **2 Claims**



1. An adjustable braking system for motorcycles having a suspension spring and shock absorber rear suspension assembly including a spring preload adjuster, and said rear suspension assembly being mounted between a frame and a rear wheel, said system comprising:

at least one front brake;

a rear brake;

a master cylinder hydraulically connected to said at least one front brake and said rear brake; and

a brake proportioning device hydraulically connected between said master cylinder and said rear brake, said brake proportioning device including;

a pressure regulating valve for limiting the maximum pressure to be applied to said rear brake,

a calibrating spring connected to said pressure regulating valve, said maximum pressure applied to said rear brake by said pressure regulating valve increasing in proportion to the compression of said calibrating spring, and

linkage means operatively connected to said calibrating spring, said linkage means compressing said calibrating spring when the suspension spring is compressed to thereby vary the maximum pressure to be applied to said rear brake in response to variations in the length of said suspension spring, variations in the length of said suspension spring changing the length of said calibrating spring to also vary the maximum pressure to be applied to said rear brake, including,

a first bracket attached to said rear suspension assembly between said suspension spring and said spring preload adjuster,

a second bracket attached to said rear suspension assembly at the end of said suspension spring opposite to said spring preload adjuster,

said pressure regulating valve and said calibrating spring being mounted to one of said brackets, and

a pushrod having one end mounted to the other of said brackets, the other end of said pushrod being connected to said calibration spring to compress said calibration spring when said suspension is compressed.

4,441,591

RAIL VEHICLE SLACK ADJUSTER

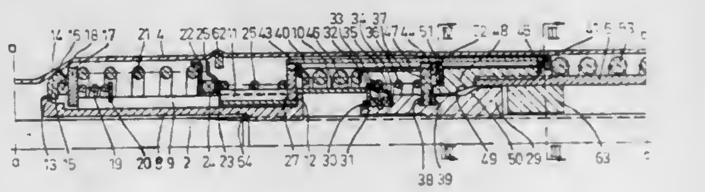
Lars M. Severinsson, Hishult; Peter Beijbom, Lund, and Anders K. Martensson, Bjärred, all of Sweden, assignors to SAB Industri AB, Landskrona, Sweden

Filed Jun. 10, 1981, Ser. No. 272,180

Claims priority, application Sweden, Jun. 24, 1980, 8004668

Int. Cl.³ F16D *65/66*

U.S. Cl. 188—202 **4 Claims**



1. A rail vehicle slack adjuster of the axial type, comprisng an elongated barrel, a non-rotatable actuation rod extending out of the barrel from one of its ends, a non-rotatable threaded spindle extending out of the barrel from its opposite end, a conditionally rotatable adjuster nut in non-self-locking engagement with the spindle, and clutch means responsive to braking conditions for conditionally relatively moving the barrel and the adjuster nut, characterized in that means between the barrel and the non-rotatable actuation means for normally preventing the barrel from rotating but for making possible a manual rotation of the barrel for rotating said adjuster nut under a manual force above a threshold level comprises at least one circumferentially deformable manual adjustment clip coupling together the non-rotatable actuation means and barrel by means of a free circumferential end projection in removable resilient engagement with a notch to prevent rotation until a manual rotational force is applied to the barrel of sufficient magnitude to circumferentially deform the clip and disengage the end projection from the notch thereby permitting manual rotation of the barrel together with the adjuster nut.

4,441,592

BICYCLE BRAKE ASSEMBLY

Richard C. Everett, Lake Oswego, Oreg., assignor to Kool-Stop International Inc., Lake Oswego, Oreg.

Filed Aug. 27, 1982, Ser. No. 412,204

Int. Cl.³ F16D *69/04, 65/78*

U.S. Cl. 188—264 A **12 Claims**

1. In a bicycle brake assembly, the combination comprising:

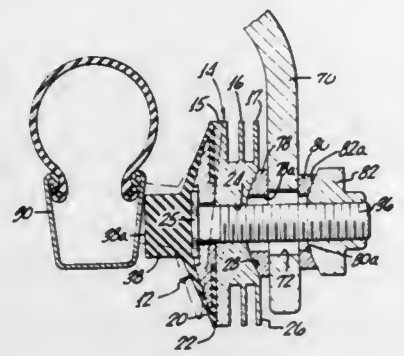
(a) heat sink means having at least one generally planar surface;

(b) a separate brake shoe means including

  (i) a thermally conductive member having a support flange portion and a generally planar surface portion, said planar portion being displaced outwardly from said flange portion; and

  (ii) a pad of friction material secured to and substantially surrounding said support flange portion, one surface of said pad and said generally planar surface of said thermally conductive member forming a generally coplanar surface; and

(c) means for separably securing said brake shoe means to said heat sink means with said coplanar surface in thermally conductive relation with said at least one generally planar surface of said heat sink means for enabling the transfer of heat from said brake shoe means through said thermally conductive member to said heat sink means and then to the atmosphere during braking action of the bicycle.



4,441,593

VIBRATION DAMPER ARRANGEMENT FOR VEHICLES

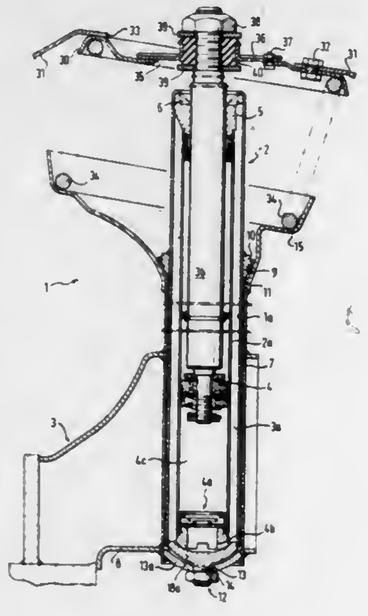
Ludwig Axthammer, Hambach, Fed. Rep. of Germany, assignor to Fichtel & Sachs AG, Fed. Rep. of Germany

Continuation of Ser. No. 176,698, Aug. 11, 1980, abandoned. This application Dec. 6, 1982, Ser. No. 446,989

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1979, 2934671

Int. Cl.³ B60G *15/06*

U.S. Cl. 188—322.11 **39 Claims**



1. Vibration damper arrangement for a vehicle comprising an axially extending damper of the piston rod-cylinder type having a pair of opposite ends spaced apart in the axial direction thereof and including a cylindrical tube having the axis thereof extending in the axial direction of said vibration damper, a support for said vibration damper, said support including a hollow cylindrical receptacle having an axis, said tube being insertable into said receptacle with said axis of said tube extending in the axial direction of said receptacle, a detachable fastening device engageable at one end of said damper for securing said damper in said receptacle, wherein the improvement comprises that said fastening device applies a tension force through one end of said vibration damper with the force acting in the axial direction of and applying a tension force to said tube, a first stop surface located on said tube spaced at a distance from both ends of said tube, a second stop surface located on said receptacle remote from said fastening device and in cooperating relation with said first stop surface so that under the applied tension action of said fastening device said first stop surface presses against said second stop surface, at least one of said first and second stop surfaces extends obliquely of the axis of said tube and said receptacle has an open axial end located between and spaced axially from the ends of said tube, said fastening device being located at the other end of said receptacle, whereby when said fastening device is detached, said damper can be removed in its axial direction out of the open end of said receptacle.

4,441,594

FLUID TYPE TORQUE CONVERTER APPARATUS

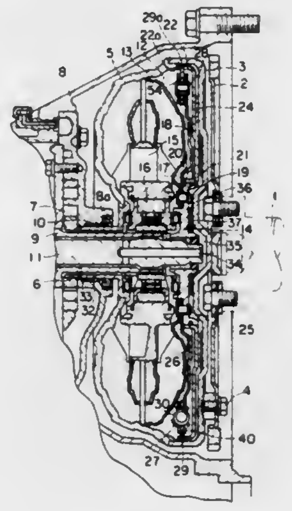
Seitoku Kubo, Toyota; Koujiro Kuramochi, Okazaki, and Tatsuo Kyushima, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jun. 18, 1981, Ser. No. 274,807

Claims priority, application Japan, Jul. 10, 1980, 55-94693

Int. Cl.³ F16H *3/66, 45/02*

U.S. Cl. 192—3.28 **4 Claims**



1. In a fluid type torque converter apparatus including an input shaft, an output shaft, a fluid type torque converter provided between said input and output shafts, and a lockup clutch provided in parallel with said fluid type torque converter for directly connecting said input and output shafts, said lockup clutch comprising:

(a) first and second disc elements disposed in axially spaced, opposed relation to each other, said first and second disc elements having a plurality of circumferentially elongated, complementary protrusions defining cavities spaced about the circumference thereof, one of said first and second disc elements being drivingly connected to said output shaft;

(b) a third disc element being selectively connected in driving relation to said input shaft and being axially disposed between for relative rotation with respect to said first and second disc elements, said third disc element having a plurality of first elongated slots circumferentially spaced for cooperation with said cavities and a plurality of second elongated slots of a given length circumferentially spaced and located between adjacent first elongated slots;

(c) a compression coil spring disposed in each said cavity and cooperating first elongated slot, said springs acting as shock absorbers for relative rotation between said first and second disc elements and said third disc element;

(d) a plurality of elongated fasteners axially interconnecting and preventing relative rotation between said first and second disc elements, one said fastener being disposed in each said second elongated slot of said third disc element; and

(e) a plurality of heat-hardened spacers for axial spacing said first disc element relative to said second disc element, said spacers being forced independently of said fasteners, one said spacer being disposed on an intermediate portion of each said fastener and being received in a respective second elongated slot, each said spacer slidably engaging one longitudinal edge of its respective second elongated slot for centering said third disc element relative to said interconnected first and second disc elements.

4,441,595

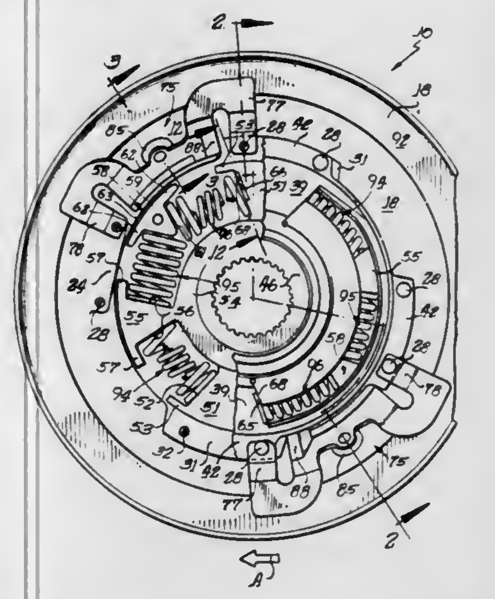
HYDRAULIC PRESSURE RELIEF VALVE FOR LOCK-UP CLUTCH

Paul E. Lamarche, Utica, Mich., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Oct. 13, 1981, Ser. No. 310,956

Int. Cl.³ F16H *45/02*

U.S. Cl. 192—3.29 **12 Claims**



1. A lock-up clutch assembly for a torque converter having a vibration damper therein, the assembly including a piston plate adapted to engage the torque converter housing, a hub assembly operatively connected to the turbine of the torque converter and having a pair of oppositely disposed radially extending arms, a pair of spring retainer plates journalled on and substantially enclosing the hub assembly, said plates being secured to the piston plate, a plurality of spring separators movably mounted within said retainer plates, and a plurality of compression springs positioned between said spring separators and hub arms, said retainer plates having diametrically oppositely disposed inwardly offset drive straps paralleling said hub arms in the path of the compression springs, the improvement comprising a pressure relief valve to equalize the fluid pressure on the opposite sides of the piston plate, said piston plate having at least one opening therein, said relief valve including a generally flat spring member secured to the piston plate, a resilient face seal carried by said spring member and normally sealing said opening, and a camming surface on the flat spring member, and a cam ring slidably mounted on said piston plate and having a camming tab generally aligned with and adjacent said camming surface, said cam ring being actuated by movement of said hub assembly in the coast direction to interengage said camming tab and said camming surface of said spring member to lift the face seal and uncover said opening.

4,441,596

VEHICLE INCHING MECHANISM INTERLOCKED WITH A BRAKING MECHANISM

Teruo Nakahara, Komatsu; Shingo Ota, Kanazawa, and Masaru Nakamura, Matsutou, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Dec. 23, 1981, Ser. No. 333,794

Claims priority, application Japan, Dec. 26, 1980, 55-186693

Int. Cl.³ B60K *41/24*

U.S. Cl. 192—13 R **4 Claims**

1. In a motor vehicle, in combination:

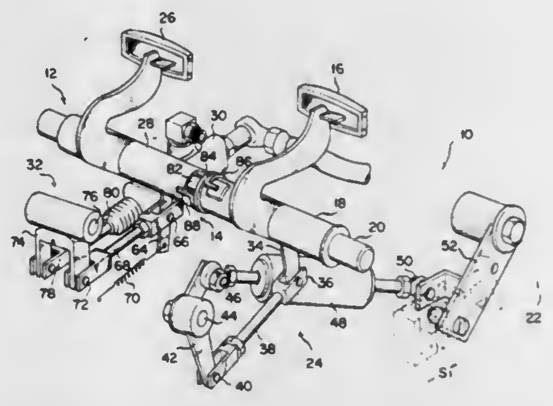
(a) a stationary shaft;

(b) an inching mechanism for inching the vehicle, the inching mechanism comprising:

- (1) a first sleeve rotatably fitted over the stationary shaft;
- (2) an inching pedal formed on the first sleeve for revolving same about the stationary shaft;
- (3) an inching valve; and
- (4) a first linkage connecting the first sleeve to the inching valve to allow actuation of the latter by the inching pedal;

(c) a braking mechanism for braking the vehicle, the braking mechanism comprising:

- (1) a second sleeve rotatably fitted over the stationary shaft;
- (2) a brake pedal formed on the second sleeve for revolving same about the stationary shaft;
- (3) a brake master cylinder; and
- (4) a second linkage connecting the second sleeve to the brake master cylinder to allow actuation of the latter by the brake pedal; and



(d) means for interlocking the inching mechanism and the braking mechanism so that the depression of the inching pedal results in the actuation of both the inching valve and the brake master cylinder but that the depression of the brake pedal results only in the actuation of the brake master cylinder, the interlocking means comprising:

- (1) a first set of jaws provided to the first sleeve;
- (2) a second set of jaws provided to the second sleeve and meshing with the first set of jaws, there being clearances between the first and the second sets of jaws to allow the revolution of either first or second sleeve relative to the other within limits; and
- (3) resilient means connected between the first and the second sleeves so as to transmit only the revolution of the former, caused by the depression of the inching pedal, to the latter.

4,441,597

AUTOMATIC HUB CLUTCH

Masao Teraoka, Sano, Japan, assignor to Tochigi-Fuji Sangyo Kabushiki Kaisha, Tochigi, Japan

Filed Nov. 20, 1981, Ser. No. 323,707

Claims priority, application Japan, Apr. 28, 1981, 56-62400[U]

Int. Cl.³ F16D *1/06, 43/00*

U.S. Cl. 192—35 **2 Claims**

1. An automatic hub clutch for a four-wheel drive vehicle and comprising:

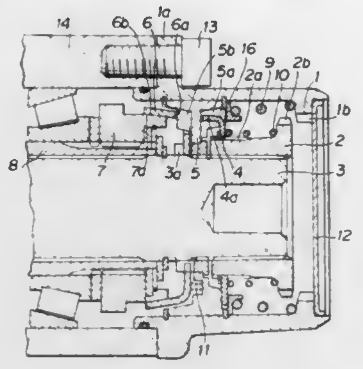
a drive shaft adapted to be rotated in a four-wheel drive mode and not to be rotated in a two-wheel drive mode;

a housing rotatably mounted with respect to said drive shaft, said housing having coupling teeth;

a slide gear having coupling teeth, said slide gear being mounted to be rotated in response to rotation of said drive shaft and to be movable axially thereof between an engagement position, whereat said coupling teeth of said slide gear mesh with said coupling teeth of said housing, and a disengagement position, whereat said coupling teeth of said slide gear are spaced from and not meshed with said coupling teeth of said housing;

first spring means, positioned between said slide gear and said housing and having a predetermined spring force, for biasing said slide gear axially of said drive shaft to said disengagement position;

second spring means, having a spring force less than said predetermined spring force of said first spring means, for biasing said slide gear axially of said drive shaft to said engagement position, said second spring means being positioned radially between said first spring means and said slide gear and coaxial thereto; and



cam means in engagement with said first and second spring means for, upon rotation of said drive shaft, causing compression of said first spring means and thereby enabling said second spring means to move said slide gear axially to said engagement position, and for, upon nonrotation of said drive shaft, enabling said first spring means to move said slide gear axially to said disengagement position.

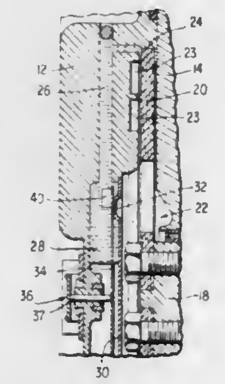
4,441,598
MODULATED VISCOUS FAN DRIVE

Michael Shepherd, Carmel, Ind., assignor to Wallace Murray Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 201,150, Oct. 27, 1980, abandoned. This application Sep. 25, 1981, Ser. No. 305,691

Int. Cl.³ F16D ***35/00, 43/25***

U.S. Cl. 192—58 B **4 Claims**



1. A viscous fluid fan drive coupling of the known temperature responsive type adapted for use with the cooling system of an internal combustion engine, the fan drive coupling including a housing, the housing including a driving chamber and a reservoir chamber, a rotary drive disc received within the drive chamber and secured to a shaft rotatably mounted within the housing, the shaft rotating with operation of the engine, a viscous shear fluid within at least one of said driving and reservoir chambers, a thermally responsive device, and thermally responsive device varying the volume of viscous shear fluid in the drive chamber, the improvement comprising, the drive chamber being provided with at least one accumulator groove, said accumulator groove being located on a wall of the drive chamber, radially inwardly of the radially outermost portion of the drive chamber and radially outwardly of the radially innermost portion of the drive chamber, whereby the coupling action from partial engagement to full coupling is modulated.

4,441,599
FLUID CLUTCH

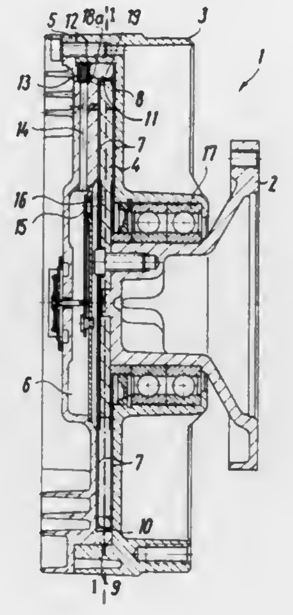
Werner Storz, Benningen, Fed. Rep. of Germany, assignor to Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. KG, Fed. Rep. of Germany

Filed Oct. 21, 1981, Ser. No. 313,506

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1980, 3041793

Int. Cl.³ F16D ***35/00, 43/25***

U.S. Cl. 192—58 B **14 Claims**



1. Fluid clutch comprising a primary part with a drive disc and a secondary part with a cover, the primary and secondary parts being mounted rotatably with respect to one another, the drive disc being disposed in a working chamber formed in the secondary part, said chamber communicating through a return channel with a supply chamber formed in the secondary part, for returning clutch fluid from the working chamber to the supply chamber, retarder means for increasing the clutch fluid return pressure provided in a gap between the circumference of the drive disc and a radial boundary of the working chamber, control means disposed in a control chamber of a size corresponding to the dimensions of the control means, said chamber being displaced axially relative to the drive disc, and being located in the secondary part, two bores are provided at an angle extending radially and circumferentially relative to said drive disc and said control chamber, said bores terminating in the vicinity of the circumferential ends of the retarder means, in said gap between the drive disc and the radial boundary of the working chamber, and in said control chamber, said return channel extending from the supply chamber to the control chamber.

4,441,600
DIAPHRAGM CLUTCH COVER ASSEMBLIES

André Caray, Paris, France, assignor to Valeo, Paris, France

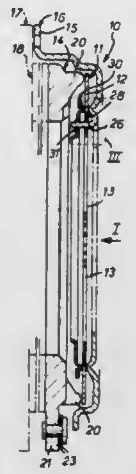
Filed Jun. 30, 1981, Ser. No. 279,186

Claims priority, application France, Jul. 2, 1980, 80 14712

Int. Cl.³ F16D ***13/44***

U.S. Cl. 192—89 B **18 Claims**

1. A diaphragm clutch cover assembly for a motor vehicle of the kind comprising a cover, a diaphragm spring having a Belleville washer outer peripheral portion and a central portion divided into radial fingers, assembly means rockably mounting said diaphragm spring on said cover, a pressure plate fixed for rotation with said cover and admitting of limited axial displacement relative thereof, said Belleville washer outer peripheral portion bearing against said pressure plate, said assembly means including a fulcrum ring disposed on one side of said diaphragm spring remote from said cover and a plurality of retaining tabs extending through openings formed in said diaphragm spring proximate to radially outer ends of said fingers for attaching said fulcrum ring relative to said cover, the improvement wherein said retaining tabs are fixed axially relative to and associated with a selected one of said cover and said fulcrum ring, a plurality of means defining apertures fixed axially relative to the nonselected one of said cover and fulcrum ring for receiving said retaining tabs, tongues formed in a selected one of said means defining apertures and said retaining tabs resiliently engaging contact surfaces formed on the nonselected one of said means defining apertures and said retaining tabs and transversely clamping the latter for maintaining said fulcrum ring in a predetermined axial position relative to said cover against axial forces exerted thereon by said diaphragm spring in the course of rocking movement.



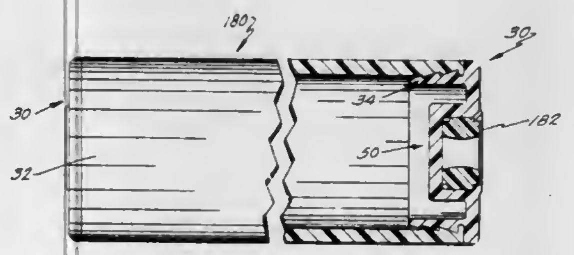
4,441,601
PLASTIC CONVEYOR ROLLER AND METHOD OF MAKING SAME

William R. Rood, Muskegon, Mich., assignor to C. L. Frost & Son, Inc., Grand Rapids, Mich.

Filed Apr. 20, 1981, Ser. No. 255,510

Int. Cl.³ B65G ***39/09***

U.S. Cl. 193—37 **48 Claims**



1. An end cap adapted for ultrasonic insertion into an end of a thermoplastic conveyor roller tube having an outside diameter so that the end cap and roller tube are mechanically interconnected, said end cap comprising:

a molded crystalline thermoplastic body, said body defining:

an axially extending hub, said hub being tapered along at least a portion thereof from an inner end to an outer end along an outer peripheral surface;

an outer flange extending radially outwardly from the outer peripheral surface of said hub; and

a plurality of tapered, axially spaced barbs, each barb extending around substantially the entire outer peripheral surface of said hub, said barbs being axially positioned between said inner end of said hub and said outer flange, said body further defining a circumferential groove opening through said outer peripheral surface between said inner end and adjacent said outer flange and wherein said outer flange has an outer diameter greater than the maximum diameter of said barbs.

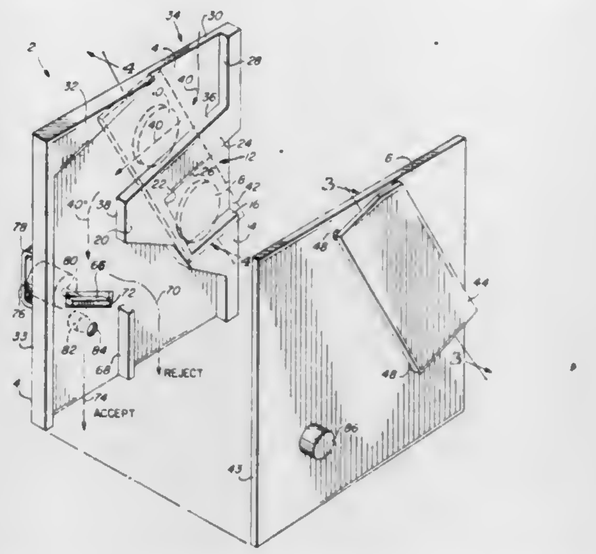
4,441,602
ELECTRONIC COIN VERIFICATION MECHANISM

Joseph Ostroski, 3413 W. Aster, Phoenix, Ariz. 85029, and Lawrence M. Briski, 2510 W. Palo Verde Dr., Phoenix, Ariz. 85017

Filed Dec. 2, 1981, Ser. No. 326,573

Int. Cl.³ G07D ***5/08***

U.S. Cl. 194—100 A **2 Claims**



1. An apparatus for verifying the authenticity of a coin under test, said apparatus comprising in combination:

a. retaining means for releasably retaining a reference coin;

b. guide means for guiding a coin under test along a predetermined path;

c. first and second matched drive coil, said first drive coil being disposed adjacent to one side of said retaining means, and said second drive coil being disposed adjacent to one side of said predetermined path;

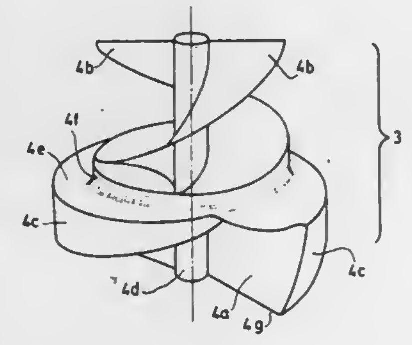
d. an oscillator coupled to said first and second drive coils for applying a first generally sinusoidal voltage to said first drive coil and a second generally sinusoidal voltage to said second drive coil, said first and second generally sinusoidal voltages being substantially equal in magnitude.

e. first and second matched sense coils inductively coupled to said first and second drive coils, respectively, said first sense coil being disposed adjacent to said retaining means on a side thereof opposite said first drive coil, and said second sense coil being disposed adjacent to said predetermined path on a side thereof opposite said second drive coil; and

f. a comparator coupled to said first and second sense coils for comparing the voltages inductively coupled to said first and second sense coils and generating an output signal when the voltages inductively coupled to said first and second sense coils are substantially equal for indicating the authenticity of the coin under test, said comparator including a differential amplifier having first and second inputs coupled to said first and second sense coils, respectively, said differential amplifier having an output terminal for providing a first signal when the voltages inductively coupled to said first and second sense coils are not substantially equal and providing a second signal when the voltages inductively coupled to said first and second sense coils are substantially equal, said comparator also including a first retriggerable monostable multivibrator having a trigger input coupled to the output terminal of said differential amplifier, said first retriggerable monostable multivibrator being continuously triggered by said first signal provided by said differential amplifier and said first retriggerable monostable multivibrator not being triggered by said second signal provided by said differential amplifier, said first retriggerable monostable multivibrator including an output terminal for generating said output signal of said comparator as a first output level when said first retriggerable monostable multivibrator has been triggered and as a second output level when said first retriggerable monostable multivibrator has not been triggered, said second output level indicating that the coin under test is authentic.

4,441,603
SINGLE OR MULTIPLE HEAD FOR EXTRACTION OF BULK MATERIALS

Ulysse Baumard, Les Essarts, France, assignor to Etablissements Briand S.A., Les Herbiers, France
Filed Nov. 3, 1981, Ser. No. 317,907
Claims priority, application France, Nov. 4, 1980, 80 23672
Int. Cl.^{3} B65G *65/16*
U.S. Cl. 198—518 **10 Claims**



1. Apparatus for simultaneous extraction of a pasty, particulate or pulverulent bulk material, with or without moisture, and transfer to an intake manifold where it is taken over for discharge to a loading or dumping station, said apparatus comprising a sheet material housing (**1**) defining said intake manifold for the bulk material, said housing comprising at least one cylindrical sleeve (**1***a* or **1***b*) having a vertical axis, an extraction device (**3**) having an upper part (**4***b*) and a lower part (**4***a*), said upper part (**4***b*) comprising a worm rotatably mounted in said sleeve and having a diameter corresponding to that of said sleeve, said lower part (**4***a*) comprising at least one spiral helical flight coiled around a central hub (**4***d*) and extending from the lower end of said sleeve, a vertical wall (**4***c*) laterally bounding said spiral helical flight, a conduit of closed section being defined between said central hub (**4***d*) and said vertical wall (**4***c*) for conveying the bulk material to said upper part of said extraction device, a ledge (**4***e*) connecting said upper and lower parts of said extraction device, the outer edge of said ledge being joined to said vertical wall, and said spiral helical flight being integral with and joined smoothly to said worm.

4,441,604
PUSHER MECHANISM

Harold W. Schlig, Grapevine, and Joel L. Staehs, DeSoto, both of Tex., assignors to BAE Automated Systems, Inc., Carrollton, Tex.
PCT No. PCT/US82/00854, 371 Date Jun. 24, 1982, 102(e) Date Jun. 24, 1982, PCT Pub. No. WO84/00144, PCT Pub. Date Jan. 19, 1984
PCT Filed Jun. 24, 1982, Ser. No. 405,960
Int. Cl.^{3} B65G *37/00*
U.S. Cl. 198—598 **4 Claims**

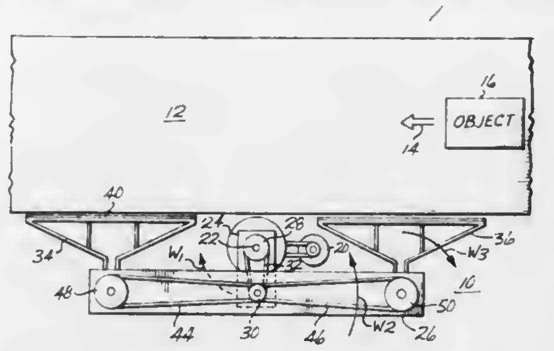
1. A pusher mechanism comprising:

a link rotatably driven at one end thereof;

an arm pivotally mounted to the free end of the link at a central location of said arm;

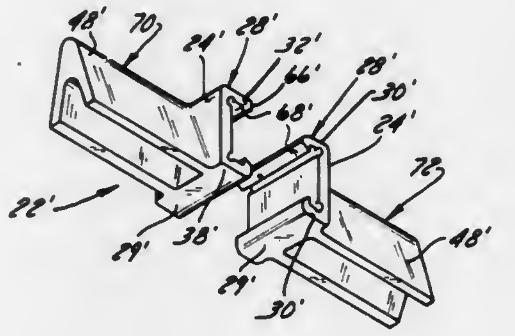
a pair of paddles, each paddle being pivotally mounted to an end of said arm; and

drive means for rotatably driving said link, arm and paddles in predetermined directions and at predetermined speeds such that each paddle is controllably driven from rest position into engagement with an object for the controlled deflection thereof, thereafter the paddle returning to a rest position.



4,441,605
TWO-PIECE SNAP-ON FLIGHT FOR A CONVEYOR CHAIN

Kenneth J. Ronco, Brookfield, and Robert E. Stacey, Waukesha, both of Wis., assignors to Rexnord Inc., Milwaukee, Wis.
Filed Aug. 28, 1981, Ser. No. 297,378
Int. Cl.^{3} B65G *19/24*
U.S. Cl. 198—731 **3 Claims**



1. A chain link pusher conveyor assembly, comprising:

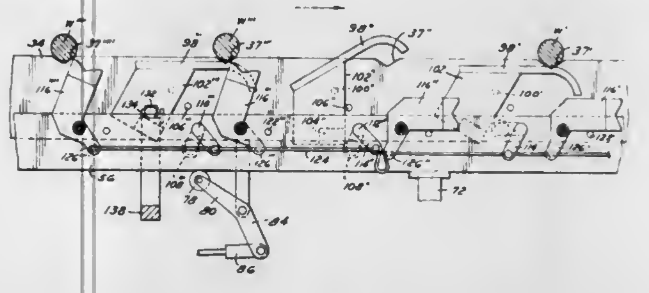
a chain composed of chain links each including a pair of sidebars, each sidebar having inner and outer surfaces and upper and lower edges; and

a snap-on flight mounted on said link, comprising at least one piece, each piece comprising a resilient side portion lying against the outer surface of one of said sidebars, an arm projecting laterally outwardly from said side portion, and two lips, at least one of which is resilient, one at each end of said side portion, each of said lips comprising a vertical portion which engages the inner surface of the adjacent sidebar and a horizontal portion which engages one of the edges of the sidebar for releasably holding said portion against said outer surface of said sidebar, each piece having a groove along its inner surface at the intersections of side portion with said horizontal portions;

wherein said piece may be readily detached from said sidebar by exerting a bending force on said piece to release said lips from engagement with said inner surface, and said piece may be securely attached, and remain attached to said sidebar during normal operation, by elastically deforming and snapping said resilient lip into engagement with said inner surface where they are held by the resilience of said resilient lips and said side portion.

4,441,606
ACCUMULATING TRANSFER UNIT

Jack E. Miller, St. Clair Shores, and Robert C. Brandenburg, Mt. Clemens, both of Mich., assignors to Harry Major Machine and Tool Co., Fraser, Mich.
Continuation of Ser. No. 173,989, Jul. 31, 1980, abandoned. This application Oct. 29, 1982, Ser. No. 437,732
Int. Cl.^{3} B65G *25/00*
U.S. Cl. 198—751 **3 Claims**

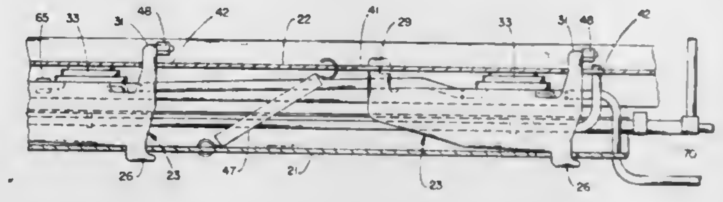


1. In an accumulating transfer unit including an elongate fixed frame having an upstream end and a downstream end, means defining a plurality of workpiece support stations uniformly longitudinally spaced from each other along said fixed frame, an elongate transfer frame, drive means for driving said transfer frame in repeated cycles of movement relative to said fixed frame, each cycle of movement commencing at a rest position from which said transfer frame is first elevated, then moved longitudinally downstream relative to said fixed frame, then lowered and then returned to said rest position, a plurality of workpiece carrier members mounted at uniformly spaced positions longitudinally along said transfer frame for movement relative to said transfer frame between an operative position and an inoperative position, each carrier member being operable when in its operative position to lift a workpiece from one station and carry said workpiece downstream to the next station during a cycle of movement of said transfer frame and each carrier member being inoperable to lift or carry workpieces when in its inoperative position, a sensing means mounted on said fixed frame adjacent each station to be located in a first position in response to the presence of a workpiece at the associated station and gravitationally biased to a second position in the absence of a workpiece at the associated station, a plurality of actuating members mounted at uniformly spaced positions along said transfer frame between said carrier members, each actuating member being associated with one of said sensing means and movable thereby when the associated sensing means is in its second position from an inoperative position to an operative position, and connector means coupling said carrier members to each other for transmitting movement of one carrier member from its inoperative to its operative position to all carrier members upstream from said one carrier member to cause said carrier members upstream from said one carrier member to move from their inoperative to their operative positions simultaneously with said one carrier member;

the improvement wherein each of said carrier members and each of said actuating members comprise a pivotal support mounting the member for pivotal movement on said transfer frame and an arm portion extending radially from said pivotal support, said arm portions being of uniform radial length, said connecting means comprising a flexible cord or chain connected to each of said arm portions to extend between adjacent arm portions in a taut condition when said adjacent arm portions are in parallel relationship with each other, each of said sensing means having an abutment thereon engageable when the sensing means is in its second position with its associated actuating means when said transfer frame is elevated to pivot the arm portion of the engaged actuating member from its inoperative to its operative position by swinging the arm portion in a direction tensioning the cord or chain coupled thereto in a downstream direction to thereby cause a corresponding pivoting movement of all members upstream thereof, and reset means operable during return movement of said transfer frame for restoring all members located in their operative position to their inoperative position.

4,441,607
MODE CHANGING MEANS FOR ACCUMULATOR CONVEYORS

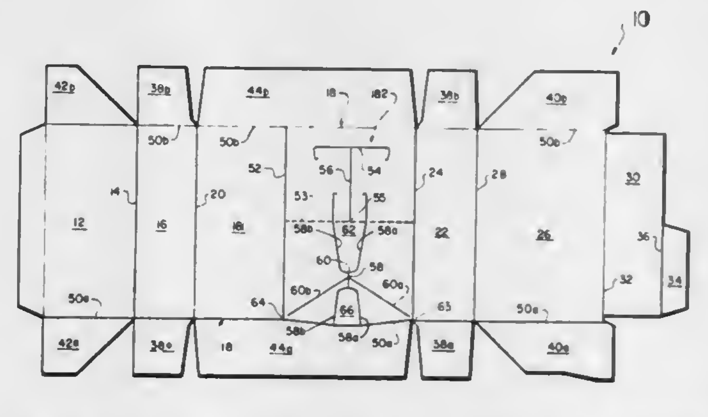
Clyde L. Bowman; Charles R. DeVries, both of Grand Rapids, and Charles W. Saur, Sparta, all of Mich., assignors to Lear Siegler, Inc., Grand Rapids, Mich.
Filed Sep. 4, 1981, Ser. No. 299,320
Int. Cl.^{3} B65G *13/06*
U.S. Cl. 198—781 **11 Claims**



1. An operator for an accumulator conveyor characterized by a pair of vertically spaced elongated plates superimposed one above the other; means holding the lower one of said plates stationary; an actuator between said plates; said actuator at one end having a footpiece passing through the lower of said plates and pivotally securing said actuator to said lower plate and a hook at the opposite end passing through the upper of said plates and pivotally securing said actuator to said upper plate; expander means mounted on said actuator intermediate its upper and lower ends for forcing said upper plate to separate from said one end of said actuator and causing said upper plate and said actuator to pivot about said footpiece and said hook for moving said plates apart when actuated; means at said one end of said actuator engaging said upper plate for limiting the distance to which said plates can be separated; means on said upper plate for supporting a propelling member.

4,441,608
DISPLAY CARTON

Thomas D. Pawlowski, Neenah, Wis., assignor to James River-Dixie/Nortern, Inc., Norwalk, Conn.
Filed May 1, 1981, Ser. No. 259,679
Int. Cl.^{3} B65D *5/50, 85/14*
U.S. Cl. 206—45.14 **14 Claims**



1. A carton having cradle means for holding an elongated container, said cradle means having top and bottom ends, top and bottom portions respectively adjacent said top and bottom ends and a length dimension between said ends with which the length dimension of the elongated container is to be aligned, and two sides and a width dimension therebetween, said width dimension being defined perpendicular to said length dimension, said cradle means comprising:

(a) a unitary panel of carton material, said panel having a first cut line therein, said cut line being spaced from said top end and extending generally along the width dimension of said cradle means, and being sufficiently long as to receive a fin of the container to be packaged in the carton;

(b) a second cut line extending from said first cut line in a direction along the length of said cradle means and terminating at a point a distance from said bottom end;

(c) third and fourth cut lines on opposite sides of said second cut line, spaced between said second cut line, and said sides, each of said third and fourth cut lines extending from the top portion of said cradle into the bottom portion of said cradle, said second, third and fourth cut lines forming a supporting panel, said third and fourth cut lines being connected to form said supporting panel into a tongue-like panel which will accommodate and support containers of various dimensions;

(d) and score lines extending from said third and fourth cut lines toward the bottom end of said cradle means.

4,441,609
PHARMACEUTICAL COMPOSITIONS

Patrick J. Crowley, Worthing, England, assignor to Beecham Group Limited, England

Division of Ser. No. 949,028, Oct. 6, 1978, abandoned. This application Mar. 5, 1979, Ser. No. 17,365

Claims priority, application United Kingdom, Oct. 11, 1977, 42191/77

Int. Cl.^{3} A45F *3/00*

U.S. Cl. 206—204 **8 Claims**

1. A packaged pharmaceutical composition of enhanced storage stability which comprises a closed container containing one or more unit-dose compositions suitable for oral administration each dosage unit of which comprises 20 mg to 1500 mg of amoxycillin trihydrate, 20 mg to 500 mg of potassium clavulanate and a pharmaceutically acceptable carrier with the proviso that the weight ratio of amoxycillin trihydrate to potassium clavulanate is from 6:1 to 1:1 and a desiccant.

4,441,610
CONTAINER FOR THE STORAGE AND WITHDRAWAL OF EAR CLEANING STICKS OR SIMILAR ARTICLES

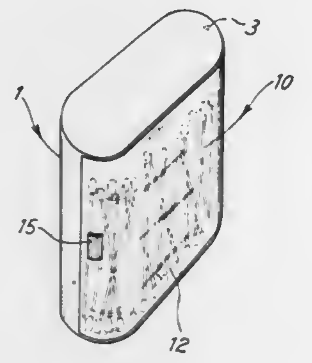
Mario Cavalcante, Thiene, Italy, assignor to Ivalda S.p.A., Italy

Filed May 18, 1981, Ser. No. 264,327

Claims priority, application Italy, May 16, 1980, 64254/80[U]

Int. Cl.^{3} B65D *8/00*

U.S. Cl. 206—361 **5 Claims**



1. A container for the storage and removal of hygienic cleaning sticks, comprising:

a first body and a second body pivotably connected to said first body so that it is movable relative thereto between an open and closed position, in the latter position of which said bodies cooperate to define a single flattened tubular body, with two flat front and rear walls connected by two generally semicylindrical side walls and two generally flat top and bottom walls, which top and bottom walls are integral with said first body and are disposed at a right angle to said front and rear walls, said first body comprising said rear wall which is further provided with a finger hole formed therethrough and two curved lateral end walls joined to opposite lateral edges of said rear wall and said top and bottom walls integrally joined to said rear walls and said lateral end walls, and said second body comprising said front wall, two additional curved lateral end walls joined to opposite lateral edges of said front wall, a base wall joined to the lower edge of said front wall and said additional curved lateral end walls and disposed in a generally normal manner relative thereto, and an inner wall spaced rearwardly of said front wall and joined to said base wall and said additional curved lateral end walls, which is about one half the height of said front and rear walls and is dimensioned and configured to complement the inner profile of said first body such that it lies flush against at least a portion of the inner surface of said rear wall of said first body when said bodies are in said closed position thereof, said inner, base, front and additional curved lateral end walls of said second body cooperating to form a storage compartment for said hygienic cleaning sticks wherein the top of said compartment is open when said first and second bodies are in the open position, said second body being secured by a hinge to said first body for pivotable movement along a free edge of one of said additional curved lateral end walls thereof, said hinge comprising a pair of cooperating nibs and holes, said nibs being mounted on one of said bodies and said holes being formed in the other of said bodies, said pivotable movement permitting said first and second bodies to be moved to a closed position by telescoping said second body into said first body wherein said base wall of said second body is nested upon the bottom wall of said first body and said top wall of said first body closes the top of said storage compartment, said inner wall having a section slanting up for about one fourth of the container height towards a lateral side edge of said front wall distal to said hinge, said inner wall and said slanting section cooperating to contain said hygienic cleaning sticks within said compartment when said first and second bodies are in the open position, said bodies being releasably maintained in said closed position by two cooperating lugs one of which is provided on a free edge of the curved lateral end wall of said first body distal from said hinge and the other of which is provided on a free edge of the curved lateral end wall of said second body distal from said hinge, said second body having generally in the middle of the external surface of said curved lateral end wall thereof distal from said hinge, a small narrow finger-engageable ridge to facilitate opening of the container.

4,441,611
MULTIPACK AND METHOD OF MAKING IT

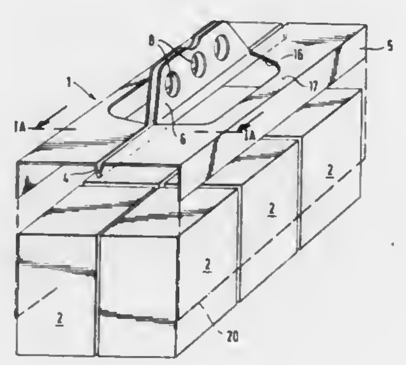
Gabriella Sommariva, Milan, Italy, assignor to MPS - Multi Packaging Services S.r.l., Milan, Italy

Filed Mar. 10, 1982, Ser. No. 356,851

Claims priority, application Italy, Mar. 12, 1981, 20311 A/81

Int. Cl.^{3} B65D *73/00, 5/46, 25/28*

U.S. Cl. 206—431 **9 Claims**



1. A method of joining articles in boxes or containers of a generally parallelepiped shape to form a multipack package comprising the steps of: die cutting a blank to provide cut lines in the blank defining two spaced areas each comprising three sides of a trapezoid; forming two rows of juxtaposed containers, placed inside guides; folding in the form of a V a band of a blank end positioning said V so that said trapezoidal areas extend outwardly in opposite directions from the end of said band; applying an adhesive on the inner surface of the folded V band and pressing the V band to obtain its closure; applying an adhesive at least on spots on the blank surfaces which are at right angles and adjacent to those being in contact with the longitudinal V band; introducing the so formed central longitudinal V portion of the blank between the two rows of containers; clamping the parts until the adhesive has set and joined the containers to the multipack; and separating said areas along said cut lines from the remainder of said blank and lifting the same to provide handles.

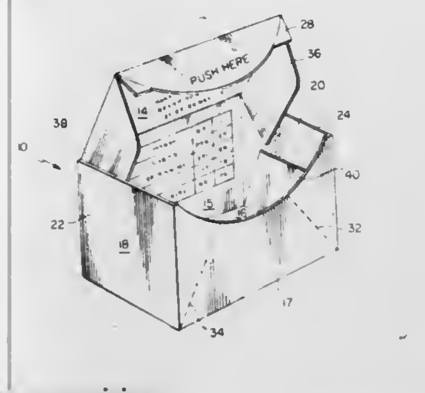
4,441,612
EASY OPEN CARTON

Richard T. Kingsley, Penfield, and Larry Sherman, Macedon, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 29, 1981, Ser. No. 230,094

Int. Cl.^{3} B65D *5/54*

U.S. Cl. 206—620 **5 Claims**



1. A carton comprising:

first and second hingedly connected rectangular side walls;

third side wall structure hingedly connected to both said first and second side walls;

first and second opposed end walls hingedly connected to said second side wall and said third side wall structure, but not to said first side wall, whereby said walls and said wall structure form an enclosure;

first tear line structure extending across said second side wall to the corners of said first side wall adjacent to said second side wall, whereby said first side wall and a first portion of said second side wall can be disengaged from a second portion of said second side wall, said second portion including first, second, and third regions connected to said first end wall, second end wall, and third side wall structure, respectively, so that said first side wall can be moved to open the carton when said tear line structure is severed; and

second tear line structure extending from said first tear line structure to the corners of said third side wall structure adjacent to said second side wall, whereby said first and second regions of said second portion can be disengaged from the said third region of said second portion so that said carton can be opened flat when both said first and second tear line structures are severed.

4,441,613
CONTAINER WITH RESEALABLE CLOSURE

Paul O. Hain, Hamilton, and J. George Lepisto, Middletown, both of Ohio, assignors to Champion International Corporation, Stamford, Conn.

Filed Sep. 1, 1982, Ser. No. 413,725

Int. Cl.^{3} B65D *33/22*

U.S. Cl. 206—621 **18 Claims**

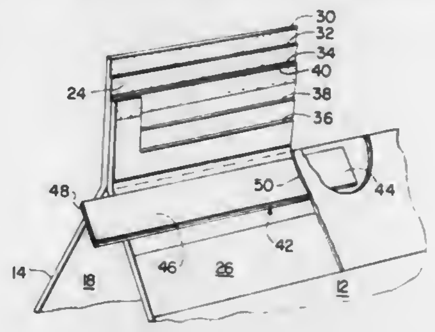
1. A resealable container which comprises:

a body portion having an opening at one end thereof providing access to the container interior;

a fold-over flap hingedly coupled to said body portion along a fold line for extending over and closing said opening, said flap being attachable to said body portion by seal means extending adjacent to and generally along said opening;

means for lifting and resealing said flap including a strip of pressure adhesive tape having a first end portion adhered to the container and second end portion having an adhesive surface covered by a removable abherent;

whereby said tape engages and separates said flap from said body portion when lifted, and said tape reseals said flap after opening by adhering to said flap and body portion upon removal of said abherent.



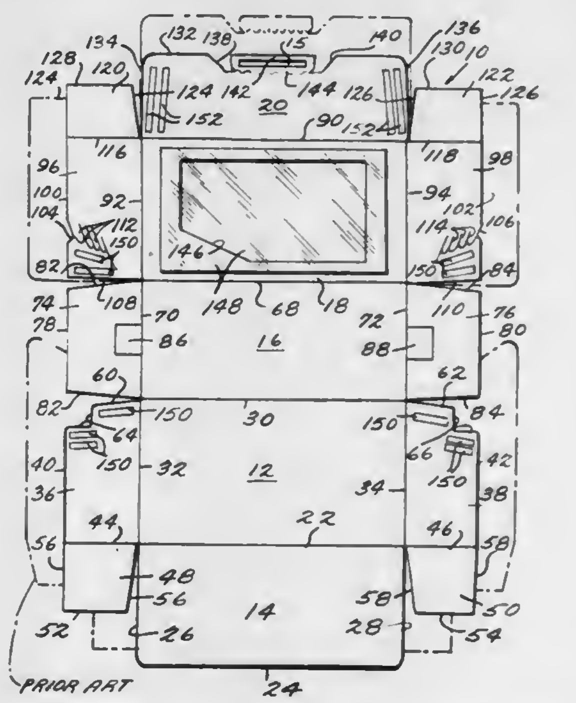
4,441,614
FRONT LOADED AND CLOSED CARTON WITH HINGED TOP COVER

Richard F. Gulliver, Tuscaloosa, Ala., assignor to Gulf States Paper Corporation, Tuscaloosa, Ala.

Filed Jan. 19, 1983, Ser. No. 459,146

Int. Cl.^{3} B65D *5/54*

U.S. Cl. 206—624 **27 Claims**



1. A cut and scored flat blank of paperboard for erection into a product containing carton comprising

a rectangular bottom panel,

a rectangular front panel hinged along one side to one side of said bottom panel in coextensive relation therewith, the opposite side and ends of said rectangular front panel being defined by cut free edges,

a rectangular rear panel hinged along one side to the opposite side of said bottom panel, said rectangular rear panel being of a size substantially equal to the size of said front panel,

a rectangular cover panel hinged along one side to the opposite side of said rear panel, said rectangular cover panel being of a size substantially equal to the size of said bottom panel, and a rectangular closure panel hinged along one side to the opposite side of said cover panel in coextensive relation therewith,

said bottom, rear and cover panels having end flaps hinged to the ends thereof,

the dimension of each of said end flaps measured perpendicular to its associated panel hinge being substantially less than the dimension of said rear panel measured perpendicularly between the hinged sides thereof,

the aforesaid dimension of each bottom end flap and each closure end flap being greater than one-half the aforesaid dimension of said rear panel.

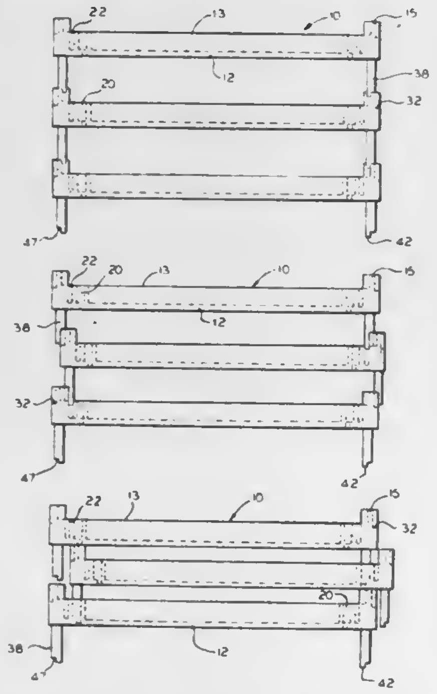
4,441,615
STACKABLE TRAY

D. Stephen Goodrich, 4322 Fig Tree Woods, San Antonio, Tex. 78249

Filed Sep. 29, 1982, Ser. No. 428,194

Int. Cl.³ B65D ***21/02***

U.S. Cl. 206—511 **10 Claims**



1. A stackable tray comprising a generally planar product supporting surface having parallel sides, side walls extending upwardly and perpendicularly from said parallel sides of said product supporting surface, lower walls extending downwardly and perpendicularly from said supporting surface and generally below said side walls, the lower portion of said lower walls having a width less than the width of the remainder of said lower walls, first and second planar tray support surfaces extending horizontally and perpendicularly from both sides of said side walls, said first planar tray support surfaces extending outwardly from said side walls and said second planar tray support surfaces extending inwardly therefrom, said second planar tray support surfaces defining a plane above and parallel to said product support surface and each of said second planar tray support surface having a pair of slots therein, said slots being parallel to one another and to said side walls, a first one of said slots having a width exceeding the width of said lower walls and the second of said slots having a width less than the width of said lower walls, but greater than the width of said lower portion thereof.

4,441,616
PROCESS FOR SORTING COARSE TO FINE MATERIALS ACCORDING TO THEIR CHEMICAL COMPOSITION

Rainer Konig, Eshborn; Hans-Ulrich Freund, Friedrichsdorf; Helga Heide, Kelkheim, and Rolf A. Sieglen, Sulzbach, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

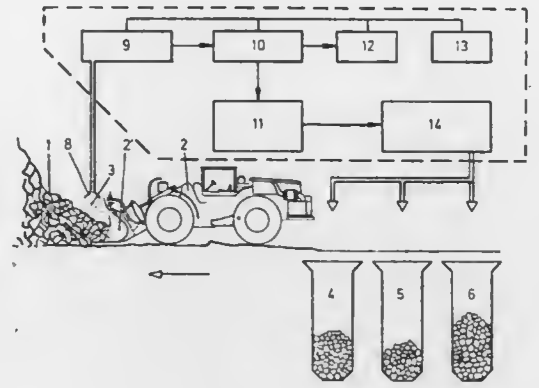
PCT No. PCT/EP80/00010, 371 Date Oct. 27, 1980, 102(e) Date Oct. 27, 1980, PCT Pub. No. WO80/01837, PCT Pub. Date Sep. 4, 1980

PCT Filed Feb. 22, 1980, Ser. No. 212,728

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1979, 2907513

Int. Cl.³ B07C ***5/00;*** **E21C** ***41/06***

U.S. Cl. 209—44.1 **24 Claims**



2. Process for sorting coarse to fine materials according to their chemical composition, in which samples are taken and analyzed, and in which the further dealing with said materials is controlled according to the results of the analysis, characterized in that the samples are taken in the form of an air swirled dust mixture of coarse dust and fine dust, the air swirled dust mixture being generated during movement of said material, that the coarser dust is separated from the fine dust, the fine dust having a grain size of less than 200 μm, and that at least a fraction of the fine dust is analyzed.

4,441,617
STORAGE STRUCTURE COMPRISING MOVABLE RACKS

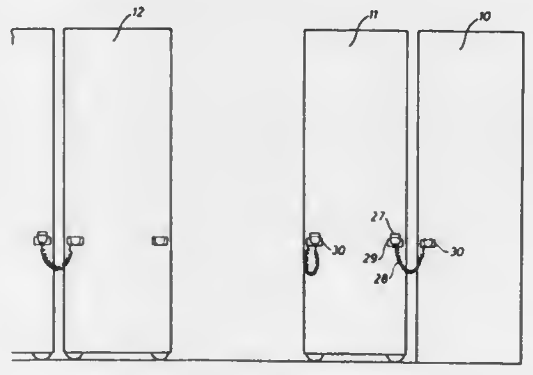
Klas Y. Forsberg, Karlstad, Sweden, assignor to Electrolux Constructor Aktiebolag, Saffle, Sweden

Filed Jun. 16, 1981, Ser. No. 274,301

Claims priority, application Sweden, Jun. 27, 1980, 8004768

Int. Cl.³ A47B ***53/00***

U.S. Cl. 211—1.5 **11 Claims**



1. In a storage structure comprising several aligned storage racks, the majority of which are movable between two end positions in order to form a passageway between two adjacent storage racks, an elongate locking means arranged between each pair of adjacent storage racks, and an activating member for starting the process of movement of each storage rack, the improvement wherein one end of the elongate locking means is secured to one of a pair of storage racks and the other end thereof is connected to the activating member, said activating member comprising a movable contact member selectively connectable to a stationary contact member on said one of a pair of storage racks for starting process of movement and to the adjacent storage rach for mechanical locking of the passageway formed between the storage racks.

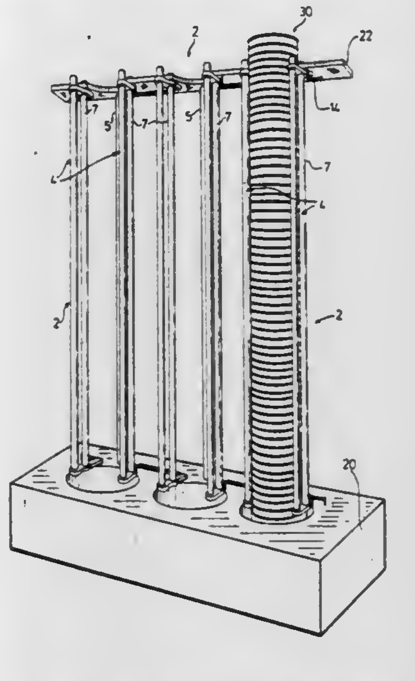
4,441,618
CONTAINER CHUTE FOR FAST RECEPTION OF NESTED CONTAINERS

Derek V. Mancini, Markham, Canada, assignor to Consumers Glass Company Limited, Etobicoke, Canada

Filed Oct. 13, 1981, Ser. No. 310,981

Int. Cl.³ A47F ***1/00***

U.S. Cl. 211—49 D **10 Claims**



1. A container chute for maintaining nested containers in a generally vertical manner to allow such containers to be dispensed with the assistance of gravity, said chute comprising support means extending generally vertically positioned to positively maintain such containers in a generally vertical manner, said chute having an open bottom allowing said containers to be dispensed through said open bottom, a portion of said support means being movable outwardly of the chute to an open position to allow lateral insertion of a stack of containers into said support means whereupon said movable portion is returned to a closed position to positively maintain such inserted stack.

4,441,619
TOOL HOLDER COMBINATION

Ernest L. Gibitz, 86 Elinor Ave., Akron, Ohio 44305

Filed Jun. 1, 1982, Ser. No. 383,810

Int. Cl.³ A47F ***5/08***

U.S. Cl. 211—60 T **2 Claims**

1. A tool holder combination for use with a perforated support panel, comprising:

(A) an elongate plate having tool engagement means and having front and rear surfaces and two integral panel engaging hooks projecting from the rear surface adjacent opposed ends thereof;

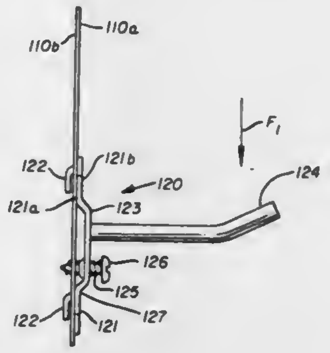
(B) said plate having a through screw receiving aperture located between said panel engaging hooks;

(C) a self-threading, tapered screw having a relatively deep thread;

(D) said screw being adapted to pass through said screw receiving aperture of said plate and into one of the perforations of the support panel and engage the periphery of the perforation when said panel engaging hooks are in engagement with the panel;

(E) said plate having top and bottom portions and a central support portion offset therefrom and disposed in a plane parallel to the plane of the front surface thereof;

(F) said central support portion having a length approximating one half the overall length of said plate; and



(G) said screw drawing the rear surfaces of said top and bottom portions into engagement with the panel and said central support portion toward the panel upon engagement with the periphery of the panel perforation, and

(H) said screw receiving aperture being disposed in said offset portion of said plate.

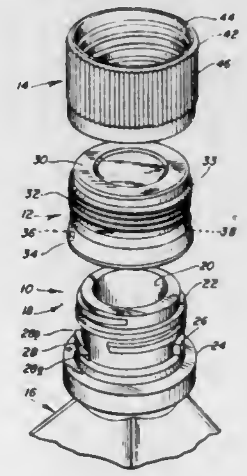
4,441,620
HEATSEAL PLUG WITH RESEALING FEATURE

Joel A. Tune, Lake Villa, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jun. 28, 1982, Ser. No. 392,681

Int. Cl.³ B65D ***41/32***

U.S. Cl. 215—232 **6 Claims**



1. An improved hermetically sealed container and closure assembly for storing and dispensing sterile liquids, said container including a bottle having a neck which includes an outlet or mouth, a set of external threads adjacent said outlet, and a transverse abutment shoulder on the neck and spaced from said outlet; said closure including an externally threaded cup-shaped overcap having a generally cylindrically shaped side wall, a top wall for positioning across said bottle outlet and wiper means depending from said top wall for sealing cooperation with said outlet, said cap being hermetically bonded to said bottle neck; and said closure also including an outer jacking ring threadedly interfitting over said overcap and adapted for counterclockwise downward rotation to engage said abutment shoulder and cause said overcap to move axially upwardly from said bottle outlet;

wherein the improvement comprises there being provided:

ramp-like cam means on said neck for cooperation in sealing said wiper means to said bottle outlet; and

shoulder means on said overcap for engaging said ramp-like cam means, causing said overcap to distort and thereby enhancing the sealing of the wiper means to said outlet.

4,441,621
PIERCEABLE CLOSURE MEMBER FOR VIAL

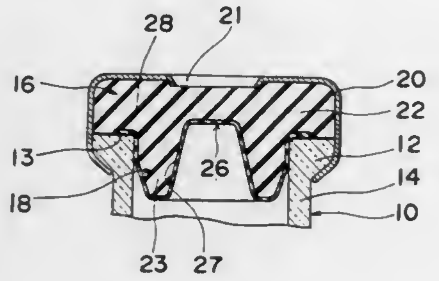
Yoshiharu Matukura, Ikoma, and Denpei Sudo, Sumida, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka and Daikyo Gomu Seiko, Ltd., Tokyo, both of, Japan

Filed Aug. 16, 1982, Ser. No. 408,717

Claims priority, application Japan, Aug. 24, 1981, 56-125792[U]

Int. Cl.^{3} B65D *39/00*

U.S. Cl. 215—247 **6 Claims**



1. A pierceable closure member for use on a vacuum filled vial, which vial includes a beaded mouth having an annular flat face on the bead of the mouth, said closure member comprising a generally disc-shaped rubber plug made of butyl rubber and having an annular leg protruding from one end surface thereof in concentrical relation thereto and also an annular protrusion protruding from said one end surface thereof in concentrical relation to said annular leg, and a generally disc-shaped lamina made of fluorocarbon resin and having an annular recess defined therein, said lamina being secured to the rubber plug with the annular recess receiving the annular leg therein, said rubber plug having a thickness within the range of 2 to 10 mm, said annular protrusion having a width within the range of 0.2 to 6.0 mm and protruding a distance H within the range of 0.1 to 3.0 mm, said annular protrusion being so located on the annular surface area of the rubber plug, which is delimited by the difference between the diameter of the rubber plug and the maximum outer diameter of the annular leg, that the distance S between the point of contact of the annular protrusion to the annular flat face and the point on the boundary between the annular peripheral portion of the lamina, which is delimited by the difference between the diameter of the lamina and the maximum outer diameter of the annular portion of the lamina where the annular recess is defined, which distance S is measured in the radial direction of the closure member, is within the range of 1 to 10 mm, the ratio of the distance H relative to the distance S being within the range of 0.1 to 0.5.

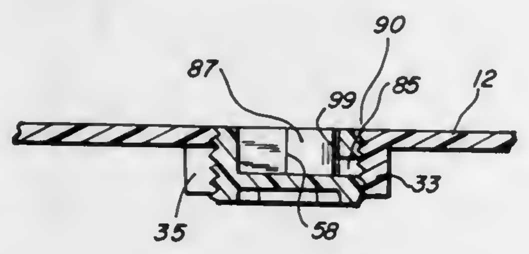
4,441,622
THREADED PORT AND PLUG HAVING ACCESS APERTURES

John W. von Holdt, 7430 N. Croname Rd., Niles, Ill. 60648

Continuation-in-part of Ser. No. 141,398, Apr. 18, 1980, Pat. No. 4,280,976. This application Nov. 20, 1980, Ser. No. 208,673

Int. Cl.^{3} B65D *39/00*

U.S. Cl. 217—99 **3 Claims**



1. An improved container comprising, in combination, a top lid having a port defined by an internally threaded cylindrical sleeve projecting downwardly into said container from said lid, a first radial passage formed in said sleeve, an externally threaded cylindrical plug positioned in said sleeve in threaded engagement therewith for sealing said port when said plug is rotated to a sealing position, the upper end of said plug including a cylindrical outer wall within which is provided a well-like recess open at its upper end, and a second radial passage formed through said plug outer wall in communication with said well-like recess, said second passage being located so it is aligned with said first passage when said plug is rotated to a first open position thereby permitting liquid within said container to flow into said well-like recess if said container is full, and said plug being rotatable to a second closed position where said first and second passages are out of alignment thereby closing said first and second passages.

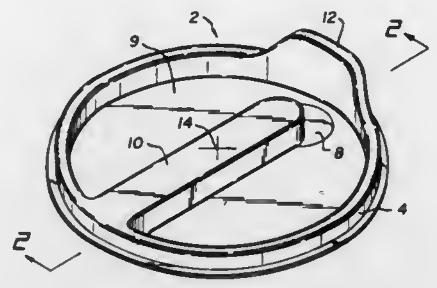
4,441,623
RESILIENT CLOSURE

Nickolas J. Antoniak, 896 W. 15th Ave., Vancouver, British Columbia, Canada V5Z 1R7

Filed Jun. 17, 1982, Ser. No. 389,310

Int. Cl.^{3} B65D *41/26*

U.S. Cl. 220—90.4 **5 Claims**



1. A resilient closure to be received on a container for a liquid, the closure comprising;

a raised periphery defining a channel to engage on the container to form a seal around the container;

a valve in the surface of the closure adjacent the raised periphery and movable between a closed and an open position but tending to remain closed in the absence of an external force;

a lever formed integrally with the closure and raised above the surface, extending generally from the periphery diametrically opposed to said valve across the surface and ending generally adjacent the valve whereby downward pressure applied to the lever opens the valve to allow liquids to pass from the container but release of the lever allows the valve to return to the closed position.

the valve comprising a slit in the surface of the closure starting at and extending away from an edge of the lever,

the valve comprising a flap forming a portion of the circumference of a circle arranged around the end of the lever, the flap being defined by the slit extending away from an edge of the lever, around but spaced from the end of the lever to meet the lever at a second edge of the lever, the flap being attached to the closure at a joint contiguous with the end of the lever.

4,441,624
DRINKING COVER

Bronislaw Sokolowski, 44 Aldrich St., Webster, Mass. 01570

Filed Jan. 20, 1983, Ser. No. 459,412

Int. Cl.^{3} B65D *41/26, 47/04*

U.S. Cl. 220—254 **18 Claims**

1. Cover for a beverage container having an annular upper rim, said cover comprising:

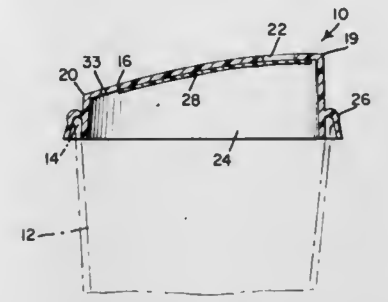
(a) a circular top wall having a peripheral edge, said edge having a front portion and an opposite rear portion, said top wall having an opening which is near the front portion of said edge and spaced from said edge,

(b) an annular side wall which extends downwardly from said edge, the top of said side wall gradually tapering downwardly from said front portion to said rear portion so that the top wall gradually tapers downwardly from said front portion to said rear portion,

(c) sealing means on the bottom periphery of the side wall for securing the cover to the rim of the container, and

(d) a sealing flap which underlies said opening and which is attached to the inner surface of the top wall, the flap being movable from a closed position in which the flap seals the opening to an open position in which the flap is in a non-sealing relationship with the opening, the top wall being made of a flexible material and the sealing flap being attached to the top wall at a limited area which is spaced from the opening, so that the flap is free to pivot about said limited area to move from said closed position to said open position upon application of downward force against said top wall, wherein the inner surface of the top wall is normally concave, and the flap is sufficiently flexible to conform to the curvature of the said inner surface of the top wall and in contact therewith, so that the flap is parallel with the top wall in said closed position.

10. Cover for a beverage container having an annular upper rim, said cover comprising:



(a) a circular top wall which is made of flexible material and which has an annular peripheral edge, said edge having a front portion and an opposite rear portion, said top wall having an opening which is near the front portion of said edge and spaced from said edge, the inner surface of said top wall being axially outwardly curved,

(b) an annular side wall which extends downwardly from said edge,

(c) sealing means on the bottom periphery of the side wall for securing the cover to the rim of the container, and

(d) a sealing flap which unlerlies said opening and which is attached to the said inner surface of the top wall intermediate the front and rear portions, so that the flap is movable from a closed position to an open position relative to the opening, said flap normally occupying said closed position and is movable to said open position upon application of downward pressure on the top wall, said top wall being capable of deflecting axially inwardly upon application of pressure to said top wall adjacent said opening thereby causing said flap to pivot about its location of attachment to said top wall and causing said open position.

4,441,625
PACKAGE HAVING A RESEALING DEVICE

Börje Andersson, Lund, Sweden, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

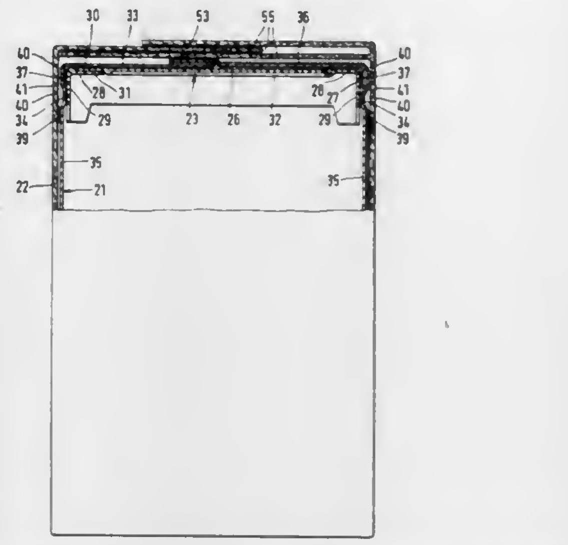
Filed Nov. 9, 1981, Ser. No. 319,501

Claims priority, application Sweden, Nov. 18, 1980, 8008063

Int. Cl.^{3} B65D *51/20*

U.S. Cl. 220—257 **11 Claims**

1. A package comprising a gas-tight, flexible three-dimensional envelope having opposite end areas and side walls forming an interior and a resealable device at one of said end areas and disposed within the interior of said envelope, said resealable device including a rigid frame assembly including side walls affixed to the interior of said side walls of said envelope and a resealable cap engaging said rigid frame, characterized in that said envelope has top wall tightly covering said resealable device in a gas-tight condition with a portion of said side walls of said frame juxtaposed a tear strip carried by said envelope which tear strip removes the top wall of said envelope from the side walls of said envelope to expose said resealable cap.



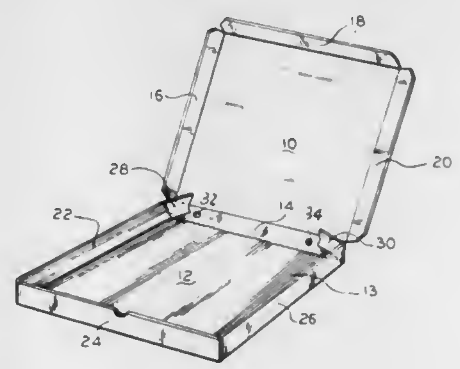
4,441,626
PIZZA BOX

Robert E. Hall, Wheaton, Ill., assignor to Fidelity Grafcor, Inc., Elk Grove Village, Ill.

Filed Dec. 14, 1981, Ser. No. 330,674

Int. Cl.^{3} B65D *81/24, 81/26*

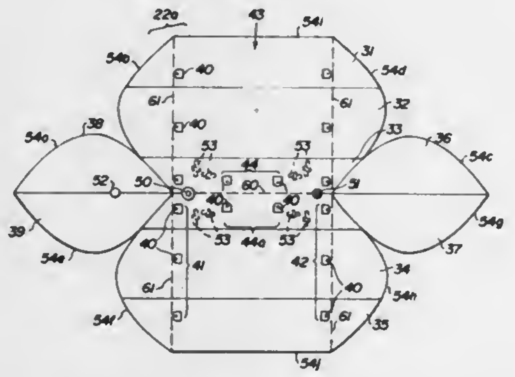
U.S. Cl. 220—443 **9 Claims**



1. A box comprising upper and lower members which close or open relative to each other to form a covered box, a bottom of said box being formed by said lower member and comprising three laminated layers, a first and outside one of said three laminated layers forming a supporting layer having a first and substantially flat surface on its interior side, a second and intermediate one of said three laminated layers extending over at least a substantial portion of said first flat interior surface, said second layer comprising barrier layer means resistant to at least moisture and being spread across the said first flat interior surface, a third and inside one of said three layers having a second and substantially flat surface on its lower side with a plurality of spaced parallel flutes upstanding on its upper side, said first and second flat surfaces being bonded together in a face to face relationship with said barrier layer means interposed therebetween, said flutes comprising a plurality of upwardly directed ridges defining therebetween upwardly directed open channels, said ridges forming means for supporting an article above the bottoms of said channels, and venting means formed in said box and located in a side wall of said box at the ends of said channels, the dimensions of said box being such that heat from an article resting on said flutes escapes through said ventilation means via said channels.

4,441,627
BAG SYSTEM FOR TRANSPORTATION OF BULK LIQUIDS

Seiji Takeuchi, Burlington, Canada, assignor to Don Fell Limited and Lawrence Fell Limited, both of Hamilton, Canada
Filed Feb. 19, 1981, Ser. No. 235,836
Int. Cl.³ H05B *3/68*
U.S. Cl. 220—461 **7 Claims**

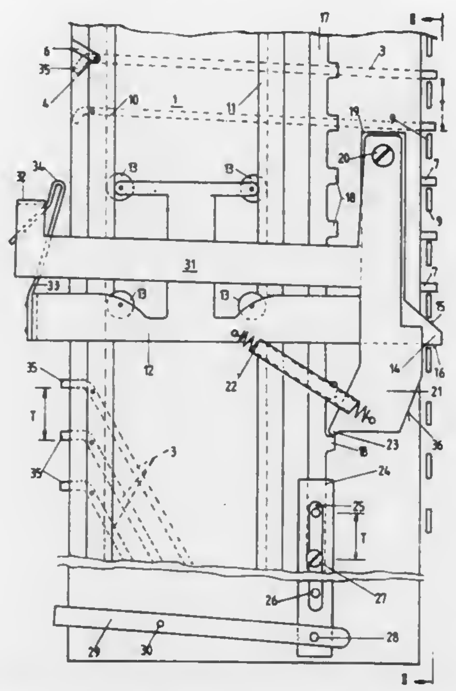


1. A bag of tough, flexible sheet material for mounting in a standard freight container to transport a liquid in bulk, said bag having a central, generally cylindrical, elongated portion extending into curved end portions and being liquid tight except for controlled access means for filling and emptying the bag, including a series of substantially uniformly spaced-apart tie down means secured to said material, said tie down means being arranged in a pair of circumferential rows extending around the periphery of the central portion near each end portion and in a further pair of parallel rows extending longitudinally adjacent each other along the central portion between said circumferential rows, each of said tie down means being independent of every other one of said tie down means whereby to permit unrestrained expansion of the bag, the arrangement of said tie down means being such that after use the bag can be cut to remove said end portions and to slit it longitudinally between said adjacent parallel rows to provide a sheet with the tie down means substantially uniformly disposed around the periphery thereof in a manner suitable for use as a tarpaulin.

4,441,628
TRAP DOOR CHUTE FOR VENDING MACHINES

Bernd Mehlan, and Josef Bayer, both of Herrieden, Fed. Rep. of Germany, assignors to Sielaff GmbH & Co., Fed. Rep. of Germany
Filed Sep. 28, 1981, Ser. No. 306,426
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1980, 3040089
Int. Cl.³ G07F *11/06*
U.S. Cl. 221—90 **14 Claims**

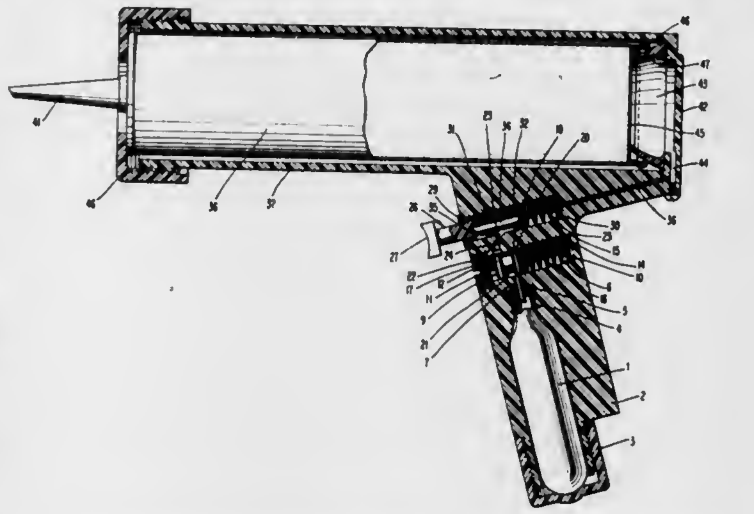
1. A trap door chute for a vending machine comprising:
- a plurality of spaced doors pivotally hinged at one end to a chute wall of the machine, each door having a finger extending from an opposite end thereof;
- a rake having a plurality of tines made of spring material each forming an elastic detention member in the machine for supporting each of said fingers, with their associated door in a storing position;
- at least one vertical track in the machine extending substantially across a range of said spaced doors;
- a carriage mounted for movement along said track;
- a cam on said carriage for deflecting each detention member as said carriage moves along said track to release each supporting finger and allow each associated door to fall into a non-supported position;
- a lifting bar extending substantially parallel to said track, vertically movably mounted in the machine, said lifting bar having a plurality of teeth with a spacing corresponding to a smallest spacing between said doors;
- a pawl on said carriage engaged with one of said teeth to support said carriage in a position below which said cam deflects a next higher detention member; and



- a stop on said carriage for supporting said carriage on a detention member below said next higher detention member.

4,441,629
COMPRESSED GAS POWERED CAULKING GUN

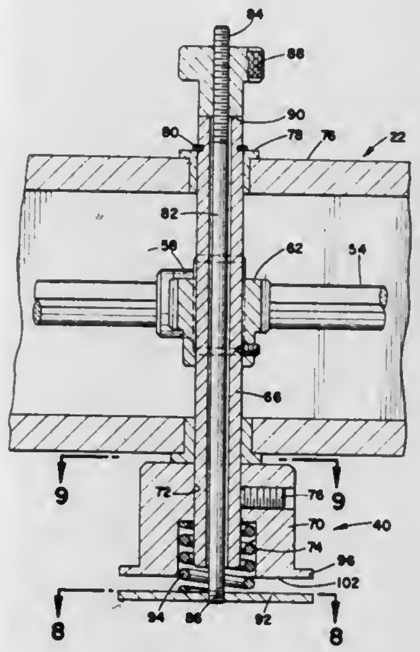
Glenn H. Mackal, 4923 59 Ave. S., St. Petersburg, Fla. 33702
Filed Aug. 10, 1982, Ser. No. 406,951
Int. Cl.³ B65D *88/54;* B67D *5/42*
U.S. Cl. 222—324 **6 Claims**



1. A pressure reducing and safety discharge valve device adapted for use with compressed gas-containing capsules, comprising a valve body having a first bore therein, a first spool-shaped valve element in the first bore reciprocable axially within the bore, the first valve element having disc-shaped transverse first and second flanges on its opposite ends and an intermediate portion between the flanges of reduced diameter, annular means on the respective flanges having sealing and sliding engagement with the wall of the first bore, resilient means constantly urging the valve element in a first direction toward a first, terminal position thereof wherein the first flange on the valve element lies adjacent a first end of the first bore and the second flange lies remote from the said first end of the first bore, a first conduit means including a first, fluid pressure feeding port in the wall of the first bore disposed to discharge fluid under pressure from a gas-containing capsule into the space within the bore at a location between the flanges on the valve element when the movable valve element is in its first, terminal position, a second, fluid discharge port in the wall of the first bore disposed between the flanges on the valve element when the valve element is in its first, terminal position, and a third, fluid pressure relief port in the wall of the first bore disposed axially in the second direction beyond the other, second flange of the valve element when the valve element is in its first, terminal position, when the valve element is in its first terminal position the distance between the axial distance between the first flange thereof and the second port is substantially less than the axial distance between the second flange and the third port, whereby when the pressure of the fluid medium entering the first port is from zero to a moderate value the valve element does not move from its first, terminal position and gas is delivered from the valve through the second port, but when the pressure of the gas being fed through the first port exceeds a predetermined desired value the valve element is first moved away from its first, terminal position to cut off fluid communication between the first and second ports, and if the pressure of the fluid medium being fed through the first port continues to rise the valve element moves further in the second direction so that communication is established between the first and third ports, whereby to provide fluid pressure relief discharge of the fluid medium through the third port.

4,441,630
ROTARY HEAD TRAY DROPPER

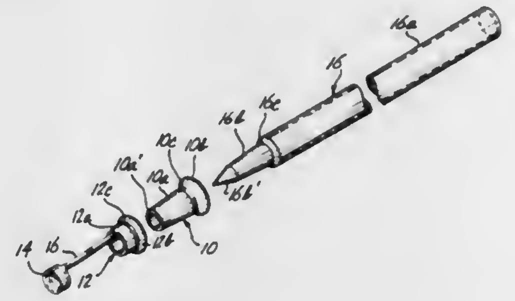
Robert L. Sauer, 5826 W. Glenn Dr., Maple Heights, Ohio 44137
Filed Apr. 28, 1981, Ser. No. 258,416
Int. Cl.³ B65G *59/06*
U.S. Cl. 221—297 **9 Claims**



8. In a rotary gravity feed tray dropper having a frame, a tray storage rack mounted on said frame, and dispenser means mounted on opposite sides of said tray storage rack adapted to separate a bottom tray from a stack of nesting trays placed in said storage rack, the improvement in said dispenser means comprising:
- a shaft concentrically fitted within a tubular housing and adapted to project from opposite ends of said tubular housing;
- a hand knob threadedly engaging said one end of said shaft;
- a truncated disc secured to the other end of said shaft;
- a wedge positioned between said tubular housing and said truncated disc and secured to said tubular housing for rotation therewith;
- said wedge being arcuately positioned away from the truncated portion of said disc;
- resilient means to bias said disc vertically away from said wedge;
- said hand knob being rotatable to adjust the vertical space between said wedge and said disc;
- and means to concentrically rotate said wedge and said disc in unison whereby trays having edges of different lip thicknesses may be readily accommodated between said wedge and said disc by adjustment of said hand knob.

4,441,631
OPENER AND POURING SPOUT WITH HOLDER FOR FLEXIBLE WALL CONTAINERS

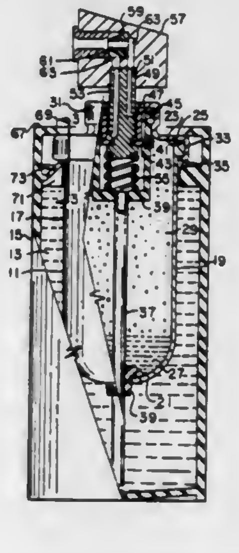
Alistair M. Hosie, 219 Superior St., Victoria, British Columbia, Canada V8V 1T4
Filed Mar. 24, 1982, Ser. No. 361,424
Int. Cl.³ B67B *7/26*
U.S. Cl. 222—86 **10 Claims**



1. An installation kit assembly for an opener and pouring spout to be used with flexible, perforable wall liquid containers, and the like, said assembly including mutually interengageable members including an annular inner member having a first end insertable outwardly of the container through an opening punched for the purpose in a first side wall of said container so as to project in a snug fit outwardly through said opening with the inner member operably positioned, said inner member having an annular shoulder adapted to bear against the inside of said wall around said opening, and an outer member having an annular portion formed to closely encircle the projecting portion of the inner member and retentively interengage the same adjacent said shoulder, said outer member having an annular shoulder formed complementally to the inner member shoulder so as to clamp the container wall around said opening between said shoulders with the members interengaged, and a hand-held, elongated carrier having a tip portion adapted to hold the inner member thereon and advance the same into operable position through the wall of the container opposite said first wall, said elongated carrier being thereupon removable by withdrawal from said inner member.

4,441,632
SOFT SHELL AEROSOL DISPENSER UNIT

William R. Stoody, 8659 Summerdale Rd., San Diego, Calif. 92126
Filed Dec. 3, 1981, Ser. No. 326,667
Int. Cl.³ B67D *5/56;* B65D *83/06*
U.S. Cl. 222—129 **6 Claims**



1. A self-contained aerosol type dispenser comprising a

container, wherein atmospheric pressure is maintained, holding a product fluid to be dispensed;

- a motivating gas vessel suspended within said container;
- said vessel containing pressurizing fluid, and including an operable valve means for dispensing said product fluid;
- and passageway means for separate flow of said product fluid into said valve means;
- said valve means being adapted to initiate discharge flow of said pressurizing fluid, and utilize said flow to effect discharge flow of said product fluid;
- said vessel mounted in cooperative valvular engagement with said container for controllable admittance of ambient air into the container;
- said vessel resiliently mounted and normally biased to provide closure of said container;
- said vessel being reciprocatively movable to allow air entrance into said container when said valve is operated for discharge of product fluid.

4,441,633

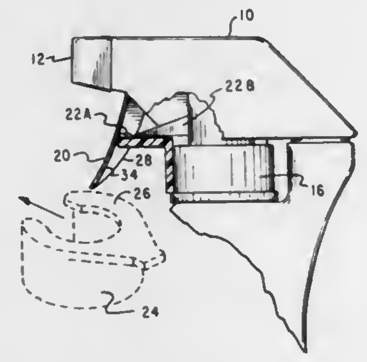
CHILD RESISTANT TRIGGER PUMP

Robert A. Bennett, 170 Sturbridge Rd., Easton, Conn. 06425

Filed Oct. 26, 1981, Ser. No. 314,782

Int. Cl.^{3} B05B *11/00*

U.S. Cl. 222—153 6 Claims



1. A device for use with a manually operable trigger pump having a pump body and a circular cap disposed below the body and adapted to engage a container having material to be pumped out by said pump, said pump having a generally vertical trigger pivotally coupled at its upper end to said body and a linkage coupled at one end to said trigger at a point intermediate the ends of the trigger, said trigger having a surface adjacent said body, said surface having a longitudinally extending groove therein, said linkage extending from said coupled end into said body, said linkage being moved into said body when said trigger is pivoted in a vertical plane toward said body to operate said pump, said device comprising:

- locking means detachably securable to the outer surface of said cap in such manner as to be manually rotatable about said cap; and
- a generally horizontal arm integral at one end with said locking means and when said means is secured to the cap extending radially outward from said cap, the other end of said arm having a tip engageable with and disengagable from said trigger surface groove, said means when secured to said cap being rotatable to a locked position at which the tip engages said groove and the pivotable motion of said trigger toward the pump body is small enough to prevent trigger operation of the pump, whereby the pump is locked into an inoperative position, said pump being unlocked and in operative position when the trigger is pivoted in the opposite direction and the locking means is simultaneously rotated to move the tip out of engagement with the trigger surface whereby the trigger can be pivoted in normal operative manner.

4,441,634

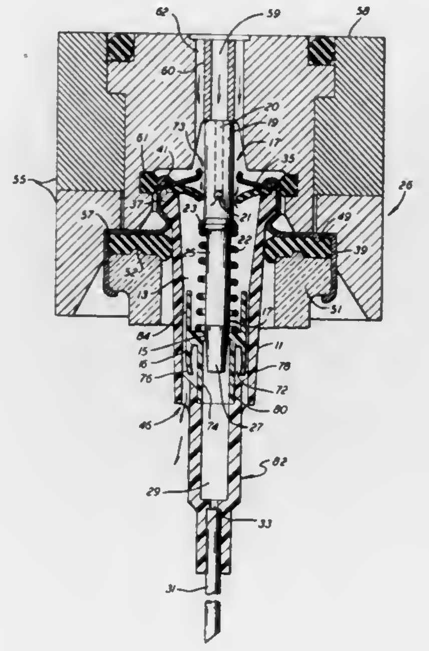
DISPENSER ADAPTED FOR FAST PRESSURE FILLING

Philip Meshberg, 2500 S. Ocean Blvd., Palm Beach, Fla. 33480

Filed Jan. 13, 1982, Ser. No. 339,046

Int. Cl.^{3} B65D *83/14;* G01F *11/02*

U.S. Cl. 222—402.16 6 Claims



1. In a pressurized dispenser comprising: a container; a mounting cup having a central opening therein, said mounting cup attached to said container; a dispensing means comprising a body member forming a tank and having an open top portion and a dispensing stem projecting therefrom through said central opening in said mounting cup and spaced from said opening to form a gap, said body retained in said mounting cup; and a diaphragm interposed between said body and said mounting cup, sealing around said projecting stem, the improvement comprising:

- (a) a body member forming a chamber axially inward of said tank, said chamber having a diameter smaller than the diameter of said tank, said tank thereby having a bottom at the point where said chamber begins, at least one hole formed in said bottom radially outward of said chamber thereby forming a path to the inside of the container;
- (b) a piston-like member inserted into said tank extending to the bottom thereof, said piston-like member having a flange extending axially inward terminating in a sealing lip sealing against the side of said tank at said bottom, said flange being radially flexible at said sealing lip, and an annular portion radially inward of said sealing lip forming a throat, said dispensing stem extending through said throat; and
- (c) a cylindrical member concentric with said flange sealed to and extending axially inwardly from said throat and engaging said chamber in a sealing manner so as to seal off an annular space between said flange and said cylindrical member, which space is in communication with said at least one hole, whereby during pressure filling, a gas admitted through the opening in said mounting cup and around said stem will flex said diaphragm, flow into said tank, and flex said flange radially inwardly to move said sealing edge from the side of said tank permitting flow through said at least one hole into the inside of the container.

4,441,635

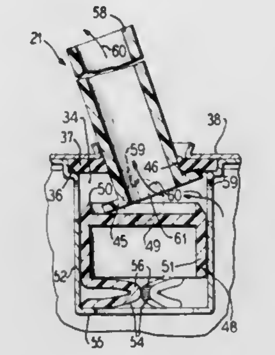
DIRECT HIGH FLOW AEROSOL-TYPE VALVE WITH MOVEABLE CUP

Walter C. Beard, South St., Middlebury, Conn. 06762

Filed Nov. 1, 1982, Ser. No. 438,212

Int. Cl.^{3} B65D *83/14*

U.S. Cl. 222—402.22 10 Claims



1. A fluid dispensing valve structure for dispensing the viscous contents of a pressurized container comprising:

- a valve mounting cup peripherally sealingly securable to said pressurized container and having wall portions defining an interior valve receiving chamber with a central upper aperture defined therein;
- a resilient seal member positioned around and radially adjacent said aperture in said valve receiving chamber;
- an elongated tubular nozzle means having a dispensing orifice in one end thereof and having a second opposed and radially outwardly flanged end extending through said central aperture and yieldingly sealingly supported by said resilient seal member in a normally generally straight upright extended position relative to said valve mounting cup;
- a moveable valve cup means reciprocally longitudinally slidably carried within said valve receiving chamber and normally biasable against said resilient seal member to form a seal means for normally sealing the contents of said container, said moveable valve cup member being engageable with said second end;
- said contents of said pressurized container being dispensable when said one end is tiltably displaced relative to said generally straight upright extended position by an external deflecting operating force applied thereagainst, thereby opening said seal means;
- said moveable valve cup member including:
  - (A) a valve plate portion position to extend across said second end having perimeter regions,
  - (B) annular rib means upstanding from valve plate portion for engaging said resilient seal member peripherally of said second end, and
  - (C) sidewall means for slidably guiding said moveable valve cup member relative to said wall portions in said valve receiving chamber during said reciprocal sliding movements;
- aperture means defined in said side wall portions generally axially adjacent said resilient seal member and generally radially adjacent said second end for passage of said viscous contents therethrough to said second end in a generally radial direction relative to said wall portions;
- the interrelationship between said moveable valve cup means, said tubular nozzle means, said resilient seal member, and said mounting cup member being such that a substantially unobstructed flow of said contents through said valve structure and across said base portion occurs when said one end is so tiltably displaced.

4,441,636

TONER CARTRIDGE

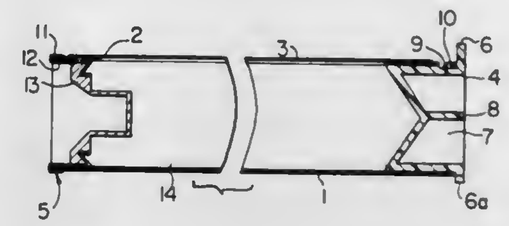
Keitaro Yamashita, Saitama, and Hiromi Kashiwagi, Kumagaya, both of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Jun. 21, 1982, Ser. No. 390,645

Claims priority, application Japan, Jun. 23, 1981, 56-97059

Int. Cl.^{3} B65D *47/10*

U.S. Cl. 222—541 2 Claims



1. A toner cartridge comprising:

- a cylindrical hollow body of nonmagnetic material providing on a peripheral wall thereof with a toner feeding slot extending lengthwise;
- a first closing member fitted to one end of said hollow body and having a flange portion on the outer peripheral surface at the end portion thereof;
- a second closing member fitted to the other end of said hollow body and having a toner introduction port therein;
- a plug member closing said toner introduction port; and
- a sealing member peelably sealing said toner feeding slot; wherein said second closing member is formed of a thin metallic sheet, one end portion of said second closing member is folded back so as to define a gap having a small radial width between the folded end portion and the outer peripheral surface of the second closing member, and said the other end of the hollow body is inserted into said gap and secured to said second closing member.

4,441,637

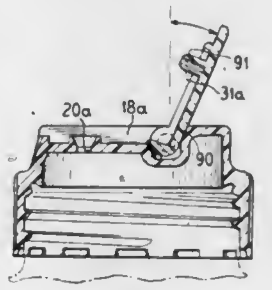
DISPENSING TYPE CAP CLOSURE

Sidney M. Libit, 141 Lakeside Ter., Glencoe, Ill. 60022

Continuation-in-part of Ser. No. 264,129, May 15, 1981. This application Dec. 1, 1981, Ser. No. 326,416

Int. Cl.^{3} B65D *47/00;* B67D *3/00*

U.S. Cl. 222—556 11 Claims

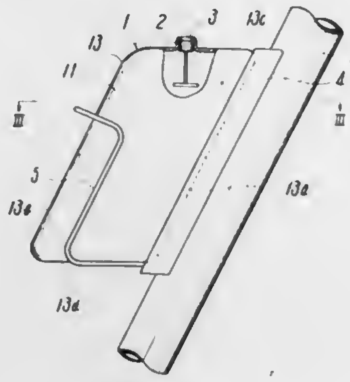


1. A dispensing closure comprising a cap portion having a top surface, a socket portion recessed in said top, a dispensing opening through said top spaced from the socket, said socket having a forward wall portion and side wall portions, a closure member having a rear depending flange and a depending stopper spaced from the flange for closing the opening, a pivot connection between the closure member and the cap, the closure member movable about the connection from a first position with the stopper closing the opening to a second position with the stopper elevated above the top surface, the closure member rotating in excess of 90° rotation from the first position to the second position, the flange moving within the socket during the said rotation, opposing engaging means on the socket forward wall portion and on the closure member flange engaged by rotational movement of the flange for retaining the closure member in the second position, the engag-

ing means comprising at least one stationary projecting boss on the forward wall extending rearwardly into the socket beyond the forward wall and engageable with an end portion of the flange upon rotational movement of the flange towards and away from the second position, the engagement upon rotational movement of the flange providing resistance to movement of the closure member relative to the cap portion both to the second position from adjacent the first position and towards the first position from the second position whereby the closure portion may be retained in the second position.

4,441,638
WATER BOTTLE FOR A BICYCLE

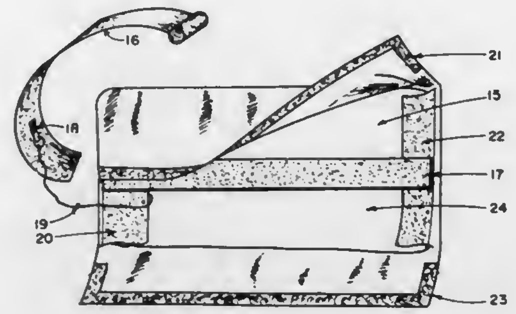
Keizo Shimano, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan
Continuation of Ser. No. 248,200, Mar. 27, 1981, abandoned. This application Feb. 28, 1983, Ser. No. 470,069
Claims priority, application Japan, Mar. 31, 1980, 55-43862[U]
Int. Cl.³ B62J *11/00*
U.S. Cl. 224—35 **3 Claims**



1. A water-bottle for a bicycle, which is mounted on a down tube of a bicycle frame by a fixing member which permits easy removal of the water-bottle; said down tube having a surface in the form of a circular arc, said water-bottle comprising a body having a spout, and a stopper for opening and closing said spout, said body being provided with a pair of side walls spreading longitudinally and vertically and a connecting wall in continuation of and connecting said side walls, said connecting wall being provided with a front surface portion extending along said down tube and a rear surface portion facing rearwardly of the bicycle, said body having between said sidewalls a narrow thickness defined by said connecting wall, said narrow thickness being less than or equal to a dimension which is slightly larger than an external dimension of said down tube forming with said down tube a streamlined structure having a reduced air resistance, said fixing member having a housing portion in which said front surface portion of said watter-bottle is contained and a retainer for permitting removal of said water-bottle from said housing portion without removing said housing portion from said frame, said housing portion covering a gap between the front surface of said water-bottle and said down tube to reduce air resistance, said connecting wall including an upper surface portion and a lower surface portion, the upper and lower surface portions continuing with said rear surface portion through respective curved surfaces, said upper surface portion and lower surface portion being made horizontal and said front and rear surface portions being inclined and in parallel with each other and with said down tube, said front surface portion being connected to said upper and lower surface portions.

4,441,639
QUICK-RELEASE AND QUICK-DEPLOY CONTAINER FOR EMERGENCY EQUIPMENT

Craig A. Craw, and Carol S. Craw, both of 911 Kaluanui Rd., Honolulu, Hi. 96825
Filed Aug. 27, 1982, Ser. No. 412,299
Int. Cl.³ A45F *3/04;* **B64D** *17/52*
U.S. Cl. 224—237 **3 Claims**



1. A container for emergency equipment such as an inflatable life raft comprising a single unitary piece of flexible sheet material formed with a back panel, a top flap, a bottom flap and a pair of side flaps, a separate and loose inner strip, an outer strip and a lanyard,

said flaps being of a size and configuration such that when all four said flaps are folded over said back panel, said flaps' edges do not meet but form a rectangular slot outlined by said flaps' edges,

said flap edges and said inner strip being covered on both exterior and interior facing sides with mating hook and burr Velcro-like material and said outer strip having mating hook and Burr Velcro-like material on the interior facing side, wherein said flaps and strips may be engaged in a mating relationship to form a closure for said container such that when said side flaps are positioned interiorly of said inner strip, said top and bottom flaps and said outer strip, and said inner strip is positioned exteriorly of said side flaps and interiorly of said top and bottom flaps and said outer strip, said top and bottom flaps are folded over said back panel and are engaged in a mating relationship to said side panels and said inner strip by hook and burr Velcro-like material, and said outer strip is engaged in a mating relationship to the exterior of said top, bottom and side flaps and said inner strip to provide a multiple layer seal of hook and burr Velcro-like material to restrain said contents, but to only lightly retain the contents when the outer strip is removed,

said lanyard is connected on the inside of one end of said outer strip and the other end of said lanyard may be attached to a bottle of compressed air for inflating a life raft such that when the outer strip is ripped off, the lanyard is pulled and air is released into the life raft which will burst said container thus effecting quick deployment of the emergency equipment.

4,441,640
NON-SPILLABLE DRINKING CONTAINER

Edward A. Lottick, 41 Gershom Pl., Kingston, Pa. 18704
Filed Mar. 30, 1983, Ser. No. 480,565
Int. Cl.³ A45F *5/02;* **B65D** *83/00, 23/00, 51/24*
U.S. Cl. 224—252 **33 Claims**

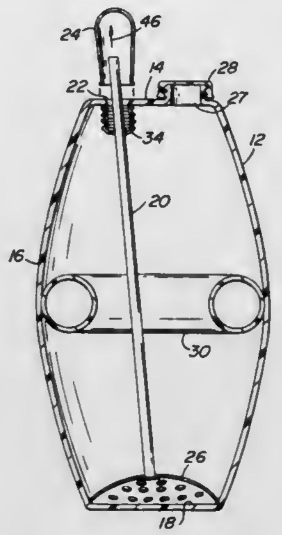
1. A non-spillable liquid drinking container, comprising:

a container having a substantially flat surface and provided with at least one opening therethrough substantially opposite said flat surface;

a tube mounted at least partially within said container and including means for engagement by the lips of a consumer extending outside of said container for a predetermined distance through said opening in said container;

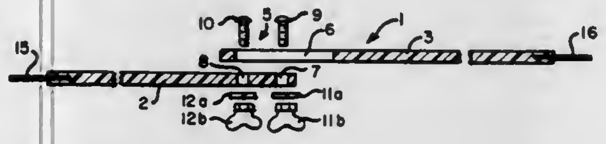
sealing means for providing a seal between the outer surface of said tube and the opening through said container and allowing movement of said tube in a direction toward or away from said substantially flat surface of said container; and

an expandable diaphragm mounted to the tube in proximity to the end of the tube juxtaposed a substantially flat surface of said container, the periphery of said diaphragm being mounted to said container, said diaphragm being provided with perforations therethrough which are normally closed in the unexpanded state of said expandable diaphragm and which are open when said expandable diaphragm is stretched by movement of said tube away from said substantially flat surface of said container.



4,441,641
AUTOMOBILE ROOF MOUNTING BRACKET AND CARTRIDGE HOLDER ASSEMBLY

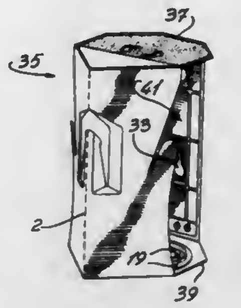
Arthur M. Thompson, 12 Waterside Ave., Northport, N.Y. 11768
Continuation of Ser. No. 299,463, Sep. 4, 1981, abandoned. This application Mar. 18, 1983, Ser. No. 476,884
Int. Cl.³ B60M *7/08;* **B60R** *7/04*
U.S. Cl. 224—311 **8 Claims**



1. An automobile tape cartridge holder assembly comprising: a bracket comprising two resiliently flexible elongated planar members having means disposed at one end portion of each for connecting the two members colinearly and for adjusting of the overall length of the colinear members and wherein one member has first blade means disposed at the other end thereof for sliding between an automobile inside roof and its windshield rim and the other member has second blade means disposed at the other end thereof for sliding between an automobile inside roof and an overhead light fixture attached thereto; a housing; and means mounting the housing on the bracket to effect the overhead support of the housing in an automobile, comprising means slidably receiving the one end portion of one of the two members before connection to the other of the two members by the connecting means.

4,441,642
CORE HOLDER AND DISPENSER

Henry Finkel, Westmount, Canada, assignor to Stanbel Ltd., Montreal, Canada
Continuation-in-part of Ser. No. 282,274, Jul. 10, 1981. This application Jun. 21, 1982, Ser. No. 390,354
Claims priority, application Canada, Aug. 11, 1981, 383632
Int. Cl.³ B26D *1/02*
U.S. Cl. 225—46 **26 Claims**



18. A dispensing package for elongated strands, such as cord, thread, yarn or the like, wound on a spool;

said package comprising:

a rigid but flexible material;

a floor member and a parallel ceiling member spaced from said floor member by wall means;

said wall means comprising at least two walls at an angle to each other and joined to each other at a common edge thereof;

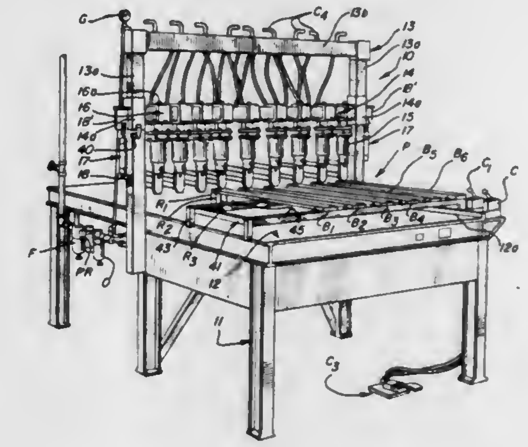
an opening in said wall means;

said opening being located in the common edge area of said wall means; and

blade holder means extending in said opening.

4,441,643
PALLET-FORMING APPARATUS

Norman L. McCutchen, Lake Mills, Iowa, assignor to Cummins Engine Company, Inc., Columbus, Ind.
Filed Jan. 29, 1982, Ser. No. 343,821
Int. Cl.³ B27F *7/09*
U.S. Cl. 227—110 **6 Claims**



1. An apparatus for forming a pallet having a plurality of elongated runners arranged in spaced substantially parallel relation and subtending a plurality of elongated deck boards arranged in spaced substantially parallel relation and extending transversely of the runners and spanning the distance therebetween; said apparatus comprising a substantially horizontal surface for supporting thereon a plurality of the runners with the deck boards overlying the latter; an elongated support member disposed in spaced overlying relation with respect to a predetermined elongated area of said surface; a plurality of power actuated fastener-driving means mounted on and depending from said support member, said driving means being arranged in spaced side-by-side relation and forming an elongated row, said row being in spaced, overlying substantially

parallel relation with the predetermined elongated area of said surface and with a runner when the latter is disposed at said predetermined surface area, said plurality of driving means and at least a portion of said support member being selectively movable as a unit relative to said surface between operative and inoperative modes, when in an operative mode, said plurality of driving means being adapted to engage and secure corresponding segments of the deck boards to a subtending runner disposed at said predetermined surface area, when in an inoperative mode, said plurality of driving means being elevated and out of contact with the runner supported deck boards; adjustable stop means disposed adjacent said predetermined surface area and mounted for selective movement relative to said surface between projected and retracted positions, when in a projected position, said stop means being engaged by a runner disposed at said predetermined surface area and preventing further movement of the runner in one direction along the surface, and when in a retracted position, said stop means being out of engagement with the runner disposed at said predetermined surface area; adjustably mounted runner-retaining means coacting with said stop means when in a projected position, to effect retention of a runner against said stop means, when said driving means is in said operative mode; and means coacting with said stop means and said runner-retaining means for effecting relative movement thereof in a predetermined time sequence.

4,441,644

BUFFER SYSTEM FOR FASTENER DRIVING DEVICES

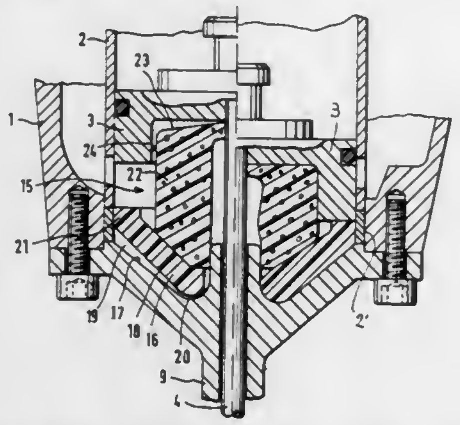
Gerhard Farian, Grossbettlingen, Fed. Rep. of Germany, assignor to Karl M. Reich Maschinenfabrik GmbH, Nuertingen, Fed. Rep. of Germany

Filed Dec. 1, 1981, Ser. No. 326,194

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1980, 3047662

Int. Cl.^{3} B25C *1/04*

U.S. Cl. 227—130 **7 Claims**



1. A buffer system for fastener driving devices having a driving piston guided in a driving cylinder and operated by air under pressure, comprising a first buffer element (**16**) having a radially inner portion resting on a bottom surface (**20**) of said driving cylinder (**2**), a second buffer element (**22**) arranged for cooperation with said first buffer element for performing a damping function, said first and second buffer elements being made of materials having different hardnesses such that the first buffer element is made of a hard elastic material while the second buffer element is made of a relatively soft elastic material, said first buffer element (**16**) further having a radially intermediate portion including a surface area (**18**) normally spaced from said bottom surface of said driving cylinder for normally providing a spacing (**19**) between said surface area (**18**) of said first buffer element (**16**) and said bottom surface of the driving cylinder, at least a part of said intermediate portion of said surface area of said first buffer element being arranged to be movable relative to said bottom surface of said driving cylinder, said first buffer element further having a radially outer portion (**21**) resting with a radially outwardly directed bias force against an inner surface of said driving cylinder above said bottom surface to provide for said spacing, wherein said first buffer element (**16**) performs its damping function in two phases, so that, in response to an impact by said driving piston on said second buffer element (**22**), the first buffer element first causes energy dissipation by friction between said radially outer portion (**21**) and said inner surface of said driving cylinder until said spacing (**19**) disappears whereupon the first buffer element causes further energy dissipation as a result of its inner deformation.

4,441,645

AUTOMATIC VEHICLE-BODY ASSEMBLING SYSTEM

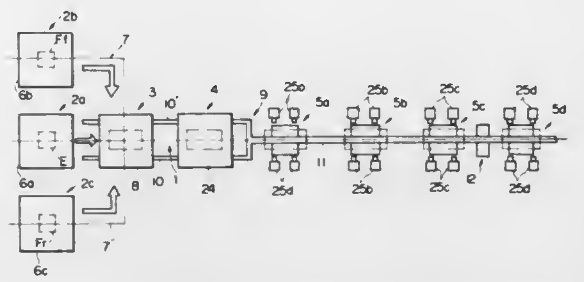
Haruyoshi Takagishi, Yamato; Kazuyoshi Kamio, Yokohama, and Tsuneo Fujikawa, Ebina, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 11, 1981, Ser. No. 329,873

Claims priority, application Japan, Dec. 16, 1980, 55-177806

Int. Cl.^{3} B23K *9/12*

U.S. Cl. 228—47 **5 Claims**



1. An automatic vehicle-body assembling system for automatically welding together an engine compartment assembly, a front floor assembly and a rear floor assembly to constitute a vehicle floor structure of an automotive vehicle, each of the engine compartment and front and rear floor assemblies being composed of a plurality of component members comprising:

first, second and third initial assembling stages for provisionally welding together the component members of said engine compartment assembly, the component members of said front floor assembly and the component members of said rear floor assembly, respectively, for forming a tentative engine compartment assembly, a tentative front floor assembly and a tentative rear floor assembly in the first, second and third initial assembling stages, respectively,

a main assembling line extending forwardly from said first initial assembling stage and including a positioning stage for correctly positioning the engine compartment and front and rear floor assemblies with respect to one another, at least one primary assembling stage for provisionally welding the tentative engine compartment and front and rear floor assemblies together to form a tentative vehicle floor structure, and at least one secondary assembling stage for completely welding together the tentative engine compartment and front and rear floor assemblies and the component members of each of the component assemblies of said tentative vehicle floor structure,

at least two subsidiary assembly lines extending respectively from said second and third initial assembling stages to said positioning stage,

a horizontally extending, reciprocative conveying member adapted to carry thereon said tentative engine compartment assembly, tentative front and rear floor assemblies and tentative vehicle floor structure and having a pair of upstream branch portions horizontally spaced apart in parallel from each other and longitudinally extending through said positioning stage and said primary assembling stage, and a single straight downstream portion merging forwardly between said primary and secondary assembling stages out of said upstream branch portions and longitudinally extending through the secondary assembling stage, and

drive means operative to drive said conveying member for

forward and backward movement along said main assembling line.

4,441,646

PROCESS FOR MANUFACTURING PLASTICALLY DEFORMED LIGHT METAL OBJECTS AND SHAPED BODIES HAVING A LIGHT METAL PART

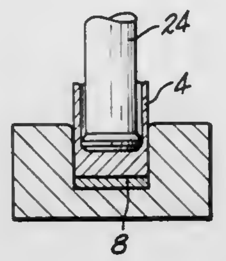
Alfred Wagner, Steisslingen; Adolf Ames, Hilzingen, and Ulf Hodel, Engen, all of Fed. Rep. of Germany, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Apr. 22, 1981, Ser. No. 256,293

Claims priority, application Fed. Rep. of Germany, May 3, 1980, 3017076

Int. Cl.^{3} B23K *28/02, 20/02*

U.S. Cl. 228—116 **2 Claims**



1. Process for manufacturing plastically deformed light metal objects which are joined permanently to a dissimilar metal component which comprises: providing a light metal blank; providing a dissimilar metal component of steel adjacent said light metal blank; plastically deforming said blank to form a light metal part thereby producing a portion thereof free from interfering oxide; and metallically joining said portion to said dissimilar metal, wherein said steel component is joined to a second steel component before joining to said portion, and wherein said steel component and said portion are joined by friction welding.

4,441,647

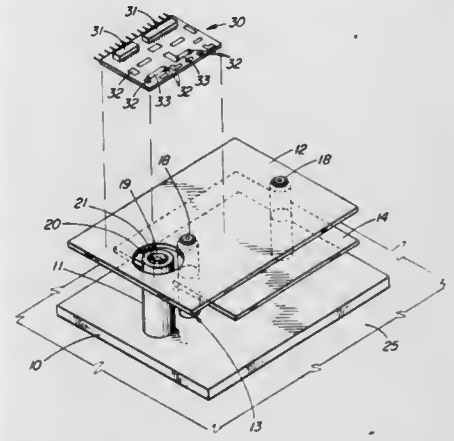
RESOLDERING TOOL FOR CERAMIC SUBSTRATE HYBRID ELECTRONIC CIRCUITS

Gordon J. Holmes, West Palm Beach, Fla., assignor to Northern Telecom Limited, Montreal, Canada

Filed Jun. 4, 1982, Ser. No. 385,050

Int. Cl.^{3} B23K *1/00*

U.S. Cl. 228—119 **9 Claims**



1. A resoldering tool for reworking ceramic substrate hybrid electronic circuits, comprising:

a heat conductive base;

a support member supported above said base, and an aperture in said support member;

a pillar of heat conductive material attached to said base and extending up therefrom, said pillar extending through said aperture, an upper surface of said support member and an upper surface of said pillar in a common plane, a clearance extending between said pillar and said support member;

said heat conductive base adapted to be positioned on a hot surface, to produce a hot spot at said upper surface of said pillar.

4,441,648

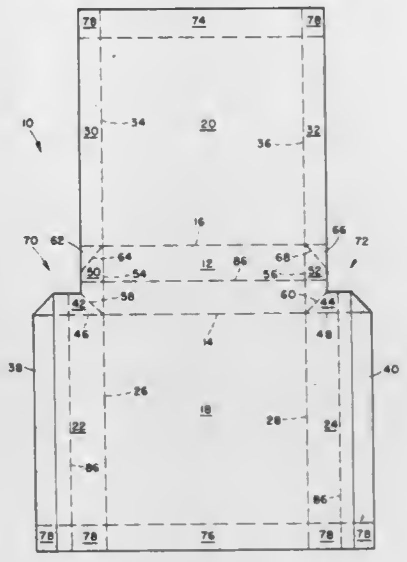
SINGLE PIECE PACKAGING CONTAINER

Joseph P. Portsmouth, White Plains, N.Y., assignor to Nabisco Brands, Inc., Parsippany, N.J.

Filed Apr. 8, 1982, Ser. No. 366,634

Int. Cl.^{3} B65D *5/06*

U.S. Cl. 229—37 R **8 Claims**



1. A hermetically sealed container formed from a single piece blank of heat sealable material while requiring a minimum number of surfaces to be heat sealed together at any one location, comprising:

a. a horizontal bottom panel;
b. first and second opposed, substantially vertical side wall panels attached through 90° folds to first and second opposed edges of said bottom panel;
c. third and fourth opposed, substantially vertical side wall panels attached through 90° folds to side edges of at least one of said first and second side wall panels, with said first and second vertical side wall panels being attached, adjacent two side corners of the carton, by two vertically extending seal seams to the third and fourth vertical side wall portions;
d. first and second bottom seam flaps attached through 90° folds to the bottom edges of said third and fourth side wall panels and extending along and adjacent to said bottom panel; and
e. third and fourth bottom seam flaps attached through 180° folds to third and fourth opposed edges of said bottom panel and extending along and adjacent to said first and second bottom seam flaps and said bottom panel, with the arrangement comprising said third bottom seam flap being folded over through 180° and overlaying and being sealed directly to said horizontal bottom panel, and said first bottom seam flap being folded over through 90° and overlaying, and at least a major portion of the first bottom seam flap being sealed directly to, the third bottom seam flap, such that a major portion of the seal between the horizontal bottom panel, the third bottom seam flap and the first bottom seam flap is comprised of only three carton surfaces sealed directly together, and no more than four carton surfaces are sealed together over the entire seal, and the arrangement further comprising said fourth bottom seam flap being folded over through 180° and overlaying and being sealed directly to said horizontal bottom panel, and said second bottom seam flap being folded over through 90° and overlaying, and at least a major portion of the second bottom seam flap being sealed

directly to, the fourth bottom seam flap, such that a major portion of the seal between the horizontal bottom panel, the fourth bottom seam flap and the second bottom seam flap is comprised of only three carton surface sealed directly together, and no more than four carton surfaces are sealed together over the entire seal.

4,441,649

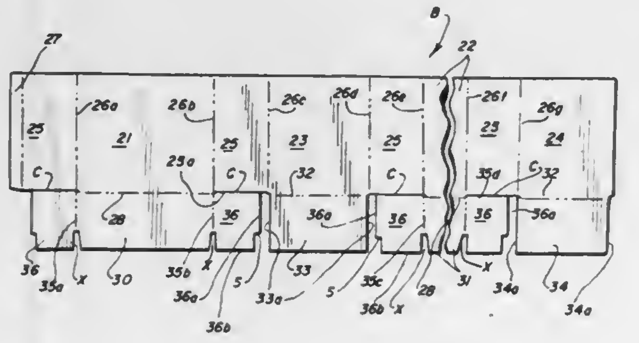
COLLAPSIBLE RECEPTACLE

Terril L. Nederveld, Ada, Mich., assignor to Packaging Corporation of America, Evanston, Ill.

Filed Sep. 7, 1982, Ser. No. 415,404

Int. Cl.^{3} B65D *5/10*

U.S. Cl. 229—38 **8 Claims**



1. A collapsible receptacle formed from a blank of foldable sheet material, comprising upright first wall panels; upright second wall panels; upright corner panels, each corner panel being foldably connected to and disposed intermediate adjoining first and second wall panels, said first, second, and corner panels coacting to delimit a predetermined area; bottom-forming first flaps foldably connected to bottom edges of said first wall panels and extending therefrom towards one another into the predetermined area; extension flaps connected to opposite ends of each first flap and extending laterally therefrom, an outer edge of each extension flap being provided with an offset shoulder, corresponding extension flaps being foldable with said first flaps into opposed relation; and bottom-forming second flaps foldably connected to bottom edges of said second wall panels and extending therefrom towards one another into the predetermined area and at least partially subtending corresponding extension flaps; the opposite ends of each folding connection between a second wall panel and a bottom-forming second flap being interposed and in substantially abutting relation with the shoulders formed in corresponding opposed extension flaps.

4,441,650

LAMP PACKAGE

David H. Caldwell, Marblehead, and Robert M. Hurley, Lexington, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Aug. 30, 1982, Ser. No. 412,754

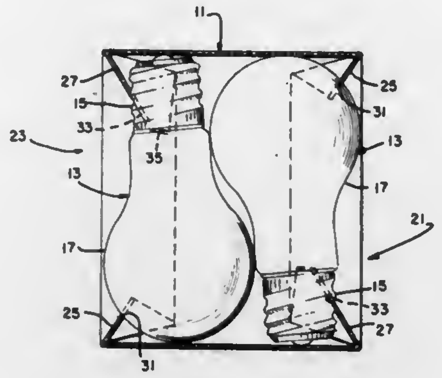
Int. Cl.^{3} B65D *85/42*

U.S. Cl. 229—39 B **18 Claims**

1. A container for a pair of electric lamps wherein each of said lamps includes a bulbous glass envelope, said container comprising:

a parallelepiped of paperboard material for having said lamps positioned therein; and

first and second pairs of lamp-engaging tab members secured to or forming part of said parallelepiped and extending substantially inwardly thereof, each of said pairs of said tab members adapted for acting in a cooperative manner with the other of said pair to positively engage a respective one of said electric lamps at spaced locations thereon to cause said glass envelopes of said electric lamps to be in physical contact with each other within said parallelepiped.



4,441,651

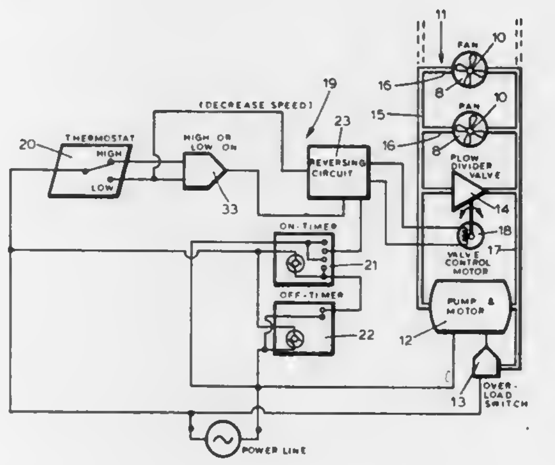
HYDRAULIC FAN CONTROL

Terry A. Dill, Keota, Iowa, assignor to Jefferson Industries Company, Fairfield, Iowa

Filed Oct. 29, 1982, Ser. No. 437,887

Int. Cl.^{3} F24F *7/00*

U.S. Cl. 236—49 **9 Claims**



6. A ventilating system for a poultry or livestock confinement building having a plurality of fans for moving air within the building, said system comprising:

(a) fluid motor means for driving each s[illegible] fan and corresponding in number to the number of said fans;

(b) means for supplying fluid under pressure to said fluid motor means including a single pump unit;

(c) reversible valve means interposed in said supplying means for variably controlling the flow of fluid to said fluid motor means, said valve means comprised of a rotatable flow divider;

(d) motive means for incrementally opening and closing said valve means in discrete steps comprising sequential timed intervals;

(e) a thermostat for providing an indication when the temperature of the air in said building exceeds or falls short of a predetermined temperature; and

(f) means associated with said thermostat for actuating said motive means to progressively increase the fluid flow to said fluid motor means for sequential time periods during which said air temperature exceeds said predetermined temperature and to progressively decrease the fluid flow to said fluid motors for sequential time periods during which said air temperature is less than said predetermined temperature.

4,441,652

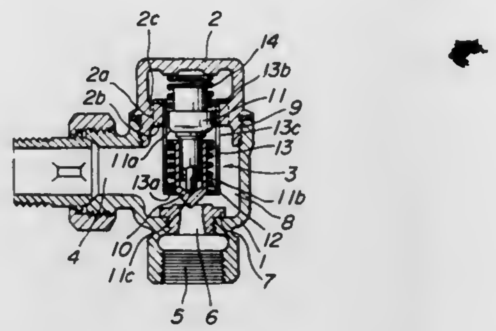
EXCHANGEABLE UNIT STEAM TRAP

Masahumi Minami, Sakai, Japan, assignor to Miyawaki Steam Trap Mfg. Co., Ltd., Osaka, Japan

Filed Feb. 5, 1982, Ser. No. 346,326

Int. Cl.^{3} G05D *23/12*

U.S. Cl. 236—56 **3 Claims**



1. An exchangeable unit steam trap comprising; a casing having an inlet, an outlet and a valve opening communicating with said outlet for condensate, a cover detachably secured to said casing to enclose a condensate reservoir in the casing, and a trap unit having a sleeve enclosing therein a valve closing and opening the valve opening in response to temperature in said reservoir, a thermowax element generating a thrust acting upon said valve in response to said temperature and a counter spring whose spring force acts against said thrust of said thermowax element, said sleeve formed at its lower end with an inward flange supporting a lower end of said counter spring whose upper end supporting said valve and, said sleeve is formed at its upper end with a plurality of outward lugs each being formed with a notch, and said cover is formed with an inward flange having alternate ridges and slots which permit said outward lugs to pass therethrough and includes at least one anchoring pin planted in said ridge for engaging said notch of said sleeve to prevent the sleeve from being rotated about its axis when the trap unit is in position, a bayonet connection enabling said cover and said trap unit to be connected only by relative movement therebetween, said bayonet connection comprises lugs formed in said sleeve of the trap unit and slots formed in said cover permitting said lugs to pass therethrough, so that the trap unit is partially inserted in the cover with said lugs passing through said slots of the cover and then is slightly rotated about its axis to connect the trap unit to the cover, and, a support spring arranged between said cover and said thermowax element.

4,441,653

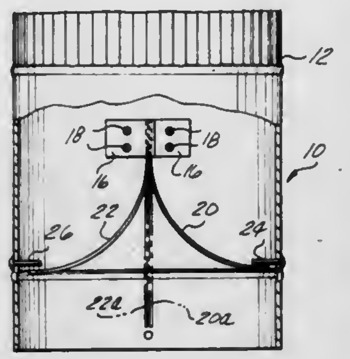
BI-METALLIC VANE VENT DAMPER

George Grudich, Rochester, Mich., assignor to Paragon Resources, Inc., Warren, Mich.

Filed Jun. 11, 1981, Ser. No. 272,444

Int. Cl.^{3} G05D *23/02*

U.S. Cl. 236—93 R **5 Claims**



1. A damper for a furnace exhaust gas flue, comprising:

a cylindrical sheet metal housing section adapted to be disposed within the flue so that vented combustion gases from the furnace pass through the housing;

a pair of flat members each having an elongated portion and an ear portion disposed within the housing with the ear portions secured to diametrically opposed points on the interior of the housing so that the longitudinal axis of the flat members extend at right angles to the longitudinal axis of the housing, with the sides of the flat members being parallel to the longitudinal axis of the housing; and

a pair of semi-circular vanes formed of two separate sheets each consisting of two laminated metal layers, one layer having a relatively high coefficient of thermal expansion and the other having a relatively low coefficient of thermal expansion, each vane having a generally flat upper end with flat opposing sides and curved lower edges, means to secure the upper ends of the two vanes to the elongated portion of the flat members, the elongated portions of the two members serving to sandwich the upper ends of the two vanes together in directly abutting relationship, so that the flat side edges of the vanes extend normally to the longitudinal axis of the housing, the two vanes projecting from the flat members in the direction of the furnace free from any structure between the vanes, and being designed so that they curved outwardly, in opposed directions, when disposed at a temperature below the temperature they experience when the furnace is operating to block a major portion of the cross-sectional area of the flue, and bend under the force of their differential expansion when the furnace is operating so that their planes lie substantially parallel to the longitudinal axis of the flue, with the vanes abutting each other substantially throughout their entire lengths thereby allowing substantially unrestricted gas flow through the flue.

4,441,654

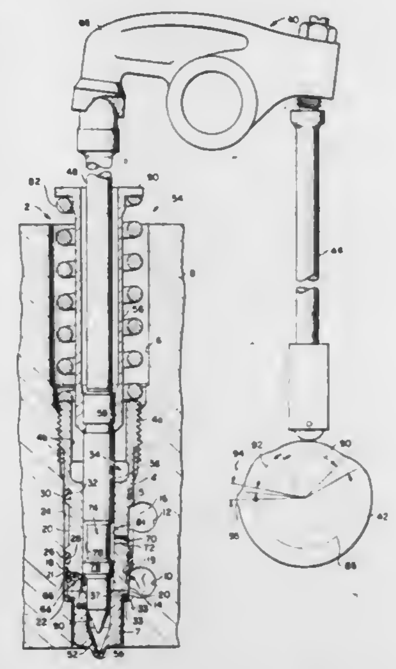
FUEL INJECTOR ASSEMBLY INCLUDING A BLOW-BACK PREVENTION CAM

Lester L. Peters, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Dec. 31, 1981, Ser. No. 336,334

Int. Cl.^{3} F02M *47/02*

U.S. Cl. 239—89 **11 Claims**



1. A fuel injector assembly for injecting periodically into a combustion chamber of an internal combustion engine fuel received from a fuel supply flow path, comprising:

(a) an injector body containing
  (1) a central bore, and
  (2) an open injection orifice located to provide a communication path between the central bore and the combustion chamber;

(b) supply connecting means for providing a pathway for fuel to flow from the supply flow path into the central bore, said supply connecting means containing a supply passage which communicates with the central bore through a feed orifice;

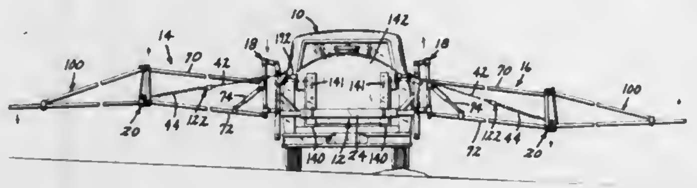
(c) an injector plunger mounted for reciprocal movement within the central bore between an innermost position in which the injection orifice is closed by the inner end of said injector plunger and an outermost position in which an injection chamber is formed within the central bore between the inner end of said injector plunger and the injection orifice, said injector plunger including a cylindrical surface in direct sealing contact with the interior surface of the central bore to form an injection chamber seal; and

(d) cam actuating means for reciprocating said injector plunger in timed sequence with the movement of a piston within the combustion chamber in a manner to cause fuel to be metered into the injection chamber without blow back of gas into the supply passage by moving said cylindrical surface outwardly beyond the feed orifice to cause the feed orifice to open directly into the injection chamber only when the combustion chamber pressure is relatively low and by terminating fuel metering substantially before fuel injection commences by moving said injector plunger inwardly to a supply passage blocking position in which said cylindrical surface is positioned over the feed orifice to seal the supply passage from the injection chamber during the period that combustion chamber pressure otherwise is increasing sufficiently to cause blow-back of gases into the supply passage if the supply passage were left unblocked.

4,441,655
AGRICULTURAL SPRAYING APPARATUS

Harold Blumhardt, Ashley, N. Dak., assignor to Blumhardt Manufacturing Co., Ashley, N. Dak.

Filed Mar. 6, 1981, Ser. No. 241,415
Int. Cl.^{3} B05B *1/20*
U.S. Cl. 239—163 **14 Claims**



13. Boom apparatus for agricultural applications, comprising:

(a) a cantilevered boom structure suitable for mounting of sprayer heads, said boom structure including an inboard end portion and an outboard end portion, said outboard end portion being articulately interconnected to said inboard end portion for movement in a generally vertical plane with respect to said inboard end portion;

(b) means for mounting said boom structure to a drive vehicle, said mounting means permitting rotation of said boom about a generally vertical axis to permit said boom to yield in response to obstruction contact;

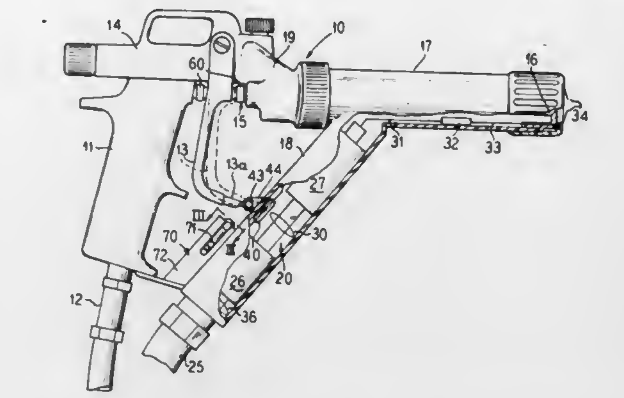
(c) spring-biased centering means, connected to said boom structure to maintain said boom structure oriented generally transverse to said drive vehicle in its normal position, and to recenter said boom structure to said transverse position absent obstructive forces thereon; and

(d) said spring-biased centering means also including means for lifting said outboard end portion of said boom structure independently of said inboard end portion as said boom structure moves away from its normal position to allow said structure to overcome obstacles or lift from ground contact.

4,441,656
ELECTROSTATIC DISABLING SWITCH FOR ELECTROSTATIC SPRAY GUNS

Willi Huber, Heerbrugg, Switzerland, assignor to J. Wagner AG, Switzerland

Filed Jan. 29, 1982, Ser. No. 343,812
Int. Cl.^{3} B05B *5/02*
U.S. Cl. 239—708 **10 Claims**



1. In an electrostatic spray device having an electrode and power supply circuitry for the electrode, a coating supply conduit terminating at an orifice means and a valve controlling flow through the orifice, switch means for activating the power supply, said switch means and valve being activated by movement of a trigger means, the improvement of the switch means being magnetically operated by a magnet means, an activating means on the trigger means for effecting the magnet means to activate the switch means in dependent response to movement of the trigger means and a second magnet means carried by the device movable towards and away from the switch means to override the trigger means activating means to prevent trigger means movement actuation of the switch means.

4,441,657
DECREASING STATIC CHARGE OF A PARTICULATE SOLID PRODUCT WHICH CAUSES PRODUCT TO PLUG METAL LINE USED FOR PNEUMATIC FLUIDIZED SOLID CONVEYANCE

Nicholas C. Huie, Naperville, Ill., and William Bradley, Sullivans Island, S.C., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Oct. 16, 1981, Ser. No. 311,931
Int. Cl.^{3} B02C *19/12*
U.S. Cl. 241—14 **4 Claims**

1. A method of decreasing the static charge accumulating tendency of a mass of high purity terephthalic acid having an average particle size of from 185 microns and above which method comprises grinding at least 10 weight percent of the high purity terephthalic acid to sharp, rough particles having a particle size of from about 40 to about 100 microns and blending the ground mass of terephthalic acid with the mass of unground purified terephthalic acid.

4,441,658
SANDMILL SCREEN MOUNTING ASSEMBLY

Edward J. Szkaradek, Santa Ana, Calif., assignor to Morehouse Industries, Inc., Fullerton, Calif.

Filed Nov. 16, 1981, Ser. No. 321,389
Int. Cl.^{3} B02C *17/18*
U.S. Cl. 241—46.17 **11 Claims**

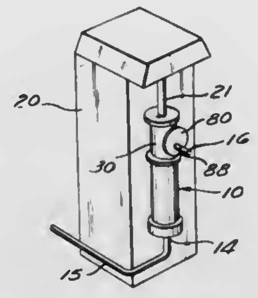
1. An apparatus for grinding or processing a liquid, having a vertical vessel, with a lower cylindrical segment and an upper cylindrical segment, for receiving grinding media and a liquid to be processed, a motor-driven rotor in the vessel for agitating the media, and a liquid inlet at the bottom of the vessel, the improvement comprising:

a single generally T-shaped casting having a large cylindrical segment forming the upper cylindrical segment of the vessel and having a large tubular liquid outlet portion extending radially outward from the upper cylindrical segment, the outlet portion having an enlarged outer cylindrical end forming an inner annular shoulder facing the end of the outlet portion;

a removable filter screen assembly fitting in the tubular outlet portion and having an annular outer rim that abuts said shoulder;

a removable cover abutting the end of the outlet portion and abutting the outer rim of the filter screen assembly to hold the filter screen assembly in position, the cover having a port providing an outlet for the filtered product; and

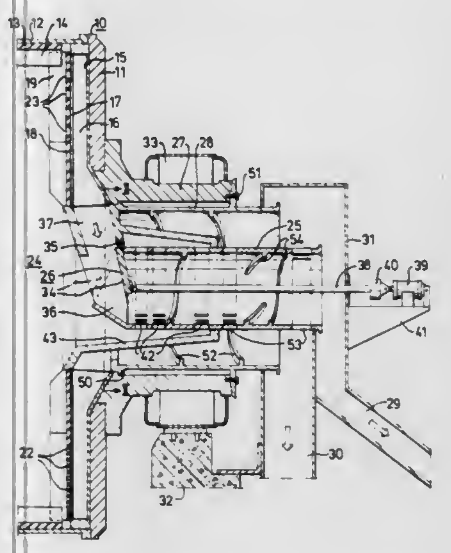
a circular retaining ring surrounding the cover and the end of the outlet portion for holding the cover against the end of the outlet portion, said screen assembly including a screen having a cup-shape with an open end positioned adjacent the cover, a cylindrical screen side wall spaced inwardly from the surrounding outlet portion, and a screen end wall positioned within said outlet portion adjacent said vessel upper segment.



4,441,659
ARRANGEMENT IN DRUM MILLS

Olle E. Marklund, Risgatan 8, S-930 50 Boliden, Sweden

Filed Nov. 17, 1980, Ser. No. 207,795
Claims priority, application Sweden, Nov. 30, 1979, 7909921
Int. Cl.^{3} B02C *17/00*
U.S. Cl. 241—70 **9 Claims**

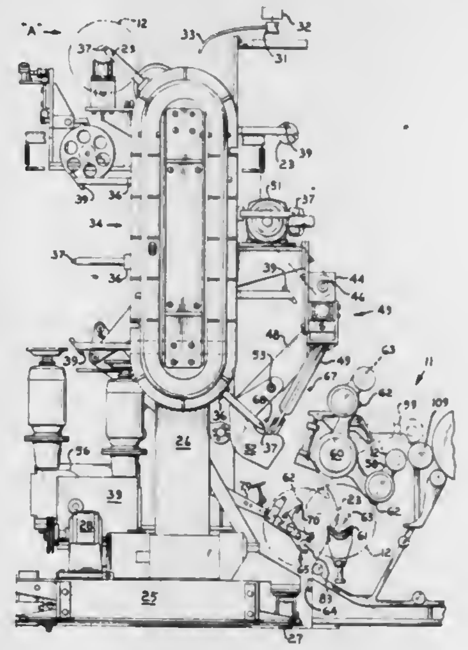


1. A drum mill for autogenous or semi-autogenous wet-grinding processes and being of the type having a screening wall which is arranged adjacent a mill drum end wall provided with a hollow material-discharge trunnion and which separates said end wall from a grinding space within the mill, wherein said screening wall has at least one first group of relatively small grate openings through which fine material ground in the mill constantly leaves the grinding space and departs through the discharge trunnion, and at least one second group of relatively large openings through which mixed material, comprising both fine and coarse material, can leave the grinding space, said second group of openings communicating with an individual material outlet via switching means by which the material mixture passing through said second group of openings can be prevented from leaving the mill, and classifying means for dividing said material mixture upsteam of the outlet therefore into at least one coarse fraction and at least one finer fraction having a maximum particle size which is at least equal to the maximum particle size of said fine material, and wherein means are provided for returning at least a major part of said finer fraction to the grinding space.

4,441,660
APPARATUS FOR AUTOMATICALLY DOFFING YARN PACKAGES AND DONNING EMPTY BOBBINS ON A WINDER

Nathan Cloud, Wilmington; Robert A. Marin, Newark, and James E. McErlane, Wilmington, all of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 27, 1982, Ser. No. 382,768
Int. Cl.^{3} B65H *67/04*
U.S. Cl. 242—35.5 A **2 Claims**



1. In a winding apparatus having a plurality of windups, each windup including a drive roll, a pair of rotatable chucks carrying yarn support bobbins alternately movable from a park position into surface driven engagement with the drive roll then to a rest position, and a pair of articulated swing arms for moving the bobbins through said positions, an apparatus for doffing yarn packages from the chucks and donning empty bobbins on the chucks, said apparatus comprising:

(a) a frame mounted for movement into a position adjacent each windup;

(b) a gripper to engage said swing arms when in the rest position;

(c) means connecting the gripper and the frame for moving the gripper into engagement with said arms and moving the gripper and swing arms from the rest position first to a doff-don position then to said park position;

(d) means attached to said frame at a location adjacent said doff-don position for doffing yarn packages from the chuck and donning empty bobbins thereon following doffing when the swing arms are in the doff-don position; and

(e) endless conveyor means attached to said frame for delivering doffed yarn packages from said doff-don position to a location away from said winder and for delivering empty bobbins to said doff-don position for placement on said chucks by said means for donning bobbins.

4,441,661

APPARATUS FOR STORING STRIP, PARTICULARLY METAL STRIP

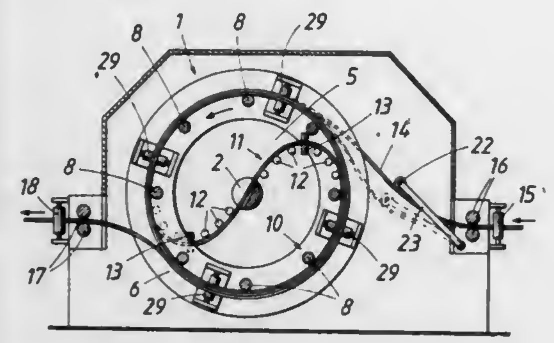
Karl Steinmair, Schildberg, Austria, assignor to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Jul. 12, 1982, Ser. No. 397,585

Claims priority, application Austria, Sep. 30, 1981, 4181/81

Int. Cl.^{3} B65H *17/48*

U.S. Cl. 242—55 **5 Claims**



1. In apparatus for storing strip, comprising a frame and two roller cages having a common horizontal axis and mounted on said frame and rotatable about said common axis, each of said roller cages comprising a circular series of angularly spaced apart, rotatably and radially adjustably mounted rollers parallel to said common axis,

the improvement residing in that

said frame is mounted for rotating about said common axis,

said roller cages are axially juxtaposed and non-rotatably connected to said frame,

the rollers of said roller cages are equal in number and angular spacing,

a circular series of swiveling shafts equal in number and angular spacing to the rollers of each of said axes and parallel to those of said rollers are rotatably mounted in said frame and extend through both said roller cages,

each of said swiveling shafts carries two pairs of radial arms,

each of said rollers of said roller cages is carried by one of said pairs of radial arms and eccentric with respect to the associated swiveling shaft,

said two pairs of arms mounted on each of said swiveling shafts are so arranged that the rollers carried by said swiveling shafts are disposed on opposite sides of an axial plane which extends through said common axis and the axis of said swiveling shaft, and

a strip guide is carried by and non-rotatably connected to said frame and extends inside said roller cages along an S-shaped path from a point near the periphery of one of said roller cages to a point near the periphery of the other of said roller cages.

4,441,662

REELS SUPPLYING DEVICE

Enzo Seragnoli, Bologna, Italy, assignor to G. D. Societa' per Azioni, Bologna, Italy

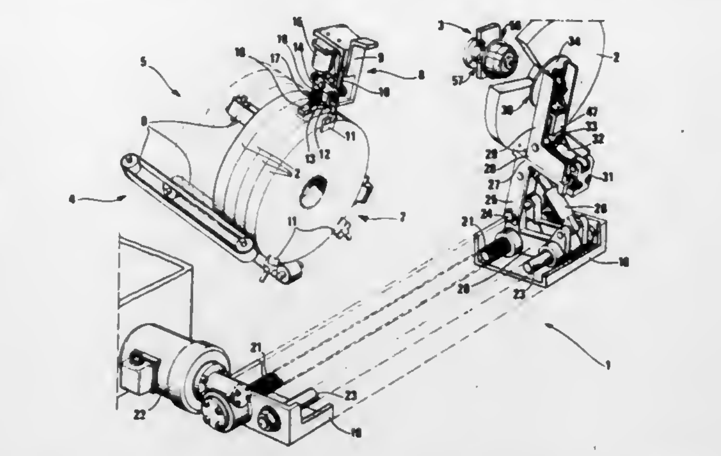
Filed Feb. 2, 1982, Ser. No. 345,039

Claims priority, application Italy, Feb. 25, 1981, 3344 A/81

Int. Cl.^{3} B65H *19/08, 17/02*

U.S. Cl. 242—58 **6 Claims**

1. A device for automatically supplying reels (2) to a user machine (3), the device comprising a magazine (4) for a plurality of reserve reels (2) each provided with an internal tubular support tube (39), an unwinding spindle (57) arranged on said machine (3), a support member (20, 30) for one of said reels (2), and first releasable locking means (71) carried by said spindle (57) and adapted to be operated by the support member (20, 30) for locking said one reel (2) on the spindle (57), said suppor member (20, 30) being mounted for movement between a take-up position (7) in front of said magazine (4) and a release position (56) in front of said spindle (57) and comprising second releasable locking means (51) adapted to engage an inner surface of the hub (39) of said one reel (2) to lock the same relative to said support member (20, 30), and actuator means (47) associated with said second locking means (51) to move the same radially of said hub (39) to a locking position.



4,441,663

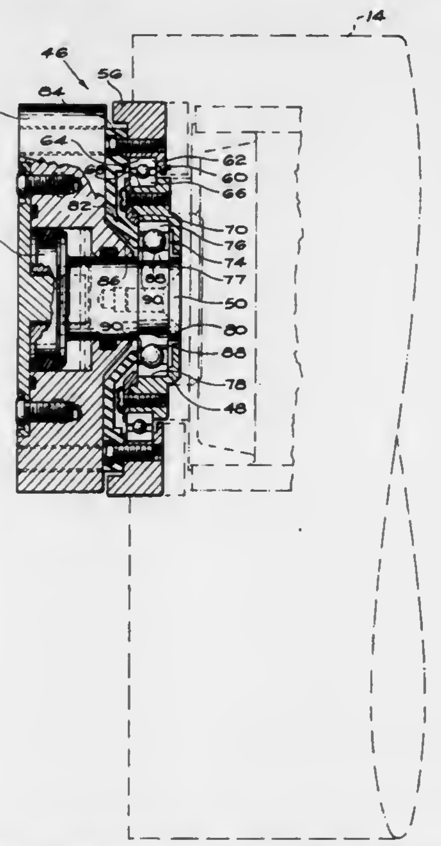
WEB CINCHING AND WINDING APPARATUS

Richard D. Welch, Pittsford, N.Y., and John G. Mulder, Kingston, Jamaica, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 29, 1982, Ser. No. 363,320

Int. Cl.^{3} B65H *17/02, 17/08;* **F16H** *13/08*

U.S. Cl. 242—65 **7 Claims**



1. An apparatus for automatically cinching the end portion of a web onto a cylindrical core and winding convolutions of web on the core to form a roll, said apparatus comprising:

a roller having a roll drive surface spaced from the outer surface of the core;

means for transporting a web between said roll drive surface and outer core surface;

means for guiding the end portion of the tranported web around the outer surface of the core and into a nip formed by the web and outer core surface;

a rotatably mounted gudgeon adapted to drivingly engage the core for rotating the core;

a rotatably mounted drive wheel normally rotatably driven by said roll drive surface; and

means directly coupling said drive wheel to said gudgeon whereby said gudgeon rotates the core at an outer core surface speed greater than said web spread for cinching the end portion of the web onto the core.

4,441,664

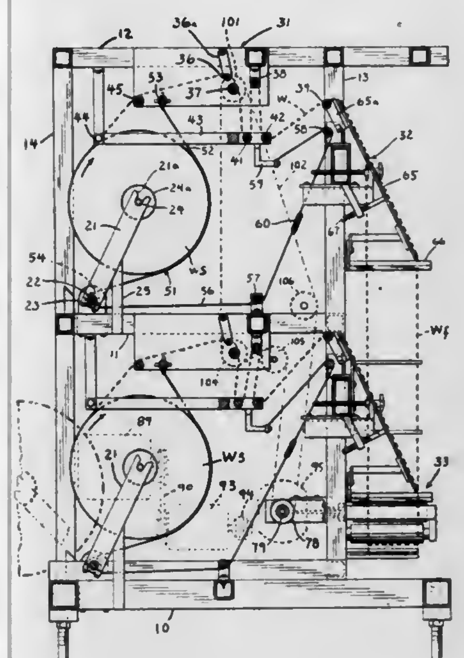
APPARATUS FOR FEEDING WEB MATERIAL FROM A SUPPLY ROLL

Roger H. Stohlquist, Rockford, Ill., assignor to Anderson Bros. Mfg. Co., Rockford, Ill.

Filed Jul. 26, 1982, Ser. No. 402,137

Int. Cl.^{3} B65H *17/22, 23/08, 23/16, 25/04*

U.S. Cl. 242—75.42 **4 Claims**



1. An apparatus for feeding a web of material from a supply roll to web processing euipment of the type that exerts an intermittent pulling force on the web during intermittent advance through the processing equipment, the apparatus including, a support frame means for supporting a supply roll of web material on the frame for unwinding rotation, web loop forming means including loop guide means mounted at a stationary location on the frame and dance means mounted on the frame for movement toward and away from the loop guide means and adapted to form a variable size loop in the web passing between the dancer means and the loop guide means, a flexible brake band means, means anchoring one end of the brake band means on the frame and means guiding the other end of the brake band means to cause the brake band means to extend part way around the periphery of the supply roll, brake applying means including a longitudinally extensible and contractable spring means operatively connected at one end to said dancer means and at its other end to the other end of the brake band means and constructed and arranged to draw the brake band means against the periphery of the supply roll when the dancer means moves to a position away from the loop guide means, the dancer means being yieldably biased in a direction away from the loop guide means to apply tension through the longitudinally extensible and contractable spring means to the brake band means, the dancer means being constructed and arranged to move toward the loop guide means and reduce tension applied to the brake band means when the web is drawn from the loop forming means at a rate faster than the web unwinds from the supply roll, outlet web feed roller means engageable with the web after it exits from the web loop forming means and operative when a pull is exerted on the web exiting from the web feed roller means to draw the web from the web loop forming means, web folding means engaging the web at a location between the web loop forming means and the outlet web feed roller means for longitudinally folding the web to form a longitudinally folded web that exits from the web folding means along a linear path of travel, said outlet web feed roller means including first and second relatively parallel feed rollers and an exiting web guide roller, means mounting the first web feed roller on the frame for axial rotation at one side of said linear path of travel of the folded web exiting from the web folding means, lever means mounted on frame for pivotal movement about an axis at the other side of said linear path of travel of the folded web, means mounting the second web feed roller at the other side of said linear path on one end of the lever means for movement along a path generally perpendicular to said linear path of travel of the folded web toward and away from the first web feed roller, means mounting the exiting web guide roller on the other end of said lever means with its periphery generally tangent to a plane extending between the first and second web feed rollers and in the direction of said linear path of travel to engage the folded web exiting from the first and second feed rollers and maintain the folded web substantially in said linear path of travel as it exits between the first and second feed rollers, means including intermeshing gear means on the first and second feed rollers for driving the first and second feed rollers at the same speed and in directions to advance the folded web, and exiting web guide means engageable with the folded web after it exits from the exiting web guide roller for guiding the folded web in an exiting direction having a substantial component laterally of said other side of said linear path of travel to shift the second feed roller toward the first feed roller in response to tension on the folded web exiting from the exiting web guide roller.

4,441,665

AXIALLY TELESCOPIC COIL CARRIER

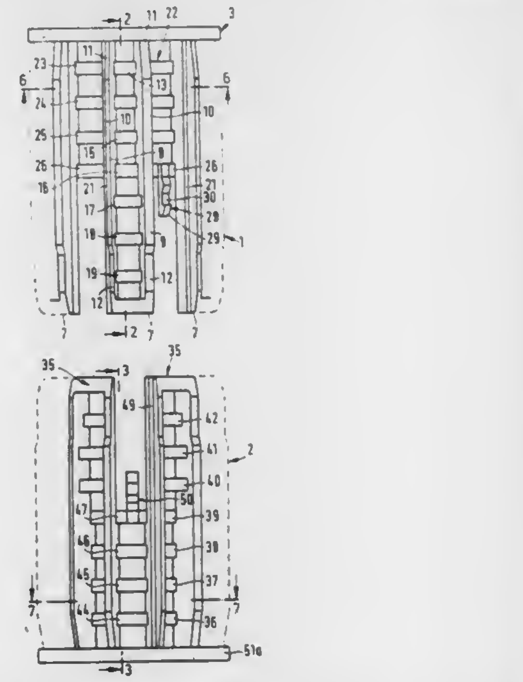
Gerhard H. Hahm, Aachen, Fed. Rep. of Germany, assignor to Jos. Zimmerman, Aachen, Fed. Rep. of Germany

Filed Apr. 7, 1982, Ser. No. 366,326

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1981, 8110872[U]

Int. Cl.^{3} B65H *49/00, 75/20*

U.S. Cl. 242—129 **15 Claims**



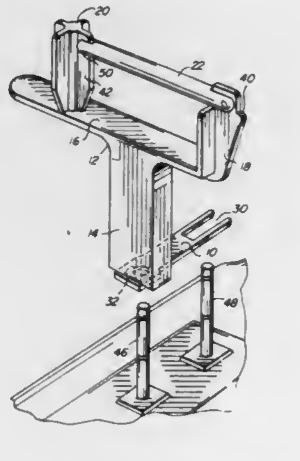
1. An axially telescopic coil carrier for receiving a coil or spool of thread or yarn, said coil carrier having a number of coil parts which are telescopically displaceable on with respect to the other, and ones of said coil carrier parts having a respective end ring element and a plurality of carrier elements extending longitudinally of the respective coil carrier part from said end ring element to form susbtantially cylindrical surfaces, the improvement comprising:

first and second reinforced section means placed, respectively, adjacent to the end ring members of said end coil carrier parts for connecting adjacent carrier elements to each other to form circumferential supporting elements, respective free ends of said carrier elements extending axially therefrom to the zone of the opposed one of said end ring elements,

means forming radial support means for free ends of the respective carrier elements, said being respectively shaped such that the side basis of the carrier elements of each said coil carrier part abut opposed side faces of carrier elements of the opposed coiled carrier part so that at least each second one of the circumferentially juxtaposed carrier elements of the two coil carrier parts are provided with radial apertures.

4,441,666
SEWING MACHINE ADAPTER

Ronald H. Tower, and Elizabeth S. Tower, both of 866 W. Isabella, Mesa, Ariz. 85202
Filed Jun. 16, 1982, Ser. No. 388,889
Int. Cl.³ B65H *49/18*
U.S. Cl. 242—134 **8 Claims**

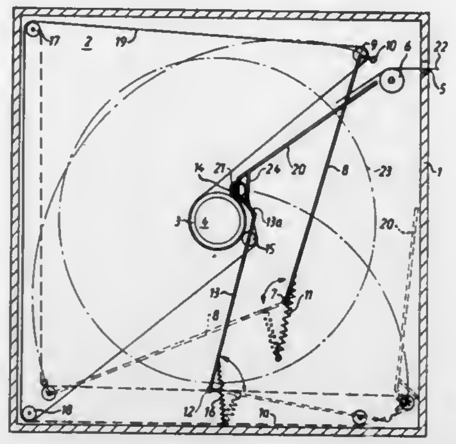


1. An adapter for use on a sewing machine equipped with first and second spool pins, said adapter for enabling said machine to operate with non-conventional spools of thread such as plastic or cardboard tube spools, small conical base spools and large spools having a large bore therethrough, comprising:
first means for mounting said adapter on said spool pins;
yoke means rotatably coupled to said first means;
a first vertical mounting fin fixedly coupled to said yoke means;
a second vertical mounting fin fixedly coupled to said yoke means;
a mounting rod hingedly coupled to said first mounting fin and capable of assuming stable horizontal and vertical positions;
a compression finger hingedly coupled to the vertical yoke; and
a stabilizing bar frictionally attached to the vertical yoke with discrete rotational intervals.

4,441,667
CASSETTE FOR WINDING BAND-LIKE PHOTOGRAPHIC MATERIAL

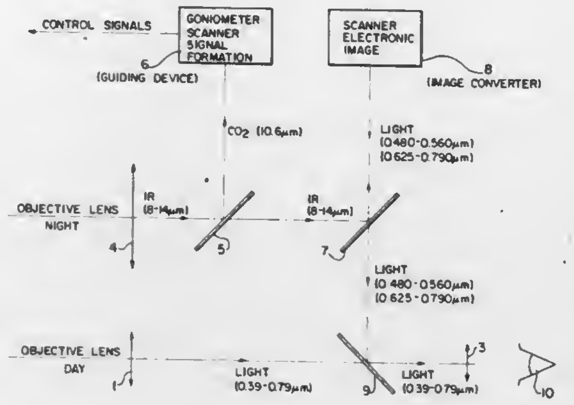
Siegfried Bartel, Gauting; Wolfgang Ermer, and Bernd Payrhammer, both of Munich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany
Filed Dec. 10, 1981, Ser. No. 329,564
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1980, 3048727
Int. Cl.³ G03B *1/04, 23/02;* G11B *15/04*
U.S. Cl. 242—197 **10 Claims**

1. A cassette for winding a band-like photographic material to form a spool, comprising a housing having a slot for introducing a material; a driven winding core having an axis; an endless band; a spring element; two lever arms pivotable about pivot axes which are parallel to said winding axis, carrying at their ends guiding rollers and coupled with one another via said endless band, one of said lever arms being connected with said spring element so that said lever arms in an initial condition assume a first position in which said endless band widely embraces said winding spool, and during further winding upon overcoming a dead point of said spring element said lever arms assume a second position in which said endless band is brought out of the region of a greatest possible spool.



4,441,668
INFRARED-OPTICAL AIMING AND GUIDING DEVICE

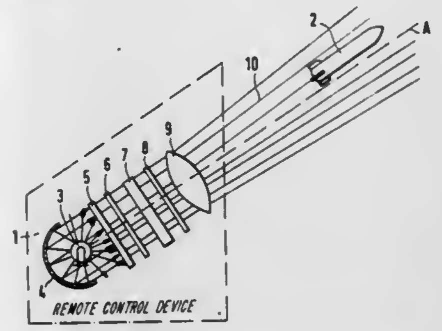
Josef F. Menke, Glücksburg, Fed. Rep. of Germany, assignor to Elektro-Optik GmbH & Co. KG, Glucksburg, Fed. Rep. of Germany
Filed Apr. 21, 1980, Ser. No. 145,472
Int. Cl.³ F41G *7/30*
U.S. Cl. 244—3.11 **3 Claims**



1. An aiming and guiding device for tracer missiles emitting infrared beams of a narrow spectral band, the device comprising
a. a daylight aiming device including a first objective lens and an ocular;
b. a night aiming device including a second objective lens and a converter for transforming infrared-beam images into visible-light images; the axes of the first objective lens and the second objective lens extending in parallel;
c. a missile guiding device including a goniometer for measuring the difference between the missile path and the line of sight of the aiming device and for issuing control signals for guiding the missile on the line of sight of the aiming device; the night aiming device and the goniometer both utilizing infrared beams of the same spectral region which also includes the narrow spectral band of the beams emitted by the missile;
d. first partially transmitting mirror means arranged along the optical axis of the second objective lens for reflecting the narrow band of infrared beams emitted by the missile to the goniometer and for transmitting all remaining infrared beams of the spectral region to the infrared/visible-light image converter; and
e. second partially transmitting mirror means in the optical path of the first objective for reflecting part of the visible light beams emitted by the converter into the ocular of the daylight aiming device.

4,441,669
APPARATUS FOR THE PRODUCTION OF A GUIDE PATTERN OF LIGHT BEAMS

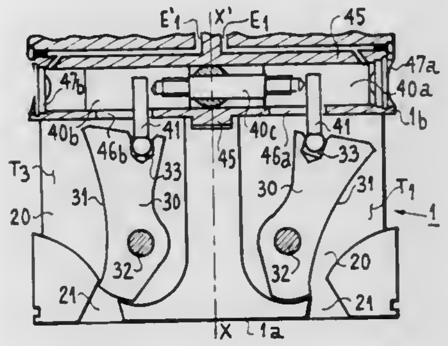
Harald Wich, Schwaig, Fed. Rep. of Germany, assignor to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany
Filed Apr. 22, 1982, Ser. No. 370,845
Claims priority, application Fed. Rep. of Germany, May 5, 1981, 3117685
Int. Cl.³ F41G *7/26*
U.S. Cl. 244—3.13 **5 Claims**



1. Apparatus for producing a guide beam pattern for a missile, wherein the guide beam pattern comprises a plurality of bundles of light beams collectively surrounding an axis of the beam pattern, said bundles of light beams being modulated in individually different manners by means of electric modulating potentials from optical modulators, the improvement wherein said modulators comprise PLZT ceramic segments each of which forming a bundle of light beams, said segments collectively covering the entire cross-section of the beam pattern of a single source of light, and means for applying different modulating potentials to said segments.

4,441,670
GUIDED PROJECTILE

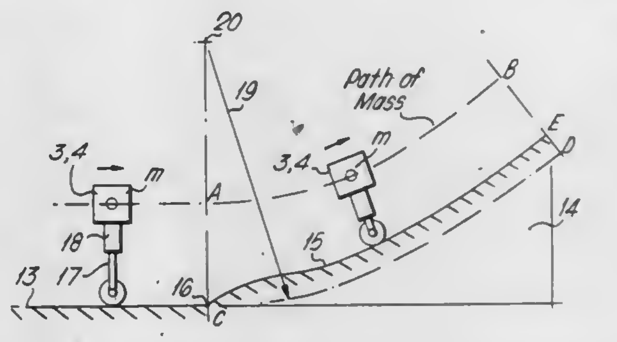
Roger Crepin, Paris, France, assignor to Brandt Armements, Paris, France
Filed Apr. 20, 1982, Ser. No. 370,255
Claims priority, application France, Apr. 21, 1981, 81 07916
Int. Cl.³ F41G *7/00*
U.S. Cl. 244—3.22 **4 Claims**



1. A guided projectile comprising more especially a source of energy supplying a gas flow and two pairs of mutually orthogonal lateral nozzles, each of these nozzles being provided with a valve for regulating the gas throughflow, wherein each valve comprises essentially a pivoting vane one of whose faces forms a wall of the nozzle and the vanes corresponding to each pair of nozzles are interlocked and positioned by means of two parallelogram mechanisms whose transverse elements are the drive elements.

4,441,671
TAKE-OFF RAMPS FOR AIRCRAFT

Douglas C. Thorby, Shepperton, and Michael C. W. Sullivan, Sutton, both of England, assignors to British Aerospace Public Limited Company, London, England
Continuation of Ser. No. 188,667, Sep. 19, 1980, abandoned. This application Nov. 17, 1982, Ser. No. 442,298
Claims priority, application United Kingdom, Sep. 29, 1979, 7933885
Int. Cl.³ B64F *1/04*
U.S. Cl. 244—63 **1 Claim**



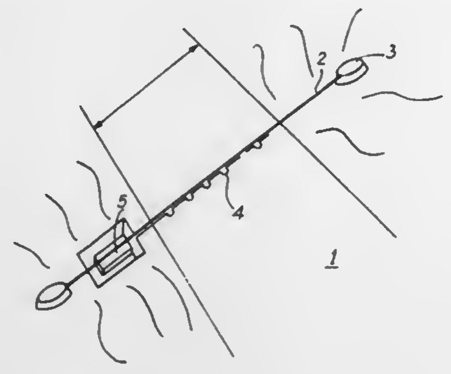
1. A take-off ramp for an aircraft having compressible landing gear, said take-off ramp being adapted to be associated with a generally horizontal take-off surface, said ramp having an upper surface profile defined by the superimposition of two coterminous profiles, the first of which being a generally circular arc having an origin positioned such that the arc has a point of tangency with said horizontal take-off surface, the second profile comprising a cam-like surface, the thickness of which increases along its length but the rate of increase of thickness decreasing therealong, the first profile causing a generally constant radial load to be transmitted to the aircraft via said compressible landing gear as it traverses the ramp, the second profile being arranged to compensate for contraction of the landing gear caused by the transmission of said radial load, whereby as the aircraft traverses the ramp it closely follows a generally circular path having an origin substantially coincident with the origin of said first profile, irrespective of the contraction of the landing gear.

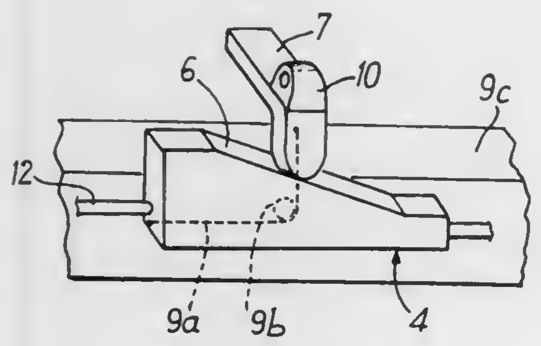
4,441,672
RETRACTILE SUPPORT UNIT FOR AN ARRESTING CABLE DISPOSED ACROSS A TAKE-OFF OR LANDING STRIP FOR AIRCRAFT

Gilbert R. Aglae, Orsay; Jacques J. Alavoine, Neauphle le Chateau; Claude Contensou, Paris; Jacques R. Rousseau, Epinay sur Orge, and Celestin Cerati, Longjumeau, all of France, assignors to Aerazur EFA, France
Continuation-in-part of Ser. No. 176,430, Aug. 8, 1980, abandoned. This application Aug. 20, 1982, Ser. No. 410,097
Claims priority, application France, Aug. 10, 1979, 79 20491
Int. Cl.³ B64F *1/02*
U.S. Cl. 244—110 C **4 Claims**

1. A retractile support unit for an arresting cable disposed across a take-off or landing strip for aircraft, comprising:
(i) a plurality of actuators supporting said arresting cable and disposed in a channel across the strip, each actuator including a cam having an inclined plane and adapted to move in said channel parallel to the arresting cable, a cable support engaging said inclined plane and adapted to pivot about an axis parallel to the arresting cable, and a mechanical connection maintaining said cable support permanently in engagement with said inclined plane,
(ii) a motor unit disposed at one side of the strip,
(iii) a member connecting the cams of the actuators, said connecting member passing about a pair of pulleys and being connected to said motor unit for movement parallel to the arresting cable so as to exert a pulling action on the cam when the connection member is moved in each direction,

movement of the connecting member in one direction causing said cable supports to be raised and pivoted such that the arresting cable emerges from the channel and is moved away from being vertically above the channel, and movement of the connecting member in the other direction causing the arresting cable to be retracted into the channel.

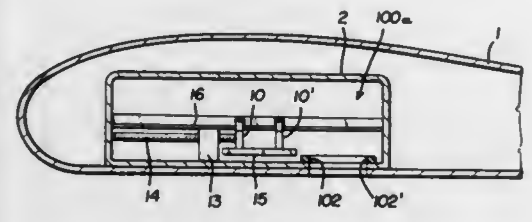




4,441,673
AIRFOIL FUEL EJECTION DEVICE

Ralph P. Muscatell, 2007 NE. 20th Ave., Fort Lauderdale, Fla. 33305

Filed Aug. 19, 1981, Ser. No. 294,377
Int. Cl.^{3} B64D *37/26*
U.S. Cl. 244—135 R **2 Claims**



1. An airfoil fuel ejection device integrated into an underside of an airfoil in order to facilitate the immediate release of fuel or other fluid contents present in a fuel storage compartment means in said airfoil through a remote control mechanism, said device comprising in combination:

a retractable bulkhead means for forming a bottom closure of said fuel storage compartment means maintaining a normal flight operation position in which it forms an integral component of said under-side of said airfoil and isolates said fuel storage compartment means from the atmosphere, said retractable bulkhead means in said normal flight operation position thereof extending across most of the extent of said fuel storage compartment means laterally of the air-foil;

a worm gear control means for maintaining said retractable bulkhead means in said under-side of said airfoil and for displacing said retractable bulkhead means from said normal flight operation position thereof to an open position in which it is offset from the remainder of the under-side of the airfoil and opens said fuel storage compartment means to the atmosphere for rapid and controlled dumping of the fuel;

a drive-motor means operatively coupled to said retractable bulkhead means through said worm gear control means for displacing said retractable bulkhead means from said normal flight operation position through prescribed displaced positions to a fully retracted position in response to the operation of said worm gear control means and drive motor means as dictated by said remote control mechanism;

a rigid rod guidance means for the controlled displacement of said retractable bulkhead means through various prescribed positions in order to guide said retractable bulkhead means in orderly fashion from said normal flight operation position to the fully retracted position and return; and

a gasket closure means for securing and sealing said retractable bulkhead means in order to provide restraint on said retractable bulkhead means and maintain the latter in sealed engagement with said airfoil during said normal flight operation position and prevent inadvertent leakage or dumping;

said retractable bulkhead means comprising a unitary door member slidably mounted reciprocably from forward to rear on said under-side of said airfoil through prescribed locations between said normal flight operation position and where said fuel compartment is fully exposed;

said rigid rod guidance means comprising a track means extending substantially parallel to said under-side of said airfoil from forward to rear above said unitary door member;

said rigid rod guidance means further comprising cylinders and pistons operatively coupled to said track means for directing and controlling said unitary door member through multiple locations between said normal flight operation position and where said fuel compartment means is fully exposed;

said worm gear means comprising a rotatable worm gear driving shaft operated by said drive motor means under the control of said remote control mechanism, said worm gear driving shaft being operatively coupled to said cylinders and pistons to guide said unitary door member internally through multiple locations between said normal flight operation position and where said fuel compartment is fully exposed; and

said gasket closure means comprising gasket means affixed on said under-side of said airfoil for sealed engagement by said unitary door member in said normal flight operation position in order to provide structural integrity and achieve maximum closure for said fuel storage compartment means.

4,441,674
CONSTRAINED STORE EJECTOR

John W. Holtrop, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 5, 1981, Ser. No. 231,718
Int. Cl.^{3} B64D *1/02, 1/12*
U.S. Cl. 244—137 R **5 Claims**

1. A suspension and release mechanism for stores on a launch vehicle, such as an aircraft, comprising:

at least one ejector module fastened to said launch vehicle which comprises:

an ejector body fastened to said launch vehicle;

an ejector piston set within said ejector body for moving said store from a release load position to a carriage/hold position and back again by hydraulic pressure;

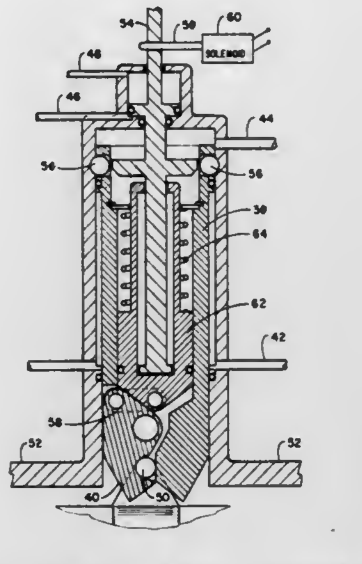
a latch hook pivotally mounted to the end of said ejector piston for grasping said store;

a release piston mounted within said ejector piston and mechanically connected to said latch hook for pivoting

said latch hook between said carriage and release positions;

a release rod mounted within said release piston for changing the position of said latch hook via said release piston; and

a spring around said release piston for limiting release of said store to upward motion of said release rod forcing compression of said spring;



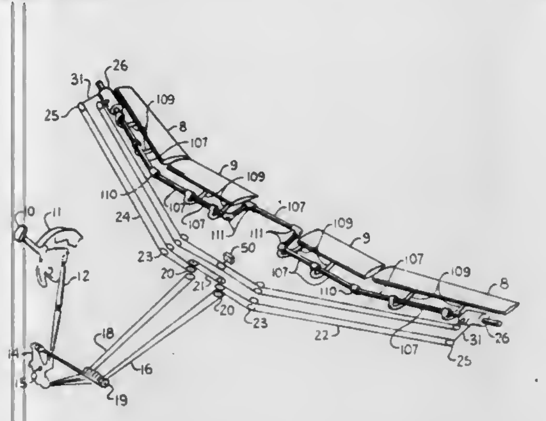
means for connecting said ejector module to a hydraulic system, such that said ejector module functions by applied pressure to hydraulic fluid; and

a hydraulic sway brace system attached to said ejector module for rigidly supporting said store along said launch vehicle prior to launch of said store.

4,441,675
HIGH LIFT SURFACE ACTUATION SYSTEM

Wilfred E. Boehringer, Fullerton, and Teunes Verhoeven, Long Beach, both of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Jun. 25, 1982, Ser. No. 392,356
Int. Cl.^{3} B64C *3/50;* F16H *1/44;* G05D *1/00*
U.S. Cl. 244—213 **12 Claims**



9. A drive system for a high-lift device on an aircraft consisting of at least two independent segments comprising:

first and second motors having first and second brakes releasable with the application of power;

a first differential gear box which sums both the force and speed of two inputs connected to the output of said first and second motors having first and second brakes to form a first drive unit;

third and fourth motors having third and fourth brakes releasable with the application of power;

a second differential gear box which sums both force and speed of two inputs located remote from said first differential gearbox and connected to the output of said third and fourth motors having third and fourth brakes to form a second drive unit;

a torque tube connected between the outputs of said first and second drive units so as to form an open loop drive, driven from each end;

means connected between said torque tube and said high-lift device segments for extending and retracting said high-lift device segments as a result of rotation of said torque tube;

at least one power source connected to said first and second drive units; and

means to control said power source.

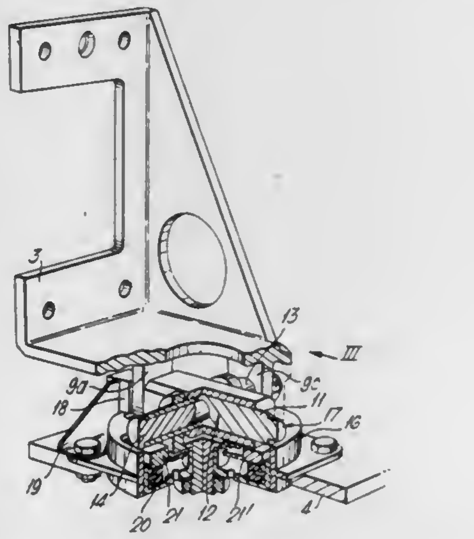
4,441,676
FORCE CONTROL MEMBER ASSEMBLIES

Ralph Rowarth, Brough, England, assignor to British Aerospace Public Limited Company, London, England

Filed Sep. 14, 1981, Ser. No. 302,086

Claims priority, application United Kingdom, Sep. 27, 1980, 8031297

Int. Cl.^{3} B64C *13/46*
U.S. Cl. 244—234 **8 Claims**



1. A mounting assembly for a force control member unit of the type described, said mounting assembly being adapted to allow significant sensible displacement of said force control member unit on application of a control force and comprising:

(1) bracket means for being attached to the body of said force control member unit,

(2) a fixed member for rigid attachment to a structure,

(3) pivot means pivotally coupling said bracket means to said fixed member for pivotal movement with respect thereto about a median position, and

(4) restraining means adapted resiliently to restrain pivotal movement of said bracket means and comprising an element of resiliently deformable material disposed with respect to the fixed member and the bracket means so that on displacement of the bracket means from its median position a portion of said element is compressed thereby to provide a restoring force.

4,441,677
CLAMP DEVICE

Robert M. Byerly, Burbank, Calif., assignor to TA Mfg., Inc., Glendale, Calif.

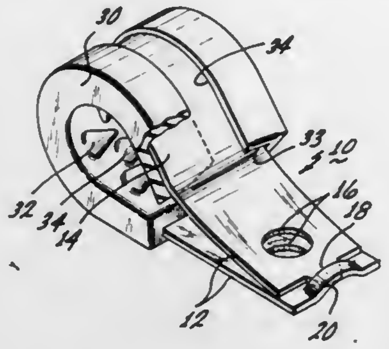
Filed Apr. 2, 1982, Ser. No. 365,104
Int. Cl.^{3} F16L *3/08*
U.S. Cl. 248—74.3 **20 Claims**

7. A resilient lining for use with a clamp device having clamp means formed by an elongated member and including at least a loop portion, including

a resilient lining formed by a strip of resilient material of a sufficient length to extend along the elongated member in the loop portion and of a sufficient width to extend across the elongated member in the loop portion,

the strip of resilient material including means formed on one side of the strip for attaching the strip to the loop portion of the elongated member to have the strip form a resilient lining on the inside of the loop portion of the elongated member, and

the strip of resilient material including gripping means formed on the other side of the strip and with the gripping means formed as a plurality of needle-like protruberences extending from the other side of the strip along the length of the strip and toward the center of the loop portion of the elongated member and with individual ones of the needle-like protruberences staggered relative to adjacent others of the needle-like protruberences across the width of the strip.



4,441,678
MOUNTING FOR A TANK RECEPTACLE IN A SUPPORTING FRAMEWORK

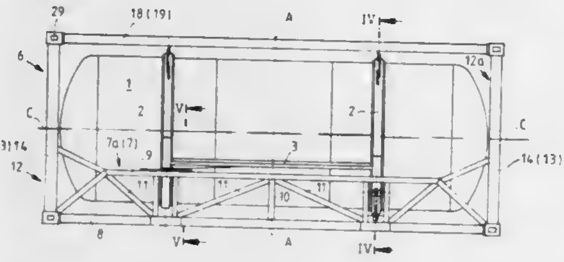
Willi Dorpmund, Elze, Fed. Rep. of Germany, assignor to Graaff Kommanditgesellschaft, Elze, Fed. Rep. of Germany

Filed Mar. 31, 1981, Ser. No. 249,328

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1980, 3012938

Int. Cl.^{3} A47G *25/00*

U.S. Cl. 248—146 **10 Claims**



1. A supporting arrangement for a substantially torsionally rigid tank receptacle, the supporting arrangement comprising:

a latticed cage-like framework adapted to accommodate a tank, the framework being torsionally flexible and stackable with similar frameworks, and

a plurality of support means for mounting a tank within the framework, one of the support means being spaced from the others in the longitudinal direction of the tank, said one support means including two support members for pivotally joining the tank to the framework, and means for interconnecting the two support members,

whereby torsional flexing of the framework is not transmitted to the tank.

4,441,679
POST ASSEMBLY

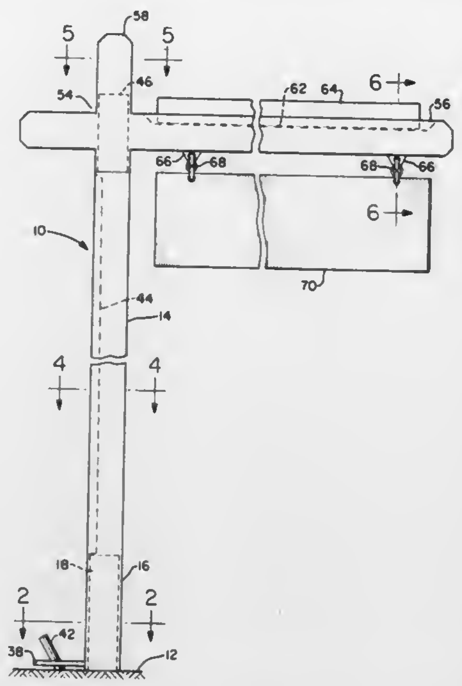
Rudolph J. Calet, 1179 Berwin Ave., Akron, Ohio 44310

Filed Mar. 8, 1982, Ser. No. 356,091

Int. Cl.^{3} A45F *3/44*

U.S. Cl. 248—156 **8 Claims**

1. A portable post assembly for mounting vertically on an earthen surface comprising a post member having a hollow end with a generally square cross section, a base member slidably positioned in said hollow end, said base member having at least two openings positioned in diagonally opposite corners of said hollow end and elongated removable base supporting members removably disposed in said openings for movement through said openings and extending beyond said post member for penetration into the earthen surface and at least one removable post securing member removably engageable with said post member for preventing movement of said base member out of said hollow end.



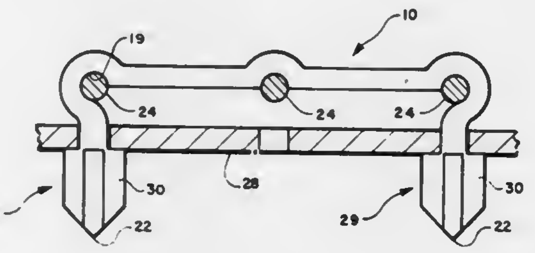
4,441,680
ANCHOR FOR A PERFORATED BOARD HANGER

Bernard Rivkin, 16287 Oak Creek Trail, Poway, Calif. 92064, and Marshall W. Wolfe, 2744 Brookside St., Ontario, Calif. 91761

Filed Aug. 16, 1982, Ser. No. 408,153

Int. Cl.^{3} A47B *96/06*

U.S. Cl. 248—220.4 **7 Claims**



1. An anchor for stabilizing and securing perforated board hangers in apertures in a board having a plurality of apertures therethrough positioned in a spaced apart relationship, said perforated hangers include an upright shank with at least one integral offset hook for insertion through at least one of said plurality of apertures for securing thereto, comprising an elongated stabilizing member spanning across the surface remote from said perforated board and formed to at least partially surround the shank of at least one hanger, whereby the shank of said hanger is held in place vertically adjacent to the surface of said board.

4,441,681
MOUNTING APPARATUS FOR OUTSIDE REAR VIEW MIRROR ASSEMBLY

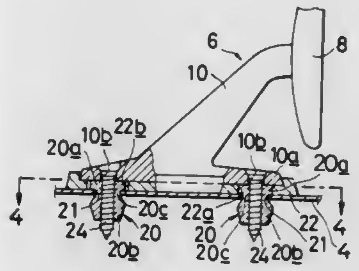
Takaaki Oda, and Hidehiro Otsuka, both of Tokyo, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 20, 1978, Ser. No. 953,176

Claims priority, application Japan, Dec. 23, 1977, 52-174849[U]

Int. Cl.^{3} A47G *1/16;* B60R *1/06*

U.S. Cl. 248—475.1 **1 Claim**



1. In a vehicle having an exterior body panel formed with a pair of apertures and an outside rear view mirror assembly having a mirror supporting arm formed with a pair of screw accommodation openings which are capable of being coaxially aligned with the apertures in the exterior body panel, respectively, an apparatus for mounting the outside rear view mirror assembly on the exterior body panel, comprising:

a base pad having a lower surface where it is mounted on the exterior body panel and an upper surface where it carries thereon the mirror supporting arm in such a manner that the apertures in the exterior body panel are coaxially aligned with the openings in the mirror supporting arm, respectively, said base pad being formed with a pair of non-circular holes which are coaxially aligned with the apertures in the exterior body panel, respectively;

two elastic grommets respectively inserted into the apertures in the exterior body panel and temporarily mounted therein with the elastic deformability of the grommets, each of the grommets having a leg section disposed on the inside of the exterior body panel, a non-circular head section received within one of the holes in the base pad in such a manner as to be prevented from rotation about the axis thereof relative to the base pad, and a neck section extending, through one of the apertures in the exterior body panel, between the head section and the leg section;

two self-tapping screws in engagement with the mirror supporting arm, extending through the openings of the mirror supporting arm and screwed into the grommets such that the grommets are reduced in elastic deformability and thereby permanently mounted in the exterior body panel and that the mirror supporting arm is drawn against the grommets thereby to be fixedly held against the exterior body panel by way of the base pad; and

in which said base pad further comprises a pair of tongue sections at the respective axial end of its holes immediately adjacent the lower surface thereof, each of said tongue sections having an opening which is so formed as to accommodate a part of the neck section of each of the grommets and to provide a shoulder upon which the head section of each of the grommets rests such that the base pad and the exterior body panel are temporarily fastened together by being clamped between the head section and the leg section of each of the grommets prior to the fitting of the self-tapping screws into the respective grommets.

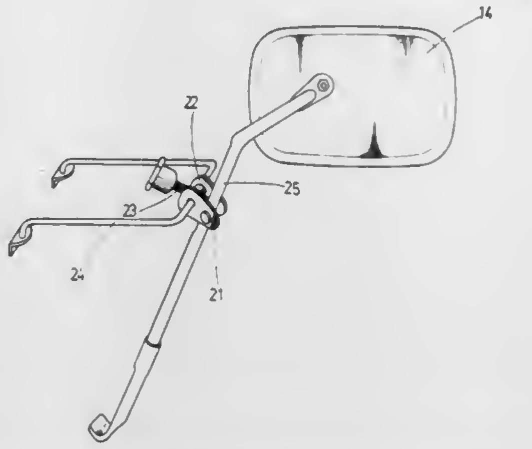
4,441,682
REAR VIEW MIRROR LOCKING MECHANISM

Fu-Chu Su, No. 2-39 Yeng Hang Tsun, Yang Kang Hsiang, Tainan, Taiwan

Filed Jul. 27, 1981, Ser. No. 287,232

Int. Cl.^{3} A47G *1/24*

U.S. Cl. 248—475.1 **1 Claim**



1. A rear-view-mirror locking mechanism for a car comprising:

a longitudinal arm having one end curved and the other end holding a mirror;

a U-shaped supporting bar defined by a pair of elongate sections joined by a middle portion, each of said elongate sections having a curved end for being removably attached to the fender of a car and a threaded opening in said middle portion;

a pair of parallel plates each of which has one end pivoted to said longitudinal arm and the other end having aperture means therein receiving said middle portion of said supporting bar, said parallel plates positioned on either side of said threaded opening; and

a locking screw threadedly connected through said threaded opening and disposed between said two parallel plates with the screw end abutting against the surface of said longitudinal arm whereby this locking mechanism can be placed at any desired position along the front fender of the car and the curved ends of said longitudinal arm and said U-shaped supporting bar will be firmly secured against the fender edge of the car by turning said locking screw to abut tightly against the surface of said longitudinal arm.

4,441,683
MUSICAL INSTRUMENT HOLDER FOR ATTACHMENT TO VERTICAL AND HORIZONTAL SURFACES

Richard G. Mayne, 1701 W. Pecos Ave., Mesa, Ariz. 85202

Filed May 17, 1982, Ser. No. 379,176

Int. Cl.^{3} F16M *13/00*

U.S. Cl. 248—558 **3 Claims**

1. An apparatus for holding a musical instrument comprising:

a narrow, elongated, flat, weight-bearing member for attachment to a supporting surface,

a similarly-shaped narrow, elongated, flat, instrument-holding means coupled at one end to one end of said weight-bearing member and extending angularly therefrom,

a first means mounted at the other end of the instrument-holding means for supporting the instrument in one of two positions,

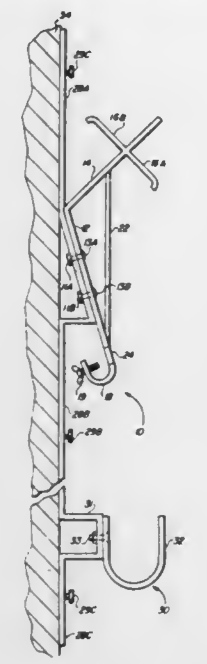
said first means comprises a flat, elongated member extending laterally across said instrument-holding means at a point spaced from said other end,

clamping means attached to the other end of said weight-bearing member for detachably securing said weight-bearing member to a horizontal surface,

an elongated engagement member for mounting on a vertical surface,

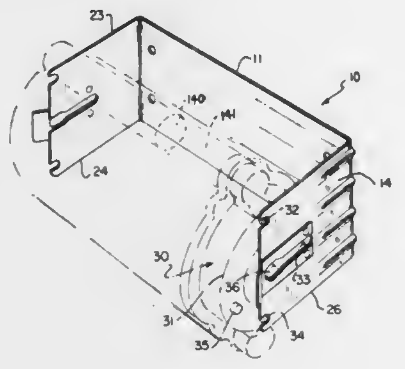
said engagement member comprising a portion angularly positioned to the remainder of said engagement member for engaging with said weight-bearing member to prop-

erly support a musical instrument supported by said instrument-holding means,
eyelet means spacedly formed in said weight-bearing member,
means means mounted on said portion for detachably con-



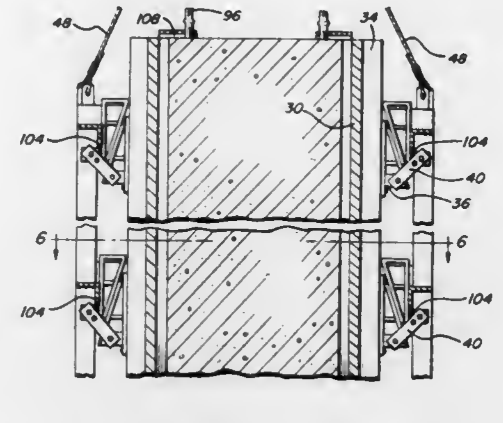
necting with said eyelet means for holding said apparatus on said engagement member, and
an instrument support means coupled to one end of said engagement member near said instrument support means for engagement at the other end with the instrument for holding it on said engagement member.

4,441,684
PUMP MOUNTING BRACKET
William S. Credle, Jr., Stone Mountain, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.
Filed Nov. 25, 1981, Ser. No. 324,682
Int. Cl.³ F16M *1/00*
U.S. Cl. 248—674 **30 Claims**



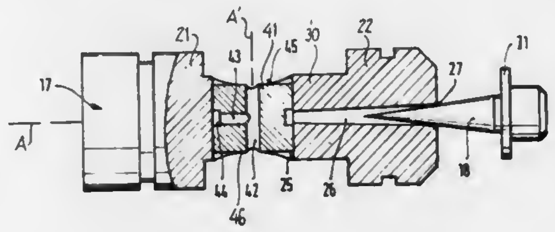
1. A mounting bracket for a device, said bracket comprising:
a base;
a pair of substantially parallel, substantially rigid flanges extending from said base;
each said flange comprising at least a first edge;
a first groove in each of said respective first edges of said flanges for receiving at least one engaging element of a device;
retaining means adjacent said first groove on each of said flanges for retaining a corresponding one of said engaging elements within said first groove;
at least one additional groove in each of said first edges for receiving at least one additional retaining element of the device.

4,441,685
COLUMN FORM
Logan C. Greeson, 1286 Marine Dr., West Palm Beach, Fla. 33409
Filed Oct. 14, 1982, Ser. No. 434,190
Int. Cl.³ B29C *1/16*
U.S. Cl. 249—51 **14 Claims**



1. A column form including an outer upstanding peripheral frame having a plurality of peripherally extending outer sides, an inner frame having an equal number of inner sides spaced inward from corresponding outer sides of said outer frame, upper and lower parallelogram links pivotally connected at opposite ends to each pair of corresponding outer and inner sides, means for lifting the outer frame, upper and lower pairs of coacting inner and outer wedge means carried by each pair of corresponding inner and outer sides engageable with each other upon downward displacement of said outer frame relative to said inner frame to limit such downward displacement to a lower position of said outer frame with said links substantially horizontally disposed and also engageable with each other upon upward displacement of said outer frame relative to said inner frame to limit such upward displacement to an upper limit position of the outer frame with said links upwardly and outwardly inclined.

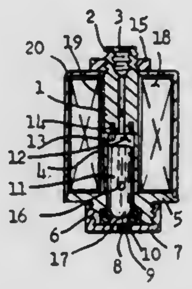
4,441,686
ELECTROHYDRAULIC PRESSURE-REGULATING VALVE
Siegfried Seyffer, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Sep. 17, 1981, Ser. No. 303,015
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1980, 3047110
Int. Cl.³ F16K *47/08*
U.S. Cl. 251—127 **7 Claims**



1. An electrohydraulic pressure-regulating valve comprising:
a valve housing formed with a chamber and with an intake passage and an outlet passage opening at spaced-apart locations into said chamber;
a valve member in said chamber between said locations and formed with a longitudinal bore and communicating therewith with a transverse bore through which fluid can flow between said locations, said bores being centered on respective longitudinal and transverse axes and said longitudinal bore forming adjacent said outlet passage a valve seat;

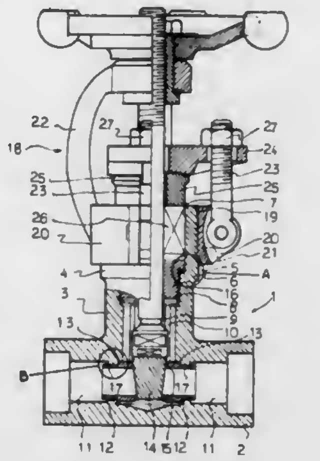
a valve body in said chamber engageable with said valve seat to block flow through said bores;
means for urging said body against said seat; and
a laminar flow throttle in said transverse bore between said seat and said intake passage and formed externally as a body of revolution centered on said transverse axis, said throttle being formed with
 an axially throughgoing passage parallel to said transverse axis,
 a transverse passage transverse to the axial passage and opening thereinto, and
 a circumferential outwardly open groove communicating with said longitudinal bore and transverse passage.

4,441,687
O-RING SOLENOID VALVE
Richard S. Pauliukonis, 6660 Greenbriar Dr., Cleveland, Ohio 44130
Division of Ser. No. 972,287, Dec. 22, 1978. This application May 15, 1981, Ser. No. 264,058
Int. Cl.³ F16K *31/06*
U.S. Cl. 251—139 **3 Claims**



1. A solenoid operated valve comprising:
a valve, housing a coaxial solenoid coil peripherally, includes a conventional guide tube assembly comprising an iron at the top thereof with a central flow opening passing therethrough, secured therein permanently to a short non-magnetic thin tube section which terminates at the bottom end thereof with a permanently secured enlarged boss provided with a counterbore which houses O-ring seal while leading to a bottom open end of said guide tube assembly which is closed by an end cup having a central fluid port provided therein, including a central passage in said guide tube assembly for fluid flow therethrough between a first top end of said valve provided with said iron and adaptable of serving as a fluid supply port means and a second bottom end wherein said end cup serves as an exhaust port means, and said O-ring seal serving as a valving means thereof, a ferritic solenoid plunger of an elongated configuration spaced inside said guide tube assembly so as to be movable between said top iron and said bottom O-ring axially and positioned so as to have a first top plunger end face said first top end of said valve while an opposite second end thereof being contoured maintains valve in a first normally closed position preventing fluid flow therethrough by said second plunger end which is seated against said O-ring for peripheral plunger sealing on seal portion exposed thereto when said plunger is forced by the prevailing fluid drag forces to assume said first valve normally closed position until said solenoid coil becomes energized electrically, an when said solenoid coil is energized, a strong magnetic pull force generated therein lifts said plunger from said O-ring seal upwards against said iron to permit fluid flow between said fluid supply and exhaust port means comprising a second valve open position for as long as said solenoid coil is energized electrically, while when said solenoid coil is de-energized electrically, said magnetic force disappears permitting an automatic plunger return by said fluid drag forces to said first valve normally closed position, and vice versa.

4,441,688
BONNETLESS COMPACT DESIGN GATE VALVE
Tomozo Kato, 32-6, Edogawa 6-Chome, Edogawa-Ku, Tokyo, 183, Japan
PCT No. PCT/JP81/00131, 371 Date Dec. 10, 1981, 102(e) Date Dec. 10, 1981, PCT Pub. No. WO82/04300, PCT Pub. Date Dec. 9, 1982
PCT Filed Jun. 5, 1981, Ser. No. 330,309
Int. Cl.³ F16K *3/12, 41/02*
U.S. Cl. 251—327 **3 Claims**



1. A gate valve, comprising: a valve body having an elongated hollow main body portion and a hollow branch body portion extending transversely from said main body portion between the longitudinal ends thereof, said main body portion having a straight flow passage of circular cross section extending lengthwise thereof, said branch body portion having a central cylindrical internal opening extending perpendicular to said straight flow passage and the inner end of which internal opening intersects said straight flow passage, said main body portion having a pair of annular ridges projecting inwardly from the wall of said straight flow passage, said ridges being located on opposite longitudinal sides of and close to the intersection of said straight flow passage and said internal opening, said ridges each having an elongated internal wall which extends parallel with the axis of said flow passage and having radially outwardly extending end walls at the ends of said internal wall, said internal walls of said ridges defining a pair of fixing surface portions having smaller diameters than the portions of said flow passage on opposite sides thereof; a pair of coaxial annular seat rings respectively disposed in said flow passage and extending in opposite longitudinal directions from the intersection of said flow passages and said internal opening, said seat rings having opposed, axially spaced-apart end walls defining valve seats, said seat rings each having a shoulder which abuts against the axially inner end wall of the adjacent ridge and a cylindrical portion which is of greater length than the internal wall of the adjacent ridge and which extends along that internal wall and thence outwardly beyond the axially outer end wall of that ridge, the cylindrical portions of said seat rings being expanded so that the section of said cylindrical portion that is disposed within the internal wall of the adjacent ridge is expanded into facial contact therewith and the remainder of said cylindrical portion is bent radially outwardly so that the edge thereof bites into the wall of said flow passage; said internal opening of said branch body portion including a gate guide chamber extending axially outwardly from said flow passage, said gate guide chamber having a guide hole and guide grooves in the wall thereof; an inside screw threaded portion extending axially outwardly from the outer end of said gate guide chamber and a stuffing box chamber extending axially outwardly from the outer end of said inside screw threaded portion to the outer end of said branch body portion, said stuffing box chamber being of larger diameter than said inside screw threaded portion and having an annular end face at the inner end thereof which end face extends radially inwardly to the outer end of said inside screw threaded portion;

a yoke having an internally screw threaded annular fixing portion which is screw threaded onto said branch body portion; a valve operating screw having a stem that extends through said internal opening of said branch body portion, a gate mounted on the inner end of said stem for movement within said gate guide chamber toward and away from sealing engagement with said valve seats; an annular seat ring sleeved on said stem, said seat ring having an externally threaded portion at the inner end thereof and which is screw threaded into said inside screw thread portion of said internal opening of said branch body portion, said seat ring having a radially outwardly projecting annular flange at the outer end thereof and projecting into said stuffing box chamber, said flange having an inner annular surface opposed to said annular end face of said stuffing box chamber.

4,441,689
BONNETLESS COMPACT DESIGN GLOBE VALVE

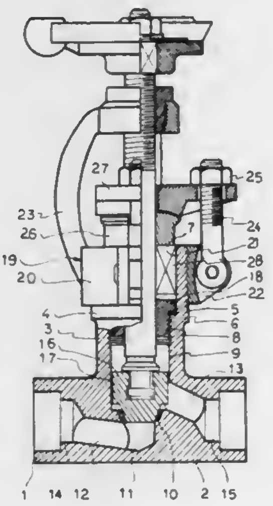
Tomozo Kato, 32-6, Edogawa 6-Chome, Edogawa-ku, Tokyo, 183, Japan

PCT No. PCT/JP81/00132, 371 Date Dec. 10, 1981, 102(e) Date Dec. 10, 1981, PCT Pub. No. WO82/04298, PCT Pub. Date Dec. 9, 1982

PCT Filed Jun. 5, 1981, Ser. No. 333,826

Int. Cl.³ F16K *31/44*

U.S. Cl. 251—366 **3 Claims**



1. An outside screw-type globe valve, comprising:

a one-piece valve body having an elongated main body portion and a branch body portion extending transversely from said main body portion between the longitudinal ends thereof, said main body portion having a through flow passage extending lengthwise thereof, said passage having a stationary valve seat defining a valve opening which is transversely aligned with and opens toward said branch body portion, said through flow passage including inlet and outlet sections which respectively communicate with opposite sides of said valve opening, said branch body portion being hollow and having a central cylindrical internal opening therethrough, said central cylindrical internal opening comprising a disc guide chamber extending axially outwardly from said through flow passage and being transversely aligned with said valve seat, an inside screw threaded portion extending axially outwardly from the outer end of said disc guide chamber and a stuffing box chamber extending axially outwardly from the outer end of said inside screw threaded portion to the outer end of said branch body portion, said stuffing box chamber being of larger diameter than said inside screw threaded portion and having an annular end face at the inner end thereof which end face extends radially inwardly to the outer end of said inside screw threaded portion, said branch body portion having a radially outwardly enlarged head portion at the outer end thereof, said enlarged head portion being externally screw threaded from the outer end thereof to a location close to but spaced outwardly from the inner end of said enlarged head portion; a yoke having an internally screw-threaded annular fixing portion which is screw-threaded onto said enlarged head portion of said branch body portion, the length of the internal screw thread of said annular fixing portion being equal to the length of the external screw thread of said enlarged head portion so that the inner end of the screw thread of said annular fixing portion is bottomed on the inner end of the screw thread of said enlarged head portion; a valve operating screw having a stem that extends through said internal opening of said branch body portion, a valve disc mounted on the inner end of said stem for movement within said disc guide chamber toward and away from sealing engagement with said valve seat; an annular seat ring sleeved on said stem, said seat ring having an externally threaded portion at the inner end thereof and which is screw threaded into said inside screw thread portion of said internal opening of said branch body portion, said seat ring having a radially outwardly projecting annular flange at the outer end thereof and projecting into said stuffing box chamber, said flange having an inner annular surface opposed to said annular end face of said stuffing box chamber, said inner annular surface having ridges which bite into said annular end face to prevent leakage of fluid therepast; and packing material disposed in said stuffing box chamber to prevent leakage of fluid.

4,441,690
DISPLACEABLE WINCH DEVICE

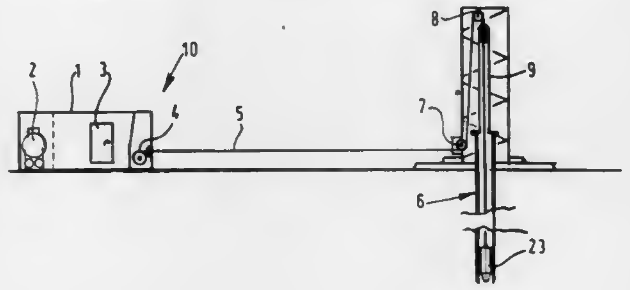
Luitzen B. Koopmans, No. 38a, Gelkemes, 2964 AC Groot-Ammers, Netherlands

Filed Feb. 1, 1982, Ser. No. 344,536

Claims priority, application Netherlands, Feb. 3, 1981, 8100506; Jul. 21, 1981, 8103443

Int. Cl.³ B66D *1/26, 3/00*

U.S. Cl. 254—279 **4 Claims**



1. A displaceable winch device comprising an external frame, a winch mounted inside said frame and including a cable drum, a driving engine, transmission means coupled with said winch for driving said cable drum from said driving engine, and a control-cabin formed in said frame, characterised in that the frame has the dimensions and characteristics of a standardized transport container, in which the winch, the control-cabin and the driving engine are accommodated, in that the winch is mounted in a winch compartment at one end of the container, in that the control-cabin is adjacent the winch compartment and in that on the side of the control-cabin remote from the winch compartment the container comprises an engine compartment for the driving engine, whilst along the top wall of the container a cooling air supply channel extends from the winch compartment towards the engine compartment.

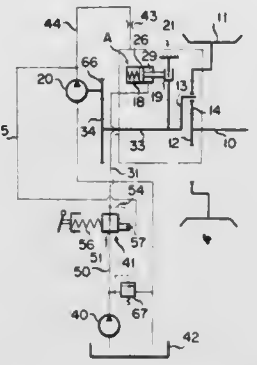
4,441,691
HOISTING WINCH MOUNTED ON CRANE OR THE LIKE

Hiroshi Nagahara, and Tosio Uchimura, both of Komatsu, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Jan. 22, 1982, Ser. No. 341,752

Int. Cl.³ B66D *1/22, 5/14, 5/22*

U.S. Cl. 254—344 **3 Claims**



1. A hoisting winch for cranes or the like comprising:

a spooling drum,

an input shaft,

a final reduction drive system interconnecting said input shaft to said spooling drum, said drive system including:

a casing;

a planetary gear system in the casing having a sun gear connected to said input shaft, planet gears engaging said sun gear, a carrier rotatably carrying said planet gears, and a ring gear engaging said planet gears and being connected to said spooling drum;

brake means mounted in the casing adapted to be spring applied and hydraulically released to arrest or release said carrier;

means driven by said carrier for governing brake releasing fluid pressure in proportion to the speed of rotation of said carrier; and

a manually adjustable pressure reducing valve means for supplying pressurized fluid delivered by a hydraulic pump by a prime mover into said brake means thereby releasing the braking force and for reducing and controlling the pressure of the pressurized fluid directed into said brake means in response to action of said means driven by rotation of said carrier.

4,441,692
RUBBER-LAGGED SHEAVE

Joseph J. Kovaleski, Easton, Conn., assignor to Wyrepak Industries, Inc., Bridgeport, Conn.

Filed Apr. 30, 1982, Ser. No. 373,325

Int. Cl.³ B66D *1/36, 1/00;* **F16H** *55/48*

U.S. Cl. 254—390 **20 Claims**

1. A sheave which is lagged with rubber or rubber-like material, comprising in combination:

(a) a disc-like member having means at its center, providing a bearing by which the member can be rotatably mounted on a spindle,

(b) said disc-like member having an annular peripheral portion which is laterally offset axially of the axis of the member,

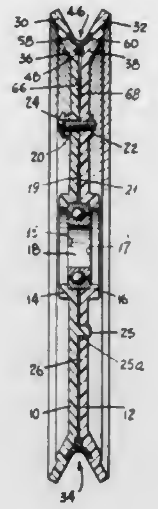
(c) a cooperable annular member having a peripheral offset portion which is complementary to the offset portion of the disc-like member,

(d) means for securing said members together in broadside relation whereby the offset peripheral portions thereof form an annular groove for receiving and guiding a strand of material,

(e) said members having oppositely-disposed wall portions adjacent their peripheral portions, which together form an annular recess with re-entrant side walls,

(f) each of said members being characterized by an annular retention groove disposed opposite and coextensive with the retention groove of the other member, the walls of said retention grooves constituting the said re-entrant side walls, and

(g) a wear strip of relatively soft, resilient material having an elongate rib which is accommodated in and frictionally seized by the re-entrant side walls of said annular recess, said wear strip being characterized by a one-piece cross-sectional configuration and extending along the said recess and presenting an annular exterior space for receiving a strand of material which is being passed around the sheave.



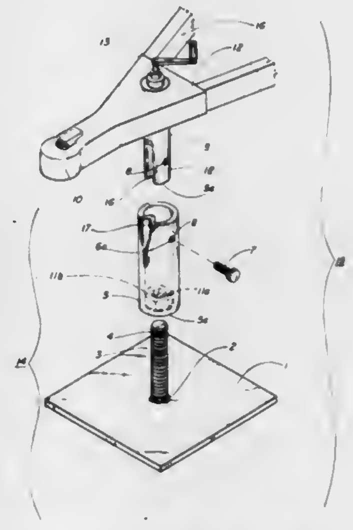
4,441,693
JACK ACCESSORY SUPPORT LEG FOR TRAILER HITCH

Sidney Silver, 1303 Marie St., Hattiesburg, Miss. 39401

Filed Jun. 1, 1982, Ser. No. 383,763

Int. Cl.³ B66F *3/10*

U.S. Cl. 254—420 **4 Claims**



1. An improvement in a trailer hitch support system including

a trailer hitch; and

jack up means having a jack leg, attached to the hitch for intermittently supporting the trailer hitch end of a trailer on a support surface; the improvement comprising:

a base support member removeably attached to the jack leg; said base support member comprising

a laterally extended base plate member having an extended flat surface on its underside for contacting in face-to-face engagement the support surface;

a threaded stud fixedly attached to said base plate member and extending vertically up from the center area of the upperside of said base plate member;

a connector formed from an at least generally cylindrical, pipe section member associated with said threaded stud, said connector havin threaded portion means defining a threaded opening for matingly and threadingly engaging said threaded stud for allowing the separation distance between said base plate member and said connector to be varied, said connector further including a cylindrical section having a bottom opening, said threaded portion comprising a threaded nut fixedly attached to said pipe section member with is threaded interior communicating in line with said bottom openings, said connector further including a bottom plate with a centrally located opening, said bottom plate being welded to the bottom portion of said connector, said nut being enclosed within said pipe section member and being welded to the upper side of said bottom plate with its threaded interior communicating in line with said centrally located opening; and

fastening means associated with said connector for fastening said connector and hence said base plate member to the lower end of the jack leg.

4,441,694

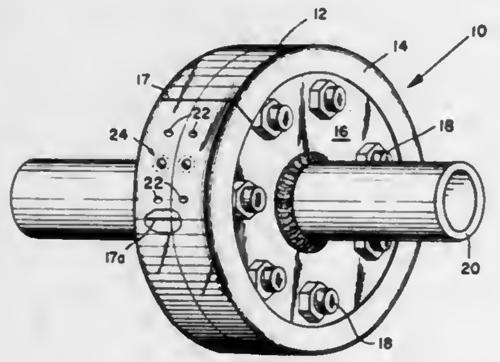
METHOD OF MANUFACTURING A SAFETY SHIELD FOR FLANGED PIPE COUPLINGS

Donald G. Curran, Norwood, Pa., and Robert A. Anderson, Sewell, N.J., assignors to Bunnell Plastics, Inc., Mickelton, N.J.

Division of Ser. No. 229,083, Jan. 28, 1981, Pat. No. 4,403,794. This application Feb. 22, 1983, Ser. No. 468,609

Int. Cl.³ B28B *7/14*

U.S. Cl. 264—163 **3 Claims**



1. A method for making a safety shield which comprises subjecting an annular section of a heat-shrinkable tubing formed of a fluoropolymer to shrinking conditions while substantially restricting radial shrinkage thereof except along marginal edge portions of said section to form flanges extending radially inward of said section, cooling said section and cutting said section longitudinally thereof to form an arcuate strip having flanges integral with and extending along each longitudinal edge of said strip, and providing means at the end edges of said strip for connecting the opposing ends of said strip in overlapping relation.

4,441,695

PIPE CUTTING MACHINE

Donald R. Watts, 6004 4th Ct. NE., Tacoma, Wash. 98422

Filed Feb. 14, 1979, Ser. No. 12,153

Int. Cl.³ B23K *7/04*

U.S. Cl. 266—57 **10 Claims**

1. A pipe cutting machine comprising:

a frame;

a torch which is affixed to the frame;

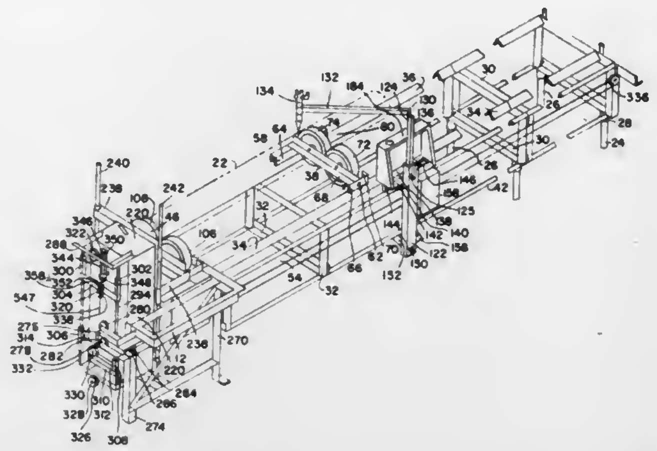
a means for rotating a pipe which is secured to the frame;

a means for translating the rotation of the pipe to a first cam;

a means for translating the rotation of the pipe to a second cam;

a means for translating the rotation of the first cam such that the rotation of the first cam is capable of translating the rotation of the first cam to the torch such that the torch is capable of cutting a saddle cut on the pipe; and

a means for translating the rotation of the first cam and second cam such that the translation of the first cam and second cam to the torch such that the torch is capable of cutting a combination of saddle and mitre cuts on the pipe.



4,441,696

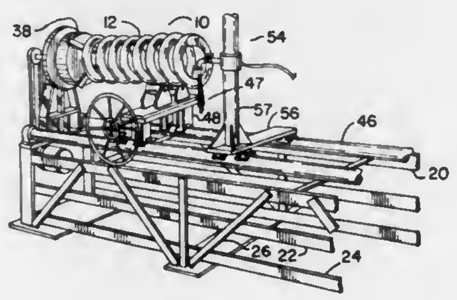
HELICAL COIL SPRING END FORMING

Robert W. Buzinski, Hebron, Ind., assignor to Amsted Industries Incorporated, Chicago, Ill.

Continuation-in-part of Ser. No. 100,017, Dec. 3, 1979, abandoned. This application Jul. 2, 1981, Ser. No. 279,863

Int. Cl.³ B23K *7/10*

U.S. Cl. 266—57 **1 Claim**



1. A flame cutting device for cutting the end of a coil spring including:

a base table structure having front and rear vertical support posts, horizontal members joining said front and rear vertical support posts, crosswise members supporting said horizontal members, and at least two guide members affixed to said front and rear vertical support posts,

a rotating mechanism affixed to said front vertical support post, said rotating mechanism comprising driving means and connection means, said connection means being adapted to hold a coil spring at one end thereof and said connection means being adjustable in height to accommodate different sized coil springs,

roller means located on said guide members adapted to support the coil spring,

flame cutting means comprising a support column affixed to said guide members in a manner that said support column can be moved along said guide members, and a flame cutting torch affixed to said support column in a manner such that said flame cutting torch can be moved up and down along said support column, said flame cutting torch extending into the interior central section of the coil spring being cut,

wherein by the rotation of said rotating mechanism and connection means, the coil spring held in said connection means can be cut at its other end by said flame cutting torch to form a flat surface on said end.

4,441,697

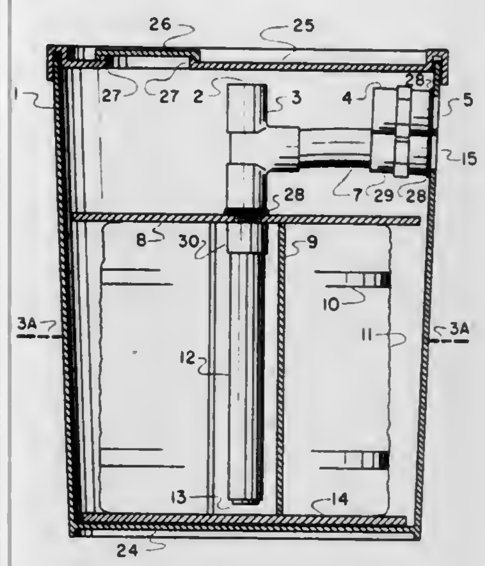
SILVER RECOVERY UNIT

Donny L. Peterson, Baytown, and Michael L. Butts, Houston, both of Tex., assignors to William E. Tipton, Jr., Houston, Tex.

Filed Jan. 29, 1982, Ser. No. 344,099

Int. Cl.³ C22B *5/00*

U.S. Cl. 266—170 **17 Claims**



1. Apparatus for recovering silver from a silver-containing solution, comprising:

a container constructed of material that is non-reactive with the solution;

influent means connected to the container for introducing solution into the container;

effluent means connected to the container at a height below that of the influent means for removing solution from the container;

core means of elongated shape and being closed at its lower end and connected to said effluent means at its upper end, said core means having a longitudinal passageway extending therethrough, and said core means having an aperture in the side thereof;

splash guard means, having upper and lower surfaces, said splash guard means connected to the upper end of the core means at a height below that of the level of the influent means, for dispersing the solution entering the container;

inner filler means peripherally disposed about the core means, said inner filler means being formed from a metal above silver in the electromotive force series;

baffle means having upper and lower edges and being peripherally disposed about the inner filler means, said baffle means being contructed of material that is non-reactive with the solution, and wherein the upper edge of said baffle means is attached to the lower surface of said splash guard means, and the lower edge of said baffle means rests on the bottom of the container, and said baffle means having an aperture in the side thereof; and

outer filler means peripherally disposed about the baffle means, said outer filler means being formed from a metal above silver in the electromotive force series.

4,441,698

FURNACE FOR THE HEAT TREATMENT OF DRILLS

Ferdinand Limque, Beatrixlaan 20, Berg en Dal, Netherlands; Cornelis H. Luiten, Nimwegen, Netherlands; Franz Bless; Reinhard Neubauer, both of Kleve, Fed. Rep. of Germany, and Dietmar Lange, Rees, Fed. Rep. of Germany, assignors to Ferdinand Limque, Berg en Dal, Netherlands

Filed Mar. 8, 1982, Ser. No. 355,782

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1981, 3111218

Int. Cl.³ C21D *1/00*

U.S. Cl. 266—249 **14 Claims**

1. In a furnace having a heating area and a quenching area for a partial heat-treatment of drills and other tools having a clamping portion and a working portion in which different properties, particularly hardness, are to be imparted by a heat treatment solely to the working portion, the improvement comprising

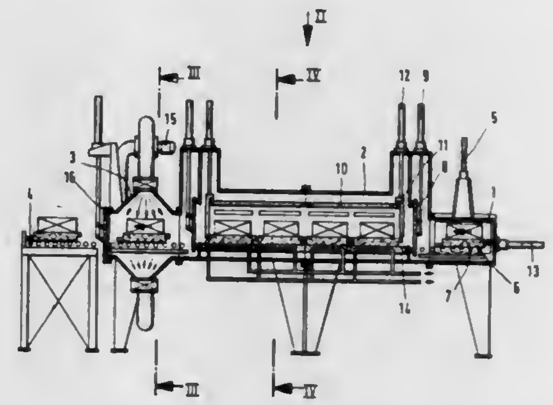
a tool receiving member movable in said furnace from said heating area to said quenching area, said tool receiving member including means for holding a plurality of said tools such that the working portion of the tools is freely exposed to the heating and quenching as said tool receiving member moves from said heating area to said quenching area, and means for maintaining the clamping portion of said tools at substantially the same temperature level during the heating and quenching,

said tool receiving member comprises a plate-like support member including a plurality of recesses of predetermined size to engage with the respective clamping portions of said tools such that the working portion of said tools projects away from said support member,

means for cooling said support member to maintain said clamping portions at said temperature level during the heating,

the heating area has a hearth engageable with said support member and said hearth includes said means for cooling said support member, and

said hearth includes cooling channels formed therein to receive a flow of coolant.



4,441,699

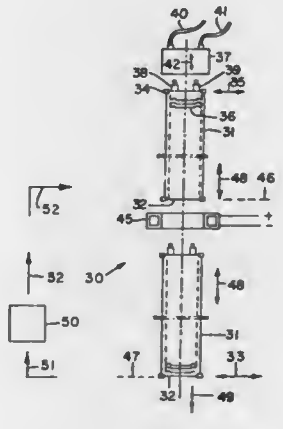
APPARATUS FOR ANNEALING OF END RIM

Helmuth Supik, Sarstedt, Fed. Rep. of Germany, assignor to The Continental Group, Inc., Stamford, Conn.

Division of Ser. No. 226,988, Jan. 21, 1981, Pat. No. 4,372,719. This application Sep. 30, 1982, Ser. No. 432,047

Int. Cl.³ C21D *9/00*

U.S. Cl. 266—255 **8 Claims**

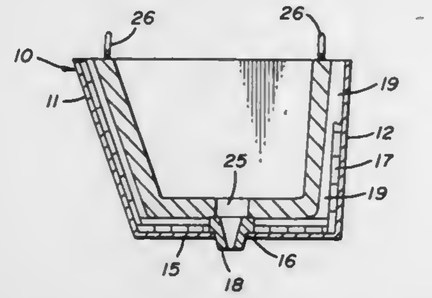


1. A device comprising means for annealing a peripheral flange area only of a can end formed by stamping the can end from a hard-to-deform ferrous metal strip, said means including a fixed annular inductive annealing device, carrier means defining an inert atmosphere, and for receiving a can end in said inert atmosphere, and means for moving said carrier

means and at least one can end through said annular inductive annealing device to anneal only the peripheral flange area of the can end.

4,441,700
BLAST FURNACE TROUGH AND LINER COMBINATION

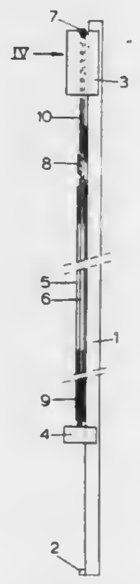
Micheal D. LaBate, 115 Hazen Ave., Ellwood City, Pa. 16117
Continuation-in-part of Ser. No. 261,678, May 7, 1981, Pat. No. 4,372,544. This application Sep. 29, 1982, Ser. No. 428,091
The portion of the term of this patent subsequent to Feb. 8, 2000, has been disclaimed.
Int. Cl.³ C21B *3/00*
U.S. Cl. 266—281 **10 Claims**



1. An improvement in a blast furnace trough and liner combination for handling hot metal, the improvement comprising a replaceable and expendable liner and cushioning and insulating means supporting the same, said blast furnace trough comprising an open topped apertured receiving vessel, and the replaceable and expendable liner comprising a multi-layered mass coalesced by vibratory physical force with each of said multilayers being of a different density and having a known predetermined lifetime when subjected to molten metal flowing thereover.

4,441,701
APPARATUS FOR SUPPORTING AND GUIDING A SUB-LANCE

Nicolaas H. Beentjes, Uitgeest, and Peter Gootjes, Alkmaar, both of Netherlands, assignors to Estel Hoogovens B.V., Netherlands
Filed Sep. 17, 1982, Ser. No. 419,184
Claims priority, application Netherlands, Sep. 25, 1981, 8104325
Int. Cl.³ C21C *5/46*
U.S. Cl. 266—287 **2 Claims**

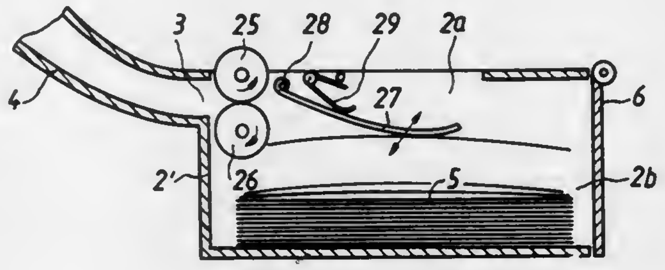


1. Apparatus for supporting and guiding a sub-lance which carries out measurements and/or taking of samples in a metallurgical furnace, said apparatus having

(a) a guide track,
(b) a sub-lance carriage to support the sub-lance and displaceable upwardly and downwardly along said guide track while being guided by the track,
(c) a sub-lance guide displaceable upwardly and downwardly along said guide track below the sub-lance carriage while being guided by the track,
(d) support means for the sub-lance guide consisting at least partly of an elongate flexible support element for the sub-lance guide, and being connected to said sub-lance carriage so as to move therewith over an upper portion of the travel of the carriage, whereby the sub-lance guide moves in dependence on the movement of the carriage said support means having, at its upper end, a cross-bar which rests upon the sub-lance carriage during movement of the latter over the said upper portion of its travel and which is caught by said stop means when the sub-lance carriage moves below said upper portion of its travel, said flexible support element of said support means extending from the upper end of the support means to the sub-lance guide, and the support means including two tubular covering elements surrounding said flexible support element and extending respectively from the upper end thereof and from the sub-lance guide into the said tubular guide so that the lengths of the support element outside the tubular guide are enclosed by said covering elements at all positions of the sub-lance guide,
(e) stop means to hold said support means, located in a fixed position relative to said guide track, so that, on movement of the carriage below said upper portion of its travel, the support means is held by stop means, and
(f) a tubular guide housing said support means over at least part of the distance from said stop means to the upper end of the travel of the sub-lance guide.

4,441,702
DEVICE FOR COLLECTING AND STACKING PHOTOGRAPHIC PRINTS

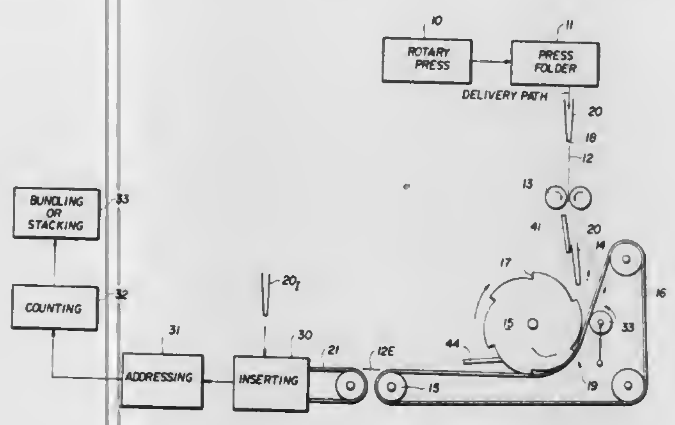
Erich Nagel, Ansing, and Rainer Türcke, Munich, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany
Continuation of Ser. No. 971,371, Dec. 20, 1978, abandoned. This application Nov. 7, 1980, Ser. No. 206,858
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1977, 2757849
Int. Cl.³ B65H *29/42, 29/38*
U.S. Cl. 271—177 **1 Claim**



1. A device for collecting and stacking photographic print, particularly paper prints discharged from a cutting apparatus, comprising a container having an inlet opening adapted for receiving said prints, an interior defining an input area in alignment with said inlet opening, a stacking area adjoining said inlet area, and an outlet opening; feeding means arranged in said input area for accelerating the incoming prints and discharging them into said stacking area at an increased speed; a tiltable flap arranged at said outlet opening to hold the prints in, and alternatively, to release the prints from said stacking area; and means for adjusting the position of said flap relative to said outlet opening according to different sizes of said prints; said inlet opening being arranged in a lateral wall of said container to feed said prints in a direction which is parallel to the outlet opening of said container, said feed means including a pair of contacting rollers driven for discharging each print at an increased speed against the opposite wall of said container, said opposite wall being spaced apart from said feed means at a distance which is larger than the length of said prints, the top wall of said container supporting a tiltable press pad which is spring-biased for urging each print after its rebouncing from said opposite wall towards said stack of prints.

4,441,703
PRESS DELIVERY SYSTEM WITH PRECISION PRODUCT TIMING AND ALIGNMENT

Hans G. Faltin, York, Pa., assignor to Custom-Bilt Machinery, Inc., York, Pa.
Filed Aug. 10, 1981, Ser. No. 291,481
Int. Cl.³ B65H *9/04*
U.S. Cl. 271—243 **2 Claims**

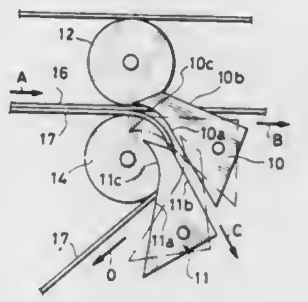


1. A high speed newspaper press delivery and processing system operable to receive papers exiting the press to precisely time, synchronize and locate them in a transport path and on-line processing system, comprising in combination,

(a) means delivering at a transit speed folded papers from a high speed printing press along a predetermined delivery path,
(b) a rotary timing placement and synchronizing member having a predetermined rotation speed and a substantially circular profile tangentially meeting said delivery path with a surface speed less than said transit speed and having a set of evenly spaced paper stop notches located about the circular periphery thereby to receive and space and shingle at a predetermined spacing the papers from said press with the papers in place in the notches constituting the outer circumferential shingled surface layer on the outermost circumferential surface of the rotary member,
(c) a moving belt contacting an arc on the circular periphery of said rotary member from the intersection of the delivery path to a substantially lowermost position on the periphery thereby to contact the surface layer defined by the shingled papers between the belt and rotary member, to advance the papers at said rotation speed while holding them in a circumferentially fixed spacing and alignment and to discharge the papers in a continuous stream moving at the rotary member surface speed in a substantially horizontal direction tagential to the movement of the drum to continue transport in the same direction with a precision alignment and spacing identical to that between said notches, and conveyor means synchronously moving with rotation of said rotary member for receiving the papers in said precision spacing and alignment for transport away from the rotary member to on-line processing stations.

4,441,704
THREE DIRECTION CHANGEABLE GUIDE DEVICE FOR USE IN A BANK NOTE HANDLING MACHINE

Isamu Uchida, and Yoshiyuki Imamura, both of Tokyo, Japan, assignors to Luarel Bank Machine Co., Ltd., Tokyo, Japan
Filed Nov. 25, 1981, Ser. No. 325,009
Claims priority, application Japan, Dec. 5, 1980, 55-175417[U]
Int. Cl.³ B65H *29/58*
U.S. Cl. 271—303 **5 Claims**



1. A three direction changeable guide device for use in a bank note handling machine in which bank notes are conveyed and selectively guided into one of these directions which comprises:

a number of first belts (**16**) disposed to transfer the bank notes in a first direction (B) therealong,
a like number of second belts (**17**) one each disposed to partially engage with one of the first belts (**16**) and to transfer the bank notes in a second direction (D) along the second belts (**17**),
a like number of pulleys (**14**) one each disposed to deflect one of the second belts (**17**) from the first direction (B) to second direction (D),
a like number of first forks (**10**) one each disposed adjacent and downstream of one of the pulleys (**14**) in the first direction (B) and adapted to swingably project above the level of the first belts (**17**) to obstruct the movement of the bank notes in the first direction (B), and
a like number of second forks (**11**) one each disposed adjacent and downstream of one of the pulleys (**14**) and the first forks (**10**) and adapted to swingably project above the level of the second belts (**17**) to obstruct the movement of the bank notes in the second direction (D),
the first forks (**10**) and the second of forks (**11**) being disposed to define therebetween a path for bank notes in a third direction (C) when the first forks obstruct the movement of the bank notes in the first direction (**13**) and the second forks (**11**) hinder the movement of the bank notes in the second direction (D).

4,441,705
EXERCISING APPARATUS

Lawrence G. Brown, 1629 Kuhilani St., Honolulu, Hi. 96821
Filed Aug. 14, 1978, Ser. No. 933,470
Int. Cl.³ A63B *69/16*
U.S. Cl. 272—73 **12 Claims**

1. Exercising apparatus for simulating the characteristics of exercise during the actual riding of a bicycle comprising:

a self supporting unitary stationary frame means for mounting components of a bicycle or the like including at least a frame, a seat, handle bars and a front wheel fork, a rear wheel, crank arms and pedals, and a pedal operated drive system;
driven wheel means for frictionally engaging the rear wheel for rotation by the rear wheel to simulate engagement with the ground during the actual riding of a bicycle;
flywheel means operatively connected to said driven wheel means for energy storage during rotation of the rear wheel to simulate momentum during actual riding of a bicycle;
variable load applying means operatively connected to said driven wheel means for applying variable loads to said

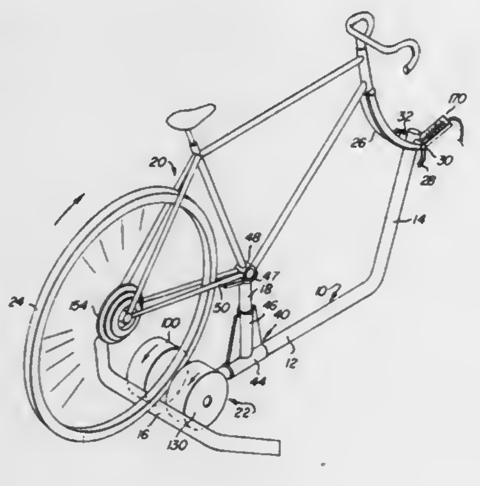
driven wheel means to simulate variations in load encountered during actual riding of a bicycle;

said self supporting unitary stationary frame means comprising:

lower support means for non-attachable self supporting placement on the ground or a floor for unitary support of the bicycle components and said driven wheel means and said flywheel means and said variable load applying means;

a front post means connected to and extending upwardly from the front end of said lower support means for supporting the bicycle front wheel fork;

a center post means connected to and extending upwardly from a central portion of said lower support means for supporting the bicycle frame adjacent the crank arms and the pedals;



rear support means connected to and extending upwardly from a rear portion of said lower support means for supporting said driven wheel means and said flywheel means and said variable load applying means, the rear wheel being supported only by said driven wheel means;

first mounting means associated with said front post means for attachment of the front wheel fork of a bicycle upon removal of the front wheel of the bicycle;

second mounting means associated with said center post means for engagement with a portion of the bicycle frame next adjacent the pedals and crank arms of the bicycle; and

said driven wheel means and said flywheel means and said variable load applying means being located rearwardly of the crank arms and pedals in juxtaposition to the lowermost portion of the rear wheel.

4,441,706

WEIGHT LIFTING TYPE EXERCISING DEVICE

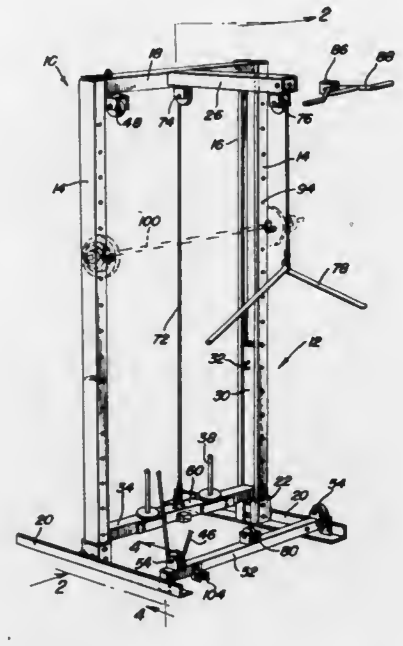
Mark M. Korzaniewski, 187 Nancy Crest La., West Seneca, N.Y. 14224

Filed Sep. 30, 1982, Ser. No. 431,793

Int. Cl.^{3} A63B *21/06*

U.S. Cl. 272—118 10 Claims

1. An exercising machine comprising a vertical framework including a pair of parallel side members of channel-shaped configuration with the side members facing inwardly, a top member rigidly interconnecting the upper ends of the side members, means supporting the lower ends of the side members, a slide vertically slidable in each side member with each slide including an elongated slide member slidably mounted in the side member and a laterally extending arm at the lower end of the slide member with the arms extending toward each other but terminating in spaced relation, each of the arms including an upstanding peg for receiving weights, a cable attached to each of the slide members and extending upwardly to the top member, a pulley assembly on the top member receiving each of the cables, each of said cables having a handle means at the free end thereof to enable the slides individually to be vertically raised and lowered.



4,441,707

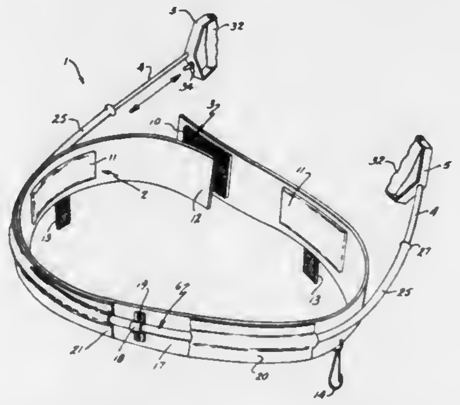
ISOMETRIC EXERCISER BELT FOR JOGGERS AND THE LIKE

Jack L. Bosch, 2451 Wisconsin, North Muskegon, Mich. 49445

Filed Jul. 15, 1981, Ser. No. 283,612

Int. Cl.^{3} A63B *21/12*

U.S. Cl. 272—119 26 Claims



1. An isometric exercise device for joggers and the like, comprising:

a belt shaped for encircling the waist of a jogger;

means for selectively retaining said belt securely about the waist of the jogger in a selected orientation;

a flexible line being substantially inelastic

first and second handles connected to opposite ends of said flexible line;

means for slidingly receiving said flexible line generally along the longitudinal axis of said belt for longitudinal, reciprocating motion of said flexible line with respect to said belt; said receiving means including substantially rigid members that extend forwardly from positions that are generally in the direction of a user's arms when said arms are extended forwardly in front of a user to support said handles forwardly and between the arms of the user, and thereby keep said flexible line out of contact with the arms of the jogger during isometric exercising therewith;

means for detachably connecting said handles to said belt at opposite locations thereon which retains said handles and said attached flexible line in a storage position, out of contact with the legs of the jogger when the jogger is running, whereby during operation, the user detaches the handles from said belt, grasps said handles in opposite hands, and alternately pushes one handle forwardly, while simultaneously resisting rearward movement of the other handle, thereby isometrically exercising arm and upper body muscles at the same time as the lower body muscles of the jogger.

4,441,708

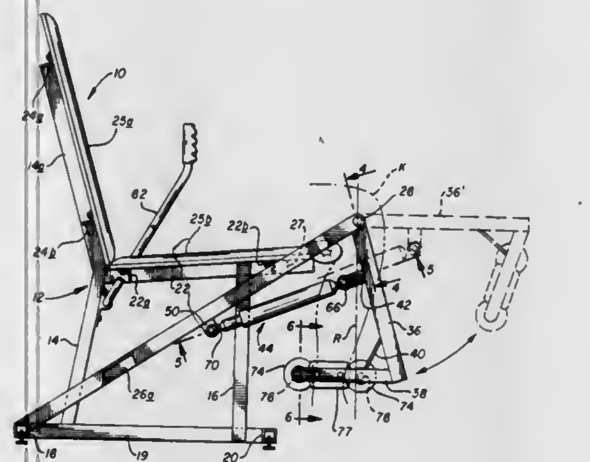
DOUBLE LEG CURL EXERCISING DEVICE

Jerry D. Brentham, P.O. Box #599, Belton, Tex. 76513

Continuation of Ser. No. 959,688, Nov. 13, 1978, abandoned, which is a continuation-in-part of Ser. No. 914,356, Jun. 12, 1978, Pat. No. 4,254,949. This application Sep. 23, 1981, Ser. No. 304,766

Int. Cl.^{3} A63B *21/00*

U.S. Cl. 272—130 8 Claims



5. A leg curl exercising device to strengthen the legs and knees of a user, comprising: a support frame; a seat support member on said support frame; a back support member on said support frame, said seat support member and said back support member being oriented relative to one another at an obtuse angle to support the body of a user in a sitting position; a pair of exercise arms to permit independent and combined exercising movement of the legs of the user, each exercise arm being independently and pivotally secured to a side of said support frame with the axis of rotation of the exercise arms being substantially aligned with the axis of rotation of an adjacent knee of the user; leg gripping means secured to the outer end of each arm for gripping a user's leg by engaging opposed sides of each leg of the user; a pair of cylinders having fluid disposed therein; means pivotally securing a first end of each said cylinder to each side of said support frame; a pair of piston rods; means pivotally securing an end of each of said piston rods to one of said arms; a piston slideably disposed in each cylinder and secured to the other end of each piston rod; means resisting flow of fluid from one side of each said piston to the other side of said piston for resisting movement of each arm independently in each direction between a position with the leg below the knee of the user being an an acute angle relative to the leg above the knee and a position with the leg being substantially extended; and hand support means upwardly of the seat support member and forwardly of the back support member on each side of said support frame to limit movement of the body of a user sitting on said seat support member.

4,441,709

MOVABLE BASKETBALL HOOP STRUCTURE

Edward A. Schroeder, Algounquin, and William F. Donat, Franklin Park, both of Ill., assignors to Porter Equipment Co., Schiller Park, Ill.

Filed Oct. 19, 1981, Ser. No. 312,990

Int. Cl.^{3} A63B *63/08*

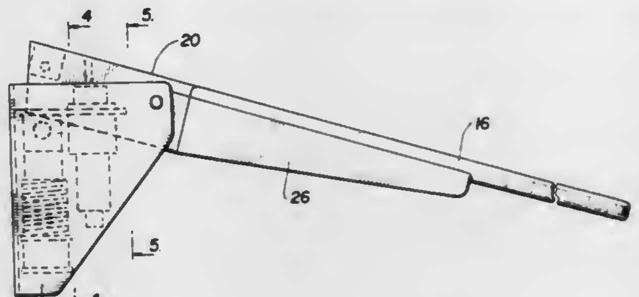
U.S. Cl. 273—1.5 R 15 Claims

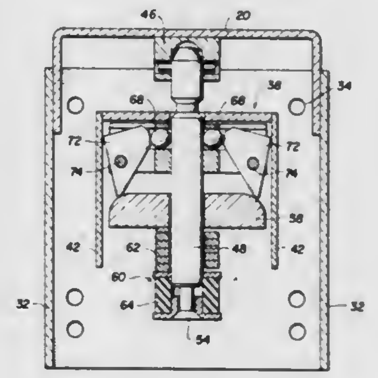
11. In a mounting assembly for a horizontal basketball goal hoop structure having support structure for mounting to a backboard, means for pivotally mounting said hoop structure to said support structure, lock means for maintaining said hoop structure until a predetermined force is applied to said hoop structure and return means for returning said hoop structure to said horizontal position, the improvement comprising:

said return means includes a rail with a first seat secured thereto and a second seat mounted thereto, compression means positioned between said first and second seats, said rail and said second seat being connected between said hoop and said support structures so as to move relative to each other and compress said compression means when said hoop structure pivots on said support structure from said horizontal position;

said lock means includes a detent having a locked position and an unlocked position; and

interconnect means connecting said detent and said compression means for biasing said detent with said compression means and for transmitting the movement of said detent from said locked to said unlocked position to move said second seat relative to said rail of said for increasing the compression means.





4,441,710

BOWLING RAMP ATTACHMENT FOR WHEELCHAIRS

Larry D. Lay, 26078 Alger, Madison Heights, Mich. 48071

Continuation-in-part of Ser. No. 178,952, Aug. 18, 1980, Pat. No. 4,368,898. This application May 21, 1982, Ser. No. 380,519

Int. Cl.^{3} A63D *5/00*

U.S. Cl. 273—54 R 13 Claims

10. A bowling ramp comprising:

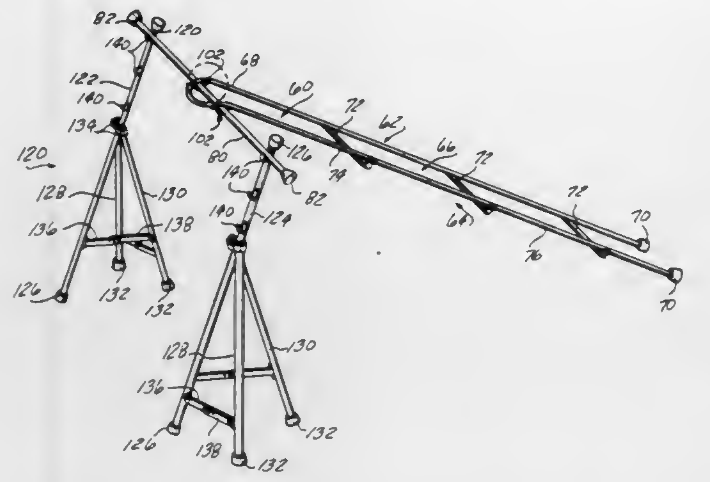
first and second spaced, upwardly extending support posts adapted to rest on the floor at one end;

means for supporting the first and second support posts in an upright manner on the floor, the supporting means including a plurality of leg members connected at one end to an intermediate portion of each of the first and second support posts and extending downwards and outward therefrom and engaging the floor at a second end spaced from the first and second support posts;

a cross bar extending laterally across the first and second support posts;

means for adjusting the vertical height of the cross bar with respect to the floor;

means for guiding a ball from the cross bar to the floor; and



means for slidingly attaching the guiding means to the cross bar such that the guiding means is movable laterally across the cross bar.

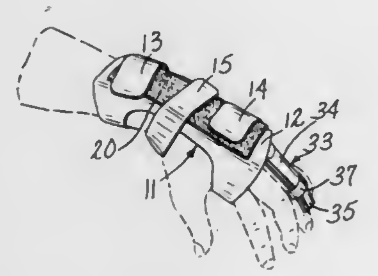
4,441,711
WRIST AND RING FINGER SUPPORT FOR BOWLER

Kenneth W. Dubar, 36 Northfield Rd., Wallingford, Conn. 06492, and Armadio J. Onofrio, 44 Woodland Ave., North Haven, Conn. 06473

Filed Sep. 20, 1982, Ser. No. 420,269

Int. Cl.³ A63B *69/00*

U.S. Cl. 273—54 B **4 Claims**



1. A wrist and finger support for bowlers comprising, in combination, a glove-like element and a rigid support piece,
  the glove-like element being of flexible fabric shaped to include,
    a rectangular body portion having a length sufficient to extend from the user's knuckles to a point proximally beyond the wrist,
    a first elongated strap element integral with the body portion and extending from a point along a first edge of said portion which is adjacent one end of said portion, laterally in a direction substantially normal to the long dimension of the body portion.
    a second elongated strap element integral with the body portion and extending from a point along said first edge which is adjacent the other end of said portion laterally in a direction substantially parallel to that of said first strap,
    a third elongated strap element integral with the body portion and extending from a point along a second edge of said portion which point is spaced from each end of said portion, each of said straps having a body portion end and a free end,
    an area of releasably adherent material mounted on one surface of said body portion,
    areas of releasably adherent material adjacent the free ends of each strap on a surface adapted to cooperate with the area of adherent material on the body portion,
    an elongated pocket element fixed to the body element longitudinally thereof and having an open end adjacent the knuckle end of said body element, and
  the support piece being of substantially rigid material shaped to include, a substantially rectangular elongated planar body portion, a finger supporting extension integral with the support body portion at one end thereof and angled both out of the plane of said portion in the direction toward the user's fingers and away from the longitudinal axis of the support body portion toward the user's ring finger,
  said extension being arcuate in transverse cross-section and provided with padding on its concave surface.

4,441,712
TENNIS RACKET STRING MOUNT

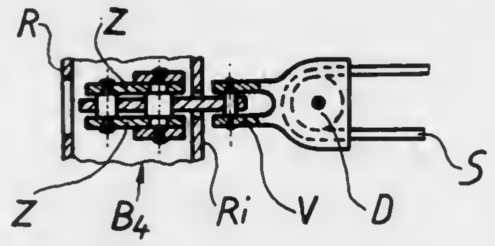
Horst Guthke, Münchener Str. 17, 8011 Forstern, Fed. Rep. of Germany

Filed Oct. 7, 1981, Ser. No. 309,398

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1980, 3038663

Int. Cl.³ A63B *49/02, 51/12*

U.S. Cl. 273—73 D **20 Claims**



1. A tennis racket comprising a frame; strings supported in said frame and connected thereto, said strings reciprocally moving between an inoperative and operative position and diverging from said inoperative position into said operative position when impinged by a tennis ball, said frame being at least partially hollow and including an interior wall and an exterior wall and having an inner boundary facing said strings and an outer boundary facing away from said strings; connecting elements for connecting said strings to said frame; and intermediate members interconnected between said connecting elements and said frame, said connecting elements being pivotally mounted to said frame at respective pivots located in the proximity of said outer boundary of said frame and mounted between said frame and said intermediate members, each of said connecting elements being adapted to pivot about a respective pivot normally to the elongation of the respective string in the inoperative position so that when the strings are in said operative position they form with said frame active connection points which are positioned in the region extended outwardly from said inner boundary in a direction away from the strings, said connecting elements including portions provided with additional pivots operatively connected to the respective strings.

4,441,713
METALLIC TENNIS RACKET WITH TORSION-RESISTANT HANDLE

Francis S. Van Dyck, Borsbeek, and Thierry M. Dumortier, Hermee, both of Belgium, assignors to Fabrique Nationale Herstal, Belgium

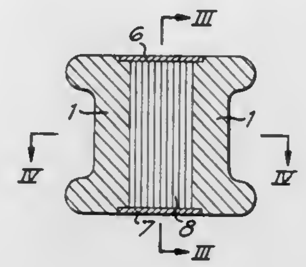
Filed Apr. 7, 1982, Ser. No. 366,382

Claims priority, application Belgium, Aug. 14, 1981, 2/59300

Int. Cl.³ A63B *49/12*

U.S. Cl. 273—73 J **1 Claim**

1. An improved tennis racket having enhanced torsional rigidity comprising a frame of a single metallic profile to form a head, a throat-piece and a tail, the portion of the frame defining said head comprised of substantially only said single metallic profile, the throat-piece being disposed between the head and the tail, the tail being defined by two parallel ends of the profile, two parallel metal plates extending over only substantially the full length of the tail for securing the two parallel ends together at a predetermined distance from each other, the parallel ends and the metal plates collectively defining a box space, and a metal honeycomb disposed only within the box space and secured to at least the plates or parallel ends.



4,441,714
POKER-TYPE TABLE GAME

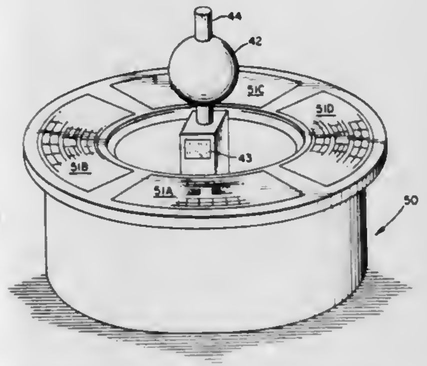
Joseph Goott, Great Falls, Mont., assignor to Tropic Industries, Inc., Salt Lake City, Utah

Continuation-in-part of Ser. No. 43,678, May 30, 1979, Pat. No. 4,364,567. This application Oct. 17, 1980, Ser. No. 198,175

The portion of the term of this patent subsequent to Dec. 21, 1999, has been disclaimed.

Int. Cl.³ A63F *1/00*

U.S. Cl. 273—144 B **12 Claims**



1. A game playable by at least one person, comprising a game board having means associated with the surface thereof for designating a plurality of positions corresponding to combinations and values as occur in a card game; and means associated with said at least one game board for selecting a number of balls corresponding to the number of cards dealt in a card game hand from a group of balls representing each of the cards in a deck of playing cards and displaying the results of the balls selected at one or more of the positions on the surface of said at least one game board, said position-designating means including a first series of defined areas actuatable to notify each player guessing with respect thereto if the selected ball associated with that area has a value of "9", "10", Jack, Queen, King, or Ace and a second series of defined, areas in line with said first series and selectively actuatable to notify each player guessing with respect thereto if the selected ball associated with that area has a value of "2", "3", "4", "5", "6", or "7".

4,441,715
SPHERICAL PUZZLE

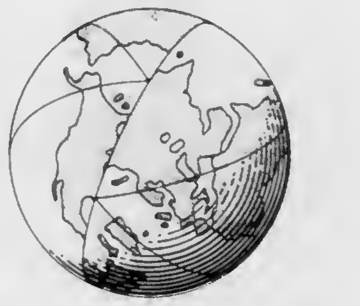
Stephen C. Titus, 1210 Arlington Blvd., Ann Arbor, Mich. 48104

Filed Apr. 5, 1982, Ser. No. 365,502

Int. Cl.³ A63F *9/08*

U.S. Cl. 273—153 S **14 Claims**

1. A spherical puzzle comprising a plurality of sections formed by longitudinal planes intersecting along a common line between diametrically opposite poles on the sphere and intersecting the surface of the sphere with each of said sections extending from pole to pole, said plurality of sections divided into two equal sets of sections with members of each set alternating in position with members of the other set about the equator of said sphere and with the total number of sections comprising the sphere defined by 4N+2 where N is a positive integer, and,
  means attaching said sections together to form said sphere, said attaching means on one set identical on both planes of each section of the one set and the attaching means on the other set identical on both planes of each section of the other set, said attaching means on the one set being complementary to the attaching means on the other set, said attaching means including means to permit relative hemispherical rotation between any two hemispherical groups of sections separated by a longitudinal plane.



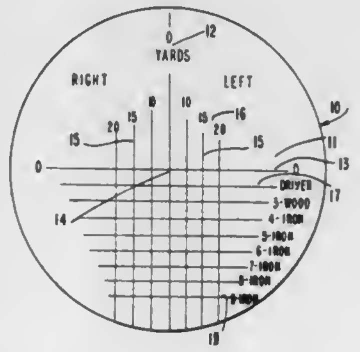
4,441,716
GOLF BALL INCLUDING ALIGNMENT MARKINGS AND GOLF BALL MARKING DEVICE

Richard M. Chen, 51-52 Goldsmith St., Elmhurst, N.Y. 11373

Filed Jul. 10, 1981, Ser. No. 282,054

Int. Cl.³ A63B *69/36*

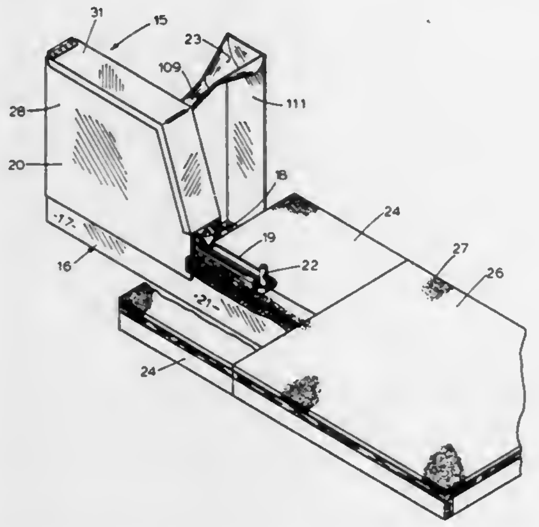
U.S. Cl. 273—183 C **10 Claims**



1. A golf alignment device comprising; a golf ball being formed with markings on said ball, said markings comprising first and second perpendicularly crossed lines, and a first plurality of lines parallel to said first line, and a second plurality of lines parallel to said second line, whereby the first line and first plurality of lines are determinative of the angular direction of the ball flight and the second line and second plurality of lines are determinative of the arc of the ball flight with respect to the horizontal, said pluralities of lines lying in one hemisphere of said ball, said lines of said first plurality bearing respective notations as to the angular deviation of the ball flight with respect to the vertical, said second plurality of lines bearing respective notations as to the arc of the ball flight, said ball in use being aligned so that the one hemisphere and crossed lines face the direction of golf club impact, and whereby when the golf club impacts the ball, an impact mark is produced in said one hemisphere, and wherein the center of the impact mark relative to said lines determines the angular deviation and arc of the flight of the ball as denoted by said notations.

4,441,717
GOLF BALL PRACTICE DRIVING APPARATUS

Leland J. Willcox, 75 Queens Dr., 7085 SE. Bloomfield Rd., Des Moines, Iowa 50320
Filed Mar. 24, 1980, Ser. No. 132,902
Int. Cl.³ A63B *57/00*
U.S. Cl. 273—201 **5 Claims**



1. A golf ball practice driving apparatus for successively teeing up golf balls comprising:

(a) a ground supported upright frame structure including a base member having a section projected from one end of said frame structure,

(b) a tee member projected upwardly from said base section and movably supported on said base member for movement from an upper ball receiving position to a lower ball driving position, said tee member movable from the ball receiving position to the ball driving position therefor by the weight of a ball received threreon,

(c) a container for golf balls mounted on an upper portion of said frame structure having a discharge chute for a single row of golf balls,

(d) means on said frame structure for releasing only the lead ball from said chute,

(e) a ball transfer member movable from a first position to receive a ball thereon to a second position to transfer the ball to a teed position on said tee member, when the tee member is in the ball receiving position therefor,

(f) first means for releasably locking the transfer member in said first position, when the tee member is in the lower ball driving position therefor,

(g) second means for releasably locking the transfer member in said second position, when the tee member is in the upper ball receiving position therefor,

(h) means interconnecting said transfer member and tee member for actuation of said first releasable locking means and said second releasable locking means in response to the concurrent movements of the tee member and the transfer member,

(i) said transfer member, when the tee member is in the upper ball receiving position therefor, being releasably locked by said second locking means on movement thereof from the first position to the second position therefor in response to the weight of a ball delivered thereon from said chute and being sequentially released by the second locking means for movement from the second position to the first position therefore, and releasably locked in the first position therefor by the first releasable locking means, in response to the movement of the tee member from the upper ball receiving position to the lower ball driving position therefor,

(j) said first releasable locking means being released in response to the driving of a ball from the tee member to provide for the movement of the transfer member from the first position to the second position therefor, in response to the weight of a next lead ball delivered from the chute,

(k) means for releasing the lead ball for delivery on the transfer member in response to movement of the transfer member from the second position to the first position therefor,

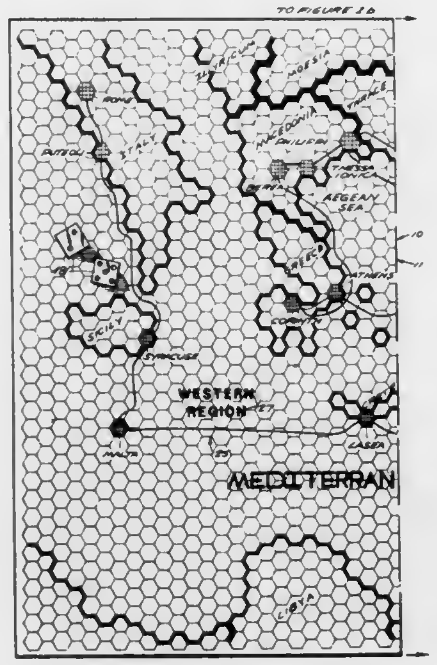
(l) said first releasable locking means including a first stop abutment pivotally supported on said base member for movement about a first transverse axis, and

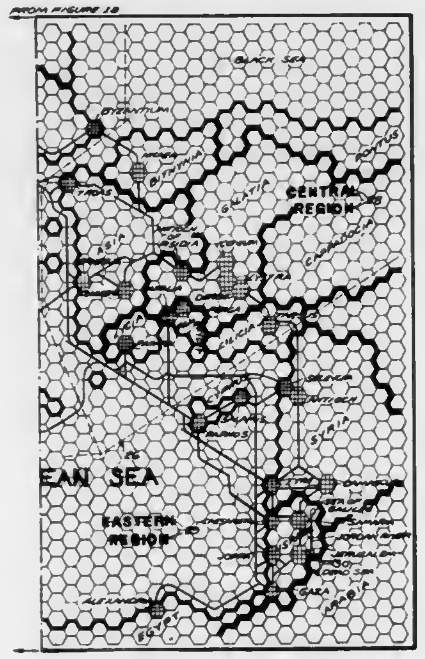
(m) said second releasable locking means including a second abutment member pivotally supported on said base member for movement about a second transverse axis spaced longitudinally from said first transverse axis, and

(n) a latch abutment common to said first and second stop abutments movably connected to the transfer member for movement into locked engagement with one or the other of said first and second stop abutments in response to the concurrent movements of the transfer member and tee member.

4,441,718
BIBLICAL GAME

Mark J. Olson, 1909 Woodlyn Dr., Apt. 104, Fredericksburg, Va. 22401
Filed Aug. 27, 1981, Ser. No. 297,081
Int. Cl.³ A63F *3/04*
U.S. Cl. 273—242 **13 Claims**





1. An educational and entertaining game for a number of participants, comprising:

a game board with a plurality of playing spaces arranged thereon, having indicia thereon associated with a part of the map of the world,

a plurality of player boards, at least two for each participant, each player board having a plurality of sections with respective predetermined indicia including a first area with indicia designating a unique identity as amongst all said player boards and a second area with at least a space movement factor indicia assigned to the respective unique identity and a plurality of different ability factor indicia related to the abilities of the respective identity,

at least two moveable game pieces per participant for movement from playing space to space on the game board, each game piece having two different kinds of indicia one of which is said unique identity and the other of which is said space movement factor indicia for determining the number of spaces the respective game piece may be moved by the respective participant for the respective unique identity,

a plurality of marker pieces each having distinguishing indicia provided thereon to correlate said abilities for placement on various possible predesignated ones of said spaces to mark the achievement thereat of said unique identities,

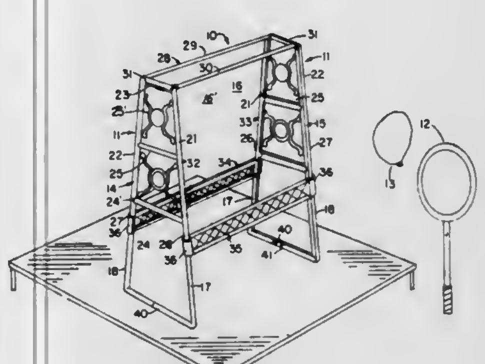
plurality of tallying pieces having different distinguishing indicia provided thereon for tallying certain conditions at said pre-designated spaces,

first chance means for losing or gaining said tallying pieces, and

second chance means for losing said tallying pieces immediately after they are gained.

4,441,719
BALLOON GAME

Raymond J. Lohr, 5043 Sterrettania Rd., Erie, Pa. 16506
Continuation-in-part of Ser. No. 23,612, Mar. 26, 1979, abandoned. This application Aug. 31, 1981, Ser. No. 297,703
Int. Cl.³ A63B *63/02*
U.S. Cl. 273—402 **12 Claims**



1. A game comprising, in combination,

a target, said target comprising a first frame member capable of being assembled to enclose a first area,

a second frame member capable of being assembled to enclose a second area,

said first frame member and second frame member being laterally spaced from each other,

said first area and said second area being adapted to permit a balloon to move therethrough,

support members,

said support members being adapted to support said first frame member and said second frame member in said spaced relation to each other,

a balloon,

said balloon being inflated sufficiently to cause it to move relatively slowly through the air and to drop slowly to the ground,

said first frame member, said second frame member and said support members comprising sections,

said sections including a top member, a first bottom member, a second bottom member, a first side member and a second side member,

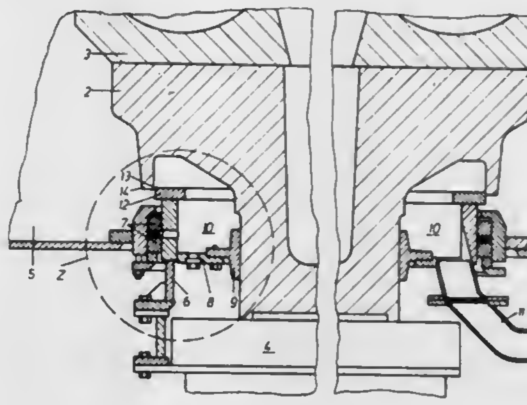
means adapted to attach said top member to said first and second side members,

means adapted to attach first bottom member to said first and second side member,

means adapted to attach second bottom member to said first and second side member, whereby the sections may be assembled to form said target.

4,441,720
SEAL OF A MILL

Günter Dibowski, Essen, and Helmut Grommes, Duisburg, both of Fed. Rep. of Germany, assignors to Deutsche Babcock Werke Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany
Filed Oct. 21, 1982, Ser. No. 435,769
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1981, 3141830
Int. Cl.³ F16J *15/40*
U.S. Cl. 277—3 **4 Claims**



1. Seal between rotating and stationary parts of a mill, particularly one operated at excess pressure and which is flowed through by air, comprising a barrier air chamber connected through a gap with interior space of the mill; barrier air fed to said chamber having a flow direction which is directed downwardly from above within the gap; said barrier air having a pressure exceeding the pressure of the carrier gas for passing through said gap and into the interior of the mill to prevent thereby passage of the carrier gas together with coal dust toward the outside, said barrier air comprising an amount substantially equivalent to the amount of carrier gas for preventing said barrier air passing through said gap to the mill interior from conveying any coal dust produced in the mill, said barrier air having a downward flow direction within said gap which is from above to below so that the barrier air flows in the direction in which gravity acts on dust particles suspended in the air, passage of the barrier having an effect on the dust particles which is increased by the force of gravity directed as the barrier air flow whereby the seal is substantially improved.

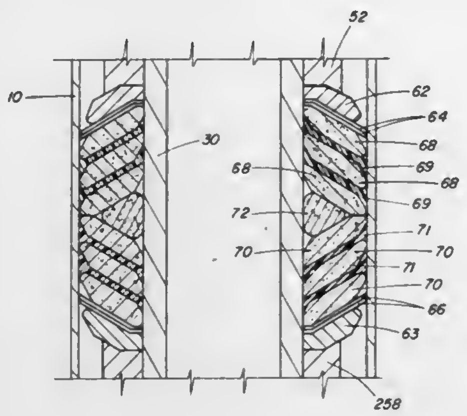
4,441,721
HIGH TEMPERATURE PACKER WITH LOW TEMPERATURE SETTING CAPABILITIES

Allen E. Harris, and David D. Szarka, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.
Filed May 6, 1982, Ser. No. 375,417
Int. Cl.³ F16J *15/06, 15/20, 15/24*
U.S. Cl. 277—26 **19 Claims**

1. In a pack-off device of the type including means to longitudinally compress a packer element associated with said device, a packer element comprising:

at least one low temperature packing segment adapted to maintain shape and substantial resiliency up to a predetermined temperature and to lose shape and resiliency at temperatures thereabove; and

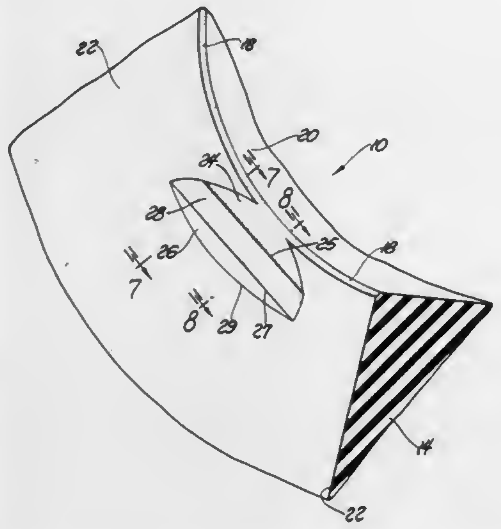
a plurality of high temperature packing segments adapted to maintain shape and substantial resiliency at temperatures including and above said predetermined temperature, said



at least one low temperature packing segment being disposed between at least two of said plurality of said high temperature packing segments.

4,441,722
ROTARY BIDIRECTIONAL DYNAMIC SHAFT SEAL HAVING A PUMPING PROJECTION WITH ANGULATED PRIMARY AND SECONDARY PUMPING SURFACES

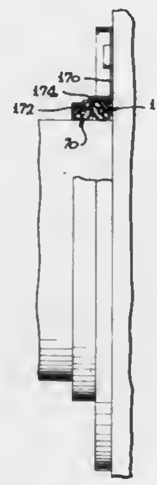
Gerald P. Pichler, Dearborn, Mich., assignor to Federal-Mogul Corporation, Detroit, Mich.
Filed May 7, 1982, Ser. No. 375,926
Int. Cl.³ F16J *15/32*
U.S. Cl. 277—134 **7 Claims**



1. A rotary bidirectional dynamic shaft seal (**10**) for sealing between a pair of relatively rotatable members, one of which (**12**) rotates about an axis, and comprising; a radially extending annular sealing edge (**18**) defined by first and second converging frustoconical surfaces (**20, 22**) extending about a common axis; a plurality of hydrodynamic pumping projections (**24, 26, 28**) extending from one (**22**) of said frustoconical surfaces, each said pumping projection having a primary pumping surface (**24**) extending generally axially from said sealing edge (**18**) and radially outwardly from said second frustoconical surface (**22**) and having a return surface (**26**) extending radially outwardly from said second frustoconical surface (**22**) to define the rear extremity of said pumping projection, characterized by each said pumping projection including a secondary pumping surface (**28**) extending axially between said primary pumping surface (**24**) and said return surface (**26**) and radially outwardly from said primary pumping surface at a shallow angle (A) relative to said primary pumping surface (**24**).

4,441,723
DUCT SEAL

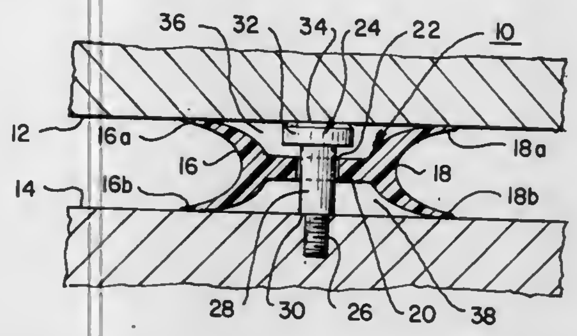
Fred A. Greenwald, Battle Ground, Wash., assignor to General Connectors Corp., Burbank, Calif.
Division of Ser. No. 212,028, Dec. 2, 1980, abandoned, which is a continuation-in-part of Ser. No. 181,411, Aug. 26, 1980, abandoned. This application Apr. 13, 1982, Ser. No. 367,930
Int. Cl.³ F16J *15/32*
U.S. Cl. 277—164 **2 Claims**



1. An aircraft duct connector to be used with aircraft ducts, comprising a tubular housing, counter bores formed on at least one end of said tubular housing for positioning seal rings in said housing in spaced side-by-side relationship, outer and inner seal rings mounted in the counter bores at at least one end of said tubular housing, means in said housing cooperating with said counter bores to hold said seal rings in said spaced side-by-side relationship, said outer seal ring being solid and generally circular in cross-section and having an inner surface, said inner surface formed from an elastomer impregnated fabric and comprising a work-engaging surface adapted to make a sealing engagement with a surface on a duct, said outer seal ring further including a generally tubular ring-shaped insert engaging the surfce of said fabric opposite said work-engaging surface, said insert being formed from an elastomeric material, a ring-shaped spring mounted inside said tubular ring-shaped insert with the spring surrounded by and engaging the inner walls of the tubular insert and in such a way that at least part of said ring-shaped insert is between said spring and said fabric to hold said spring away from said fabric, said spring sized so when said seal is mounted on a duct said spring maintains the said work-engaging surface of the seal in sealing engagement with a surface on a duct independent of temperature over a wide temperature range, said inner seal ring including a lamination of elastomer impregnated fabric and being generally channel shaped in cross-section with radially outwardly extending legs and a connecting web, the web of said lamination having a work contacting surface and an opposite surface, the radial outer end of one of said legs being spaced from said tubular housing both to prolong seal life and to communicate duct pressure to the interior of the tubular housing between said legs, the work contacting surface of the inner seal ring adapted to be in sealing engagement with a surface of a duct whereby the inner seal ring can withstand high duct pressures while maintaining sealing contact, said inner seal ring including a tubular ring-shaped insert formed from an elastomeric material mounted on the surface of the lamination of said inner seal ring opposite said work contacting surface, a ring-shaped spring mounted inside the tubular insert of the seal ring with said spring engaging the inner walls of the tubular insert so that a thickness of the elastomeric material composing the insert is between the spring and the said opposite surface of the web, said spring sized so as to exert a compressive radially inwardly directed force on the web of said inner seal ring to maintain the work contacting surface of the inner seal ring in sealing engagement with a surface on a duct independent of temperature over a wide temperature range.

4,441,724
FLUID-TIGHT SEAL

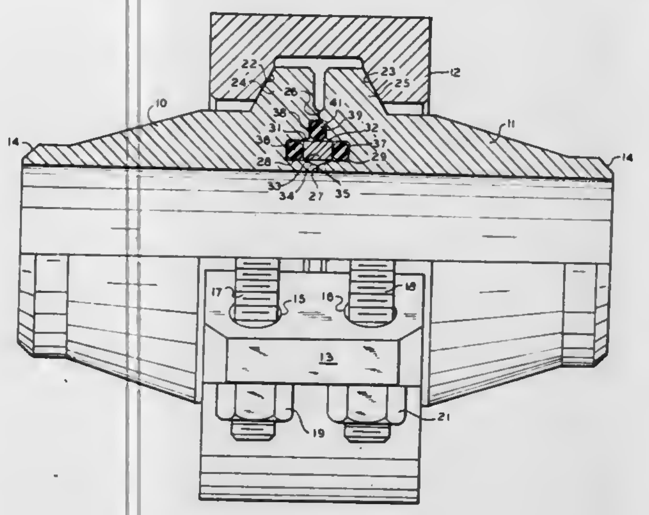
Laurence D. Taylor, Erie, Pa., assignor to American Sterilizer Company, Erie, Pa.
Filed Mar. 16, 1981, Ser. No. 244,240
Int. Cl.³ F16J *15/02*
U.S. Cl. 277—166 **5 Claims**



1. Apparatus for forming fluid-tight seal between two confronting surfaces comprising:
a plurality of spaced rigid post members mounted to one of said surfaces and adapted to engage the other of said surfaces when it is brought into said confronting relationship to provide a space between said confronting surfaces;
gasket means longitudinally extending between said confronting surfaces and having a pair of spaced sealing members adapted to engage said confronting surfaces to form seals therebetween; and
deformable web means joining said spaced sealing members and having a plurality of longitudinally spaced openings formed therein,
said post members having enlarged head portions adapted to pass through said openings in said web means by deforming said openings and thereby retain said gasket means.

4,441,725
QUAD BOLT

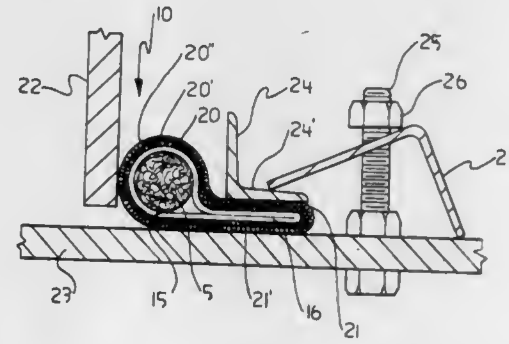
Kent T. Bailey, Houston, Tex., assignor to Thornhill Craver Company, Houston, Tex.
Filed Apr. 9, 1982, Ser. No. 366,914
Int. Cl.³ F16J *15/12;* F16L *23/00*
U.S. Cl. 277—167.5 **2 Claims**



1. A coupling comprising,
a pair of confronting hubs,
confronting inner and outer annular grooves in the confronting faces of said pair of hubs,
means for clamping said hubs in end-to-end abutment with at least the faces of the hubs immediately outboard of the outer groove in engagement,
a malleable metal seal ring in said inner groove of each hub sealing between the confronting hub faces,
an O-ring in the bottom of each inner groove sealing between each hub and the metal seal ring, and
an O-ring in said outer groove sealing against fluid flow in either direction to provide an environmental seal against external fluid under pressure which might corrode the metal seal ring and to seal against internal pressure in the event of failure of the metal seal ring and one of the O-rings in one of said inner grooves.

4,441,726
HEAT AND VIBRATION RESISTANT SEAL

Larry A. Uhl, Sandusky, Ohio, assignor to Shan-Rod, Inc., Huron, Ohio
Filed Dec. 14, 1981, Ser. No. 330,192
Int. Cl.³ F16J *15/16*
U.S. Cl. 277—230 **7 Claims**



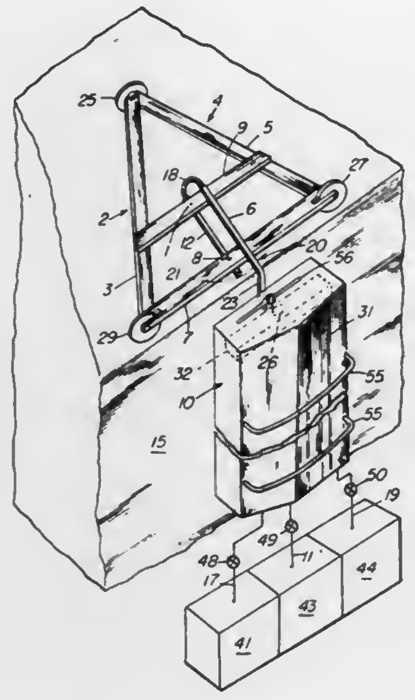
1. A heat and vibration resistant seal construction comprising:
a. a core member constructed of a dense, resilient material having spring-like properties at elevated service temperatures;
b. an intermediate wrap member constructed of a fiber material having an alumina-boria-silica composition, said intermediate wrap member forming a co-extensive cover for said core; and
c. an outer wrap member of at least one layer of braided wire metal mesh forming a co-extensive cover around said intermediate wrap member.

4,441,727
LOAD CARRYING APPARATUS

John W. Durcan, 178 Newbrook La., Bay Shore, N.Y. 11706
Division of Ser. No. 139,883, Apr. 14, 1980, Pat. No. 4,312,090. This application Oct. 13, 1981, Ser. No. 310,385
Int. Cl.³ B62B *11/00;* B62D *21/00;* B60S *3/06*
U.S. Cl. 280—62 **8 Claims**

1. A load carrying apparatus comprising:
a moveable triangular shaped carriage disposed at an elevation above the load to be conveyed;
a cross-member connected to two sides of said triangular shaped carriage, said two sides being of equal length, and parallel to the third side of said triangular shaped carriage;
a first load carrying member connected to the underside of the midpoint of said cross-member and the underside of the midpoint of said side of said triangular shaped carriage parallel to said cross member, said first load member extending slightly beyond said cross-member;
a second load carrying member have a first segment, parallel to said first load carrying member disposed above said carriage and a second segment, disposed downward from

said carriage, perpendicular to said first segment; in communication with said load;



a connecting member connecting said first and second load carrying member.

4,441,728

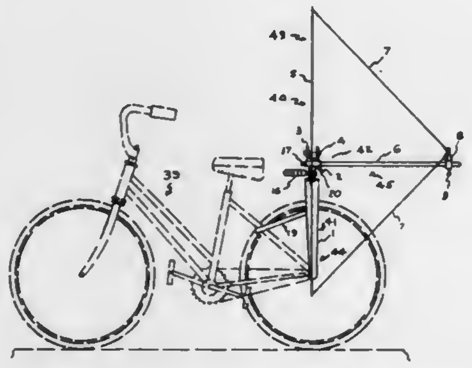
BICYCLE SAIL

Warren C. Schroeder, 200 Cambridge Dr., Hagerstown, Md. 21740

Filed Aug. 10, 1981, Ser. No. 290,927

Int. Cl.^{3} B62B *15/00*

U.S. Cl. 280—213 10 Claims



1. In a bicycle having a sail, the combination comprising: an apparatus for bicycle **(39)** having a front wheel and rear wheel, each with an axle, to increase its forward thrust when available winds exist in a desired direction wherein said rear wheel includes a frame, said apparatus comprising; sail support means comprising a U-shaped structure **(1)** mounted over said rear wheel journaled at the lower ends by bores matching said rear axle, said support means secured by nuts **(18)** to said rear axle and secured in position by upper braces **(19)** interconnecting the bicycle frame with said support means, and means on the uppermost surface of said support **(1)** for mounting a pad **(31)** secured to a vertical spindle **(21)**, said vertical spindle being concentric with an upper matching spindle having a U-shaped yoke **(3)**, an outer tube **(20)** journaling both said spindle and U-shaped yoke **(3)** and said vertical spindle **(21)**, the upper end of said outer tube **(20)** secured to said spindle and U-shaped yoke **(3)**, the lower end of said outer tube being slotted and clamped to said spindle **(21)** by a surrounding collar **(25)**, and a grip handle **(16)** connected to said collar, said U-shaped yoke **(3)** bored 90 degrees through the radial arc portion **(49)** of said U-shaped yoke.

4,441,729

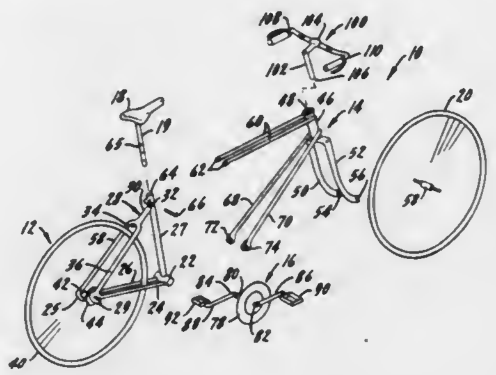
FOLDING BICYCLE

Herbert N. Underwood, Chicago, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed May 17, 1982, Ser. No. 378,964

Int. Cl.^{3} B62F *15/00*

U.S. Cl. 280—278 4 Claims



1. A folding bicycle assembly, comprising:

a rear subassembly including a hollow cylindrical sprocket hub having first and second annular bearing end portions, an upright tubular support member extending from said sprocket hub, a pair of rear wheel axle supports extending from said sprocket hub at substantially right angles relative to the upright support, and a yoke member, having a first end affixed to said upright support end including a rear wheel axle receiving means at the ends of the rear wheel axle supports, a rear wheel, and a rear wheel axle extending through said rear wheel and fastened to the rear wheel axle receiving means to complete a rigid, generally triangular subassembly, and

a front subassembly, including a fork hub member defining a bore, a pair of fork legs extending downwardly from said hub member terminating in axle retaining means to receive the axle for a front wheel, at least two horizontal support members extending rearwardly from the fork hub member at substantially right angles to the fork legs, and a pair of angular supports extending from the fork hub member at an angle intermediate the horizontal support member and the fork legs, said angular support members defining extremities terminating at annular bearing means which ride on the sprocket hub bearing end portions enabling relative rotation of the rear and front subassemblies to thus nest said subassemblies to provide a compact arrangement for storage.

4,441,730

STEERING DEVICE FOR MANY-AXLED GOOSE-NECK TRAILERS

Sverre Damm, Gamleveien 1, N-1473 Skårer, Norway

PCT No. PCT/NO81/00006, 371 Date Nov. 6, 1981, 102(e) Date Nov. 6, 1981, PCT Pub. No. WO81/02554, PCT Pub. Date Sep. 17, 1981

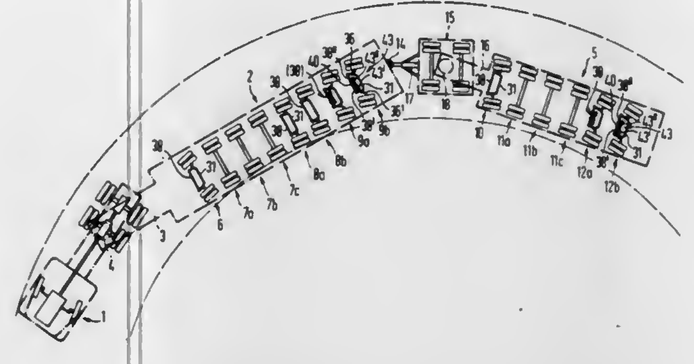
PCT Filed Mar. 10, 1981, Ser. No. 320,956

Claims priority, application Norway, Mar. 11, 1980, 80/0682

Int. Cl.^{3} B62D *53/06*

U.S. Cl. 280—426 5 Claims

1. Steering device for a multi-axled goose-neck trailer which is coupled with a vehicle in front of said trailer, said steering device comprising wheels pivotable about a main axle and connected to stay rods for forcibly steering said wheels, said stay rods each connected to an intermediate member, said intermediate member also connected to a double piston rod,



the ends of which are adapted for receiving a hydraulic signal from said vehicle.

4,441,731

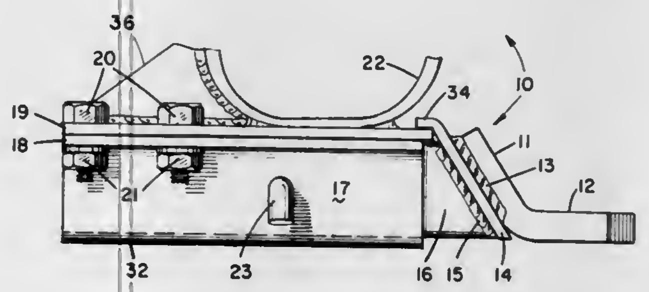
TOWING SYSTEM FOR VEHICLES WITH REAR BUMPERS

Jerome Belsky, 44 Strawberry La., Rolling Hills Estates, Calif. 90724, and Don M. Belsky, 5427 Vista Fortuna, Cypress, Calif. 90630

Filed Feb. 8, 1982, Ser. No. 346,861

Int. Cl.^{3} B60D *1/00*

U.S. Cl. 280—495 10 Claims



1. A towing system for vehicles with rear bumpers, comprising:

(a) anchor plate means adapted for securement to the underside of said rear bumper of said vehicle so that the ends of said anchor plate means project forwardly and rearwardly from said bumper;

(b) means for securing said anchor plate means to said rear bumper;

(c) bracket means adapted for securement to said anchor plate means and having a channel therein with a pair of mounting flanges laterally disposed thereto, said flanges projecting from the top edges of said channel;

(d) means for securing said bracket means to said anchor plate means;

(e) tongue means adapted to be slideably engaged with said bracket means and disposed within said channel, said tongue means further having one end thereof projecting rearwardly from said bracket means;

(f) means for securing said tongue means to said bracket means;

(g) end plate and lip means, said end plate having a portion secured to said one end of said tongue means projecting rearwardly from said rear bumper and said lip means having a portion being disposed over said end of said anchor plate means projecting outwardly from said rear bumper in intimate abutting relationship therewith when said tongue means is fully engaged with said bracket means; and a

(h) ball hitch mounting means attached to said end plate and lip means, said ball hitch mounting means including a rearwardly projecting tang portion having a hole therein for mounting a ball hitch therein for towing a vehicle.

4,441,732

SKI BINDING WITH A FOOT SUPPORT

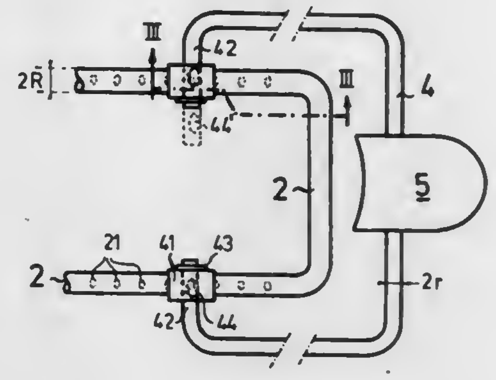
Hans Napflin, Kastanienallee 5, Beckenried, Switzerland (CH 6375)

Filed Sep. 10, 1981, Ser. No. 301,028

Claims priority, application Austria, Oct. 27, 1980, 5282/80

Int. Cl.^{3} A63C *9/08*

U.S. Cl. 280—614 5 Claims



1. Ski binding with a foot support on which a front toe bracket for a ski boot is fastened and which has two rods which at least in the skiing start-off position run parallel to the longitudinal direction of the ski and on which a heel bracket is provided equipped with a swingable heel holder, each bracket at its forward end being equipped with an inwardly bent end, said heel holder and heel bracket clamping the heel of said boot in the skiing start-off position, a number of recesses for adjusting said heel bracket being arranged on each rod in the longitudinal direction of the ski which serve to hold one of the bent ends of the bracket, characterized by the fact, that on each rod **(2)** a U-shaped shackle **(41)** is arranged which extends over the rod and through whose sides one of the bent ends **(42)** of the heel bracket passes while extending under the rod **(2)**, and that the recesses **(21)** are arranged on the side of the rod **(2)** facing the upper side of the ski and shaped to conform to said bent ends, and that each bent end **(42)** of the bracket **(4)** has a recess **(44)** which when said heel bracket is in a position deviating angularly from the start-off position can be brought under the respective recess **(21)** of the rod **(2)** so that the bent end **(42)** of the heel bracket **(4)** is not in engagement with this recess **(21)** and the bracket **(4)** can be moved jointly with the two U-shaped shackles **(41)**.

4,441,733

ADJUSTING MECHANISM FOR A SKI BINDING JAW

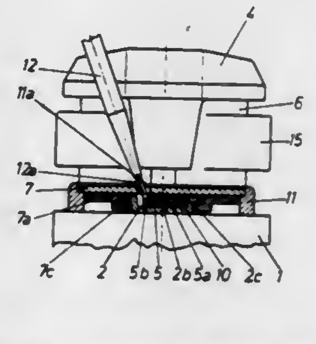
Engelbert Spitaler, Wr. Neudorf, Austria, assignor to TMC Corporation, Baar, Switzerland

Filed Dec. 4, 1981, Ser. No. 327,390

Claims priority, application Austria, Dec. 19, 1980, 6197/80

Int. Cl.^{3} A63C *9/22*

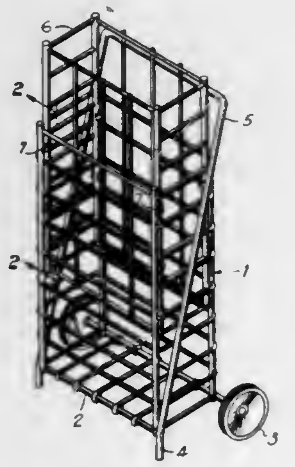
U.S. Cl. 280—633 16 Claims



1. A mechanism for adjusting the position of a ski binding jaw on a ski, comprising a guide rail adapted to be secured to the ski and having laterally spaced guideways which extend longitudinally of the ski, said ski binding jaw being arranged on a base plate and said base plate being supported on said laterally spaced guideways of said guide rail for movement longitudinally of the ski, said guide rail having at least one longitudinally extending serrated strip thereon which can releasably engage a tooth system provided on a locking element which is supported for movement transversely of the ski and is biased by a spring, said spring having one end supported on said locking element, said locking element and spring being disposed between said guideways of said guide rail and being secured against movement relative to said base plate in a direction longitudinally of the ski by two extensions which are provided on said base plate and, viewed in the longitudinal direction of the ski, are spaced from one another, said locking element having a recess for receiving an operating tool which can be inserted through an opening in said base plate, and said locking element having a further recess for receiving said one end of said spring.

4,441,734
TELESCOPIC SHOPPING CART

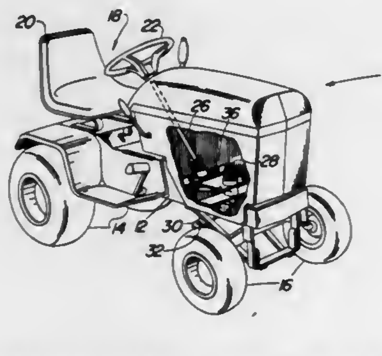
Ann R. Schlissel, 1745 E. 18th St., Brooklyn, N.Y. 11229
Filed Nov. 20, 1981, Ser. No. 323,248
Int. Cl.³ B62B *1/12*
U.S. Cl. 280—638 **3 Claims**



1. In a wheeled shopping cart comprising a container member having a frame defining four sides and a bottom, the improvement which comprises an extension member defining four walls and fitting telescopically within said container member and extendible vertically upward in order to variably increase the volume of the container member of the cart; and fastening means engaging the frame of said container member and the extension member in order to hold the extension member in any desired extended position.

4,441,735
STEERING GEAR ASSEMBLY FOR A LAWN AND GARDEN TRACTOR

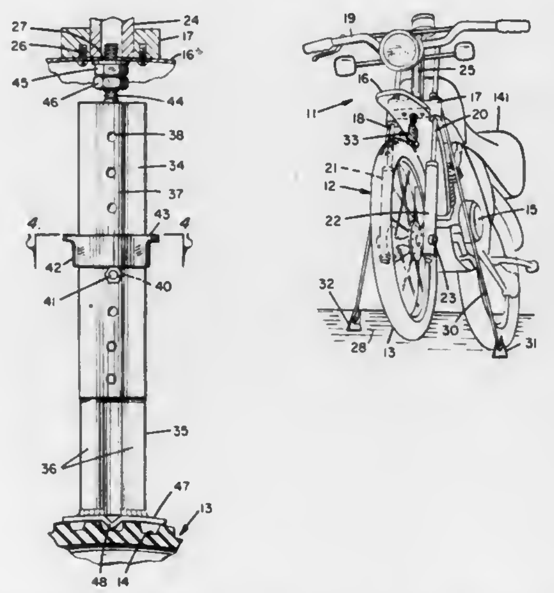
Wayne R. Hutchison, Mayville, and David L. Apple, Horicon, both of Wis., assignors to Deere & Company, Moline, Ill.
Filed Feb. 18, 1982, Ser. No. 349,796
Int. Cl.³ B62D *7/10*
U.S. Cl. 280—771 **4 Claims**



1. A vehicle steering system, comprising: a support means; a steering input shaft and a steering output shaft each being journalled for oscillation in the support means about respective axes which converge downwardly toward each other; first and second intermeshed straight bevel gears respectively mounted on said input and output shafts for oscillation therewith; said intermeshed straight bevel gears having respective desired operational positions located against said support means; and biasing means acting on at least one of the first and second bevel gears and biasing it to its respective desired operational position.

4,441,736
DEVICE FOR REDUCING WEAR IN VEHICLE SUSPENSION SYSTEMS

Joel T. Shedden, P.O. Box 628, Lake Elsinore, Calif. 92330
Filed May 12, 1982, Ser. No. 377,350
Int. Cl.³ B60R *27/00*
U.S. Cl. 280—754 **10 Claims**



1. A device for preventing flexing of a resilient suspension system interconnecting a vehicle chassis and a vehicle wheel, said wheel including a tire having a tread thereon, which comprises:

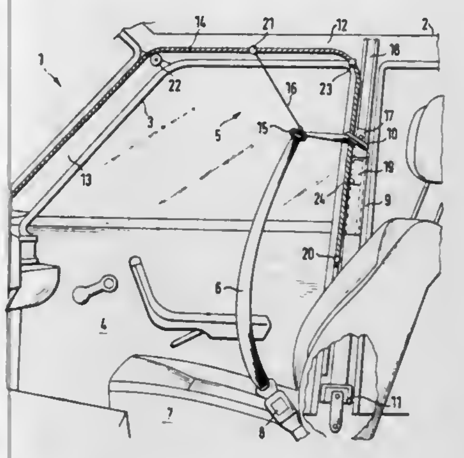
a pair of elongate members adapted to be positioned between a part of said chassis and said wheel,
means for adjustably securing said members together to extend to any one of a choice of overall lengths,
first means at the remote end of one of said members for interlocking engagement with the tread of said tire, and
second means at the remote end of the other of said members for engagement with said part of said chassis.

4,441,737
VEHICLE WITH A PASSIVE BELT SYSTEM

Robert Wimmer, Ebersberg, and Laslo Levai, Munich, both of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke A.G., Munich, Fed. Rep. of Germany
PCT No. PCT/EP81/00047, 371 Date Jan. 4, 1982, 102(e) Date Jan. 4, 1982, PCT Pub. No. WO81/03468, PCT Pub. Date Dec. 10, 1981
PCT Filed May 16, 1981, Ser. No. 336,387
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1980, 8014800[U]
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—804 **3 Claims**

1. A passive safety belt system for a motor vehicle having:

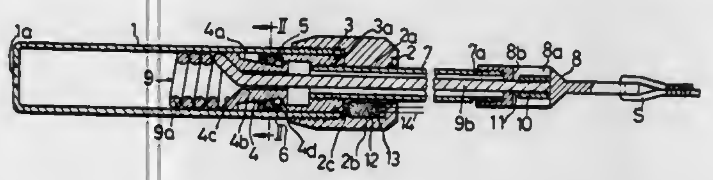
a diagonal safety belt, which is movable along the upper edge of a door opening of a front side door of the vehicle, and is affixed in the generally midplane area of the vehicle to a seat by a locking means;
transport means controlling the movement of the safety belt said transport means are activated by the motions of the side door of the vehicle;
a deflection element contained in a rear door post for adjusting the length of the safety belt to match the shoulder height of the vehicle occupant;
an automatic roller contained in the rear door post;
a carrier slidably carried by the safety belt; wherein:
the safety belt passes over the deflection element onto the automatic roller;
the motions of the side door activate a switch which moves the transport means;
the transport means is carried by the carrier by a cable having a constant length;
the deflection element is slidably carried by a guide, which extends from the shoulder height area beyond the upper end region of the rear door post;



a movable stop means is provided in the guide to lock the safety belt in the guide when adjusting the belt to the shoulder height of the vehicle occupant;
a gripper is provided in the transport means along the rear door post at a given distance from a coupling point between the transport means and the safety belt;
said gripper serves to displace the deflection element in the upper end area of the rear door post when the safety belt is released from the vehicle occupant while the transport means is displaced over a second deflection element, which is solidly fastened to the chassis in the upper end of the front door post.

4,441,738
SEAT BELT TENSIONING DEVICE

Noboru Tsuge, Kariya; Toshiaki Shimogawa, Okazaki; Satosi Kuwakado, Aichi, and Toshihiro Takei, Kariya, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan
Filed Oct. 7, 1981, Ser. No. 309,407
Claims priority, application Japan, Dec. 30, 1980, 55-190057[U]
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—806 **11 Claims**

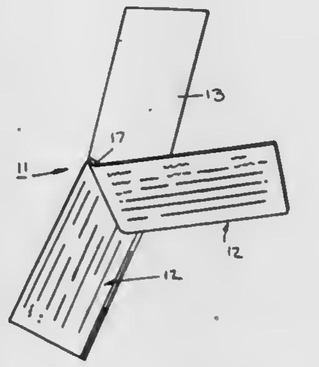


1. A seat belt tensioning device to be mounted on a vehicle, comprising:

a cylinder installable on a vehicle;
a piston slidable in said cylinder and adapted to be connected to the belt for tensioning the latter on movement of said piston in one direction;
means for moving said piston in said one direction at an urgent time, e.g. on an impact of the vehicle;
a first means for connecting said piston to said seat belt, said first means including load-limiting means for disconnecting the seat belt from said piston when a predetermined tension load is applied to said load limiting means;
a second means for connecting said piston to the seat belt when the seat belt is disconnected from said piston by said load limiting means;
means for locking said piston to said cylinder to prevent belt-tensioning movement of said piston when a predetermined tension load is applied to said second connecting means; and
said second connecting means including energy absorbing means elongatable by a predetermined load for absorbing kinetic energy of the passenger restrained by the belt.

4,441,739
BOOKLET

Warren S. Cluff, 510 Topping Hill Rd., and David W. Cluff, 610 Dorian Rd., both of Westfield, N.J. 07090
Filed Aug. 27, 1981, Ser. No. 296,803
Int. Cl.³ B42D *1/00*
U.S. Cl. 281—16 **9 Claims**



1. A booklet for attachment to a bulk container for prescription drugs, said booklet comprising a spine, a plurality of removable multi-page pamphlets secured at one side to said spine with said pages of each pamphlet being secured together at an opposite side, said pages of each pamphlet being perforated adjacent said one side to permit separation of each pamphlet from the remainder of said pamphlets, at least some of said pamphlets containing identical printed patient information.

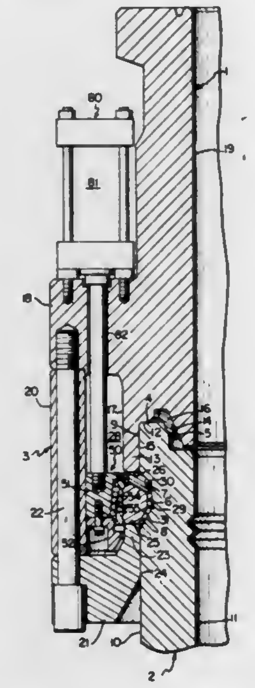
4,441,740
CONNECTORS FOR SECURING MEMBERS TOGETHER UNDER LARGE CLAMPING FORCE

William S. Cowan, and Edward M. Galle, Jr., both of Houston, Tex., assignors to Armco Inc., Middletown, Ohio
Filed Dec. 4, 1981, Ser. No. 327,445
Int. Cl.³ F16L *35/00, 55/00*
U.S. Cl. 285—18 **13 Claims**

1. In a connector for connecting two members together under a large clamping force, the combination of

a first connector member to be joined to one of the members to be connected;
a second connector member to be joined to the other of the members to be connected;
annular locking means carried by the first connector member and presenting a generally annular locking shoulder capable of flush engagement with a mating shoulder carried by the second connector member,
  the locking means being radially distortable between an inactive position, in which the locking means can be moved axially relative to the second connector member, and an active position, in which the locking shoulder is engaged with the mating shoulder,
  the locking means being yieldably biased toward its inactive position;
a resilient metal split ring having an inner surface and an outer surface,
one of the inner and outer surfaces of the split ring being shaped and dimensioned for telescopic engagement with the locking means,
the other of the inner and outer surfaces of the split ring

being frustoconical, tapering axially of the connector and constituting a cam follower surface;
- a rigid driving ring having a frustoconical camming surface tapering at the same angle and in the same direction as the cam follower surface of the split ring;
- the split ring and the driving ring being supported on the first connector body for movement axially of the connector between first positions, in which the locking means is allowed to occupy its inactive position, and second positions, in which, when both the split ring and the driving ring occupy their second positions, the locking shoulder of the locking means is in wedging engagement with the mating shoulder, the excursion of the driving ring from its first position to its second position being longer than the excursion of the split ring from its first position to its second position;
- a plurality of rigid rolling antifriction elements disposed between and in direct rolling engagement with the camming surface of the driving ring and the cam follower surface of the split ring; and
- retaining means carried by the split ring and the driving ring and disposed to prevent the antifriction elements from rolling axially beyond the confines of the opposed portions of the camming and cam follower surfaces.



4,441,741
CONNECTORS FOR SECURING MEMBERS TOGETHER UNDER LARGE CLAMPING FORCE

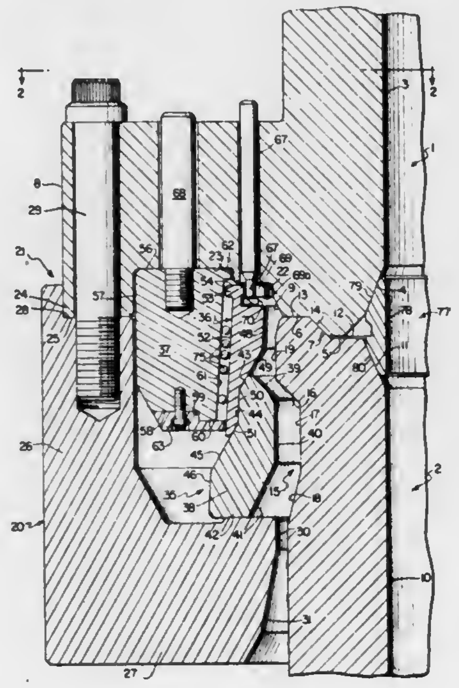
Edward M. Galle, Jr., Houston, Tex., assignor to Armco Inc., Middletown, Ohio

Filed Dec. 4, 1981, Ser. No. 327,446

Int. Cl.³ F16L *35/00, 55/00*

U.S. Cl. 285—18 **18 Claims**

1. In a connector for connecting two members together under a large clamping force, the combination of:
- a connector body to be joined to one of the members to be connected and dimensioned to be moved in telescopic relation relative to the other member to be connected;
- annular locking means carried by the connector body and presenting a generally annular locking shoulder capable of flush engagement with a mating shoulder carried by the other member to be connected,
  - the locking means being radially distortable between an inactive position, in which the locking shoulder is spaced radially from the mating shoulder, and an active position, in which the locking shoulder engages the mating shoulder when the connector body is operatively positioned relative to the other of the members to be connected, the locking means being yieldably biased toward its inactive position,
  - the locking means having a first annular surface which is directed toward the other of the members to be connected and a second annular surface directed away from the other member to be connected, the second annular surface of the locking means having a first frustoconical surface;
- first actuating means carried by the connector body and comprising a resiliently expansible and contractible annular member dimensioned for telescopic engagement with the second annular surface of the locking means and having
  - a second frustoconical surface constituting a camming surface which tapers in the same direction and at the same angle as the first frustoconical surface and is disposed to engage the first frustoconical surface in camming relation as the annular member is moved telescopically relative to the locking means,
  - the annular member also having a third frustoconical surface constituting a cam follower surface which faces radially away from the second frustoconical surface and tapers in the same direction as the second frustoconical surface but at a smaller angle;
- second actuating means comprising a rigid driving ring having a fourth frustoconical surface facing toward the third frustoconical surface and tapering in the same direction and at the same angle as the third frustoconical surface; and
- a plurality of rigid rolling antifriction elements disposed between and in direct rolling engagement with the third and fourth frustoconical surfaces;
- the annular member of the first actuating means being disposed for movement axially of the connector and independently of the driving ring of the second actuating means between a first position, in which the locking means is allowed to assume its inactive position, and a second position,
  - movement of the annular member to its second position causing the first and second frustoconical surfaces to coact to displace the locking means through most of the excursion of the locking means from its inactive position to its active position;
- the driving ring of the second actuating means being disposed for movement axially of the connector between a first inactive position and a second fully actuated position, movement of the driving ring from its first position to its second position causing the third and fourth frustoconical surfaces and the rolling antifriction elements to coact to radially distort the annular member of the first actuating means and drive the locking means through the remaining portion of its excursion to bring the locking shoulder into final engagement with the mating shoulder.



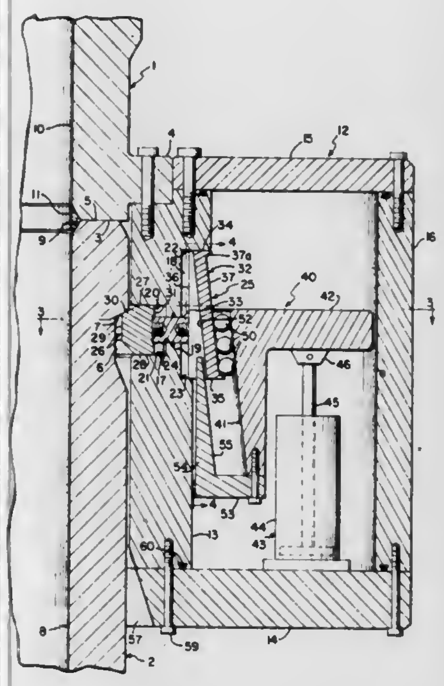
4,441,742
CONNECTORS FOR SECURING MEMBERS TOGETHER UNDER LARGE CLAMPING

James H. Owens, III, Houston, Tex., assignor to Armco Inc., Middletown, Ohio

Filed Dec. 4, 1981, Ser. No. 327,449

Int. Cl.³ F16L *35/00, 55/00*

U.S. Cl. 285—18 **15 Claims**



1. In a connector for securing two members together under a large clamping force, the combination of
- a connector body adapted to be secured rigidly to one of the members;
- generally annular locking means having
  - a frustoconical locking shoulder, and
  - an annular cam follower surface concentric with the axis of the connector body and tapering axially with respect to the connector body,
  - the locking means being supported on the connector body for radial movement between an inactive position, in which the diameter of the locking means allows the connector body to be moved axially relative to the other member to be secured so as to place the locking means in operative position relative to the other member, and an active position, in which the diameter of the locking means is such that said locking shoulder will engage coacting locking means on the other member to be secured;
- a driving ring having a generally annular axially tapering camming surface parallel to said cam follower surface and concentric therewith, said camming surface and cam follower surface being spaced apart radially;
- a plurality of rigid rolling antifriction elements disposed and retained between said camming surface and cam follower surface and engaged therewith; and
- means carried by the connector body and supporting the driving ring for axial movement between a first position, in which the camming ring allows the locking means to occupy said inactive position, and a second position, in which the locking means is forced by coaction of said camming surface, said rolling antifriction elements and said cam follower surface to occupy said active position.

4,441,743
ADHESIVELY JOINED PIPE CONNECTION

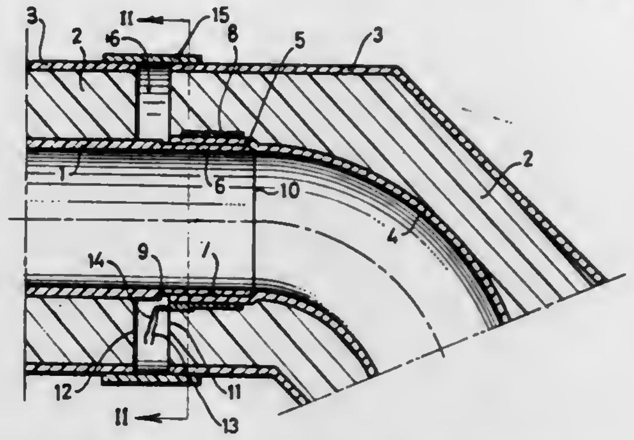
Johannes F. Steenbergen, Ommen, Netherlands, assignor to Wavin B.V., Zwolle, Netherlands

Filed Sep. 14, 1981, Ser. No. 301,643

Claims priority, application Netherlands, Sep. 15, 1980, 8005161

Int. Cl.³ F16L *47/02, 55/00, 59/16*

U.S. Cl. 285—21 **7 Claims**



1. A plastic pipe connection, comprising a female pipe part and male pipe part, of fibre reinforced thermosetting plastics, secured together by means of a thermosetting adhesive, at least said female part **(4)** having a thermally insulating foam plastic layer **(2)** on its male-part receiving portion **(5)**, characterized in that an electrically heatable foil element **(8)** covered by the insulating layer **(2)** is provided on the outer wall surface of the receiving portion **(5)**.

4,441,744
BRANCH PIPE PART

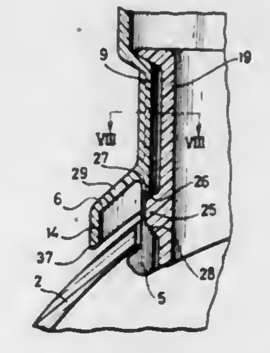
Albertus A. Oostenbrink, Hardenberg; Anno G. Negen, Ommen, and Marinus L. G. van Kaam, Leimuiden, all of Netherlands, assignors to Wavin B.V., Zwolle, Netherlands

Filed Dec. 17, 1981, Ser. No. 331,577

Claims priority, application Netherlands, Dec. 18, 1980, 8006882

Int. Cl.³ F16L *41/00, 55/00, 21/00*

U.S. Cl. 285—162 **6 Claims**



1. A plastic branch pipe part for connecting a discharge conduit to a main conduit, the lower end of said branch pipe part to be inserted into an opening of a main conduit comprising a first outwardly extending projection part forming with the outer side of the branch pipe an annular space for receiving an annular sealing member, the lower portion **(11)** of said branch pipe part being provided with lock means **(5)** to be inserted and locked into a main conduit **(2)** and having an incision **(10)** to allow said portion to be deformable and being provided with a positioning member **(9)** in the form of a groove, a bush **(19)** having a positioning member portion **(25)** in the form of a cam slidably installed in said groove in said lower portion of said branch pipe part **(1)** and hooking behind an end edge **(27)** of said incision **(10)**, said cam being guided in said groove **(9)** of the branch pipe part, said bush obviating any deformation of the lower part **11** of the branch pipe part to be inserted into a main conduit.

4,441,745
COUPLING PIPE PART FOR INTERCONNECTING CORRUGATED PIPE PARTS

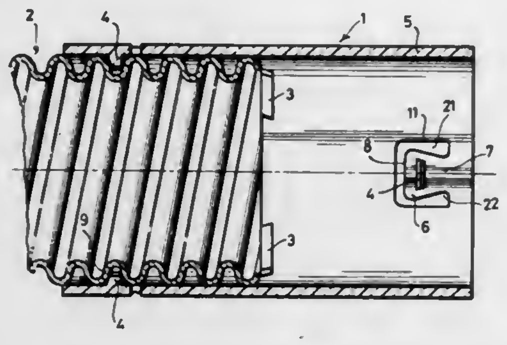
Terry G. Nicholas, Twyford, England, assignor to Wavin B.V., Zwolle, Netherlands

Continuation of Ser. No. 293,952, Aug. 18, 1981. This application Sep. 20, 1983, Ser. No. 533,632

Claims priority, application Netherlands, Aug. 22, 1980, 8004770

Int. Cl.³ F16L *21/00, 15/00, 39/00*

U.S. Cl. 285—417 **6 Claims**



1. Pipe connection for corrugated pipes comprising a coupling pipe part slid over the outer side of corrugated pipe parts said coupling pipe part comprising at least one coupling element located at a distance from the end of the pipe part having a cam (4) directed towards the inside of the coupling pipe part, said coupling element comprising a resilient lip (6) carrying said cam and formed in the coupling pipe part (1) by wall slits (11) characterized in that the lip extends axially of the pipe part and the part of said lip (6) provided with said inwardly directed cam has a larger width than the width of the transition area (7) between the lip (6) and the pipe wall (5) of the coupling pipe part (1), said cam (4) being located at a distance from said transition area.

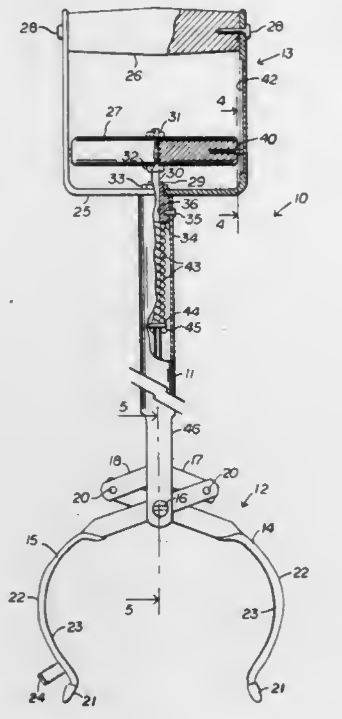
4,441,746
TOOL FOR RETRIEVING OUT-OF-REACH OBJECTS

Edward D. Corboy, Jr., 710 N. Lake Shore Dr., Apt. 606, Chicago, Ill. 60611

Filed Jan. 4, 1982, Ser. No. 336,688

Int. Cl.³ B25B *5/04*

U.S. Cl. 294—19 R **9 Claims**



1. A tool for retrieving out-of-reach objects, comprising:

an elongated, rigid tube having a slot in its lower end, forming a clevis;

a handle assembly and means securing it to the upper end of the tube, including a fixed handle piece engageable by the palm of a user and a movable handle piece engageable by the fingers of the user, movable toward the fixed handle piece;

a connecting rod within the elongated tube, connected at its upper end to the movable handle piece;

a jaw assembly connected at the lower end of the elongated tube, including a pair of movable jaws and means connecting the jaws to the lower end of the connecting rod such that upward movement of the movable handle piece and the connecting rod causes the jaws to converge centrally toward each other, toward a closed, central position, the jaws each including tips at their lower ends and curved, bowed-out portions above the tips, so that small objects can be engaged between the tips, and larger objects can be engaged between the curved portions; and

spring means urging the jaws toward a normal, open position, and the connecting rod and movable handle piece downwardly;

whereby movement of the movable handle piece toward the fixed handle piece, by squeezing movement of the user's hand, effects a closing of the jaws to engage an object to be retrieved.

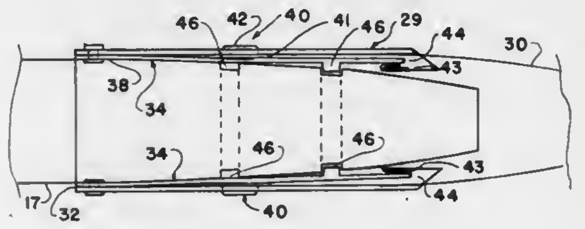
4,441,747
SEPARABLE TOOL

Clayton W. Bryington, II, P.O. Box 78, Gaines, Pa. 16921

Filed May 21, 1982, Ser. No. 380,718

Int. Cl.³ F41C *27/04*

U.S. Cl. 294—51 **7 Claims**



1. A separable tool including a handle portion, a working portion and a connector portion; said handle portion including an elongated member, said elongated member including a gripping section adjacent one end of said elongated member and a male connecting section adjacent the opposite end of said elongated member, said male section including a plurality of annular recesses along the length thereof, said male section including a tapered end section; said working portion including a plurality of tool members with different configurations and the same connector portion configuration, each of said tool members being interchangeably connectable with said male connecting section of said handle portion; said connector portion including a socket section extending from one end of said tool member, said socket section having a diameter slightly larger than said male section of said handle portion, said socket section including a pair of opposed longitudinal slots along the length thereof, strips sections disposed within said socket section, said strip sections being aligned longitudinally of said socket section, one of said strip sections being disposed adjacent each of said longitudinal slots and generally aligned therewith, said strip sections extending beyond the ends of said longitudinal slots, one end of each strip section being affixed to said socket section adjacent to the open end of said socket section, a button member slidably contacting each strip section, said button member including a base section adjacent said strip section and a finger-contacting section extending outwardly through the adjacent longitudinal slot, biasing means disposed in contact with each of said strip sections, each biasing means being located adjacent the end of said strip section remote from said socket section, said biasing means urging said strip section toward said longitudinal slot, protrusions affixed to each strip section along the length thereof, said protrusions extending from said strip section on the side thereof remote from said socket section, said protrusions being spaced longitudinally along the length of said strip section with the same spacing as the spacing between said recesses of said male handle section for engagement therewith.

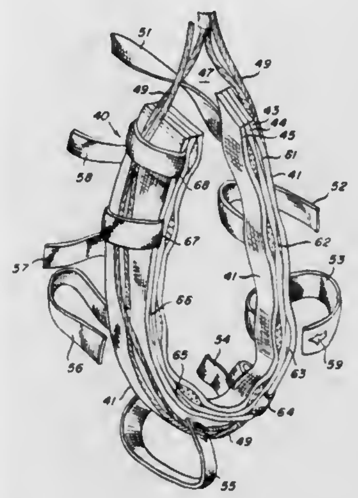
4,441,748
STRIP THIMBLE

Dennis St. Germain, 19 Stonecrop Rd., Wilmington, Del. 19801

Filed Apr. 12, 1982, Ser. No. 367,391

Int. Cl.³ B66C *1/12*

U.S. Cl. 294—74 **7 Claims**



1. Protection means for attachment to a hoisting sling comprising a strip made up of at least three bonded plies of woven webbing of uniform width, a plurality of spaced channels between a first and a second ply of said strip, and a plurality of friction straps secured between said second and a third ply of said strip and extending perpendicularly from a longitudinal edge of said strip, each of said straps corresponding to one of said plurality of spaced channels and having a cross-sectional dimension substantially identical to, or only slightly smaller than, the width of the corresponding channel.

4,441,749
ELEVATOR FOR CASING

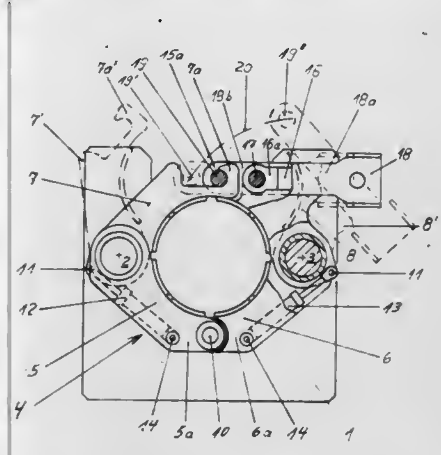
Kurt Blaschke, Saarbrücken-Dudweiler, and Josef Roob, St. Wendel, both of Fed. Rep. of Germany, assignors to Stahl- und Apparatebau Hans Leffer GmbH, Saarbruecken-Dudweiler, Fed. Rep. of Germany

Filed Aug. 11, 1981, Ser. No. 291,943

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1980, 3031027

Int. Cl.³ B66C *1/42;* **E21B** *19/02*

U.S. Cl. 294—88 **7 Claims**



1. An elevator for gripping casings, comprising:

first and second pivotably supported elevator links;

means for producing independent powered pivot movements of said first and second elevator links between an open position in which said links are spaced from one another to form an opening in a side of said elevator to receive a casing laterally into said elevator, and a closed position for gripping a casing received in said elevator;

a double acting force jack secured to said second elevator link for pivotal movement therewith, said force jack being actuatable to produce rectilinear motion of a portion of said force jack;

a hook;

a locking bolt adapted to engage said hook;

one of said hook and locking bolt being attached to said first elevator link, and the other of said hook and locking bolt being connected to said portion of said force jack for rectilinear movement with said portion;

wherein said force jack supplies all of the tension on said first and second elevator links necessary to grip a casing.

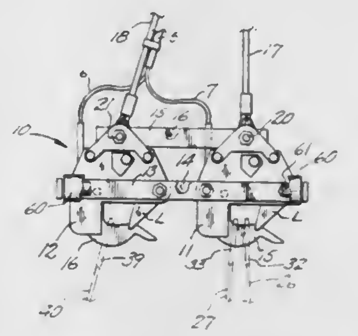
4,441,750
CARGO SLING SYSTEM FOR A HELICOPTER

Dwight E. Reber, Aurora, Oreg., assignor to Columbia Helicopters, Inc., Portland, Oreg.

Filed Sep. 17, 1981, Ser. No. 303,006

Int. Cl.³ B66C *1/38*

U.S. Cl. 294—83 R **10 Claims**



1. A sling system for the aerial transport of cargo below a prime mover and subsequent discharge of system components for attachment to a load, said sling system comprising,

elongate sling means,

a guide to which one end of said sling means is attached, said guide including retainers through which said sling means passes when in a load lifting configuration,

a cargo hook assembly suspended from the prime mover and including independently actuated first and second hook components, the first hook component of the hook assembly securing the remaining end of said sling means in a releasable manner, said first and second hook components of the hook assembly adapted for remote and individual actuation to a release position, and

a tag line extending between said second hook component of the hook assembly and said guide to impart elevation to the guide in an endwise manner subsequent to load discharge, endwise elevation of the guide by the tag line causing the released end of the load biased sling means to be drawn dowardly through the guide mounted retainers and thence out of load engagement whereupon the unloaded sling means and guide are suppported by the tag line and the hook assembly until opening of the second hook component results in dropping of the sling system at a loading site remote from the load discharge site.

4,441,751

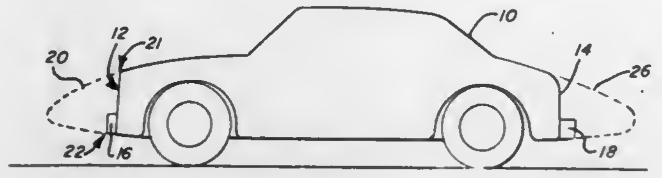
COLLAPSIBLE HIGH SPEED EXTENSION FOR MOTOR VEHICLES

William M. Wesley, 21956 N. Hickory Hill Dr., Kildeer, Lake County, Ill.

Filed Nov. 24, 1980, Ser. No. 209,945

Int. Cl.^{3} B62D *35/00;* **B60R** *19/04, 19/10*

U.S. Cl. 296—1 S **38 Claims**



1. An extension assembly for selectively altering the aerodynamic shape of a vehicle comprising:

a substantially air-tight outer shell of elastomeric material having a first desired contour when in the relaxed state

an interior structure of flexible material which is substantially non-stretchable and which is coupled to the inside of said outer shell, said inner structure being shaped to define a second desired contour when it is tautened, and

means for selectively introducing a gaseous medium into said outer shell so that the outer shell and inner structure expands from said first desired contour toward said second desired contour.

4,441,752

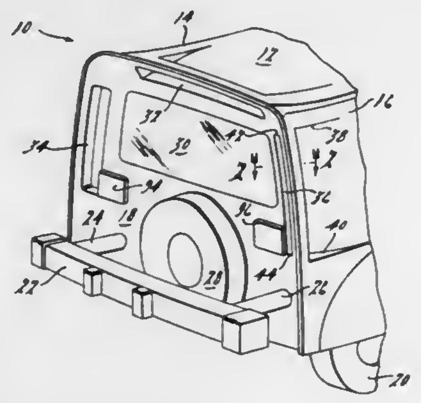
AUTOMOBILE REAR END CONSTRUCTION

Gordon M. Buehrig, Grosse Pointe Woods, Mich., assignor to Richard P. Kughn, Detroit, Mich.

Filed Jan. 25, 1982, Ser. No. 342,180

Int. Cl.^{3} B62D *37/02*

U.S. Cl. 296—1 S **5 Claims**



1. An automotive vehicle body having top and right and left side panels the rearward edges of which intersect with a substantially flat, generally vertical rear end,

said body being provided adjacent the rear end thereof with a plurality of slot means through which air moving rearwardly along said body flows when the vehicle is traveling in a forward direction,

said slot means being disposed inwardly of and elongate in directions substantially parallel to at least certain of said intersecting edges,

each of said slot means having inner and outer walls defining a passageway extending angularly rearwardly and inwardly between an inlet end in one of said panels and an outlet end in said rear end,

the inner walls of said slot means merging at the inlet ends thereof smoothly and relatively gradually with their respective panels to enhance air flow into said slots and merging at the outlet ends thereof relatively abruptly with said rear end, whereby airstreams flowing through said slot means converge in a low pressure air pocket normally created behind said vehicle body in use so as to minimize drag effect on the forward motion of said vehicle caused by said air pocket and the attendant air turbulence behind said body,

the inner walls of at least certain of said slot means being formed with openings therein, and including

light support means secured to said inner walls at said openings, and

light means disposed on said support means so as to be visible through both the inlet and outlet ends of said certain slot means.

4,441,753

AIRFOILS FOR LAND VEHICLES

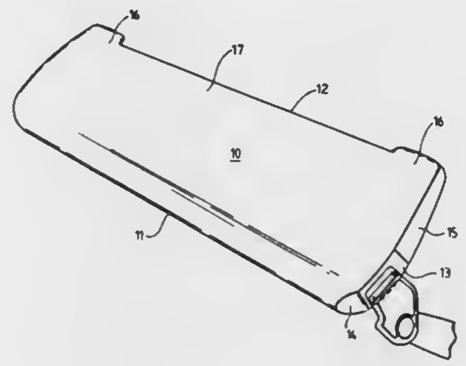
Stuart V. Mason, Biggleswade, England, assignor to Paul Forster, Surrey, England

Filed Sep. 28, 1981, Ser. No. 306,476

Claims priority, application United Kingdom, May 11, 1981, 8114365

Int. Cl.^{3} B60R *27/00*

U.S. Cl. 296—1 S **3 Claims**



1. An air flow drag reducing member for use with a land vehicle pulling a trailer, said member having an airfoil shaped cross section and a longitudinal axis extending transversely across said vehicle roof, and including means for fixing the ends of said member to the roof of said vehicle, said member further comprising means for adjusting the inclination of said member between a horizontal position, in which said member acts to reduce drag in one of the cases wherein the roof of said trailer is lower than the roof of said vehicle, and wherein no trailer is being pulled, and an inclined position in which said member deflects air over the roof of said trailer.

4,441,754

REAR DOOR FOR ARMORED VEHICLES

Alwin Hantel, Espenau, Fed. Rep. of Germany, assignor to Thyssen Industrie Aktiengesellschaft, Essen, Fed. Rep. of Germany

Filed Feb. 17, 1982, Ser. No. 349,578

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1981, 3106117

Int. Cl.^{3} B62D *25/00*

U.S. Cl. 296—51 **6 Claims**

1. A rear door for a door opening in the rear wall of an armored vehicle having an interior, including in combination:

an upper door half pivotally connected to said rear wall of said vehicle and adapted to be locked and made tight in a closed position, and to be pivoted into, and arrested in, an open position;

a lower door half pivotally connected to said rear wall of said vehicle and adapted to be locked and made tight in a closed position, said lower door half being provided with means for holding same in a lowered open position, with the inner side of said lower door half being provided with steps for getting in and out of said vehicle;

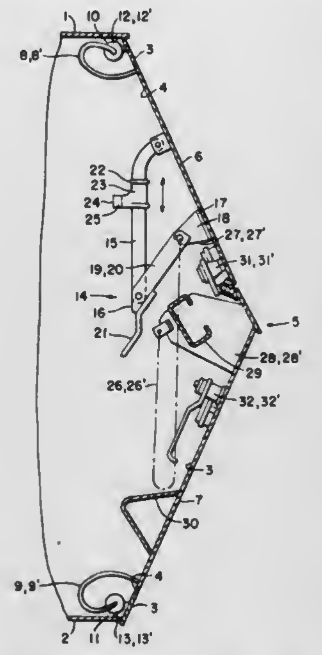
a lower edge portion of said upper door half covering an upper edge portion of said lower door half for holding said lower door half in said closed position;

bearing housings respectively rigidly arranged on the inner side of said rear vehicle wall to the side of and respectively above and below said door opening;

a shaft for each door half, each shaft extending in the transverse direction of said vehicle and being supported in associated ones of said bearing housings; each shaft comprising a rotating rod and serving to aid in pivotal movement of said door halves;

swivel levers respectively fastened to the inner sides of said door halves and to said shafts for effecting pivotal mounting of each door half to an associated shaft; and

a swivel device for effecting movement of said upper door half and for effecting arresting thereof in said open position; said swivel device including a push-pull rod pivotally connected to the inner side of said upper door half, and a lever pivotally connected to said push-pull rod and to the inner side of said rear wall of said vehicle, with said lever being provided with a rigid handle whereby said upper door half is actuated from the vehicle interior with only one hand being needed to actuate door opening movement of both said upper and lower door halves since only the upper door half needs to be open so far until said covering is eliminated with respect to the lower door half because of position of center of gravity automatically to pivot downwardly from closure position thereof.



4,441,755

WINDOW MOLDING FOR AUTOMOBILE

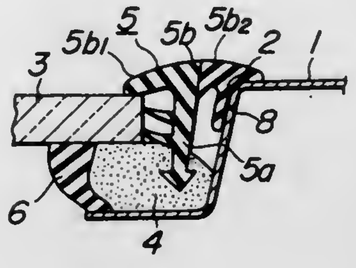
Toshiaki Endo, Chigasaki, and Kazuhiko Yoshiyuki, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Continuation of Ser. No. 210,610, Nov. 26, 1980, abandoned. This application Jul. 22, 1982, Ser. No. 400,598

Claims priority, application Japan, Nov. 28, 1979, 54-154773

Int. Cl.^{3} B60J *1/20*

U.S. Cl. 296—93 **1 Claim**



1. In combination, a flexible window molding of resin material, and a peripheral wall of a window opening of a vehicle body, said window molding including a head portion for covering a clearance between an edge of a window glass and said wall, said head portion having a leg portion extending therefrom into said clearance in spaced relation to said window glass edge and the peripheral wall of said window opening with the end of said leg portion being embedded in an adhesive for fixing a peripheral edge of the window glass to a flange of said wall, said head portion having a depending lip arranged in spaced parallel relation to said leg portion and adjacent to said peripheral wall of said window opening, an adhesive interposed between said lip and said peripheral wall, said lip terminating in a ridge for engaging said peripheral wall to retain said adhesive, said window molding being composed of two integral portions of different resin materials, a first, compressive portion adjacent said window glass and a second, stretch portion adjacent said wall of a resin material softer than that of said first portion, thereby snugly fitting the window molding to panels of the vehicle body to obtain a more aesthetical appearance.

4,441,756

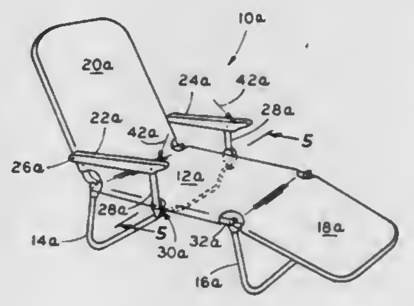
LOUNGE CHAIR WITH IMPROVED ARM RESTS

Tony Liou, Tai Pei, Taiwan, and Richard Wang, Fair Lawn, N.J., assignors to Collins Company, Ltd., Secaucus, N.J.

Filed Jan. 29, 1982, Ser. No. 344,170

Int. Cl.^{3} A47C *4/00, 5/10;* **F16B** *12/40*

U.S. Cl. 297—39 **1 Claim**



1. In a lounge chair of the type having a horizontally oriented seat and a back rest pivotally connected thereto so as to assume a selected back-supporting angular orientation to said seat and including arm rests in operative arm-supporting positions on opposite cylindrically-shaped sides of said seat, an improved means for mounting each said arm rest in said operative position thereof comprising an arm rest support member pivotally connected to a cylindrically-shaped side of said seat in supporting relation beneath the front of a cooperating arm rest, said arm rest being further connected at its opposite end to said backrest so as to be mounted in spanning relation between said back rest and arm rest support member and to operatively be arranged to partake of movement in unison with the pivotal traversing movement during the positioning of said back rest, a member having on one side a smooth circular contact surface and on an opposite side a semi-circular groove and a depending projection therefrom, said member being stationarily connected in an interposed position between said arm rest support member and said cylindrically-shaped side of said seat with said one side presenting a circular contacted surface for said arm rest support member in any assumed position of pivotal traversing movement thereof, whereby said contact by said arm rest support member against said surface is along a diametrical line of a sufficient extent that is effective to obviate any wobble in said pivotally mounted arm rest support member, and with said opposite side presenting said semi-circular groove for the seating thereof of said cylindrically-shaped side of said seat, to thereby obviate any possibility of rotative movement of said member in relation to said side of said seat that otherwise might result from pivotal movement of said arm rest support member against said opposite contacted surface of said member, and a bar-like member connected in spanning relation between said depending projections of said members to obviate any rotation between said depending projections of said members to obviate any rotation in said members about the longitudinal axis of said cylindrically-shaped sides of said seat.

4,441,757

STRUCTURAL JOINT FOR FOLDING CHAIR

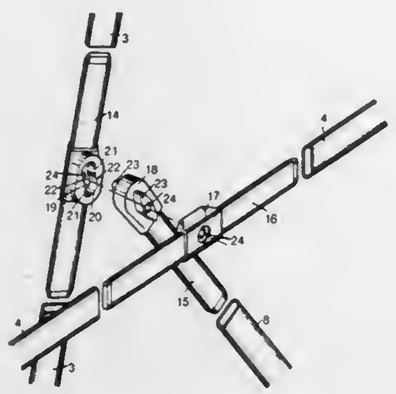
Jesus Gasca Burges, Avda. Madrid, 8 - 90 D, San Sebastian, Spain

Filed Feb. 3, 1981, Ser. No. 231,574

Claims priority, application Spain, Feb. 13, 1980, 248.575[U]; Jan. 22, 1981, 255.730[U]

Int. Cl.³ A47C *4/00*

U.S. Cl. 297—55 **2 Claims**



1. A structural joint device for use in connecting and enabling relative folding and unfolding movement between tubular elements of a foldable chair of the type including a first element in the form of a rectangular frame and forming the front legs and backrest of the chair, a second element having a U-shaped profile and forming the rear legs of the chair, and a third element in the form of a rectangular frame and forming the seat frame of the chair, the three chair elements being foldably connected at each of opposite sides thereof by a said structural joint device which comprises:

a first elongated flat body having opposite end portions adapted to plug into confronting portions of a lateral member of the first tubular chair element and a central portion having a thickness greater than said opposite end portions;

a second elongated flat body identical in construction to said first flat body and having opposite end portions adapted to plug into confronting portions of a lateral member of the third tubular chair element and a central portion having a thickness greater than said opposite end portions;

each said central portion of said first and second flat members having a surface having therein a recess defined by diametrically opposite curved surfaces, opposite ends of which are joined by pairs of converging planar surfaces which are disposed generally in diametral opposition;

a third elongated flat body having a first end portion adapted to plug into an end of a lateral member of the second tubular chair element and a second end portion having a thickness greater than said first end portion, said second end portion having opposite side surfaces;

each said side surface of said second end portion of said third flat body having extending outwardly therefrom a projection having a rombic contour with rounded smaller corners;

said first, second and third flat bodies being assembled with said second end of said third flat body positioned between said central portions of said first and second flat bodies, with said recesses in said central portions of said first and second bodies facing each other, and with said projections on said opposite side surfaces of said second end portion of said third flat body extending into respective said recesses; and

a pin extending through holes in said central portions, at positions symmetrical with said recesses, and in said second end portion, at a position symmetrical with said projections, said pin defining an axis of relative rotation between said first, second and third flat bodies.

4,441,758

ADJUSTABLE FOOT SUPPORT

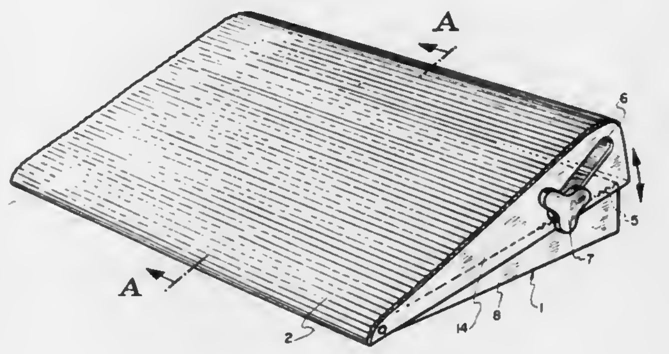
Willy Fleischer, Essen-Werden, Fed. Rep. of Germany, and Alfred von Schuckmann, Kevenhonk 63, 4178 Kevelaer 2, Fed. Rep. of Germany, assignors to Willy Fleischer Metalwarenfabrik GmbH & Co. KG and Alfred von Schuckmann, both of, Fed. Rep. of Germany

Filed Jul. 29, 1981, Ser. No. 288,177

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1980, 8021146[U]

Int. Cl.³ A47C *9/12*

U.S. Cl. 297—439 **10 Claims**



1. An adjustable footrest comprising;

a floor stand;

a footplate pivotally mounted to said floor stand for height and inclination adjustment thereof;

a trackway defined on said footplate;

an actuating shaft movably mounted along said trackway;

a rack defined on said floorplate and extending at an angle to said trackway to which said shaft is engaged for movement therealong with simultaneous movement of said shaft along said trackway; and

operating means connected to said shaft for moving said shaft simultaneously along said rack.

4,441,759

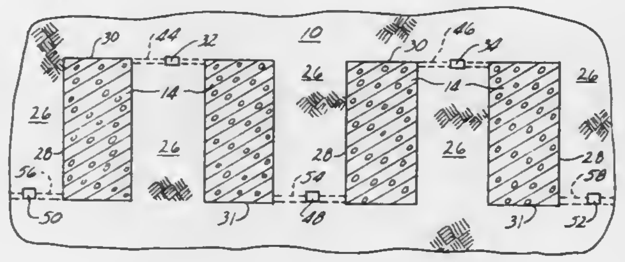
IN SITU OIL SHALE RETORT SYSTEM

Ned M. Hutchins; Irving G. Studebaker, both of Grand Junction, Colo.; Rudolf Kvapil, Tucson, Ariz., and Thomas E. Ricketts, Grand Junction, Colo., assignors to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Oct. 29, 1981, Ser. No. 316,351

Int. Cl.³ E21B *43/247;* **E21C** *41/10*

U.S. Cl. 299—2 **24 Claims**



1. A system of in situ oil shale retorts formed within a subterranean formation containing oil shale, such an in situ oil shale retort having upper, lower, and side boundaries of unfragmented formation and containing a fragmented permeable mass of formation particles containing oil shale, the retort system comprising:

a plurality of mutually spaced apart rows of such in situ oil shale retorts;

load-bearing barrier pillars of unfragmented formation separating adjacent rows of such in situ retorts from one another, such load-bearing barrier pillars being sufficiently strong for preventing substantial subsidence of overburden at elevations above the upper boundaries of such in situ oil shale retorts;

separate air level drifts excavated in alternating barrier pillars and extending along the length of such pillars between adjacent rows of such retorts adjacent upper edges of the retorts in such adjacent rows;

separate production level drifts excavated along the length of intervening barrier pillars between the barrier pillars in which the air level drifts are excavated, the production level drifts being between adjacent rows of retorts and extending adjacent lower edges of the retorts in such adjacent rows, said lower edges being on opposite sides of such retorts from the sides adjacent the air level drifts;

means for providing fluid communication between such an air level drift and adjacent upper edges of retorts in the rows of retorts adjacent such air level drift; and

means for providing fluid communication between such a production level drift and adjacent lower edge of retorts in the rows of retorts adjacent such production level drift.

4,441,760

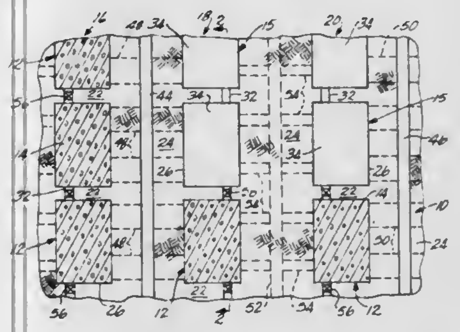
METHOD FOR CLOSING A DRIFT BETWEEN ADJACENT IN SITU OIL SHALE RETORTS

Alex E. Hines, Grand Junction, Colo., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Jan. 4, 1982, Ser. No. 336,914

Int. Cl.³ E21B *43/243*

U.S. Cl. 299—2 **35 Claims**



24. A method for inhibiting gas flow through a drift interconnecting first and second in situ oil shale retorts in a subterranean formation containing oil shale, each of said retorts containing a fragmented permeable mass of formation particles containing oil shale, the drift extending through unfragmented formation between the fragmented masses in the first and second retorts, the method comprising filling the drift between the retorts by pneumatically compacting crushed formation particles into the drift, the formation particles having a void fraction smaller than the average void fraction of the fragmented masses in the retorts.

4,441,761

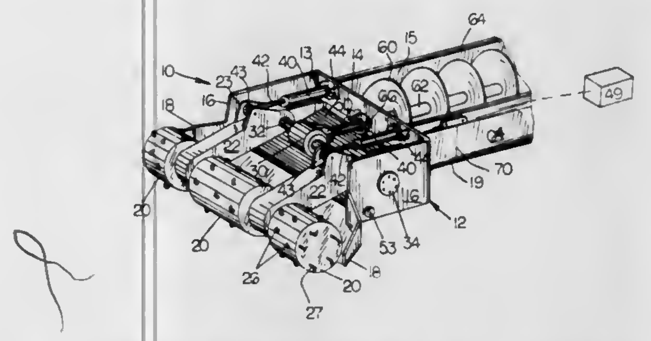
MINING MACHINE

Rush F. Fields, Box 83, Gilbert, W. Va. 25621, and Buddy D. Fields, 6225 Highland Dr., Huntington, W. Va. 25705

Filed Jan. 19, 1982, Ser. No. 340,804

Int. Cl.³ E01C *27/24, 29/22*

U.S. Cl. 299—64 **24 Claims**



21. A mining apparatus adapted to be connected to a sectioned powered auger conveyor assembly and driven thereby comprising a housing comprising a cutting section and an attachment section, a drive shaft rotatably mounted to said cutting housing section, transmission means mounted to said drive shaft and including an input shaft connected to said transmission means and extending from said cutting housing section into said attachment section; coupling means mounted on the end of said input shaft, said coupling means being adapted to couple said input shaft with the central shaft of said auger conveyor so that said auger conveyor shaft will turn said input shaft and drive said drive shaft through said transmission means, cutting arms rotatably mounted on said drive shaft, cylinder means mounted to said cutting housing section and connected to said cutting arms adapted to selectively rotate said cutting arms around said drive shaft, said cylinder means having fluid lines connected thereto which run along said housing and said auger conveyor structure back to a fluid reservoir remotely located from said cylinder means, means to selectively supply fluid to said cylinder means, a cutter drum axle mounted to said cutting arms, a plurality of cutter drum members mounted on said axle and adapted to be driven by drive means connecting said cutting drum axle with said drive shaft, each of said cutter drum members being provided with cutter means adapted to cut into material such as coal, ore or the like and shear such material from its respective seam or deposit, and conveyor means extending from said cutting housing section into said transfer section, said conveyor means comprising an endless belt and being driven by said drive shaft so that material fragments cut from the seam or deposit are carried onto said conveyor belt and transported along said conveyor belt into the auger conveyor which carries the material back through the auger conveyor back to the desired site.

4,441,762

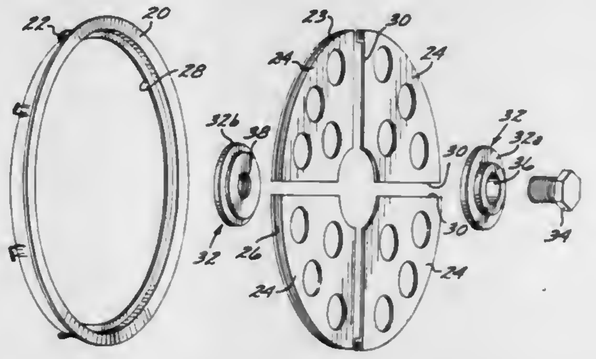
DECORATIVE WHEEL COVERING FOR PROVIDING A MULTIPLICITY OF DESIGNS

William J. Segal, Culver City, Calif., assignor to Orion Industries, Inc., Compton, Calif.

Filed Apr. 12, 1982, Ser. No. 367,420

Int. Cl.³ B60B *7/04*

U.S. Cl. 301—37 R **10 Claims**



1. A decorative cover for an automotive wheel comprising:

a rim including means for engaging said wheel;

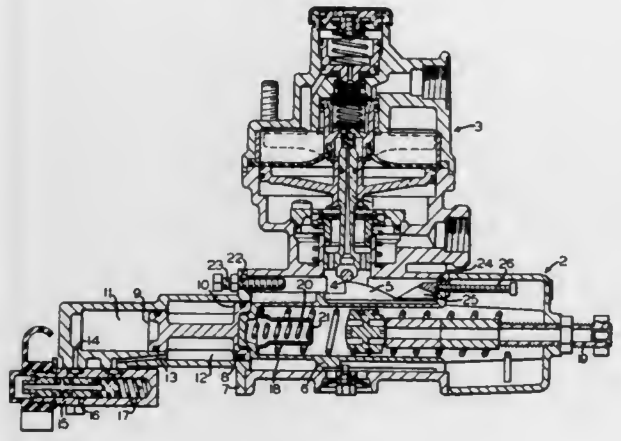
a plurality of decorative segments selectively disposable relative to said rim, whereby disposition of said plurality of segments with respect to each other and to said rim may be arbitrarily varied to create a multiplicity of decorative patterns, with each of said plurality of segments being reversible with respect to said rim and with respect to each other whereby said multiplicity of patterns may be multiplied by both arbitrary disposition of said plurality of segments with respect to said rim and with respect to each other as well as arbitrary reversal of said segments with respect to said rim and with respect to each other;

a center element coaxial with said rim;

first coupling means on the radial outer edge of said segments that are releasably engaged with complementary radially extending coupling means formed on the inner circumferential edge of said rim; and second coupling means on the radial inner edge of said segments releasably engaged with complementary radially extending coupling means formed on the outer circumferential edge of said center element, said coupling means comprises a tab and groove arrangement.

4,441,763
VARIABLE LOAD CONTROLLED FLUID BRAKE PRESSURE REGULATOR

Gerhard Fauck, Hanover, and Bernd-Joachim Kiel, Wunstorf, both of Fed. Rep. of Germany, assignors to WABCO Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany
Filed Feb. 18, 1982, Ser. No. 349,936
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1981, 3105874
Int. Cl.^{3} B60T *8/20*
U.S. Cl. 303—23 R **6 Claims**

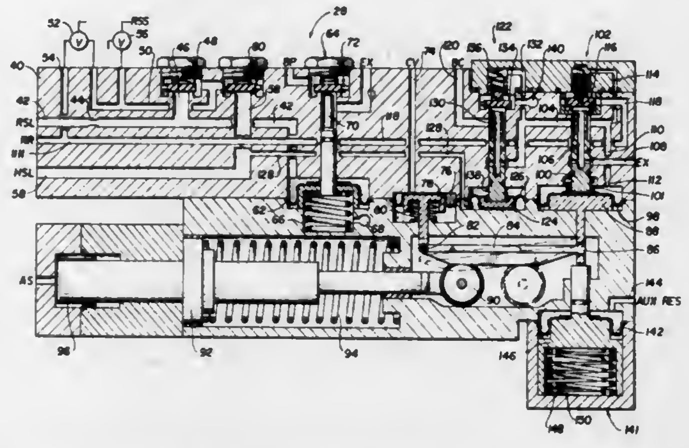


1. A vehicle load controlled fluid brake pressure regulator comprising:
(a) load-dependent variable relay valve means for controlling the vehicle brake pressure;
(b) a control piston subject to a control pressure that varies in accordance with the vehicle load;
(c) a control spring acting on said control piston in a direction counter to said control pressure, thereby establishing an axial position of said control piston in accordance with the vehicle load condition;
(d) first and second cam members carried on said piston means for axial movement therewith, said first and second cam members each having an inclined control surface forming a cam profile that varies in a direction perpendicular to the axis of said control piston, said inclined control surfaces running in opposite directions;
(e) actuator means engageable with the control surface of said cam members and with said relay valve means for setting said relay valve means in accordance with the axial position of said control piston; and
(f) means for axially adjusting one of said cam members relative to the other to thereby set the low point of said cam profile in accordance with the desired "empty" load braking pressure setting of said relay valve means.

4,441,764
RELAY VALVE ASSEMBLY

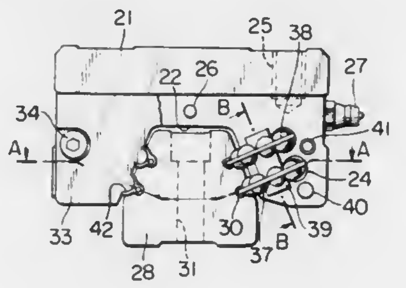
Ronald O. Newton, Adams, N.Y., assignor to General Signal, Stamford, Conn.
Continuation of Ser. No. 224,932, Jan. 14, 1981. This application May 31, 1983, Ser. No. 499,449
Int. Cl.^{3} B60T *15/02*
U.S. Cl. 303—40 **7 Claims**

1. A fluid brake control system comprising:
a brake control pipe for transmitting a braking signal;
a first fluid source;
control valve means responsive to braking signal changes of pressure in said brake control pipe to provide control signals from said first fluid source;
supply line having fluid under pressure distinct from said brake control pipe;
relay valve means connected to said brake control pipe, said control valve means and said supply line, responsive to said control signal for governing the flow of fluid from said supply line to a brake cylinder and responsive to a supply line pressure below a predetermined pressure for creating an emergency brake pressure change in said brake control pipe.



4,441,765
TRACK GUIDE BEARING

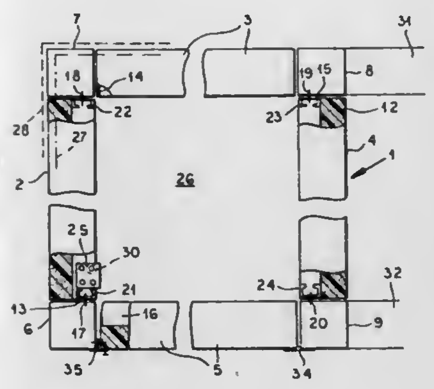
Shinichi Kasai, Fujimi; Sotoji Nakagawa, Maebashi, and Nobuyuki Osawa, Takasaki, all of Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 30, 1982, Ser. No. 431,701
Claims priority, application Japan, May 7, 1982, 57-65665[U]
Int. Cl.^{3} F16C *29/06*
U.S. Cl. 308—6 C **1 Claim**



1. A track guide bearing provided with a slide table having two parallel axial ball rolling grooves of Gothic arch-like cross section provided in each of the inclined side surfaces of an outwardly opening trapezoidal groove and having axial through-bores providing ball passageways formed rearwardly of said ball rolling grooves, an elongate track shaft having Gothic arch-like ball rolling grooves formed axially thereof and corresponding to the ball rolling grooves of said slide table, each of said Gothic arch-like ball rolling grooves having a narrow escape groove provided in the bottom thereof, side plates fixed to the opposite ends of said slide table and having semicircular ball passageways extending astride of the ball rolling grooves of said slide table and the through-bores corresponding thereto, each of said semicircular ball passageways having a narrow concave groove in the bottom thereof and having formed as a recess, a retainer comprising a wire rod having a straight portion and semicircularly bent portions extending from the opposite ends of said straight portion, said semicircularly bent portions being engaged with the concave grooves of said side plates, and a number of rollable balls disposed between the ball rolling grooves of said slide table and the ball rolling grooves of said track shaft and in the through-bores of said slide table and the ball passageways of said side plates, said balls being selected so as to be capable of fitting in four-point contact condition between the ball rolling grooves of said slide table and the ball rolling grooves of said track shaft opposed thereto, said slide table being supported on said track shaft by four rows of balls which are in four-point contact, said slide table being axially movable through the rolling movement of said balls.

4,441,766
PROTECTIVE EQUIPMENT CABINET

Joachim Hess, Schröplerstrasse 37, D-8070 Ingolstadt, Fed. Rep. of Germany
Filed Sep. 7, 1982, Ser. No. 415,441
Claims priority, application Fed. Rep. of Germany, Sep. 8, 1981, 3135471
Int. Cl.^{3} A47B *81/00*
U.S. Cl. 312—214 **8 Claims**

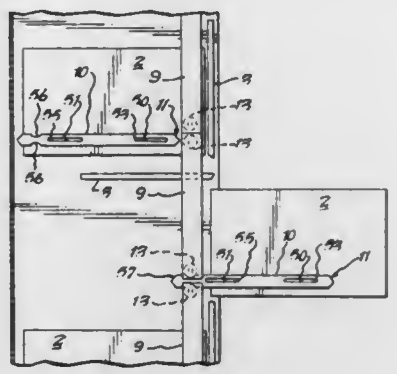


1. A protective cabinet comprising:
a plurality of upright and hollow square-section posts formed of a rigid synthetic resin and spaced at corners of a polygon;
respective upright walls between the posts and each having
  a rigid and rectangular inner panel,
  a rigid outer panel generally identical and parallel to the inner panel, the panels having parallel and spaced outer edges,
  an annular rim joining the outer edges together and projecting annularly inward past the inner panel, the rim engaging at its outer face at each corner between two respective posts, the panels being formed with respective upturned edges, the upturned edge of the sheet forming the outer panel being taller and forming the rim with the upturned edge of the other sheet, and
  a mass of insulating material between the panels and within the rim;
respective rigid equipment-supporting channels at the posts and each lying inward of the respective inner panel against the rim on its inner face; and
fasteners securing the channels through the rims to the respective posts, thereby also securing the respective wall to the respective posts.

4,441,767
CABINET DRAWER ANTI-TIP LOCK DEVICE

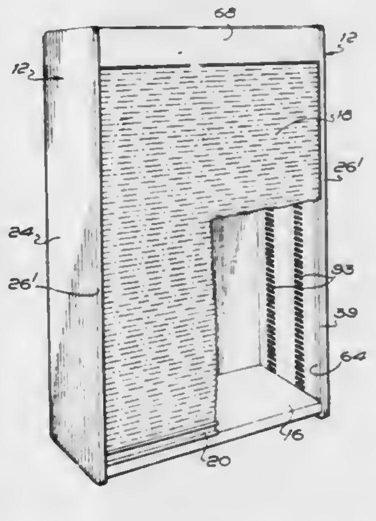
Forest G. Stark, Jamestown, N.Y., assignor to AVM Corporation, Jamestown, N.Y.
Filed Apr. 21, 1982, Ser. No. 370,374
Int. Cl.^{3} A47B *88/00;* E05C *7/06*
U.S. Cl. 312—216 **18 Claims**

1. An improved cabinet of the type having a case with a plurality of horizontally movable components mounted therein, the improvement characterized by an anti-tip mechanism for preventing more than one component from being opened to its fully extended position at one time, said anti-tip mechanism comprising:
a segmented lock bar extending adjacent each of said components, said lock bar comprising a plurality of longitudinally extending snubber elements axially aligned in end-to-end abutment;
a single abutment element on only one of said snubber elements and a single abutment element on said case in vertical alignment with said first mentioned abutment element;
a single resilient means for urging said abutment elements into engagement to limit vertical movement of said one snubber element whereby all of said snubber elements are maintained in a central equilibrium position and are movable therefrom in opposite directions to first and second opposite axially displaced positions;
a plurality of longitudinally extending activator rails each disposed substantially normal to said lock bar, each rail being carried by a different one of said components, each rail being disposed with one of its ends positioned to insinuate itself between adjacent snubber elements when its respective component is opened and so shaped with respect to said adjacent snubber elements to displace all of the snubber elements from their central equilibrium positions to one of said first and second positions with the snubber elements located in one of said directions with respect to said insinuated rail moving to said first axially displaced position and those located in the opposite of said one direction moving to said second axially displaced position, whereby the remainder of said plurality of rails and their respective components are blocked by a displaced snubber element.



4,441,768
OFFICE CABINET

Joseph Clarkson, Seacroft, England, assignor to Thatchcode Limited, Great Britain
Filed Mar. 16, 1982, Ser. No. 358,695
Int. Cl.^{3} A47B *43/00;* E06B *9/14*
U.S. Cl. 312—257 SM **9 Claims**



1. In an office cabinet comprising a pair of end members each formed from a planar sheet metal blank bent so as to provide a plane face and edge faces extending around at least part of the periphery of the plane face, which edge faces are substantially wider than the thickness of the sheet metal and substantially narrower than the width of the plane face, the plane face forming a generally rectangular outer side surface of

the cabinet and the edge faces adjoining said side face at least at the front, top and rear of the cabinet,

the improvement wherein said sheet metal blank includes:

a generally rectangular area which corresponds to said plane face and has at least some rounded corners and straight edges extending from said corners,

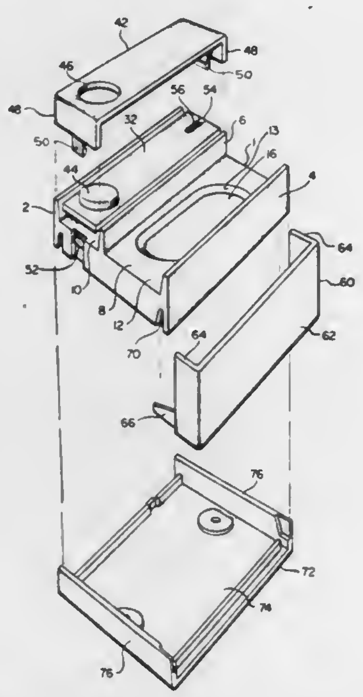
edge forming portions contiguous with said area along said straight edges,

continuation of at least some of said edge forming portions projecting beyond the junction of one of said straight edges with said rounded corner, and

the blank being bent along said edges to turn said edge forming portions perpendicularly to the plane face and said continuations of said edge forming portions being curved to adjoin the rounded corners of the plane face such that the edge face formed by said edge forming portions and the continuations thereof curves around said rounded corners whereby the end member mimics the shape of a board with rounded corners.

4,441,769
LENS DISINFECTING UNIT

Michael D. Thomas, and Francis E. Ryder, both of Arab, Ala., assignors to Ryder International Corporation, Arab, Ala.
Filed Apr. 19, 1982, Ser. No. 369,413
Int. Cl.^{3} A47B *47/00;* **B65D** *41/16, 41/18*
U.S. Cl. 312—270 **2 Claims**



1. A housing construction for a lens disinfecting unit or the like, said housing having a pair of spaced walls forming opposed walls of the housing; a cover for part of said housing, interfitting means on said cover and housing for retaining the housing and cover assembled, a lid in pivotal connection with the housing for closing another part of the housing, and a base for covering a further part of said housing, said base overlying said interfitting means and said pivotal connection in such manner as to prevent separation of the lid and cover from said housing; the cover, the base, and the lid when closed cooperating to define two additional sets of opposed walls for the housing that cooperate with the first-mentioned set of opposed walls to form an enclosure.

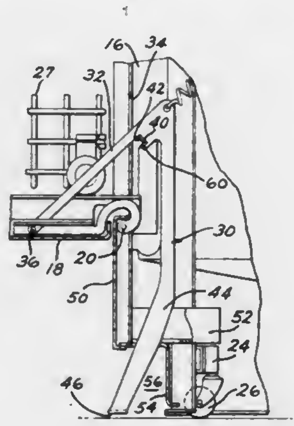
4,441,770
APPLIANCE ANTI-TIP DEVICE

Bernard J. Brezosky, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.
Filed Aug. 19, 1982, Ser. No. 409,746
Int. Cl.^{3} A47B *81/02*
U.S. Cl. 312—276 **2 Claims**

1. A freestanding cabinet adapted to be self-supporting on a floor surface having an access opening and an access door hinged about a horizontal axis for movement between a closed position and a fully open position where it is supported in a substantially horizontal position by a support means, said support means comprising:

an anti-tip member carried by said cabinet for allowing movement of said member from a retracted position to a tip-preventing position extending from the front of said cabinet in the door open position to a location adjacent said floor surface and outward of said cabinet;

a stop arm formed integral with said anti-tip member having an end connected to said access door for moving said anti-tip member between said retracted and extended tip-preventing position; and a leg portion engaging said floor when said anti-tip member is in its tip-preventing position;

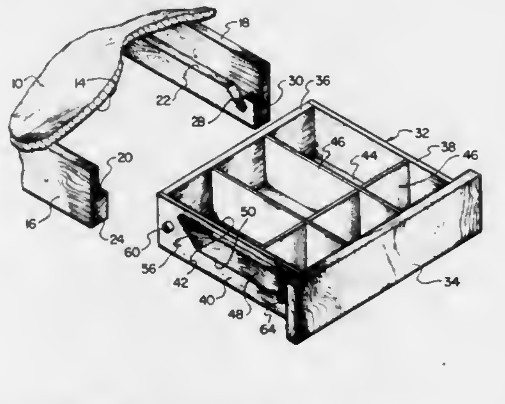


means on said stop arm of said member including a stop surface area oriented perpendicular to the line of travel of said stop arm engaging a mating indexing surface secured relative to said cabinet at a location above said horizontal axis for positioning said door in its horizontal open position and to prevent tipping of said cabinet, in response to an incident of downward force on said door, tending to move said door downwardly from said open position; and

locking means on said stop arm adjacent said stop surface area being dimensioned to automatically engage holding means on said indexing surface on said cabinet when said leg portion is in engagement with said floor to prevent tipping of said cabinet in response to an incident of downward force on a part of said cabinet apart from said door, tending to tip said cabinet, and for automatically releasing said locking means from said holding means on said indexing surface when such downward force is removed.

4,441,771
DRAWER APPARATUS

Layton S. Roesler, 3515Mound St., Ventura, Calif. 93003
Filed Feb. 8, 1982, Ser. No. 346,483
Int. Cl.^{3} A47B *88/00, 88/18*
U.S. Cl. 312—322 **5 Claims**



1. A drawer apparatus comprising:

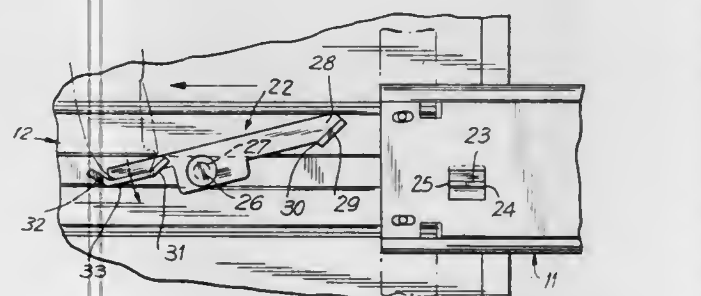
a side rail assembly comprised of a pair of substantially parallel spaced-apart side rails, each said side rail having an inner surface, said inner surfaces facing each other, each said side rail having a cam surface, each said cam surface including a recess, each said side rail terminating at a front edge;

a drawer having an internal compartment enclosed by a front wall and a back wall interconnected by a pair of spaced-apart side walls, each said side wall having an exterior surface, each said exterior surface having a guide rail, each said guide rail extending from said front wall to a surface located directly adjacent said back wall but spaced therefrom, a said guide rail to slidably connect with a said cam surface to permit movement of said drawer relative to said side rail assembly, said movement of said drawer being between a closed position and an open position, said closed position not permitting access into said internal compartment, said open position permitting access into said internal compartment; and

a protruding member mounted on each said exterior surface with there being two in number of said protruding members, each said protruding member being located between its respective said surface and said back wall, each said protruding member to engage with a said recess when said drawer is in said open position, said protruding members and said recesses preventing disengagement of said drawer from said side rail assembly when in said open position, upon said drawer reaching said open position the entire said drawer pivots to an inclined position (relative to said closed position) with each said surface of each said guide rail abutting said front edge of a said side rail.

4,441,772
SEPARABLE BOTTOM MOUNTED DRAWER SLIDE

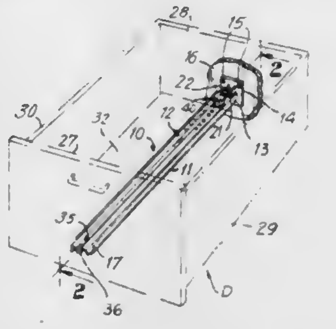
Brian S. Fielding, Chappaqua, and Fred S. Leiper, Valley Cottage, both of N.Y., assignors to Hardware Designers, Inc., Mt. Kisco, N.Y.
Filed Feb. 11, 1982, Ser. No. 347,884
Int. Cl.^{3} A47B *88/16*
U.S. Cl. 312—330 R **7 Claims**



1. A frontwise removable bottom mounted drawer slide assembly comprising a fixed channel adapted to be mounted to a cabinet and a movable drawer channel adapted to be mounted to a drawer, antifriction means interposed between said channels and connecting said channels for longitudinal relative movement between telescoped and extended positions, said drawer channel having an outer end portion adapted to be disposed adjacent the face of a drawer and an inner end portion endwisely removable from said cabinet channel in said extended position, a self-coupling lock mechanism for connecting and disconnecting said channels, said mechanism including a stop member on said fixed channel, a pawl on said drawer channel having a first end adjacent said inner end of said drawer channel and an outer end spaced from said inner end, said pawl being mounted for pivotal movement about an axis intermediate said ends between first and second limiting positions, a latch surface on said pawl adjacent said inner end, said latch surface facing said outer end and being in the path of said stop member and clear of said stop member in said first and second positions respectively of said pawl, first cam means on said pawl inwardly positioned relative to said latch surface and disposed in the path of said stop member for co-acting with said stop member to shift said pawl from said first to said second position responsive to inward movement of said first cam past said stop member and second cam means on said pawl outwardly of said pivot for shifting said pawl from said second to said first position responsive to continued inward movement of said drawer channel relative to said cabinet channel.

4,441,773
BOTTOM MOUNTED DRAWER SLIDE ASSEMBLY

Fred B. Leiper, Valley Cottage, N.Y., assignor to Hardware Designers, Inc., Mt. Kisco, N.Y.
Filed Feb. 8, 1982, Ser. No. 346,521
Int. Cl.^{3} A47B *88/00;* **F16C** *21/00*
U.S. Cl. 312—330 R **7 Claims**



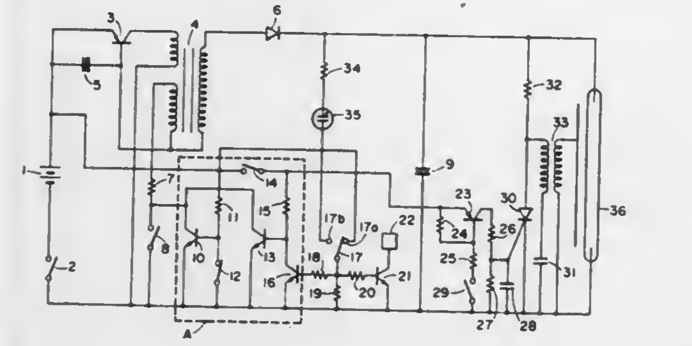
1. A bottom mounted drawer slide assembly comprising, in combination, a fixed channel member adapted to be mounted to a cabinet, said fixed channel member being U-shaped in vertical section, a drawer channel generally U-shaped in vertical section and including a horizontally disposed central web, antifriction means interposed between said channels and coupling the same for longitudinal movement between telescoped and extended relative positions, a fixed mounting flange adjacent a forward end of said drawer channel, said flange being formed from and disposed in a plane normal to said web, said flange being adapted to be secured to the front panel portion of a drawer by a horizontally directed fastener member, a plurality of mutually longitudinally spaced mounting apertures formed in said web adjacent the rear end thereof, a mounting bracket adapted to be seated selectively in one of said apertures in accordance with the depth of said drawer, said bracket including a channel attachment finger adapted to extend through a said aperture and engage against under portions of said web surrounding said aperture, said bracket having a drawer attachment disposed substantially at a right angle to said finger said leg including a fastener aperture adapted to receive a horizontal fastener member extending therethrough and into the rear panel of said drawer, thereby to couple said panel to said leg and said bracket to said web.

4,441,774
FLASH DEVICE OF A CAMERA

Kazuyuki Kazami, Tokyo, and Yoshiaki Ohtsubo, Kawasaki, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan
Filed Apr. 24, 1981, Ser. No. 257,356
Claims priority, application Japan, May 14, 1980, 55-62737; May 15, 1980, 55-65580; May 15, 1980, 55-65581; May 16, 1980, 55-66202
Int. Cl.^{3} H05B *41/32*
U.S. Cl. 315—241 P **10 Claims**

1. In a flash device for photography including a DC/DC converter for boosting a DC power source voltage and applying a voltage to a main capacitor for supplying energy for driving a flashlight tube, said converter having control means operative in response to the trigger operation by a start operating switch to stop the operation when the charging current of said main capacitor is reduced at a predetermined current value, the improvement comprising:

another switch means for enabling the operation of said converter independently of said start operating switch, said another switch means being operative to operate said converter until the charging voltage of said main capacitor reaches a sufficient value to drive said flashlight tube; said another switch means including a switch circuit parallel-connected to said start operating switch, and a detecting circuit for detecting the charging voltage of said main capacitor and inverting the operation of said switch circuit.



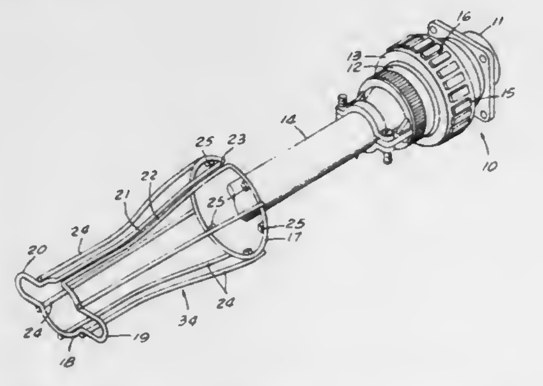
4,441,775
COUPLING AND DECOUPLING AID FOR AN ELECTRICAL CONNECTOR

Gerald E. Walters, Granada Hills, Calif., assignor to Automation Industries, Inc., Greenwich, Conn.

Filed Aug. 9, 1982, Ser. No. 406,329

Int. Cl.^{3} H01R *13/62*

U.S. Cl. 339—89 R **6 Claims**



1. An aid for use in coupling and decoupling a plug and receptacle connector, the plug having a coupling housing that is rotatable to couple and decouple the connector depending on the direction of rotation, and a cable connected to the plug, comprising:

a member adapted for holding in the hand with a bore extending therethrough having a first opening of sufficient size to enable receipt onto the coupling housing and a second opening of sufficient size to enable receipt onto the cable;

means on an interior wall of the member defining the first opening for releasably engaging the coupling housing; and

first and second means extending from opposite sides of the member immediately adjacent and transversely of the member second opening.

4,441,776
QUICK DETACHABLE COUPLING

John W. Anhalt, Orange, Calif., assignor to ITT Corporation, New York, N.Y.

Filed Nov. 9, 1981, Ser. No. 319,457

Int. Cl.^{3} H01R *13/62*

U.S. Cl. 339—91 R **11 Claims**

6. A quick detachable coupling comprising:

mating plug and receptacle members;

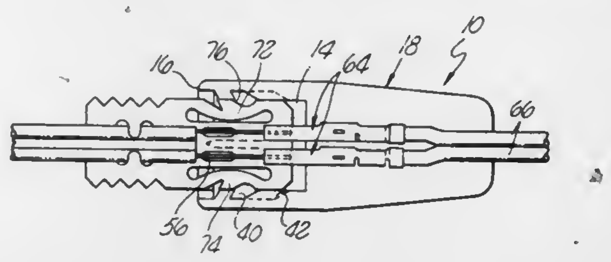
a recess opening at the front of said receptacle member slidably receiving said plug member therein, said recess being formed by upper and lower walls and first and second side walls;

means forming rearwardly facing latching shoulders on said side walls lying in a first plane generally parallel to said upper and lower walls;

means forming release slots below said latching shoulder forming means lying in a second plane generally parallel to said first plane;

said plug member having latching tabs on opposite sides thereof adjacent to said side walls, said tabs normally lying in said first plane behind said shoulders for latching said members together and being vertically movable into said second plane, said tabs also being movable in said first plane toward each other for allowing the positioning of said tabs behind said shoulders upon mating of said plug and receptacle members; and

means for selectively shifting said tabs vertically into said release slots in said second plane to allow disengagement of said plug and receptacle members.



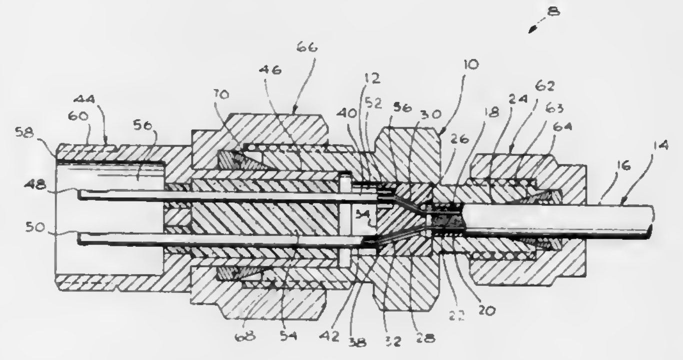
4,441,777
ELECTRICALLY SEALED CONNECTOR AND CABLE ASSEMBLY

Aramis Harootion, Northridge, Calif., assignor to Whittaker Corporation, Los Angeles, Calif.

Filed Sep. 29, 1982, Ser. No. 426,325

Int. Cl.^{3} H01R *13/52*

U.S. Cl. 339—94 M **6 Claims**



1. An improved hermetically sealed heat resistant connector and cable assembly, said assembly comprising, in combination:

a. an elongated heat resistant connector body defining a central longitudinally extending passageway therethrough;

b. a sheathed cable containing a plurality of spaced leads, said cable being slidably disposed in one end of said passageway, said leads projecting from said cable in said passageway;

c. a dielectric element having apertures extending longitudinally therethrough within which are disposed said leads, said element being positioned adjacent said cable in said passageway;

d. a heat resistant connector plug slidably disposed in the opposite end of said passageway from said end containing said cable, said plug having a spaced parallel plurality of hollow pins extending longitudinally therethrough, aligned with said apertures of said dielectric element and receiving said leads; and,

e. locking means comprising heat resistant first and second lock nuts threadably releasably connected to opposite ends of said body, a first swaging cone releasably disposed around said cable between said first nut and the adjacent body end and a second swaging cone disposed around said plug between said second nut and the adjacent body end, said lock nuts and swaging cones hermetically sealing said cable and plug in place in said connector body, thus hermetically protecting said cable leads and cable interior.

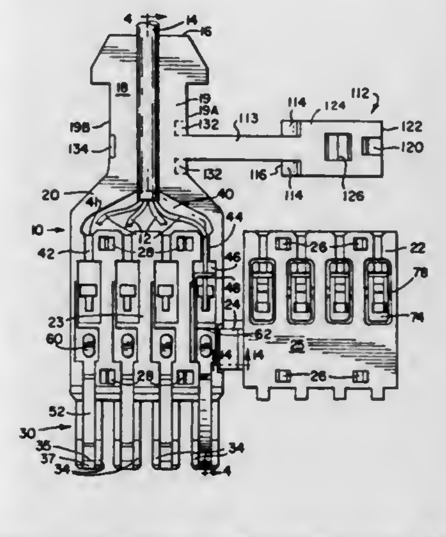
4,441,778
PATCHCORD CONNECTOR

Stephen A. Sampson, Wheaton, Ill., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 93,401, Nov. 13, 1979, abandoned. This application Oct. 9, 1981, Ser. No. 309,900

Int. Cl.^{3} H01R *13/39*

U.S. Cl. 339—99 R **15 Claims**



1. A patchcord connector for terminating at least one insulated conductor, comprising:

a housing comprising body members interlocked to form a closed body, said closed body defining at least one internal pocket with an access opening in communication with the exterior of said housing, said access opening being dimensioned to permit unimpeded insertion of a portion of said insulated conductor into said pocket;

at least one contact element mounted within said housing before said body members are interlocked to form said closed body, said contact element having a termination portion disposed within said pocket, said termination portion including means for piercing the insulation of an insulated conductor inserted into said pocket of said closed body, said contact element termination portion including means for locating said insulated conductor adjacent said piercing means; and

means associated with said closed body for driving a portion of said inserted insulated conductor into said piercing means to establish electrical connection between said contact element and said conductor without displacing said contact element, said driving means being operable from a point outside of said housing;

said housing consisting of first and second interlockable body members, at least one of said body members having a channel defining said pocket at the interface of said body members;

said positioning means of said termination portion of said contact element includes portions defining an aperture in communication with said piercing means, said aperture being of size sufficient to accommodate said insulated conductor, and adapted to receive a portion of said insulated conductor therethrough, said portion of said insulated conductor being driven from said aperture to said piercing means by said driving means;

said piercing means including means defining a slot with edges spaced at a distance less than the diameter of said conductor, said edges including means for cutting through said insulation and biting into said conductor;

said housing including an aperture overlying said piercing means and said driving means includes operating means mounted in said overlying aperture;

said operating means comprising a push button mounted for movement between a pre-termination position with said driving means separated from said insulated conductor, and a termination position with said conductor in electrical engagement with said contact element and said driving means abutting said insulated conductor;

said push button when in its pre-termination position being frangibly mounted in said aperture.

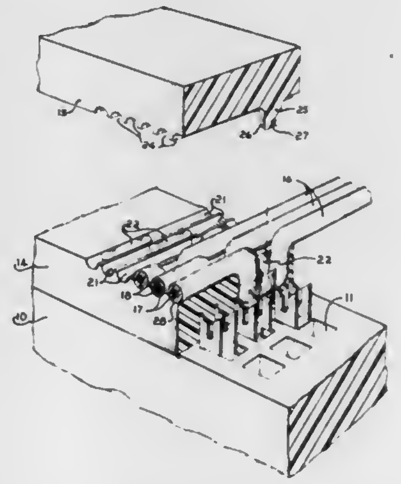
4,441,779
CONTACT DEVICE FOR A MULTICONDUCTOR CABLE

Wilhelmus T. M. Foederer, Best, and Francesco G. M. Voorn, Waalwijk, both of Netherlands, assignors to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Continuation of Ser. No. 221,886, Dec. 31, 1980, abandoned. This application Apr. 30, 1982, Ser. No. 373,705

Int. Cl.^{3} H01R *13/39*

U.S. Cl. 339—99 R **4 Claims**



1. In a connector for multiconductor cable having a dielectric terminal support member supporting a multiplicity of terminals, each terminal having at least one bifurcated insulation wire piercing contact with a slit for receiving an insulated conductor at one end and another electrical contact at the other end, a dielectric cable support member, a dielectric terminal cover between said terminal support member and said cable support member and a multiconductor cable retained longitudinally between said terminal cover and said cable support member, the improvement comprising:

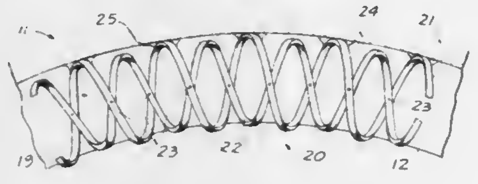
(a) mounting the terminals in three rows, two outer and one middle row, the outer rows containing terminals with the slit offset with respect to the center line of the terminal, one outer row of terminals being turned 180° with respect to the other row and the middle row containing terminals with the slit in line with the center line of the terminal, the slits in the terminals of each row being in a plane parallel to the slits in the terminals of adjacent rows,

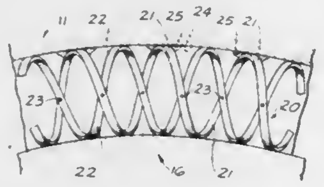
(b) a multiplicity of recesses in a top surface of the terminal cover and a channel from each said recess to an exit in a bottom surface of the terminal cover, each recess accommodating the bifurcated end of a terminal when the terminal cover is mated with the terminal support member and

(c) the cable support member maintaining the cable in a U-shaped configuration by a slotted finger extending from a lower surface of the cable support member, the finger having its largest width extending transversely to the plane of the bifurcated insulation piercing contact so that when the connector is closed, one conductor is located within the slit of each terminal.

4,441,780
PLUG AND RECEPTACLE ELECTRICAL CONNECTOR

Gerald E. Walters, Granada Hills, Calif., assignor to Automation Industries, Inc., Greenwich, Conn.
Filed Sep. 30, 1982, Ser. No. 428,768
Int. Cl.³ H01R *13/648*
U.S. Cl. 339—143 R **8 Claims**



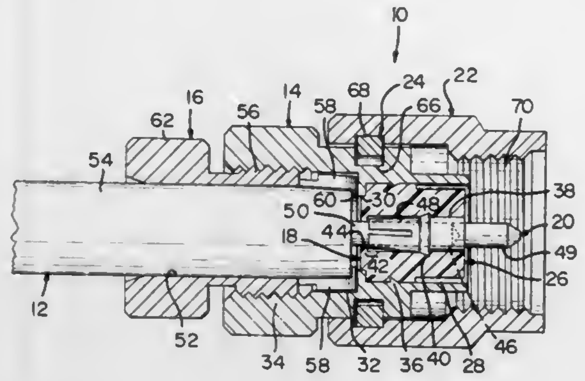


1. An electromagnetic energy shielding means for receipt within a groove on the inner wall of a plug connector part and which contacts a receptacle connector part when the plug and receptacle connector parts mate, comprising:

- a first helically wound coil spring arranged in a continuous closed path;
- a second helically wound coil spring arranged in a continuous closed path, said second coil spring being interleaved with the first coil spring;
- means conductively bonding crossover points of the first and second coil springs; and
- means for conductively securing one of said spring coils to plug connector part walls defining the groove.

4,441,781
PHASE-MATCHED SEMIRIGID COAXIAL CABLE AND METHOD FOR TERMINATING THE SAME

Edgar W. Forney, Jr., Harrisburg, and Richard S. Hogendobler, Camp Hill, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Aug. 17, 1982, Ser. No. 408,958
Int. Cl.³ H01R *17/18*
U.S. Cl. 339—177 R **4 Claims**

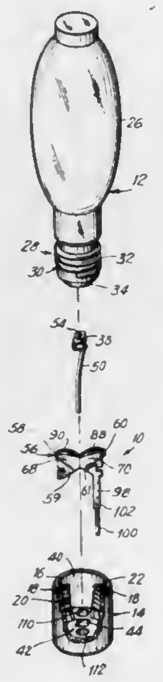


1. A method for terminating a length of coaxial cable to a selected electrical length comprising the steps of:

- cutting the coaxial cable to the selected electrical length;
- permanently terminating one end of the coaxial cable with a coaxial connector;
- positioning a phase-matching test connector onto the other end of the coaxial cable;
- measuring the phase angle of the coaxial cable to determine the electrical length of the coaxial cable;
- removing the test connector from the coaxial cable, and if the electrical length of the coaxial cable is correct, permanently terminating the other end of the coaxial cable with another coaxial connector;
- or, if the electrical length is not correct, removing the test connector from the coaxial cable, trimming the other end of the coaxial cable to the correct electrical length, positioning the test connector onto the trimmed end, measuring the phase angle of the trimmed coaxial cable to make certain the electrical length is correct, removing the test connector from the coaxial cable, and permanently terminating the other end of the coaxial cable with another coaxial connector.

4,441,782
LAMPSOCKET MECHANISM

Manfred M. Kneer, Icard, N.C., assignor to Leviton Manufacturing Company, Inc., Little Neck, N.Y.
Filed Feb. 11, 1982, Ser. No. 348,110
Int. Cl.³ H01R *13/50*
U.S. Cl. 339—199 R **15 Claims**

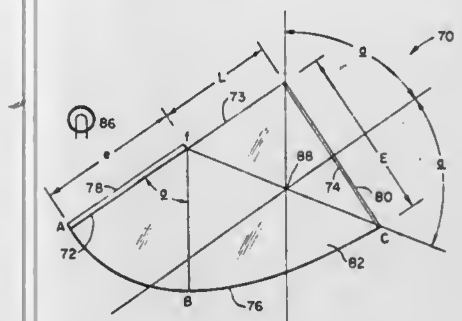


1. A lampsocket mechanism for holding an incandescent lamp, said lamp being of the type having a screw base having an electrical contact portion approximately at the center of said base, said base being rotatable about an axis of rotation, said mechanism comprising:

- an electrically nonconductive body forming a socket capable of receiving said screw base of said lamp,
- a centrally located contact means mounted on said body for electrically contacting said electrical contact portion of said screw base,
- thread segment means within said socket unitary with said body for engaging the threads of said screw base, said thread segment means and said screw base cooperating to press said electrical contact portion of said screw base longitudinally against said centrally located contact means when said screw base is manually screwed into said socket,
- bias contact means mounted within said socket opposed to said thread segment means, said bias contact means being biased inwardly and being in bias contact with said screw base along a plurality of longitudinal lines of thrust when said base is screwed into said socket, said bias contact means being for laterally pressuring against said screw base along a plurality of planes formed by said longitudinal lines with said axis of rotation, whereby the screw base is laterally aligned in the socket and the electrical contact portion of the screw base is centered into alignment with the first contact means, said bias contact means also being for electrically contacting the screw base of said lamp,
- a first electrical lead connected to said centrally located contact means, and
- a second electrical lead connected to said bias contact means, said bias contact means including a resilient member having a plurality of planar faces, each face being mounted diametrically and longitudinally opposite to said thread segment means and each face bing capable of exerting equal lateral pressures along said lines of thrust in an axial direction against said screw base.

4,441,783
VESSEL NAVIGATION LIGHTS

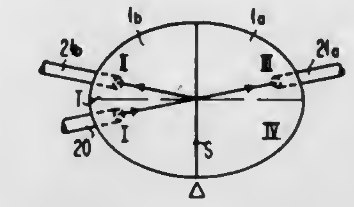
Alexander J. Houghton, Annandale, and Thomas M. Knasel, McLean, both of Va., assignors to Science Applications, Inc., La Jolla, Calif.
Division of Ser. No. 149,962, May 15, 1980, Pat. No. 4,367,519. This application Sep. 23, 1982, Ser. No. 421,915
Int. Cl.³ G02B *5/14;* **F21V** *7/00*
U.S. Cl. 350—96.10 **5 Claims**



1. An optical element for navigational lights and the like, comprising an asymmetrical light diverger having a light entry plane for receiving diffuse light, a light exit plane positioned in spaced normal relation to said light entry plane, and at least one curved surface, which is in part parabolic, connecting said planes for diverging diffuse light from said light entry plane into a virtual line of luminous energy, the light from said line being transmitted through said light exit plane over a precise arc of visibility.

4,441,784
PARABOLOIDAL COUPLER FOR LIGHT WAVE GUIDES

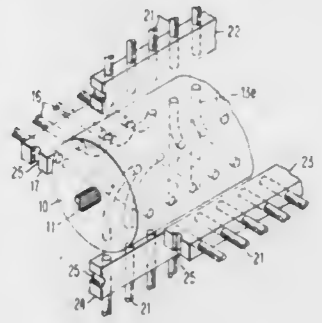
Hans-Erdmann Korth, Stuttgart, Fed. Rep. of Germany, assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 30, 1981, Ser. No. 258,868
Claims priority, application Fed. Rep. of Germany, May 24, 1980, 3019955
Int. Cl.³ G02B *7/26*
U.S. Cl. 350—96.15 **10 Claims**



1. A coupler assembly comprising a pair of couplers, each of said couplers including a light transmitting body having the configuration of a paraboloid of revolution, said body having a flat face perpendicular to an axis of symmetry and a connection for at least one optical fiber at or near its point of focus, said couplers being arranged with their respective flat faces in adjacent, parallel relationship.

4,441,785
ROTARY FIBER OPTIC SWITCH

James R. Petrozello, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 29, 1981, Ser. No. 316,185
Int. Cl.³ G02B *7/26*
U.S. Cl. 350—96.20 **3 Claims**



1. A rotary fiber optic switch for controlling and distributing light signal impulses comprising;

- a cylindrical housing;
- a drum rotatably mounted within said housing;
- a plurality of cable sockets positioned at specific locations around the periphery of said housing and communicating with the periphery of said drum;
- an input fiber optic cable connected to one of said cable sockets and having a plurality of fiber optic strands communicating with the periphery of said drum and each of which may transmit a series of input light signal impulses;
- a plurality of output fiber optic cables, there being one connected to each of the remaining cable sockets and communicating with the periphery of said drum;
- a plurality of output fiber optic strands in each one of said output cables and communicating with the periphery of said drum for transmitting a plurality of output light signal impulses;
- a plurality of light conductive elements arranged within said drum, there being one conductive element associated with each one of said input fiber optic strands for transmitting the input light signal impulses from said input cable to the output fiber optic strands in one or more of said output cables; and
- means for selectively positioning said drum and light conductive elements to complete one or more light paths between said input fiber optic cable and simultaneously more than one of said output fiber optic cables.

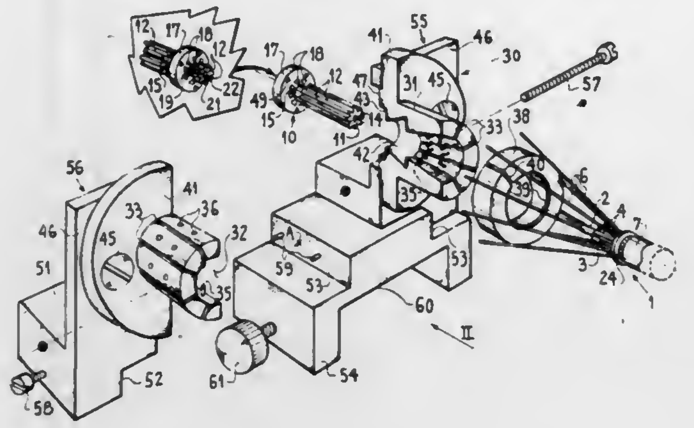
4,441,786
DEVICE FOR POSITIONING OPTICAL FIBERS IN A TERMINAL CONNECTOR FOR SPLICING TWO OPTICAL FIBER TRANSMISSION CABLES

Jean P. Hulin; Andre Bouvard, and Patrick LeMaitre, all of Conflans Ste Honorine, France, assignors to Lignes Telegraphiques et Telephoniques, Conflans Ste Honorine, France
Filed Oct. 30, 1981, Ser. No. 316,912
Claims priority, application France, Nov. 3, 1980, 80 23464
Int. Cl.³ G02B *7/26*
U.S. Cl. 350—96.21 **13 Claims**

1. A device for positioning optical fibers in grooves of a terminal connector for splicing two optical-fiber transmission cables, said connector defining an outer connector periphery in which said grooves are formed, said device comprising:

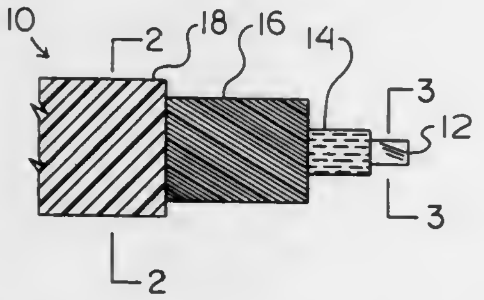
- an optical-fiber insertion piece defining an outer insertion piece periphery and comprising a central recess provided substantially over all its length, and radial slits formed in said outer insertion piece periphery and extending substantially over all the length of said insertion piece, said connector being fitted into said central recess so that each groove is disposed opposite a slit of said insertion piece; and

optical-fiber distribution means mounted freely rotatable on said insertion piece and having a longitudinal slit intended to come successively opposite each slit of said insertion piece, the optical fibers being presented one by one to the slit of said distribution means so that, by rotation of said distribution means, each optical fiber penetrates into a groove of said connector through the slit of said distribution means positioned opposite a slit of said insertion piece.



4,441,787
FIBER OPTIC CABLE AND METHOD OF MANUFACTURE

Rosemary K. Lichtenberger, Elgin, Ill., assignor to Cooper Industries, Inc., Houston, Tex.
Filed Apr. 29, 1981, Ser. No. 258,618
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.23 **10 Claims**



9. A fiber optic cable comprising:

an optical fiber, including a core, a cladding extending longitudinally about and upon the core, and a buffer jacket extending about and upon the cladding;

a tetrafluoroethylene grease coating extending upon said optical fiber and having a Young's modulus less than the Young's modulus of the aforementioned buffer jacket;

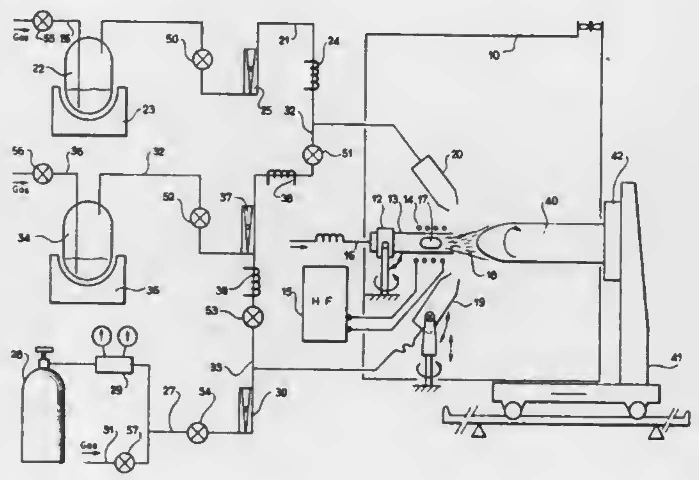
a textile serve extending helically about said tetrafluoroethylene grease coating and in contact therewith; and

a cable jacket extending longitudinally about and upon said serve;

whereby, said tetrafluoroethylene grease coating maintains the concentricity of said optical fiber and said textile serve.

4,441,788
OPTICAL WAVE GUIDE WITH FLUORINE-DOPED CORE

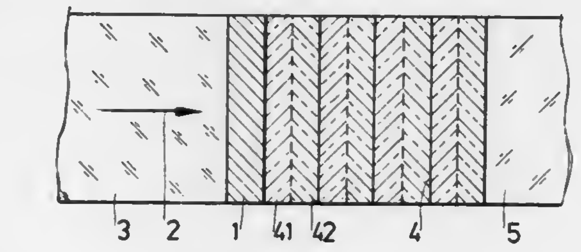
Pierre Guerder, Pithiviers, and Andre Ranson, Rueil Malmaison, both of France, assignors to Quartz et Silice, Paris, France
Filed Dec. 15, 1981, Ser. No. 331,018
Claims priority, application France, Dec. 16, 1980, 80 26670
Int. Cl.³ G02B *5/172*
U.S. Cl. 350—96.34 **8 Claims**



1. An optical waveguide formed with a core made of a vitreous material containing fluorine and coated with at least a distinct peripheral layer, wherein the core of said waveguide is made of a silica glass in which fluorine is uniformly distributed.

4,441,789
RESONANCE ABSORBER

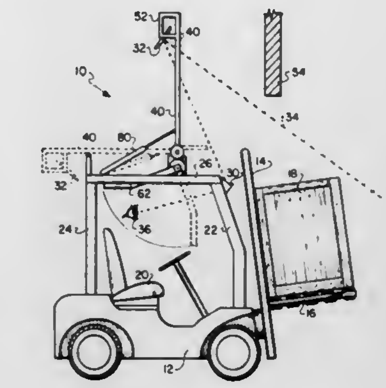
Hubert Pohlack, Jena, German Democratic Rep., assignor to Jenoptik Jena GmbH, Jena, German Democratic Rep.
Filed Mar. 26, 1981, Ser. No. 247,956
Claims priority, application German Democratic Rep., Mar. 31, 1980, 220063; Apr. 1, 1980, 220110
Int. Cl.³ G02B *5/28, 5/22*
U.S. Cl. 350—166 **6 Claims**



1. In a resonance absorber for the absorption of impinging photons of electromagnetic radiation having an effective wavelength λ, said resonance absorber including (1) an absorption material of refractive index n and absorption coefficient k and having a medium of refractive index n_a disposed frontally thereof; (2) an external optical element positioned posteriorly of said absorption material, and (3) a series of interference layers located between said absorption material and said external optical element, each of said interference layers having an optical thickness of substantially $\lambda/4$, and the series of layers arranged to have alternatingly low and high refractive indices, the improvement wherein: the thickness of said absorption material is equal to $m\lambda/(4n)$, where m is the whole number closest to $2n_a/(\pi k)$, and where the refractive index n of the absorption material equals the refractive index n_a of the said medium disposed frontally of said absorption material, and wherein the interference layers have alternatingly low and high refractive indices in that order when m is even and alternatingly high and low refractive indices in that order when m is odd.

4,441,790
LIFT TRUCK SAFETY MIRROR

David M. Williams, 165 Riker Ter., Salinas, Calif. 93901, and Charles L. Curtis, 295 Zabala Rd., Salinas, Calif. 93908
Filed Aug. 7, 1981, Ser. No. 290,853
Int. Cl.³ B60R *1/10*
U.S. Cl. 350—302 **11 Claims**



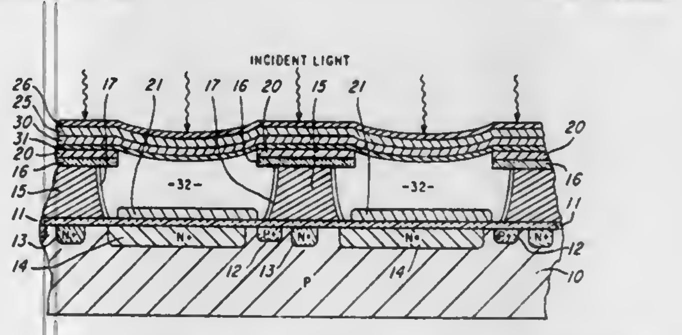
1. An overload viewing system for a fork lift truck type cargo handling vehicle for viewing forwardly over a forward positioned load, said viewing system comprising:

a first mirror in the line of sight of the vehicle operator,

a pivoting arm assembly, and a second mirror mounted on said pivoting arm assembly above said first mirror for pivotal movement between a viewing position to establish a line of sight from the operator via said first mirror and said second mirror forwardly over a normal forward positioned load of said vehicle, and a retracted position to permit passage of the vehicle beneath a low clearance.

4,441,791
DEFORMABLE MIRROR LIGHT MODULATOR

Larry J. Hornbeck, Van Alstyne, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 183,595, Sep. 2, 1980, abandoned. This application Jun. 7, 1982, Ser. No. 386,141
Int. Cl.³ G02F *1/29*
U.S. Cl. 350—360 **43 Claims**



1. A light modulating semiconductor device comprising:

a semiconductor substrate of one conductivity type;

a layer of insulating material disposed on one surface of said substrate;

a first doped region of the other conductivity type disposed in said substrate;

a member of conductive material disposed on said insulating layer above said first doped region of the other conductivity type and extending upwardly from said substrate;

membrane means including at least one conductive layer disposed upon said conductive member and extending across said substrate in spaced relationship with respect to said insulating layer, said membrane means having a light reflective surface exposed to incident light;

a conductive element disposed on said insulating layer and overlying said substrate in offset relationship with respect to said first doped region of the other conductivity type and said conductive member extending upwardly from said substrate;

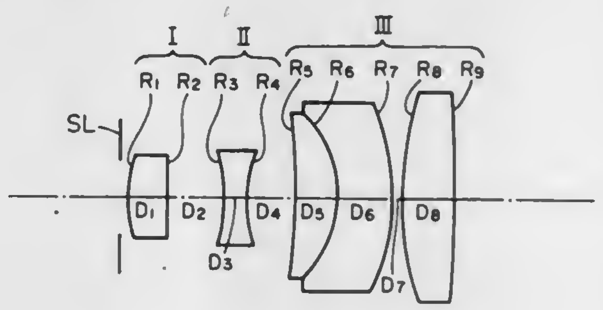
a second doped region of the other conductivity type disposed in said substrate and extending to said one surface thereof, said second doped region of the other conductivity type being substantially disposed beneath said conductive element and spaced therefrom by said insulating layer interposed therebetween;

said conductive element being spaced from said membrane means so as to define an air gap therebetween, said conductive element and said conductive layer of said membrane means respectively serving as opposed field plates with the air gap therebetween to comprise an air gap capacitor; and

said membrane means being deflectable in a direction toward said conductive element in response to the charge placed on said air gap capacitor.

4,441,792
TELECENTRIC PROJECTION LENSES

Masamichi Tateoka, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 26, 1981, Ser. No. 238,412
Claims priority, application Japan, Mar. 4, 1980, 55-27735; Mar. 4, 1980, 55-27736
Int. Cl.³ G02B *13/22*
U.S. Cl. 350—415 **8 Claims**



1. A telecentric projection lens comprising:

a first lens component composed of a single lens of positive refractive power;

a second lens component composed of a bi-concave lens of negative refractive power; and

a third lens component including at least two positive lenses one having a cemented surface whose center of curvature is spaced from the surface towards the object field side, said first, second and thrid lens components being arranged in the recited order as viewed from the object field side and satisfying the conditions:

$$1.69 \leqq |f_1/f_2| \leqq 2.55$$

$$-0.33 \leqq f_2/f \leqq -0.19$$

$$0.41 \leqq f_3/f \leqq 0.59$$

wherein f_1, f_2 and f_3 are focal lengths of said first, second and third lens components, respectively, and f is the focal length of the whole lens system.

4,441,793
MICROSCOPIC EVALUATION SLIDE

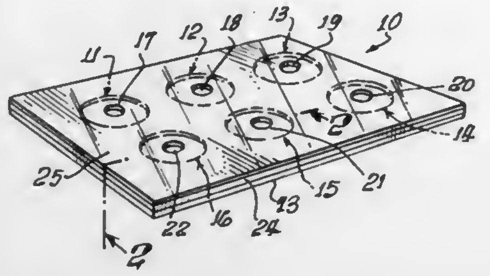
Carlos D. Elkins, 1414 S. Fairplain Ave., Whittier, Calif. 90601
Filed Jan. 10, 1983, Ser. No. 456,700
Int. Cl.³ G02B *21/34*
U.S. Cl. 350—536 **12 Claims**

1. A microscopic evaluation slide for viewing liquid specimens, said sliding comprising:

a base having at least one flat viewing area;

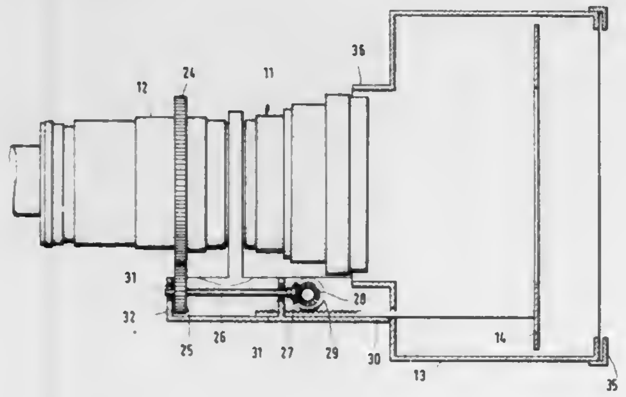
side walls extending from the base completely surrounding said viewing area;

a transparent cover sheet affixed to said side walls in a sealed relationship therewith, said transparent cover sheet having a flat, planar upper surface and said cover sheet completely covering said base and having at least one opening therethrough and said cover sheet being positioned about parallel to the flat viewing area and between 0.001 and 0.020 inches therefrom.



4,441,794
ADJUSTABLE SUN SCREEN FOR CAMERA LENS

Roger C. Field, Cincinnati Str. 41, 8000 Munich, Fed. Rep. of Germany
Filed Aug. 3, 1981, Ser. No. 289,482
Claims priority, application Fed. Rep. of Germany, Aug. 4, 1980, 8020870; Feb. 23, 1981, 3106631
Int. Cl.³ G02B *7/22*
U.S. Cl. 350—580 **29 Claims**

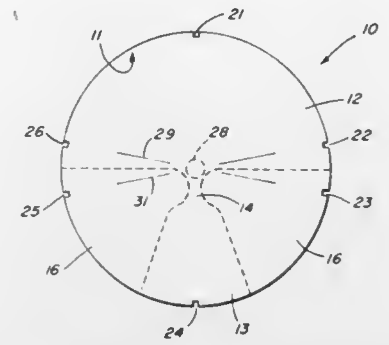


1. In a camera having a lens adapted to be mounted thereto and including a rigid sunshade mounted thereon having a fixed field of view to restrict the angle of light entry to said lens, the improvement comprising a mask disposed within the sunshade for screening light, and means for supporting said mask in a position in front of the lens and within the sunshade, said means for supporting said mask including means for axially adjusting the position of the mask relative to and within the sunshade in accordance with the focal length of the lens so as to limit the field of view of the lens through the sunshade.

4,441,795
MOLDED MULTIFOCAL LENS AND MOLD ASSEMBLY

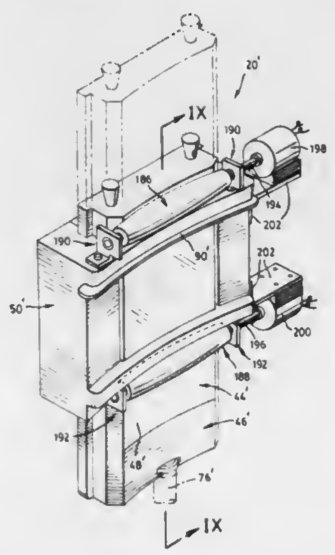
Alban J. Lobdell, Plantation, Fla., assignor to Camelot Industries Corporation, Burlington, Mass.
Filed Mar. 24, 1980, Ser. No. 133,186
Int. Cl.³ B29C *11/00;* B29D *11/00;* G02C *7/06*
U.S. Cl. 351—169 **11 Claims**

10. In a molded multifocal lens otherwise having no inherently visible multifocal lens features, the improvement comprising a plurality of notches formed by a gasket having notch defining means, said notches being formed at the time of molding and located in the edge thereof at precise positions around said lens for use in visually identifying by means of the unaided human eye and locating specific optical features of and on said lens.



4,441,796
FILM SUPPORT ELEMENT ASSEMBLY

William C. Shaw, Streetsville, Canada, assignor to Imax Systems Corporation, Toronto, Canada
Continuation-in-part of Ser. No. 290,630, Aug. 6, 1981, Pat. No. 4,365,877. This application Aug. 12, 1982, Ser. No. 407,524
The portion of the term of this patent subsequent to Dec. 28, 1999, has been disclaimed.
Int. Cl.³ G03B *1/00*
U.S. Cl. 352—184 **13 Claims**



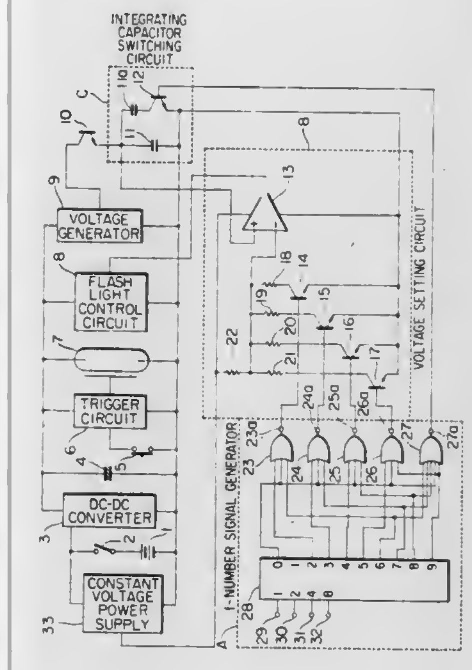
1. A projector, camera or like apparatus having a rolling loop film transport mechanism including a stator and a rotor adapted to co-operate to form continuous rolling loops in said film and to cause transportation thereof through the apparatus along a film path which includes an aperture;

wherein the improvement comprises:

a film support element assembly disposed at the position of said aperture and comprising: an elongate lens element having a film support surface across which successive portions of a film of known width can be laid during transportation of said film in said film transport path; means supporting said lens element for movement in a direction generally normal to said path between first and second positions in which respectively different portions of said film support surface are disposed in said path; said film support surface of the lens element being continuous and of uniform cross-sectional shape and having a length sufficiently in excess of twice the width of the film that said movement of the lens element between its first and second positions will cause a portion of said film support surface in said path to move to a position adjacent to and clear of said path; and cleaning means adapted to remove debris from a said portion of said film support surface which has been moved out of said path.

4,441,797
ELECTRONIC FLASH DEVICE CAPABLE OF AUTOMATICALLY CONTROLLING THE QUANTITY OF A FLASH OF LIGHT

Yuji Maruyama, and Katsumi Horinishi, both of Osaka, Japan, assignors to West Electric Co., Ltd., Osaka, Japan
Filed Dec. 14, 1982, Ser. No. 449,610
Claims priority, application Japan, Dec. 14, 1981, 56-186940[U]; Dec. 14, 1981, 56-186941[U]; Dec. 14, 1981, 56-186944[U]
Int. Cl.³ G03B *15/05*
U.S. Cl. 354—416 **4 Claims**


INTEGRATING CAPACITOR SWITCHING CIRCUIT
VOLTAGE GENERATOR
FLASH LIGHT CONTROL CIRCUIT
TRIGGER CIRCUIT
DC-DC CONVERTER
CONSTANT VOLTAGE POWER SUPPLY
VOLTAGE SETTING CIRCUIT
f-NUMBER SIGNAL GENERATOR

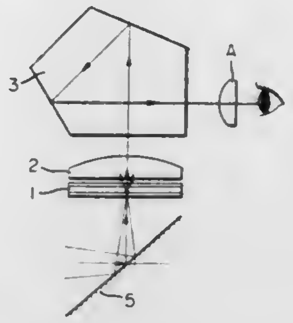
1. An electronic flash device capable of automatically controlling the quantity of a flash of light in response to a preselected f number of a camera comprising

(a) a flash lamp which is connected to a main flash capacitor and which is adapted to convert the energy stored on said main flash capacitor into light,
(b) a comparator with a first input terminal to which is applied a reference voltage and a second input terminal to which is applied a voltage derived from an integrator means which is adapted to totalize the photocurrent flowing through a photosensor means which in turn responds to the intensity of light reflected back from a subject,
(c) a flash light control circuit which is responsive to the electrical signal derived from said comparator so as to extinguish said flash lamp,
(d) an f number signal generator means which receives binary coded signals, each representing each of a plurality of f-numbers, from a camera or an arithmetic circuit incorporated in said electronic flash device and which is adapted to convert the received binary coded signal into a coded signal representative of the received binary coded signal which in turn represents a selected f number,
(e) a control circuit for controlling said flash light control circuit which receives the coded output signal from said f number signal generator means and which produces said reference voltage which corresponds to said received coded output signal, and
(g) an integrating capacitor-switching circuit which responds to the coded output signal from said f number signal generator means so as to select a combination of a plurality of capacitors of an integrator means corresponding to said coded output signal received,

whereby, the control signal to be applied to said flash light control circuit can be varied in response to said selected f number.

4,441,798
CAMERA HAVING A LIQUID CRYSTAL FOCUSING SCREEN

Koji Watanabe; Yoshihiro Higuchi; Michio Yagi, and Kazuo Shiozawa, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 186,349, Sep. 12, 1980, abandoned. This application Oct. 6, 1982, Ser. No. 433,021
Claims priority, application Japan, Sep. 14, 1979, 54/118398
Int. Cl.³ G03B *7/00*
U.S. Cl. 354—483 **2 Claims**



1. In a camera including a source of electric voltage and in which light reflected from a subject to be photographed is passed through the focusing screen,

the focusing screen comprising a pair of substantially flat, transparent members spaced apart in substantially parallel relation so as to dispose a surface of each said member in confrontingly opposed relation to said surface of the other of said members, at least a transparent electrode mounted on each of said confrontingly opposed surfaces, and a current effect mode liquid crystal disposed in the space between said members,
a changeover switch movable between a first position and a second position,
means connecting said electrodes of the focusing screen to the electric voltage source through said changeover switch so that operating voltage is applied to said focusing screen by impression on said electrodes in said second position of the changeover switch but not in said first position thereof,
means for measuring the amount of light passed through the focusing screen and for outputting a signal in accordance with said measurement,
an exposure control circuit, and
switching means connected to said changeover switch and said exposure control circuit for causing said output signal of the light measuring means to be transmitted to said exposure control circuit only when said changeover switch is in said second position thereof whereby operating voltage is applied to said focusing screen.

4,441,799
CAMERA WITH A LENS PROTECTIVE COVER

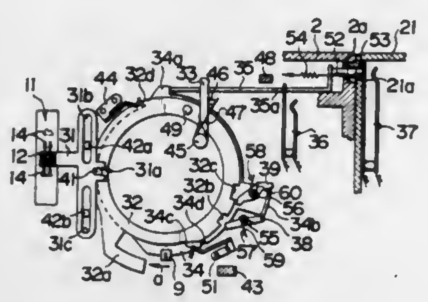
Fujio Enomoto, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed May 3, 1982, Ser. No. 374,034
Claims priority, application Japan, Jul. 1, 1981, 56-102472
Int. Cl.³ G03B *15/05*
U.S. Cl. 354—145.1 **13 Claims**

1. A camera with a lens protective cover which is movable between a first position in which it covers the front side of a taking lens and a second position in which it permits the taking lens to be exposed, the camera being adapted to utilize an electronic flash which is either internally housed therein or detachably mounted thereon, by comprising:

switching means for turning on a power supply of an electronic flash to establish a flash photography mode;
a connection mechanism for returning the switching means to a position other than the flash photography mode in interlocked relationship with the movement of the lens protective cover as the latter is closed when the switching

means is left in a position establishing a flash photography mode; and

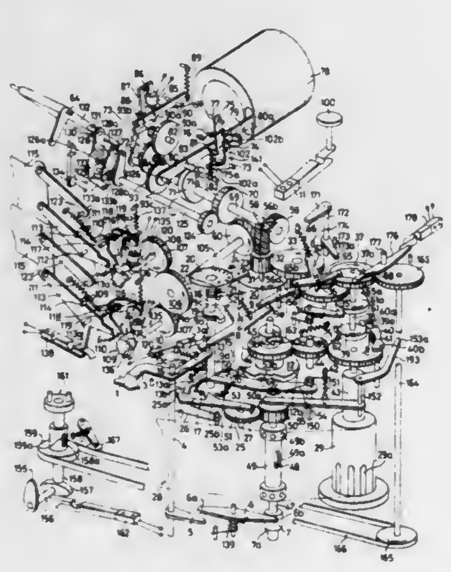
said switching means being connected through said connection mechanism to a distance adjustment unit associated



with said taking lens in a manner such that whenever said switching means assumes a position in which a flash photography mode is established, said taking lens is automatically focused to a focus setting suitable for flash photography.

4,441,800
DRIVING SYSTEM IN CAMERA

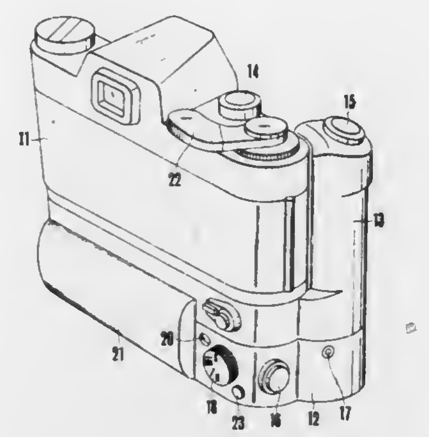
Yoshiyuki Nakano, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Filed May 18, 1982, Ser. No. 379,347
Claims priority, application Japan, May 25, 1981, 56-77938; May 25, 1981, 56-77939
Int. Cl.³ G03B *19/12*
U.S. Cl. 354—152 **10 Claims**



1. In a camera including displacement means displaceable by the driving force of a driving source from a position corresponding to the maximum aperture of a taking lens to a position corresponding to the minimum aperture of said lens so as to stop down the aperture and particular devices operable after the displacement of said displacement means, a device for controlling said aperture comprising:
- means for regulating the speed of displacement of said displacement means, said speed regulating means including means for accumulating mechanical energy to be used for operating said particular device or devices;
- means for connecting said energy accumulating means to said driving source during the displacement of said displacement means thereby accumulating the mechanical energy by a portion of the driving force from said driving source; and
- locking means for inhibiting said displacement means against further displacement when said aperture has been stopped down to a determined aperture value.

4,441,801
MOTOR DRIVEN CAMERA

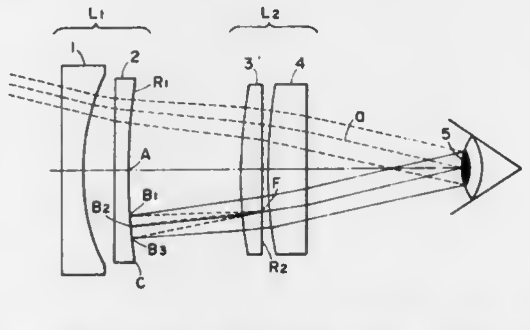
Yukio Mashimo, and Tomonori Iwashita, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 81,334, Oct. 3, 1979, Pat. No. 4,367,937, which is a continuation of Ser. No. 888,469, Mar. 2, 1978, abandoned. This application Jul. 20, 1981, Ser. No. 285,042
Claims priority, application Japan, Mar. 24, 1977, 52-32492; Apr. 11, 1977, 52-41094
Int. Cl.³ G03B *1/18, 17/38*
U.S. Cl. 354—173.11 **1 Claim**



1. An electric driving device for a camera, comprising:
- a camera body having a control circuit and a first terminal for adding a signal to the control circuit,
- an electrical drive device removably attached to the camera body, said device including:
- (a) a grip fitted to the camera body and having an upper surface and a side face,
- (b) a first operating member on the upper face of the grip,
- (c) a second operating member on the side face of the drive device,
- (d) a first switch associated with the operation of the first operating member,
- (e) a second switch associated with the operation of the second operating member, and
- (f) a second terminal electrically connected to the first terminal when the drive device is attached to the camera body, for adding a signal corresponding to the switching action of the first or second switch to the control circuit.

4,441,802
ALBADA FINDER DEVICE

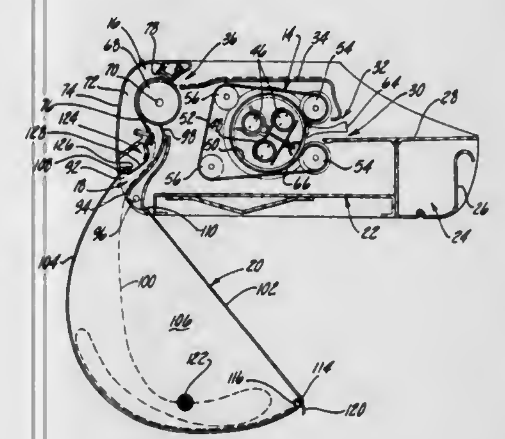
Yutaka Iizuka, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Filed May 22, 1981, Ser. No. 266,468
Claims priority, application Japan, Jun. 3, 1980, 55-74539
Int. Cl.³ G03B *13/08*
U.S. Cl. 354—224 **3 Claims**



1. In an Albada finder device including: a field frame provided on an eyepiece lens so as to be capable of reflecting part of the light from an objective lens; and a reflecting surface provided on the objective lens to reflect the reflected light from said field frame to the eyepiece lens to indicate a bright frame within the finder view field and including a central area containing the optical axis and passing light therethrough, and a marginal area formed around said central area and having a reflection factor greater than that of said central area; the improvement residing in that said reflecting surface further includes:
- a boundary area provided between said central area and said marginal area and having a reflection factor continuously varying so as to be smaller toward said optical axis, said boundary area being formed in an annular shape having a width substantially equal to the diameter, on said reflecting surface, of a reflected light beam passing from a point of said field frame to the circumference of the exit pupil of said finder device.

4,441,803
DIAZO COPY MACHINE WITH AMMONIA FUME ELIMINATOR

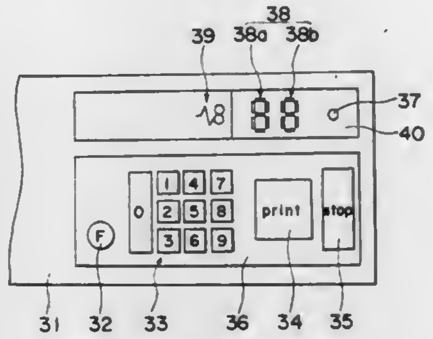
Giovanni Pelis, Bergamo, Italy, assignor to Northwest Blueprint & Supply Co., Livonia, Mich.
Filed Jun. 1, 1982, Ser. No. 383,489
Int. Cl.³ G03D *7/00*
U.S. Cl. 354—299 **10 Claims**



1. A machine for developing light sensitive copy material by contact with ammonia developing gases comprising, a degasser passage constructed and arranged for developed copy material to pass through after being contacted with the ammonia developing gases, heater means cooperating with said degasser passage and constructed and arranged to heat the developed copy material to an elevated temperature to accelerate the release of ammonia vapor from the copy material, an enclosed receptacle communicating with said degasser passage and constructed and arranged to receive developed copy material from said degasser passage, said receptacle having a bottom wall of a flexible and impervious material generally underlying said degasser passage and being curved and constructed and arranged to cooperate with said degasser passage to deposit copy material emerging from said degasser passage into said receptacle, a pair of end walls of a flexible and impervious material spaced apart in generally opposed relation and each having a generally lower curved edge sealed to said bottom wall, an air inlet opening disposed in at least one of said walls of said receptacle, a cover of a flexible and impervious material normally overlying said bottom wall and having a free edge normally overlaying and engaging an edge of said bottom wall to provide a closed and sealed receptacle, said cover also being constructed and arranged such that said free edge can be lifted from said bottom wall to provide an outlet for removal of developed copy material from said receptacle, and a blower constructed and arranged to move a stream of air through said air inlet, around developed copy material in said receptacle and through at least a portion of said degasser passage such that essentially all ammonia is removed from developed copy material received in said receptacle before such developed copy material is removed from said receptacle.

4,441,804
ELECTROSTATIC COPYING APPARATUS INCLUDING A SWITCH CHECKING SYSTEM

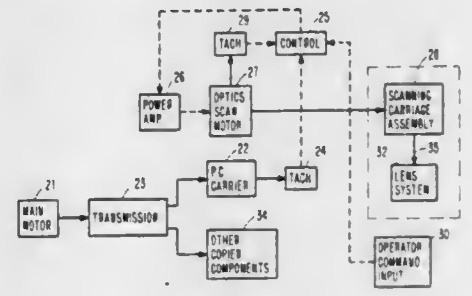
Kenji Shibazaki, Aichi, and Masazumi Ito, Toyokawa, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed May 4, 1981, Ser. No. 261,135
Claims priority, application Japan, May 12, 1980, 55-63146; Mar. 23, 1981, 56-42703
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 R **6 Claims**



1. In an electrostatic copying apparatus provided with a switch to be operated through an operation of a movable member of the copying apparatus and provided with a controlling apparatus which has a program for judging the operating condition of said switch so as to output given controlling signals, a switch checking system wherein said controlling apparatus has a controlling mode for switch checking use and a program for displaying the changing-over condition of said switch when said switch has been operated in said controlling mode, whereby the switch is adapted to be checked through the mode changing-over operation operation of said controlling apparatus.

4,441,805
MEANS FOR POSITIONING OPTICAL COMPONENTS FOR A VARIABLE MAGNIFICATION/REDUCTION COPIER OPTICS SYSTEM

Gerald L. Smith, Broomfield, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 28, 1982, Ser. No. 392,864
Int. Cl.³ G03G *15/28*
U.S. Cl. 355—14 R **16 Claims**



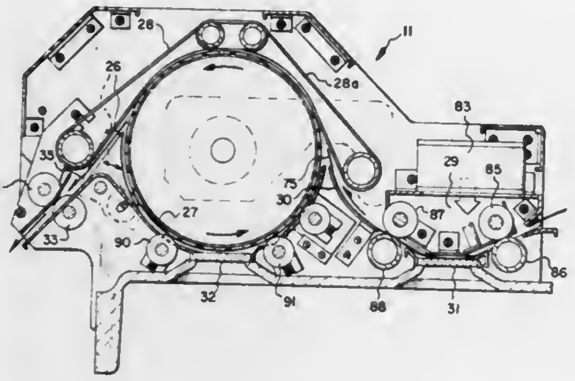
1. A variable reduction optical system for use with a document copier machine comprising:
- a drive motor means for driving machine components during copy reproduction;
- a lens assembly; and
- an optics positioning system for use in altering the position of said lens in order to achieve a selected reduction ratio, said positioning system including disconnectable coupling means for connecting said lens assembly and said drive motor means for altering the position of said lens in response to rotation of said drive motor means, the connection provided by said coupling means being removed for the normal copying operation.

4,441,806

DOCUMENT EXPOSURE APPARATUS

James W. Davis, Richardson, Tex., assignor to The Mead Corporation, Dayton, Ohio

Filed Mar. 8, 1982, Ser. No. 356,016
Int. Cl.³ G03B *27/32*
U.S. Cl. 355—23 **8 Claims**



1. Apparatus for presenting an original document to a first scanning station and thence transporting said document alternatively either directly to an output tray or to a second scanning station, followed by movement to said output tray, said apparatus comprising:

a. a frame;
b. a lid hingedly connected to said frame;
c. a document transport assembly hingedly connected to said frame and housed within said lid for transporting said document in a first direction past said first scanning station and thence continuing generally in said first direction toward said output tray;
d. a rotatable document reversing drum hingedly connected to said frame and housed within said lid separate from and cooperable with said document transport assembly for receiving said document from said document transport means, inverting said document, transporting said document in a second direction opposite said first direction for presentation to said second scanning station, and returning said document to said document transport assembly for movement to said output tray;
e. gate means for selectively removing said document from said drum and directing said document to said output tray; and
f. means for enabling said transport assembly to be latched to said lid such that both may be raised to an upwardly hinged position together.

4,441,807

PHOTOGRAPHIC PRINTING SYSTEM INCLUDING AN IMPROVED MASKING CARD

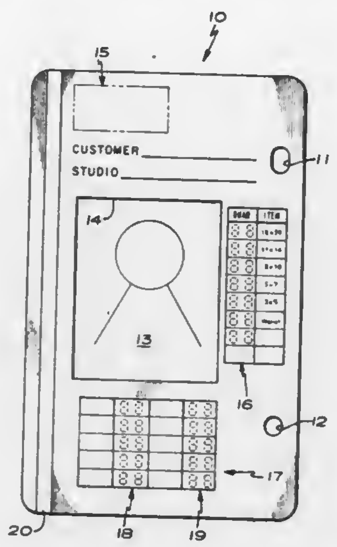
Stephen A. Bartz, Jordan, Minn., assignor to Lucht Engineering, Inc., Minneapolis, Minn.

Filed Feb. 17, 1982, Ser. No. 349,649
Int. Cl.³ G03B *27/52*
U.S. Cl. 355—40 **7 Claims**

1. A masking card for use in a photographic printing system of the type wherein a transparency bearing an image to be printed is positioned within a photographic printer, the transparency being carried by the masking card with the image to be printed at an aperture thereof and the card contributing to registration of the image within the printer, the masking card improvement for the automatic control of printer exposure parameters which comprises:

a plurality of mark boxes in predetermined locations on said card, each mark box location representing a printer exposure parameter with at least some of said mark box locations representing exposures of preselected size and at least some of said mark box locations having preprinted ghost character outlines of an optically readable character font; and

information storage means carried by said card including a plurality of data blocks dedicated to a printer exposure parameter including printer exposure parameters represented by said mark box locations.

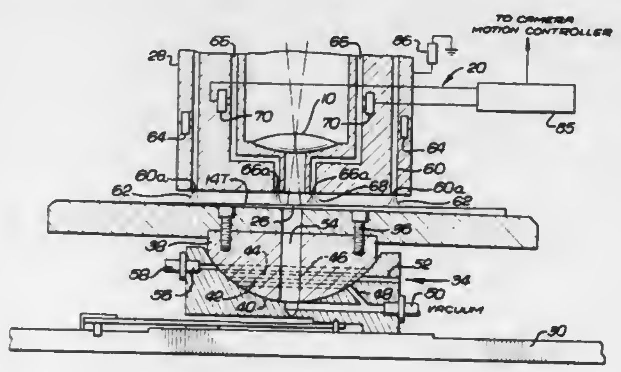


4,441,808

FOCUSING DEVICE FOR PHOTO-EXPOSURE SYSTEM

Thomas P. Giacomelli, Simi, Calif., assignor to TRE Semiconductor Equipment Corp., Woodland Hills, Calif.

Filed Nov. 15, 1982, Ser. No. 441,648
Int. Cl.³ G03B *27/42*
U.S. Cl. 355—53 **4 Claims**



1. An apparatus useful in a step and repeat semiconductor wafer photo-exposure system of the type having a camera for sequentially exposing different areas on said wafer to produce semiconductor devices, said apparatus achieving spaced parallel alignment of the surface of said semiconductor wafer with a reference plane that is associated with the body of the camera of said system and is in spaced facing relationship with said wafer surface, comprising:

a platform for supporting said wafer;
a spherical air bearing mounting for said platform;
a plurality of first channels in said camera body for conducting gas under pressure to first openings in said camera body facing said wafer surface so as to form gas jets directed toward said semiconductor wafer;
first pressure sensors associated with each of sad channels to sense the gas back-pressure therewithin,
means for applying gas via said channels so that the force of said gas jets applied against said wafer will cause said wafer and said platform to move within said air bearing mounting until the back-pressure condition indicating that the distance from each of said openings to said wafer surface is equal, whereby said parallel alignment between said semiconductor wafer and the reference plane of said camera body is achieved;
vacuum clamping means for locking with said spherical air bearing mounting to prevent further movement of said platform therewithin, said vacuum clamping means being actuated upon detection by said sensors of said equal back-pressure condition;
a plurality of second channels in said camera body for conducting gas under pressure to second openings in the camera body facing said wafer surface so as to form gas jets directed toward said semiconductor wafer, wherein the second openings are located so that the gas jets strike the semiconductor wafer adjacent the exposure field of the camera;
second pressure sensors associated with each of said second channels to sense the gas back-pressure therewithin;
means for moving said camera body toward and away from said semiconductor wafer; and
focusing means for causing said moving means to move said body relative to said wafer until the average level of back-pressure sensed at all of the said second sensors is equal to a predetermined value, said value corresponding to a spacing between said body end and said wafer at which said camera is most accurately focused on said surface.

4,441,809

METHOD AND APPARATUS FOR DETERMINING POSITION

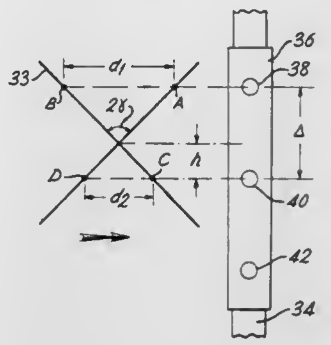
James R. Dudley, 27 Colville Rd., Walthamstow, London E17, and Barry J. Gorham, 55 Roundmead Ave., Loughton, Essex, both of England

PCT No. PCT/GB80/00169, 371 Date May 29, 1981, 102(e) Date May 29, 1981, PCT Pub. No. WO81/01195, PCT Pub. Date Apr. 30, 1981

PCT Filed Oct. 16, 1980, Ser. No. 269,044

Claims priority, application United Kingdom, Oct. 16, 1979, 7935790; Apr. 2, 1980, 8011177

Int. Cl.³ G01C *3/10, 3/08*
U.S. Cl. 356—1 **8 Claims**



1. Position sensing apparatus comprising generating means (**12**) for generating a beam of radiation; rotation means (**24**) for rotating the beam to define a reference plane, characterised by the beam having an effective sectional shape such that a leading edge and a trailing edge are straight and diverge from each other on at least one side of the reference plane; at least two radiation sensors (**38**, **40**) spaced a known distance apart in a direction parallel to the axis of rotation of the beam; and means (**30**, **32**, **44**, **46**) for determining the distances between the leading and trailing edges at the positions along those edges which pass across each sensor whereby the distance of each sensor from the reference plane and the distance of the sensors from the axis of rotation can be determined.

4,441,810

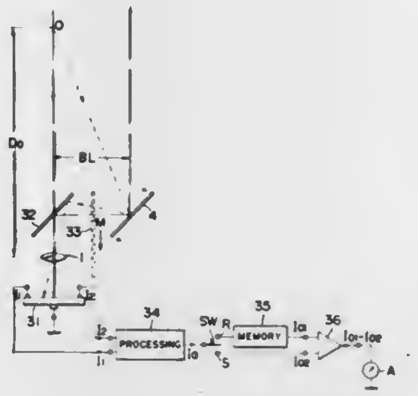
RANGE FINDER

Haruhiko Momose, Hachioji; Toshiaki Takahashi, Hino, and Yasushi Hoshino, Tokyo, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jul. 9, 1981, Ser. No. 281,890

Claims priority, application Japan, Jul. 15, 1980, 55-97331; Jul. 21, 1980, 55-99617; Jul. 21, 1980, 55-99618; Jul. 23, 1980, 55-101807; Jul. 30, 1980, 55-105608

Int. Cl.³ G01C *3/00*
U.S. Cl. 356—1 **6 Claims**



1. A range finder comprising:

(a) image forming means disposed fixedly with respect to an object;
(b) a semiconductor position detection element disposed at a position substantially corresponding to the image forming position of said image forming means;
(c) a semi-transparent mirror disposed between said image forming means and said object;
(d) a moving relecting mirror disposed so as to be spaced apart by a length of a basic line from said semi-transparent mirror;
(e) driving means for relatively moving an optical image formed by said moving reflecting mirror, said semi-transparent mirror and said image forming means on said semiconductor position detection element with respect to an optical image formed by said image forming means on said semiconductor position detection element through said semi-transparent reflecting mirror;
(f) light-interception means for temporarily intercepting a ray of light incident from said reflecting mirror to said semiconductor position detection element and memory means for temporarily storing only a signal representing an incident ray of light emanating from said object through said semi-transparent reflecting mirror during the interim while said ray of light from said reflecting mirror is intercepted; and
(g) an operation circuit for operating on the output signals of said semiconductor position detection element and said memory means for producing a distance signal representing the distance between said object and said image forming position of said image forming means.

4,441,811

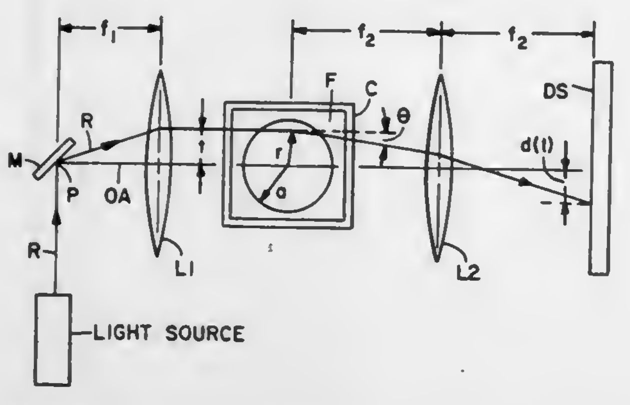
APPARATUS AND METHOD FOR DETERMINING REFRACTIVE INDEX PROFILE IN A CYLINDRICAL ARTICLE

Cevdet Melezoglu, Corning, and David J. Smith, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Sep. 10, 1981, Ser. No. 300,796
Int. Cl.³ G01N *21/47*
U.S. Cl. 356—128 **2 Claims**

1. In optical apparatus for analyzing the optical characteristics of a transparent, cylindrical, radially symmetric article comprising source means for generating a narrow collimated beam of light along a path, rotatable reflecting means positioned at an interception point on the path for reflecting light

from the interception point over a range of selected angles in a scanning plane, support means for supporting the transparent cylindrical article in index-matching fluid at a fixed work station in the scanning plane such that the article intersects said plane at right angles thereto, first convergent refracting means L1 having focal length f_1 positioned between the reflecting means and the work station and on an optical axis joining the interception point and the cylinder axis of the article for directing light from the reflecting means through the cylindrical article, second convergent refracting means L2 of focal length f_2 positioned on the optical axis behind the article to refract the light traversing the article, and displacement sensor means on the optical axis behind refractor L2 for intercepting the light refracted thereby, the improvement characterized in that:



the second convergent refractor L2 of focal length f_2 is positioned a distance f_2 from the cylinder axis of the article, with the displacement sensor being positioned a distance f_2 from the second convergent refractor L2, such that a displacement value d(t) output by the sensor, corresponding to the displacement from the optical axis at the sensor of a narrow light beam reaching the sensor from the source, corresponds exactly to the ray displacement function (t-y(t)) from the integral expression:

$$n(r) - n_c = \frac{n_c}{\pi L} \int_r^a \frac{(t - y(t))}{(t^2 - r^2)^{\frac{1}{2}}}\, dt$$

for calculating the refractive index profile of a cylindrical article.

4,441,812

METHOD AND APPARATUS FOR AUTOMATIC ALIGNMENT OF AN ANGLE-MEASURING INSTRUMENT

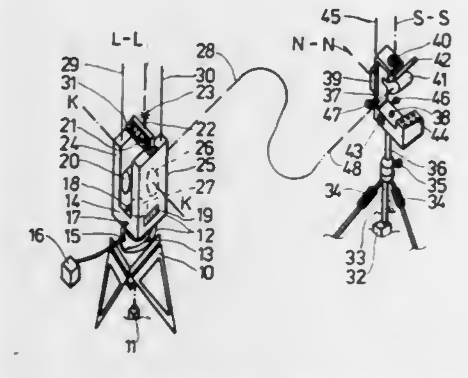
Wieland Feist, Jena-Lobeda, German Democratic Rep., assignor to Jenoptik Jena GmbH, Jena, German Democratic Rep.

Filed Oct. 30, 1981, Ser. No. 316,473

Claims priority, application German Democratic Rep., Dec. 24, 1980, 226659

Int. Cl.³ G01C *1/02;* G01B *11/26*

U.S. Cl. 356—147 **2 Claims**



1. A method for automatically aligning a geodetic angle-measuring device to a target point, comprising determining the target direction to the angle measuring device at the target point with respect to the north direction and the vertical direction, respectively, then determining the target direction from the angle measuring device to the target point from the results of the first mentioned determining step and then adjusting the angle measuring device, with respect to the horizontal angle and vertical angle, until it points to the target direction that has been determined in the second mentioned determining step.

4,441,813

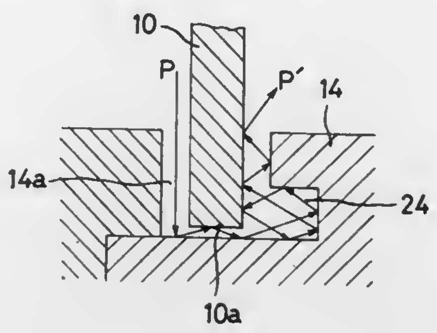
APPARATUS FOR DETECTING PINHOLES IN CANS

Kyuichi Shibasaki, and Hideo Kurashima, both of Yokosuka, Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Mar. 10, 1981, Ser. No. 242,496

Int. Cl.³ G01N *21/90*

U.S. Cl. 356—237 **16 Claims**



1. Apparatus for detecting pinholes in cans comprising dark box means for excluding ambient light, said dark box means having an interior and a window communicating with said interior, light seal plate means disposed at said window and adapted to cooperate with the end of a can to attenuate passage of light between said can and said light seal plate means as the interior of said can communicates with the interior of said dark box means through said window, photodetector means in said dark box means for detecting light entering into the interior of said can through pinholes in said can and for producing an electrical signal, and light source means adapted to be disposed externally of said can for radiating light onto said can, said light seal plate means comprising receiving groove means defining a receiving groove adapted to receive the open end of said can, said receiving groove including a trap groove in communication with said receiving groove and operable to attenuate outside light entering said receiving groove and passing into the interior of said can.

4,441,814

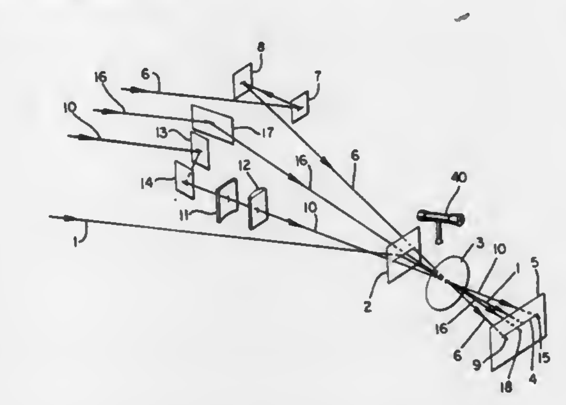
SPECTROGRAPH PROVIDING SPECTRAL REFERENCE MARKS

William T. Buchanan, 3518 Roswell Rd., Apt. C-6, Atlanta, Ga. 30305

Filed Sep. 28, 1981, Ser. No. 306,517

Int. Cl.³ G01J *3/18*

U.S. Cl. 356—305 **21 Claims**



1. In a spectrograph including means for dispersing a first beam of light from a light source into spectral components along an axis of dispersion and means for focusing and recording said spectral components, the improvement comprising:

means for directing undispersed light of a second beam from said light source through said focusing means onto said recording means to record a reference mark approximately at a position along the axis of dispersion at which a first particular dispersed wavelength appears when present in the spectrum of said light source.

4,441,815

SELF-MODULATING SPECTROMETER

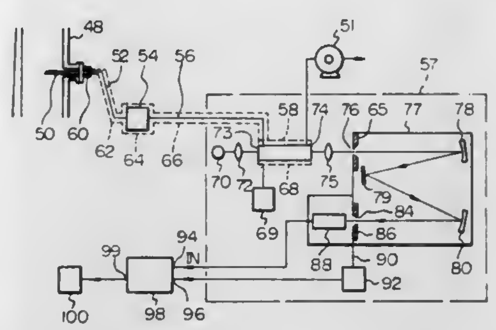
Takusuke Izumi, Tokyo, Japan, assignor to Anritsu Electric Company Limited, Tokyo, Japan

Filed Aug. 27, 1981, Ser. No. 296,735

Claims priority, application Japan, Mar. 31, 1981, 56-46263

Int. Cl.³ G01J *3/42*

U.S. Cl. 356—328 **20 Claims**



1. An apparatus for spectroscopic measurement of a concentration of a first substance which is present in a gas together with at least a second substance, said second substance having a characteristic absorption spectrum with a periodic spectrum structure and said first substance having a characteristic absorption spectrum which varies in a more gradual manner with respect to wavelength than does said characteristic absorption spectrum of said second substance, said apparatus comprising: a light absorption cell for containing said gas incorporating said first and second substances;

a source of light, arranged to illuminate a portion of said light absorption cell;

an entrance slit plate having an entrance slit formed therein, said entrance slit being disposed such that a portion of light from said light source passes therethrough after having passed through said light absorption cell, said entrance slit having a slit width which is no greater than one half of the period of said periodic structure of said characteristic absorption spectrum of said second substance;

optical dispersion means disposed to resolve said light passed through said entrance slit into the spectra of said first and second substances;

an exit slit plate having a first exit slit formed therein, said first exit slit being disposed with respect to said optical dispersion means such that light of said resolved spectra which is within a predetermined range of wavelengths passes therethrough, said first exit slit having a slit width which is greater than one half of said period of said periodic structure of said second substance, and such that said first exit slit in conjunction with said entrance slit provide a trapezoidal slit function having a full-width which is within a range extending from a value substantially equal to said period of said periodic structure to a value which is one and one-half times said period of said periodic structure;

wavelength modulation means for modulating the wavelength of light passed through said first exit slit in a periodic manner at a predetermined modulation frequency, with the peak-to-peak amplitude of said wavelength modulation being substantially equal to a value which is 5/π times said period of said periodic structure;

photo-electric detection means disposed to be illuminated by said light passed through said first exit slit, and responsive to variations in the intensity thereof due to said modulation for producing a light intensity-modulated electrical signal;

signal processing circuit means comprising frequency-selective amplifier circuit means for selectively amplifying a component of said light intensity-modulated electrical signal corresponding to the second derivative of variation of said spectrum of said first substance with respect to wavelength, said second derivative signal component having a frequency of twice said modulation frequency, said frequency-selective amplifier circuit means being responsive to said second derivative signal component for producing an output signal having an amplitude value which is indicative of the concentration of said first substance in said gas; and

display means responsive to said output signal from said frequency-selective amplifier circuit means for providing an indication of said concentration of said first substance.

4,441,816

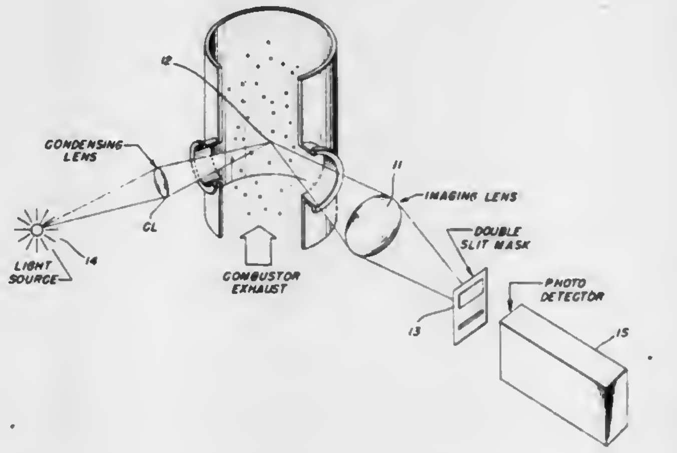
OPTICAL DOUBLE-SLIT PARTICLE MEASURING SYSTEM

Kenneth R. Hencken, Pleasanton; Daniel A. Tichenor, Freemont, and James C. F. Wang, Livermore, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 25, 1982, Ser. No. 361,954

Int. Cl.³ G01N *15/02*

U.S. Cl. 356—335 **11 Claims**



4. A system for measuring the size of the particles in a certain size range moving along a path comprising:

(a) optical focusing means located between said path for forming an image and an image plane of a given particle moving along said path;

(b) a double-slit mask of opaque material located at the image plane of the optical focusing means, said double-slit mask having a first slit of a width equal to or larger than the largest particle of interest and a second slit spaced therefrom of a width equal to or smaller than the diameter of the smallest particle of interest;

and

(c) a photodetector means disposed behind the double-slit mask and wherein the distance between said first and second slits is sufficient to cause said means to generate a double-pulsed output signal, a first pulse being related to the amount of light transmitted by said particle image through said first slit and a second pulse being related to the amount of light passing through said second slit.

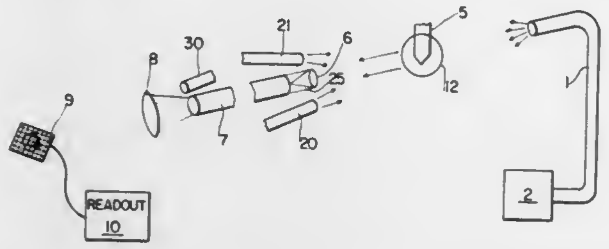
4,441,817
ELECTRO-OPTICAL SENSORS WITH FIBER OPTIC BUNDLES

Timothy R. Pryor, Techmseh, Canada, assignor to Diffracto Ltd., Windsor, Canada

Filed Jul. 29, 1980, Ser. No. 173,370

Int. Cl.^{3} G01B *11/14*

U.S. Cl. 356—375 **59 Claims**



1. A method of determining the dimension, location, orientation, presence, or identity of at least a portion of an object comprising the steps of

imaging at least a portion of an object onto an end of a non-coherent optical fiber bundle whereby the image incident on said end of said fiber bundle is transmitted to the other end thereof;

transferring said image from said other end of said non-coherent optical fiber bundle onto a photodetector comprising a plurality of discrete photodetector elements;

determining, from the output of said photodetector elements, the area of the lighted or unlighted portion at the other end of said non-coherent optical fiber bundle; and

determining, from said area, said dimension, location, orientation, presence, or identity of at least said portion of said object.

4,441,818
DEFLECTION UNIT

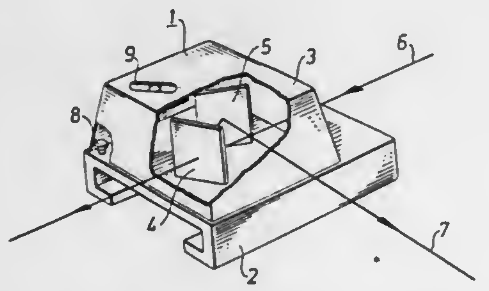
Kjell J. Wickman, Stockholm, Sweden, assignor to Pharos AB, Lidingo, Sweden

Filed Apr. 7, 1981, Ser. No. 251,735

Claims priority, application Sweden, Apr. 23, 1980, 8003082

Int. Cl.^{3} G01B *11/26*; G01C *1/00, 9/34*

U.S. Cl. 356—372 **7 Claims**



1. A controllable light beam deflection apparatus for deflecting a light beam such that it travels in a predetermined measuring plane, comprising:

a beam deflection unit displaceable along a guide which extends substantially parallel to the light beam to be deflected, and

a level sensor comprising means for sensing the level deviation within a plane parallel to the measuring plane and along a line that bisects the angle between the beam to be deflected and the deflected beam for rotationally setting the deflection unit about an axis which is within a plane perpendicular to said measuring plane and perpendicular to said line.

4,441,819
CALIBRATION METHOD FOR PRINTING PLATE PICTURE PATTERN AREA METER

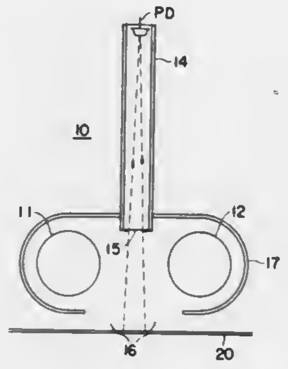
Hideo Takeuchi, Shirai; Satoru Horiguchi, Tsurugashima, and Ryuzo Tamaki, Sagamihara, all of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Filed Oct. 15, 1981, Ser. No. 311,603

Claims priority, application Japan, Oct. 24, 1980, 55-149106; Oct. 24, 1980, 55-149107

Int. Cl.^{3} G01B *11/28*

U.S. Cl. 356—380 **2 Claims**



1. A method for calibrating a device for measuring the printing image area of a printing plate by detecting the quantity of light reflected from a plate detection region having a non-printing-image region and a printing image region, said method of calibrating comprising:

scanning a predetermined portion of said plate detection region a plurality of times to obtain a plurality of reflected light measurement values representing the measurement of a printing image area;

calculating a plurality of successive average values from said plurality of reflected light measurement values;

selecting a minimum value from among said average values which represents a measurement value from a printing image region of said detection region;

selecting a maximum value from among said average values which represents a measurement value from a non-printing-image region; and

calibrating said device by modifying said measurement of a printing area with said maximum and minimum values.

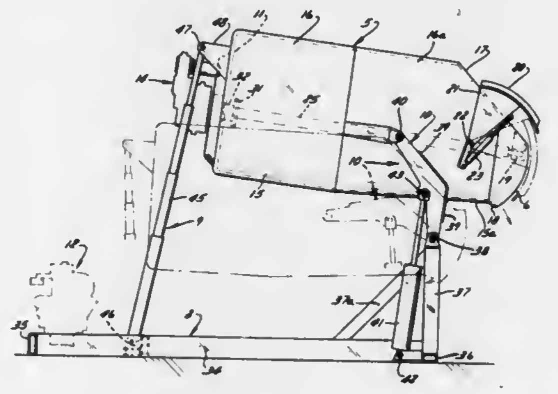
4,441,820
CONCRETE MIX SURGE BIN

Glenway W. Maxon, III, Bayside, Wis., assignor to Maxon Industries, Inc., Milwaukee, Wis.

Filed Sep. 27, 1982, Ser. No. 423,784

Int. Cl.^{3} B01F *7/04*

U.S. Cl. 366—26 **6 Claims**



1. A surge bin for temporary storage of material such as concrete mix, into which a dump truck can charge material and from which the material can be intermittently discharged, said surge bin comprising a body having opposite side walls that converge towards a discharge outlet at a rear end of the body and having an open top from its front end to near said discharge outlet, and an agitator in said body having an axis extending from front to rear thereof and rotatable in one direction about said axis to drive material in the body towards said discharge outlet, said surge bin being characterized by:

A. a substantially horizontal frame underlying the body and by which the body is supported;

B. a pair of lifting means, one near the front end of the body and the other near the rear end of it, each said lifting means having
   (1) a lower pivotal connection with the frame, at a fixed location thereon, and
   (2) an upper pivotal connection with the body, said pivotal connections having sidewardly extending axes, and said lifting means providing for vertical motion of both ends of the body in unison and alternatively for vertical motion of each end of the body relative to the other whereby the body is tilted; and

C. motion control means for controlling forward and rearward motion of the body,
   (1) having a connection with the frame at a fixed location thereon, and
   (2) having a pivotal connection with the body near one of its ends that defines a sidewardly extending axis about which the body can tilt.

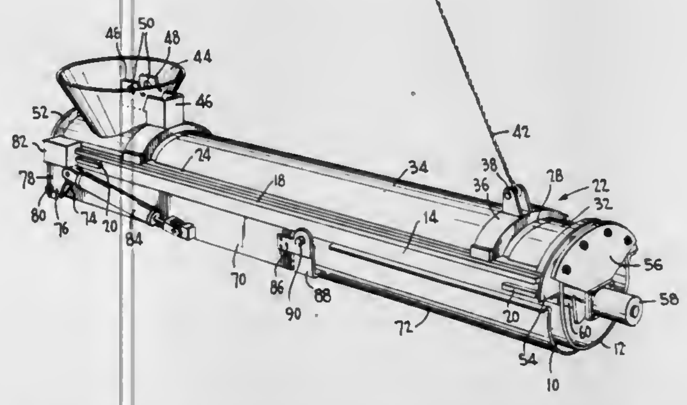
4,441,821
APPARATUS FOR INCREASING THE DELIVERY RANGE OF A MIXING AND DELIVERY AUGER TROUGH

George M. Burkhart, Strasburg, Pa., and Martin F. Dohnalik, Cortland, Ill., assignors to Barber-Greene Co., Aurora, Ill.

Filed Jul. 20, 1982, Ser. No. 400,140

Int. Cl.^{3} B28C *7/16*

U.S. Cl. 366—61 **9 Claims**



1. An improved apparatus for mixing and delivering individual stored components which are selectively dispensed for delivery as a mixture, said apparatus comprising:

mixing means for receiving the dispensed ingredients, said mixing means comprising: an elongated trough having an inlet end and a discharge end; a rotatably driven auger disposed in said trough for transporting the dispensed ingredients from said inlet end to said discharge end while mixing the dispensed ingredients in transit; and drive means for selectively rotating said auger;

first and second elongated conveyor chutes, each having an ingress end and an egress end;

pivot means securing said egress end of said first chute to said ingress end of said second chute;

mounting means slidably securing said first chute to said trough for longitudinal slidable movement relative to said trough in longitudinally aligned end-to-end relation beneath the trough and in which free fall of the mixed ingredients from said discharge end of said trough is unimpeded by said first and second chutes, and a deployed position in which the ingress end of said first chute is disposed below said discharge end of said trough to receive mixed ingredients falling from said discharge end; and

wherein pivot means includes further means permitting selective pivotal motion of said second chute relative to said first chute in said deployed position, said pivotal motion extending between first and second mutual orientations, said first and second chutes in said first orientation being disposed in longitudinal alignment, with the egress end of said first chute adjacent the ingress end of said second chute to permit free flow of mixed material from said first chute to said second chute, said second chute in said second orientation being positioned out of longitudinal alignment with said first chute to permit free fall of mixed ingredients from the egress end of said first chute.

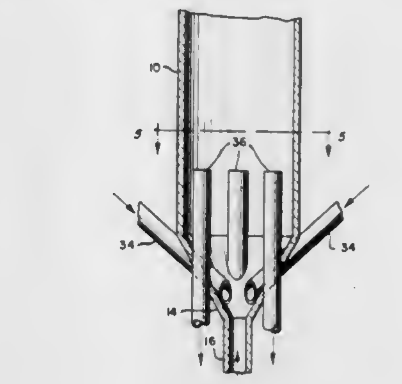
4,441,822
APPARATUS FOR MIXING AND DISTRIBUTING SOLID PARTICULATE MATERIAL

Bimal K. Biswas, East Orange, and Joseph E. Kochie, Carteret, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Division of Ser. No. 183,781, Sep. 3, 1980, abandoned. This application May 10, 1982, Ser. No. 376,644

Int. Cl.^{3} B01F *13/02*

U.S. Cl. 366—101 **18 Claims**



1. An apparatus for mixing and distributing solid particulate material, said apparatus comprising a vessel, a plurality of spaced inlet pipes extending through said vessel at an angle relative to the axis of said vessel and communicating with the lower portion of said vessel for introducing particulate material into said vessel to form a bed of material, means for introducing a pressurized gas into the lower portion of said vessel at a velocity sufficient to pass upwardly through said bed of material, means formed in the upper portion of said vessel for permitting said gas to discharge from said vessel, said gas passing through a central portion of said bed creating a central zone in which the concentration of particles in the gas is relatively low and said particles move upwardly with the gas, and an outer zone surrounding said central zone in which the concentration of said particles is relatively high and their general movement is downwardly, and a plurality of pipes communicating with corresponding portions of said outer zone in a common plane and extending from said outer zone, through said vessel and to an area external of said vessel, said pipes disposed in a spaced relation around said vessel and parallel to the axis of said vessel with their inlet ends extending above the discharge ends of said inlet pipes for permitting said material to discharge from a plurality of areas of said bed.

4,441,823
STATIC LINE MIXER

Harold H. Power, 65 Five Field Rd., Madison, Conn. 06443

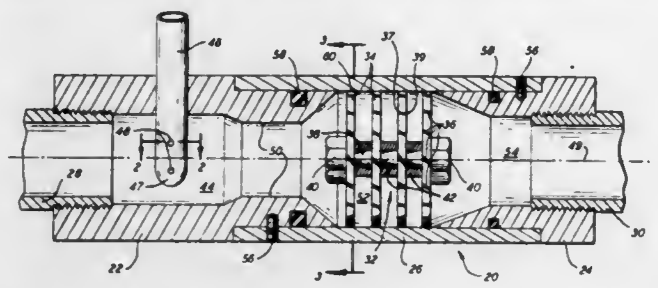
Filed Jul. 19, 1982, Ser. No. 399,959

Int. Cl.^{3} B01F *5/06*

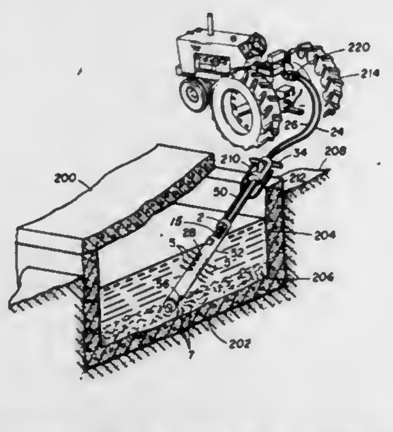
U.S. Cl. 366—167 **10 Claims**

1. A liquid mixer for dispersing a second fluid into a first fluid comprised of a body having a chamber with a longitudinal axis, the chamber having a flow path for the flow of a comingled first fluid and second fluid therethrough along said

axis; a plurality of orifice plates spaced apart along said axis and fixedly held within the chamber; each orifice plate having an upstream face, a downstream face and a multiplicity of slot passages connecting the faces; each slot passage having a length L and a through-plate length D, both lengths at least two times the width T of the slot passages; and each slot passage shaped to discharge fluid at an angle of 30–60 degrees to the downstream face of the orifice plate.

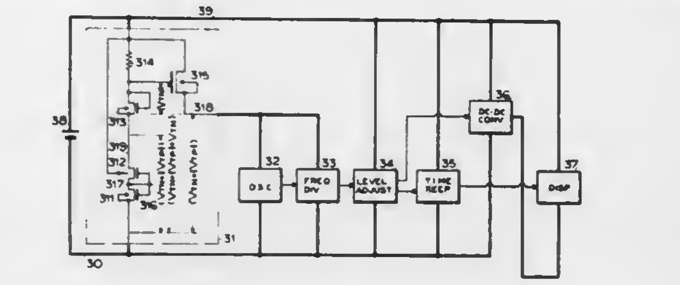


4,441,824
PORTABLE WASTE AGITATOR
Kim C. Brokaw, 701 N. Birch St., Monticello, Iowa 52310
Continuation of Ser. No. 286,147, Jul. 23, 1981, abandoned. This application Aug. 8, 1983, Ser. No. 521,513
Int. Cl.³ B01F *5/12*
U.S. Cl. 366—266 **11 Claims**



1. Portable apparatus for agitation of waste solids within a livestock confinement facility collection pit, comprising
- a portable elongated tubular housing having a first end and a second end
- a plurality of bars extending from the first end of said housing,
- a top plate mounted to the ends of said bars,
- a propulsion member mounted within said housing,
- a hydraulic piston motor mounted within said housing adjacent to the first end thereof,
- said propulsion member comprising
  - a driven shaft depending from said motor,
  - screw flighting mounted to said driven shaft along a portion thereof,
  - impeller blades mounted to said shaft,
- a plurality of openings along said housing from the first end thereof to a point midway along said housing,
- an opening in the sidewall of said housing adjacent the impeller portion of said propulsion member,
- an end cap on the second end of said housing,
- a plurality of fluid conducting members interconnecting said motor and said top plate,
- a plurality of fluid conducting interconnectors mounted in said top plate and passing therethrough.

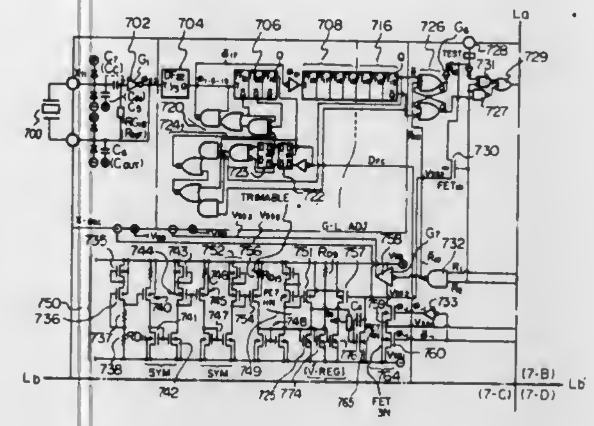
4,441,825
LOW-POWER INTEGRATED CIRCUIT FOR AN ELECTRONIC TIMEPIECE
Shigeru Morokawa, Tokyo, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 721,440, Sep. 8, 1976, abandoned. This application Aug. 4, 1978, Ser. No. 931,277
Claims priority, application Japan, Sep. 8, 1975, 50-108629
Int. Cl.³ G04B *1/00*
U.S. Cl. 368—204 **9 Claims**



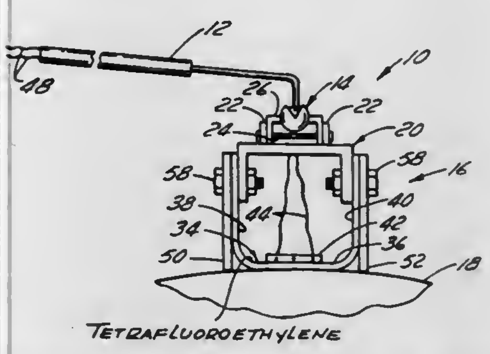
1. An electronic timepiece comprising:
- (a) a time reference signal source for generating a time reference signal;
- (b) a time count unit signal synthesizing means for synthesizing a time count unit signal from said time reference signal;
- (c) a time keep means for synthesizing a time keep signal from said time count unit signal;
- (d) a time display means for displaying a time information in response to said time keep signal from said time keep means;
- (e) a power source for applying electric energy to a first circuit part including said time reference signal source and said time unit signal synthesizing means and to a second circuit part including said time keep means and said time display means;
- (f) a device parameter dependent regulated constant voltage source circuit means for connecting said power source to the first circuit part of said timepiece and for providing a first regulated voltage to the first circuit part, said device parameter comprising a threshold voltage of a transistor;
- (g) a level shift means receiving a signal from said first circuit part and sending a shifted signal to said second circuit part; and
- (h) said time reference signal source, said time count unit signal synthesizing means, said device parameter dependent regulated constant voltage source circuit means and said level shift means being incorporated in an integrated circuit.

4,441,826
ELECTRONIC TIMEPIECE
Shigeru Morokawa, Tokyo, and Keiichiro Koga, Tokorozawa, both of Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan
Division of Ser. No. 269,297, Jun. 1, 1981, abandoned, which is a division of Ser. No. 1,260, Jan. 5, 1979, Pat. No. 4,298,971. This application Sep. 30, 1982, Ser. No. 430,569
Claims priority, application Japan, Jan. 11, 1978, 53-1751
Int. Cl.³ G04B *1/00;* **H03K** *3/01;* **G05F** *1/56*
U.S. Cl. 368—204 **3 Claims**

1. An electronic timepiece powered by a battery and having display means for indicating time, comprising an integrated circuit chip including a standard frequency signal source for generating a signal of relatively high frequency, frequency divider means responsive to said signal of relatively high frequency for producing a relatively low frequency signal, and drive signal generator means responsive to said relatively low frequency signal for producing drive signals, said integrated circuit chip also including reference voltage circuit means composed of current mirror circuit means to provide a stabilized current and a plurality of voltage stabilizer circuit means responsive to said stabilized current to provide a reference voltage, and constant voltage circuit means including a differential amplifier responsive to said reference voltage and source grounded driving transistor means connected to said differential amplifier to provide a constant voltage.

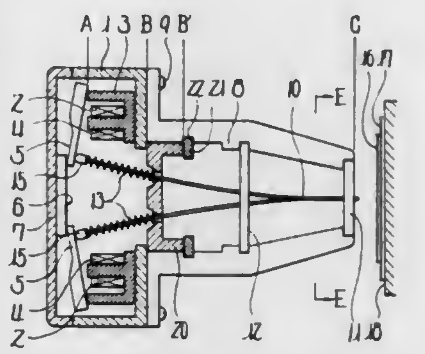


4,441,827
TRAVELLING SURFACE TEMPERATURE PROBE
Andre Coderre, 15964 Perreault St., Pierrefonds, Quebec H9H 1N3, Canada
Filed Oct. 14, 1980, Ser. No. 196,535
Int. Cl.³ G01K *13/08, 1/14*
U.S. Cl. 374—153 **5 Claims**



1. A temperature probe adapted to sense the temperature of a surface travelling relative to said probe comprising; a support member having a pair of spaced apart arms, a bridging section formed from flexible sheet material mounted from said arms and bridging across the space between said arms and having a contact face adapted to contact said surface being sensed over a contacting portion of its area and an opposite face facing the space between said arms, said contacting portion being spaced from said arms, a sensor element in said space between said arms in close thermal contact with said opposite face in an area of said opposite face directly opposite said contacting portion; said sensor element being spaced from said support member, said flexible sheet material having a low coefficient of friction between said contacting portion and said surface travelling relative to said probe and a thickness and a thermal conductivity coordinated so that heat generated by contact between said sheet material and said surface does not materially affect the temperature of said sensor element and a temperature differential of up to 20° F. on said surface is detectable by said sensor element in less than 30 seconds.

4,441,828
PRINTING HEAD OF DOT PRINTER
Kuniaki Ochiai; Masami Horii, and Osamu Aoki, all of Shizuoka, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan
Filed Nov. 24, 1981, Ser. No. 324,649
Claims priority, application Japan, Dec. 5, 1980, 55-171852; Feb. 16, 1981, 56-21676
Int. Cl.³ B41J *3/12*
U.S. Cl. 400—124 **6 Claims**

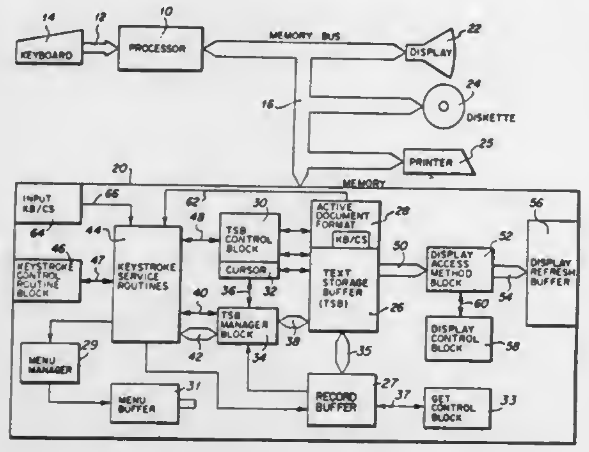


1. A printing head of a dot printer, comprising:
- a support member;
- a plurality of needle members located in said support member;
- a guide holder connected to said support member and including a groove and a stepped portion;
- a stop member engageable in said groove;
- a plurality of electromagnets mounted in said support member and each of which further comprises a stopper and an armature with a reset position thereof being determined by said stopper;
- a needle guide for guiding said needle members driven by said armatures and wherein said needle guide is operatively associated with an end portion of said guide holder; and
- a common spring support for supporting one end of each of said needle springs and for urging the needle members in a reset direction wherein said spring support is located at a rear side of said guide holder after assembly and wherein said spring support is positioned in said guide holder so as to be movable forward to a front position defined by said stepped portion or backward during assembly with respect to the guide holder so as to avoid contact of said armature and stopper with said needle springs during assembly and is fixedly installed at a predetermined rear position within said support member after assembly by said stop member engaged in said groove.

4,441,829
METHOD FOR PERFORMING A MULTIPLE PAGE GET OPERATION IN A TEXT PROCESSING SYSTEM
Raymond A. Hebert, Jr.; Lewis J. Levine, and Kenneth O. Shipp, Jr., all of Austin, Tex., assignors to International Business Machines, Armonk, N.Y.
Filed Sep. 24, 1981, Ser. No. 305,253
Int. Cl.³ B41J *3/46*
U.S. Cl. 400—63 **4 Claims**

1. In an interactive text processing system which includes a keyboard and a display unit and in which a document input by way of a keyboard is stored, displayed to an operator, and further processed in accordance with directions supplied to said system by an operator interacting with the keyboard and display unit, an improved method for copying one or more pages of text into a document from another part of the same document or from a different document, said method comprising:
- displaying to the operator the document into which one or more pages of text data is to be copied;

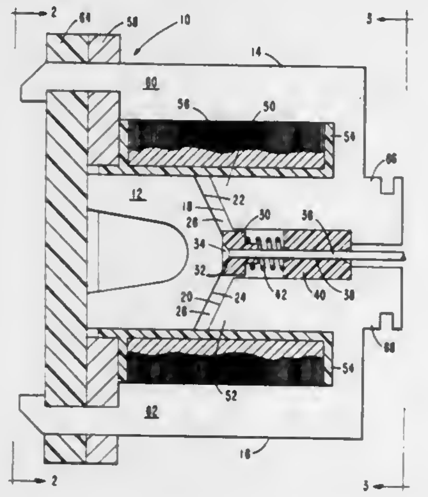
signalling to the system the location within said document into which the text data is to be copied;
specifying to the system the identification and location of said text data;
scanning said specified text data for data control instructions contained within said specified text data specifying added text data to be included within said specified text data;



adding said specified added text data to said specified text data prior to copying said specified text data into said document; and
copying said specified text data as modified by said added text data into said document at the signalled location to provide a revised document.

4,441,830
PRINTING SOLENOID

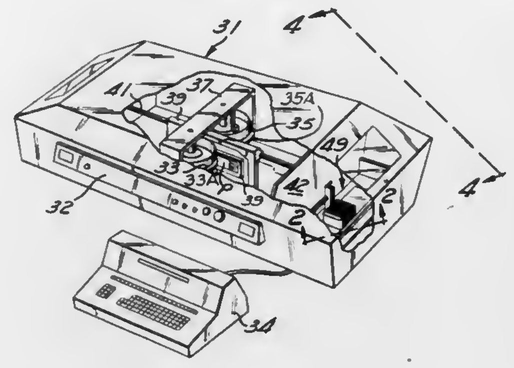
Victor J. Italiano, Ithaca, N.Y., assignor to NCR Corporation, Dayton, Ohio
Filed Mar. 29, 1982, Ser. No. 363,361
Int. Cl.^{3} B41J *3/12*
U.S. Cl. 400—124 **3 Claims**



1. A print wire actuating device of generally rectangular construction comprising a
pair of spaced flat irregular-shaped electromagnetic pole pieces, each pole piece having a first portion and a second portion, an
electromagnetic coil operably associated with said pole pieces, a
plunger defining inclined surfaces on one end thereof and positioned in the same plane with said pole pieces and spaced from the first portion of each pole piece to provide an air gap between the surfaces of the plunger and the first portions and movable in said plane toward the first portions upon energization of said electromagnetic coil, a
print wire disposed between said pole pieces and abutting said plunger and slidably operated thereby,
resilient means for biasing said print wire and said plunger in one direction, and a
flat rectangular apertured member for receiving said plunger and the second portion of each pole piece for securing the parts of the actuating device and positioned in relation to said coil and said plunger for providing a path for magnetic flux generated in response to energization of said coil.

4,441,831
APPARATUS FOR EMBOSSING PLATES OF DIFFERENT SIZES AND SHAPES

Neil A. Tipple, Torrance; Jerome W. Gibson, and Ronald J. Boyd, both of Northridge, all of Calif., assignors to DBS, Inc., Randolph, Mass.
Filed Apr. 4, 1980, Ser. No. 137,216
Int. Cl.^{3} B41J *1/22*
U.S. Cl. 400—134.3 **39 Claims**

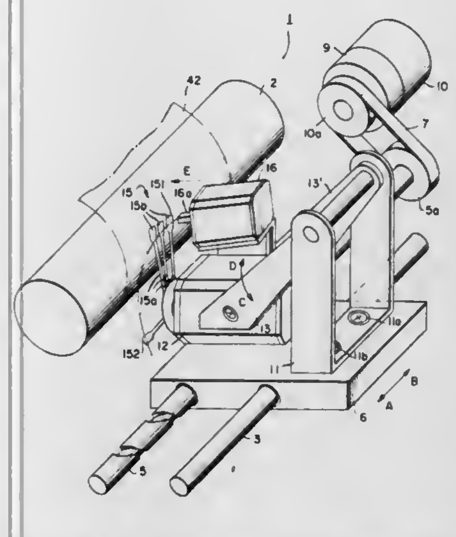


1. In an embossing machine having embossing elements located to operate on a planar workpiece at an embossing site, frame means shiftable in a plane at the embossing site to present various areas of the workpiece sequentially to the embossing elements to receive successive embossed impressions, and means for feeding workpieces to the embossing site for embossment and away from the embossing site for accumulation after embossment wherein said feeding means comprises:
first track means having opposed rails on said frame means for supporting a workpiece by parallel edges during embossment;
inlet track means having opposed rails for guiding a workpiece toward the embossing site, and aligned with said first track means for transferring the workpiece thereto:
outlet track means having opposed rails for guiding a workpiece away from the embossing site and aligned with said first track means for accepting a workpiece therefrom; and
means mounting at least one corresponding rail of each track means for ready adjustment towards and away from the other rail to permit convenient adaption of the machine to feeding and embossing of workpieces with substantially different dimensions transversely of their direction of travel through the machine via the track means.

4,441,832
ADAPTIVE HIGH SPEED SERIAL PRINTER

Masahisa Narita, Kodaira, and Osamu Tomita, Ebina, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Mar. 24, 1982, Ser. No. 361,542
Claims priority, application Japan, Mar. 30, 1981, 56-47108
Int. Cl.^{3} B41J *1/30, 3/54*
U.S. Cl. 400—144.2 **11 Claims**

1. An adaptive high speed serial printer operatively connected to an external source having a selection amount data, for printing on a record media, comprising:
a platen for supporting the record media;
a carrier for traversing back and forth along said platen;
a printing wheel, selected from a plurality of printing wheels, mounted on said carrier, said printing wheel having a plurality of type elements;
selecting means, mounted on said carrier, for moving a selected one of said plurality of type elements to a hammering position located in front of said platen by rotating said printing wheel;
hammering means for impacting said selected one of said plurality of type elements with said platen;
spacing means, coupled to said carrier, for correctly spacing said carrier along said platen at a spacing speed in dependence upon a command signal; and
control means, operatively connected to receive the selection amount data from the external source, comprising:
selecting control means for controlling the movement of said selecting means so as to rotate said selected one of said plurality of type elements to the hammering position between said hammering means and said platen in accordance with the selection amount data which indicates the distance from the present position of said selected one of said plurality of type elements to said hammering position;
hammer control means, connected to said hammering means, for controlling the impact timing of said hammering means;
signal generating means for generating a signal corresponding to the inertia of said printing wheel, selected from said plurality of printing wheels, mounted on said carrier; and
carrier control means, operatively connected to said signal generating means, said spacing means and the external source, for generating the command signal for controlling the spacing speed of said carrier as it moves along said platen, the command signal being generated in accordance with the selection amount data and the signal corresponding to the inertia of said printing wheel.

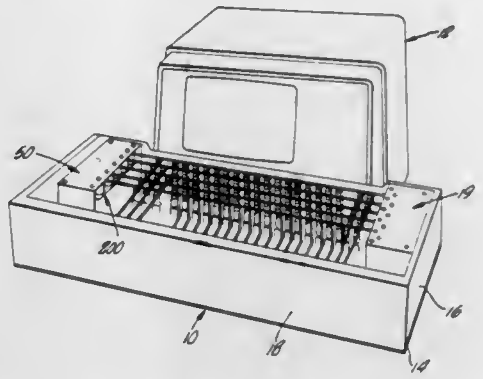


4,441,833
KEYBOARD ACTUATOR

Ralph D. Hasenbalg, 8635 Rudnick Ave., Canoga Park, Calif. 91304
Filed Oct. 13, 1981, Ser. No. 310,850
Int. Cl.^{3} B41J *23/22;* **F15B** *15/26*
U.S. Cl. 400—180 **18 Claims**

10. A method for controllably actuating selected keys of a keyboard-operated apparatus in response to signals from control means comprising the steps of
supporting a plurality of latching fluid actuators adapted to be associated with respective keys of a keyboard-operated apparatus,
communicating a first fluid pressure from a first in response to the control means signals to release latch means within the selected latching fluid actuators, and
communicating a second fluid pressure from a second valve means independent of the first valve means to one or more selected latching fluid actuators in response to the control means signals to provide drive fluid pressure to piston means within the selected latching fluid actuators, whereby each latching fluid actuator associated with each selected key selectively receives both the first fluid pressure from the first valve means and the second fluid pressure from the second valve means to unlatch the piston means and to drive the piston means to actuate the selected key of the keyboard with which it is associated.

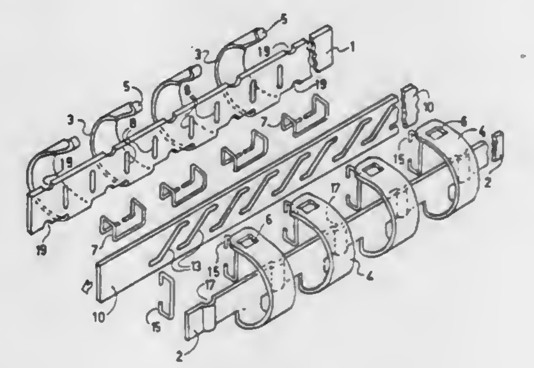
12. A latching fluid actuator comprising
a cylinder closed at one end and a piston member sealably carried within the cylinder, the piston member including a piston rod and engagement means,
first fluid inlet means for providing fluid communication through the cylinder closed end,
a latch element having a first member and a second member



disposed on opposite sides of the piston rod and a third member interconnecting the first and second members,
a fluid responsive diaphragm member acting against one of the first or second members of the latch element,
second fluid inlet means for providing fluid communication to the fluid responsive member said second fluid inlet means providing a fluid communication independent of the fluid communication to the first fluid inlet means, and
spring means for applying biasing force against the other of the first or second members of the latch element, the second member being adapted to engage the piston member engagement means, the engagement means being for receiving the second member to prevent piston member displacement.

4,441,834
LOOSE LEAF BINDER

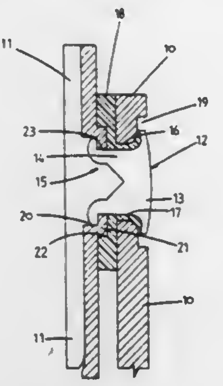
Claudio B. Cardellini, Rua Manuel Maria Tourinho, 673, 01236 Sao Paulo SP, Brazil
Continuation-in-part of Ser. No. 127,544, Mar. 6, 1980, abandoned. This application Sep. 21, 1981, Ser. No. 304,366
Claims priority, application Brazil, Mar. 13, 1979, 7901568
Int. Cl.^{3} B42F *13/22*
U.S. Cl. 402—55 **6 Claims**



1. A loose leaf binder comprising:
a pair of elongated strips each having a plurality of half loops joined to an edge thereof at corresponding spaced locations along said edge, the ends of said half loops being arranged so as to form full loops when the strips are positioned in juxtaposition;
a plurality of clip means hingedly interconnecting said strips;

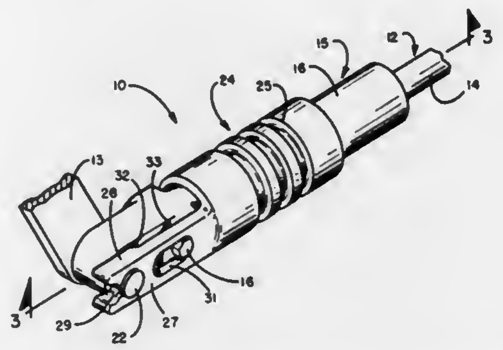
means provided on one of said strips for permitting movement of said clip means transversely of said strip;
an actuator interposed between said strips in movable relationship thereto, said actuator having a plurality of parallel inclined slots located intermediate its edges and adapted to receive said clip means whereby when said actuator is moved in a direction longitudinally of said elongated strips, movement of the clip means within said slots displaces the clip means transversely of said one strip and engages an edge of the other strip thereby moving said other strip to separate its half loops from the half loops of said one strip; and
additional clip means operatively related to said strips and the actuator to prevent transverse movement of the actuator relative to one of said strips while permitting the actuator to move longitudinally relative to the strips.

4,441,835
PIVOT JOINTS
Ronald P. Davis, Wellington, New Zealand, assignor to Interlock Industries Limited, Wellington, New Zealand
Filed Mar. 11, 1982, Ser. No. 357,194
Claims priority, application New Zealand, Mar. 12, 1981, 196479
Int. Cl.³ F16B *19/00*
U.S. Cl. 403—24 **11 Claims**



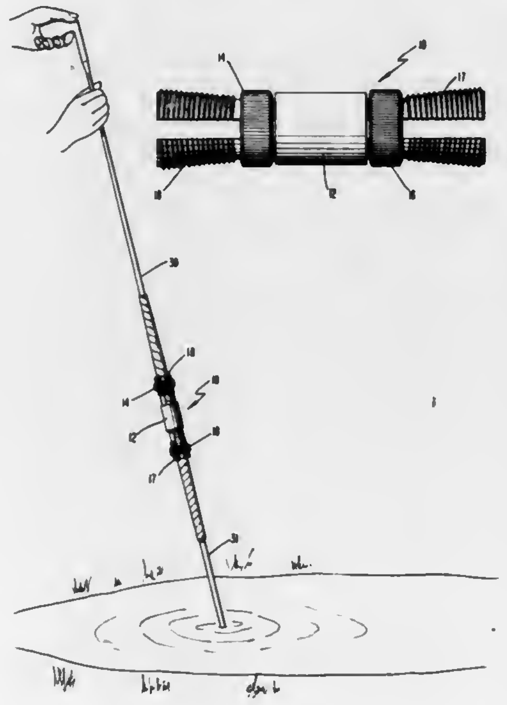
1. A friction pivot joint between two components, said joint being of the type in which a first of the components has an opening through which the shank of a headed fastening extends, the tail of said shank extending through an axially aligned opening in the second of the components, the tail of said shank having means to prevent axial movement of said fastening relative to said components, the joint being characterised in that the shank of the fastening extends through a bushing of wear-resistant plastics material located in the opening in the first component, said bushing having integrally formed therewith a peripheral flange, said flange being sandwiched between said first and second components thereby preventing contact between the components, friction in said joint being created from the plastics bushing and integral peripheral flange being placed under pressure by said fastening, said bushing having a length which is greater than the length of the opening in which it is located with the result that during assembly of the joint pressure created by said fastening causes the free end of the bushing to flow under the head of the fastening to be retained thereunder by a concave underside of the head of the fastening, said head and shank of the fastening thereby being prevented from contacting said first component so that during relative pivotal movement of said components substantially no torque is applied to the shank by the head of the fastening.

4,441,836
CABLE CONNECTION
James C. Boda, Winneconne, Wis., assignor to Brunswick Corporation, Skokie, Ill.
Filed Sep. 2, 1982, Ser. No. 414,118
Int. Cl.³ F16C *1/14*
U.S. Cl. 403—154 **5 Claims**



1. A connector for attaching a central core wire of a flexible cable to a control element, said connector comprising:
(A) a cylindrical body attached to said flexible cable, said cylindrical body including a hole therethrough, said hole extending generally perpendicular to the axis of said cylinder;
(B) a connecting pin having one end attached to said control element, said connecting pin extending through said hole in said cylindrical body and having a shoulder facing said control element; and
(C) a locking body reciprocably mounted on said cylindrical body, said locking body including a generally cylindrical portion mounted around said cylindrical body and having a surface engageable with said shoulder of said connecting pin on the side of said cylindrical body opposite said control element, to prevent removal of said pin from said hole.

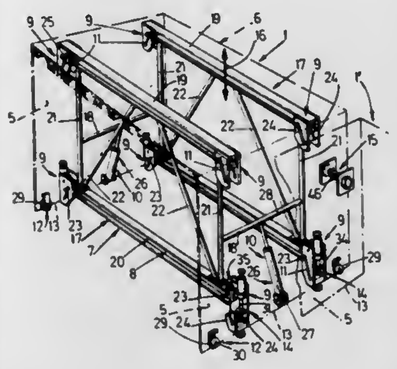
4,441,837
GOLF CLUB COUPLING ASSEMBLY
Joseph Mastroni, 462 W. Fairway Cir., Mesa, Ariz. 85201
Filed Sep. 4, 1981, Ser. No. 299,425
Int. Cl.³ B25G *3/00;* F16B *7/18;* F16D *1/00;* F16L *15/00*
U.S. Cl. 403—300 **11 Claims**



1. A coupling assembly for joining the tapered grip ends of two golf clubs to form a golf ball retrieving device, said assembly comprising:

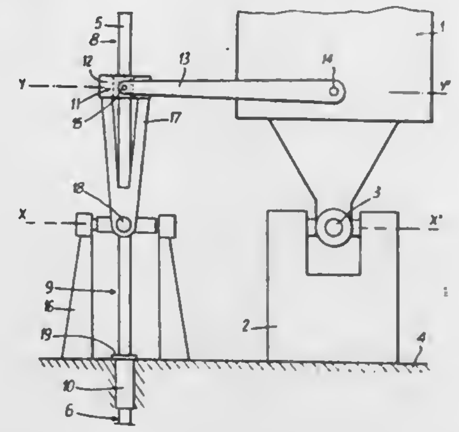
(a) a housing portion and gripping portions disposed along a longitudinal axis,
(b) a housing portion having first and second handle receiving ends,
(c) a gripping portion being disposed adjacent each of the receiving ends and being in open communication with the respective adjacent receiving end, and
(d) tightening means mounted to cause each of the gripping portions to operate between an open position and a contracted, gripping position,
(e) said gripping portions being effective to receive the tapered handle end of a golf club when in the open position and being effective to tightly grip the tapered handle end of said golf club when in the contracted, gripping position,
(f) each gripping portion includes at least two gripping sections laterally spaced with respect to each other and having a structural configuration effective to cause the gripping sections to move toward one another when the gripping portion is in the contracted, gripping position,
(g) each gripping portion including a threaded outer surface on each of the gripping sections, and
(h) the tightening means includes a tightening member having a portion which threadingly engages the threaded outer surface of the gripping sections,
(i) said tightening member being effective to move along the longitudinal axis of the assembly in a direction away from the housing portion outwardly along each of the gripping portions to cause the gripping portion to move from an open position to said contracted, gripping position when the tapered handle end of a golf club is disposed between the spaced gripping sections,
(j) said gripping sections have a cross-sectional thickness which increases along the longitudinal axis of the assembly in a direction away from the housing portion to form a tapered bore within the gripping portions which engage the tapered grip ends of the golf club when the gripping portion is in the contracted, gripping position.

4,441,838
ELEMENT FOR TUNNEL-TYPE METAL SHUTTERING
Alain M. Cossart, Paris, France, assignor to Metalex, Paris, France
Filed Jan. 3, 1983, Ser. No. 455,023
Int. Cl.³ E21D *19/04;* B28B *7/02*
U.S. Cl. 405—150 **11 Claims**



1. Element from tunnel-type metal shuttering, particularly retractable element for shuttering and unshuttering cells from buildings with bearing cross-walls and solid concrete slab, comprising two vertical panels joined together by a flexible plating, means to retain said panels in parallel relationship and to vary the spacing thereof to bring said plating to a horizontal shuttering position or to a concave unshuttering position, said means being comprised of a rigid and undistortable structure extending between the element panels, guides secured to said panels and bearing said structure, and means bearing on the panels and structure to move said structure in parallel relationship therewith along a vertical direction, between two end positions corresponding to the shuttering position in which said structure bears the plating in horizontal position and the unshuttering position of said element, said guides having that portion thereof which cooperates with the structure lying at an angle to the panels in such a way that the slanting of those guide portions secured to the one panel be opposite to the slanting of the guides secured to the other panel, in such a way that the structure as it moves relative to the panels from the one end position to the other one, causes the spacing between said panels to vary, rolling means associated with each said panels adjacent the bottom thereof, to allow moving said element to the unshuttering position, and means associated with each panel adjacent the bottom thereof and controlled by the rigid structure as it is moved between both end positions thereof, to adjust the panel bottom position and the rolling means position relative to the ground, while insuring automatic levelling of the element in the shuttering position thereof, and means to join each panel from an element to the directly adjacent parallel panel from an element lying side by side when said element lie in shuttering position.

4,441,839
ECCENTRIC FLUID DELIVERY COLUMN FOR ARTICULATED DRILLING PLATFORM IN DEEP WATER PETROLEUM PRODUCTION
Francois Baduel, Tarbes; Christian Dumazy, Idron, and Jean-Paul Sarraïlh, Pau, all of France, assignors to Societe Nationale Elf Aquitaine, Courbevoie, France
Filed Sep. 17, 1982, Ser. No. 419,448
Claims priority, application France, Sep. 18, 1981, 81 17642
Int. Cl.³ E02B *17/02*
U.S. Cl. 405—202 **7 Claims**

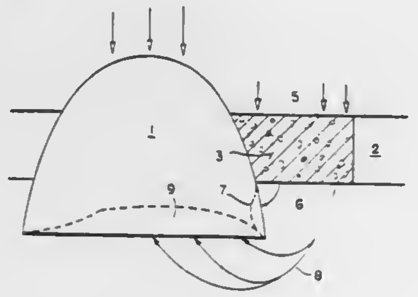


1. A delivery column for a deep-water well structure for communicating with a region beneath the water bottom, said structure having a vertical axis, said structure resting on a first base and articulated with respect thereto about a first axis, said column containing a plurality of pipes connected to each other end to end, comprising an upper tubular part rising near the surface of the water, and a lower tubing member connected at one end to a base pipe by means of a disconnecting coupler and at the other end to the lower end of the lower tubing member of the column by means of a coaxial union of a piston mounted for longitudinal sliding movement in a generally cylindrical seat wherein said seat **12** is connected:
at one end to the structure by means of a first arm articulated at each of its ends, the axis of one end articulation coinciding with the axis of the structure, and the axis of the other end articulation coinciding with the axis of the column, the axes of both articulations being perpendicular to the plane defined by the axis of the structure and the axis of the column;
at the other end to a second base by means of a second arm extending from the seat and coupled to said second base by means of a universal joint, the center of said joint being situated horizontally adjacent the axis of articulation of the structure on the base thereof, the center of the universal joint lying on a vertical center line of the base housing of the lower tubing member;

said second arm being such that the axis of the seat passes through the center of the universal joint,
 the centers of articulation of said structure on the base thereof and of the universal joint and the centers of the two end articulations of the first arm forming the vertices of a parallelogram.

4,441,840
PROCESS FOR THE DISPOSAL AND ECONOMIC USE OF THE RESIDUE OF THE EXHAUST GAS WASHERS OF FURNACES IN RELATION TO WASTE PRODUCTS

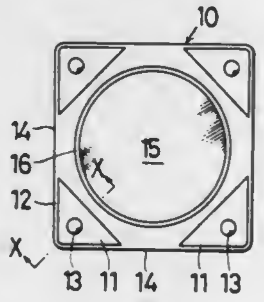
Friedrich Bassier, Duisburg, and Klaus Goldschmidt, Essen, both of Fed. Rep. of Germany, assignors to Ruhrkohle AG and Steag AG, both of Essen, Fed. Rep. of Germany
Filed Jun. 6, 1980, Ser. No. 156,933
Claims priority, application Fed. Rep. of Germany, Jun. 9, 1979, 2923545
The portion of the term of this patent subsequent to Jan. 30, 1996, has been disclaimed.
Int. Cl.^{3} E02D *3/14*
U.S. Cl. 405—267 **7 Claims**



1. An improved process for utilizing the residues of a thermal energy power plant washer in which the limestone or lime residue resulting from the washer is converted to gypsum, the substrate is recrystallized to alpha sulfate hemihydrate and is treated with water, wherein the improvement comprises the step of mixing with the alpha sulfate hemihydrate, at least one additive selected from the group consistency of flue ash from a coal combustion installation, waste washings or local tailings from coal recuperation, granulate of ash from coal combustion, slag from coal combustion, slag from steel production, calcium sulfate from exhaust gas washers, and calcium sulfate dehydrate from exhaust gas washers.

4,441,841
THROW AWAY INSERT

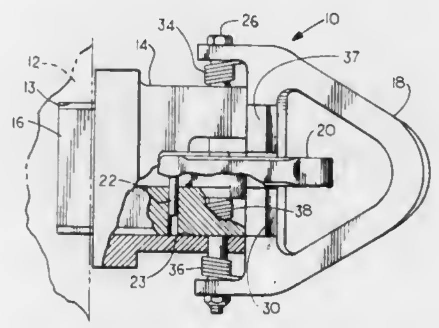
Yoshikatsu Mori, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan
Continuation of Ser. No. 242,903, Mar. 12, 1981, abandoned, which is a continuation of Ser. No. 81,259, Oct. 2, 1979, abandoned. This application Feb. 2, 1982, Ser. No. 344,931
Claims priority, application Japan, Nov. 6, 1978, 53-138523
Int. Cl.^{3} B26D *1/00*
U.S. Cl. 407—114 **1 Claim**



1. A throw away insert for a boring tool, said insert having a polygonal shape with corners and having two opposite, parallel surfaces and a plurality of sides, a cutting edge formed at the junction of each of said sides with at least one of said surfaces, said one surface having a land extending inside of and along said cutting edge, said insert having a plurality of separate recesses in said one surface inside of said land, one recess at each corner of the insert, a substantially circular first chip breaking projection in the central portion of each recess with a periphery spaced from the edges of the recess, and a second chip breaking projection at the center of said one surface and having the outer periphery thereof extending substantially closer to said cutting edge between each pair of the corners of the insert than at the corners, the top of said first chip breaking projection being below the top of said second chip projection.

4,441,842
FOOT ACTUATED LATCH

Jeffrey P. Kosmoski, Long Beach, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.
Filed Nov. 5, 1981, Ser. No. 318,474
Int. Cl.^{3} B60P *1/64, 7/13;* B61D *45/00*
U.S. Cl. 410—81 **5 Claims**

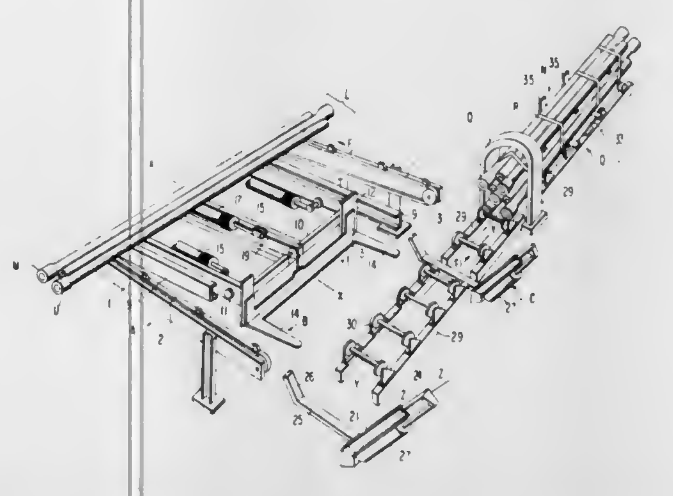


1. A foot actuated latch for use in securing a container in position on the cargo floor of an aircraft comprising:
- a base member including:
  - a slot;
- a tongue slidably positioned in said slot, said tongue having;
  - a first end adapted to engage a container,
  - an opposite second end;
  - an abutment surface therebetween;
  - an extended container engaging position; and
  - a retracted container releasing position;
- a lock lever having:
  - a first end hingedly connected to said base member;
  - an abutment finger;
  - lock lever bias means acting to urge said abutment finger into engagement with said tongue abutment surface to maintain said tongue in its retracted container release position; and
  - a second end adapted for foot actuation against said lock lever bias means to disengage said abutment finger from said tongue abutment surface; and
- a release lever having:
  - a first end hingedly connected to said base member;
  - means connecting said release lever to said tongue;
  - release lever bias means acting to urge said release lever to move said tongue within said slot to its extended container engaging position; and
  - a second end adapted for foot actuation against said release lever bias means to move said tongue to its retracted container release position.

4,441,843
ADJUSTABLE QUARTER-TURN FASTENER

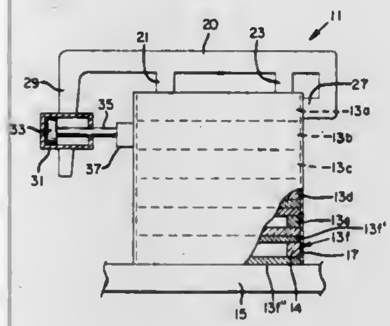
Andrew C. W. Wright, Farnham, and John W. Petruschke, Aldershot, both of England, assignors to Dzus Fastener Co., Inc., West Islip, N.Y.
Filed Nov. 23, 1981, Ser. No. 323,815
Int. Cl.^{3} F16B *21/02*
U.S. Cl. 411—349 **4 Claims**

1. A quarter-turn fastener for fastening a panel to a support, said fastener comprising a bolt, the bolt having a head and a screw-threaded shank; a retainer assembly including a bush having a sliding fit on said shank with a counterbore formed therein and having a nut permanently and non-rotatably retained in said counterbore with a tight frictional screw fit with the screw-threaded shank; a pair of abutments on said bush for engaging the rear of said support, said support having an aperture in which said bush locates; at least one pair of stops on said bush for engagement with the sides of said aperture in said support or a corresponding aperture in said panel to define inoperative and operative positions of said retainer assembly, wherein a compression spring is located between said retainer assembly and said panel to retain said retainer assembly in said inoperative position on said panel, under the action of friction, when said retainer assembly is disengaged from said support.



4,441,844
PORTABLE PANEL SEPARATION DEVICE

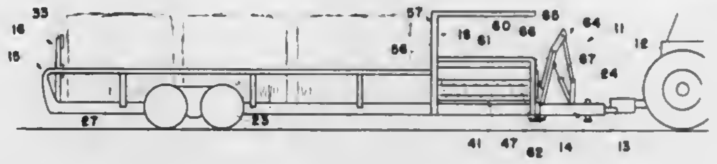
Curtis D. Miller, 24203 NE. Oregon St., Troutdale, Oreg. 97060
Filed Apr. 12, 1982, Ser. No. 367,464
Int. Cl.^{3} B65G *59/02*
U.S. Cl. 414—117 **3 Claims**



1. A portable separator device comprising a beam to span a stack of panels to be separated,
- a pair of feet means carried by the beam in spaced relation therealong to adapt the device to be supported solely by contact with the top of such stack at spaced places thereon,
- a stop member carried by the beam at one end for disposition at one side of the stack,
- a power unit carried by the beam at the other end thereof and having a stack engaging member for disposition at the opposite side of the stack,
- said feet means acting as depth guides to vertically dispose said stop member at a level even with the associated edge of the uppermost panel, and to vertically dispose said stack engaging member below the just mentioned level,
- and means to facilitate actuation of said power unit to cause it to bodily shift said beam horizontally relative to the stack and carry the uppermost panel with it,
- at least one of said feet means being mounted for adjustable movement along said beam.

4,441,845
BALE HANDLING APPARATUS

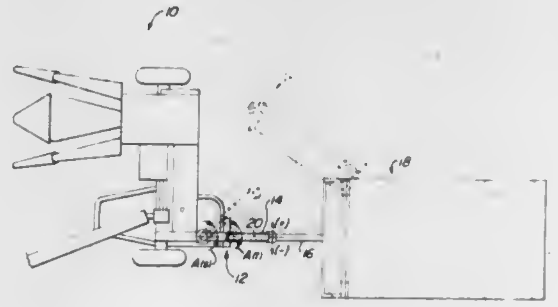
David W. Gibson, P.O. Box 117, Springdale, Mont. 59082
Continuation-in-part of Ser. No. 287,285, Jul. 27, 1981, Pat. No. 4,376,607. This application Mar. 10, 1983, Ser. No. 474,256
Int. Cl.^{3} A01D *87/12*
U.S. Cl. 414—24.6 **17 Claims**



1. Bale handling apparatus including a base portion, a bale storing portion, a bale moving portion, a bale distributing portion, a bale loading portion and a control portion; said base portion including a frame section, wheeled carriage means supporting said frame section, a hitch member disposed at one end of said frame section; said bale storing portion including a bale supporting section disposed on said frame section, said bale supporting section extending from the rear end of said frame section remote from said hitch member toward but spaced from said hitch member, side rail sections extending upwardly from longitudinal edges of said bale supporting section; said bale moving portion including a transverse rear rail section disposed between said side rail sections, said rear rail section being movable from the rear end of said bale supporting section to the front end thereof; said bale distributing portion being disposed on said frame section between said hitch member and said bale storing portion, said bale distributing portion including a frame, bale rotating means mounted on said frame, said bale rotating means being oriented transversely of said bale storing portion; said bale loading portion being disposed adjacent to said bale distributing portion for loading a bale onto said bale distributing portion; said control portion including means for moving said rear rail section toward said bale distributing portion, and means for driving said bale rotating means; whereby bales positioned on said bale storing portion are advanced sequentially to said bale distributing portion and material distributed therefrom.

4,441,846
AUTO SPOUT AIMER WITH DELAY

Stanley J. Johnson, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.
Filed Feb. 9, 1982, Ser. No. 347,125
Int. Cl.^{3} B65G *67/22*
U.S. Cl. 414—335 **6 Claims**



1. In a machine including a crop discharge spout on an agricultural machine, a crop-receiving wagon pivotally attached to the machine and a control system for maintaining predetermined spout-wagon angular relationships, the control system having a first and second operational mode wherein the spout-wagon angular relationship is maintained within first and second angular ranges during first and second ranges of wagon-machine angles, and having means for switching from one

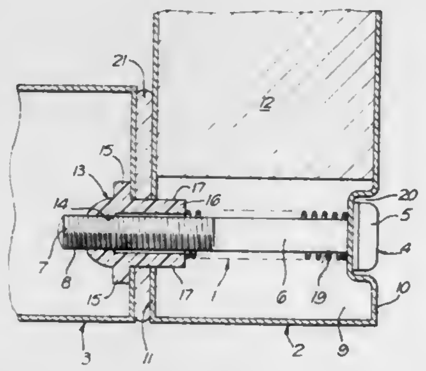
to the other of the operational modes when the wagon-machine angle changes from one to other of the wagon-machine angle ranges; the improvement comprising:

timer means for delaying the switching between operational modes for a predetermined delay time period after the wagon-machine changes from one to the other of the wagon-machine angle ranges.

4,441,847
METHOD AND APPARATUS FOR PRODUCING BUNDLES OF CAST IRON PIPES

Roger Malivoir, Pont a Mousson, and Gilbert Mayer, Nancy, both of France, assignors to Pont-a-Mousson SA, Nancy, France

Filed Nov. 12, 1982, Ser. No. 441,010
Claims priority, application France, Nov. 20, 1981, 81 21931
Int. Cl.³ B65B *13/18, 27/10;* **B66F** *9/04*
U.S. Cl. 414—31 **16 Claims**

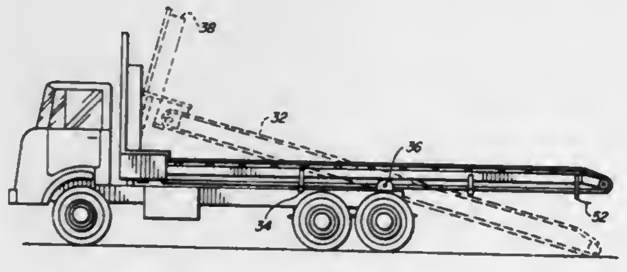


4. An apparatus for producing bundles (N) of pipes (P) from multiple pipe beds (L), comprising: a horizontal transporter (A) for beds of cast iron pipes; and loading means for loading said beds, at one end of said tranporter, onto a removal sled (D) which is movable transversely to the direction of movement of the beds of pipes on said transporter, wherein said loading means for loading said beds comprises shovel means (B) for removing the beds of pipes from the transporter, and an intermediate cradle (C) for receiving the beds of pipes from said shovel means, said intermediate cradle further functioning to transfer said beds of pipe onto said removal sled, said intermediate cradle being movable in height relative to said removal vehicle in an oblique direction between a high position above and a low position beneath said removal sled, wherein said intermediate cradle is movable along a guide path which is oblique at a first actue angle (y) in relation to the horizontal, said guide path being sloped downward in relation to the approach of said intermediate cradle towards said removal sled when said cradle is above said removal vehicle, and upward in relation to said removal sled when said intermediate cradle is beneath said removal vehicle.

4,441,848
SELF-LOADING MATERIAL TRANSPORTER

Gerald M. Bailey, P.O. Box 36373, Tucson, Ariz. 85740

Filed Sep. 4, 1981, Ser. No. 299,309
Int. Cl.³ B60P *1/38*
U.S. Cl. 414—439 **12 Claims**



1. A self-loading transporter comprising:

a. a land vehicle supported by wheels and having a bed including first and second ends and pivot means coupled to said bed in proximity to the second end of said bed, said vehicle further including a plurality of load support wheels coupled to said vehicle in proximity to said pivot means;

b. a conveyor system coupled to said pivot means and having a substantially linear upper surface and a lower surface, first and second ends, and a continuous flexible conveyor belt extending around the upper and the lower surface and the first and second ends for loading and unloading material from said vehicle, said conveyor system including a plurality of rollers positioned below the section of said conveyor belt passing along the upper surface of said conveyor system for providing low friction support for said conveyor belt, said conveyor system including a first section extending between said pivot means and the first end of said system and a second section extending between said pivot means and the second end of said system;

c. conveyor drive means for translating said conveyor belt in first or second directions along the upper surface of said conveyor system;

d. positioning means coupled to said vehicle and to the first section of said conveyor system for tilting said conveyor system between a horizontal position and an inclined position;

e. first velocity measurement means for determining the rate of translation of said vehicle with respect to the ground;

f. second velocity measurement means for measuring the rate of movement of said conveyor belt with respect to said conveyor system;

g. synchronization means coupled to said first and second velocity measurement means for synchronizing the rate of translation of said conveyor belt to the rate of translation of said vehicle whereby said conveyor belt is displaced at a velocity equal to the velocity of displacement of said vehicle with respect to the ground;

h. sensing means coupled near the second end of said conveyor system for generating an output signal representative of the spacing between the second end of said system and the ground; and

i. attitude control means coupled to said positioning means and responding to the output signal from said sensing means for actuating said positioning means to maintain a predetermined constant spacing between the second end of said conveyor system and the ground as said conveyor system is translated with respect to the ground;

whereby the weight of the material being loaded onto or unloaded from said transporter is transferred directly between the ground and said vehicle load support wheels without the assistance of auxiliary support wheels positioned between said load support wheels and the second end of said conveyor system.

4,441,849
APPARATUS FOR HOISTING LOADS TO ELEVATED BUILDING LOCATIONS

Michael J. Dizmang, 905 Highway 332, Apt. 1503, Lake Jackson, Tex. 77566

Filed Aug. 26, 1982, Ser. No. 411,689
Int. Cl.³ B60P *3/28*
U.S. Cl. 414—490 **9 Claims**

1. Apparatus for lifting and transporting a load to an elevated building location, comprising

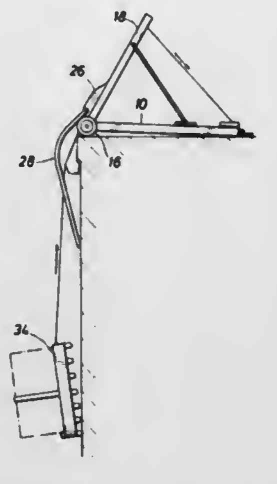
an elongated carriage having

a flat bed with at least two wheels on a first end thereof and a cable connection on the second end thereof to provide for hauling of the carriage up a vertical wall of the building, the balance of the carriage being such as to cause the wheels on said first end to be closer to the wall structure than said second end,

a ramp pivoted near said first end with a collapsed position during the time said carriage is hauled up the building wall and an inclined position after the carriage is at an elevated building location near the edge of the wall,

connectable support means for holding said ramp in its inclined position,

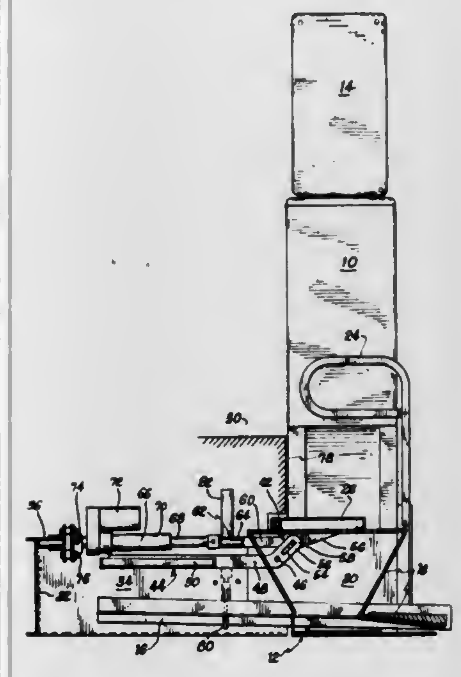
a platform for carrying said load and having a cable connection for hauling said platform and load up the vertical wall of the building and onto said ramp of said carriage, said weight on said ramp, the inclined angle of said ramp and the weight distribution of said flat bed of said carriage being such that the flat bed does not raise up from a level position when the platform and load are in position on said ramp.



4,441,850
AUXILIARY STEP FOR WHEELCHAIR LIFT

Graham R. Thorley, La Mesa, Calif., assignor to Transporation Design Technology, Inc., San Diego, Calif.

Filed Apr. 9, 1982, Ser. No. 366,942
Int. Cl.³ B60P *1/46;* **B60R** *3/00*
U.S. Cl. 414—545 **7 Claims**



1. A retractable step mechanism alternately deployable in a step mode or in a substantially vertical barrier mode, said mechanism comprising:

a horizontally pivoted step element pivoted between said step mode in which said element is horizontally extended and said barrier mode in which said element is generally vertically extended;

a panel movable between said step mode in which said panel is stowed, and said barrier mode in which said panel aligns with and defines a vertical extension of said step element; and,

linkage mechanism linking said step element and panel and confining same to concomitant motion into and between said step and barrier modes,

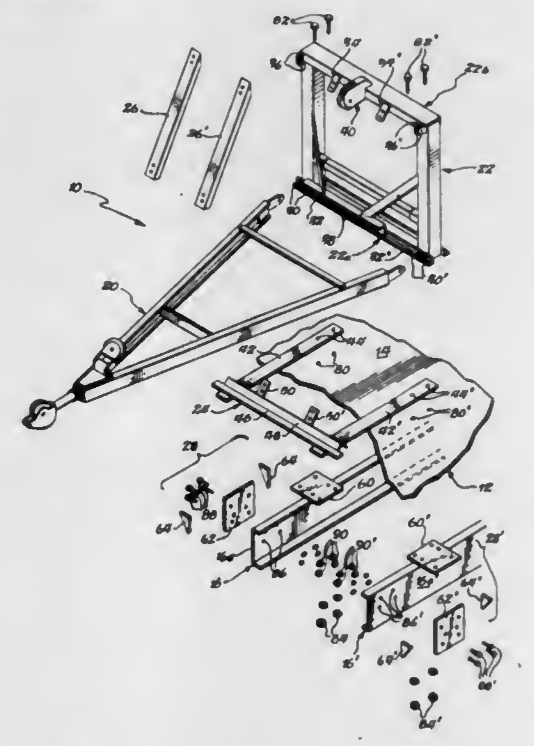
wherein said panel is pivoted on a horizontal axis, said panel and step element each has an extending arm, said arms are linked together to define said linkage means, and

one of said arms defines a slot and the other of said arms engages said one arm slidably through said slot to define said linkage mechanism.

4,441,851
WRECKER ATTACHMENT

Robert G. Starkweather, E. Amherst, N.Y., assignor to Escort Systems, Inc., Amherst, N.Y.

Filed Nov. 2, 1981, Ser. No. 317,066
Int. Cl.³ B60P *3/12*
U.S. Cl. 414—563 **5 Claims**



1. A wrecker attachment mounted on the bed of a pickup truck having an underlying supporting frame formed in part by a pair of transversely spaced frame members extending lengthwise of said bed and comprising in combination:

said attachment includes a boom assembly; a back post assembly for mounting said boom assembly; a floor plate assembly for positionally locating and bracing said back post assembly relative to said bed; a pair of brace members, said back post assembly having a horizontally disposed base portion and an upstanding post portion of inverted U-shaped configuration, said base portion mounting said boom assembly, said post portion mounting a pair of transversely spaced upper brace mounting flanges, said floor plate assembly is of a U-shaped plan view configuration and includes parallel side floor mounting plates laid flatwise on said bed and connecting plate means for joining rearwardly disposed ends of said side floor mounting plates and mounting a pair of transversely spaced lower brace mounting flanges, said base portion extending transversely of said side floor mounting plates adjacent front ends thereof; said pair of brace members having opposite ends thereof connected to said upper and lower brace mounting flanges, said base portion and said front ends of said floor mounting plates having groups of mounting apertures proximately located one group in vertical association with each of said frame members; attachment mounting bolts passed downwardly through said groups of mounting apertures and through mounting holes formed in said bed in alignment with said groups of mounting apertures; and a pair of mounting assemblies arranged beneath said bed one in association with each of said frame members and its associated group of mounting apertures, said assemblies each having a bed mounting plate arranged to underengage said bed and formed with mounting openings disposed to receive said bolts passing through an associated group of mounting apertures for clamping said base portion and said floor mounting plates to an upper surface of said bed and said bed mounting plate to a lower surface of said bed, a frame mounting plate fixed to depend from said bed mounting plate in surface engagement with an adjacent one of said frame members to define a generally T-shaped structure, said frame mounting plate having a plurality of mounting openings aligned with mounting holes in said adjacent one of said frame members, assembly mounting bolts passed through said mounting openings of said frame mounting plate and aligned mounting holes in said adjacent one of said frame members for clamping said frame mounting plate to said adjacent one of said frame members, and gusset plates edge connected to said bed and frame mounting plates for rigidifying said structure.

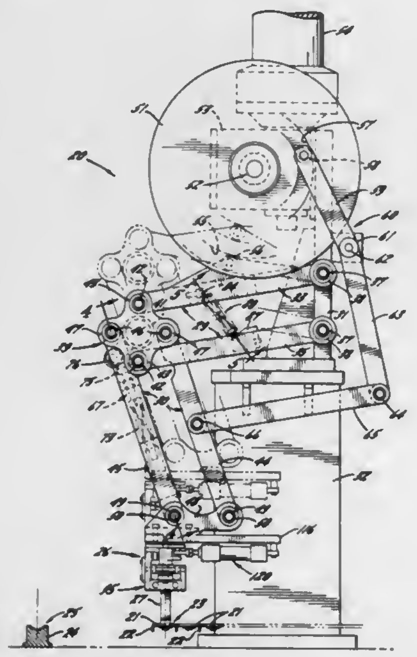
4,441,852
PARTS HANDLING MACHINE

Paul H. Dixon, Belvidere, Ill., assignor to Dixon Automatic Tool, Inc., Rockford, Ill.

Filed Sep. 28, 1981, Ser. No. 306,205

Int. Cl.^{3} B65G *65/02*

U.S. Cl. 414—733 **10 Claims**



1. A parts handling machine comprising a support, gripping mechanism for selectively picking up and releasing a part, and means mounting said gripping mechanism on said support to move upwardly, then generally horizontally and thence downwardly, said mounting means comprising a first pair of generally horizontally extending and vertically spaced parallel links having inner end portions pivotally mounted on said support to swing upwardly and downwardly about generally horizontal axes, a second pair of generally vertically extending and horizontally spaced parallel links having lower end portions pivotally connected to said gripping mechanism to swing inwardly and outwardly about generally horizontal axes, a connector pivotally mounting the outer end portions of said first links to swing upwardly and downwardly about generally horizontal axes and pivotally mounting the upper end portions of said second links to swing inwardly and outwardly about generally horizontal axes, a reaction surface on said connector, spring mechanism carried by one of said second links, said spring mechanism having an upper end biased upwardly against said reaction surface and having a lower end portion acting through said one link to bias said gripping mechanism downwardly, the upper end of said spring mechanism riding along said reaction surface as said second links are swung inwardly and outwardly, said reaction surface being shaped and located so as to cause said spring mechanism to urge said gripping mechanism inwardly when said second links are at the end of their inward stroke and to urge said gripping mechanism outwardly when said second links are at the end of their outward stroke, a first actuator for swinging said first links upwardly and downwardly, and a second actuator for swinging said second links inwardly and outwardly in timed relation with the swinging of said first links.

4,441,853
DISC ORIENTING DEVICE

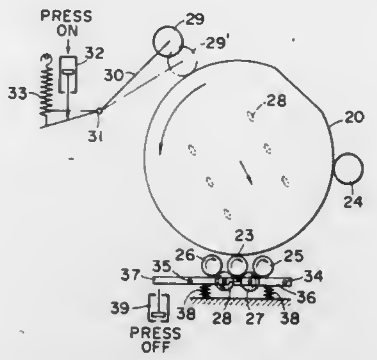
Masao Kosugi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 204,004, Oct. 31, 1980, abandoned. This application Apr. 28, 1983, Ser. No. 487,414

Claims priority, application Japan, Nov. 5, 1979, 54-142937

Int. Cl.^{3} B65G *47/24*

U.S. Cl. 414—757 **2 Claims**



1. A device for orienting a disc having a flat portion formed on the outer periphery thereof, comprising:

a base plate on which a disc may be disposed;

at least one positioning means for point-contacting the outer periphery of said disc disposed on said base plate;

rotary drive means;

a first rotatable roller for point-contacting the outer periphery of said disc and coupled to said drive means for imparting a rotational force to said disc;

second and third rotatable rollers disposed on opposite sides of said first rotatable roller for point-contacting the outer periphery of said disc and being coupleable to said drive means for imparting a rotational force to said disc, the periphery of said first roller being spaced, in a direction away from said disc, from a common tangent to the peripheries of said second and third rollers that lies adjacent the periphery of said disc, so that said first roller does not contact the flat portion of said disc when said second and third rollers contact the flat portion;

clutch means for interrupting the coupling of said second and said third rotatable rollers to said drive means when said disc has come to a predetermined rotational position; and

resiliently urged roller means for engaging said disc for moving it toward said positioning means and said first roller when the coupling of said second and said third rollers to said drive means is interrupted by said clutch means.

4,441,854
CONTROLLING POSITIONING SYSTEMS UPON REMOVAL OF POWER

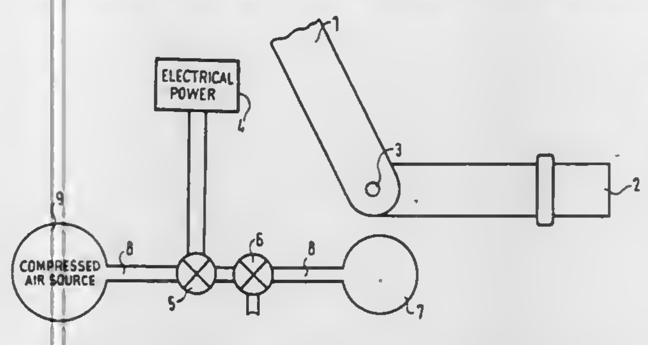
Paul Di Matteo, Huntington, and Joseph Ross, Fort Salonga, both of N.Y., assignors to Robotic Vision Systems, Inc., Hauppauge, N.Y.

Filed Aug. 5, 1981, Ser. No. 290,237

Int. Cl.^{3} B65G *43/06*

U.S. Cl. 414—787 **1 Claim**

1. A system for preventing damage to one type of equipment in response to uncontrolled dropping of another theretoconnected second type of equipment resulting from removal of electrical power to the second equipment, comprising: means for detecting the power loss; and means for preventing the dropping of the second type of equipment; said detecting means comprising a spring-loaded solenoid valve; and the preventing means comprising inflatable bag means positioned to prevent dropping of the second equipment, a source of fluid under pressure, and conduit means connecting said bag means and source and having said solenoid valve interposed therein.



4,441,855
COMPRESSORS

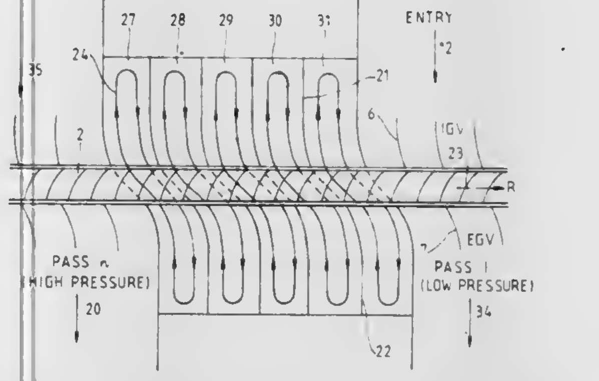
Colin A. M. Tayler, Bath, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Mar. 11, 1981, Ser. No. 242,566

Claims priority, application United Kingdom, Mar. 20, 1980, 8009450

Int. Cl.^{3} F04D *5/00*

U.S. Cl. 415—53 T **6 Claims**



1. An axial flow rotary compressor having a rotor provided with a multiplicity of blades distributed around its periphery for rotation between a row of upstream stator blades and a row of downstream stator blades and having disposed adjacent to the rotor blades at least one low pressure fluid inlet duct, at least one circumferentially spaced high pressure fluid outlet duct and a flow splitter positioned between a fluid inlet duct and a fluid outlet duct to separate the low pressure fluid from the high pressure fluid, wherein the flow splitter comprises a plurality of contiguous chambers positioned around a portion of the rotor, each chamber forming a duct for a loop fluid flowpath intersecting the path of the rotor blades such that in use there is a continuous fluid flow through the rotor blades as the blades pass the flow splitter.

4,441,856
STEAM TURBINE FOR GEOTHERMAL POWER GENERATION

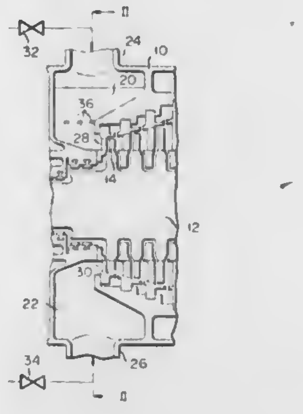
Kazunari Tsujimura, Tokyo, and Yoshikazu Hadano, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 21, 1981, Ser. No. 313,615

Claims priority, application Japan, Oct. 22, 1980, 55-149743[U]

Int. Cl.^{3} F01D *17/18, 9/04*

U.S. Cl. 415—155 **4 Claims**



3. A steam turbine for geothermal power generation utilizing the steam of geothermal water, said steam turbine comprising:

(a) a casing;

(b) turbine vanes rotatably set within the casing;

(c) a plurality of partition walls which extend in radial directions from the rotational center of the turbine vanes to define a plurality of steam valve chambers within the casing, at least one of said partition walls being provided with at least one circumferentially extending penetrating hole for causing adjacent steam valve chambers on either side of said at least one of said partition walls to be brought into communication with each other;

(d) steam supply pipes respectively connected to the corresponding steam valve chambers; and

(e) regulating valves which are fitted to the respective steam supply pipes to regulate respectively the flow rate of steam jets of the geothermal water supplied to respective steam valve chambers,

whereby the steam of the geothermal water existing in one of the steam valve chambers flows through the penetrating hole into an adjacent chamber, thereby preventing solid particles entrained in the geothermal water from clogging the steam turbine.

4,441,857
WEAR RESISTANT FAN BLADE FOR CENTRIFUGAL FAN

John E. Jackson, Brownsburg, and William G. Doherty, Lebanon, both of Ind., assignors to Union Carbide Corporation, Danbury, Conn.

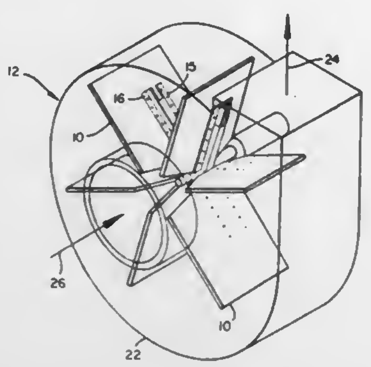
Filed Sep. 25, 1981, Ser. No. 305,728

Int. Cl.^{3} F04D *29/02*

U.S. Cl. 415—213 R **10 Claims**

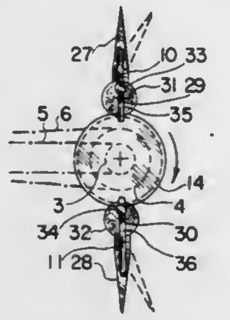
1. A fan blade for use in exhausting a gas stream effluent containing erosive particles from a radial flow fan comprising, in combination, a serrated surface forming in longitudinal cross-section a sawtooth configuration in the radial direction of the rotating blade with each serration having a notched apex which intersects a line drawn normal to the back edge of the blade for forming an inlet angle with the inlet surface of the serration and an exit angle with the exit surface of the serration with the combined included angle between the inlet surface and the exit surface lying between sixty and one hundred and twenty degrees and oriented so as to trap erosive particles in

the serrations with the serrated surface extending from substantially about the exit tip of the blade toward the inlet end thereof and having a wear resistant coating over at least a substantial area of the serrated surface.



4,441,858
VARIABLE CAMBER FLUID POWER MACHINE

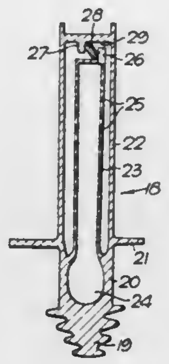
Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005
Continuation-in-part of Ser. No. 63,141, Aug. 2, 1979, Pat. No. 4,286,922. This application Feb. 20, 1981, Ser. No. 236,207
The portion of the term of this patent subsequent to Sep. 1, 1998, has been disclaimed.
Int. Cl.³ F03D *3/06*
U.S. Cl. 416—17 **4 Claims**



1. Another variable camber fluid power machine comprising in combination:
- (a) a central shaft;
- (b) a plurality of arms extending axisymmetrically from said central shaft, said plurality of arms rotatable about said central shaft;
- (c) a plurality of blades, each of which plurality of blades disposed near the outer extremity of each of said plurality of arms rotatably about an axis generally parallel to said central shaft;
- (d) mechanical or hydraulic means linking the rotational motion of said plurality of blades about the blade axis to the revolving motion of said plurality of blades about said central shaft wherein each of said plurality of blades undergoes 180 degree rotation per 360 degree revolution by each of said plurality of blades about and relative to said central shaft;
- (e) a plurality of pairs of flaps, each of said pairs of flaps pivotably disposed to each edge of each of said plurality of blades wherein said each of said pairs of flaps is pivotable about an axis generally parallel to said central shaft; and
- (f) mechanical or hydraulic means linking the deflection of said pairs of flaps to the revolving motion of said plurality of blades about and relative to said central shaft wherein the maximum camber generating higher lift force takes place at angles of revolution equal to or somewhat greater than or somewhat less than 90 and 270 degrees, said angle of revolution measured from the minimum drag position of revolution.

4,441,859
ROTOR BLADE FOR A GAS TURBINE ENGINE

John H. R. Sadler, Derby, England, assignor to Rolls-Royce Limited, London, England
Filed Jan. 20, 1982, Ser. No. 341,189
Claims priority, application United Kingdom, Feb. 12, 1981, 8104334
Int. Cl.³ F01D *5/10, 5/18*
U.S. Cl. 416—96 A **10 Claims**

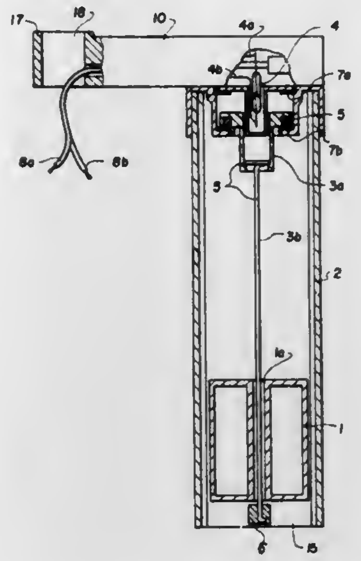


1. A rotor blade for a gas turbine engine comprising:
- a hollow aerofoil having a predetermined vibrational characteristic;
- a component mounted internally of said hollow aerofil and having a vibrational characteristic different from said vibrational characteristic of said hollow aerofoil;
- said hollow aerofoil and said component having facing surfaces defining a gap therebetween; and
- a damper weight having a center of gravity and positioned internally of said aerofoil in said gap betwen said facing surfaces of said hollow aerofoil and said component, said damper weight being eccentrically mounted within said gap with a first point of contact with a one of said facing surfaces on said hollow aerofoil and a second point of contact with another of said surfaces which is on said component, said first point of contact being out of radial alignment with said center of gravity of said damper weight to cause said damper weight, when under centrifugal force, to rotate about said first point of contact and to apply a sideways load to both said hollow aerofoil and said component and to further frictionally engage with both of said facing surfaces.

4,441,860
WATER LEVEL DETECTOR APPARATUS OF FLOAT TYPE

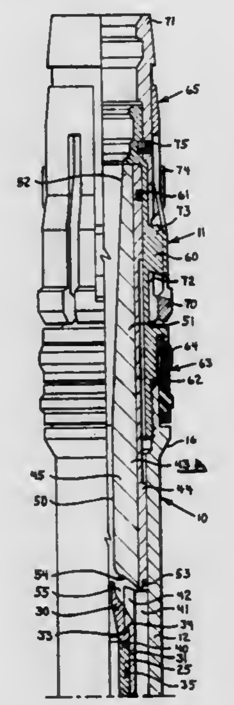
Haruo Tsujimoto, 16-39, 4-Chome, Tsurumi, Tsurumi-Ku, Osaka-shi, Japan
Filed Mar. 1, 1982, Ser. No. 353,439
Int. Cl.³ F04B *49/04*
U.S. Cl. 417—40 **11 Claims**

1. A device for operating an apparatus such as a pump for controlling a water level, comprising a housing, a switch mounted in said housing for starting and stopping the apparatus and having a magnetically influenced openable and closable contact, a float in said housing floatable on the water level to be controlled and changing in level with the change of water level, a movable driven member associated with said float in said housing, means establishing a loss motion connection between said float and said driven member causing movement of said float upon change of water level by a predetermined amount before causing movement of said driven member in each direction of level change, said driven member having a magnetic actuator actuating the contacts of said switch positionable by movement of said float into a first position to locate said actuator in an area in which it influences said switch to cause its contacts to move to a selected one of an opened and closed position, and being movable to a second position spaced away from said first position upon movement of said float to a different level in which it influences said switch to move its contacts to the opposite direction of the selected position, holding means holding said magnetic actuator in said first and second positions by a predetermined holding force which may be overcome by movement of said float only after a predetermined change of level, said holding means comprising a pair of magnetic holders, one for holding said magnetic actuator in each of said first and second positions.



4,441,861
WELL PRODUCTION APPARATUS AND METHOD

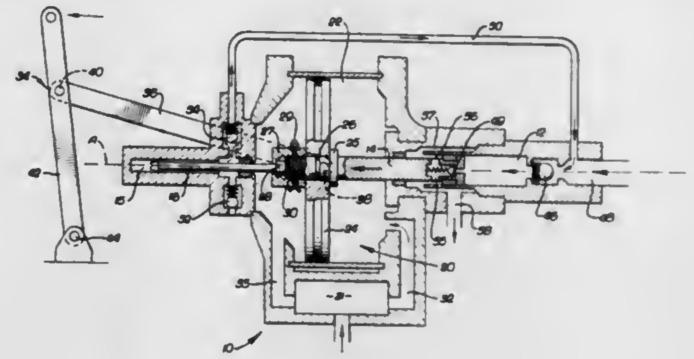
Carlos R. Canalizo, 10511 Allegheny Dr., Dallas, Tex. 75229
Filed Jul. 10, 1981, Ser. No. 282,138
Int. Cl.³ F04F *5/00*
U.S. Cl. 417—54 **10 Claims**



1. A jet pump assembly for producing a well comprising: a pump housing having a longitudinal bore provided with an inlet end, a transverse bore opening into said inlet end, and an outlet end for discharge into a producing flow path having an axis aligned with the axis of said housing bore; a nozzle body and a nozzle arranged in tandem in said longitudinal bore near the inlet end thereof downstream from said transverse bore for receiving power fluid introduced into said housing through said transverse bore; said nozzle body having longitudinal bypass flow passages separate from and around said transverse bore and said nozzle body and nozzle from an inlet end of said housing into said bore of said housing downstream from said nozzle for flowing producing fluids from below said pump into said pump bore downsteam from said nozzle; a throat member in said housing bore downstream from said nozzle and from the entry of said bypass flow passages for producing fluids into said housing bore; a diffuser in said housing bore downstream from said throat member; said nozzle body, said nozzle, said throat member, and said diffuser being arranged in tandem along a substantially straight longitudinal axis for substantially straight line flow of power fluid and producing fluids through said jet pump into a producing flow passage having an axis substantially aligned with said axis through said pump housing bore whereby producing fluids entrained in said power fluid through said jet pump and into said producing flow passage move along a substantially straight line path without impinging upon internal surfaces in said well; a locking mandrel assembly on said housing around said diffuser for releasably locking said jet pump along a producing fluids tubing string for producing fluids through said tubing string with said pump from below said pump into said string above said pump along a substantially straight line flow path; and a seal assembly on said housing above said transverse flow passage around said diffuser adapted to seal with the inner wall of a tubing for sealing off an annulus in said tubing around said housing to direct power fluid into said transverse flow passage.

4,441,862
SYNCHRONIZED MIXING PUMP

Benjamin Vogel, Encino, Calif., assignor to Haskel, Inc., Burbank, Calif.
Filed Dec. 7, 1981, Ser. No. 328,072
Int. Cl.³ F04B *17/00*
U.S. Cl. 417—250 **7 Claims**



1. A mixing pump comprising:
- a primary pumping chamber;
- a mixing chamber;
- first valve means for admitting a mixture of a main fluid and an additive fluid from said mixing chamber to said primary pumping chamber;
- second valve means for emitting said mixture from said primary pumping chamber;
- a primary piston reciprocable in said primary pumping chamber for drawing said mixture into said primary pumping chamber through said first valve means on a first stroke and for expelling said mixture from said primary pumping chamber through said second valve means on a second and opposite stroke, said second valve means being disposed within said primary piston;
- an annular passage surrounding said piston as said piston enters said primary pumping chamber;
- an outlet passage for fluid emitted from said primary pumping chamber arranged to receive said fluid from said annular passage;
- a secondary pumping chamber;
- third valve means for admitting said additive fluid to said second pumping chamber;
- fourth valve means for emitting said additive fluid from said secondary pumping chamber;
- a secondary piston reciprocable in said secondary pumping chamber for drawing said additive fluid into said secondary pumping chamber through said third valve means on a first stroke and for expelling said additive fluid from said

secondary pumping chamber through said fourth valve means on a second and opposite stroke;
mixing conduit means leading from said fourth valve means to said mixing chamber; and
means for causing said primary and secondary pistons to reciprocate in synchronization such that said first stroke of said primary piston corresponds to said second stroke of said secondary piston and said second stroke of said primary piston corresponds to said first stroke of said secondary piston.

4,441,863
VARIABLE DISCHARGE ROTARY COMPRESSOR

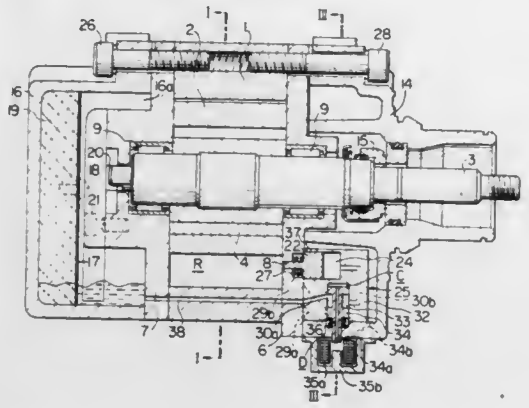
Teruyuki Hotta, Nagoya; Yoshiki Kurokawa, Okazaki; Eiichi Nagasaku, Chiryu, and Masao Yasunaga, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jan. 26, 1982, Ser. No. 342,808

Claims priority, application Japan, Jan. 27, 1981, 56-10016[U]; Jan. 27, 1981, 56-10017[U]

Int. Cl.³ F04B *49/02, 49/06*

U.S. Cl. 417—281 **3 Claims**



1. A variable discharge rotary compressor comprising:
a housing having a generally cylindrical main housing part, end plates provided to close the open ends of said main housing part, front and rear housing members provided to cooperate with said end plates to define chambers one of which acts as an intake chamber and the other of which acts as a discharge chamber;
a rotor rotatably mounted in said main housing part;
a plurality of vanes slidably mounted on said rotor to cooperate with said main housing part, said end plates and said rotor defining working chambers having volumes which are variable by the rotation of said rotor so that each of said working chambers operates to suck an amount of fluid from said intake chamber, to compress the thus sucked fluid and then to discharge the thus compressed fluid into said discharge chamber;
the end plate adjacent to said intake chamber being formed therein with a first passage means for communicating said intake chamber and the working chambers when in their compression strokes;
a first valve means for controlling the communication through said first passage means between said working chambers in compression strokes and said intake chamber;
said discharge chamber including a section which acts as a reservoir for oil which is under the fluid pressure in said discharge chamber;
a second passage means formed in said housing and extending between said oil reservoir and said first valve means for applying the oil pressure to said first valve means;
said first valve means being responsive to the oil pressure from said oil reservoir to block said first passage means; and
a second pilot valve means disposed in said housing to control the application of the oil pressure to said first valve means and having a first position in which the oil pressure is applied through said second passage means to said first valve means when the discharge of said compressor does not exceed a predetermined discharge requirement and a second position in which the oil pressure is not applied to said first valve means when the compressor discharge exceeds said predetermined requirement.

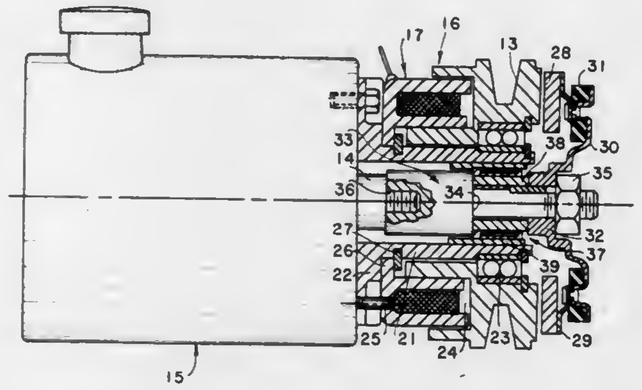
4,441,864
HYDRAULIC PUMP WITH A MAGNETICALLY OPERATED COUPLING

Jeffrey E. Watts, 50 Anderson Ave., Westbrook, Me. 04092, and Edward E. Watts, Star Rte., Manchester Rd., Steep Falls, Me. 04085

Filed Feb. 11, 1981, Ser. No. 233,450

Int. Cl.³ F04B *9/00*

U.S. Cl. 417—319 **5 Claims**



1. A hydraulic pump to be driven by a pulley having a belt trained about it and a pulley driven by the motor vehicle engine on which the pump is mounted, an elongated hub attached to the pump casing, a bearing unit rotatably supporting said pulley on the front end of the hub said pump including a drive shaft extending freely through the hub, an electro-magnet supported by said hub rearwardly of said pulley, a clutch disc including a portion engageable with said pulley only when said electro-magnet is energized and fixed on the free end of said shaft, and a bearing means fitted between said adapter shaft and the outer end of said hub substantially in radial alignment with said first bearing.

4,441,865
FLUID PRESSURE PUMP

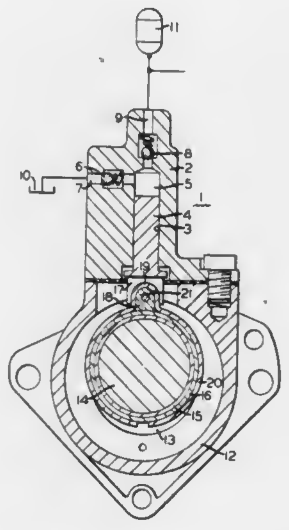
Diether Staisch, Walsrode, Fed. Rep. of Germany, assignor to WABCO Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Dec. 4, 1981, Ser. No. 327,316

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1980, 3048265

Int. Cl.³ F04B *9/00, 35/00*

U.S. Cl. 417—319 **6 Claims**



1. A fluid pressure pump comprising,

(a) a pump housing, said pump housing including a cylinder bore and inlet and outlet valves,
(b) a reciprocating piston disposed within the cylinder bore for forming a pump chamber on one end thereof,
(c) a crankshaft housing mounted on said pump housing, a rotatable drive shaft carried by said crankshaft housing,
(d) an eccentric connected to said rotatable drive shaft for activating said reciprocating piston,
(e) a spring flexibly linking said piston to said eccentric,
(f) said spring takes the form of a split-ring which is preloaded and which frictionally engirds said eccentric and which becomes released when the force transmitted by said piston exceeds the pre-loaded force.

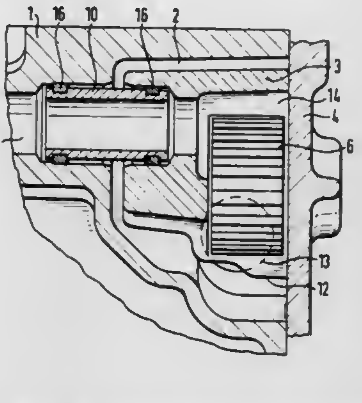
4,441,866
OIL PUMP ARRANGEMENT

Heribert Kubis, and Karl Schott, both of Nuremberg, Fed. Rep. of Germany, assignors to M.A.N. Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Nuremberg, Fed. Rep. of Germany

Continuation of Ser. No. 66,627, Aug. 15, 1979, Pat. No. 4,334,836. This application Oct. 7, 1981, Ser. No. 309,412

Int. Cl.³ F04B *17/00*

U.S. Cl. 417—364 **1 Claim**



1. A lubricant pump arrangement for supplying pressurized lubricant to an internal combustion engine having a cast crank case and a set of timing gears in a timing gear case, the lubricant pump arrangement comprising in combination with the internal combustion engine:
a rough case recess cast in the cast crank case of the engine and left unmachined, the recess being defined by a side wall, a rear wall and an open side, and the recess having an inlet opening through the side wall and an outlet opening extending normally through the rear wall;
a pump housing, smaller than the rough case recess, and forming a space therebetween when seated therein; the pump housing having an open front and a closed back, the closed back having an outlet opening extending normally therethrough and journal means therein; the pump housing further having a surrounding side wall with an inlet opening through the bottom thereof;
two impeller gears having gear shafts with one end journalled in the journal means of the closed back of the pump housing and contained within the pump housing, one of the impeller gears having a drive shaft thereon extending beyond the open side of the rough case and the open front of the pump housing;
a driving gear meshed with the set of timing gears and connected to the drive shaft for rotating the drive shaft and driving the impeller gears;
a closure closing the open side of the recess and open front of the pump housing and being disposed between the driving gear and pump housing, the closure being one walt of the timing gear case and having journals therein for journaling the other ends of the gear shafts;
a rigid tube connecting the outlet opening through the rear wall of the recess to the outlet opening of the pump housing, the rigid tube being smaller than either opening and having flexible sealing gaskets at both ends thereof for effecting seals between the opening through the rear wall of the recess and the opening through the closed back of the pump housing; whereby the pump housing is movable with respect to the crank case recess during assembly thereof so as to ease the assembly process while lessening the volume consumed by the engine while helping to minimize the expense of engine manufacture.

4,441,867
PERISTALTIC PUMP

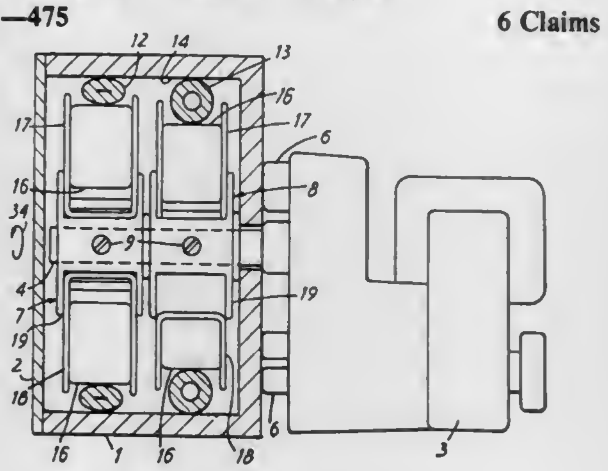
Rudolph Berelson, Treelawns, 34 Fallowfield, Stanmore Hill, Stanmore, Middlesex, England

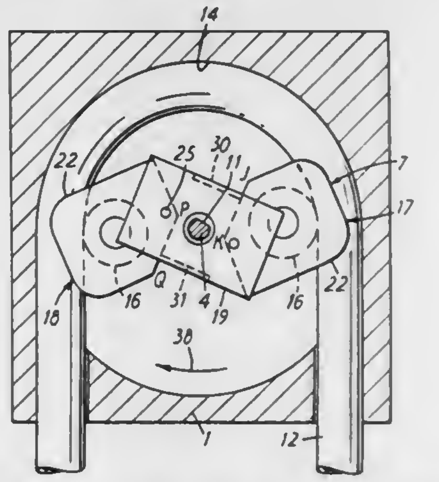
Filed Mar. 25, 1982, Ser. No. 361,592

Claims priority, application United Kingdom, Oct. 20, 1981, 8131573

Int. Cl.³ F04B *43/12, 45/08*

U.S. Cl. 417—475 **6 Claims**





1. A peristaltic pump comprising a single reversible motor, a shaft driven thereby, and at least two rotors turned by said shaft, said rotors respectively passing over an associated separate resiliently compressible tube when the motor is on, wherein each rotor comprises a carrier adapted to be mounted on said shaft, a plurality of separate roller mountings each pivoted to said carrier, a roller individually mounted for rotation in each roller mounting, and stop means provided on the carrier and on each roller mounting for limiting pivotal motion of said roller mountings with respect to said carrier between a first limiting position at which the rollers are extended towards the associated tube and a second limiting position at which the rollers are retracted from the associated tube, the construction being such that the rollers of a first of said at least two rotors become extended and those of a second of said at least two rotors become retracted when the shaft is turning in one direction, and vice versa when the motor is reversed.

4,441,868
FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

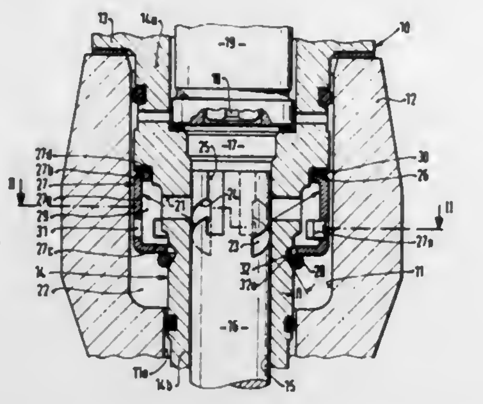
Helmut Fiedler, Glen-Ellyn, Ill., and Ernst Ritter, Stuttgart, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 15, 1982, Ser. No. 398,731

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1981, 3136749

Int. Cl.³ F02M *59/44*

U.S. Cl. 417—490 **8 Claims**



1. A fuel injection pump for internal combustion engines having a cylinder bushing arranged to receive a pump piston, a pump piston in said bushing, said bushing further having at least one return flow opening for returning fuel flow controlled by said pump piston, and an impact protection ring positioned on said bushing, said impact protection ring having a center (M) and pressed by a holder means against an abutment shoulder located above said return flow opening in the pumping direction, said ring further having a cylindrical wall portion and an inner wall provided with means defining openings therethrough which enclose an annular chamber, said wall portion further having flowthrough openings in said inner wall arranged to connect said return flow opening with a return flow chamber, characterized in that said impact protection ring is further provided with guide faces exposed to said returning fuel and causing a rotational movement on the part of said impact ring, said guide faces being molded into said cylindrical wall portion such that they are inclined toward said center (M) of said ring.

4,441,869
POWER CONVERSION MACHINE HAVING A NUTATING PISTON

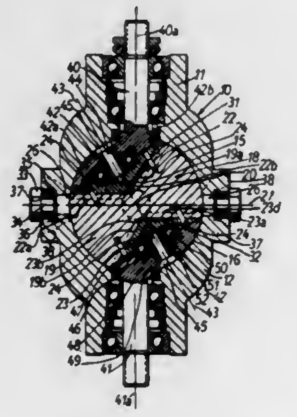
Thor Larsen, Nils Langhellesvei 31, 5033, Fyllingsdalen, and Terje Samdal, Smoeraaslia 24, 5050, Nesttun, both of Norway

Filed Jan. 15, 1982, Ser. No. 339,777

Claims priority, application Norway, Mar. 2, 1981, 810691

Int. Cl.³ F01C *1/00, 19/00*

U.S. Cl. 418—51 **18 Claims**



1. In a power conversion machine having a housing defining a double-curved space and having a partition plate fixedly mounted therein dividing said space into two semi-spherical chambers and having a diametrically extending slot therein; a piston including

a disc-shaped main portion extending through said slot and having a pair of sector-shaped cavities; and

a pair of conic-shaped roller portions, each said roller portion being fixed to said main portion within a respective cavity and being disposed on an opposite side of said partition from the other of said roller portions.

4,441,870
SCROLL MEMBER

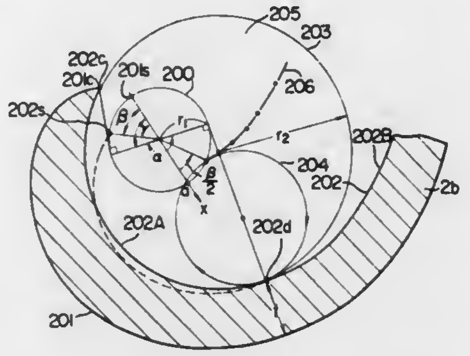
Masato Ikegawa; Eiji Sato, both of Ibaraki, and Kenji Tojo, Shimizu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 23, 1981, Ser. No. 314,395

Claims priority, application Japan, Oct. 27, 1980, 55-149401

Int. Cl.³ F01C *1/02*

U.S. Cl. 418—55 **6 Claims**



1. A scroll member comprising an end plate, an upstranding wrap of a vortical form located on at least one surface of said end plate, said wrap having a thickness and a height, boundaries of the thickness of the wrap are defined by an outer side wall surface and an inner side wall surface thereof, the inner side wall surface of the wrap includes an arcuate starting end portion in the form of an arc of a circle of a predetermined radius, the radius of the arc is equal to a radius of a circle in contact with the outer side wall surface and the inner side wall surface of the wrap.

4,441,871
ROTARY COMPRESSORS WITH PRIMARY AND SECONDARY OIL SEPARATION MEANS

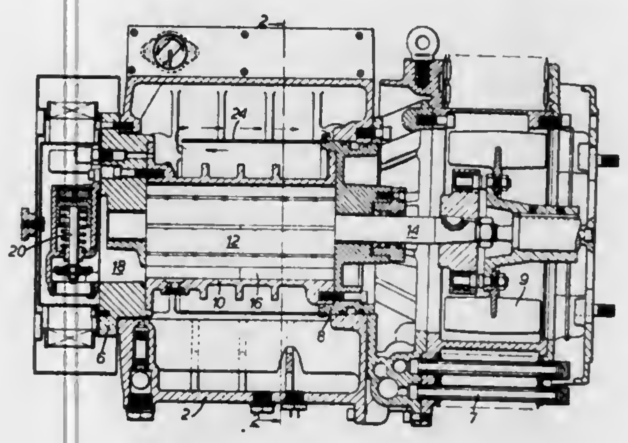
Edward Boller, Lapal, England, assignor to Hydrovane Compressor Company Limited, United Kingdom

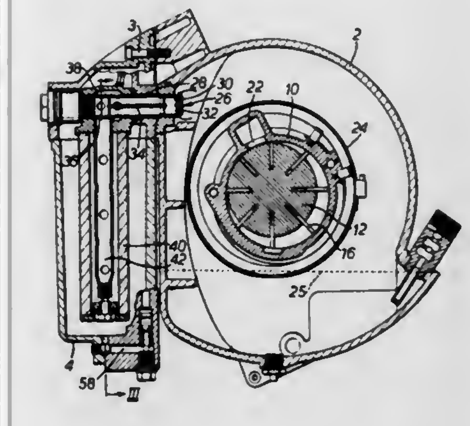
Filed Dec. 18, 1981, Ser. No. 336,354

Int. Cl.³ F04C *29/02;* B01D *45/06, 46/24*

U.S. Cl. 418—97 **13 Claims**

1. A rotary oil mist compressor having a compressor casing, a rotor stator unit within the casing for compressing air into which oil has been injected, said compressor including a primary oil separation means for removing a portion of the entrained oil from the compressed air and a secondary oil separation means for removing substantially the remainder of the entrained oil, a compressor housing, the rotor stator unit and the primary separation means being situated within the compressor housing; a separate housing detachably secured to the compressor housing and said secondary separation means being situated in the separate housing, the primary and secondary oil separation means being connected by a pathway characterised in that the pathway includes a secondary separation manifold, in which oil droplets coalesce and collect, an oil return passageway communicating with the manifold and the compressor casing for returning the oil collected in the manifold to the compressor casing for re-use and a primary tube communicating between the compressor housing and the secondary separation housing, said primary tube having apertures in its side wall at its inlet end communicating with the interior of the compressor housing and apertures in its side wall at its outlet end communicating with the secondary separation manifold, the axis of said inlet and outlet apertures being at a substantial angle to the longitudinal axis of said tube.





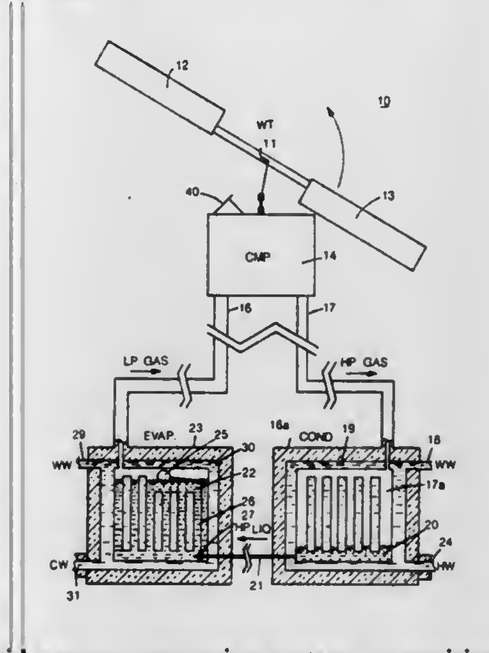
4,441,872
FLUID ENERGY CONVERSION SYSTEM

Joseph B. Seale, 31 Avalon Dr., East Falmouth, Mass. 02536

Continuation-in-part of Ser. No. 254,084, Apr. 14, 1981, abandoned. This application Apr. 29, 1981, Ser. No. 258,751

Int. Cl.³ 290 *44;* F03D *9/00*

U.S. Cl. 417—282 **15 Claims**



1. A fluid energy conversion system, comprising:
(A) variable fluid energy source means;
(B) variable load means;
(C) transformer means responsive to said energy source and load means, including means for determining the relative energies associated with said load and source means for controlling the period during which said load and source means are coupled together, substantially continuously to match the impedances of said source and load means, such that substantially maximum energy transfer takes place substantially continuously,

said transformer means including fluid relief means for controlling said period and electronic control means,

said electronic control means having, means for sensing a selected parameter of said system, means responsive to said sensed parameter for actuating said fluid relief means, and computer means responsive to said sensed parameter for computing said period during which said source and load means are coupled for transferring power from said source to said load means,

said computer means including

means for computing the amount of energy that can be transferred during the remainder of a transformer cycle;

means for predicting a desired level of energy available from said source means; and

means for initiating said period only if said energy level available from said source means exceeds said amount.

4,441,873
MACHINE FOR FORMING PREFABRICATED BUILDING COMPONENTS

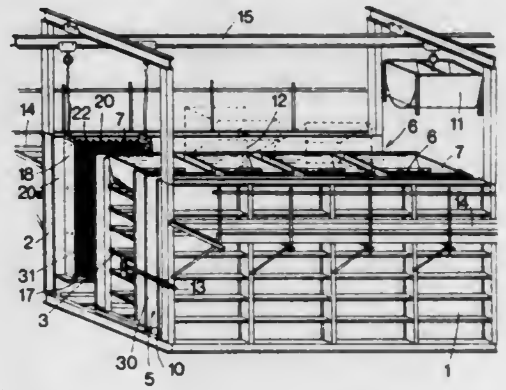
Edoardo Maccarinelli, Via Gramsci 30, Brescia, Italy

Filed Mar. 12, 1982, Ser. No. 357,720

Claims priority, application Italy, Mar. 20, 1981, 5135 A/81

Int. Cl.³ B28B *7/22*

U.S. Cl. 425—64 **4 Claims**



1. In a machine for forming prefabricated components for the building industry from a prefabricating component mixture, the combination of:

two fixed lateral frames arranged parallel to and at a distance from each other, each having an internal vertical wall panel provided with a smooth continuous surface facing the surface of the panel of the other fixed frame,

an intermediate movable bilateral frame arranged between the two fixed frames and having two corresponding vertical wall panels each provided with a smooth continuous surface opposite to a corresponding facing surface of the two wall panels of the two panels of the fixed frames, said movable frame being arranged for guided alternate movement horizontally toward and away from each of the fixed frames and thereby defining two alternative mold spaces of variable breadth between the surfaces of the movable frame and the corresponding opposite facing surfaces of the fixed frames, which mold spaces can be used alternative for forming prefabricated components, said movable frame being fitted with locking devices securable, when the machine is in use, on one or the other of said fixed frames,

at least one mixing vessel for preparation of the mixture which is intended to form the prefabricated component, said at least one vessel being mounted on the top of said movable frame and being capable of being alternately tipped in the direction of each mold space defined between the movable frame and the two corresponding fixed frames,

horizontal and vertical means arranged for positioning alternatively between the opposing surfaces defining each mold space for defining the thickness, height and length dimensions of the component which is to be manufactured in the corresponding mold space, said means consisting of a horizontal section arranged for positioning in the bottom of the corresponding mold space, and a pair of opposed vertical end molds arranged for interconnection by means of tie rods and adapted to support reinforcing means and/or mold the component to be formed and

means for the measured addition to the at least one mixing vessel of the starting materials for providing said mixture.

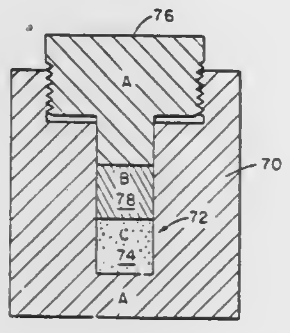
4,441,874
APPARATUS FOR DIFFERENTIAL EXPANSION VOLUME COMPACTION

Kaplesh Kumar, Wellesley, and Dilip K. Das, Bedford, both of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Division of Ser. No. 58,530, Jul. 18, 1979, Pat. No. 4,260,582. This application Nov. 5, 1980, Ser. No. 206,877

Int. Cl.^{3} B22F *3/00*

U.S. Cl. 425—78 **13 Claims**



1. Apparatus for molding articles from particulate material comprising:

a mold having a cavity adapted to contain said particulate material to be formed into said article;

at least one element adapted to closely fit the cavity of said mold and having a coefficient of thermal expansion higher than said mold;

said mold adapted to constrain said element so as to cause plastic deformation of said element upon heating induced expansion of said element within said cavity with resulting compression of particulate material filling said cavity and bonding of said particles to form said article.

4,441,875
MOLD APPARATUS FOR FORMING ARTICLE UNDER INFLUENCE OF MAGNETIC FIELD

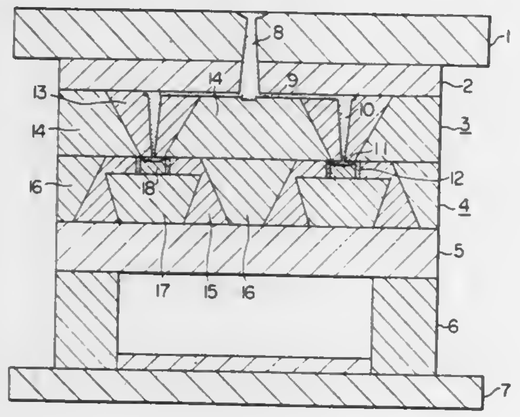
Takahide Saito, Takatsuki, and Yasuo Nakagawa, Nishinomiya, both of Japan, assignors to Sumitomo Bakelite Company Limited, Tokyo, Japan

Filed Feb. 28, 1983, Ser. No. 470,354

Claims priority, application Japan, Mar. 5, 1982, 57-34049

Int. Cl.^{3} B29C *1/022*

U.S. Cl. 425—3 **2 Claims**



1. A mold apparatus for forming ring-shaped magnets from a plastic magnet material containing a magnetic powder under the influence of a magnetic field, comprising a stationary intermediate composite retainer plate and a movable intermediate composite retainer plate, the former being put on the latter; said movable intermediate composite retainer plate consisting of at least one cylindrical or inversed frusto-conical cavity block made of a magnetic material having a ring-shaped cavity, at least one cavity block holder made of a non-magnetic material embracing and holding said cavity block and at least one cylindrical or inversed frusto-conical magnetism shielding member made of a non-magnetic material and disposed concentrically and in contact with the lower side of said cavity, the diameter of the side of said magnetism shielding member contacting the lower side of said cavity being greater than the outside diameter of said cavity; said stationary intermediate composite retainer plate consisting of at least one cylindrical or inversed frusto-conical sprue block made of a magnetic material, at least one sprue block holder made of a non-magnetic material embracing and holding said sprue block, said sprue block being placed on said cavity concentrically with the cavity, the diameter of the side of said sprue block contacting the upper side of said cavity being not larger than the inside diameter of said cavity.

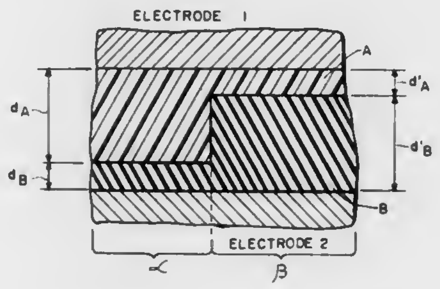
4,441,876
FLOW MOLDING

Michel Marc, 48 Ridge Hill Farm Rd., Wellesley, Mass. 02181

Continuation of Ser. No. 41,982, May 24, 1979, abandoned. This application Sep. 11, 1981, Ser. No. 301,313

Int. Cl.^{3} B29C *1/02;* B29G *7/00*

U.S. Cl. 425—174.8 E **7 Claims**



1. An apparatus for molding a part having at least two sections of different thicknesses and for providing uniform heating throughout each section, said apparatus comprising:

first and second electrodes uniformly spaced from each other;

means defining a mold cavity between said electrodes for molding a part from a material to be molded, said mold cavity having different dimensions measured along lines perpendicular to said electrodes in the different portions thereof that form the different sections of the part; and

means for establishing a capacitive electromagnetic heating field between said electrodes;

said defining means being formed of a mold material and an additive material, said additive material being different from said mold material and also different from the material to be molded, said additive material having a high dielectric constant higher than the dielectric constant of the material to be molded and at least an order of magnitude higher than the dielectric constant of said mold material, said mold material and said additive material both having a power factor lower than the material to be molded, said additive material being added to said mold material to equalize the dielectric constant between the material to be molded and said defining means to provide a uniform capacitance at all locations between said electrodes across said mold cavity throughout said different portions thereof and to provide uniform heating across said mold cavity.

4,441,877
DOUBLE OPENING PRESS FOR MANUFACTURING WOOD CHIPBOARD AND FIBRE-BOARD OR THEIR SUBSTITUTES, PROVIDED WITH FOUR HEATING PLATENS, IN WHICH THE TWO CENTRAL PLATENS ARE SEPARATED BY A RIGID PLATE

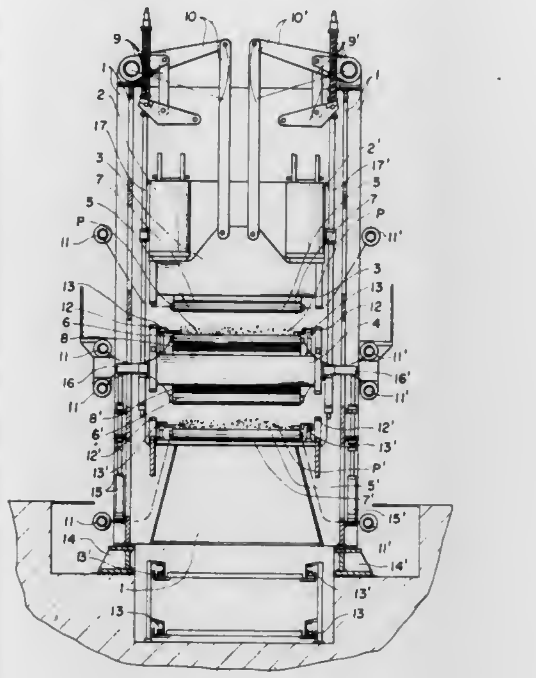
Giorgio Pagnoni, Monza, Italy, assignor to F.lli Pagnoni S.p.A., Italy

Filed Jan. 21, 1982, Ser. No. 341,252

Claims priority, application Italy, May 22, 1981, 21913 A/81

Int. Cl.^{3} B29J *5/00;* B30B *7/02, 15/06*

U.S. Cl. 425—338 **5 Claims**



1. A double opening press for manufacturing particle board comprising:

a frame having a lower fixed plate;

and upper movable plate mounted to said frame;

upper plate drive means connected to said upper movable plate for moving said upper movable plate vertically;

outer heating platens connected to a top surface of said lower fixed plate and a bottom surface of said upper movable plate;

a rigid intermediate plate extending between said upper and lower plates and connected to said frame;

upper and lower additional heating platens fixed to upper and lower surfaces of said intermediate platen whereby upper and lower openings are defined between said intermediate plate and said upper and lower plates respectively

intermediate plate drive means connected between said plate and said frame for driving said intermediate plate vertically;

said upper and lower additional heating platens are electrically insulated from said rigid intermediate plasten between upper and lower surface of said intermediate plate and said upper and lower additional heating platens respectively; and

guide means connected between said intermediate plate and said frame and a plurality of spacers connected to said intermediate plate for setting a thickness of a particle board to be produced, said intermediate plate drive means, guide means and spacers, and said intermediate plate being grounded and being made of non-electrically insulating material.

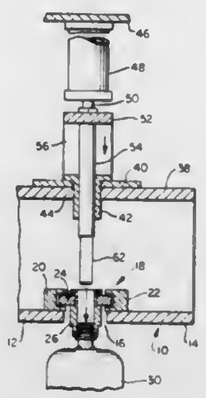
4,441,878
BOTTLE EJECTOR

Ieuan L. Harry, Nashua, N.H., assignor to The Continental Group, Inc., Stamford, Conn.

Filed Oct. 28, 1981, Ser. No. 315,844

Int. Cl.^{3} B29C *17/07;* B65G *47/36*

U.S. Cl. 425—534 **20 Claims**



1. In a machine of the type wherein plural blow molded articles are delivered by a pallet having a plurality of collets each carrying a blow molded article, a blow molded article ejector, said machine comprising a track for receiving a pallet and determining the position of such pallet and the collets thereof; and said blow molded article ejector comprising a guide device overlying said track, a plurality of ejector plungers carried by said guide device and spaced longitudinally of said track in accordance with the spacing of collets wherein each ejector plunger is aligned with a collet of an underlying pallet, and means for moving said ejector plungers in unison to enter into aligned collets and engage and eject blow molded articles carried by the collets from the collets.

4,441,879
OIL AND GAS BURNER FOR INSTALLATION IN HEATING AND STREAM-PRODUCING BOILERS

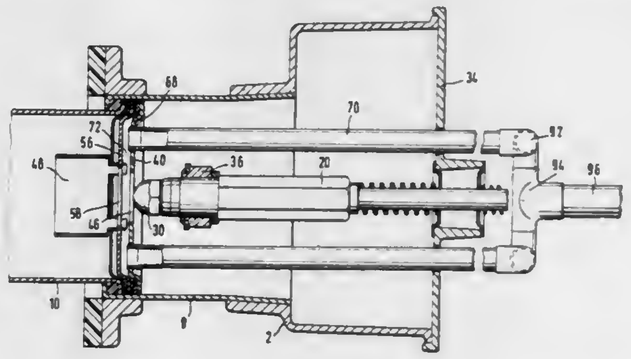
Ulrich Wagner, Hamburg, and Winfried Buschulte, Neckarsulm, both of Fed. Rep. of Germany, assignors to M.A.N. Maschinenfabrik Augsburg-Nurnberg, Augsburg and Deutsche Forschungs-und Versuchsanstalt fur Luft- und Raumfahrt E.V., Cologne, both of, Fed. Rep. of Germany

Filed Sep. 18, 1981, Ser. No. 303,640

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1980, 3035707

Int. Cl.^{3} F23D *17/00*

U.S. Cl. 431—284 **13 Claims**



1. An oil burner for installation in heating and steam-raising boilers having an oil atomizer device, comprising a first plate located downstream of the oil atomizer device and having at least one opening formed therein that defines a passageway for atomized oil and further defining the sole passageway for combustion air, a mixing tube positioned coaxially with respect to the opening in said first plate and spaced downstream therefrom having a diameter greater than the diameter of a circle surrounding the passageway in said first plate; a flame tube

coaxially surrounding said mixing tube and having a length such that combustion gases flowing downstream of said mixing tube are received against an inner wall of said flame tube, and downstream of said first plate, an annular chamber for the supply of gaseous fuel having gas outlet openings in the region of said at least one opening in said first plate, said annular chamber being formed by said first plate and a second plate spaced a short distance downstream of said first plate, and at least one gaseous fuel supply tube being mounted on the upstream side of said first plate.

4,441,880

DRYING APPARATUS

Colin S. Pownall, Southwell, and Joseph L. Spencer, West Bridgford, both of England, assignors to Pownall Spencer Engineering, Ltd., Southwell, United Kingdom

Filed Apr. 6, 1982, Ser. No. 366,001

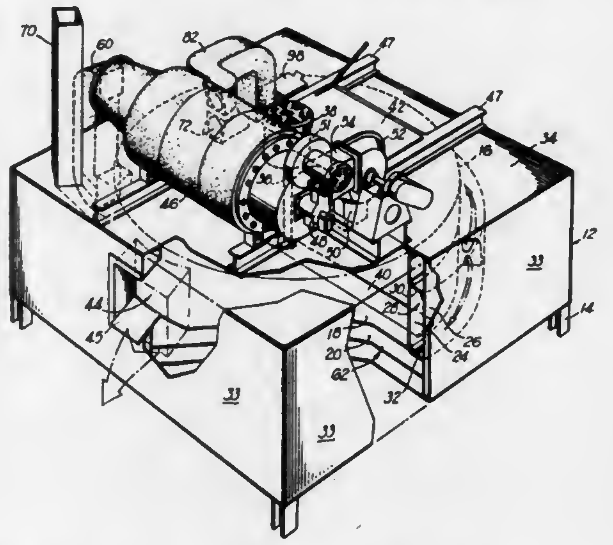
Claims priority, application United Kingdom, Apr. 23, 1981, 8112650

Int. Cl.^{3} F27B *14/00;* **F26B** *9/18, 11/00;* **F23B** *5/00*

U.S. Cl. 432—13 **10 Claims**

1. A method for dehydrating waste material comprising the steps of placing the material in a substantially closed vessel and simultaneously:

agitating the material;
admitting preheated air to the vessel;
drawing the air and moisture and gases evolved from the material in the vessel into an incinerator; and



passing the gases of combustion from the incinerator in proximity to the vessel to heat the material.

CHEMICAL

4,441,881

DETERGENT COMPOSITIONS CONTAINING ETHOXYLATED FATTY ALCOHOLS WITH NARROW ETHYLENE OXIDE DISTRIBUTIONS

Ronald M. Ruppert, Moonachie, and Tamara Padron, Union City, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

Filed Sep. 7, 1982, Ser. No. 415,085

Int. Cl.^{3} C11D *1/72, 3/37;* **B08B** *3/00*

U.S. Cl. 8—137 **3 Claims**

1. A process for the spray-dry manufacture of a detergent composition wherein tower smoke is reduced comprising:

(i) forming an azueous mixture containing:
  (a) about 7 to about 15% by weight of a nonionic surfactant formed from C_{12-18} fatty alcohols ethoxylated with about 10 to about 14 moles of ethylene oxide and containing a narrow ethylene oxide distribution characterized in that at least 70% by weight of the surfactant contains polyethoxy groups which are within about 3 ethoxy groups of the average number of ethylene oxide units and that less than 5% of the ethoxylate mixture comprises 6 or less ethylene oxide molecules per alcohol molecule further characterized by exhibiting a smoke point of 321° F. or higher;
  (b) an effective amount to impart a soil shield up to about 1.0% of a modified cellulose ether selected from the group consisting of alkyl cellulose, hydroxyalkyl cellulose, hydroxyalkyl alkyl cellulose ethers and mixtures thereof;
  (c) the balance, detergency adjunct materials; and
(ii) spray drying said mixture to produce a detergent powder.

4,441,882

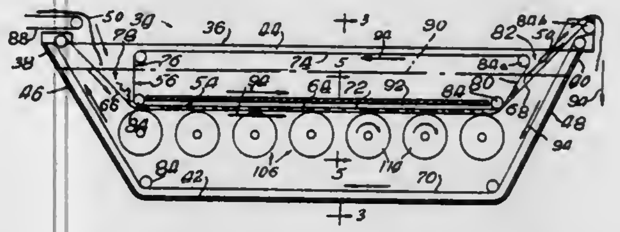
CONTINUOUS LAUNDERING METHOD

Paul H. Gallagher, 2530 Crawford Ave., Evanston, Ill. 60201

Continuation-in-part of Ser. No. 141,952, Apr. 21, 1980, Pat. No. 4,361,018. This application May 5, 1982, Ser. No. 374,935

Int. Cl.^{3} D06F *15/00*

U.S. Cl. 8—150 **8 Claims**



1. A method of laundering goods comprising the steps,

conveying the goods immersed in and through water in a tank, and confining them in a predetermined path by means other than the tank, and so confining them in such manner as to enable water to pass into and out of them virtually unrestrictedly, and

agitating the goods while they are so conveyed and confined, by imposing force against the goods from one side thereof and providing a physical reaction on the opposite side against the force, and moving the force a substantial distance relative to the thickness of the goods so as to compact the goods against the reaction, and

so imposing the force, and reaction, intermittently and repeatedly and at speed intervals along the path and withdrawing the force after each such imposition, and thereby rendering the periods of such imposition of momentary extent.

4,441,883

DYEING METHOD FOR CONTROL OF MULTICOLORED PATTERN NYLON CARPET

Louis M. Vavala, Colonial Heights, Va., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Sep. 11, 1981, Ser. No. 301,343

Int. Cl.^{3} D06P *5/15*

U.S. Cl. 8—457 **8 Claims**

1. In the method of dyeing nylon carpet in a pattern, the improvement comprising a continuous, wet-on-wet process of

adding a reducing agent selected from the group consisting of zinc formaldehyde sulfoxylate, sodium formaldehyde sulfoxylate, mixtures thereof and thiourea dioxide with a mixture of two or more dyes selected from the group consisting of acid, direct, disperse, fiber reactive and mixtures thereof; and an activator for the reducing agent wherein the activator is a salt, either acid or alkaline, then dyeing and without drying,

steaming the dyed carpet to make dyed patterns that are reproducible, controlled differential multicolorations,

each of said dyes being selected for its known characteristic behavior with the activated reducing agent, whether completely unaffected, partially affected or completely destroyed, and each dye being applied at a time during the dyeing so that its characteristic effect produces the desired multicoloration effect wherein each tuft has differential multicoloration along its length.

4,441,884

QUATERNARY AMMONIUM COMPOUNDS AND THEIR USE AS DYEING ASSISTANTS FOR POLYAMIDE FIBERS

Hans-Peter Baumann, Ettingen, and Urs Mosimann, Oberwil, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

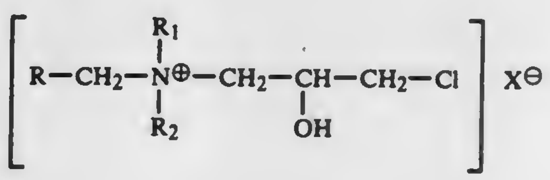
Continuation-in-part of Ser. No. 856,395, Dec. 1, 1977, abandoned. This application Nov. 9, 1978, Ser. No. 959,211

Claims priority, application Switzerland, Dec. 7, 1976, 15355/76

Int. Cl.^{3} C09B *62/00*

U.S. Cl. 8—542 **17 Claims**

1. A process for treating a polyamide textile substrate to increase the affinity thereof for anionic dyes or to reserve the same against cationic dyes comprising applying thereto, in a weakly alkaline medium, a compound of formula I,



$$\left[R-CH_2-\overset{\overset{R_1}{|}}{\underset{\underset{R_2}{|}}{N^{\oplus}}}-CH_2-\underset{\underset{OH}{|}}{CH}-CH_2-Cl \right] X^{\ominus} \qquad \text{I}$$

wherein

R is phenyl; naphthyl; (C_{5-6})cycloalkyl; or phenyl or naphthyl substituted by a total of up to 3 substituents selected from the group consisting of (C_{1-4})alkyl, chlorine and bromine (maximum of two of each of these);

each of R_1 and R_2, independently, is (C_{1-4})alkyl, and $X^{\ominus}$ is a non-chromophoric anion.

4,441,885
ANTICREASE FINISHING COMPOSITION AND USE THEREOF IN THE DYEING OR WHITENING OF TEXTILE MATERIAL WHICH CONTAINS POLYESTER FIBRES

Heinz Abel, Reinach, and Paul Schäfer, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 22, 1982, Ser. No. 370,761

Claims priority, application Switzerland, Apr. 29, 1981, 2781/81

Int. Cl.^{3} D06P *1/642, 1/613, 1/16*

U.S. Cl. 8—603 **19 Claims**

1. A non-foaming anticrease finishing composition for dyeing or whitening textile material which contains polyester fibres, which composition comprises at least

(A) an O-cyanoethylated compound of the formula

$$R(O{-}CH_2CH_2CN)_n, \qquad (1)$$

wherein R is an n-valent aliphatic, cycloaliphatic or araliphatic radical, and n is 1 to 5, and

(B) a carboxylated polypropylene oxide adduct, or salt thereof, which adduct is obtained from

(a) 1 to 3 moles of an aliphatic diol having an average molecular weight of at most 2600,

(b) 2 to 4 moles of an aliphatic dicarboxylic acid, or anhydride thereof, containing 4 to 10 carbon atoms,

(c) 1 mole of an adduct of propylene oxide and an at least trihydric aliphatic alcohol containing 3 to 10 carbon atoms, and

(d) 0.5 to 2 moles of a fatty acid containing 8 to 22 carbon atoms.

4,441,886
PROCESS FOR REMOVING ORGANIC SULPHUR FROM COAL AND MATERIAL RESULTING FROM THE PROCESS

Charles B. Muchmore, Carbondale; Juh W. Chen, Murphysboro, and Kenneth E. Tempelmeyer, Carbondale, all of Ill., assignors to Southern Illinois University Foundation, Carbondale, Ill.

Filed Nov. 22, 1982, Ser. No. 443,544

Int. Cl.^{3} C10L *9/02, 9/08*

U.S. Cl. 44—15 R **20 Claims**

1. A process for removing organic sulphur from coal comprising the steps of: mixing coal with ethanol, raising the temperature and pressure of the coal ethanol mixture to above the critical temperature and pressure of the ethanol, holding the coal ethanol mixture at the moderate temperature and elevated pressure for a period sufficient to allow the sulphur in the coal to react with the ethanol, and separating the resultant fluids from the coal solids.

19. A process for removing organic sulphur from coal comprising the steps of: reducing the coal to granules having a size between −10 and +100 standard mesh, heating the coal granules to a temperature in excess of the boiling point of water, holding the coal granules at a temperature above the boiling point of water to drive off substantially all of the water contained in the coal granules, mixing the dried coal granules with ethanol into a mixture of coal granules and ethanol having between 22% and 61.7% solids, heating the mixture of coal granules and ethanol to a temperature of at least 244°0 C., applying a pressure to the mixture of coal granules and ethanol to in excess of 927 psia, cooling the mixture of coal granules and ethanol, and separating the resulting liquid from the remaining solids.

20. A solid coal product made in accordance with the process of claim **19**.

4,441,887
STABILIZED SLURRY AND PROCESS FOR PREPARING SAME

James E. Funk, Alfred Station, N.Y., assignor to Alfred University Research Foundation Inc., Alfred, N.Y.

Continuation-in-part of Ser. No. 288,737, Jul. 31, 1981, which is a continuation-in-part of Ser. No. 88,815, Oct. 26, 1979, Pat. No. 4,282,006, which is a continuation-in-part of Ser. No. 957,166, Nov. 2, 1978, abandoned, which is a continuation-in-part of Ser. No. 790,337, Apr. 25, 1977, abandoned. This application May 5, 1982, Ser. No. 375,183

The portion of the term of this patent subsequent to Jul. 21, 1998, has been disclaimed.

Int. Cl.^{3} C10L *1/32*

U.S. Cl. 44—51 **31 Claims**

1. A carbonaceous compact comprising finely divided solid carbonaceous particles, wherein:

(a) said compact has a specific surface area of from about 0.8 to about 4.0 square meters per cubic centimeter and an interstitial porosity of less than about 20 volume percent;

(b) from about 5 to about 70 weight percent of said solid carbonaceous particles are of colloidal size, being smaller than about 3 microns;

(c) said compact of finely divided solid carbonaceous particles has a particle size distribution substantially in accordance with the following formula:

$$\frac{CPFT}{100} = \sum_{j=1}^{k}\left[X_j\left(\frac{D^{N_j} - D_{s_j}{}^{N_j}}{D_{L_j}{}^{N_j} - D_{s_j}{}^{N_j}}\right)\right]$$

where $\sum_{j=1}^{k} X_j = 1.0$

and where if $D < D_{sj}\left(\frac{D^{N_j} - D_{s_j}{}^{N_j}}{D_{L_j}{}^{N_j} - D_{s_j}{}^{N_j}}\right) = 0.0$

and where if $D > D_{Lj}\left(\frac{D^{N_j} - D_{s_j}{}^{N_j}}{D_{L_j}{}^{N_j} - D_{s_j}{}^{N_j}}\right) = 1.0$

wherein:

1. CPFT is the cumulative percent of said solid carbonaceous material finer than a certain specified particle size D, in volume percent;
2. k is the number of component distributions in the compact and is at least 1;
3. X_j is the fractional amount of the component j in the compact, is less than or equal to 1.0, and the sum of all of the X_j's in the consist is 1.0;
4. N is the distribution modulus of fraction j and is greater than about 0.001;
5. D is the diameter of any particle in the compact and ranges from about 0.05 to about 1180 microns;
6. D_s is the diameter of the smallest particle in fraction j, as measured at 1% CPFT on a plot of CPFT versus size D, is less than D_L, and is greater than 0.05 microns; and
7. D_L is the diameter of the size modulus in fraction j, measured by sieve size or its equivalent, and is from about 15 to about 1180 microns; and

(d) at least 85 weight percent of the carbonaceous particles in the compact have a particle size less than 300 microns.

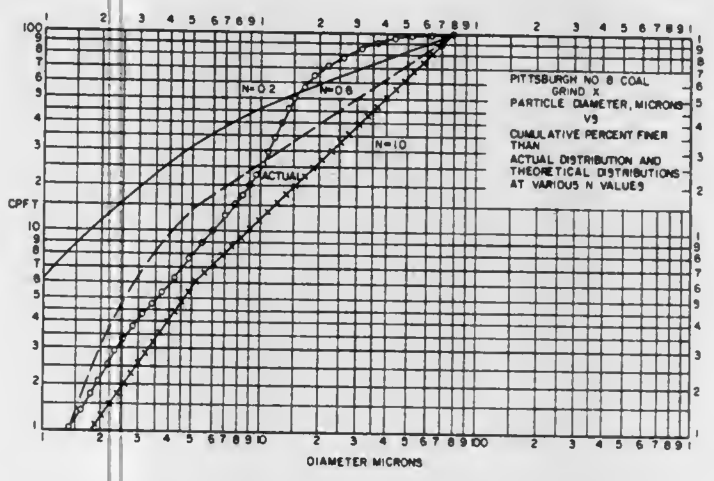
4,441,888
COAL-WATER SLURRY VISCOSITY REDUCTION USING OLEFIN/MALEIC ACID SALT COPOLYMERS

Joseph Matt, Downers Grove, and John M. Ferrara, Palos Heights, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed May 21, 1982, Ser. No. 380,488

Int. Cl.^{3} C10L *1/32*

U.S. Cl. 44—51 **4 Claims**



1. An improved coal-water slurry of the type comprising at least 45% by weight of finely divided coal particles and a dispersing agent, said slurry being characterized as having a Brookfield viscosity at 60 rpm of less than 4,000 centipoise, the improvement which comprises adjusting the pH of said slurry to at least 6 and using as the dispersing agent, a water-soluble salt of an olefin/maleic acid copolymer having a molecular weight within the range of about between 3,000–50,000.

4,441,889
COAL-AQUEOUS MIXTURES

Seymour Mark, Northampton, Pa., assignor to Gulf & Western Industries, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 230,062, Jan. 29, 1981, abandoned. This application Sep. 10, 1982, Ser. No. 416,606

Int. Cl.^{3} C10L *1/32*

U.S. Cl. 44—51 **23 Claims**

1. A method for forming a coal-aqueous mixture, said method comprising the steps of:

(i) admixing a polyalkyleneoxide nonionic surfactant having a hydrophobic portion and a hydrophilic portion, said hydrophilic portion being comprised of at least about 100 units of ethylene oxide, with water, under low speed agitation conditions;

(ii) admixing particulate coal with the admixture resulting from step (i) under medium speed agitation conditions; and

(iii) agitating the resultant coal containing mixture of step (ii) under high speed agitation.

4,441,890
METHOD FOR IMPROVING STABILITY OF RESIDUAL FUEL OILS

Nicholas Feldman, Woodbridge, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Sep. 29, 1982, Ser. No. 428,372

Int. Cl.^{3} C10L *1/32*

U.S. Cl. 44—51 **10 Claims**

1. In the method of inhibiting or reducing the level of asphaltic sediment formed in residual fuel oils by adding an alkylaryl sulfonic acid stabilizer having from about 10 to about 70 carbon atoms to said fuel, the improvement comprising adding an effective stabilizing amount of said alkylaryl sulfonic acid stabilizer to said fuel oil and maintaining said stabilized fuel at a temperature of at least about 190° C. for a time sufficient to inhibit the formation or reduce the level of asphaltic sediment that forms or separates out.

4,441,891
GASOLINE-AIDED PRODUCTION OF ALCOHOL AND FUEL

Ernest R. Roth, Villanova, Pa., assignor to Biohol Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 217,703, Dec. 18, 1980. This application Dec. 18, 1981, Ser. No. 332,219

The portion of the term of this patent subsequent to Dec. 22, 1998, has been disclaimed.

Int. Cl.^{3} C10L *1/02*

U.S. Cl. 44—56 **15 Claims**

1. In solvent extraction of alcohol from alcohol/water mixtures with predominantly alcoholic solvent, the improvement comprising adding gasoline in minor amount to the organic extract, settling out an aqueous underlayer, and removing an enriched organic overlayer.

4,441,892
PROCESS FOR THE GASIFICATION OF CARBONIFEROUS MATERIAL IN SOLID, PULVERULENT OR EVEN LUMP FORM

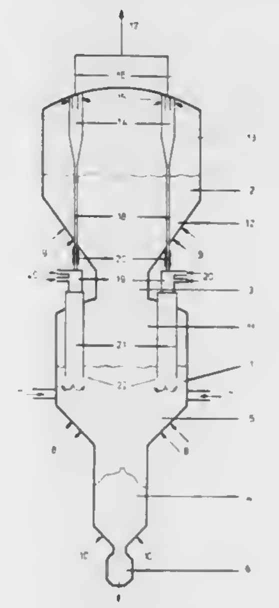
Ernst Schuster, Gummersbach, Fed. Rep. of Germany, assignor to Carbon Gas Technologie GmbH, Ratingen, Fed. Rep. of Germany

Continuation of Ser. No. 208,821, Nov. 20, 1980, abandoned. This application Aug. 9, 1982, Ser. No. 406,357

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1979, 2947222

Int. Cl.^{3} C10J *3/16, 3/46, 3/54*

U.S. Cl. 48—197 R **7 Claims**



1. Process for the gasification of carbonaceous material in solid form, with at least oxygen, at pressures from 1 to approximately 80 bar in a fluidized bed, the process comprising the steps of: arranging two fluidized bed gasification stages above each other in a reaction chamber and connecting said two stages to each other; supplying carbonaceous material and oxygen to the lower fluidized bed and supplying gasifying agent to the upper fluidized bed,; separating solids containing pure substance and ash from gas leaving the upper fluidized bed; supplying the separate solids to at least one flue-dust gasification chamber via a gasification burner said flue-dust gasification chamber being arranged substantially entirely inside said reaction chamber and extending from a location between said lower and upper fluidized beds downwardly into and below the upper surface of the lower fluidized bed and with the upper portion of the flue-dust gasification chamber being connected to a mounted gasification burner located outside the reaction chamber said flue-dust gasification chamber having a size for allowing adequate time for both carbon conversion and ash melting; at least one flue-dust gasification chamber releasing as products gas and liquid slag into the lower fluidized bed; a direct heat release taking place from said products to the lower fluidized bed; the liquid slag solidifying in the fluidized bed and precipitating at the bottom as a granulate into a fixed bed gasification stage underneath the fluidized bed stages.

4,441,893

ENHANCED CARBON MONOXIDE UTILIZATION IN METHANATION PROCESS

Louis F. Elek, Peekskill, and Albert C. Frost, Congers, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 224,441, Jan. 12, 1981, abandoned. This application Nov. 5, 1982, Ser. No. 439,635

Int. Cl.^{3} C10K *3/04*

U.S. Cl. 48—197 R **15 Claims**

1. A cyclic process for the production of methane from carbon monoxide-containing gas streams comprising:

(a) passing a carbon monoxide-containing feed gas stream over a catalyst present in a metal state and capable of catalyzing the disproportionation of carbon monoxide at a temperature of from about 100° C. to about 350° C. and a pressure of from about 1 to about 10 atmos., said feed gas stream having a hydrogen concentration of from about 5% to about 100% by volume based on the volume of CO present in said stream, and being passed over the catalyst for a time sufficient to deposit a surface layer of active surface carbon on the catalyst essentially without the formation of inactive coke on the catalyst, the residence time of the feed gas stream in the presence of the catalyst being sufficiently short so as to enable hydrogen present in said feed gas stream to react with the carbon monoxide content of said feed gas stream to form additional active surface carbon essentially without the formation of methane by the less rapid reaction of active surface carbon or carbon monoxide with hydrogen present in the feed gas stream;

(b) contacting said layer of active surface carbon deposited on said catalyst present in the metal state with steam, a steam-containing gas stream or hydrogen at a pressure of from about 1 to about 100 atmos., and a temperature of from about 100° C. to about 400° C., thereby converting said active surface carbon to methane and carbon dioxide; and

(c) passing additional carbon monoxide-containing gas over said catalyst from step (b) and repeating said steps (a) and (b) on a cyclic basis, whereby relatively pure methane can conveniently be produced from carbon monoxide-containing gas streams on a cyclic basis, the presence of said hydrogen at the relatively low disproportionation pressures employed in step (a), for said short residence time, surprisingly enhancing the effective CO utilization and the overall technical-economic feasibility of the methanation process.

4,441,894

COATED COMPOSITE SILICON NITRIDE CUTTING TOOLS

Vinod K. Sarin, Lexington, and Sergej-Tomislav Buljan, Acton, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Sep. 26, 1983, Ser. No. 536,110

Int. Cl.^{3} B24D *11/00*

U.S. Cl. 51—295 **9 Claims**

1. A coated composite ceramic cutting tool comprising a densified composite silicon nitride substrate having at least one intermediate adherent refractory coating layer and an outer adherent alumina coating layer;

said substrate body consisting essentially of particles of a hard refractory material uniformly distributed in a matrix consisting essentially of a first phase of silicon nitride and a refractory second phase comprising silicon nitride and an effective amount of a densification aid selected from the group consisting of yttrium oxide, hafnium oxide, the lanthanide rare earth oxides, and mixtures thereof.

4,441,895

PROCESS FOR THE SEPARATION OF MIXTURES BY MEANS OF MASS TRANSFER AT DIFFERENT TEMPERATURES OR PRESSURES

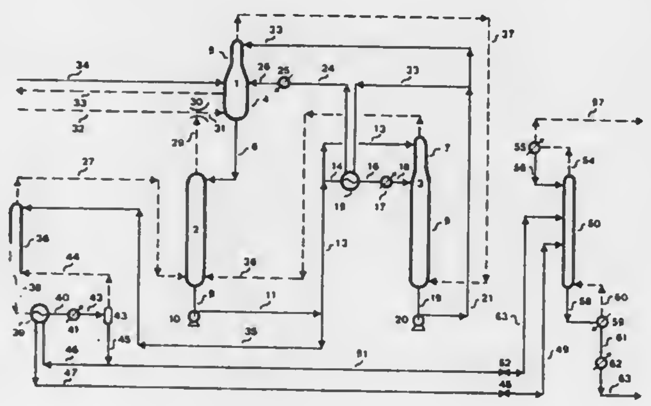
Ludwig Silberring, Limmattalstrasse 266, Zürich, Switzerland

PCT No. PCT/CH81/00041, 371 Date Dec. 11, 1981, 102(e) Date Dec. 11, 1981, PCT Pub. No. WO81/02985, PCT Pub. Date Oct. 29, 1981

PCT Filed Apr. 13, 1981, Ser. No. 328,576

Int. Cl.^{3} C01C *1/10*

U.S. Cl. 55—70 **5 Claims**



1. A process for the selective ab-respectively desorption of gaseous syngas components in, respectively out of liquid ammonia, comprising:

providing a closed circuit for the flow of two mass streams each of one or more components;

providing a first reaction chamber having first and second physically separated input ports and first and second physically separated output ports;

applying two input mass streams in different respective phases within said closed circuit to said reaction chamber at respective ones of said first and second reaction chamber input ports to produce counter current flow of one input mass stream with respect to the other input mass stream within a region of said reaction chamber;

withdrawing two output mass streams in different respective phases from respective ones of said first and second output ports subsequent to the counter current flow of said phases;

maintaining a temperature or pressure gradient within said reaction chamber sufficient to cause at least one third of at least one component of each input mass stream to change its phase in the region of counter current flow thereby producing said output mass streams each differing in content from the input mass stream of the corresponding phase.

4,441,896

PROCESS FOR RECOVERING ORGANIC SUBSTANCES FROM SPENT AIR VAPORS

Rolf Bentz, Basel, and Christian Schori, Muttenz, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 13, 1982, Ser. No. 417,234

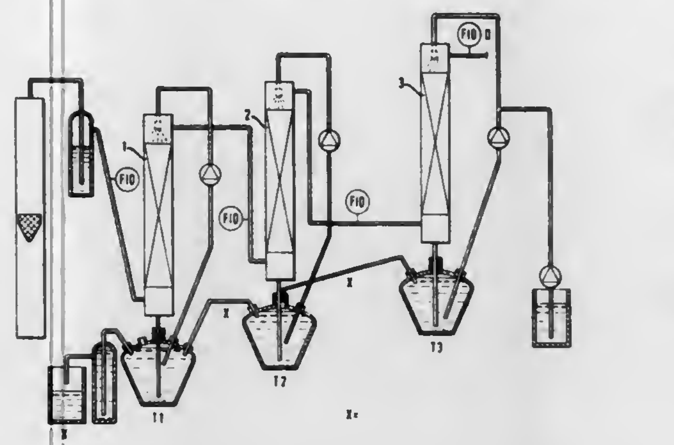
Claims priority, application Switzerland, Sep. 18, 1981, 6044/81

Int. Cl.^{3} B01D *47/06*

U.S. Cl. 55—85 **6 Claims**

1. A process for recovering nitrobenzene, dichlorobenzene or trichlorobenzene from spent air vapours by absorption, which process comprises passing spent air vapours containing these organic substances through an organic liquid which has

a high boiling point and is homogeneously miscible with water, absorbing said organic substances therein, subsequently adding water to the absorbent organic liquid, forming a lower phase of organic substance and an upper phase of absorbent/water solution and separating and recovering the organic substances from the absorbent/water mixture.



4,441,897

WET ELECTROSTATIC PRECIPITATOR HAVING REMOVABLE NESTED HEXAGONAL COLLECTOR PLATES AND MAGNETIC ALIGNING AND RAPPING MEANS

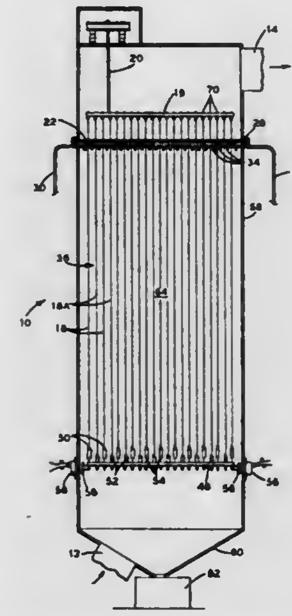
Charles E. Young, and George Drzewiecki, both of Ontario, Canada, assignors to Inco Limited, Toronto, Canada

Filed Feb. 12, 1982, Ser. No. 348,221

Claims priority, application Canada, Sep. 30, 1981, 386980

Int. Cl.^{3} B03C *3/76*

U.S. Cl. 55—112 **11 Claims**



1. An electrostatic precipitator, the precipitator comprising a shell, gas inlet and outlet ducts in fluid flow communication with the shell, a plurality of discharge electrodes and collecting electrodes disposed within the shell, an upperframe for suspending the discharge electrodes within the shell, the upper frame insulatingly supported by the shell, a lower frame supported from the upper frame by at least some of the discharge electrodes, means for supporting the collecting electrodes, a plurality of fluid sprayers disposed above the collecting electrodes, the collecting electrodes forming a honeycombed pattern of repeating, hexagonal collecting zones within the precipitator, the collecting electrodes including a plurality of long plates having two opposing sixty degree bends formed along the two longitudinal edges of each plate, each bent edge of each plate registered with two similar longitudinal edges from two similarly formed adjacent collecting electrodes to form a self-nesting, equiangled, Y-shaped intersection point and the resultant honeycombed pattern of repeating, hexagonal collecting electrodes throughout the precipitator, and a discharge electrode disposed within each collecting electrode.

4,441,898

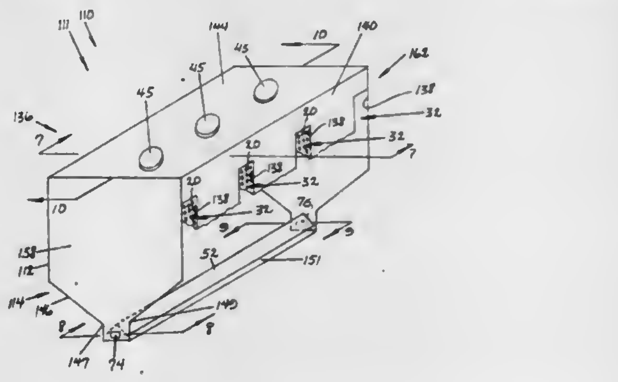
DISCHARGE APPARATUS FOR REMOVING GRANULAR FILTER MATERIAL FROM A FILTER HOUSING AND A FILTER APPARATUS HAVING SAME

Alan E. Revell, Louisville, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.

Continuation of Ser. No. 808,915, Jun. 22, 1977, abandoned. This application Apr. 2, 1981, Ser. No. 250,492

Int. Cl.^{3} B01D *46/34, 50/00*

U.S. Cl. 55—350 **9 Claims**



1. A filter apparatus comprising:

(a) a filter housing having opposing upstream and downstream walls andd a pair of opposing side walls interconnecting the upstream and downstream walls including:

  (1) a gas treating enclosure having a plurality of dirty gas inlet apertures in the upstream wall and a plurality of clean gas outlet apertures in the downstream wall;

  (2) a hopper portion disposed below and open to the interior of the gas treating enclosure having a pair of downwardly converging sloping walls extending from the opposing upstream and downstream walls between the side walls; and,

  (3) elongated trough means extending completely across the hopper portion and being open to the interior of the hopper portion along its entire length;

(b) means defining a plurality of filter cells adapted to be filled with a granulated gas treating material disposed within the gas treating enclosure of the filter housing such that gas to be cleaned passes through one of said filter cells before exiting through one of said clean gas outlet apertures, said filter cell defining means being open to the hopper portion of the filter housing so that when the filter cell defining means are filled with granulated gas treating material, granulated gas treating material will fall into the hopper portion of the filter housing;

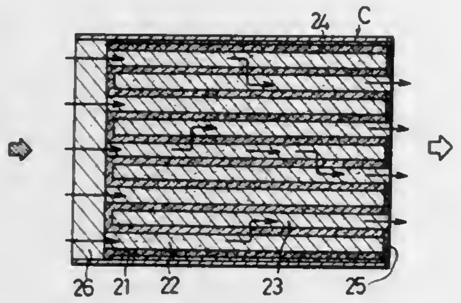
(c) an elongated baffle plate secured to the side walls spaced above the bottom of the elongated trough means and extending completely across the hopper portion and cooperating with the elongated trough means to define an elongated gas treating material conveying channel within and extending completely across the hopper portion of the filter housing, the longitudinal edges of the elongated baffle plate being spaced from the sides of the elongated trough means to define two parallel elongated slots between the longitudinal edges of the elongated baffle plate and the sides of the elongated trough means which are of uniform width and extend parallel to the longitudinal axis of the elongated trough means so that the gas treating material conveying channel is open to the interior of the hopper portion of the filter housing only along the longitudinal edges of the elongated baffle plate;

(d) a conveying gas inlet aperture in one of the side walls opening into the gas treating material conveying channel at one end of the gas treating material conveying channel;

(e) a gas treating material and conveying gas outlet aperture in the other side wall opening into the other end of the gas treating material conveying channel, said gas treating material and conveying gas outlet aperture being larger in cross-sectional area than said conveying gas inlet aperture to promote progressive aspiration of treating material from the interior of the hopper portion along the conveying channel commencing at the end of the channel proximate the conveying gas inlet aperture.

4,441,899
DUST COLLECTING FILTER

Shigeru Takagi, and Masahiro Tomita, both of Anjo, Japan, assignors to Nippon Soken, Inc., Nishio, Japan
Filed Dec. 15, 1981, Ser. No. 331,063
Claims priority, application Japan, Dec. 30, 1980, 55-187519
Int. Cl.^{3} B01D *39/20, 46/52*
U.S. Cl. 55—485 **7 Claims**



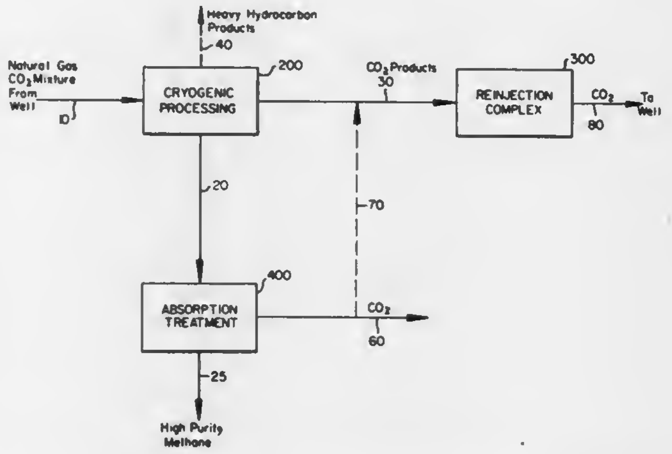
1. A filter for collecting dust contained in a flowing fluid, comprising:
- a tubular casing for flow therethrough of fluid containing dust;
- a thin-walled first filter member snugly disposed within said casing and having a zigzag configuration in a plurality of angularly spaced longitudinal sections defining a plurality of longitudinal flow passages, alternate of said passages being inlet passages having their upstream ends open and their downstream ends closed and the remainder of said passages being outlet passages having their upstream ends closed and their downstream ends open;
- a second filter member snugly charged within said inlet passages;
- a third filter member snugly charged within said outlet passages; and
- a fourth filter member snugly charged within said casing upstream of said second filter member and covering said open ends of said inlet passages and said closed ends of said outlet passages;
- all of said filter members being formed of foamed ceramic material having interconnecting pores, the pores of said second and third filter members being larger than the pores of said first filter member and the pores of said fourth filter member being larger than those of said first filter member and smaller than those of said second filter member.

4,441,900
METHOD OF TREATING CARBON-DIOXIDE-CONTAINING NATURAL GAS

Brian R. Swallow, Media, Pa., assignor to Union Carbide Corporation, Danbury, Conn.
Filed May 25, 1982, Ser. No. 381,846
Int. Cl.^{3} F25J *3/04*
U.S. Cl. 62—29 **3 Claims**

1. A method for separating carbon dioxide from a carbon-dioxide-containing natural gas mixture having a high carbon dioxide content comprising:

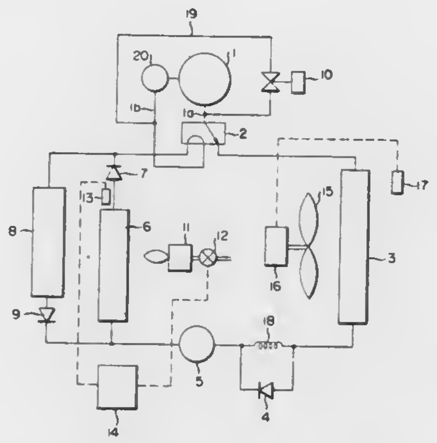
(1) providing a natural gas mixture containing about 10 to 70% methane and having a carbon dioxide content of 30 to 90 mol percent and liquefying a major portion of the carbon dioxide in the natural dioxide in the natural gas mixture by cooling the gas mixture, at an elevated pressure above about 700 psig,
(2) thereafter separating the cooled natural gas mixture of step (1) into a condensed liquid carbon-dioxide-containing stream and non-condensed vapor,
(3) subcooling the liquid carbon-dioxide-containing stream,
(4) rectifying the subcooled liquid carbon-dioxide-containing stream to provide methane-containing overhead vapor and a kettle liquid having an increased carbon dioxide content,
(5) vaporizing a minor portion of the carbon-dioxide-containing kettle liquid of step (4) by heating so as to provide reflux vapor for rectifying the subcooled liquid carbon-dioxide-containing stream of step (4),



(6) separating a carbon-dioxide-enriched liquid from the vapor of step (5),
(7) combining the methane-containing overhead vapor separation of step (4) with the non-condensed vapor separated in step (2) to provide a methane-containing gas mixture,
(8) cooling the methane-containing gas mixture of step (7) and rectifying the cooled mixture to provide a methane-enriched overhead vapor and a kettle liquid containing carbon dioxide, the steps (1) through (8) being conducted at a pressure below the critical pressure and at a temperature above the triple point temperature for each composition involved.

4,441,901
HEAT PUMP TYPE AIRCONDITIONER

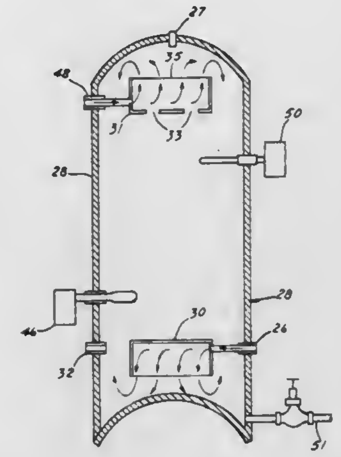
Masakazu Endoh, Osaka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed May 19, 1982, Ser. No. 379,988
Claims priority, application Japan, Jun. 5, 1981, 56-86682
Int. Cl.^{3} F25B *13/00, 27/00, 29/00*
U.S. Cl. 62—160 **19 Claims**



1. A heat pump type airconditioner operable in a cooling operation mode, and a warming operation mode employing a refrigerant heated with a heat generation means as a heat source, comprising: compression means to compress the refrigerant, a first heat exchanger which is disposed indoors and which functions as a vaporizer in the cooling operation mode and as a condenser in the warming operation mode, a second heat exchanger which is disposed outdoors and which functions as a condenser in the cooling operation mode, a third heat exchanger which is disposed in parallel with said second heat exchanger and which heats the refrigerant in the warming operation mode, the heat generation means applying heat to said third heat exchanger, a reservoir which stores the excess refrigerant in a pipe line where the refrigerant is in the liquid phase in the cooling operation mode, a pressure reduction mechanism which is disposed between said reservoir and said first heat exchanger and which reduces the pressure of the refrigerant circulating in the cooling operation mode, bypass means around said pressure reduction mechanism to bypass the refrigerant tending to flow to said pressure reduction mechanism in the warming operation mode, first valve means disposed at one end of said second heat exchanger on the reservoir side and functioning so as to cause liquid refrigerant to be stored in said second heat exchanger in the warming operation mode, second valve means disposed at one end of said third heat exchanger on the compression means side and functioning so as to prevent the refrigerant from flowing through said third heat exchanger in the cooling operation mode, first temperature detection means adjacent the refrigerant outlet of said third heat exchanger to sense the temperature of the refrigerant heated in said third heat exchanger in the warming operation mode, blowing means disposed in correspondence with said first heat exchanger and blowing cold air and warm air from said first heat exchanger into a room in the cooling and warming operation modes respectively, second temperature detection means adjacent said first heat exchanger to sense the temperature of the air blown over said first heat exchanger in the warming operation mode, and control means connected to the respective temperature detection means to stop operation of said heat generation means in the warming operation mode when the refrigerant temperature detected by said first temperature detection means has exceeded a predetermined value and also to regulate a rate of flow of the air from said blowing means in dependence on the air temperature detected by said second temperature detection means.

4,441,902
HEAT RECLAIMING METHOD AND APPARATUS

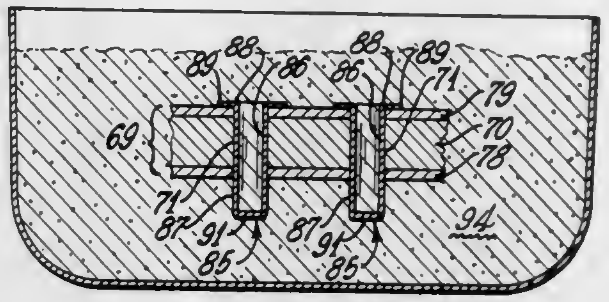
Douglas M. Jardine, Colorado Springs, Colo., assignor to Kaman Sciences Corporation, Colorado Springs, Colo.
Filed Feb. 2, 1982, Ser. No. 344,984
Int. Cl.^{3} F25B *27/02*
U.S. Cl. 62—238.6 **2 Claims**



1. A combination hot water heater, refrigerant desuperheater assembly for use in conjunction with a refrigeration circuit in a hot water system which comprises:
- a water inlet for receiving water to be heated;
- a refrigerant inlet for receiving the refrigerant;
- a water outlet for discharging water;
- a refrigerant outlet for discharging refrigerant;
- heat exchange means for transferring heat energy between the refrigerant and the water, said heat exchange means being connected to the refrigerant inlet and the refrigerant outlet;
- pump means having an inlet and an outlet, with the outlet connected to the water inlet for circulating water through the assembly;
- first pipe means connecting the pump means to the heat exchange means;
- second pipe means connecting the heat exchange means to the water outlet;
- a first valve means associated with the first pipe means, said valve having an open position allowing waterflow from the water inlet to the heat exchange means and a closed position preventing waterflow from the water inlet to the heat exchange means but permitting flow from the heat exchange means to a drain;
- a one way second valve means associated with the second pipe means, said valve having an open position allowing waterflow from the heat exchange means to the water outlet and a closed position preventing waterflow from the heat exchange means to the water outlet; and,
- including a hot water storage tank having at least one inlet and one outlet with an outlet thereof connected to the pump inlet and an inlet thereof connected to the water outlet wherein the storage tank includes a cold water inlet and a hot water outlet, wherein the cold water inlet is connected to a cold water expanding inlet nozzle positioned within the tank and the hot water outlet is connected to a hot water expanding inlet nozzle positioned within the tank.

4,441,903
METHOD OF MAKING GLASS FIBER FORMING FEEDERS AND FEEDER FORMED THEREBY

Mohinder S. Bhatti, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Filed Dec. 22, 1982, Ser. No. 452,273
Int. Cl.^{3} C03B *37/095*
U.S. Cl. 65—1 **17 Claims**



1. A method of forming an orificed discharge wall for a feeder for supplying molten streams of glass to be attenuated into filaments comprising:
- inserting elements in apertures in a member;
- immersing said member containing said elements in a bed of particles of water soluble glass;
- heating said bed of particles under a vacuum to fuse said particles to hermetically seal said member and elements in a high temperature resistant and pressure transmittable coating of water soluble glass and to remove residual gases from between said member and elements;
- hot isostatically pressing said hermetically sealed member and elements to intimately bond the elements to said member;
- contacting the coating with water to remove said coating; and
- forming an orifice in said elements to permit the passage of molten glass therethrough to establish said streams.

4,441,904

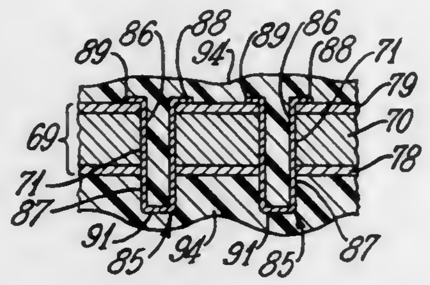
METHOD OF MAKING GLASS FIBER FORMING FEEDERS AND FEEDER FORMED THEREBY

Mohinder S. Bhatti, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 20, 1983, Ser. No. 486,777

Int. Cl.³ C03B *37/095*

U.S. Cl. 65—1 **11 Claims**



11. A feeder for supplying molten streams of glass to be drawn into filaments comprising:

a member having a plurality of elements positioned in apertures therein said elements being mechanically sealed to said member by cold isostatic pressing;

sidewall sections extending upwardly from said member; and

end wall sections extending upwardly from said member, said member, sidewall sections, and end wall sections being joined together in the absence of heating said member and elements to fuse the elements and member together.

4,441,905

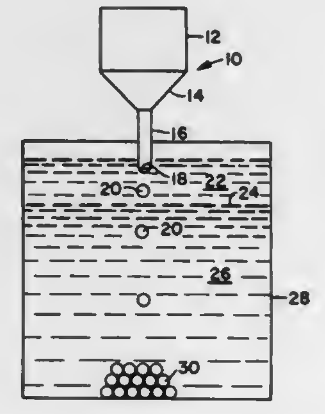
METHOD OF FORMING CERAMIC BODIES

Joseph W. Malmendier; Carol F. Pride, both of Big Flats; Randy L. Rhoads, Horseheads; Robert J. Schlaufman, Elmira, and Robert D. Shoup, Corning, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jan. 27, 1983, Ser. No. 461,684

Int. Cl.³ C03B *19/10*

U.S. Cl. 65—21.3 **30 Claims**



1. A method of producing low density ceramic bodies from a gel containing dispersed crystals from a synthetic, water-swelling, lithium and/or sodium mica, the crystals being selected from the group of fluorhectorite, hydroxyl hectorite, boron fluorphlogopite, hydroxyl boron phlogopite, and solid solutions among those and between those and other structurally-compatible species selected from the group of talc, fluortalc, fluorpolylithionite, polylithionite, phlogopite, and fluorphlogopite, which comprises releasing droplets of the gel to form shaped bodies, effecting an exchange of large cations from an external source with lithium and/or sodium ions from the mica crystals, and draining and drying the ion-exchanged bodies thus formed.

4,441,906

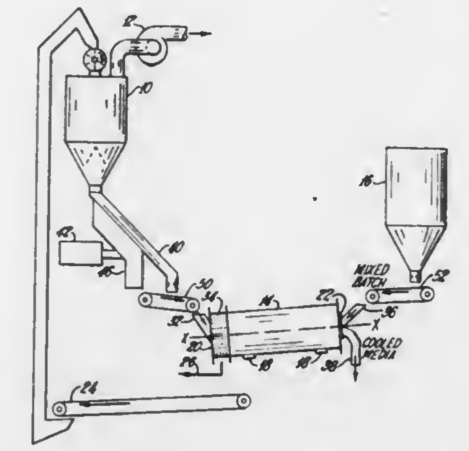
METHOD OF PREHEATING GLASS BATCH

Mark A. Propster, Gahanna; Stephen Seng, Bladensburg, and Charles M. Hohman, Granville, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Oct. 28, 1982, Ser. No. 437,243

Int. Cl.³ C03B *1/00*

U.S. Cl. 65—27 **10 Claims**



1. A process for producing glass by charging to a melting furnace and melting therein a particulate glass batch, including the steps of:

heating the durable heat transfer media, larger in particle size than the glass batch, by direct contact with exhaust gases from the melting furnace wherein the direct contact with furnace gases coats the media with a condensate;

heating the glass batch by direct contact with the hot media; and

cleaning the media by heating them to a temperature that will melt the condensate from the media.

4,441,907

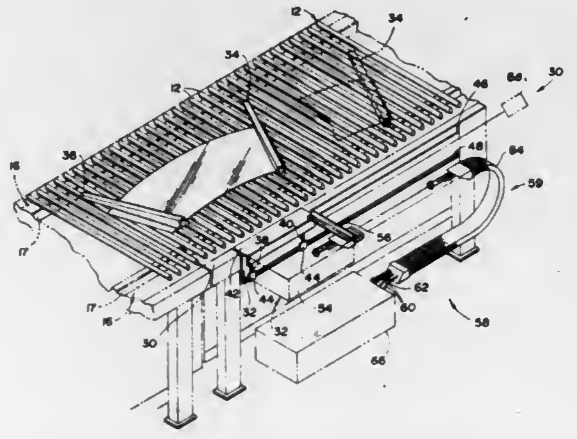
APPARATUS AND METHOD FOR LOCALLY HEATING CONVEYED GLASS SHEETS

John S. Nitschke, Perrysburg, Ohio, assignor to Glasstech, Inc., Perrysburg, Ohio

Filed Aug. 20, 1982, Ser. No. 410,100

Int. Cl.³ C03B *23/02*

U.S. Cl. 65—106 **14 Claims**



1. In a glass sheet bending system including a heating chamber, a conveyor for conveying glass sheets through the heating chamber from an upstream position to a downstream position for heating to a sufficiently high temperature for bending, and a bending station for bending heated glass sheets, the improvement comprising:

a localized heater mounted for movement relative to and independent of the conveyed glass sheet for providing localized heating of each glass sheet transverse the direction of conveyance as the glass sheet moves from the upstream position to the downstream position; and

an actuator for moving the heater to track each glass sheet in the direction of conveyance from the upstream position to the downstream position.

6. In a glass sheet bending system including a conveyor for conveying glass sheets through a heating chamber from an upstream position to a downstream position for heating to a sufficiently high temperature for bending, and a bending station for bending heated glass sheets, a method for facilitating the bending of a strip portion of each glass sheet extending transverse the direction of conveyance without interrupting movement of the glass sheets, the method comprising:

tracking the strip portion of each of the conveyed glass sheets between the upstream position and the downstream position on the conveyor with a localized heater movable relative to and independent of the conveyed glass sheet so that the localized heater heats the strip portion to a temperature higher than the temperature of the rest of the glass sheet prior to bending at the bending station.

4,441,908

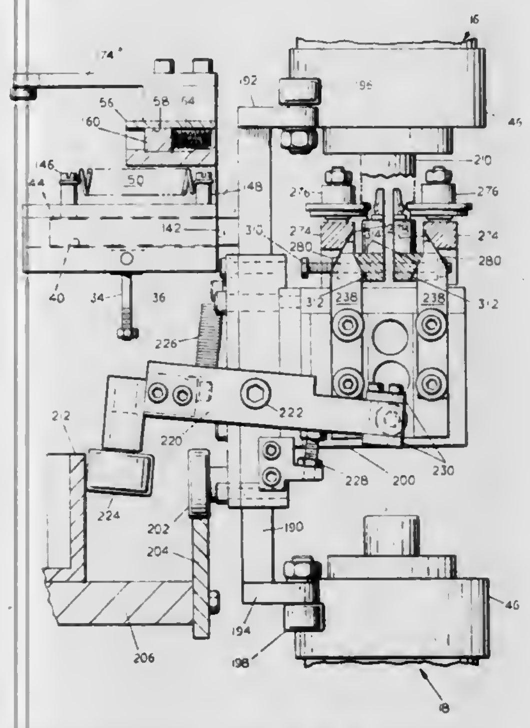
VIAL TOOLING APPARATUS

Otto Zauner, Vineland, N.J., assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 248,790, Mar. 30, 1981, abandoned. This application Aug. 25, 1982, Ser. No. 411,717

Int. Cl.³ C03B *23/04, 23/09*

U.S. Cl. 65—109 **24 Claims**



1. A machine for working-end adjacent regions of thermoplastic material preforms such as glass preforms, comprising, in combination, a rotatable carousel having a plurality of pairs of vertically aligned upper and lower chucking assemblies disposed adjacent the periphery of said carousel and defining a respective plurality of vertical axes of rotation, each of said chucking assemblies having a collar defining an axis coaxial with said respective axis of rotation, means for rotating said carousel and said chucking assemblies, at least one tooling carriage positioned generally adjacent the periphery of said carousel, said tooling carriage including a drive sprocket and an idler sprocket rotatably mounted on said carriage, a chain disposed about said drive and idler sprockets, and a plurality of tooling stations secured to said chain for movement about the periphery of said tooling carriage, said plurality of tooling stations each including a pair of upper and a pair of lower means for engaging a respective one of said collars on said upper and lower chucking assemblies, a first pair of pivotally supported arms each arm having a respective forming roller rotatably secured thereto, a second pair of pivotally supported arms each arm having a segment of a mandrel secured thereto, and cam means disposed adjacent said first and said second pair of arms for pivoting said first pair of arms apart while pivoting said second pair of arms together and pivoting said first pair of arms together while pivoting said second pair of arms apart.

22. A method of forming the finish portion of a glass vial or similar article comprising the steps of:

- (a) for each of a plurality of articles:
  - providing an article in a workable condition;
  - providing a pair of spaced apart chucks disposed for rotation on a common vertical reference axis, each of said chucks having a collar secured thereto and disposed coaxially with said vertical reference axis;
  - constraining said article in said chucks, and
  - rotating said article about its length axis while said article is constrained in said chucks;
- (b) for each of a plurality of working stations:
  - providing a working station defining a tooling reference axis and having (1) two pairs of reference rollers, each of said pair of reference rollers disposed for engagement with a respective one of said chuck collars, (2) a segmented mandrel aligned with said tooling reference axis and (3) a pair of forming rollers, each being disposed for roation on an axis parallel to said tooling reference axis;
- (c) moving each of said plurality of articles, while constrained in said chucks, around a rotatable carriage periphery to advance each article therearound for tooling finishing,
- (d) moving each of said plurality of working stations in proximity to the carriage periphery,
- (e) meeting each one of the advancing articles with one of the stations and advancing the station together with the article for and during finishing,
- (f) for each such working station and the article it works upon:
  - moving such working station into proximity with said chucks such that each of said pair of reference rollers engage a respective one of said collars and said vertical reference axis and said tooling reference axis coincide;
  - inserting the segments of the mandrel of such working station into the article; and
  - forming the finish portion of the article by engaging the outside of the article with the forming rollers of such working station while expanding the mandrel segments and engaging the inside of such article with the expanded mandrel segments whereby the article is worked to a desired finish.

4,441,909

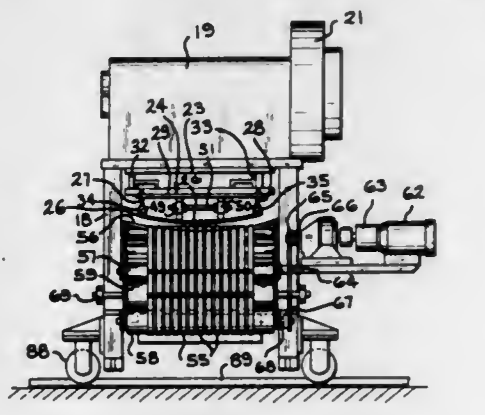
APPARATUS FOR CURVING AND TEMPERING GLASS SHEETS

Harold E. McKelvey, Plymouth; William T. Livingston, Farmington Hills, and Edward D. Sheldon, Detroit, all of Mich., assignors to Shatterproof Glass Corporation, Detroit, Mich.

Filed Jun. 24, 1982, Ser. No. 391,573

Int. Cl.³ C03B *23/03, 35/14*

U.S. Cl. 65—273 **10 Claims**



1. Apparatus for producing curved tempered sheets of glass, including means for heating the glass sheets to softening temperature, means for receiving the softened sheets from said heating means and shaping them to the desired curvature, and

means for receiving the curved sheets from the shaping means and for tempering the same, said shaping means comprising upper and lower shaping members, and a plurality of relatively narrow endless belts arranged in spaced parallel relation and having a substantially horizontal flight for conveying the glass sheets between the shaping members, said lower shaping member having an upper concavely curved shaping surface of a length and width at least equal to those of the glass sheets, with the curvature of said shaping surface being disposed transversely to the line of movement of said belts and the said belts passing over and in contact therewith, means for lowering and raising the upper shaping member, and means for driving said endless belts for receiving the softened glass sheets from the heating means, carrying them over the said shaping surface and subsequently delivering the curved glass sheets to the tempering means.

6. Apparatus for producing curved tempered sheets of glass, including means for heating the glass sheets to softening temperature, means for receiving the softened sheets from said heating means and shaping them to the desired curvature, and means for receiving the curved sheets from said shaping means and for tempering the same, said tempering means comprising a plurality of horizontally arranged conveyor rolls, and means for mounting said rolls such that adjacent rolls cross one another at an angle intermediate their ends to provide a substantially V-shaped saddle for supporting the curved glass sheets.

4,441,910

THIOPHENE OR FURAN HERBICIDES

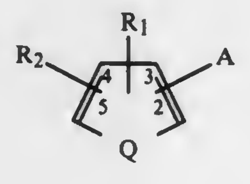
Rafael Shapiro, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 247,134, Mar. 24, 1981, abandoned. This application Feb. 8, 1982, Ser. No. 345,935

Int. Cl.³ A01N *43/02;* **C07D** *409/12, 405/12*

U.S. Cl. 71—90 **50 Claims**

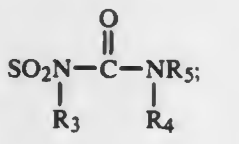
1. A compound of the formula:



wherein

Q is O or S;

A is



$$SO_2\underset{\substack{|\\ R_3}}{N}-\overset{\substack{O\\ \|}}{C}-\underset{\substack{|\\ R_4}}{N}R_5;$$

R_1 is $R_6S(O)_n$;

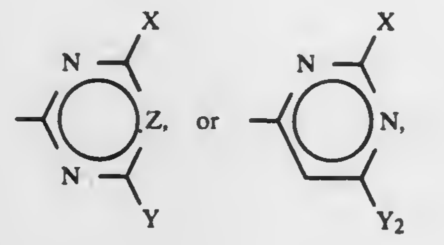
R_6 is C_1–C_4 alkyl, C_3–C_4 alkenyl, cyclopentyl or cyclopropylmethyl;

R_2 is H, Cl, Br or CH_3;

R_3 and R_4 are independently H or CH_3;

n is 0, 1 or 2; and

R_5 is



wherein

X is CH_3 or OCH_3;

Y is H, Cl, CH_3, C_2H_5, OCH_3, OC_2H_5 or CH_2OCH_3;

Y_1 is H, Cl, CH_3 or OCH_3;

Y_2 is CH_3 or OCH_3;

Z is CH;

and their agriculturally suitable salts; provided that:

both R_3 and R_4 may not simultaneously be CH_3, and further provided that R_1 and A are bonded to adjacent carbon atoms of the thiophene or furan ring.

31. A composition suitable for controlling the growth of undesired vegetation which comprises an effective amount of a compound of claim **1** and at least one of the following: surfactant, solid or liquid diluent.

4,441,911

HERBICIDAL HETEROCYCLIC PENTALENES

Michael T. Clark, and Ian J. Gilmore, both of Sittingbourne, England, assignors to Shell Oil Company, Houston, Tex.

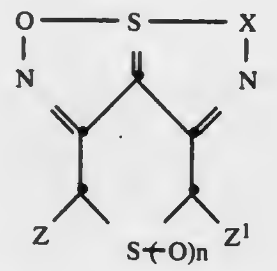
Continuation-in-part of Ser. No. 388,777, Jun. 15, 1982, abandoned. This application Sep. 15, 1982, Ser. No. 418,370

Claims priority, application United Kingdom, Jun. 24, 1981, 8119403

Int. Cl.³ A01N *43/02;* **C07D** *291/08*

U.S. Cl. 71—91 **3 Claims**

1. A compound of the formula



wherein X is O or S, Z and Z^1 each is hydrogen or alkyl of from one to three carbon atoms, and n is zero, one or two, with the proviso that when X is sulfur, n is zero.

2. A method for controlling unwanted plant growth at a locus, which comprises treating the locus with an effective dosage of a compound of claim **1**.

4,441,912

N-PYRAZINYL-N-BENZYLCARBAMATES, HAVING FUNGICIDAL AND PLANT GROWTH REGULATING PROPERTIES

Pieter Ten Haken, Eastling, Nr. Faversham, and Shirley B. Webb, Sheldwich, Nr. Faversham, both of England, assignors to Shell Oil Company, Houston, Tex.

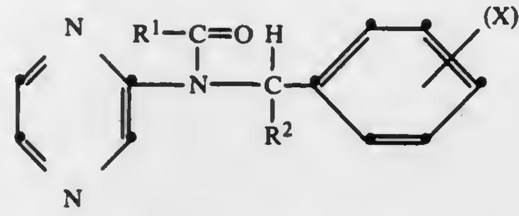
Division of Ser. No. 269,174, Jun. 2, 1981, Pat. No. 4,359,576, which is a continuation-in-part of Ser. No. 164,975, Jul. 1, 1980, abandoned. This application Jul. 30, 1982, Ser. No. 403,943

Claims priority, application United Kingdom, Jul. 19, 1979, 7925164

Int. Cl.³ A01N *55/02, 43/60;* **C07F** *15/02, 3/04*

U.S. Cl. 71—92 **2 Claims**

1. A method for reducing the growth of a plant which comprises subjecting the plant to an effective dosage of a compound of the formula:



wherein R^1 is hydrogen, or is alkyl, alkoxyalkyl, cycloalkyl or alkylcycloalkyl of up to six carbon atoms, R^2 is hydrogen or alkyl of one to four carbon atoms, X is halogen or alkyl of from one to six carbon atoms and n is one or two, and the horticulturally acceptable acid addition salts, and complexes thereof with halides of calcium, copper and iron.

4,441,913

SUBSTITUTED PHENOXYPROPIONATES AND HERBICIDAL COMPOSITIONS

Masahiro Aya, Kodaira; Junichi Saito, Mitaka; Kazuomi Yasui, Tokyo; Kozo Shiokawa, Kawasaki, and Koichi Moriya, Hachioji, all of Japan, assignors to Nihon Tokushu Noyaku Seizo K.K., Tokyo, Japan

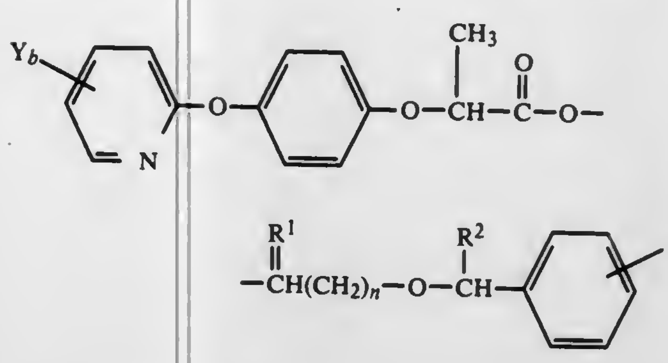
Filed Jun. 17, 1982, Ser. No. 389,525

Claims priority, application Japan, Jun. 25, 1981, 56-97486; Sep. 16, 1981, 56-144778; Dec. 7, 1981, 56-195604; Dec. 7, 1981, 56-195605

Int. Cl.³ C07D *213/64;* **A01N** *43/40*

U.S. Cl. 71—94 **21 Claims**

1. A substituted phenoxypropionate of the formula



(I)

in which

R^1 and R^2 each independently is a hydrogen atom or a C_1 to C_6 alkyl group,

X is a hydrogen or halogen atom, a nitro, C_1 to C_6 alkyl or C_1 to C_6 alkoxy group,

a and n each independently is 1 or 2,

Y is a trifluoromethyl group, a halogen atom or a nitro, cyano or C_1 to C_6 alkyl group, and

b is 1 or 2.

18. A method of combating weeds which comprises applying to the weeds, or their habitat, a herbicidally effective amount of a substituted phenoxypropionate according to claim **1**.

4,441,914

DICHLOROACETYL OXAZOLIDINE HERBICIDE ANTIDOTES

Charles J. Duerksen, and Benjamin P. Rodriquez, both of Visalia, Calif., assignors to Stauffer Chemical Company, Westport, Conn.

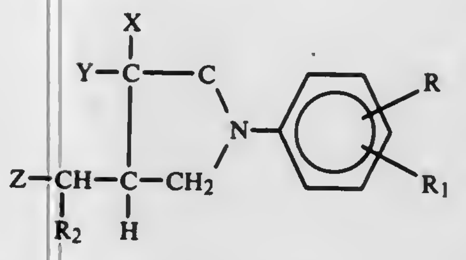
Filed Dec. 30, 1981, Ser. No. 335,950

Int. Cl.³ A01N *25/32*

U.S. Cl. 71—95 **8 Claims**

5. A method of controlling undesirable vegetation and reducing pyrrolidone-type herbicidal crop injury comprising applying to the locus where control is desired a composition comprising:

(a) an herbicidally effective amount of a pyrrolidone compound of the formula



in which

X is hydrogen, chlorine, or methyl;

Y is hydrogen, chlorine or bromine;

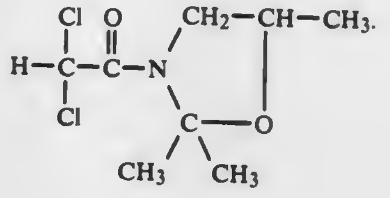
Z is chlorine or bromine;

R is hydrogen, alkyl, acetyl, chloride, bromine, fluorine, iodine, trifluoromethyl, nitro, cyano, alkoxy having 1 to 4 carbon atoms, inclusive, alkylthio having 1 to 4 carbon atoms, inclusive, alkylsulfinyl having 1 to 4 carbon atoms, inclusive, alkylsulfonyl having 1 to 4 carbon atoms, inclusive, trifluoromethylthio, trifluoromethylsulfinyl, trifluoromethylsulfonyl, pentafluoropropionamide, or 3-methylureido;

R_1 is hydrogen, alkyl having 1 to 4 carbon atoms, inclusive, chlorine or trifluoromethyl; and

R_2 is alkyl having 1 to 4 carbon atoms, inclusive, or hydrogen; and,

(b) a non-phytotoxic antidotally effective amount of a compound of the formula



4,441,915

DIURETHANES AND HERBICIDAL COMPOSITIONS CONTAINING THE SAME

Friedrich Arndt, and Gerhard Boroschewski, both of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

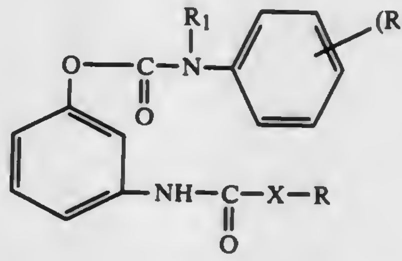
Continuation of Ser. No. 101,051, Dec. 6, 1979, which is a continuation of Ser. No. 925,552, Jul. 17, 1978. This application Jul. 15, 1981, Ser. No. 283,661

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1977, 2732848

Int. Cl.³ A01N *37/44;* **C07C** *149/43, 125/073, 125/075*

U.S. Cl. 71—100 **4 Claims**

1. Diurethane of the formula



I

N-(2-Methoxyethyl)-carbanilic acid-(3-methoxy carbonylamino)-phenyl-ester, wherein $R=CH_3$, $X=O$, $R_1=2$-methoxyethyl and $n=o$.

4. A herbicidal composition comprising from about 10 to 80% by weight of at least one diurethane selected from the group consisting of N-(2-Methoxyethyl)-carbanilic acid-(3-methoxy carbonylamino)-phenyl-ester,

N-(2,2-Dimethoxyethyl)-carbanilic acid-(3-methylthiocarbonylamino)-phenyl-ester, and

N-(2-Methoxyethyl)-carbanilic acid-(3-methylthiocarbonylamino)-phenyl-ester, and about 90 to 20% by weight of a liquid or solid inert carrier material with or without up to 20% by weight of a surface active agent upon corresponding reduction of the amount of carrier material.

4,441,916

HALOALKYLOXIME HERBICIDAL ANTIDOTES

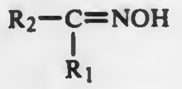
Don R. Baker, Orinda, and Arnold D. Gutman, Berkeley, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Oct. 19, 1981, Ser. No. 313,057

Int. Cl.³ A01N *37/00, 33/02*

U.S. Cl. 71—100 **4 Claims**

1. The method of protecting corn from injury due to S-ethyl dipropyl thiolcarbamate herbicide, comprising preplant incorporation in the soil in which said corn is to be planted, a non-phytotoxic antidotally effective amount of a compound corresponding to the formula



$$R_2-\underset{R_1}{\underset{|}{C}}=NOH$$

wherein R_1 is monochloromethyl and R_2 is monochloromethyl.

4,441,917

HERBICIDAL UREA DERIVATIVES

David A. Griffin, Bracknell, and David J. Collins, Crowthorne, both of England, assignors to Imperial Chemical Industries PLC, London, England

Filed May 25, 1982, Ser. No. 381,888

Claims priority, application United Kingdom, Jun. 9, 1981, 8117680

Int. Cl.³ A01N *41/06;* **C07C** *143/833*

U.S. Cl. 71—103 **17 Claims**

1. Sulphonyl urea compounds of the formula (I)

$$ArSO_2NHCONHY \qquad (I)$$

wherein Ar is a phenyl ring optionally bearing from one to five substituents each of which may be fluoro-, bromo-, or chloroalkyl of 1 to 4 carbon atoms other than trifluoromethyl; alkylsulphinyl of 1 to 4 carbon atoms; amino; mono- or dialkylamino in which the alkyl groups each have from 1 to 4 carbon atoms; carbamoyl optionally substituted by one or two methyl or ethyl groups; carboxyl and salts thereof; or alkoxycarbonyl of 2 to 5 carbon atoms, and Y is a group $—CO_2R^1$ wherein R^1 is an alkyl group of 1 to 6 carbon atoms or an alkenyl or alkynyl group of 2 to 6 carbon atoms or a phenyl group; and salts thereof.

7. A process of inhibiting the growth of plants, which comprises applying to the plants, or to the locus thereof, a phytotoxic amount of a compound of formula (I) as defined in claim 1.

4,441,918

ETHYLENE INHIBITION IN PLANTS

Bobby E. Rehberg, Winter Haven, Fla., assignor to Estech, Inc., Chicago, Ill.

Filed Jul. 1, 1982, Ser. No. 394,295

Int. Cl.³ A01N *37/118*

U.S. Cl. 71—113 **7 Claims**

1. A method of regulating plant growth by effecting ethylene inhibition which comprises treating the plant with an effective but non-injurious amount of a member selected from the group consisting of oxamide and oxamic acid and its lower alkyl esters and alkali metal salts or mixtures thereof, said amount being in the order of about 10^{-1} M to 10^{-6} M.

4,441,919

HERBICIDAL COMPOSITIONS

Konrad Albrecht, Kelkheim; Heinz Frensch, Frankfurt am Main, and Hans Schumacher, Flörsheim am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 138,885, Apr. 10, 1980, abandoned. This application Jan. 22, 1982, Ser. No. 341,751

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1979, 2914867

Int. Cl.³ A01N *37/36*

U.S. Cl. 71—120 **9 Claims**

1. A liquid herbicidal composition in the form of an emulsifiable concentrate or an aqueous suspension concentrate consisting essentially of an effective amount of Linuron as an active component in admixture with 0.05 to 2% by weight of a fat-soluble disazo dye selected from the group consisting of solvent red 23 (C.I. 26100), solvent red 24 (C.I. 26105), solvent red 27 (C.I. 26125) and solvent black 3 (C.I. 26150) wherein said disazo dye is present in an amount sufficient to inhibit the crystallization of said active component in aqueous emulsions of the emulsifiable concentrate or in aqueous suspension concentrates and the aqueous dilutions thereof.

4,441,920

METHOD FOR THE THERMAL PRODUCTION OF METALS

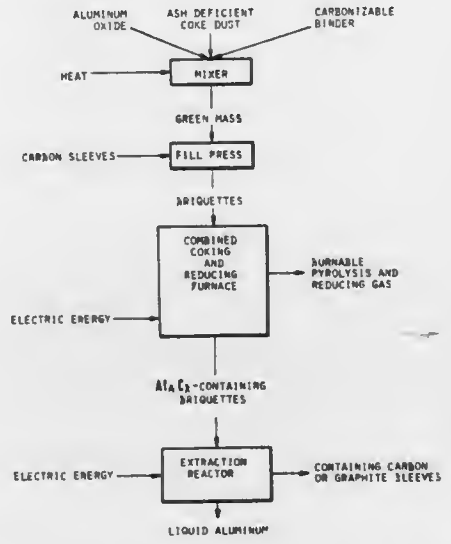
Siegfried Wilkening, Alfter-Oedekoven, Fed. Rep. of Germany, assignor to Vereinigte Aluminium-Werke A.G., Bonn, Fed. Rep. of Germany

Filed Nov. 28, 1980, Ser. No. 211,054

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1979, 2948640

Int. Cl.³ C22B *4/04*

U.S. Cl. 75—10 R **8 Claims**



1. A method for thermally producing metals which comprises:

admixing a metal oxide and carbon;

forming said metal oxide and carbon mixture into a plurality of agglomerates, the amount of carbon in each of the agglomerates being sufficient for reducing said metal oxide to a carbide of said metal;

encasing each of said agglomerates within a shell comprising at least one material selected from the group consisting of carbon and graphite;

placing said agglomerate containing shells in a tightly packed formation;

coking said shells,

reducing the metal oxide in said agglomerates to form metal carbide by electrical resistance heating of said tightly packed shell formation, said shells remaining as a housing for said agglomerates and serving as an electrical resistance element for heating the agglomerates during said reducing reaction; and

extracting said metal from said metal carbide.

4,441,921

PRODUCTION AND TREATMENT OF FERROCHROMIUM

Thomas R. Curr, Johannesburg, and Nicholas A. Barcza, Randburg, both of South Africa, assignors to Council for Mineral Technology, Randburg and Middelburg Steel and Alloys (Proprietary) Limited, Sandown, both of, South Africa

Filed Oct. 18, 1982, Ser. No. 434,753

Claims priority, application South Africa, Oct. 19, 1982, 81/7210

Int. Cl.³ C21B *4/00*

U.S. Cl. 75—10 R **15 Claims**

1. A process for the production or treatment of ferrochromium metal comprising the steps of:

(a) feeding a feed material comprising unreduced or partly reduced chromium and iron oxides, a carbonaceous reductant, and a slagging agent to a reaction zone in a furnace bath, the slagging agent providing a slag liquidus not appreciably higher than the ferrochromium metal liquidus temperature in the furnace bath;

(b) maintaining the reaction zone in a substantially oxygen free condition;

(c) heating the reaction zone by a transferred arc thermal plasma to maintain a liquid slag phase and a molten metal phase in the reaction zone;

(d) controlling the feed rate of the feed materials to the reaction zone to maintain approximately a constant temperature in the furnace bath; and

(e) tapping the slag and ferrochromium metal.

4,441,922

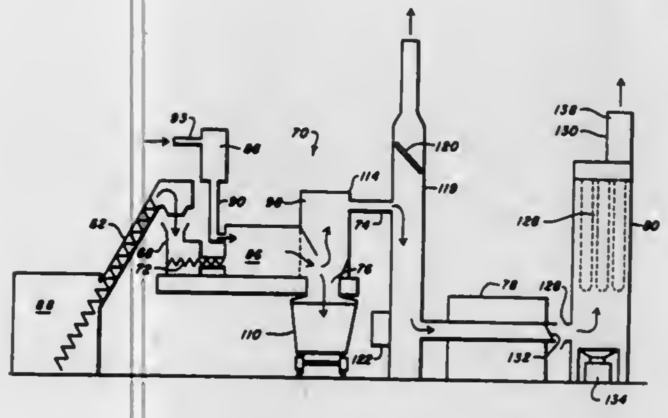
TREATMENT METHOD FOR METAL BEARING OILY WASTE

Ivan G. Most, Cape Elizabeth, and William S. Hubble, Bridgton, both of Me., assignors to Kramer Industries, Inc., Greenfield, Mass.

Filed Apr. 21, 1982, Ser. No. 370,397

Int. Cl.³ C22B *1/00*

U.S. Cl. 75—25 **16 Claims**



1. A method for treating sludge comprising a mixture of water, ferrous containing particulate, and hydrocarbon liquids, said sludge resulting from the washing in a heated detergent-and-water solution of crushed metal bathed in oil, said ferrous containing particulate comprising about 10–60% by weight of said sludge, said method comprising the steps of:

mechanically feeding the sludge into an incinerator in a controlled manner;

incinerating the hydrocarbon liquids in starved air conditions such that metallic components of the sludge are removed as a dry metallic particulate, the temperature of incineration being within the range of 1600° F. to 2350° F., and the oxygen levels of the incinerator exhaust being within the range of 4% to 6% by volume, thereby permitting the metallic particulate to be produced as a non-unitary mass; and

extracting the metallic particulate from the incinerator exhaust.

4,441,923

INTEGRATED PROCESS USING NON-STOICHIOMETRIC SULFIDES OR OXIDES OF POTASSIUM FOR MAKING LESS ACTIVE METALS AND HYDROCARBONS

Rollan Swanson, 220 California St., Santa Monica, Calif. 90403

Continuation of Ser. No. 169,281, Jul. 16, 1980, abandoned, which is a continuation-in-part of Ser. No. 706,795, Jul. 19, 1976, abandoned, and Ser. No. 3,590, Jan. 15, 1979, abandoned. This application Jan. 29, 1982, Ser. No. 343,977

Int. Cl.³ C21B *15/00;* **C22B** *5/02, 26/10*

U.S. Cl. 75—28 **13 Claims**

1. An integrated process for producing potassium from its non-stoichiometric oxide or sulfide and subsequently using the potassium produced to obtain less active metals and hydrocarbons, comprising the combination of steps of:

1. thermally decomposing potassium oxide or potassium sulfide substantially in the absence of water thereby obtaining potassium metal, and, respectively potassium peroxide or potassium super oxide, and potassium disulfide; recovering said potassium metal from the aforesaid other products;
2. providing a portion of the previously obtained potassium metal at a temperature above its melting point in the molten or vapor state; reacting said potassium with at least one oxide or sulfide of magnesium, copper, calcium, silver, lead, zinc, antimony, cadmium, iron, arsenic and mixtures thereof to displace the metal from said oxide or sulfide and recovering the thus displaced less active metal from residual potassium or potassium compounds;
3. reacting another portion of the previously obtained potassium with water to form hydrogen, potassium oxide and potassium hydroxide;
4. utilizing a portion of said hydrogen obtained in Step 3 to prepare a hydrocarbon by either:
   (a) reducing said hydrogen with potassium metal obtained in step 1, above, at a temperature of between 250° C. and 300° C. to form potassium hydride, next reacting said potassium hydride with carbon to form potassium acetylide, synthesizing acetylene and KOH by contacting said acetylide with water; hydrogenating said acetylene to ethene and ethane with hydrogen obtained in step 3, above, or
   (b) using said hydrogen to hydrogenate carbon in the presence of a hydrogenation catalyst to form methane.

4,441,924

SOFT SOLDER MATERIAL FOR USE IN THE FORMATION OF A SOLDER BATH

Gordon F. Arbib, Hemel Hempstead, England, assignor to Multicore Solders Limited, Hemel Hempstead, England

Continuation of Ser. No. 243,735, Mar. 15, 1981. This application Jul. 8, 1983, Ser. No. 511,722

Claims priority, application United Kingdom, Mar. 17, 1980, 8008890

Int. Cl.³ B23K *35/34*

U.S. Cl. 75—65 R **24 Claims**

1. A soft solder material in the form of an extruded bar of tin/lead soft solder alloy for use in the formation of a molten soft solder bath, said material comprising:

at least one substantially uninterrupted core extending longitudinally through the interior of the extruded bar, wherein the core contains at least one organic substance in an amount sufficient to form an anti-oxidant coating on the surface of the molten bath, said substance being selected from at least one of the following classes:

(I) esters of polyhydric alcohols having a molecular weight of at least 300;

(II) ester derivatives of rosin or of a modified rosin;

- (III) hydrocarbon resins derived from feedstocks of petrochemical origin; and
- (IV) polymeric waxes selected from the group consisting of polyethylene glycols, polyethylene oxides, polyvinyl alcohols and polyacrylic acids.

4,441,925
METHOD AND AN APPARATUS FOR PRODUCING TITANIUM METAL FROM TITANIUM TETRACHLORIDE

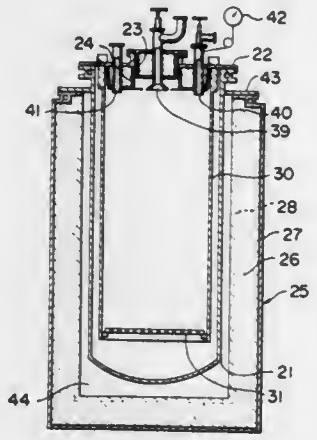
Hiroshi Ishizuka, 19-2, Ebara 6-chome, Shinagawa-ku, Tokyo, Japan

Filed Mar. 19, 1982, Ser. No. 360,054

Claims priority, application Japan, Apr. 4, 1981, 56-50896; May 18, 1981, 56-74606; May 22, 1981, 56-77461

Int. Cl.³ C22B *34/12*

U.S. Cl. 75—84.5 **6 Claims**



1. In a method for producing titanium metal from titanium tetrachloride, comprising holding fused magnesium in a space which is provided in an elongated vessel means and surrounded by and heatable with a furnace means, introducing titanium tetrachloride onto said magnesium to cause a reaction therebetween so as to form a titanium metal product and a magnesium chloride byproduct, continuing such reaction until there is deposited in said vessel means a substantial volume of titanium metal, and recovering said titanium metal product and said magnesium chloride byproduct, the improvement which comprises providing a pressure-regulatable, air tight interspace, between the vessel means and the furnace means, and keeping an inert gas in said interspace at a pressure close to that inside the vessel means while the vessel means is heated in the furnace means.

4,441,926
NON-MAGNETIC ALLOY HAVING HIGH HARDNESS

Hisashi Hiraishi, Kyoto; Yoshiaki Yamakami, Toyonaka, and Atsunobu Shintani, Hirakata, all of Japan, assignors to Kubota Ltd., Osaka, Japan

Filed Sep. 9, 1982, Ser. No. 416,235

Claims priority, application Japan, Oct. 14, 1981, 56-163721

Int. Cl.³ C22C *38/58*

U.S. Cl. 75—128 A **2 Claims**

1. An electromagnetic stirrer roll adapted for use in continuous casting consisting essentially of a non-magnetic alloy having a magnetic permeability up to 1.004 and a Vickers hardness of at least 215, said alloy consisting essentially of the following components in the following proportions in % by weight:

C	0.1–0.6,
$0 < Si \leqq 2.0$,	
Mn	5–15,
Cr	7.5–15,
Ni	5–13,
V	1.1–3, and
One of	$0 < Mo \leqq 1$ and
	$0 < Nb \leqq 2$,

the balance being substantially Fe and inevitable impurities.

4,441,927
TANTALUM POWDER COMPOSITION

Marlyn F. Getz, Barto; Michael J. Maggio, and Billy F. Hitch, both of Boyertown, all of Pa., assignors to Cabot Corporation, Boston, Mass.

Filed Nov. 16, 1982, Ser. No. 442,027

Int. Cl.³ B22F *1/00, 3/12*

U.S. Cl. 75—229 **12 Claims**

1. An ingot-derived agglomerated tantalum powder composition comprising a granular tantalum powder having a particle size less than about 10 microns and including about 20 to 40 percent by weight of a flaked tantalum powder having a BET surface area of about 0.20 to about 0.40 m^2/gm produced by deforming a granular tantalum powder having a particle size ranging from about 10 microns to about 44 microns, said composition having an oxygen content of less than about 1900 ppm, a Scott Density greater than about 25 g/in^3, (1500 kg/m^3) a crush strength of an unsintered pellet, pressed at 6.0 g/cc, greater than about 15 pounds (67 N), and an anode capacitance, pressed at 6.0 g/cc and sintered at 1600° C., of greater than about 7500 CV/g.

4,441,928
INK COMPOSITION

Zenshiro Iijima, Higashimurayama, Japan, assignor to Adger Kogyo Co., Ltd., Japan

Continuation of Ser. No. 97,034, filed as PCT JP 79/00080, Mar. 31, 1979, publish as WO 79/00873, Nov. 1. 1979 § 102(e) date Nov. 23, 1979, abandoned. This application Oct. 7, 1982, Ser. No. 433,366

Claims priority, application Japan, Apr. 3, 1978, 53-38927

Int. Cl.³ C09D *11/00*

U.S. Cl. 106—21 **11 Claims**

1. An erasable ink composition comprising an indicator of the phthalein series; an inorganic weakly basic substance which is selected from the group consisting of alkali carbonates, alkali sulfites, alkali hydrogen phosphates, alkali phosphates and alkali acetates; and an organic amine which is triethanolamine.

4,441,929
SUPERPLASTICIZERS FOR CEMENTITIOUS COMPOSITIONS

Alphonso W. Marcellis, Boonton; Grannis S. Johnson, Plainfield, and Joseph P. Fleming, East Brunswick, all of N.J., assignors to Diamond Shamrock Chemicals Company, Dallas, Tex.

Filed Aug. 24, 1982, Ser. No. 411,034

Int. Cl.³ C04B *7/35*

U.S. Cl. 106—90 **15 Claims**

1. A superplasticizer for cementitious compositions selected for the group consisting of:
- (a) a mixture of from about 90.0 to about 96.0 parts by weight of a free acid of naphthalenesulfonic acid formaldehyde condensate and from about 4.0 to about 10.0 parts by weight of zinc sulfate; and
- (b) a mixture of from about 90.0 to about 96.0 parts by weight of a salt of naphthalenesulfonic formaldehyde condensate and from about 4.0 to about 10.0 parts by weight of zinc sulfate.

4,441,930
PROCESS FOR REMOVAL OF SAND MOLD RESIDUES FROM CAST PARTS

Ulrich Baudis, Hanau; Peter Biberbach, Rodenbach, and Wolfgang Weber, Karlstein, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Dec. 16, 1980, Ser. No. 217,094

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1979, 2951130

Int. Cl.³ C03C *23/00*

U.S. Cl. 134—2 **13 Claims**

1. A process for removing and dissolving molding sand residues from cast parts in salt melts comprising inserting a cast part having molding sand residues in a melt consisting essentially of 55 to 97 weight % of alkali metal hydroxide and 3 to 45 weight % of at least one fluoride of a metallic element of the first to third main group of the periodic system of the elements and/or of zinc and also containing, based on the total weight of the above-mentioned melt, a boron containing compound which is a boron-oxygen compound or a boron-fluorine compound or a mixture thereof in an amount of from 1 to 40% by weight, and inserting the cast part in the melt at a temperature of 400° to 800° C.

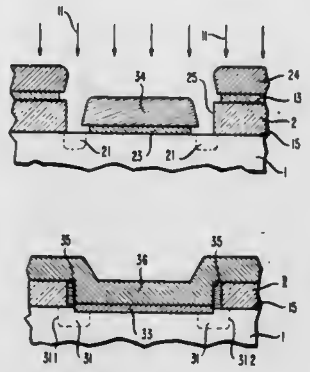
4,441,931
METHOD OF MAKING SELF-ALIGNED GUARD REGIONS FOR SEMICONDUCTOR DEVICE ELEMENTS

Rafael M. Levin, Highland Park, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 28, 1981, Ser. No. 315,757

Int. Cl.³ H01L *21/28, 21/265*

U.S. Cl. 148—1.5 **28 Claims**



1. A method of defining a submicron feature on a major planar surface of a semiconductor body comprising the step of
- forming on said surface a patterned insulating layer having a sidewall extending between first and second surfaces situated parallel to said major surface at differing first and second distances therefrom;
- depositing nonconformally a mask-forming metal layer onto said first and second surfaces, thereby inherently defining relatively thin metal layer portions at the intersection of the sidewall with the first surface and relatively thick first and second metal layer portions overlying the first and second surfaces, respectively, at regions removed from said intersection;
- etching the metal to remove the relatively thin portion completely and to leave at least some of both the first and second metal layers at the relatively thick portions, whereby a submicron gap in the remaining metal layer is formed at said sidewall; and
- using the gap to define the feature;
- (a) removing both said first and second metal layers simultaneously, and removing said protective layer to expose an underlying portion of the said major surface of the semiconductor body; and
- (b) forming an insulating spacer layer on the sidewall of the patterned layer.

4,441,932
PROCESS FOR PREPARING SEMICONDUCTOR DEVICE HAVING ACTIVE BASE REGION IMPLANTED THEREIN USING WALLED EMITTER OPENING AND THE EDGE OF DIELECTRIC ISOLATION ZONE

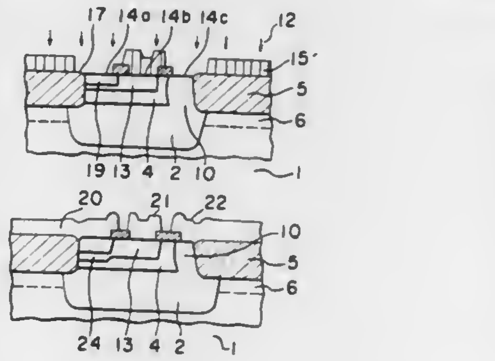
Yoichi Akasaka, and Katsuhiro Tsukamoto, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 11, 1982, Ser. No. 357,299

Claims priority, application Japan, Mar. 11, 1981, 56-36096

Int. Cl.³ H01L *21/265, 21/225, 21/26*

U.S. Cl. 148—1.5 **1 Claim**



1. In a method of preparing a semiconductor device having a walled emitter structure covering at least one side surface with a dielectric layer for separation of a plurality of said devices wherein a collector is formed in a substrate by doping through the use of one of thermal diffusion and implantation of ions and wherein a surface oxide layer covering said collector and said substrate is removed with a epitaxial layer being grown on said collector and whereby said layer for separating each of a plurality of said devices is formed by selective oxidation and wherein a collector wall is formed by implantation of phosphorus ions through a first resist mask having an opening for forming said collector wall, the improved method comprising the steps of:
- forming a base by implantation of ions with a second resist mask with an opening to obtain a base;
- forming an emitter area by implantation of ions with a third resist mask having an emitter-opening portion and a collector-opening portion;
- forming an active base just below said emitter by implantation of ions through said emitter-opening portion and an edge of said separating oxide layer through the use of a fourth resist mask which is an over-size mask.

4,441,933
METHOD OF MAKING PRODUCTS OF ALUMINIUM ALLOY SUITABLE FOR DRAWING

Francois-Regis Boutin, Virieu, and Jan Kubie, Voiron, both of France, assignors to SCAL Societe de Conditionnements en Aluminium, Paris, France

Filed Feb. 25, 1983, Ser. No. 469,757

Claims priority, application France, Apr. 30, 1982, 82 07924

Int. Cl.³ C22F *1/04*

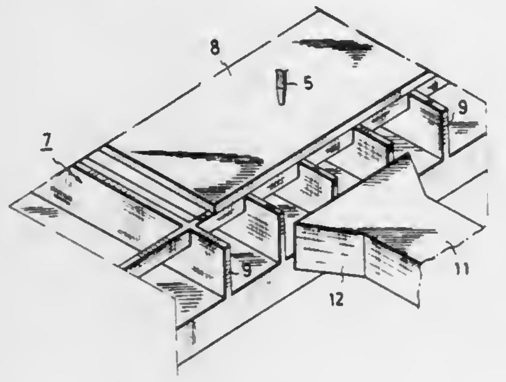
U.S. Cl. 148—2 **3 Claims**

1. A method of making sheets of aluminum alloy suitable for drawing comprising the steps of:
- (a) casting the alloy between cylinders to form a strip;
- (b) subjecting the strip to mechanical cleaning to enable most of the particles deposited on the surface and the thick oxide layer formed during casting to be eliminated;
- (c) reforming an oxide anti-galling layer on the surface of the strip by heat treatment carried out at elevated temperature in air intermittently over a period of 4 to 8 hours at a temperature in the range of 520° to 550° C. or continuously over a period of 1 to 10 minutes at a temperature in the range of 600° to 620° C.;
- (d) subjecting the strip coated with the layer to the rolling operations to convert it in a sheet with a thickness of the

order of 300 μm in a series of passes optionally separated by annealing treatment;
(e) cutting discs from the sheet; and
(f) subjecting discs to deep drawing and ironing.

4,441,934
PROCESS AND APPARATUS FOR EXHAUSTING FUMES AND OXIDE PARTICLES GENERATED BY PLASMA-ARC CUTTING MACHINE

Masamichi Kawakami, Tokyo, Japan, assignor to Koike Sanso Kogyo Co., Ltd., Tokyo, Japan
Filed Dec. 2, 1982, Ser. No. 446,379
Claims priority, application Japan, Dec. 14, 1981, 56-200051; Dec. 14, 1981, 56-200052
Int. Cl.^{3} B23K *7/00, 7/02*
U.S. Cl. 148—9 R **9 Claims**



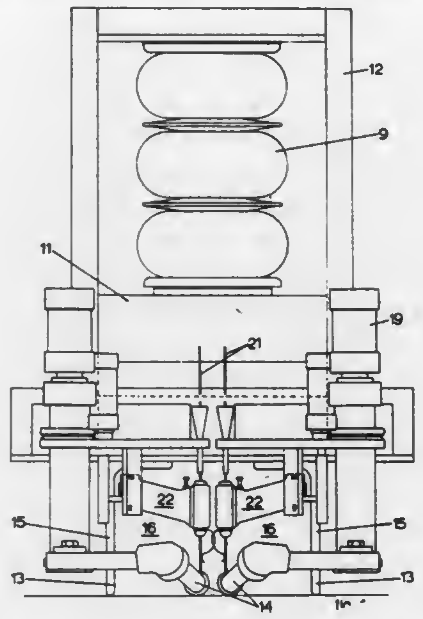
1. In a method for exhausting fumes in a plasma cutting machine which includes a movable carriage crossing at right angles to the direction of a rail laid in parallel to the construction work of the cutting machine body running on said rail, and carries out cutting by making the upper part of the machine to be able to move the plasma cutting apparatus mounted on said carriage, said method characterized in that the lower part of a fixed board for cutting capable of supporting the material which is cut is divided relative to the direction crossing at right angles with the driving direction of said cutting machine body, and a dust collector having a hood corresponding to the plasma cutting apparatus is installed and fixed to the cutting machine body, exhausted fumes caused by the plasma cutting in every position of cutting arranged to be absorbed efficiently at the shortest distance and from the limited spaces by partitions in a lateral direction.

4,441,935
APPARATUS AND METHOD FOR SCARFING

Jan Middel, Barsingerhorn, and Gezinus A. Steenkamp, Heemskerk, both of Netherlands, assignors to Estel Hoogovens B.V., Netherlands
Filed Aug. 31, 1982, Ser. No. 413,257
Claims priority, application Netherlands, Sep. 11, 1981, 8104203
Int. Cl.^{3} B23K *7/06*
U.S. Cl. 148—9.5 **10 Claims**

1. In apparatus for scarfing an inspection track on a flat surface of a steel slab, particularly a slab of ductile steel of deep-drawing quality, to enable sub-surface inspection of the slab, comprising at least one burner, the improvement that:

said burner is mounted on a burner carriage having at least one skid surface by which in use the carriage contacts the said surface of the slab at an unscarfed region thereof, the apparatus further having a guide track spaced from the slab surface and driving means to move the carriage with said skid surface making sliding contact with the slab surface while the carriage is guided by said guide track, the carriage being arranged so that said skid surface makes substantial contact pressure with the slab surface so that scale on the slab surface is pushed aside and/or crushed by the skid surface, whereby the burner is maintained at a substantially constant distance from the slab surface.



4,441,936
HIGH-STRENGTH, LOW-YIELD-POINT, COLD-ROLLED STEEL SHEET OR STRIP SUITABLE FOR DEEP DRAWING

Nobuyuki Takahashi; Masaaki Shibata, and Yoshikuni Furuno, all of Kitakyusyushi, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
Continuation of Ser. No. 249,456, Mar. 31, 1981, abandoned. This application Nov. 18, 1982, Ser. No. 442,780
Claims priority, application Japan, Apr. 9, 1980, 55-46473
Int. Cl.^{3} C21D *8/04, 9/48*
U.S. Cl. 148—12 C **5 Claims**

1. A method for the manufacture of a high-strength cold rolled steel sheet having a yield point of not more than 26.1 kg/mm^2, a yield ratio of not more than 0.6, and an $\bar{r}$ value of not less than 1.6 and excelling in secondary workability, which comprises heating to a temperature of not less than 1100° C. a steel slab consisting of not more than 0.01% C, not more than 0.60% Si, not more than 1.5% Mn, 0.03 to 0.14% P, not more than 0.20sol. Al, not more than 0.008% N, Ti in an amount 4 to 20 times the combined amount of C+N and not more than 0.100%, 0.009 to 0.0080% B, with the balance being iron and unavoidable impurities, then hot rolling the heated steel slab at a finishing temperature of not less than the Ar$_3$ point and coiling the hot rolled steel strip at a temperature of not more than 650° C., subsequently cold rolling the resultant hot rolled steel sheet at a reduction rate of not less than 70%, and annealing the cold rolled sheet at a temperature of not more than the Ar$_3$ point.

4,441,937
QUENCHING BATH AND QUENCHING METHOD FOR METALS

Serge Gosset, Lestrem, and Michael Huchett, Merville, both of France, assignors to Roquette Freres, Lestrem, France
Filed Jul. 20, 1983, Ser. No. 515,466
Claims priority, application France, Jul. 23, 1982, 8212921
Int. Cl.^{3} C21D *1/44, 1/56*
U.S. Cl. 148—18 **8 Claims**

1. A method of quenching a metal selected from the group consisting of ferrous and non-ferrous metals and their alloys which comprises quenching said metal with an aqueous quenchant bath comprising an aqueous solution of an hydrogenated starch hydrolysate having, expressed with respect to the dry matter, a percentage of products of degree of polymerisation 1 and 2 comprised between 1 and 90, the complement to 100

being constituted by products of degree of polymerisation equal or higher than 3, the concentration of said aqueous solution in hydrolysate being from 0.2 to 80% by weight.

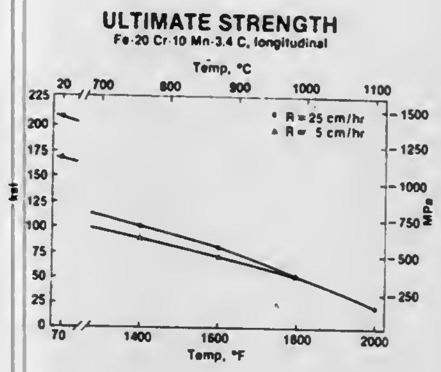
4,441,938
SOLDERING FLUX

Richard M. Poliak, Endwell; Dennis L. Rivenburgh, Endicott, and Carlos J. Sambucetti, Croton-on-Hudson, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 29, 1983, Ser. No. 480,158
Int. Cl.^{3} B23K *35/34*
U.S. Cl. 148—23 **20 Claims**

1. A soldering flux comprising:
(A) about 40 to about 60% by weight of rosin,
(B) about 1 to about 10% by weight of at least one of compound selected from the group of ethylenediaminetetraacetic acid, sodium salt thereof, diethylenetriaminepentaacetic acid, sodium salt thereof, or mixtures thereof;
(C) about 0.1 to about 1% by weight of an ionic fluorocarbon surfactant; and
(D) the remainder being substantially at least one water soluble organic diluent.

4,441,939
M_7C_3REINFORCED IRON BASE SUPERALLOYS

Franklin D. Lemkey, Windsor, and Earl R. Thompson, Glastonbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.
Filed Nov. 6, 1981, Ser. No. 318,774
Int. Cl.^{3} C22C *38/36, 38/38*
U.S. Cl. 148—31 **10 Claims**



1. An iron base superalloy article, of multivariant eutectic composition, which comprises an austenitic (face centered cubic) matrix reinforced by aligned carbide fibers of the M_7C_3 type, where M consists of at least 80% of a material selected from the group consisting of Cr, Fe, Mn, Ni, Co and mixtures thereof: said fibers being present in an amount of about 30% by volume, and said austenitic matrix phase being stabilized by the presence of at least about 8% Mn.

4,441,940
METHOD FOR PRODUCING TOROIDAL TAPE CORES FOR FAULT CURRENT SAFETY SWITCHES AND USE OF SUCH CORES

Friedrich Pfeifer, Bruchkoebel, and Willi Kessler, Linsengericht, both of Fed. Rep. of Germany, assignors to Vacuumschmelze GmbH, Fed. Rep. of Germany
Filed Aug. 10, 1981, Ser. No. 291,487
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1980, 3031257
Int. Cl.^{3} H01F *1/00*
U.S. Cl. 148—121 **5 Claims**

1. A method of producing torodial tape cores for fault current safety switches with a relatively high dynamic induction boost, B_{dyn}, at least 0.08 T and, simultaneously, a relatively high temperature constancy of B_{dyn} in the temperature range of about −5° to +80° C. from a toroidal tape core wound out of a 0.05 through 0.3 mm thick tape composed of a Ni-Mo-Cu-Fe alloy such core being subject to thermal treatment in a non-oxidizing atmosphere, said method comprising of:

employing as said alloy a composition having an Ni and Cu content in a binary Ni-Cu system which is defined by an area bounded by a quadrangle of points A (80.5 wt. % Ni and 0 wt. % Cu), B (82 wt. % Ni and 0 wt. % Cu), C (70 wt. % Ni and 16.5 wt. % Cu), and D (70 wt. % Ni and 14.4 wt. % Cu), and having a Mo content, z, in wt. % which satisfies the relation:

$$11/30(x-68)\leqq z\leqq 11/30(x-63.5)$$

with a given Ni content, x, in wt. %. and the remainder consisting essentially of Fe along with minor amounts of impurities and usual processing-promiting and deoxidizing additives;

said thermal treatments in said non-oxidizing atmosphere consisting of annealing said core for at least about 30 minutes at a temperature ranging between 900° and 1200° C., and

thereafter tempering said so annealed tape core in accordance with its Mo content at a temperature ranging between 450° and 550° C. in such a manner that the magnetic anisotropy K_1, thereof becomes equal to 0 at a temperature between −5° and +30° C.

5. A toroidal tape core for an electronic safety switch, and for fault current-sensitive safety switches, with a relatively high dynamic induction boost, B_{dyn}, at least 0.08 T and, simultaneously, a relatively high temperature constancy of B_{dyn} in the temperature range of about −5° to +80° C.; said core having been wound out of a 0.05 through 0.3 mm thick tape composed of Ni-Mo-Cu-Fe alloy, such core having been subjected to thermal treatment in a non-oxidizing atmosphere,

said alloy having a Ni and Cu content in a binary Ni-Cu system which is defined by an area bounded by a quadrangle of points A (80.5 wt. % Ni and 0 wt. % Cu), B (82 wt. % Ni and 0 wt. % Cu), C (70 wt. % Ni and 16.5 wt. % Cu), and D (70 wt. % Ni and 14.4 wt. % Cu), and having a Mo content, z, in wt. % which satisfies the relation:

$$11/30(x-68)\leqq z\leqq 11/30(x-63.5)$$

with a given Ni content, x, in wt. %, and the remainder consisting essentially of Fe along with minor amounts of impurities and usual processing-promoting and deoxidizing additives;

said thermal treatment in said non-oxidizing atmosphere consisting of first annealing said core for at least about 30 minutes at a temperature ranging between 900° and 1200° C., and

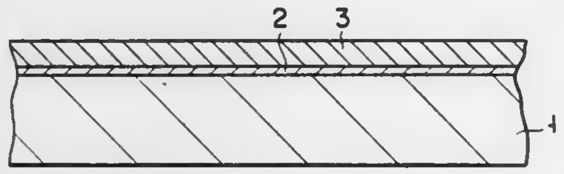
thereafter tempering said so annealed tape core in accordance with its Mo content at a temperature ranging between 450° and 550° C. in such a manner that the magnetic anisotropy K_1, thereof becomes equal to 0 at a temperature between −5° and +30° C.

4,441,941
METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE EMPLOYING ELEMENT ISOLATION USING INSULATING MATERIALS

Hiroshi Nozawa, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Mar. 4, 1981, Ser. No. 240,300
Claims priority, application Japan, Mar. 6, 1980, 55-27310; Mar. 6, 1980, 55-27311; Mar. 12, 1980, 55-30307; Jul. 10, 1980, 55-93254
Int. Cl.^{3} H01L *21/22*
U.S. Cl. 148—187 **10 Claims**

1. A method for manufacturing a semiconductor device employing element isolation of an active region in a semiconductor substrate by forming insulating materials, said method comprising the steps of:

a. forming an oxidizable material layer on a surface of the semiconductor substrate;
b. forming an oxidation mask on a portion of said oxidizable material layer overlying said active region;
c. oxidizing at least part of said oxidizable material layer not covered with said oxidation mask forming an oxide layer for element isolation;



d. removing said oxidation mask;
e. partially exposing the surface of said semiconductor substrate by removing at least a part of said oxidizable material layer exposed by said step of removing said oxidation mask; and
f. forming a semiconductor element in said exposed surface of said semiconductor substrate.

4,441,942

EMBEDMENT SYSTEM FOR ULTRAHIGH-BURNING RATE PROPELLANTS OF SOLID PROPULSION SUBSYSTEMS

David C. Sayles, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 3, 1983, Ser. No. 455,366
Int. Cl.³ C06B *45/10*

U.S. Cl. 149—19.6 **1 Claim**

1. An embedment system for use with a composite-modified double-base propellant composition, said embedment system comprised of an embedment granule portion (A) which comprises ingredients (i–vi) in percent by weight as follows:

(A) embedment granule portion:
  (i) nitrocellulose: 23.0;
  (ii) nitroglycerine: 15.0;
  (iii) resorcinol: 1.5;
  (iv) 2-nitrodiphenylamine: 1.0;
  (v) ammonium perchlorate (10 micrometers weight-mean-diameter particle size): 45.5; and,
  (vi) aluminum powder (20 micrometers weight-mean-diameter particle size): 14.0; and,

an embedment resin portion (B) which comprises ingredients (i–iii) in percent by weight as follows:

(B) embedment resin portion:
  (i) bisphenol A epichlorohydrin: 44.0;
  (ii) epoxidized dimer acid: 20.0; and,
  (iii) condensation product of 2 moles of 1,2-bis(-maleimido)ethane with one mole of triaminotriazine: 36.0,

said condensation product prepared by reacting said 1,2-bis(-maleimido)ethane and said triaminotriazine at 80°–100° C. to yield a low molecular weight reaction prepolymer for curing said bisphenol A-epichlorohydrin and said epoxidized dimer acid.

4,441,943

POLYPEPTIDES AS CHEMICAL TAGGING MATERIALS

Paul H. Kydd, Lawrenceville, N.J., assignor to HRI Inc., Gibbsboro, N.J.

Division of Ser. No. 264,991, May 18, 1981, Pat. No. 4,359,353. This application Sep. 13, 1982, Ser. No. 417,811
Int. Cl.³ D03D *23/00;* **E02B** *15/00*

U.S. Cl. 149—109.4 **3 Claims**

1. A method of tagging a substance which is comprised of an explosive composition or an oil to allow subsequent identification thereof comprising incorporating in said substance a synthetic polypeptide having a specific sequence of amino acids.

4,441,944

BUILDING BOARD COMPOSITION AND METHOD OF MAKING SAME

David H. Massey, Winnetka, Ill., assignor to PMP Corporation, Mundelein, Ill.

Filed Dec. 31, 1981, Ser. No. 336,498
Int. Cl.³ F04B *2/00;* **B05D** *3/02*

U.S. Cl. 156—71 **7 Claims**

1. A method of forming an insulative construction monolith which comprises the following:

(a) forming a liquid aqueous base cementitious slurry containing from 10 to 70 parts by volume of portland cement, 10 to 70 parts by volume of polymeric emulsion and 10 to 70 parts by volume of flyash containing from 5 to about 100 percent by volume of cenospheres;
(b) applying a coating layer of said liquid slurry to at least one surface of a cellular insulating board monolith to form a composite; and
(c) drying and curing said composite.

4,441,945

METHOD FOR SELECTIVE LAMINATION OF THERMOPLASTIC LAYERS

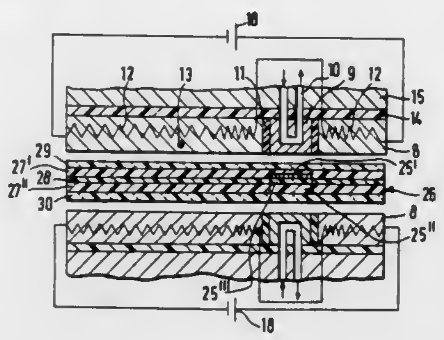
Roland Moraw, and Renate Schädlich, both of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 10, 1980, Ser. No. 111,033

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1979, 2900978

Int. Cl.³ B60J *1/00;* **B32B** *31/00*

U.S. Cl. 156—108 **4 Claims**



1. A process for the selective lamination by means of heat and pressure of at least internal surfaces of two thermoplastic layers, at least one of said layers including therein at least one window portion in which at least one insert is located, said lamination ocurring without laminating at least one window portion of said layers, said process comprising the steps of:

aligning said at least two thermoplastic layers along said window portions;
discontinuously pressing said at least two thermoplastic layers together, said discontinuous pressing occurring at the window portions of said layers and the pressure thereon being less than the pressure applied to the rest of the surface of said layers; and
heating the external surfaces of said thermoplastic layers in a discontinuous manner across each of said external surfaces, said discontinuous heating occurring at each of said selected window portions of said layers with said temperature at said window portion being at least 10° C. lower than at the rest of the external surfaces of said layers, wherein said discontinuous heating step includes the steps of:
heating an area immediately adjacent said selected window portion to a temperature higher than the temperature of the rest of the surfaces of said layers; and
cooling said selected window portion to a temperature which is from 10° to 70° C. below the rest of the external surfaces of said layers.

4,441,946

HEAT AND HUMIDITY RESISTANT STEEL CORD REINFORCED RUBBER COMPOSITE

Satish C. Sharma, Mogadore, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 260,234, May 4, 1981, abandoned. This application Nov. 22, 1982, Ser. No. 443,253
Int. Cl.³ B29M *5/02*

U.S. Cl. 156—307.3 **3 Claims**

1. A method of bonding bright steel cord to an unvulcanized vulcanizable rubber which comprises coating said cord, said cord being free of acid or base surface treatment prior to coating, with an amino functional organo silane wherein said vulcanizable rubber contains a resorcinol and hexamethyol melamine bonding agent, a hydrated silica and other conventional rubber compounding ingredients, combining said coated bright steel cord and said unvulcanized vulcanizable rubber to form a composite and vulcanizing said composite.

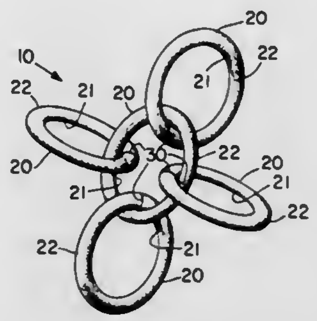
4,441,947

ARTICULATED FABRIC FORMED BY SELF-ASSEMBLING FIBERS

Edward F. Leonard, Bronxville, N.Y., assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 367,203, Apr. 12, 1982, Pat. No. 4,421,818. This application Sep. 19, 1983, Ser. No. 533,172
Int. Cl.³ B32B *31/00;* **D04H** *3/16*

U.S. Cl. 156—158 **11 Claims**



1. A method for producing a patterned, nonwoven, articulated fabric exhibiting a substantially uniform texture and comprised of a multiplicity of synthetic fiber elements, the opposing free ends of each of said synthetic fiber elements being joined to one another to form substantially continuous loops, said loops being interconnected to one another in a predetermined pattern, said method comprising the steps of:

(a) preparing a multiplicity of substantially straight synthetic fiber elements of predetermined length, each of said elements exhibiting a non-uniform shrinkage potential along its cross-section, as measured in a direction substantially perpendicular to its length;
(b) orienting said substantially straight synthetic fiber elements so that said non-uniform shrinkage potential along their cross-sections will cause them to simultaneously curl in a predetermined orientation and interlock with one another when said fibers are subjected to a predetermined external stimulus;
(c) subjecting said synthetic fiber elements to said predetermined external stimulus, thereby causing said fibers to curl in a predetermined orientation and interlock with one another; and
(d) joining the opposing free ends of each of said fiber elements to one another to form substantially continuous loops which are interconnected with one another in a predetermined pattern.

4,441,948

METHOD AND APPARATUS FOR CONSTRUCTING MULTIPLE LAYER CORRUGATED BOARD CONTAINERS

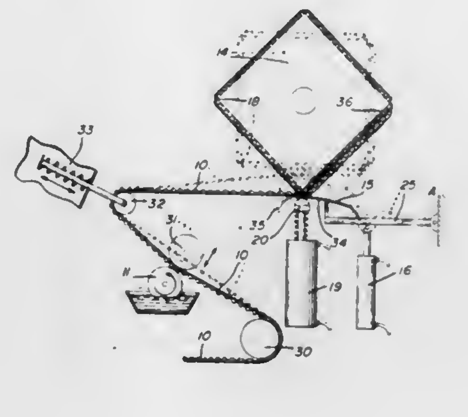
David F. Gillard, Surrey, and Jack T. Yelf, West Vancouver, both of Canada, assignors to MacMillan Bloedel Limited, Vancouver, Canada

Filed Jul. 14, 1982, Ser. No. 397,990

Claims priority, application United Kingdom, Oct. 28, 1981, 8132505

Int. Cl.³ B31F *1/22*

U.S. Cl. 156—189 **13 Claims**



1. In a method of forming a multi-layered container having a plurality of substantially flat sides with corners between adjacent sides, wherein compressible sheet layers are wound on a forming mandrel, the improvement comprising the steps of:

attaching one edge of a compressible sheet layer adjacent a corner of the mandrel,
pressing a pressure shoe plate across the width of the layer against the mandrel,
rotating the mandrel to wind the layer on the mandrel ensuring that the plate has sufficient movement to be in contact with the layer on the mandrel as it rotates to keep a substantially constant pressure on the mandrel, said substantially constant pressure being insufficient to compress the layer, and applying an additional momentary force to the shoe plate as each corner of the mandrel passes over the shoe plate such that the layer at each corner is compressed.

6. An apparatus for forming a multi-layered container of corrugated board having a plurality of substantially flat sides with corners between adjacent sides comprising:

a forming mandrel having a plurality of substantially flat sides with corners between adjacent sides, the mandrel having means to grip an edge of a corrugated board layer,
rotating means to rotate the mandrel and wind the layer around the mandrel,
pressure shoe plate located across the width of the mandrel and having movement in a predetermined path,
pressure means to push the plate in the predetermined path against the mandrel at a substantially constant pressure so that the layer is squeezed between the plate and the mandrel during rotation of the mandrel, said substantially constant pressure being insufficient to compress the layer, and momentary high pressure means to provide an additional force on the plate to compress the layer at each corner of the mandrel.

4,441,949

PROCESS FOR LINING MOULDED ARTICLES AND APPARATUS FOR PERFORMING THE PROCESS

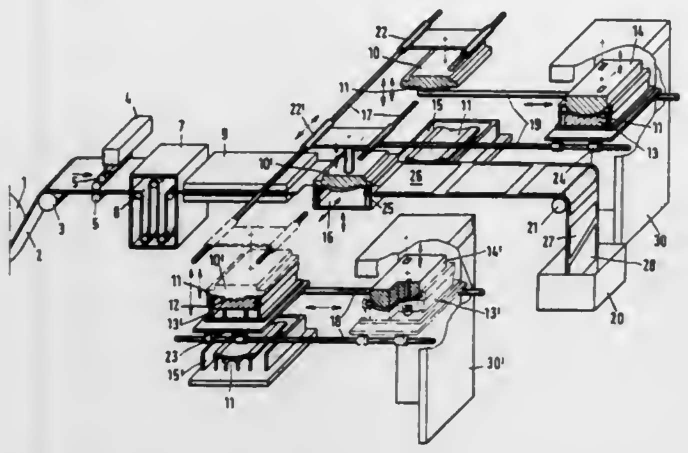
Günter H. Kiss, Gustav-Freytag-Strasse 7, D-1000 Berlin 33, Fed. Rep. of Germany

Filed Aug. 18, 1982, Ser. No. 409,076

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1981, 3138442

Int. Cl.^{3} B65C *9/08*

U.S. Cl. 156—212 **12 Claims**



1. In a process of the class described for lining moulded blanks on a lining foil to produce lined moulded articles, comprising the steps of supplying the moulded blanks to blank support means, supplying the lining foil on a continuous belt passing through lining apparatus, applying and durably securing the lining foil onto the moulded blanks by action of heat and pressure, and finishing the lined moulded blanks in finishing means to yield finished lined moulded articles;

the improvement wherein said lining apparatus include at least two lining mould devices alternately disposed to respective sides of said continuous belt, and said finishing means include a respective at least two finishing mould assemblies alternately disposed to respective sides of said continuous belt, at least a portion of each of said finishing mould assemblies being displaceable to receive, at one end portion thereof, the lined moulded blank from the associated one of said lining mould devices and to another end position thereof corresponding to an operative portion of the respective finishing mould assembly;

and further comprising the steps of alternately suppling said blanks to said lining apparatus from respective sides of said continuous belt in time sequence; and whereby, while one of said lining mould devices is engaging a moulded blank supported by the blank support means on one of the respective sides of the continuous belt, another lining mould device is securing another moulded blank to the lining foil.

4,441,950

UNIVERSAL FILE WITH INNER GLUING BACK FOR THERMAL GLUING SYSTEMS

Carla P. Lolli, Gansbroekstraat 24, Puurs, Belgium (2658)

Continuation of Ser. No. 66,394, Aug. 14, 1979, abandoned. This application Apr. 27, 1983, Ser. No. 487,241

Claims priority, application Belgium, Aug. 22, 1978, 2/57218; Sep. 1, 1978, 2/57251

Int. Cl.^{3} B32B *3/04*

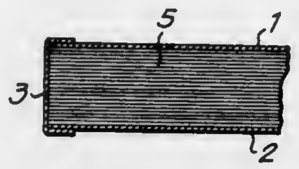
U.S. Cl. 156—216 **9 Claims**

1. A method of binding bundles of documents having varying thicknesses comprising:

(a) providing a universal file comprising a single-layer front cover sheet having a rear edge and inner and outer surfaces, a single-layer rear cover sheet having a rear edge and inner and outer surfaces, a back sheet of flexible material fastened to the outer surface adjacent the rear edge of each of said cover sheets and a strip of glue having a predetermined width disposed on said back sheet between the inner surfaces of said cover sheets;

(b) inserting a bundle of document sheets between said cover sheets; said bundle of document sheets having a thickness less than the width of said glue strip;

(c) wrapping said backing around the edge of said bundle with one edge of each of said document sheets abutting against said back sheet and said glue;



(d) introducing said file with said bundle of document sheets therein into a heating machine and heating said glue to bond said document sheets to said backing and said front and rear cover sheets and form a bound set of documents, the finished binding for which is formed of only a pair of cover sheets and a back; and

(e) cooling the bound documents.

4,441,951

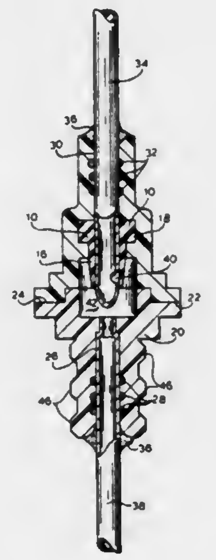
MULTIPLE SAMPLING DEVICE HAVING MOLDED VALVE AND HUB

Werner Christinger, Franklin Lakes, N.J., assignor to Becton Dickinson and Company, Paramus, N.J.

Division of Ser. No. 66,818, Aug. 15, 1979, Pat. No. 4,295,477. This application Jul. 14, 1981, Ser. No. 282,998

Int. Cl.^{3} B29C *19/00;* **A61B** *5/14*

U.S. Cl. 156—245 **2 Claims**



1. A method for manufacturing a multipled blood sampling device adapted to be coupled with an evacuated container to obtain blood samples from a patient, comprising the steps of:

molding a one-way valve into a desired form including a first portion and a second portion;

molding a first housing part around the first portion of said valve so as to securely attach it thereto,

molding a second housing part having a chamber around said second portion of said one-way valve so that said second portion freely extends into said chamber;

attaching a first cannula to said first housing part;

attaching a second cannula to said second housing part,

joining said first and second housing parts together permanently, and

the valve, housing parts, and cannulas being assembled in such a manner that blood is able to flow through the first cannula, the one-way valve and chamber in said housing parts, and into the second cannula when suction is applied at said second cannula, the valve arranged to prevent any backflow from said second cannula to said first cannula.

4,441,952

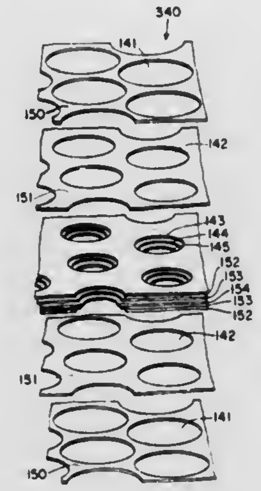
METHOD AND APPARATUS FOR UNIFORMLY DEBOSSING AND APERTURING A RESILIENT PLASTIC WEB

William I. Mullane, Jr., Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 2, 1981, Ser. No. 230,488

Int. Cl.^{3} A61F *13/16;* **B31F** *1/00;* **B32F** *31/00*

U.S. Cl. 156—222 **12 Claims**



1. A method for constructing a forming cylinder for imparting an uninterrupted, uniformly apertured three-dimensional pattern to a heated plastic film subjected to a fluid pressure differential while in contact with its surface, said method comprising the steps of:

(a) forming substantially continuous patterns of apertures in a multiplicity of planar sheets, at least a portion of said sheets having aperture patterns in which the apertures at least to a degree coincide from one sheet to another, at least a portion of said coinciding apertures being dissimilar in size from one lamina to another;

(b) superposing said sheets having said patterns of coinciding, dissimilarly sized apertures upon one another to form a three-dimensional stack having a greater overall thickness than the maximum depth to which said film is drawn when subjected to said fluid pressure differential, said stack further exhibiting a three-dimensional continuum of capillary networks, each of said capillary networks placing the uppermost and lowermost surfaces of said stack in exclusive fluid communication with one another, each of said capillary networks having a cross-sectional area which varies in size intermediate the uppermost and lowermost surfaces of said stack, said cross-sectional area reaching a minimum at a point located intermediate said uppermost and lowermost surfaces of said stack and thereafter increasing in the direction of the lowermost surface of said stack;

(c) bonding said superposed stack of sheets to one another at contact points to form an integral laminate structure;

(d) causing the uppermost surface of said laminate structure to assume a radius of curvature greater than that of said lowermost surface of said laminate structure without causing delamination thereof, thereby causing said laminate structure to assume a substantially tubular shape having an outermost surface corresponding to the uppermost surface of said stack and an innermost surface corresponding to the lowermost surface of said stack;

(e) securing the opposing free edges of said tubular shaped laminate structure to one another while maintaining substantial continuity of said three-dimensional continuum of capillary networks about the entire periphery of the tubular member thus formed; and

(f) supporting the innermost surface of said tubular laminate structure on a multiplicity of support members, each of said support members having a land which contacts the innermost surface of said tubular laminate structure, the width of said lands being insufficient to completely obstruct said capillary networks at their points of contact with the innermost surface of said tubular laminate structure, whereby said outermost and said innermost surfaces of said tubular laminate structure are maintained in fluid communication with one another about the periphery of said tubular structure.

4,441,953

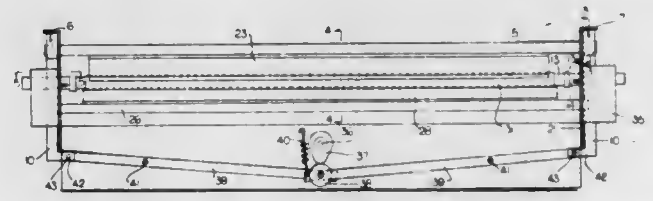
HEAT SEALING MACHINE AND PROCESS FOR HEAT SEALING PLASTIC FILM EDGES

William K. Hollinger, Jr., 7015 Duncraig Ct., McLean, Va. 22101

Filed Mar. 15, 1982, Ser. No. 358,032

Int. Cl.^{3} B32B *31/20*

U.S. Cl. 156—290 **34 Claims**



1. A heat sealing machine for simultaneously heat sealing at least two sets of plastic films or sheets, said machine comprising a work surface means for supporting said plastic sheets, an elongated heat sealing means for simultaneously heat sealing at least one set of superposed plastic films or sheets on each side thereof and projecting, at least during the heat sealing step, at least in part above said work surface means with said work surface means extending on either side of said heat sealing means, movable alignment means for providing an alignment guide for the sets of plastic sheets to be heat sealed, and movable clamping means for clamping an aligned set of said plastic sheets to said work wurface means in position on either side of said heat sealing means to be heat sealed by said heat sealing means, said clamping means and said alignment means cooperating so that at least during a portion of the time that the clamping means clamps said sets of plastic sheets, the alignment means is out of alignment relationship to the clamped plastic sheets, and at least during a portion of the time that said alignment means is in position to align each set of plastic sheets, the clamping means is out of clamping engagement with said plastic sheets.

9. A method of simultaneously heat sealing at least two sets of plastic films or sheets, said method comprising aligning each set of said films or sheets in proper positions on a heat-sealing machine by contacting the edge of each set of the films or sheets with a movable alignment means with at least one set of films or sheets on each side of the alignment means, clamping said aligned sets of plastic film or sheet and moving the alignment means out of aligning position, exposing the aligned edges of the plastic film or sheet to heat from an elongated heating element positioned between at least two sets of the aligned plastic sheets for a predetermined time to weld or seal the plastic films or sheets edges, thereafter terminating transfer of heat from the heating element to the edges and disengaging the plastic film or sheet from clamping engagement.

4,441,954
PHENOL-ALDEHYDE BENTONITE ADHESIVE COMPOSITION IN WOOD LAMINATION PROCESS

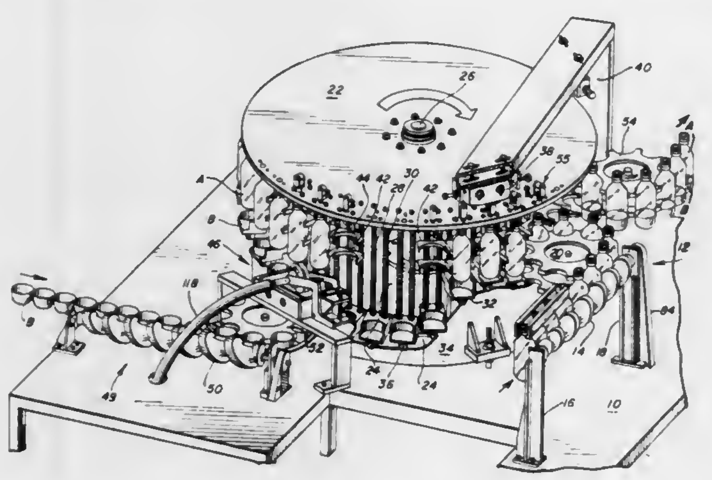
Seymour Hartman, Mahopac, and Timothy M. Brown, Holmes, both of N.Y., assignors to Champion International Corporation, Stamford, Conn.
Continuation of Ser. No. 177,471, Aug. 12, 1980, abandoned. This application Sep. 30, 1982, Ser. No. 430,186
Int. Cl.^{3} C09J *1/00*
U.S. Cl. 156—291 **10 Claims**

1. A process for making wood laminates from a plurality of wood plies which comprises:

(a) applying an adhesive to mating surfaces of a plurality of wood plies in an amount of from 70 to 90 pounds per thousand square feet of double glue line, the adhesive consisting essentially of a condensation product of a phenol and an aldehyde having a molar ratio of phenol to aldehyde in the range of 1:1.5 to 1:2.5, an alkaline catalyst selected from the group consisting of alkali metal and alkaline earth metal hydroxides, from 20% to 35% of bentonite clay based on the weight of condensation product solids;
(b) assembling a panel of the plurality of wood plies by mating the surfaces to which the adhesive has been applied;
(c) pressing the assembled plies under pressure for a time effective to create a bond of sufficient strength between them to hold them together in a unitary, consolidated panel; and
(d) pressing the consolidated panel under conditions of pressure, temperature and time effective to cure the adhesive.

4,441,955
BASE CUP APPLICATOR

Bryan D. Richardson, Good Hope, and Shelton E. Lewis, Norcross, both of Ga., assignors to Standard Oil Company (Indiana), Chicago, Ill.
Filed Aug. 5, 1982, Ser. No. 405,554
Int. Cl.^{3} B29D *3/00*
U.S. Cl. 156—423 **2 Claims**

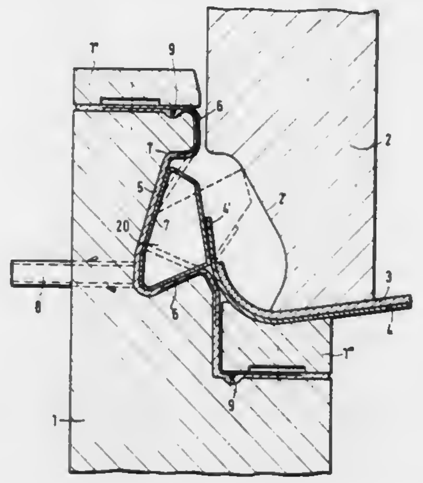


1. Apparatus for applying base cups to the bottoms of rounded bottom containers comprising:

(1) upper and lower circular driven support plates,
(2) U-shaped bottle holders mounted below said upper support plate,
(3) a plurality of internal gripper assemblies including an upwardly biased internal gripper mounted on said upper support plate,
(4) vertical support means extending between said support plates,
(5) a first cam surrounding said lower support plate,
(6) vertically movable shoes mounted on said support means adapted to be driven vertically by said cam,
(7) bottle supply means adapted to supply bottles to said machine at a first position,
(8) a second cam mounted above said upper circular support plate at a location downstream of said first position adapted to depress an internal gripper into the neck of a container,
(9) a first portion of said first cam aligned with said second cam adapted to raise a shoe thereby pushing a container upwardly onto a depressed internal gripper at a second location,
(10) a second portion of said first cam being adapted to permit movement of said shoes to a lowermost position,
(11) means to supply base cups to said shoes in said lowermost position,
(12) means to apply an adhesive to the bottoms of said containers at a third position,
(13) a third portion of said first cam downstream of said third position adapted to raise said shoes to a position where a base cup is pressed onto the bottom of a container in a fourth position,
(14) a third cam mounted above said upper transport member adapted to release a bottle from an internal gripper at a fifth position, and
(15) bottle removal means at a sixth position.

4,441,956
APPARATUS FOR TUCKING THE EDGE ZONE OF A SURFACE COVERING OVER A SUPPORTING EDGE

Günter H. Kiss, Gustav-Freytag-Strasse 7, D-1000 Berlin 33, Fed. Rep. of Germany
Filed Jul. 1, 1982, Ser. No. 394,272
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1981, 3127203
Int. Cl.^{3} B32B *31/00*
U.S. Cl. 156—479 **16 Claims**

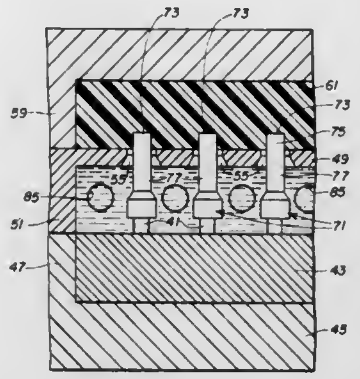


1. Apparatus for tucking the edge zone of a surface covering over a supporting edge, the apparatus comprising, in combination:

a pair of support members which respectively include contact surfaces in spaced relationship with each other to define an enlarged opening therebetween;
means for maintaining a surface covering and a supporting edge between the support members with the edge zone of the surface covering overlapping said edge and extending into the enlarged opening, the edge including at least one corner portion;
a flexible impermeable turn-over membrane disposed within the enlarged opening in position to move toward and away from the edge zone;
a deformable fold-over member located within the opening between the turn-over membrane and the edge zone, the fold-over member being formed as a shaped tube and being filled with resilient foam at the locations of said at least one corner portion of the surface covering; and
means for applying pressure to the turn-over membrane to move the membrane and the associated fold-over member toward the edge zone and thereby urge said edge zone over its supporting edge, the filling of resilient foam serving to prevent the shaped tube of the fold-over member from kinking at the locations of the at least one corner portion.

4,441,957
METHOD FOR SELECTIVELY ETCHING INTEGRAL CATHODE SUBSTRATE AND SUPPORT

Wayne R. Poff, Lancaster, and Donald W. Bartch, Wrightsville, both of Pa., assignors to RCA Corporation, New York, N.Y.
Filed Nov. 25, 1980, Ser. No. 210,246
Int. Cl.^{3} C23F *1/02;* H01L *21/312*
U.S. Cl. 156—656 **9 Claims**



1. In a method for preparing an integral cathode substrate and support including

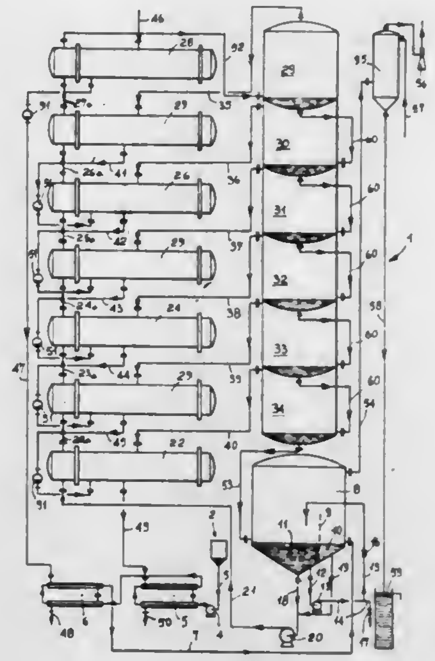
(a) providing a formed metallic part, said part including a cathode substrate and an integral support therefore,
(b) masking selected portions of the surface of said part with an etch-resistant mask,
(c) etching the unmasked portions of said surface to a desired depth
(d) and then removing said mask, the improvement wherein said masking step is conducted by providing a chamber around said part and pressing surface portions of an etch-resistant, compressible sheet against said selected surface portions of said part, said sheet constituting one wall of said chamber, and wherein said etching step is conducted by passing a liquid etchant through said chamber into contact with said unmasked surface portions of said part.

4,441,958
FORCED-CIRCULATION EVAPORATOR PLANT

Giampaolo Teucci, Villa Emilia, Ortignano Reggiolo, Italy
Filed Jan. 15, 1982, Ser. No. 339,676
Claims priority, application Italy, Jan. 27, 1981, 19340 A/81
Int. Cl.^{3} B01D *1/04, 1/20, 1/26*
U.S. Cl. 159—2 MS **5 Claims**

1. A forced circulation evaporator plant for processing a product to be concentrated, comprising:

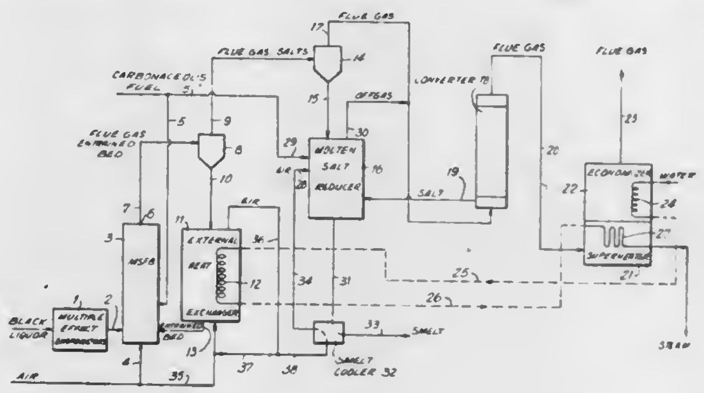
product storage means,
means for supplying a product to be concentrated to said product storage means,
a circulating pump connected to said product storage means,
a plurality of heat exchangers connected in series with one another and to said circulating pump,
a plurality of flash drums connected in series with one another and to said product storage means,
each of said flash drums being also connected to a different one of said heat exchangers, thereby respectively supplying heating vapors thereto,
product storage means having at least two compartments, a first of said compartments storing said product before concentration and a second of said compartments storing said product after concentration,
means for withdrawing said product from said first and second compartments in predetermined proportions to form a mixed product,
said mixed product circulating through said heat exchangers and flash drums in series, becoming progressively more concentrated, and returning as concentrated product to said second compartment,



and means for withdrawing said concentrated product from said second compartment for use.

4,441,959
RECOVERY OF HEAT AND CHEMICAL VALUES FROM SPENT PULPING LIQUORS

Howard L. Empie, Jr., Goshen, N.Y., assignor to International Paper Company, New York, N.Y.
Filed Jul. 21, 1982, Ser. No. 400,492
Int. Cl.^{3} D21C *11/12*
U.S. Cl. 162—30.1 **9 Claims**



1. An integrated process for the recovery of energy and chemical values from spent pulping liquors comprising an initial stage of subjecting concentrated spent pulping liquor to combustion with air in a fluidized bed reaction chamber provided with a plurality of inert solid particulate materials, at least one of which is of finer particle size than another, followed by at least one further step of treating the finer particle size inert particulate material in an external fluidized bed to recover heat values wherein at least a portion of said inert finer particle size solid particulate material is separated from the gaseous and solid combustion products produced by said combustion with air and passed to said external fluidized bed and then passed back to said fluidized bed reaction chamber; wherein said solid combustion products and said gaseous combustion products obtained from said separation are then also separated and the separated solid combustion products are passed to a molten salt reducer for recovery of smelt leaving a minor portion of said solid combustion products entrained in said gaseous combustion products; and thereafter said separated gaseous combustion products containing said remaining entrained solid combustion products are further oxidized at a

temperature greater than the melting point of said solid combustion products and molten salts are recovered from said further oxidation and fed back to the reducer.

4,441,960

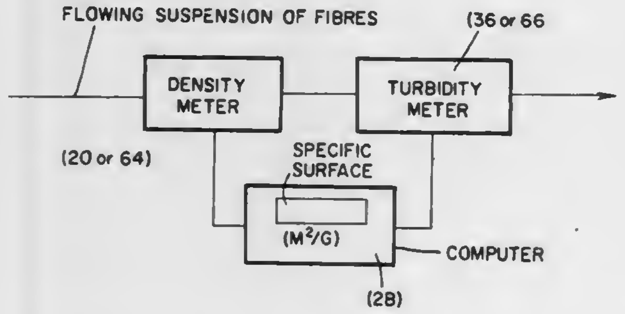
METHOD AND APPARATUS FOR ON-LINE MONITORING OF SPECIFIC SURFACE OF MECHANICAL PULPS

Alkibiadis Karnis, 487 Montcalm Ave., Dollard des Ormeaux, Quebec, Canada, and Paul M. Shallhorn, 159 Bastien, Vaudreuil, Quebec, Canada (J7V 5Y7)

Division of Ser. No. 38,631, May 16, 1979, Pat. No. 4,276,119. This application Nov. 26, 1979, Ser. No. 97,109

Int. Cl.^{3} D21F ***7/06;*** **G01N** ***21/00***

U.S. Cl. 162—49 **4 Claims**



1. An apparatus for on-line determining the specific surface of fibrillated wood fibres forming a pulp suspension, said apparatus consisting essentially of means to continuously measure the turbidity of said suspension by sensing light reflected from said suspension as said suspension continuously passes a light source, means for measuring directly density of said suspension to determine the consistency of said suspension substantially independent of other properties of said pulp suspension and means for determining said specific surface of said fibres based on a predetermined relationship of said turbidity measurement and said consistency to specific surface.

3. A method of on-line determining the specific surface of fibrillated wood fibres forming a pulp suspension, said method consisting essentially of: continuously measuring the turbidity of said suspension by sensing light reflected from said suspension as said suspension continuously passes a light source, measuring the density of said suspension to determine the consistency of said suspension substantially independent of other properties of pulp suspension and determining the specific surface of said suspension fibres based on a pre-determined relationship of said turbidity measurement and said consistency measurement to specific surface.

4,441,961

PULP INSULATED TELECOMMUNICATIONS CONDUCTOR

John F. Porter, St. Catharines; Joerg-Heim J. Walling, Beaconsfield, and Oleg Axiuk, Pincourt, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Sep. 27, 1982, Ser. No. 424,086

Int. Cl.^{3} D21D ***3/00***

U.S. Cl. 162—106 **9 Claims**

1. A method of making pulp insulated telecommunications conductor comprising:

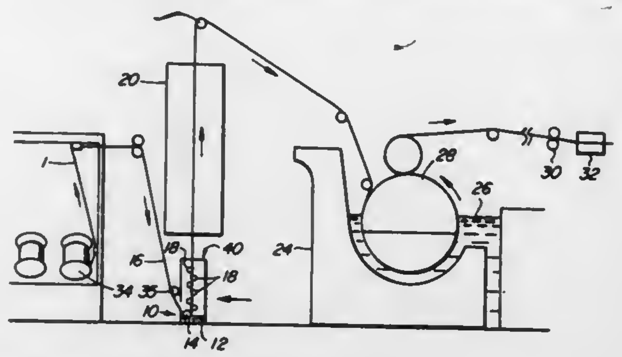
passing the conductor around a first roll while immersed in a bath of acrylic resin solution to provide the conductor with a covering layer of solution;

passing the conductor along its feedpath at a controlled speed and successively into contact with wiping rolls of a series of wiping rolls which are staggered alon sides of the path of the conductor while rotating the rolls to provide a differential speed between the rolls and the conductor to create a wiping action, the speed of rotation of the rolls and their distance apart being controlled to determine both the angle of contact with the conductor and the differential speed of the conductor and the peripheral surface of the rolls to provide, after the further steps in the method, a dried thickness of resin of no greater than 0.00015 inches;

passing the coated conductor through a solution drying oven to dry the coating to make it resistant to migration from the conductor while immersed in a pulp bath downstream of the oven;

coating the adhesive coated conductor with pulp in a pulp bath; and

drying the pulp and the adhesive coating, the coating producing a solidified layer which adhesively retains fibers from the pulp upon the conductor.



4,441,962

SOFT, ABSORBENT TISSUE PAPER

Thomas W. Osborn, III, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 197,291, Oct. 15, 1980, abandoned. This application Jul. 30, 1982, Ser. No. 403,700

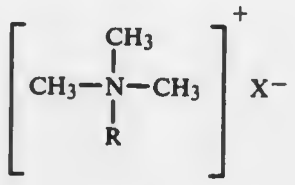
Int. Cl.^{3} D21H ***3/12, 5/24***

U.S. Cl. 162—111 **18 Claims**

1. A process for making a soft, absorbent tissue paper web comprising the steps of forming an aqueous papermaking furnish, depositing said furnish on a foraminous surface, removing the water from said furnish, and enhancing the strength of the web so formed wherein said aqueous papermaking furnish comprises:

(a) papermaking fibers;

(b) at least one quaternary ammonium compound having the structure



$$\left[\begin{array}{c} CH_3 \\ | \\ CH_3-N-CH_3 \\ | \\ R \end{array}\right]^+ X^-$$

wherein R is an aliphatic hydrocarbon radical selected from the group consisting of alkyl radicals having from about 12 to about 18 carbon atoms, alkylene radicals having from about 12 to about 18 carbon atoms, coconut, and tallow, and X is halogen;

(c) at least one nonionic surfactant selected from the group consisting of

(1) ethylene oxide adducts of fatty alcohols; and

(2) ethylene oxide adducts of fatty acids

wherein said fatty alcohols and fatty acids each have from about 12 to about 18 carbon atoms and wherein said adducts contain from about 2 to about 12 moles of ethylene oxide;

wherein said quaternary ammonium compound is present at from about 0.5 to about 5.0 grams per kilogram of paper making fiber and said nonionic surfactant is present at from about 0.5 to about 5.0 grams per kilogram of papermaking fiber.

4,441,963

DISTILLATION APPARATUS

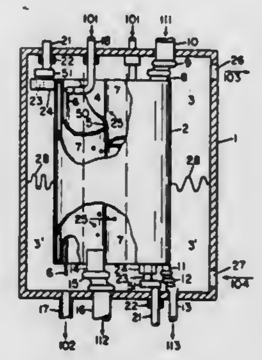
Yao T. Li, Huckleberry Hill, Lincoln, Mass. 01773

Continuation of Ser. No. 201,380, Oct. 27, 1980, abandoned, which is a continuation-in-part of Ser. No. 961,452, Nov. 16, 1978, Pat. No. 4,230,529. This application Apr. 7, 1982, Ser. No. 367,251

The portion of the term of this patent subsequent to Oct. 28, 1997, has been disclaimed.

Int. Cl.^{3} B01D ***1/22, 1/26, 1/28***

U.S. Cl. 202—172 **31 Claims**



1. Distillation apparatus comprising

an even number of pairs of vertically aligned heat transfer tube groups,

means for mounting each of said pairs of tube groups symmetrically aligned about an associated vertical axis and with two of said pairs of tube groups arranged with a mutual angular displacement that has a criss-cross configuration in a plane transverse to said associated vertical axes, said mounting means including means for restraining said tube groups from rotation about said vertical axis while allowing them to wobble,

means to drive said mounting means and said pairs of heat transfer tube groups about wobbling centers each associated with one of said pairs of tube groups and located along said associated vertical axis, said drive means including a common drive shaft and a plurality of eccentric drive systems each connected between said drive shaft and an associated one of said pairs of tube groups, said drive means and said mounting means providing a dynamic self balancing of said tube groups during said wobbling, and

means to direct a stream of fluid toward the inner surface of each of said transfer tubes, the wobbling motion imparted to each of said transfer tubes serving to cause said fluid stream to cling to the inner surface of the transfer tube away from the wobbling center whereby the resulting revolving flow stream serves to wipe the inside surface of the transfer tube to form a thin film with low heat resistance and thus to facilitate evaporation and carry the residue and reflux downward with low resistance.

4,441,964

METHOD OF DEPOSITING A METAL

Franciscus E. P. Mikkers, and Peter E. Wierenga, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

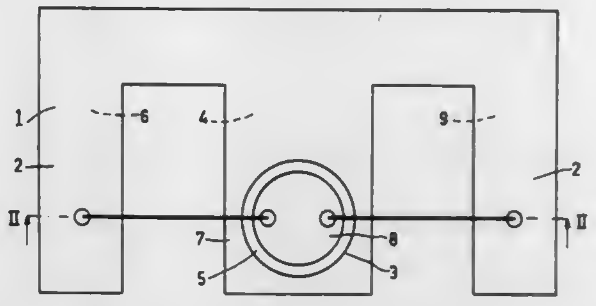
Filed Jan. 21, 1983, Ser. No. 459,859

Claims priority, application Netherlands, Feb. 15, 1982, 8200561

Int. Cl.^{3} C25D ***5/02***

U.S. Cl. 204—15 **6 Claims**

1. A method of depositing a metal on a heat-conducting metallic substrate, in which a surface of the substrate is irradiated at at least one area by a laser beam, while said metallic substrate is in a metal deposition bath and the metal is deposited from the bath on said irradiated surface on the substrate, characterized in that the metal is deposited on a layer of the substrate which is located at the irradiated area and in its non-irradiated surroundings and has a thermal conductivity which is smaller than the thermal conductivity of the metal of the substrate adjoining the layer, the ratio between the thermal conductivity of the material of said layer and that of the adjoining substrate being smaller than ratio between the thickness of said layer and the diameter of said laser beam.



4,441,965

CODEPOSITION METHOD

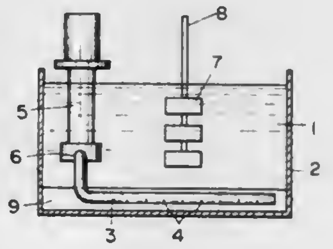
Sowjun Matsumura, Toyonaka; Ken Araki, Ibaragi; Tetsuo Otaka, Kashiwa, and Masumi Tanigawa, Hirakata, all of Japan, assignors to C. Uyemura & Co., Ltd., Osaka, Japan

Filed May 20, 1983, Ser. No. 496,396

Claims priority, application Japan, May 21, 1982, 57-87076

Int. Cl.^{3} C25D ***15/02***

U.S. Cl. 204—16 **9 Claims**



1. The method for codepositing a water-insoluble material with a metal from a plating solution having the metal ion dissolved and the water-insoluble material suspended therein, characterized by pumping at least one third per minute of the volume of the plating solution by means of a pump without entraining air bubbles, and injecting the thus pumped volume downward into the bath through a plurality of holes in the lower side of a sparger pipe connected to said pump and located at a lower level in a plating tank, thereby circulating and fluidizing the plating solution in which codeposition is being carried out.

4,441,966

ELECTROPLATING APPARATUS AND METHOD

Tsutomu Onda, Nishio; Keiichi Kano, Nagoya, and Shinji Itakura, Hekinan, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Oct. 16, 1981, Ser. No. 312,354

Claims priority, application Japan, Oct. 16, 1980, 55-144889

Int. Cl.^{3} C25D ***7/04, 17/00, 17/06***

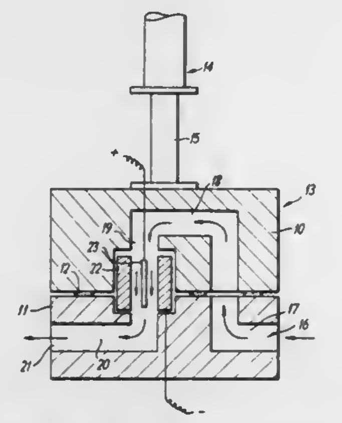
U.S. Cl. 204—26 **7 Claims**

5. A method of electroplating an article, said method comprising the steps of:

(a) providing a first member having therein an inlet port into which plating fluid is supplied during plating operations, a first passageway in fluid communication with said inlet port and with a working face of said first member, an outlet port, and a third passageway in fluid communication with said outlet port and with said working face of said first member;

(b) providing a second member having therein a second

passageway in fluid communication at both ends with a working face of said second member;
(c) the working faces of said first and second members defining a chamber therebetween which is in fluid communication with one end of said second passageway and with either said first passageway or said second passageway during plating operations, the other of said first or second passageways being simultaneously in fluid communication with the other end of said second passageway;
(d) placing the article to be plated in said chamber;



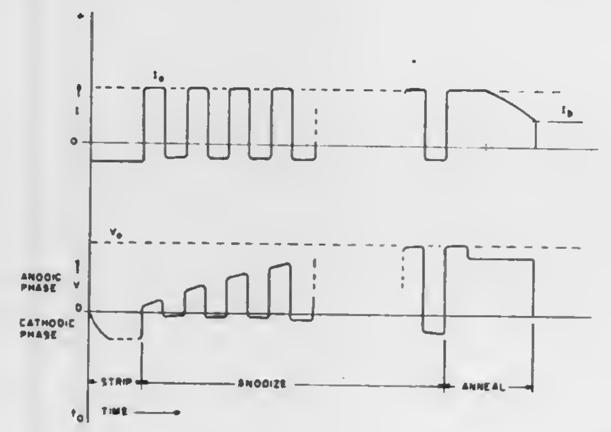
(e) connecting a first electrode means to the article to be plated;
(f) providing a second electrode means in position to cooperate with said first electrode means to electroplate the article;
(g) causing the plating fluid to flow through said chamber in one direction without doubling back on itself; and
(h) providing an electroplating voltage differential between said first and second electrodes.

4,441,967

METHOD OF PASSIVATING MERCURY CADMIUM TELLURIDE USING MODULATED DC ANODIZATION

Juergen L. W. Pohlmann, Alexandria, Va., and Michael Martinka, Gaithersburg, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 23, 1982, Ser. No. 452,681
Int. Cl.^{3} C25D *11/32*
U.S. Cl. 204—29 **5 Claims**



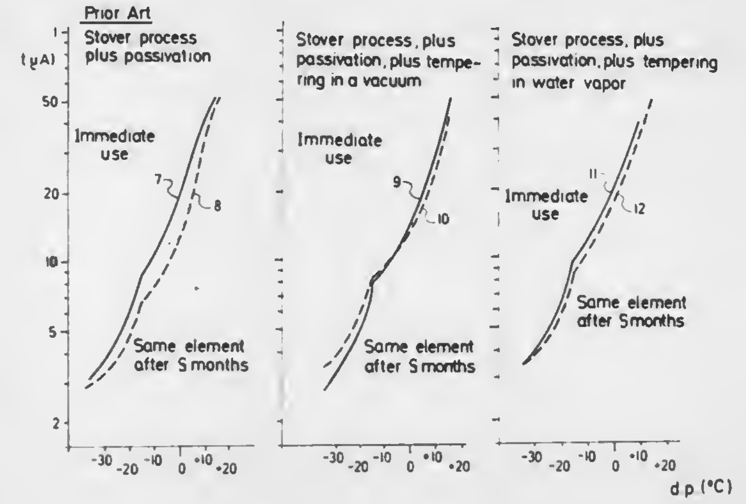
1. In a method of passivating a mercury cadmium telluride surface on a workpiece comprised of a mercury cadmium telluride layer on a substrate, wherein the workpiece is passivated by the following steps:
attach the workpiece to one electrode of an electrolytic circuit;
immerse the workpiece in an electrolyte in which a second electrode of said electrolytic circuit is immersed; the improvement comprising the following steps:
energize the electrolytic circuit with the workpiece as the cathode in the circuit, to strip surface oxide layers from the layer surface;
energize said electrodes to anodize the layer surface with a generally square current wave having an anodic phase wherein the workpiece is energized as the anode in said electrolytic circuit and a cathodic phase in which the workpiece is energized as the cathode in said electrolytic circuit, and wherein the current in the cathodic phase is less than the current in the anodic phase, and, when a predetermined voltage is reached between said electrodes;
energize with the workpiece as the anode using an essentially constant voltage until the current drops to a predetermined value to anneal the workpiece; and
remove the workpiece from the electrolyte and deenergize said circuit.

4,441,968

METHOD OF MANUFACTURE OF AN ELECTRIC HUMIDITY DETECTING SENSING ELEMENT

Ivan Emmer; Zdenek Hajek, and Petr Repa, all of Prague, Czechoslovakia, assignors to Matematicko-fyzikalni fakulta University Karlovy v Praze, Prague, Czechoslovakia

Continuation-in-part of Ser. No. 158,819, Jun. 12, 1980, abandoned. This application Dec. 1, 1981, Ser. No. 326,285
Claims priority, application Czechoslovakia, Jul. 12, 1979, 4887-79
Int. Cl.^{3} C25D *11/18;* G01N *25/56*
U.S. Cl. 204—35 N **5 Claims**



1. In a method of manufacturing an electric humidity detecting sensing element by anodically oxidizing a polished aluminum surface by alternating current of a density of about 12 mA/sq.cm using an electrolyte of 50% sulphuric acid at a temperature of 33° C. for 25 minutes to provide a porous layer of aluminum oxide and sealing the porous layer in boiling water, the improvement in combination therewith which comprises prior to preparing an upper electrode, tempering said layer for a time ranging from 2 to 24 hours at a temperature of from 70° to 110° C. in an atmosphere which is chemically inert relative to said aluminum oxide layer, said atmosphere containing water vapor in an amount of from zero to that corresponding to the dew point of 65° C., thereby stabilizing surface properties of said layer with respect to a reversible absorption of water vapor.

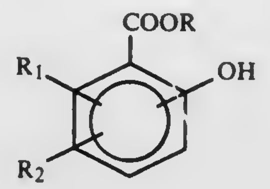
4,441,969

COUMARIN PROCESS AND NICKEL ELECTROPLATING BATH

Robert A. Tremmel, Woodhaven, Mich., assignor to OMI International Corporation, Warfen, Mich.

Filed Mar. 29, 1982, Ser. No. 362,940
Int. Cl.^{3} C25D *3/18*
U.S. Cl. 204—49 **36 Claims**

1. An aqueous acidic nickel electroplating bath comprising a coumarin compound and an aryl hydroxy carboxylic acid compound corresponding to the following general structural formula:



wherein:
R is —H, or M, wherein M is a bath soluble cation,
R_1 is —H, —OH, $—CH_3$, $—C_2H_5$, $—OCH_3$, $—OC_2H_5$, or a halogen,
R_2 is —H, —COOH, $—CH_3$, $—C_2H_5$, $—OCH_3$, $—OC_2H_5$, or a halogen,
as well as mixtures thereof; present in a combined amount effective to provide a ductile, self-leveling semi-bright nickel deposit.

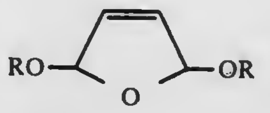
4,441,970

ELECTROCHEMICAL PREPARATION OF 2,5-DIALKOXY-2,5-DIHYDROFURANS

Dieter Degner, Dannstadt-Schauernheim, and Heinz Hannebaum, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 18, 1982, Ser. No. 435,037
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1981, 3142626
Int. Cl.^{3} B01D *3/34*
U.S. Cl. 204—59 R **14 Claims**

1. A process for the preparation of a 2,5-dialkoxy-2,5-dihydrofuran of the formula



I

where R is alkyl of 1 to 4 carbon atoms, which comprises:
electrochemically oxidizing 2,5-dihydrofuran in an electrolyte containing an alkanol of the formula ROH.

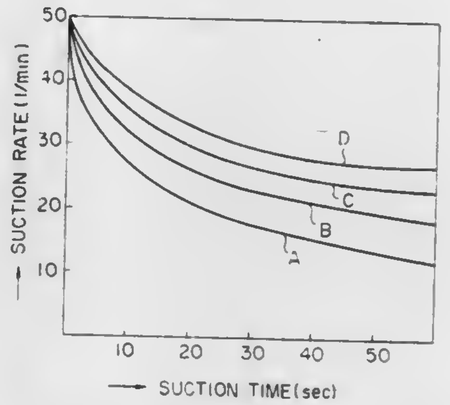
4,441,971

PROCESS AND APPARATUS FOR REDUCING SOOT

Tomoji Ishiguro, and Yoshimi Kizaki, both of Nagoya, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Japan

Continuation of Ser. No. 185,571, Sep. 9, 1980, abandoned. This application Dec. 23, 1982, Ser. No. 452,868
Claims priority, application Japan, Sep. 20, 1979, 54-121331; Mar. 6, 1980, 55-28952
Int. Cl.^{3} F01N *3/00;* B01J *1/00, 8/00*
U.S. Cl. 204—164 **3 Claims**

1. A process for reducing soot in exhaust gases from an automobile Diesel engine which comprises:
introducing soot-containing exhaust gases from an automobile Diesel engine into a container;
applying to said soot-containing exhaust gases an alternating or pulsating voltage in the range of from 100 v/cm to 10,000 v/cm and having a frequency in the range of from 10 Hz to 250 Hz to break masses of soot particles, each mass having a diameter of at least 0.2 micron, into individual finer particles, each having a diameter not greater than several hundred angstroms; and
discharging said gases out of said container.

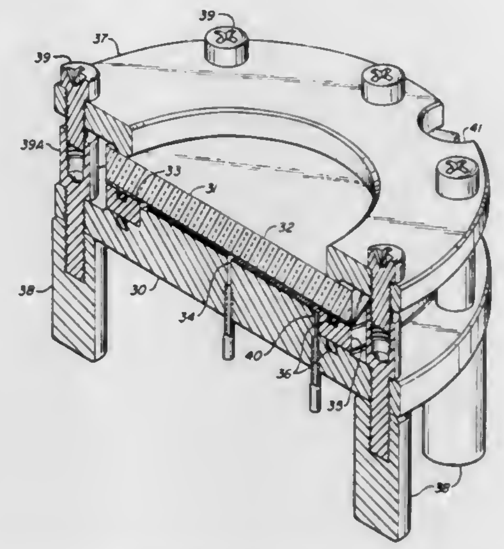


4,441,972

APPARATUS FOR ELECTROFUSION OF BIOLOGICAL PARTICLES

Herbert A. Pohl, Stillwater, Okla., assignor to D.E.P. Systems, Inc., Metamora, Mich.

Filed Apr. 8, 1983, Ser. No. 483,290
Int. Cl.^{3} B01D *57/02*
U.S. Cl. 204—180 R **7 Claims**



1. A method for fusing neutral polarizable bodies comprising the steps of
generating a non-uniform electric field in a chamber defined by at least two parallel and cofacially disposed electrodes, at least one of said electrodes having a surface comprising a plurality of substantially concentric grooves, and said chamber provided with inlet means being centrally disposed to said grooves;
introducing said bodies into said chamber through said inlet means;
exposing said bodies in said chamber to said field to align said particles contiguously between said electrodes;
imposing a direct current impulse to said electrodes, thereby fusing said contiguously aligned said bodies;
withdrawing the fused bodies from said chamber.

4,441,973
METHOD FOR PREPARING A THIN FILM AMORPHOUS SILICON HAVING HIGH RELIABILITY

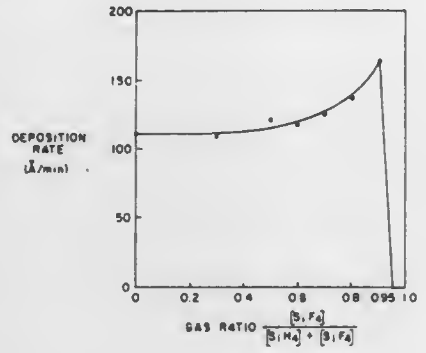
Kesao Noguchi, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jul. 29, 1981, Ser. No. 287,940

Claims priority, application Japan, Jul. 30, 1980, 55-104518

Int. Cl.^{3} C23C *15/00*

U.S. Cl. 204—192 N **23 Claims**



1. A method for preparing a semiconductor film by utilizing an ion-plating method, comprising the steps of disposing a substrate within a reaction chamber, providing a semiconductor material, applying an ion accelerating voltage between said substrate and said semiconductor material, evaporating said semiconductor material to supply an evaporated semiconductor gas into said reaction chamber, introducing a fluoride gas of semiconductor material into said reaction chamber, generating a high frequency electric field within said reaction chamber, and controlling a gas pressure within said reaction chamber so that said high frequency electric field causes ionization of said evaporated semiconductor gas but precludes a sputtering of said semiconductor material, whereby said evaporated semiconductor gas is ionized within said reaction chamber and an amorphous semiconductor film containing fluorine is deposited on said substrate.

4,441,974
MAGNETRON SPUTTERING APPARATUS

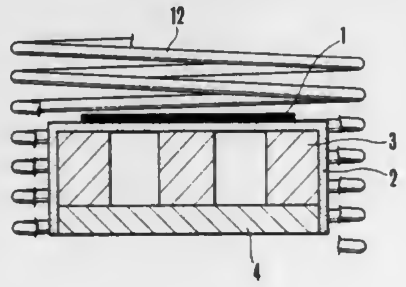
Reiji Nishikawa; Shozo Satoyama, both of Yokohama; Yoshinori Ito, Chigasaki, and Hidetaka Jyo, Sagamihara, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki and Tokuda Seisakusho, Ltd., Zama, both of, Japan

Filed Apr. 28, 1983, Ser. No. 489,593

Claims priority, application Japan, Apr. 30, 1982, 57-71556

Int. Cl.^{3} C23C *15/00*

U.S. Cl. 204—192 R **16 Claims**



1. A magnetron sputtering apparatus comprising a sputtering chamber; a substrate and target disposed within said sputtering chamber to form a desired space therebetween; means for applying a voltage between said substrate and target; and means for producing a magnetic field so that the direction of the magnetic field is inverted on the magnetic symmetry axis within said space.

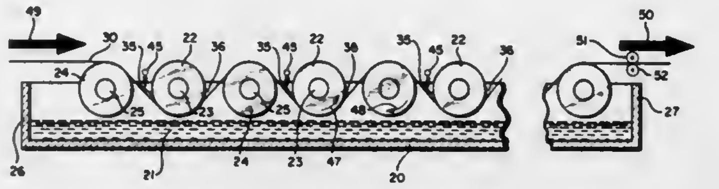
4,441,975
ELECTROTREATING APPARATUS WITH ELECTRODE ROLL

William A. Carter, Munster, and Frank A. Martin, Merrillville, both of Ind., assignors to Inland Steel Company, Chicago, Ill.

Filed Feb. 17, 1983, Ser. No. 467,360

Int. Cl.^{3} C25D *17/00, 17/12*

U.S. Cl. 204—206 **7 Claims**



1. In an apparatus for conducting an electrotreating operation on a continuous metal strip:
- a cylindrical electrode roll composed of electrically conductive material and having an outer surface;
- said electrode roll having an initial outside diameter;
- means for wrapping a portion of a continuous metal strip around a portion of said electrode roll;
- a porous mesh layer, composed of non-conductive material, disposed around said outer surface of the electrode roll;
- said mesh layer comprising means for maintaining said wrapped-around portion of the metal strip in non-contacting, spaced relation to said outer surface of the electrode roll;
- means for introducing an electrolytic liquid into the space between said metal strip and said outer surface of the electrode roll;
- said porous mesh layer comprising means for maintaining said electrolytic liquid in said space while said strip portion is wrapped around said portion of the electrode roll;
- said last recited means comprising means on said porous mesh layer defining, on the outer surface of the electrode roll, a plurality of open sites separated by side walls;
- the width of said side walls being relatively small compared to the width of said open site;
- and means fixedly securing said mesh layer to said outer surface for maintaining the outside diameter of said electrode roll at said initial diameter substantially throughout said electrotreating operation.

4,441,976
DEVICE FOR ELECTROLYTIC SURFACE TREATMENT OF MECHANICAL WORKPIECES

Giuliano Iemmi; Michele Raimondo, and Luigi Mo, all of Turin, Italy, assignors to Centro Ricerche Fiat S.p.A., Turin, Italy

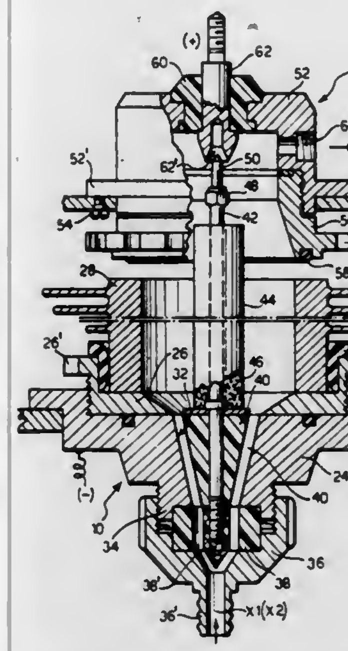
Filed Oct. 29, 1981, Ser. No. 316,389

Claims priority, application Italy, Oct. 29, 1980, 68650 A/80

Int. Cl.^{3} C25D *17/04, 17/06, 7/04*

U.S. Cl. 204—224 M **7 Claims**

1. A device for electrolytic surface treatment of mechanical workpieces, including a head and a counter-head, respective support means for the head and the counter-head, the head and counter-head having respective parts which can be applied in a liquid-tight manner against respective ends of a said workpiece arranged vertically, an anode arranged to extend along the axis of said workpiece in use, and means for circulating a liquid electrolyte around a closed circuit taking it through the interior of said workpiece, said circulation means including a reservoir spaced from the head and counter-head and a circulation pump, wherein the improvement consists in:
- the head being electrically-conductive to provide a cathode contact for said workpiece, and being mounted fixedly in a working plane by its said support means;
- the counter-head being supported by its said support means in such a way as to be movable towards and away from the head;
- means being provided to urge the counter-head axially against the upper end of said workpiece when the latter is resting vertically on the head;
- electrically-insulating means supporting the base of said anode on the head,
- the anode having a contact terminal at its upper end, and the counter-head having a central anode current contact member engaging the said contact terminal when the counter-head is pressed against the workpiece, and



- the head and the counter-head defining respective passages for the entry of said electrolyte at one end of the workpiece and the exit of the electrolyte from the other end of the workpiece.

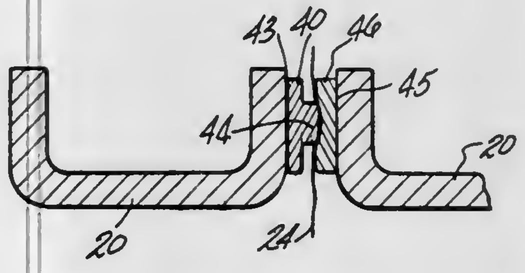
4,441,977
ELECTROLYTIC CELL WITH SEALING MEANS

James M. Ford, Cleveland, Tenn., assignor to Olin Corporation, New Haven, Conn.

Filed Nov. 5, 1980, Ser. No. 204,127

Int. Cl.^{3} C25B *9/00, 13/08*

U.S. Cl. 204—252 **8 Claims**



1. An electrolytic cell which comprises:
- a. a first frame member housing an electrode,
- b. a second frame member housing an electrode,
- c. a separator positioned between said first frame member and said second frame member,
- d. a first sealing means contacting a planar side of said first frame member and one side of said separator,
- e. a second sealing means contacting a planar side of said second frame member, said second sealing means having a level first portion and a level second portion separated by a raised portion, said raised portion contacting the other side of said separator, the area of contact between said raised portion of said second sealing means and said separator is less than the area of contact between said first sealing means and said separator, and
- f. pressing means for pressing said frames together against said sealing means and said separator so as to form a substantially fluid-tight seal.

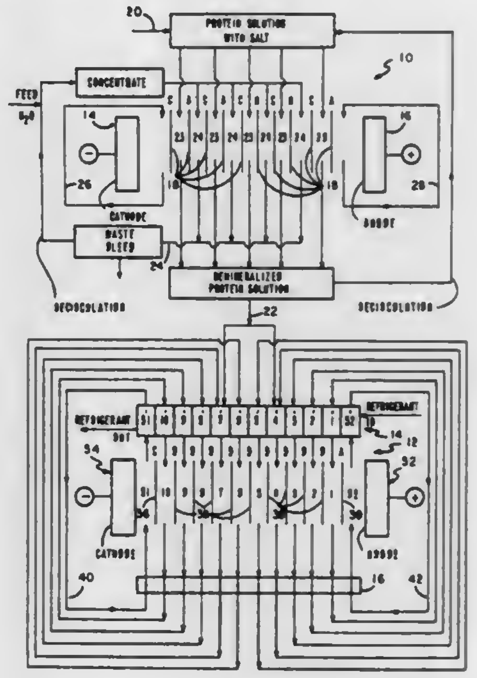
4,441,978
SEPARATION OF PROTEINS USING ELECTRODIALYSIS - ISOELECTRIC FOCUSING COMBINATION

Surendar M. Jain, Watertown, Mass., assignor to Ionics Incorporated, Watertown, Mass.

Division of Ser. No. 278,267, Jun. 29, 1981, Pat. No. 4,396,477. This application Feb. 16, 1983, Ser. No. 466,821

Int. Cl.^{3} B01D *13/02*

U.S. Cl. 204—301 **4 Claims**



1. Apparatus for the treatment of protein containing liquids comprising an electrodialysis membrane cell for desalting said liquids having substantially alternating desalting and concentrating chambers in combination with a isoelectric focusing membrane cell having substantially parallel channels with conduit means for passing the resulting desalted liquids from said electrodialysis cell into a reservoir and further conduit means for passing the said liquid to said channels of said isoelectric focusing cell.

4,441,979
NUTATING PROBE FOR GAS ANALYSIS

Leo L. Dailey, Philadelphia, Pa., assignor to Fischer & Porter Company, Warminster, Pa.

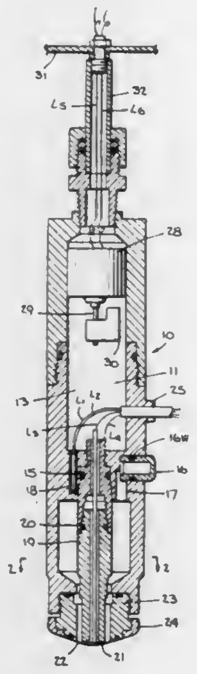
Filed May 31, 1983, Ser. No. 499,777

Int. Cl.^{3} G01N *27/30*

U.S. Cl. 204—402 **9 Claims**

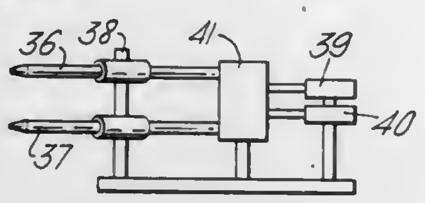
1. A probe immersible in a liquid having a gas dissolved therein and adapted to continuously and accurately measure the concentration of the gas, said probe comprising:
- A. a hollow casing provided with an upper motor chamber and a lower chamber having an open mouth, the casing being supported in a vertical position for immersion in the liquid by a flexible coupling attached to the upper end thereof, whereby the probe is deflectable from its normal vertical axis;
- B. a noble metal measuring electrode disposed in said electrolyte chamber adjacent said open mouth;
- C. a diffusing membrane covering said open mouth, said membrane being permeable to the gas to be measured;
- D. an oxidizable metal counter-electrode disposed in said electrolytic chamber, the chamber being filled with an electrolyte which bridges the electrodes to form a gas-sensitive electro chemical cell generating a current which is a function of the dissolved gas diffusing through said membrane; and
- E. a motor mounted in said motor chamber and having a shaft to which is attached an unbalanced rotor mass,

whereby when the motor is energized, the rotating mass causes the probe to nutate relative to its normal vertical axis to simulate the effect of a rapid flow of the liquid relative to the membrane.



4,441,980
APPARATUS FOR DETERMINING UNDERWATER POTENTIAL DIFFERENCES EMPLOYING LUGGINS TUBULUS

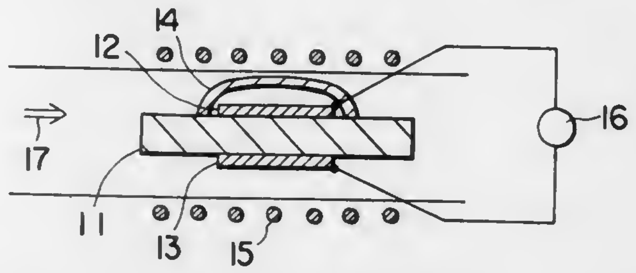
Michael A. Warne, Brewood, England, assignor to Global Cathodic Protection Ltd., Shropshire, England
Filed May 4, 1982, Ser. No. 374,727
Claims priority, application United Kingdom, May 9, 1981, 8114232
Int. Cl.³ G01N *27/30*
U.S. Cl. 204—409 **20 Claims**



1. Apparatus for use in measuring an electric potential at or a potential difference between each of two spaced underwater positions, the apparatus including two probe tubes, each probe tube having an outer open end and an inner end which is capable of being electrically coupled to the outer end by fluid means within the tube, fluid coupling valve means, a reference electrode or half cell, the inner end of each probe tube being connected to the fluid coupling valve means for selective coupling of electric current at said outer end via fluid means to the reference electrode or half cell, a further electrode, and means to determine the difference between the potential at the outer open end of a tube as it appears at the reference electrode or half cell and the potential at the further electrode.

4,441,981
GAS SENSOR

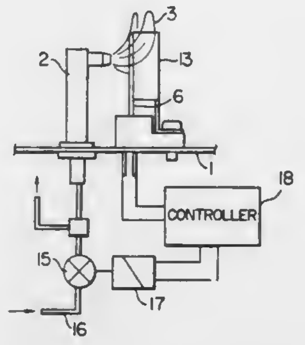
Hiroshi Okamoto, Ohme; Michiharu Seki, Kodaira, and Hidehito Ohayashi, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation of Ser. No. 36,862, May 7, 1979, abandoned. This application Jul. 15, 1980, Ser. No. 169,137
Claims priority, application Japan, May 10, 1978, 53-54501
Int. Cl.³ G01N *27/58*
U.S. Cl. 204—426 **19 Claims**



1. A gas sensor comprising a solid electrolyte which has an oxygen ion conductivity, a first electrode which is covered with an oxidizing catalyst for oxidizing a combustible gas to-be-detected contained in air, and a second electrode which is made of the same material as that of said first electrode and having a surface that comes into direct contact with the air containing the gas to-be-detected, said oxidizing catalyst and said first and second electrodes being disposed on said solid electrolye, and means for causing the air containing the gas to-be-detected to contact the oxidizing catalyst covering the first electrode and the contact surface of the second electrode so that the concentration of the combustible gas contained in the air is sensed and known from an electromotive force generated across said first and second electrodes.

4,441,982
COMBUSTION SENSING APPARATUS

Sadayasu Ueno, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed May 12, 1982, Ser. No. 377,411
Claims priority, application Japan, May 15, 1981, 56-72352
Int. Cl.³ G01N *27/58;* F23N *5/00*
U.S. Cl. 204—426 **5 Claims**



1. A combustion sensing apparatus comprising a combustion sensor disposed in the vicinity of a burner and a flame jetted thereby, said combustion sensor being formed of a solid electrolyte having a cathode formed on a surface of the solid electrolyte that is oriented so as to be subjected to the flow of a hot combustion gas produced in the vicinity of said flame, and an anode formed on a surface of said solid electrolyte subjected to an atmosphere of a reference gas, characterized in that said solid electrolyte has a tabular form and is provided with said anode and cathode on opposite surfaces of a free end thereof, said apparatus further having a shielding member mounted to a support means so as to be positioned adjacent the side of the free end of the solid electrolyte upon which said anode is formed in a manner so as to prevent the flame jetted from said burner from extending to the same side of said solid electrolyte as said anode.

4,441,983
ZINC SULFIDE LIQUEFACTION CATALYST

Diwakar Garg, Macungie, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.
Filed Aug. 19, 1982, Ser. No. 409,469
Int. Cl.³ C10G *1/08*
U.S. Cl. 208—10 **6 Claims**

1. In a process for the liquefaction of solid carbonaceous material at elevated temperature and pressure in the presence of a solvent for the carbonaceous material, hydrogen and a hydrogenation catalyst to produce a predominantly liquid product, the improvement comprising the use of an activated zinc sulfide hydrogenation catalyst which is activated by subjecting preformed zinc sulfide to a hydrogenation atmosphere comprising substantially hydrogen at up to 900° F. in solvent for the carbonaceous material but in the absence of said carbonaceous material.

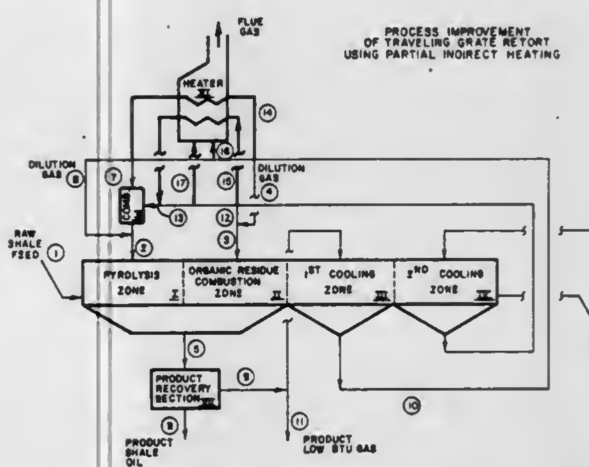
4,441,984
RECOVERY OF OIL FROM OIL-BEARING LIMESTONE

Robert P. Guerre, Seabrook, Tex., assignor to Exxon Research and Engineering Co., Florham Park, N.J.
Filed Dec. 24, 1980, Ser. No. 219,675
Int. Cl.³ C10G *1/00, 1/04*
U.S. Cl. 208—11 LE **12 Claims**

1. A process for recovering hydrocarbon liquids from oil-bearing rock composed primarily of limestone which comprises:
(a) separating said oil-bearing rock into a low density fraction containing oil-rich limestone particles and a high-density fraction containing oil-lean limestone particles;
(b) contacting said low-density fraction containing said oil-rich limestone particles with an organic solvent in an extraction zone thereby extracting said oil from said oil-rich limestone particles; and
(c) recovering the extracted oil from said organic solvent as said hydrocarbon liquids.

4,441,985
PROCESS FOR SUPPLYING THE HEAT REQUIREMENT OF A RETORT FOR RECOVERING OIL FROM SOLIDS BY PARTIAL INDIRECT HEATING OF IN SITU COMBUSTION GASES, AND COMBUSTION AIR, WITHOUT THE USE OF SUPPLEMENTAL FUEL

James E. Burchfield, Scotch Plains, and Robert C. Green, Berkley Heights, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.
Filed Mar. 8, 1982, Ser. No. 355,850
Int. Cl.³ C10G *1/00;* C10B *53/06, 49/06*
U.S. Cl. 208—11 R **5 Claims**



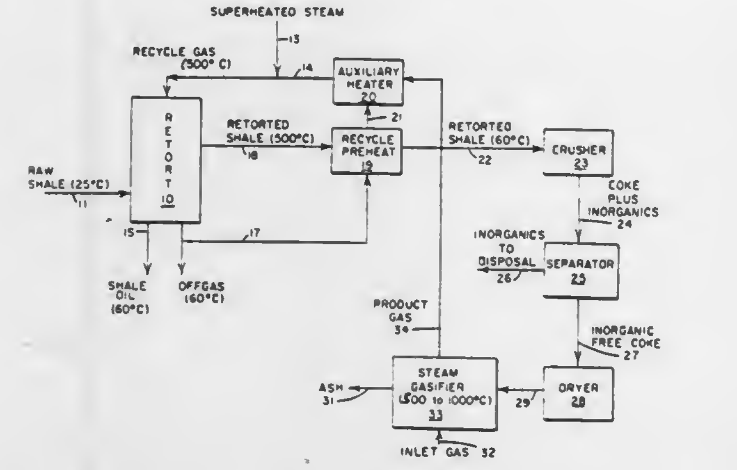
1. In a process for the recovery of an organic oil from an organic oil-bearing solid wherein said solid, in particulate form, is transported through a series of zones inclusive of a pyrolysis zone, and wherein is included an organic residue combustion zone, one of more cooling zones, an external combustor wherein product gas generated from within the process is recycled and burned with an oxygen-containing gas to supply heat for the pyrolysis zone, and a product recovery zone from which product oil and product gas produced in the pyrolysis and organic residue combustion zones are recovered,
pyrolysis is carried out in the pyrolysis zone by contacting the organic oil-bearing solid with a hot non-reactable gas essentially devoid of oxygen to remove from the solid a product organic oil and product gas, the oil-containing gas being injected into the product recovery zone,
the hot non-reactable gas employed in the pyrolysis zone is generated in situ within the process by burning some of the product gas with an oxygen-containing gas in a combustor external to the pyrolysis zone, and the combustion gases quenched with a portion of the recycled product gas as dilution gas to moderate the temperature to a satisfactory level for injection into the pyrolysis zone,
the solid, which contains an organic residue after removal of organic oil, is transported from the pyrolysis zone to the organic residue combustion zone and contacted with a recycle gas to which is added sufficient of an oxygen-containing gas to combust with the organic residue of the pyrolyzed solid to produce process heat, and the products of the combustion are injected into the product recovery zone,
the product organic oil and product gas from the pyrolysis and organic residue combustion zones are separated into a product oil, and a product gas a portion of which is heated in a cooling zone of the series and recycled, a portion of the product gas burned with an oxygen-containing gas in said combustion zone and another portion of the product gas as dilution gas used to quench and moderate the temperature of the combustion products from the combustion zone to a satisfactory level for injection into the pyrolysis zone,
the improvement comprising
adding to the process an indirect heater,
heating, in the external indirect heater, at least a portion of the recycled product gas,
burning within the external combustor, an admixture of the hot recycled product gas from the external indirect heater and an external oxygen-containing gas indirectly preheated by heat generated from within the process to form a non-reactable gas mixture essentially devoid of oxygen, and
injecting said mixture of burned gases into the pyrolysis zone to reduce the amount of combustion required for achieving the combustion gas temperature necessary for pyrolysis, to produce a gas product which can be burned with an oxygen-containing gas to supply process heat without necessity of using supplemental fuel.

4,441,986
SHALE RETORTING WITH INORGANIC REMOVAL PRIOR TO COMBUSTION

Lawrence R. Stowe, Plano, Tex., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Apr. 14, 1983, Ser. No. 484,795
Int. Cl.³ C10G *1/00*
U.S. Cl. 208—11 R **19 Claims**

1. A process for the recovery of hydrocarbon products and energy from oil shale, including separation of coke from shale, comprising:
(a) feeding raw shale into a surface retort;
(b) retorting the raw shale in the retort to recover hydrocarbon products and produce coke on the inorganic matrix;
(c) removing the retorted shale from the retort;
(d) recovering sensible heat from the retorted shale;
(e) crushing the retorted shale to a size sufficient so that the coke and inorganic matrix may be separated;

(f) separating the crushed, retorted shale into a coke fraction and an inorganic matrix fraction;



(g) contacting the coke fraction with either superheated steam or air in order to form carbonaceous product gases at a temperature of 500° to 1000° C.; and

(h) recovering process heat from said product gases.

4,441,987

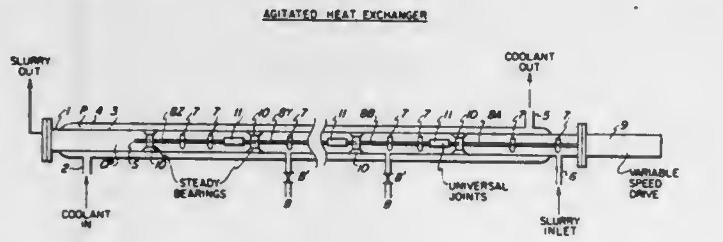
DEWAXING PROCESS USING AGITATED HEAT EXCHANGER TO CHILL SOLVENT-OIL AND WAX SLURRY TO WAX FILTRATION TEMPERATURE

Thomas E. Broadhurst, Sarnia, Canada, assignor to Exxon Research & Engineering Company, Florham Park, N.J.

Filed Mar. 20, 1981, Ser. No. 245,712

Int. Cl.^{3} C10G *73/08*

U.S. Cl. 208—33 **21 Claims**



7. A method of dewaxing hydrocarbon oils comprising diluting the waxy oil with dewaxing solvent, introducing the oil-solvent mixture into an indirect heat exchanger operated at a high level of agitation expressed in terms of Impeller Reynolds Number in the range of about 10,000 to 1,000,000 wherein the high level of agitation is achieved by means of an articulated multi-section shaft having blades radially attached thereto, each section of said shaft being supported by means of a steady bearing, chilling the oil-solvent mixture to the wax separation temperature whereby wax is precipitated to form a wax-oil-solvent slurry, and separating the precipitated wax from the wax-oil-solvent slurry in liquid-solid separation means.

4,441,988

CATALYTIC REFORMER PROCESS

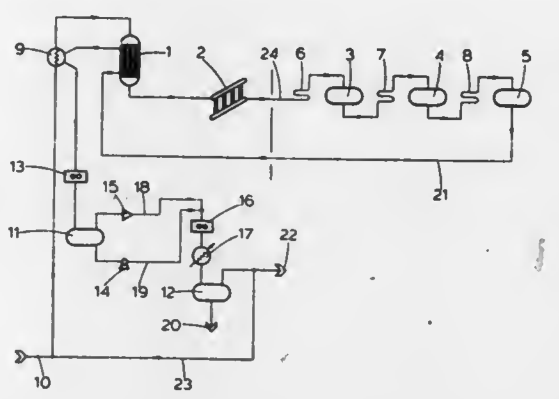
Robert L. Irvine, 214 Rec., 27040 Cedar Rd., Apt. Mark IV, Beechwood, Ohio 44122

Continuation-in-part of Ser. No. 43,784, May 30, 1979, abandoned. This application Jun. 4, 1981, Ser. No. 270,405

Int. Cl.^{3} C10G *35/04*

U.S. Cl. 208—64 **13 Claims**

1. A catalytic reformer process for the production of hydrogen and a product of enhanced aromatic content from a naphtha feedstock which process comprises a plurality of adiabatic reactor stages in which the feedstock is subjected to conversion to aromatic products, where the heat in the effluent from the terminal adiabatic reactor stage is utilized in an alkylcyclohexane converter, wherein said alkylcyclohexane converter has an ascending temperature pattern, by means of simultaneous heat-exchange, to provide the endothermic heat of reaction required in an alkylcyclohexane converter for the dehydrogenation to aromatics of the original alkylcyclohexanes in the feed.



4,441,989

PROCESS AND APPARATUS FOR THERMAL CRACKING AND FRACTIONATION OF HYDROCARBONS

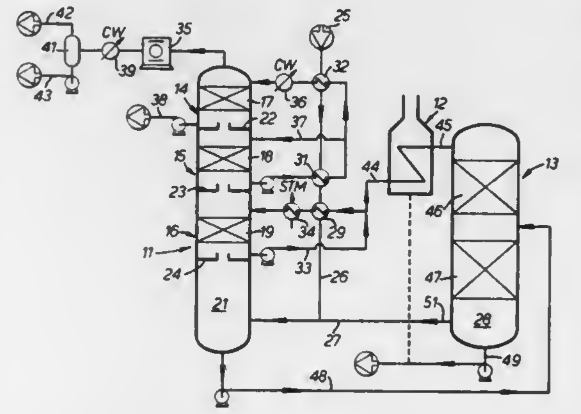
Peter Spencer, 9 Links Close, Ashtead, Surrey, England

Filed Sep. 23, 1982, Ser. No. 422,040

Claims priority, application United Kingdom, Nov. 3, 1981, 8133060

Int. Cl.^{3} C10G *51/04, 55/04*

U.S. Cl. 208—76 **13 Claims**



1. In a process for the thermal cracking of the heavy fraction of a petroleum crude oil feedstock, the steps including:

introducing said feedstock into the flash zone of a fractionator;

withdrawing a bottom stream of heavy fractions from said flash zone and feeding said stream of heavy fractions directly to a reactor;

withdrawing a heavy gas oil fraction from said fractionator;

heating said heavy gas oil;

introducing the heated heavy gas oil into a reactor and heating the stream of heavy bottom fractions to a temperature at which thermal cracking occurs solely by the heat supplied by the heavy gas oil; and

thermally cracking said heavy bottom fractions.

4. A process for the thermal cracking and fractionation of reduced petroleum crude oil feedstock, employing a thermal cracking reactor, a heater, and a fractionating column comprising a flash zone and a fractionating section, said process comprising:

feeding said feedstock into said flash zone;

removing a bottom stream of heavy fractions from said flash zone and feeding said heavy fractions directly to said reactor;

passing lighter fractions including a heavy gas oil fraction into said fractionating section;

removing from said fractionating section at least one light fraction product stream;

removing from said fractionating section a heavy gas oil stream and feeding said heavy gas oil to said heater and thence to said reactor;

subjecting said heavy fractions and said heavy gas oil to thermal cracking conditions in said reactor;

removing from said reactor a cracked vapour products stream and recycling said cracked vapour products whereby said cracked vapour products are introduced into said feedstream prior to said feedstream being introduced into said flash zone thereby quenching said cracked vapour products and heating said feedstream; and

withdrawing from said reactor a cracked liquid products stream.

4,441,990

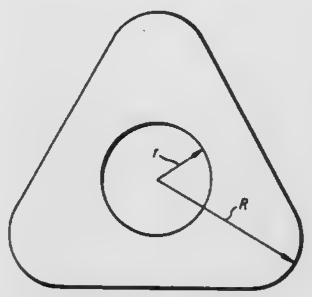
HOLLOW SHAPED CATALYTIC EXTRUDATES

Yun-Yang Huang, Voorhees, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed May 28, 1982, Ser. No. 383,070

Int. Cl.^{3} C10G *47/02;* B01J *35/00;* C07C *2/68, 2/02*

U.S. Cl. 208—111 **39 Claims**



1. A catalyst particle having a non-cylindrical centrally located aperture surrounded by a solid wall portion, a volume to surface ratio of less than about 0.02 inch and an external periphery characterized by having at least 3 points of contact when circumscribed by a cylindrical shape.

15. A process for the conversion of an organic charge which comprises contacting the same under conversion conditions with a catalyst comprising a crystalline aluminosilicate characterized by having a formed non-cylindrical particle configuration comprising a centrally located aperture surrounded by a solid wall portion, a volume to surface ratio of less than about 0.02 inch and an external periphery characterized by having at least 3 points of contact when circumscribed by a cylindrical shape.

4,441,991

CATALYTIC DEWAXING OF OILS CONTAINING AMMONIA OVER HIGHLY SILICEOUS POROUS CRYSTALLINE MATERIALS OF THE ZEOLITE ZSM-5 TYPE

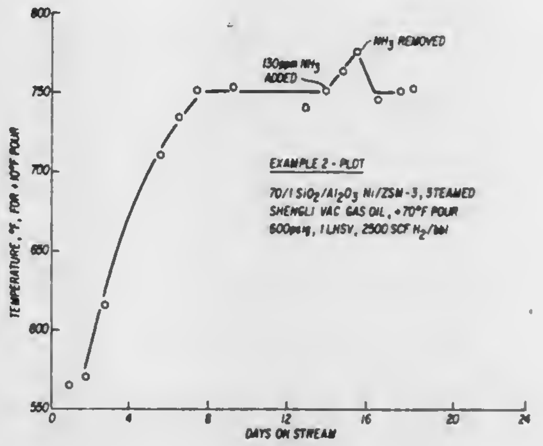
Francis G. Dwyer, West Chester, Pa., and William E. Garwood, Haddonfield, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 256,213, Apr. 21, 1981, abandoned. This application Oct. 20, 1982, Ser. No. 435,424

Int. Cl.^{3} C10G *47/16*

U.S. Cl. 208—111 **19 Claims**

1. In a hydrowaxing process, conducted at temperatures of between about 400° F. and about 825° F., pressures of between about 10 and about 2500 psig, liquid hourly space velocity of between about 0.1 and about 10, and molar ratios of hydrogen to hydrocarbon charge of between about 2 and about 80 and in an environment containing from 1 to 250 ppm of NH_3, for the selective cracking of straight-chain hydrocarbons and slightly branched-chain hydrocarbons from a mixture of the same with compounds of different molecular shapes, the improvement which comprises contacting said mixture with a highly siliceous porous crystalline material related to the zeolite ZSM-5



having a SiO_2/Al_2O_3 mole ratio of greater than about 200 and having an X-ray diffraction pattern as set forth in Table I.

4,441,992

DEMETALLIZATION OF HYDROCARBON CONTAINING FEED STREAMS

James B. Kimble, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 18, 1983, Ser. No. 485,792

Int. Cl.^{3} C10G *45/06*

U.S. Cl. 208—251 H **18 Claims**

1. A process for the demetallization of a hydrocarbon containing feed stream, which contains metals, comprising the step of contacting said hydrocarbon containing feed stream under suitable demetallization conditions with hydrogen and a catalyst composition comprising zirconium phosphate, cobalt phosphate and a metal phosphate where the metal is selected from the group consisting of nickel and vanadium.

4,441,993

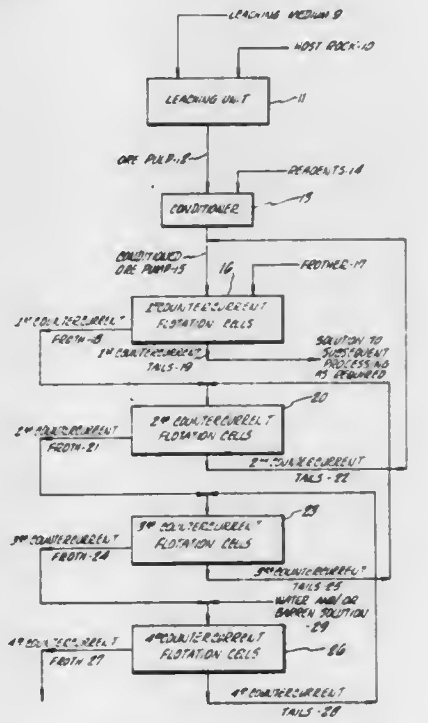
FLOTATION PROCESS

Frank P. Howald, Sunnyvale, Calif., assignor to Fluor Corporation, Irvine, Calif.

Continuation of Ser. No. 627,949, Nov. 3, 1975, abandoned. This application May 3, 1979, Ser. No. 35,634

Int. Cl.^{3} B03B *1/00*

U.S. Cl. 209—5 **8 Claims**


LEACHING MEDIUM 9
HOST ROCK 10
LEACHING UNIT
11
ORE PULP 12
REAGENTS 14
CONDITIONER
13
CONDITIONED ORE PULP 15
16
FROTHER 17
1st COUNTERCURRENT FLOTATION CELLS
1st COUNTERCURRENT FROTH 18
1st COUNTERCURRENT TAILS 19
SOLUTION TO SUBSEQUENT PROCESSING AS REQUIRED
20
2nd COUNTERCURRENT FLOTATION CELLS
2nd COUNTERCURRENT FROTH 21
2nd COUNTERCURRENT TAILS 22
23
3rd COUNTERCURRENT FLOTATION CELLS
3rd COUNTERCURRENT FROTH 24
3rd COUNTERCURRENT TAILS 25
WATER AND/OR BARREN SOLUTION 29
4th COUNTERCURRENT FLOTATION CELLS
26
4th COUNTERCURRENT FROTH 27
4th COUNTERCURRENT TAILS 28

1. A process for recovering soluble metallic values selected from the group consisting of copper, uranium, gold, silver,

nickel, cobalt, zinc, aluminum, tungsten, titanium, antimony, barium and rhenium from a mixture comprising (A) said metallic values, (B) a solvent selected from the group consisting of (1) sulfuric acid, hydrochloric acid and ferric chloride when the metallic value is copper, (2) sulfuric acid and both sodium carbonate and sodium bicarbonate when the metallic value is uranium, (3) sodium cyanide when the metallic value is gold, (4) sodium cyanide, sodium hypochlorite and potassium hypochlorite when the metallic value is silver, (5) ammonia and ammonium carbonate when the metallic value is nickel, (6) sulfuric acid when the metallic value is cobalt, (7) sulfuric acid when the metallic value is zinc, (8) sodium hydroxide when the metallic value is aluminum, (9) hydrochloric acid when the metallic value is tungsten, (10) sulfuric acid and hydrochloric acid when the metallic value is titanium, (11) sodium sulfide or hydrochloric acid when the metallic value is antimony, (12) hydrofluoric acid and nitric acid when the metallic value is barium, (13) chlorine and sodium hypochlorite when the metallic value is rhenium, (C) at least one flotation reagent selected from the group consisting of collectors and modifiers, and (D) mineral impurities which are substantially insoluble in said selected solvent, said process comprising the steps of:

a. in a first flotation step, combining said mixture, with agitation, with a countercurrent tails stream from a second subsequent flotation step to thereby wash dissolved metallic values from said mineral impurities and dissolve undissolved metallic values;

b. floating the mineral impurities on the combined mixture to form a product solution of said metallic values and a first froth;

c. processing said product solution to yield said metallic values;

d. removing said first froth from said first flotation step and feeding it to the first of at least one subsequent flotation step wherein, in each subsequent flotation step, a froth from the preceding flotation step is mixed with a countercurrent stream to wash additional metallic values from said mineral impurities and dissolve additional undissolved metallic values, and a new froth and a countercurrent tails stream are formed, said countercurrent stream comprising the countercurrent tails stream from the next subsequent flotation step, and in the last subsequent flotation step, consisting of water, barren solution, said solvent for said metallic values or mixtures thereof; and

e. controlling the concentration and flow rate of said countercurrent stream to maintain predetermined concentrations of the metallic values in the advancing countercurrent tails streams and in said product solution.

4,441,994

APPARATUS FOR SEPARATING FOREIGN BODIES FROM FIBER TUFTS

Wolfgang Beneke, Mönchen-Gladbach, and Ferdinand Leifeld, Kempen, both of Fed. Rep. of Germany, assignors to Trützschler GmbH & Co. KG, Monchen-Gladbach, Fed. Rep. of Germany

Filed Feb. 4, 1982, Ser. No. 345,769

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1981, 3103844; Mar. 11, 1981, 3109154

Int. Cl.^{3} B07B *3/00*

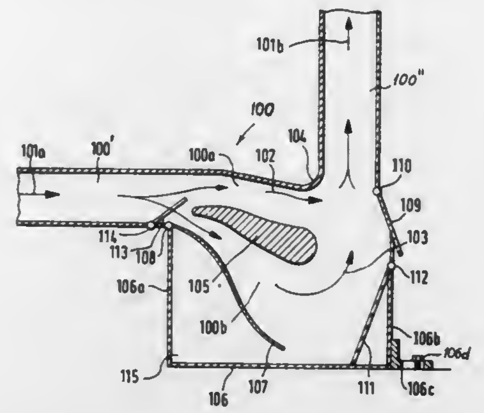
U.S. Cl. 209—139 R **13 Claims**

1. An apparatus for separating heavy foreign particles from fiber tufts comprising

(a) a duct for conveying the fiber tufts by an air stream; said duct having a first, inlet duct portion oriented in a first direction and carrying the fiber tufts and heavy foreign particles to be separated from the fiber tufts; and a second, outlet duct portion arranged downstream of said first duct portion as viewed in the direction of fiber tuft flow therein; said second duct portion being oriented in a second direction different from said first direction;

(b) a separating chamber situated in said duct between said first and second duct portions;

(c) a guide element extending from a downstream end of said first duct portion as a smooth continuation thereof and bounding said separating chamber; said guide element being oriented downwardly for guiding therealong the heavy foreign particles; said guide element having a lower terminal portion curving towards said second duct portion for guiding said air stream into said second direction; said lower terminal portion having a free lower end from which the heavy foreign particles drop out of the separating chamber; and



(d) an air splitter in said separating chamber and being spaced from said guide element; said air splitter guiding one part of the air stream into said separating chamber on one side of the air spliter and guiding another part of the air stream towards said second duct portion on the other side of the air spliter.

4,441,995

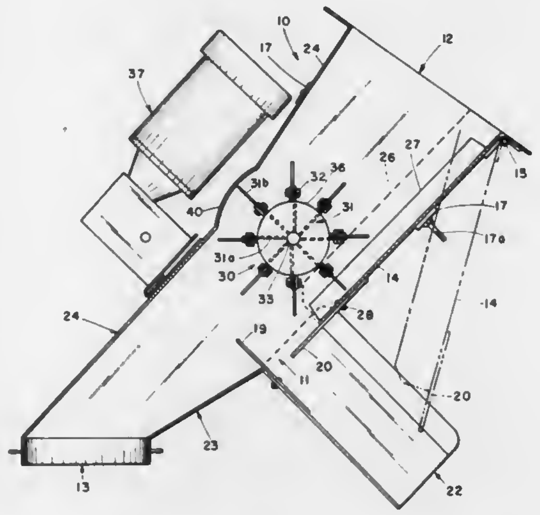
CHUNK SEPARATOR AND PROCESS OF SEPARATION FOR MACHINE TOOL SCRAP

Russell D. Dudley, Kalamazoo, Mich., assignor to Reclamet, Inc., Kalamazoo, Mich.

Filed May 12, 1983, Ser. No. 494,006

Int. Cl.^{3} B07B *4/02*

U.S. Cl. 209—137 **18 Claims**



1. Apparatus for separating large metallic pieces from an oil coated mixture of the metallic waste products of machining operations, said apparatus including a conduit having receiving and discharge ends and a bottom wall, an opening through said bottom wall intermediate said ends, a paddle wheel-type rotary metering element mounted in said conduit adjacent to and upstream of said opening for metering the movement of waste products through said conduit and providing an air seal between said receiving end and said opening, means for effecting rotation of said element, means for generating an air current through said opening such that the velocity of said air current is sufficient to entrain small metallic particles while permitting large metallic pieces to fall through said opening, said apparatus characterized in that said bottom wall beneath said element

has a movable section and means pivotally securing said section to said conduit between said element and said receiving end; means resiliently biasing said section into closed position whereby said section may be forced to pivot away from said metering element by a large metallic piece entering between said element and section.

4,441,996

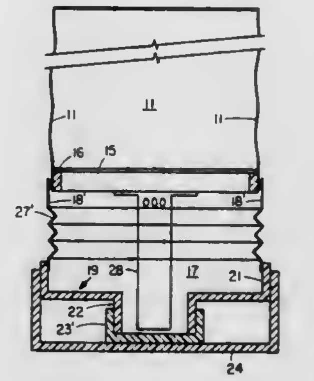
APPARATUS FOR PRODUCING BACTERIA FREE DRINKING WATER

Richard F. Hurst, 126 Steeplechase Rd., Devon, Pa. 19333

Filed Mar. 31, 1982, Ser. No. 363,666

Int. Cl.^{3} B01D *39/00*

U.S. Cl. 210—241 **10 Claims**



1. A flexible and collapsible apparatus for producing bacteria free drinking water from contaminated water comprising:

a sleeve shaped flexible non-porous contaminated water collector having a top open inlet end and a bottom closed filter end adapted to receive contaminated water therein,

a sub-micron porous bacteria membrane filter permanently connected to said bottom closed filter end of said water collector,

a flexible and expandable non-porous bacteria free holding chamber permanently connected to said bacteria filter and sealed on said water collection to form an axial extension of said water collector,

said flexible water collector being adapted to be squeezed to generate a uniform force on top of said contaminated water in said collector and to force said contaminated water through said sub-micron filter and into said holding chamber where it accumulates by gravity, and

bacteria free exit means connected to the bottom of said holding chamber for removing bacteria free drinking water from said holding chamber without subjecting said drinking water to said contaminated water.

4,441,997

LIQUID FILTRATION SYSTEM

Larry D. Fields, Mira Loma, Calif., assignor to Yardney Electric Corporation, Pawcatuck, Conn.

Filed Feb. 25, 1983, Ser. No. 469,888

Int. Cl.^{3} B01D *25/06, 25/08*

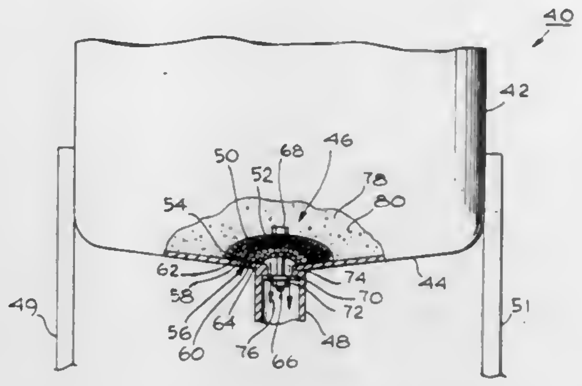
U.S. Cl. 210—266 **5 Claims**

1. An improved liquid filtration system, such system comprising, in combination:

a. a vessel having a plurality of spaced interconnected walls defining a central cavity and having a liquid inlet and a liquid outlet;

b. a porous, self-supporting rigid filter comprising a self-supporting body formed of a plurality of granules cemented together by set organic resin, said filter including a domed porous metallic plate disposed around said body, said body occupying only that portion of said vessel cavity which is adjacent said outlet, said body being arched over said outlet in a structurally stable configuration;

c. connector means releasably securing said body in said cavity adjacent said outlet so as to cover said outlet; and,



d. a mass of loose particles of filtering medium disposed above and around said rigid filter in said cavity and supported thereby.

4,441,998

WATER PURIFICATION DEVICE

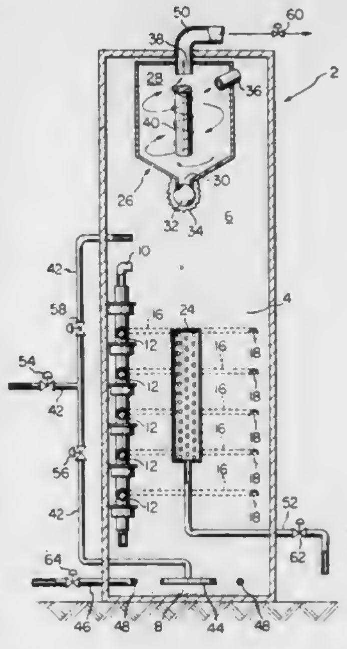
Yoshihiko Ueda, Yamaguchi, Japan, assignor to Takara Kogyo Co., Ltd., Tokyo, Japan, a part interest

Filed Aug. 24, 1982, Ser. No. 410,920

Claims priority, application Japan, Mar. 12, 1982, 57-39092

Int. Cl.^{3} B01D *23/16*

U.S. Cl. 210—275 **12 Claims**



1. A water purification device for filtering raw water, comprising:

a filter tank having a major dimension and designed and dimensioned to hold a body of filter medium which substantially fills said tank, said tank having raw water inlet means and filtered water outlet means;

a plurality of flow passage defining means mounted in said filter tank and spaced at intervals along the inner peripheral surface of the sidewall of said filter tank in the direction of the major dimension of said filter tank, said flow passage defining means being designed and dimensioned for defining a plurality of raw water flow passages in said filter medium which extend along said flow passage defining means;

raw water supply means connected to said flow passage defining means for supplying raw water from said inlet means into said raw water flow passages from which the raw water disperses laterally from the flow passages into the filter medium; and

a water collection strainer mounted substantially centrally in said filter tank and extending in the direction of the major dimension and being positioned radially inwardly of said flow passage defining means and connected to said water outlet means for collecting purified water flowing through the filter medium from said raw water passages, the flow passage defining means and the water collection strainer being positioned relative to each other and designed and dimensioned for causing the laterally dispersed raw water from the flow passages to flow radially inwardly through the filter medium to utilize and annular layer of the filter medium extending in the direction of the major dimension for initial filtration and thereby increasing the efficiency of utilization of the filter medium as compared to simply filtering the raw water by flowing it through the filter medium in the direction of the major dimension.

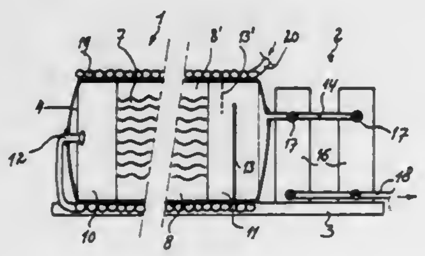
4,441,999
STRAINER MEANS FOR PULP PURIFICATION

Rune H. Frykhult, Huddinge, Sweden, assignor to AB Celleco, Stockholm, Sweden
Filed Jan. 26, 1981, Ser. No. 228,569
Claims priority, application Sweden, Jan. 28, 1980, 8000651
Int. Cl.^{3} B01D *33/06*
U.S. Cl. 210—354 **10 Claims**

1. In a device for straining pulp, the combination of a housing having an inlet for a suspension, a strainer drum located within the housing and having a substantially circular cylindrical mantle provided with strainer openings, the mantle having between said openings slanting external surfaces which are inclined in relation to the circumferential direction of the mantle, said surfaces forming an attack angle against the flow direction of said suspension from the inlet, the inclination of said surfaces acting to give particles issuing from said inlet and contacting said surfaces a component of movement directed radially outward, the two slanting external surfaces adjacent each strainer opening lying in different planes.

4,442,000
EASILY TRANSPORTABLE WATER PURIFICATION DEVICE

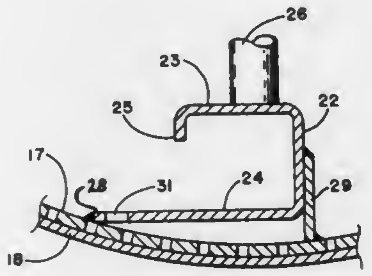
Jacob Pielkenrood, Krommenie, Netherlands, assignor to Pielkenrood-Vinitex Beheer B.V., Assondelft, Netherlands
Filed Jan. 21, 1982, Ser. No. 341,311
Claims priority, application Netherlands, Jan. 29, 1981, 8100443
Int. Cl.^{3} B01D *21/08*
U.S. Cl. 210—256 **6 Claims**



1. In a portable water purification device having a tank with an inlet and an outlet chamber and a plate separator arranged there between, which inlet chamber communicates with a supply connection, and which outlet chamber communicates with a filter assembly, the improvement comprising a tube coalescence apparatus between the supply connection and the inlet chamber having the form of a tube of resilient material wound around the tank in a single or multiple winding, said tube protecting said tank against damage from impact suffered during transport.

4,442,001
ROTARY VACUUM FILTER

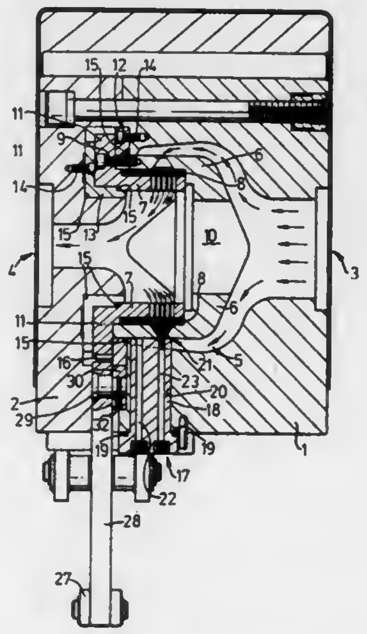
Kent L. Davis, Salt Lake City, Utah, assignor to WesTech Engineering, Inc., Salt Lake City, Utah
Filed Sep. 27, 1982, Ser. No. 423,832
Int. Cl.^{3} B01D *33/06*
U.S. Cl. 210—402 **4 Claims**



1. In a rotary drum vacuum filter: an improved drum comprising a single cell defined by a perforated cylindrical wall and solid end walls; a hollow shaft extending axially of the drum axis and from at least one end of the drum; means for connecting said shaft to a source of vacuum; a plurality of elongated open-topped pans inside said drum spaced angularly about and radially from said shaft; each of said pans being defined by spaced apart inner and outer side walls, a bottom wall, and the drum end walls; a closed conduit for each pan connecting the interior thereof with the interior of said hollow shaft; each of said pans is positioned with its outer wall adjacent and spaced from the inner drum wall and its open top facing in the direction of rotation of said drum; means securing the upper edge of said outer pan wall to said drum wall along a continuous line of connection adjacent the open top of said pan; and a plurality of ports in said outer pan wall adjacent to and spaced apart along said continuous line of connection.

4,442,002
FILTRATION DEVICES

Peter A. Morris, Southampton, England, assignor to Cresta Technology Limited, Chichester, England
Filed Jul. 28, 1982, Ser. No. 402,676
Claims priority, application United Kingdom, Aug. 5, 1981, 8123933
Int. Cl.^{3} B01D *33/06, 35/12, 35/22*
U.S. Cl. 210—411 **12 Claims**



1. A screening device for removing foreign matter from fluid plastic material, comprising elements designed, arranged and dimensioned to minimize pressure fluctuations during treatment of plastic polymers at up to the highest pressures and

temperatures at which such polymers can be treated, including,

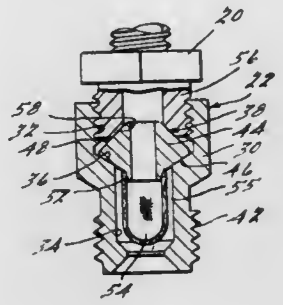
(a) a filter drum arranged to receive material to be filtered at its outer surface and to deliver filtered material from its interior, said material having been filtered by passage through the wall of said drum from the exterior to the interior thereof;

(b) means for cleansing the external surface of said filter drum by selective back flow of filtered material from the interior to the exterior of said drum so as to flush away deposited foreign matter, said cleansing means comprising a manifold member in seating engagement with a limited area of the external surface of said drum to provide for a flow of filtered material from the drum interior through said limited area of the drum external surface and into said manifold member, and means for rotating said drum so as to cause different areas of the external surface thereof to register successively with said manifold member and to be cleansed by said back flow of filtered material;

(c) said filter drum comprising an inner and an outer cylindrical filter barrel adapted to receive therebetween a cylindrical filter screen, said outer barrel having a plurality of relatively large spaced apart openings in its outer surface each of which communicates via a passageway through the thickness of the barrel wall with a correspondingly large opening in the inner surface of said barrel, said inner barrel having through apertures of such small size that a plurality thereof register with each of said openings in the inner surface of said outer barrel, and said manifold member being dimensioned to seat with an area of the external surface of said outer filter barrel corresponding to one of the said openings therein.

4,442,003
FILTER ASSEMBLY

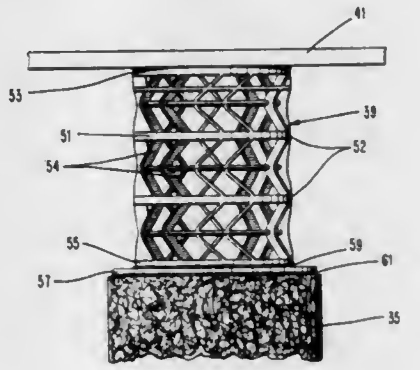
Earl R. Holt, Rochester, Mich., assignor to Hose Specialties Company, Detroit, Mich.
Filed Sep. 30, 1982, Ser. No. 430,326
Int. Cl.^{3} B01D *27/08, 35/02*
U.S. Cl. 210—445 **6 Claims**



1. An inline filter assembly adapted for use in a paint spray supply system comprising an integral tubular body member formed with a throughbore having an annular tapered shoulder intermediate the upstream and downstream ends thereof, said body member formed with an internal thread in the downstream portion of said bore extending inwardly toward said tapered shoulder for threadably receiving a threaded male connection formed with a conically tapered seat at the end thereof, a removable filter element comprising an annular ferrule formed with a first annular conical sealing seat disposed in seated sealing relationship on said tapered shoulder and a second annular conical sealing seat disposed in seated sealing relationship on the conically tapered seat of the male connection and removably clamped therebetween, a thimble-shaped filter screen affixed to said ferrule adjacent to said first conical seat and projecting axially within said bore toward said upstream end, and means on the upstream end portion of said body member for connecting said filter assembly to a paint supply system.

4,442,004
BIASING ARRANGEMENT AND FILTER UNIT FOR A FILTERING APPARATUS

Zan P. Smith, Summit, and Frank Haimbach, IV, Nutley, both of N.J., assignors to Osmonics, Inc., Minnetonka, Minn.
Filed Jul. 1, 1982, Ser. No. 394,195
Int. Cl.^{3} B01D *29/32*
U.S. Cl. 210—448 **23 Claims**



1. A biasing arrangement for use with a filter element having a longitudinal bore therethrough, the biasing arrangement comprising a spring element having first and second ends, said spring element being comprised entirely of a plastic material and being deformable by pressure applied in a direction generally along an axis extending between said first and second ends, a generally planar sealing disk adapted to seal an end of the longitudinal bore of the filter element, said sealing disk being comprised entirely of a plastic material, and said sealing disk being permaently positively secured to an end of said spring element.

11. A filter unit for use in a filtering apparatus employing at least one filter unit, said filter unit comprising an elongated filter element including filtering material and having a longitudinal bore therethrough, a spring element having first and second ends, said spring element being deformable by a pressure applied in a direction generally along an axis extending between said first and second ends, a sealing disk for sealing an end of the longitudinal bore of the filter element, said sealing disk being positively directly secured to both an end of said spring element and an end of said filtering material such that said spring element, said sealing disk and said filter element define an integral unit, said spring element, said sealing disk and said filtering material each being comprised of a plastic material.

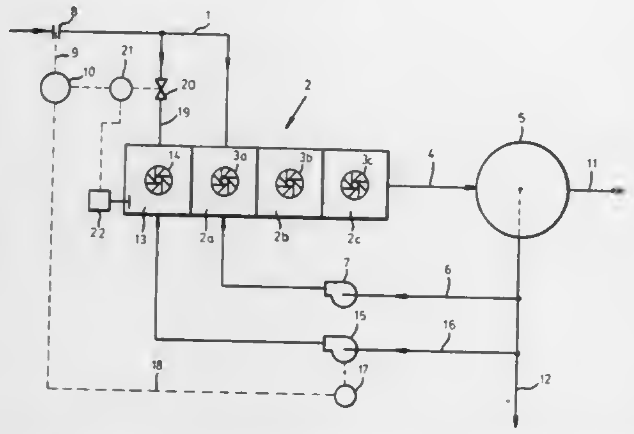
4,442,005
METHOD OF AND APPARATUS FOR THE BIOLOGICAL DECONTAMINATION OF WASTE WATER

Edmund J. Breider, Getzville, N.Y., assignor to Linde Aktiengesellschaft, Höllriegelskreuth, Fed. Rep. of Germany
Filed Apr. 13, 1982, Ser. No. 367,990
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1981, 3115104
Int. Cl.^{3} C02F *3/26*
U.S. Cl. 210—614 **6 Claims**

1. A method of biologically treating an influent waste water having variable organic waste loading which comprises the steps of:

(a) contacting said waste water with recycled sludge and aerating same in at least one activation basin to decompose organic components in said waste water and produce a suspension;
(b) withdrawing said suspension and separating same into an effluent and sludge in at least one clarifier;
(c) recycling at least a portion of the sludge separated in step (b) to the activation basin of step (a);
(d) monitoring the waste loading of said waste water;
(e) only upon the monitored waste loading said waste water exceeding a predetermined threshold, aerating at least a portion of the sludge recycled in step (c) prior to introduc-

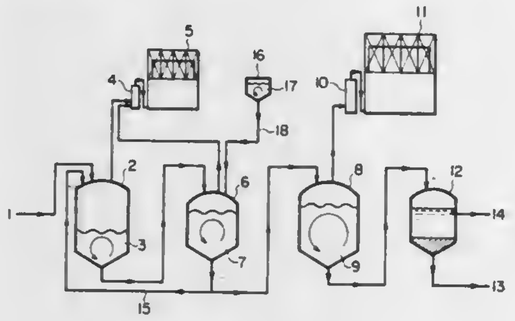
tion of the recycled sludge into said activation basin in step (a) in an aeration basin which is not spatially separated from the activation basin; and



(f) upon the monitored waste loading of said waste water reaching a maximum, introducing a portion of the influent waste water to said aeration basin to flush aerated sludge from said aeration basin into said activation basin.

4,442,006
ANAEROBIC DIGESTION PROCESS

Masahiko Ishida; Ryooichi Haga, and Yoji Odawara, all of Hitachi, Japan, assignors to The Agency of Industrial Science and Technology, Tokyo, Japan
Continuation of Ser. No. 140,677, Apr. 15, 1980, abandoned. This application Dec. 3, 1981, Ser. No. 327,227
Claims priority, application Japan, Apr. 24, 1979, 54-49751
Int. Cl.³ C02F *3/28*
U.S. Cl. 210—613 **18 Claims**



1. An anaerobic digestion method for organic wastes consisting essentially of:

partially liquefying an organic waste slurry in the presence of liquefying bacteria of the facultative anaerobic bacteria group which are capable of converting organic materials to volatile fatty acid, while stirring without adjusting pH under an anaerobic condition to obtain a stable organic waste slurry; and

thereafter, liquefying and gasifying the treated slurry by adding to said slurry liquefying bacteria and gasifying bacteria of the obligatory anaerobic bacteria group which are capable of fermenting methane.

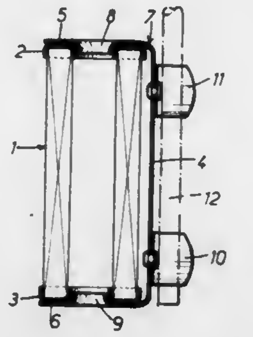
4,442,007
ACTIVATED SEAWATER WASTEWATER TREATMENT SYSTEM

Russell H. Rehm, 1505 Washington St., Bath, Me. 04530
Filed Sep. 28, 1982, Ser. No. 425,581
Int. Cl.³ C02F *3/02*
U.S. Cl. 210—631 **12 Claims**

1. A process for treating sewage and waste material for making it suitable for discharge into tidal waters comprising the steps of: activating seawater with hydrogen peroxide by dissolving the hydrogen peroxide in said seawater; delivering said activated seawater to a source of waste material and mixing said activated seawater with said waste material; transporting said waste material with said activated seawater mixture to at least one reaction vessel whereby said activated seawater decomposes said waste material; providing a separate continuous supply of said activated seawater to said reaction vessel to insure continuous aerobic biochemical reaction with solids in said reaction vessel; filtering the treated wastewater in a filtering vessel after it is discharged from said reaction vessel and discharging said filtered and treated wastewater to a disposal location.

4,442,008
PROCESS FOR PURIFYING THE ACTIVE LIQUID WITHIN HYDRAULIC CONTROL CIRCUITS

Georges J. C. Seurin, Izon, France, assignor to Avions Marcel Dassault-Breguet Aviation, Vaucresson, France
Filed Apr. 16, 1982, Ser. No. 369,089
Claims priority, application France, Apr. 17, 1981, 81 07770
Int. Cl.³ B01D *15/00*
U.S. Cl. 210—683 **6 Claims**



1. A process for automatically purifying the active liquid in a closed loop hydraulic control circuit by removing contaminent ions and corrosive products produced therein during operation of the closed loop hydraulic control circuit, said process comprising the steps of

providing a band of solid state trap material which is insoluble in said active liquid and is chemically reactive with the contaminent ions and corrosive products in said active liquid so as to chemically fix them on the surface thereof,

providing an opening in said closed loop hydraulic control circuit,

moving said band of solid state trap material through said opening and into said closed loop hydraulic control circuit so as to become immersed in the active liquid therein,

closing said opening, and

causing said active liquid to flow in said closed loop hydraulic control circuit and past said band of solid state trap material, such that said contaminent ions and corrosive products in the active liquid flowing past said band of solid state trap material will become chemically fixed on the surface thereof.

4,442,009
BOILER WATER TREATMENT

Richard P. O'Leary, Wayne, and David W. Reichgott, Richboro, both of Pa., assignors to Betz Entec, Inc., Horsham, Pa.
Filed Jun. 7, 1982, Ser. No. 385,751
Int. Cl.³ C02F *5/10*
U.S. Cl. 210—697 **9 Claims**

1. A method for controlling scale which would otherwise be formed from water-soluble calcium, magnesium and iron impurities contained in boiler water which would provide calcium, magnesium and iron ions, which method comprises adding to said water:

(i) a chelant selected from the group of ethylene diamine tetraacetic acid and the water soluble salts thereof, in an amount which is substoichiometric to that amount required to react with said ions present in the water, and is at least about 0.5 parts per million for each part of calcium and magnesium (all expressed as calcium carbonate) contained in the water;

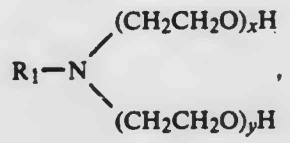
(ii) a watr soluble phosphate salt which will provide orthophosphate ions in said water in an amount which is less than a 1:1 mole ratio of phosphate to calcium, but which is sufficient to react with all the calcium ions provided by said impurities that are not complexed by the chelant; and

(iii) a water soluble polymethacrylic acid or water soluble salt thereof in an amount sufficient to disperse any particles formed by the reaction of the calcium ions with the phosphate ions and any other particulate matter formed by the reactions of the magnesium and iron ions.

4,442,010
POLYALKOXYLATED AMINES AS DEWATERING AIDS FOR FELDSPATHIC MINERALS

Joseph L. Mehaffey, Brookfield, Ill., assignor to Akzona Incorporated, Asheville, N.C.
Filed Nov. 12, 1982, Ser. No. 440,888
Int. Cl.³ B01D *37/02;* C02F *1/56*
U.S. Cl. 210—729 **6 Claims**

1. A process for the concentration and dewatering of an aqueous suspension of feldspathic minerals, comprising: adding to said suspension a filter aid in an amount between 0.05 and 0.5 pounds per ton of dry solids contained in said aqueous suspension, said filter aid having the general formula:



$$R_1-N\begin{matrix}(CH_2CH_2O)_xH\\(CH_2CH_2O)_yH\end{matrix},$$

wherein R_1 is an alkyl group of between 8 and 18 carbon atoms and wherein x and y are integers greater than 0 whose sum is between 2 and 15; and then filtering said aqueous suspension.

4,442,011
DRILLING MUD VISCOSIFICATION AGENTS BASED ON SULFONATED IONOMERS

Warren A. Thaler, Aberdeen, N.J.; Thad O. Walker, Humble, Tex.; Robert D. Lundberg, Bridgewater, and Joseph Wagensommer, Westfield, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.
Filed Dec. 21, 1981, Ser. No. 332,770
Int. Cl.³ C09K *7/06*
U.S. Cl. 252—8.5 M **9 Claims**

1. An oil based drilling mud which comprises:

(a) a liquid hydrocarbon;

(b) about 1 to about 10 parts by weight of water per 100 parts by weight of the liquid hydrocarbon;

(c) about 20 to about 50 lb/bbl of at least one emulsifier;

(d) weighting material of sufficient quantity necessary to achieve the desired density; and

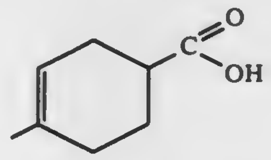
(e) about 0.25 to about 2 lb/bbl of a neutralized sulfonated ethylene/propylene/5-phenyl-2-norbornene terpolymer, said neutralized sulfonated polymer having about 5 to about 30 meq. of sulfonate groups per 100 grams of the neutralized sulfonated polymer, said terpolymer having about 0.5 to about 20 wt.% of said 5-phenyl-2-norbornene and said terpolymer having a number average molecular weight of about 5,000 to 300,000.

4,442,012
USE OF 4-METHYL-3-CYCLOHEXENE-1-CARBOXYLIC ACID FOR AUGMENTING OR ENHANCING THE AROMA OF FABRIC SOFTENER COMPOSITIONS OR DRIER-ADDED ARTICLES

Nicholas Calderone, Laurel Hollow, N.Y.; Hugh Watkins, Lincroft, and Takao Yoshida, West Long Branch, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.
Division of Ser. No. 316,238, Oct. 29, 1981, which is a division of Ser. No. 299,211, Sep. 3, 1981. This application Jun. 24, 1982, Ser. No. 391,589
Int. Cl.³ D06M *13/20*
U.S. Cl. 252—8.6 **2 Claims**

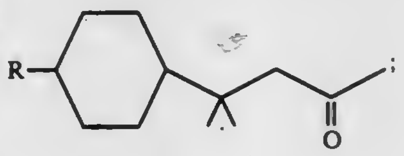
1. A process for augmenting or enhancing the aroma of a fabric softener composition or drier-added fabric softener article comprising the step of adding to a fabric softener composition or drier-added fabric softener article component an aroma augmenting on enhancing quantity of a mixture of chemical compounds comprising:

A. the compound having the structure:

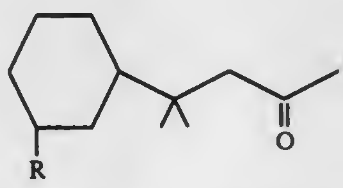


and

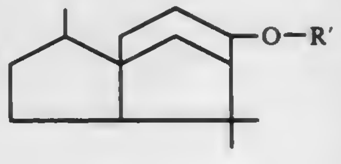
B. at least one compound selected from the group consisting of compounds having the structures:



;



and



wherein R is selected from the group consisting of t-butyl and t-amyl and R' is selected from the group consisting of methyl, ethyl, propyl, butyl, allyl and methallyl.

4,442,013

CONCENTRATED FABRIC SOFTENING COMPOSITIONS

Marie-Helene Fraikin, Herstal, and Alan Dillarstone, Rocourt, both of Belgium, assignors to Colgate-Palmolive Company, New York, N.Y.

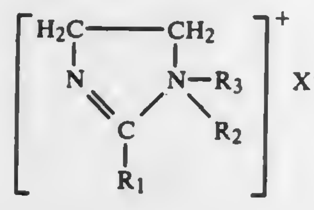
Filed Mar. 22, 1982, Ser. No. 360,726

Int. Cl.³ D06M *13/46*

U.S. Cl. 252—8.8 **6 Claims**

1. A stable, aqueous, concentrated fabric softening composition consisting essentially of water and about

(a) 8 to 20% by weight of an imidazolinium softener compound of the formula:



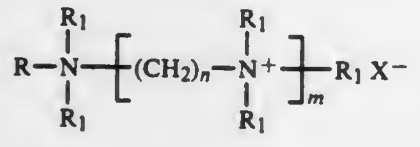
wherein

R_1 is C_8 to C_{30} aliphatic radical;

R_2 and R_3 are independently selected from R_1 radicals, or C_1 to C_4 alkyl or substituted C_1 to C_4 alkyl and

X is a water-solubilizing anion, and

(b) from about 0.5 to about 5% by weight of a polyquaternary compound of the formula:



$$R-\overset{R_1}{\underset{R_1}{N}}-\left[(CH_2)_n-\overset{R_1}{\underset{R_1}{N^+}}\right]_m-R_1\ X^-$$

wherein

R is C_{10} to C_{30} aliphatic radical;

R_1's are independently hydrogen, C_1 to C_4 alkyl or hydroxyalkyl;

n is an integer from 2 to 6;

m is an integer from 1 to 5; and

X is a water-solubilizing anion, the weight ratio of (A) to (B) ranging from 40:1 to 5:1.

4,442,014

USE OF ESTERS OF SULFONIC ACIDS AS ANTI-SLUDGE AGENTS DURING THE ACIDIZING OF FORMATIONS CONTAINING SLUDGING CRUDE OILS

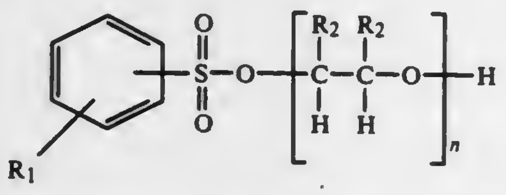
James R. Looney, and Lee A. McDougall, both of Houston, Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 1, 1982, Ser. No. 344,606

Int. Cl.³ E21B *43/27*

U.S. Cl. 252—8.55 C **7 Claims**

1. A method for enhancing the recovery of sludging crude oils during acid stimulation of hydrocarbon bearing formations comprising the step of adding to the acid used for stimulation at least a sludge inhibiting amount of a nonionic ester derivative of a sulfonic acid represented by the formula



wherein: R_1 represents a hydrocarbyl group containing from 6 to 22 carbon atoms; R_2 represents hydrogen, methyl, ethyl, and phenyl; and, n is an integer of from 0.5 to 100.

4,442,015

SELF-SEALING REFRIGERANT

Joseph J. Packo, 11000 Onion Creek Ct., Austin, Tex. 78747, and Donald L. Bailey, Traverse City, Mich., assignors to Joseph J. Packo, Austin, Tex.

Filed Jul. 12, 1982, Ser. No. 397,191

Claims priority, application Japan, May 31, 1982, 57-092931

Int. Cl.³ C09K *5/04*

U.S. Cl. 252—68 **15 Claims**

1. A leak sealing, leak preventing and moisture removing refrigeration fluid composition for refrigeration and air-conditioning units, comprising:

(a) a material selected from the group consisting of a refrigerant fluid which ammonia or chlorofluorocarbon, a lubricating fluid and a mixture thereof; and

(b) a liquid sealant for removing moisture from the interior of the refrigeration or air-conditioning circuit and for forming a seal at the site of a leak in such a circuit, said sealant being a liquid hydrolyzable organosilane or mixture thereof compatible with said refrigerant fluid, which does not substantially interfere with the properties of the refrigerant fluid, which exists as a liquid both in the liquid portion of the circuit and the gaseous portion of the circuit, and which is substantially inert to the material from which the circuit is made, said organosilane sealant being selected from silanes and mixtures of silanes having at least two silicon-bonded hydrolyzable substituents selected from the group consisting of alkylamino-, dialkylamino-, mercapto-, acyloxy-, alkoxy-, amido-, aminoxy-, and oximo-groups; low molecular weight, low viscosity silicone polymers having at least 2 silicon-bonded hydrolyzable substituents selected from the group consisting of alkylamino-, dialkylamino-, mercapto-, acyloxy-, alkoxy-, amido-, aminoxy-, oximo-, disilazanyl- and disilthianyl groups; low molecular weight, low viscosity silicon-substituted organic polymers having at least two silicon-bonded hydrolyzable substituents selected from the group consisting of alkylamino-, dialkylamino-, mercapto-, acyloxy-, alkoxy-, amido-, aminoxy-, and oximo-groups; mixtures of said silanes and said silicone polymers; and mixtures of said silanes and said silicon-substituted organic polymers.

4,442,016

INCREASING THE CYCLE STABILITY OF A SODIUM SULFATE HEAT EXCHANGE MEDIUM BY ADDING SULFURIC ACID

Friedrich Lindner, Stuttgart, and Kurt Scheunemann, Lahr-Mietersheim, both of Fed. Rep. of Germany, assignors to Deutsche Forschungs-und Versuchsanstalt für Luft- und Raumfahrt E.V., Bonn, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 275,215, Jun. 19, 1981, abandoned. This application Feb. 25, 1983, Ser. No. 469,686

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1980, 3024125

Int. Cl.³ C09K *5/00*

U.S. Cl. 252—70 **3 Claims**

1. A method for increasing the cycle stability of a latent heat accumulator medium consisting essentially of a concentrated or saturated salt melt of sodium sulfate, which method comprises adding sulfuric acid to the latent heat accumulator medium in an amount of from 0.5 to 3% by weight, based on the weight of said latent heat accumulator medium, thereby to lower the pH value of the latent heat accumulator medium without precipitating any impurities included therein and without causing appreciable supercooling of said latent heat accumulator medium.

4,442,017

ADDITIVE BLENDS FOR POLYMERIC MATERIALS

Morris Blumberg, Irvington, N.Y., and Chester C. Swasey, Demarest, N.J., assignors to Sandoz, Inc., E. Hanover, N.J.

Continuation of Ser. No. 157,687, Jun. 9, 1980, abandoned, which is a division of Ser. No. 916,733, Jun. 19, 1978, Pat. No. 4,238,384. This application Aug. 24, 1982, Ser. No. 411,100

Int. Cl.³ C09K *11/06*

U.S. Cl. 252—301.21 **14 Claims**

1. A composition which is a solid uniform blend consisting of (a) one or more additives for organic polymers, each additive independently being normally solid at room temperature and being an anti-oxidant, stabilizer, lubricant, flameproofing agent, slip agent, anti-blocking agent anti-static agent and (b) a compound which gives a detectable response to irradiation in the presence of said additive(s), said additive(s) and said irradiation-responsive compound being in intimate cohesive contact with one another.

4,442,018

STABILIZED AQUEOUS FOAM SYSTEMS AND CONCENTRATE AND METHOD FOR MAKING THEM

Peter B. Rand, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 1, 1982, Ser. No. 438,126

Int. Cl.³ B01J *13/00;* **A62D** *1/08;* **C09K** *3/00;* **A61K** *9/00*

U.S. Cl. 252—307 **19 Claims**

1. A concentrate composition useful for producing a stable high expansion aqueous foam, comprising on a weight basis: an acrylic acid polymer, about 2–3%, dodecyl alcohol, tetradecanol or hexadecanol, about 2–3%; pentanol or butanol, about 10%; a sodium lauryl sulfate or alpha-olefin sulfonate, about 8%; and water, 70–80%.

4,442,019

ELECTROORDERED DIPOLE SUSPENSION

Alvin M. Marks, Bigelow Rd., Athol, Mass. 01331

Continuation-in-part of Ser. No. 909,944, May 26, 1978, abandoned. This application Jan. 5, 1981, Ser. No. 222,377

Int. Cl.³ B01J *13/00;* **G02F** *1/01;* **G05D** *25/00*

U.S. Cl. 252—309 **31 Claims**

1. An electrodichroic composition of matter comprising a fluid suspension of asymmetric electrically charged conductive particles in an insulating surfactant fluid, said electrically charged particles producing an electrostatic field mutually repelling said particles, said fluid suspension having a resistivity exceeding 10^{10} ohm-cm, said fluid suspension having a layer thickness of 3–50 μm, said fluid suspension layer having a particle concentration such that the ratio of random optical density to thickness in micrometers is between 0.08 and 0.8, a constant amplitude alternating electric voltage, said voltage being applied across said layer, said voltage being such as to produce an electrodichroic ratio of 6 to 40, where said particles form an electroordered array without particle coagulation in said fluid.

4,442,020

CATALYTIC STEAM REFORMING OF HYDROCARBONS

Andrija Fuderer, Antwerpen, Belgium, assignor to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 114,566, Jan. 23, 1980, Pat. No. 4,337,170. This application Jun. 3, 1982, Ser. No. 384,581

The portion of the term of this patent subsequent to Jun. 29, 1999, has been disclaimed.

Int. Cl.³ C01B *3/38*

U.S. Cl. 252—373 **9 Claims**

1. An improved process for the catalytic steam reforming of fluid hydrocarbons comprising:

(a) catalytically reacting a major portion of a fluid hydrocarbon feed stream with steam in catalyst-containing reformer tubes positioned within a first primary reforming zone maintained at an elevated temperature by radiant heat transfer and/or by contact with combustion gases, the hot reformer tube effluent comprising a first primary reformed gas mixture;

(b) passing said first reformed gas mixture from said first primary reforming zone to a secondary reforming zone, for the catalytic reaction therein of unconverted hydrocarbons present in the first primary reformed gas mixture with oxygen or air, the hot effluent from said zone comprising a secondary reformed gas mixture;

(c) catalytically reacting the remaining portion of said hydrocarbon feed stream with steam at an elevated temperature in a second primary reforming zone having catalyst-containing reformer tubes positioned therein; the hot effluent from said tubes comprising a second primary reformed gas mixture;

(d) passing said secondary reformed gas mixture to the second primary reforming zone for combining with said second primary reformed gas mixture at the hot discharge end of the reformer tubes of said second primary reforming zone, thus forming a hot combined reformer gas stream within said second primary reforming zone at the hot discharge end of the reformer tubes therein;

(e) passing the hot combined reformer gas formed within said second primary reforming zone countercurrently on the shell side of said second primary reaction zone, thereby supplying heat to maintain said second primary reforming zone at an elevated temperature; and

(f) withdrawing the thus-partially cooled combined reformer effluent stream, comprising a combination of said primary and secondary reformed gas mixtures, from said second primary reaction zone,

whereby the desired overall steam reforming is accomplished at a substantial reduction in hydrocarbon fuel consumption.

4,442,021

METHOD OF PROTECTING REINFORCING BARS, PRE-STRESSING CABLES AND SIMILAR ARTICLES INSIDE OF STRUCTURES

Theodor Bürge, Geroldswil, and Gustav Bracher, Rifferswil, both of Switzerland, assignors to Sika AG, vorm. Kaspar Winkler & Co., Zurich, Switzerland

Filed Jul. 8, 1982, Ser. No. 396,152

Claims priority, application Switzerland, Jul. 20, 1981, 4750/81

Int. Cl.³ C23F *11/18, 11/10*

U.S. Cl. 252—389 R **13 Claims**

1. A method of protecting reinforcing bars, prestressing cables and similar articles inside of structures against corrosion, comprising the coating or covering of the reinforcing bars or prestressing cables, or similar, by an aqueous suspension of 10–99.99% hydraulic binding agents or mixtures thereof with latent hydraulic additives and 0.01–10% corrosion inhibitors.

4,442,022

PHOTOPOLYMERIZABLE COMPOSITION, PHOTOINITIATOR MIXTURE AND CURING PROCESS

Tjerk van der Hauw, Diepenveen, and Hans Jaspers, Putten, both of Netherlands, assignors to Akzona, Inc., Asheville, N.C.

Filed Oct. 28, 1981, Ser. No. 315,799

Claims priority, application Netherlands, Nov. 5, 1980, 8006035

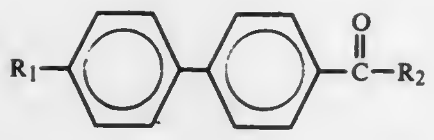
Int. Cl.³ C08F *2/46, 4/00*

U.S. Cl. 502—150 **3 Claims**

1. A photoinitiator mixture comprising:

a. benzil, fluorenone, or mixtures thereof;

b. a biphenylyl ketone of the formula:



wherein:

R_1=hydrogen, an alkyl group having 1-8 carbon atoms, an alkoxy group having 1-10 carbon atoms, an alkyl carbonyl group having 2-12 carbon atoms or a halogen atom; and

R_2=an alkyl group having 1-12 carbon atoms, phenyl, naphthyl, furyl or thiophenyl, which groups may be substituted or not, and

wherein the molar ratio of said biphenylyl ketone to said benzil, fluorenone, or mixtures thereof is between 0.25 and 9.

4,442,023
HYDROTREATING HYDROCARBON FEEDSTOCKS

Roland H. Heck, Pennington; Edward J. Rosinski, Pedricktown, and Stuart S. Shih, Cherry Hill, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 220,554, Dec. 29, 1980, abandoned. This application Feb. 17, 1983, Ser. No. 467,573

Int. Cl.^{3} B01J *27/06*

U.S. Cl. 502—222 **13 Claims**

1. In a hydrotreating catalyst consisting essentially of about 10 wt. % to about 20 wt. % of at least one Group VIA metal, metal oxide or metal sulfide and about 3.5 wt. % to about 6.5 wt. % of at least one Group VIIIA metal, metal oxide or metal sulfide deposited on an inorganic refractory oxide, the improvement wherein said catalyst further consists essentially of about 0.1% to about 7% by weight of a halogenated metal compound selected from the group consisting of halogenated metal compound of Groups IB, IIB, IIIB, titanium and tin.

4,442,024
CATALYST AND METHOD OF MAKING THE SAME

John M. Crone, Jr., Fishkill, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Feb. 9, 1982, Ser. No. 346,773

Int. Cl.^{3} B01J *23/42*

U.S. Cl. 502—334 **11 Claims**

1. A method of forming a catalytic article consisting essentially of the steps of contacting substrate and aluminum metal with a coating solution comprising an alkali aluminate and an alkali hydroxide for a period of time sufficient to form a film of hydrated alumina on said substrate; separating said film coated substrate from said coating solution; forming a slurry of a catalytic material, a calcined alumina material and a liquid carrier; contacting said film of alumina with said slurry; and then calcining said slurry coated alumina film and substrate.

4,442,025
PERFUME COMPOSITIONS AND PERFUMED ARTICLES CONTAINING ESTERS OF SUBSTITUTED BICYCLO [2.2.1]HEPTANE- AND HEPTENE-CARBOXYLIC ACIDS AS PERFUME BASE

Harmannus Boelens; Antonius J. A. van der Weerdt, and Theodorus G. M. Hesp, all of Huizen, Netherlands, assignors to Naarden International, N.V., Naarden-Bussum, Netherlands

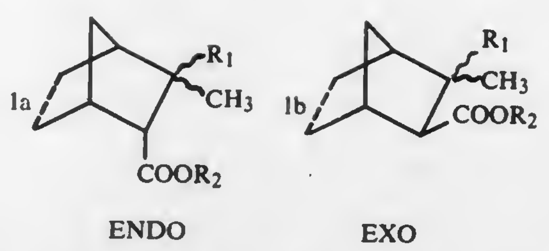
Filed May 27, 1981, Ser. No. 267,644

Claims priority, application Netherlands, May 28, 1980, 8003068

Int. Cl.^{3} A61K *7/46;* **C11B** *9/00*

U.S. Cl. 252—522 R **8 Claims**

1. A perfume composition comprising one or more esters of methyl substituted bicyclo[2.2.1]heptane- and/or heptene-carboxylic acid having the following formulae:



wherein the dotted line is a single or double bond; R_1 is selected from a group consisting of CH_3 and H; and R_2 is selected from a group consisting of alkyl and alkenyl having 1–4 carbon atoms.

4,442,026

Patent Not Issued For This Number

4,442,027
ELECTRICAL INSULATING OIL COMPOSITION

Atsushi Sato, Tokyo; Naoya Takahashi, Yokohama; Keiji Endo, Yokohama, and Hitoshi Yanagishita, Yokohama, all of Japan, assignors to Nippon Petrochemicals Company Ltd., Tokyo, Japan

Continuation of Ser. No. 300,503, Sep. 9, 1981, abandoned. This application Jul. 8, 1983, Ser. No. 511,728

Claims priority, application Japan, Sep. 11, 1980, 55-126489

Int. Cl.^{3} H01B *3/22*

U.S. Cl. 252—574 **4 Claims**

1. An electrical insulating oil composition which is resistant to deterioration caused by contact with lead and lead alloys consisting essentially of aromatic hydrocarbons having two to three aromatic nuclei and sulfur compounds in an amount sufficient to provide 5 to 300 ppm as sulfur, said sulfur compounds obtained by treating in the presence of an acid catalyst a liquid phase hydrocarbon by-product fraction derived from the thermal cracking of petroleum hydrocarbons at a temperature of at least 700° C. and principally composed of components with a boiling range of between about 75° C. and about 198° C., said acid catalyst treated hydrocarbon by-product fraction having a boiling range of between 265° C. and 360° C. and combined with said aromatic hydrocarbons whereby said sulfur concentration is adjusted to 5 to 300 ppm as sulfur..

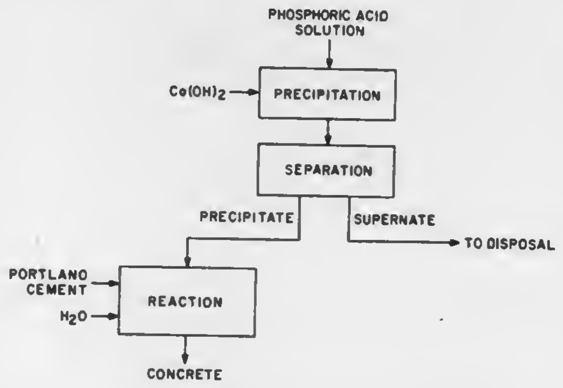
4,442,028
METHOD FOR INCORPORATING RADIOACTIVE PHOSPHORIC ACID SOLUTIONS IN CONCRETE

Gary A. Wolf, Kennewick, Wash.; Jeffrey W. Smith, Lancaster, Ohio, and Nathan C. Ihle, Walla Walla, Wash., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 8, 1982, Ser. No. 396,192

Int. Cl.^{3} G21F *9/10, 9/11*

U.S. Cl. 252—628 **5 Claims**



1. A method for incorporating radioactive phosphoric acid solutions in concrete comprising:

(a) first neutralizing a phosphoric acid solution containing Cobalt-60 with $Ca(OH)_2$ and thereby forming a precipitate, said precipitate having the formula $Ca_{10}(PO_4)_6(OH)_2$ and the crystal structure of hydroxyapatite, and then

(b) mixing said precipitate with portland cement and thereby forming concrete.

4,442,029
PROCESS FOR THE PREPARATION OF ACID AMIDES AND APPLICATION OF THE PROCESS

Dieter Marquarding, Darmstädter Strasse 11, 800 Munich 50, and Helmut Aigner, Barerstrasse 52, 8000 Munich 40, both of Fed. Rep. of Germany

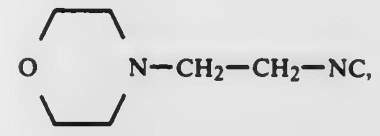
Continuation of Ser. No. 198,251, Oct. 17, 1980, abandoned. This application Jan. 25, 1983, Ser. No. 460,881

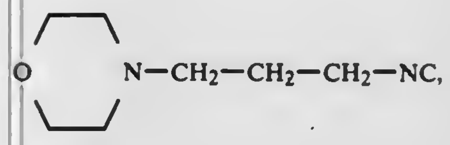
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1979, 2942606

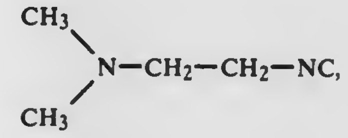
Int. Cl.^{3} C07C *102/04*

U.S. Cl. 260—112.5 R **1 Claim**

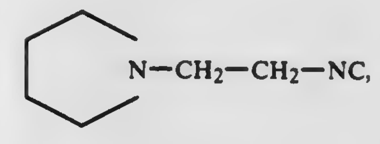
1. In a process for the preparation of acid amides by reacting a carboxylic acid and an amine in the presence of an isonitrile, the improvement consisting of using as said isonitrile a compound selected from the group consisting of:

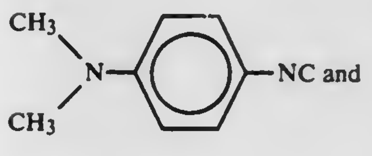


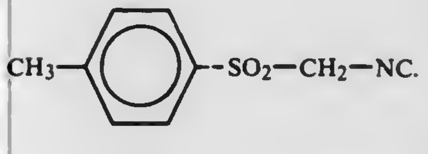




$$\begin{matrix} CH_3 & \\ & \diagdown \\ & N-CH_2-CH_2-NC, \\ & \diagup \\ CH_3 & \end{matrix}$$







4,442,030
PROCESS FOR PREPARING CARBOXYALKYL DIPEPTIDES

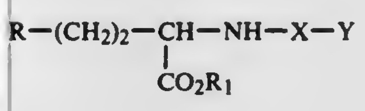
William J. Greenlee, Teaneck, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 385,745, Jun. 7, 1982, abandoned. This application Jan. 31, 1983, Ser. No. 462,727

Int. Cl.^{3} C07C *103/52*

U.S. Cl. 260—112.5 R **10 Claims**

1. A process for preparing carboxyalkyl dipeptides having the formula:



I

$$R-(CH_2)_2-\underset{\displaystyle CO_2R_1}{\underset{|}{CH}}-NH-X-Y$$

wherein

R is

aryl;

substituted aryl wherein the substituent can be loweralkyl, loweralkoxy, or halo;

heteroaryl which can optionally include an O or N atom;

substituted heteroaryl wherein the substituent(s) on the aryl and heteroaryl groups is (are) halo, dihalo, loweralkyl, hydroxy, loweralkoxy, acylamino, haloloweralkyl;

R_1 is loweralkyl of 1 to 4 carbon atoms;

X is

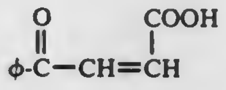
alanine;
glycine;
isoleucine;
leucine;
lysine;
phenylalanine;
valine;

Y is

alanine;
glycine;
isoleucine;
leucine;
lysine;
phenylalanine;
proline;
valine; and,

the pharmaceutically acceptable salts thereof; which process comprises:

reacting a compound having the formula:



II'

$$\phi\text{-}\overset{\displaystyle O}{\overset{\|}{C}}-CH=\overset{\displaystyle COOH}{\overset{|}{CH}}$$

with a dipeptide to obtain a dicarboxy dipeptide; hydrogenating said dicarboxy dipeptide in an acidic medium in an alcohol solvent to afford, after concomittant esterification, a dicarboalkoxy dipeptide as a mixture of diastereomers; and, separating said diastereomeric mixture to produce said Formula I compounds.

4,442,031
IMMUNOPOTENTIATING PEPTIDES

Arthur M. Felix, West Caldwell, N.J.; Hideo Ishitsuka, Yokohama, Japan; Johannes A. Meienhofer, Upper Montclair, N.J., and Yumiko Ohta, Zushi, Japan, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 311,569, Oct. 15, 1981, which is a continuation-in-part of Ser. No. 282,571, Jul. 13, 1981, abandoned. This application Apr. 5, 1983, Ser. No. 482,347

Int. Cl.^{3} C07C *103/52*

U.S. Cl. 260—112.5 R **3 Claims**

1. A compound of the formula

H-Lys-X-Glu-Val-Val-Glu-OH

wherein X is -Lys- or -Ser-, or a pharmaceutically acceptable salt thereof.

4,442,032
ISOTHIOCYANATO-AZOBENZENE-SULFONIC, ARSONIC AND SUBSTITUTED-GLUTAMIC ACID HAPTENS

Robin G. Simmonds, Wokingham, England, assignor to Lilly Industries Limited, London, England

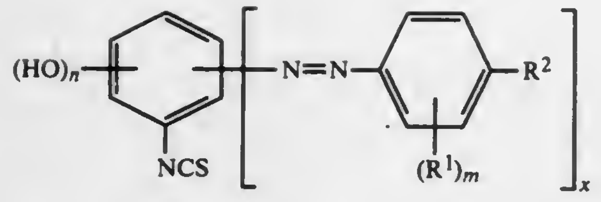
Filed Nov. 27, 1981, Ser. No. 325,513

Claims priority, application United Kingdom, Dec. 4, 1980, 8038910

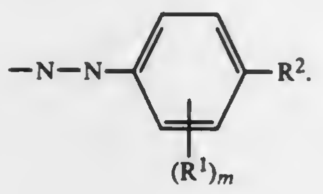
Int. Cl.^{3} C07C *107/06, 113/04;* **C09B** *29/12, 33/044*

U.S. Cl. 260—149 **3 Claims**

1. A compound of formula



in which n is 1 or 2, R^1 is C_{1-4} alkyl, C_{1-4} alkoxy, nitro, amino, halo or hydroxy, m is 0, 1 or 2, R^2 is an immunogenic determinant and x is 1 or 2, provided that when n is 1, x is 1 or 2 and there is one diazo moiety at the 3-position or two diazo moieties at the 3- and 5-positions, with respect to the isothiocyanate group, and the hydroxy group is at the 4-position; and provided that when n is 2, x is 1 and the diazo moiety is at the 4-position and the hydroxy groups are at the 3- and 5-positions, wherein the term diazo moiety represents



4,442,033

AZO DYESTUFF FOR USE AS A CHROMOGEN IN DETECTING LEUKOCYTES

Dieter Berger, Viernheim; Franz Braun, Rimbach; Günter Frey, Ludwigshafen; Werner Güthlein, Mannheim-Neckarau, and Manfred Kuhr, Mannheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Division of Ser. No. 63,211, Aug. 2, 1979, Pat. No. 4,296,202. This application Jun. 8, 1981, Ser. No. 271,342

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1978, 2836644

Int. Cl.³ C09B *29/036, 29/042, 29/15;* **C12Q** *1/29*

U.S. Cl. 260—158 **25 Claims**

1. Azo dyestuff of the formula

$$A—N=N—B\ (OR)_n$$

wherein

A is a five- or six membered heterocyclic radical of up to 2 hetero ring atoms selected from nitrogen, sulfur and oxygen, and wherein the heterocyclic ring is unsubstituted or substituted with at least one member of the group selected from F, Cl, Br, lower alkyl with 1 to 5 carbon atoms and lower alkoxy with 1 to 5 carbon atoms; or

A is phenyl substituted by one to three radicals selected from lower alkyl with 1 to 5 carbon atoms, lower alkoxy with 1 to 5 carbon atoms, nitro, sulphonato and benzoylamino;

B is substituted once or twice, or unsubstituted benzene, naphthalene or quinoline, wherein the substituents are selected from the group consisting of sulphonato, lower alkoxy with 1 to 5 carbon atoms and lower alkoxypolyethyleneoxy containing an alkoxy group with 1 to 5 carbon atoms and 1 to 5 ethyleneoxy groups;

R is an amino acid or di-to pentapeptide having an NH_2 protective group, said amino acid being a naturally occurring L-alpha-amino acid attached to substituent B through a terminal carboxyl group; and

n is 1 or 2.

4,442,034

PROCESS FOR PRODUCING CORN OIL

Hirohisa Suzuki, and Hironiro Takahashi, both of Kamakura, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Apr. 3, 1981, Ser. No. 250,729

Claims priority, application Japan, Apr. 17, 1980, 55-50999; Apr. 17, 1980, 55-51000

Int. Cl.³ C11B *9/00, 1/10*

U.S. Cl. 260—236.6 **6 Claims**

1. A process for producing corn oil, which comprises: (a) obtaining germ by the dry milling of maize; (b) separating the higher oil-content germ having an oil content of not less than 22% by weight from the lower oil-content germ; (c) pelletizing said lower oil-content germ; (d) mixing said pelletized lower oil-content germ with said higher oil-content germ; (e) heating and flaking said mixed germ fractions, thereby obtaining a flaked product, wherein the temperature of the heating process is in the range of from 60° C. to 90° C.; and (f) contacting said flaked product with an organic solvent to extract corn oil therefrom.

4,442,035

ACYCLIC AMINE EPOXIDE PROCESS

Clifford E. Sacks, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

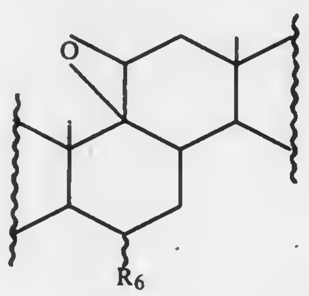
Continuation-in-part of Ser. No. 431,548, Sep. 30, 1982, abandoned. This application Oct. 25, 1982, Ser. No. 436,219

Int. Cl.³ C07J *71/00*

U.S. Cl. 260—239.55 R **33 Claims**

1. A process for the preparation of an epoxide of the formula

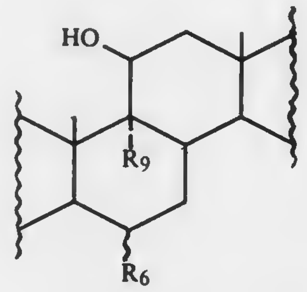
(II)



which comprises

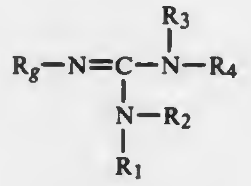
(1) contacting a 9α-substituted 11β-hydroxy steroid of the formula

(I)



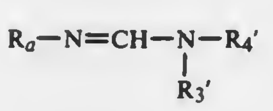
with an acyclic amine selected from the group consisting of compounds of the formula

(III)



$$R_g{-}N{=}\underset{\substack{|\\ N-R_2\\ |\\ R_1}}{C}{-}\overset{\substack{R_3\\ |}}{N}{-}R_4$$

(IV)



$$R_a{-}N{=}CH{-}\underset{\substack{|\\ R_3'}}{N}{-}R_4'$$

and

(2) isolating the epoxide (II) where

R_a is alkyl of one through 7 carbon atoms, cycloalkyl of 5 through 7 carbon atoms, phenyl substituted with one through 3—R, —OR_{50} or —$N(T_{50})_2$ where with the amine the R_{50}'s can be the same or different and can be combined to form a cyclic secondary amine selected from the group consisting of piperidine, pyrrolidine and morpholine;

R_g is R_a and a hydrogen atom, or phenyl;

R_1 is alkyl of one through 7 carbon atoms, cycloalkyl of 5 through 7 carbon atoms, phenyl substituted with zero through 3—R, —OR_{50} or —$N(R_{50})_2$ where with the amine the R_{50}'s can be the same or different and can be combined to form a cyclic secondary amine selected from the group consisting of piperidine, pyrrolidine and morpholine with the proviso that R_1 and R_2 combined cannot have more than 14 carbon atoms; R_1 and R_2 can be combined to form a cyclic secondary amine selected from the group consisting of piperidine, pyrrolidine and morpholine;

R_2 is alkyl of one through 7 carbon atoms, cycloalkyl of 5 through 7 carbon atoms, phenyl substituted with zero through 3—R, —OR_{50} or —$N(R_{50})_2$ where with the amine the R_{50}'s can be the same or different and can be combined to form a cyclic secondary amine selected from the group consisting of piperidine, pyrrolidine and morpholine with the proviso that R_1 and R_2 combined cannot have more than 14 carbon atoms; R_1 and R_2 can be combined to form a cyclic secondary amine selected from the group consisting of piperidine, pyrrolidine and morpholine;

R_3 is alkyl of one through 7 carbon atoms, cycloalkyl of 5 through 7 carbon atoms, phenyl substituted with zero through 3—R, —OR_{50} or —$N(R_{50})_2$ where with the amine the R_{50}'s can be the same or different and can be combined to form a cyclic secondary amine selected from the group consisting of piperidine, pyrrolidine and morpholine with the proviso that R_3 and R_4 combined cannot have more than 14 carbon atoms; R_3 and R_4 can be combined to form a cyclic secondary amine selected from the group consisting of piperidine, pyrrolidine and morpholine;

R_3' is alkyl of one through 7 carbon atoms, cycloalkyl of 5 through 7 carbon atoms, phenyl substituted with one through 3—R, —$OR_{50})_2$ where with the amine the R_{50}'s can be the same or different and can be combined to form a secondary amine selected from the group consisting of piperidine, pyrrolidine or morpholine, with the proviso that R_3' and R_4' combined cannot have more than 14 carbon atoms; R_3' and R_4' combined cannot have more than 14 carbon atoms; R_3' and R_4' can be combined to form a cyclic secondary amine selected from the group consisting of piperidine, pyrrolidine and morpholine;

R_4 is alkyl of one thru 7 carbon atoms, cycloalkyl of 5 thru 7 carbon atoms, phenyl substituted with zero thru 3—R, —OR_{50} or —$N(R_{50})_2$ where with the amine the R_{50}'s can be the same or different and can be combined to form a cyclic secondary amine selected from the group consisting of piperidine, pyrrolidine and morpholine with the proviso that R_3 and R_4 combined cannot have more than 14 carbon atoms; R_3 and R_4 can be combined to form a cyclic secondary amine selected from the group consisting of piperidine, pyrrolidine and morpholine;

R_4' is alkyl of one thru 7 carbon atoms, cycloalkyl of 5 thru 7 carbon atoms, phenyl substituted with one thru 3—R, —OR_{50} or —$N(R_{50})_2$ where with the amine the R_{50}'s can be the same or different and can be combined to form a secondary amine selected from the group consisting of piperidine, pyrrolidine or morpholine, with the proviso that R_3' and R_4' combined cannot have more than 14 carbon atoms; R_3' and R_4' can be combined to form a cyclic secondary amine selected from the group consisting of piperidine, pyrrolidine and morpholine;

R_6 is a hydrogen or fluorine atom or methyl group;

R_9 is a chlorine, bromine or iodine atom or hydroxyl group as the tosylate, mesylate, or triflate ester;

R_{16} is a hydrogen atom, hydroxyl, acyloxy where the acyl group contains 2 thru 6 carbon atoms, or methyl group with the proviso that when R_{16} is a hydrogen atom the hydroxyl groups at C_{16} and C_{17} can be in the form of an acetonide;

R_{17} is a hydrogen atom or a —$COR_{17\alpha}$ group with the proviso that when R_{17} is a hydrogen atom and R_{16} is a hydroxyl group the hydroxyl groups at C_{16} and C_{17} can be in the form of an acetonide;

$R_{17\alpha}$ is an alkyl of one thru 6 carbon atoms or phenyl;

R_{21} is alkyl of one thru 6 carbon atoms or phenyl, or phenyl substituted with p-nitro or m-methoxy groups;

R_{50} is a hydrogen atom or alkyl of 1 thru 3 carbon atoms;

~ indicates the attached atom or group can be in the alpha or beta configuration; and

$\equiv$ is a single or double bond.

4,442,036

PROCESS FOR OXIDIZING PHENOL TO BENZOQUINONE

Chao-Yang Hsu, Media, and James E. Lyons, Wallingford, both of Pa., assignors to Sun Tech, Inc., Philadelphia, Pa.

Filed Feb. 28, 1983, Ser. No. 470,694

Int. Cl.³ C07C *49/64*

U.S. Cl. 260—396 R **10 Claims**

1. In the process of oxidizing phenol to benzoquinone in a polar organic solvent with a bivalent copper catalyst, the improvement which comprises obtaining increased selectivity and/or conversion by promoting the catalyst with a vicinal dialkoxy alkane or cycloalkane.

4,442,037

WATER-SOLUBLE CHOLESTEROL DERIVATIVE

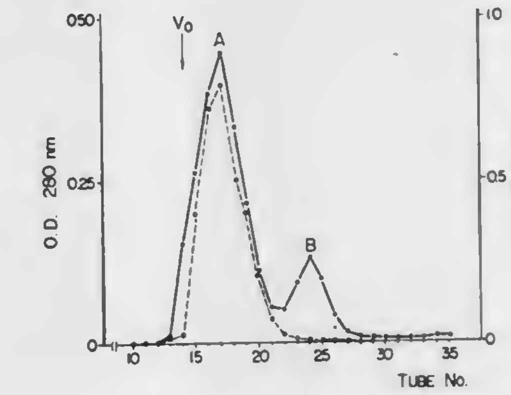
Yoshio Arakawa, 10-18, Ezakacho 1-chome, Suita-shi; Atsuyuki Takanabe, 29-19, Nagao-Higashicho 2-chome; Yahiro Uemura, 5-18, Mitsuyacho, both of Hirakata-shi; Satoshi Funakoshi, 16-5, Aoyama 1-chome, Katano-shi, and Tadakazu Suyama, 3-7, Tanabecho, Matsuigaoka 4-chome, Tsuzuki-gun, Kyoto, all of Japan

PCT No. PCT/JP81/00056, 371 Date Sep. 28, 1982, 102(e) Date Sep. 28, 1982, PCT Pub. No. WO82/03175, PCT Pub. Date Sep. 30, 1982

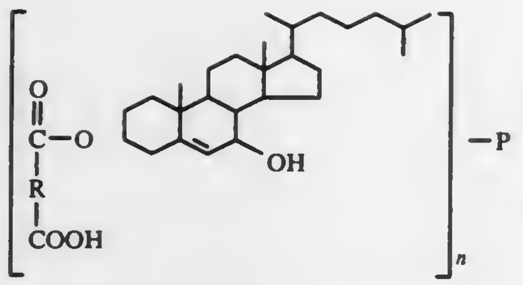
PCT Filed Mar. 13, 1981, Ser. No. 432,938

Int. Cl.³ C07J *9/00*

U.S. Cl. 260—397.2 **10 Claims**



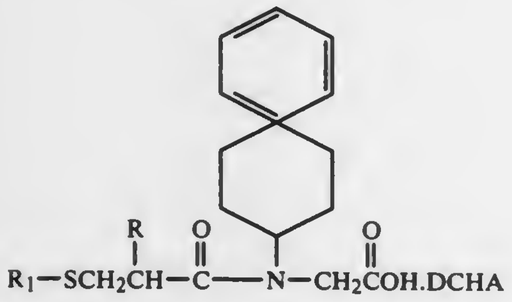
1. A complex of albumin with an organic dibasic acid half ester of 7-hydroxycholesterol, said complex being represented by the formula



wherein R is phenylene or $(CH_2)_m$, of which m indicates 0 or an integer of 1-5, P is albumin residue, and n is a number of 20–200 indicating the number of moles of the steroid, shown in the bracket, binding to mole of albumin.

4,442,038
CONVERTING ENZYME INHIBITORS
James R. Skuster, Norwich, N.Y., assignor to Norwich Eaton Pharmaceuticals, Inc.
Filed Sep. 17, 1982, Ser. No. 419,152
Int. Cl.³ C07C *153/11*
U.S. Cl. 260—455 R **5 Claims**

1. A compound of the formula:



wherein R is H or lower alkyl and DCHA is dicyclohexylamine or nil and R_1 is hydrogen or benzoyl.

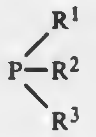
3. The compound trans-(S)-(−)-N-(3-benzoylthio-2-methyl-1-oxopropyl)-N-(4-phenylcyclohexyl)glycine.

4,442,039
PROCESS FOR TREATING HYDROXYL TERMINATED LIQUID POLYMERS
Walter T. Murphy, Cuyahoga Falls, and Clifford D. Guiley, Jr., Medina, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio
Continuation-in-part of Ser. No. 154,671, May 30, 1980, abandoned. This application May 6, 1982, Ser. No. 375,414
Int. Cl.³ C07C *121/30, 67/48*
U.S. Cl. 260—465.4 **9 Claims**

1. A process for improving the reactivity of hydroxyl terminated liquid polymers with organic polyisocyanates which comprises adding 20 to 96% sulfuric acid or 20 to 85% phosphoric acid to said hydroxyl terminated liquid polymers in amount to increase the total acid number of said polymer by at least three points to an acid number of about 6 to 12, said hydroxyl terminated liquid polymers being the reaction product of liquid carboxyl terminated polymers with 3 to 10 parts per 100 of polymer of ethylene oxide in the presence of 0.1 to 0.5 of an amine catalyst, said reaction product containing greater than 0.01 to less than about 0.5 part residual amine catalyst, said liquid carboxyl terminated polymers being selected from the group consisting of (1) carboxyl terminated poly(butadiene-1,3), (2) carboxyl terminated copolymers of butadiene-1,3 and acrylonitrile containing more than 50 weight percent butadiene with the remainder being acrylonitrile, and (3) carboxyl terminated poly(alkyl acrylate) polymers of alkyl acrylates wherein the alkyl groups contains 1 to 18 carbon atoms.

4,442,040
POLYMERIC RHODIUM, IRIDIUM AND RUTHENIUM PHOSPHINE COMPLEX COMPOUNDS, PROCESSES FOR THEIR PRODUCTION AND USE
Peter Panster, and Peter Kleinschmit, both of Hanau, Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Jul. 16, 1981, Ser. No. 283,868
Claims priority, application Fed. Rep. of Germany, Aug. 5, 1980, 3029599
Int. Cl.³ C07F *15/00*
U.S. Cl. 260—429 R **24 Claims**

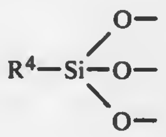
1. A polymeric complex compound of a noble metal selected from the group consisting of rhodium, iridium and ruthenium, having a silica-like structure, wherein at least one phosphine of the formula:



(1)

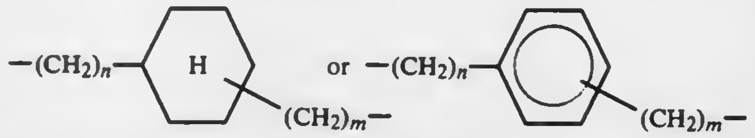
is coordinately bound to the noble metal atom selected from the group consisting of rhodium, iridium and ruthenium; an atomic ratio of noble metal to phosphorus being $1:1-1:10^6$; any free coordination positions on said noble metal atom being occupied by other electron pair donors, and any required charge equalization being furnished by an inorganic or organic anion;

wherein R^1 is a group of the formula:



(2)

in which R^4 is a straight-chain or branched alkylene with 1 to 10 carbons, cycloalkylene with 5 to 8 carbons, or a group of the following formula:



in which n is from 1 to 6, and corresponds to the number of methylene groups situated on phosphorus, m can be a number from 0 through 6, the ring hydrogen atoms can be partially or completely substituted by halogen, methyl or ethyl, and the free valences on the oxygen atoms are saturated either by silicon atoms of further units of formula (2) or by silicon, titanium or aluminum bridging atoms,

R^2 and R^3 may be R^1, alkyl or alkoxy containing 1 to 6 carbons, phenyl or phenoxy groups substituted with alkyl or alkoxy of 1 to 6 carbons.

4,442,041
METHOD FOR PREPARATION OF N-PHOSPHONOMETHYLGLYCINE
N. Subramanian, Hercules, Calif., assignor to Stauffer Chemical Company, Westport, Conn.
Continuation-in-part of Ser. No. 393,573, Jun. 30, 1982. This application May 31, 1983, Ser. No. 499,588
Int. Cl.³ C07F *9/38*
U.S. Cl. 260—502.5 F **6 Claims**

1. A method for the preparation of N-phosphonomethylglycine which comprises the steps of:

(1) reacting N-(diethylphosphonomethyl)iminobisethanol in an oxygen free atmosphere with an alkali metal hydroxide selected from the group consisting of sodium hydroxide and potassium hydroxide, in the presence of water as solvent and a catalyst selected from the group consisting of zinc oxide and cadmium oxide at a temperature ranging from about 270° C. to about 280° C. and pressure ranging from about 800 psi to about 1500 psi, for a combination of time, temperature and pressure sufficient for the reaction to go to completion thus forming as an intermediate product N-phosphonomethylglycine trisalt and

(2) acidifying said intermediate product thus formed.

4,442,042
PROCESS OF MAKING PROPANE SULFONATES
Kirk D. Schmitt, Pennington, N.J., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Apr. 30, 1981, Ser. No. 259,218
Int. Cl.³ C07C *143/11, 143/06, 143/38*
U.S. Cl. 260—512 R **8 Claims**

1. A method of preparing propane sulfonates from alcohols or thiols via their allyl ethers comprising conducting, under suitable conditions, a reaction in accordance with the following 2-step procedure in a single reactor without isolation of intermediates:

$$RZH+NaOH+CH_2{=}CHCH_2X \rightarrow RZCH_2CH{=}CH_2+NaX \quad (1)$$

$$RZCH_2CH{=}CH_2+NaHSO_3 \rightarrow RZCH_2CH_2CH_2SO_3Na \quad (2)$$

where R is C_1–C_{16} alkyl, alkaryl, alkyl-polyoxyethylene or alkarylpolyoxyethylene, X is halide or tosylate, Z is O or S, and where the NaOH is an approximately 50% aqueous system; and recycling to (1) a minor amount of the desired product sufficient to function as phase transfer catalyst for said reaction, whereby the yield is improved compared to the reaction conducted in the absence of recycled product.

4,442,043
OIL RECOVERY METHOD UTILIZING A DICYCLOPENTADIENE DERIVED ETHOXYSULFONATE
David R. McCoy; Robert M. Gipson, and Carter G. Naylor, all of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.
Division of Ser. No. 423,415, Sep. 24, 1982. This application Jun. 27, 1983, Ser. No. 508,214
Int. Cl.³ C07C *143/02*
U.S. Cl. 260—513 R **4 Claims**

1. A composition of matter of the formula:

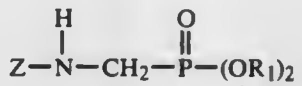
$$R{-}Y(CH_2CH_2O)_m(CH_2)_nSO_3X$$

wherein

R is a dicyclopentenyl moiety,
Y is a divalent moiety selected from the group consisting of oxygen and sulfur,
X is a cation selected from the group consisting of sodium, potassium and ammonium,
n is an integer of from 2 to 3,
m is an integer of from 1 to 10 with the proviso that when Y is sulfur, m is an integer of from 2 to 10.

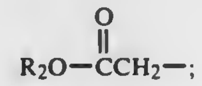
4,442,044
PROCESS FOR PREPARING MONOESTERS AND DIESTERS OF N-ALKYL SUBSTITUTED AMINO METHYL PHOSPHONIC ACID
William R. Purdum, Maryland Heights, Mo., assignor to Monsanto Company, St. Louis, Mo.
Continuation-in-part of Ser. No. 275,487, Jun. 19, 1981, abandoned. This application Mar. 28, 1983, Ser. No. 479,246
Int. Cl.³ C07F *9/40*
U.S. Cl. 260—969 **3 Claims**

1. A process for the preparation of phosphonate compounds useful as herbicides of the formula



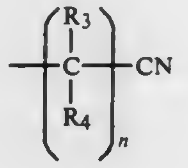
$$Z{-}\overset{\overset{\displaystyle H}{|}}{N}{-}CH_2{-}\overset{\overset{\displaystyle O}{\|}}{P}{-}(OR_1)_2 \qquad (I)$$

wherein Z is selected from the group consisting of

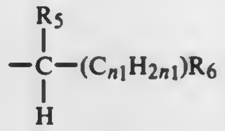


$$R_2O{-}\overset{\overset{\displaystyle O}{\|}}{C}CH_2{-};$$

wherein R_2 is lower alkyl, lower alkoxy alkyl, halo lower alkyl or phenyl lower alkyl; lower alkynyl; lower alkyl; and $NCCH_2$-; and R_1 is selected from the group consisting of lower alkyl; lower alkoxy lower alkyl; halo lower alkyl; phenyl lower alkyl;

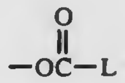


wherein n is an integer from 1 to 4, R_3 is selected from the group consisting of lower alkyl, lower alkoxy lower alkyl, halo lower alkyl, phenyl lower alkyl and R_4 is hydrogen or lower alkyl;



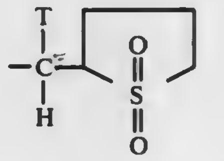
$$-\underset{\underset{\displaystyle H}{|}}{\overset{\overset{\displaystyle R_5}{|}}{C}}-(C_{n1}H_{2n1})R_6$$

wherein R_5 is hydrogen, lower alkyl, lower alkoxy carbonyl; R_6 is halogen, lower alkoxy carbonyl, or

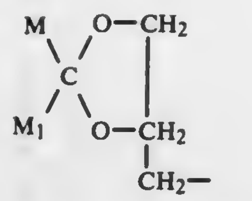


$$-O\overset{\overset{\displaystyle O}{\|}}{C}-L$$

wherein L is lower alkyl and n_1 is an integer from 0 to 3; $(C_{n2}H_{2n2})S$-X wherein X in lower alkyl or lower alkoxy carbonyl and n_2 is an integer from 1 to 4;

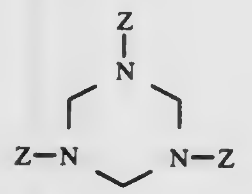


wherein T is lower alkyl; and $(C_{n3}H_{2n3})Y$ wherein n_3 is an integer from 0 to 4 and Y is selected from the group consisting of trihalomethyl, lower alkoxycarbonyl, furanyl, pyrolidinyl, pyranyl and



wherein M_1 and M are independently lower alkyl: said process comprising:

(a) reacting
  (i) a trisubstituted phosphite of the formula $P(OR_1)_3$ wherein R_1 is as defined above, with
  (ii) water, and
  (iii) a compound of the formula

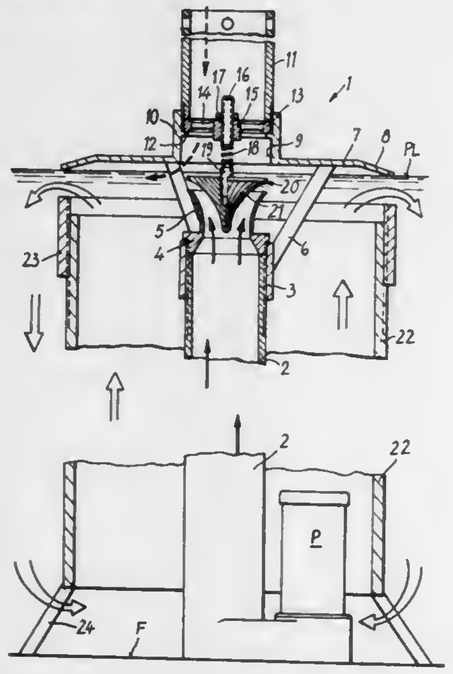


wherein Z is as aforedefined, to prepare a crude phosphonate composition containing said phosphonate compound, and
  (b) thereafter recovering said phosphonate compound from said crude phosphonate composition.

4,442,045
APPARATUS FOR ADMIXING A GAS TO A LIQUID, IN PARTICULAR FOR ADMIXING OXYGEN TO POLLUTED WATER

Lussoria A. Sciolla, Via Ipsitani, 80 Fordongianus (Cagliari), Italy

Filed Sep. 18, 1981, Ser. No. 303,667
Claims priority, application Italy, Sep. 26, 1980, 3521 A/80
Int. Cl.^{3} B01F *3/04*
U.S. Cl. 261—36 R 3 Claims



1. An apparatus for admixing a gas to a liquid, in particular for admixing oxygen to polluted water, comprising:

a tank containing a liquid to be oxygenated, said liquid having a free surface;

a vertical tubular column having a lower inlet and an upper outlet, said column being immersed, in use, in said liquid to be oxygenated, said upper outlet extending, in use, below the free surface of the liquid;

a pump connected to said lower inlet and adapted to draw the liquid into said tubular column through said lower inlet and to pump it upwardly to said upper outlet;

a liquid deflector substantially in the form of an inverted cone, said deflector extending through said outlet coaxially with said column, being, in use, at least partially immersed and diverting the liquid flowing vertically through said column in a substantially radial direction with respect to said column;

a laminating plate located above said deflector and, in use, approximately level with the free surface of the liquid, said laminating plate having a central opening coaxial with said column, said opening being smaller than said laminating plate;

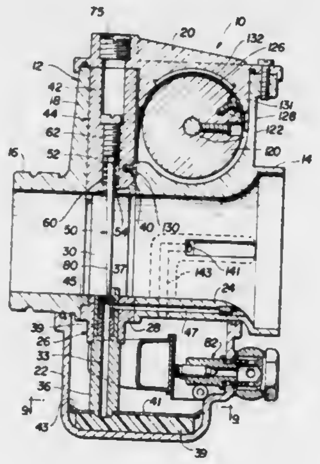
an upper axial gas intake conduit fixed to said laminating plate, coaxial and communicating with said central opening; and

means supported by said intake conduit for adjusting the axial position of said deflector relatively to said column.

4,442,046
CARBURETOR

William H. Edmonston, 22021 Trailway, El Toro, Calif. 92630

Filed Mar. 31, 1982, Ser. No. 364,059
Int. Cl.^{3} F02M *9/06*
U.S. Cl. 261—44 B 6 Claims



1. A carburetor, comprising:

a body having an inlet end, an outlet end, and a throat extending therethrough from said inlet end to said outlet end,

a fuel supply tube secured to the underside of said body and having an outlet in communication with said throat,

a throttle slide member movably mounted on the body intermediate said inlet and outlet ends thereof for substantially transverse movement across said throat to vary the unblocked portion thereof, and

a metering rod secured to said throttle slide member and extending downwardly into said fuel supply tube to control the flow of fuel therethrough,

a fuel reservoir secured to and disposed beneath said body, said fuel supply tube extending downwardly into said fuel reservoir, and

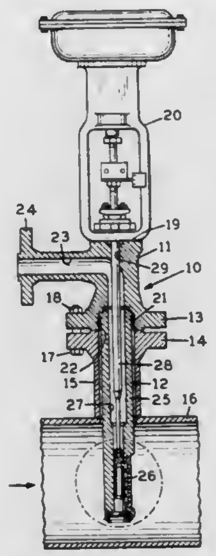
a fuel cell disposed on the bottom of said fuel reservoir and being adapted to absorb fuel therein, means covering the upper portion of said fuel cell to trap fuel therein, said covering means having an aperture therethrough, and the lower end of said fuel supply tube extending through said aperture into engagement with said fuel cell,

whereby said fuel cell and said covering means serve to reduce turbulence in the fuel and to prevent air from entering said fuel supply tube.

4,442,047
MULTI-NOZZLE SPRAY DESUPERHEATER

Roger E. Johnson, Girard, Pa., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Oct. 8, 1982, Ser. No. 433,505
Int. Cl.^{3} B01F *3/04*
U.S. Cl. 261—66 10 Claims



1. A desuperheater, which comprises

(a) a cage structure including an internal flow path,

(b) a generally flat, rectangular nozzle surface formed on said cage structure,

(c) a plurality of slot-like openings formed through said cage structure and arranged in a predetermined pattern across the rectangular nozzle surface,

(d) each of said slot-like openings providing flow communication between the internal flow path and the rectangular nozzle surface,

(e) a plurality of nozzle means,

(f) each of said nozzle means including a swirl inducing structure and a fluid discharge opening,

(g) said nozzle means being arranged across and supported against said flat rectangular nozzle surface whereby each of said nozzle means is in flow communication with one of said slot-like openings,

(h) a valve seat formed at the lowermost end of said internal flow path, and

(i) a hollow piston plug received in a leak-tight relation within said internal flow path and arranged for selective, controlled axial displacement within said internal flow path through a predetermined work stroke,

(j) said plug being matable with said valve seat when said plug is at the lowermost end of its work stroke,

(k) said slot-like openings and said plug being arranged and configured whereby said plug physically covers and isolates all of said slot-like openings from flow communication with said internal flow path when said plug is seated against said valve seat,

(l) said plug including at least one flow port formed at a topmost portion of the plug whereby fluid flow in said internal flow path will flow through said port into the interior of the hollow plug and toward said valve seat,

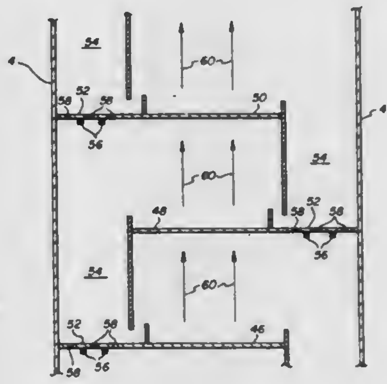
(m) said plug including an opening formed at its lowermost end,

(n) said slot-like openings and said plug being arranged and configured with respect to one another whereby said slot-like openings are progressively and sequentially exposed to flow communication with said internal flow path as said plug is axially displaced within said internal flow path toward the upper end of its work stroke.

4,442,048
METHOD AND APPARATUS FOR CONTROLLING THE FORMATION OF POLYMER ACCUMULATIONS DURING DISTILLATION OF A VINYLAROMATIC MONOMER

Marshall Abernathy, Big Spring, Tex., and Darrell E. Bailey, Prairieville, La., assignors to Cosden Technology, Inc., Dallas, Tex.

Division of Ser. No. 230,617, Feb. 2, 1981, Pat. No. 4,374,000. This application Apr. 1, 1982, Ser. No. 364,479
Int. Cl.^{3} B01D *3/22*
U.S. Cl. 261—114 R 15 Claims



1. Apparatus for controlling the formation of polymer accumulations on the underside of a seal pan underneath a downcomer in a downcomer-equipped distillation column used for distillative purification of a vinylaromatic monomer, said apparatus comprising:

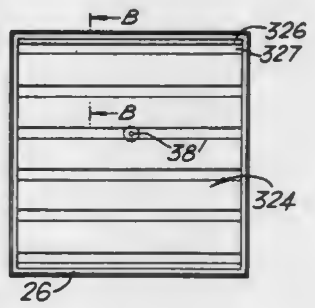
at least one downcomer-equipped distillation column comprising a series of gas/liquid contact trays, at least some of said trays having associated therewith a downcomer and a seal pan positioned underneath said downcomer for providing a liquid seal between successive trays in said series; and

means, provided in at least one seal pan and including liquid pervious weep holes spaced and dimensioned therethrough, for allowing a liquid phase material containing an effective polymerization inhibiting concentration of polymerization inhibitor accumulated on said seal pan to seep through said weep holes to the underside of said seal pan.

4,442,049
APPARATUS FOR ENSURING HEAT EXCHANGE BETWEEN A GAS FLOW AND A HEAT EXCHANGER

Ivan Bloomer, London, England, assignor to Haden Schweitzer Corporation, Madison Heights, Mich.

Division of Ser. No. 205,479, Nov. 10, 1980, abandoned. This application Sep. 21, 1982, Ser. No. 420,968
Int. Cl.^{3} B01F *3/04*
U.S. Cl. 261—148 5 Claims

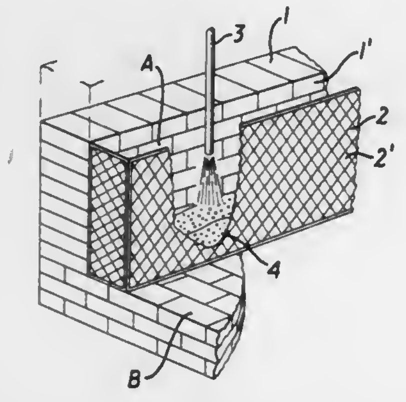


1. Apparatus for ensuring heat exchange between gas flow and a heat exchanger, comprising a duct defined by longitudinally extending duct walls, means for establishing a flow of gas through the duct, a heat exchanger mounted to extend transversely in the duct such that gas flows therethrough, a rigid

diaphragm extending transversely within the duct and perpendicular to the duct walls, said diaphragm being disposed upstream of the heat exchanger in the direction of gas flow and sealed around its perimeter with respect to the duct walls, and means for spraying liquid mounted in the duct upstream of and adjacent said diaphragm and arranged to spray liquid towards the heat exchanger, said diaphragm including a plurality of flow passages extending therethrough and defining constrictions for said gas flow such that jets of gas are produced, said diaphragm further including means for adjusting the size of said flow passages.

4,442,050
SPRAY METHOD OF APPLYING MONOLITHIC REFRACTORY MATERIAL

Hosaka Takuo, Toyota, Japan, assignor to Nippon Crucible Co., Ltd., Tokyo, Japan
PCT No. PCT/JP78/00060, 371 Date Aug. 20, 1979, 102(e) Date Aug. 20, 1979, PCT Pub. No. WO79/00442, PCT Pub. Date Jul. 26, 1979
PCT Filed Dec. 19, 1978, Ser. No. 67,890
Claims priority, application Japan, Dec. 21, 1977, 52-153868
Int. Cl.^{3} F27D *1/16*
U.S. Cl. 264—30 **5 Claims**



1. A method of applying a monolithic refractory material to a work surface, comprising:

providing a screen having openings dimensioned to permit the flow of air therethrough and to effectively prevent the passage therethrough of refractory material which is to be applied to a work surface;

positioning the screen so as to substantially enclose the work surface such that a major portion of the screen is spaced a selected distance from the work surface to define between the work surface and the major portion of the screen a space having a thickness approximately corresponding to the thickness of the refractory material to be applied; and

spraying by compressed air a refractory material in the space between the work surface and the screen in a direction generally parallel relative to the work surface to progressively accumulate refractory material in the space between the screen and the work surface while permitting the air to escape through the screen openings both below and above the level of the accumulated refractory material to thereby form a layer of refractory material on the work surface free from trapped air.

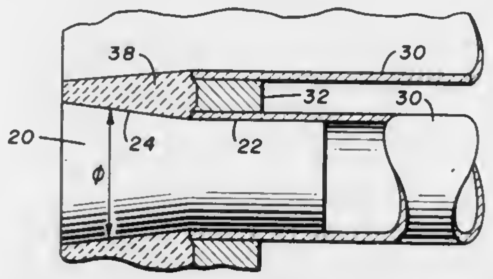
4,442,051
ENCAPSULATION OF INDOMETHACIN

James S. Rowe, Twickenham, and John E. Carless, Reigate, both of England, assignors to Nicholas Proprietary Limited, Victoria, Australia
PCT No. PCT/AU81/00044, 371 Date Dec. 11, 1981, 102(e) Date Dec. 11, 1981, PCT Pub. No. WO81/02976, PCT Pub. Date Oct. 29, 1981
PCT Filed Apr. 15, 1981, Ser. No. 330,313
Claims priority, application United Kingdom, Apr. 21, 1980, 8013003
Int. Cl.^{3} B01J *13/02*
U.S. Cl. 264—4.3 **14 Claims**

1. A method of encapsulating Indomethacin comprising mixing Indomethacin with a water-miscible liquid polyhydroxyalkane to form a dispersion or paste, dispersing said dispersion or paste in an aqueous solution of a gelatin/polysaccharide coacervate system, causing coacervation of said system to encapsulate Indomethacin with a coacervate complex, and hardening and dehydrating the resultant microcapsules.

4,442,052
FORM FOR REFRACTORY-FACED TUBE SHEETS

Philip S. Reynertson, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.
Filed Apr. 5, 1982, Ser. No. 365,209
Int. Cl.^{3} F27D *1/16*
U.S. Cl. 264—30 **5 Claims**



1. An apparatus for use in a vessel, having a shell and tube construction with refractory material protecting the tube sheet, to provide a flared entrance or exit for said tubes to reduce the pressure drop on the process fluid flowing through said vessel, comprising a form having a shank end and a flared end, said shank end being in the shape of a cylinder having a diameter less than the internal diameter of said tubes and a length of at least about 5 centimeters, and said flared end having a length at least equal to the thickness of said refractory and expanding conically outwardly at an angle of from about 15° to about 20°.

4. A method for reducing the pressure drop in a vessel having a shell enclosing a plurality of tubes which are retained by tube sheets wherein a refractory material is installed against said tube sheets comprising:

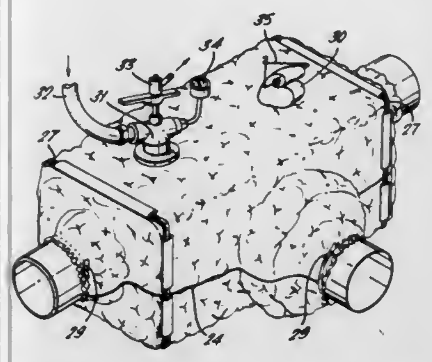
inserting a form in each of said plurality of tubes, said form having a shank end and a flared end, said shank end being in the shape of a cylinder having a diameter less than the internal diameter of said tubes but large enough to securely seat in each of said tubes and a length of at least about 5 centimeters, and said flared end having a length equal to or greater than the thickness of said refractory material and expanding conically outwardly at an angle of from about 15° to about 20°;

installing said refractory material to abut against said tube sheet and surrounding said forms; and

removing said forms after solidification of said refractory material to provide a conically flared passageway through said refractory material as the inlet to said tubes to reduce the pressure drop created by the flow of process material through said vessel.

4,442,053
METHOD OF AND APPARATUS FOR REPAIRING A LEAK IN A PIPE OR PIPELINE

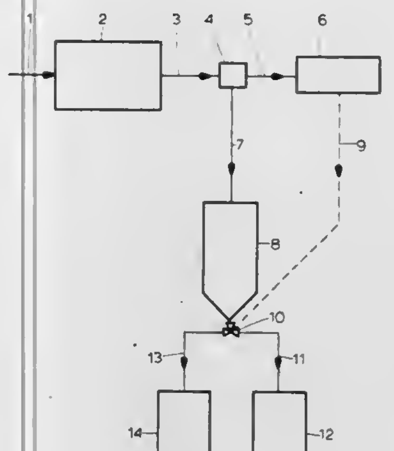
John Pickering, Belper; Ian Woodhouse, and Araspillai N. Ganendran, both of Burton-on-Trent, all of England, assignors to BTR Limited, London, England
Filed Jul. 21, 1982, Ser. No. 400,267
Claims priority, application United Kingdom, Aug. 11, 1981, 8124560
Int. Cl.^{3} B29C *1/02*
U.S. Cl. 264—36 **12 Claims**



1. In a method of repairing a leak in a pipe or pipeline comprising the steps of providing a mould around the pipe or pipeline by installing and securing a flexible mould around the pipe and introducing a sealant into the space so provided between the mould and pipe or pipeline, there being vent means from the mould space to atmosphere, the improvement being that the flexible mould has an inner skin and an outer skin which can be separated only by a limited amount, a mould forming material is introduced into the space defined between the skins, the mould-forming material is allowed to set to a rigid form to provide a rigid mould around the pipe or pipeline into which the said sealant is injected.

4,442,054
PROCESS FOR CONTINOUSLY MONITORING AND CONTROLLING THE PRODUCT FILM QUALITY FROM A POLYMER PRODUCTION UNIT

Lambertus M. Dane, Voerendaal; Johannes C. A. Engels, Sittard, and Cornelis L. Stevens, Geleen, all of Netherlands, assignors to Stamicarbon BV, Geleen, Netherlands
Filed May 14, 1981, Ser. No. 263,731
Claims priority, application Netherlands, May 14, 1980, 8002782
Int. Cl.^{3} B29H *19/00*
U.S. Cl. 264—40.1 **4 Claims**



1. A process for continuously monitoring and controlling the product film quality from a polymer production unit, and for automatically separating acceptable polymer product from unacceptable or off-specification polymer product, said process comprising the steps of:

(a) continuously formulating in said polymer production unit a particulated solid polymer product, and passing said product from said polymer production unit along a transport line to a product sampling point;

(b) periodically or continuously withdrawing a product sample at said product sampling point from said product transport line, supplying said product sample to an extruder and preparing a film therefrom;

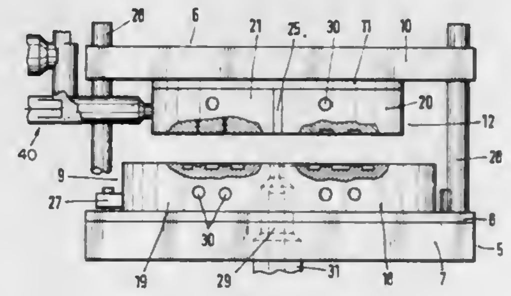
(c) at least intermittently analyzing said film to determine the film properties thereof, while

(d) meantime continuously delivering the product lot remaining after sampling is practiced according to step (b) to a residence holding device which will retain said sampled product lot for a period of time equal to, or differing not more than 10% from the time required to perform the analysis according to step (c) on said sample; and

(e) providing a signal representative of the result of said analysis for operating a flow diverter device responsive to said signal, whereby as determined by said analysis, acceptable sampled product lot is then delivered from said residence holding device to the main product delivery line to a product storage facility, while any unacceptable or off-specification polymer product lot is instead delivered to a by-product delivery line.

4,442,055
PROCESS FOR THE MANUFACTURE OF A CONTACT MAT

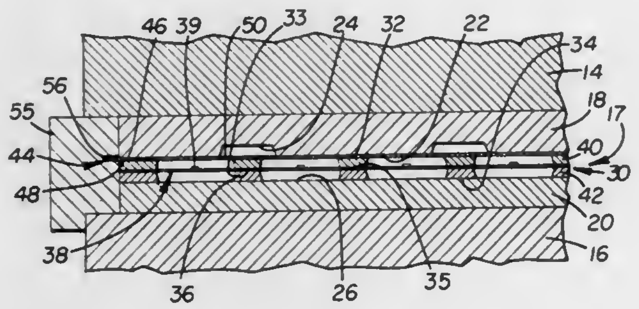
Jürgen Oelsch, Salz; Richard Volk, Brendlorenzen, and Karl-Heinz Claassen, Wülfershausen, all of Fed. Rep. of Germany, assignors to Preh Elektrofeinmechanische Werke Jakob Preh Nachf. GmbH & Co., Bad Neustadt, Fed. Rep. of Germany
Filed Sep. 28, 1982, Ser. No. 425,520
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1981, 3144084
Int. Cl.^{3} B29H *3/08*
U.S. Cl. 264—105 **7 Claims**



1. Process for the manufacture, by the injection-moulding process, of a contact mat which is suitable for a key board and consists of a sheet-like composite body made of an electrically non-conductive elastomeric material, comprising at least one carrier member elastically deformable upon application of pressure to a key formed therein, said carrier member being moulded in the shape of a calotte projecting out of the plane of the composite body, a respective contact component made of a vulcanizable, highly conductive material being joined to said carrier member, characterized in that the contact component is first moulded in an injection mould consisting essentially of a lower mould part and a bipartite upper mould part, the lower mould part being at a temperature above the vulcanization temperature of the contact component, one half of the upper mould part being at a temperature below the vulcanization temperature of the contact component wherein after the contact component has been fully vulcanized, the lower mould part is moved, relative to the upper mould part, from a first into a second position, and subsequently by means of runners in the lower mould part, the composite body and the carrier parts are moulded so that the contact component is rigidly joined to the carrier part, the temperatures of the lower mould part and of the other half of the upper mould part being above the vulcanization temperature of the composite body.

4,442,056
ENCAPSULATION MOLD WITH GATE PLATE AND METHOD OF USING SAME

Dusan Slepcevic, 10370 Alpine Dr., Cupertino, Calif. 95014
Continuation-in-part of Ser. No. 194,593, Dec. 6, 1980, Pat. No. 4,368,168, which is a division of Ser. No. 925,295, Jul. 17, 1978, Pat. No. 4,332,537. This application Jan. 10, 1983, Ser. No. 456,693
Int. Cl.^{3} B29C *1/00;* **B29D** *3/00, 31/00*
U.S. Cl. 264—161 19 Claims



1. A method for encapsulating objects (39) held by a lead frame strip (38) comprising:

(a) loading the lead frame strip (38) with the objects (39) held thereby in a cavity plate structure (30) having first (32) and second (34) oppositely facing generally planar outer surfaces (32, 34) and a plurality of openings (36) extending from said first outer surface (32) towards said second outer surface (34) with said objects (39) in said openings (36);

(b) positioning said loaded cavity plate structure (30) in a molding apparatus (10) between first (18) and second (20) mold plates (18, 20) mounted to opposed mold bases (14, 16), said first mold plate (18) having a generally planar first surface (22) having a feed runner network (24) formed therein and said second mold plate (20) having a generally planar second surface (26) opposed to said first surface (22), with said second outer surface (34) of said cavity plate structure (30) facing said second surface (26) and said first outer surface (32) facing and spaced from said first surface (22);

(c) positioning a gate plate (44) having first (46) and second (48) generally planar outfacing surface portions (46, 48) and a plurality of apertures (50) from said first outfacing surface portion (46) to said second outfacing surface portion (48) with said first outfacing surface portion (46) facing said first surface (22) of said first mold plate (18) and said second outfacing surface portion (48) facing said first outer surface (32) of said cavity plate structure (30) and with said apertures (50) in registration with said openings (36) in said cavity plate structure (30);

(d) moving said first (18) and second (20) mold plates (18, 20) together sufficiently so that said first surface (22) contacts said first outfacing surface portion (46) and connects said feed runner network (24) to said apertures (50), said second outfacing surface portion (48) contacts said first outer surface (32) and said second outer surface (34) contacts said second surface (26);

(e) injecting a fluid encapsulating material into said feed runner network (24), through said apertures (50) and into said openings (36) in sufficient quantity to encapsulate said objects;

(f) maintaining the mold apparatus (10) closed until the encapsulating material has set;

(g) opening the molding apparatus (10);

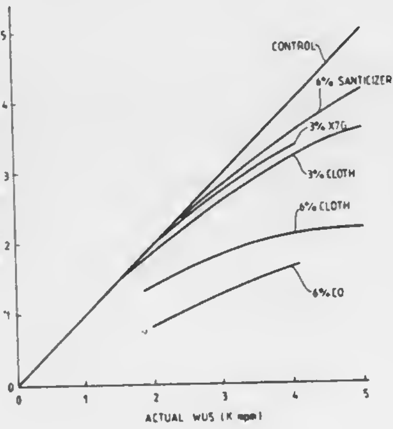
(h) separating the gate plate (44), with the set runners (71) from the feed runner network (24) held to the first outfacing surface (46), orthogonally from the first surface (22);

(i) moving the gate plate (44) laterally across the first outer surface (32) sufficiently to fully separate the first outer surface (32) from the second outfacing surface portion (48); and

(j) removing the set runners (71) from the first outfacing surface portion (46).

4,442,057
MELT SPINNING PROCESS

Harry Brody, Harrogate, North Yorkshire, England, assignor to Imperial Chemical Industries Limited, London, England
Filed May 29, 1981, Ser. No. 268,249
Claims priority, application United Kingdom, May 30, 1980, 8017685; Jul. 29, 1980, 8024694
Int. Cl.^{3} D01D *1/04*
U.S. Cl. 264—176 F 7 Claims



1. A process of melt spinning a fibre-forming thermoplastic polymer the improvement comprising adding to the fibre-forming thermoplastic polymer a small proportion of a polymer capable of forming an anisotropic melt in the temperature range at which the thermoplastic polymer may be melt spun together and the polymers are then melt spun together in intimate mixture at a minimum wind up speed of 1 kilometer per minute whereby in the process there is suppression of wind up speed compared with the process carried out in the absence of the added polymer.

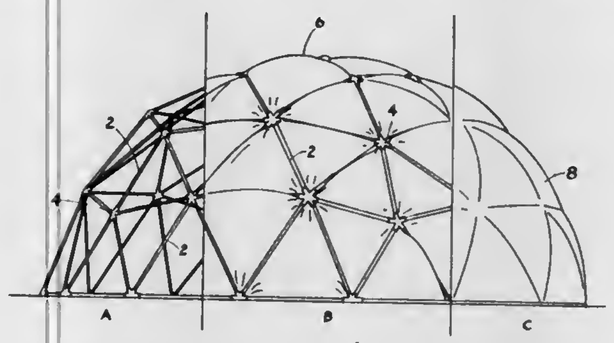
4,442,058
ESTERIFICATION OF CARBOXYL END GROUPS EMPLOYING ADDITION OF OXIRANE COMPOUNDS

Ronald L. Griffith, Charlotte, N.C., and Nicolai A. Favstritsky, Broomall, Pa., assignors to Fiber Industries, Inc., Charlotte, N.C.
Continuation of Ser. No. 416,731, Sep. 10, 1982, abandoned, which is a continuation-in-part of Ser. No. 170,339, Jul. 21, 1980, abandoned, which is a continuation-in-part of Ser. No. 913,417, Jun. 7, 1978, abandoned. This application Jul. 5, 1983, Ser. No. 510,781
Int. Cl.^{3} D01F *1/00*
U.S. Cl. 264—176 R 11 Claims

1. A method of improving the intrinsic viscosity and reducing the carboxyl end group concentration in melt spun fibers of high-molecular weight polyester polymers comprising adding to the molten linear condensation polymer and reacting therewith in the molten state from about 0.05 to less than 0.25 percent, by weight based on the weight of polymer, of an oxirane compound selected from the group consisting of ethylene oxide; 1,2-epoxypropane; 1,2-epoxybutane; and 1,2-epoxy-2methylpropane, said oxirane compound being added to said polymer 1 to 30 minutes prior to the polymer extrusion operation.

4,442,059
RIGID BUILDING FRAME WITH INFLATABLE MEMBER

Norman A. Boyce, 38 Ratby La., Markfield, Leicester, England
Filed Jul. 13, 1982, Ser. No. 397,931
Claims priority, application United Kingdom, Jul. 14, 1981, 8121683; Jan. 20, 1982, 8201584
Int. Cl.^{3} B28B *9/04*
U.S. Cl. 264—228 10 Claims



1. A method of building construction comprising the steps of (a) erecting a rigid skeletal framework of struts or tubular members to define the contours of the desired building, and securing the struts or members together at appropriate intersections thereof to form support zones, (b) providing within said framework an air-impervious membrane so as to provide an airtight envelope, (c) inflating said envelope within said framework at sufficient pressure to take said framework from an as-assembled state of component compression between the struts or members to a state in which there is tension between the components, (d) coating the external surface of said inflated membrane with settable material, and (e) returning the air pressure within the envelope to normal thereby permitting the struts or members to return to a non-tensioned state and detach from the newly set material, said material being arranged to remain in contact with support zones situated at the intersection of the struts or members.

4,442,060
INJECTION-MOLDING OF PASTY, THERMOSETTING ORGANOPOLYSILOXANE COMPOSITIONS

Noel Bouverot, Saint Symphorien D'Ozon; Paul Medard, Oullins, and Alain Viale, Venissieux, all of France, assignors to Rhone-Poulenc Industries, Paris, France
Filed Jan. 7, 1982, Ser. No. 337,844
Claims priority, application France, Jan. 7, 1981, 81 00114
Int. Cl.^{3} B29G *3/00*
U.S. Cl. 264—328.2 11 Claims

1. A process for the production of an injection-molded, elastomeric shaped article, comprising injection-molding, at a temperature ranging from about 125° C. to about 225° C., a pasty organopolysiloxane composition of matter having a viscosity ranging from about 4,000 to 55,000 Pa.s at 25° C. comprising an intimate admixture of:

(A_1) 100 parts by weight of a diorganopolysiloxane oil having a viscosity of 500 to 300,000 mPa.s at 25° C., consisting essentially of recurring units of the formula R_2SiO and blocked at each end of the chain by units of the formula $R_2R'SiO_{0.5}$, in which formulae the symbols R, which are identical or different, represent hydrocarbon radicals which are unsubstituted or substituted by halogen atoms or cyano groups and which have 1 to 8 carbon atoms, and the symbol R′ represents the same radicals as the symbols R and also a hydroxyl radical, an alkoxy radical having from 1 to 4 carbon atoms or a β-methoxyethoxy radical;

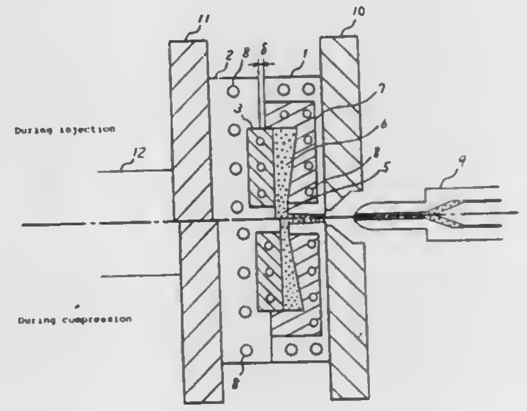
(B_1) 10 to 75 parts by weight of a finely divided, reinforcing silica having a specific surface area of at least 50 m^2/g;

(C_1) 1 to 20 parts by weight of a structuring inhibitor; and

(D_1) 0.1 to 4 parts by weight of 2,4-dichlorobenzoyl peroxide cross-linking agent.

4,442,061
HEAT CYCLE INJECTION COMPRESSION MOLDING METHOD

Shunsuke Matsuda, Osaka; Akio Ito, Katano; Mitani Katsuaki, Kyoto; Murakami Yoshinobu, Katano, and Tamura Tooru, Ikeda, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jul. 15, 1982, Ser. No. 398,696
Claims priority, application Japan, Jul. 16, 1981, 56-111775
Int. Cl.^{3} B29F *1/06*
U.S. Cl. 264—328.7 3 Claims



1. A heat cycle injection compression molding method comprising the steps of:

heating a synthetic resin until it becomes fluidized;

injecting the fluidized synthetic resin into a large and nonuniform cavity formed by a cavity block in a mold which is slightly opened;

cooling the injected fluidized resin until the center portion temperature of the resin is equal to or lower than a solidifying temperature of the resin, thereby solidifying the resin;

reheating the solidified resin uniformly until the temperature of the resin is higher than the solidifying temperature, thereby making the resin fluidized again;

compressing the refluidized resin by reducing the volume of the cavity;

cooling the refluidized resin until the temperature of the refluidized resin is lower than a take-out set temperature, while continuing said compressing step, thereby resolidifying the resin;

stopping the compressing step; and

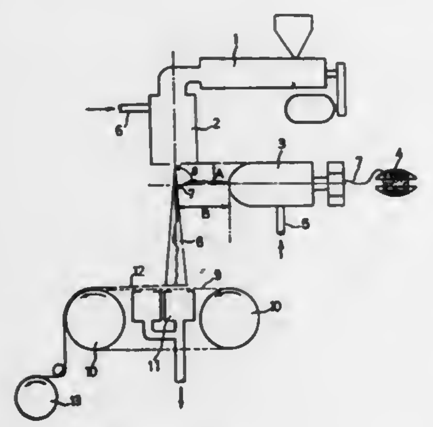
ejecting out of the mold a formed product having a large and nonuniform thickness.

4,442,062
PROCESS FOR PRODUCING MELT-BLOWN THERMOPLASTIC ARTICLES

Shigeo Fujii; Tokuzo Ikeda; Takashi Mikami, and Shuji Okano, all of Saitama, Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 882,596, Mar. 2, 1978, Pat. No. 4,238,175. This application Oct. 2, 1980, Ser. No. 193,234
Int. Cl.^{3} B28B *5/00*
U.S. Cl. 264—518 2 Claims

1. A process for the production of a non-woven structure, said process comprising blowing a thermoplastic resin with a high speed hot gas to form a fiber stream of fine thermoplastic resin fibers, blowing uniformly at least one continuous yarn at

the rate of 30 to 40 m/sec. and at an angle of about 30° to about 140° into the thermoplastic resin fiber stream from a distance of about 10 mm to about 1000 mm and collecting the thermoplastic fiber stream.



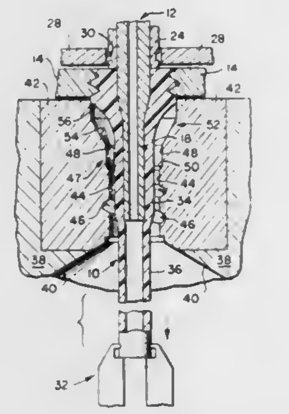
4,442,063
CONTAINER FORMING PROCESS

Harry A. Younkin, Newark, Del.; Gottfried Mehnert, Berlin, and Uwe V. Roos, Bodenteich-Uelzen, both of Fed. Rep. of Germany, assignors to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 249,723, Mar. 31, 1981, Pat. No. 4,382,769. This application Sep. 28, 1982, Ser. No. 425,579

Int. Cl.^{3} B29C *17/07*

U.S. Cl. 264—532 **15 Claims**



1. In a method of blow molding from a tubular parison of orientable plastic material in substantially unoriented condition, but at a suitable orientation temperature, a hollow container, the material of which is biaxially oriented, which has a neck with at least one lateral projection such as a thread or the like for engagement with a container closure, the inside diameter of at least the container neck portion of said tubular parison being substantially the inside diameter of the neck opening, the improvement comprising:

positioning the container neck portion of said parison on a mandrel having a stem part, the outside diameter of the stem part being substantially less than the inside diameter of the neck opening and the length being approximately the axial length of said neck, which stem part merges into a calibration part, the outside diameter of which is substantially the inside diameter of said neck, the neck end of the parison when said container neck portion is in position being around said calibration part;

securing the neck end of said parison in said position;

stretching the parison longitudinally to orient substantially longitudinally said material and cause the parison to neck down onto the stem part of said mandrel;

closing on the stretched parison separable sections of a mold having a container body and neck forming cavity;

inflating the parison to conform the same substantially to the cavity and to orient transversely said material; and

inserting the calibration part of the mandrel substantially to the inner end of the neck portion of the parison to calibrate substantially the entire length of the container neck opening, and to further urge the material in the neck portion of the parison into closer conformity with any lateral projection forming recess of said cavity.

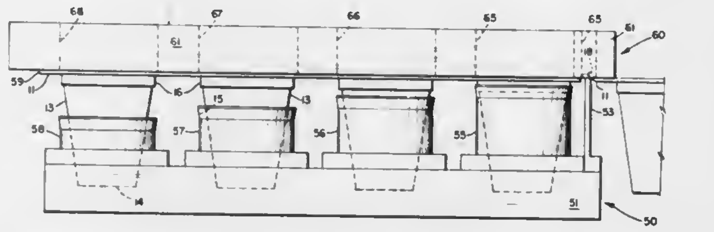
4,442,064
THERMOFORMING AND SELF-ALIGNMENT TRIMMING METHOD AND APPARATUS

Donald W. Myers, and Samantha L. Vivlamore, both of Canandaigua, N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 206,201, Nov. 12, 1980, abandoned, which is a continuation-in-part of Ser. No. 942,836, Sep. 15, 1978, Pat. No. 4,239,727. This application Oct. 29, 1981, Ser. No. 316,174

Int. Cl.^{3} B29D *27/00;* **B29C** *17/03, 17/10;* **B29H** *3/06*

U.S. Cl. 264—551 **24 Claims**



1. In the manufacture of plastic articles by thermoforming a plurality of plastic articles from a plastic sheet, a method of trimming said articles from the connecting web remaining from said sheet, comprising:

A. providing a plurality of article punches and approximately registering said articles with said punches;

B. loosely fitting said registered articles within said punches, whereby said articles are loosely supported by said punches;

C. shearing said web between all said registered and loosely fitted articles, whereby all said articles have complete freedom of movement, each registered and loosely fitted article being movable independently of all surrounding articles;

D. exactly registering said independently movable articles with said supporting punches and providing a plurality of article dies which are stationary and in close proximity with said connecting web and in trimming relationship to said articles; and

E. moving said punches towards and into said dies thereby trimming said articles from said web with said punches and said dies.

4,442,065
RETROFITTABLE NUCLEAR REACTOR CORE CATCHER

Albert L. Latter, Marina del Rey; R. Philip Hammond, and James L. Dooley, both of Santa Monica, all of Calif., assignors to R & D Associates, Marina del Rey, Calif.

Filed Dec. 1, 1980, Ser. No. 211,519

Int. Cl.^{3} G21C *9/00*

U.S. Cl. 376—280 **7 Claims**

1. A passive system for the prevention of the escape of radioactive material to the biosphere from a nuclear reactor plant suffering a major core-destructive accident with meltdown of the reactor, said nuclear reactor plant having a main above-ground structural containment shell, said system comprising:

an isolation conduit or tube extending downward from the floor of the nuclear reactor plant immediately below the reactor core, said isolation conduit or tube including an outer reinforced concrete shell, refractory lining material within the concrete shell and an inner layer of a high strength, high temperature resistant metal; said isolation tube having a diameter which is the same order of magnitude as said core, and a depth at least two times greater than its diameter;

a relatively thin sealing layer extending over the upper end of said isolation tube;

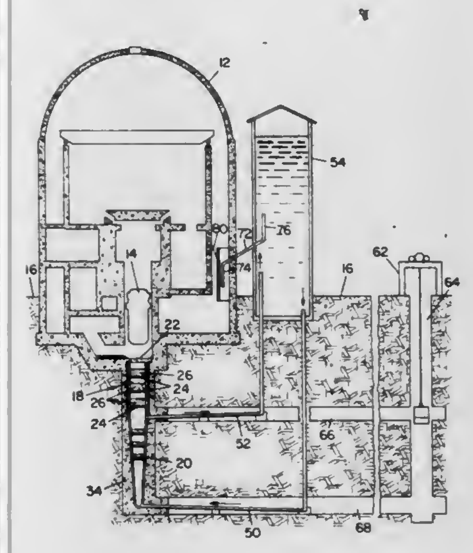
means mounted within said isolation tube for delaying the descent of said core through said isolation tube following melt-down;

a core-catcher heat exchanger having a relatively large surface area mounted below said isolation tube to receive melted core material flowing through said isolation tube; said isolation conduit and said core-catcher heat exchanger being formed as a single long sustantially vertically extending channel, said heat exchanger including an inner structural liner of good heat transfer material forming an inner metal wall surrounding said channel and a thin enclosing water jacket having upper and lower conduits and said core-catcher heat exchanger having a sufficiently small cross-section for containing the core material to preclude a critical assembly for the particular core material employed in the reactor, said core-catcher heat exchanger being of a size and shape for sufficiently cooling the molten core material to provide a solid liner formed from said molten core material on the inner wall of said core-catcher heat exchanger, wherein an outer reinforced concrete shell extends the length of said core-catcher heat exchanger and the cross-section of said channel at its lower end being sufficiently small so as to preclude said critical assembly, said water jacket having an outer wall spaced a short distance from said inner metal wall to provide said thin water jacket, supporting means in said space for maintaining said inner and outer walls in said spaced relation, means mounted within said core-catcher heat exchanger for delaying the descent of said molten core material through said core-catcher heat exchanger;

a passive body of cooling water positioned adjacent the main nuclear reactor plant, said body of cooling water being open to the atmosphere to permit the boiling off of water;

means for coupling said upper and lower conduits to said body of cooling water, to facilitate the flow of heat between said core-catcher heat exchanger and said body of cooling water; and

additional passive heat exchanger means coupled between the space within said reactor plant containment shell and said body of cooling water.



4,442,066
SUPPORTING FLOOR FOR THE CORE OF A NUCLEAR REACTOR

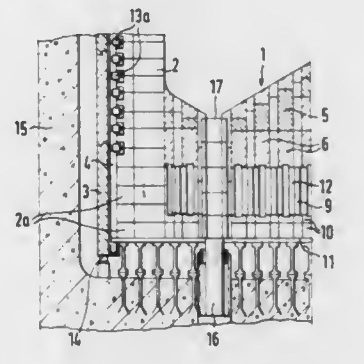
Josef Schoening, Hambruecken; Hans-Georg Schwiers, Ketsch; Claus Elter, Bad Durkheim; Rolf Fritz, Oftersheim, and Karl-Friedrich Kissel, Laudenbach, all of Fed. Rep. of Germany, assignors to Hochtemperatur-Reaktorbau GmbH, Cologne, Fed. Rep. of Germany

Filed Jul. 16, 1980, Ser. No. 169,282

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1979, 2929741

Int. Cl.^{3} G21C *11/00*

U.S. Cl. 376—302 **12 Claims**



1. A support floor for the core of a high temperature pebble bed nuclear reactor comprising:

a plurality of support columns placed directly adjacent one another forming the reactor core floor;

a bed of spherical fuel elements forming the reactor core;

a cylindrical side reflector surrounding said columns and the reactor core;

a thermal side shield arranged at a distance around said cylindrical side reflector to form an annular space; and

means for retaining said support columns in their respective horizontal positions said means disposed in said annular space between the lower part of the side reflector and the thermal side shields to substantially prevent the formation of expansion gaps between said columns.

4,442,067
MATERIAL FOR SEMICONDUCTOR HOLDER IN ELECTRON BEAM WRITING APPARATUS

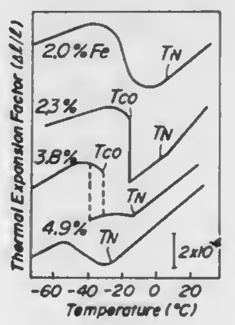
Yoshinobu Saito, and Sakae Sugimoto, both of Sendai, Japan, assignors to Tohoku Tokushuko Kabushiki Kaisha, Miyahiken, Japan

Filed Dec. 14, 1982, Ser. No. 449,623

Claims priority, application Japan, Dec. 22, 1981, 56-207315

Int. Cl.^{3} C22C *27/06*

U.S. Cl. 420—428 **3 Claims**



1. Material for semiconductor holder in electron beam writing apparatus consisting of 3.0–7.0% by weight of iron, 0.2-less than 1.5% by weight of manganese, 0.001–1.0% by weight of at least one rare earth element, and remainder of chromium and inevitable impurity, said material having magnetic susceptibility of not more than 3.5×10^{-5} emu/g and a thermal expansion coefficient of $0\text{–}2.5\times10^{-6}$/°C. at a temperature of 0° C.–40° C.

4,442,068

HEAT RESISTANT CAST IRON-NICKEL-CHROMIUM ALLOY

Junichi Sugitani, Hirakata; Teruo Yoshimoto, Suita, and Makoto Takahashi, Hirakata, all of Japan, assignors to Kubota Ltd., Osaka, Japan

Filed Sep. 17, 1982, Ser. No. 419,310

Claims priority, application Japan, Oct. 12, 1981, 56-162482

Int. Cl.^{3} C22C *30/00*

U.S. Cl. 420—584 **1 Claim**

1. A heat resistant cast iron-nickel-chromium alloy consisting essentially of the following components in the following proportions in terms of % by weight:

C: 0.3–0.6,
$0<Si\leqq 2.0$,
$0<Mn\leqq 2.0$,
Cr: 20–30,
Ni: 30–40,
W: 0.5–5.0,
N: 0.04–0.15,
B: 0.0002–0.004,
Ti: 0.04–0.50 and
$0.07<Al\leqq 0.50$

the balance being substantially Fe.

4,442,069

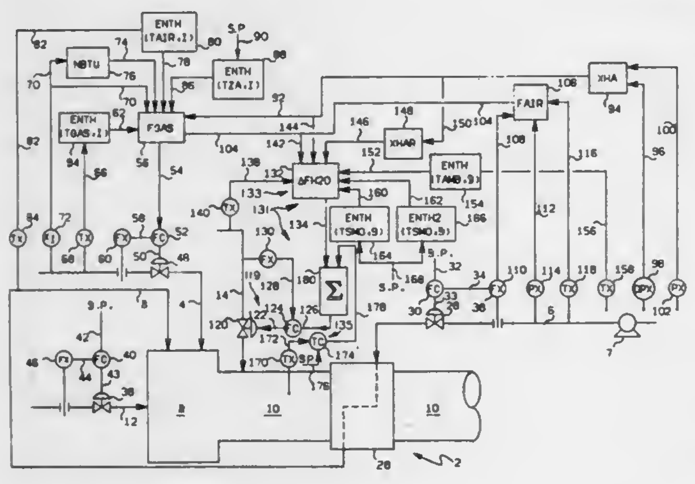
CARBON BLACK FURNACE APPARATUS

Merle R. Likins, Jr., and Galen D. Stacy, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 211,984, Dec. 1, 1980, Pat. No. 4,351,818. This application Sep. 17, 1982, Ser. No. 419,297

Int. Cl.^{3} C09C *1/00, 1/48;* **G01N** *33/00*

U.S. Cl. 422—62 **6 Claims**



1. In a carbon black reactor comprising
a means defining a first reaction zone;
a fuel conduit communicating with said first reaction zone;
an air conduit communicating with said first reaction zone;
an effluent conduit communicating with said first reaction zone;
a means for heat exchanging the effluent in said effluent conduit with the air in said air conduit to pre-heat the air prior to introduction into said first reaction zone; and
a means for defining a quench fluid conduit communicating with said effluent conduit between said first reaction zone and said means for heat exchanging; the improvement comprising:

(a) a means for determining the moisture content of the air and for establishing a first signal representative of the moisture content of the air, and means for generating a modified quench fluid flow rate signal derived at least in part from the moisture content of air entering the air conduit;
(b) a means for determining the flow rate of the quench fluid and generating a representative signal; and
(c) a flow control means in association with the quench fluid conduit for controlling the quench fluid flow rate through the quench fluid conduit in response to the modified quench fluid flow rate signal and the signal representative of the rate of fluid flow through the quench fluid conduit.

4,442,070

APPARATUS FOR THE PRODUCTION OF A FLOWABLE REACTION MIXTURE

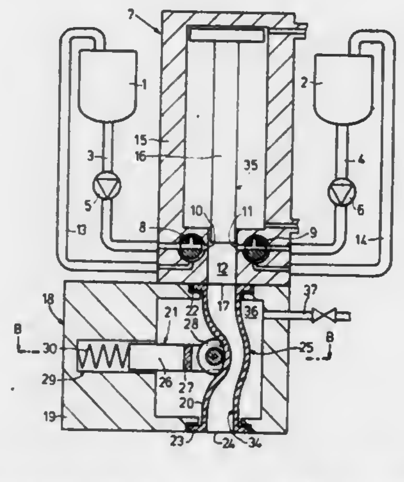
Ferdinand Proksa, Leverkusen; Hans-Michael Sulzbach, Koenigswinter, and Reiner Raffel, Siegburg, all of Fed. Rep. of Germany, assignors to Maschinenfabrik Hennecke GmbH, Leverkusen, Fed. Rep. of Germany

Filed Mar. 18, 1982, Ser. No. 359,632

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1981, 3111957

Int. Cl.^{3} B01J *5/04, 15/02;* **B01S** *14/00*

U.S. Cl. 422—133 **8 Claims**



1. An apparatus for the production of a flowable reaction mixture of at least two flowable components which mixture forms a foam or solid material, comprising:

(a) storage means for said components;
(b) supply lines leading from the storage means via metering pumps to a mixing head;
(c) said mixing head having a mixing chamber;
(d) injection openings connected to said supply lines and opening into said mixing chamber;
(e) said mixing chamber having an outlet opening downstream of said injection openings;
(f) said outlet opening having an elastic outlet tube whose throughflow cross section may be varied connected thereto;

said apparatus further characterized in that:

(g) the outlet tube has at least one means associated therewith for deflecting said outlet tube;
(h) an ejection piston is associated with said outlet tube, which piston is capable of filling the outlet tube; the contour of the inside wall of said outlet tube corresponding to the external contour of said ejection piston.

4,442,071

EXTRACTION OF PLUTONIUM IONS FROM AQUEOUS SULFURIC ACID SOLUTIONS WITH D_2EHPA OR D_2EHPA/TOPO

Karl H. Lieser, Seeheim-Jugenheim, and Bernd Stojanik, Rodgau, both of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Jul. 23, 1981, Ser. No. 286,168

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1980, 3028024

Int. Cl.^{3} C01G *43/00*

U.S. Cl. 423—10 **9 Claims**

1. Method for separating plutonium ions from an aqueous solution containing sulfuric acid, comprising:

(a) introducing into the aqueous solution 0.1 to 1.5 moles of nitrate ions per liter of aqueous solution;
(b) adding to the aqueous solution containing nitrate ions, an organic phase comprising a solution of 0.1 to 1.0 M di-2-ethylhexylphosphoric acid in kerosene in an amount sufficient that the volume ratio of the aqueous solution containing nitrate ions to the organic phase is between 1:1 and 4:1, to extract the plutonium ions into the organic phase;
(c) separating the organic phase containing plutonium ions from the aqueous solution;
(d) adding to the separated organic phase, a re-extractant aqueous solution containing 0.2 to 1.0 M oxalic acid, and 0 to 0.5 M nitric acid, to re-extract the plutonium ions into the re-extractant aqueous solution; and
(e) separating the re-extractant aqueous solution containing plutonium ions from the organic phase.

4,442,072

SELECTIVE RECOVERY OF BASE METALS AND PRECIOUS METALS FROM ORES

Elizabeth G. Baglin, and John M. Gomes, both of Reno, Nev., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Oct. 20, 1982, Ser. No. 435,534

Int. Cl.^{3} C01G *55/00, 7/00, 3/10, 53/10*

U.S. Cl. 423—22 **3 Claims**

1. A process for recovery of nickel, iron, copper, platinum, palladium and gold values from ore concentrates consisting essentially of:

(a) smelting the concentrate with a flux to form a matte and slag,
(b) grinding the matte to a particle size suitable for leaching,
(c) leaching, in a first-stage, the ground matte with sulfuric acid of a concentration of about 10 to 40 wt-pct at a temperature of about 40° to 100° C. and atmospheric pressure to selectively extract nickel and iron values, and
(d) roasting and leaching, in a second-stage, the residue from the first-stage leach, the roasting being at a temperature of about 300° to 500° C., and the leaching being with dilute sulfuric acid at ambient temperature and pressure, to selectively extract copper values and provide a residue containing a high concentration of platinum, palladium and gold.

4,442,073

SEPARATION AND RECOVERY OF METAL ALLOYS FROM SUPERALLOY SCRAP

Douglas J. Robinson, and Aniedi O. Ette, both of Tucson, Ariz., assignors to University Patents, Inc., Norwalk, Conn.

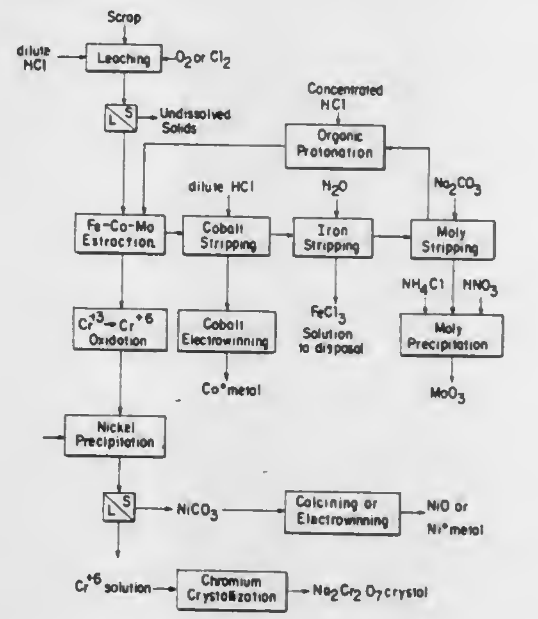
Filed May 21, 1982, Ser. No. 380,859

Int. Cl.^{3} C01G *37/14, 53/00*

U.S. Cl. 423—54 **7 Claims**

1. A method of recovering metal values from superalloy scrap comprising the steps of:

(i) oxidizing the superalloy scrap in an aqueous acidic media, said aqueous acidic media having an oxidation potential sufficient to oxidize valve metals to insoluble solid oxides thereof, and to oxidize non-valve metals to aqueously soluble ionic species wherein the chromium values are oxidized to the +3 valence;
(ii) separating the insoluble solids from the aqueous solution;
(iii) extracting the aqueous solution with an aqueously substantially insoluble tertiary amine to form an organic phase containing the non-valve metal values except for the nickel and chromium values and an aqueous phase containing nickel and chromium values; and
(iv) separating the aqueous phase containing the nickel and chromium values from the organic phase wherein the improvement comprises the steps of:
(v) oxidizing the chromium +3 to aqueous-soluble chromium +6;
(vi) deacidifying the aqueous phase to a pH of about 7–10 with a soluble carbonate to form insoluble nickel carbonate;
(vii) precipitating the nickel carbonate from the chromium-containing solution;



(viii) recovering the nickel from the nickel carbonate precipitate; and
(ix) recovering the chromium from the solution.

4,442,074

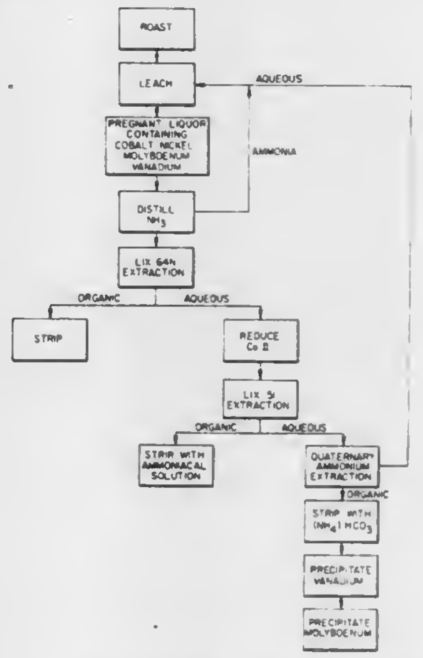
RECOVERY OF COBALT, MOLYBDENUM, NICKEL AND VANADIUM FROM AN AQUEOUS AMMONIA AND AMMONIUM SALT SOLUTION BY SERIAL EXTRACTION OF NICKEL AND COBALT AND COEXTRACTING MOLYBDENUM AND VANADIUM

Gale L. Hubred, Richmond, and Dean A. Van Leirsburg, Petaluma, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Sep. 24, 1982, Ser. No. 422,989

Int. Cl.^{3} C01G *31/00, 39/00, 51/00; 53/00*

U.S. Cl. 423—54 **4 Claims**



1. A process for separating the metal values in a pregnant liquor from an ammoniacal ammonium aqueous leach solution containing:

(i) at least one metal value selected from the group consisting of cobalt and nickel; and
(ii) at least one metal value selected from the group consisting of vanadium and molybdenum; comprising the steps of:

(a) transferring nickel from said pregnant liquor into a first organic solution by means of a first organic liquid extractant comprising an oxime;

(b) stripping said first organic solution with an aqueous stripping solution to form a nickel-containing aqueous solution;

(c) reducing cobalt metal values in said pregnant liquor to divalent cobalt;

(d) transferring cobalt metal values from said pregnant liquor into a second organic solution by means of an organic cobalt extractant selected from the group consisting of dioximes, hydroxy-oximes and beta-diketones;

(e) stripping said second organic solution with an aqueous stripping solution to form a cobalt-containing aqueous solution;

(f) transferring molybdenum and vanadium metal values from said pregnant liquor into a third organic solution by means of an organic extractant comprising a quaternary ammonium compound; and

(g) stripping said third organic solution with an aqueous ammonium bicarbonate stripping solution to form an aqueous solution containing said molybdenum and vanadium metal values.

4,442,075

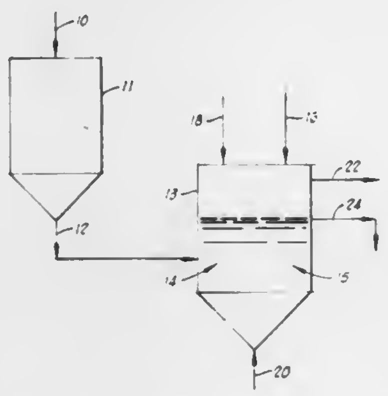
TITANIUM ORE CHLORINATION PROCESS USING A MOLTEN SALT

Theodore A. Rado, Oklahoma City, Okla., assignor to Kerr-McGee Chemical Corporation, Oklahoma City, Okla.

Filed Mar. 30, 1983, Ser. No. 480,252

Int. Cl.^{3} C01G *23/02*

U.S. Cl. 423—76 **8 Claims**



1. A process for producing titanium tetrachloride from natural or synthetic titanium ore, carbonaceous reductant and chlorine, comprising the steps of:

providing a first quantity of salt, melting at between about 600 degress centigrade and about 900 degrees centigrade, in molten form having a temperature between about 800 degrees centigrade and about 1000 degrees centigrade to produce a chlorination zone;

introducing the titanium ore and the reductant into the chlorination zone to produce a loaded chlorination zone, the titanium ore and reductant essentially being suspended in the first quantity of salt in the molten form;

passing chlorine into the loaded chlorination zone to produce a first product stream comprising titanium tetrachloride, the first quantity of salt in the molten form cooperating to retain relatively fine particles of titanium ore or reductant or combinations thereof thereby permitting the use of smaller sizes of titanium ore or reductant or combinations thereof and the first quantity of salt in the molten form cooperating to form double salts in the loaded chlorination zone and to retain a substantial portion of some impurities for reducing the impurities in the first product stream; and

passing the first product stream from the loaded chlorination zone.

4,442,076

ENTRAINED DOWNFLOW CHLORINATION OF FINE TITANIFEROUS MATERIAL

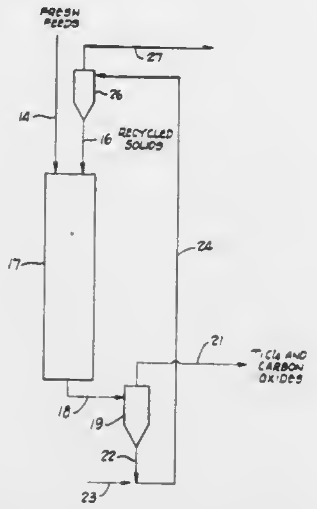
James P. Bonsack, Aberdeen, Md., assignor to SCM Corporation, New York, N.Y.

Filed Nov. 17, 1982, Ser. No. 442,313

The portion of the term of this patent subsequent to Aug. 10, 1999, has been disclaimed.

Int. Cl.^{3} C01G *23/02*

U.S. Cl. 423—78 **4 Claims**



1. In an entrained flow process for chlorinating fine iron-containing titaniferous powder with chlorine gas and/or organochloride in the presence of fine porous coal-based reductant powder for obtaining as products titanium and iron chlorides wherein both of said powders are entrained in and flow downwardly through a chlorination reaction zone at a temperature of at least about 800° C., the improvement which comprises:

supplying titaniferous and reductant powders of -140 mesh to said reaction zone at a rate sufficient for establishing and maintaining titanium, iron, and carbon reactants therein in substantial excess over those stoichiometric for complete reaction of the chlorine present;

employing as at least the major portion of fresh reductant powdered reactive coal char having surface area of at least about 10 m.^{2}/g. and particle size of -140 mesh;

separating carbon and titaniferous solids from the effluent of said reaction zone; and

recycling at least the major portion of the resulting separated solids as -140 mesh powder into said reaction zone.

4,442,077

METHOD OF REMOVING HYDRIDES OF PHOSPHORUS, ARSENIC, ANTIMONY AND BISMUTH FROM HYDROCARBON AND NON-HYDROCARBON STREAMS

David I. Foster, Lake Charles, La.; Paul T. Scott; Mark W. Pierick, both of Corpus Christi, Tex., and Clarence L. Shaddock, Jr., Lake Charles, La., assignors to Chemical Engineering Technology, Inc., Lake Charles, La.

Filed Sep. 27, 1982, Ser. No. 423,796

Int. Cl.^{3} B01D *53/34*

U.S. Cl. 423—210 **13 Claims**

1. A method for removing a hydride of an element selected from the group consisting of phosphorous, arsenic, antimony, bismuth, or mixtures thereof from a petroleum hydrocarbon stream primarily having C_1–C_5 hydrocarbons and hydrogen, or from a non-hydrocarbon gas stream including a gas selected from the group consisting of nitrogen, oxygen, carbon monoxide, air, and a gas or gases of Group O, or mixture of the gases thereof; or a mixture of the hydrocarbon stream and the non-hydrocarbon gas stream; the method comprising the steps of:

(a) raising the predetermined known temperature of the hydrocarbon stream of the non-hydrocarbon gas stream or the mixtures of the two streams to between 120° F. and about 170°; and

(b) contracting for at least 8 seconds the effluent of step (a) with a soda lime bed formation means having at least a five (5) foot length.

4,442,078

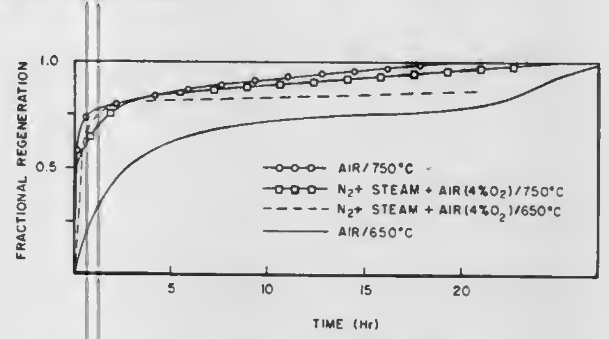
METHOD OF REMOVING HYDROGEN SULFIDE FROM GASES UTILIZING A ZINC OXIDE SORBENT AND REGENERATING THE SORBENT

Vinod M. Jalan, Concord, and David G. Frost, Maynard, both of Mass., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 7, 1982, Ser. No. 395,894

Int. Cl.^{3} B01D *53/34*

U.S. Cl. 423—230 **1 Claim**



1. A method of repetitively generating a spent sorbent containing zinc sulfide to form zinc oxide in conjunction with a hydrogen sulfide sorption process, wherein said zinc oxide sorbent is repetitively spent to form zinc sulfide, said method in each repetition consisting essentially of contacting said spent sorbent with a desorbent gas mixture flow consisting essentially of approximately 55% nitrogen, 25% steam and 20% air (4% oxygen) by volume at a space velocity of about 3200 gas to sorbent volumes per hour at a temperature of about 650° C. for a period of about 2 to 3 hours to provide about 75% sorbent renewal.

4,442,079

PROCESS FOR REMOVAL OF NITROGEN OXIDES AND SULFUR OXIDES FROM WASTE GASES

James R. Donelly, Ballerup; Karsten S. Felsvang, Allerod, Denmark; Per Morsing, Vedbaek, all of Denmark, and Preston L. Veltman, Severna Park, Md., assignors to A/S Niro Atomizer, Soborg, Denmark

Filed May 28, 1982, Ser. No. 382,968

Claims priority, application Denmark, Oct. 12, 1981, 4507/81

Int. Cl.^{3} B01J *8/00;* **C01B** *21/00, 17/00*

U.S. Cl. 423—239 **9 Claims**

1. A process for removal of nitrogen oxides and sulfur oxides from waste gases in which the molar ratio of nitrogen oxides to sulfur oxides is 3 or below comprising subjecting said waste gases to a nitrogen oxides removing contact by contacting said waste gases with a particulate material comprising an alkaline earth based absorbent for sulfur oxides which absorbent also includes an additive selected from (i) sodium sulfite, (ii) sodium compounds forming sodium sulfite by contact with SO_2, (iii) divalent iron together with EDTA and (iv) mixtures thereof in an amount of 1–20% based on the weight of said absorbent, securing during at least a part of the contact period a temperature of the gas of 85°–145° C. and the presence of H_2O and at least 0.5% by volume oxygen.

2. A process for removal of nitrogen oxides and sulfur oxides from hot waste gas in which the molar ratio of nitrogen oxides to sulfur oxides is below 3, comprising the steps of

(a) preparing an aqueous suspension comprising a basic alkaline earth metal compound;

(b) atomizing said suspension into the hot waste gas in a drying chamber for simultaneous drying of the resulting atomized droplets and absorption of a portion of the sulfur oxides in the waste gas, the amount of basic compound atomized being restricted to secure the molar ratio of nitrogen oxides to sulfur oxides in the gas does not exceed 3,

(c) maintaining an O_2-concentration in the waste gas of 0.5% by volume or above;

(d) introducing the gas together with entrained particles formed by the drying and absorption in step (b) into a particle separation device securing that during at least a part of the residence time of the gas and the particles in said separation device the temperature of the gas is 85°–145° C.;

(e) withdrawing the particles separated in said particle separation device; and

(f) withdrawing and discharging the gas from said particle separation device with a substantially decreased content of nitrogen oxides and sulfur oxides.

4,442,080

FLUID BED SOX/NOX PROCESS—"HYDRATED CALCINE ABSORPTION"

James R. Donnelly, Ballerup; Karsten S. Felsvang, Allerod; Per Morsing, Vedbak, all of Denmark, and Preston L. Veltman, Severna Park, Md., assignors to A/S Niro Atomizer, Soeborg, Denmark

Continuation-in-part of Ser. No. 382,968, May 28, 1982. This application Jun. 1, 1982, Ser. No. 383,999

Claims priority, application Denmark, Oct. 12, 1981, 4507/81

Int. Cl.^{3} B01J *8/00;* **C01B** *21/00, 17/00*

U.S. Cl. 423—239 **21 Claims**

1. A process for treating a gaseous mixture containing SO_x and NO_x wherein the molar ratio of NO_x to SO_x is 3 or below and wherein both SO_x and NO_x are removed which comprises:

a. providing a reactor for particulate material wherein the particles are in motion relative to each other;

b. said particles having a surface comprising alkaline earth hydroxide reactable with said SO_x and NO_x, in admixture with the reaction products of said SO_x and NO_x and alkaline earth hydroxide;

c. contacting the particles in said reactor with the gaseous mixture at a temperature of between about 85° C. and about 150° C. in the presence of at least 0.5% by volume oxygen and water vapor but in the absence of a substantial quantity of liquid water;

d. thereby substantially reducing the amount of SO_x and NO_x in the gaseous mixture.

4,442,081

PROCESS FOR PRODUCING A STABILIZED PHOSPHORIC ACID

Roberto I. Morrell, and Charles F. Peters, both of Lakeland, Fla., assignors to W. R. Grace & Co., New York, N.Y.

Filed Dec. 2, 1982, Ser. No. 446,257

Int. Cl.^{3} C01B *25/16, 15/16, 25/26;* **C05B** *11/00*

U.S. Cl. 423—321 R **5 Claims**

1. A method for preparing wet process phosphoric acid having a P_2O_5 content of about 57 to 63 weight percent comprising:

(a) clarifying crude feed phosphoric acid in a clarifier, said phosphoric acid having a P_2O_5 content of about 26–36% P_2O_5;

(b) separating the clarified phosphoric acid portion from the settled solids;

(c) dissolving about 0.05 to 2.0 weight percent of an aluminum silicate material based on the total weight of P_2O_5 to the clarified phosphoric acid;

(d) concentrating the phosphoric acid to a P_2O_5 content of 38 to 42 weight percent;

(e) clarifying the concentrated phosphoric acid in a clarifier thereby causing solids to settle by gravity in the clarifier and separating a further clarified phosphoric acid from the settled solids;

(f) concentrating the separated phosphoric acid to a P_2O_5 content of about 46 to 52 weight percent;

(g) crystallizing phosphate-containing solids and separating such solids from said phosphoric acid;

(h) concentrating the remaining phosphoric acid to a P_2O_5 content of 57 to 63 weight percent; and

(i) utilizing the solids from step (g) to prepare one or more by-products selected from the group consisting of diammonium phosphate and triple superphosphate.

4,442,082

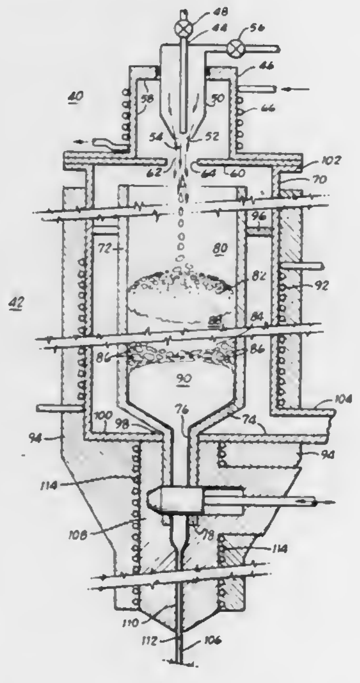
PROCESS FOR OBTAINING SILICON FROM FLUOSILICIC ACID

Angel Sanjurjo, San Jose, assignor to SRI International, Menlo Park, Calif.

Filed Dec. 27, 1982, Ser. No. 453,456

Int. Cl.³ C01B *33/02*

U.S. Cl. 423—350 13 Claims



1. A process for producing low cost, high purity, solar grade silicon by reaction of gaseous silicon tetrafluoride with sodium in substantially stoichiometric quantities to produce a reaction product consisting essentially of sodium fluoride and silicon from which silicon is recovered and wherein said fluoride gas used in the reaction is obtained by thermal decomposition of sodium fluosilicate which is precipitated from aqueous fluosilicic acid generated from phosphate rock conversion to fertilizer, said process comprising:

(a) carrying out said reaction inside a reactor including a reaction chamber formed with perforations in ht walls thereof, said perforations being of a size such that essentially all of the molten sodium fluoride reaction product freely passes out through the perforations due to the low surface tension of sodium fluoride compared to silicon, and molted silicon is preferentialy contained in the reaction chamber;

(b) collecting said sodium fluoride reaction product passing through said perforations in said reaction chamber in a sodium fluoride product collection and dispensing chamber surrounding said reaction chamber; and

(c) removing the silicon reaction product remaining in the lower portion of said reaction chamber by free flow.

4,442,083

METHOD OF DESULFURIZING WASTE GASES CONTAINING SULFUR DIOXIDE

Manuel J. Canales, Orange, Conn., and John Reynolds, El Cerrito, Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Nov. 4, 1982, Ser. No. 439,257

Int. Cl.³ C01B *17/00, 17/02*

U.S. Cl. 423—567 R 8 Claims

1. A process for the removal of sulfur dioxide from a feed gas which comprises:

(a) absorbing the sulfur dioxide (SO_2) in an aqueous absorbent comprising soluble sulfite;

(b) stripping the absorbent from (a) which contains absorbed SO_2 to form a gas comprising SO_2 and wherein the absorbent is recycled back to the absorber from the stripper;

(c) absorbing the stripped SO_2 in a separate absorbent for the SO_2; and

(d) reacting the absorbed SO_2 from step (c) in a liquid Claus reactor thereby forming sulfur and wherein excess H_2S in the tail gas from the Claus reactor is incinerated to form SO_2 which is recycled to the Claus reactor.

4,442,084

ANALGESIC AND MYOTONOLYTIC PREPARATIONS

Dietmar Römer, Allschwil, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 296,910, Aug. 27, 1981, abandoned, which is a continuation of Ser. No. 224,086, Jan. 12, 1981, abandoned, which is a continuation-in-part of Ser. No. 138,229, Apr. 7, 1980, abandoned. This application Aug. 11, 1982, Ser. No. 407,153

Claims priority, application Switzerland, Apr. 10, 1979, 3411/79; Apr. 10, 1979, 3409/79

Int. Cl.³ A61K *31/425, 3/505*

U.S. Cl. 424—251 19 Claims

1. A pharmaceutical preparation in oral form useful in inducing analgesia and/or in treating myotonolytic conditions comprising: as active agent (a), an analgesically active quinazoline compound selected from the group consisting of

1-isopropyl-4-(4-fluorophenyl)-6,7-methylenedioxy-2(1H)-quinazolinone;

1-isopropyl-4-phenyl-7-methyl-2(1H)-quinazolinone;

1-isopropyl-4-phenyl-6,7-methylenedioxy-2(1H)-quinazolinone;

1-isopropyl-4-(4-fluorophenyl)-7-methyl-2-(1H)-quinazolinone;

1-cyclopropylmethyl-4-phenyl-6-methoxy-2(1H)-quinazolinone; and

1-(2,2,2-trifluoroethyl)-4-phenyl-6-chloro-2(1H)-quinazolinone, and

as active agent (b), a centrally acting myotonolytic compound selected from 5-chloro-7-methyl-4-(-imidazolin-2-ylamino)-2,1,3-benzothiadiazole and 5-chloro-4-(2-imidazolin-2-ylamino)-2,1,3-benzothiadiazole, said active agents (a) and (b) being present in the pharmaceutical preparation in a ratio of active agent (a) to active agent (b) of from about 5:1 to about 100:1 parts by weight.

4,442,085

PROTECTION AGAINST DENTAL CARIES

Geoffrey Colman, Sevenoaks, and Roy R. B. Russell, Bromley, both of England, assignors to The Secretary of State for Social Services in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Continuation of Ser. No. 68,443, Aug. 21, 1979, abandoned. This application Jun. 15, 1982, Ser. No. 388,624

Claims priority, application United Kingdom, Sep. 1, 1978, 35383/78

Int. Cl.³ A61K *7/16, 39/00, 39/09;* **C07G** *7/00*

U.S. Cl. 424—49 9 Claims

1. An antigen preparation for use in the reduction or prevention of dental caries wherein the antigenic proteins present in the preparation are derived from bacteria of the species *Streptococcus mutans* genetic group I and have the following properties:

(a) are present on the cell walls of *Streptococcus mutans* genetic group I,

(b) remain associated with the cell walls after boiling the cell walls with 10 gm/liter aqueous sodium dodecyl sulphate for 20 minutes,

(c) have a molecular weight of about 29,000 by SDS-polyacrylamide gel electrophoresis (SDS-PAGE),

(d) have an isoelectric point of about 4.1 to 4.5,

(e) are destroyed by proteolytic enzyme, and

(f) do not cross react with heart tissue.

3. A pharmacological preparation for use in the reduction or prevention of dental caries in a mammal comprising a nontoxic effective amount of an active component in a pharmacologically acceptable diluent or carrier, wherein said active component is an antigen preparation according to claim 1 or antibodies thereto.

4,442,086

DIETHYLCARBAMAZINE RESINATE AND STYRYLPYRIDINIUM RESINATE-DIETHYLCARBAMAZINE RESINATE EDIBLE ANTHELMINTIC TABLETS FOR COMPANION ANIMALS

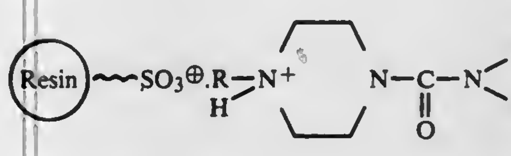
James M. Quinlan, Trenton, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 60,931, Jul. 26, 1979, abandoned. This application Mar. 3, 1981, Ser. No. 239,966

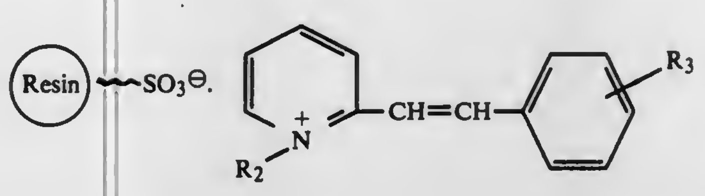
Int. Cl.³ A61K *31/74*

U.S. Cl. 424—79 4 Claims

1. A palatable anthelmintic resinate composition comprising from 2% to 5% by weight of a resinated N,N-dialkylpiperazine carboxamide compound having the structural formula:



where R is hydrogen or alkyl C_1–C_6 and R_1 is alkyl C_1–C_5 and wherein the resin is a high capacity sulfonic cationic exchange resin of the polystyrene-divinylbenzene type having a particle size of less than 800μ; from 0 to 7% by weight of a resinated styrylpyridinium compound having the structural formula:



wherein R_2 is alkyl C_1–C_4, R_3 is hydrogen or halogen and the resin is a high capacity sulfonic cationic exchange resin of the polystyrene-divinylbenzene type having a particle size of less than 800μ; 18% to 60% by weight of desiccated liver; 0 to 40% by weight of Brewer's yeast; 23.95% to 31% by weight of microcrystalline cellulose, 0% to 7% by weight of stearic acid; and 0% to 0.05% by weight of sodium aluminum silicate or silicon dioxide.

4,442,087

INTERFERON INDUCER, A PROCESS FOR PRODUCING THE SAME AND PHARMACEUTICAL COMPOSITION CONTAINING THE SAME

Yasuhiko Kojima, Yokohama; Seishi Konno; Sadao Tamamura, both of Tokyo; Takashi Hashimoto, Chofu, and Nobuyuki Shibukawa, Tokyo, all of Japan, assignors to The Kitasato Institute, Tokyo, Japan

Filed Jul. 13, 1981, Ser. No. 282,468

Claims priority, application Japan, Dec. 10, 1979, 54/160089

Int. Cl.³ A61K *31/69, 39/00, 45/02*

U.S. Cl. 424—85 15 Claims

1. A process for producing a water-soluble interferon inducer from a plant tissue, comprising extracting said interferon inducer with water from the tissue of a plant belonging to the genus Artemisia containing said interferon inducer at a temperature of from ambient to the boiling point of the extraction mixture for a period of up to 5 days sufficient to extract the major portion of said interferon inducer present in said tissue, forming a supernatant from the extracted solution, fractionating the supernatant to yield fractions containing the major portion of said interferon inducer present in the supernatant, and recovering said interferon inducer therefrom.

4,442,088

TUMOR ENZYME DETECTION

A. Robin Poole, Baie d' Urfe; John S. Mort, and Anneliese D. Recklies, both of Point Claire, Canada, assignors to Shriners Hospitals for Crippled Children, Tampa, Fla.

Filed Sep. 29, 1981, Ser. No. 307,085

Int. Cl.³ A61K *39/00*

U.S. Cl. 424—85 6 Claims

1. The process of producing a monospecific antiserum to cathepsin B proteinase secreted by malignant tumors comprising essentially the steps of:

(a) producing a proteinase emulsion by homogenizing purified cathepsin B proteinase after dialyzing to remove ampholines, said cathepsin B proteinase having a molecular weight of about 36,000 and being stable under alkaline pH conditions;

(b) injecting the proteinase emulsion intramuscularly into an animal;

(c) reinjecting the animal with the proteinase emulsion;

(d) withdrawing blood of the animal after sufficient time elapses for antibody production; and

(e) isolating the monospecific antiserum from the blood.

4,442,089

METHOD FOR TREATING GLAUCOMA WITH TOPICAL OR SYSTEMIC ACE INHIBITOR COMPOSITIONS

Zola P. Horovitz, Princeton, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jul. 6, 1982, Ser. No. 395,542

Int. Cl.³ A61K *37/00, 31/675, 31/66, 31/40*

U.S. Cl. 424—177 14 Claims

1. A method for treating glaucoma or lowering intraocular pressure in a mammalian species, which comprises topically or systemically administering an effective amount of an angiotensin converting enzyme inhibitor selected from the group consisting of a substituted proline derivative, a carboxyalkyl dipeptide derivative, a phosphinylalkanoyl proline derivative, and a phosphonamidate derivative.

4,442,090

ABSORPTION-PROMOTING COMPOUNDS, COMPOSITIONS THEREOF WITH PHARMACEUTICALS AND/OR BASES FOR RECTAL ADMINISTRATION AND METHOD OF USE

Nobuharu Kakeya, Nagaokakyo; Kazuhiko Kitao, and Ken-ichi Nishimura, both of Kyoto, all of Japan, assignors to Kyoto Yakuhin Kogyo Kabushiki Kaisha, Japan

Filed Mar. 24, 1981, Ser. No. 246,953

Claims priority, application Japan, Nov. 14, 1980, 55-161121; Nov. 19, 1980, 55-157170

Int. Cl.^{3} A61K *37/26, 37/00, 31/54, 31/425*

U.S. Cl. 424—178 **10 Claims**

1. A combination of (I) a physiologically-acceptable pharmacologically-active substance, which is rectally unabsorbable into the bloodstream or rectally absorbable into the bloodstream to an inadequate degree or only with difficulty, with (II) at least one physiologically-acceptable compound which is an N-acylamino acid having at least 9 carbon atoms, the acyl moiety having from 2 to 18 carbon atoms, and which:

(A) has a log P value in the range of from 2.5 to 6,
(B) has at least one carboxyl group in its molecular structure,
(C) has a carboxyl-group pKa value of at least 2.5, and
(D) is free from halogen atoms,

or a nontoxic salt thereof;

the amount of (II) being sufficient to promote absorption of (I) from the rectum into the bloodstream.

4,442,091

PROCESS FOR COMBATTING AND/OR PREVENTING ALLERGIC DISEASES EMPLOYING NATAMYCIN

Philippe Lebrun, La-Neuve, and Daniele de Saint Georges-Gridelet, Geel, both of Belgium, assignors to Gist-Brocades N.V., Delft, Netherlands

PCT No. PCT/NL81/00024, 371 Date Apr. 29, 1982, 102(e) Date Apr. 29, 1982, PCT Pub. No. WO82/00750, PCT Pub. Date Mar. 18, 1982

PCT Filed Aug. 28, 1981, Ser. No. 377,205

Claims priority, application Netherlands, Aug. 29, 1980, 8004949

Int. Cl.^{3} A01N *63/02*

U.S. Cl. 424—181 **6 Claims**

1. A method of combatting house-dust mites comprising contacting house-dust mites with a miticidally effective amount of natamycin.

4,442,092

SESAME NEMATOCIDAL COMPOSITION

Bob W. McBrayer, P.O. Box 128, Dixon, Calif. 95620

Filed Apr. 19, 1982, Ser. No. 369,623

Int. Cl.^{3} A61K *35/78*

U.S. Cl. 424—195 **10 Claims**

1. A method for killing nematodes comprising treating soil infested with nematodes with a nematocidally effective amount of a composition containing as active nematocidal ingredients of at least one or more of the following total sesame plant meal or the extracts thereof or concentrate of the extract of the sesame plant meal.

4,442,093

METHOD FOR ADMINISTERING 24,25-DIHYDROXYCHOLECALCIFEROL TO PERSONS SUFFERING FROM HYPERCALCEMIA

Yuji Maeda, Matsudo; Takayoshi Fujii, Tokyo; Yasuhiko Kobayashi, Tokyo; Kenichi Saito, Tokyo; Tadaaki Kato, Tokyo, and Chikao Yoshikumi, Kunitachi, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 4, 1982, Ser. No. 374,702

Claims priority, application Japan, May 15, 1981, 56-73264; Dec. 9, 1981, 56-198015; Dec. 9, 1981, 56-198016; Feb. 8, 1982, 57-18600; Apr. 15, 1982, 54-62688; Apr. 20, 1982, 54-65869; Apr. 27, 1982, 54-70682

Int. Cl.^{3} A61K *31/59*

U.S. Cl. 424—236 **4 Claims**

1. A method for treating hypercalcemia, ulcer, reduced immune function, metabolic abnormality on magnesium, hyperphosphatemia, abnormality on blood sugar or tumour, which comprises administering to a human or an animal suffering therefrom a therapeutically effective amount of a compound selected from the group consisting of 24R,25-dihydroxycholecalciferol, 24S,25-dihydroxycholecalciferol and a mixtures thereof.

2. The method according to claim **1**, wherein the compound is 24R,25-dihydroxycholecalciferol.

4,442,094

(3-ARALKYLAMINO-2-OR-PROPOXY)HETEROCYCLIC COMPOUNDS

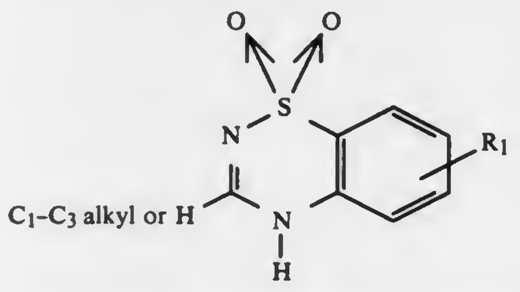
Joseph G. Atkinson, Montreal, Canada; John J. Baldwin, Gwynedd Valley, and David E. McClure, Lansdale, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 219,726, Dec. 23, 1980, Pat. No. 4,349,673. This application Feb. 22, 1982, Ser. No. 350,922

Int. Cl.^{3} C07D *285/24;* **A61K** *31/54*

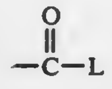
U.S. Cl. 424—246 **14 Claims**

1. A compound of the formula:



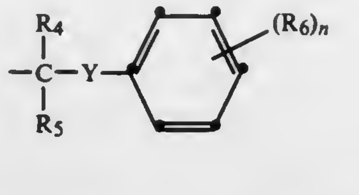
individual isomers and pharmaceutically acceptable salts thereof wherein

R_1 is $—OCH_2—CHOR_2—CH_2—NHR_3$
R_2 is H or



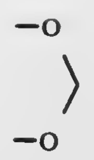
$$—\overset{\overset{\Large O}{\|}}{C}—L$$

wherein
L is phenyl or C_1–C_5 alkyl and

R_3 is 

wherein

R_4 and R_5 are independently selected from H and C_1–C_3alkyl,
Y is CH_2, $(CH_2)_2$ or $—CH_2O—$
R_6 is H, OH, OCH_3, halogen, C_1–C_3alkyl or



and n is 1 or 2.

14. A method for reducing intraocular pressure in a patent in need of such treatment which comprises administering to such patient an intraocular pressure reductive amount of a compound of claim **1**.

4,442,095

N-[(5-HALO-2,6-(SUBSTITUTED)PYRAZINYL)METHYLENE]AMINE ANTIMICROBIAL COMPOUNDS, COMPOSITIONS AND USE

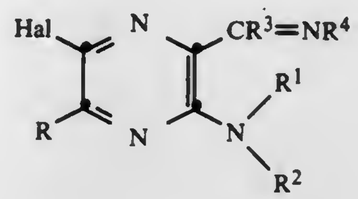
David B. R. Johnston, Warren, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 27, 1982, Ser. No. 453,056

Int. Cl.^{3} A01N *43/60, 43/84;* **C07D** *241/20, 413/04*

U.S. Cl. 424—248.5 **14 Claims**

1. A compound of the formula:



(I.)

wherein:

Hal is bromine or chlorine; and

R is halo; mono- or di-substituted mono- or diloweralkylamino wherein the loweralkyl substituents are hydroxy or loweralkanoyloxy; 4-morpholino; thiocyano; mercapto; straight or branched chain C_{1-8}alkylthio; mono- or di-substituted loweralkylthio wherein the substituents are hydroxy, amino, loweralkylanoylamino, or loweralkoxycarbonyl; arylthio; loweralkylsulfoxy; or loweralkylsulfonyl;

R^1 is hydrogen; or loweralkyl;

R^2 is $(CH_2)_nCOOR^a$, where R^a is hydrogen, loweralkyl, or benzyl; and n is 1 to 3;

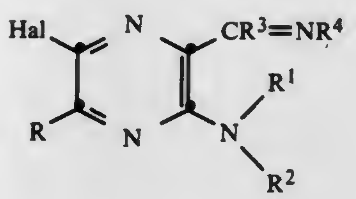
R^1 and

R^2 are taken together with an oxygen or nitrogen atom to form morpholino, piperazinyl, or piperazinyl which is N-loweralkyl substituted;

R^3 is hydrogen; straight or branched C_{1-8} alkyl; aryl; aryl substituted with up to two members selected from the group consisting of C_{1-3}alkyl, C_{1-3}alkoxy, halo, and mono- or di-C_{1-3}alkyl substituted amino; heteroaryl; formylC_{2-4}alkenyl; or C_{2-4}alkenyl; and

R^4 is straight or branched C_{1-8}alkyl; loweralkoxy; hydroxy; loweralkoxycarbonylmethyl; benzyl; or benzyl substituted with up to two members selected from the group consisting of halo, loweralkyl, and loweralkoxy.

5. A method of inhibiting the growth of bacteria and fungi comprising contacting said bacteria and fungi with a bactericidally and fungicidally effective amount of a compound of the formula:



(I.)

wherein:

Hal is bromine or chlorine; and

R is halo; mono- or di-substituted mono- or diloweralkylthio wherein the loweralkyl substituents are hydroxy or loweralkanoyloxy; 4-morpholino; thiocyano; mercapto; straight or branched chain C_{1-8}alkylthio; mono- or di-substituted loweralkylthio wherein the substituents are hydroxy, amino, loweralkanoylamino, or loweralkoxycarbonyl; arylthio; loweralkylsulfoxy; or loweralkylsulfonyl;

R^1 is hydrogen; or loweralkyl;

R^2 is $(CH_2)_nCOOR^a$, where R^a is hydrogen, loweralkyl, or benzyl; and n is 1 to 3;

R^1 and

R^2 are taken together with an oxygen or nitrogen atom to form morpholino, piperazinyl, or piperazinyl which is N-loweralkyl substituted;

R^3 is hydrogen; straight or branched C_{1-8} alkyl; aryl; aryl substituted with up to two members selected from the group consisting of C_{1-3}alkyl, C_{1-3}alkoxy, halo, and mono- or di-C_{1-3}alkyl substituted amino; heteroaryl; formylC_{2-4}alkenyl; or C_{2-4}alkenyl; and

R^4 is straight or branched C_{1-8}alkyl; loweralkoxy; hydroxy; loweralkoxycarbonylmethyl; benzyl; or benzyl substituted with up to two members selected from the group consisting of halo, loweralkyl, and loweralkoxy.

4,442,096

2-(SUBSTITUTED)AMINO-3-CYANO-5-HALO-6-(SUBSTITUTED)-PYRAZINE ANTIMICROBIAL COMPOUNDS, COMPOSITIONS AND USE

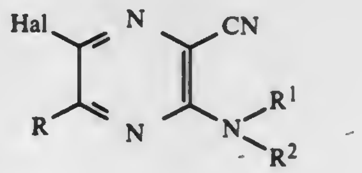
David B. R. Johnston, Warren, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 27, 1982, Ser. No. 453,057

Int. Cl.^{3} A01N *43/60, 43/84;* **C07D** *241/20, 413/04*

U.S. Cl. 424—248.5 **14 Claims**

1. A compound of the formula:



(I.)

wherein:

Hal is bromine or chlorine; and

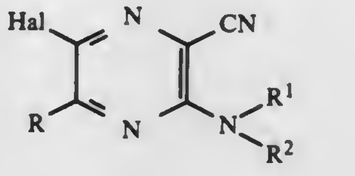
R is halo; mono- or di-substituted mono- or diloweralkylamino wherein the loweralkyl substituents are hydroxy or loweralkanoyloxy; 4-morpholino; thiocyano; mercapto; straight or branched chain C_{1-8}alkylthio; mono- or di-substituted loweralkylthio wherein the substituents are hydroxy, amino, loweralkanoylamino, or loweralkoxycarbonyl; arylthio; loweralkylsulfoxy; or loweralkylsulfonyl;

R^1 is hydrogen; or loweralkyl;

R^2 is $(CH_2)_nCOOR^3$, where R^3 is hydrogen, loweralkyl, or benzyl; and n is 1 to 3; and

R^1 and R^2 are taken together with an oxygen or nitrogen atom to form morpholino, piperazinyl, or piperazinyl which is N-loweralkyl substituted.

5. A method of inhibiting the growth of bacteria and fungi comprising contacting said bacteria and fungi with a bactericidally and fungicidally effective amount of a compound of the formula:



(I.)

wherein:

Hal is bromine or chlorine; and

R is halo; mono- or di-substituted mono- or diloweralkylamino wherein the loweralkyl substituents are hydroxy or loweralkanoyloxy; 4-morpholino; thiocyano; mer-

capto; straight or branched chain C_{1-8}alkylthio; mono- or di-substituted loweralkylthio wherein the substituents are hydroxy, amino, loweralkanoylamino, or loweralkoxycarbonyl; arylthio; loweralkylsulfoxy; or loweralkylsulfonyl;
- R^1 is hydrogen; or loweralkyl;
- R^2 is $(CH_2)_nCOOR^3$, where R^3 is hydrogen, loweralkyl, or benzyl; and n is 1 to 3; and
- R^1 and R^2 are taken together with an oxygen or nitrogen atom to form morpholino, piperazinyl, or piperazinyl which is N-loweralkyl substituted.

4,442,097

3-ACYL-2-(SUBSTITUTED) AMINO-5-HALO-6-(SUBSTITUTED) PYRAZINE ANTIMICROBIAL COMPOUNDS, COMPOSITIONS AND USE

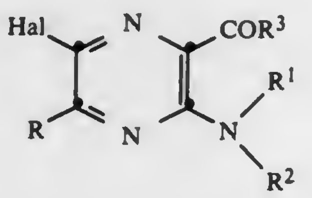
David B. R. Johnston, Warren, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 27, 1982, Ser. No. 453,058

Int. Cl.³ A01N *43/60, 43/84;* **C07D** *241/20, 413/04*

U.S. Cl. 424—248.5 **14 Claims**

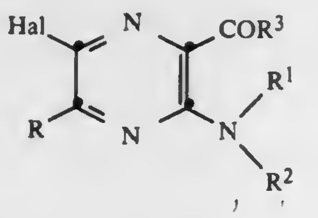
1. A compound of the formula:



(I.)

wherein:
- Hal is bromine or chlorine; and
- R is halo; mono- or di-substituted mono- or diloweralkylamino wherein the loweralkyl substituents are hydroxy or loweralkanoyloxy; 4-morpholino; thiocyano; mercapto; straight or branched chain C_{1-8}alkylthio; mono- or di-substituted loweralkylthio wherein the substituents are hydroxy, amino, loweralkanoylamino, or loweralkoxycarbonyl; arylthio; loweralkylsulfoxy; or loweralkylsulfonyl;
- R^1 is hydrogen; or loweralkyl;
- R^2 is hydroxyloweralkyl; $(CH_2)_nCOOR^a$, where R^1 is hydrogen, loweralkyl, or benzyl; and n is 1 to 3;
- R^1 and R^2 are taken together with an oxygen or nitrogen atom to form morpholino, piperazinyl, or piperazinyl which is N-loweralkyl substituted; and
- R^3 is hydrogen; straight or branched C_{1-8} alkyl, provided that when R^3 is hydrogen or C_{1-8} alkyl, R is other than halo; aryl; aryl substituted with up to two members selected from the group consisting of C_{1-3}alkyl, C_{1-3}alkoxy, halo, and mono- or di-C_{1-3}alkyl substituted amino; heteroaryl; formyl C_{2-4}alkenyl; or C_{2-4}alkenyl.

5. A method of inhibiting the growth of bacteria and fungi comprising contacting said bacteria and fungi with a bactericidally and fungicidally effective amount of a compound of the formula.



(I.)

wherein:
- Hal is bromine or chlorine; and
- R is halo; mono- or di-substituted mono- or diloweralkylamino wherein the loweralkyl substituents are hydroxy or loweralkanoyloxy; 4-morpholino; thiocyano; mercapto; straight or branched chain C_{1-8}alkylthio; mono-or-disubstituted loweralkylthio wherein the substituents are hydroxy, amino, loweralkanoylamino, or loweralkoxycarbonyl; arylthio; loweralkylsulfoxy; or loweralkylsulfonyl;
- R^1 is hydrogen; or loweralkyl;
- R^2 is hydroxyloweralkyl; $(CH_2)_nCOOR^1$, where R^a is hydrogen, loweralkyl, or benzyl; and n is 1 to 3;
- R^1 and R^2 are taken together with an oxygen or nitrogen atom to form morpholino, piperazinyl, or piperazinyl which is N-loweralkyl substituted; and
- R^3 is hydrogen; straight or branched C_{1-8} alkyl, provided that when R^3 is hydrogen or C_{1-8} alkyl, R is other than halo; aryl; aryl substituted with up to two members selected from the group consisting of C_{1-3}alkyl, C_{1-3}alkoxy, halo, and mono- or di-C_{1-3}alkyl substituted amino; heteroaryl; formyl C_{2-4}alkenyl; or C_{2-4}alkenyl.

4,442,098

PENTACYCLIC DERIVATIVES OF PIPERAZINE

Derek V. Gardner, Bishop Stortford, and Laramie M. Gaster, Sawbridgeworth, both of England, assignors to Beecham Group Limited, England

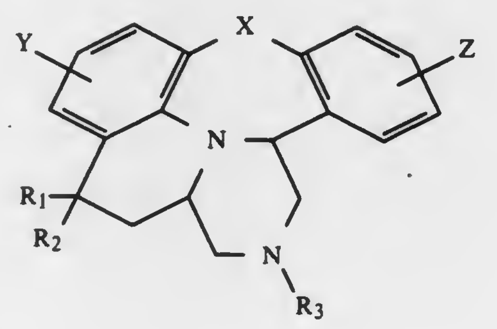
Filed Dec. 18, 1981, Ser. No. 332,347

Claims priority, application United Kingdom, Dec. 31, 1980, 8041558

Int. Cl.³ C07D *471/06, 498/06, 513/06;* **A61K** *31/495*

U.S. Cl. 424—248.51 **8 Claims**

1. A compound of formula (I) or a pharmaceutically acceptable salt thereof:



(I)

wherein:
- X is CH_2, O, S or NR wherein R is hydrogen or C_{1-4} alkyl;
- Y and Z are independently selected from hydrogen, C_{1-4} alkyl, C_{1-4} alkoxy, halogen or CF_3;
- R_1 is hydrogen, C_{1-6} alkyl, phenyl or phenyl-C_{1-4} alkyl any of which phenyl moieties may be substituted by one or more of C_{1-6} alkyl, C_{1-6} alkoxy, halogen or CF_3;
- R_2 is hydrogen, OH, C_{1-6} alkoxy, phenyl-C_{1-4} alkoxy, C_{1-7} acyloxy or NR_4R_5 wherein R_4 and R_5 are independently selected from hydrogen or C_{1-6} alkyl; R_4 is hydrogen and R_5 is OH or C_{1-4} alkoxy; or R_4 and R_5 together form C_{3-6} polymethylene optionally interrupted by one O or one NR_6 where R_6 is hydrogen or C_{1-4} alkyl; or together with R_1 forms an oxo group or $=NOR_7$ wherein R_7 is hydrogen or C_{1-6} alkyl; and
- R_3 is hydrogen or C_{1-6} alkyl.

4,442,099

LEUKOTRIENE ANALOGUES

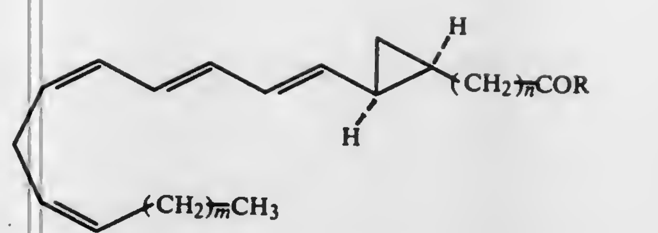
Kyriacos C. Nicolaou, Haverton; Nicos A. Petasis, and Steven P. Seitz, both of Philadelphia, all of Pa., assignors to Research Corporation, New York, N.Y.

Filed Nov. 27, 1981, Ser. No. 325,553

Int. Cl.³ C07C *69/743, 103/737;* **A61K** *31/215, 31/16*

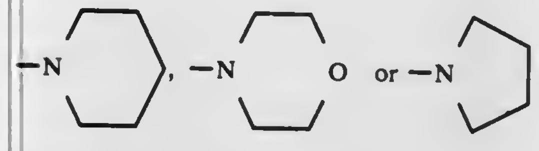
U.S. Cl. 424—248.57 **20 Claims**

1. A compound of the formula

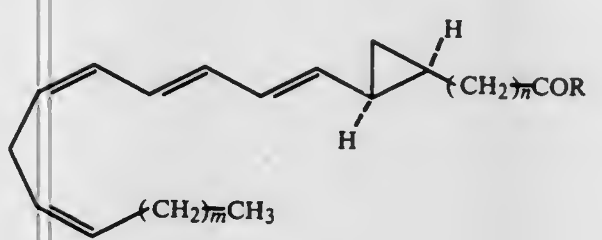


wherein n is an integer from 2 to 4; m is an integer from 3 to 5; R is OM, OR_1 or NR_2R_3 where M is a pharmaceutically acceptable cation;

R_1, R_2 and R_3 are the same or different and selected from the group consisting of: hydrogen; C_1–C_{12} branched, unbranched or cyclic alkyl; phenyl, lower-alkyl substituted phenyl, halo-substituted phenyl and combinations thereof; and benzyl, lower alkyl substituted benzyl, and halo-substituted benzyl; or R_2 and R_3 taken together form a group of the formula:

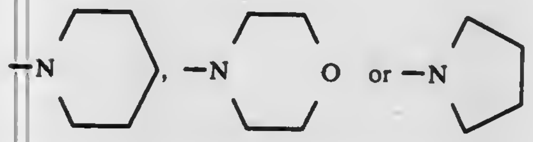


10. A pharmaceutical composition comprising an amount sufficient to inhibit the lipoxygenase pathway of arachidonic acid metabolism of a compound of the formula:



wherein n is an integer from 2 to 4;
n is an integer from 3 to 5;
R is OM, OR_1 or NR_2R_3
where M is a pharmaceutically acceptable cation;

R_1, R_2 and R_3 are the same or different and selected from the group consisting of: hydrogen; phenyl, lower-alkyl substituted phenyl, halo-substituted phenyl and combinations thereof; and benzyl, lower alkyl substituted benzyl and halo-substituted benzyl; or R_2 and R_3 taken together form a group of the formula:



together with an inert pharmaceutical carrier.

4,442,100

SUBSTITUTED 2-AMINO-3,4-DIHYDROPYRIDINE DERIVATIVES, THEIR PRODUCTION AND THEIR MEDICINAL USE

Horst Meyer; Rüdiger Sitt; Günter Thomas, all of Wuppertal; Benward Garthoff, Hilden; Robertson Towart, and Ulrich Rosentreter, both of Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

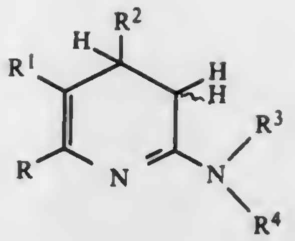
Filed Nov. 24, 1980, Ser. No. 210,119

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1979, 2949701; May 2, 1980, 3016874

Int. Cl.³ A61K *31/495;* **C07D** *241/04, 401/04*

U.S. Cl. 424—250 **14 Claims**

1. A compound of the formula



(I)

in which R represents a hydrogen atom, a straight-chain or branched alkyl radical which has up to 6 carbon atoms and is optionally mono-substituted or di-substituted by alkoxy with 1 to 4 carbon atoms, dialkylamino with 1 to 4 carbon atoms in each alkyl group, or a phenyl or benzyl radical, the phenyl ring thereof optionally being mono-substituted or di-substituted by identical or different substituents selected from fluorine, chlorine, bromine and alkyl and alkoxy with in each case 1 to 4 carbon atoms, R^1 and R^2 are identical or different and each represent a phenylnaphthyl or pyridyl radical, these aromatic rings optionally containing 1 or 2 identical or different substituents selected from cyano, hydroxyl, carboxyl, halogen, phenyl, alkyl, alkoxy, trifluoromethyl, trifluoromethoxy, trifluoromethylthio, alkylmercapto, alkylsulphonyl and alkylamino, and the alkyl and alkoxy radicals mentioned each containing 1 to 4-carbon atoms, and R^3 and R^4 together with a nitrogen atom to which they are attached, form a piperazino ring, which is optionally substituted at the 4-nitrogen atom by an R^6 group
in which R^6 has a meaning indicated above in the definition of R^1 and R^2.

3. A pharmaceutical composition containing as an active ingredient an antilipidemically effective amount of a compound according to claim 1, in admixture with an inert pharmaceutical carrier.

4,442,101

SESQUIHYDRATE OF NAPHTHYRIDINE DERIVATIVE, AND PROCESS FOR THE PREPARATION THEREOF

Hitoshi Ichihashi, Kyoto; Terukazu Tanaka, Osaka, and Yu Imasato, Toyonaka, all of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan and Laboratoire Roger Bellon, Neuilly sur Seine, France

Filed Feb. 4, 1982, Ser. No. 345,916

Claims priority, application Japan, Feb. 13, 1981, 56-20749

Int. Cl.³ C07D *487/04;* **A61K** *31/495*

U.S. Cl. 424—250 **11 Claims**

1. 1-Ethyl-6-fluoro-1,4-dihydro-4-oxo-7-(1-piperazinyl)-1,8-naphthyridine-3-carboxylic acid.sesquihydrate.

11. An antibacterial composition comprising as an active ingredient an antibacterially effective amount of the sesquihydrate defined in claim 1 and a pharmaceutically acceptable carrier therefor.

4,442,102

1,5-DIPHENYLPYRAZOLIN-3-ONE COMPOUNDS, PROCESS AND INTERMEDIATES FOR PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Henning Heinemann, Hanover, Fed. Rep. of Germany; Daniel Jasserand, Paris, France; Wolfgang Milkowski, Burgdorf, Fed. Rep. of Germany; Dimitri Yavordios, Chatillon-sur-Chalaronne, France, and Horst Zeugner, Hanover, Fed. Rep. of Germany, assignors to Kali-Chemie Pharma GmbH, Hanover, Fed. Rep. of Germany

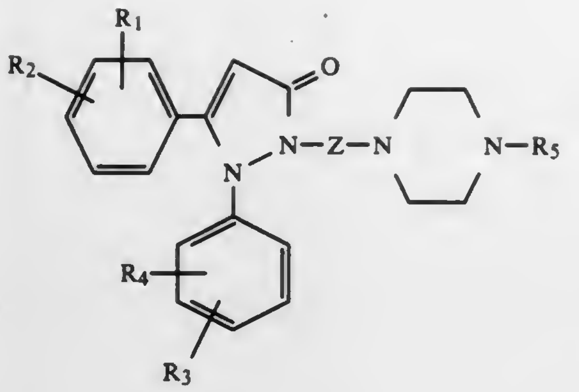
Filed Aug. 19, 1982, Ser. No. 409,631

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1981, 3132915

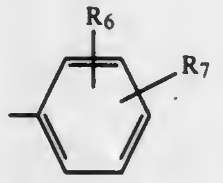
Int. Cl.³ C07D *403/06, 231/08;* **A61K** *31/495*

U.S. Cl. 424—250 **5 Claims**

1. A 1,5-diphenylpyrazolin-3-one compound of the formula I



where R_1 is a hydrogen or halogen atom, or a lower alkyl, lower alkoxy, hydroxyl, trifluoromethyl or lower alkanoyloxy, R_2 is a hydrogen or halogen atom, or a lower alkyl or lower alkoxy, or R_1 and R_2 are bonded to adjacent carbon atoms and together denote a methylenedioxy or ethylenedioxy, R_3 is a hydrogen or halogen atom, or a lower alkyl, lower alkoxy, hydroxy, trifluoromethyl or lower alkanoyloxy, R_4 is a hydrogen or halogen atom, or a lower alkyl or lower alkoxy, or R_3 and R_4 are bonded to adjacent carbon atoms and together denote a methylenedioxy or ethylenedioxy, Z is an alkylene with 2 to 6 carbon atoms, and R_5 is an unsubstituted pyridyl, a pyridyl which is monosubstituted by a halogen atom, or a lower alkyl or lower alkoxy, a thienyl or an unsubstituted or substituted phenyl a



a

where R_6 is a hydrogen or halogen atom, or a lower alkyl, lower alkoxy, hydroxyl, trifluoromethyl or lower alkanoyloxy, and R_7 is a hydrogen or halogen atom, or a lower alkyl or lower alkoxy, or R_6 and R_7 are bonded to adjacent carbon atoms and together denote a methylenedioxy or ethylenedioxy; and acid addition salts thereof.

4,442,103

TREATING SEDATION WITH 1-(3-SUBSTITUTED-2-PYRIDINYL) PIPERAZINES

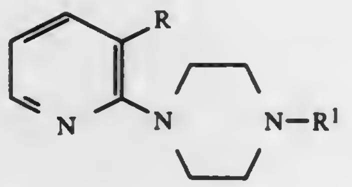
Walfred S. Saari, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 267,326, May 26, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 430,914

Int. Cl.^{3} A61K *31/495*

U.S. Cl. 424—250 **4 Claims**

1. A method of treating sedation caused by presynaptic α_2-adrenergic receptor stimulation by antihypertensive drug therapy in a patient in need of such treatment which comprises the administration of 0.01 to 20 mg/kg/day of a compound of structural formula:



or a pharmaceutically acceptable salt thereof, wherein:

R is
- (1) hydrogen;
- (2) halo;
- (3) C_{1-4}alkyl;
- (4) cyano;
- (5) C_{1-4}alkoxy;
- (6) trifluoromethyl; or
- (7) nitro; and

R^1 is
- (1) hydrogen, or
- (2) C_{1-3}alkyl;

with the proviso that if R is fluoro, chloro or bromo, R^1 is C_{1-3}alkyl.

4,442,104

COLORING OF FRUIT

Elaine R. Wedral, Brookfield; Richard M. Hopefl, and Rufus A. Ivie, both of New Milford, all of Conn., assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Jan. 4, 1983, Ser. No. 455,597

Int. Cl.^{3} A23L *1/275, 1/212*

U.S. Cl. 426—250 **10 Claims**

1. A process for artificially colouring fruit which comprises:
(a) combining a pale-coloured fruit with from 0.5 to 4.0 parts by weight of water per part by weight of the fruit;
(b) treating the fruit/water mixture with from 0.001% to 1.00% by weight of a colourant comprising a food acceptable pigment or dye containing carboxyl groups based on the weight of the fruit and with an effective amount of a hydrolysable tannin sufficient to fix the colourant in the fruit at a temperature of from 15° C. to the boiling point of the mixture;
(c) lowering the pH of the mixture to at least a value at which the colourant becomes substantially insoluble;
(d) raising the pH of the mixture such that the pH of the inner parts of the fruit does not exceed 7; and then
(e) separating the coloured fruit from the mixture.

4,442,105

FRUIT COLORING PROCESS

Ulrich Wissgott, La Tour-de-Peilz, Switzerland, assignor to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Jan. 4, 1983, Ser. No. 455,599

Int. Cl.^{3} A23L *1/275, 1/212*

U.S. Cl. 426—250 **10 Claims**

1. A process for artificially colouring fruit which comprises:
(a) combining a pale-coloured fruit with from 0.5 to 4.0 parts by weight of water per part by weight of the fruit;
(b) treating the fruit/water mixture with from 0.001% to 0.100% by weight of a food acceptable dye containing carboxyl groups based on the weight of the fruit and with an effective amount of an edible calcium salt sufficient to fix the dye in the fruit at an elevated temperature of from 80° C. to the boiling point of the mixture;
(c) lowering the pH of the mixture to at least a value at which the colourant becomes substantially insoluble;
(d) raising the pH of the mixture such that the pH of the inner parts of the fruit does not exceed 7; and then
(e) separating the coloured fruit from the mixture.

4,442,106

QUINOLINE DERIVATIVES, PHARMACEUTICAL COMPOSITIONS CONTAINING SUCH COMPOUNDS, AND METHODS OF TREATING CARDIOVASCULAR CONDITIONS WITH THEM

Hans B. Trijzelaar, Zeist; Ronus de Bode, Bilthoven, and Hendricus B. A. Welle, Maarssen, all of Netherlands, assignors to Acf Chemiefarma N.V., Netherlands

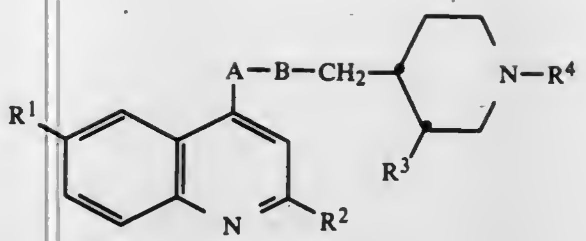
Filed Mar. 5, 1981, Ser. No. 240,808

Claims priority, application Netherlands, Mar. 6, 1980, 8001369

Int. Cl.^{3} A61K *31/47;* **C07D** *401/06*

U.S. Cl. 424—258 **31 Claims**

1. A compound of formula 1, or a salt thereof,



in which

A—B is —CH_2—CH_2—, —CHOH—CH_2—, —CH_2—CHOH—, —C(O)—CH_2—, —CH_2—C(O)—, —C(NOR^5)—CH_2—or —CH_2—C(NOR^5)—,
R^1 is hydrogen, hydroxy or lower alkoxy,
R^2 is lower alkyl, hydroxy, lower alkoxy, or CF_3,
R^3 is ethyl or vinyl,
R^4 is C_{1-9} alkyl, C_{2-9} hydroxyalkyl or lower alkoxyalkyl, C_{5-6} cycloalkyl, C_{3-6} cycloalkyl lower alkyl, cyano lower alkyl, lower alkenyl, lower alkynyl, tetrahydrofurfuryl, mono- or di-lower alkylamino lower alkyl; mono- or di-lower alkylamino lower hydroxyalkyl; phenyl C_{1-4} alkyl, phenyl C_{1-4} hydroxyalkyl, diphenyl C_{1-4} alkyl, or benzoyl C_{1-4} alkyl, in which the phenyl moiety is unsubstituted or substituted by one substituent selected from halogen, lower alkyl or lower alkoxy; furyl C_{1-4} alkyl, thienyl C_{1-4} alkyl, furoyl C_{1-4} alkyl or thienoyl C_{1-4} alkyl, and
R^5 is lower alkyl,

whereby the substituents at the 3- and 4-positions of the piperidine ring are in the cis-configuration.

19. A pharmaceutical composition comprising a cardiovascularly effective amount of a compound according to claim 1, or a pharmaceutically acceptable salt thereof, in combination with a pharmaceutically acceptable carrier.

20. The method of treating cardiovascular conditions in a human or other animal in need thereof which comprises administering an effective amount of a compound according to claim 1.

4,442,107

QUINOLINE DERIVATIVES, PHARMACEUTICAL COMPOSITIONS CONTAINING SUCH COMPOUNDS, AND METHODS FOR TREATING CARDIOVASCULAR CONDITIONS WITH THEM

Hans B. Trijzelaar, Zeist; Ronus de Bode, Bilthoven, and Hendricus B. A. Welle, Maarssen, all of Netherlands, assignors to ACF Chemiefarma N.V., Netherlands

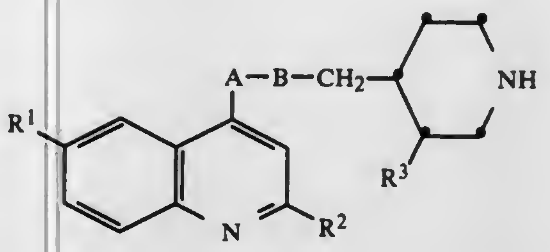
Filed Mar. 5, 1981, Ser. No. 240,818

Claims priority, application Netherlands, Mar. 6, 1980, 8001369; Jul. 11, 1980, 8004003

Int. Cl.^{3} A61K *31/47;* **C07D** *401/06*

U.S. Cl. 424—258 **14 Claims**

1. A compound of the formula



or a pharmaceutically acceptable salt thereof in which

A-B is —CH_2—CH_2—, —CHOH—CH_2—, —CH_2—CHOH—, —C(O)—CH_2—, —CH_2—C(O)—, —C(NOR^4)—CH_2— or —CH_2—C(NOR^4)—,
R^1 is hydrogen, hydroxy or lower alkoxy,
R^2 is hydroxy, lower alkoxy or trifluoromethyl,
R^3 is ethyl or vinyl, and
R^4 is lower alkyl,

in which the configuration of the substituents in the 3- and 4-position of the depicted piperidine ring is cis.

14. The method of treating cardiovascular conditions in a human or other animal in need thereof which comprises administering an effective amount of a compound according to claim 1.

4,442,108

HYDROGENATED ISOQUINOLINES AND PERIPHERAL VASCULAR DISEASE TREATING COMPOSITIONS THEREOF

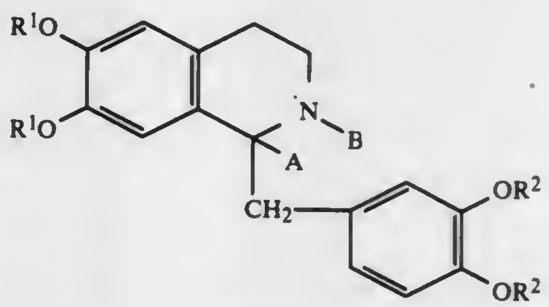
Jean-Bernard Le Polles, Rennes; Michel Martin, Saint-Gregoire; Guy Nadler, Rennes, and Edmond Saias, Issy-les-Moulineaux, all of France, assignors to Laboratoires Sobio S.A. of Immeuble Perisud, France

Continuation of Ser. No. 196,322, Oct. 14, 1980, abandoned, which is a continuation of Ser. No. 898,145, Apr. 20, 1978, abandoned. This application Sep. 10, 1981, Ser. No. 300,957

Int. Cl.^{3} C07D *215/14;* **A61K** *31/47*

U.S. Cl. 424—258 **7 Claims**

1. A compound of the formula



(II)

or a pharmaceutically acceptable acid addition salt thereof, wherein R^1 and R^2 are different and one is alkyl of 1 to 6 carbon atoms and the other is isopropyl, and A and B together represent a covalent bond.

7. A pharmaceutical composition for the treatment of peripheral vascular disease which comprises from 50 to 500 mg of a compound as claimed in claim 1 together with a pharmaceutically acceptable carrier.

4,442,109

3-METHYLTHIOMETHYL-AND 3-METHYLSULFINYLMETHYL-4-QUINOLINONES USEFUL FOR TREATING HYPERTENSION

Roy V. Davies, Sutton-in-Ashfield, England, assignor to The Boots Company Limited, Nottingham, England

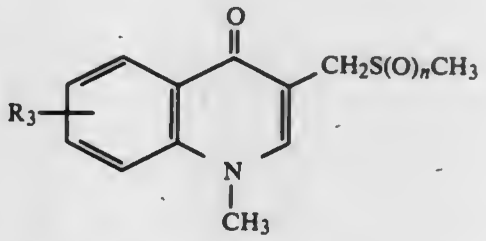
Filed Sep. 21, 1981, Ser. No. 303,948

Claims priority, application United Kingdom, Sep. 26, 1980, 8031106; Sep. 26, 1980, 8031162; Jun. 19, 1981, 8118879; Jun. 19, 1981, 8119062

Int. Cl.^{3} A61K *31/47;* **C07D** *215/22*

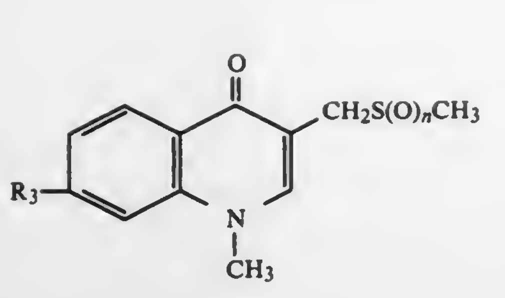
U.S. Cl. 424—258 **16 Claims**

1. A quinolone of the formula



wherein n is 0 or 1 and R_3 is hydrogen, 7-chloro, 7-fluoro, 7-trifluoromethyl, 6-fluoro, 7-methyl, or 7-bromo.

9. Therapeutic compositions which comprise an antihypertensive effective amount of a quinolone of the formula

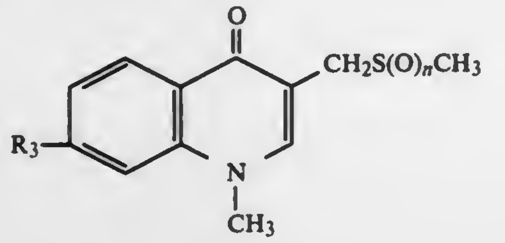


wherein

(a) n is 0 and R_3 is chloro, or

(b) n is 1 and R_3 is chloro, bromo, or trifluoromethyl.

16. A method of treating hypertension in a hypertensive mammal which comprises administering to the hypertensive mammal a therapeutically effective amount of a quinolone of the formula



wherein

(a) n is 0 and R_3 is chloro, or

(b) n is 1 and R_3 is chloro, bromo, or trifluoromethyl.

4,442,110

1H-1,2,4-TRIAZOLE-3,5-DIAMINE DERIVATIVES AND USE AS SELECTIVE HISTAMINE H_2-ANTAGONISTS

John W. Clitherow; John Bradshaw, both of Ware; John W. M. Mackinnon, Royston; Barry J. Price, Hertford; Michael Martin-Smith, Dane End, Near Ware, and Duncan B. Judd, Ware, all of England, assignors to Glaxo Group Limited, London, United Kingdom

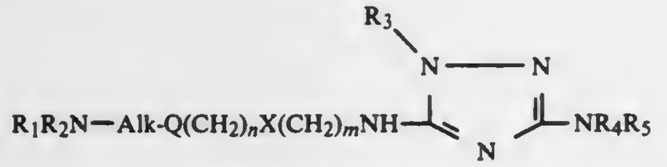
Division of Ser. No. 33,508, Apr. 26, 1979, Pat. No. 4,318,913. This application Nov. 24, 1981, Ser. No. 324,440

Claims priority, application United Kingdom, Apr. 26, 1978, 16468/78; Dec. 8, 1978, 47689/78; Mar. 2, 1979, 7907422

Int. Cl.^{3} A01N *43/64;* **C07D** *249/14*

U.S. Cl. 424—263 **21 Claims**

1. A compound of the formula (I)



and physiologically acceptable acid addition salts thereof, in which

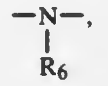
R_1 and R_2, which may be the same or different, each represent hydrogen, C_{1-10} alkyl, C_{3-8} cycloalkyl, C_{3-6} alkenyl, C_{3-6} alkynyl, arC_{1-6}alkyl, wherein the aryl portion is phenyl or phenyl substituted with one or more C_{1-3} alkyl or C_{1-3} alkoxy groups or halogen atoms; trifluoroC_{1-6}alkyl or C_{1-6} alkyl substituted by hydroxy, C_{1-6} alkoxy, amino, C_{1-6} alkylamino, diC_{1-6}alkylamino or C_{3-8} cycloalkyl;

Alk represents a straight or branched alkylene chain of 1 to 6 carbon atoms;

Q represents a furan or thiophen ring in which incorporation into the rest of the molecule is through bonds at the 2- and 5-positions, the furan ring optionally bearing a further substituent R_7 adjacent to the group R_1R_2N—Alk—, or Q represents a benzene ring in which incorporation into the rest of the molecule is through bonds at the 1- and 3- or 1- and 4-positions;

R_7 represents halogen or C_{1-4} alkyl which may be substituted by hydroxy or C_{1-4} alkoxy;

X represents —CH_2—,



$$-\underset{R_6}{\underset{|}{N}}-,$$

—O— or —S—

where

R_6 represents hydrogen or methyl;

n represents zero, 1 or 2;

m represents 2, 3 or 4;

R_3 represents hydrogen, C_{1-6} alkyl, C_{3-6} alkenyl, phenyl C_{1-6} alkyl, hydroxyalkyl having from two to six carbon atoms, C_{1-6} alkoxyC_{1-6}alkyl, phenyl or phenyl substituted with one or more C_{1-3} alkyl or C_{1-3} alkoxy groups or halogen atoms; and

R_4 and R_5, which may be the same or different, each represent hydrogen, C_{1-6} alkyl, C_{1-6} alkyl substituted by hydroxy or C_{1-3} alkoxy, C_{3-6} alkenyl, phenyl C_{1-6} alkyl or pyridyl C_{1-6} alkyl.

21. A method of treating a condition mediated through histamine H_2-receptors which comprises administering to a patient an effective amount of a compound as defined in claim **1** to relieve said condition.

4,442,111

ANTITHROMBOTIC SULFIMINO AND SULFOXIMINO INDOLINONES-2

Erich Müller; Josef Nickl; Berthold Narr; Josef Roch; Walter Haarmann, and Johannes M. Weisenberger, all of Biberach, Fed. Rep. of Germany, assignors to Dr. Karl Thomae Gesellschaft mit beschränkter Haftung, Biberach an der Riss, Fed. Rep. of Germany

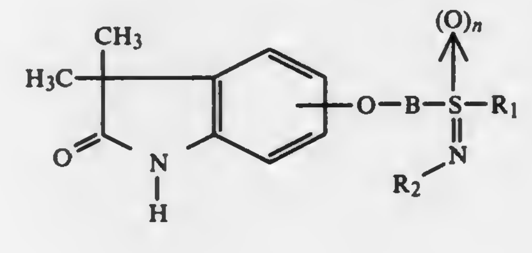
Filed Jul. 6, 1982, Ser. No. 395,631

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1981, 3129444; Oct. 29, 1981, 3142904

Int. Cl.^{3} C07D *215/22, 209/34;* **A61K** *31/40, 31/47*

U.S. Cl. 424—263 **5 Claims**

1. A compound of the formula



where

n is 1;

B is straight alkylene of 3 to 5 carbon atoms;

R_1 is alkyl of 1 to 6 carbon atoms; benzyl; phenylethyl; cyclohexyl; naphthyl; methoxy-naphthyl; pyridyl-(2), -(3) or -(4); phenyl monosubstituted by alkyl of 1 to 4 carbon atoms, methoxy, cyclohexyl, phenyl, fluorophenyl, fluorine, chlorine or bromine; phenyl disubstituted by alkyls of 1 to 4 carbon atoms, methoxy, chlorine or bromine, where the substituents of the phenyl nucleus may be the same or different; or an aminophenyl, hydroxyphenyl or methoxyphenyl group substituted by two chlorine or bromine atoms, two methoxy groups or two alkyl groups each of 1 to 4 carbon atoms; and

R_2 is hydrogen; alkanoyl of 1 to 8 carbon atoms; methoxy(alkanoyl of 1 to 8 carbon atoms); benzoyl; benzoyl monosubstituted by halogen, cyano or alkyl of 1 to 4 carbon atoms; phenylsulfonyl; phenylsulfonyl monosubstituted by halogen, cyano or alkyl of 1 to 4 carbon atoms; alkoxycarbonyl of 2 to 4 carbon atoms; aminocarbonyl; (chlorophenyl-amino)carbonyl; methylamino-carbonyl; dimethylamino-carbonyl; naphthoyl; pinanoyl; camphorsulfonyl; pentamethylphenylsulfonyl or nicotinoyl.

4. An antithrombotic pharmaceutical composition consisting essentially of an inert pharmaceutical carrier and an effective antithrombotic amount of a compound of claim **1**.

4,442,112

DIHYDROPYRIDINE DERIVATIVES USEFUL IN TREATING VASCULAR HEADACHES

Else Müller-Schweinitzer, Oberdorf, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

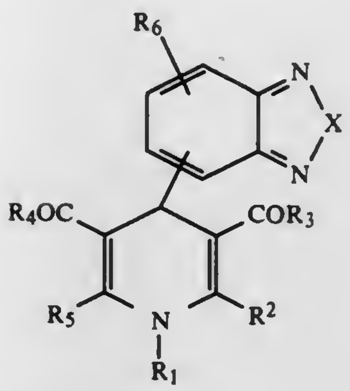
Filed Aug. 24, 1982, Ser. No. 411,101

Claims priority, application United Kingdom, Sep. 2, 1981, 8126574

Int. Cl.^{3} A61U *31/44, 31/445*

U.S. Cl. 424—263 **12 Claims**

1. A method for treating or preventing vascular headaches, which comprises administering a therapeutically effective amount of a compound of formula I.



I

wherein

R_1 is hydrogen, alkyl of 1 to 6 carbon atoms, alkenyl or alkinyl of 3 to 6 carbon atoms, cycloalkyl of 3 to 7 carbon atoms, cycloalkylalkyl of 4 to 8 carbon atoms, phenylalkyl of 7 to 9 carbon atoms or phenylalkenyl or 9 to 12 carbon atoms, the phenyl ring being unsubstituted or mono-, di- or trisubstituted independently by halogen, hydroxy or alkyl or alkoxy of 1 to 4 carbon atoms.

R_2 and R_5, independently, are hydrogen or alkyl of 1 to 6 carbon atoms,

R_3 and R_4, independently, are alkyl of 1 to 6 carbon atoms, alkenyl or alkinyl of 3 to 6 carbon atoms, cycloalkyl of 3 to 7 carbon atoms, cycloalkylalkyl of 4 to 8 carbon atoms, alkoxy of 1 to 6 carbon atoms, hydroxyalkoxy of 2 to 6 carbon atoms, alkoxyalkoxy of 3 to 6 carbon atoms, hydroxyalkoxyalkoxy of 4 to 8 carbon atoms, alkenyloxy or alkinyloxy of 3 to 6 carbon atoms, cycloalkyloxy of 3 to 7 carbon atoms or cycloalkylalkoxy of 4 to 8 carbon atoms,

R_6 is hydrogen, halogen, alkyl or alkoxy or alkylthio or alkylsulfonyl, each of 1 to 4 carbon atoms, trifluoromethyl, nitro or hydroxy, and X is oxygen or sulphur,

to a subject in need of such treatment.

4,442,113

LONG-TERM WEIGHT REDUCTION OF OBESE PATIENTS USING FEMOXETINE

Joergen B. Lassen, Glostrup; Birte K. Skrumsager, Broenshoej, and Joergen A. Christensen, Virum, all of Denmark, assignors to A/S Ferrosan, Soborg, Denmark

Filed May 7, 1981, Ser. No. 261,479

Int. Cl.^{3} A61K *31/445*

U.S. Cl. 424—267 **16 Claims**

1. The method of reducing appetite to obtain weight control and reduction in an obese human patient which comprises the step of orally or rectally administering to the said patient an appetite suppressing amount of a compound selected from the group consisting of femoxetine and a pharmaceutically-acceptable salt thereof over a period of at least eight (8) weeks.

4,442,114

IMIDE DERIVATIVES

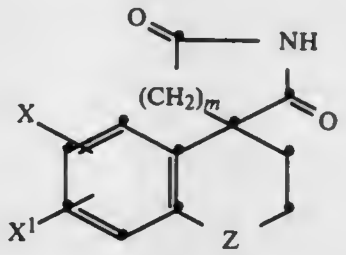
John L. Belletire, Madison, Wis., and Reinhard Sarges, Mystic, Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 292,751, Aug. 13, 1981, abandoned, which is a division of Ser. No. 106,577, Dec. 26, 1979, Pat. No. 4,307,108. This application Jan. 17, 1983, Ser. No. 458,700

Int. Cl.^{3} C07D *211/88;* **A61K** *31/445*

U.S. Cl. 424—267 **2 Claims**

1. A method of treating a diabetic host to prevent or alleviate diabetes-associated chronic complications, which comprises administering to said host an effective amount of a compound selected from the group consisting of spiro-imides of the formula:



I

and the base salts thereof with pharmacologically acceptable cations, wherein

W is —$(CH_2)_n$—;

X is hydrogen, chlorine, lower alkyl or lower alkoxy;

X^1 is hydrogen, fluorine, chlorine, bromine, lower alkyl, lower alkoxy or phenyl, with the proviso that when X^1 is fluorine, bromine or phenyl, X is hydrogen;

Y is oxygen or sulfur;

Z is W, Y or Q wherein Q is oxosulfur or dioxosulfur;

m is two; and

n is zero or one.

4,442,115

2'HYDROXY TETRAZOLE-5-CARBOXANILIDES AND ANTI-ALLERGIC USE THEREOF

Christopher A. Ramsden, Brentwood; Philip Knowles, Rayleigh; Edward J. Lewis, Romford; Edward Lunt, Westcliff-On-Sea, and Derek E. Wright, South Benfleet, all of England, assignors to May & Baker Limited, Essex, England

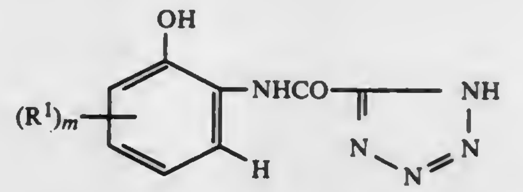
Continuation of Ser. No. 954,785, Oct. 26, 1978, abandoned. This application Jun. 1, 1979, Ser. No. 44,511

Claims priority, application United Kingdom, Oct. 28, 1977, 45097/77

Int. Cl.^{3} C07D *257/04;* **A61K** *31/41*

U.S. Cl. 424—269 **43 Claims**

1. A tetrazole of the formula:



I

wherein R^1 represents a halogen atom, an alkyl, alkoxy, alkylthio, alkylsulphinyl, alkylsulphonyl or alkylsulphamoyl group, each such group having from 1 to 6 carbon atoms, a dialkylsulphamoyl, dialkylamino, or dialkylcarbamoyl group (wherein each of the two alkyl groups has from 1 to 4 carbon atoms), an alkanoyl, alkoxycarbonyl, alkoxycarbonylamino, alkylcarbamoyl or alkanoylamino group of from 2 to 6 carbon atoms, a cycloalkylcarbonyl group of from 3 to 8 carbon atoms in the cycloalkyl moiety, or a hydroxy, formyl, nitro, trifluoromethyl, trifluoroacetyl, phenyl, benzyloxycarbonylamino, amino, sulphamoyl, cyano, tetrazol-5-yl, carboxy, carbamoyl, benzyloxy, phenylacetyl or benzoyl group, or a group of the formula:

$$-CR^2{=}NOR^3$$

II

(wherein R^2 represents a hydrogen atom, an alkyl group of from 1 to 5 carbon atoms, a phenyl, phenylalkyl or trifluoromethyl group, or a cycloalkyl group of 3 to 8 carbon atoms, and R^3 represents a hydrogen atom, an alkyl group of from 1 to 6 carbon atoms unsubstituted or substituted by a phenyl group, or represents a phenyl group unsubstituted or substituted by one substituent selected from halogen atoms and alkyl and alkoxy groups of from 1 to 6 carbon atoms and hydroxy, trifluoromethyl and nitro groups), and m represents zero, 1, or 2, the substituent R^1 being in the 3- or 5-position when m is 1 and the substituents R^1 being the same or different and being in the 3- and 5-positions when m is 2 and pharmaceutically acceptable salts thereof.

42. A pharmaceutical composition useful in the treatment of allergic conditions which comprises, as active ingredient, an effective amount of a tetrazole as claimed in claim **1**, or a pharmaceutically acceptable salt thereof, in association with a pharmaceutical carrier.

4,442,116
HETEROCYCLIC COMPOUNDS

Isao Iwataki; Minoru Kaeriyama; Nobuo Matsui, and Tomio Yamada, all of Kanagawa, Japan, assignors to Nippon Soda Company, Limited, Tokyo, Japan

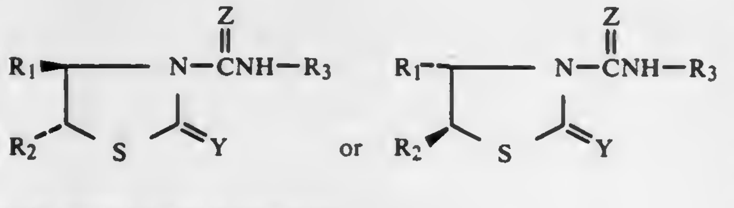
Division of Ser. No. 187,412, Sep. 15, 1980. This application Feb. 19, 1982, Ser. No. 350,368

Claims priority, application Japan, Oct. 3, 1979, 54-127707; Apr. 18, 1980, 55-50363

Int. Cl.³ C07D *277/14, 277/16;* **A01N** *43/78*

U.S. Cl. 424—270 **27 Claims**

1. A compound represented by the formula



or racemate thereof wherein

each of Y and Z is oxygen or sulfur,

R_1 is alkyl of one to four carbon atoms,

R_2 is thienyl, furyl, phenyl, phenyl having one alkoxy, or phenyl having one or two substituents selected from a group consisting of alkyl, halogen, haloalkyl, nitro and methylenedioxy, and

R_3 is a five to seven membered cycloalkyl with or without one or two methyl, cyclohexenyl or tetrahydropyranyl.

4,442,117
HOMOSERINE DERIVATIVES AND THEIR USE AS MICROBICIDES

Walter Kunz, Oberwil, Switzerland; Wolfgang Eckhardt, Lörrach, Fed. Rep. of Germany; Adolf Hubele, Magden, and Peter Riebli, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

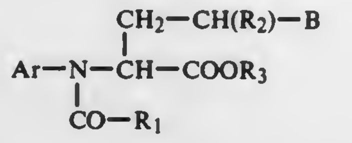
Filed Oct. 23, 1980, Ser. No. 199,903

Claims priority, application Switzerland, Oct. 26, 1979, 9631/79; Sep. 24, 1980, 7150/80

Int. Cl.³ A01N *37/22;* **C07C** *103/66, 103/737*

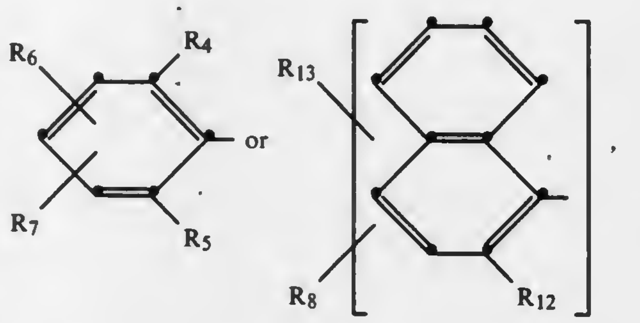
U.S. Cl. 424—273 R **49 Claims**

1. A homoserine derivative of the formula I

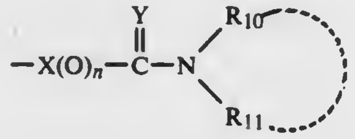


$$\begin{array}{l} \quad\quad\quad CH_2-CH(R_2)-B \\ \quad\quad\quad | \\ Ar-N-CH-COOR_3 \\ \quad\;\; | \\ \quad\;\; CO-R_1 \end{array} \qquad (I)$$

wherein R_1 is alkyl of 2 to 6 carbon atoms wich is optionally interrupted by an oxygen or a sulfur atom, 2-furyl, 2-tetrahydrofuryl, 1H-1,2,4-triazolylmethyl, 1-imidazolylmethyl, 1-pyrazolylmethyl, C_2–C_4-alkenyl or cyclopropyl, each of which is unsubstituted or is substituted by halogen, or when B is halogen, R_1 may also be halomethyl, R_2 is hydrogen or methyl; R_3 is hydrogen or C_1–C_4-alkyl; Ar is



in which R_4 is C_1–C_3-alkyl, C_1–C_3-alkoxy or halogen, R_5 is C_1–C_3-alkyl, C_1–C_3-alkoxy, NH_2, halogen or NO_2, R_6 is hydrogen, NO_2, NH_2, C_1–C_3-alkyl, C_1–C_3-alkoxy or halogen, R_7 and R_8 are each hydrogen or methyl, R_{12} is methyl, NO_2 or NH_2, R_{13} is hydrogen, methyl, NO_2 or NH_2; and B is one of the following groups $—X(O)_kH$, $—X(O)_mR_9$,



or halogen, wherein X and Y independently of one another are each oxygen or sulfur, and, when X is sulfur, k has the value nought or 3, and n and m are nought, 1 or 2, whilst when X is oxygen k, m and n are always nought, R_9 is a C_1–C_5-alkyl group which is unsubstituted or substituted by halogen, C_1–C_3-alkoxy or C_1–C_3-alkylthio, R_{10} is hydrogen, methyl or ethyl, R_{11} is a C_1–C_5-alkyl group which is unsubstituted or substituted by halogen, or R_{11} is a phenyl group which is unsubstituted or substituted by halogen, methyl, trifluoromethyl or nitro, or R_{10} and R_{11} together with the nitrogen atom to which they are bound form an imidazole or 1,2,4-triazole ring.

25. A composition for combating and/or preventing an infection by pathogenic microorganisms, which comprises as active ingredient an effective amount of a compound according to claim **1**, together with a suitable carrier therefor.

4,442,118
ALDOSE REDUCTASE INHIBITION BY 1-(4-CHLOROBENZOYL)-5-METHOXY-2-METHYL-1H-INDOLE-3-ACETIC ACID

Dushan M. Dvórnik, Mount Royal, and Nicole Simard-Duquesne, Montreal, both of Canada, assignors to Ayerst, McKenna & Harrison, Inc., Montreal, Canada

Filed Jul. 23, 1981, Ser. No. 286,227

Int. Cl.³ A61K *31/40*

U.S. Cl. 424—274 **5 Claims**

1. A method of treating a diabetic complication, selected from the group consisting of cataracts, neuropathy, nephropathy and retinopathy, in a diabetic mammal which comprises administering to said mammal in need of such treatment an effective lens aldose reductase inhibiting amount of 1-(4-chlorobenzoyl)-5-methoxy-2-methyl-1H-indole-3-acetic acid, or a therapeutically acceptable salt thereof with an organic or inorganic base.

4,442,119
CYCLOPROPYL ANALOGS AND ESTROGENIC AS ANTI-FERTILITY AGENTS

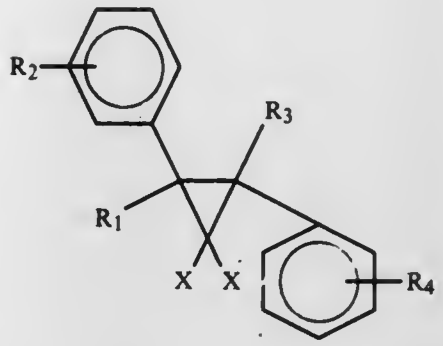
Robert A. Magarian, and Joseph T. Pento, both of Norman, Okla., assignors to The Board of Regents for the University of Oklahoma, Norman, Okla.

Continuation-in-part of Ser. No. 166,081, Jul. 7, 1980, abandoned. This application Jul. 26, 1982, Ser. No. 402,112

Int. Cl.³ A01N *43/36;* **A61K** *31/40;* **A01N** *29/04*

U.S. Cl. 424—274 **19 Claims**

1. A method of treating a normal or pathological condition responsive to estrogenic activity in a female subject in need of such therapy comprising administering to the subject an estrogenically effective, non-toxic dosage of an agent having the generic structure:



wherein:

X is a halogen or hydrogen atom;

R_1 is a hydrogen atom, an alkyl group, containing from 1 to about 3 carbon atoms, a monocyclic group, or an alkoxy substituted monocyclic group in which the alkyl substituent contains from 1 to about 3 carbon atoms;

R_2 is a hydroxyl group;

R_3 is a hydrogen atom or an alkyl group containing from 1 to about 3 carbon atoms; and

R_4 is a hydrogen atom, a hydroxyl group, or an alkoxy group in which the alkyl substituent contains from 1 to about 3 carbon atoms.

4,442,120
1-ARYLOXY-3-ALKYLAMINO-PROPAN-2-OLS

Herbert Köppe; Werner Kummer; Helmut Stähle; Gojko Muacevic, and Werner Traunecker, all of Ingelheim, Fed. Rep. of Germany, assignors to Boehringer Ingelheim KG, Ingelheim am Rhein, Fed. Rep. of Germany

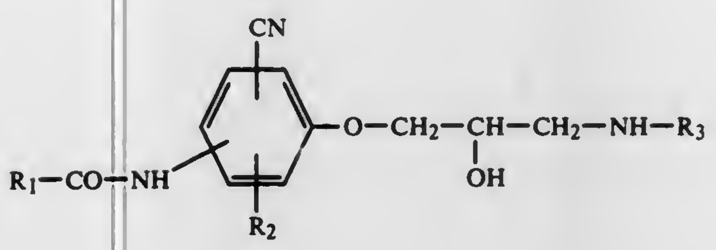
Filed Jul. 15, 1982, Ser. No. 398,577

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1981, 3133678

Int. Cl.³ A61K *31/36, 31/275;* **C07C** *121/80;* **C07D** *317/60*

U.S. Cl. 424—282 **9 Claims**

1. A compound of the formula



wherein

R_1 is cycloalkyl of 3 to 10 carbon atoms; phenyl; mono- or poly-substituted phenyl, where the substituents are halogen, lower alkyl, lower alkoxy, lower alkenyl, lower alkinyl, lower alkinyloxy, lower cycloalkyl, acyl, acyloxy, lower alkoxycarbonyl, hydroxy-lower alkyl, lower alkoxy-lower alkyl or the ring-forming groups $(—CH═CH—)_2$ or $—O—CH_2—O—$ attached to vicinal carbon atoms of the phenyl ring; aryl-oxy-lower alkyl; (mono- or poly-substituted aryl)-oxy-lower alkyl, where the substituents are halogen, lower alkyl, lower alkoxy, lower alkenyl, lower alkinyl, lower alkinyloxy, lower cycloalkyl, acyl, acyloxy, lower alkoxycarbonyl, hydroxy-lower alkyl, lower alkoxy-lower alkyl or the ring-forming groups $(—CH═CH—)_2$ or $—O—CH_2—O—$ attached to vicinal carbon atoms of the phenyl ring;

R_2 is hydrogen, halogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or the ring-forming group $(—CH═CH)_2$ or $—(CH_2)_n—$, where n is an integer from 3 to 5, attached to vicinal carbon atoms of the phenyl ring; and

R_3 is straight or branched alkyl of 1 to 10 carbon atoms;

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

7. The method of treating tachycardia in a warm-blooded animal in need thereof, which comprises perorally, parenterally or rectally administering to said animal an effective amount of a compound of claim **1**.

4,442,121
1-ARYLOXY-3-ALKINYLAMINO-PROPAN-2-OLS

Herbert Köppe; Werner Kummer; Helmut Stähle; Gojko Muacevic, all of Ingelheim, and Werner Traunecker, Münster-Sarmsheim, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim K.G., Ingelheim am Rhein, Fed. Rep. of Germany

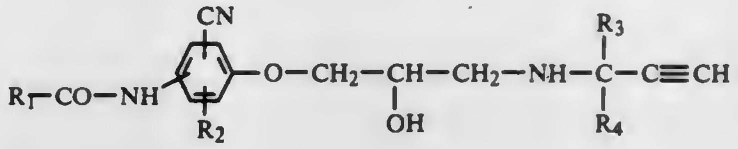
Filed Jul. 15, 1982, Ser. No. 398,578

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1981, 3133719

Int. Cl.³ A61K *31/36, 31/275;* **C07C** *121/80;* **C07D** *317/60*

U.S. Cl. 424—282 **8 Claims**

1. A compound of the formula



wherein

R_1 is cycloalkyl of 3 to 10 carbon atoms; phenyl; mono- or poly-substituted phenyl, where the substituents are halogen, lower alkyl, lower alkoxy, lower alkenyl, lower alkenyloxy, lower alkinyl, nitro, trifluoromethyl, hydroxyl, acyl, acyloxy, lower alkoxycarbonyl, hydroxy-lower alkyl, lower alkoxy-lower alkyl or the ring-forming groups $(—CH═CH—)_2$ or $—O—CH_2—O—$ attached to vicinal carbon atoms of the phenyl ring; aryloxy-lower alkyl; (mono- or poly-substituted aryl)-oxy-lower alkyl, where the substituents are halogen, lower alkyl, lower alkoxy, lower alkenyl, lower alkinyl, acyl, acyloxy, nitro, trifluoromethyl or the ring-forming groups $(—CH═CH—)_2$ or $—O—CH_2—O—$ attached to vicinal carbon atoms of the aryl ring;

R_2 is hydrogen, halogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or the ring-forming group $(—CH═CH)_2$ or $—(CH_2)_n—$, where n is an integer from 3 to 5, attached to vicinal carbon atoms of the phenyl ring;

R_3 is hydrogen or alkyl of 1 to 3 carbon atoms; and

R_4 is alkyl of 1 to 3 carbon atoms or, together with R_3, a ring-forming group $—(CH_2)_p—$, where p is an integer from 4 to 6;

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

6. The method of treating tachycardia in a warm-blooded animal in need thereof, which comprises perorally, parenterally or rectally administering to said animal an effective amount of a compound of claim 1.

4,442,122

1,2-DIBROMO-2-CYANOALKANE ANTIMICROBIAL COMPOUNDS

John E. Engelhart, Westfield; Marshall R. Angeles, Scotchplains, both of N.J., and Michael J. D'Errico, Flossmoor, Ill., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 22, 1981, Ser. No. 333,276

Int. Cl.³ C07C *121/16, 121/46;* A01N *37/34*

U.S. Cl. 424—304 **10 Claims**

1. 1,2-dibromo-2-cyanononane.

4,442,123

6-CHLORO-6-DEOXY-D-HEXITOLS, COMPOSITIONS CONTAINING THEM AND THEIR USE IN FERTILITY CONTROL

Elner B. Rathbone, Wokingham; Geoffrey M. H. Waites, Reading, and William C. L. Ford, Newbury, all of England, assignors to Tate & Lyle Public Limited Company, England

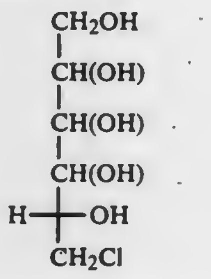
Continuation of Ser. No. 124,461, Feb. 25, 1980, abandoned. This application Dec. 28, 1981, Ser. No. 334,550

Claims priority, application United Kingdom, Feb, 28, 1979, 7907089; Mar. 12, 1979, 7908627

Int. Cl.³ A01N *37/10, 31/00;* A61K *31/235, 31/045*

U.S. Cl. 424—308 **6 Claims**

1. A male fertility-inhibiting composition containing an effective fertility-inhibiting amount of 6-chloro-6-deoxy-D-hexitol of the general formula:



$$\begin{array}{c} CH_2OH \\ | \\ CH(OH) \\ | \\ CH(OH) \\ | \\ CH(OH) \\ H-\!\!\!+\!\!\!-OH \\ | \\ CH_2Cl \end{array}$$

or a physiologically acceptable esterified form thereof together with a pmaceutically acceptable carrier or excipient.

4,442,124

VALPROIC ACID ESTER WITH ANTIEPILEPTIC AND ANTICONVULSANT ACTIVITY AND PHARMACEUTICAL COMPOSITIONS THEREFROM

Zemp J. Niklaus, Vaduz, Liechtenstein, assignor to Texcontor-Anstalt, Vaduz, Liechtenstein

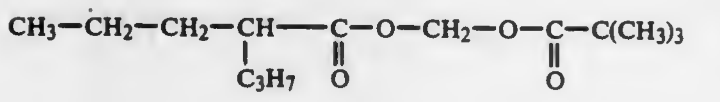
Filed Jun. 2, 1980, Ser. No. 155,588

Claims priority, application Italy, Jun. 8, 1979, 23392 A/79

Int. Cl.³ C07C *69/28;* A61K *31/22*

U.S. Cl. 424—311 **2 Claims**

1. The compound pivaloyloxymethyl 2-propyl-pentanoate of formula I:



$$CH_3-CH_2-CH_2-\underset{\substack{|\\ C_3H_7}}{CH}-\underset{\substack{\|\\ O}}{C}-O-CH_2-O-\underset{\substack{\|\\ O}}{C}-C(CH_3)_3 \qquad I$$

4,442,125

PROCESS FOR DETACHING OR PREVENTING ATTACHMENT OF MICROORGANISMS TO A SURFACE

Geraldine H. Thiele, New Oxford, Pa., assignor to Oxford Hill, Ltd., New Oxford, Pa.

Continuation-in-part of Ser. No. 918,792, Jun. 26, 1978, Ser. No. 918,795, Jun. 26, 1978, Ser. No. 918,817, Jun. 26, 1978, Ser. No. 927,614, Jul. 24, 1978, Ser. No. 929,119, Jul. 27, 1978, Ser. No. 961,932, Nov. 30, 1978, Ser. No. 724,942, Sep. 20, 1976, abandoned, Ser. No. 724,943, Sep. 20, 1976, abandoned, Ser. No. 113,362, Feb. 8, 1971, Pat. No. 3,741,204, Ser. No. 123,830, Mar. 12, 1971, Pat. No. 3,767,812, Ser. No. 283,662, Aug. 25, 1972, Pat. No. 3,805,776, Ser. No. 369,236, Jun. 12, 1973, Pat. No. 3,924,000, Ser. No. 483,010, Jun. 25, 1974, Pat. No. 3,982,017, Ser. No. 283,663, Aug. 25, 1972, Pat. No. 3,828,772, and a continuation of Ser. No. 755,400, Dec. 29, 1976, Pat. No. 4,097,064, Ser. No. 890,239, Mar. 27, 1978, Ser. No. 642,114, Dec. 18, 1975, abandoned, and a continuation of Ser. No. 153,573, May 27, 1980, abandoned, which is a continuation-in-part of Ser. No. 965,319, Dec. 1, 1978, abandoned, which is a continuation of Ser. No. 890,239, Mar. 27, 1978. This application Jun. 21, 1982, Ser. No. 390,706

Int. Cl.³ A01N *37/00, 35/02*

U.S. Cl. 424—318 **18 Claims**

1. Process for preventing microorganisms from attaching or reattaching to a surface which comprises treating the microorganisms or the surface or both with an amount of a liquefied composition effective to prevent said attachment or reattachment of said microorganisms, said liquefied composition consisting essentially of an effective amount of a non-necrotic sclerosing fatt6y acid salt which prevents said attachment or reattachment of said microorganisms, ethyl alcohol in an amount of about 0.5 to about 10 percent, a buffering agent and a water carrier, said salt containing an unsaturated fatty acid having one double bond moiety and containing an alkali metal or an alkaline earth metal, said fatty acid salt having 14 to 22 carbon atoms, and said liquefied composition having a pH between 9 and 11, said buffer being used in an amount sufficient to maintain said pH range, whereby the microorganism is prevented or retarded from attaching or reattaching to the surface.

4,442,126

1,2,3,4-TETRAHYDRONAPHTHALENE DERIVATIVES

Nigel R. A. Beeley, Villebon sur Yvette; Gerard Cremer, Chilly Mazarin; Michael J. Dimsdale, Villebon sur Yvette, and Philippe Manoury, Le Plessis Robinson, all of France, assignors to Synthelabo, Paris, France

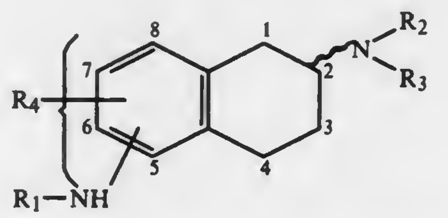
Filed Sep. 15, 1982, Ser. No. 418,265

Claims priority, application France, Sep. 16, 1981, 81 17454

Int. Cl.³ A61K *31/165;* C07C *103/365*

U.S. Cl. 424—324 **8 Claims**

1. A 1,2,3,4-tetrahydronaphthalene derivative of the formula:



wherein R_1 represents an alkanoyl group containing from 1 to 4 carbon atoms, R_2 and R_3 each represent, independently of one another, a hydrogen atom or an alkyl group containing from 1 to 4 carbon atoms, and R_4 represents a hydroxy or methoxy group located in the 6-position or 7-position, and its pharmacologically-acceptable acid addition salts.

7. A method for the treatment of a patient with Parkinson's disease which comprises administering to such patient a tetrahydronaphthalene derivative as claimed in any one of claims **1**, **2**, **3**, **4** or **5**, or a pharmacologically-acceptable acid addition

salt thereof, in an amount effective to ameliorate the condition of the patient.

4,442,127

NAPHTHOQUINONE ANTI-PSORIATIC AGENTS

Gordon H. Jones, Cupertino, and John M. Young, Redwood City, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

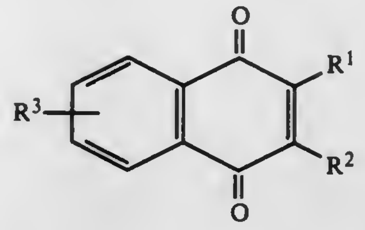
Continuation-in-part of Ser. No. 255,624, Apr. 20, 1981, abandoned, which is a continuation of Ser. No. 144,479, Apr. 28, 1980, abandoned, which is a division of Ser. No. 912,697, Jun. 5, 1978, Pat. No. 4,229,478. This application Jan. 19, 1983, Ser. No. 459,165

The portion of the term of this patent subsequent to Oct. 21, 1997, has been disclaimed.

Int. Cl.³ A61K *31/12, 31/275;* C07C *50/00, 97/18*

U.S. Cl. 424—331 **14 Claims**

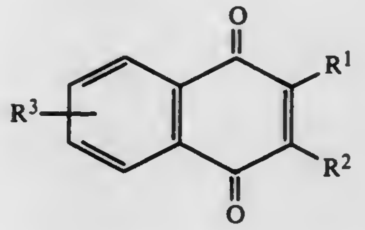
1. A composition in a form for topical administration to mammals for relieving the condition of psoriasis which comprises a pharmaceutically acceptable, non-toxic carrier and a psoriasis-relieving amount of a compound of the formula



(I)

where R^1 and R^2 are lower alkoxy of one to six carbon atoms and R^3 is halo or cyano.

11. A method for relieving the condition of psoriasis which comprises topically administering to mammals in need thereof an effective amount of a compound of the formula



(I)

wherein R^1 and R^2 are lower alkoxy of one to six carbon atoms and R^3 is halo or cyano.

4,442,128

PRODUCTION OF FERMENTED WHEY PRODUCTS CONTAINING A THICKENING POLYMER

Robert D. Schwartz, Concord, and Elizabeth A. Bodie, El Cerrito, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Jul. 20, 1981, Ser. No. 284,421

Int. Cl.³ A23C *21/02;* C12P *19/06;* C12N *1/14;* C12R *1/64*

U.S. Cl. 426—41 **10 Claims**

1. A process for producing a functionalized dairy whey product comprising the steps of:
   (a) forming a fermentation broth of unhydrolyzed whey containing unhydrolyzed lactose, and glucose; and
   (b) fermenting the broth with the organism *Xanthomonas campestris* ATCC 31922 to produce a functionalized dairy whey product containing a thickening polymer produced by the organism.

10. A biologically pure culture of the organism *Xanthomonas compestris* ATCC 31922 having the ability to grow in a fermentation broth of unhydrolyzed whey containing unhydrolyzed lactose and glucose to produce a functionalized whey product containing a thickening polymer produced by the organism.

4,442,129

PROCESS FOR SEALING GLASS CONTAINER OPENINGS

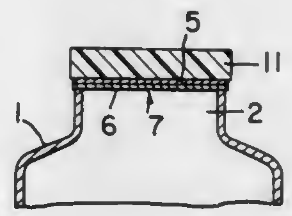
Susumu Niwa, Wako, and Masao Koike, Sakura, both of Japan, assignors to Kabushiki Kaisha Hosokawa Yoko, Tokyo, Japan

Filed Jan. 25, 1982, Ser. No. 342,705

Claims priority, application Japan, Jul. 20, 1981, 56-112119

Int. Cl.³ B65B *7/28*

U.S. Cl. 426—399 **10 Claims**



1. Process for affixing covers onto glass containers which comprises the steps of:
   (a) providing a glass container having an opening end;
   (b) providing a cover comprising a piece of metal foil having a shape suitable for covering said opening end and a sealant layer of a thermoplastic resin laminately secured to one surface of the metal foil;
   (c) preheating the opening end of said glass container;
   (d) placing the cover on the opening end so that the sealant layer contacts the opening end;
   (e) pressing the cover, as it is heated, against the opening end by means of a heating plate having a cushioning layer provided on the part of the heating plate which contacts the cover thereby to cause the cover to adhere to the opening end of the glass container through the heating of the sealing thermoplastic resin so that said sealant is in an adhesive state; and
   (f) pressing the cover against the opening end of the glass while said sealant is in an adhesive state by means of a pressing plate at a temperature lower than that of the heating plate in step (e) so as to cool said sealant thereby assuring positive sealing of the opening end by the cover;

said heating plate means of step (e) and pressing plate means of step (f) being entirely separate means.

4,442,130

CONTINUOUS PROCESSING OF RICE

Harry S. Autrey, and John W. Hunnell, both of Houston, Tex., assignors to Riviana Foods, Inc., Houston, Tex.

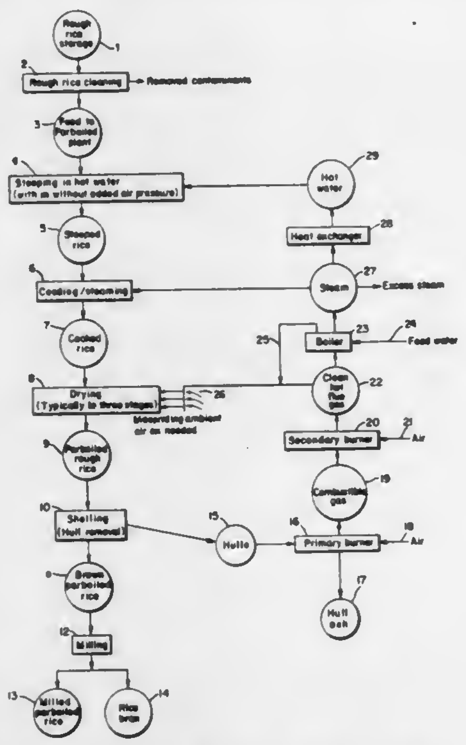
Filed Jan. 13, 1982, Ser. No. 339,076

Int. Cl.³ A23L *1/10;* A23B *9/00*

U.S. Cl. 426—462 **4 Claims**

1. In a method for producing parboiled rice which comprises the steps of heat treating paddy rice to produce cooked rice, shelling the cooked rice to produce hulls and brown rice, feeding said hulls to a burner wherein the hulls are burned in a first stage under controlled temperature conditions below the fusion point of silica to produce ash and volatile components and whereby said volatile components are delivered to a second stage where complete combustion of said volatile compo-

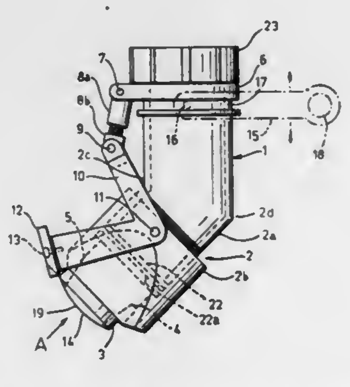
nents takes place in a higher temperature range, and feeding at least a portion of the products of combustion resulting from said second stage combustion into direct contact with said cooked rice to effect predetermined drying of said cooked rice.



4,442,131
ANGLED DOUGH CUTTER

Alex J. Nagy, Mississauga, and William G. Reed, Toronto, both of Canada, assignors to Margaret's Fine Food Ltd., Toronto, Canada

Filed Jan. 8, 1981, Ser. No. 223,322
Claims priority, application Canada, Jan. 8, 1980, 343223
Int. Cl.^{3} B29F *3/08;* **A21C** *3/04, 11/10, 11/16*
U.S. Cl. 426—518 **8 Claims**



1. A method of cutting donuts of a desired shape which comprises the steps of
- (a) forcing dough under pressure into a discharge tube having a lower end face inclined at an angle from the horizontal and defining but a single through outlet opening;
- (b) extruding the dough under pressure through the outlet opening which is longer vertically than horizontally and larger on the top than on the bottom;
- (c) cutting the dough with a knife mounted for cutting movement across the outlet opening from top to bottom while said dough is extruding.

4,442,132
LIGHT BAKERY PRODUCTS FOR DIABETICS AND METHOD FOR THE PREPARATION OF THESE PRODUCTS

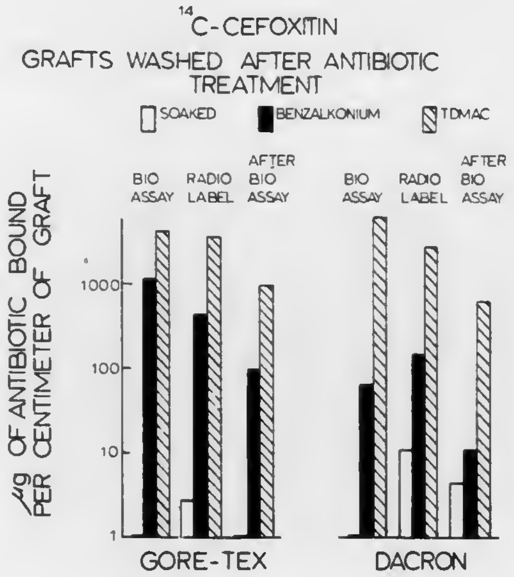
Jong C. Kim, Bennekom, Netherlands, assignor to C.V. Chemie Combinatie Amsterdam C.C.A., Gorinchem, Netherlands
Continuation of Ser. No. 260,997, May 6, 1981, abandoned, which is a continuation of Ser. No. 92,497, Nov. 8, 1979, abandoned. This application Jul. 30, 1982, Ser. No. 403,718
Claims priority, application Netherlands, Nov. 13, 1978, 7811204
Int. Cl.^{3} A21D *13/00;* **A23L** *1/32*
U.S. Cl. 426—549 **5 Claims**

1. Light bakery products for diabetics, having a digestible carbohydrate content of less than 10% by weight and prepared from a dough consisting essentially of a major amount of egg in the form of whole egg or egg albumin, 2-30% by weight of a protein-containing flour substitute of which at least 50% by weight is supplied by calcium caseinate, wheat flour in an amount up to 15% by weight of the total mixture, 3-40% by weight of minced nuts, 5-50% by weight of a sugar alcohol selected from the group consisting of lactitol, sorbitol and xylitol, and 0% by weight of sugar, and wherein the weight % of weight flour is less than the weight % of flour substitute.

4,442,133
ANTIBIOTIC BONDING OF VASCULAR PROSTHESES AND OTHER IMPLANTS

Ralph S. Greco, 29 Goltra Dr., Basking Ridge, N.J. 07920, and Richard A. Harvey, 1 Overland Rd., East Brunswick, N.J. 08816

Filed Feb. 22, 1982, Ser. No. 351,324
Int. Cl.^{3} A61F *1/00, 1/24*
U.S. Cl. 427—2 **3 Claims**



1. The method of preparing a vascular graft comprising the steps of

preparing a length of a graft material,

soaking said length of graft material in a solution of about 5% by weight of tridodecyl methyl ammonium chloride in ethanol for about 30 minutes at room temperature,

washing said graft in distilled water to remove excess tridodecyl methyl ammonium chloride but leaving an adsorbed coating thereon,

incubating, for about one hour, the graft carrying the adsorbed coating of tridodecyl methyl ammonium chloride in a solution of antibiotic selected from the group consisting of penicillin, oxacillin, ticarcillin, carbenicillin, the cephalosporins, and cefoxitin,

washing the graft in sterile water to remove unbound antibiotic, and

storing the graft for use in the operating room.

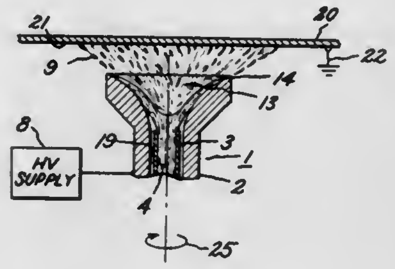
4,442,134
CHEMICAL DEPOSITION TERMINATION

Werner Kern, Hightstown, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Mar. 18, 1983, Ser. No. 476,781
Int. Cl.^{3} B05D *1/06, 5/12*
U.S. Cl. 427—9 **19 Claims**

9. A method of forming a coating of a material on a substrate comprising:
- (a) providing an aqueous solution of said material in a suitable vessel;
- (b) immersing the substrate in said solution;
- (c) introducing into the vessel an organic displacement liquid so that it forms a layer overlying the aqueous coating solution, said liquid and water each having a solubility in the other of at least about 0.5 percent by volume; and
- (d) when a predetermined amount of material has been deposited on the substrate, rapidly raising the substrate into the displacement liquid thereby terminating the coating of the substrate.

4,442,135
METHOD FOR COATING WITH AN ATOMIZABLE MATERIAL

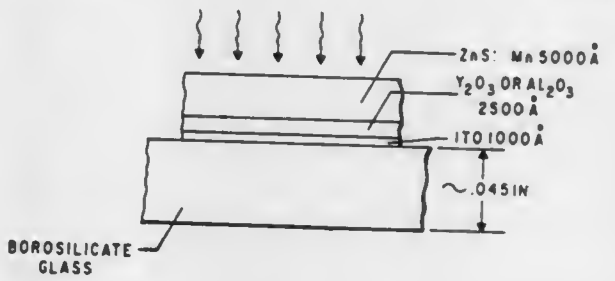
Robert W. L. Snaddon, Burnt Hills, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Feb. 3, 1982, Ser. No. 345,510
Int. Cl.^{3} B05D *4/02, 4/06;* **B05B** *3/10, 5/04*
U.S. Cl. 427—31 **13 Claims**



1. A method for atomizing an atomizable material including particulate matter, comprising:
- a) delivering said material from a source thereof to a surface of a rotatable atomizer adapted to receive said material substantially uniformly around the axis of rotation of said surface, said surface of said atomizer rotating with said atomizer;
- b) positioning material delivery means spaced from said atomizer and within the interior volume defined by said atomizer and further establishing no seal between said material delivery means and said atomizer;
- c) positioning the material delivery means in relation to said source such that neither said delivery means nor said source is impacted by material moving axially away from said surface of said atomizer;
- d) shaping said surface of said atomizer such that said material is directed away from the space between said atomizer and said material delivery means; and
- e) rotating said atomizer at a predetermined angular velocity in order to force said material from said surface of said atomizer.

4,442,136
ELECTROLUMINESCENT DISPLAY WITH LASER ANNEALED PHOSPHOR

Milo R. Johnson, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Mar. 2, 1982, Ser. No. 354,113
Int. Cl.^{3} B05D *3/06, 5/12*
U.S. Cl. 427—53.1 **14 Claims**



1. A process for fabricating thin film electroluminescent displays, comprising the steps of:

providing a transparent substrate;

providing a patterned transparent conductor on said substrate;

providing a first continuous dielectric layer on said pattern conductor;

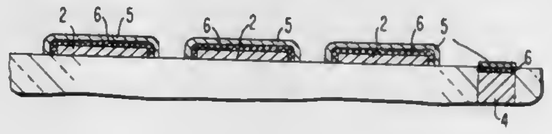
providing a phosphor layer on said first dielectric layer; and

transiently annealing said phosphor to induce recrystallization therein.

4. The process of claim 1, 2, or 3, wherein said annealing step comprises laser annealing.

4,442,137
MASKLESS COATING OF METALLURGICAL FEATURES OF A DIELECTRIC SUBSTRATE

Ananda H. Kumar, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 18, 1982, Ser. No. 359,444
Int. Cl.^{3} B05D *3/12, 5/12*
U.S. Cl. 427—57 **21 Claims**



1. A method for selectively depositing a conductive solderable or brazeable metal layer over an existing diverse metallurgical pattern supported on a dielectric substrate comprising:

blanket coating said metal over said substrate, said metal having a different thermal coefficient of contraction relative to said substrate;

heating said substrate to diffusion bond said metal to said metallurgical pattern;

cooling said substrate to spall said metal on the remaining metallurgically unpatterned portions of said substrate by the stresses induced from the differences in the thermal contraction differentials therebetween, and

mechanically removing said spalled metal from said remaining unpatterned portions of said substrate.

4,442,138

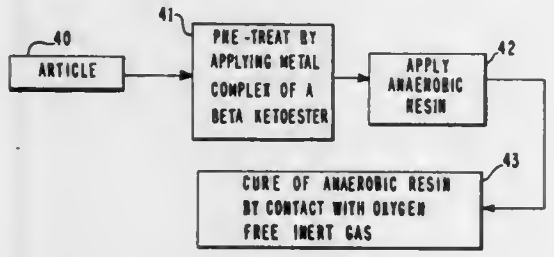
SUBSTRATE PRETREATMENT WITH A METAL-BETA KETO ESTER COMPLEX IN THE METHOD OF CURING AN ANAEROBIC RESIN

George J. Bich, Pittsburgh; Thomas M. Burke, Whitehall, and James D. B. Smith, Monroeville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

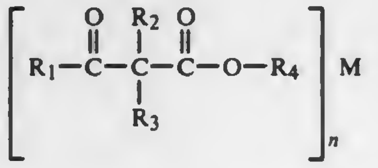
Filed Feb. 22, 1982, Ser. No. 350,907

Int. Cl.^{3} B01J *31/12;* **B05D** *3/12, 5/12;* **D02G** *3/00*

U.S. Cl. 427—116 **24 Claims**


40
ARTICLE
41
PRE-TREAT BY APPLYING METAL COMPLEX OF A BETA KETOESTER
42
APPLY ANAEROBIC RESIN
43
CURE OF ANAEROBIC RESIN BY CONTACT WITH OXYGEN FREE INERT GAS

3. A method of curing an anaerobic resin, comprising the steps of: (1) applying a composition consisting essentially of a metal-beta keto ester complex to a surface of an article, and (2) applying an anaerobic resin comprising acrylic resin to said surface to contact said metal-beta keto ester complex, where the metal-beta keto ester complex has the structural formula:



$$\left[R_1-\overset{\overset{O}{\|}}{C}-\underset{\underset{R_3}{|}}{\overset{\overset{R_2}{|}}{C}}-\overset{\overset{O}{\|}}{C}-O-R_4 \right]_n M$$

where M is a transition metal; R_1 is selected from the group consisting of alkyl groups having from 1 to 20 carbon atoms, benzene, naphthalene, anthracene, and hydrocarbon substituted aromatic; R_2 and R_3 are selected from hydrogen, alkyl groups having from 1 to 20 carbon atoms, benzene, naphthalene, anthracene and hydrocarbon substituted aromatic; R_4 is selected from alkyl groups having from 1 to 20 carbon atoms; and n is equal to the valence of the metal M.

9. The method of claim **3**, where the composition containing the metal-beta keto ester complex is a solvent solution of a transition metal alkylacetoacetate, and the article is a resin impregnated tape.

15. The method of claim **9**, where the resin impregnated tape is wrapped around an electrical coil.

4,442,139

ELEMENTS COMPRISING FIBROUS MATERIALS

Alan Brigham, Sunnyvale, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

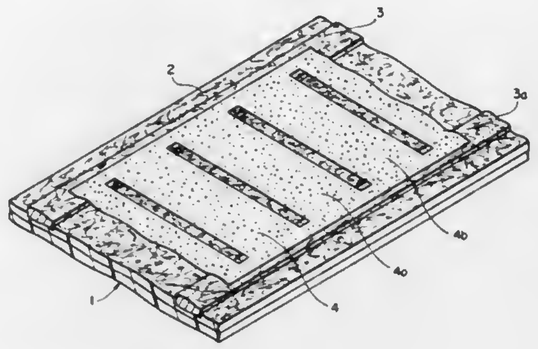
Filed Dec. 11, 1979, Ser. No. 102,576

The portion of the term of this patent subsequent to Jan. 31, 2001, has been disclaimed.

Int. Cl.^{3} B05D *5/12*

U.S. Cl. 427—122 **13 Claims**

1. A process for modifying an element comprising a support which comprises a continuous film of a polymeric composition and fibrous material which is secured to the support and which protrudes therefrom, at least a portion of the fibrous material which protrudes from the support providing an outer surface of the element and comprising randomly distributed fibers, which process comprises (a) applying to said surface a liquid coating composition comprising a dispersion of solid particles in a liquid carrier and (b) removing the liquid carrier from the applied coating composition.



4,442,140

AQUEOUS COMPOSITION FOR THE PROTECTION OF PAINT SURFACES

Nobuaki Kawabata; Nobuo Yokoyama, both of Yokohama, and Yoshihiko Araki, Tokyo, all of Japan, assignors to Nippon Oil Co. Ltd., Japan

Filed Apr. 26, 1982, Ser. No. 371,829

Claims priority, application Japan, May 6, 1981, 56-66840

Int. Cl.^{3} B65B *33/00;* **C08L** *91/06*

U.S. Cl. 427—154 **23 Claims**

1. An aqueous composition for the protection of paint surfaces which comprises an aqueous emulsion containing as essential components

(a) 100 parts by weight of an oxygen-containing wax having an oxygen content of not less than 3.0% by weight and a melting point of 50° to 85° C.,

(b) less than 7 parts by weight of an emulsifying agent,

(c) 10 to 1,000 parts by weight of a substantially white-colored fine powder of an inorganic material having a silicon content of not less than 23% by weight, and

(d) 10 to 200 parts by weight of a white-colored fine powder of an inorganic or organic material substantially free of silicon.

4,442,141

TREATMENT OF CELLULOSE ACETATE BUTYRATE CONTACT LENSES

Drahoslav Lim, San Diego, Calif., assignor to Barnes-Hind/Hydrocurve, Inc., Sunnyvale, Calif.

Filed Nov. 1, 1982, Ser. No. 437,976

Int. Cl.^{3} B05D *1/18;* **G02B** *1/04, 1/10, 3/00*

U.S. Cl. 427—164 **12 Claims**

1. A process for rendering cellulose acetate butyrate contact lenses hydrophilic which comprises contacting said lenses with a treating agent for a period of time sufficient to increase the hydrophilicity of said lenses; wherein the treating agent is ammoniacal salt, alkali metal hydroxide, a strong mineral acid, benzene sulfonic acid, alkali metal borohydride, or organometallic compound.

4,442,142

NITRILE ELASTOMER TREATING SOLUTION AND METHOD OF TREATING NITRILE ELASTOMER THEREWITH

Martin H. Kaufman, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 147,815, May 8, 1980, Pat. No. 4,355,078. This application Jul. 19, 1982, Ser. No. 399,410

Int. Cl.^{3} B05D *3/02*

U.S. Cl. 427—316 **2 Claims**

2. A method for bonding a nitrile elastomer surface to an external surface with an epoxy adhesive comprising:

providing a treating solution comprising a concentration of less than 1.0 N of a mineral acid in a carrier comprising water and one of alcohol and ketones,

treating the elastomer surface with the treating solution,

drying the treated surface, and

applying an epoxy adhesive to the surface.

4,442,143

CATALYTIC CURING OF COATINGS

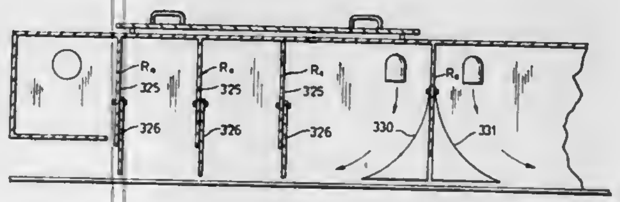
Gordon A. D. Reed, Mount Royal, Canada, assignor to Liquid Carbonic Inc., Canada

Filed Apr. 26, 1982, Ser. No. 372,019

Claims priority, application Canada, Mar. 3, 1982, 397511

Int. Cl.^{3} C23C *13/04, 13/10*

U.S. Cl. 427—340 **14 Claims**



1. An apparatus for curing a wet catalyst-curable resin on a substrate with a vapor containing a catalyst, comprising,

a treating zone provided by a sealed vapor-curing chamber connected to a sealed entrance chamber at one end and a sealed exit chamber at the other end, the entrance and exit chambers each being separated from the vapor-curing chamber by a wall, each wall being provided with a passage,

each passage being provided with height adjustable means to limit the escape of vapor from the curing chamber,

conveying means running through the treating zone,

a curing vapor generator,

a source of inert gas,

a connection from the inert gas source to the generator,

an impinger near the entrance of the vapor-curing chamber for projecting catalyst vapor against the substrate, and a connection from the vapor generator to the impinger,

connections from the inert gas source to the vapor-curing chamber and to the entrance and exit chambers,

exhaust and scrubber means,

connections from the vapor-curing chamber and entrance and exit chamber to the exhaust and scrubber means,

means for flushing inert gas, from the gas source, through the vapor-curing chamber to the exhaust and scrubber means, for purging the vapor curing chamber,

a connection from the inert gas source to the entrance chamber to provide it with an atmosphere of inert gas to replace the boundary layer of air on the substrate passing through it with a boundary layer of inert gas,

a connection from the inert gas source to the exit chamber to provide it with an atmosphere of inert gas to replace the boundary layer of curing vapor with inert gas,

and control means for controlling the respective gas and vapor connections to balance scour flow and catalyst to achieve minimum dilution of the catalyst vapor and to maintain minimum catalyst concentrations in the chamber.

5. A method for curing a wet catalyst-curable resin on a substrate in which the substrate is passed through a treating zone provided by a sealed vapor-curing chamber connected to a sealed entrance chamber at one end and a sealed exit chamber at the other, the entrance and exit chambers being separated from the vapor-curing chamber by a wall provided with a passage having height adjustable means to limit the escape of vapor from the vapor sealing chamber, comprising,

providing the entrance chamber with an atmosphere of inert gas,

providing the vapor-curing chamber with an atmosphere of curing catalyst vapor,

providing the exit chamber with an atmosphere of inert gas,

passing the substrate through the entrance chamber whereby a boundary layer of air is substantially replaced by inert gas,

passing the substrate from the entrance chamber into the vapor-curing chamber whereby it is exposed to the catalyst vapor in sufficient concentration to cure the resin,

passing the substrate from the vapor-curing chamber into the exit chamber whereby the curing vapor is removed,

providing flow controlling means to balance the flow of inert gas in the entrance/exit chamber with catalyst vapor flow to minimize escape/dilution of the latter.

4,442,144

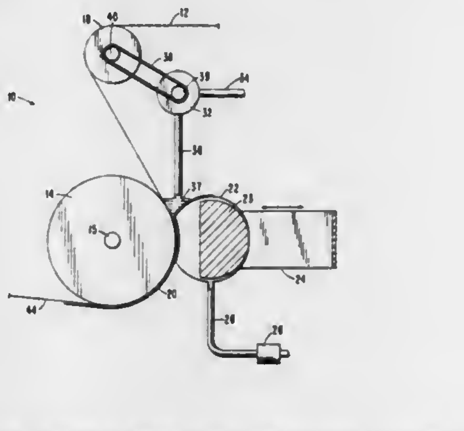
METHOD FOR FORMING A COATING ON A SUBSTRATE

David J. Pipkin, Boulder County, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 207,571, Nov. 17, 1980, Pat. No. 4,345,543, which is a continuation-in-part of Ser. No. 53,143, Jun. 27, 1979, abandoned, which is a continuation-in-part of Ser. No. 882,281, Feb. 23, 1978, abandoned. This application Mar. 11, 1982, Ser. No. 356,993

Int. Cl.^{3} B05C *11/04;* **B05D** *1/40*

U.S. Cl. 427—355 **6 Claims**



1. A method for coating a moving web with a coating liquid comprising:

conducting a moving web over a backing support means;

urging a first portion of at least one stationary smoothing film toward at least a portion of said backing support means by means of pliant pressure generating means, to thereby form a high-hydrodynamic-pressure and a static force coating zone of a length which is coincident with said first portion;

metering a coating liquid onto the web adjacent the confluence of the smoothing film and the web;

providing a second portion of said stationary film which trails said first portion in the direction in which said web is moving, which second portion of said smoothing film is not urged against said web and the coating liquid carried thereby;

adjusting the position of said pliant pressure generating means, relative said backing support means, to thereby control the length of said coating zone; and

adjusting said static force which exists within said controlled-length coating zone in a manner which does not affect the length of said coating zone;

thereby providing a coating nip having a length which is a function of said position adjustment, and having a static force which is a function of said force adjustment, such that the coating liquid is subjected to said static force, in the environment of the moving web and the first portion of the stationary film, for at least a critical time duration which insures uniform coating to the length of the web.

4,442,145
PROCESS FOR COATING SUBSTRATES WITH POLYISOCYANATES AND POLYHYDROXY POLYACRYLATES

Joachim Probst; Bernd Riberi, both of Cologne, Fed. Rep. of Germany; Günter Kolb, deceased, late of Leverkusen, Fed. Rep. of Germany (by Ingeborg Kolb, heiress), and Peter Höhlein, Kempen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 28, 1982, Ser. No. 393,224

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1981, 3125569

Int. Cl.^{3} B05D *3/02*

U.S. Cl. 427—385.5 **10 Claims**

1. A process for the production of a coated substrate which comprises
(A) coating said substrate with a coating composition which contains as binder a mixture comprising
  (a) a lacquer-grade polyisocyanate-containing biuret, urethane or isocyanurate groups and
  (b) a polyhydroxy polyacrylate resin based on a copolymer comprising
    (i) about 10 to 20 parts by weight of 2-hydroxyethyl(-meth)-acrylate, 2- or 3-hydroxypropyl(meth)acrylate and/or hydroxybutyl(meth)acrylate,
    (ii) about 55 to 80 parts by weight of methyl methacrylate,
    (iii) about 8 to 30 parts by weight of 2-ethylhexyl acrylate and
    (iv) up to about 2 parts by weight of (meth)acrylic acid,
wherein the polyhydroxy acrylate resin is further characterized by
    (1) an average molecular weight as determined by gel permeation chromatography, M_{GPC}, of about 30,000 to 80,000,
    (2) about 3 to 15% by weight, based on the total weight of the copolymer, of low molecular weight constituents having molecular weights of at most about 3,000,
    (3) a molecular heterogeneity factor, $U = Mw/Mn - 1$, of between about 1.0 and 10.0, and
    (4) a chemical heterogeneity parameter δ; for the copolymer of between 0 and about 0.06, and
(B) hardening the coating composition to form a polyurethane coated substrate.

4,442,146
DIBLOCKED DIISOCYANATE DIUREA OLIGOMERS AND COATING COMPOSITIONS COMPRISING SAME

Joseph W. Holubka, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 334,842, Dec. 28, 1981, Pat. No. 4,396,753. This application Apr. 11, 1983, Ser. No. 472,802

Int. Cl.^{3} C08G *18/32, 18/58, 18/80;* **C08L** *63/00*

U.S. Cl. 427—386 **24 Claims**

1. A solvent based resin composition comprising:

A. a chain-extendable crosslinkable diblocked diisocyanate diurea oligomer of number average molecular weight about 300 to about 5000 comprising the reaction product of diamine of molecular weight about 50 to about 700, with half-blocked organic diisocyanate of molecular weight about 120 to about 2000 in molar ratio of about 1:2, respectively, said half-blocked organic diisocyanate comprising the reaction product of a monofunctional blocking agent with organic diisocyanate in molar ratio of about 1:1, said oligomer having de-blocking temperature of about 120° C. to about 250° C.

B. polyepoxide bearing about 2 to about 10 epoxide groups and having molecular weight of about 100 to about 1000, in a weight ratio to said oligomer of about 1:1 to about 1:10; and

C. organic solvent.

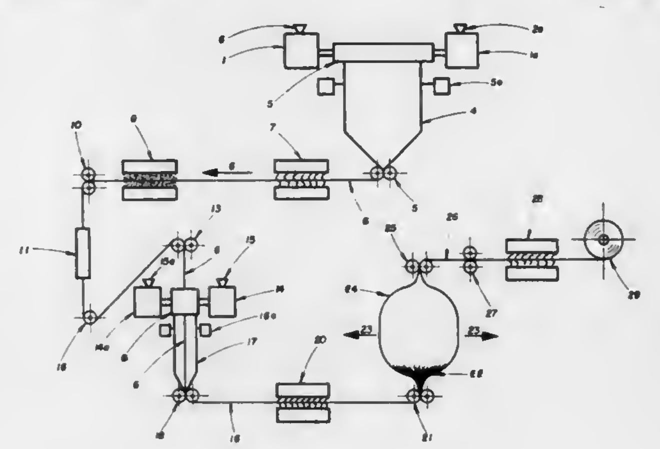
4,442,147
ORIENTED MULTI-LAYER FILMS HAVING A DIFFERENT ORIENTATION DISTRIBUTION BETWEEN LAYERS

Henry G. Schirmer, Spartanburg, S.C., assignor to W. R. Grace & Co., Cryovac Division, Duncan, S.C.

Filed Aug. 9, 1982, Ser. No. 406,590

Int. Cl.^{3} B32B *27/32*

U.S. Cl. 428—35 **15 Claims**



1. A seamless multi-layer film comprising:
an outer layer having a melting point and an orientation temperature range;
an inner layer having a melting point and an orientation temperature range;
wherein the orientation temperature range of said inner layer is substantially higher than the orientation temperature range of said outer layer and the melting point of said inner layer is substantially higher than both the melting point and the orientation temperature range of said outer layer; and with
said inner and outer layers having a different orientation distribution.

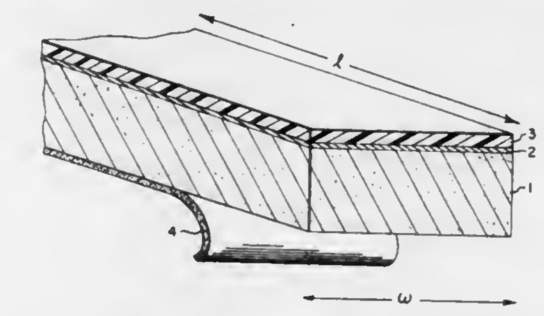
4,442,148
WATERPROOFING LAMINATE

Robert F. Stierli, Lexington, Mass., assignor to W. R. Grace & Co., Cambridge, Mass.

Filed Oct. 2, 1981, Ser. No. 307,702

Int. Cl.^{3} B32B *3/00, 11/00, 5/14*

U.S. Cl. 428—40 **8 Claims**



1. An improved pre-formed, sheet-like flexible laminate for waterproofing structural surfaces, said laminate being comprised of (a) a flexible waterproof and waterproofing bituminous membrane having oil therein; (b) a flexible non oil-resistant polymeric support sheet for said membrane non-removably adhered thereto and covering at least one major surface of said membrane; and (c) intermediate said bituminous membrane and said support sheet, an oil resistant and oil-impermeable barrier formed by depositing a coating of an oil-resistant polymer to said sheet and/or said membrane, whereby oil present in said bituminous membrane is prevented from substantially contacting said polymeric sheet.

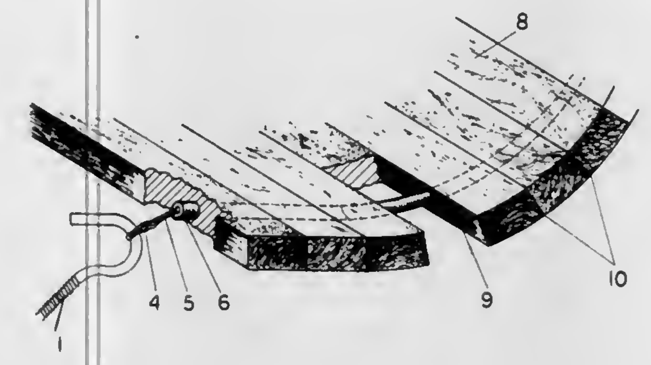
4,442,149
CABLE TENSION GLUING PROCESS

Garry K. Bennett, 1011 Grand St., Alameda, Calif. 94501

Filed Apr. 27, 1981, Ser. No. 257,940

Int. Cl.^{3} B32B *3/00, 7/08*

U.S. Cl. 428—53 **8 Claims**



1. In a method for forming a predetermined curved shape from multiple pieces without the use of a jig, form or press, the steps comprising:
(a) forming the multiple pieces with opposite glue surfaces,
(b) selecting an angular relationship for the glue surfaces of each piece to mate with glue surfaces of adjacent pieces and form the predetermined curved shape,
(c) aligning internal passages extending between the glue surfaces of the respective pieces,
(d) applying glue means to the glue surfaces,
(e) routing a tensioning cable means through the aligned passages,
(f) connecting tensioning devices at each end of the cable means for bearing against end pieces of the curved shape, and
(g) applying tension to the cable means by the tensioning devices whereby the multiple pieces are drawn into the predetermined curved shape with pressure applied between adjacent glue surfaces.

4,442,150
FLEXIBLE TWO-DIMENSIONAL MATERIAL

Wolfgang H. A. Greiner, Wolfstr. 34, and Magnus Mauch, J.Kerner-Str. 2, both of D-7320 Gppingen, Fed. Rep. of Germany

Filed Dec. 1, 1981, Ser. No. 326,334

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1980, 3039520

Int. Cl.^{3} B32B *3/00*

U.S. Cl. 428—53 **6 Claims**

1. A flexible two-dimensional material composed solely of a plurality of identical link members which are articulatedly connected directly to each other only by each other in a pattern of rows, wherein each of said links includes
(1) two integrally formed connecting sections located in a first portion of each link, and
(2) aperture means in another portion of each link located at a spaced distance away from the two connecting sections in that said link, said aperture means engaging with one connecting section from each of two adjacent links, each of the two connecting sections being in the form of a strap, the two straps of the two connecting sections being parallel to each other and the inner edge of each strap being aligned with the outer edge of the link of which it forms a part and the external edges of said straps being offset outwardly from the outer edges of the link of which it forms a part.

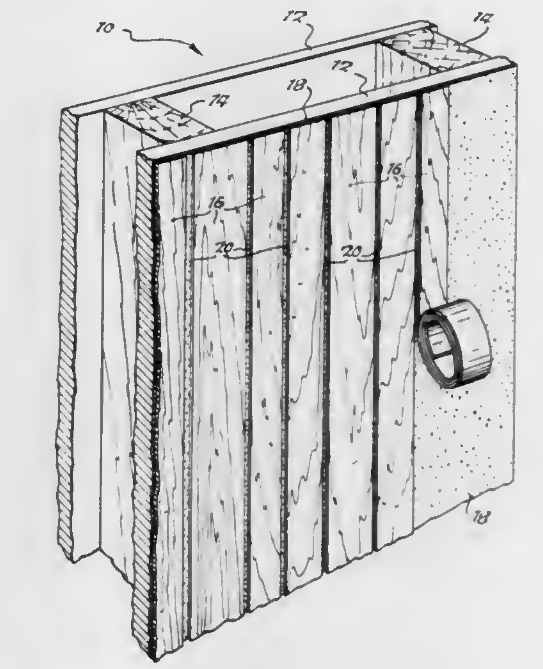
4,442,151
WOOD PLANK WALLCOVERING SYSTEM USING WIDTHS OF 3 TO 8 INCHES

Daniel A. Winkowski, Tonawanda, N.Y., assignor to National Gypsum Company, Dallas, Tex.

Filed Dec. 3, 1981, Ser. No. 327,242

Int. Cl.^{3} B32B *3/10*

U.S. Cl. 428—54 **10 Claims**



1. A wallcovering combination for covering a single wall comprising a plurality of strips of wallcovering in a form which prior to being adhered to a wall is suitable for being adhered to a wall, of sufficient flexibility prior to being adhered to a wall to be rolled up and unrolled, all having a generally similar design, having a plurality of various widths, all said widths being in the range of from about 3 inches to about 8 inches and an adhesive for adhering the strips to a wall in a random width, parallel relationship one to another.

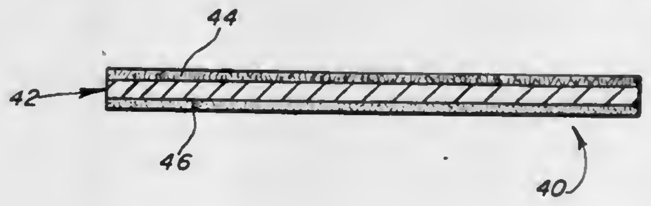
4,442,152
MARKER MEMBER

Arthur G. Kirk, 2408 S. Ridgeland Ave., Berwyn, Ill. 60402

Filed Jun. 1, 1982, Ser. No. 383,749

Int. Cl.^{3} C09J *7/02*

U.S. Cl. 428—77 **5 Claims**



1. An article for marking the location of structural members prior to the installation of a wall or floor panel, comprising an elongated reaction-responding member and an adhesive associated with said reaction-responding member, wherein said reaction-responding member comprises a flexible carrier, an adhesive layer supported on one side of said carrier, and magnetic particles incorporated in said adhesive layer, including a further adhesive layer supported on the other side of said flexible carrier.

4,442,153

LONGITUDINALLY DIVIDED CABLE SLEEVE OF THERMO-PLASTIC SYNTHETIC MATERIAL WITH A SHAPE MEMORY

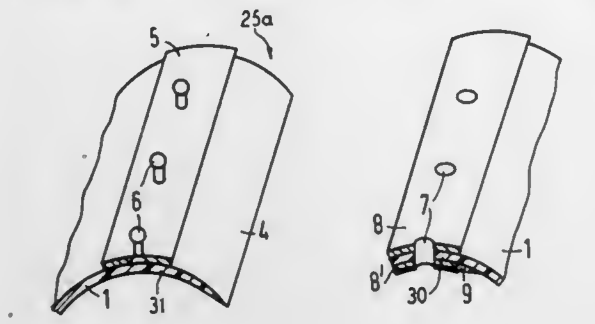
Hans-Jürgen Meltsch, Germering, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 20, 1981, Ser. No. 313,342

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1980, 3048051

Int. Cl.^{3} F16L *11/12;* **B65D** *65/42;* **H02G** *15/18;* **B32B** *3/02*

U.S. Cl. 428—99 **23 Claims**



1. In a longitudinally divided cable sleeve having a strip-like sleeve member composed of a thermoplastic synthetic member having a shape memory, said sleeve member having longitudinal edges and closure means for closing said edges together so that the edges can be sealed together after the cable sleeve has been wrapped around an object and the sleeve is shrinkable onto the enclosed object when heat is applied, the improvements comprising the closure means having means for overlapping a slot between the two edges and a mechanical reinforcement for the edges, said reinforcement including a reinforcing element secured to the cable sleeve adjacent each longitudinal edge with at least a portion of said edges overlapping, each of the edges with the reinforcing element being more thermally stable than the remainder of the sleeve member when subjected to the heat for shrinking the sleeve onto an object, said closure means having coacting closure elements comprising headed pins having heads adjacent one end being provided on one reinforcing element and apertures for receiving said headed pins being provided in the other reinforcing element, said apertures and headed pins being constructed to form a mutual locking of the two reinforcing elements and overlapping edges together when the pins are inserted into said apertures to hold the overlapping edges together.

4,442,154

LONGITUDINALLY SPLIT SLEEVE

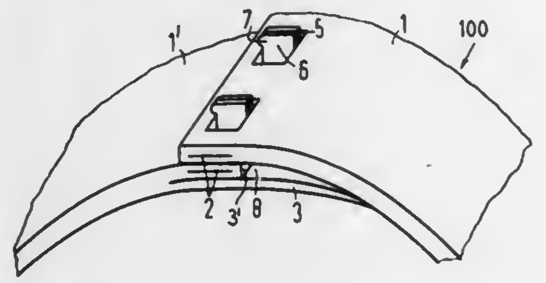
Johann Förtsch, Kronach-Friesen, and Hans-Jürgen Meltsch, Germering, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 1, 1982, Ser. No. 413,749

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1981, 3135766

Int. Cl.^{3} B32B *3/06;* **F16L** *9/00, 33/00;* **H02G** *13/06*

U.S. Cl. 428—99 **38 Claims**



1. In a longitudinally split sleeve having a strip like sleeve member composed of a thermo-plastic synthetic member having a shape memory, said sleeve member having longitudinal edges with at least one edge having a reinforcing member, said sleeve having closure means for closing said edges together in an overlapping joint so that the edges can be sealed together after the sleeve has been wrapped around an object and the sleeve is shrunk onto the enclosed object by a result of an application of heat, said closure means comprising radially extending elements disposed along one edge of said sleeve member and being engaged in spaced apertures provided along the other edge of the joint, the improvements comprising said radially extending elements being integral radially extending tabs formed from the material adjacent said one edge, said tabs being cut from said material and being folded to the radially extending position along a fold line extending at an incline angle relative to the edge of the sleeve member.

4,442,155

LONGITUDINALLY DIVIDED CABLE SLEEVE OF SHRINKABLE MATERIAL HAVING CLOSURE ELEMENTS ALONG ITS LONGITUDINAL EDGES

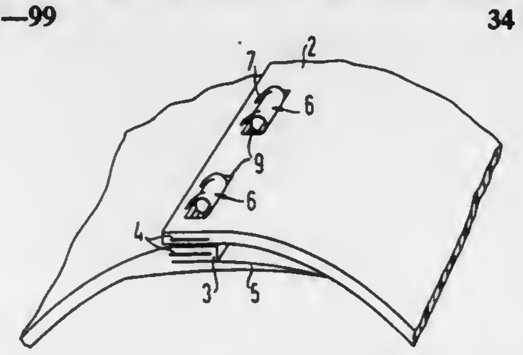
Johann Foertsch, Kronach-Friesen, and Hans-Juergen Meltsch, Germering, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, United Kingdom

Filed Nov. 24, 1982, Ser. No. 444,345

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1981, 3148135

Int. Cl.^{3} B32B *3/06;* **F16L** *9/00;* **H02G** *13/06;* **F16L** *33/00*

U.S. Cl. 428—99 **34 Claims**



1. In a longitudinally divided cable sleeve having a strip-like sleeve member composed of a heat-shrinkable material, said sleeve member having two longitudinal edges with reinforcing inserts to form first and second edges with reinforced portions and coacting closure means for closing said edges together comprising closure elements mounted along the first edge and being engaged in openings formed in the reinforced portion of the second edge to hold the two edges in a closed position, the improvements comprising each of the elements having link means for mounting the element in axially extending slots in the area of the reinforced portion of the first edge, each element having abutment means for limiting the depth of insertion of the link means into each slot, each element having a projecting closure part for being inserted through an opening of the second edge with each projecting closure part having at least one latching element extending therefrom so that when the openings of the second edge are placed on the closing elements, said latching elements engage the outer surface adjacent each opening to prevent accidental and unintentional disassembly of the closure means.

4,442,156

WINDOW WEATHER STRIPPING AND THE MANUFACTURING METHOD

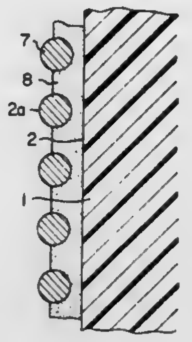
Toshiaki Yamaguchi, Chiba, Japan, assignor to Kinugawa Rubber Industrial Co., Ltd., Chiba, Japan

Filed Apr. 22, 1982, Ser. No. 370,675

Claims priority, application Japan, Apr. 23, 1981, 56-61624; Apr. 23, 1981, 56-61625; Apr. 23, 1981, 56-61626; Apr. 23, 1981, 56-58804[U]; Jun. 16, 1981, 56-88441[U]; Jun. 16, 1981, 56-88442[U]

Int. Cl.^{3} B32B *27/08*

U.S. Cl. 428—142 **5 Claims**



1. Window weather stripping for sealing a gap between a movable glass and a window frame which comprises:

a strip of elastic material having a microscopically rough surface on at least the surface of said strip along which the movable window glass slides, said rough surface comprising nylon particles bonded to said strip surface by a paint consisting essentially of nylon particles contained in a nylon-based bonding agent.

4,442,157

FIREPROOFING COMPOSITION AND DOOR RABBET COATED THEREWITH

Hans-Norbert Marx, Buehl-Weitenung, and Reimer Göttsche, Baden-Baden, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 12,722, Feb. 16, 1979, abandoned. This application Dec. 29, 1980, Ser. No. 220,964

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1978, 2807697

Int. Cl.^{3} B32B *3/00;* **C09D** *5/18;* **C09K** *3/28*

U.S. Cl. 428—173 **3 Claims**

1. A mechanically stable fireproofing composition which is heat-formable to more than 10 times its original volume to form a mechanically stable insulating layer and which consists essentially of

- (a) from 15 to 40% by weight of a phenolic resin, which is thermosetting by itself,
- (b) from 25 to 45% by weight of an ammonium salt,
- (c) from 10 to 20% by weight of a carbohydrate and/or a polyhydric alcohol,
- (d) from 15 to 40% of a thermally decomposable organic nitrogen compound, selected from the group consisting of urea, melamine, and dicyandiamide, and
- (e) from 1 to 10% of a binder from the group consisting of the water-soluble, solvent-soluble and water-dispersible vinyl polymers, the percentages given being based on the solids content of the composition.

3. A door rabbet having thereon a coating of mechanically stable fireproofing composition as recited in claim 1, which is heat-foamable to at least 10 times its original volume, and which has sufficient mechanical strength to remain whole when the door is slammed, to prevent passage of flames in the event of a fire.

4,442,158

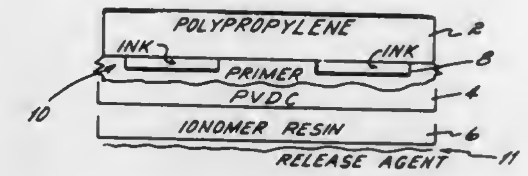
FOOD PACKAGE OF PLASTIC LAMINATE

James A. Distler, Cloudsley Co. - 470 W. Northland Rd., Cincinnati, Ohio 45240

Filed Jun. 1, 1981, Ser. No. 268,823

Int. Cl.^{3} B32B *7/02*

U.S. Cl. 428—195 **4 Claims**



1. A plastic laminate especially adapted for use as a food package, said laminate comprising in sequential layers from exterior to interior, a polypropylene layer, a polyvinylidene chloride polymer layer, and an ionomer resin layer as the inside layer of the package.

4,442,159

MAGNETIC RECORDING MEDIUM

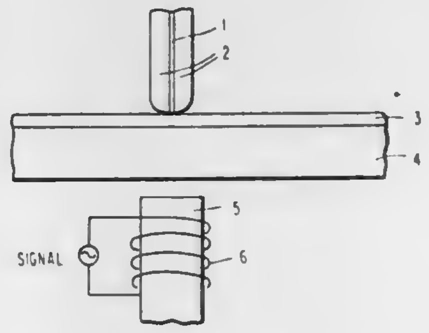
Shin-ichiro Dezawa; Goro Akashi, and Tatsuji Kitamoto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 26, 1982, Ser. No. 382,336

Claims priority, application Japan, May 26, 1981, 56-79685

Int. Cl.^{3} G11B *5/68, 5/70*

U.S. Cl. 428—212 **8 Claims**



1. A magnetic recording medium which comprises

- (a) a non-magnetic support;
- (b) a magnetic layer comprising magnetic particles dispersed in a binder and said magnetic layer comprising two or more layers,
  - (i) the layer(s) other than the topmost layer containing needle-shaped magnetic particles, and
  - (ii) the topmost layer containing plate-shaped hexagonal ferrite magnetic particles having a mean diameter of 0.1 μm to 20 μm, a coercive force of 300 to 3,000 oersteads, and satisfying the following relationship

$$K/(2\pi M_s^2) \geqq 1$$

wherein K represents the magnetic anisotropy constant in the direction perpendicular to the major plane of an individual particle plate, M_s represents the saturation magnetization value and π is the ratio of the circumference of a circle to its diameter, and which have axes of easy magnetization perpendicular to their individual plate planes and whose plate planes are oriented substantially parallel to the surface of the magnetic layer.

4,442,160

ELECTROSTATIC RECORDING MEDIUM HAVING AN ELECTRICALLY CONDUCTIVE LAYER CONTAINING PRE-DISPERSED ELECTRICALLY CONDUCTIVE CARBON BLACK AND POLYURETHANE BINDER RESIN

Hirotaka Toba; Masanori Itoh, both of Himeji; Keita Nakano, Ebina; Shoji Wakoh, Ebina; Toshihiko Toyoshima, Ebina, and Hidemasa Todo, Ebina, all of Japan, assignors to Daicel Chemical Industries, Ltd., Osaka and Fuji Xerox Co., Ltd., Tokyo, both of, Japan

Continuation-in-part of Ser. No. 274,683, Jun. 17, 1981, Pat. No. 4,410,584. This application Jul. 13, 1982, Ser. No. 397,943

Claims priority, application Japan, Jul. 21, 1981, 56-114051

Int. Cl.^{3} B32B *5/00;* **G03G** *5/02*

U.S. Cl. 428—215 **10 Claims**

1. An electrostatic recording member adapted to be used for repetitive formation and development of electrostatic latent images, followed by transfer of the developed images from said member to successive separate paper sheets, said member consisting essentially of:

a support;

an electrically conductive layer laminated directly on top of said support, said electrically conductive layer consisting essentially of a mixture of fine powder of predispersed electrically conductive carbon black uniformly dispersed in a polyurethane binder resin prepared by reacting a polyester with a polyisocyanate, said electrically conductive layer having a surface resistivity in the range of from 10^6 to 10^8 ohms; and

a non-photoconductive recording layer laminated directly on top of said electrically conductive layer, said recording layer consisting essentially of a dielectric material having a volume resistivity of at least 10^{12} ohm.cm.

4,442,161

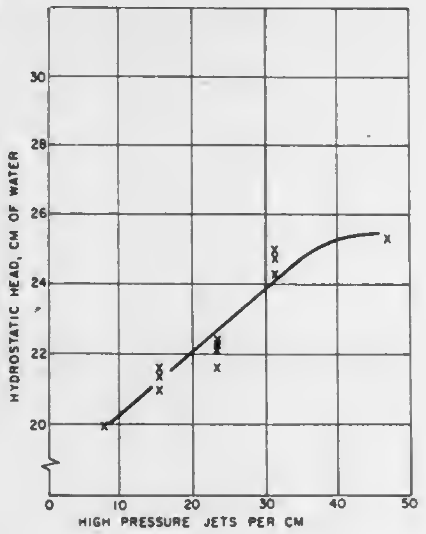
WOODPULP-POLYESTER SPUNLACED FABRICS

Birol Kirayoglu, Wilmington, and Dimitri P. Zafiroglu, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 4, 1982, Ser. No. 439,209

Int. Cl.^{3} D04N *1/46*

U.S. Cl. 428—219 **10 Claims**



1. In a process for producing a nonapertured spunlaced nonwoven fabric from an assembly consisting essentially of woodpulp and synthetic organic fibers wherein the assembly, while on a supporting member is treated with fine, columnar jets of water which issue from banks of orifices having diameters in the range of 0.05 to 0.13 millimeters and provide a sufficient total energy-impact product (E×I) to entangle the fibers and form them into the spunlaced fabric, the improvement which comprises for increasing the liquid-barrier characteristics of the fabric, performing the entanglement treatment with at least one third of the total E×I being furnished through orifice banks having orifice supply pressures of at least 6900 kPa and providing at least 23 jets per centimeter of fiber assembly being treated.

4,442,162

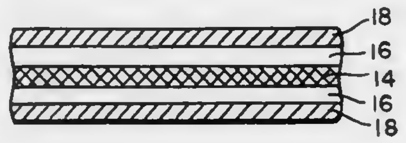
CHEMICAL AND BIOLOGICAL RESISTANT MATERIAL AND METHOD OF FABRICATING SAME

Frank E. Kuester, DeLand, Fla., assignor to Brunswick Corporation, Skokie, Ill.

Filed Oct. 9, 1981, Ser. No. 309,899

Int. Cl.^{3} B32B *7/00;* **B65B** *55/00*

U.S. Cl. 428—245 **18 Claims**



1. A laminated chemical and biological resistant, flexible camouflage material comprising:

a base fabric of woven construction forming a support layer for said material;

a flexible base coat of polyvinyl chloride material laminated to at least one side of said base fabric; and

a flexible top coat laminated to said base coat, said top coat having camouflage properties and comprising a chemical and biological resistant material selected from the group consisting of aliphatic polyurethanes, polyvinylidene chloride, butyl rubber, fluorocarbon polymers, nitrile rubber.

8. A process of fabricating a laminated chemical and biological resistant, flexible camouflage material comprising:

providing a support layer for said material in the form of a base fabric of woven construction;

applying to at least one side of said base fabric a flexible coat of polyvinyl chloride material; and

applying to said base coat a flexible top coat of chemical and biological resistant camouflage material, selected from the group consisting of aliphatic polyurethanes, polyvinylidene chloride, butyl rubber, fluorocarbon polymers, nitrile rubber.

4,442,163

RESORCINOL-FILLER PREPARATION, PROCESS FOR THE PRODUCTION AND USE OF THE SAME

Gerhard Kühner, Hanau; Siegfried Wolff, Bornheim-Merten, and Lothar Rothbühr, Hürth-Hermülheim, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Division of Ser. No. 213,475, Feb. 3, 1981, Pat. No. 4,381,949. This application Jan. 21, 1983, Ser. No. 459,983

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1980, 3003934

Int. Cl.^{3} C08K *3/04, 5/13;* **B32B** *7/00*

U.S. Cl. 428—262 **19 Claims**

1. A vulcanizable rubber composition having improved adhesion to metal, glass and textile fibers other than metal or glass comprising a vulcanizable rubber and distributed therethrough a resorcinol-filler composition consisting essentially of homogeneously distributed resorcinol and at least one carbon black, the amount of carbon black being 70 to 30% and the amount of resorcinol being 30 to 70%.

17. An article of manufacture comprising a fabric made of polyethylene glycol terephthalate adhered to the vulcanizate of a vulcanizable rubber composition according to claim 1.

4,442,164

FIBROUS COMPOSITE MATERIALS AND THE PRODUCTION AND USE THEREOF

Peter J. Briggs, Cheadle Hume; Kevin McAloon, Appleton Thorn, and Graham R. Rideal, Handbridge, all of England, assignors to Imperial Chemical Industries Ltd., London, England

Continuation of Ser. No. 281,104, Jul. 7, 1981, abandoned. This application Oct. 24, 1983, Ser. No. 545,103

Claims priority, application United Kingdom, Jul. 11, 1980, 8022713

Int. Cl.^{3} B32B *5/16;* **D02G** *3/00*

U.S. Cl. 428—283 **14 Claims**

1. A fibrous composite material of essentially two-dimensional configuration consisting essentially of at least about 15% by weight combustible fibers and at least about 20% by weight lamallae of chemically delaminated vermiculite, the lamallae having a thickness of less than 0.5 micron and an aspect ratio of at least 10, substantially all of the lamallae being of size below 50 microns and the fibers being bonded together by the vermiculite.

4,442,165

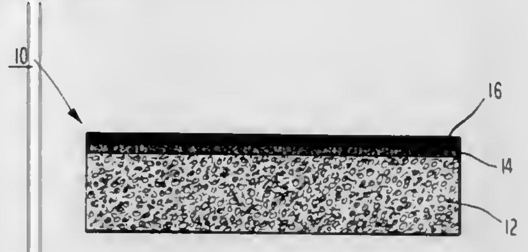
LOW-DENSITY THERMALLY INSULATING CARBON-CARBON SYNTACTIC FOAM COMPOSITE

Joseph J. Gebhardt, Malvern, and Paul W. Juneau, Jr., Norristown, both of Pa., assignors to General Electric Co., Philadelphia, Pa.

Filed Mar. 26, 1981, Ser. No. 247,703

Int. Cl.^{3} B32B *5/18, 7/02, 9/00*

U.S. Cl. 428—307.7 **2 Claims**



1. A low-density, thermally insulating composite comprising:

(a) a reinforced, carbon-carbon syntactic foam material exhibiting low thermal conductivity and low density characteristics, said foam material further comprising a thermosetting resin matrix and a pyrolyzed mixture of carbon fibers and hollow carbon spheres within said thermosetting resin matrix;

(b) pyrolytic carbon covering and penetrating into at least a portion of said foam material; and,

(c) a layer of pyrolytic graphite on at least a portion of said pyrolytic carbon covered and penetrated syntactic foam material.

4,442,166

CERMET FILM SELECTIVE-BLACK ABSORBER

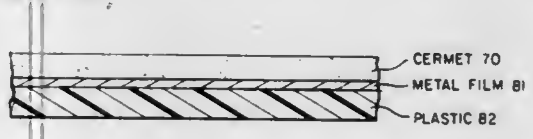
John C. C. Fan, Chestnut Hill, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 94,370, Nov. 15, 1979, Pat. No. 4,312,915, which is a continuation of Ser. No. 837,434, Jan. 30, 1978, abandoned, which is a continuation-in-part of Ser. No. 624,701, Apr. 7, 1976, abandoned. This application Jan. 21, 1982, Ser. No. 341,376

The portion of the term of this patent subsequent to Jan. 26, 1999, has been disclaimed.

Int. Cl.^{3} B32B *5/16, 15/04;* **F24J** *3/02*

U.S. Cl. 428—323 **2 Claims**



1. A selective black absorber capable of highly absorbing solar energy and only slightly emitting infrared energy comprising:

a substrate comprising a layer of material which is an electrical insulator and a low infrared emissivity film coating formed thereon and said substrate being electrically nonconductive in the direction normal to the layer of said substrate,

a cermet film deposited on the film coating of said substrate, said cermet film comprising metal particles having diameters much less than the wavelength of solar energy to be absorbed to cause the particles to be good solar energy absorbers,

said cermet film having a thickness and composition such that it has high solar absorptance and low infrared thermal emissivity as a coating on said substrate having low infrared emissivity.

4,442,167

WEATHER RESISTING EXTRUDED RUBBERY ARTICLES HAVING ON THE SURFACE THEREOF A THIN LAYER OF A COLORED RUBBERY MATERIAL

Tadanobu Iwasa, Ichinomiya, and Mituo Ushida, Inazawa, both of Japan, assignors to Toyoda Gosei Kabushiki Kaisha, Nishikasugaigun, Japan

Filed Jun. 29, 1982, Ser. No. 393,517

Int. Cl.^{3} B32B *5/16, 3/20*

U.S. Cl. 428—323 **8 Claims**

1. A weather-resisting extruded rubbery article based on a carbon black-incorporated EPDM rubber substrate having on the surface thereof a thin, smooth layer of a colored rubbery material of a smooth or suede-like appearance integrally formed on the substrate by extrusion molding, wherein the colored rubbery material has been derived from 75–0% by weight of EPDM rubber and 25–100% by weight of a graft copolymer of EPDM rubber and vinyl chloride together with one or more coloring fillers.

4,442,168

COATED SUBSTRATE COMPRISING A CURED TRANSPARENT ABRASION RESISTANT FILLED ORGANO-POLYSILOXANE COATINGS CONTAINING COLLOIDAL ANTIMONY OXIDE AND COLLOIDAL SILICA

William H. White, La Puente; William C. Harbison, and Gary L. Nelson, both of Lake Forest, all of Calif., assignors to Swedlow, Inc., Garden Grove, Calif.

Division of Ser. No. 309,423, Oct. 7, 1981, Pat. No. 4,390,373. This application Apr. 28, 1983, Ser. No. 489,697

Int. Cl.^{3} B32B *27/30, 5/16;* **C09K** *3/14*

U.S. Cl. 428—331 **27 Claims**

1. An article manufactured by applying to at least one surface of a substrate a coating composition which forms a transparent, abrasion-resistant coating upon curing, said coating composition comprising an effective abrasion resisting amount of a colloidal dispersion containing colloidal silica and an effective abrasion resistance enhancing amount of colloidal antimony oxide in a weight ratio of less than or equal to about 30:70, antimony oxide:silica, in a water-alcohol solution of the partial condensate of $R(Si(OH)_3)$ wherein R is an organic radical, and curing said applied coating composition.

4,442,169

MULTIPLE COATED CUTTING TOOL AND METHOD FOR PRODUCING SAME

Donald E. Graham, St. Clair Shores, Mich., assignor to General Electric Company, Schnectady, N.Y.

Filed Jan. 28, 1982, Ser. No. 343,545

Int. Cl.^{3} B32B *15/04*

U.S. Cl. 428—332 **13 Claims**

1. An article comprising:

(i) a cemented carbide or aluminum base solid ceramic substrate having aluminum oxide on at least portions of the surface thereof, said aluminum oxide forming a first surface;

(ii) an intermediate layer of an oxide of titanium adjacent at least a portion of said first surface; and

(iii) an outer layer of at least one of titanium nitride, titanium carbide and titanium carbonitride adjacent at least a portion of said intermediate layer.

2. The article as defined in claim **1** wherein said intermediate layer contains TiO.

3. The article as defined in claim **2** wherein said intermediate layer is less than or equal to approximately 1 micron in thickness.

4,442,170

SECURITY DOCUMENT WITH SECURITY FEATURES IN THE FORM OF LUMINESCING SUBSTANCES

Wittich Kaule, Gauting; Gerhard Schwenk, Puchheim, and Gerhard Stenzel, Munich, all of Fed. Rep. of Germany, assignors to GAO Gesellschaft fur Automation und Organisation mbH., Munich, Fed. Rep. of Germany

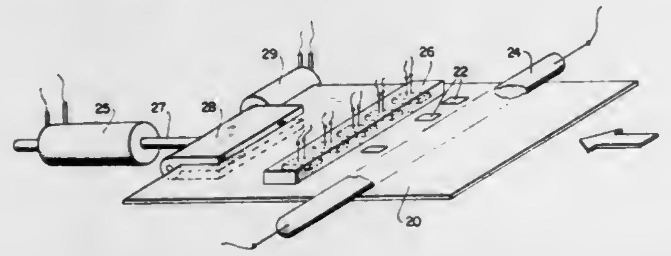
PCT No. PCT/DE81/00080, 371 Date Oct. 23, 1981, 102(e) Date Oct. 23, 1981, PCT Pub. No. WO81/03509, PCT Pub. Date Dec. 10, 1981

PCT Filed May 29, 1981, Ser. No. 314,840

Claims priority, application Fed. Rep. of Germany, May 30, 1980, 3020601

Int. Cl.^{3} B32B *21/04;* G01N *21/38*

U.S. Cl. 428—333 **16 Claims**



1. Security document with security features comprising:

a substrate material; and

a luminescing substance combined with said carrier material, said luminescing substance having a known excitation spectrum and a known emission spectrum wherein at least a portion of said excitation spectrum and at least a portion of said emission spectrum are contained in a narrow band of wavelengths and at least a portion of said excitation spectrum overlaps at least a portion of said emission spectrum in said narrow wavelength band whereby said luminescing substance operates in a quasi-resonant mode.

4,442,171

MAGNETIC RECORDING MEDIUM

Masami Sato; Goro Akashi; Yasutoshi Okuzawa, and Toshimitu Okutu, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

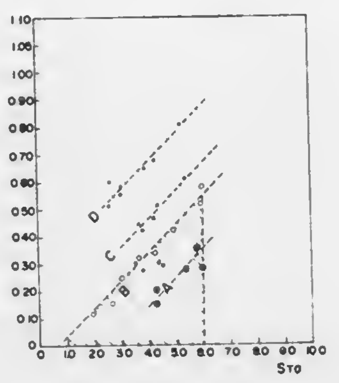
Filed Mar. 9, 1982, Ser. No. 356,285

Claims priority, application Japan, Mar. 12, 1981, 56-35833

Int. Cl.^{3} G11B *5/70*

U.S. Cl. 428—336 **6 Claims**

1. A magnetic recording medium comprising a non-magnetic flexible substrate, a magnetic layer provided on the surface of said substrate and containing ferromagnetic grains dispersed in a binder, and a back layer provided on the back surface of said substrate, wherein the stiffness (S_{TD}) of said magnetic recording medium is 6.0 or less, the surface roughness of said back layer is substantially 0.038 microns or less, the magnetic recording medium has a thickness of substantially 15.5 microns or less, and the friction coefficient (μ_B) of said back layer with respect to the axial direction of a loading post satisfies the condition:



$$0 \leqq \mu_B \leqq 0.1S_{TD}-0.05.$$

4,442,172

INK JET RECORDING SHEET

Hiroyo Oshima; Matsukuma Daisaku; Kojima Yutaka; Kobayashi Yukio, and Nagai Koichi, all of Tokyo, Japan, assignors to Jujo Paper Co., Ltd., Tokyo, Japan

Filed Jul. 2, 1982, Ser. No. 394,625

Claims priority, application Japan, Jul. 10, 1981, 56-106970

Int. Cl.^{3} B32B *5/16*

U.S. Cl. 428—342 **7 Claims**

1. Ink jet recording sheet characterized in that 1 g/m^2 or more (as solid content) of water-soluble polymer is coated onto the surface of a base sheet comprising a uniform mixture of 15–45 wt. parts of synthetic silicate and 0.1–1 wt. parts of a wet strength additive and 2–10 wt. parts of glass fiber of 5–7 μm diameter and 2–4 mm length with respect to 100 wt. parts of wood pulp.

4,442,173

NOVEL WATER-ABSORBING ACRYLIC FIBERS

Shinsuke Takegami, Ootsu; Kaoru Ban, and Mitsuru Wakitani, both of Okayama, all of Japan, assignors to Japan Exlan Company, Limited, Osaka, Japan

Division of Ser. No. 231,626, Feb. 5, 1981, abandoned. This application Jun. 11, 1982, Ser. No. 387,682

Claims priority, application Japan, Feb. 14, 1980, 55-17360

Int. Cl.^{3} D02G *3/00*

U.S. Cl. 428—372 **12 Claims**

1. Water-absorbing acrylic fibers consisting of more than 90 weight % on an acrylonitrile polymer and less than 10 weight % of a water-absorbing resin, which fibers have a surface resistance not larger than $1\times10^9\Omega$ and a water-holding ratio not less than 25%, the decrease in the water-holding ratio of the fibers after a dry heat treatment at 120° C. for one hour being not more than 10%, and which fibers are produced by the steps of wet-spinning a spinning solution of an acrylonitrile polymer mixed with a water-absorbing resin, water-washing and stretching the resulting fibers, dry-compacting the fibers if desired, subjecting the fibers to a wet-heat relaxing treatment, imparting to the fibers less than 1.5%, by weight of the fibers, of a spinning oil, and drying the fibers in a temperature range of from 105° to 170° C., said water-absorbing resin having 1 to 15 cross-links for 400 repeating units of the polymer forming said resin, and being a resin having a particle diameter less than 0.5μ in absolute dryness and a degree of water-swellability within the range of from 20 to 300 cc/g.

7. A process of producing water-absorbing acrylic fibers consisting of more than 90 weight % of an acrylonitrile polymer and less than 10 weight % of a water-absorbing resin, which fibers have a surface resistance not larger than $1\times10^9\Omega$ and a water-holding ratio not less than 25%, the decrease in the water-holding ratio of the fibers after a dry heat treatment at 120° C. for one hour being not more than 10%, said process

comprising the steps of wet-spinning a spinning solution of an acrylonitrile polymer mixed with a water-absorbing resin, water-washing and stretching the resulting fibers, dry-compacting the fibers if desired, subjecting the fibers to a wet-heat relaxing treatment, imparting to the fibers less than 1.5%, by weight of the fibers, of a spinning oil, and drying the fibers in a temperature range of from 105° to 170° C., said water-absorbing resin having 1 to 15 cross-links for 400 repeating units of the polymer forming said resin, and being a resin having a particle diameter less than 0.5μ in absolute dryness and a degree of water-swellability within the range of from 20 to 300 cc/g.

4,442,174

RUBBER SEALING MEMBER

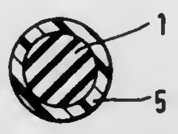
Kurt Neumann, Wassenberg, and Wolfgang Dietrich, Cologne, both of Fed. Rep. of Germany, assignors to Wilhelm Leeser Gummi-und Kunststoffverarbeitung GmbH & Co., KG, Wegberg-Dalheim, Fed. Rep. of Germany

Filed Mar. 8, 1983, Ser. No. 473,232

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1982, 3208794

Int. Cl.^{3} D02G *3/00;* B32B *27/06*

U.S. Cl. 428—376 **7 Claims**



1. A cellular compressible elongated rubber member having a sheathing of plastic material, the thickness of said sheathing being less than the cross-sectional dimension of said member, and said sheathing enclosing said member without being fixedly connected thereto.

4,442,175

CELLULAR CERAMIC BODIES AND METHOD MAKING SAME

James E. Flannery; Robert D. Shoup, and Dale R. Wexell, all of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jan. 27, 1983, Ser. No. 461,670

Int. Cl.^{3} C03B *19/10*

U.S. Cl. 428—404 **32 Claims**

1. A cellular ceramic body of high mechanical strength and exhibiting a density of less than 15 lbs./ft^3 consisting essentially of the ion exchange product of a large cation donor and a synthetic, lithium and/or sodium, water-swelling mica wherein the lithium and/or sodium ions on the mica surface are essentially replaced by the large cations, and the mica being selected from the group of fluorhectorite, hydroxyl hectorite, boron fluorphlogopite, hydroxyl boron phlogopite, and solid solutions among those and between those and other structurally-compatible species selected from the group of talc, fluortalc, polylithionite, fluorpolylithionite, phlogopite, and fluorphlogopite.

4,442,176

HEAT-SENSITIVE RECORDING SHEET

Kazuya Nagaoka, and Sigeru Yoshii, both of Yokohama, Japan, assignors to Kawasaki Kasei Chemicals Ltd., Tokyo, Japan

Filed Aug. 19, 1983, Ser. No. 524,666

Int. Cl.^{3} B41M *5/18*

U.S. Cl. 346—208 **10 Claims**

1. A heat-sensitive recording sheet having a color-forming layer comprising a colorless or pale-colored chromogenic dyestuff and a hydroxyphthalic acid diester having a melting point of from about 60° to about 120° C.

4,442,177

ALKYL ETHER METHYLOLMELAMINE COATING COMPOSITION, COATING PROCESS AND TRANSPARENT PRODUCT

Akinori Noda; Seiichi Miyasaka, and Hiroshi Kawahara, all of Yokohama, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Apr. 1, 1981, Ser. No. 250,071

Claims priority, application Japan, Apr. 4, 1980, 55-43527

Int. Cl.^{3} B32B *27/42;* B05D *3/02*

U.S. Cl. 428—412 **13 Claims**

1. A coating composition which comprises:

(A) an alkyl ether methylolmelamine in which a part or whole of methylol groups of methylolmelamine are converted into alkyl ether methylol groups;

(B) a polyhydric alcohol having 2 or more hydroxyl groups; and

(C) a dispersion of colloidal silica having about 3 to 4 silanol groups per 100 square Angstroms and which can be condensed with one or more of the components (A), (B), or (C); and

(D) a solvent.

4,442,178

SOS SUBSTRATE FOR SEMICONDUCTOR DEVICE

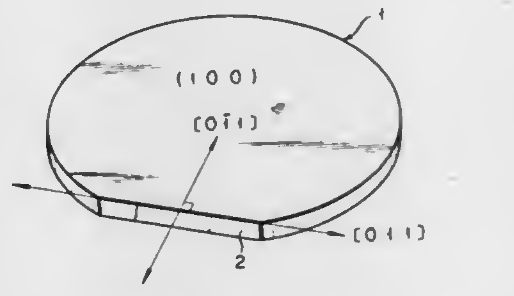
Minoru Kimura, Yokohama, and Bunzi Takeuchi, Sagamihara, both of Japan, assignors to Tokyo Shibarua Denki Kabushiki Kaisha, Japan

Filed Sep. 24, 1982, Ser. No. 422,371

Claims priority, application Japan, Nov. 25, 1981, 56-188842

Int. Cl.^{3} H01L *21/20*

U.S. Cl. 428—446 **2 Claims**



1. An SOS substrate for a semiconductor device, comprising:

a single crystal sapphire plate which has a surface with an index of plane (**1012**);

an epitaxial silicon layer which has a surface with an index of plane (**100**) and which is formed on the surface of said sapphire plate; and

an end face on said SOS substrate, said end face being inclined by an angle of 2.1° to 2.2° with respect to the [**011**] or [**011**] crystallographic direction of said silicon.

4,442,179

HEAT-SENSITIVE RECORDING PAPER

Akira Igarashi, and Sukenori Nakamura, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Shizuoka, Japan

Filed Oct. 15, 1982, Ser. No. 434,661

Claims priority, application Japan, Oct. 16, 1981, 56-165263

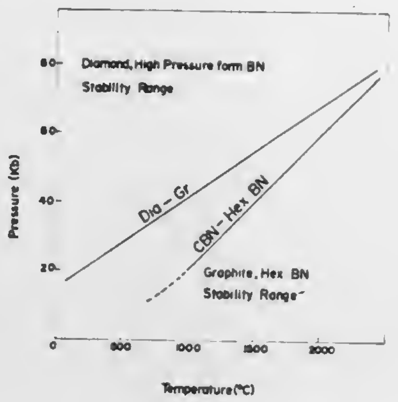
Int. Cl.^{3} B41M *5/18*

U.S. Cl. 428—220 **9 Claims**

1. A heat sensitive recording paper which has on a paper support base a heat-sensitive recording layer having received a surface treatment in such a state that said recording paper comes to contain moisture in a proportion ranging from 5 wt% to 12 wt% by drying after the coating of a heat-sensitive recording layer, said surface treatment being effected by passing the recording paper through a pressure applying means, which is constructed by a metal roller heated up to a temperature of 40° C. to 60° C. and an elastic roller, with the recording layer brought into a face-to-face contact with the metal roller.

4,442,180
SINTERED BODY FOR USE IN A CUTTING TOOL AND THE METHOD FOR PRODUCING THE SAME

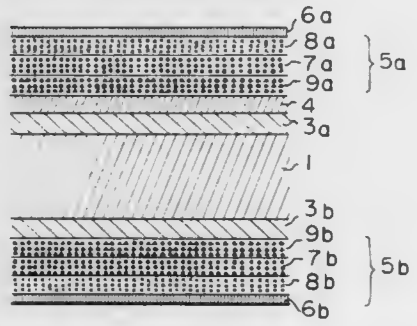
Akio Hara, and Shuji Yazu, both of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Division of Ser. No. 36,989, May 7, 1979, Pat. No. 4,293,618. This application May 8, 1981, Ser. No. 262,027
Claims priority, application Japan, May 14, 1978, 53-58546
Int. Cl.^{3} C22C *29/00;* B22F *7/06*
U.S. Cl. 428—551 **10 Claims**



1. In a diamond sintered body or high pressure form boron nitride sintered body for use in a cutting tool, the improvement wherein said sintered body is supported by cermet in which carbide crystals in the form of $(Mo, W)_1C_x$ wherein x is within the range of 0.8 to 0.98, chiefly consisting of molybdenum are bonded by iron group metals with the interposition of an intermediate bonding layer consisting of a metal carbide less than 0.1 mm in thickness.

4,442,181
STEEL STRIP HAVING DIFFERENTIATED MULTILAYER COATINGS AND BEING USEFUL FOR MANUFACTURING OF CANS

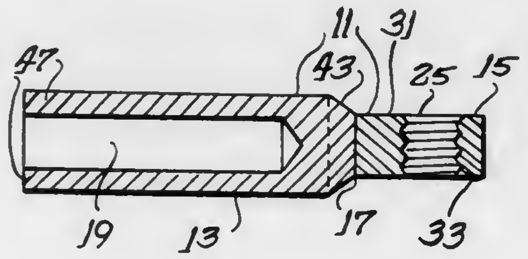
Takao Saito, and Kazuya Ezure, both of Himeji, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
Filed Apr. 21, 1982, Ser. No. 370,349
Claims priority, application Japan, Apr. 23, 1981, 56-61767; Jul. 17, 1981, 56-111639
Int. Cl.^{3} B21D *51/26;* B32B *15/04, 15/18;* C25D *5/12*
U.S. Cl. 428—623 **8 Claims**



1. A differential multilayer-coated steel strip useful for the manufacture of cans in which the surface coatings are different from each other, said steel strip consisting of:
- (A) a steel strip substrate;
- (B) a 3-layered first surface coating formed on a surface of said steel strip substrate consisting of
  - (a) a plated nickel first base layer formed on said surface of said substrate and consisting of from 10 to 5,000 mg/m^2 of plated nickel,
  - (b) a plated tin intermediate layer formed on the surface of said first base layer and consisting of from 50 to 11,000 mg/m^2 of plated tin, and
  - (c) a chromium-treated first surface layer formed on the surface of said intermediate layer and having a weight of from 3 to 50 mg/m^2, in terms of metallic chromium; and
- (C) a 2-layered surface coating formed on the other surface of said steel strip substrate consisting of
  - (d) a plated nickel second base layer formed on said other surface of said substrate and consisting of from 10 to 5,000 mg/m^2 of plated nickel, and
  - (e) a chromium-treated second surface layer formed on the surface of said second base layer and having a weight of from 3 to 50 mg/m^2, in terms of metallic chromium.

4,442,182
ONE-PIECE, COMPOSITE ELECTRICAL CONNECTOR

John E. Chart, Edinboro, Pa., assignor to Teledyne Penn-Union, Edinboro, Pa.
Filed May 26, 1982, Ser. No. 382,154
Int. Cl.^{3} H01R *11/00;* H02G *15/00*
U.S. Cl. 428—654 **15 Claims**



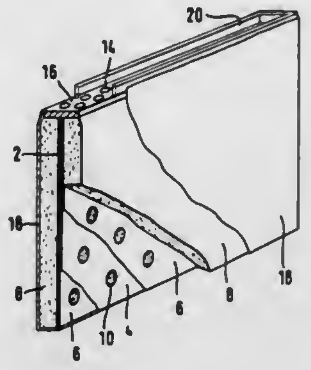
1. A one-piece, composite electrical connector fabricated from at least two portions of electrically conductive metal alloys, comprising at least a first one of said portions being a precipitation hardenable metal alloy which is thermally hardenable, and at least a second one of said portions being a work hardenable metal alloy which is thermally softenable, said first and second portions being joined together by a bond along an interface common to said first and second portions, said first and second portions each having more than about 87% by weight of aluminum as a compositional element thereof for substantially precluding formation at said interface of intermetallic compounds harmful to said bond, said first portion being suitable for mechanical connection and being selected from the group consisting of AA 2011, AA 2014, AA 2017, AA 2018, AA 2024, AA 2025, AA 2036, AA 2117, AA 2124, AA 2218, AA 2219, AA 2319, AA 2618, AA 6003, AA 6005, AA 6053, AA 6061, AA 6063, AA 6066, AA 6070, AA 6101, AA 6105, AA 6151, AA 6162, AA 6201, AA 6253, AA 6262, AA 6351, AA 6463, AA 6951, AA 7001, AA 7005, AA 7008, AA 7011, AA 7072, AA 7075, and AA 7178, said second portion being crimpable and being selected from the group consisting of AA 1050, AA 1060, AA 1100, AA 1145, AA 1175, AA 1200, AA 1230, AA 1235, AA 1345, AA 1350, AA 3003, AA 3004, AA 3005, AA 3105.

4,442,183
ATMOSPHERIC OXYGEN ELEMENT WITH POSITIVE ELECTRODE PLATES

Bruno Siller, Freigasse 24, D-7090 Ellwangen, Fed. Rep. of Germany
Filed Oct. 14, 1981, Ser. No. 311,458
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1980, 3040093
Int. Cl.^{3} H01M *4/00*
U.S. Cl. 429—29 **23 Claims**

1. A primary atmospheric oxygen element of reduced thickness comprising:

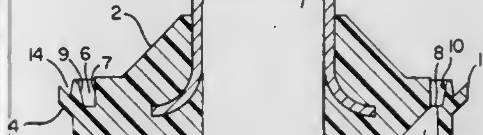
- (a) positive electrode means providing a positive electrode,
- (b) negative electrode means providing a negative electrode,
- (c) an electrolyte solution containing manganese (II) chloride operatively associating said positive and negative electrode means,
- (d) the electrolyte solution containing a thickening agent;
- (e) container means containing said positive and negative electrodes and said electrolyte, wherein said positive electrode means comprises:
- (i) a substantially planar carrier means for conducting an electric current therethrough, including a central planar metallic foil and planar conductive sheets substantially covering each side of said metallic foil;
- (ii) air permeable positive electrode substance;



- (iii) means adhering said positive electrode substance to said planar conductive sheets on each side of said carrier means;
- (iv) rigid cover means covering a narrow front side of said positive electrode substance and said cover means defining a plurality of openings allowing the passage of air therethrough to said positive electrode means;
- (v) coating means comprising a varnish substantially coating the exterior surfaces of said positive electrode means and securely assembling said cover means and said positive electrode substance; and
- (vi) protection means protecting said openings from being coated by said coating means.

4,442,184
DRY PATH GAS VENTING SEAL

Frank G. Spanur, Parma Heights, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.
Filed Mar. 31, 1983, Ser. No. 480,695
Int. Cl.^{3} H01M *2/12*
U.S. Cl. 429—54 **12 Claims**

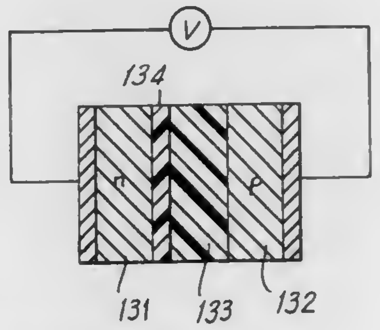


1. A galvanic cell comprising a cylindrical container having an anode, a cathode separated from said anode by a separator, and electrolyte disposed therein; and a plastic closure member comprised of a resiliently deformable peripheral flange defined by an annular groove having an inner upstanding wall, a base, and an outer upstanding wall in the upper surface of the closure member, said resiliently deformable flange defining an annular notch which forms an outer sealing lip and an inner venting lip, which venting lip is deformed in part by the outer upstanding wall of the groove; said closure member defining at least one aperture that extends through the base of said annular groove, said closure member being compressed in said cylindrical container such that said venting lip is positioned over the inner surface of said groove and against the inner upstanding wall of the groove thereby forming a closed annular groove, and said closure operable such that when the internal pressure in the cell exceeds a predetermined limit the venting lip is momentarily deflected away from the inner upstanding wall of the groove to allow the release of such pressure from within the cell.

7. A method for production of galvanic cells having a resealable all-plastic vent path comprising the steps of:
- (a) assembling within a cylindrical container an anode, a cathode separated from said anode by a separator, and disposing electrolyte therein;
- (b) providing a plastic closure member comprised of a resiliently deformable peripheral flange defined by an annular groove having an inner upstanding wall, a base, and an outer upstanding wall in the upper surface of the closure member, said resiliently deformable flange having an outer diameter greater than the inner diameter of said cylindrical container and defining an annular notch which forms an outer sealing lip and an inner venting lip, which venting lip is defined in part by the outer upstanding wall of the groove; said closure member defining at least one aperture that extends through the base of said annular groove; and
- (c) placing said closure member within the open end of said cylindrical container and compression sealing said container such that the venting lip of said closure member is positioned over the inner surface of said groove and against the inner upstanding wall of said groove thereby forming a closed annular groove and seal for the cell.

4,442,185
PHOTOELECTROCHEMICAL CELLS FOR CONVERSION OF SOLAR ENERGY TO ELECTRICITY AND METHODS OF THEIR MANUFACTURE

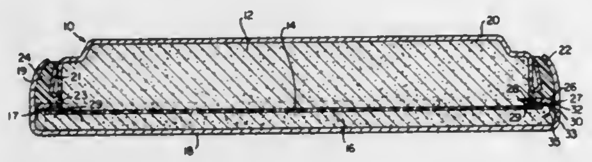
Terje Skotheim, East Patchoque, N.Y., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Continuation-in-part of Ser. No. 312,888, Oct. 19, 1981, Pat. No. 4,416,959, which is a continuation-in-part of Ser. No. 208,059, Nov. 18, 1980, Pat. No. 4,352,868. This application Jun. 9, 1982, Ser. No. 386,666
Int. Cl.^{3} H01M *6/36*
U.S. Cl. 429—111 **11 Claims**



1. A photoelectric device comprising:
- (a) a first layer of semiconductive material having a first band gap;
- (b) a second layer of semiconductor material having a different band gap or of a metal;
- (c) a layer of dry solid polymer electrolyte between said first and second layers; and
- (d) a layer of a polymer blend of a highly conductive polymer and a solid polymer electrolyte between said dry solid polymer electrolyte and said first layer.

4,442,186
POROUS ANNULUS PROVIDING GAS CHANNELS BETWEEN ELECTRODE COMPARTMENTS

Lewis F. Urry, Columbia Station, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.
Filed Jun. 28, 1982, Ser. No. 392,662
Int. Cl.^{3} H01M *2/18*
U.S. Cl. 429—142 **11 Claims**



1. A sealed miniature galvanic cell comprising a housing having a container with a base, a sidewall and an open end, a cover disposed over the open end of the container and an electrically insulating sealing gasket compressively disposed between the container sidewall and the periphery of the cover, which housing contains a first electrode in electrical contact with the container, a second electrode in electrical contact with the cover, a separator interposed between the first and second electrodes and an electrolyte in ionic contact with the first and second electrodes; the improvement being a rigid annulus which is compressively disposed between the base of the sealing gasket and the separator, which annulus has portions defining a plurality of channels which provide means for the exchange of gaseous products around the separator and between the first and second electrodes.

4,442,187
BATTERIES HAVING CONJUGATED POLYMER ELECTRODES

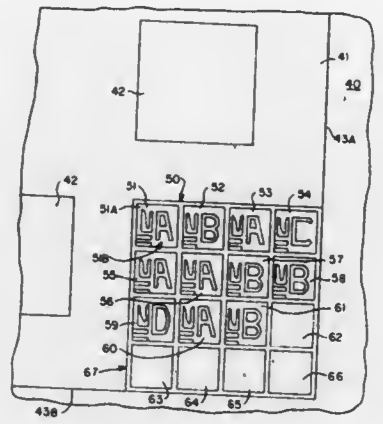
Alan G. MacDiarmid, Drexel Hill; Alan J. Heeger, Wynnewood, and Paul J. Nigrey, Philadelphia, all of Pa., assignors to University Patents, Inc., Norwalk, Conn.
Continuation-in-part of Ser. No. 129,439, Mar. 11, 1980, Pat. No. 4,321,114. This application Dec. 29, 1980, Ser. No. 220,496
Int. Cl.^{3} H01M *4/60*
U.S. Cl. 429—213 **20 Claims**

1. A secondary battery comprising an anode means, a cathode means, and an electrolyte each of said electrode means including as an electrode-active material thereof a conjugated polymer which is characterized by having conjugated unsaturation along a main backbone chain thereof, said polymer being electrochemically oxidizable to a p-type doped material and electrochemically reducible to an n-type doped material, said electrolyte comprising a compound which is ionizable into one or more anionic or cationic dopant species capable of doping said polymer to one of said oxidized or reduced states.

4,442,188
SYSTEM FOR SPECIFYING CRITICAL DIMENSIONS, SEQUENCE NUMBERS AND REVISION LEVELS ON INTEGRATED CIRCUIT PHOTOMASKS

Ping-Wang Chiang, Los Gatos, Calif., assignor to Amdahl Corporation, Sunnyvale, Calif.
Filed Jan. 2, 1981, Ser. No. 222,254
Int. Cl.^{3} G03F *9/00*
U.S. Cl. 430—5 **14 Claims**

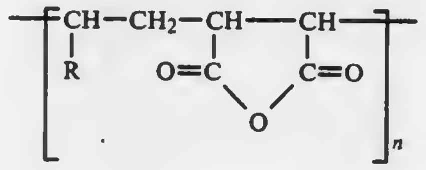
11. In a set of photomasks adapted to be used during sequential photolithography processing steps in an overall process for manufacturing integrated circuit chips on a semiconductor wafer, a coding pattern for specifying critical dimensions and mask layer numbers for each of said photomasks comprising a preselected common subarea of each photomask free of circuit topography patterns and having formed thereon a prearranged marked array of geometric areas together with a preselected critical dimension pattern located in a prearranged one of said geometric areas indicating the particular mask layer number for each of said photomasks.



4,442,189
TONER COMPOSITIONS CONTAINING POLYANHYDRIDE RESINS

Chin H. Lu, and Christopher J. AuClair, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Jan. 26, 1983, Ser. No. 461,088
Int. Cl.^{3} G03G *9/08, 9/10*
U.S. Cl. 430—45 **23 Claims**

1. A dry negatively charged toner composition comprised of resin particles, pigment particles and a polyanhydride charge enhancing composition of the formula:



wherein R is an alkyl group containing from about 6 carbon atoms to about 22 carbon atoms, and n is a number ranging from about 5 to about 2,000.

4,442,190
METHOD AND APPARATUS FOR IMAGE FORMATION UTILIZING A BLOCKING MEMBER FOR BLOCKING AN ION FLOW THROUGH A PHOTOSENSITIVE SCREEN TO PROVIDE A NON-IMAGE AREA

Tadayuki Kitajima, and Nobuhiro Kasama, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 97,863, Nov. 27, 1979, abandoned. This application Jul. 21, 1981, Ser. No. 285,669
Claims priority, application Japan, Dec. 8, 1978, 53-151765
Int. Cl.^{3} G03G *13/02*
U.S. Cl. 430—53 **11 Claims**

1. A method of forming an image by imagewise modulation of an ion stream, making use of an electric field formed on a photosensitive medium in a form of a screen mounted on an outer periphery of a drum-shaped frame, which is characterized by placing said screen photosensitive medium and an ion stream source in a spaced relation, wherein said source is located inside said drum-shaped frame, and by disposing a blocking member comprising an insulator or resistor material between said source and an inner periphery of said drum-shaped frame for preventing the ion stream from reaching a portion of said screen along a periphery of said frame, so as to form a non-image area on an image receiving member to which the ion stream is applied at the time of modulation.

4,442,191
ELECTROPHOTOGRAPHIC COPYING PROCESS FOR PRODUCING A PLURALITY OF COPIES

Masaji Nishikawa, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan
Filed Nov. 9, 1981, Ser. No. 319,326
Claims priority, application Japan, Nov. 12, 1980, 55-158092
The portion of the term of this patent subsequent to Feb. 21, 2001, has been disclaimed.
Int. Cl.^{3} G03G *13/22*
U.S. Cl. 430—55 **4 Claims**

1. An electrophotographic copying process for selectively forming a positive or a negative electrostatic latent image for producing a plurality of copies utilizing a photosensitive member for electrophotography which includes a conductive layer carrying a sequential lamination of a first and a second photoconductive layer thereon, the first photoconductive layer having a range of photoconductive response extending over a range of light rays from ultraviolet rays to visible light rays and defined as a first wavelength region, the second photoconductive layer being sensitive only to ultraviolet rays and defined as a second wavelength region, the process comprising a selective use of:

(A) a step of charging the photosensitive member simultaneously with an irradiation thereof with an image of an original which is formed by radiation in the first wavelength region, followed by a uniform exposure of the photosensitive member to radiation in the second wavelength region to trap a charge in a portion of the first photoconductive layer corresponding to a dark area of the image to form a positive electrostatic latent image; or

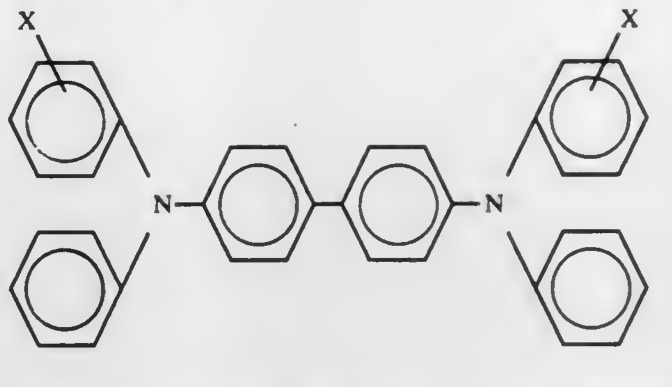
(B) a step of charging the photosensitive member simultaneously with an irradiation thereof with an image of an original which is formed by radiation of the first wavelength region, followed by an inverse charging which reduces the entire surface potential to substantially zero, subsequently followed by a uniform exposure of the photosensitive member to radiation in the second wavelength region to trap a charge in a portion of the first photoconductive layer corresponding to a bright area of the image to form a negative electrostatic latent image; and

(C) followed by the step of repeatedly subjecting the electrostatic latent image formed by the selective use of (A) or (B) to only a developing and a transfer step to produce a plurality of copies.

4,442,192
PHOTORESPONSIVE DEVICE CONTAINING AN ELECTRON DONATING LAYER

Damodar M. Pai, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Jun. 7, 1982, Ser. No. 385,628
Int. Cl.^{3} G03G *5/00, 5/04*
U.S. Cl. 430—59 **5 Claims**

1. An improved layered overcoated photoresponsive imaging device useful in a xerographic imaging process with a single charging step, which device consists essentially of (1) a conductive supporting substrate, (2) a photoconductive composition layer comprised of selenium, selenium alloys, halogen doped selenium materials, halogen doped selenium alloys, metal free phthalocyanines, metal phthalocyanies, or vanadyl phthalocyanine (3) a hole trapping layer, and (4) an overcoating layer comprised of a composition capable of donating electrons to positive charges contained on the surface of the photoresponsive device, which overcoating layer contains a dispersion of a diamine of the following formula dispersed in an insulating organic resinous binder:

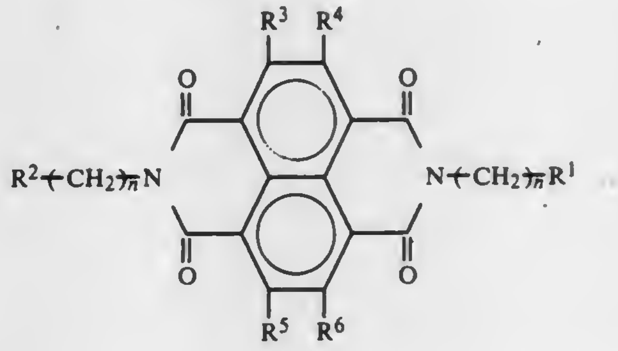


wherein X is selected from the group consisting of (ortho) CH_3, (meta) CH_3, (para) CH_3, ortho (Cl), meta (Cl) and para (Cl), which electron donating material is present in an amount of from about 10 percent by weight to about 75 percent by weight.

4,442,193
PHOTOCONDUCTIVE COMPOSITIONS AND ELEMENTS CONTAINING NAPHTHALENE BIS-DICARBOXIMIDE COMPOUNDS

Chin H. Chen; Ralph H. Young, and Michael Scozzafava, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 22, 1983, Ser. No. 468,726
Int. Cl.^{3} G03G *5/09*
U.S. Cl. 430—83 **11 Claims**

1. A photoconductive composition comprising a photoconductor and a 1,4,5,8-naphthalene bis-dicarboximide sensitizing compound having the structure:



wherein:

R^1 and R^2, which may be the same or different, represent aryl, or aryl substituted with alkyl, alkoxy, perfluoroalkyl or perfluoroalkoxy groups having 2 to 20 alkyl carbon atoms; sulfonyl; sulfone; sulfonamide; nitrile; or nitro groups;

R^3, R^4, R^5 and R^6, which may be the same or different, represent hydrogen, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms or halogen; and

n is 0 to 3.

4,442,194
PREPARATION OF ENCAPSULATED ELECTROSTATOGRAPHIC TONER MATERIAL USING GELATIN DERIVATIVE

Takeshi Mikami, Fujinomiya, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Jul. 1, 1982, Ser. No. 394,637
Claims priority, application Japan, Jul. 30, 1981, 56-119671
Int. Cl.^{3} B01J *13/02;* **G03G** *9/08*
U.S. Cl. 430—137 **6 Claims**

1. A process for the preparation of an electrostatographic toner material comprising encapsulated toner particles which comprises:

dispersing droplets of hydrophobic liquid having an average particle size in the range from about 0.5 to 1,000 microns and containing pressure fixable adhesive core material including colorant into a hydrophilic colloidal solution containing a gelatin derivative which is selected from the group consisting of a carboxylated gelatin, a sulfonylated gelatin, and an isocyanated gelatin;

encapsulating the droplets with a polymerization reaction product of an active-hydrogen-containing compound with an acid chloride, a bischloroformate, a sulfonyl chloride, an isocyanate or an isothiocyanate; and

separating the encapsulated droplets from the hydrophilic colloidal solution to obtain the dry toner particles.

4,442,195

PHOTOSENSITIVE COMPOSITION AND ARTICLE WITH O-QUINONE DIAZIDE AND 6-MEMBERED CYCLIC ACID-ANHYDRIDE

Takeshi Yamamoto, and Kiyoshi Goto, both of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jul. 7, 1982, Ser. No. 395,976
Claims priority, application Japan, Jul. 15, 1981, 56-111000
Int. Cl.³ G03C *1/60, 1/54*
U.S. Cl. 430—191 **12 Claims**

1. A photosensitive composition comprising in admixture a photosensitive o-quinone diazide compound, an alkali-soluble resin and a 6-membered cyclic acid anhydride wherein said anhydride is present in an amount of 0.5 to 20% by weight.

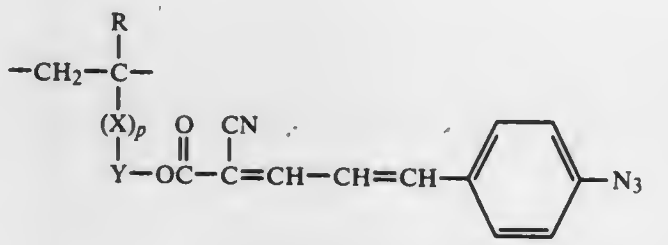
4,442,196

PHOTOSENSITIVE COMPOSITION

Akio Iwaki, Hachioji; Noriyasu Kita, Musashimurayama; Tatsuya Sasazawa, and Hiroyoshi Yamaguchi, both of Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 29,350, Apr. 11, 1979, abandoned. This application Nov. 14, 1980, Ser. No. 207,087
Claims priority, application Japan, Apr. 12, 1978, 53-42940
Int. Cl.³ G03C *1/52*
U.S. Cl. 430—195 **5 Claims**

1. A photosensitive composition characterized by comprising as its main photosensitive ingredient a photosensitive polymeric compound having in its polymeric molecule at least 5 mole percent of a structural unit of the following general formula



in which R represents a hydrogen atom, a halogen atom or an alkyl group, Y represents a substituted or unsubstituted phenylene group or a substituted or unsubstituted naphthylene group, p is 0 or 1, and when p=1, X is a divalent organic group serving to join therethrough the carbon atom of the main chain of the polymer and the carbon atom of the aromatic ring expressed by Y and —CH₂—C— is part of the main chain of the polymer's compound.

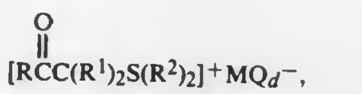
4,442,197

PHOTOCURABLE COMPOSITIONS

James V. Crivello, Clifton Park, and Julia L. Lee, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

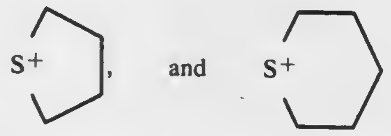
Filed Jan. 11, 1982, Ser. No. 338,818
Int. Cl.³ G03C *1/68*
U.S. Cl. 430—280 **7 Claims**

1. Compositions which are photocurable at wave lengths greater than 300 nm comprising a cationically polymerizable organic material and an effective amount of a photoinitiator having the formula



$$[R\overset{O}{\overset{\|}{C}}C(R^1)_2S(R^2)_2]^+MQ_d^-,$$

sensitized with an effective amount of a sensitizer selected from perylene, anthracene, mixture thereof, phenothiazene, where R is a member selected from $C_{(6\text{-}13)}$ monovalent aromatic organic radicals and substituted $C_{(6\text{-}13)}$ monovalent aromatic organic radicals, R^1 is a monovalent radical selected from hydrogen, $C_{(1\text{-}8)}$ alkyl and mixtures thereof, R^2 is a $C_{(1\text{-}13)}$ monovalent organic radical, or a divalent organic radical which can form a cyclic structure selected from the group consisting of



M is a metal or metalloid, Q is halogen and d is equal to 4–6.

4,442,198

POLYMER COMPOSITION HAVING TERMINAL ALKENE AND TERMINAL CARBOXYL GROUPS

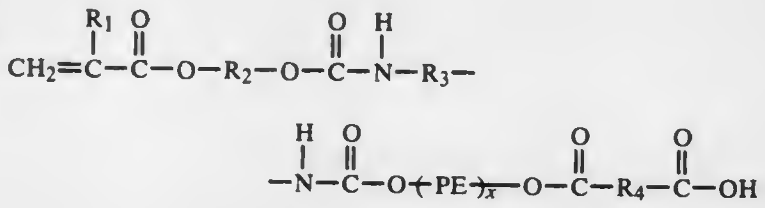
Jung-Hsien Tsao, Marietta, and Paul R. Hein, Atlanta, both of Ga., assignors to W. R. Grace & Co., Cambridge, Mass.

Division of Ser. No. 225,809, Jan. 16, 1981, Pat. No. 4,422,914. This application Sep. 29, 1982, Ser. No. 426,390
Int. Cl.³ G03C *5/16, 1/70*
U.S. Cl. 430—311 **15 Claims**

1. A method for producing a photo resist comprising:

(a)

(1) providing a composition containing a polymer wherein the polymer consists essentially of a polymer having the formula:



$$CH_2{=}\overset{R_1}{\overset{|}{C}}-\overset{O}{\overset{\|}{C}}-O-R_2-O-\overset{O}{\overset{\|}{C}}-\overset{H}{\overset{|}{N}}-R_3-\overset{H}{\overset{|}{N}}-\overset{O}{\overset{\|}{C}}-O(PE)_x-O-\overset{O}{\overset{\|}{C}}-R_4-\overset{O}{\overset{\|}{C}}-OH$$

wherein R_1 is hydrogen, methyl or ethyl, R_2 is alkyl of from 1 to 6 carbon atoms, R_3 is alkyl, aryl or alkylaryl, (PE) is selected from the group consisting of polyethers, polyesters and mixtures thereof, x is an integer of from 2 to 50 and R_4 is alkyl, alkene, aryl or alkyl or alicyclic.

(2) a photo initiator;

(b) coating said composition onto at least a portion of a printed circuit board blank; and

(c) contacting at least parts of said coated printed circuit board blank with actinic light radiation.

4,442,199

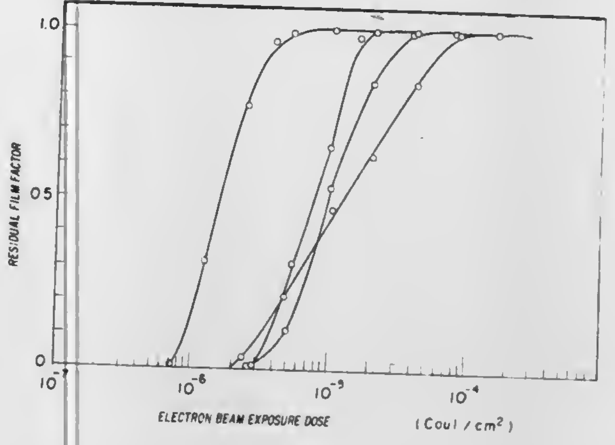
PATTERN FORMATION WITH NEGATIVE TYPE RESIST

Kimio Shibayama, Sendai; Kingo Itaya, Tagajyo, and Teruo Fujimoto, Nagaoka, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shin-nanyo, Japan

Continuation of Ser. No. 289,282, Aug. 3, 1981, abandoned. This application Aug. 8, 1983, Ser. No. 520,761
Claims priority, application Japan, May 16, 1981, 56-72896
Int. Cl.³ G03C *5/00*
U.S. Cl. 430—323 **2 Claims**

1. A method of forming a pattern with a negative type resist comprising forming a thin film made of a resist on a substrate and exposing the resist film imagewise to radiation;

developing and etching the product, where said resist is a diene polymer having a dispersion factor of about 1 obtained by a living polymerization of a diene monomer selected from the group consisting of isoprene and butadiene in the presence of an organometallic compound selected from the group consisting of butyl lithium, sodium naphthalene, sodium anthrasene, sodium biphenyl, phenyl isopropyl potassium, α-methyl styrene tetramer potassium and mixtures thereof.

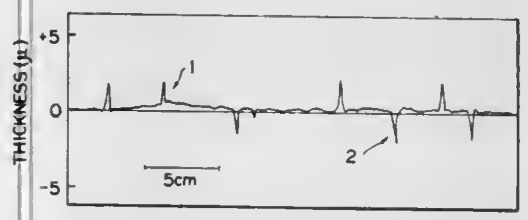


4,442,200

PROCESS FOR THE PREPARATION OF PHOTOGRAPHIC RESIN-COATED PAPER

Yasuzi Asao, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd.

Filed Jul. 16, 1982, Ser. No. 398,824
Claims priority, application Japan, Jul. 24, 1981, 56-116170
Int. Cl.³ G03C *1/76, 1/86, 3/00*
U.S. Cl. 430—538 **9 Claims**



1. A process for the preparation of a photographic resin-coated paper which comprises coating a paper sheet with polyolefin resin of melt index in the range of 1.0–40 g./10 min. containing titanium dioxide powder coated with an alcohol having 2–18 carbon atoms and 3 methylol groups.

4,442,201

METHOD FOR PRODUCTION OF A SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Syun Takada; Takashi Kadowaki; Mitsuhiro Okumura, all of Odawara; Shinichi Nakamura, Tokyo, and Masaru Iwagaki, Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

Filed Jul. 7, 1982, Ser. No. 395,998
Claims priority, application Japan, Jul. 7, 1981, 56-106412
Int. Cl.³ G03C *1/02*
U.S. Cl. 430—569 **8 Claims**

1. A method of producing a silver halide photographic emulsion coating liquid comprising the steps of:

(a) adding a first sensitizing dye to an emulsion containing silver halide particles, during the chemical ripening of the silver halide particles, to sensitize the silver halide particles; and

(b) adding a second sensitizing dye to the emulsion containing the sensitized silver halide particles, after the chemical ripening of the silver halides particles, to form a coating liquid.

4,442,202

POST-ACTIVATION TYPE DRY IMAGE FORMING MATERIAL

Tetsuo Shiga; Takeo Kimura; Yoshinobu Ito; Kageyasu Akashi; Minoru Akiyama, and Takeki Matsui, all of Shizuoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 346,305, Feb. 5, 1982, abandoned, which is a continuation of Ser. No. 139,951, Apr. 14, 1980, abandoned. This application Feb. 28, 1983, Ser. No. 468,692
Claims priority, application Japan, Apr. 16, 1979, 54-45257
Int. Cl.³ G03C *1/02*
U.S. Cl. 430—600 **5 Claims**

1. A post-activation type dry image forming material possessing an improved storage stability comprising:

(I) a silver halide component reducible to free silver upon being exposed to light and consisting of silver iodide and silver bromide in a molar ratio of 50/50 to 95/5;

(II) a redox reactive composition comprising a non-photosensitive organic silver salt oxidizing agent and a reducing agent for silver ion, said redox reactive composition being capable of making a visual change according to a redox reaction of said composition, the redox reaction being initiated by heating said composition in the presence of free silver;

(III) an oxidizing agent for free silver comprising at least one member selected from the group consisting of a compound of divalent mercury, a compound of trivalent iron, a compound of divalent palladium, a compound of trivalent cobalt and a sulfinic acid compound respectively in amounts of 0.2 to 7 mole %, 0.01 to 1 mole %, 0.01 to 10 mole %, 0.01 to 1 mole % and 0.05 to 10 mole % based on said non-photosensitive organic silver salt oxidizing agent, said oxidizing agent for free silver having a capacity of oxidizing free silver and being capable of being rendered photosensitive by heating but, upon being exposed to light after said heating, being suppressed with respect to the capacity of oxidizing free silver and capable of catalytically promoting the redox reaction of said redox reactive composition; and

(IV) a photoreactive oxidizing agent comprising at least one bromo compound in which a carbon atom is bonded to a bromine atom and which is capable of generating a free radical of bromine upon light exposure and satisfies a requirement in a photoreaction test using a film containing said bromo compound, silver behenate and polyvinyl butyral such that (1) when the film is examined by X-ray diffractometry, the intensity of the peak due to silver bromide observed at 31.0° in terms of an angle of 2 θ in the X-ray diffraction pattern obtained by using, Cukα line is less than about 19 relative to 100 as the intensity of the peak due to silver behenate observed at 12.1° in terms of an angle of 2 θ as defined above; and (2) when the film is irradiated with a 20,000 luxes-light from a fluorescent lamp at 75° C. in an atmosphere of a relative humidity of 30 % for one hour, and then examined by X-ray diffractometry, the intensity of the peak due to silver bromide observed at 31.0° in terms of an angle of 2θ as defined above is about 10 or more relative to 100 as the intensity of the peak due to silver behenate observed at 12.1° in terms of an angle of 2 θ as defined above, said photoreactive oxidizing agent, upon being exposed to light, being capable of returning to the original state said oxidizing agent for free silver which has been reduced by serving to oxidize the free silver.

4,442,203
GENE AMPLIFICATION ASSAY FOR DETECTING TUMOR PROMOTERS

Alexander J. Varshavsky, Cambridge, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

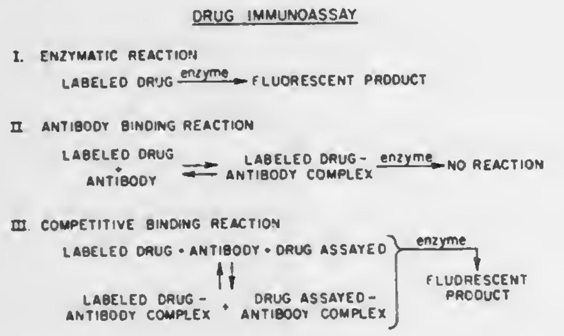
Filed Jun. 30, 1981, Ser. No. 279,155
Int. Cl.^{3} C12Q *1/68, 1/00*
U.S. Cl. 435—6 **11 Claims**

1. A method for indicating the tumor-promoting characteristics of a substance or process, comprising determining the incidence of gene amplification of a cell culture that is induced by said substance or process and using the induction of gene amplification as an indication of the tumor-promoting capability of the substance or process.

4,442,204
HOMOGENEOUS SPECIFIC BINDING ASSAY DEVICE AND PREFORMED COMPLEX METHOD

Alfred C. Greenquist, Elkhart, and Bert Walter, South Bend, both of Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Apr. 10, 1981, Ser. No. 253,147
Int. Cl.^{3} G01N *33/54, 33/58, 33/52*
U.S. Cl. 435—7 **13 Claims**


DRUG IMMUNOASSAY
I. ENZYMATIC REACTION
LABELED DRUG
enzyme
FLUORESCENT PRODUCT
II ANTIBODY BINDING REACTION
LABELED DRUG
ANTIBODY
LABELED DRUG - ANTIBODY COMPLEX
enzyme
NO REACTION
III. COMPETITIVE BINDING REACTION
LABELED DRUG + ANTIBODY + DRUG ASSAYED
enzyme
LABELED DRUG - ANTIBODY COMPLEX
DRUG ASSAYED - ANTIBODY COMPLEX
FLUORESCENT PRODUCT

1. A test device for detecting the presence of a ligand in a test sample, said test device comprising a carrier matrix incorporated with components for a homogeneous specific binding assay for the ligand, said components comprising a complex of a specific binding partner for the ligand and a conjugate comprising a label and the ligand or a specific binding analog of the ligand, wherein the label is capable of providing a detectable response when not part of said complex, but which response is inhibited when the label-containing conjugate is part of said complex, and wherein said specific binding partner is unbound to said matrix.

4,442,205
SIMIAN VIRUS RECOMBINANT THAT DIRECTS THE SYNTHESIS OF HEPATITIS B SURFACE ANTIGEN

Dean H. Hamer, Washington, D.C., and John Gerin, Bethesda, Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Sep. 22, 1981, Ser. No. 304,571
Int. Cl.^{3} C12P *21/00;* **C12N** *15/00, 1/00, 7/06*
U.S. Cl. 435—68 **2 Claims**

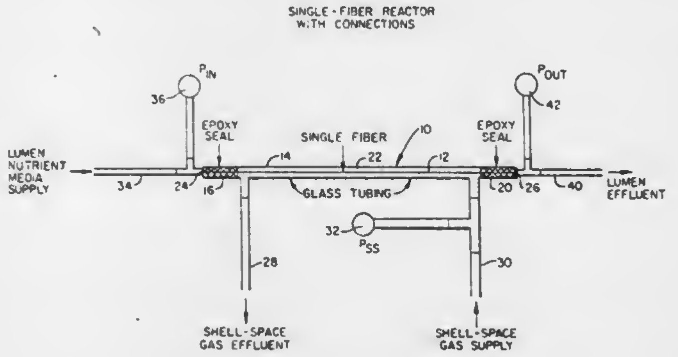
1. A process for producing hepatitis B surface antigen comprising the steps of:
(a) digesting HBV DNA and an *E. coli* plasmid with Bam HI and ligating the digest to produce *E. coli* plasmid-HBV recombinant
(b) cleaving the resulting plasmid-HBV with Bam HI to produce a 1350 bp DNA fragment containing the HB$_s$Ag coding region
(c) preparing recombinant plasmid-SV40 by ligating a Bam HI Eco RI digest of *E. coli* plasmid and SV40
(d) said 1350 bp DNA fragment is then ligated to Bam HI cleaved plasmid-SV40 to produce double recombinant *E. coli* plasmid-SV40-HBV
(e) said double recombinant plasmid is then cleaved with Hae II to generate 4950 bp linear SV40-HBV recombinant molecules
(f) infecting monkey kidney cells with the 4950 bp molecules and SV40 temperature sensitive early gene mutant helper virus and
(g) culturing the infected cells to produce hepatitis B surface antigen.

2. The double recombinant plasmid produced by the process of claim 1 wherein the *E. coli* plasmid is pBR322.

4,442,206
METHOD OF USING ISOTROPIC, POROUS-WALL POLYMERIC MEMBRANE, HOLLOW-FIBERS FOR CULTURE OF MICROBES

Alan S. Michaels, New York, N.Y.; Channing R. Robertson, Stanford; Stanley N. Cohen, Portola Valley, both of Calif.; Douglas S. Inloes, Clayton, Mo., and William J. Smith, Stanford, Calif., assignors to Stanford University, Stanford, Calif.

Continuation of Ser. No. 179,590, Aug. 21, 1980, abandoned. This application May 4, 1983, Ser. No. 489,609
Int. Cl.^{3} C12P *21/00;* **C12N** *9/00;* **C12M** *3/00*
U.S. Cl. 435—68 **11 Claims**



1. A method for the efficient cultivation of microbial cells employing a microbiological reactor comprising isotropic, porous-wall polymeric hollow-fibers having a cell free zone and a cell containing zone, said cell containing zone substantially located in the space surrounding said hollow-fiber and partially extending beneath the outer surface of said hollow-fibers, wherein both zones are perfused with nutrient medium and separated by a porous barrier permeable to said nutrient medium and impermeable to said cells,

said method comprising:

continuously introducing at an entry port of said cell free zone at a pressure greater than the pressure of said nutrient medium in said cell containing zone a nutrient medium stream, whereby said nutrient medium flows out of said cell free zone into said cell containing zone and said microbial cells metabolize nutrients in said nutrient medium to products to produce a product-containing spent nutrient medium in said cell containing zone and said cells further proliferating within said cell containing zone to a cell density greater than 10^{12} cell/ml;

continuously flowing said nutrient medium stream remaining in said cell free zone toward an exit port in said cell free zone while reducing the pressure of said nutrient medium stream, so that the pressure of said nutrient medium stream at said exit port is below the pressure of said product-containing nutrient medium in said cell containing zone, whereby product-containing spent nutrient medium in said cell containing zone flows into said cell free zone near said exit port and mixes with said nutrient medium in said cell free zone to form a mixture; and

continuously removing said mixture from said exit port of said cell free zone.

4,442,207
PROCESS FOR PRODUCTION OF GLUCOSONE

Robert O. Horwath, Westport, and Osama O. Ibrahim, Brookfield, both of Conn., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Filed Jun. 30, 1982, Ser. No. 393,850
Int. Cl.^{3} C12P *19/02;* **C12N** *9/04;* **C12R** *1/645*
U.S. Cl. 435—105 **8 Claims**

1. A process for producing glucosone and co-producing hydrogen peroxide which comprises contacting an aqueous solution of glucose with oxygen and glucose-2-oxidase produced by at least one fungus of the Basidiomycetes class selected from the group consisting of NRRL 15093, NRRL 15094 and NRRL 15095, said fungus being characterized in that substantially all of the glucose-2-oxidase activity thereof is available to aqueous glucose substrate on contact therewith without disruption of the fungus.

4,442,208
METHOD FOR PRODUCING L-ISOLEUCINE BY FERMENTATION

Takayasu Tsuchida, Yokohama; Kiyoshi Miwa, Matsudo, and Shigeru Nakamori, Yokohama, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Jun. 25, 1982, Ser. No. 392,145
Claims priority, application Japan, Jun. 25, 1981, 56-98699
Int. Cl.^{3} C12P *13/06;* **C12N** *15/00, 1/20*
U.S. Cl. 435—116 **5 Claims**

1. A method of producing L-isoleucine by fermentation, which comprises:

aerobically culturing in an aqueous culture medium an L-isoleucine producing microorganism selected from the group consisting of *Corynebacterium glutamicum* AJ 11686 and *Brevibacterium lactofermentum* AJ 11687.

4,442,209
PROCESS FOR THE PRODUCTION OF MONASCUS-PIGMENT

Toshio Miyake; Shoichi Ohno, and Shuzo Sakai, all of Okayama, Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Filed May 4, 1982, Ser. No. 374,685
Claims priority, application Japan, May 16, 1981, 56-73832
Int. Cl.^{3} C12P *17/18, 1/02*
U.S. Cl. 435—119 **6 Claims**

1. In the process for the production of Monascus-pigment which comprises cultivating in a nutrient medium a microorganism of genus Monascus capable of producing said pigment, and harvesting the resultant pigment from the culture, the improvement whereby the production of Monascus-pigment is greatly increased, comprising cultivating said microorganism in a nutrient medium containing 0.1–95% maltitol as a carbon source.

4,442,210
PROCESS FOR THE PRODUCTION OF FERMENTATION ETHANOL

Ralph M. Dessau, Edison, and Werner O. Haag, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

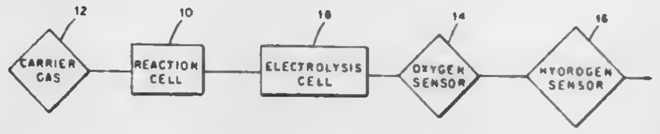
Filed Sep. 2, 1981, Ser. No. 298,665
Int. Cl.^{3} C12P *7/06*
U.S. Cl. 435—161 **28 Claims**

1. In a process for the production of fermentation ethanol, which process comprises fermenting a fermentable carbohydrate thereby forming a fermented mixture comprising a dilute aqueous ethanol solution, the improvement consisting essentially of selectively sorbing ethanol from said fermented mixture with a crystalline zeolite sorbent having a silica to alumina mol ratio of at least 35 and an effective pore diameter of at least 5 Angstroms under conditions effective to sorb from at least about 10% to about 100% of said ethanol contained in said fermented mixture, separating said sorbent from said fermented mixture and desorbing sorbed ethanol from said sorbent.

4,442,211
METHOD FOR PRODUCING HYDROGEN AND OXYGEN BY USE OF ALGAE

Elias Greenbaum, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 16, 1982, Ser. No. 388,872
Int. Cl.^{3} C12P *3/00;* **C12N** *13/00, 1/12;* **A01H** *13/00*
U.S. Cl. 435—168 **8 Claims**



1. A method of producing H_2 and O_2 by use of algae and light comprising the following steps in the sequence set forth:
(1) subjecting algae in an aqueous phase to light in an environment substantially free of CO_2 and atmospheric O_2 to produce H_2 and O_2 by the action of the light-stimulated algae in splitting water molecules during a first period of time of sufficient duration to produce a physiological stress on said algae;
(2) culturing said algae in culture medium in an aerobic atmosphere during a second period of time sufficient to remove said physiological stress; and
(3) subjecting said algae in an aqueous phase to light in an environment substantially free of CO_2 and atmospheric O_2 during a third period of time at an enhanced rate of production of H_2 and O_2 compared to that occurring during said first time period of step (1).

4,442,212
MONOTHIOGLYCEROL AS THIOL-PROTECTOR IN LYOPHILIZED MATERIALS

Anglis R. Briggs, Newark, Del., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Nov. 10, 1980, Ser. No. 205,793
Int. Cl.^{3} C12N *9/96*
U.S. Cl. 435—188 **8 Claims**

1. A water reconstitutable lyophilized product of a solution consisting essentially of:
(A) monothioglycerol, present in the pre-lyophilized solution to an extent of not less than 2 mmoles/liter of solution and in an amount not leading to gelation of the solution;
(B) sulfhydryl-requiring enzyme; and
(C) substantially completely delipified animal serum having low residual levels of enzyme activity.

4,442,213
PROCESS FOR THE PREPARATION OF PLASMINOGEN AND PLASMINOGEN THUS PREPARED

Helmut Heber; Horst Schwinn; Norbert Heimburger, all of Marburg; Gerhardt Kumpe, Wetter, and Manfred Schick, Marburg, all of Fed. Rep. of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Fed. Rep. of Germany

Filed May 12, 1982, Ser. No. 377,312
Claims priority, application Fed. Rep. of Germany, May 14, 1981, 3119157
Int. Cl.^{3} C12N *9/68, 9/96*
U.S. Cl. 435—217 **7 Claims**

1. A process for preparing plasminogen which is virtually free of hepatitis virus, which comprises heating a solution of plasminogen having a plasminogen concentration greater than 20 CTA units per milliliter which contains a proteinase inhibi-

tor with plasmin specificity, an amino acid, and a saccharide or sugar alcohol.

4,442,214

THERMO-STABLE MICRO-ORGANISM

Hugh W. Morgan, and Roy M. Daniel, both of Hamilton, New Zealand, assignors to Development Finance Corporation of New Zealand, Wellington, New Zealand

Filed Aug. 8, 1980, Ser. No. 176,528

Claims priority, application New Zealand, Aug. 8, 1979, 191246

Int. Cl.^{3} C12N *1/20, 9/50*

U.S. Cl. 435—253 **14 Claims**

1. A culture of THERMUS AQUATICUS (VARIETY T-351), ATCC No. 31,674, in substantially biologically pure form.

4,442,215

ELEMENT-RICH COMPOSITION

Anders M. Vognsen, Sollerod Slotsvej 17, DK-2840 Holte, and Henrik Boisen, Virum, both of Denmark, assignors to Anders Marius Vognsen, Sollerod, Denmark

PCT No. PCT/DK81/00013, 371 Date Oct. 12, 1981, 102(e) Date Oct. 12, 1981, PCT Pub. No. WO81/02242, PCT Pub. Date Aug. 20, 1981

PCT Filed Feb. 11, 1981, Ser. No. 310,075

Claims priority, application Denmark, Feb. 11, 1980, 589/80

Int. Cl.^{3} C07G *17/00*

U.S. Cl. 435—262 **10 Claims**

5. A method for preparing an element-rich composition for use in biological and physiological systems, comprising fermenting lactic acid producing bacteria in an aqueous fermentation medium containing fly ash, converting a plurality of the components of the fly ash into a biologically assimilable form and recovering the converted biologically assimilable mineral containing liquid after the completion of said fermentation.

4,442,216

CONTINUOUS ENZYMATIC REACTOR FOR USE OF IMMOBILIZED ENZYME BEADS

Douglas G. Harvey, deceased, late of Baltimore, Md.; by Dolores C. Harvey, executrix, 220 Ridgewood Rd., Baltimore, Md. 21210, and Christian D. Harvey, 220 Ridgewood Rd., Baltimore, Md. 21210

Filed Sep. 29, 1982, Ser. No. 427,879

Int. Cl.^{3} C12M *1/40;* **C12N** *11/00, 11/14*

U.S. Cl. 435—288 **15 Claims**

1. A continuous enzymatic reactor for use of immobilized enzyme beads to act on a fluid reactant material and to produce a product lighter in weight than said immobilized enzyme beads comprising a basic reactor having first and second ends, a screw, a shell, the screw mounted coaxially within the shell; means for introducing cleansed immobilized enzyme beads continuously to the basic reactor at said first end, means for feeding fluid reactant material into the basic reactor at said first end, means for continuously mixing, agitating and transporting said immobilized enzyme beads and fluid reactant material by rotating said screw; means at said second end for removing product produced; a cleansing chamber, means for lifting the immobilized enzyme beads continuously from said second end and dropping them through said cleansing chamber; means for cleansing the immobilized enzyme beads continuously during said dropping, and means for conveying the cleansed immobilized enzyme beads continuously from the cleansing chamber to said means for introducing.

4,442,217

SAMPLE INJECTION

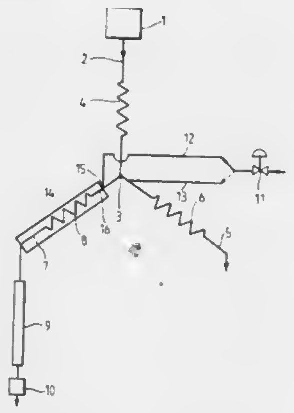
David R. Deans, Nunthorpe, England, assignor to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 172,975, Jul. 28, 1980, abandoned. This application Jan. 18, 1982, Ser. No. 339,981

Claims priority, application United Kingdom, Aug. 6, 1979, 7927347

Int. Cl.^{3} G01N *31/08*

U.S. Cl. 436—161 **6 Claims**



1. A method of introducing a sample of controlled quantity so that reproducible sample quantities can be obtained regardless of variations in pressure and/or temperature, said method comprising the steps of:

(a) passing a stream of sample fluid through a restriction to its flow to a junction which leads to at least two outlet limbs of which at least one of said outlet limbs is a sample injection limb and another is a vent limb, each of said outlet limbs comprising a restriction to fluid flow;

(b) passing carrier fluid at a substantially constant pressure to each sample injection limb downstream of said junction and upstream of its restriction to fluid flow, the restrictions to fluid flow of the outlet limbs and the pressures downstream of them being such that the volumetric rate of flow of sample fluid and carrier fluid through the vent limb is greater than the volumetric rate of flow of sample fluid through the inlet limb, the volumetric flow rate of sample fluid through said inlet limb being greater than the flow rate through each sample injection limb, and the volumetric flow rate of carrier fluid being at least equal to the total of the volumetric flow rates through all of the sample injection limbs;

(c) switching the supply of carrier fluid from a sample injection limb to the vent limb at a point downstream of said junction and upstream of its restriction to fluid flow for a controlled time while maintaining the supply of carrier fluid to any other sample injection limb thus injecting a portion of sample fluid to the first mentioned sample injection while the remainder of the sample fluid continues to flow through the vent limb;

(d) switching the supply of carrier fluid switched according to step (c) from the vent limb to the sample injection limb to resume supply of carrier fluid, therethrough; and

(e) controlling the temperature of the sample injection limb.

4,442,218

METHOD OF MEASURING DEGREE OF PARTITIONING

Lynn G. Amos, Painted Post, N.Y., and Charles H. Rogers, Duxbury, Mass., assignors to Corning Glass Works, Corning, N.Y.

Filed May 27, 1981, Ser. No. 267,580

Int. Cl.^{3} G01N *33/58, 33/60;* **G01T** *1/00*

U.S. Cl. 436—525 **16 Claims**

1. A method of measuring the degree of partitioning of a labeled species between free and bound states which comprise the steps of:

A. incubating the labeled species in a liquid medium with an insoluble porous monolith having a means for binding a portion of the labeled species within the pores thereof, thereby partitioning the labeled species between free and bound states, which monolith is capable of substantially attenuating the signal emitted by the bound labeled species, wherein the liquid medium volume is sufficient to prevent the monolith from substantially attenuating the signal emmitted by the free labeled species and the liquid medium per se does not substantially attenuate the signal emitted by labeled species, whether free or bound; and

B. measuring the composite signal emitted by the labeled species in both the free and bound states in the mixture of liquid medium and insoluble porous monolith, with the measured composite signal being directly related to the degree of partitioning of the labeled species between the free and bound states, wherein the difference between the attenuation of the signal emitted by the free labeled species and the attenuation of the signal emitted by the bound labeled species is at least about 40 percent when the attenuations of the signals emitted by the labeled species in the free and bound states are expressed as percentage values;

wherein the insoluble porous monolith is composed essentially of iron, stainless steel, nickel, lead, or high-lead glass.

4,442,219

TWO PART CASTABLE CERAMIC CEMENT

John D. TenEyck, Lewiston; Russell D. Smith, Grand Island, and Kurt W. Hoff, Tonawanda, all of N.Y., assignors to Kennecott Corporation, Cleveland, Ohio

Filed Oct. 19, 1981, Ser. No. 312,586

Int. Cl.^{3} C04B *35/02, 35/80*

U.S. Cl. 501—95 **10 Claims**

1. A two part castable ceramic cement wherein the first and second parts are mixed together, prior to use, in proportions of the first part to the second part of from 1:3 to 3:1; said first part being a partially dewatered slurry of about 50 to about 20 weight percent solids in water wherein the slurried solids consist essentially of from about 5 to about 15 weight percent colloidal silica, from about 3 to about 10 weight percent of an organic adhesive, from about 2 to about 10 weight percent of organic fibers, from about 35 to about 60 weight percent ceramic fiber and from about 0.5 to about 30 weight percent of a high temperature inorganic filler; said second part being essentially dry and comprising from about 50 to about 100 weight percent calcium aluminate, the majority of the remainder said second part being a high temperature inorganic filler.

4,442,220

DIELECTRIC CERAMICS

Hiromu Ouchi, Toyonaka; Syunichiro Kawashima, Nishinomiya; Masamitsu Nishida, Osaka, and Ichiro Ueda, Nishinomiya, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 13, 1982, Ser. No. 367,977

Claims priority, application Japan, Apr. 15, 1981, 56-57375; Apr. 20, 1981, 56-60182

The portion of the term of this patent subsequent to May 18, 1999, has been disclaimed.

Int. Cl.^{3} C04B *35/46, 35/50*

U.S. Cl. 501—139 **3 Claims**

1. A dielectric ceramic composition consisting of barium oxide, titanium oxide, samarium oxide and praseodymium oxide in which the composition formula is represented by

$$xBaO\text{-}yTiO_2\text{-}z\ \{(Sm_2O_3)_{1-v}(Pr_2O_{11/3})_v\}$$

wherein x, y, z and v in terms of mole fraction fall in the range that $0.05 \leqq x \leqq 0.23$, $0.57 \leqq y \leqq 0.825$, $0.025 \leqq z \leqq 0.375$, $x+y+z=1$, and $0.01 \leqq v \leqq 0.95$.

2. A dielectric ceramic composition consisting of barium oxide, titanium oxide, samarium oxide, praseodymium oxide and neodymium oxide in which the composition formula is represented by

$$xBaO\text{-}yTiO_2\text{-}z\{(Sm_2O_3)_{1-(v+u)}(Pr_2O_{11/3})_v(Nd_2O_3)_u\}$$

wherein x, y, z, v and u in terms of mole fraction fall in the range that $0.05 \leqq x \leqq 0.23$, $0.57 \leqq y \leqq 0.825$, $0.025 \leqq z \leqq 0.375$, $x+y+z=1$, $0.01 \leqq v \leqq 0.65$, $0.01 \leqq u \leqq 0.665$ and $0.02 \leqq (v+u) \leqq 0.95$.

4,442,221

PROCESS FOR REGENERATING A SPENT COPPER COMPOSITE SULFUR SORBENT

Keith C. Bishop, III, San Rafael; David E. Earls, Pinole; Richard C. Robinson, San Rafael, all of Calif.; Donald W. Blakely, deceased, late of Oakland, Calif., and by Robert L. Jacobson, administrator, Vallejo, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Apr. 9, 1982, Ser. No. 367,070

Int. Cl.^{3} B01J *20/34;* **C10G** *29/16, 29/04*

U.S. Cl. 502—25 **7 Claims**

1. A process for regenerating a spent copper inorganic porous carrier composite sorbent for removing sulfur-containing compounds from hydrocarbons comprising:

(a) contacting the spent sorbent with an oxidizing gas at a temperature and for a time sufficient to convert at least a portion of the sulfur in the sorbent to a sulfate form or sulfur dioxide; and

(b) thereafter impregnating the sorbent with fresh copper by

  (i) contacting the sorbent with an aqueous solution of a copper salt whereby the copper salt is deposited on the sorbent surface;

  (ii) drying the copper salt-treated sorbent to remove solvent;

  (iii) calcining the dried sorbent at an elevated temperature that converts the copper salt on the sorbent to copper oxide or copper metal; and

  (iv) recovering the regenerated sorbent without having removed a substantial portion of the contaminant sulfur.

2. The process of claim 1 wherein between steps (a) and (b) the oxidized sorbent is contacted with a reducing gas at a temperature and for a time sufficient to further convert the sulfur in the sorbent to sulfur dioxide.

3. The process of claim 2 wherein the oxidizing gas is nitrogen containing about 0.3% to about 3% by volume oxygen and the reducing gas is nitrogen containing about 0.2% to about 4% by volume hydrogen.

4,442,222

ADSORBENT FOR SEPARATION OF PARA-XYLENE

William Smolin, Fishkill, and John H. Estes, Wappingers Falls, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 6, 1982, Ser. No. 395,384

Int. Cl.^{3} B01J *29/06*

U.S. Cl. 502—60 **8 Claims**

3. Synthetic crystalline barium aluminosilicate zeolite HP having an atom ratio of silicon to aluminum in the unit cell below 1.0 prepared by the process which comprises exchanging a synthetic crystalline sodium aluminosilicate zeolite HP with barium thereby forming product synthetic crystalline barium aluminosilicate zeolite HP; and recovering said product synthetic crystalline barium aluminosilicate zeolite HP.

6. Synthetic crystalline barium/potassium aluminosilicate HP having an atom ratio of silicon to aluminum in the unit cell below 1.0 prepared by the process which comprises exchanging a synthetic crystalline sodium aluminosilicate zeolite HP with barium and potassium thereby forming product synthetic crystalline barium/potassium aluminosilicate zeolite HP; and recovering product synthetic crystalline barium/potassium aluminosilicate zeolite HP.

4,442,223

CATALYST AND CATALYST SUPPORT COMPOSITIONS

Arthur W. Chester, Cherry Hill, and William A. Stover, Woodbury, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 104,522, Dec. 17, 1979, Pat. No. 4,326,993. This application Mar. 22, 1982, Ser. No. 360,122

The portion of the term of this patent subsequent to Apr. 27, 1999, has been disclaimed.

Int. Cl.^{3} B01J *21/16, 29/06*

U.S. Cl. 502—68 **18 Claims**

1. A composition adapted for application as a catalyst or catalyst support which is prepared by blending a mixture of components comprising (1) about 1–99 weight percent of colloidal dispersions of alumina particles, (2) about 1–99 weight percent of colloidal dispersions of silica particles, (3) about 1–75 weight percent of a particulate weighting agent, and (4) about 1–75 weight percent of crystalline aluminosilicate zeolite hydrocarbon conversion component selected from the group consisting of X, Y, erionite, mordenite and faujasite, and thereafter drying the resultant composite; said alumina and silica particles having diameters in the range of 10–10,000 Å and said particles having at least 40 weight percent of the 30–300 Å diameter pore volume in the range between 60–80 Å, and at least 25 percent of total pore volume in excess of 30 Å being in the range of said 60–80 Å.

3. A composition in accordance with claim 1 wherein the weighting agent is a particulate clay selected from the group consisting of attapulgite, bauxite, montmorillonite, kaolin and fuller's earth.

14. A composition adapted for application as a catalyst or catalyst support which is prepared by blending a mixture of components comprising (1) about 20–90 weight percent of colloidal dispersion of alumina particles, and (2) about 10–80 weight percent of colloidal dispersion of silica particles, and thereafter drying the resultant composite; said alumina and silica particles having diameters in the range of 10–10,000 Å and said composite having at least 40 weight percent of the 30–300 Å diameter pore volume in the range between 60–80 Å, and at least 25 percent of total pore volume in excess of 30 Å being in the range of said 60–80 Å.

4,442,224

CATALYTIC COMPONENT FOR POLYMERIZATION OF α-OLEFIN AND METHOD FOR HOMO- OR CO-POLYMERIZATION OF α-OLEFIN

Masaru Takitani; Shizuo Tomiyasu, and Keikichi Baba, all of Shinnanyo, Japan, assignors to Toyo Stauffer Chemical Co., Ltd., Tokyo, Japan

Filed Jun. 9, 1982, Ser. No. 386,586

Claims priority, application Japan, Jun. 11, 1981, 56-89857

Int. Cl.^{3} C08F *4/64*

U.S. Cl. 502—112 **2 Claims**

1. A catalytic component for polymerizing an α-olefin, prepared by the following steps:

(a) reacting an organo-magnesium compound with a halogenating agent in the presence of an electron donor compound at a temperature between −50° C. and 100° C. to obtain a solid product; the organo-magnesium compound being expressed by the formula R'MgX', wherein R' is a hydrocarbon group having 1 to 20 carbon atoms, and X' is a halogen atom selected from the group consisting of chlorine, bromine and iodine or a hydrocarbon group having 1 to 20 carbon atoms;

(b) treating the solid product with at least one of an alcohol and a phenol for at least 0.1 hour at a temperature above the melting point of the at least one of an alcohol and a phenol;

(c) treating the resulting product from step (b) with at least 0.01 mol of a halogen-containing titanium compound, per mol of magnesium in the resulting product from step (b), at a temperature between room temperature and 150° C.; and

(d) treating the resulting product from step (c) with a mixture or complex consisting of an organo-aluminum compound, a carboxylic acid ester and a polysiloxane, at a temperature between 0° C. and 100° C.

4,442,225

CATALYTIC COMPONENT FOR POLYMERIZATION OF α-OLEFIN AND METHOD FOR HOMO- OR CO-POLYMERIZATION OF α-OLEFIN

Masaru Takitani; Shizuo Tomiyasu, and Keikichi Baba, all of Shinnanyo, Japan, assignors to Toyo Stauffer Chemical Co., Ltd., Tokyo, Japan

Filed Jun. 9, 1982, Ser. No. 386,587

Claims priority, application Japan, Jun. 11, 1981, 56-89858

Int. Cl.^{3} C08F *4/64*

U.S. Cl. 502—112 **5 Claims**

1. A catalytic component for polymerization of an α-olefin prepared by the following steps:

(a) reacting an organo-magnesium compound, or a mixture or reaction product of the organo-magnesium compound and an organo-aluminum compound, with a mixture or reaction product of a halogenating agent other than a halogenated titanium compound and a titanium compound at a temperature between −50° C. and 100° C. in the presence of an electron doner compound and an α-olefin, to obtain a solid product; the halogenating agent being used in an amount of 0.01 to 10 mol and the titanium compound being used in an amount of 0.001 to 0.4 mol, each per mol of the hydrocarbon group of the organo-magnesium compound, or the mixture or reaction product of the organo-magnesium compound and the organo-aluminum compound; and

(b) treating the solid product with at least one of an alcohol and a phenol in an amount of 0.01 to 10 mol per mol of magnesium existing in the solid product, for at least 0.1 hour at a temperature above the melting point of the at least one of an alcohol and a phenol.

4,442,226

CATALYST FOR VAPOR PHASE OXIDATION OF N-BUTANE TO MALEIC ANHYDRIDE

Tom A. Bither, Jr., Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 349,305, Feb. 16, 1982, Pat. No. 4,371,702. This application Sep. 22, 1982, Ser. No. 421,467

Int. Cl.^{3} B01J *27/14*

U.S. Cl. 502—209 **12 Claims**

1. Improved vanadium/phosphorus oxide catalyst for the oxidation of n-butane to maleic anhydride, said improved catalyst containing the promoter comprising silicon and at least one of indium, antimony and tantalum, the Si/V atom ratio being in the range 0.02–3.0:1.0, the (In+Sb+Ta)/V atom ratio being in the range 0.005–0.2:1.0 and the P/V atom ratio being in the range 0.9–1.3:1.0, said catalyst being prepared in an aqueous or organic liquid medium by the procedure wherein the appropriate vanadium species substantially of valence +4 is contacted with the promoter or promoter precursors and thereafter with the appropriate phosphorus species.

4,442,227

SUBSTITUTED COBALT OXIDE SPINELS FOR CATALYTIC DECOMPOSITION OF HYPOCHLORITE

Donald L. Caldwell, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 334,791, Dec. 28, 1981. This application Oct. 18, 1982, Ser. No. 435,018

Int. Cl.^{3} B01J *23/78, 23/80*

U.S. Cl. 502—243 **13 Claims**

1. A hypochlorite-decomposition catalyst composition, said composition consisting essentially of

pellets or particles of ceramic or refractory material having applied as a coating thereon,

a substituted cobalt spinel conforming generally to the empirical structure

$$M_xN_yCo_{3-(x+y)}O_4$$

where zero$<x\leqq 1$; zero$\leqq y\leqq 0.5$; zero$<(x+2y)\leqq 1$; M is at least one metal of Periodic Table Groups IIA, and IIB; and N is at least one metal from Group IA.

4,442,228

PROCESS FOR THE MANUFACTURE OF ETHANOL FROM SYNTHESIS GAS

Ernst I. Leupold, Neu-Anspach; Hans-Joachim Schmidt, Königstein; Friedrich Wunder, Flörsheim am Main; Hans-Jürgen Arpe, Kelkheim, and Horst Hachenberg, Walluf, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 289,706, Aug. 3, 1981, abandoned, which is a continuation of Ser. No. 86,952, Oct. 22, 1979, abandoned. This application Nov. 19, 1982, Ser. No. 443,131

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1978, 2846148

Int. Cl.^{3} C07C *27/06, 31/08*

U.S. Cl. 518—714 **7 Claims**

1. In a catalytic process for the manufacture of ethanol by catalytically reacting carbon monoxide and hydrogen in the presence of a supported rhodium catalyst at a temperature in the range of 175° C. to 375° C. and a pressure in the range of 1 to 300 bar, the improvement which comprises selecting a supported rhodium catalyst consisting of an rhodium component and at least one co-catalyst selected from the group consisting of zirconium, hafnium, lanthanum, platinum, chromium and mercury wherein said rhodium component and co-catalyst are applied by impregnation onto a catalyst carrier of silicic acid or silicates of elements of groups II to VIII of the Periodic Table.

4,442,229

REGENERATION OF ION EXCHANGE MATERIALS

James R. Emmett, Brewood, England, assignor to Northern Engineering Industries plc, England

Filed Feb. 22, 1983, Ser. No. 468,196

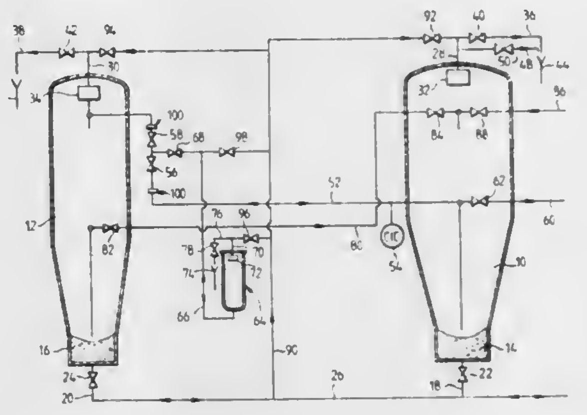
Claims priority, application United Kingdom, Mar. 30, 1982, 8209291

The portion of the term of this patent subsequent to Nov. 3, 1998, has been disclaimed.

Int. Cl.^{3} B01J *49/00*

U.S. Cl. 521—26 **1 Claim**

1. A method of regenerating particulate anion and cation ion exchange materials comprises classifying the materials above a perforate barrier in a separator vessel into an upper anion material layer, an intermediate interfacial region and a lower cation material layer by passing water upwardly within the vessel, transferring cation material from the vessel through a conduit having an inlet adjacent the barrier and an outlet outside the vessel by passing water into the vessel and allowing flow through the conduit until a major proportion of cation material has passed through said outlet of the conduit, major proportion of material from the interfacial region has entered the conduit and a major proportion of anion material remains in said separator vessel, detecting an interface in the conduit between materials, isolating said outlet from said inlet in response to detection of said interface, regenerating at least said major proportions of cation and anion materials, reclassifying the regenerated anion material by passing water upwardly therethrough to allow contaminant cation material present in the anion material to settle to the bottom of the anion material, removing material from the bottom of the anion material to remove settled contaminant cation material, said removed material being isolated from the regenerated materials and remixing the regenerated materials.



4,442,230

Patent Not Issued For This Number

4,442,231

AMINOPHOSPHONIC ACID CHELATE RESIN

Yushin Kataoka; Masaaki Matsuda, and Masaru Kamoda, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 16, 1982, Ser. No. 369,088

Claims priority, application Japan, Apr. 23, 1981, 56-62198

Int. Cl.^{3} B01J *39/20;* **C08F** *8/40, 8/30*

U.S. Cl. 521—32 **4 Claims**

1. A process for producing a chelate resin which comprises reacting an amino resin having amine-reactive groups (A) with an amino compound having one or more primary and/or secondary amino groups (B) to produce an aminated resin, and subsequently reacting the animated resin with an alkylphosphonation agent (C), the amino compound being used in an amount of 1/20 mole or more per equivalent weight of the amine-reactive group in the resin (A), the alkylphosphonation agent being used in an amount of 1/10 mole or more per equivalent weight of amino group in the aminated resin.

4,442,232

EXPANDABLE STYRENE-MALEIC ANHYDRIDE COPOLYMER PARTICLES AND A PROCESS FOR MOLDING THE SAME

Mutsuhiko Kajimura, Moriyama, and Tetsuji Maeda, Nara, both of Japan, assignors to Sekisui Plastic Co., Ltd., Tokyo, Japan

Division of Ser. No. 146,012, May 2, 1980, Pat. No. 4,278,627. This application Nov. 12, 1980, Ser. No. 206,080

Claims priority, application Japan, May 7, 1979, 54-56047

Int. Cl.³ C08J *9/18, 9/20*

U.S. Cl. 521—56 **9 Claims**

1. An expandable styrene-maleic anhydride copolymer particle which comprises a copolymer resin obtained by the reaction of a styrene-maleic anhydride copolymer with a hydroxy compound having 2–4 active hydroxy groups and 2–15 carbon atoms in an amount of 2.5–150 mol% relative to the maleic anhydride moiety of said copolymer and further impregnated with a volatile blowing agent.

4,442,233

METHOD FOR THE MANUFACTURE OF CROSS-LINKED AND OPTIONALLY FOAMED POLYPROPYLENE

Ernst Lohmar, Weinheim, and Wolffried Wenneis, Mannheim, both of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Continuation of Ser. No. 77,909, Sep. 24, 1979, abandoned. This application Jun. 17, 1982, Ser. No. 389,559

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1978, 2939733

Int. Cl.³ C08J *9/04*

U.S. Cl. 521—98 **19 Claims**

1. In a method for producing cross-linked crystalline high pressure or low pressure polypropylene by subjecting said polypropylene to high energy radiation and/or heating a mixture of said polypropylene with a peroxide cross-linking agent, the improvement comprising mixing said polypropylene with from about 2 to about 20 weight percent, based upon the weight of said polypropylene of, a normally liquid polybutadiene, and a foaming agent compounding said mixture at a temperature of about 160° C. to about 180° C.; and thereafter subjecting said compounded mixture to conditions sufficient to cross-link said polypropylene and foam said mixture.

4,442,234

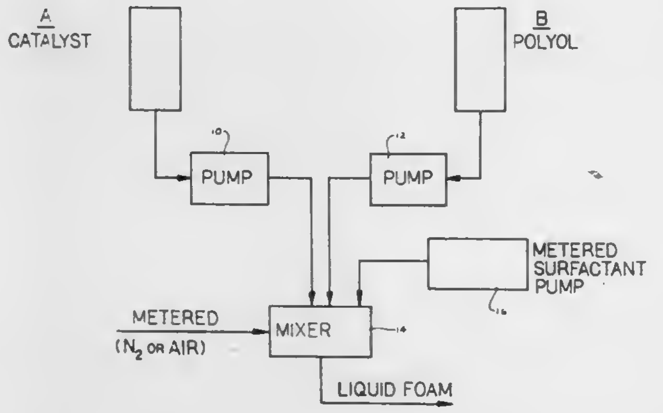
NYLON FOAM

Bruce G. Kosa, Woodstock, Conn., assignor to Rogers Corporation, Rogers, Conn.

Filed Jul. 25, 1983, Ser. No. 516,779

Int. Cl.³ C08J *9/30*

U.S. Cl. 521—112 **4 Claims**



1. A process for preparing a nylon block copolymer foam comprising:

(a) mixing a catalyzed reactant stream comprising a bromide catalyst dissolved in molten caprolactam with a second molten caprolactam stream containing a polyol prepolymer prepared by reacting a polyol with bis acyllactam in an intensive mixer;

(b) adding a silicone-based surfactant and a frothing agent to said mixture so as to froth the mixture;

(c) injecting said frothed mixture into a preheated mold, and

(d) curing said frothed mixture in said mold to form said foam.

4,442,235

PROCESS AND COMPOSITION FOR THE PRODUCTION OF POLYURETHANE ELASTOMER MOLDINGS

Ronald P. Taylor, Coraopolis; John E. Dewhurst, Oakdale, and Saad M. Abouzahr, Coraopolis, all of Pa., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed May 9, 1983, Ser. No. 492,923

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—122 **14 Claims**

1. In a process for the production of polyurethane elastomer moldings by reacting a reaction mixture in a closed mold, the improvement wherein said reaction mixture comprises:

(a) an organic polyisocyanate;

(b) an organic active hydrogen group-containing compound having a molecular weight of from 1800 to 12,000 and containing at least two active hydrogen groups,

(c) 1,3,5-triethyl-2-6-diamino benzene and, optionally

(d) a catalyst for the reaction between hydroxyl groups and isocyanate groups,

wherein component (c) is present in an amount of from 25 to 35 percent by weight based on the combined weight of components (b) and (c), wherein the amounts of components (a), (b) and (c) are such that the isocyanate index of the reaction mixture is from about 90 to 110, and wherein all of said components are processed via a one-shot process whereby (a) is mixed simultaneously either with (b), (c) and (d) or with a nonreacted premixture of some or all of (b), (c) and (d).

4,442,236

PROCESS FOR THE PRODUCTION OF MOLDED ARTICLES

Werner Rasshofer, Cologne; Hermann Schäfer, Leverkusen; Reiner Paul, Muelheim-Ruhr, and Josef Beuth, Frechen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 11, 1983, Ser. No. 522,276

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1982, 3231399

Int. Cl.³ C08G *18/14, 18/62, 18/79, 18/22*

U.S. Cl. 521—130 **13 Claims**

1. A process for the production of molded articles based on polyurethanes and/or polyureas, having a smooth surface, by the reaction inside a closed mold, of a reaction mixture comprising:

(i) at least one organic polyisocyanate compound, and

(ii) at least one compound having a molecular weight of from 400 to 12,000 which contains at least two isocyanate-reactive groups,

(iii) at least one isocyanate-inert polymer or copolymer of at least one olefinically-unsaturated monomer, which polymer or copolymer has a molecular weight in the range of from 200 to 50,000, determined by vapor pressure osmometry, and is liquid at room temperature and soluble in the reaction mixture, used in a quantity of from 0.01 to 1% by weight, based on component (ii), and

(iv) at least one metal salt of a monocarboxylic acid having at least 8 carbon atoms, used in a quantity of from 0.01 to 2% by weight, based on component (ii).

4,442,237

NOVEL AROMATIC AMIDE POLYOLS FROM THE REACTION OF PHTHALIC ACID RESIDUES, ALKYLENE GLYCOLS AND AMINO ALCOHOLS

Robert L. Zimmerman, Austin, and Kenneth G. McDaniel, Round Rock, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Nov. 22, 1982, Ser. No. 443,726

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—131 **18 Claims**

1. A mixture of aromatic polyols having amine and ester functionalities for use in preparing rigid foams, being produced by the process comprising reacting a residue selected from the group consisting of a dimethyl terephthalate manufacturing residue and a polyethylene terephthalate manufacturing residue, with an alkylene glycol and a tertiary amino alcohol.

4,442,238

AROMATIC AMIDE POLYOLS FOR RIGID POLYURETHANE FOAMS

Robert L. Zimmerman, and George P. Speranza, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Nov. 22, 1982, Ser. No. 443,822

Int. Cl.³ C08J *11/04;* **C08G** *18/14, 63/02, 63/18*

U.S. Cl. 521—164 **32 Claims**

1. An aromatic polyol having amide and ester functionalities for use in preparing rigid foams, being produced by the process comprising

a. reacting a phthalic acid residue containing ester functionalities with an amino alcohol to form a mixture containing amides and esters, and

b. subsequently reacting the amide and ester mixture with an alkylene oxide to give an aromatic polyol having amide and ester functionalities.

4,442,239

PHOSPHATE DERIVATIVES, PROCESS FOR PRODUCING PHOSPHATE DERIVATIVES AND FILLERS FOR HUMAN HARD TISSUES CONTAINING THE SAME

Masayoshi Tsunekawa; Shinzo Yoshida, and Tamotsu Komura, all of Kawanishi, Japan, assignors to Sankin Industry Co., Ltd., Osaka, Japan

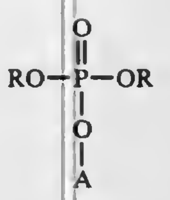
Filed Feb. 10, 1982, Ser. No. 347,429

Claims priority, application Japan, Feb. 12, 1981, 56-19520

Int. Cl.³ C08F *136/14, 136/22, 230/02;* **A61K** *5/00*

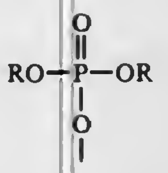
U.S. Cl. 523—116 **19 Claims**

1. A phosphate derivative represented by the formula (I)



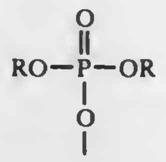
$$\begin{array}{c}\mathrm{O}\\ \|\\ \mathrm{RO{-}P{-}OR}\\ |\\ \mathrm{O}\\ |\\ \mathrm{A}\end{array} \qquad \text{(I)}$$

wherein A represents an aryl group which may be substituted with one or more substituents selected from the group consisting of an alkenyl group, an acryloyloxy group, a methacryloyloxy, an aryl group, a halogen atom, an alkyl group, an alkoxy group, a hydroxy group substituted with an aryl group and a group of the formula



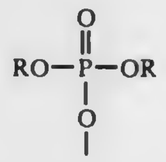
$$\begin{array}{c}\mathrm{O}\\ \|\\ \mathrm{RO{-}P{-}OR}\\ |\\ \mathrm{O}\\ |\end{array}$$

in which each of said substituents may further be substituted with one or more aryl groups or halogen atoms, and any aryl group as a substituent of the group A may be substituted with a substituent selected from the group consisting of an alkenyl group, an acryloyloxy group, a methacryloyloxy group and a group of the formula



$$\begin{array}{c}\mathrm{O}\\ \|\\ \mathrm{RO{-}P{-}OR}\\ |\\ \mathrm{O}\\ |\end{array}$$

and R's may be the same or different and each represents an alkenyl group, an alkenylaryl group, an acryloyloxy(lower)alkyl group, an acryloyloxyaryl group, a methacryloyloxy(lower)alkyl group or a methacryloyloxyaryl group in which the (lower)alkyl group and aryl group may be substituted with a halogen atom, there being two



$$\begin{array}{c}\mathrm{O}\\ \|\\ \mathrm{RO{-}P{-}OR}\\ |\\ \mathrm{O}\\ |\end{array}$$

groups in the phosphate derivative, including that present in formula (I).

4,442,240

DENTAL FILLING MATERIALS

Byoung I. Suh, Glen Ellyn, Ill., assignor to Bisco, Inc., Lombard, Ill.

Filed Jul. 14, 1983, Ser. No. 513,694

Int. Cl.³ C08K *3/36*

U.S. Cl. 523—116 **4 Claims**

1. A finely divided inorganic filler for use in preparing direct dental filling materials, said filler comprising organo-silane keying agent treated fumed silica having a surface coating comprising about 2-20%, based on the weight of the silica, of an active polyfunctional polymerizable monomer having at least two acrylic end groups.

4,442,241

SHEAR THICKENING COMPOSITION

Evelyn N. Drake, Plainfield, and Peter Calcavecchio, Lodi, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jun. 28, 1982, Ser. No. 392,632

Int. Cl.³ C08L *3/34, 5/01;* **C09K** *7/00*

U.S. Cl. 523—130 **40 Claims**

1. A composition of matter comprising a water-in-oil emulsion having particles of hydratable, water-expandable clay dispersed in the continuous oily phase thereof and wherein both a surfactant and an oil soluble amine are dissolved in said oil phase said composition having a greater low shear thickening time than the same composition free of the oil soluble amine dissolved in the oily phase.

4,442,242

PROCESS AND COMPOSITION FOR INSULATION OF SURFACES, AND PRODUCT THEREBY OBTAINED

Ernst R. Fogelberg, Vällingby, Sweden, assignor to A.B. Bonnierföretagen, Stockholm, Sweden

Continuation of Ser. No. 957,660, Nov. 3, 1978, abandoned, which is a division of Ser. No. 800,200, May 25, 1977, abandoned, which is a continuation of Ser. No. 593,661, Jul. 7, 1975, abandoned. This application Mar. 23, 1981, Ser. No. 246,446

Claims priority, application Sweden, Jul. 10, 1974, 7409097

Int. Cl.^{3} C08K *7/20, 9/04;* **C08L** *33/08, 91/00*

U.S. Cl. 523—200 **4 Claims**

1. A sprayable composition for coating an uninsulated surface with a water-absorbent coating for the purpose of preventing or reducing occurrence of condensation on the surface, which comprises a liquid blend which consists of a film-forming binder dispersed in an aqueous vehicle wherein said film-forming binder does not swell in said aqueous vehicle having distributed therein granules of heat-expanded perlite; in which said composition has a consistency such that it can be sprayed on said uninsulated surface; in which the water-absorptivity of said heat-expanded perlite is not occluded; and in which said coating composition is capable of setting-up into an adherent, water-absorptive, insulating coating without application of heat, said granules being present in the range of 5–20 percent by weight based on the composition before application, having a grain size of about 0.01 mm to about 1.5 mm, and having been pretreated with 0.2–2 percent by weight based on the composition of a wetting agent.

4,442,243

REINFORCED RESIN COMPOSITES

Raymond T. Woodhams, 33 Palisades, Toronto, Ontario, M6S 2W9, Canada

Filed Jun. 16, 1982, Ser. No. 388,996

Int. Cl.^{3} C08K *3/34*

U.S. Cl. 523—212 **20 Claims**

1. A reinforced thermoplastic resin composite comprising a thermoplastic high molecular weight polymeric matrix material reinforced with inorganic filler material, said filler comprising from about 20 to about 80 volume percent of the total composite, said composite also containing from about 1 to about 10 weight percent, based upon the weight of inorganic filler, of derivatized propylene polymer wax of number average molecular weight from about 500 to about 10,000, said derivatized propylene polymer wax having functional reactive end groups.

4,442,244

PROCESS FOR PREPARING HEAT-CURABLE, WATER-DILUTABLE COATING COMPOSITIONS FOR COATING METAL SUBSTRATES

Gerhard Johannes, Taunusstein; Fali Shroff, Wiesbaden; Gerhard Dullis, Taunusstein, and Dieter Steidl, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 23, 1981, Ser. No. 276,702

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1980, 3024158

Int. Cl.^{3} C08L *0/00*

U.S. Cl. 523—221 **12 Claims**

1. A process for preparing heat-curable, water-dilutable coating compositions based on polymers, cross-linking agents and optionally conventional adjuvants, wherein

(A) 5–35% by weight of at least one epoxy resin which is free from cationic groups, solid at ambient temperature and is liquid at the cross-linking temperature,

(B) 2–20% by weight of at least one hydrophobic resin which is solid at ambient temperature and selected from the group consisting of ketone resin and hydrocarbon resin which is a dicyclopentadiene resin or a hydrocarbon resin derived from the C_5- or C_9-fractions of the petroleum fractionation,

(C) 15–60% by weight of at least one cationic thermosetting synthetic resin having functional groups, which is in the form of a solution or dispersion with a solids content of 10 to 50% by weight,

(D) 5–30% by weight of at least one nitrogen-containing organic crosslinking agent which is solid at ambient temperature and

(E) 0–73% by weight of at least one component selected from the group consisting of pigments and other conventional adjuvants,

in which the sum of components (A) to (E) is always 100% by weight, are processed together, in one or more stages in a grinding apparatus, at least one stage being a wet grinding operation, the original particle size being reduced so far to form a homogeneous coating composition having a particle size of less than 100 μm and subsequently water is added to adjust the solids content to that required for application.

8. A coating composition prepared according to the process as claimed in claim **1** for the electrolytic coating of a metal substrate in an aqueous bath.

4,442,245

EMULSION BASED ON EPOXY RESINS AND DIAMMONIUM SALTS AND ITS PREPARATION

Jörn-Volker Weiss, Haltern; Heinz Riemer, Bottrop, and Friedhelm Mutzberg, Muelheim, all of Fed. Rep. of Germany, assignors to Chemische Werke Huels, AG, Marl, Fed. Rep. of Germany

Filed Jun. 16, 1983, Ser. No. 504,928

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1982, 3222531

Int. Cl.^{3} C08L *63/00;* **C08K** *5/16;* **C08J** *3/06;* **C04B** *7/35*

U.S. Cl. 523—401 **15 Claims**

1. An epoxy resin-diammonium salt emulsion, comprising

(a) a liquid epoxy resin;

(b) about 30–130 wt. % of water based on the amount of epoxy resin;

(c) an emulsifying effective amount of an emulsifier comprising a primary, aliphatic alcohol of 8–14 carbon atoms, an adduct thereof with up to 10 ethylene oxide groups, or a mixture thereof; and

(d) an effective amount of a latent curing agent comprising a reaction product of the essentially complete neutralization of a diamine of the formulae

$$H_2N—CH_2—R—NH_2$$

or

$$H_2N—R—CH_2—R—NH_2$$

with oxalic acid,

wherein R is alkyl substituted alkylene or cycloalkylene each of 6–9 carbon atoms in total, or phenylalkylene of 7–9 carbon atoms in total.

4,442,246

AQUEOUS COATING COMPOSITION COMPRISING SELF-EMULSIFIABLE ESTER OF EPOXY AND ACID CONTAINING ADDITION POLYMER

George L. Brown, Scotch Plains, and Arthur T. Spencer, New Providence, both of N.J., assignors to SCM Corporation, New York, N.Y.

Continuation of Ser. No. 95,682, Nov. 19, 1979, abandoned, which is a continuation-in-part of Ser. No. 914,472, Jun. 12, 1978, abandoned. This application Apr. 1, 1981, Ser. No. 249,795

Int. Cl.^{3} C08L *33/02, 63/10*

U.S. Cl. 523—404 **5 Claims**

1. A composition suitable for sanitary can coatings consisting essentially of a self-emulsified mixture substantially free of

oxirane groups including a hydroxy ester copolymer containing carboxyl groups at least some of which, sufficient to achieve self-emulsification in water, are neutralized by volatile amine; which composition is the product of the reaction of:

(A) an acidic addition copolymer having an acid number greater than 150 comprising a copolymer of monoethylenically unsaturated monomers selected from the group consisting of styrene, vinyl toluene, acrylic acid esters, methacrylic acid esters, acrylic acid and methacrylic acid containing at least about 30% by weight of acrylic or methacrylic acid based on the total weight of monomers;

(B) a mixture containing (bisphenol-A)-epichlorohydrin polyether epoxy resin including at least 5% by weight of polyether epoxy resin containing oxirane groups and at least 25% by weight of said (bisphenol-A) polyether being terminated with bisphenol-A and devoid of oxirane groups, said mixture comprising at least 40% of the total resin solids and containing sufficient oxirane groups to provide a ratio of oxirane groups to carboxyl of 1:2 to 1:20; and

conducted in the presence of a tertiary amine in amounts from 0.1% to 0.3% by weight of reactants subjected to esterification.

4,442,247

AQUEOUS COATING COMPOSITIONS

Shinichi Ishikura, Kyoto; Kazunori Kanda, Yao, and Shohachiro Yamaguchi, Neyagawa, all of Japan, assignors to Nippon Paint Company, Ltd., Osaka, Japan

Filed Aug. 25, 1982, Ser. No. 411,482

Claims priority, application Japan, Sep. 2, 1981, 56-138859

Int. Cl.^{3} C08L *63/00;* **C09D** *3/58, 3/66, 3/76*

U.S. Cl. 523—414 **8 Claims**

1. An aqueous coating composition comprising from 45 to 98 parts by weight (solids) of aqueous resin(s) and from 2 to 55 parts by weight (solids) of finely divided water-insoluble resin(s), in which at least a part of said aqueous resin is selected from the cationic resins having amino group(s), the amino-nitrogen equivalent weight being 40 to 2000, and fulfilling the requirement that the water tolerance is greater than 4 and the surface tension for a 1% w/w aqueous solution is less than 51 dyne/cm.

4,442,248

AQUEOUS COATING COMPOSITIONS

Kazunori Kanda, Yao, and Shinichi Ishikura, Kyoto, both of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Sep. 3, 1982, Ser. No. 414,823

Claims priority, application Japan, Oct. 5, 1981, 56-158929

Int. Cl.^{3} C08L *63/00;* **C09D** *3/58, 3/66, 3/76*

U.S. Cl. 523—414 **8 Claims**

1. An aqueous coating composition comprising from 45 to 98 parts by weight as solids of at least one aqueous resin and from 2 to 55 parts by weight as solids of at least one finely divided water-insoluble resin, in which at least a part of said aqueous resin is selected from amphoteric resins having 0.2 to 4 m mol/g carboxyl groups and 0.01 to 3 m mol/g amino groups.

4,442,249

PARTIALLY ORIENTED POLYESTER YARN FINISH

Gerard D. Lees, and Barry D. Causby, both of Charlotte, N.C., assignors to Fiber Industries, Inc., Charlotte, N.C.

Continuation-in-part of Ser. No. 433,330, Oct. 7, 1982, abandoned. This application Dec. 13, 1982, Ser. No. 449,068

Int. Cl.^{3} B01F *17/42;* **D06M** *13/18, 13/20*

U.S. Cl. 523—455 **21 Claims**

1. A finish for partially oriented polyester yarn, said finish being an emulsifiable mixture consisting essentially of;

(a) from about 50 to about 90 weight percent of one or more ethylene oxide/propylene oxide copolymers having a molecular weight in excess of about 1000 and having an ethylene oxide content such that the ethylene oxide in the copolymer constitutes less than about 25 weight percent of the finish;

(b) from about 10 to about 35 weight percent of one or more alkyl chain based lubricants, a major amount of which has a smoke point within the range of from about 155° C. to about 200° C.; and

(c) a base neutralized fatty acid in an amount in the range of from about 3 to about 10 weight percent, and sufficient to emulsify the ethylene oxide/propylene oxide copolymer and the alkyl chain based lubricant.

4,442,250

PIPERIDYL DERIVATIVES OF MACROCYCLIC TRIAZINE COMPOUNDS, POSSESSING A STABILIZING ACTIVITY FOR POLYMERS, AND PROCESSES FOR THEIR PREPARATION

Giuseppe Cantatore, Casalecchio di Reno, Italy, assignor to Chimosa Chimica Organica S.p.A., Pontecchio Marconi, Italy

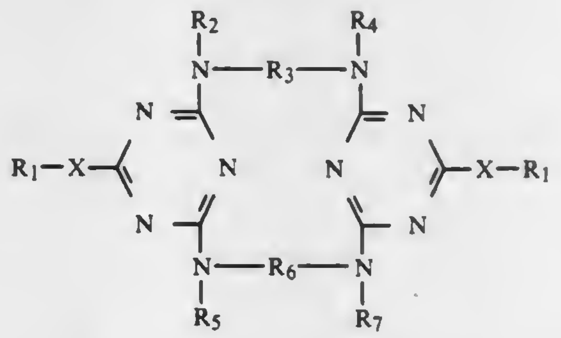
Filed Sep. 28, 1982, Ser. No. 426,153

Claims priority, application Italy, Oct. 2, 1981, 24296 A/81

Int. Cl.^{3} C07D *401/14;* **C08K** *5/34*

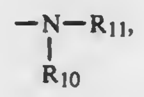
U.S. Cl. 524—98 **18 Claims**

1. A compound of the formula (I)



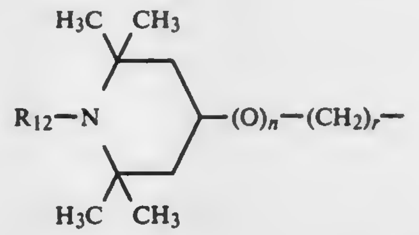
(I)

in which R_1 is hydrogen, C_1–C_{18}-alkyl, C_3–C_{18}-alkenyl, C_5–C_{18}-cycloalkyl, substituted or unsubstituted C_6–C_{18}-aryl, substituted or unsubstituted C_7–C_{18}-aralkyl, an $—R_8—Y$ radical, in which R_8 is C_2–C_6-alkylene and Y is $—O—R_9$ or



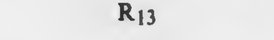
$$—\underset{\substack{|\\R_{10}}}{N}—R_{11},$$

R_9 being hydrogen or C_1–C_{18}-alkyl and R_{10} and R_{11}, which may be identical or different, being C_1–C_6-alkyl, 2,2,6,6-tetramethyl-piperid-4-yl or 1,2,2,6,6-pentamethyl-piperid-4-yl, or R_1 is a radical of the formula (II)



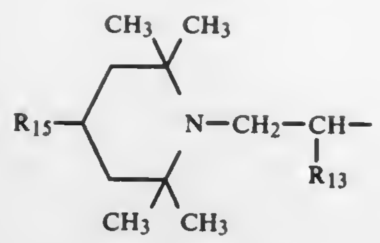
(II)

in which n is zero or 1, r is zero, 1, 2 or 3, R_{12} is hydrogen, C_1–C_{12}-alkyl, C_3–C_{12}-alkenyl or -alkynyl, substituted or unsubstituted C_7–C_{12}-aralkyl, C_1–C_{12}-acyl, 2,3-epoxypropyl or



$$—CH_2—\underset{\substack{|\\R_{13}}}{CH}—O—R_{14},$$

in which R_{13} is hydrogen, methyl, ethyl or phenyl and R_{14} is hydrogen, C_1–C_{12}-alkyl, C_3–C_{12}-alkenyl, C_7–C_{12}-aralkyl or C_1–C_{12}-acyl, or R_1 is a radical of the formula (III)



(III)

in which R_{15} is hydrogen, C_1-C_8-alkoxy, C_3-C_8-alkenyloxy or benzyloxy and R_{13} is as defined above, and X is >O, >S or >N-R_{16}, in which R_{16} has the same meaning as R_1, and the radical R_1—X—, considered as a whole, can also be chlorine or pyrrolidin-1-yl, piperid-1-yl or hexahydroazepin-1-yl, R_2, R_4, R_5 and R_7, which may be identical or different, are hydrogen, C_1–C_{12}-alkyl, C_2–C_6-hydroxyalkyl, C_3–C_{12}-alkenyl, C_5–C_{12}-cycloalkyl, substituted or unsubstituted C_6–C_{12}-aryl, substituted or unsubstituted C_7–C_{12}-aralkyl or a radical of the formula (II), and R_3 and R_6, which may be identical or different, are C_2–C_{12}-alkylene, C_4–C_{12}-iminodialkylene or -oxadialkylene, C_5–C_{12}-cycloalkylene, C_6–C_{12}-arylene or C_7–C_{12}-aralkylene, and at least one of the radicals R_1, R_2, R_4, R_5 and R_7 in formula (I) is a radical of the formula (II).

15. A light-stabilised, heat-stabilised and oxidation-stabilised polymer composition comprising a synthetic polymer and one or more stabilisers of the formula (I) in an amount of between 0.01 and 5%, preferably between 0.05 and 1%, by weight relative to the weight of the synthetic polymer.

4,442,251
IMPACT RESISTANT POLYPHENYLENE ETHER RESIN COMPOSITIONS

William R. Haaf, Voorheesville; Gim F. Lee, Jr., Albany, and Sei P. Ting, Delmar, all of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Mar. 4, 1982, Ser. No. 354,894

Int. Cl.³ C08K *5/52;* C08L *71/04*

U.S. Cl. 524—141 **8 Claims**

1. A thermoplastic composition, comprising an admixture of:

(a) a blend of a polyphenylene ether resin and a rubber modified high impact polystyrene; and

(b) an impact strength enhancing amount of a copolymer of ethylene and methyl acrylate.

7. A composition according to claim 1, which includes a flame retardant amount of a flame retardant agent.

4,442,252
COLD-SET ADHESIVE COMPOSITIONS COMPRISING POLYVINYL ALCOHOL FOR PAPER AND PAPER BOARD

Masao Sumi, Nara; Junichi Suenaga, Osaka; Masazo Takenaka, Hyogo; Itaru Murano, Osaka; Mikio Tanabe, and Kiyoshi Hirai, both of Okayama, all of Japan, assignors to Unitika Ltd., Hyogo and Okayama Paper Mill Co., Ltd., Okayama, both of, Japan

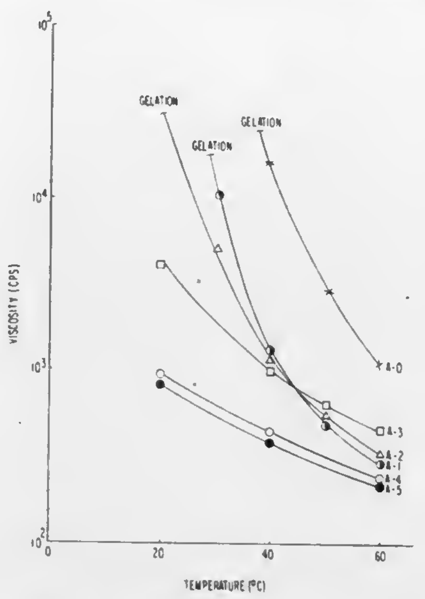
Continuation of Ser. No. 206,605, Nov. 13, 1980, abandoned. This application Apr. 8, 1982, Ser. No. 366,619

Claims priority, application Japan, Nov. 13, 1979, 54-146820

Int. Cl.³ C08K *3/38*

U.S. Cl. 524—183 **13 Claims**

1. A cold-set adhesive for paper having a viscosity of from about 100 to 2,000 centipoises at 60° C. and which gelatinizes upon cooling at a temperature higher than 20° C. and consisting essentially of polyvinyl alcohol, a filler which exhibits alkalinity in an aqueous dispersion, a water-soluble boron compound, and water, the mixing ratio by weight of polyvinyl alcohol to filler being from about 20/80 to 70/30 and the amount of the water-soluble boron compound being from about 0.2 to 4 parts by weight per 100 parts by weight of polyvinyl alcohol plus filler.



4,442,253
BLEND COMPOUNDS OF SULFONATED POLYMERS AND COMPOSITIONS THEREOF

Robert D. Lundberg, Bridgewater; Warren A. Thaler, Aberdeen, and Pawan K. Agarwal, Westfield, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

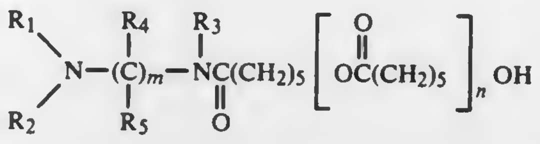
Division of Ser. No. 332,860, Dec. 21, 1981. This application Sep. 29, 1982, Ser. No. 426,661

Int. Cl.³ C08K *5/09, 5/21;* C08L *51/08, 53/00*

U.S. Cl. 524—211 **5 Claims**

1. A blend composition which comprises a blend of:

(a) a sulfonated polymer derived from elastomeric or thermoplastic polymers selected from the group consisting of butyl rubbers, EPDM terpolymers, partially hydrogenated polybutadienes, neoprene, styrene-butadiene copolymers and isoprene-styrene random copolymer, which has about 200 meg. of sulfonate groups per 100 grams of said sulfonated polymer, said sulfonated groups being neutralized with a polycaprolactone polymer having formula:



$$\begin{matrix}R_1\diagdown & \\ & N-\underset{R_5}{\overset{R_4}{(C)_m}}-\overset{R_3}{N}\underset{O}{\underset{\|}{C}}(CH_2)_5\left[\overset{O}{\overset{\|}{OC}}(CH_2)_5\right]_n OH \\ R_2\diagup & \end{matrix}$$

wherein n is 1 to 500; M is 1 to 20; R_1 or R_2 are selected from the group consisting of alkyl and cycloalkyl having about 1 to about 20 carbon atoms and aryl groups; R_3 is selected from the group consisting of hydrogen, alkyl and cycloalkyl groups having about 1 to about 20 carbon atoms, and aryl groups; a R_4 and R_5 are selected from the group consisting of hydrogen, alkyl, cycloalkyl and aryl groups and wherein the polycaprolactone polymer has a number average molecular weight of about 200 to about 50,000 and a melting point from below 20° C. to 52° C.; and

(b) an unsulfonated thermoplastic or elastomeric polymer; and

(c) at least about 3 parts to less than about 60 parts by weight of a perferential plasticizer per 100 parts by weight of the sulfonated polymer, wherein said perferential plasticizer is selected from the group consisting of carboxylic acids having at least 8 carbon atoms, metallic salts of said carboxylic acids, urea thioureas, amides, amines, ammonium salts of said carboxylic acids, a combination of a carboxylic acid and a metal salt of said carboxylic acid, wherein a metal ion of said metallic salt is selected from the group consisting of aluminum, antimony, ion, lead and Groups I-A, IIA, I-B and II-B of the Periodic Table of Elements, and mixtures thereof.

4,442,254
POLYAMIDE RESIN COMPOSITION

Yutaka Aratani, Suwa, Japan, assignor to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 29, 1983, Ser. No. 490,203

Claims priority, application Japan, May 17, 1982, 57-83456

Int. Cl.³ C08K *3/10, 3/04*

U.S. Cl. 524—413 **5 Claims**

1. A polyamide resin composition comprising 20 to 90% by weight of a polyamide resin formed by the reaction of a xylylenediamine and an aliphatic straight-chain dicarboxylic acid having 6 to 12 carbon atoms, 5 to 60% by weight of carbon fiber, and 5 to 60% by weight of potassium titanate fiber.

4,442,255
SELF-EXTINGUISHING POLYOLEFINIC COMPOSITIONS

Franco Marciandi, Rho, and Pasquale Relvini, Bollate, both of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Aug. 23, 1982, Ser. No. 410,704

Claims priority, application Italy, , 23645 A/81

Int. Cl.³ C08K *5/34, 3/32, 5/16, 5/21*

U.S. Cl. 524—414 **3 Claims**

1. Self-extinguishing polymeric compositions consisting of an olefinic polymer and, on the total weight of the composition, from 1to 5% of red phosphorus, from 0% to 10% of a substance capable of mainly freeing ammonia by thermal decomposition, and from 0.3% to 2% of a promoter of free radicals selected from the group consisting of 3,4-dimethyl-3,4-diphenylhexane and 2,3-dimethyl-2,3-diphenylbutane.

4,442,256
ADDITIVE FOR ALKYD RESIN COATING COMPOSITIONS

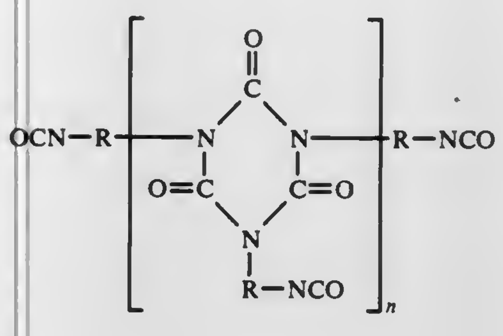
Lester I. Miller, Troy, Mich., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 16, 1982, Ser. No. 450,220

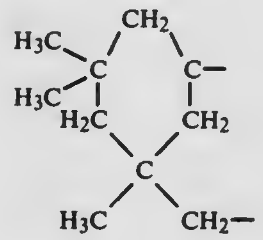
Int. Cl.³ C09D *3/52, 3/66*

U.S. Cl. 524—539 **7 Claims**

1. An additive for alkyd resin coating compositions consisting essentially of about 10–50% by weight of isocyanato isocyanurate having the formula



wherein R is



and n is an integer of 1–5,

wherein the isocyanato isocyanurate is formed from 3-isocyanatomethyl-3,5,5-trimethyl-cyclohexyl isocyanate and has an isocyanate functionality of 3.0–4.0;

0.5–5% by weight of dibutyltindilaurate and

49.5–89.5% by weight of an organic solvent.

4,442,257
LOW TEMPERATURE CURE LATEXES

David A. Borovicka, Sr., Parma; Kenneth G. Hahn, Jr., Hinckley, and John T. Tupa, Broadview Hts., all of Ohio, assignors to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 264,419, May 18, 1981, abandoned. This application Oct. 22, 1982, Ser. No. 436,188

Int. Cl.³ C08L *75/00*

U.S. Cl. 524—555 **11 Claims**

1. A stabilized aqueous thermosetting low temperature curable composition containing a polymeric composition dispersed in water, comprising on a weight basis:

between 5% and 60% of dimethylol dihydroxy ethylene urea, and between 40% and 95% emulsion polymer wherein said emulsion polymer contains polymerized ethylenically unsaturated monomers comprising between 0% and 10% carboxylic monomer, 2% and 20% alkylhydroxyl acrylate or methacrylate monomer, and the balance being other ethylenically unsaturated monomer comprising monomers selected from vinyl monomers, styrene monomers or acrylate monomers, whereby said emulsion polymer contains reactive groups for cross-linking reaction with said dimethylol dihydroxy urea.

4,442,258
WATER-SOLUBLE PRESSURE-SENSITIVE ADHESIVE COMPOSITION

Makoto Sunakawa; Yutaka Moroishi, and Isao Mune, all of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 3, 1980, Ser. No. 165,825

Claims priority, application Japan, Jul. 4, 1979, 54-85292

Int. Cl.³ C08K *5/05, 5/06*

U.S. Cl. 524—767 **19 Claims**

1. A water-soluble pressure-sensitive adhesive composition comprising a composition obtained by the solution polymerization of a water-soluble ethylenically unsaturated monomer in the presence of a solvent and an alcoholic plasticizer selected from the group consisting of polyether polyols and polyhydric alcohols, said alcoholic plasticizers having an average molecular weight of less than about 3,000 and which is liquid at room temperature,

wherein said composition contains as a polymer component at least an addition copolymer of the unsaturated monomer and the alcoholic plasticizer, wherein the alcoholic plasticizer is present in an amount of from 20 to 400 parts by weight per 100 parts by weight of the unsaturated monomer.

4,442,259
AQUEOUS-BASED POLYURETHANE COMPOSITIONS AND METHOD OF PREPARATION

Irving E. Isgur, Framingham, and William D. DelVecchio, Randolph, both of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Filed Apr. 26, 1982, Ser. No. 371,631

Int. Cl.³ C08L *75/00*

U.S. Cl. 524—839 **26 Claims**

1. A method of preparing an aqueous based polyurethane adhesive solution comprising the steps of:

providing a reaction mixture comprising an isocyanate-terminated urethane prepolymer and an equivalent excess of water, based on the isocyanate content of said prepolymer;

reacting said prepolymer and said water to effect chain extension of said prepolymer;

controlling the rate of said chain extension by adding to said reaction mixture a monofunctional isocyanate group blocking agent and permitting reaction between said agent and isocyanate groups in said prepolymer;

permitting said prepolymer and said water to react until said reaction mixture acquires a desired adhesive capability; and

adding to said reaction mixture additional said monofunctional isocyanate group blocking agent or a second isocyanate group blocking agent in an amount at least substantially equal to the remaining unreacted isocyanate groups in said prepolymer on an equivalent basis.

4,442,260

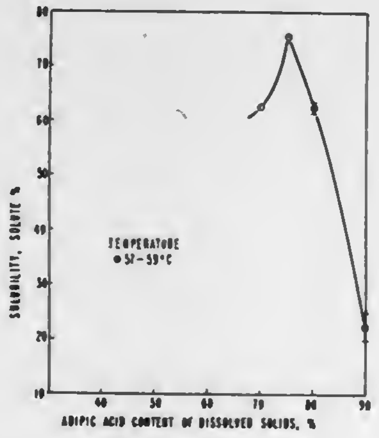
PREPARATION OF SALT SOLUTION USEFUL FOR MAKING NYLON

Howland A. Larsen, Parkersburg, W. Va., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Mar. 14, 1983, Ser. No. 475,030

Int. Cl.³ C08G *69/28*

U.S. Cl. 524—845 **1 Claim**



1. A process for making 66-nylon salt solution which comprises, in sequence

(a) preparing a water solution in which the solute phase contains 73.5–77.5% adipic acid and 22.5–26.5% hexamethylene diamine, by weight, at a temperature of 55°–60° C. in which the total solute concentration is 60–69% and the water concentration is 31–40%, and

(b) concentrating the solution by evaporating water until the solute comprises between 89 and 96%, by weight, and

(c) adding hexamethylene diamine until the hexamethylene diamine and adipic acid are in about stoichiometric proportions.

4,442,261

CATIONICALLY POLYMERIZABLE MACROMOLECULAR MONOMERS AND GRAFT COPOLYMERS THEREFROM

Joseph P. Kennedy, Akron, Ohio, and Kurt C. Frisch, Jr., Midland, Mich., assignors to The University of Akron, Akron, Ohio

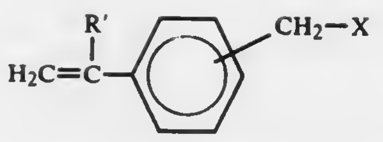
Division of Ser. No. 199,656, Oct. 22, 1980, Pat. No. 4,327,201. This application Jan. 11, 1982, Ser. No. 338,502

Int. Cl.³ C08F *291/02, 291/06, 255/10*

U.S. Cl. 525—324 **22 Claims**

1. A graft copolymer comprising the reaction product of a copolymerizable monomer and a cationically prepared macromolecular monomer,

said macromolecular monomer being the reaction product of a cationically polymerizable monomer and a vinyl substituted hydrocarbon halide having the formula:



where R′ is a hydrocarbon having from 1 to 18 carbon atoms, and wherein X is selected from the group consisting of F, Cl, Br, and I,

in said reaction the amount of said vinyl substituted hydrocarbon halide is from about 5.0 moles to about 1.0×10^{-5} moles per mole of said cationically polymerizable monomer, and

wherein said macromolecular monomer has polymerizable head groups, said polymerizable head groups being vinyl or substituted vinyl groups,

wherein said monomer forming said cationically prepared macromolecular monomer is isobutylene, and

wherein said copolymerizable monomer is selected from the group consisting of a free-radically polymerizable monomer, a cationically polymerizable monomer, an anionically polymerizable monomer, a coordinately polymerizable monomer, and combinations thereof.

4,442,262

COMPOSITION OF POLYESTER-BLOCK COPOLYMER

Haruhiko Yusa; Mitsuru Hoshino; Akira Kurosaki, all of Iwaki; Hironobu Furusawa, and Chikara Sugitawa, both of Ohtsu, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha and Toyo Boseki Kabushiki Kaisha, both of Tokyo, Japan

Filed Nov. 17, 1981, Ser. No. 322,152

Claims priority, application Japan, Nov. 22, 1980, 55-164909; Nov. 22, 1980, 55-164910

Int. Cl.³ C08F *8/00;* **C08L** *51/00*

U.S. Cl. 525—69 **12 Claims**

1. A polyester-block copolymer composition which comprises 95% to 20% by weight of a polyester-block copolymer obtained by the copolymerization of 95% to 20% by weight of hard polyester segments having a melting point higher than 150° C., and 5% to 80% by weight of polymer segments having a melting point of less than 80° C. and a molecular weight of 400 to 20,000; and

5% to 80% by weight of at least one of a graft-copolymer formed by graft copolymerization of:

50 to 25 parts by weight of a monomeric mixture comprised of 90% to 10% by weight of styrene and 10% to 90% by weight of methyl methacrylate, and 0.01% to 3% by weight of a cross-linking agent, with

50 to 75 parts by weight of an elastomeric trunk polymer containing not less than 50% by weight of rubber like segments selected from the group consisting of butadiene units and C_4 to C_4-alkyl acrylate units, and 3.0% to 0.01% by weight of a cross-linking agent.

4,442,263

THERMOPLASTIC MOLDING MATERIALS

Franz Brandstetter, Neustadt; Juergen Hambrecht, Heidelberg; Rudolf Stephan, Ludwigshafen; Heinz-Juergen Overhoff, Frankenthal; Josef Schwaab, Maikammer; Claus Bernhard, Eisenberg; Johann Swoboda, and Adolf Echte, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 16, 1982, Ser. No. 398,822

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1981, 3129472

Int. Cl.³ C08L *51/04, 51/06*

U.S. Cl. 525—83 **2 Claims**

1. A thermoplastic molding material essentially containing

(A) 50–90% by weight, based on A+B, of a hard component comprising one or more copolymers of styrene or α-methylstyrene, or of styrene and α-methylstyrene, with acrylonitrile, these copolymers containing from 20 to 40% by weight of acrylonitrile as copolymerized units, and

(B) 50–10% by weight, based on A+B, of a graft copolymer comprising

(B_1) 40–80% by weight, based on (B), of one or more cross-linked acrylate polymers having a mean particle size of not more than 0.8 μm (d_{50} value of the cumulative mass distribution) and a glass transition temperature, Tg, below 0° C., onto which is grafted

(B_2) 20–60% by weight, based on (B), of one or more mixtures of styrene and acrylonitrile in a weight ratio from 88:12 to 65:35,

wherein the mean particle size of the grafting base (B_1) is >0.5 μm and the particle distribution, expressed by the ratio

$$Q = \frac{d_{90} - d_{10}}{d_{50}},$$

is ≧0.6.

4,442,264

GRAFT RUBBERS FOR MODIFYING THERMOPLASTIC MOULDING COMPOSITIONS

Karl Zabrocki, Buettgen, and Alfred Pischtschan, Kuerten, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

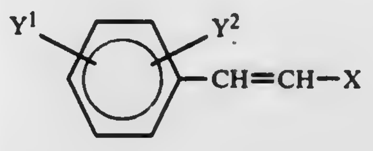
Filed May 2, 1983, Ser. No. 490,541

Claims priority, application Fed. Rep. of Germany, May 12, 1982, 3217874

Int. Cl.³ C08L *51/04, 55/02, 279/02*

U.S. Cl. 525—86 **8 Claims**

1. A graft rubber obtainable by the radical polymerisation of one or more vinyl-group-containing monomers in the presence of at least one rubber, wherein polymerisation is carried out in the presence of from 0.001 to 1.0% by weight (based on solid graft product) of at least one compound corresponding to the general formula (I)



(I)

in which

X represents Cl or NO_2;

Y^1 and Y^2, which may be the same or different, represent H, C_1–C_{10}-alkyl, NO_2, F, Cl or Br.

4,442,265

POLYMERIC BLENDS

John R. Haws, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 286,097, Jul. 22, 1981, Pat. No. 4,393,170, which is a continuation of Ser. No. 145,091, Apr. 30, 1980, abandoned. This application Sep. 29, 1982, Ser. No. 427,249

Int. Cl.³ C08L *53/00*

U.S. Cl. 525—91 **18 Claims**

1. A composition of matter that is a blend of polymers comprising:

(a) a block copolymer of lactone with conjugated diene,

(b) acrylic ester polymer, and

(c) coumarone-indene resin.

4,442,266

MELT SPINNING OF POLYPROPYLENE

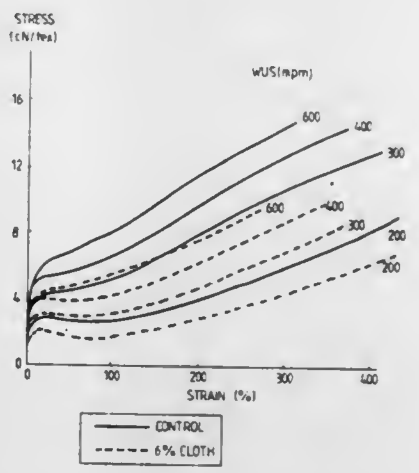
Harry Brody, Harrogate, England, assignor to Imperial Chemical Industries Limited, London, England

Filed May 29, 1981, Ser. No. 268,252

Claims priority, application United Kingdom, May 13, 1981, 8114626

Int. Cl.³ C08L *67/06*

U.S. Cl. 525—173 **5 Claims**



1. A process of melt spinning polypropylene the improvement comprising adding to the polypropylene before it is melt spun, a small proportion of a polymer capable of forming an anisotropic melt in the temperature range at which the polypropylene may be melt spun and then melt spinning the polymers together at a wind up speed of less than 1000 meters per minute whereby in the process there is a suppression of wind up speed compared with the process carried out in the absence of the added polymer.

4,442,267

HEAT RESISTANT TOUGHENED ADHESIVE COMPOSITION

Ronald S. Charnock, Celbridge, Ireland, assignor to Loctite (Ireland) Limited, Tallaght, Ireland

Filed Mar. 17, 1983, Ser. No. 476,395

Int. Cl.³ C08F *255/02*

U.S. Cl. 525—309 **12 Claims**

1. In a two-component adhesive composition of the type having a first component comprising a solution of polymer in at least one polymerizable monomer in combination with an adhesion promoter and a free radical catalyst system, and a second component comprising an activator, an improved composition providing increased high temperature resistance in the cured adhesive wherein: said polymer is present at levels of 30% or more of the total composition and is a copolymer of ethylene and methyl acrylate having a glass transition temperature below 15° C., a Mooney viscosity of between about 25 and about 60 ML (1+4) at 100° C. and a molecular weight in excess of 5,000; said monomer is an acrylate ester; and said composition when cured does not exhibit significantly decreased shear strength after high temperature aging when compared to the shear strength of said composition when cured at room temperature.

4,442,268

N-(SUBSTITUTED PHOSPHINYL) POLYAMIDES

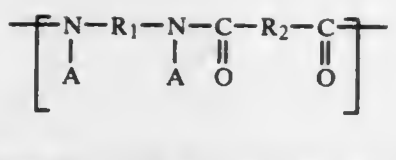
Alexandros K. Tsolis, 171 Old National Road, Arahovitika, Patra, Greece

Filed Aug. 4, 1981, Ser. No. 290,087

Int. Cl.³ C08G *69/48, 69/42*

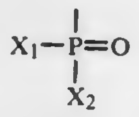
U.S. Cl. 525—420 **5 Claims**

1. A solid N-(substituted phosphinyl) polyamide consisting essentially of the recurring structural unit represented by the formula:



$$\left[-\underset{\underset{A}{|}}{N}-R_1-\underset{\underset{A}{|}}{N}-\underset{\underset{O}{\|}}{C}-R_2-\underset{\underset{O}{\|}}{C}-\right]$$

wherein A is from 0.9 to 0.4 mol hydrogen and from 0.1 to 0.6 mol substituted phosphinyl radical of the formula



$$X_1-\overset{|}{\underset{\underset{X_2}{|}}{P}}=O$$

wherein X_1 and X_2 are the same or different radicals selected from the group consisting of dimethylamino, diethylamino, aziridinyl, hydroxy, substituted and unsubstituted radicals selected from the group consisting of alkyl and alkoxy having 1 to 4 carbon atoms, cyclohexyloxy, phenoxy, benzyloxy and phenyl, the substituents being selected from the group consisting of from 1 to 4 chlorine and bromine atoms; R_1 and R_2 being the same or different radicals selected from the group consisting of alkylene radicals of the formula $—(CH_2)_m—$, wherein m is from 2 to 10 unsubstituted and substituted m-arylene and p-arylene, wherein the substituent is selected from the group consisting of 1 to 2 chlorine and bromine atoms.

4,442,269

STAGED COPOLYMERIZATION OF POLYESTERS

Eugene G. Sommerfeld, Mt. Laurel, N.J., and Andrew P. Stamegna, Claymont, Del., assignors to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Dec. 15, 1982, Ser. No. 450,135

Int. Cl.^{3} C08L *67/02*

U.S. Cl. 525—440 **12 Claims**

1. A non-equilibrium, two-stage polymerization process conducted without external catalysts for producing polyester copolymers having a linear segment with terminal hydroxyl groups and a number average molecular weight (Mn) of at least about 500 and a branched segment with lateral hydroxyl groups wherein

in the first stage of the process one half of the carboxyl groups of a diacid or a diacid anhydride are reacted in approximately stoichiometric proportions with one of (A) one half of the hydroxyl groups of the linear segment and (B) 10–80% of the hydroxyl groups of the branched segment to form a first reaction product, and then

in the second stage of the process the other half of the carboxyl groups of the first reaction product are reacted in approximately stoichiometric proportions with the hydroxyl group of the other of (A) and (B).

4,442,270

THERMOSETTING POWDER COATING COMPOSITIONS

David T. Passmore, Golborne, England; Willis C. Wooten, Kingsport, Tenn., and Paul McBride, Crescent Green, England, assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 278,228, Jun. 29, 1981, Pat. No. 4,387,214. This application Feb. 8, 1983, Ser. No. 464,804

Int. Cl.^{3} C08L *63/00, 61/28, 67/02*

U.S. Cl. 525—440 **13 Claims**

1. A thermosetting composition comprising

(a) a linear saturated crystalline polyester of an acid moiety and a moiety of a dihydric alcohol, at least 40 mole percent of the acid moiety being a terephthalic or isophthalic acid moiety, said polyester containing as moieties of the dihydric alcohol at least 40 mole percent 1,6-hexanediol, said polyester being further characterized as having a molecular weight of about 700–3000, a melt viscosity of about 50–3000 cps at 160° C. and a hydroxyl number of about 35–160, and

(b) from about 10 to about 40%, based on the weight of said polyester, of a curing agent which is reactive with hydroxyl groups to crosslink said polyester.

4,442,271

PREPARATION OF PROPYLENE HOMOPOLYMERS OR COPOLYMERS

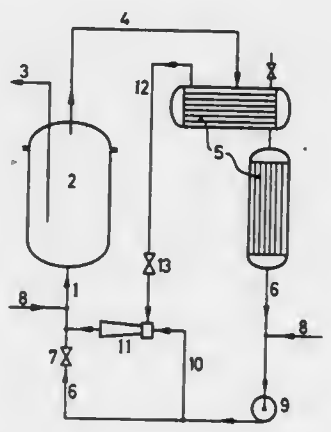
Wolfgang Rau, Heidelberg; Helmut Klamann, Ludwigshafen, and Peter Hennenberger, Freinsheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed May 26, 1982, Ser. No. 382,344

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1981, 3123115

Int. Cl.^{3} C08F *2/34, 10/06*

U.S. Cl. 526—61 **1 Claim**



1. A process for the preparation of a propylene homopolymer or copolymer which contains more than 50% by weight of propylene and less than 50% by weight of other α-monoolefins, of 2 to 6 carbon atoms, as copolymerized units, by polymerizing the monomer or monomers in the presence of hydrogen as a molecular weight regulator, using a Zielger-Natta catalyst, at from 40° to 150° C., under a total pressure of from 10 to 50 bar, in the gas phase in a stirred loose bed of finely divided polymer, with removal of the heat of polymerization by evaporative cooling, the monomer mixed with hydrogen being introduced continuously or batchwise into a polymerization kettle, and the polymer being discharged continuously or batchwise from the polymerization kettle, with the provisos that

(a) the pressure and temperature in the polymerization kettle are maintained within a range corresponding to the gaseous state of the monomer,

(b) gaseous unpolymerized monomer mixed with hydrogen is discharged from the polymerization kettle, the monomer is liquefied and stored in a condenser-cooler-accumulator system and is reintroduced, as liquid, into the polymerization kettle,

(c) the temperature in the stirred loose bed is regulated by continuously measuring it and, if there is a temperature change, varying, the amount of liquid monomer, vaporizing in the polymerization kettle, which is introduced per unit time, and

(d) the monomer consumed by polymerization, plus any monomer discharged with the polymer, is replaced by supplying fresh monomer through one or more lines and the hydrogen required to maintain the desired concentration is replenished, wherein

(e) liquid monomer is taken from the condenser-cooler-accumulator system by means of a pump,

(f) a proportion of the liquid monomer taken off by means of the pump is introduced into the polymerization kettle by means of a branch line via an ejector, with the liquid monomer as the jetting medium,

(g) the gaseous phase remaining in the condenser-cooler-accumulator system is fed to the polymerization kettle by means of a line, via the intake side of the ejector, and

(h) the amount of the gaseous phase which remains in the condenser-cooler-accumulator system and is taken off via the line is so regulated, by means of a valve, that the amount of gaseous phase actually remaining in the system remains constant.

4,442,272

PRODUCTION OF COPOLYMERS USING SHORTSTOP AGENT AT END OF POLYMERIZATION

Herbert Brooks, Twyford, and Frederick A. Waite, Farnham Common, both of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Aug. 17, 1981, Ser. No. 293,334

Claims priority, application United Kingdom, Sep. 17, 1980, 8030043

The portion of the term of this patent subsequent to Oct. 26, 1999, has been disclaimed.

Int. Cl.^{3} C08F *2/26*

U.S. Cl. 526—82 **10 Claims**

1. A process for the production of a copolymer from a mixture consisting of (i) a monomer selected from alkylstyrenes in which the alkyl group contains from 3 to 6 carbon atoms, the acrylic and methacrylic acid esters of aliphatic monohydric alcohols containing from 6 to 18 carbon atoms, vinyl esters of aliphatic carboxylic acids containing from 6 to 18 carbon atoms and vinyl ethers of aliphatic monohydric alcohols containing from 6 to 18 carbon atoms; (ii) from 2% to 8%, based on the total monomer mixture, of acrylic acid or methacrylic acid; and (iii) from 0% to 25%, based on the total monomer mixture, of one or more monomers selected from the acrylic and methacrylic esters of aliphatic monohydric alcohols containing from 1 to 4 carbon atoms, 2-ethoxyethyl methacrylate, acrylonitrile, vinyl acetate and vinyltoluene, the process comprising the emulsion polymerisation, in a wholly aqueous diluent as hereinbefore defined, of the said monomer mixture and being characterised by the following features in combination:

(a) the ratio of the total weight of monomer mixture which is polymerised in the process to the weight of liquid diluent is from 1:19 to 3:2 by weight;

(b) there is present in the reaction mixture an anionic surfactant at a concentration in the range 3% to 20% of the total weight of monomer mixture which is polymerised;

(c) the reaction mixture is stirred at a temperature in the range 15°–60° C. for a period of from 6 to 10 hours in the presence of an inert gas atmosphere;

(d) there is added to the reaction mixture, after the establishment of the inert gas atmosphere, in an amount of 0.05% to 1.0% based on the weight of monomer mixture, a water-soluble initiator which is effective at the chosen polymerisation temperature;

(e) there is added to the reaction mixture when polymerisation of the monomers is complete, in an amount of from 0.001% to 0.1% based on the weight of monomer mixture taken, a chain transfer agent.

4,442,273

PROCESS AND APPARATUS FOR CONTINUOUS POLYMERIZATION OF A MONOVINYL AROMATIC MONOMER

David S. Neiditch, Evansville, Ind.; Gerald A. Bullano, Glen Mills, Pa.; Robert J. DiLullo, Paoli, Pa., and David E. Ofstein, West Chester, Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Apr. 6, 1983, Ser. No. 482,391

Int. Cl.^{3} C08F *2/06*

U.S. Cl. 526—88 **10 Claims**

1. The process for continuous anionic solution polymerization of a monovinyl aromatic monomer to produce a polymer having a low weight average molecular weight to number average molecular weight ratio, comprising:

continuously feeding a solution of a monovinyl aromatic monomer in an inert solvent, and a hydrocarbyllithium initiator in an inert solvent, to form a mixture in the bottom zone of a sealed, cylindrical, pressurized, vertical reactor having a bottom zone, a top zone, and a plurality of intermediate zones, each said zone separated from an adjacent zone by separation plates having a central aperture therethrough, and stirring means carried by a central shaft passing through said apertures with an annular space provided between the shaft and each said separation plate;

continuously passing said mixture from the bottom zone to successive zones through the annular space between the shaft and each said separation plate, said annular space being dimensioned so as to provide a high interstage velocity relative to superficial velocity and pressure differential of less than one pound per square inch between said successive zones;

stirring said mixture while passing the same through each zone; and cooling the reaction if necessary by means of a zoned-jacket or pumparound loop for each zone; and

continuously removing a solution of polymer from the top zone.

4,442,274

POLYMERIZATION PROCESS USING A PHOSPHATE CONTAINING SUPPORT FOR VANADIUM CATALYST

Max P. McDaniel, and Marvin M. Johnson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 221,752, Dec. 31, 1980, Pat. No. 4,397,761. This application Sep. 27, 1982, Ser. No. 423,597

Int. Cl.^{3} C08F *4/02, 4/68*

U.S. Cl. 526—95 **36 Claims**

1. A polymerization process comprising:

contacting at least one mono-1-olefin having 2 to 8 carbon atoms per molecule in a reaction zone under polymerization conditions with a catalyst system comprising:

(a) a catalyst comprising an activated vanadium compound on a phosphate-containing support;

(b) an organoaluminum cocatalyst of the formula R_nAlX_{3-n} wherein R is a 1 to 12 carbon atom alkyl radical, n is a number between 1 and 2 inclusive, and X is a halogen; and

recovering a polymer.

4,442,275

POLYMERIZATION PROCESS USING CATALYST HAVING AQUEOUS TITANATION OF SUPPORT WITH SOLUBILIZED TI(OR)$_4$

Joel L. Martin, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 356,582, Mar. 9, 1982. This application Sep. 29, 1982, Ser. No. 426,332

Int. Cl.^{3} C08F *4/02, 4/24*

U.S. Cl. 526—96 **10 Claims**

1. A process comprising:

(a) reacting a titanium hydrocarbyloxide of the formula $Ti(OR)_4$ where R is a hydrocarbyl radical, with a polyhydroxy organic compound to give a reaction product;

(b) combining the thus formed product with an aqueous solution of a strong acid to form a water soluble titanium composition;

(c) combining said water soluble titanium composition while in solution with an inorganic catalyst support and a chromium compound;

(d) activating the resulting combined product of (c) by heating at an elevated temperature in an oxygen containing ambient to produce a catalyst; and

contacting at least one mon-1-olefin having 2 to 8 carbons atoms per molecule with said catalyst in a reaction zone under polymerization conditions to produce a polymer.

4,442,276

PROCESS FOR POLYMERIZING OR COPOLYMERIZING OLEFINS

Norio Kashiwa, Iwakuni, and Yoshihisa Ushida, Ohtake, both of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Feb. 12, 1982, Ser. No. 348,176

Int. Cl.^{3} C08F *4/02, 10/00*

U.S. Cl. 526—125 **7 Claims**

1. A process for polymerizing or copolymerizing olefins, which comprises polymerizing or copolymerizing olefins in the presence of a catalyst composed of

(A) a solid titanium catalyst component obtained by reacting (i) a titanium composition composed essentially of tetravalent titanium, magnesium, halogen and an electron donor or electron donor residue selected from the group consisting of organic acid esters, alkoxy groups and aryloxy groups with (ii) an organic silicon compound having an Si—O—C bond in the molecule in the presence of (iii) an organoaluminum compound, until the content of the electron donor or electron donor residue in the titanium composition (i) decreases to not more than 90 mole% of that before the reaction and reaches not more than 0.6 mole per gram-atom of Ti, and also until the amount of the silicon compound contained in the titanium composition becomes 0.1 to 50 moles per gram-atom of Ti or by first treating the titanium composition (i) with the organoaluminum compound (iii) and then reacting it with the organic silicon compound (ii), until the amount of the electron donor or electron donor residue in the titanium composition (i) decreases to not more than 90 mole% of that before the reaction, and reaches not more than 0.6 mole per gram atom of Ti, thus including 0.1 to 50 moles of the silicon compound per gram-atom of Ti in the titanium composition, and;

(B) an organoaluminum compound.

4,442,277

PROCESS AND CATALYST FOR OLEFIN POLYMERIZATION

Joel L. Martin, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 241,975, Mar. 9, 1981, Pat. No. 4,400,303. This application Sep. 22, 1982, Ser. No. 421,222

Int. Cl.^{3} C08F *4/02, 10/02*

U.S. Cl. 526—125 **14 Claims**

1. A process for producing polymers of ethylene comprising contacting monomers comprising ethylene with a catalyst system comprising:

(a) a cocatalyst comprising an organometallic compound of a metal of Groups I, IIA, and IIIA of the Periodic Table, and

(b) a catalyst prepared by

(1) pretreating solid particles of magnesium dihalide by pulverizing said particles in the presence of at least one oxy compound of the formula

$RC(OR'')_3$

wherein R is selected from hydrogen and alkyl radicals having 1 to 4 carbon atoms and each R" is individually selected from alkyl radicals containing 1 to 4 carbon atoms, and then

(2) reacting said pretreated solid particles with a halogenated titanium compound of the formula $TiX_n(OR''')_{4-n}$ wherein R''' is a hydrocarbyl radical containing 1 to 12 carbon atoms, X is a halogen, and n is an integer of 1 to 4 in the absence of any substantial pulverization.

4,442,278

ETHYNYL-SUBSTITUTED S-TRIAZINE DERIVATIVES, POLYMERS THEREOF AND PROCESS FOR MAKING THE SAME

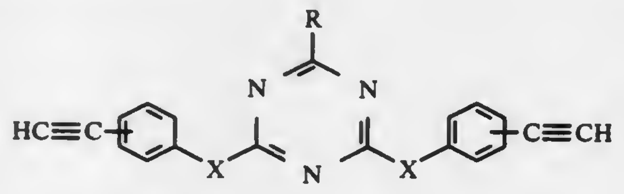
Thomas W. Giants, Santa Monica, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Dec. 3, 1981, Ser. No. 326,792

Int. Cl.^{3} C08F *126/06*

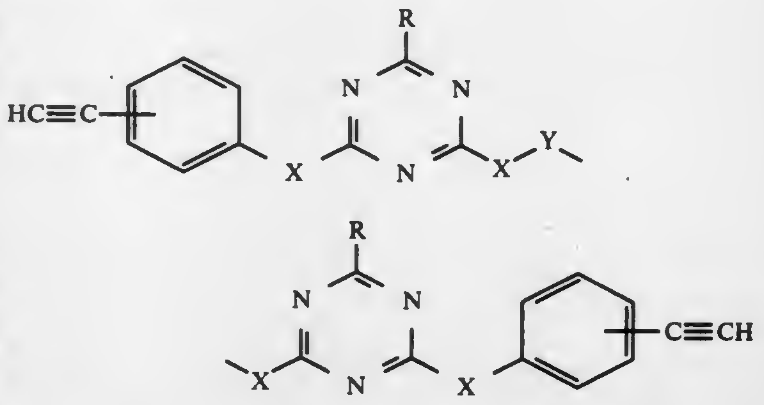
U.S. Cl. 526—261 **2 Claims**

1. A polymer prepared by thermal curing from an oligomer having the structure

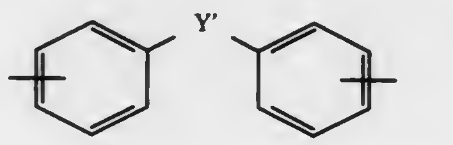


where X, is a single bond, O, S, NR', $(CH_2)_n$, $C(C_nH_{2n+1})_2$, or $[C(Ar_2)]_n$, where Ar is aryl, R is alkyl, alkoxyl, aryl, or aryloxy, R' is H, alkyl or aryl, and n ranges from 1 to about 4.

2. A polymer prepared by thermal curing from an oligomer having the structure



where X is a single bond, O, S, NR', $(CH_2)_n$, $C(C_nH_{2n+1})_2$ or $[C(Ar_2)]_n$ where Ar is aryl, R' is H, alkyl, or aryl, and n ranges from 1 to about 4; R is alkyl, alkoxy, aryl, or aryloxy, and Y is a divalent moiety whose structure is



where Y' may be $C(CF_nH_{3-n})_2$ where n ranges from 0 to 3, CO, SO_2, S, or O.

4,442,279

COMPOSITIONS CONTAINING ISOCYANATOSILANES AS ADDITIVES TO INCREASE THE STABILITY IN STORAGE OF COMPOSITIONS CONTAINING POLYURETHANE PREPOLYMERS WITH FREE ISOCYANATE GROUPS

Rudolf Fauss, Cologne; Michael Sonntag, Odenthal; Kuno Wagner, Leverkusen; Kurt Findeisen, Odenthal, and Gerhard Mennicken, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

Filed Jan. 24, 1983, Ser. No. 460,338

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1982, 3204128

Int. Cl.^{3} C08G *18/00*

U.S. Cl. 528—44 **6 Claims**

1. A liquid or pasty, clear or pigmented composition comprising:

(a) a polyurethane prepolymer having free isocyanate groups,

(b) an isocyanatosilane corresponding to the formula

$R_nSi(NCO)'_{4-n}$

wherein

R denotes an alkyl group having 1 to 6 carbon atoms and

R represents 0 or an integer from 1 to 3 in an amount sufficient to increase the storage stability of said composition and, optionally,

(c) a solvent which is inert towards isocyanate groups.

4,442,280

HETEROGENEOUS SYSTEMS OF POLYOL/DIPHENYL METHANE URETDIONE DIISOCYANATES AND A PROCESS FOR THEIR PRODUCTION

Gerhard Grögler, Leverkusen, and Wilhelm Kallert, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 2, 1982, Ser. No. 404,010

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1981, 3131780

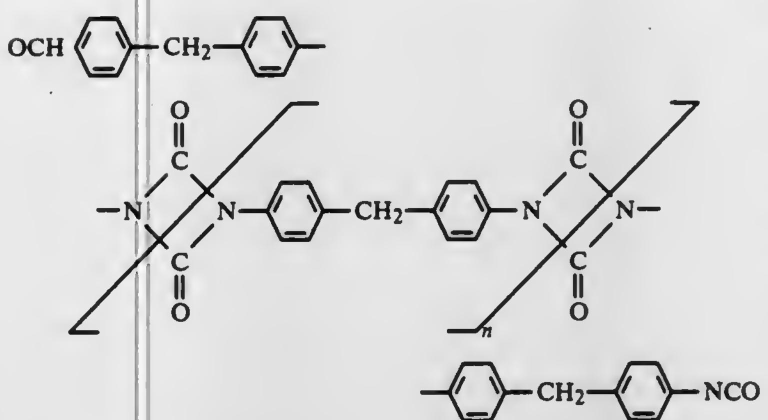
Int. Cl.^{3} C08G *18/77, 18/79, 18/24, 18/26*

U.S. Cl. 528—54 **29 Claims**

1. A storage stable, low molecular weight, substantially water free heterogeneous composition which may be hardened to form a polyurethane by exposure to heat comprising:

(a) one OH-equivalent of difunctional or polyfunctional polyhydroxyl compounds having a molecular weight from 1,000 to 10,000;

(b) (i) 0.8 to 1.5 NCO-equivalents of 4,4'-diphenyl methane uret dione diisocyanates corresponding to the formula:



in which n=0 to 2.5 or

(ii) 0.8 to 12 NCO-equivalents of a 4,4'-diphenyl methane uret dione diisocyanate modified by a difunctional or polyfunctional compound containing OH-groups attached to aliphatic and/or cycloaliphatic groups and/or aromatic NH_2-groups which modifying compound has a molecular weight from 62 to 400; and

(c) 0.001 to 5 wt. % (based on (a)+(b)) of a lead and/or tin catalyst.

4,442,281

THERMOPLASTIC POLYURETHANE-ELASTOMERS FROM CYCLOHEXANE-1,4-DIISOCYANATE

Peter Hentschel, Laudenbach; Walter Brodowski, Amorbach, and Hans Zengel, Kleinwallstadt, all of Fed. Rep. of Germany, assignors to AKZO nv, Arnheim, Netherlands

Filed Sep. 6, 1983, Ser. No. 529,531

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1982, 3233384

Int. Cl.^{3} C08G *18/32*

U.S. Cl. 528—79 **26 Claims**

1. Thermoplastically workable polyurethane-elastomers, obtained by polyaddition of substantially pure trans-cyclohexane-1,4-diisocyanate, marcrodiols of an average molecular weight from 800 to 4000 and chain lengtheners having at least two active hydrogen atoms, said chain lengtheners composed of bisethoxylated Bisphenol A or mixtures of bisethoxylated Bisphenol A with other short-chain diols customarily employed as chain lengtheners.

4,442,282

POLYURETHANE COVERED GOLF BALLS

Edmond G. Kolycheck, Lorain, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jun. 20, 1983, Ser. No. 505,585

Int. Cl.^{3} C08G *18/42;* **A63B** *37/12*

U.S. Cl. 528—83 **3 Claims**

1. A golf ball comprising a core and a polyesterurethane cover comprising the reaction product of a polyester of an aliphatic diol containing 2 to 8 carbon atoms and 1,12-dodecanedioc acid, said polyester having a molecular weight of about 1500 to about 5000, reacted with diphenylmethane-4,4'-diisocyanate in a molar ratio of about 0.96 to 1.02 mols of diisocyanate per mol of polyester, the melt index of the polyesterurethane being in the range of about one to ten.

4,442,283

POLYIMIDE ADHESIVE FROM LACTAM, AROMATIC DIANHYDRIDE, ALIPHATIC DIANHYDRIDE AND DIAMINE

John Gagliani, 6280 Lance Pl., San Diego, Calif. 92120, and John V. Long, 1756 Lexington Pl., El Cajon, Calif. 92021

Filed Sep. 27, 1982, Ser. No. 423,801

Int. Cl.^{3} C08G *69/14*

U.S. Cl. 528—323 **15 Claims**

1. In the method for preparing a polyimide adhesive which comprises the steps of:

preparing a mixture of an aromatic tetracarboxylic acid dianhydride with an oxime in a mole ratio of oxime to tetracarboxylic acid dianhydride between about 0.01:1 and 1:1 to produce an N-substituted aliphatic imide;

dissolving said imide in a solvent; and

adding thereto a diamine;

the improvement comprising:

adding to the mixture an aliphatic tetracarboxylic acid dianhydride either before or after the mixture is dissolved in said solvent; and

wherein said solvent is a reactive solvent esterifying agent.

4,442,284

CHEMICAL COMPOUNDS, AMINOACID ATTACHED TO GLYCOSIDE

Cenek Kolar, Marburg an der Lahn; Hans Paulsen, Hamburg, both of Fed. Rep. of Germany, and Jean C. Jacquinet, Orleans-La Source, France, assignors to Behringwerke Aktiengesellschaft, Marburg an der Lahn, Fed. Rep. of Germany

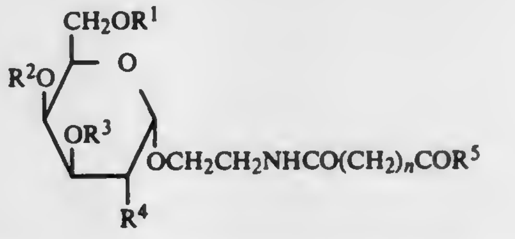
Filed Feb. 22, 1982, Ser. No. 350,887

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1981, 3106815

Int. Cl.^{3} C07H *15/04*

U.S. Cl. 536—17.9 **6 Claims**

1. A compound of the formula



wherein R^1 taken alone is hydrogen, acetyl, benzoyl, or benzyl, R^2 and R^3 taken alone are hydrogen, acetyl, benzoyl, benzyl, beta-D-galactopyranosyl, or 2,3,4,6-tetra-O-acetylated beta-D-galactopyranosyl, R^1 and R^2 taken together are alkylidene or benzylidene, R^4 is azido, amino, or acetamido, R^5 is $—OCH_3$,

—O—benzyl, —NHNH$_2$, —N$_3$, or —OH, and n is an integer from 1 to 10.

4,442,285

PROCESS FOR SEPARATING GLUCOSE FROM FRUCTOSE BY SELECTIVE ADSORPTION

Richard W. Neuzil, Downers Grove, and James W. Priegnitz, Elgin, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 197,874, Oct. 17, 1980, Pat. No. 4,349,668, which is a continuation-in-part of Ser. No. 690,769, May 27, 1976, abandoned. This application May 4, 1982, Ser. No. 374,819

Int. Cl.^{3} C07H *1/06;* **C13K** *1/00*

U.S. Cl. 536—127 **3 Claims**

1. A process for the recovery of glucose from a mixture thereof with fructose which comprises contacting a mixture containing glucose and fructose, at a temperature in the range of from 20° C. to 200° C. and a pressure in the range of from atmospheric to 500 psig, with an X zeolite containing potassium cations at exchangeable cationic sites and selectively adsorbing glucose in said zeolite to separate the same from unadsorbed fructose, and thereafter removing the adsorbed glucose from the zeolite.

4,442,286

PREPARATION OF AMINES BY THE REDUCTION OF IMINES WITH PHOSPHOROUS ACID

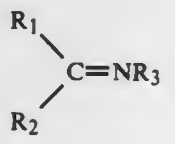
Derek Redmore, Ballwin, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Filed Oct. 15, 1976, Ser. No. 732,604

Int. Cl.^{3} C07D *295/02;* **C07C** *85/08, 85/00*

U.S. Cl. 544—178 **13 Claims**

1. A process of preparing amines which comprises reducing imines of the formula



where R$_1$ and R$_2$ are hydrogen, alkyl or R$_1$ and R$_2$ may be joined to form a cycloalkyl group, and R$_3$ may be alkyl, aryl, cycloalkyl, alkaryl, aralkyl or heterocyclic, or enamines with phosphorous acid.

2. The process of claim 1 where an aldehyde and phosphorous acid are first mixed and the mixture then added to an amine whereby an imine or enamine is formed in situ and the final product is an amine.

4,442,287

ANTHRAQUINONE DYES

Ernst Hartwig, Heidelberg, and Reinhold Krallmann, Weisenheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

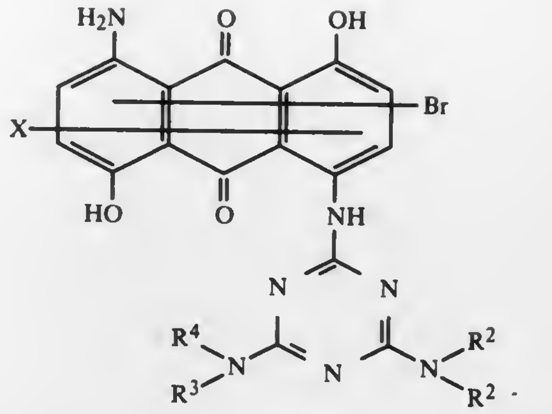
Filed Jun. 30, 1982, Ser. No. 393,609

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1981, 3127240

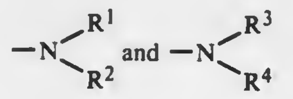
Int. Cl.^{3} C07D *251/70*

U.S. Cl. 544—187 **2 Claims**

1. A dye of the formula



where X is hydrogen, 4-hydroxyphenyl or 4-methoxyphenyl, and



are each independently —N(CH$_3$)$_2$ or —NHCH$_3$.

4,442,288

ANTHRAQUINONE COMPOUNDS

Fritz Meininger, Frankfurt am Main, Fed. Rep. of Germany; Joachim W. Otten, deceased, late of Offenbach am Main, Fed. Rep. of Germany; by Ursla Otten, heir, Hiedelberg, and by Anna G. Rudolph, heir, Dillenburg, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

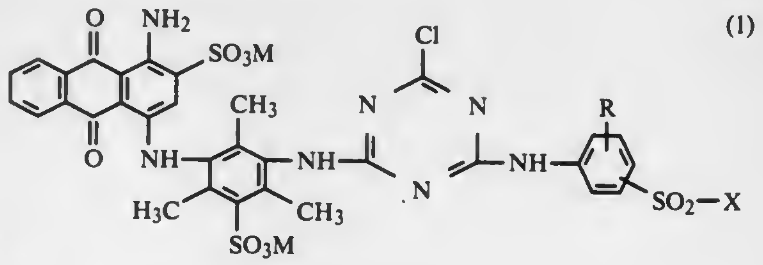
Filed Apr. 30, 1982, Ser. No. 373,789

Claims priority, application Fed. Rep. of Germany, May 2, 1981, 3117482

Int. Cl.^{3} C07D *251/50*

U.S. Cl. 544—189 **2 Claims**

1. A compound of the formula (1)



(1)

wherein

M is hydrogen or the equivalent of a metal,

R is hydrogen, halogen, methyl, ethyl, methoxy, ethoxy or carboxy, and

X is vinyl, β-sulfatoethyl, β-thiosulfatoethyl or β-chloroethyl, and

the group of the formula —SO$_2$—X is bound to the benzene nucleus in the para position with respect to the amino group.

4,442,289

4-OXOTHIENO[3,2-d]PYRIMIDINE ACETIC ACID ESTERS

Frank Kienzle, Flüh, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

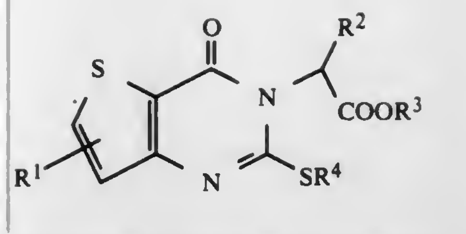
Division of Ser. No. 275,271, Jun. 19, 1981, Pat. No. 4,376,121. This application Dec. 23, 1982, Ser. No. 452,677

Claims priority, application Switzerland, Jun. 27, 1980, 4995/80

Int. Cl.^{3} C07D *487/04;* **A61K** *31/505*

U.S. Cl. 544—280 **6 Claims**

1. A compound of the formula



II

wherein R^1 is hydrogen, chlorine, bromine or C$_{1\text{-}4}$-alkyl, R^2 is hydrogen or methyl and R^3 and R^4 is C$_{1\text{-}4}$-alkyl.

3. A compound in accordance with claim 1, 2-methylthio-7-methyl-4-oxothieno[3,2-d]pyrimidine-3(4H)-acetic acid methyl ester.

4,442,290

DEVELOPMENT RESTRAINER RELEASE COMPOUNDS

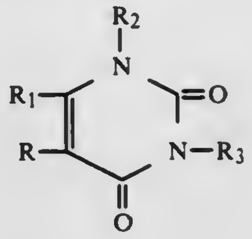
James R. Bartels-Keith, Lexington, and Anthony J. Puttick, Arlington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 273,039, Jun. 12, 1981, Pat. No. 4,350,754. This application Mar. 29, 1982, Ser. No. 362,651

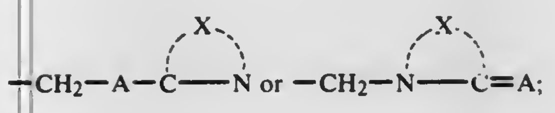
Int. Cl.^{3} C07D *403/06, 403/12*

U.S. Cl. 544—310 **18 Claims**

1. A compound represented by the formula

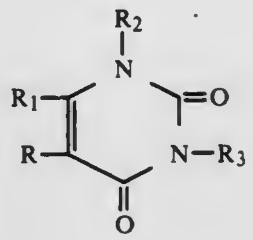


wherein R is

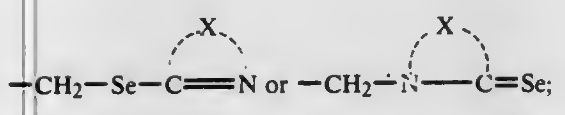


A is sulfur or selenium; X represents the nonmetallic atoms necessary to form a nucleus which completes a tetrazole moiety; R$_1$ is H or alkyl having from 1 to 6 carbon atoms; R$_2$ is H or a group which is hydrolyzable upon contact with an aqueous alkaline medium; and R$_3$ is H, alkyl or a group which is hydrolyzable upon contact with an aqueous alkaline medium.

10. A compound represented by the formula

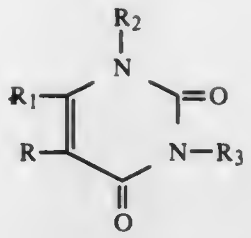


wherein R is

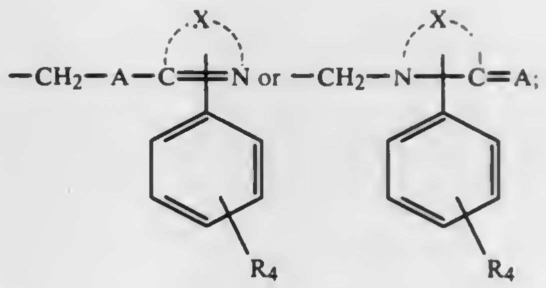


X represents the nonmetallic atoms necessary to form a nucleus which completes a five or six membered heterocyclic moiety; R$_1$ is H or alkyl having from 1 to 6 carbon atoms; R$_2$ is H or a group which is hydrolyzable upon contact with an aqueous alkaline medium; and R$_3$ is H, alkyl or a group which is hydrolyzable upon contact with an aqueous alkaline medium.

15. A compound represented by the formula



wherein R is



A is sulfur or selenium; X represents the nonmetallic atoms necessary to form a nucleus which completes a five or six membered heterocyclic moiety; R$_1$ is H or alkyl having from 1 to 6 carbon atoms; R$_2$ is H or a group which is hydrolyzable upon contact with an aqueous alkaline medium; R$_3$ is H, alkyl or a group which is hydrolyzable upon contact with an aqueous alkaline medium; and R$_4$ is either a group having a pKa of from about 7 to about 14 which is ionizable to an anion whereby the silver salt of the moiety resulting from cleavage of R is more soluble in the pH range within which R$_4$ is ionized to an anion that it is below that pH range or a precursor thereof, said precursor being capable of being converted to R$_4$ upon contact with an aqueous alkaline medium.

4,442,291

1,2,3,4,4A,7-HEXAHYDRO-6,8-DIMETHOXY-2-METHYL ISOQUINOLINE

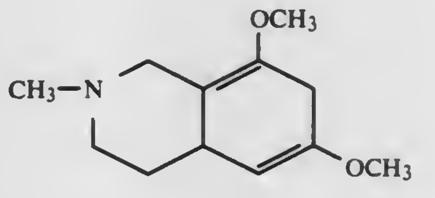
Leo Berger, Montclair, and Gary L. Olson, Westfield, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 393,141, Jun. 28, 1982, which is a division of Ser. No. 215,941, Dec. 12, 1980, Pat. No. 4,349,678, which is a division of Ser. No. 73,813, Sep. 10, 1979, Pat. No. 4,260,762, which is a continuation-in-part of Ser. No. 950,947, Oct. 13, 1978, abandoned. This application Mar. 28, 1983, Ser. No. 479,544

Int. Cl.^{3} C07D *217/24*

U.S. Cl. 546—150 **1 Claim**

1. A compound of the formula



XI

4,442,292

OPTICALLY ACTIVE NICOTINE ANALOGS AND PROCESS FOR THEIR PREPARATION

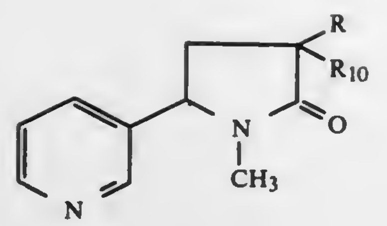
William B. Edwards, III, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Division of Ser. No. 229,481, Jan. 29, 1981, Pat. No. 4,332,945. This application May 13, 1982, Ser. No. 377,990

Int. Cl.^{3} C07D *401/04*

U.S. Cl. 546—281 **6 Claims**

1. A compound represented by the formula:

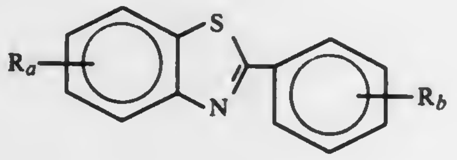


wherein R is CO_2R', and R' is selected from the group consisting of a straight chain or branched alkyl group having from 1 to 12 carbon atoms, a cycloalkyl group having from 3 to 12 carbon atoms, and an aryl group having from 6 to 12 carbon atoms; and R_{10} is an alkyl group containing from 1 to 12 carbon atoms.

4,442,293
DI-ACETYLENYL-SUBSTITUTED 2-PHENYLBENZOTHIAZOLES

Tsu-Tzu Tsai, Dayton, and Fred E. Arnold, Centerville, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Mar. 9, 1982, Ser. No. 356,576
Int. Cl.³ C07D *277/66*
U.S. Cl. 548—152 **9 Claims**

1. A compound of the formula



wherein R_a and R_b are —H or —C≡CH, wherein at least one of R_a or R_b is —C≡CH and wherein the location of R_a is —5 or —6 and the location of R_b is —3' or —4'.

4,442,294
PROCESS FOR THE PREPARATION OF HALO-2-MERCAPTOBENZOXAZOLES

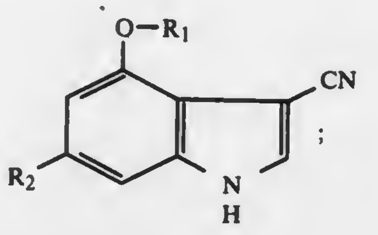
Reinhard Handte, Hofheim am Taunus; Jürgen Sander, Kelkheim, and Thomas Tammer, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed May 28, 1982, Ser. No. 383,209
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1981, 3121675
Int. Cl.³ C07D *263/58*
U.S. Cl. 548—221 **5 Claims**

1. A process for the preparation of 5- and 6-halo-2-mercaptobenzoxazoles or the sodium and potassium salts thereof, as a product, which comprises reacting, as one reactant, the corresponding 4- or 5-halo-2-aminophenols with sodium or potassium lower alkyl xanthates, as the other reactant, in a aromatic or aqueous dispersion in which a heterogeneous phase is present of one of the reactants or where the heterocyclic product is also in a heterogeneous phase.

4,442,295
3-CYANO INDOLES AS INTERMEDIATES FOR CARDIOSELECTIVE COMPOUNDS

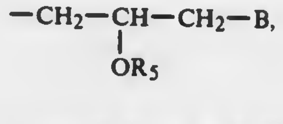
Helmut Michel, Mannheim; Wolfgang Kampe, Heddesheim, and Roland Ofenloch, Lorsch, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany
Filed Jul. 29, 1981, Ser. No. 288,077
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1980, 3029980
Int. Cl.³ C07D *209/04*
U.S. Cl. 548—505 **6 Claims**

1. An indole of the formula



in which

R_1 is a hydrogen atom, a phenyl-C_{1-4}-alkyl radical or a radical of the formula



$$—CH_2—\underset{OR_5}{\underset{|}{CH}}—CH_2—B,$$

B is a chlorine or bromine atom, or a mesyloxy or tosyloxy radical, or together with R_5 is a valency bond,

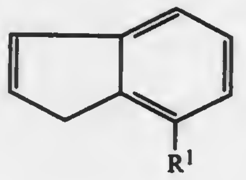
R_5 is a hydrogen or an acetyl, formyl or benzoyl radical, or together with B is a valency bond, and

R_2 is a hydrogen atom or C_{1-6}-alkyl radical.

4,442,296
4-HETEROCYCLIC-SUBSTITUTED-2-INDANYL ALCOHOLS AND INSECTICIDAL ESTER DERIVATIVES

John F. Engel, Medina, N.Y., assignor to FMC Corporation, Philadelphia, Pa.
Division of Ser. No. 303,292, Sep. 17, 1981, Pat. No. 4,368,205, and a continuation-in-part of Ser. No. 202,813, Oct. 31, 1980, Pat. No. 4,346,251, which is a continuation-in-part of Ser. No. 42,372, May 24, 1979, Pat. No. 4,263,319. This application Dec. 23, 1982, Ser. No. 452,535
Int. Cl.³ C07D *207/323, 333/10*
U.S. Cl. 548—563 **1 Claim**

1. A compound of the formula



wherein R^1 is 2-thienyl or 1-pyrrolyl.

4,442,297
MANGANESE COMPOUNDS AND SORPTION OF GASES USING MANGANESE COMPOUNDS

William E. Hill, Auburn, Ala., and Charles A. McAuliffe, Altrincham, England, assignors to Facilitated Separations, Inc., Towson, Md.
Continuation-in-part of Ser. No. 157,028, Jun. 6, 1980, abandoned. This application May 11, 1981, Ser. No. 262,705
Int. Cl.³ C07F *13/00*
U.S. Cl. 549—206 **18 Claims**

1. A compound of the formula

$$Mn^{II}LX_2(Q)_n \qquad (I)$$

wherein L represents a monodentate ligand of the formula

$$PR^1R^2R^3 \qquad (II)$$

wherein

R^1, R^2, and R^3 are identical or different and represent alkyl, cycloalkyl, alkenyl, alkynyl, or aryl groups or hydrogen with the proviso that no more than two of R^1, R^2, and R^3 are aryl groups and that at least one of R^1, R^2, and R^3 is a alkyl, cycloalkyl, alkenyl, alkynyl, or aryl group,

X is a species capable of existing as an anion and is selected from the group consisting of Cl, Br, I, CN, NO_2, NO_3, OH, NCS, NCSe, and NCO,

Q is a solvento molecule that forms a chemical bond to the manganese, and

n is the number of solvent donor bonds to the manganese and is 1, 2, or 3.

4,442,298
CHEMICAL SYNTHESIS OF ETHYLENE/MALEIC ANHYDRIDE DIMER WITH PHENYLETHYL END GROUP

Jacob S. Tou, and Alfred A. Schleppnik, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.
Filed Aug. 30, 1982, Ser. No. 413,009
Int. Cl.³ C07D *307/60*
U.S. Cl. 549—252 **6 Claims**

1. A method for the chemical synthesis of a phenylethyl substituted dimer of ethylene and maleic anhydride comprising

(a) alkylating alkyl 2,4-dihalobutyrate with alkyl 2-cyano-3-phenylbutyrate,

(b) alkylating the resulting halide condensation product with a carboxylate selected from the group consisting of trialkyl ethane-1,1,2-tricarboxylate and dimethyl cyanoethane-1,2-dicarboxylate,

(c) acid hydrolyzing the resulting tetra or pentaester accompanied by decarboxylating, and

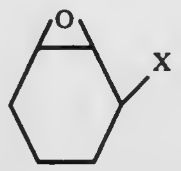
(d) dehydrating the resulting tetra-acid to yield the desired phenylethyl substituted dimer of ethylene and maleic anhydride,

wherein the alkyls in the butyrate and carboxylate ester groups each contain from one to about four carbon atoms and halo is selected from the group consisting of bromo, chloro and iodo.

4,442,299
DIEPOXYCYCLOHEXANE DERIVATIVES

Horst Prinzbach; Reinhard Schwesinger, and Reinhold Keller, all of Freiburg, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany
Continuation of Ser. No. 28,738, Apr. 10, 1979, abandoned, which is a continuation of Ser. No. 891,014, Mar. 28, 1978, abandoned, which is a continuation of Ser. No. 710,458, Aug. 2, 1976, abandoned. This application Apr. 22, 1982, Ser. No. 371,014
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1975, 2537682
Int. Cl.³ C07D *303/08*
U.S. Cl. 549—545 **3 Claims**

1. A compound of the formula

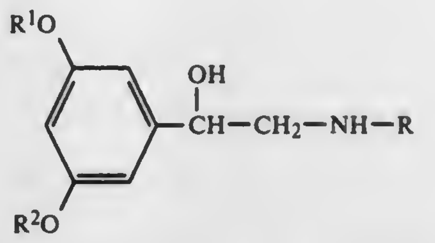


where the broken line is an oxygen atom bonded in the form of a cis epoxide, and X is endo- or exo-bromine.

4,442,300
THERAPEUTICALLY ACTIVE COMPOUNDS

O. A. Torsten Olsson; Leif Å Svensson, both of Lund, and Kjell I. L. Wetterlin, Sandby, all of Sweden, assignors to Aktiebolaget Draco, Lund, Sweden
Filed Jul. 1, 1981, Ser. No. 279,467
Claims priority, application United Kingdom, Sep. 7, 1980, 8022440; May 29, 1981, 8116440
Int. Cl.³ C07C *69/773, 69/88, 69/76*
U.S. Cl. 560—66 **19 Claims**

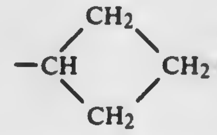
1. A compound of the formula



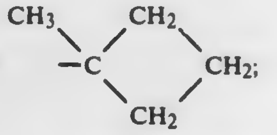
I

and therapeutically acceptable salts thereof, in which formula R, R^1 and R^2 are as follows:

R is selected from the group consisting of $—C(CH_3)_3$,



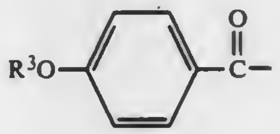
and



R^1 is selected from the group consisting of H and R^2;

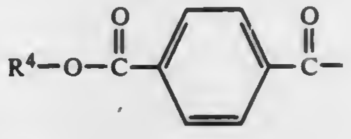
R^2 is selected from the group consisting of

(a)



and

(b)

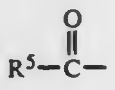


in which formulas

R^3 is selected from the group consisting of

(a) H;

(b)

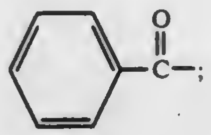


$$R^5—\overset{O}{\overset{\|}{C}}—$$

wherein R^5 is a straight or branched alkyl group containing 1–4 carbon atoms;

and

(c)



and wherein

R^4 is selected from the group consisting of

(b) an alkyl group containing 1–3 carbon atoms.

4,442,301

PROCESS FOR STEREOSELECTIVELY SYNTHESIZING CYCLOPROPANE CARBOXYLATES

Franco Gozzo; Giuseppe Caprara; Lamberto Roberti; Giuseppe Paparatto, and Ettore Santoro, all of Milan, Italy, assignors to Montedison S.p.A., Milan, Italy

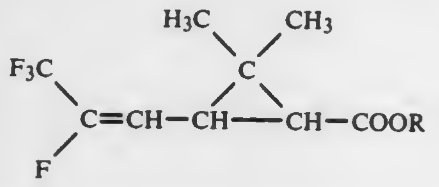
Filed Jun. 29, 1981, Ser. No. 278,676

Claims priority, application Italy, Jul. 2, 1980, 23180 A/80

Int. Cl.^{3} C07C *69/743*

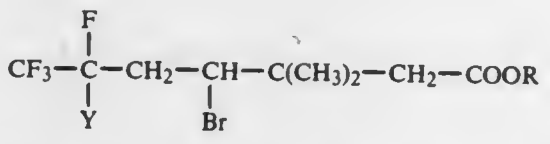
U.S. Cl. 560—124 **15 Claims**

1. A stereoselective process for preparing lower alkyl esters of the cis-2,2-dimethyl-3-(β-trifluoromethyl-β-trifluorovinyl)-cyclopropane carboxylic acid of the formula:



(II-F)

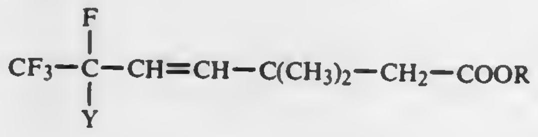
wherein R is a C_1–C_4 alkyl, wherein a compound of the formula



$$CF_3-\underset{Y}{\underset{|}{\overset{F}{\overset{|}{C}}}}-CH_2-\underset{Br}{\underset{|}{C}}H-C(CH_3)_2-CH_2-COOR$$

(III-F)

wherein R is a C_1–C_4 alkyl and Y is chlorine or bromine, is monodehydrohalogenated in the presence of a primary or secondary amine and in a non-polar or low polarity solvent, to selectively obtain a compound of formula:



$$CF_3-\underset{Y}{\underset{|}{\overset{F}{\overset{|}{C}}}}-CH=CH-C(CH_3)_2-CH_2-COOR$$

(A')

and subsequently dehydrohalogenating said product by the action of an alkaline base in a non-polar solvent or in ether maintaining, in the latter case, a temperature below 50° C.

4,442,302

PHOTOPOLYMER COMPOSITIONS FOR PRINTING PLATES

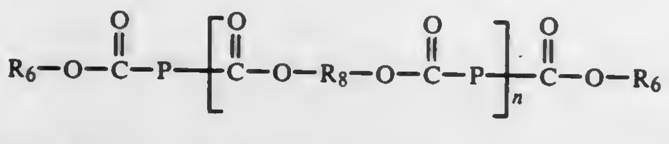
Rudolph L. Pohl, Landenberg, Pa., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 175,171, Aug. 4, 1980, abandoned, which is a continuation-in-part of Ser. No. 20,778, Mar. 15, 1979, abandoned, which is a continuation-in-part of Ser. No. 866,964, Jan. 4, 1978, abandoned. This application Jul. 2, 1982, Ser. No. 394,565

Int. Cl.^{3} C07C *69/34*

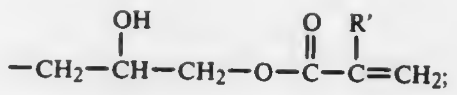
U.S. Cl. 204—159.23 **3 Claims**

1. A liquid terminally olefinically unsaturated linear polymer having the structure:



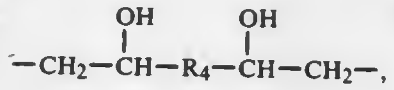
$$R_6-O-\overset{O}{\overset{\|}{C}}-P-\left[\overset{O}{\overset{\|}{C}}-O-R_8-O-\overset{O}{\overset{\|}{C}}-P\right]_n-\overset{O}{\overset{\|}{C}}-O-R_6$$

wherein P is a polymer residue having a number average molecular weight of at least about 1000 selected from homopolymers of butadiene, isoprene, chloroprene and isobutylene and copolymers of butadiene with styrene, butadiene with acrylonitrile, butadiene with isoprene and ethylene with 1-butene, and the corresponding saturated residues; R_6 is

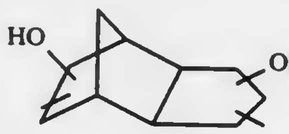


$$-CH_2-\overset{OH}{\overset{|}{C}}H-CH_2-O-\overset{O}{\overset{\|}{C}}-\overset{R'}{\overset{|}{C}}=CH_2;$$

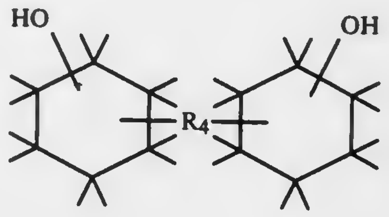
R_8 is selected from



$$-CH_2-\overset{OH}{\overset{|}{C}}H-R_4-\overset{OH}{\overset{|}{C}}H-CH_2-,$$



and



where each —OH group and free valence bond is on an adjoining carbon atom; R_4 is selected from aliphatic hydrocarbon, cycloaliphatic hydrocarbon and monocyclic aromatic hydrocarbon radicals containing up to 30 carbon atoms with 0–2 ester linkages or 0–7 ether linkages; R′ is selected from —H and —CH_3 groups; and n = 1–5.

4,442,303

RECOVERY OF WATER MISCIBLE ORGANIC ACIDS FROM AQUEOUS SOLUTION AS ALKYL ESTERS

Samuel S. Mims, Baton Rouge, La., assignor to El Paso Products Company, Odessa, Tex.

Filed Dec. 9, 1980, Ser. No. 214,790

Int. Cl.^{3} C07C *67/03, 67/08, 67/54, 67/58, 67/60, 69/003*

U.S. Cl. 560—191 **18 Claims**

1. A process for recovery of C_4–C_6 dicarboxylic acid components contained in an aqueous waste byproduct stream resulting from a primary reaction system in which adipic acid is produced by nitric acid oxidation of cyclohexanone/cyclohexanol, wherein the process comprises the steps of (1) contacting the said aqueous stream with a mixture of C_1–C_3 alkanol and C_6–C_{20} alkanol to esterify the C_4–C_6 dicarboxylic acid components; (2) separating the formed water-immiscible organic ester phase from the aqueous phase; and (3) distilling the said organic ester phase to yield di(C_6–C_{20} alkyl) esters of succinic acid, glutaric acid and adipic acid.

14. A process for recovery of water-miscible organic acid components contained in an aqueous solution which comprises the steps of (1) contacting the said aqueous stream with a mixture of C_1–C_3 alkanol and C_6–C_{20} alkanol under acidic conditions to esterify the organic acid components; (2) separating the formed water-immiscible organic ester phase from the aqueous phase; and (3) distilling the said organic ester phase to recover C_6–C_{20} alkyl esters of the organic acids.

4,442,304

PROCESS FOR PURIFYING AND RECOVERING CONTAMINATED CATALYST SOLUTION OBTAINED IN THE CARBONYLATION OF METHYL ACETATE AND/OR DIMETHYLETHER

Heinz Erpenbach, Cologne; Klaus Gehrmann; Winfried Lork, both of Erftstadt, and Peter Prinz, Hürth, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 29, 1982, Ser. No. 402,942

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1981, 3134350

Int. Cl.^{3} C07C *67/36, 69/16, 51/56;* B01J *31/40*

U.S. Cl. 560—232 **14 Claims**

1. In a process for purifying and recovering constituents from a contaminated catalyst solution which is obtained as a result of the carbonylation of methyl acetate, dimethylether, or

a mixture of methylacetate and dimethyl ether, the contaminated catalyst solution containing carbonyl compounds of noble metals of group VIII of the Periodic System of the elements, quaternary heterocyclic aromatic nitrogen compounds or quaternary organophosphorus compounds as organic promoters, undistillable organic contaminants, and volatile constituents, including acetic acid, acetic anhydride and ethylidene diacetate, the improvement which comprises: distillatively freeing the catalyst solution from the volatile constituents and water-treating the remaining solid distillation residue, the noble metal/carbonyl-compound being thereby precipitated together with the organic contaminants and the organic promoter becoming dissolved in the water; removing the precipitated and contaminated noble metal/carbonyl-compound by filtration and freeing it from the organic contaminants by extraction with aliphatic ethers; recovering the organic promoter from the water; and recycling the purified noble metal/-carbonyl-compound and the recovered organic promoter into the carbonylation reaction.

7. A process as claimed in claim **1** wherein the catalyst solution additionally contains carbonyl-forming non-noble metals as inorganic promoters which, during said water-treatment of said solid distillation residue, are precipitated together with said organic contaminated noble metal/carbonyl-compound, filtered off, purified by extraction with an ether and recycled together with said noble metal/carbonyl-compound to the carbonylation reaction.

10. In a process for purifying and recovering constituents from a contaminated catalyst solution which is obtained as a result of the carbonylation of methyl acetate, dimethylether, or a mixture of methylacetate and dimethylether, the contaminated catalyst solution containing carbonyl compounds of noble metals of group VIII of the Periodic System of the elements, quaternary heterocyclic aromatic nitrogen compounds or quaternary organophosphorus compounds as organic promoters, undistillable organic contaminants, and volatile constituents including acetic acid, acetic anhydride and ethylidene diacetate, the improvement which comprises: distillatively freeing the catalyst solution from the volatile constituents and water-treating the remaining solid distillation residue, the noble metal/carbonyl-compound being thereby precipitated together with the organic contaminants and the organic promoter becoming dissolved in the water; removing the precipitated and contaminated noble metal/carbonyl-compound by filtration and freeing it from the organic contaminants by extraction with aliphatic ethers; removing the organic promoter by extracting it with halogenated hydrocarbons and evaporating said halogenated hydrocarbons; and recycling the purified noble metal/carbonyl-compound and the recovered organic promoter into the carbonylation reaction.

4,442,305

POLYCATECHOLAMIDE CHELATING AGENTS

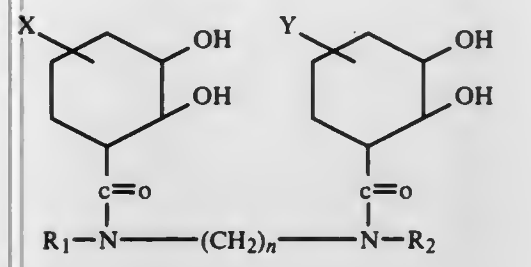
Frederick L. Weitl, Martinez, and Kenneth N. Raymond, Berkeley, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 24, 1981, Ser. No. 295,512

Int. Cl.^{3} C07C *101/72*

U.S. Cl. 562—451 **14 Claims**

1. Compound of the formula:



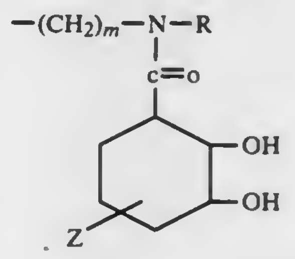
in which:

n is an integer varying from about 1–8, inclusively;

X and Y are independently selected from the group consisting of H, SO_3H, SO_3M, NO_2, and CO_2H, CO_2M;

where M represents a metal selected from the group consisting of alkali metals and alkaline earth metals,

R_1 and R_2 are selected from the group consisting of alkyl and aralkyl hydrocarbon radicals and the benzamide moiety:



where

m is an integer varying from 1–8, inclusively and can be the same or different than n;

Z is selected from the same group as X and Y;

R is selected from the same group as R_1 and R_2.

4,442,306

PRODUCTION OF TERTIARY AMINES

Herbert Mueller, Frankenthal; Hartmut Axel, Schwetzingen, and Arnold Wittwer, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 20, 1982, Ser. No. 400,133

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1981, 3128889

Int. Cl.^{3} C07C *85/06*

U.S. Cl. 564—479 **8 Claims**

1. A process for the preparation of a symmetrical or asymmetrical tertiary amine of not more than about 40 carbon atoms in total which comprises reacting a secondary amine having identical or different substituents with a primary or secondary monohydric or polyhydric alcohol having 6 or more carbon atoms and having the characteristics of a fatty alcohol, over a copper catalyst, at from 150° to 250° C., in the presence or absence of hydrogen, wherein the catalyst used is formed directly from copper formate under the reaction conditions.

4,442,307

CONVERSION OF DIMETHYL ETHER TO FORMALDEHYDE USING BI-MO-FE CATALYST

Robert M. Lewis, Sugarland; Robert C. Ryan, Houston, and Lynn H. Slaugh, Cypress, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 7, 1982, Ser. No. 433,195

Int. Cl.^{3} C07C *45/32*

U.S. Cl. 568—470 **4 Claims**

1. A process for converting dimethyl ether to formaldehyde which comprises contacting the dimethyl ether with oxygen at a temperature ranging from about 300 C. to about 600 C. with a catalyst comprising a mixture of oxides of bismuth, molybdenum and iron wherein the catalyst contains about 20 to about 80% by weight of bismuth, measured as the metal, from about 10 to about 50% by weight of molybdenum measured as the metal and from about 0.1 to about 10% by weight, measured as the metal, of iron, exclusive of any inert support.

4,442,308
PROCESS FOR PREPARING BY CATALYTIC OXIDATION IN OXYGEN-CONTAINING GAS MIXTURES, ACROLEIN FROM PROPYLENE AND METHACROLEIN FROM ISOBUTYLENE OR TERTIARY BUTANOL

Dietrich Arntz; Günter Prescher, both of Hanau, and Johannes Heilos, Seligenstadt, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 21, 1982, Ser. No. 390,448

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1981, 3125061

Int. Cl.^{3} C07C ***45/35, 45/38***

U.S. Cl. 568—480 **21 Claims**

1. In a process for preparing acrolein from propylene wherein there is carried out an oxidation in oxygen-containing gas mixtures in the presence of an active catalyst material of the composition:

$Ni_aCo_bFe_cBi_dP_eMo_fO_x$ in which a is a number from 2–20, b is a number from 0–15, a and b are a number from 2–20, c is a number from 0.1–7, d is a number from 0.1–4, e is a number from 0.1–4, f is about 12 and x is a number from 35–85, and 0.2 to 5% by weight of tantalum or samarium, calculated as Ta_2O_5 or Sm_2O_3, and a carrier therefor,

said carrier being composed of a layer lattic silicate and/or highly dispersed silica, the weight ratio silicate to silica being 10:1 to 1:1,

the improvement wherein an abrasion resistant coated catalyst is employed, said coated catalyst having an inert support which has a particle size of 0.5 to 6 mm and a rough surface and a coating enclosing said support and anchored in it, which coating is obtained by spraying a suspension of the starting material for the coating onto an agitated bed of the support while the suspending medium is partially removed by a gas stream at 20°-250° C. and an essentially constant residual moisture of the coating is being maintained, and drying and heat-treating,

wherein coated catalysts are used for the oxidation in the preparation of which the support bed is set into mixing motion by mechanical agitation and is simultaneously loosened by blowing in from below a fluidizing, mixing-intensifying gas stream, and a suspension of a precursor of the catalytically active material, which suspension contains a binder, is passed countercurrent to the gas in this bed at a rate which increases with increasing thickness of the coating,

the amounts of suspending medium drawn off and sprayed on being maintained in a substantially constant ratio which is determined by the particular combination of support and precursor used and the thermal expansion coefficients of support and of dried pulverulent precursor being so chosen that they differ by at most 15%,

and wherein after the spraying-on has been completed the coating is densified by continuing the increased mixing motion, the mechanical mixing motion is then stopped, the material is dried in a continuing gas stream and finally heat-treated.

4,442,309
PREPARATION OF LINEAR OLEFIN PRODUCTS

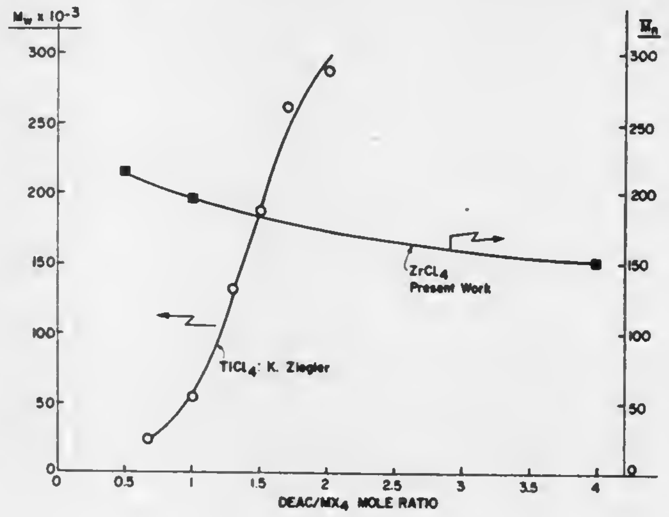
Arthur W. Langer, Jr., Watchung, N.J., assignor to Exxon Reserch and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 179,655, Aug. 20, 1980, Pat. No. 4,409,414, which is a continuation of Ser. No. 10,527, Feb. 9, 1979, abandoned, which is a division of Ser. No. 882,946, Mar. 2, 1978, Pat. No. 4,396,788, which is a continuation of Ser. No. 232,618, Mar. 7, 1972, abandoned, which is a continuation-in-part of Ser. No. 783,699, Dec. 13, 1968, Pat. No. 3,662,021, which is a continuation-in-part of Ser. No. 562,089, Jul. 1, 1966, abandoned, which is a continuation-in-part of Ser. No. 428,836, Jan. 28, 1965, abandoned, which is a continuation-in-part of Ser. No. 55,845, Sep. 8, 1960, Pat. No. 3,168,588. This application Dec. 14, 1981, Ser. No. 330,596

The portion of the term of this patent subsequent to Apr. 29, 1986, has been disclaimed.

Int. Cl.^{3} C07C ***2/22***

U.S. Cl. 585—523 **6 Claims**



1. A process for preparing and controlling the $\overline{M}_n$ of a reaction product comprising at least 90 mole % linear alpha olefins which comprises polymerizing an ethylene containing gas in the presence of the reaction product of $ZrCl_4$ with R_2AlX, wherein R is an alkyl group having about 1 to about 5 carbon atoms and X is Cl or Br, in the presence of a diluent at a temperature of about 75° to 200° C. and an ethylene pressure above about 50 psia, wherein the mole ratio of ethylene to olefin reaction product is above 0.8 throughout the reaction wherein the product olefin concentration is greater than 5 wt.% based on the diluent and reaction product, wherein the $\overline{M}_n$ of said reaction product is controlled by the molar ratio of said $R_2AlX/ZrCl_4$, said molar ratio being less than about 1.

ELECTRICAL

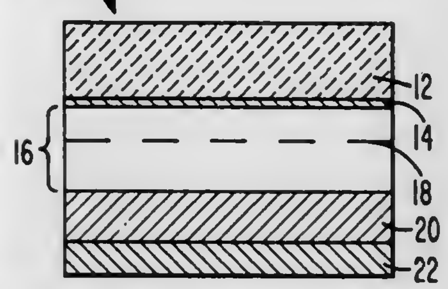
4,442,310
PHOTODETECTOR HAVING ENHANCED BACK REFLECTION

David E. Carlson, Yardley, Pa., and Brown F. Williams, Princeton, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jul. 15, 1982, Ser. No. 398,631

Int. Cl.^{3} H01L ***31/06***

U.S. Cl. 136—256 **19 Claims**



1. A photodetector comprising:
  a body including a semiconductor material, having a semiconductor junction therein and having first and second opposed major surfaces;
  a first electrical contact to the first major surface through which light impinges on the body;
  a light transmissive and electrically conducting spacer layer overlying the second major surface of the body; and
  a light reflective second electrical contact overlying the spacer layer;
  wherein the optical constants of the second electrical contact, the spacer, layer and the body and the thicknesses of the spacer layer and the body are such that the overall reflectivity of the photodetector is minimized at a particular wavelength of light.

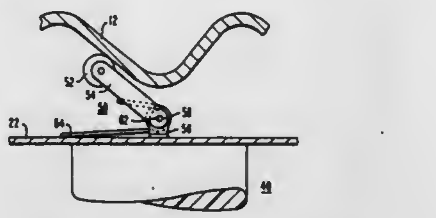
4,442,311
PARTICLE TRAP TO SHEATH CONTACT FOR A GAS-INSULATED TRANSMISSION LINE HAVING A CORRUGATED OUTER CONDUCTOR

William H. Fischer; Alan H. Cookson, and Kue H. Yoon, all of Pittsburgh, Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 4, 1982, Ser. No. 439,246

Int. Cl.^{3} H01B ***9/06, 9/04;*** **H02G** ***5/06***

U.S. Cl. 174—14 R **6 Claims**



1. A gas-insulated transmission line, comprising;
(A) a corrugated outer conductor;
(B) an inner conductor adapted for connection to an energizing source and disposed interiorly in said outer conductor;
(C) an insulating gas disposed within the annular space between said outer and inner conductors;
(D) insulating means disposed between said outer and inner conductors for insulatingly supporting said inner conductor within said outer conductor;
(E) particle trapping means for trapping foreign particles disposed proximate the inner periphery of said corrugated outer conductor; and
(F) contact means for keeping electrical continuity between said corrugated outer conductor and said particle trapping means for all axial positions of said particle trapping means relative to the corrugations of said corrugated outer conductor, said contact means including an electrical contact disposed on a lever arm, a rotatable attachment means for rotatably attaching said lever arm to said particle trapping means and a biasing means for biasing said contact means in a direction to make electrical contact with said corrugated outer conductor.

4,442,312
END PIECE OF BIPOLAR WATER-COOLED CABLE

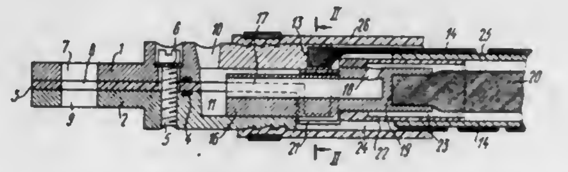
Anatoly I. Oshkin, bulvar Koroleva, 10 kv. 58; Mikhail D. Banov, Ulitsa Belorusskaya, 25, kv. 30, and Alexandr N. Chernyshev, ulitsa Frunze, 20, kv. 56, all of Tolyatti, U.S.S.R.

PCT No. PCT/SU81/00009, 371 Date Sep. 2, 1982, 102(e) Date Sep. 2, 1982, PCT Pub. No. WO81/02617, PCT Pub. Date Aug. 5, 1982

PCT Filed Jan. 28, 1981, Ser. No. 417,114

Int. Cl.^{3} H01B ***7/34***

U.S. Cl. 174—15 WF **3 Claims**



1. An end piece of a bipolar water-cooled cable comprising a cable cooling system means; a first part having sockets to connect current-carrying conductors of one polarity, an opening for connection to a cooling water source and communicating with spaces of said cable cooling system, and a recess; a second part rigidly secured to said first part; sealing insulation gasket means inserted between said first and second parts; an insert of said second part extending beyond a butt end of said second part and fitting through an insulation gasket in said recess of said first part, a portion of said insert extending beyond the butt end of said second part being cylindrical in shape and extending to a length not less than 2.5 diameters of the insert, said insert having a blind central hole for connecting the current-carrying conductors of the opposite polarity; and a sleeve made of an insulating material and rigidly secured on said insert and extending beyond an end of said insert.

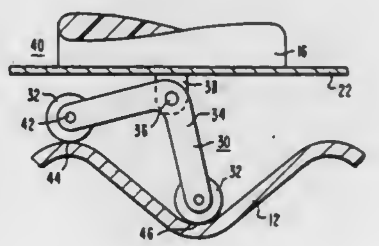
4,442,313
CONDUCTOR LOAD BEARING ROLLER FOR A GAS-INSULATED TRANSMISSION LINE HAVING A CORRUGATED OUTER CONDUCTOR

William H. Fischer, and Kue H. Yoon, both of Pittsburgh, Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 4, 1982, Ser. No. 439,247

Int. Cl.^{3} H01B ***9/06, 9/04;*** **H02G** ***5/06***

U.S. Cl. 174—28 **3 Claims**



1. A gas-insulated transmission line, comprising:
(A) a corrugated outer conductor;
(B) an inner conductor adapted for connection to an energizing source and disposed interiorly within said outer conductor;
(C) an insulating gas disposed within the annular space between said outer and inner conductors;
(D) insulating means disposed between said outer and inner conductors for insulatingly supporting said inner conductor within said outer conductor; and
(E) transport means for supporting and permitting axial movement without radial displacement of said inner conductor/insulating means assembly along said corrugated outer conductor, said transport means including two mov-

able support means supported on a common pivot lever, said pivot lever being rotatable about a pivot lever axis, said two movable support means being separated axially a distance equal to the axial distance between the peaks and valleys of the corrugations and separated radially a predetermined distance equal to the radial distance between the peaks and valleys of the corrugations.

4,442,314

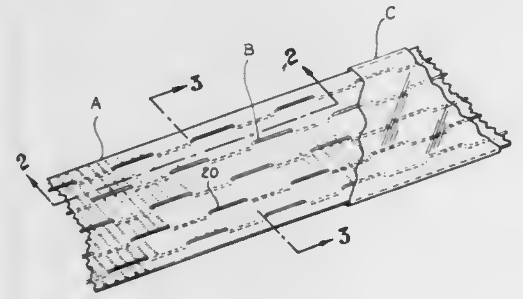
SHIELDED WOVEN CABLE ASSEMBLY AND METHOD OF MAKING SAME

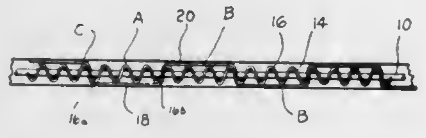
Douglas E. Piper, Greenville, S.C., assignor to Woven Electronics Corporation, Mauldin, S.C.

Filed Aug. 18, 1982, Ser. No. 409,127

Int. Cl.^{3} H01B *7/08, 11/06*

U.S. Cl. 174—36 **8 Claims**





1. A continuously shielded woven electrical transmission cable assembly comprising:
  a plurality of elongated warp elements extending in the warp direction in said woven cable;
  a filling element interwoven with said warp elements to define a base weave pattern;
  at least a number of said elongated warp elements being electrical signals conductor elements arranged in said weave pattern for transmitting electrical signals through said cable;
  a plurality of uninsulated drain wires woven in the base weave pattern of said woven cable from one side of said woven cable to another side of said woven cable;
  said drain wires being floated out of said base weave pattern at spaced picks of said filling element along the length of said cable;
  a conductive shield jacketing said woven cable, said drain wires on each side of said woven cable contacting said shield on corresponding sides of said shield; and
  said drain wires being woven in said base weave generally along the entire length of said woven cable for continuous immediate draining of said shield and termination of said drain wires at the ends of said cable.

6. A method of constructing a continuously shielded woven electrical transmission cable comprising the steps of:
  weaving a plurality of warp elements with a filling element to define a base weave pattern;
  including in said plurality of warp elements at least a number of electrical signal conductor elements;
  weaving a plurality of drain wires in said cable generally from one side of the cable to the other side of said cable;
  floating said drain wires out of said base weave patterns at spaced locations of said cable along the length thereof;
  enclosing said woven cable in a metallic shield;
  contacting said shield on both sides of said woven cable and said shield with floated said drain wires to effectively and instantaneously drain said shield on both sides of said shield along the length of said cable.

4,442,315

X-RAY TRANSMISSIVE ELECTRODE-SHIELDED WIRE ASSEMBLY AND MANUFACTURE THEREOF

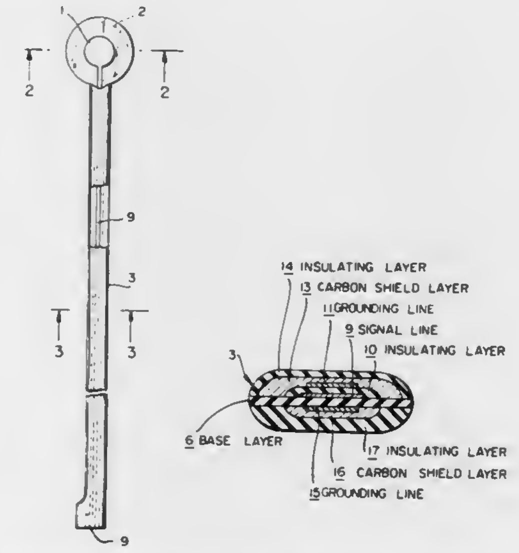
Kiyoshi Segawa, Tokyo, Japan, assignor to Fukuda Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 7, 1981, Ser. No. 291,031

Claims priority, application Japan, Nov. 17, 1980, 55-160689; Nov. 17, 1980, 55-160690

Int. Cl.^{3} H01B *7/34;* A61B *5/04*

U.S. Cl. 174—36 **5 Claims**



1. A shielded wire used in conjunction with an electrode for application to a living body, said shielded wire being adapted to transmit electrical signals issuing from the living body, said shielded wire comprising an elongated strip of an insulating film, a narrow signal line formed on the surface of one side of said strip, a first layer of electrically conductive material having a width larger than the width of said signal line and arranged on said one side of said strip overlying said signal line, a layer of insulating material located between said signal line and said first layer of electrically conductive material, a second layer of electrically conductive material having a width larger than the width of said signal line and arranged on the opposite side of said strip underlying said signal line, and grounding lines electrically connected to and arranged longitudinally of said layers of electrically conductive material, said signal line being substantially shielded by said layers of electrically conductive material and said grounding lines.

4,442,316

CRIMP CONNECTOR FOR ELECTRICAL WIRES

Joerg H. W. Thuermer, Hamburg, Fed. Rep. of Germany, assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Nov. 3, 1981, Ser. No. 317,866

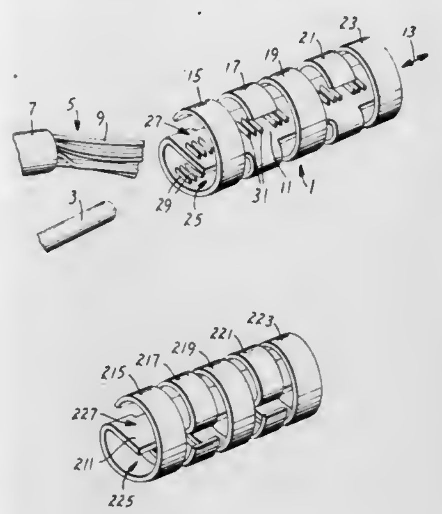
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1980, 3043209

Int. Cl.^{3} H02G *15/08;* H01R *11/00*

U.S. Cl. 174—84 C **10 Claims**

1. A crimp connector for electrical wires for interconnecting at least one magnet wire and at least one connecting wire, comprising a unitary piece of sheet metal having a bridge part and a row of a plurality of fingers which depend from the bridge part radially of the axis of the connector, said fingers being bent circularly around the bridge part to form two chambers disposed side by side, one of said chambers being formed to accommodate a said magnet wire and the other chamber being formed to accommodate a said connecting wire, at least the magnet wire chamber having cutting means provided on its

interior surface for cutting through insulation on a said magnet wire upon compression of the chamber to make electrical connection with the electrically conductive core of the magnet wire.



4,442,317

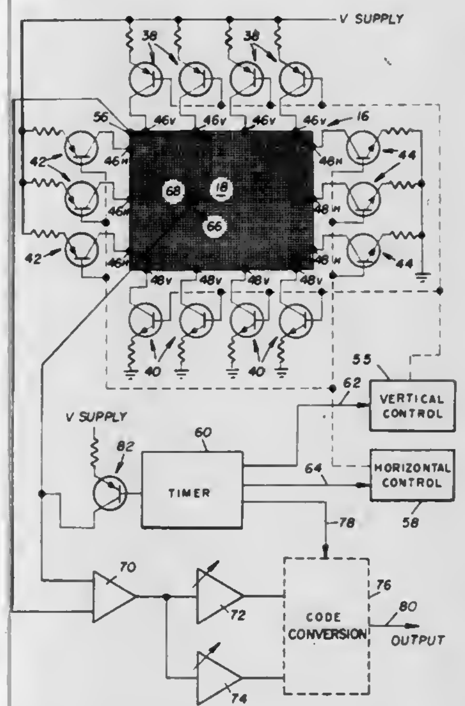
COORDINATE SENSING DEVICE

Louis H. M. Jandrell, Terra Linda, Calif., assignor to Sun-Flex Company, Inc., Novato, Calif.

Filed Sep. 14, 1981, Ser. No. 300,687

Int. Cl.^{3} G08C *21/00*

U.S. Cl. 178—18 **22 Claims**



1. A coordinate sensing device comprising:
a fine meshed fabric screen having electrical conductive properties and defining a major surface;
first current source means for selectively establishing a first electrical current between a first injection point and first sink point on said major surface, said first injection and sink points defining a first electrical field across the said major surface;
second current source means for selectively establishing a second electrical current between a second injectionand a second sink point on said major surface, said second injection point and sink points defining a second electric field across the said major surface, the two electric fields related so that the position of the equipotential lines from each field intersect at unique points;
probe means for selectively sensing a first electrical potential on the first electric field at a physical point on the surface between the first injection and sink points and a second electrical potential on the second electric field at the same physical point on the surface between the second injection and sink points;
means for converting said sensed first or second potentials to an intelligent signal representing the coordinates of the physical point indicated in any chosen coordinate system.

4,442,318

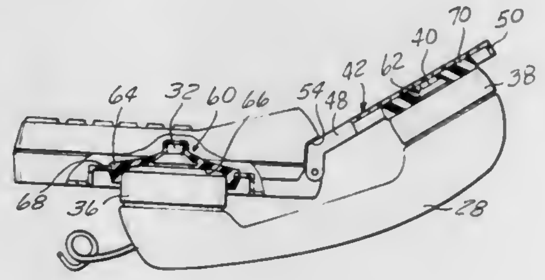
PORTABLE BI-DIRECTIONAL DATA COMMUNICATION TERMINAL

Franklin J. Desrochers, 6230 Elro St., Davison, Mich. 48423

Filed Aug. 20, 1982, Ser. No. 409,779

Int. Cl.^{3} H04M *11/00*

U.S. Cl. 179—2 C **4 Claims**



1. A portable terminal having bi-directional data communication capabilities via a telephone handset said terminal comprising:
  a generally rectangular housing; a first acoustical coupler having a first muffler member with an opening therein defining a recess adapted to detachably receive a receiver portion of the telephone handset, said first muffler being mounted in said housing with the opening therein facing the bottom of the housing; a cover for the bottom of the housing; a second acoustical coupler having a second muffler member mounted on an inner surface of the cover, said second muffler member being of a configuration adapted to fit within the confines of the opening of the first muffler member; and hinge means for pivotally connecting one end of the cover to the housing, operative to enable flush mounting of the cover on the housing bottom with the second muffler member nested in the opening of the first muffler member in a closed position of the cover, and permitting the first and second muffler members to operably engage the receiver and transmitter portions of the telephone handset when the cover is in an open portion thereby enabling bi-directional data communication with the terminal.

4,442,319

TELEPHONE ACCESSIBLE APPLIANCE CONTROL SYSTEM

Bernhard L. Treidl, 2 Soldiers Field Park, Apt. #501, Boston, Mass. 02163

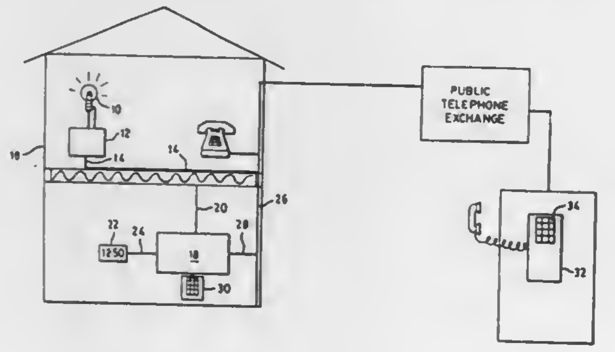
Filed Feb. 26, 1981, Ser. No. 238,598

Int. Cl.^{3} H04M *11/00*

U.S. Cl. 179—2 A **10 Claims**

1. Switching apparatus for time dependent switching of electric loads on a common three wire electrical distribution network comprising: tone decoder means for producing a predetermined coded signal corresponding to any series of unique tones out of a set of unique tones; local tone generation means connected to the tone decoder means for producing any series of unique tones out of a set of unique tones; telephone interface means adapted to be operatively coupled between a subscriber loop of a telephone network and said tone decoder means and being responsive to a predetermined number of ringing signals detected on said subscriber loop, whereby said tone decoder means will be connected to said subscriber loop and thereby receive any series of unique tones out of a set of

unique tones produced by remote tone generation means at a call originating telephone in said telephone network; a data structure in communication with said tone decoder means for storing a plurality of coded signals produced by said tone decoder means thereby forming one or more device control codes, each device control code including a device status code and an electrical load address identifying a particular addressable switching means and a set point time code for identifying a particular coded current time signal; clock means for producing a coded current time signal representative of a day and the time of day; at least one addressable switching means adapted to be connected to a three wire electrical distribution network for selectively engaging or isolating a respective electrical load from said three wire electrical distribution network in response to a predetermined load control signal, the addressable switching means including means for producing a load control feedback signal produced in response to said predetermined load control signal; control means connected to and responsive to signals produced by said clock means and adapted to communicate with said addressable switching means via said three wire electrical distribution network and in communication with said data structure whereby a load control signal is produced by said control means in response to a match between a set point time of any device control code stored in said data structure and the current time signal, thereby engaging or isolating a respective electrical load from said three wire electrical distribution network, said control means including means responsive to said load control feedback signal whereby said control means manifests its response to said load control feedback signal by producing a unique audible tone; and the control means including means for modifying the status code in response to said load control feedback signal whereby said device status code is set to a first value when a load control feedback signal is received by said control means after a load control signal is produced by said control means, and is set to a second value when a load control feedback signal is not received by said control means after a load control signal is produced by said control means, and further comprising means for inputting into the control means electrical load addresses, whereby said control means will respond to an imputted electrical load address by producing a third unique audible tone when the device status code of the device control code associated with said electrical load address is equal to said first value, or by producing a fourth unique audible tone when the device status code of the device control code associated with said electrical load address is equal to said second value.



4,442,320
REMOTE SUBSCRIBER INTERACTION SYSTEM
Rolland T. James, Collingswood, and Ronald J. Chebra, Mercerville, both of N.J., assignors to Base Ten Systems, Inc., Trenton, N.J.

Filed Dec. 4, 1981, Ser. No. 327,486
Int. Cl.^{3} G08B *26/00;* H04M *11/04*
U.S. Cl. 179—5 R **13 Claims**

1. A system for providing communication between a central location and instrumentalities other than a conventional telephone located at the premises of telephone network subscribers, comprising:

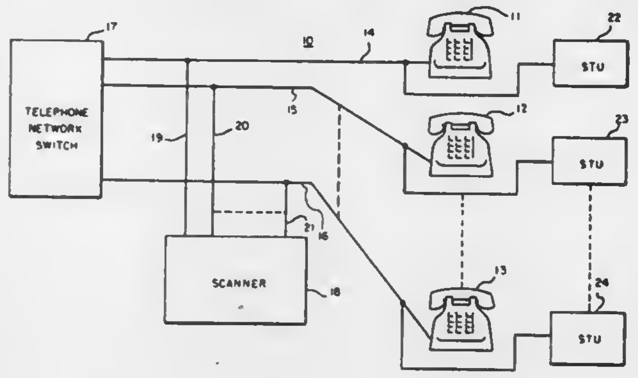
means for selectively transmitting signals from the central location to the telephones at different ones of said subscriber premises;

means located at said premises and connected to said telephones and responsive to said transmitted signals to retransmit to the central location from the respective subscriber premises signals in the audible telephone frequency range and of characteristics indicative of the state of said instrumentalities;

means at the central location for sensing the off-hook state of the conventional telephone at a given subscriber's premises and responding thereto to inhibit the transmitting of said signals from the central location to that same premises;

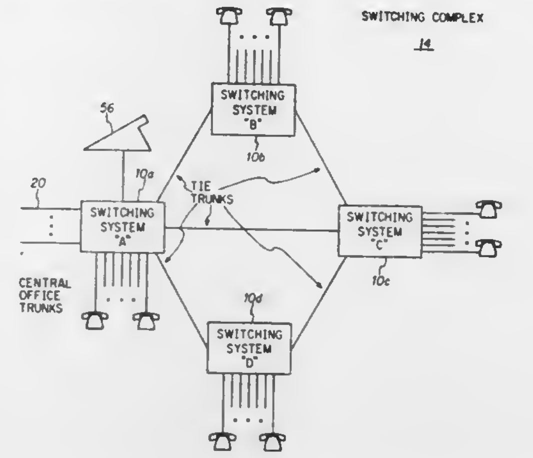
means for transmitting to the central location a signal at a frequency below the audible range from each of the premises when the instrumentalities at the given subscriber premises are in one predetermined state; and

means responsive to at least one instrumentality being in another predetermined state to interrupt the transmission of said below-audible-range signal.



4,442,321
TRANSPARENT DIALING BETWEEN INTERCONNECTED TELECOMMUNICATION SWITCHING SYSTEMS
Carl J. Stehman, LaGrange, Ill., assignor to Rockwell International Corporation, Downers Grove, Ill.

Filed Jun. 8, 1981, Ser. No. 271,457
Int. Cl.^{3} H04M *7/00;* H04Q *3/54*
U.S. Cl. 179—18 EB **16 Claims**



14. A method of providing communications across multiple switching systems of a telecommunication switching complex, said method comprising the steps of:

interconnecting said switching systems with communication lines,

allocating to each system a custom group of directory numbers identifying stations serviced thereby,

correlating within each said system, the directory numbers corresponding to stations serviced by others of the systems with

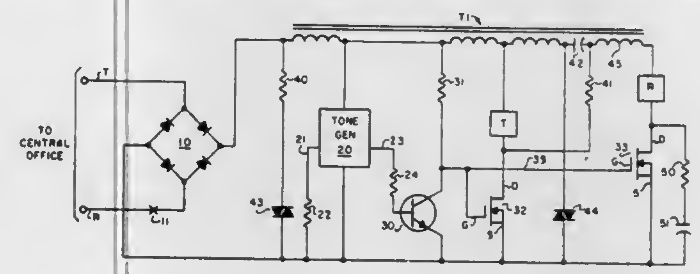
quasi-ultimate system functions for selecting communication lines in accordance with dialed directory numbers, and

identity codes representative of communication lines connected to the switching systems servicing said stations; and

executing said quasi-ultimate system functions so that said dialed directory numbers are outpulsed over the communications lines correlated therewith.

4,442,322
ELECTRONIC COMMON SWITCH HAVING AN IMPROVED RECEIVER MATING ARRANGEMENT
Gary Grantland, Hartselle, Ala., assignor to GTE Automatic Electric Inc., Northlake, Ill.

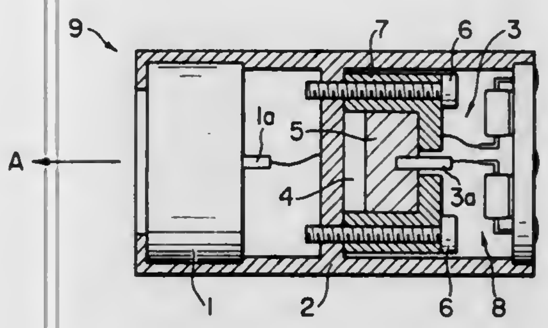
Filed Jul. 7, 1982, Ser. No. 395,885
Int. Cl.^{3} H04M *1/26*
U.S. Cl. 179—81 R **5 Claims**



1. In a telephone substation, employing multi-frequency dialing, in combination, a speech network including a resistive path, a transmitter, a receiver and a signal generator, said signal generator arranged to produce a control signal and dialing signals to said speech network responsive to said signal generator being operated, a first transistor connected to said speech network arranged to turn on responsive to said control signal, a second transistor disconnecting said transmitter from said speech network responsive to said first transistor turning on, said second transistor further connected to said speech network via said resistive path, and a third transistor disconnecting said receiver from said speech network responsive to said first transistor turning on, said second transistor providing a bias voltage to said third transistor via said resistive path preventing said third transistor from being reverse biased by said dialing signals and reconnecting said receiver.

4,442,323
MICROPHONE WITH VIBRATION CANCELLATION
Satoshi Yoshida, and Hidejiro Higashi, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

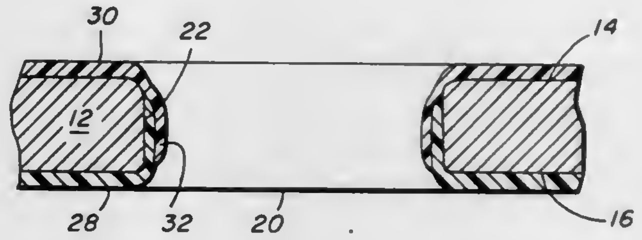
Filed Jul. 17, 1981, Ser. No. 284,023
Claims priority, application Japan, Jul. 19, 1980, 55-102295
Int. Cl.^{3} H04R *1/02*
U.S. Cl. 179—110 A **9 Claims**



1. A microphone unit with vibration cancellation comprising: a capacitance type microphone element fixed to said case; a piezoelectric type vibration pickup unit fixed to said case; an inertial body, said vibration pickup unit being disposed between said inertial body and said case, a ratio of a stiffness of said vibration pickup unit to a mass of said inertial body being such that a vibration frequency response of said vibration pickup unit and said microphone are similar; and circuit means for combining outputs of said microphone element and said vibration pickup unit wherein a vibration component in said output of said microphone unit is cancelled by said output of said vibration pickup unit.

4,442,324
ENCAPSULATED BACKPLATE FOR ELECTRET TRANSDUCERS
Senior N. Blanchard, Spruce Head; William T. Flint, Owls Head; George C. Tibbetts, and Joseph A. Sawyer, both of Camden, all of Me., assignors to Tibbetts Industries, Inc., Camden, Me.

Filed Jun. 24, 1982, Ser. No. 391,966
Int. Cl.^{3} H04R *19/00*
U.S. Cl. 179—111 E **9 Claims**



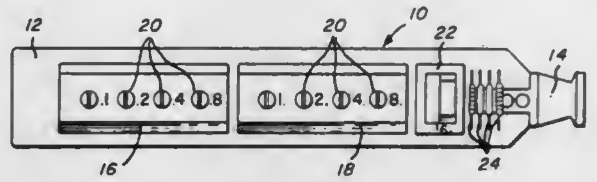
1. A backplate assembly for an electret transducer comprising, in combination,

an electrically conductive sheet having a peripheral edge, front and back faces with an electrically conductive tab extending from said back face, and at least one acoustic aperture communicating between said faces, and

an electrically insulating coating of material substantially covering and bonded to both of said faces, said peripheral edge and the interior edge of each said aperture, said coating including a layer of electret material covering said front face.

4,442,325
SWITCHABLE INCREMENTAL ATTENUATION FOR TELEPHONE LINE INTERFACE
Noel C. McDermott, Santa Cruz, Calif., assignor to Larus Corporation, Santa Clara, Calif.

Continuation of Ser. No. 326,490, Dec. 2, 1981, abandoned. This application Sep. 2, 1983, Ser. No. 528,668
Int. Cl.^{3} H04M *1/76*
U.S. Cl. 179—190 **16 Claims**



1. A device for providing selectively incremental attenuation in a telephone circuit using discrete resistive values, comprising:

a plurality of serially coupled individually switchable attenuation sections, each of said attenuation sections including switching means for selectively determining the attenuation value of each section, permitting the selection of the total attenuation value of said device by integral multiples of a selected incremental base unit, within a range generally of 0–41.75 db;

frame including mounting means for receiving and supporting said attenuation device;

connecting means for connecting said serially coupled attenuator sections to said telephone circuit;

whereby incremental attenuation in said telephone circuit is provided.

4,442,326

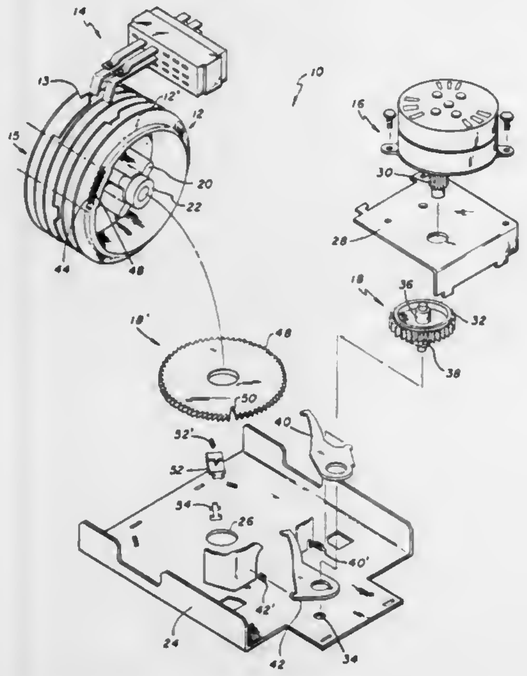
DRIVE MEANS FOR A TIMING MECHANISM

William F. Wagle, Bloomington, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Continuation-in-part of Ser. No. 205,012, Nov. 7, 1980, abandoned. This application Jul. 14, 1982, Ser. No. 398,403

Int. Cl.^{3} H01H *43/10*

U.S. Cl. 200—38 R 4 Claims



1. A timing mechanism comprising
(a) a cam means rotatably carried on a shaft and providing a program and electrical switches opening and closing in response to said program,
(b) rotatable first ratchet teeth of a first major diameter carried on said shaft and coupled to said cam means for intermittent rotation therewith,
(c) groups of rotatable second ratchet teeth coupled to and in axial alignment with said first rotatable ratchet teeth and of a second major diameter which is less than said first major diameter,
(d) rotatable third ratchet teeth carried by said shaft in axial alignment with said first and second ratchet teeth and independently rotatable from said first and second ratchet teeth and having a third major diameter which is greater than said second major diameter and further having a plurality of notches of sufficient depth to provide a minor diameter at least as small as a minor diameter of said second ratchet teeth,
(e) a drive pawl selectively engaging said first and third rotatable ratchet teeth and said second ratchet teeth when engaged with said notches, and
(f) individual stop means engaging said first and third ratchet teeth.

4,442,327

MANUALLY PORTABLE START CONTROL FOR ELECTRICALLY POWERED APPARATUS

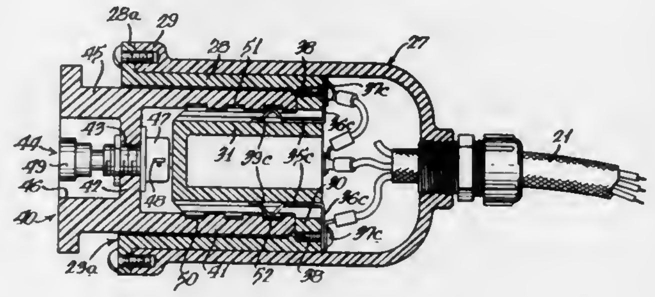
Frank L. West, Sharon, and Larry A. Norton, Elkhorn, both of Wis., assignors to Starline Products, Inc., Harvard, Ill.

Division of Ser. No. 140,202, Apr. 14, 1980, Pat. No. 4,349,856. This application Jun. 10, 1982, Ser. No. 386,940

Int. Cl.^{3} H01R *13/70*

U.S. Cl. 200—51 R 12 Claims

1. A cordless manually portable start control mode for a system that controls energization of an electrically powered apparatus, said system having a primary control station remote from the apparatus, a secondary control station near the apparatus, and a cylindrical socket at each control station provided with first fixed contacts electrically connected to an electrical power source and second fixed contacts which are axially spaced from said first fixed contacts and which are electrically connected to the electrically powered apparatus so that an electrical circuit may be closed across said first and second fixed contacts at either control station to start energization of said apparatus, whereby said control stations are alternatively usable to control said energization, said



a cylindrical plug member which makes an endwise sliding fit and seats in either of said sockets, said plug member having first and second axially spaced start contacts which bear, respectively, upon said first and second fixed contacts when the plug member is seated in either of said sockets, at least one of said start contacts being annular, and a normally open push button start switch on said plug member, said start switch being adapted to be manually depressed to close an electric circuit through said start contacts at either station.

4,442,328

ELECTRICAL SWITCH

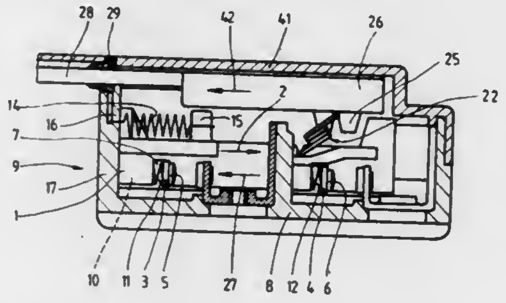
Alois Schäffeler, Spaichingen, Fed. Rep. of Germany, assignor to Marquardt GmbH, Fed. Rep. of Germany

Filed Jul. 8, 1982, Ser. No. 396,365

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1981, 3126816

Int. Cl.^{3} H01H *15/18, 21/40*

U.S. Cl. 200—76 13 Claims



1. An electrical switch comprising:
a housing;
a slide mounted for displacement in said housing and movable between two end positions, said slide including at least one contact bridge for bridging a pair of fixed contacts connected to said housing;
an operating plunger shiftable within said housing;
a snap spring engaged between said slide and said operating plunger, said snap spring mounted for pivoting on both said slide and said plunger and movable into a neutral plane which is transverse to planes of displacement of said slide and said plunger, said snap spring having two end positions in which said snap spring is inclined relative to said neutral plane and into which positions said snap spring is movable by shifting said operating plunger;
a tension spring connected between said slide and said housing for biasing said slide into one of its end positions in which said at least one contact bridge is out of engagement with said fixed contacts;
said housing includes a bottom, said plunger slidable parallel

to said bottom, said tension spring comprising a helical spring and provided in a space between said slide and said plunger;
a helical compression spring connected between said contact bridge and said slide for spring loading said contact bridge with engagement between said contact bridge and said fixed contacts, said contact bridge connected to said slide adjacent said housing bottom;
said housing including an upper part, said operating plunger mounted for shifting in said upper part, said operating plunger including a forked driver, said snap spring comprising a C-shaped snap spring having leg portions and a back connected between said leg portions, said snap spring back engaged in said forked driver, said snap spring including free end portions extending from said leg portions and toward each other, said slide including a groove shaped recess for receiving each end portion of said snap spring facing said upper part.

4,442,329

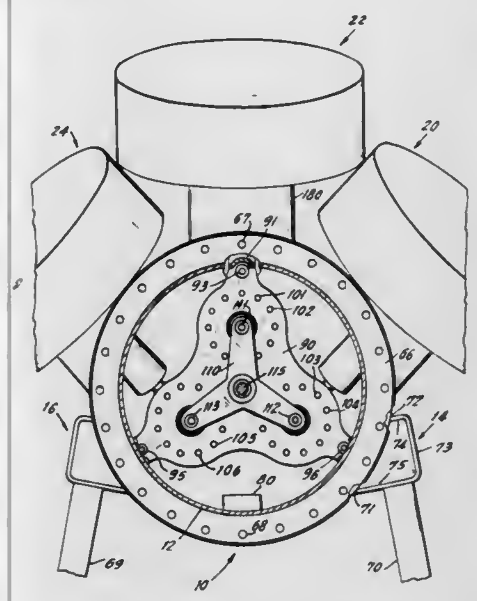
DEAD TANK HOUSING FOR HIGH VOLTAGE CIRCUIT BREAKER EMPLOYING PUFFER INTERRUPTERS

Keith I. Gray, La Verne, and Henry G. Meier, Glendale, both of Calif., assignors to Brown Boveri Electric Inc., Rolling Meadows, Ill.

Filed Jan. 4, 1982, Ser. No. 336,636

Int. Cl.^{3} H01H *33/60*

U.S. Cl. 200—148 B 10 Claims



1. A dead tank high voltage circuit breaker comprising, in combination: a gas-filled cylindrical elongated metal housing having an exterior support framework; first, second and third elongated interrupter structures disposed parallel to one another and having respective central axes which are equally spaced from one another; three pairs of insulator bushings, each of said three pairs connected to the opposite ends of respective ones of said first, second and third interrupter structures; each of said pairs of bushings extending outwardly of said metal housing to provide exterior connection points for each of said interrupter structures; an operating mechanism disposed exteriorly of said elongated metal housing and having operating shaft means connected to each of said interrupter structures for simultaneously operating each of said interrupter structures; a generally triangularly shaped flat support plate for supporting said first, second and third interrupter structures in cantilever within said housing; one end of each of said interrupter structures being fixed to said support plate with the axes of said interrupter structures perpendicular to the plane of said plate; and first, second and third relatively thin straps having one of their ends fixed to respective apices of said triangularly shaped plate and their opposite ends fixed to said metal housing; said first, second and third straps being more flexible than said plate.

4,442,330

PUFFER TYPE CURRENT INTERRUPTER

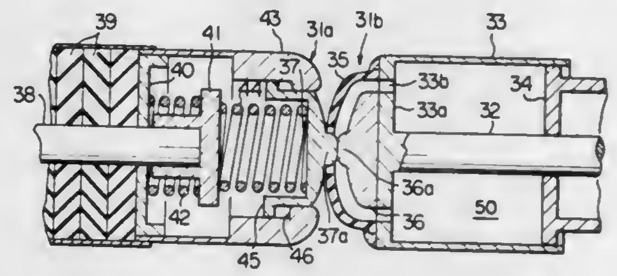
Youichi Oshita, Kashiwa; Shunji Sato, Hitachi; Takeshi Takahashi, Hitachiota, and Kunio Hirasawa, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 19, 1982, Ser. No. 399,820

Claims priority, application Japan, Aug. 12, 1981, 56-125236

Int. Cl.^{3} H01H *33/70*

U.S. Cl. 200—148 A 14 Claims



1. A puffer type current interrupter including current interrupting means comprising:
a pair of electrodes having confronting surfaces formed in a substantially symmetric shape;
a pair of bosses respectively integrally formed on the confronting surfaces of said electrodes and adapted to provide electrical contact between said electrodes, said bosses having substantially equal heights with respect to the respective confronting surfaces;
an insulator nozzle means for covering one of said pair of electrodes and having a throat which is capable of receiving the boss of the other of said pair of electrodes;
a gas flow path formed between said insulator nozzle means and said one of said pair of electrodes; and
means responsive to an opening operation of said electrodes for compressing arc-quenching gas and blasting the compressed gas through said gas flow path to extinguish an arc produced betweeen said bosses when said electrodes are opened.

4,442,331

METHOD AND APPARATUS OF INDUCTION HEATING A METALLIC ELONGATED MATERIAL HAVING DIFFERENT THICKNESS SECTIONS

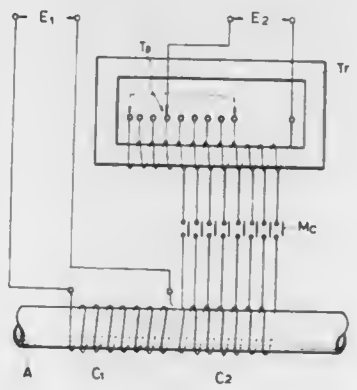
Yasuo Watanabe, Kita-Kyushu, Japan, assignor to Dai Ichi High Frequency Company, Ltd., Tokyo, Japan

Filed Jan. 20, 1982, Ser. No. 341,088

Claims priority, application Japan, Jan. 22, 1981, 56-8220

Int. Cl.^{3} H05B *6/06, 6/40*

U.S. Cl. 219—10.43 14 Claims



1. In a method of inductively heating elongated metallic material in which the elongated metallic material is passed axially through the coils of an induction heater in a continuous motion at a uniform speed and in which the axial dimension of the induction heater is small relative to the axial dimension of the metallic material, the improvement by which the uniform

heating of the metallic material over the length thereof is achieved despite significant variations in the cross-sectional area of the metallic material over the length thereof, comprising the steps of:

(a) providing a coil with multiple axially spaced turns; and
(b) selectively applying an electric current to the individual turns of the coil in synchronism with the passage of the metallic material therethrough

to thereby selectively vary the ratio which (i) the time each successive cross-sectional area of the metallic material entering the coil is in heating proximity to a turn thereof through which current is applied bears to (ii) the total time necessary for such cross-sectional area to pass entirely through the coil, and thus vary the heating of each such cross-sectional area as a function of its area.

4,442,332

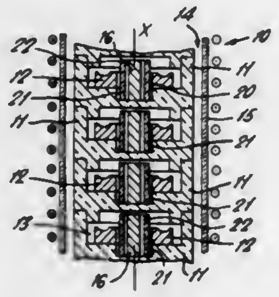
HEAT TREATMENT OF ROTATIONALLY SYMMETRICAL WORKPIECES BY INDUCTION HEATING

William B. Jackson, Wirral; Ian G. Harvey, Upton by Chester, and Philip H. Warren, Chester, all of England, assignors to The Electricity Council, England

Filed Jul. 13, 1981, Ser. No. 282,901

Int. Cl.^{3} H05B *6/10*

U.S. Cl. 219—10.67 **27 Claims**



1. A method of heat treating a rotationally symmetrical workpiece by induction heating comprising mounting the workpiece on a refractory transport means and passing the transport means longitudinally through an elongate treatment region of an induction heating apparatus with the axis of symmetry of the workpiece parallel to the magnetic flux of the induction heating apparatus, the workpiece being accompanied on at least part of its passage through the treatment region by at least one flux modifying member to modify the magnetic flux distribution in the workpiece wherein said flux modifying member is arranged so that, by the effects of the eddy currents induced in that member and/or its magnetic permeability, the resultant distribution across the workpiece transversely to the axis thereof of the flux density in the axial direction is substantially inversely related to the distance from the axis of rotational symmetry of the workpiece.

4,442,333

CAPACITOR-TYPE PULSE GENERATOR FOR ELECTRICAL DISCHARGE MACHINING, ESPECIALLY FOR WIRE-CUTTING EDM

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Feb. 25, 1981, Ser. No. 238,123

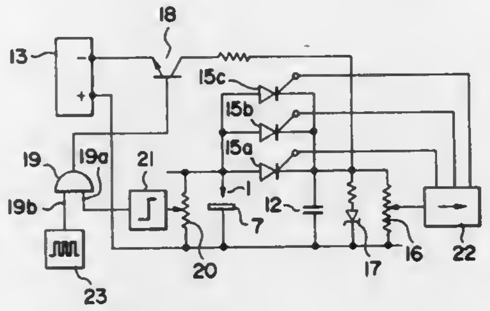
Claims priority, application Japan, Feb. 26, 1980, 55-23574

Int. Cl.^{3} B23P *1/08*

U.S. Cl. 219—69 W **3 Claims**

1. A capacitor-type pulse generator for wire-cutting EDM, comprising:

a capacitor;
a DC source having an output voltage for charging said capacitor;
first switch means connected in series with said capacitor, a wire electrode and a workpiece, said wire electrode and said workpiece defining an EDM gap therebetween;
a first sensing circuit responsive to the charging voltage on said capacitor for turning said first switch means into conduction upon said charging voltage reaching a predetermined level, thereby permitting the charge on said capacitor to be discharged through said EDM gap whereby to form at least one EDM pulse;



second switch means connected in series with said DC source and said capacitor and normally held conductive to permit said capacitor to be charged by said DC source to said predetermined level, said output voltage of said DC source being at least twice said predetermined charging level; and
a second sensing circuit responsive to the EDM gap voltage for turning said second switch means into nonconduction upon the EDM gap voltage exceeding a preselected value.

4,442,334

DEVICE FOR FEEDING WELDING WIRE IN A SUBMERGED ARC WELDING OPERATION

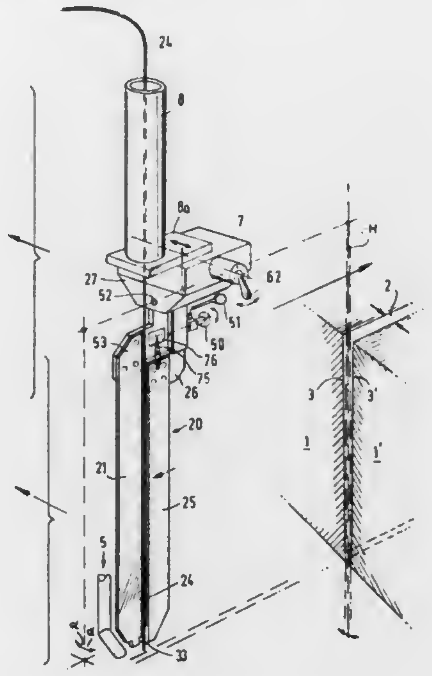
Werner Lux, Oberhausen; Jürgen Vahlensieck, Bonn; Jakob Zell, Oberhausen; Bodo Hermann; Heinz Bartsch, both of Bottrop, and Horst Zimmermann, Oberhausen, all of Fed. Rep. of Germany, assignors to M.A.N. Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 23, 1981, Ser. No. 334,072

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1980, 3049118

Int. Cl.^{3} B23K *9/18*

U.S. Cl. 219—73 **20 Claims**



1. A device for feeding welding wire in a welding advance direction in a welding operation in which there is a narrow gap between welding workpieces which are to be welded together, comprising: a guide support; a plurality of spaced apart wire straightening roller assemblies mounted on said guide support, said straightening roller assemblies being positioned at separated location and at selected angles around the circumference and in engagement with the welding wire and defining a feed guide path for the passage of a welding wire, said welding wire straightening roller assemblies comprise at least three separate units arranged in spaced relationship along the feed guide path, each unit being positioned at a desired angle around the periphery of the welding wire with respect to an adjacent unit, each of said units comprising a shell which is centered and fixed with respect to a shell of an adjacent unit, at least two straightening rollers rotatably mounted to said shell on one side of the feed guide path and at least one other straightening roller rotatably mounted to said shell on an opposite side of the feed path for straightening the welding wire therebetween; a carrying member mounted for pivotal motion on said guide support; a welding head mounted on said carrying member including a current-carrying guide and a welding wire guide arranged in spaced opposition and defining tongs of said head; means on said carrying member for mounting said current-carrying guide and said welding wire guide for movement toward and away from each other; a plurality of guide shoes associated with said tongs defining a continuing guide for the welding wire aligned with the feed guide path and receiving wire from the feed guide path and advancing it to the welding zone between the workpieces; a contact piece associated with said current carrying guide for delivering welding current to the wire at a welding zone; and means for biasing said current-carrying guide toward said welding wire guide.

4,442,335

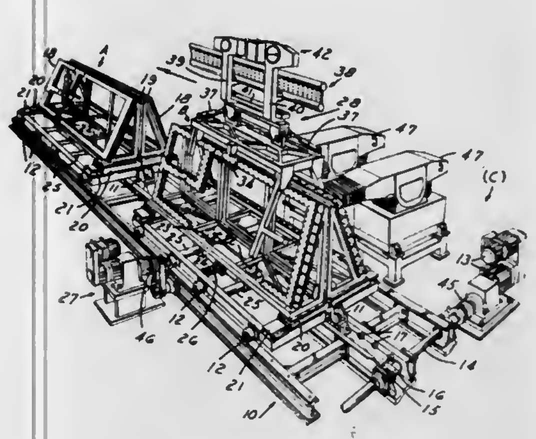
SIDE APERTURE WELDING ASSEMBLY SYSTEM

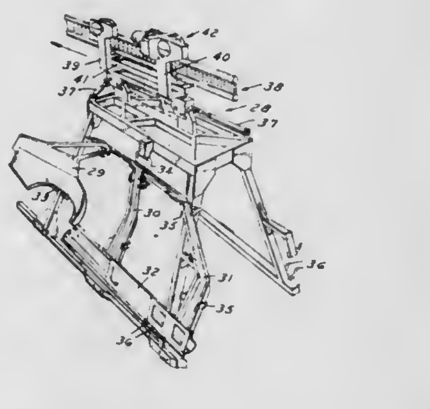
Cristiano Rossi, Birmingham, Mich., assignor to Comau S.p.A., Turin, Italy

Continuation of Ser. No. 363,897, Mar. 31, 1982, abandoned. This application Jun. 7, 1982, Ser. No. 385,514

Int. Cl.^{3} B23K *9/12, 37/00*

U.S. Cl. 219—79 **11 Claims**





1. A multiple style vehicle body side aperture welding system characterized by overhead carrier means including laterally spaced side aperture support means for respectively carrying a plurality of components of left and right side apertures to be welded together in integrated relation, a framing station including alternatively positionable floor mounted fixture means for each body style extending inside between the left and right side aperture support means of said carrier means upon entering said station, means for effecting relative closing movement between said support means and said fixture means at said framing station, said fixture means having tooling for accurately locating and clamping said side aperture components for the particular body style at said station relative to each other and said station upon closing of said support means and fixture means, and selectively programmable welding means at said station for integrally joining said components in accurate relation while held by said fixture means.

4,442,336

APPARATUS FOR CONDUCTING SMUT-FREE STUD WELDING

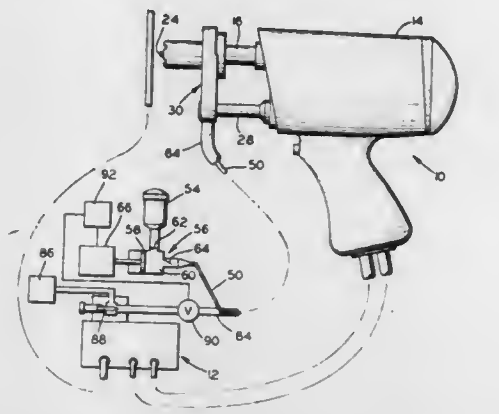
Thomas E. Shoup, Amherst, Ohio, assignor to TRW Inc., Cleveland, Ohio

Continuation-in-part of Ser. No. 75,751, Sep. 14, 1979. This application Oct. 9, 1981, Ser. No. 310,142

The portion of the term of this patent subsequent to Feb. 23, 1999, has been disclaimed.

Int. Cl.^{3} B23K *9/20*

U.S. Cl. 219—98 **30 Claims**



1. Apparatus for welding a stud to a workpiece with the weld area around the stud being maintained substantially free of contaminant coatings, said apparatus comprising a welding tool having means for holding the stud, means for establishing a welding arc between the stud and the workpiece, and means for moving the stud toward and away from the workpiece, a spark shield assembly including an outer spark shield having end notches, an inner non-metallic sleeve in said shield, fluid supply passage means formed between said sleeve and said spark shield, said sleeve having a plurality of passages at an end of said sleeve toward the notched end of said spark shield, said passages being directed inwardly toward the weld area around the stud, a welding foot supporting an end portion of said spark shield opposite the notched end in a position around said holding means with an inner surface of said sleeve being spaced from said holding means, a source of gas under pressure communicating through said welding foot with said supply passage means for supplying gas through said sleeve passages during a welding operation, and a source of anti-smut liquid under pressure communicating through said welding foot with said supply passage means for supplying liquid through said sleeve passages during the welding operation.

4,442,337
METHOD AND SYSTEM FOR DUAL CONTROL OF RESISTANCE WELDING

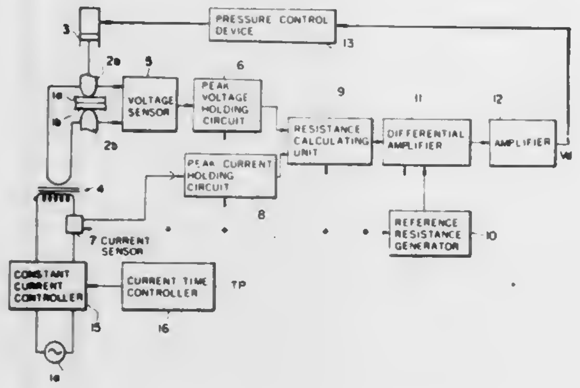
Shuji Nakata, Toyonaka; Yoshio Kawaguchi, Yokohama, and Akira Nishimura, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Apr. 21, 1981, Ser. No. 256,244

Claims priority, application Japan, Apr. 21, 1980, 55-51684; Jan. 30, 1981, 56-11627

Int. Cl.^{3} B23K *11/24*

U.S. Cl. 219—117.1 **41 Claims**


PRESSURE CONTROL DEVICE
13
3
2a
5
6
VOLTAGE SENSOR
PEAK VOLTAGE HOLDING CIRCUIT
9
11
12
RESISTANCE CALCULATING UNIT
DIFFERENTIAL AMPLIFIER
AMPLIFIER
2b
PEAK CURRENT HOLDING CIRCUIT
4
8
REFERENCE RESISTANCE GENERATOR
10
7 CURRENT SENSOR
CONSTANT CURRENT CONTROLLER
CURRENT TIME CONTROLLER
TP
15
16

1. A method of dually controlling resistance welding, which compriese the steps of:

(a) detecting electrode resistance between welding electrodes between which members to be welded are pinched;

(b) comparing the detected electrode resistance with a reference electrode resistance based on a predetermined reference electrode resistance curve;

(c) controlling the electrode pressure applied to the welding electrodes in accordance with the difference in electrode resistance between the detected value and the reference value so that the detected electrode resistance coincides with the reference electrode resistance based on the reference electrode resistance curve;

(d) detecting electrode welding voltage between the welding electrodes between which members to be welded are pinched;

(e) comparing the detected electrode voltage with a reference electrode voltage based on a predetermined reference electrode voltage curve; and,

(f) controlling electrode current passed between the welding electrodes in accordance with the difference in electrode voltage between the detected electrode voltage value and the reference electrode voltage value so that the detected electrode voltage coincides with the reference electrode voltage based on the reference electrode voltage curve,

whereby the electrode current is controlled by detecting the electrode voltage, in addition to the control of the electrode pressure by detecting the electrode resistance.

4,442,338
PLASMA ETCHING APPARATUS

Takashi Yamazaki, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 26, 1981, Ser. No. 296,305

Claims priority, application Japan, Sep. 3, 1980, 55-121007

Int. Cl.^{3} B23K *9/00;* C23F *1/02*

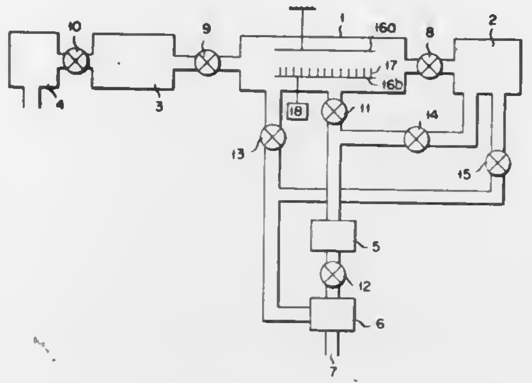
U.S. Cl. 219—121 PE **4 Claims**

1. A plasma etching process comprising:

etching by exposing a workpiece containing aluminum or aluminum alloy in its surface to plasma of a reactive gas introduced into a space between a pair of parallel flat plate electrodes disposed in an etching chamber, said plasma being formed by applying high frequency power to one of said flat plate electrodes, said reactive gas containing chlorine atoms and the other electrode being grounded;

transporting the workpiece from said etching chamber into an after-treatment chamber; and

blowing a gas heated to 40° to 200° C. introduced through a conduit against the workpiece in the after-treatment chamber so as to remove chlorine remaining on the workpiece surface.



4,442,339
CONSTANT VOLTAGE DC ARC WELDING APPARATUS

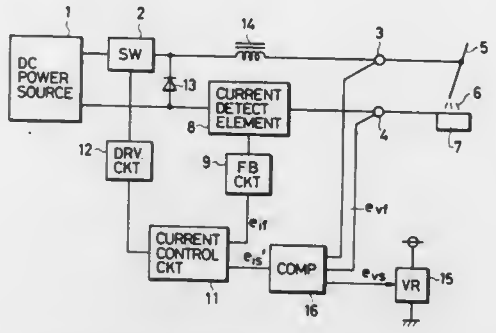
Takaji Mizuno; Hiroshi Suwahara, and Hirohisa Segawa, all of Nagoya, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 26, 1982, Ser. No. 401,774

Claims priority, application Japan, Jul. 31, 1981, 56-120217

Int. Cl.^{3} B23K *9/10*

U.S. Cl. 219—130.33 **7 Claims**



1. A DC welding apparatus comprising:

(a) a DC power source (**1**) for supplying current between a welding electrode (**5**) and a material (**7**) to be welded through a switching element (**2**);

(b) a comparator (**16**) for comparing a voltage detected across said welding electrode and material to be welded with a predetermined set voltage, to provide a first difference signal therebetween; said comparator comprising circuit means for delaying the difference signal;

(c) a current detecting element (**8**) for detecting the current flowing between said welding electrode and said material to be welded;

(d) a current control circuit (**11**) for subjecting a signal proportional to the detected current and the delayed difference signal from said comparator, which corresponds to a predetermined set current, to comparison to derive a control signal; and

(e) a drive circuit (**12**) for said switching element, said drive circuit being responsive to said control signal to control the on-off operation of said switching element to maintain a constant arc voltage and reduce the number of welding sputters.

4,442,340
FOUR-ELECTRODE SUBMERGED ARC WELDING PROCESS

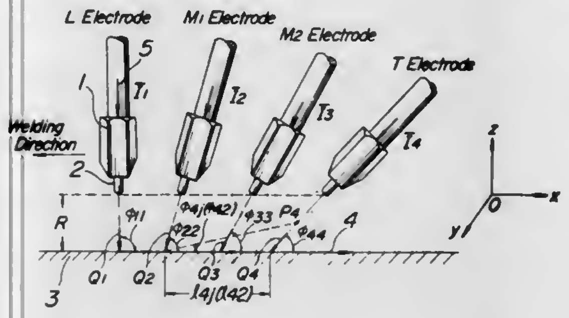
Fumimaru Kawabata; Atsushi Shiga, both of Chiba, and Tadamasa Yamaguchi, Yotsukaido, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Oct. 14, 1982, Ser. No. 434,379

Claims priority, application Japan, Oct. 20, 1981, 56-166387

Int. Cl.^{3} B23K *9/18*

U.S. Cl. 219—137 PS **5 Claims**



1. A four-electrode submerged arc welding process with four electrodes L, M_1, M_2 and T aligned in one row from front to rear in a welding direction, all said electrodes being supplied with alternating current, comprising connecting said electrodes such that electromagnetic force $\bar{F}_{x4}$ in a direction opposite to said welding direction acting upon a middle point of an arc from said rearmost T electrode is substantially within $-25 \lesssim \bar{F}_{x4} \lesssim -10$ (N/m).

4,442,341
ELECTRIC ANTIFREEZE HEATING DEVICE FOR LOCK CYLINDERS AND MOUNTING ARRANGEMENT THEREFOR

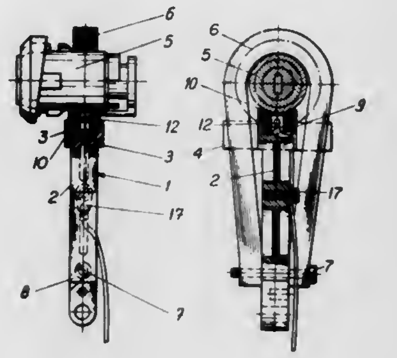
Yvan Lesquereux, and Pierre-Andre Lesquereux, both of 2, rte. de Duillier, Nyon, CH - 1260, Switzerland

Filed Jul. 15, 1982, Ser. No. 398,754

Claims priority, application Switzerland, Jul. 20, 1981, 4728/81

Int. Cl.^{3} E05B *17/00;* H05B *3/02*

U.S. Cl. 219—201 **4 Claims**



1. An antifreeze device for locking cylinders for vehicle and house door locks comprising at least one PTC resistor, a nonconducting pressure body, said pressure body including two transverse wing pairs, said wing pairs forming two guide grooves, an elastic tension means, said elastic tension means adapted to surround a lock cylinder and be hooked in a detachable manner to the pressure body and engaged in said guide grooves, said tension means adapted to push a bearing side of the pressure body, in heat exchange relationship with said at least one PTC resistor within said body, against the lock cylinder, the bearing side of the pressure body being defined by a recess sealed by a U-shaped bent sheet metal strip that comes to rest against the lock cylinder, said recess lodging said at least one PTC resistor, said pressure body including a terminal plug connected with one of the conductors of said at least one PTC resistor and the other conductor of said at least one PTC resistor being in contact with the sheet metal strip, so that the circuit to said at least one PTC resistor is completed by engagement of said metal strip with the lock cylinder.

4,442,342
THERMAL PRINTER WITH PRINT DENSITY CONTROL

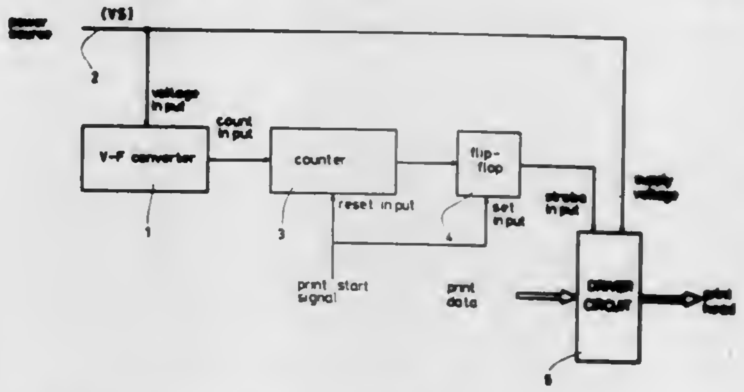
Shigeo Yoneda, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 30, 1982, Ser. No. 373,681

Claims priority, application Japan, May 1, 1981, 56-67140

Int. Cl.^{3} H05B *3/00*

U.S. Cl. 219—216 **4 Claims**



1. A thermal printer comprising:

a print head for effecting printing upon supply of voltage thereto;

voltage-to-frequency converter means responsive to the voltage supplied to said print head for producing an output signal whose frequency varies as a function of the supply voltage to said print head; and

control circuit means for permitting voltage supply to said print head for a period determined by a predetermined number of pulses of the frequency of the output signal of said voltage-to-frequency converter to thereby control the current conduction duration of said print head as a function of the variation in the supply voltage to said print head,

whereby the strength of thermal energy supplied to said print head is kept constant regardless of variations in the supply voltage to said print head.

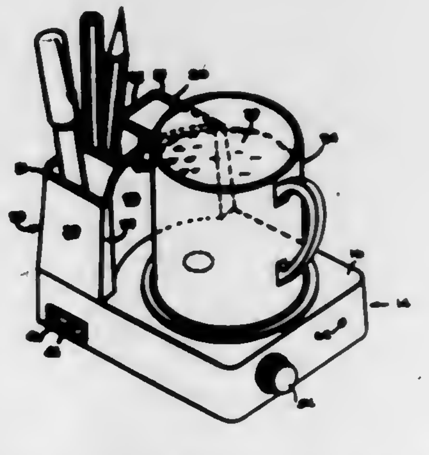
4,442,343
ADJUSTABLE CUP AND FLUID HEATER

James E. Genuit, Carrollton, and Gary Cooper, Lewisville, both of Tex., assignors to Koffee Keeper, Inc., Lewisville, Tex.

Filed Apr. 16, 1982, Ser. No. 369,101

Int. Cl.^{3} F27D *11/02*

U.S. Cl. 219—433 **1 Claim**



1. A heater for cups and fluids therein, comprising:

a. adjustable heating circuitry means, said adjustable heating circuitry comprising a heating element and a solid-state controlled switch, AC power supply, temperature sensor; adjustable temperature control and circuit and combined limiter, DC power supply, detector, sensing amplifier and gate and protection integrated circuitry in operative circuit therewith,

b. a base support,

c. a heating plate, said heating plate being disposed above said heating element and being comprised of heat-conductive material,

d. circuit-enclosing housing means, said circuit-enclosing housing means being supported by said base support and comprising a substantially horizontal surface defining an opening for mounting said heating plate therein and vertically-extending receptacle means, said vertically-extending receptacle means comprising a floor and front, rear and a pair of opposed side walls defining an open topped receptacle said front wall facing said heating element being concave about at least a portion of said heating plate, said floor being disposed at a level which is above the level of said horizontal surface,

f. said base support comprising a recess raised in an upwardly extending direction toward, and located substantially beneath, said heating element and said heating plate,

g. heating support means, said heating support means extending between said recess, said heating element and said heating plate and comprising a bolt,

h. said circuit-enclosing housing means being comprised of an electrically non-conductive material,

i. said solid-state controlled switch and said adjustable temperature control each being accessably located on an exposed portion of said circuit-enclosing housing means,

j. a sealed well, said sealed well being located in said heating plate,

k. said temperature sensor being located in said sealed well in thermal communication with a cup placed on said heating plate.

4,442,344

SENSOR CONTROLLED COOKING APPARATUS

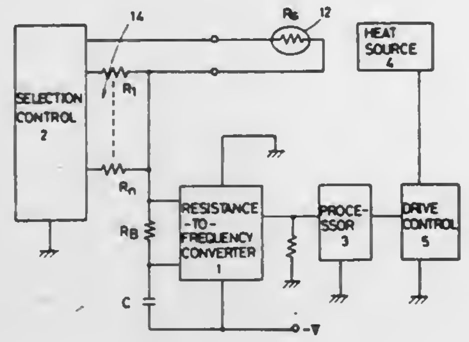
Takatoshi Yasuda, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 21, 1981, Ser. No. 285,506

Claims priority, application Japan, Jul. 28, 1980, 55-107178[U]

Int. Cl.³ H05B ***1/02***

U.S. Cl. 219—497 **12 Claims**



1. A cooking apparatus for cooking a foodstuff to a desired doneness comprising:

means for heating said foodstuff;

sensor means for monitoring a cooking condition and producing a variation in an output resistance value thereof;

means responsive to said sensor means for converting said resistance value of said sensor means into a sensor frequency indicative thereof;

means for compensating for variations in said sensor frequency produced by said means for converting by using the lowest sensor frequency monitored by said means for compensating to modify said sensor frequency to produce a compensated frequency signal substantially free of tolerance induced variations in the resistance of said sensor means;

reference means for developing a reference frequency signal representative of the desired doneness corresponding to a user selected menu;

control means for disabling said means for heating to terminate the cooking of said foodstuff upon coincidence of said compensated frequency signal developed from said means for compensating and said reference frequency signal developed by said reference means.

4,442,345

APPARATUS FOR AND METHOD OF RECYCLING RECORDING CARRIERS, SUCH AS CREDIT CARDS, INCLUDING NON-VOLATILE ERASABLE MEMORIES FOR IDENTIFICATION DATA

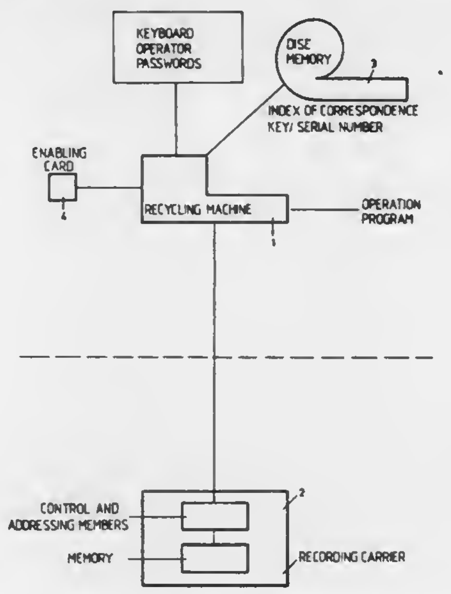
Jean H. Mollier, Bougival, and Michel Ugon, Plaisir, both of France, assignors to Compagnie Internationale pour l'Informatique CII Honeywell Bull (Societe Anonyme), Paris, France

Continuation of Ser. No. 340,523, Dec. 2, 1981, which is a continuation of Ser. No. 143,808, Apr. 23, 1980, abandoned. This application Jul. 29, 1983, Ser. No. 517,981

Claims priority, application France, Apr. 25, 1979, 79 10561

Int. Cl.³ G06K ***5/00***

U.S. Cl. 235—380 **9 Claims**


KEYBOARD OPERATOR PASSWORDS
DISC MEMORY
7
INDEX OF CORRESPONDENCE KEY/ SERIAL NUMBER
ENABLING CARD
4
RECYCLING MACHINE
1
OPERATION PROGRAM
CONTROL AND ADDRESSING MEMBERS
2
MEMORY
RECORDING CARRIER

1. A method of changing variable data stored in a credit card memory having first and second zones, the first zone including: a first fixed serial number bit field, a card validating/invalidating character field subject to change to an invalidating state, and initially having a state different from the invalidating state, and a key character field containing data unknown to the person carrying the card, the key character controlling change of data stored in the second zone, the data in the second zone being subject to change to enable re-use of the credit card, the method comprising reading each of said fields, comparing the second field with a predetermined value for the second field, in response to the comparing step indicating that the second read field is an invalid character preventing change of the data in the second zone to data associated with re-use of the credit card, comparing the serial number read from the first field with a set of serial numbers for credit cards, comparing the key character with a predetermined value therefor correlated with the card serial number, in response to the second field comparing step indicating that the second read field is not an invalid character and in response the first field comparing step indicating that the read serial number is in the set of assigned serial numbers and in response to the third field comparing step indicating that the key character has the predetermined value therefor changing the data in the second zone to data associated with re-use of the card.

4,442,346

MONEY DEPOSIT AND/OR DISPENSING DEVICE

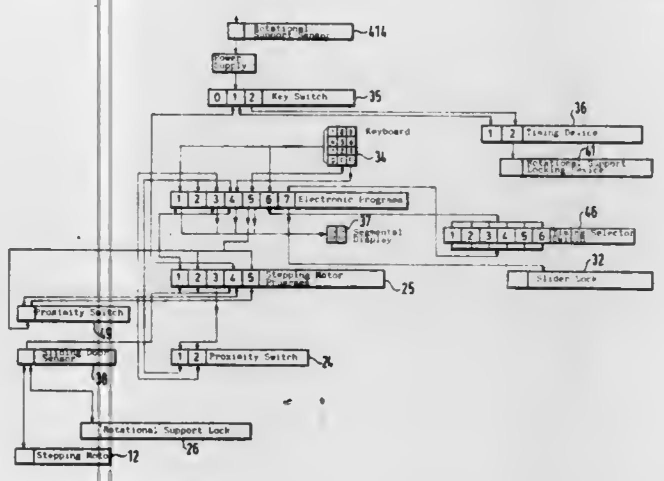
Gerhard Bösinger, Schulstr. 9, D-8857 Wertingen; Michael Backes, Herrenberg 14, D-8851 Buttenwiesen, and Eberhard F. Beyhl, Unterrieden Nr. 73, D-8503 Altdorf, all of Fed. Rep. of Germany

Filed Jun. 8, 1981, Ser. No. 271,507

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1980, 3022066

Int. Cl.³ G06F ***15/30***

U.S. Cl. 235—379 **9 Claims**



1. A device for deposit and/or dispensing of money having a plurality of bank note reception compartments in a housing, an opening and as associated closure member being provided in said housing for allowing access to one of said compartments when said closure member is in an open position, and means for moving said compartments within said housing to bring said compartments in registration with said opening, comprising control means for controlling said closure member after each closure thereof to enable said opening position independently of the movement of said compartments only a predetermined delay time after an opening instruction is introduced into said control means through an instruction input generator.

4,442,347

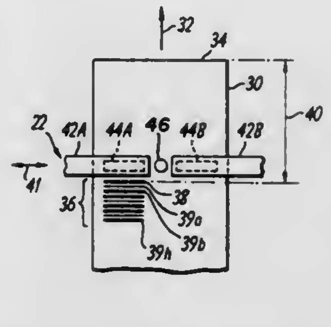
INDICIA READING METHOD AND APPARATUS

Kenneth A. Hams, Easton, Pa., assignor to Bell & Howell Company, Phillipsburg, N.J.

Filed Aug. 31, 1981, Ser. No. 297,534

Int. Cl.³ G06K ***7/016***

U.S. Cl. 235—474 **23 Claims**



1. A method of reading indicia on documents travelling past a read station, said documents having thereon a number of print lines, said method comprising the steps of:

detecting the presence of a document in said read station;

determining when an indicia-bearing portion of said travelling document is in a position to be read, said determination further comprising the steps of:

generating a digital signal having a pulse frequency proportional to the speed of travel of said document;

counting with a first counter means the number of said pulses as an indication of the number of printing lines that are passing through the read station;

maintaining a second counter means in a selective present condition until said second counter means is enabled to count, said second counter means having a maximum value to which it can count so that its range of counting from a preset count to a maximum count is controllable;

comparing the counted number of said pulses counted by said first counter means to a pre-selected value, said pre-selected value approximating the number of print lines typically distancing a neighborhood of the indicia-bearing portions of similar documents from an edge of similar documents; and,

enabling said second counter means to count further ones of said pulses when it is determined that the number of pulses counted by said first counter means equals said preselected value, said counting by said second counter means commencing from said preset count;

scanning a number of further consecutive print lines on said document for an initial information mark signaling the beginning of said indicia, the number of print lines so scanned being related to the counting range of said second counter means; and,

reading at least one further print line of said indicia-bearing portion of said document.

4,442,348

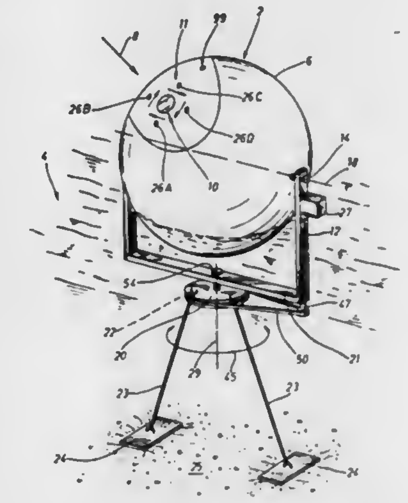
SOLAR TRACKING APPARATUS FOR A GIMBALED BODY

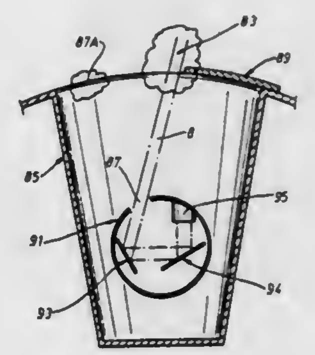
Wesley L. Snyder, 1103 Forest Home Dr., Houston, Tex. 77094

Continuation of Ser. No. 73,128, Sep. 6, 1979, abandoned, which is a continuation of Ser. No. 880,882, Mar. 16, 1978, Pat. No. 4,276,122. This application Aug. 13, 1981, Ser. No. 292,607

Int. Cl.³ G01J ***1/24***

U.S. Cl. 250—203 R **17 Claims**





1. A solar tracking apparatus for detecting incident solar radiation and providing a means for orienting a gimbaled body relative to said solar radiation, said tracking apparatus being insensitive to movements of said gimbaled body caused by environmental factors, comprising:

a plurality of independent light receiving sensors capable of individual sensitivity adjustment, located on said gimbaled body;

means operatively associated with and electrically connected to said plurality of sensors, for moving said gimbaled body about perpendicular axes relative to the position of said solar radiation; and,

sensitizing means for controlling the amount of radiation needed to activate any of said sensors, thus inhibiting said means for moving said body in unfavorable environmental conditions;

said sensitizing means including for each of said plurality of independent light receiving sensors, a coarse radiation adjustment means and a fine radiation adjustment means for correcting for overshoot of the solar radiation, said coarse adjustment means including a rotating drum having an aperture therein, said drum housing one of said plurality of independent light receiving sensors, said coarse adjustment means further including reflective optics for dispersion of the solar radiation to facilitate detection by said light receiving sensor.

4,442,349

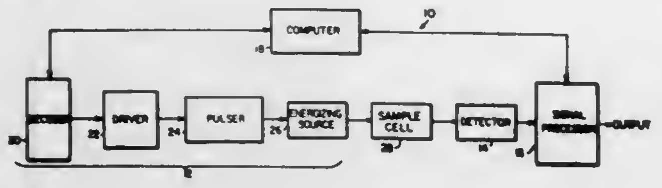
CIRCUITRY FOR THE GENERATION AND SYNCHRONOUS DETECTION OF OPTICAL PULSED SIGNALS

Sture R. Blom, Wayland, and Theodore M. Osborne, Burlington, both of Mass., assignors to Baird Corporation, Bedford, Mass.

Filed Sep. 15, 1980, Ser. No. 187,518

Int. Cl.^{3} G01J *3/00*

U.S. Cl. 250—222.1 **3 Claims**



1. Circuitry for the generation and synchronous detection of pulsed signals in a spectrometer, said circuitry being characterized by a high signal to noise ratio comprising:

(a) means for generating current pulses;

(b) means for generating pulsed energy signals in response to said current pulses;

(c) means for generating detector signals in response to said pulsed energy signals;

(d) means for processing said detector signals in synchronism with said pulsed energy signals including an integrator, a switch synchronized with said pulsed energy signals for driving said integrator and a high pass filter to remove extraneous noise in the 1/f frequency spectrum from said detector signals before they are integrated by said integrator;

(e) a second switch coupled to said integrator for dumping said integrated detector signals; and

(f) means for generating a series of signals for driving said means for generating current pulses, said series of signals being variable analog signals.

4,442,350

FIBER OPTIC SENSOR WITH ENHANCED IMMUNITY TO RANDOM ENVIRONMENTAL PERTURBATIONS

Scott C. Rashleigh, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 17, 1981, Ser. No. 293,589

Int. Cl.^{3} G01B *11/16*

U.S. Cl. 250—227 **18 Claims**

11. A sensor for sensing a field condition with minimum disturbance from environmentally induced perturbations comprising:

a sensing region defined by a length of single mode birefringent optical fiber made birefringent to have two orthogonally disposed eigenmodes oriented respectively along fast and slow axes, said optical fiber being disposed on a carrier;

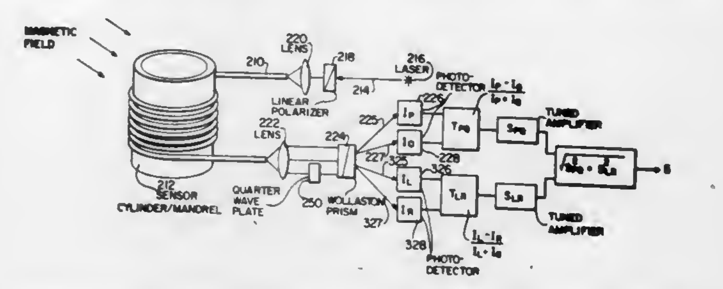
means for launching linear polarized light into one end of the optical fiber at 45° to its fast and slow axes for propagation therethrough along its length and emanating at the other end;

said carrier adapted to undergo dimensional changes in response to the field condition to strain the birefringent fiber relative to its axes for changing the birefringence thereof;

means for splitting one portion of the light emanating from the optical fiber other end into first and second components of linearly polarized light which are at 45° to the optical fiber fast and slow axes;

a quarter wave plate in another portion of the polarized light emanating from the optical fiber end for introducing a differential 90° phase shift therein;

means for splitting the phase shifted light into a third component of left circularly polarized light and a fourth component of right circularly polarized light;



means for monitoring the intensities of the first and second linearly polarized light components to produce first and second electrical signals respectively and for combining the first and second electrical signals to filter out low frequency perturbations to provide a third electrical signal proportional to stresses in the optical fiber induced by the field condition;

means for monitoring the intensities of the third and fourth circularly polarized light components to produce fourth and fifth electrical signals respectively and for combining the fourth and fifth electrical signals to filter out low frequency perturbations to provide a stress induced sixth electrical signal which is phase shifted by 90° relative to the third electrical signal;

means for combining the third and sixth electrical signals to produce an output electrical signal which is independent of low frequency environmentally induced perturbations.

4,442,351

OPTOELECTRONIC INCREMENTAL POSITION ENCODER

George F. Pfeifer; George R. Koonce, both of Liverpool, and Jack E. Phillips, Fayetteville, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 5, 1981, Ser. No. 308,219

Int. Cl.^{3} H01J *3/14*

U.S. Cl. 250—237 G **14 Claims**

1. An optoelectronic incremental position encoder for providing a signal indicative of the position of an encoder slide, comprising:

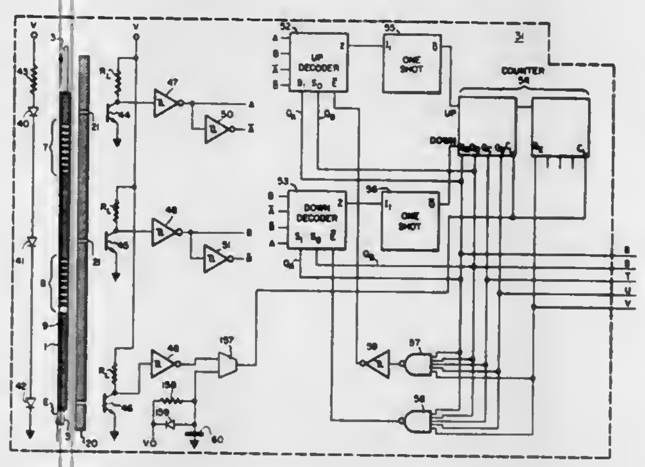
an optical interrupter assembly, including a plurality of paths for optical wavelength radiation to pass therethrough, and a plurality of photodetectors, each photodetector being situated to receive said radiation in a separate one of said paths of optical wavelength radiation, respectively;

an encoder slide positioned for linear movement with respect to said interrupter, said slide having optically transmissive windows arranged in tandem and colinear with the line of movement of said slide so that in response to said movement said photodetectors can detect said radiation transmitted through said windows;

a digital counter;

means coupled to selected ones of said photodetectors for providing electronic output signals and logic complement signals thereof; and

decoder means coupled to receive said electronic signals and logic complements thereof from selected ones of said photodetectors, said decoder means being coupled at its output to said counter so that in response to the count thereof said decoder means can select one of the signals applied thereto and supply a signal to said digital counter to cause said counter to count and thereby produce an output signal indicative of the position of said slide.



4,442,352

SCANNING SYSTEM FOR CHARGED AND NEUTRAL PARTICLE BEAMS

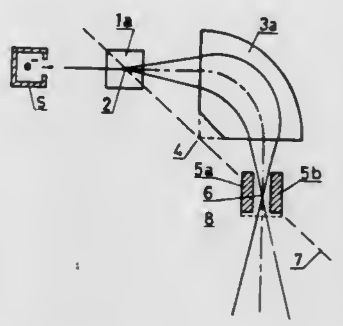
Anders Brahme, Bromma, Sweden, assignor to Instrument AB Scanditronix, Sweden

Continuation-in-part of Ser. No. 150,447, May 16, 1980, abandoned. This application Mar. 9, 1982, Ser. No. 356,284

Claims priority, application Sweden, May 17, 1979, 7904360

Int. Cl.^{3} H01S *1/00;* G01K *1/08*

U.S. Cl. 250—251 **12 Claims**



1. A method of irradiating a confined volume of material normally located at a substantial depth below a surface with a beam of high energy particles, comprising the steps of electromagnetically scanning the beam in a first plane such that the scanned particles emanate from a first center of divergence; forming an image of the first center of divergence of the scanned beam by electromagnetically bending the beam through a spatial angle; and electromagnetically scanning the electromagnetically bent beam in a second plane perpendicular to the first plane with the so-scanned particles emanating from a second center of divergence, and with the second center of divergence being disposed so as to generally coincide with the image of the first center of divergence.

4,442,353

HIGH-PRECISION METHOD AND APPARATUS FOR IN-SITU CONTINUOUS MEASUREMENT OF CONCENTRATIONS OF GASES AND VOLATILE PRODUCTS

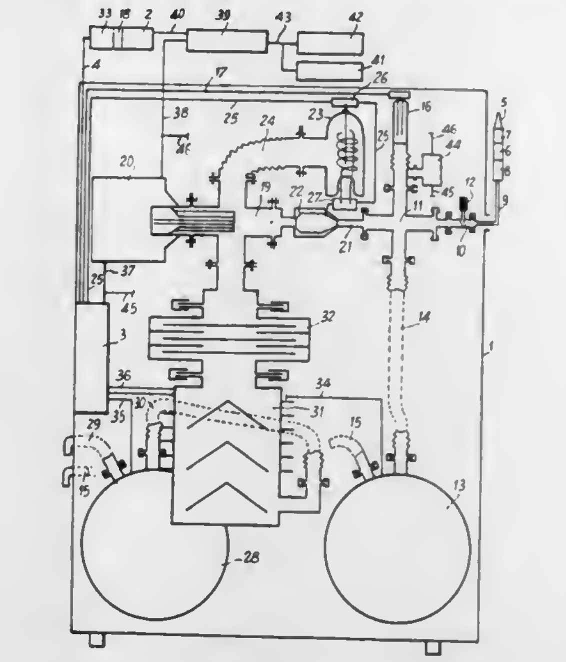
Jean-Claude C. Baubron, Sandillon, France, assignor to Bureau de Recherches Geologiques et Minieres, Paris, France

Filed Jun. 19, 1981, Ser. No. 275,164

Claims priority, application France, Jun. 20, 1980, 80 13776

Int. Cl.^{3} B01D *59/44*

U.S. Cl. 250—281 **6 Claims**



2. Apparatus for high precision measuring of concentrations of gases and volatile products emanating from any natural or industrial source at a varying flow-rate and at a varying pressure above atmospheric pressure before being fed to a mass spectrometer via an input duct and an intermediary expansion enclosure while maintaining optimal pressure values within said spectrometer and said expansion enclosure by means of vacuum pumps, and collecting over a very long period of time samples of the gases in which time-dependent variations of concentrations are to be measured; said apparatus comprising:

(a) a sampling probe (**5**) for collecting gas samples,

(b) an expansion enclosure (**11**)

(c) a pressure-independent duct (**9**) connecting said probe to said expansion enclosure (**11**)

(d) a pressure-limiting valve (**12**) between said duct and said enclosure (**11**),

(e) a vacuum pump (**13**) for evacuating said expansion enclosure (**11**),

(f) a pressure gauge (**16**) measuring the pressure in said expansion enclosure for controlling the operation of said valve (**12**) as a function of said pressure,

(g) a mass spectrometer (**20**) having an analysing chamber (**19**),

(h) a piezo-electric valve (**22**) between said expansion enclosure (**11**) and the analysing chamber (**19**) of said mass spectrometer (**20**), for controlling the gas flow from said enclosure (**11**) into said analysing chamber, and

(i) means for controlling said piezo-electric valve (**22**) as a function of the pressure in said analysing chamber.

4,442,354

SPUTTER INITIATED RESONANCE IONIZATION SPECTROMETRY

G. Samuel Hurst; James E. Parks, and Harold W. Schmitt, all of Oak Ridge, Tenn., assignors to Atom Sciences, Inc., Oak Ridge, Tenn.

Filed Jan. 22, 1982, Ser. No. 341,895

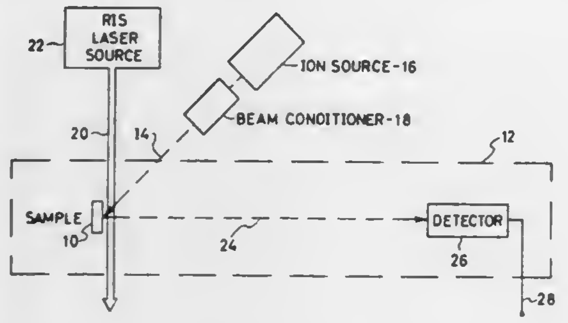
Int. Cl.^{3} B01D *59/44*

U.S. Cl. 250—281 **32 Claims**

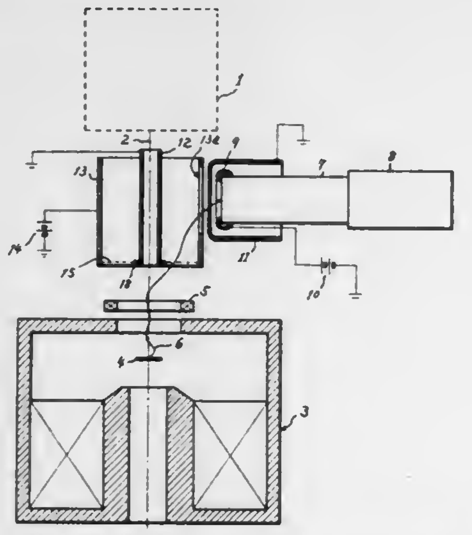
1. A method of quantitatively analyzing for a component in

a sample, said method having sufficient sensitivity to determine as little as one atom, which comprises:

- bombarding said sample with energetic particles thereby producing a cloud of constituents of said sample;
- subjecting said cloud to laser initiated resonance ionization spectroscopy for selectively ionizing constituents in said cloud corresponding to said component; and
- accurately and substantially simultaneously detecting said ions resulting from said laser initiated resonance ionization spectroscopy as a measure of the quantity of said component in said sample with said sensitivity.

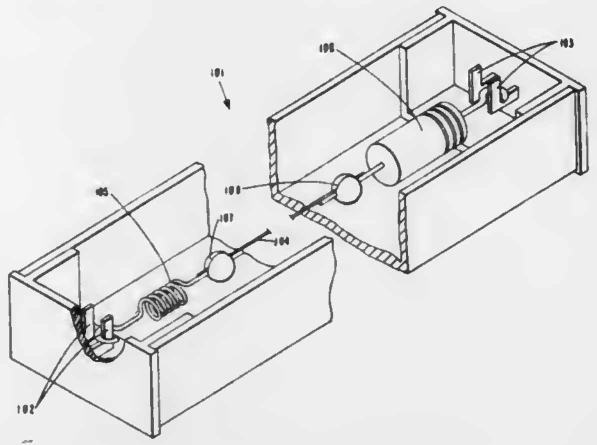


4,442,355
DEVICE FOR DETECTING SECONDARY ELECTRONS IN A SCANNING ELECTRON MICROSCOPE
Nobuaki Tamura, and Susumu Takashima, both of Akishimashi, Japan, assignors to Jeol, Ltd., Tokyo, Japan
Filed Jul. 22, 1981, Ser. No. 286,056
Claims priority, application Japan, Jul. 31, 1980, 55-105516
Int. Cl.^{3} H01J *37/26*
U.S. Cl. 250—310 **6 Claims**



1. In a device for detecting secondary electrons enamating from a specimen in a scanning electron microscope in which a primary electron beam emitted along an optical axis from an electron gun is directed onto said specimen placed substantially centrally in a gap between the magnetic pole pieces of an objective lens, said device comprising a scintillator with an accelerating electrode and a photomultipler that are located in a position displaced off the objective lens toward the electron gun, the improvement comprising a first pipe-shaped electrode disposed around the optical axis for preventing deflection of the primary electron beam due to the accelerating electrode associated with the scintillator, an annular-shaped mesh electrode supported from the first pipe electrode extending outwardly from the first pipe-shaped electrode and away from the optical axis, a second pipe-shaped electrode around the first supporting the peripheral edge of the mesh electrode, said mesh electrode maintained at a positive potential such that the mesh electrode and second pipe-shaped electrode guide the secondary electrons to the scintillator.

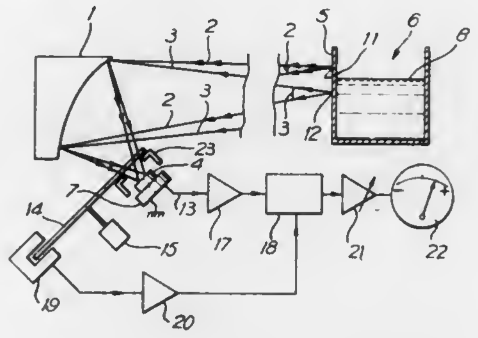
4,442,356
CORONA WIRE ASSEMBLY AND METHOD
Sandra L. Ludwick, Broomfield; Stanley L. Pond, Boulder County, and Robert T. Rhodes, Longmont, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 21, 1981, Ser. No. 294,945
Int. Cl.^{3} H01T *19/04*
U.S. Cl. 250—324 **2 Claims**



1. In a copier, a corona emission wire assembly comprising the combination of:

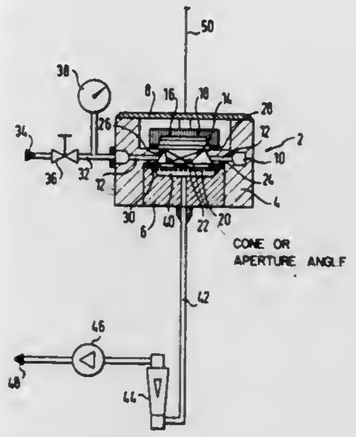
- a conductive and high strength emission wire;
- a supporting structure, having arms, for mechanically retaining the wire under tension and electrically connecting the wire to an external circuit;
- a tension spring connectable between one end of the wire and an arm of the structure;
- a resistor connectable between another end of the wire and another arm of the structure; and
- first and second deformable connectors, each connector having a slot for concurrently receiving one end of the wire and a lead from one of said spring or resistor, for mechanically and electrically joining them when the connector is deformed to compress them in the slot, the first connector joining one end of the wire and a lead of the tension spring, and the second connector joining the opposite end of the wire and a lead of the resistor.

4,442,357
DIFFERENTIAL RADIATION DETECTION APPARATUS
Geoffrey Baker, and Roger A. Lockett, both of Southampton, England, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Sep. 21, 1981, Ser. No. 304,290
Claims priority, application United Kingdom, Sep. 26, 1980, 8031083
Int. Cl.^{3} G01J *1/00;* G01F *23/00*
U.S. Cl. 250—338 **9 Claims**



1. A differential radiation detection apparatus comprising an objective for forming a real image of a field of view in an image plane in response to thermal radiation emitted by objects in said field of view, a pair of thermal radiation detectors adjacent to one another in said image plane, a radiation chopper located between said objective and said detectors and substantially in said image plane, said chopper having blades which chop the real image radiation falling on both detectors at a predetermined chopping frequency, and circuit means for extracting a.c. output signals at the chopping frequency of each of said detectors and including means for deriving a signal determined by the difference between said a.c. output signals.

4,442,358
APPARATUS FOR DETECTING α-RAYS PRESENT IN A SPECIFIED ENERGY RANGE
Hans-Jürg Kreiner, Munich, Fed. Rep. of Germany, assignor to Münchener Apparatebau für elektronische Geräte Kimmel GmbH, Haar, Fed. Rep. of Germany
Filed Nov. 18, 1980, Ser. No. 208,321
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1979, 2947302
Int. Cl.^{3} G01J *1/16*
U.S. Cl. 250—435 **21 Claims**



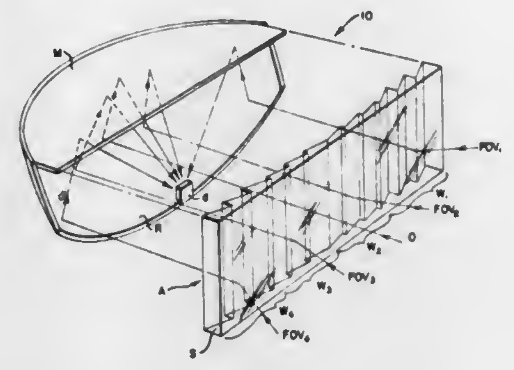
1. An α-ray detection apparatus including an energy discriminating α-ray detector having a receiving surface for measuring the energy of α-particles suspended in a gas which are separated from the gas on the receiving surface of a membrane filter, comprising:

- a cylindrical body enclosing a chamber within which said detector and said filter are disposed;
- an annular flange extending from said cylindrical body radially inward with respect to the axis of said body, said flange having first and second surfaces perpendicular to said axis and a circumferential inner surface tapered toward said second surface, said filter receiving surface being sealed against said first surface and said detector receiving surface being sealed against said second surface whereby a measuring space is formed defined by said receiving surfaces and said circumferential inner surface;
- pressure reduction means for reducing the pressure of said measuring space to less than atmospheric pressure to reduce energy loss by said α-particles while in said measuring space; and
- admitting means for admitting said gas suspended α-particles into said measuring space through said annular flange.

4,442,359
MULTIPLE FIELD-OF-VIEW OPTICAL SYSTEM
David B. Lederer, Rochester, N.Y., assignor to Detection Systems, Inc., Fairport, N.Y.
Filed Mar. 1, 1982, Ser. No. 353,364
Int. Cl.^{3} G01J *1/04*
U.S. Cl. 250—342 **9 Claims**

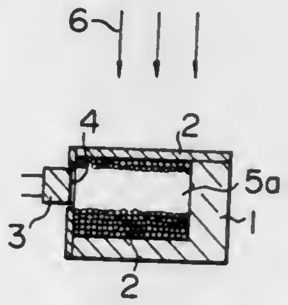
1. For use in an electromagnetic radiation-responsive detection system of the type comprising a radiation-responsive detector disposed on an optical axis, an optical system for concentrating radiation onto the detector from each of a plurality of discrete fields of view, said optical system comprising:

- an array of optical wedges, each wedge being adapted to intercept radiation propagating toward said optical axis at a unique angle and to refract such radiation in a direction substantially parallel to said optical axis and toward said detector; and



- a reflective focusing element disposed on said optical axis between said optical wedge array and said detector to focus radiation refracted by each of said wedges onto said detector.

4,442,360
RADIATION DETECTOR
Atsushi Suzuki, Higashiyamato; Hiromichi Yamada, Hino; Yoko Uchida, Kawasaki; Hideki Kohno, Tokyo; Fukino Tadashi, Hachioji, and Minoru Yoshida, Tokyo, all of Japan, assignors to Hitachi Medical Corporation, Tokyo, Japan
Filed Apr. 24, 1981, Ser. No. 257,426
Claims priority, application Japan, Apr. 25, 1980, 55-54156
Int. Cl.^{3} G01T *1/20;* G01J *1/58*
U.S. Cl. 250—486.1 **13 Claims**



1. A radiation detector comprising a scintillator exhibiting luminescence by the action of radioactive rays and a light detector detecting light output of said scintillator, characterized in that said scintillator is a phosphor represented by the formula:

$$(A_{1-x-y}Ln_xCe_y)_2O_2S{:}X \qquad (1)$$

wherein A is at least one element selected from the group consisting of Y, La and Gd; Ln is Pr; and X is at least one element selected from the group consisting of F, Cl and Br; and the values of x and y and the amount of X are as follows:

$0.000003 \leqq x \leqq 0.2,$

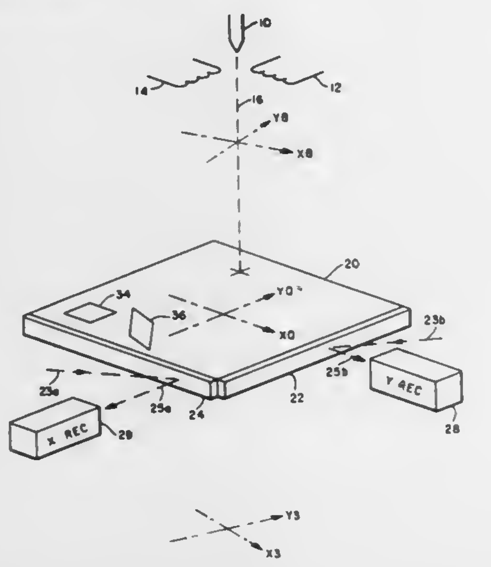
$0.000001 \leqq y \leqq 0.005,$ and

$X = 0$ to 1000 ppm on weight basis.

4,442,361
SYSTEM AND METHOD FOR CALIBRATING ELECTRON BEAM SYSTEMS

John Zasio, Sunnyvale; Larry Cooke, Cupertino, and Raymond Paul, Soquel, all of Calif., assignors to Storage Technology Partners (through STC Computer Research Corporation, managing general partner), Santa Clara, Calif.

Filed Sep. 30, 1982, Ser. No. 429,948
Int. Cl.^{3} H01J *37/304*
U.S. Cl. 250—491.1 **17 Claims**



1. A calibration system for making a plurality of scanning beam systems compatible one with another, each of said scanning beam systems including bean deflection control means for controlling the deflection of a scanning beam in response to beam deflection signals, and stage position control means for controlling the movement of a stage in response to stage position signals, said stage being selectively positioned in the path of said scanning beam, and said stage further being adapted to receive and hold an object that is to be scanned, whereby a desired pattern can be scanned on said object by said beam through selective control of said beam deflection and stage position signals, said calibration system comprising:

marking means for marking a calibration plate held on the stage of a first of said scanning beam systems with a plurality of calibration marks, each of said mark being positioned at a prescribed location on said calibration plate;

holding means for allowing said calibration plate to be removed from said first scanning beam system and inserted into another of said scanning beam systems;

measuring means for measuring the location of a plurality of said marks after said calibration plate has been inserted into said other scanning beam system;

mapping means for creating and using an error data map that indicates the difference between the prescribed location and the measured location; and

correction means, responsive to said error data map, for selectively controlling the movement of the stage of said other scanning beam system so that a pattern exposed on an object placed thereon is aligned with a pattern scanned on said same object whenever said object is placed on the stage of said first system.

4,442,362
SHORT PULSE GENERATOR

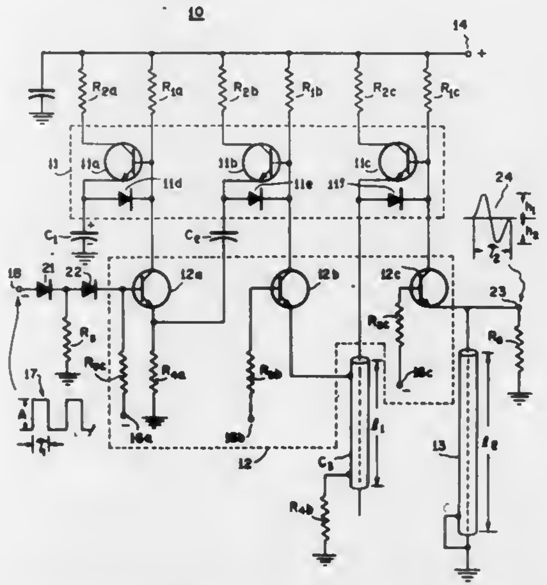
Basrur R. Rao, Lexington, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed May 17, 1982, Ser. No. 378,558
Int. Cl.^{3} H03K *3/00*
U.S. Cl. 307—108 **7 Claims**

1. An appartus for generating signals of short duration comprising:

charging means having a conducting state and a nonconducting state for supplying energy at an output means thereof while in said conducting state and including a plurality of unidirectional current conductive devices poled to set said charging means to said nonconducting state when said energy supplied achieves a predetermined level;

a plurality of chargeable energy storage devices coupled to said unidirectionl current conductive devices and said charging means such that all are charged from said charging means substantially simultaneously to achieve said predetermined energy level;



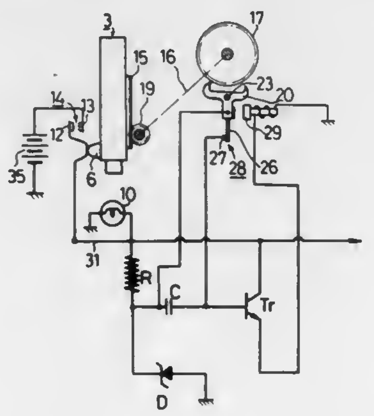
switch means having a conducting state and a nonconducting state, and coupled to said plurality of energy storage devices for coupling said energy storage devices substantially in series when in said conducting state; and

pulse shaper means coupled to said energy storage devices by said switch means during said conduction state of said switch means for providing an energy discharge path for energy stored in said storage devices and for providing an output signal representative of said energy discharge from said energy storage devices.

4,442,363
TIMER SWITCH FOR VEHICLE

Masaru Suzuki, Chiryu, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Niwa, Japan

Filed Jan. 7, 1983, Ser. No. 456,431
Claims priority, application Japan, Jan. 19, 1982, 57-6495; Feb. 1, 1982, 57-14549
Int. Cl.^{3} H01H *3/34, 43/00*
U.S. Cl. 307—141.4 **14 Claims**



1. A timer switch to be installed in a vehicle, comprising:

a casing;

a setting member for setting a desired period, which is housed in said casing and is moved along its axis when a desired period is set;

a switching means which is turned on when a desired period is set by said setting member;

a biasing means for biasing said setting member to its original position;

an escape wheel provided with saw-shaped teeth in the outer periphery thereof, which is rotatably supported within said casing;

a clutch means which is interposed between said setting member and said escape wheel for disengaging said setting member from said escape wheel while said setting member is operated and engaging said setting member with said escape wheel when said escape wheel turns to return said setting member to its original position;

an anchor provided with a pair of claws, which is rockably supported within said casing so as to be opposed to said escape wheel; and

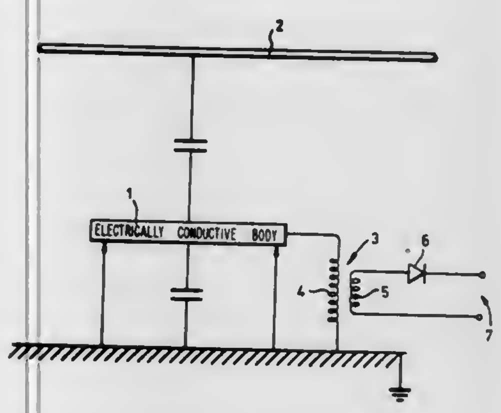
an anchor rocking means for rocking said anchor at constant periods to engage said pair of claws with said teeth of said escape wheel alternately;

said anchor rocking means being provided with a magnetic body fixed to said anchor, an electromagnetic member disposed within said casing so as to be opposed to said magnetic body, and an electric current supplying means for supplying an electric current to said electromagnetic member intermittently.

4,442,364
OVERHEAD ELECTRIC TRANSMISSION SYSTEMS

Philip Dey, New Barnet, England, assignor to BICC Public Limited Company, London, England

Filed Jul. 19, 1982, Ser. No. 399,914
Claims priority, application United Kingdom, Jul. 21, 1981, 8122471
Int. Cl.^{3} H02G *7/20*
U.S. Cl. 307—147 **8 Claims**

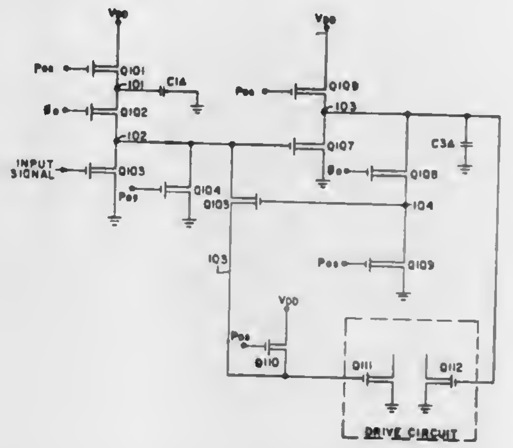


1. An overhead electric transmission and optical communication system of the kind in which at least one overhead electric conductor, along which an alternating current is caused to flow, is freely supported in long lengths between spaced towers and in which the overhead electric conductor, or at least one of the overhead electric conductors, includes at least one optical guide of the optical communication system, wherein, at at least one tower along the system, electrical power for electrically powered ancillary equipment of the optical communication system is derived from at least one electrically conductive body supported by and electrically insulated with respect to the tower and electrically connected to earth through the primary winding of a step-down voltage transformer, the electrically conductive surface area of the or each electrically conductive body and its position with respect to a current carrying overhead conductor of the transmission system being such that said electrical power is provided across the secondary winding of the transformer.

4,442,365
HIGH SPEED LATCH CIRCUIT

Akira Nagami, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Dec. 2, 1981, Ser. No. 326,925
Claims priority, application Japan, Dec. 2, 1980, 55-170071
Int. Cl.^{3} H03K *3/356*
U.S. Cl. 307—279 **11 Claims**

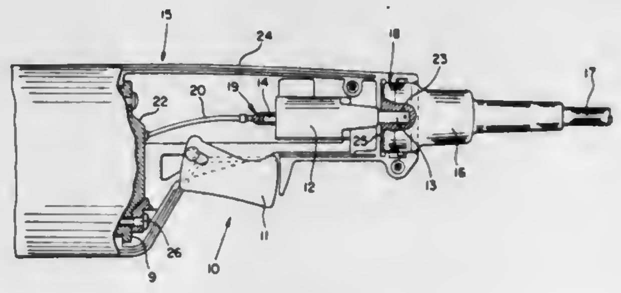


5. A latch circuit comprising first to fourth nodes, means for supplying said first node with a logic signal, first charging means for operatively charging a second node at said first potential, second charging means for operatively charging said fourth node at said first potential, means for operatively discharging a potential at said third node to a second potential, first control means for operatively enabling said first and second charging means and said discharging means during a first period, first transfer means for operatively transferring a potential at said second node to said third node, second control means for operatively enabling said first transfer means during a second period after said first period, switching means responsive to a level of said first node for selectively discharging a potential of said second node to a second potential, and second transfer means responsive to a potential at said third node for selectively providing an electrical path between said first and fourth nodes.

4,442,366
SWITCH-PLUG MODULE FOR PORTABLE ELECTRIC TOOL

Giuseppe Cuneo, Gattorna, Italy, assignor to Black & Decker Inc., Newark, Del.

Filed Mar. 2, 1982, Ser. No. 353,918
Claims priority, application Italy, Mar. 4, 1981, 20969/81[U]
Int. Cl.^{3} H02K *7/14*
U.S. Cl. 310—50 **4 Claims**



1. A portable electric tool, comprising:

a tool housing having a handle depending rearwardly therefrom with a receptacle recessed in the rear of the handle for receiving a female connector of a cord set therein, said receptacle being separated from the interior of the handle by a partition;

an electric motor contained in said tool housing and having a cable, comprising the leads of the motor, extending rearwardly therefrom and terminating in a female connector;

an elongate support structure having a lug at the forward end thereof and being attached to said motor by a screw passing through said lug into the rear end of the motor;

a trigger-actuated switch having a trigger and a switch housing, the switch housing being mounted at the rear end of said support structure, and the trigger being mounted on said support structure intermediate the length thereof between said lug and the switch housing; and

said switch housing having two sets of plug prongs extending outwardly therefrom in opposite directions, one set extending forwardly and engaging in the female connector of said motor cable, and the other set extending rearwardly through said partition into said receptacle for engagement by the female connector of said cord set when received therein;

whereby said support structure, trigger and switch housing form a sub-assembly which during assembly of the portable electric tool is simply secured to the motor by said screw and the female connector of the motor cable inserted on said forwardly extending set of plug prongs.

4,442,367

ELASTOMERIC MEMBER FOR SUSPENDING A MOTOR WHILE POSITIONING ITS MAGNET

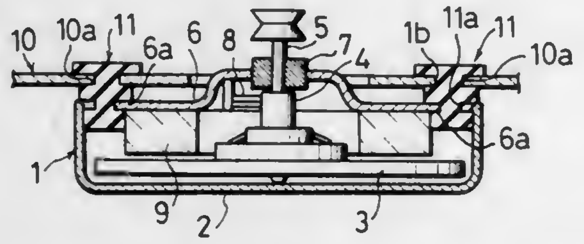
Tadashi Suzuki, Kakuda, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Aug. 5, 1982, Ser. No. 405,324

Claims priority, application Japan, Aug. 6, 1981, 56-117271[U]

Int. Cl.³ H02K *5/24*

U.S. Cl. 310—91 **1 Claim**



1. A member for suspending a motor from a chassis of a tape recorder or the like, comprising a support member formed of elastomeric material and having a first constricted portion of a reduced diameter adapted to fit tightly within an opening of said chassis and a second constricted portion of a reduced diameter adapted to fit tightly within an opening of a frame member supporting said motor, said member including means formed by an enlarged portion adapted to abut the lateral side surface of a permanent magnet of said motor for aligning the permanent magnet of said motor by positioning a plurality of said members in spaced relation around the lateral side surface thereof.

4,442,368

ROTATING ELECTRICAL MACHINE

Stefan Kupisiewicz, 55, rue Bois d'Evegnee, and Jacques J. F. Schoebrechts, 61, Chaussee de Wegimont, both of 4634 Soumagne, Belgium

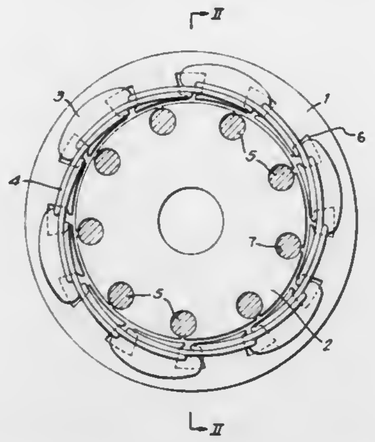
Continuation of Ser. No. 199,357, Oct. 21, 1980, abandoned. This application Mar. 21, 1983, Ser. No. 477,587

Claims priority, application Belgium, Apr. 25, 1980, 2/58536; Sep. 30, 1980, 2/58779

Int. Cl.³ H02K *3/04*

U.S. Cl. 310—201 **16 Claims**

1. A rotating electrical machine of the type comprising a stationary portion and a moving portion coaxial therewith, said stationary portion including a first and a second winding, and said moving portion including a single phase third winding, said first and second windings having pole pitches even multiples or sub-multiples of each other and a mutual zero inductance, said third winding being alone and closed on itself, the arrangement being such that said first winding generates a field inducing current into said third winding, said current generating a fixed flux in relative rotation with respect to said moving portion which has the same pole pitch as said second winding and magnetically interacts with said second winding, said third winding including a number of bar sets each of which comprise two interconnected bars, said number of bar sets being equal to the number of pole pairs of said first or second winding having the largest pole pitch.



4,442,369

ROTOR OF A SUPERCONDUCTIVE ROTARY ELECTRIC MACHINE

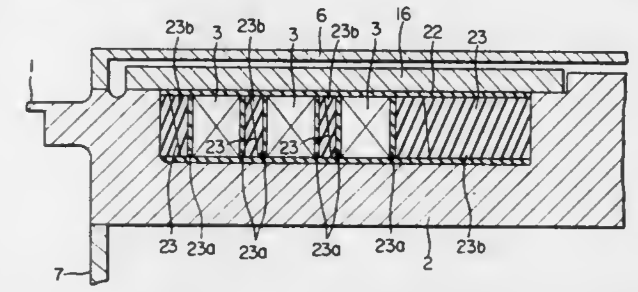
Kouichi Okamoto, Kobe; Masaki Sakuyama, Ashiya, and Mitsuo Tanaka, Ibaragi, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 15, 1982, Ser. No. 388,733

Claims priority, application Japan, Jun. 22, 1981, 56-98890

Int. Cl.³ H02K *3/48*

U.S. Cl. 310—214 **1 Claim**



1. A rotor for a superconductive rotary electric machine, comprising:

a coil carrying shaft;

a plurality of superconductive magnetic field coil means mounted on said coil carrying shaft and having coil end portions which are curved along the circumference of an end portion of the coil carrying shaft, said coil end portions being spaced in the direction of the length of said shaft to define gaps between the coil end portions;

electrically insulating padding plate means positioned against the side surfaces of said coil end portions on opposite sides of said gaps; and

electrically insulating filler means filling the remainder of said gaps between said padding plate means, said filler means being a pair of filler portions which have a cross-sectional shape of complementary wedges and filling the space in each gap between the padding plate means.

4,442,370

BRUSH LEAD RETAINER FOR AN ELECTRICAL MACHINE

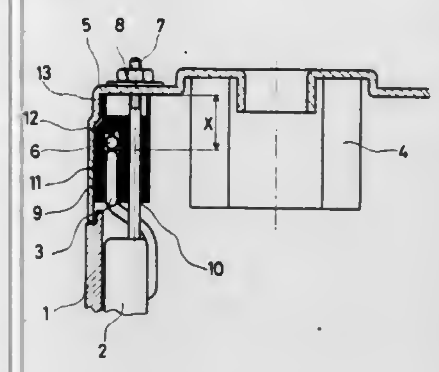
Gerard Veyssiere, Issoire, France, assignor to Ducellier & Cie, France

Filed Sep. 2, 1981, Ser. No. 298,780

Claims priority, application France, Oct. 23, 1980, 80 22645

Int. Cl.³ H02K *13/00*

U.S. Cl. 310—239 **1 Claim**



1. A device for immobilizing the brush lead connections of electrical machines, particularly for motor vehicle starters, which includes a housing, inductor windings held against said housing, connections formed between said windings, an end support on which is mounted a brush carrying assembly of which at least one of the brushes includes a flexible brush lead of substantial length, the starter assembly being held together by means of tie rods situated near to the brush lead and to one of said connections, the device being characterized in that it is constituted by a retainer disposed, when assembled, so as to cooperate with the brush lead, tie rod and connection between windings and being adapted to be held in position by gripping between the interior of the end support and said connection, by virtue of a resiliently deformable lip integrally formed at the bottom of a groove extending inwardly from one end of the retainer parallel to a longitudinal hole through which passes the tie rod, and also of an annular resiliently deformable ip surrounding the external periphery of the other end of the retainer.

4,442,371

COOLING DEVICE FOR ROTARY ELECTRIC MACHINE

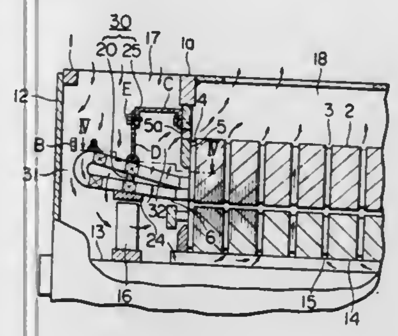
Yumiteru Utsunomiya, Isahaya, and Shigeru Murayama, Nagasaki, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 25, 1982, Ser. No. 436,652

Claims priority, application Japan, Nov. 24, 1981, 56-188589

Int. Cl.³ H02K *3/46*

U.S. Cl. 310—260 **4 Claims**



1. In a cooling device for a rotary electric machine wherein a coil end portion of a stator of said rotary electric machine is provided with a ventilating guide which divides the stator coil end portion in the axial direction into a first ventilating section extending in the radial direction that causes cooling air to advance onto an inner peripheral side of the coil end portion and a second ventilating section extending in the radial direction that causes the cooling air, having passed through said first ventilating section, to advance onto an outer peripheral side of the coil end portion, and which guides the cooling air, having passed through said second ventilating section, into a space surrounding the stator, the improvement in said ventilation guide comprising a shroud covering the stator coil end portion from the outer peripheral side, and a partition member disposed on an inner peripheral side of said shroud and extending radially inwardly to divide a ventilation space into which said stator coil end portion extends into said first and second ventilation sections, said partition member being constructed of an electrically-insulating spacer ring of hardened, felt-like material interposed while pliable and hardened in position so as to extend in a circumferential direction between top coils and bottom coils of said stator coil end portion, and individual electrically-insulating spacers of hardened, felt-like material respectively interposed while pliable and hardened in position between the top coils and between the bottom coils in a manner to adjoin said spacer ring, said spacer ring and adjoining individual spacers closing up the interspaces between coils and forming said partition.

4,442,372

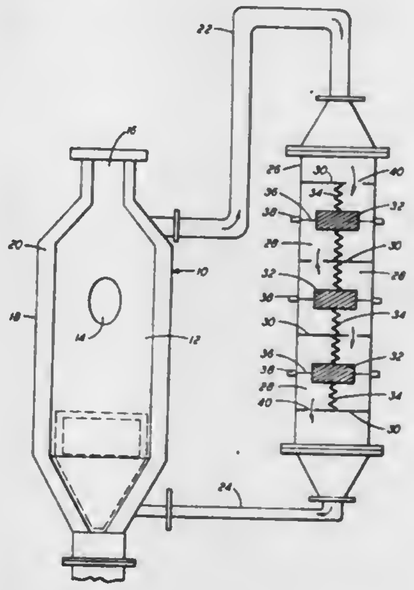
PIEZO ELECTRIC APPARATUS FOR GENERATING ELECTRICITY

Walter M. Roberts, Buffalo, N.Y., assignor to Walton Energy Systems Co., Buffalo, N.Y.

Filed Nov. 22, 1982, Ser. No. 443,229

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—339 **6 Claims**



1. In a frequency generator, a furnace chamber in which heat is produced, a refrigerant chamber at least partially surrounding the furnace chamber, a liquid refrigerant in the refrigerant chamber that is vaporized by the heat produced in the furnace chamber, a condensing chammber, conduit means connecting the refrigerant chamber with the condensing chamber whereby vaporized refrigerant under pressure flows from the refrigerant chamber to the condensing chamber and after passing through the latter returns to the refrigerant chamber, a plurality of piezo electric elements in the condensing chamber in the path of the pressurized refrigerant passing therethrough, and means in the condensing chamber for producing variations in the refrigerant pressure whereby the refrigerant exerts a mechanical force on the piezo electric elements which in turn produce electricity, said last-named means comprising an apertured plate member located between each adjacent pair of piezo electric elements.

4,442,373

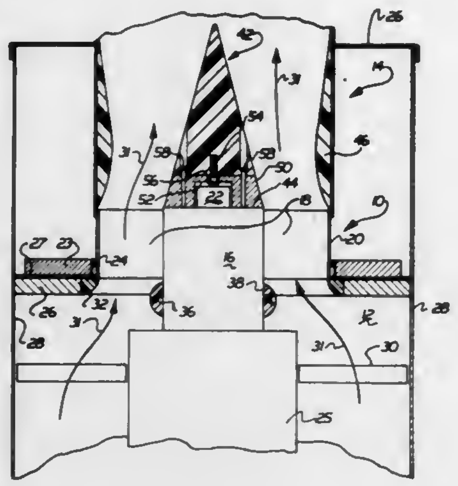
APPARATUS FOR REDUCING AERODYNAMIC DRAG IN SYSTEM FOR AIR COOLING A HIGH POWER VACUUM TUBE

Robert E. Klein, Quincy, Ill., assignor to Harris Corporation, Melbourne, Fla.

Continuation of Ser. No. 22,945, Mar. 22, 1979, abandoned. This application Sep. 2, 1981, Ser. No. 298,737

Int. Cl.^{3} H01J *7/26, 61/52*

U.S. Cl. 313—35 **13 Claims**



1. Apparatus for use in conjunction with a high power vacuum tube including a body portion having a longitudinal axis, a plurality of heat radiating members each extending transversely outward from said body portion in a direction transverse to said longitudinal axis, channel means for defining a channel through which gas may flow in a longitudinal direction past said body portion and said heat radiating members so as to cool said body portion, and entry and exit ports for directing gas flow into and out of said channel, said apparatus comprising drag reducing means associated with at least one of said entry and exit ports for providing an aerodynamically smooth transition between said channel and said at least one port to minimize gas drag associated with the flow of gas between said port and said channel, thereby improving gas flow through said channel, and improving the dissipation of heat from said high power vacuum tube, wherein said drag reducing means comprising chimney means associated with said exit port from said channel and defining an extension of said gas channel, wherein said chimney means is constructed of a material having sufficient resilience that reduced gas pressure created within the extension air channel by the flow of gas therethrough will draw the chimney means into the desired shape.

4,442,374

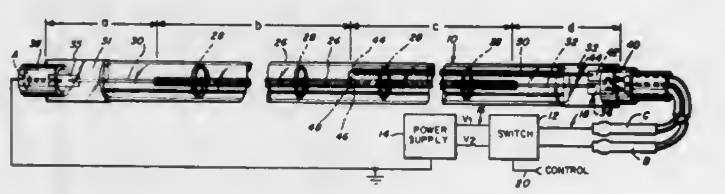
DUAL LENGTH COPIER LAMP

Merle E. Morris; Lawrence M. Rice, both of Lexington, and Steven L. Meade, Winchester, all of Ky., assignors to GTE Products Corporation, Stamford, Conn.

Filed Mar. 25, 1982, Ser. No. 362,016

Int. Cl.^{3} H01K *9/00, 1/18*

U.S. Cl. 313—316 **18 Claims**



1. In an incandescent lamp including a tubular quartz envelope, a coiled tungsten filament substantially centrally disposed within said envelope and extending substantially the length thereof, and first and second contact means located respectively at first and second opposing ends of said coiled tungsten filament and electrically coupled thereto, said coiled tungsten filament being energized over the substantially entire length thereof when a predetermined, first voltage is applied across said first and second contact means, the improvement comprising:

- means for de-energizing an end portion of preselected length of said coiled tungsten filament while enabling the remaining length of said filament to be energized, said de-energizing means comprising a third contact means located at said second opposing end of said coiled tungsten filament and spaced from said second contact means, said third contact means electrically coupled to said coiled tungsten filament at a point located an established distance from said second opposing end substantially equal to said preselected length of said coiled tungsten filament being de-energized, said de-energizing of said end portion of said filament and said energizing of said remaining length simultaneously occurring when a predetermined, second voltage is applied across said first and third contact means.

14. An incandescent lamp comprising:

- first and second tubular quartz envelopes of substantially the same length and positioned substantially parallel to each other, each of said envelopes having a first sealed end portion positioned within a first common mount member and a second sealed end portion positioned within a second common mount member;
- a first coiled tungsten filament having a first length and substantially centrally disposed within said first tubular quartz envelope;
- a second coiled tungsten filament having a second length shorter than said first length and substantially centrally disposed within said second tubular quartz envelope;
- first contact means associated with said first common mount member and electrically coupled to a first end of each of said first and second coiled tungsten filaments;
- second and third contact means associated with said second common mount member and respectively electrically coupled to a second end of said first and second coiled tungsten filaments whereby said first coiled tungsten filament will be energized when a predetermined, first voltage is applied across said first and third contact means and said second coiled tungsten filament will be energized when a predetermined, second voltage is applied across said first and second contact means.

4,442,375

ELECTRICAL SELF-PURIFICATION IGNITION PLUG

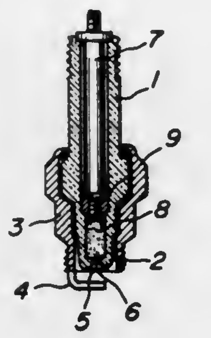
Kanemitsu Nishio, Komaki; Shunichi Takagi, Tajimi, and Yasuhiko Suzuki, Nagoya, all of Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Aug. 11, 1980, Ser. No. 176,800

Claims priority, application Japan, Sep. 14, 1979, 54-117208; Sep. 14, 1979, 54-117209

Int. Cl.^{3} H01T *13/20*

U.S. Cl. 313—142 **6 Claims**



2. An electrical self-purification ignition plug comprising a porcelain insulator ignition leg provided with a conical depression at its end surface opposed to a grounded electrode, and a center electrode exposed to the base surface of said conical depression and made integral with said porcelain insulator, said center electrode being composed of a metal chip formed of a metal selected from the group consisting of Ni, Ni base alloy and Au-Pd alloy and made integral with said porcelain insulator by hot pressing at a softening temperature of said metal chip.

4,442,376

COLOR DISPLAY TUBE HAVING HEAVY METAL COATING ON COLOR SELECTION ELECTRODE

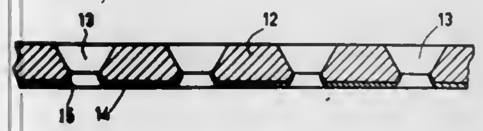
Jan Van Der Waal, and Johannes M. A. A. Compen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 10, 1981, Ser. No. 282,127

Claims priority, application Netherlands, Jul. 16, 1980, 8004075

Int. Cl.^{3} H01J *29/07*

U.S. Cl. 313—402 **7 Claims**



1. A color display tube comprising an envelope containing means for producing a number of electron beams, a display screen having areas for luminescing in a corresponding number of associated colors, and a color selection electrode disposed adjacent the display screen and having a plurality of apertures situated to effect passage of only the portions of each beam which will impinge on the screen areas of the associated color, said color selection electrode being covered on the side remotte from the display screen with a layer of material including a heavy metal having an atomic number exceeding 70,

characterized in that the thickness of the material covering the color selection electrode surface extending between the apertures corresponds to a weight of approximately 0.2 to 2 mg/cm^2 and the thickness of the material covering walls defining said apertures corresponds to a weight which does not exceed 0.2 mg/cm^2.

4,442,377

PHOSPHORS

Malcolm Higton, and Aron Vecht, both of London, England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, United Kingdom

Continuation of Ser. No. 365,335, Apr. 5, 1982, abandoned, which is a division of Ser. No. 128,552, Mar. 10, 1980, Pat. No. 4,365,184, which is a continuation of Ser. No. 928,696, Jul. 27, 1979, abandoned, and a continuation of Ser. No. 801,211, May 27, 1977, abandoned. This application Mar. 10, 1983, Ser. No. 474,059

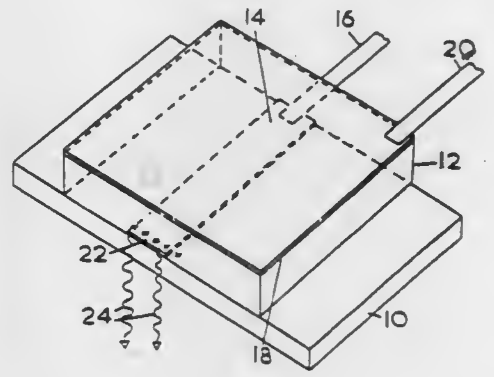
Claims priority, application United Kingdom, Jun. 1, 1976, 22697/76

Int. Cl.^{3} H05B *33/10, 33/14*

U.S. Cl. 313—503 **21 Claims**

1. A process for making a DC electroluminescent device including the steps of

a. producing phosphor particles including a sulphide selected from the group consisting of strontium and calcium sulphide mixed with a dopant selected from the group consisting of europium, terbium, and erbium,
b. coating said phosphor particles with an element of Group Ib of the Periodic Table to introduce said element onto the outer surface of said particles,
c. embedding the coated particles in a matrix,
d. arranging the resulting particle bearing matrix as a phosphor layer in contact with two electrodes, and
e. passing a forming direct electrical current between the two electrodes until the electrical resistance is increased in



a localized and predetermined region of the phosphor layer.

4,442,378

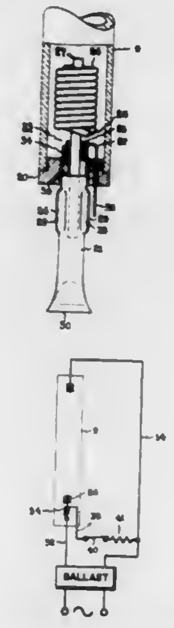
HIGH PRESSURE SODIUM VAPOR LAMP HAVING RESISTANCE HEATER MEANS

Robert G. Frey, Strongsville, and Charles I. McVey, Shaker Heights, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 30, 1982, Ser. No. 403,899

Int. Cl.^{3} H05B *41/16*

U.S. Cl. 315—47 **15 Claims**



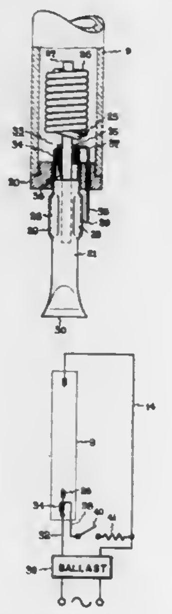
1. An improved high pressure sodium vapor lamp having a tubular light-transmitting ceramic envelope containing a reservoir of sodium-mercury amalgam in excess of the quantity vaporized during lamp operation and thermionic electrodes being sealed into its ends, wherein the improvement comprises further including within said ceramic envelope resistance heater means including a resistive heating element disposed adjacent said reservoir of sodium-mercury amalgam and electrically connected with respect to said electrodes to be supplied with electric current other than the lamp current which is actuated before the lamp operating discharge is established between said electrodes in order to reduce the starting voltage level for lamp operation but which is reduced when the lamp is started.

4,442,379

HIGH PRESSURE SODIUM VAPOR LAMP HAVING RESISTANCE HEATER MEANS

Robert G. Frey, Strongsville, and Charles I. McVey, Shaker Heights, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 30, 1982, Ser. No. 403,900
Int. Cl.³ H05B *41/16;* H01J *61/56*
U.S. Cl. 315—47 **14 Claims**



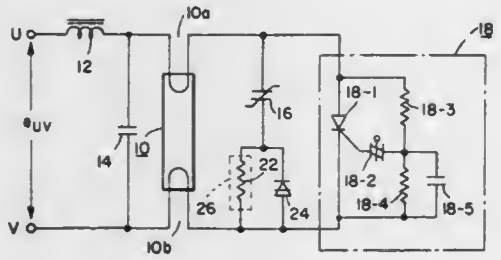
1. An improved high pressure sodium vapor lamp having a tubular light-transmitting ceramic envelope containing a reservoir of sodium-mercury amalgam in excess of the quantity vaporized during lamp operation and thermionic electrodes being sealed into its ends, wherein the improvement comprises further including within said ceramic envelope resistance heater means including a resistive heating element disposed adjacent the amalgam reservoir and electrically connected with respect to said electrodes to be supplied with electric current other than the lamp current responsive to thermal switch means to increase the quantity of amalgam being vaporized during said lamp operation and thereby help maintain the desired lamp color temperature.

4,442,380

DISCHARGE TUBE FIRING DEVICE

Hiromi Adachi, Kamakura, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 28, 1981, Ser. No. 297,169
Claims priority, application Japan, Sep. 11, 1980, 55-126597
Int. Cl.³ H05B *39/00, 37/00*
U.S. Cl. 315—101 **6 Claims**



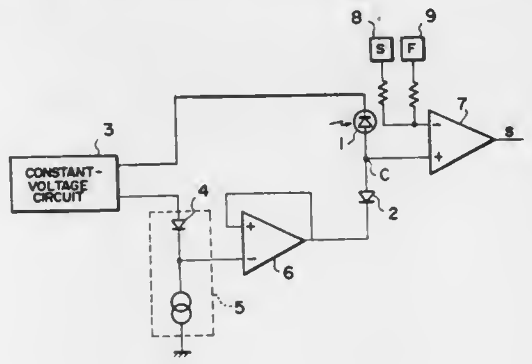
1. A discharge tube firing device comprising: a discharge tube; an inductive stabilizer connected in series with said discharge tube; a first semiconductor switch and a nonlinear dielectric element each connected in parallel to said discharge tube; a second semiconductor switch connected in series with said nonlinear dielectric element and in parallel to said first semiconductor switch, said second semiconductor switch serving as a charging circuit for said nonlinear dielectric element; and a discharging circuit connected in parallel to said second semiconductor switch.

4,442,381

AUTO STROBE CONTROL CIRCUIT

Saburo Numata, Urawa, Japan, assignor to Fuji Photo Optical Co., Ltd., Japan

Filed Aug. 30, 1982, Ser. No. 413,090
Int. Cl.³ H05B *41/32*
U.S. Cl. 315—151 **7 Claims**



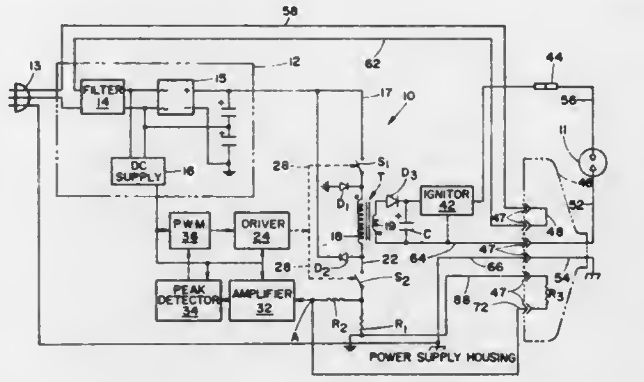
1. An auto strobe control circuit comprising a flash stopping signal generating circuit for measuring the luminance of an object exposed to light emitted from a flash tube by a photometric circuit containing a photoelectromotive force type light receiving element, sending the obtained photometric value and information on film sensitivity and aperture value to an operational amplifier to subject said value and said information to an arithmetic operation, and generating a flash stopping signal when the value calculated by the arithmetic operation reaches a predetermined light amount, said photometric circuit essentially consisting of said light receiving element and a log-conversion diode connected in series with a constant-voltage circuit, and a temperature compensation circuit connected with said log-conversion diode, said photometric value being sent out from a connection point between said light receiving element and said log-conversion diode.

4,442,382

CONSTANT POWER SWITCHING POWER SUPPLY

William C. Fleck, Palisades Park, N.J., assignor to Chiu Technical Corporation, Kings Park, N.Y.

Filed Jul. 6, 1982, Ser. No. 395,136
Int. Cl.³ G05F *1/00;* H05B *41/16*
U.S. Cl. 315—287 **10 Claims**



1. Apparatus for delivering DC electrical power at a constant rate to continuously operating load means comprising:

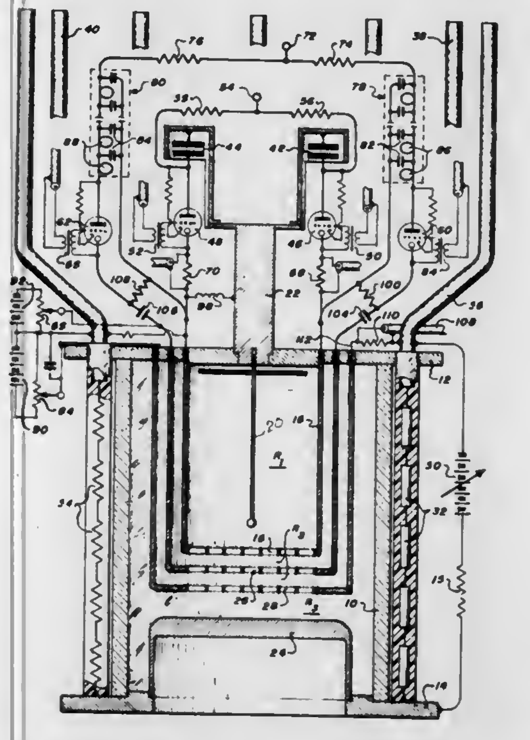
a. means for generating a series of spaced, generally sawtooth shaped waves;
b. means for initiating said waves at a predetermined unvarying frequency;
c. means in response to the peak current reached by said waves to terminate said pulses at times so as to maintain a preselected peak current; and
d. means for delivering the electrical energy in said sawtooth waves to said load means during the periods of time between said sawtooth waves, said power being delivered to said load means being thereby maintained at a constant, predetermined level irrespective of variations in line voltage and impedance of said load means.

4,442,383

PLASMA SWITCH

Alan E. Hill, Box 5444A, Rte. 5, Albuquerque, N. Mex. 87123

Filed Mar. 8, 1982, Ser. No. 355,894
Int. Cl.³ H01J *11/04*
U.S. Cl. 315—349 **13 Claims**



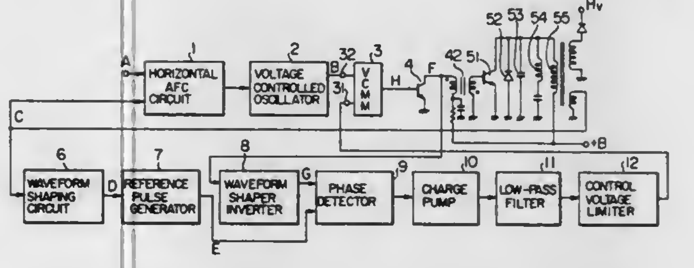
1. A circuit for use in an energy pulse system including a plasma switch to selectively conduct current pulses between an energy source and a load, said circuit having first, second, and third states, said circuit in its first state being adapted to render said plasma switch non-conductive, in its second state to form a plasma within a restrained volume in said switch, and in its third state to render said plasma switch conductive.

4,442,384

HORIZONTAL DEFLECTION CIRCUIT

Hitoshi Maekawa; Michitaka Osawa, and Kunio Ando, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 18, 1982, Ser. No. 434,880
Claims priority, application Japan, Oct. 19, 1981, 56-165840; Nov. 9, 1981, 56-178381
Int. Cl.³ H01J *29/70, 29/76*
U.S. Cl. 315—399 **5 Claims**



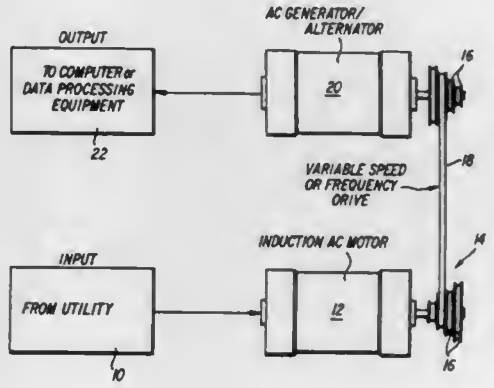
1. A horizontal deflection circuit comprising:
horizontal oscillator means;
horizontal drive means including a horizontal drive transistor turned on and off by an output pulse from said horizontal oscillator means;
horizontal output means including a horizontal output transistor turned on and off by an output pulse from said horizontal drive means;
variable pulse generator means including a first input terminal connected to said horizontal oscillator means, an output terminal connected to said horizontal drive means, and a second input terminal, said variable pulse generator means generating at said output terminal a pulse synchronous with the pulse applied to said first input terminal and terminated at a time point determined in accordance with a DC voltage applied to said second input terminal;
reference pulse generator means connected to said horizontal output means for generating a reference pulse delayed from a horizontal flyback pulse by a predetermined time;
phase detector means for detecting the phase difference between the drive pulse generated at the collector of said horizontal exciting transistor and the reference pulse, and
control means for supplying said second input terminal of said variable pulse generator means with a voltage converted into direct current from the output of said detector means in a direction to dampen the variations of the drive pulse.

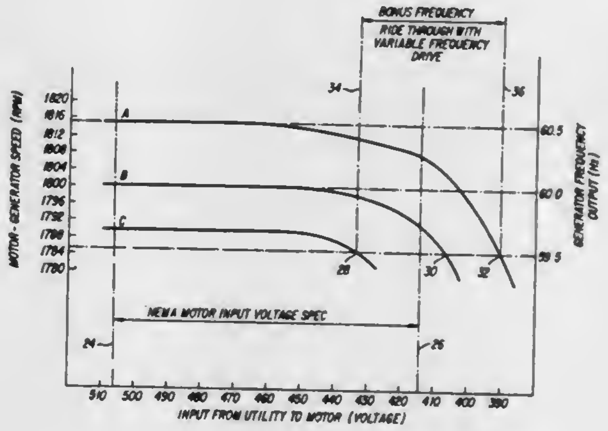
4,442,385

VARIABLE FREQUENCY DRIVE FOR A MOTOR-GENERATOR/ALTERNATOR SET

Robert J. Van Sickle, Richmond, Va., assignor to Power Distribution, Inc., Richmond, Va.

Filed Feb. 10, 1983, Ser. No. 465,590
Int. Cl.³ H02P *7/66*
U.S. Cl. 318—140 **3 Claims**





1. A method of operating a motor-generator/alternator set used to supply power to computer or data processing equipment, said motor-generator/alternator set having a synchronous speed of 1800 rpm at 60 Hz with a desired frequency variation of ±0.5 Hz which comprises the steps of

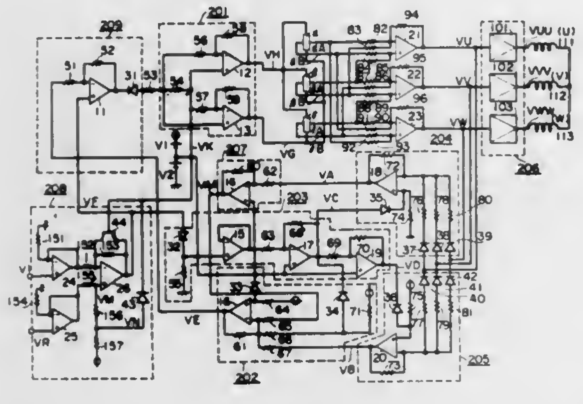
a. supplying commercial power to an induction motor to drive said induction motor at a speed below said synchronous speed,
b. introducing a speed changer between said induction motor and said generator/alternator so said generator/alternator can produce a frequency greater than said synchronous frequency but within said desired frequency variation therefrom,
1. whereby upon the failure of said commercial power,

power from said generator/alternator remains within the desired frequency range for a longer period of time than power from a comparable generator/alternator driven at lower speed.

4,442,386
CONTROL APPARATUS OF TRANSISTOR MOTOR

Ryohei Uchida; Tatsuo Yamasaki; Toshio Idei, all of Nagaokakyo; Toshio Tatsutani, and Ippei Hagiwara, both of Nakatsugawa, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 31, 1983, Ser. No. 462,203
Claims priority, application Japan, Feb. 10, 1982, 57-21526
Int. Cl.^{3} H02K *29/00*
U.S. Cl. 318—254 16 Claims

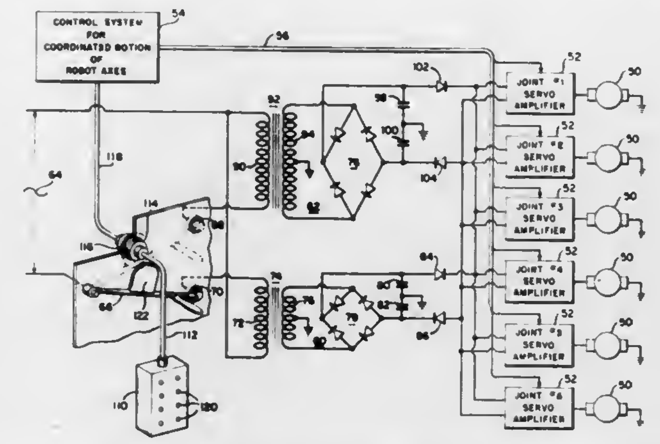


1. A control apparatus of a transistor motor having multiple phase armature coils, comprising:
- voltage source means for providing positive and negative voltages with respect to an intermediate potential,
- a plurality of sensor means, each detecting magnetic flux equivalent to the magnetic flux interlinking each said phase armature coil for providing a detected signal,
- a plurality of amplifying means, each coupled to said sensor means and each said armature coil for amplifying said detected signal for providing an electrical output for driving said motor to each said armature coil,
- a plurality of feedback voltage generating means, each coupled to said armature coil for detecting the electrical quantity for driving said motor for providing the same as a feedback voltage of each said phase,
- reference value generating means responsive to a control signal externally provided for generating a first reference value having the magnitude of a predetermined relation with respect to the magnitude of said feedback voltage and a second reference value having the same magnitude as that of said first reference value and of the opposite polarity to that of said reference value, with said intermediate potential as a reference,
- first voltage addition means coupled to said feedback voltage generating means and said reference value generating means for adding the magnitude of the component in a more positive direction than said first reference value within the instantaneous values of said feedback voltages, with said first reference value as a reference, for providing a first addition output voltage,
- second voltage addition means coupled to said feedback voltage generating means and said reference value generating means for adding the magnitude of the component in a more negative direction than said second reference value within the instantaneous values of said feedback voltages, with said second reference value as a reference, for providing a second addition output voltage,
- third voltage addition means coupled to said first and second voltage addition means for adding said first and second addition output voltages for providing a third addition output voltage, and
- difference control means coupled to said third voltage addition means and said sensor means for controlling the magnitudes of said detected signals such that the magnitude of said third addition output voltage may be consistent with the magnitude of said control signal.

4,442,387
SAFE PROGRAMMING SYSTEM FOR INDUSTRIAL ROBOTS

Torsten H. Lindbom, Brookfield, Conn., assignor to Unimation, Inc., Danbury, Conn.

Filed Nov. 25, 1981, Ser. No. 324,697
Int. Cl.^{3} G05B *19/42*
U.S. Cl. 318—568 21 Claims



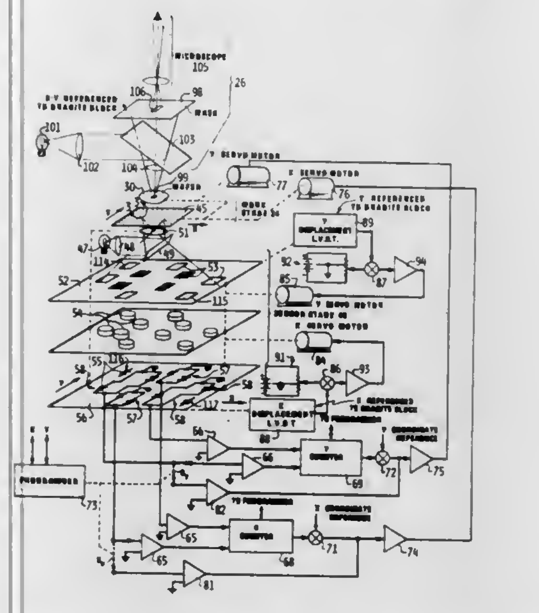
1. In a programmable manipulator apparatus, a manipulator arm movable in a plurality of axes, memory storage means having a plurality of command signals stored therein corresponding to different positions to which said arm is to be moved during a playback cycle, means for moving said manipulator arm in each of said axes, first power driving means controlled by said stored command signals and controlling said arm moving means so that said arm is moved to said different positions during a playback cycle, counterbalancing means for said manipulator arm which is effective to reduce the force required to move said arm in each of said axes during an initial teaching mode, and second low power driving means for controlling said arm moving means during said initial programming mode, the maximum force which can be exerted on said manipulator arm by said second low power driving means during said initial teaching mode being limited to a predetermined value which is insufficient to cause injury to teaching personnel.

4,442,388
X-Y ADDRESSABLE WORKPIECE POSITIONER HAVING AN IMPROVED X-Y ADDRESS INDICIA SENSOR

Edward H. Phillips, Mountain View, Calif., assignor to Optimetrix Corporation, Mountain View, Calif.

Continuation of Ser. No. 136,816, Apr. 2, 1980, abandoned, which is a continuation of Ser. No. 925,454, Jul. 17, 1978, abandoned. This application Jul. 27, 1981, Ser. No. 286,985
Int. Cl.^{3} G05B *1/06;* G01J *1/20*
U.S. Cl. 318—640 48 Claims

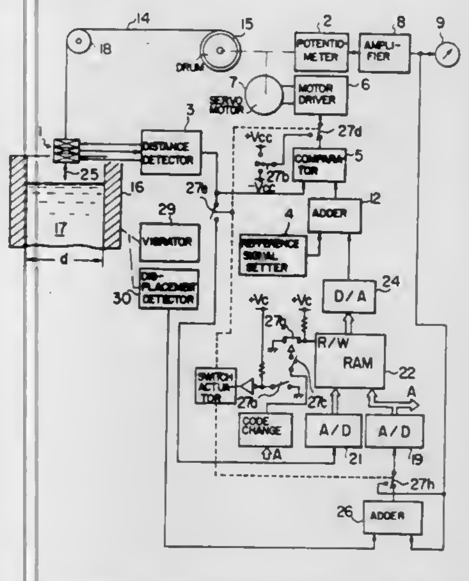
7. In an X-Y addressable workpiece positioning apparatus:
- work stage means movable in both X and Y directions within a common plane of movement defined by the X and Y directions and within which a workpiece is to be positioned;
- the work stage means including holding means for holding the workpiece for movement with the work stage means;
- indicia means comprising a two-dimensional array of X and Y coordinate positioning indicia affixed to the work stage means and movable therewith for effecting positioning of the work stage means;
- relatively stationary sensor stage means for determining the X and Y coordinates of the work stage means;
- projector means for projecting an enlarged image of at least a portion of the array of X and Y coordinate positioning indicia onto the sensor stage means;
- the sensor stage means including at least two pairs of pattern recognition windows and corresponding sensing means for independently recognizing and sensing the X and Y coordinate positioning indicia of the enlarged image to derive a sensed output through each window of each pair of pattern recognition windows and determine the X and Y coordinates of the position of the work stage means, the sensing means being coupled for subtracting the sensed output derived through one window of each pair of pattern recognition windows from the sensed output derived through the other window of the same pair to cancel ambient background effects;
- comparative means for comparing the X and Y coordinates of the position of the work stage means with the X and Y coordinates of a different position of the work stage means to derive an error output; and
- drive means for moving the work stage means and the array of X and Y coordinate positioning indicia to the different position in response to the error output.



4,442,389
APPARATUS FOR MEASURING A METAL SURFACE POSITION

Yasuhiro Sawada, Fuchu; Tadashi Inoue, Noogata, and Toyoaki Nishida, Kitakyushu, all of Japan, assignors to Nippon Steel Corp., Tokyo and Mishima Kosan Co., Ltd., Kitakyushu, both of, Japan

Filed Jun. 8, 1982, Ser. No. 386,387
Claims priority, application Japan, Mar. 22, 1982, 57-45315
Int. Cl.^{3} G05D *9/00*
U.S. Cl. 318—642 7 Claims

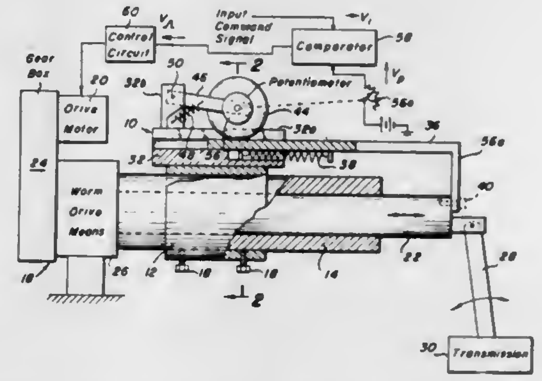


1. An apparatus for measuring a change along a predetermined direction of a surface position of a metallic mass comprising:
- a magnetic sensing type metal sensor reciprocably movable along said predetermined direction and arranged in spaced relation to said metal surface,
- drive means operative to drive said sensor along said predetermined direction,
- follow-surface means for comparing an output of said sensor with a predetermined reference distance value and activating said drive unit in accordance with a difference signal of the comparison for causing said sensor to follow the change along said predetermined direction of the surface position of said metal,
- means for determining the surface position of said metal based on a current position of said sensor,
- noise storing means for measuring a noise component in the output of said sensor due to factors other than the change of the surface position of said metal and storing said noise component; and
- correction means for correcting said difference signal by said noise component stored in said storing means for activating said drive unit by the corrected signal.

4,442,390
FEEDBACK SYSTEM FOR A LINEAR ACTUATOR

Kenneth W. Davis, HHB 2/42 FA New York BN, APO NY, N.Y. 09751

Filed Jul. 6, 1982, Ser. No. 395,383
Int. Cl.^{3} G05B *1/06*
U.S. Cl. 318—663 11 Claims



1. Feedback means for use in connection with linear actuator means including a pair of relatively linearly displaceable actuator members, and motor means for displacing one of said actuator members relative to the other, comprising
- (a) sensing means for sensing the position of said one actuator member relative to the other member, said sensing means including
  - (1) mounting bracket means adapted for mounting on said other actuator member;
  - (2) a slide bar connected for longitudinal displacement relative to said mounting bracket means in a direction parallel with the direction of displacement of said one actuator member relative to said other member, said slide bar including a portion arranged for operation by said one actuator member during the linear displacement thereof relative to said other member; and
  - (3) a rotary member connected with said mounting bracket means for rotation by said slide bar during the linear displacement thereof relative to said mounting bracket means, the axis of rotation of said rotary member being contained in a plane normal to the axis of linear displacement of said one actuator member; and
- (b) feedback means operable by said sensing means for controlling the operation of said motor means as a function of the position of said one member relative to the other member.

4,442,391
AUTOMATIC CONTROL SYSTEM FOR POSITION FOLLOWING AND RECIPROCATING MOTION OF A CONTROLLED OBJECT

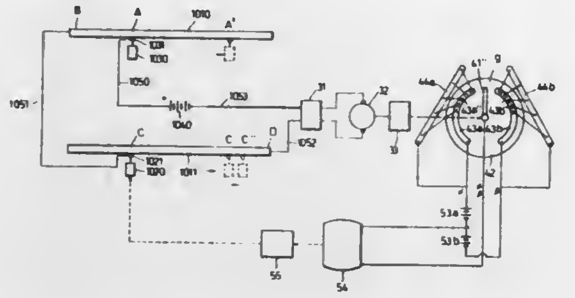
Lee Yu-Kuang, No. 596, Chung Cheng Rd., Chu Pei, Hsing Chu Hsien, China

Filed Oct. 1, 1980, Ser. No. 192,690

The portion of the term of this patent subsequent to Feb. 10, 1998, has been disclaimed.

Int. Cl.³ G05B ***11/06***

U.S. Cl. 318—663 **23 Claims**



1. Automatic position following control apparatus for controlling a controlled object to follow a demand object, said apparatus comprising:

- means for producing a control signal corresponding to the difference in position between the controlled object and the demand object, said control signal producing means comprising a signal source connected in series with first and second variable resistances each having a fixed contact and a movable contact, said first and second variable resistances being series connected with each other such that said fixed contact of said first resistance is connected to said movable contact of said second resistance, and the controlled object and demand object being coupled to respective ones of said first and second resistance movable contacts for conjoint movement therewith such that the resistance, and thus the output, of the circuit formed by said signal source and said first and second resistances is dependent on the respective positions of the controlled object and the demand object;
- means for converting said control signal into a displacement corresponding to said control signal;
- drive means controllable to drive the controlled object in a selected one of two directions; and
- control switch means responsive to said signal converting means for controlling said drive means.

4,442,392
ELECTRIC INDEXING DRIVE AND STEPPING MOTOR WITH DRIVE RETARDATION THEREFOR

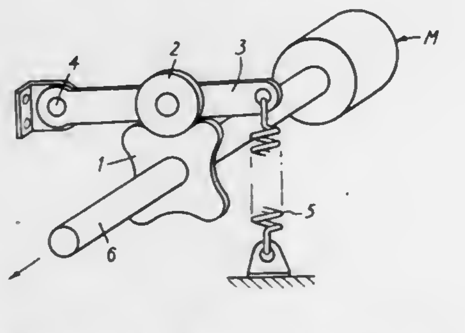
Donald L. Hore, Bristol, England, assignor to Hornet Electrical Company Limited, England

Filed Apr. 28, 1982, Ser. No. 372,521

Claims priority, application United Kingdom, May 1, 1981, 8113602

Int. Cl.³ G05B ***19/40***

U.S. Cl. 318—696 **15 Claims**



1. In an electric stepping motor for driving an indexed rotary drive arrangement, said drive arrangement having a detent mechanism by means of which index positions thereof are determined,

- the motor including a drive shaft for driving said drive arrangement, electrical winding means arranged to apply torque to the drive shaft when energized, and control means for energizing the winding means to cause the motor to index the drive shaft and said drive arrangement from a first index position towards a second, adjacent index position against the force of the detent mechanism,
- said electrical winding means including a first electrical winding, said drive shaft having a null position in relation to said first winding in which said first winding applies no torque to said drive shaft when said first winding is energized, said null position being intermediate the first and second index positions, and said control means including means for energizing the first winding to drive the drive shaft to said null position in the direction from the first index position towards the second index position, and,
- said control means further including means for continuing energization of the first winding after the drive shaft has passed said null position so as to provide electrical retardation of the movement of said drive shaft as the drive shaft approaches said second index position under the action of the detent mechanism.

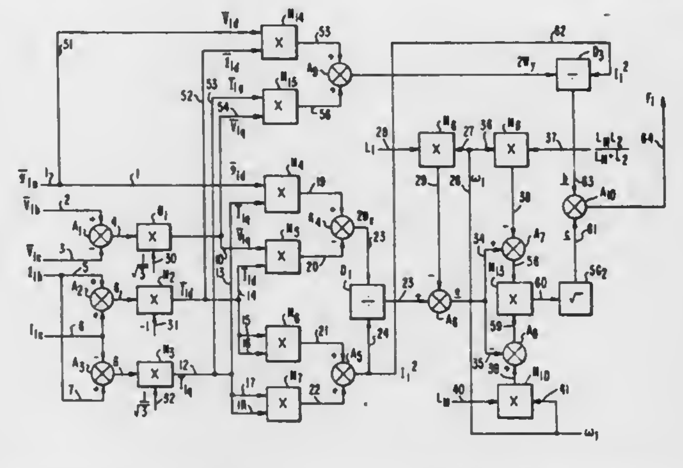
4,442,393
APPARATUS AND METHOD FOR DETERMINING THE OPERATION OF AN INDUCTION MOTOR

Alberto Abbondanti, Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 4, 1982, Ser. No. 354,700

Int. Cl.³ H02P ***5/40***

U.S. Cl. 318—802 **14 Claims**



1. Apparatus for the determination of the load resistance of a rotating field motor, having a squirrel cage rotor, supplied under three terminal voltages and three line currents, comprising:

- first means for sensing said three terminal voltages and means for sensing two of said line currents for deriving corresponding sensed signals;
- second means responsive to said sensed signals for deriving direct and quadrature voltage and current component signals representative of said sensed terminal voltages and line currents;
- third means responsive to said direct and quadrature voltage and current component signals for deriving the following quantity in real time: motor overall reactance $2W_X/I_1^2$; and
- fourth means for deriving with said quantity a representation of the load resistance R_L in accordance with the formula:

$$R_L=\omega_1(L_M+L_2)\{[a-\omega_1L_ML_2/(L_M+L_2)]/[\omega_1L_M-a]\}^{\frac{1}{2}}$$

where
L_M is the leakage inductance,
L_1 is the stator inductance,

L_2 is the rotor inductance,
ω_1 is the terminal line frequency,
W_X being the reactive power equal to $(V_1I_1 \sin \phi)^{\frac{1}{2}}$
I_1 being the stator current, V_1 the stator voltage
ϕ the phase angle between V_1 and I_1,
a is the air gap reactance equal to $2W_X/I_1^2-\omega_1L_1$, the parallel combination of stator and rotor leakage reactances $\omega_1L_ML_2/(L_M+L_2)$, and the stator leakage reactance ω_1L_1, thereby to provide a signal representative of the instantaneous load resistance R_L of the motor.

4,442,394
INVERTER CIRCUIT FOR OPERATING A SPEED-CONTROLLABLE ASYNCHRONOUS MOTOR

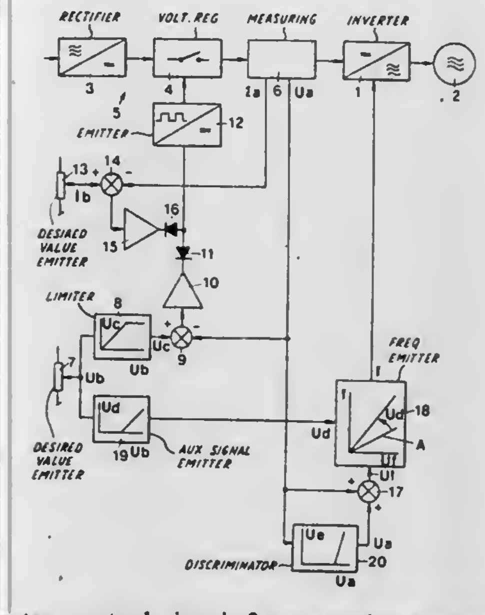
Hans M. Beierholm, Fynshav, and Niels J. Henriksen, Nordborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed May 28, 1981, Ser. No. 267,743

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1980, 3021119

Int. Cl.³ H02P ***5/34***

U.S. Cl. 318—807 **6 Claims**



1. An inverter control circuit for operating a speed-controllable asynchronous motor, comprising, control means outputting in response to frequency related voltage input settings voltage and frequency signals which are substantially proportionally related within a range limited by a predetermined nominal voltage and a corresponding nominal frequency, a voltage regulator, an inverter having input terminal means connected to said voltage regulator, frequency regulating means for said inverter having variable transfer characteristics, defined by curves, and a summating input terminal connected to said inverter input terminal means, auxiliary speed regulating means connected between said voltage input settings and said frequency regulating means for increasing said inverter frequency by alternating said frequency regulating means transfer characteristics when the setting of said control means exceeds its nominal voltage setting, excess voltage discriminating means connected between said inverter input terminal means and said summating input terminal for increasing said inverter frequency by supplementing the input at said summating input of the voltage at said inverter input terminal means, said voltage discriminating means having transfer characteristics with a threshold being a predetermined value larger than said nominal voltage.

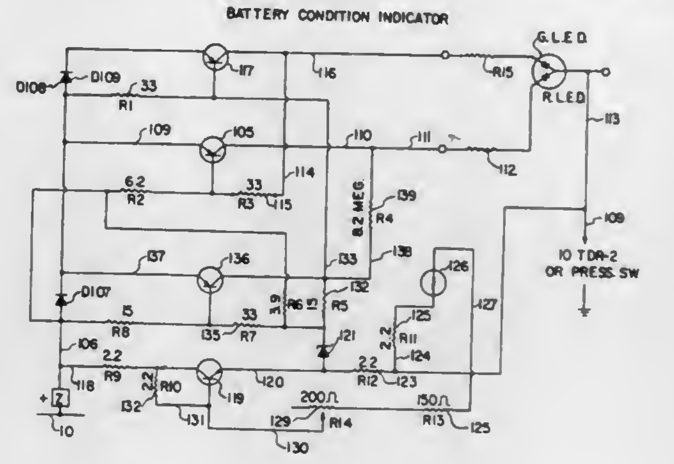
4,442,395
PUMP FAILURE PROTECTION FOR LIQUID TRANSMISSION PIPELINES

Louis E. Salina, and Joseph E. Lescovich, both of Bridgeville, Pa., assignors to GA Industries Inc., Mars, Pa.

Division of Ser. No. 948,040, Oct. 2, 1978, Pat. No. 4,273,513. This application Mar. 16, 1981, Ser. No. 243,878

Int. Cl.³ H02J ***7/10***

U.S. Cl. 320—48 **7 Claims**

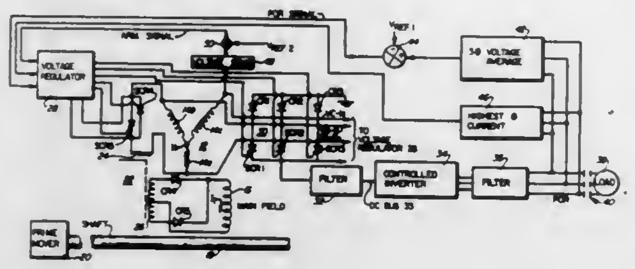


1. A battery condition indicator for use in a circuit comprising a DC power supply connected across the terminals of a nickel cadmium battery, comprising:

- (a) a first main branch leading to the positive side of the power supply;
- (b) a second main branch leading to the negative side;
- (c) four transistor circuits connected in parallel with said positive main branch and each including a transistor, the four circuits and transistors being herein designated **1** to **4**, the fourth transistor in the series **1** to **4** having its emitter connected through a circuit with the negative main branch of the DC current source;
- (d) a connection from the negative emitter circuit of the fourth transistor to the base of the first emitter, said connection including a resistor;
- (e) the second transistor having its base connected with the collector-to-green LED circuit of the first transistor;
- (f) a zener diode having a connection from the negative emitter circuit of the fourth diode through said zener diode with the base of the first transistor with a resistor between the zener diode and the base of said first transistor;
- (g) a shunt circuit around said last-named resistor wherein the base of the third transistor is connected through a resistor to the connection leading from the zener diode to the base of the first transistor at a point between the zener diode and the resistor in said connection, the collector circuit of the third transistor being also connected to the connection between the zener diode and the base of the first transistor but joining said connection between the said resistor in said connection; and
- (h) the said four parallel transistor circuits as herein defined being thereby so arranged that a normal charging current path will put a negative bias on the base of the first transistor to light the green LED, thereby extinguishing the red, but lighting the red by an absence of adequate negative voltage in the base of the first transistor, and the lighting of the green by the application of adequate negative voltage through the zener diode circuit to bias the first transistor, the green LED being extinguished when the charging voltage is above normal by the positive voltage from the collector of the third transistor offsetting the negative flow from the zener diode, but by reason of the resistor in the connection between the zener diode and the base of the first transmitter enabling the zener diode to continue to supply a negative bias to the base of the third diode.

4,442,396
GENERATOR SYSTEM WITH FAULT CONDITION EXCITATION

David J. Hucker, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.
Filed Mar. 31, 1983, Ser. No. 480,727
Int. Cl.^{3} H02P *9/10, 9/14*
U.S. Cl. 322—21 16 Claims



1. In a generating system driven by a source of motive power for energizing a load, including means for developing main generator field current, a rotating main generator field winding coupled to the developing means and to the source of motive power for generating a moving main generator magnetic field and a stationary main generator armature disposed in the moving main generator magnetic field for generating main generator output current, the improvement comprising:

means for sensing the voltage at the load;

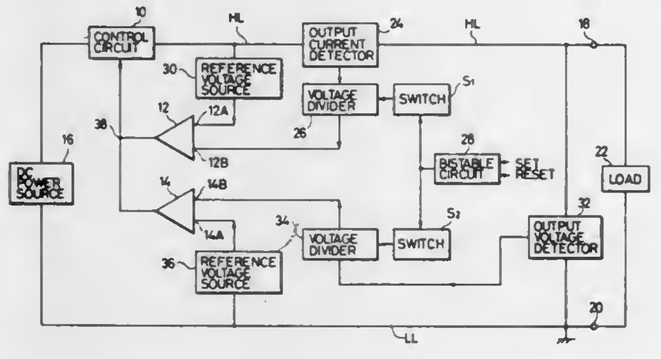
means coupled to the load voltage sensing means for detecting when the load voltage is less than a predetermined value;

means for sensing the voltage at the main generator armature; and

means responsive to the detecting means and coupled to the developing means and the armature voltage sensing means for controlling the main generator field current in response to the sensed voltage at the main generator armature when the sensed voltage at the load is less than the predetermined value.

4,442,397
DIRECT CURRENT POWER CIRCUIT

Hiroichi Ishikawa, Kawaguchi, and Toshio Mikami, Sakado, both of Japan, assignors to Toko Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 25, 1982, Ser. No. 342,669
Claims priority, application Japan, Jan. 26, 1981, 56-9859
Int. Cl.^{3} G05F *1/56*
U.S. Cl. 323—275 13 Claims



1. A DC power circuit having two different output characteristics, comprising:

a DC power source;

a pair of output terminals;

a first control means provided between said DC power source and said pair of output terminals for controlling the voltages as well as currents supplied to a load from said DC power source;

an output current detector for detecting the output current from said first control means for providing a first control potential proportional to the detected current;

an output voltage detector which is coupled between said pair of output terminals for detecting voltage applied to the load and which provides a second control potential proportional to the detected voltage;

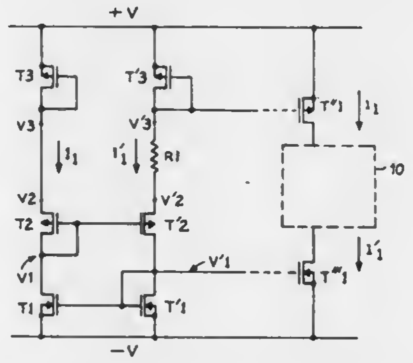
a second control means for selectively assuming one of two stable states in response to an external control;

and

a third control means which is connected to said output current detector and said output voltage detector for receiving said first and said second control potentials therefrom, respectively, and which is also connected to said first and said second control means and which controls circuit parameters in response to the state of said second control means for controlling said first control means based on the received two control potentials.

4;442,398
INTEGRATED CIRCUIT GENERATOR IN CMOS TECHNOLOGY

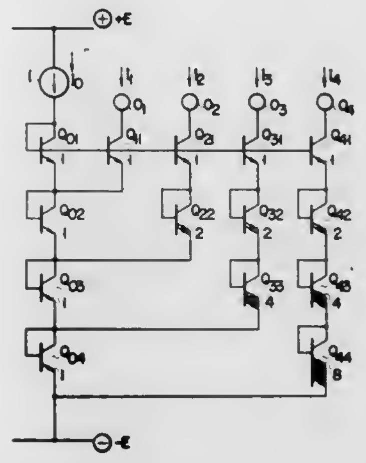
Jean-Claude Bertails, and Christian Perrin, both of Grenoble, France, assignors to Societe pour l'Etude et la Fabrication de Circuits Integres Speciaux-E.F.C.I.S., Grenoble, France
Filed Nov. 9, 1981, Ser. No. 319,791
Claims priority, application France, Nov. 14, 1980, 80 24232
Int. Cl.^{3} G05F *3/20*
U.S. Cl. 323—315 6 Claims



1. An integrated-circuit current generator formed by CMOS technology, wherein said current generator comprises a voltage source which supplies in parallel two similar assemblies of three MOS transistors in series, each transistor of one assembly being such as to correspond to a similar transistor having the same channel type in the other assembly and the geometry ratios of the similar transistors being the same in the case of all the transistors of the assemblies, the first transistors of a first channel type being such as to have a common threshold voltage and gates connected to each other, the gate of the transistor of the second assembly being also connected to its drain, the second transistors of the opposite channel type being such as to have a common threshold voltage and gates connected to each other, the gate of the transistor of the first assembly being also connected to its drain, the gates of the third transistors of the opposite channel type being connected to their drains and being such as to have different threshold voltages, a resistor of known value being inserted in series between the second and third transistor of one of said assemblies, at least one additional MOS transistor being provided in addition to said assemblies in order to serve as a constant supply-current generator, the source and the gate of said additional transistor being connected to the source and to the gate of the first or the third transistor of one of said assemblies, the threshold voltage of said additional transistor being the same as that of the transistor to which it is thus connected.

4,442,399
CURRENT SOURCE CIRCUIT

Katsumi Nagano, Hiratsuka, Japan, assignor to Tokyo Shibaura Denki Dabushiki Kaisha, Kawasaki, Japan
Filed Sep. 16, 1981, Ser. No. 302,774
Claims priority, application Japan, Oct. 17, 1980, 55-145193
Int. Cl.^{3} G05F *3/20*
U.S. Cl. 323—315 12 Claims



1. A current source circuit for producing a plurality of currents with their own weights, comprising:

a first transistor including a collector connected to a first power source through a current source, and a base electrode coupled to the collector, the emitter area thereof being a reference value "1";

a first group of (N−1) transistors including a first transistor, a second transistor, . . . , a (K−1)th transistor, . . . , and an (N−1)th transistor connected in series, the base electrode of each said first group transistors being connected to the collector thereof, the collector of said first transistor of said first group transistors being connected to the emitter of said first transistor, the emitter of said (N−1)th transistor of said first group of transistors being connected to a second power source, and the emitter area of each of said first group transistors being a reference value "1";

a second group of (N) transistors including a first transistor, a second transistor, . . . , a Kth transistor, . . . , and an Nth transistor each having a base electrode connected to the base electrode of said first transistor, the collectors of said first, second, . . . , Kth, . . . , and Nth transistors of said second groups transistors producing currents with their own weights;

the emitter of said first transistor of said second group of transistors being connected to the emitter of said first transistor;

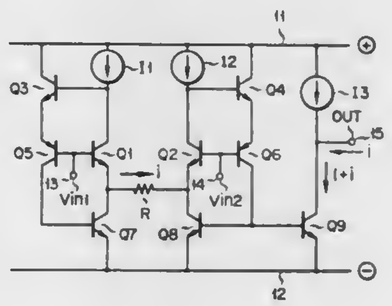
a third group of transistors including first, second, . . . , (K−1)th, . . . , and (N−1)th subgroups, the base electrode of each of said third group transistors being connected to the collector thereof; said first subgroup including a single subgroup transistor connected at its collector to the emitter of said second transistor of said second group transistors, and at its emitter to the emitter of said first transistor of said first group transistors; said second subgroup including first and second transistors connected in series, said first transistor of said second subgroup being connected at its collector to the emitter of a third transistor of said second group transistors, said second transistor of said second subgroup being connected at its emitter to the emitter of said second transistor of said first group transistors; said (K−1)th subgroup including a first transistor, a second transistor, . . . , and a (K−1)th transistor, said first transistor of said (K−1)th subgroup being connected at its collector to the emitter of said Kth transistor of said second group transistors and said (K−1)th transistor of said (K−1)th subgroup being connected at its emitter to the emitter of said (K−1)th transistor of said first group transistors; and said (N−1)th subgroup including a first transistor, a second transistor, . . . , and an (N−1)th transistor connected in series, said first transistor of said (N−1)th subgroup being connected at its collector to the emitter of said Nth transistor of said second group transistors, and said (N−1)th transistor of said (N−1)th subgroup being connected at its emitter to the emitter of said (N−1)th transistor of said first group transistors;

the product of emitter areas of said Kth transistor of said second group transistors and each transistor of said (K−1)th subgroup being

$$2 \sum_{I=1}^{I=K} (I-1).$$

4,442,400
VOLTAGE-TO-CURRENT CONVERTING CIRCUIT

Katsumi Nagano, Shimonoseki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Jul. 7, 1982, Ser. No. 396,075
Claims priority, application Japan, Jul. 8, 1981, 56-106518
Int. Cl.^{3} G05F *3/20*
U.S. Cl. 323—315 4 Claims



1. A voltage-to-current converting circuit comprising:

a differential pair of first and second transistors each having base, emitter and collector;

a resistor connected between the emitters of said first and second transistors;

first and second constant current sources respectively connected between the collector of said first transistor and a first power supply terminal and between the collector of said second transistor and the first power supply terminal;

third and fourth transistors each having base, emitter and collector, said third transistor having its collector-emitter path connected between the emitter of said first transistor and a second power supply terminal and said fourth transistor having its collector-emitter path connected between the emitter of said second transistor and the second power supply terminal;

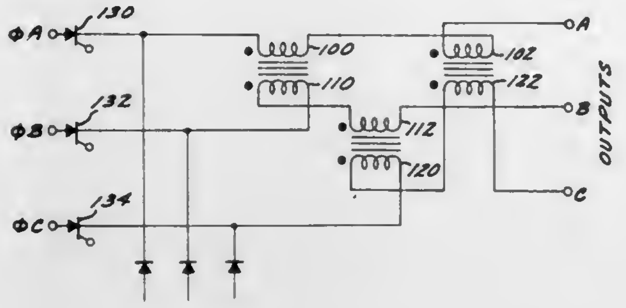
first and second base current supply means respectively connected between the base of said third transistor and the first power supply terminal and between the base of said fourth transistor and the first power supply terminal for supplying base currents to said third and fourth transistors;

an output transistor having its collector connected to an output terminal, its emitter connected to the second power supply terminal and its base connected to the base of said fourth transistor; and

a third constant current source connected between the collector of said output transistor and the first power supply terminal.

4,442,401
NEGATIVE COUPLED INDUCTORS FOR POLYPHASE CHOPPERS

Robert S. Jamieson, Pasadena, Calif., assignor to California Institute of Technology, Pasadena, Calif.
Filed Jan. 8, 1982, Ser. No. 338,121
Int. Cl.^{3} H02M *3/135*
U.S. Cl. 323—351 **6 Claims**

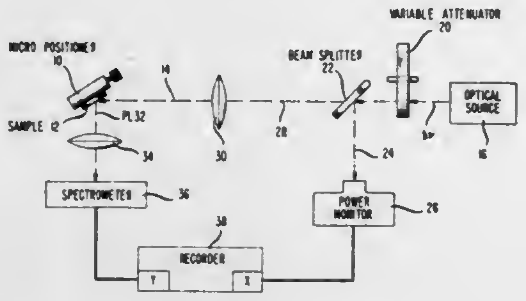


1. In a multiphase chopper wherein the output of each chopper is coupled via an output inductance to the load, the improvement wherein:

the output inductance of each phase is comprised of a first inductance and a second inductance, and each of said first inductances and said second inductances of each phase are respectively negatively coupled to a corresponding one of said output inductances in separate adjacent neighboring phases.

4,442,402
PHOTOLUMINESCENCE METHOD OF TESTING DOUBLE HETEROSTRUCTURE WAFERS

Paul R. Besomi, Edison; Joshua Degani, Highland Park, and Daniel P. Wilt, Scotch Plains, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Sep. 10, 1982, Ser. No. 416,474
Int. Cl.^{3} G01R *31/26*
U.S. Cl. 324—158 D **6 Claims**

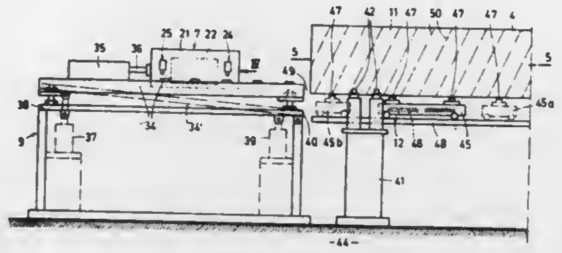


1. A manufacturing process including a method of testing a double heterostructure wafer having a narrow bandgap active layer between a pair of wider bandgap cladding layers, the method including the steps of:

(a) directing an excitation beam of optical radiation at the wafer, the radiation energy being chosen so that it is absorbed in the active layer, but not in the cladding layers, thereby to generate photoluminescence from the active layer,
(b) varying the intensity of the excitation beam so as to vary the intensity of the photoluminescence,
(c) detecting the photoluminescence,
(d) generating a photoluminescence intensity versus excitation beam intensity characteristic,
(e) selecting the wafer if the characteristic exhibits a photoluminescence threshold P_{th} which indicates that the wafer has a p-n junction in the active layer, and rejecting the wafer if the characteristic exhibits no such threshold which indicates that the wafer has a p-n junction outside the active layer.

4,442,403
TESTING INSTALLATION FOR PIPES HAVING AN INTERNAL TESTING UNIT DRIVEN BY THE ROTATION OF THE PIPE

Carl-Ludwig Pohler, Lutzowstrasse 123, D-5650 Solingen 1, Fed. Rep. of Germany
Filed Apr. 1, 1981, Ser. No. 249,887
Int. Cl.^{3} G01N *27/72, 27/82;* **G01R** *33/12*
U.S. Cl. 324—220 **14 Claims**

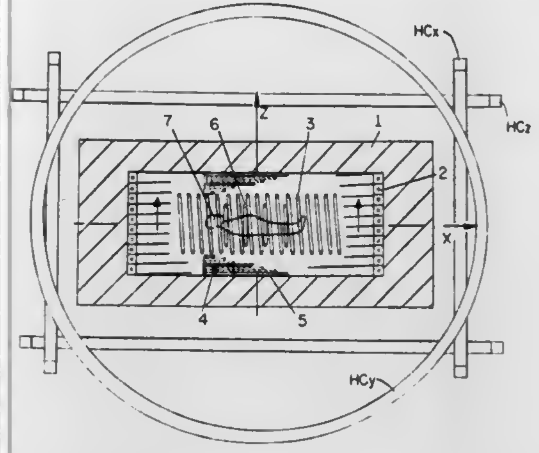


1. Testing installation for pipes to determine surface defects and core defects, characterized by at least one testing zone (**1, 2**) comprising a rotary roller track (**3**) for rotatingly driving the pipe (**4**) to be tested, an internal testing unit (**7**) movable in a direction along the longitudinal axis of the pipe, within the pipe (**4**), parking stations (**9, 10**) adjustable to the pipe length at both ends of the testing zone (**1, 2**) for accommodating the internal testing unit (**7**) during pipe change, an external testing unit (**12**) movable along the outer pipe wall (**11**), and conveying devices (**16**) for the introduction and for the removal of the pipes (**4**) into and from the testing zone (**1, 2**), respectively, wherein the internal testing unit (**7**) is a cylindrical housing (**21**) equipped with built-in contactless testing devices (**22**) and arranged on a running gear frame (**23**) with a forward running gear and a rearward running gear (**24, 25**), and wherein the running gears (**24, 25**) consist of a drive shaft (**26**) and two supporting rollers (**27, 28**) assuming a driving position (**26', 27', 28'**) obliquely to the longitudinal axis (**5—5**) of the pipe (**4**) to be tested, traveling on the inner pipe wall (**6**), and being driven by the revolving motion of the pipe (**4**) to be tested, which latter is located between the parking stations (**9, 10**).

4,442,404
METHOD AND MEANS FOR THE NONINVASIVE, LOCAL, IN-VIVO EXAMINATION OF ENDOGENEOUS TISSUE, ORGANS, BONES, NERVES AND CIRCULATING BLOOD ON ACCOUNT OF SPIN-ECHO TECHNIQUES

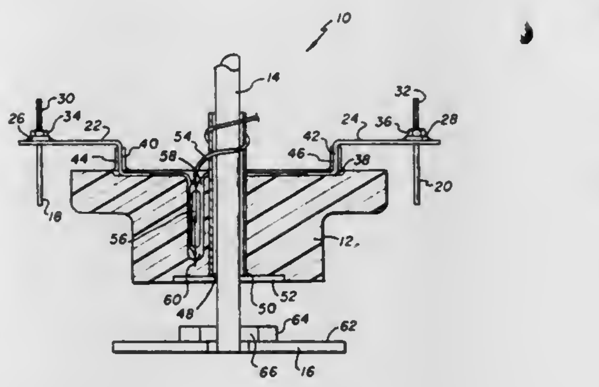
Wilfried H. Bergmann, Lerchenweg 3, D-5483 Bad Neuenahr, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 103,227, Dec. 13, 1979. This application Dec. 1, 1981, Ser. No. 326,344
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1978, 2854774
Int. Cl.^{3} G01N *27/00*
U.S. Cl. 324—309 **5 Claims**

1. An apparatus for noninvasive, localized, in-vivo examination of tissue, organs, bones, nerves and circulating blood for the purpose of medical check-ups or of case control of therapeutic measures by means of spin-echo techniques of the type having a transmission and receiving coil system of a nuclear magnetic resonance equipment encompassing the test person completely, or at least that region of exploration, and means for detection and computation of the signals, comprising means for determining the density of nuclides with non-zero nuclear magnetic moment within a selected control volume, means for determining the spin-lattice relaxation time (T_1) and the spin-spin relaxation time (T_2), means for determining the components of the diffusion tensor (D_{ij}) and evaluating the contraction experienced by the spin-spin relaxation time (T_2) in consequence of the state of flow of blood within said control volume, a detection coil system, means for operating said detection coil system within the range of superconductivity below about 1.85° K., an electromagnet providing a homogeneous, with respect to time extremely constant magnetic field H_0, magnetic coils for the generation of slowly in time and space variable three dimensional linear and/or quadratic field gradients for confining and controlling the region of resonance into the control volume and for conducting a hydrodynamic analysis within said control volume and for the remote control of its position as a function of involuntary movements within the test person, another coil system for the production of fast three-dimensional magnetic field gradients pulses, a gradiometer detection coil of the first or second order for reduction of perturbations by exterior fields preferably arranged coaxially with respect to the transmission coil, and a microwave biased superconducting quantum interference device operative within the range of superconductivity.



4,442,405
FLOAT ASSEMBLY FOR A SENSOR

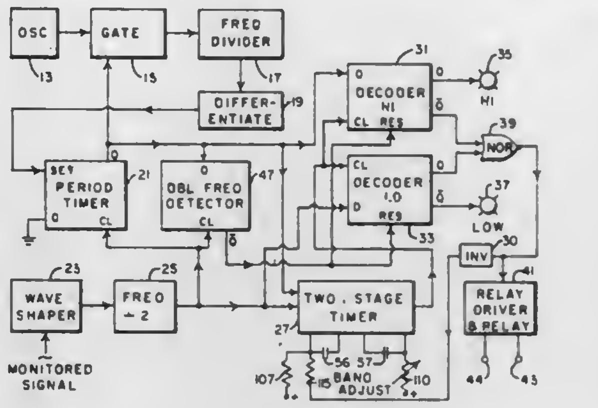
Raymond J. Andrejasich, Carmel, and Ralph A. Perry, Indianapolis, both of Ind., assignors to Emhart Industries, Inc., Indianapolis, Ind.
Filed May 3, 1982, Ser. No. 373,850
Int. Cl.^{3} G01N *27/02*
U.S. Cl. 324—439 **10 Claims**



1. A float assembly for a sensor, comprising:
a float member having a channel means passing therethrough;
means for mounting a sensor on said float;
guide means passing through said channel means for guiding the movement of said float member;
stop means located on said guide means for limiting the movement of said float means, said stop means including a magnet; and
magnetically activated switch means included in said float member for activating when in proximity to said stop means magnet for indicating that said float member is in proximity to said stop means.

4,442,406
FREQUENCY MONITOR WITH ADJUSTABLE TOLERANCE

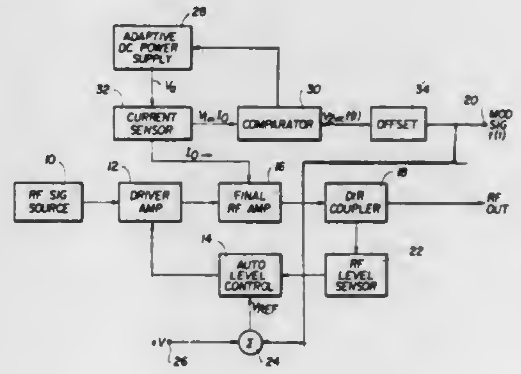
Earl W. Voss, Colcord, Okla., assignor to Diversified Electronics, Inc., Evansville, Ind.
Filed Sep. 29, 1981, Ser. No. 306,756
Int. Cl.^{3} H03D *3/02;* **H03L** *7/00;* **H03K** *5/22*
U.S. Cl. 328—134 **15 Claims**



1. Frequency monitor apparatus for detecting and indicating departures of a monitored signal frequency from a reference frequency by greater than a preset tolerance comprising
first means for generating a first timing pulse having a period equal to a multiple not less than two of one-half cycle of a reference frequency,
second means for generating a second timing pulse having a period equal to a multiple not less than two of one-half cycle of a monitored signal,
said first means being connected to start in synchronism with said second means,
third means responsive to the end of the period of either said first means or second means to produce a delay pulse substantially shorter than either of said timing pulse periods, and
fourth means for detecting the failure of either said first timing pulse period or said second timing pulse period to end at the termination of said delay pulse.

4,442,407
TWO LOOP AUTOMATIC LEVEL CONTROL FOR POWER AMPLIFIER

Thomas R. Apel, Cedar Rapids, Iowa, assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Jun. 11, 1982, Ser. No. 387,307
Int. Cl.^{3} H03G *3/20;* **H03C** *1/00*
U.S. Cl. 330—128 **13 Claims**



1. Control circuit means for maintaining high efficiency in a modulated RF power amplifier having a modulating signal applied thereto and powered by an adaptive power supply, comprising:
at least one control loop including,
means providing a power supply potential to at least one

amplifier stage of said power amplifier from said adaptive power supply,

sensor means for sensing an operational parameter of said at least one amplifier stage and providing a signal in accordance therewith,

means providing a signal corresponding to the weighted sum of the magnitude of said power supply potential and said operational parameter signal,

means for providing a comparison between the weighted sum signal and the magnitude of said modulating signal generating a control signal therefrom, and

means coupling said control signal to said adaptive power supply which operates to vary said power supply potential in accordance with said control signal.

4,442,408

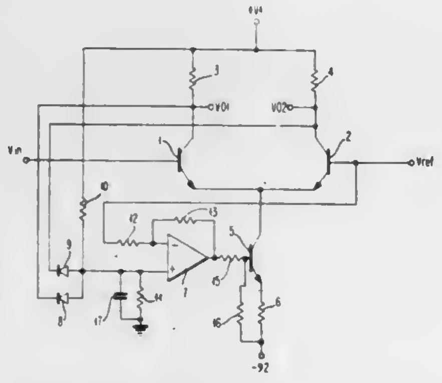
DIFFERENTIAL AMPLIFIER WITH AUTO BIAS ADJUST

Trung Le, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 13, 1982, Ser. No. 377,771

Int. Cl.^{3} H03F *3/45*

U.S. Cl. 330—261 **9 Claims**



1. In a differential amplifier circuit having first and second complimentary outputs, the improvement comprising;

means for individually sensing the voltages of both differential amplifier outputs; and

means responsive to the minimum of said sensed differential amplifier output voltages for controlling current flow out of said amplifier to maintain said minimum voltage value at a predetermined, constant level.

4,442,409

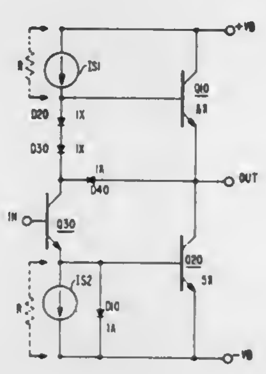
PUSH-PULL NON-COMPLEMENTARY TRANSISTOR AMPLIFIER

Donald R. Preslar, Plainfield, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 25, 1982, Ser. No. 352,179

Int. Cl.^{3} H03F *3/30*

U.S. Cl. 330—274 **13 Claims**



7. A push-pull amplifier comprising:

first and second transistors of a like conducivitity type, and a third transistor, each transistor having first, second and control electrodes and having a principal conduction path between its first and second electrodes controlled by a potential between its control and first electrode;

first and second current sources;

a bridge circuit including a like number greater than one of current dependent potential offset means in each of two arms, the bridge arms terminating in first and second common ends, one of said arms serially including the control and first electrodes of said first transistor with the first electrode of said first transistor remote from said first and second common ends;

means for serially connecting the first current source, the bridge circuit the second and first electrodes of the third transistor and the second current source in the recited order;

means for connecting the control and second electrodes of the second transistor to the respective first electrodes of the third and first transistors respectively; and

means for connecting the control and first electrodes of the second transistor across said second current source.

4,442,410

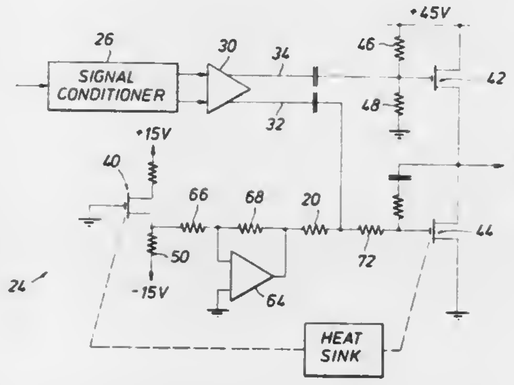
TEMPERATURE STABILIZED AMPLIFIER FOR BOREHOLE USE

Joseph T. Daniel, Houston, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed Oct. 29, 1981, Ser. No. 316,208

Int. Cl.^{3} H03F *3/18*

U.S. Cl. 330—289 **2 Claims**



1. An oil well logging tool amplifier for driving a well logging cable conductor having a low impedance and adapted to be exposed to temperature fluctuations encountered in a down hole environment, the amplifier circuit comprising:

(a) an output conductor of a logging cable connected to a pair of output VMOS field effect transistors connected in a complementary symmetry arrangement wherein one of the transistors is designated as the lower transistor of the output pair of transistors;

(b) a bias voltage forming third VMOS field effect transistor exposed on a common heat sink to the same temperature fluctuations to which said lower output transistor is exposed to, and further having substantially identical temperature drift characteristics therewith; and

(c) bias voltage transfer circuit means connected from said third transistor and input to said output pair of transistors and including an inverting amplifier coupling an output of said third transistor to the gate of sid lower output transistor in such a manner as to apply a bias thereto which applied bias offsets the temperature dependent drift of said output pair of transistors, and wherein said offset bias maintains said output pair of transistors in a specified range of operative conditions during temperature fluctuations over a specified range.

4,442,411

CIRCUIT FOR THE LOAD-PROPORTIONAL ADJUSTMENT OF THE DRIVING CURRENT OF A SINGLE-ENDED OUTPUT TRANSISTOR OF A TRANSISTOR AMPLIFIER, OPERATED IN A COMMON-EMITTER CIRCUIT

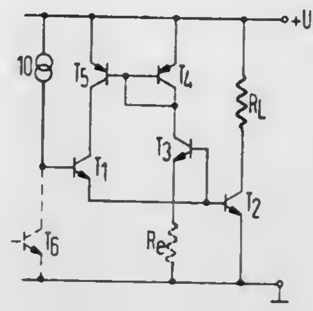
Gerhard Gehring, Unterhaching, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 2, 1981, Ser. No. 298,775

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1980, 3036736

Int. Cl.^{3} H03F *3/04*

U.S. Cl. 330—296 **5 Claims**



1. Circuit for load-proportional adjustment of a driving current of a single-ended output transistor of a transistor amplifier for a variable load of the output transistor, the output transistor having a base-emitter voltage and being operated in a common emitter circuit, the driving current being fed via a control branch to the output transistor, comprising a sensing transistor stage having an output circuit and being driven by the base-emitter voltage of the output transistor, a transistor serving as a driver transistor for the output transistor and a coupling circuit through which current in the output circuit of said sensing transistor is feedable to said transistor serving as a driver transistor.

4,442,412

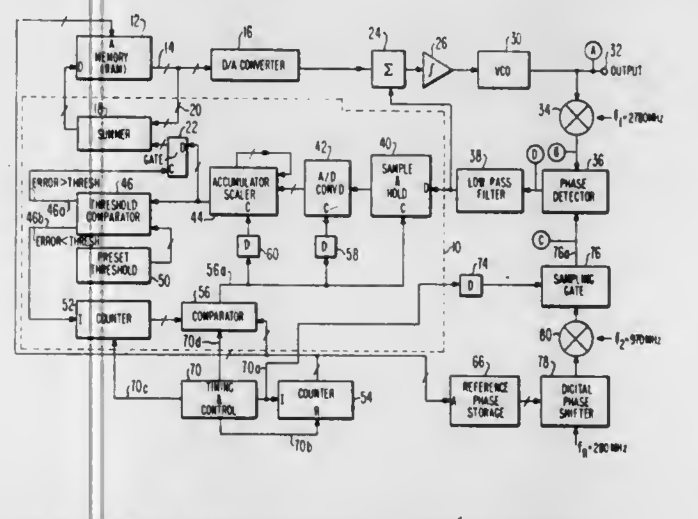
PHASE LOCKED-LOOP GENERATOR WITH CLOSED-LOOP FORCING FUNCTION SHAPER

Edwin B. Smith, Medford Lakes, and Richard A. Craft, Cinnaminson, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 12, 1981, Ser. No. 320,433

Int. Cl.^{3} H03B *3/08*

U.S. Cl. 331—1 **8 Claims**



1. In a phase locked loop system which includes:

signal controllable first means for producing an output frequency signal in accordance with a drive signal applied thereto;

second means generating a signal having a phase which at least at selected times corresponds to the phase of the desired output frequency signal;

third means producing an error signal having a value proportional to the phase difference between the output and generated signals;

summing fourth means coupled to said first means to provide said drive signal thereto and having first and second summing input terminals the first responsive to said error signal;

storage fifth means coupled to said fourth means second terminal and producing signals as a function of time which ideally cause said first means to produce as a function of time a desired output frequency signal but which actually causes said first means to produce a signal such that error signals are produced by said third means;

wherein the improvement comprises:

sixth means responsive to said error signal from said third means for altering the signal in said fifth means in a sense to reduce said error signal.

4,442,413

TELEVISION RECEIVER PHASE LOCKED LOOP TUNING ARRANGEMENT

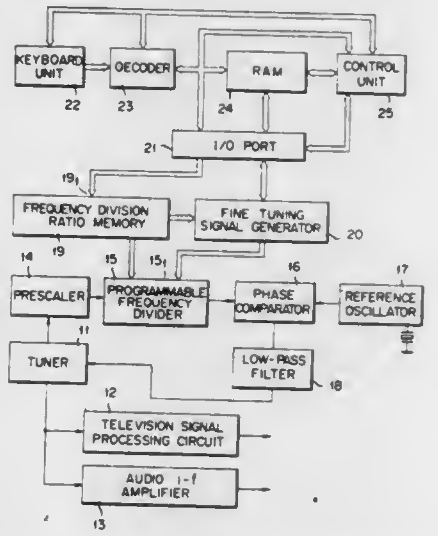
Shizuo Hayashida, and Akinori Masuko, both of Saitama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 137,966, Apr. 7, 1980, abandoned. This application Sep. 24, 1982, Ser. No. 423,305

Claims priority, application Japan, Apr. 10, 1979, 54-43345

Int. Cl.^{3} H03L *7/16*

U.S. Cl. 331—1 A **8 Claims**



1. An oscillation frequency control arrangement for a phase-locked loop (PLL) system comprising:

voltage controlled oscillator (VCO) means for providing a VCO signal at a signal output thereof responsive to a control signal;

prescaler means, coupled to said signal output of said VCO means, for prescaling by frequency dividing said VCO signal and providing a prescaled signal at a prescaler output thereof;

programmable frequency divider means, coupled to said prescaler output, for frequency dividing said prescaled signal in accordance with a controllable division ratio in response to a signal coupled to a control terminal thereof and providing a divided signal at a divider output thereof;

reference oscillator means for providing a reference signal;

phase comparator means, coupled to said reference oscillator means and to said programmable frequency divider means, for comparing said divided signal with said reference signal and generating a comparator signal corresponding to a frequency and phase difference between said compared signals;

means, responsive to said comparator signal, for providing the control signal to said VCO;

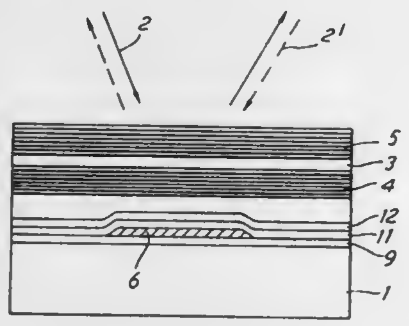
first frequency division ratio data generating means for generating first frequency division data providing coarse tuning information;

second frequency division ratio data generating means for generating second frequency division data providing fine tuning information;

arithmetic operation means for arithmetically combining said first and second frequency division ratio data and producing third frequency division ratio data for controlling the division ratio of said programmable frequency divider means; and

means for selectively supplying first frequency division ratio data from said first frequency division ratio generating means and third frequency division ratio data from said arithmetic operation means to said control terminal of said programmable frequency divider means.

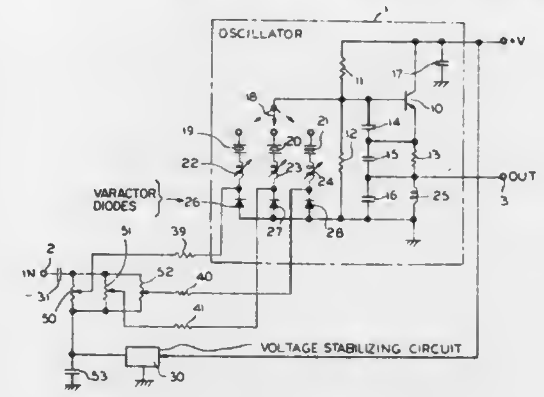
4,442,414
MAGNETO-OPTICAL PHASE-MODULATING DEVICES
Walter S. Carter, Bracknell, England, assignor to British Aerospace Public Limited Company, London, England
Filed Apr. 17, 1981, Ser. No. 255,027
Claims priority, application United Kingdom, Apr. 29, 1980, 8014087
Int. Cl.^{3} G02F *1/05;* G02B *5/08*
U.S. Cl. 332—7.51 **14 Claims**



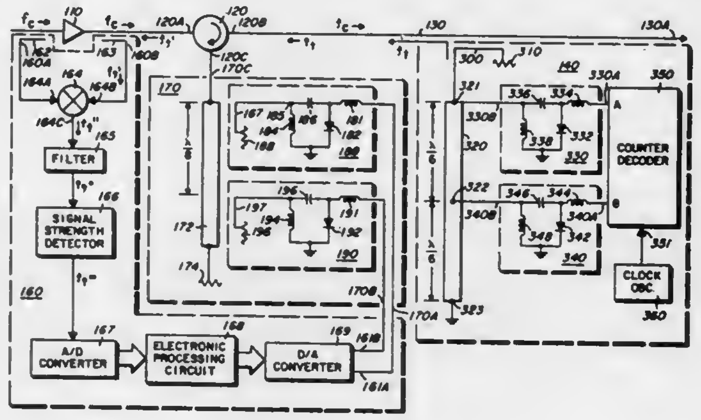
1. A magneto-optical phase-modulating device comprising a magneto-optic layer forming part of an optical stack and upon which, in use, light is incident and to which is applied a reversible magnetic field, a layer of magnetic material adjacent the magneto-optic layer, and at least two flat, low inductance conductors connected in series and disposed one on either side of the layer of magnetic material, in use the conductors having a electric current applied thereto to magnetize the layer of magnetic material, which magnetization is switchable between one direction and the opposite direction by reversing the current in the conductors and which induces an external field of a strength to magnetically affect the magneto-optic layer such that the consequent magnetization thereof is also switched between said one direction and the opposite direction as the field associated with the layer of magnetic material is switched.

4,442,415
MULTICHANNEL FREQUENCY MODULATOR
Shigeaki Ashida, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan
Filed Jul. 14, 1980, Ser. No. 168,583
Claims priority, application Japan, Jul. 20, 1979, 54-99294
Int. Cl.^{3} H03C *3/22*
U.S. Cl. 332—16 T **16 Claims**

13. An FM modulator-oscillator combination for use in a walkie-talkie, said modulator comprising oscillator means having a plurality of separate oscillating circuits associated therewith, means for biasing each of said oscillating circuits from an individually associated midpoint variable potential terminal on a voltage-dividing resistor, each of said oscillating circuits tuning said oscillator means to a separate carrier wave frequency, a source of modulating signals coupled directly to one end of each of said voltage-dividing resistors, and a stabilized voltage source means coupled directly to the other end of each of said voltage-dividing resistors.



4,442,416
VARIABLE IMPEDANCE SYNTHESIS APPARATUS
Robert L. Epsom, Hanover Park; Paul H. Gailus, Chicago, and Anthony P. van den Heuvel, Arlington Heights, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Dec. 31, 1981, Ser. No. 336,202
Int. Cl.^{3} H01P *1/00*
U.S. Cl. 333—263 **6 Claims**



1. A variable impedance network for providing a selectably variable input impedance to signals entering a port comprising:

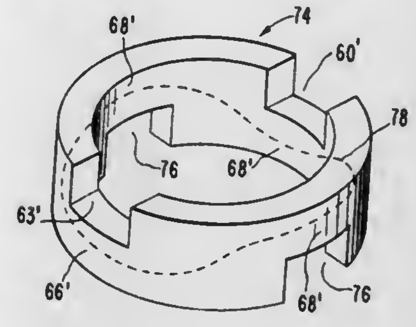
transmission line means, having first and second ends, for conducting radio frequency energy, said first end being said port, said selectably variable input impedance being measurable at said first end, said second end being electrically coupled to a predetermined characteristic impedance;

first variable resistance means, electrically coupled via a first directional coupler to said transmission line means at a first coupling point, for varying the resistance presented to said transmission line means at said first coupling point in response to a first control signal, and

second variable resistance means electrically coupled via a second directional coupler to said transmission line means at a second coupling point, for varying the resistance presented to said transmission line means at said second coupling point in response to a second control signal, said second point being situated between said first point and said characteristic impedance at a sufficient distance from said first point such that signals reflected by said second resistance means are in quadrature relationship with respect to signals reflected by said first resistance means at said first coupling point;

said first and second variable resistance means cooperating to cause different selected input impedances to be presented to signals at said port depending on the value of said first and second control signals provided to said first and second variable resistance means, respectively.

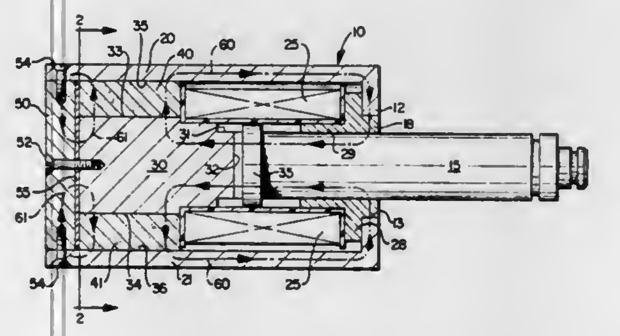
4,442,417
UNIFORM FIELD SOLENOID MAGNET WITH OPENINGS
Robert S. Symons, Los Altos, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.
Filed Jan. 26, 1982, Ser. No. 342,957
Int. Cl.^{3} H01F *7/00*
U.S. Cl. 335—210 **9 Claims**



1. A generally solenoidal electromagnet coil for directing a stream of charged particles by a generally uniform magnetic field along the axis of said solenoid, an even number of first regions impeding the flow of coil current spaced circumferentially near one end of said coil whereby said current is forced to divert away from said one end around said first regions,

the improvement wherein being an equal even number of second regions impeding the flow of coil current and diverting it from circumferential flow, said second regions being circumferentially spaced between said first regions and axially removed from said one end.

4,442,418
TRIP SOLENOID
John L. Myers, Tipp City, Ohio, assignor to Ledex, Inc., Vandalia, Ohio
Continuation-in-part of Ser. No. 259,769, May 1, 1981, abandoned. This application Mar. 2, 1983, Ser. No. 471,542
Int. Cl.^{3} H01F *7/08*
U.S. Cl. 335—230 **10 Claims**



1. An improved trip solenoid comprising:

an open frame, having general parallel frame side members and an end,

means in said end defining an opening adapted to receive an armature therethrough,

a coil in said frame defining an annular armature cavity,

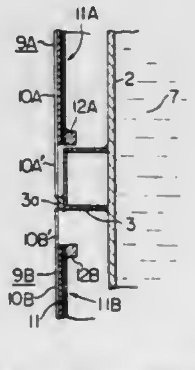
an armature received in said frame opening for axial movement and having an inner end received within said coil cavity,

a pole piece mounted in said frame and having a forward portion received in an end of said coil defining a working air gap with said armature and having a rearward portion received exteriorly of said coil and defining a pair of magnet receiving surfaces which are oriented in spaced relation to opposed inside surfaces formed on said frame side members,

a pair of thickness oriented magnets, one each received in each of the spaces between said pole surfaces and the adjacent surfaces of said frame members and in contact therebetween for providing an initial holding force tending to retain said armature adjacent said pole piece, and

closure plate means receiving in the end of said frame in magnetic contact with said frame members and in spaced relation to said pole piece forming a secondary flux path, through which a major portion of the flux of the coil may pass when energized.

4,442,419
STATIC INDUCTION APPARATUS
Minoru Kanoi, Ibaraki; Yasuro Hori, Katsuta, and Masaaki Maejima, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Sep. 29, 1981, Ser. No. 306,868
Claims priority, application Japan, Sep. 30, 1980, 55-136879
Int. Cl.^{3} H01F *15/00*
U.S. Cl. 336—100 **6 Claims**



1. A static induction apparatus comprising:

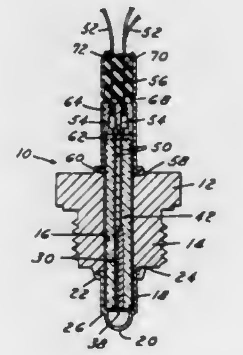
a vessel containing a main body of said static induction apparatus;

a plurality of reinforcing support members secured to a side plate of said vessel; and

sound reducing means supported between said reinforcing support members;

said sound reducing means including a sound insulating panel composed of a high damping metal plate formed of a plurality of thin metal sheets having a layer of viscoelastic material interposed between adjacent metal sheets, a resilient plate formed of a thin metal sheet material interposed between said sound insulating panel and said reinforcing support members, and a weight member disposed only about an outer peripheral portion of the sound insulating panel and secured to the sound insulating panel only in an area of a boundary between said sound insulating panel and said resilient plate.

4,442,420
PARTIAL PRESSURE OF OXYGEN SENSOR-II
Robert F. Novak, Farmington Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Sep. 30, 1982, Ser. No. 429,413
Int. Cl.^{3} H01L *7/00*
U.S. Cl. 338—34 **5 Claims**



1. A partial pressure of oxygen sensor for insertion into an

exhaust system of a hydrocarbon fuel burning device, comprising in combination:

a mounting body formed of a metallic material threaded on one end for securement to the exhaust system and having a cylindrical configured bore of a first diameter extending along a central axis thereof;

a first protection tube having an opening therein secured to said threaded end of said mounting body, said first protection tube having a stepped shoulder therein having an internal diameter smaller than said first diameter of said cylindrical bore;

a heated sensing element including: a ceramic support of generally rectangular cross section, a resistance heater element bonded to a leading portion of said ceramic support, a titania dioxide sensing element, and a sensing element supporting wire upon which said titania dioxide sensing element is supported in a location in juxtaposition to said leading portion of said ceramic support so that said resistance heater heats said sensor element to a required temperature when a preselected voltage is applied across said resistance heater element;

an insulator body of ceramic material, said insulating body having a shape of a right cylinder with a diameter slightly less than said first diameter of said cylindrical configured bore, said insulator body having a slotted opening for receiving said heated sensing element therein with said titania dioxide sensing element of said heated sensing element projecting beyond a leading portion of said insulator body, said insulator body receiving said heated sensing element therein being received in said cylindrical configured bore of said mounting body in a manner such that, said leading portion of said insulator body extends beyond said cylindrical bore to engage said stepped shoulder of said first protection tube, said first protection tube protecting said leading portion of said heated sensing element, said opening of said first protection tube permitting exhaust gases to flow into contact with said heated sensing element;

a plurality of fine electrical lead lines, a pair of said fine lead lines being bonded to and extending from said resistance heater element and a pair of said fine lead lines also bonded to and extending from said sensing element supporting wire;

a plurality of electrical lead lines equal in number to said fine electrical lead lines;

a plurality of crimped bands, each of said crimped bands interconnecting paired ones of said electrical lead lines and said fine electrical lines;

a second ceramic insulator body having a plurality of passageways therein equal in number to said plurality of said crimped bands, said passageways being so constructed and arranged that each of said passageways has an associated pair of said interconnected leads passing therethrough with said crimped band interconnecting the same coming into locating engagement with the side walls defining said associated passageway;

a second protection tube means having one end secured to an end of said mounting body not having said threads thereon for enclosing and protecting said second ceramic insulator body and elements received therein and passing therethrough;

a ceramic cement occupying a volume between said second ceramic insulator body and a rear portion of said heated sensing element received therein;

a high temperature resistant sealant material occupying a volume between said second ceramic insulator body and a free end of said second protection tube means; and

electrical terminal means connected to said plurality of electrical lead lines for independently connecting said lead lines as required to a source of voltage and to a sensing circuit.

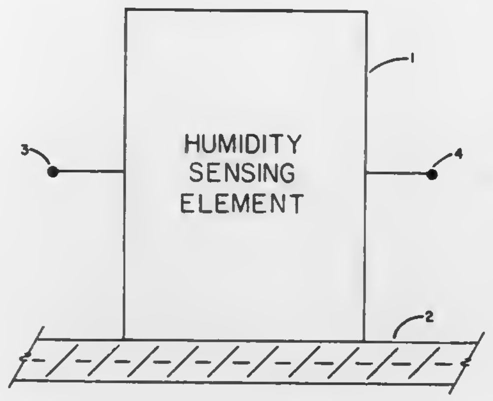
4,442,421
SEMICONDUCTING COORDINATION POLYMERS AND ELECTRICAL APPLICATIONS THEREOF

Otha J. Jacobus, 917 Marlene Dr., Gretna, La. 70053, and Donald R. Owen, 8418 Sycamore St., New Orleans, La. 70118

Filed Jul. 31, 1981, Ser. No. 288,884

Int. Cl.^{3} H01L *7/00*

U.S. Cl. 338—35 **5 Claims**



1. A humidity sensing detector, comprising:

a semiconducting, oxidized coordination polymer, humidity sensing element prepared from a polydentate organic ligand and a metal salt; and

electrical contacts at spaced locations on said sensing element.

4,442,422
HUMIDITY SENSITIVE RESISTOR

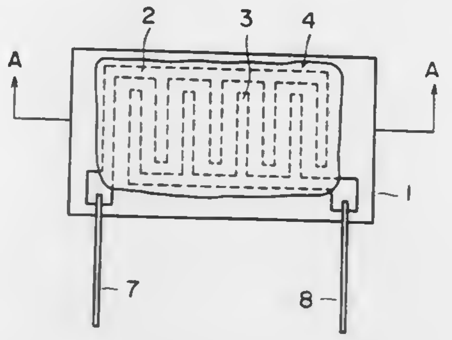
Michihiro Murata, Kyoto; Shoichi Kitao, Otokuni, and Shinsei Okabe, Takatsuki, all of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Mar. 21, 1983, Ser. No. 477,408

Claims priority, application Japan, Mar. 31, 1982, 57-54569; Nov. 22, 1982, 57-204778

Int. Cl.^{3} H01L *7/00*

U.S. Cl. 338—35 **3 Claims**



1. A humidity sensitive resistor, comprising:

a pair of detecting electrodes (**2**, **3**) formed on an insulating substrate (**1**); and

a humidity sensitive film (**4**) formed by coating on the detecting electrodes, said humidity sensitive film being formed of an integrated structure of a first layer macromolecular resin film (**5**) containing a polyvinyl alcohol polymer and an electrolyte and a second layer of hygroscopic macromolecular resin film (**6**) coating on said first layer macromolecular resin film (**5**), said humidity sensitive resistor being characterized in that the water absorbing rate of the second layer high molecular resin film (**6**) by moisture absorption is smaller than that of the first layer macromolecular resin film (**5**).

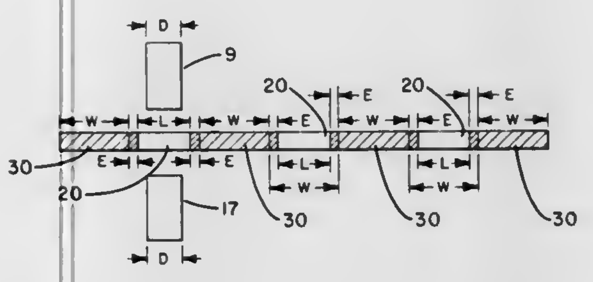
4,442,423
OPTICAL POSITION SENSOR INCLUDING A SPECIALLY DESIGNED ENCODER PLATE

Peter J. Urbanik, Wethersfield, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jan. 8, 1982, Ser. No. 337,909

Int. Cl.^{3} H03K *13/02*

U.S. Cl. 340—347 P **5 Claims**



1. An optical position sensor comprising:

an optical transmitter for transmitting a substantially constant amplitude light signal;

an optical receiver for receiving the light signal transmitted by the optical transmitter and for generating an output light signal in response thereto;

a digital switching device for monitoring the optical output light signal at the receiver and for generating a high level output signal when the monitored light signal exceeds a threshhold level which is set at less than one-half of the designed maximum output light signal amplitude at the receiver; and

an encoder plate located between the optical transmitter and the optical receiver for modulating the light transmissions from the transmitter to the receiver as a function of plate position, said encoder plate having at least one information channel having a linear series of alternating apertures and opaque sections with each aperture having a length, L, given by:

$$L=(I+2T)D$$

where,

I=a selected positive integer which may vary from row to row depending on the code pattern which it is desired to establish on the plate

T=the ratio, which is less than one-half, of the preset threshhold level of the digital switching device to the designed maximum output light signal amplitude at the receiver, and

D=the beam width of the transmitted signal from the optical transmitter

and with each opaque section having a length, OP, given by:

$$OP=2(I+1)D-L$$

whereby a symmetrical digital output signal is generated as a function of encoder plate position for each information channel having such apertures and opaque sections.

4,442,424
METHOD AND SYSTEM FOR DISPLAYING VEHICLE OPERATING PARAMETERS IN A VARIABLE FORMAT

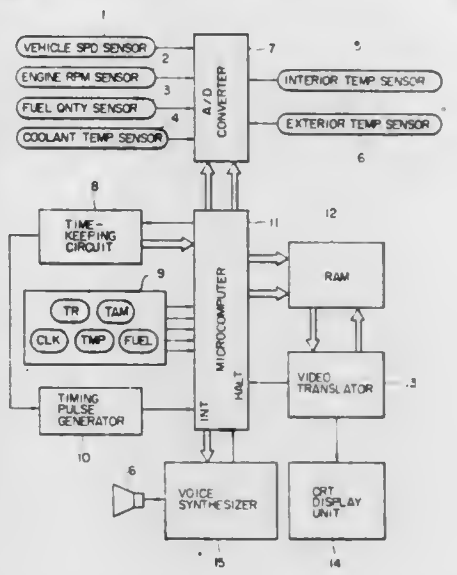
Shinji Shirasaki, Kariya; Yoshihiko Tsuzuki, Anjyo; Yuzi Hirabayashi, Aichi; Hiroshi Okazaki, Okazaki; Masahiro Matsuyama, Kariya; Masanobu Kobayashi, Kariya, and Yoji Ito, Kariya, all of Japan, assignors to Nippondenso Company, Limited, Kariya, Japan

Filed Jun. 9, 1981, Ser. No. 271,936

Claims priority, application Japan, Jun. 11, 1980, 55-79298; Aug. 21, 1980, 55-115695

Int. Cl.^{3} B60Q *1/00*

U.S. Cl. 340—52 F **17 Claims**



1. A method for displaying the operating parameters of a plurality of parts of a motor vehicle on a viewing screen, comprising the steps of:

(a) constantly monitoring said operating parameters;

(b) displaying the magnitudes of said monitored operating parameters as indication items in respective formats on said viewing screen;

(c) detecting one or more of said monitored parameters which are abnormal;

(d) deleting a portion of the displayed indication items excepting the item whose monitored parameter is detected as being abnormal; and

(e) enlarging the displayed item whose monitored parameter is detected as being abnormal over an area including the area in which said portion has been displayed.

4,442,425
PASSIVE FIBER OPTIC KEYBOARD

Jules A. Eibner, Maple Glen, Pa., assignor to Sperry Corporation, New York, N.Y.

Filed Nov. 13, 1981, Ser. No. 321,009

Int. Cl.^{3} G06F *3/02;* **G08C** *9/00*

U.S. Cl. 340—365 S **11 Claims**

1. An electrically inert keyboard apparatus, comprising:

a plurality of keys arranged in the form of a keyboard,

actuating bar means connected to each of said keys,

shutter means operated by said actuating bar means,

light pulse source means,

fiber optic projection means coupled to said light pulse source means and arranged in parallel juxtaposed one side of said shutter means,

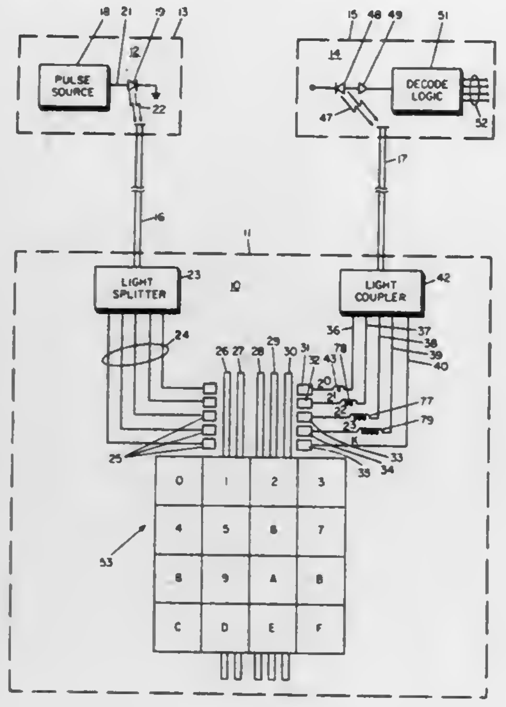
fiber optic collector means arranged in parallel juxtaposed the other side of said shutter means for receiving said light pulses in parallel from said projection means,

said collector means comprising a plurality of optical collectors each coupled to individual output fiber optic cables,

coupling means for logic OR gating said individual output fiber optic cables into a single output fiber optic cable,

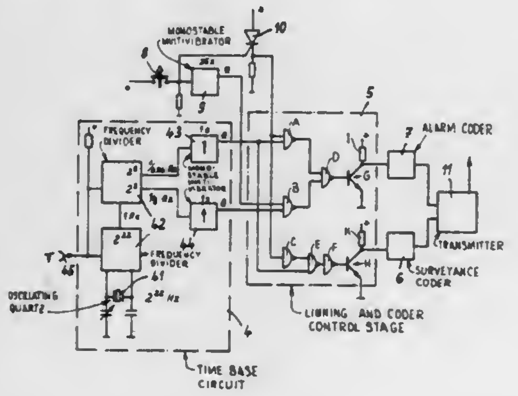
delay means connected intermediate said light pulse source means and said coupling means in one of said fiber optic means, and

decoding logic means coupled to said single output fiber optic cable for detecting the absence or presence of several light pulses at said optical collectors when said shutters are actuated by depression of a key of said keyboard and for producing electrical signals indicative of said key being depressed.



4,442,426
SIGNAL TRANSMISSION

Herr F. Heuschmann, Munich, and Herr A. Plank, Kolbermoor, both of Fed. Rep. of Germany, assignors to Compur-Electronic GmbH, Munich, Fed. Rep. of Germany
Continuation of Ser. No. 4,243, Jan. 17, 1979, abandoned. This application Feb. 4, 1981, Ser. No. 231,548
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1978, 2802075
Int. Cl.^{3} G08B *1/08;* **H04Q** *7/00*
U.S. Cl. 340—539 **16 Claims**



1. A security and monitoring method in a wireless information system which includes receiving means and plural separate transmitting means, comprising the steps of:

transmitting from each of said plural and separate transmitting means to said receiving means a monitoring signal of predetermined duration at a fixed repetition rate, the period of said repetition rate being an integer multiple of a first fixed interval of time;

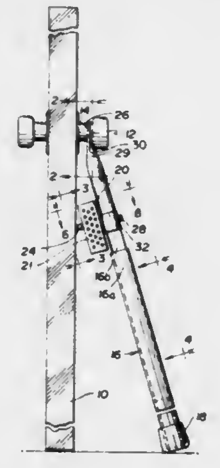
synchronizing said plural transmitting means to transmit said respective monitoring signals so that any two successive said monitoring signals transmitted by respective said transmitting means are spaced in time by a respective delay interval which is an integer multiple of said first fixed interval of time; and

sending alarm signals separate from said monitoring signals and of predetermined duration to said receiving means, each said alarm signal being transmitted during a respective said delay interval and at a point in time spaced a second fixed interval of time after transmission of a respective said monitoring signal by a respective said transmitting means;

whereby said monitoring and alarm signals are transmitted by said plural transmitting means according to a rigid timing schedule and all said monitoring signals and said alarm signals of each said transmitting means are free of interference with said monitoring signals of other of said transmitting means.

4,442,427
DOOR LOCKING ALARM DEVICE

David C. Morton, 3152 Curtis Dr., Flint, Mich. 48507
Continuation-in-part of Ser. No. 244,294, Mar. 16, 1981, Pat. No. 4,358,758. This application Jun. 24, 1982, Ser. No. 391,531
Int. Cl.^{3} G08B *13/08*
U.S. Cl. 340—546 **10 Claims**



1. A door locking and alarm device for portable use and ready installation on a door handle comprising:

an adjustable length shaft portion;

a non-skid end portion mounted on the lower end of the shaft portion;

a door handle engaging end fixed to the upper end of said shaft portion and mounted on it substantially aligned to its longitudinal axis; and

an alarm device slidably mounted on said shaft portion and having an actuator therefor movable away from and toward abutment with the inner surface to the door for providing an alarm responsive to a limited movement of the door inwardly.

4,442,428
COMPOSITE VIDEO COLOR SIGNAL GENERATION FROM DIGITAL COLOR SIGNALS

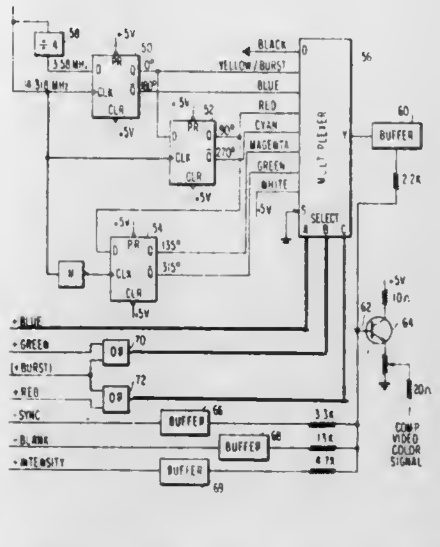
Mark E. Dean, Boynton Beach; David A. Kummer, Boca Raton, and Jesus A. Saenz, Coral Springs, all of Fla., assignors to IBM Corporation, Armonk, N.Y.
Filed Aug. 12, 1981, Ser. No. 292,074
Int. Cl.^{3} G09G *1/28*
U.S. Cl. 340—703 **4 Claims**

1. A composite video color signal-generating circuit for generating a composite video color signal compatible with a television receiver designed according to the NTSC color system comprising:

means for providing a 3.58 MHz wave reference color subcarrier signal;

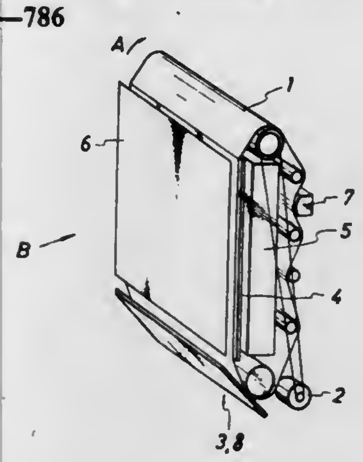
digital phase-shifting means for digitally converting said subcarrier signal into a plurality of individual phase-shifted subcarrier signals of identical frequency simultaneously present on corresponding individual output lines, each individual signal having a different predetermined phase shift relative to said reference subcarrier signal, and each phase shift representing a different color; and

multiplexer means having inputs coupled to respective ones of said output lines, and responsive to coded digital signals, representing different desired colors, for selectively switching to an output terminal of said multiplexer means individual ones of the phase-shifted subcarrier signals in accordance with the coded digital signals.



4,442,429
DISPLAY APPARATUS UTILIZING A THERMALLY COLOR REVERSIBLE DISPLAY MEDIUM WHICH HAS A HYSTERESIS EFFECT

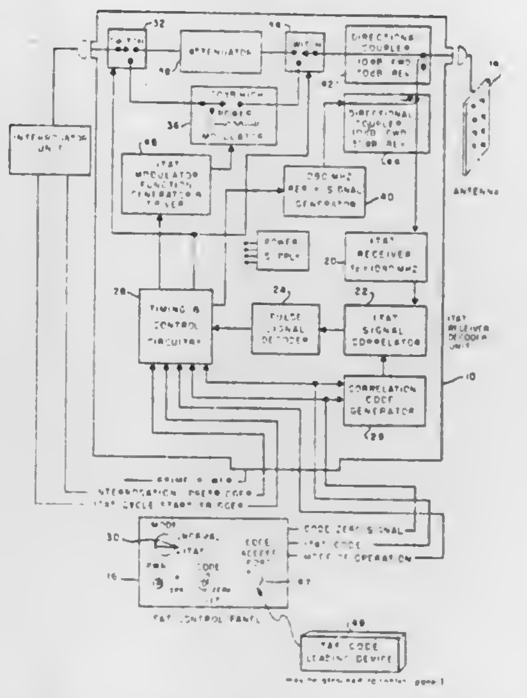
Shintaro Kotani; Ichimatsu Abiko; Takashi Arae; Mio Chiba; Tomoo Araki, and Hiromasa Kanno, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Sep. 14, 1981, Ser. No. 301,598
Int. Cl.^{3} G09G *3/22*
U.S. Cl. 340—786 **7 Claims**



1. A display apparatus comprising a heat-sensitive medium of an endless, broad-width belt-like shape having a hysteresis effect between the temperature and color, driving means for rotating and transferring said heat-sensitive display medium, a first heating member comrpising a plurality of heating elements aligned in the lateral direction of the heat-sensitive display medium, a plane transparent panel heater located on the back of the display surface contiguously to the heat-sensitive display medium, lighting means disposed on the back of the transparent heat-insulating member to illuminate the display surface, a color filter disposed in front of the display surface, and cooling means for cooling the heat-sensitive display medium after display, and a second heating member disposed in the passage of the heat-sensitive display medium between the transparent panel heater and the cooling means, the entire heat-sensitive medium being uniformly discolored by said second heating member to erase said information recorded on the heat-sensitive display medium.

4,442,430
IDENTIFICATION TECHNIQUE FOR AIR TRAFFIC

Bernard A. Schneider, 8984 Bellefontaine Rd., Dayton, Ohio 45424
Filed May 11, 1981, Ser. No. 262,713
Int. Cl.^{3} G01S *13/78*
U.S. Cl. 343—6.5 R **5 Claims**



1. In an interrogator-transponder beacon system having an interrogator cooperating with an antenna and a transponder cooperating with an antenna, the improvement comprising an identification technique (ITAT) comprising an interrogator add-on unit coupled between the interrogator and its antenna, and a transponder add-on unit coupled between the transponder and its antenna;

wherein said interrogator add-on unit comprises control means including means to manually select either a normal mode of operation or an ITAT mode; apparatus effective during the ITAT mode which includes means to add special modulation to an interrogator output radio frequency signal, and means to pass the interrogator signal with said special modulation to the interrogator antenna;

wherein said transponder add-on unit includes control means to select either a normal mode or an ITAT mode, and apparatus effective during the ITAT mode which includes means to route the interrogation signal received at the transponder unit to an ITAT receiver, means to detect the ITAT information, means to generate a normal interrogation which is forwarded to the transponder, which in a normal manner generates a reply, means to add special modulation to the transponder output radio frequency signal, and means to pass the transponder signal with said special modulation to the transponder antenna;

wherein said interrogator add-on unit further includes means to route the transponder reply received at the interrogator antenna to an ITAT receiver, means to detect the ITAT information, and means to generate a normal transponder reply which is forwarded to the interrogator.

4,442,431
AIRBORNE MISSILE GUIDANCE SYSTEM

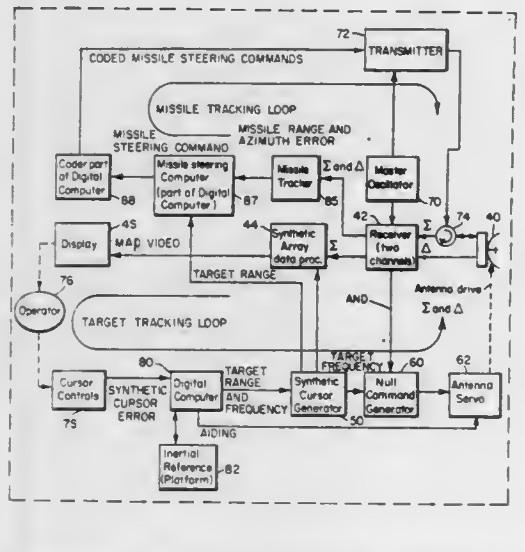
William M. Bleakney, Sherman Oaks, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.
Filed Jul. 12, 1971, Ser. No. 163,535
Int. Cl.^{3} F41G *7/28*
U.S. Cl. 343—7 ED **5 Claims**

1. A system for guiding a remotely controllable missile along a flight path towards a designated target area, said system comprising:

radar means for transmitting energy to and receiving energy from a selected area of terrain, said radar means including a monopulse antenna having a pattern with a null plane in the azimuth dimension;

cursor generator means, including manual control circuitry, for providing cursor signals indicative of the relative range and doppler frequency of a selected target portion in said terrain area as designated by the manual control circuitry;

display means responsive to said received energy and to said cursor signals presenting a map display of said selected area; and for presenting an indication of the relative position of the selected target portion of said terrain area;



null command generator means for measuring the relative doppler frequency of energy received along said null plane and for positioning said antenna such that the relative doppler frequency of said null plane energy is substantially the same as the doppler frequency of said cursor signal;

means for sensing the position of said missile in said pattern and for remotely controlling said missile so that its flight path is substantially along said azimuth null plane.

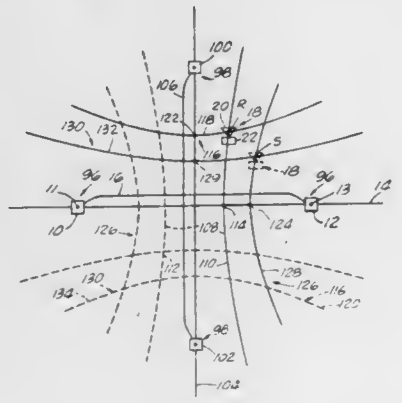
4,442,432
ELECTRONIC NAVIGATION METHOD AND SYSTEM

William L. Quigley, 3280 E. Fairpoint St., Pasadena, Calif. 91107

Continuation of Ser. No. 96,629, Nov. 23, 1979. This application Sep. 17, 1981, Ser. No. 302,966

Int. Cl.³ G01S *1/30, 3/02*

U.S. Cl. 343—394 **28 Claims**



1. A navigation system, comprising,

frequency standard means for generating at least one frequency standard signal,

transmitter means comprising at least three transmitters arranged in pairs, each of said transmitters fixed in location relative to the others and transmitting a navigation signal,

link means for supplying at least one frequency standard signal to each transmitter of said transmitter means for providing each transmitter with an excitation signal, each transmitter being responsive to the applied excitation signal for establishing the frequency of the navigational signal transmitted therefrom, and

receiver means responsive to the navigation signals for detecting and counting Doppler frequency shifts in said navigation signals separately from pairs of the transmitter means and for determining receiver means displacement with respect to a known starting position and with respect to said pairs of transmitter means in accordance with detected and counted Doppler frequency shifts.

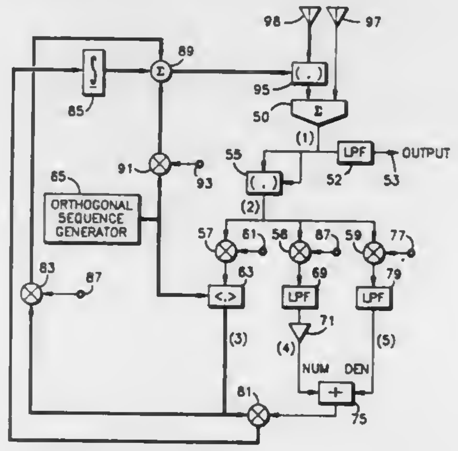
4,442,433
ADAPTIVE SIGNAL PROCESSING APPARATUS

Michael H. Myers, Scottsdale, and Sam Daniel, Tempe, both of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Jul. 1, 1982, Ser. No. 394,082

Int. Cl.³ G01S *3/16, 3/28*

U.S. Cl. 343—378 **9 Claims**



1. Adaptive signal processing apparatus for a signal array including a main input and a plurality of secondary inputs, said apparatus comprising:

first means coupled to receive a weight signal, a gradient signal and an orthogonal sequence signal and further coupled to the plurality of secondary inputs for dithering input signals from the plurality of secondary inputs in accordance with the combined weight, gradient and orthogonal sequence signals;

second means coupled to said first means and the main input for combining signals from the main input with the dithered input signals and for developing an output signal, a weight signal and a gradient signal, said weight and gradient signals being coupled to said first means for supplying the dithering signals; and

an orthogonal sequence generator coupled to said first and second means for supplying a portion of the dithering signal and for use in developing the gradient signal.

4,442,434
ANTENNA CIRCUIT OF THE NEGATIVE IMPEDANCE TYPE

Knud E. Baekgaard, Struer, Denmark, assignor to Bang & Olufsen A/S, Struer, Denmark

Filed Mar. 13, 1981, Ser. No. 243,623

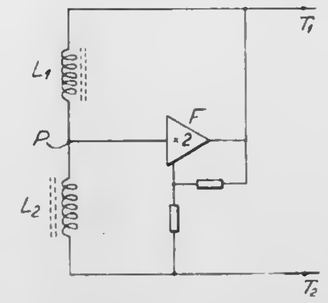
Claims priority, application Denmark, Mar. 13, 1980, 1070/80

Int. Cl.³ H01Q *1/26, 7/06*

U.S. Cl. 343—701 **9 Claims**

1. An aerial circuit comprising a main antenna and a negative impedance means for producing a broad effective frequency range of the aerial circuit the negative impedance means comprising an amplifier and a frequency dependent impedance

imitating an impedance of the main antenna and seeking to eliminate the same through the amplifier, characterized in that



the frequency dependent impedance is constituted by an auxiliary antenna of a similar type as the main antenna.

4,442,435
GYRO STABILIZATION PLATFORM FOR SCANNING ANTENNA

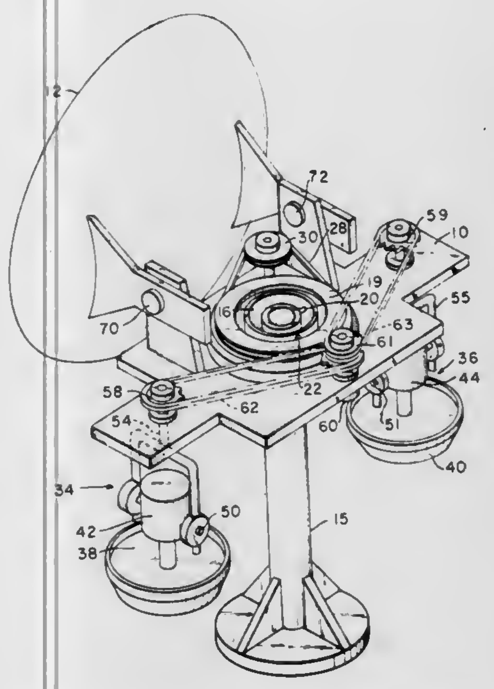
Rikio Kiryu, Yokohama, and Takeshi Bessho, Hachioji, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation-in-part of Ser. No. 269,953, Jun. 3, 1981, abandoned. This application Jan. 8, 1982, Ser. No. 337,971

Claims priority, application Japan, Jun. 3, 1980, 55-73710

Int. Cl.³ H01Q *1/34, 1/18*

U.S. Cl. 343—709 **10 Claims**



1. A passive stabilization system comprising;

a fixed stand;

gimbal means associated with said stand;

a platform pivotally mounted on said stand by said gimbal means;

at least two gyros, each including a flywheel and a drive motor for said flywheel;

at least two suspension means suspending respective ones of said gyros from said platform and having a gyro azimuth axis normal to said platform, said at least two gyros being mounted pivotally about respective gyro support axes which are perpendicular to one another; and

gyro azimuth drive means for driving said at least two suspension means about their individual gyro azimuth axes while maintaining the individual axes in their relative angular relationship in response to azimuthal movement of said platform.

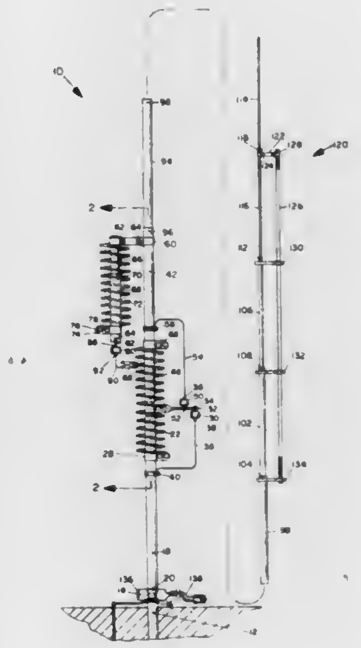
4,442,436
VERTICAL ANTENNA

Donald R. Newcomb, Rte. 2, Box 356E, San Marcos, Tex. 78666

Filed Nov. 16, 1981, Ser. No. 321,548

Int. Cl.³ H01Q *9/14, 9/18*

U.S. Cl. 343—722 **7 Claims**



1. Vertical antenna resonating on six predetermined segments of the high-frequency spectrum comprising:

a. first inductor-capacitor means vertically supported and comprising an eighty/seventy-five meter section including an eighty/seventy-five meter inductor and capacitor connected in parallel across the top of said section, said inductor adjusting the center frequency of operation;

b. second inductor-capacitor means vertically connected to said first inductor-capacitor means and comprising a forty-meter section including a forty-meter inductor and capacitor connected in parallel across the top of said section, said inductor adjusting the center frequency of operation, and said inductors and capacitors connecting at a common point on an insulator between said sections;

c. vertical radiating means connected to said second inductor-capacitor means by an insulator post, said vertical radiating means comprising first, second, third, fourth, fifth, and sixth vertical radiating sectional elements secured to each of the other respective elements;

d. third inductor-capacitor means vertically supported and comprising a thirty-meter inductor and capacitor connected in series between said forty-meter inductor and said vertical radiating element;

e. stub means connected to a top portion of said vertical radiating means, spaced a fraction of a wavelength therefrom and extending parallel downwardly therefrom, said stub means substantially one-quarter wavelength of fifteen meters; and,

f. an impedance matching coil connected across said first inductor-capacitor means and ground, a coaxial cable transmission line impedance matching section connected across said impedance matching coil, and said vertical antenna having a height in the range of twenty-five to twenty-six feet whereby a coaxial cable transmission line connected to said first inductor-capacitor means and ground, and the entire vertical radiating length of said vertical antenna is active on five of said six high-frequency spectrum segments and said stub means decouples said vertical radiating means above said stub means thereby yielding a quarter wave vertical radiating means on the frequency corresponding to the length of said stub means.

4,442,437

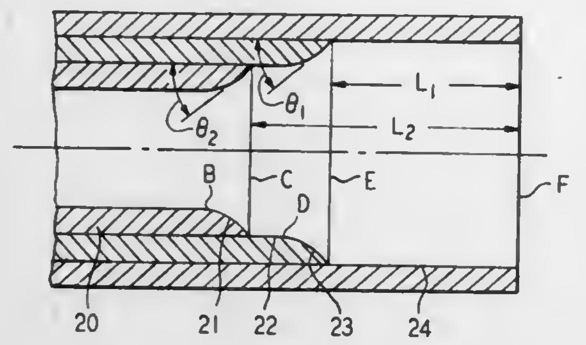
SMALL DUAL FREQUENCY BAND, DUAL-MODE FEEDHORN

Ta-Shing Chu, Lincroft, and Robert W. England, Piscataway, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 25, 1982, Ser. No. 342,058

Int. Cl.^{3} H01Q *13/06*

U.S. Cl. 343—786 **4 Claims**



1. A dual frequency band, dual-mode feedhorn comprising:

a first waveguide section (**20**) comprising a longitudinal passage with a first and second port at a first and second end thereof, respectively, and capable of supporting a dominant TE_{11} mode of a first and a second signal in a first and a second frequency band, respectively, propagating therein;

a second waveguide section (**22**) comprising a longitudinal passage, which is larger in cross-section than the longitudinal passage of the first waveguide section, with a first and a second port at a first and a second end thereof, respectively, and capable of supporting the TE_{11} mode of said first and second frequency bands and only the TM_{11} mode of a higher one of the two frequency bands;

a first discontinuity (**21**) connecting the second port of the first waveguide section with the first port of the second waveguide section and capable of converting a portion of the TE_{11} mode in both frequency bands into TM_{11} mode energy;

a third waveguide section (**24**) comprising a longitudinal passage, which is larger in cross-section than the longitudinal passage of the second waveguide section, with a first and a second port at a first and a second end thereof, respectively, and capable of supporting the TE_{11} and TM_{11} mode in said first and second frequency bands, said second and third waveguide sections comprising a longitudinal length such that the vector sum of the associated TE_{11} and TM_{11} mode components in each of the frequency bands are all substantially in phase at the second port of the third waveguide section; and

a second discontinuity (**23**) connecting the second port of the second waveguide section with the first port of the third waveguide section and capable of converting a portion of the TM_{11} mode in both frequency bands into TM_{11} mode energy.

4,442,438

HELICAL ANTENNA STRUCTURE CAPABLE OF RESONATING AT TWO DIFFERENT FREQUENCIES

Kazimierz Siwiak, Sunrise; Oscar M. Garay, North Lauderdale, and Quirino Balzano, Plantation, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 29, 1982, Ser. No. 363,186

Int. Cl.^{3} H01Q *1/36*

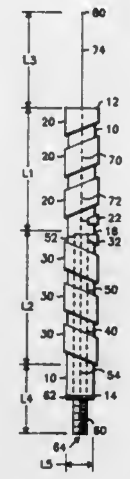
U.S. Cl. 343—792 **8 Claims**

1. An antenna exhibiting first and second different predetermined resonant frequencies comprising:

a first helically configured electrically conductive element;

a second helically configured electrically conductive element, said first and second elements being coupled to a common feed port so as to together resonate at said first predetermined resonant frequency when radio frequency energy is supplied to said feed port, and

a first electrically conductive member including first and second portions, said first portion being situated within said first element, said second portion being situated external to said first element and extending from said first portion, said first member being coupled to said feed port and said first element such that said first member and said first element together resonate at said second predetermined resonant frequency when radio frequency energy is supplied to said feed port.



4,442,439

INK JET PRINTING APPARATUS

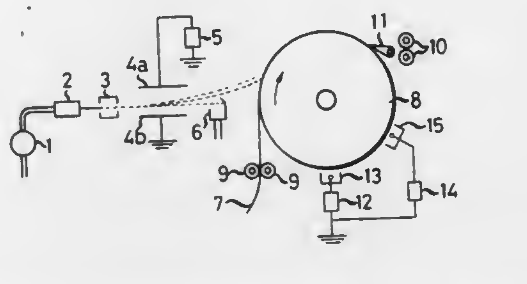
Akinori Mizuno, Yokohama, Japan, assignor to Ricoh Co. Ltd., Japan

Filed Nov. 3, 1980, Ser. No. 203,542

Claims priority, application Japan, Nov. 8, 1979, 54-144660

Int. Cl.^{3} G01D *9/00, 15/18*

U.S. Cl. 346—1.1 **23 Claims**



2. A method of reducing printing distortion in ink jet printing, wherein the ink jet is ejected from an ejection head, breaks into drops which are charged by a signal electrode in accordance with a printing signal and deflected before they strike a recording medium, comprising the steps of:

charging a record medium conveyor member with a charge of an inverse polarity to the charge applied to the ink drops by the signal electrode; and

conveying the record medium on the record medium conveying member to a position where the record medium receives the ejected charged ink drops.

4,442,440

INK JET GUTTER METHOD AND APPARATUS

Gilbert M. Elchinger, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 5, 1982, Ser. No. 365,123

Int. Cl.^{3} G01D *18/00, 15/18*

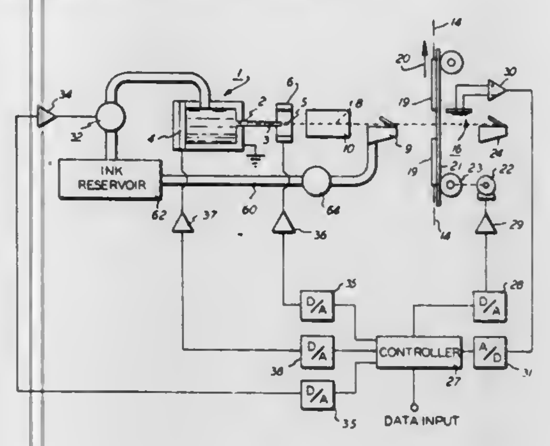
U.S. Cl. 346—1.1 **12 Claims**

4. A method for recirculating ink from a droplet generator in a continuous ink jet printing system through an ink processing station and back to said droplet generator comprising the steps of:

forcing one or more ink streams under pressure through an orifice to produce one or more discrete droplet streams traveling along a path toward a recording medium;

deflecting certain ones of said droplets from said one or more streams away from their initial trajectory to allow only certain ones of said droplets to strike said medium;

intercepting those droplets not intended to strike said recording medium with a receiving structure having a cavity therein with an opening thereto through which the droplets enter the cavity, the internal surface of said cavity having a first surface energy;



connecting a supporting structure to said receiving structure, the supporting structure being below said receiving structure and having a passageway therethrough, the internal surface of said passageway having a second surface energy which is higher than that of the first surface energy and having one edge abutting an edge of the internal surface of the receiving structure to form a boundary therebetween, so that the guttered ink in the vicinity of the boundary is pulled from the receiving structure cavity with the lower surface energy to the supporting structure passageway with the higher surface energy by capillary attraction, thereby avoiding ink buildup in the receiving structure cavity; and

moving said guttered ink through subsequent processing steps and back to the droplet generator.

4,442,441

MAGNETIC RECORDING DEVICE

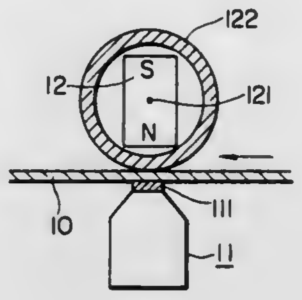
Yoshiki Kikuchi; Takashi Omori; Haruhiko Moriguchi; Fujio Moriguchi, and Tomio Murayama, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Feb. 19, 1981, Ser. No. 235,366

Claims priority, application Japan, Feb. 19, 1980, 55-18472; Feb. 19, 1980, 55-18473; Feb. 19, 1980, 55-18474; Feb. 19, 1980, 55-19140[U]

Int. Cl.^{3} G01D *15/12*

U.S. Cl. 346—74.4 **10 Claims**



1. A magnetic recording device comprising:

a magnetic medium having an initial uniform magnetization pattern in which desired portions are selectively magnetized in a latent image pattern;

a thermal printing head having a supporting substrate and a plurality of heat generating elements arranged on said supporting substrate, said magnetic medium moving relative to said thermal printing head;

means for supplying heating current selectively to said heat generating elements according to data to be recorded so that said magnetic medium is locally heated by selected ones of said heat generating elements to a temperature greater than the Curie temperature of said magnetic medium as it moves relative to said thermal printing head;

a confronting roll disposed confronting said thermal printing head through said magnetic medium; and

a biasing magnet provided inside said confronting roll for applying a biasing magnetic field to predetermined portions of said magnetic medium which are heated.

4,442,442

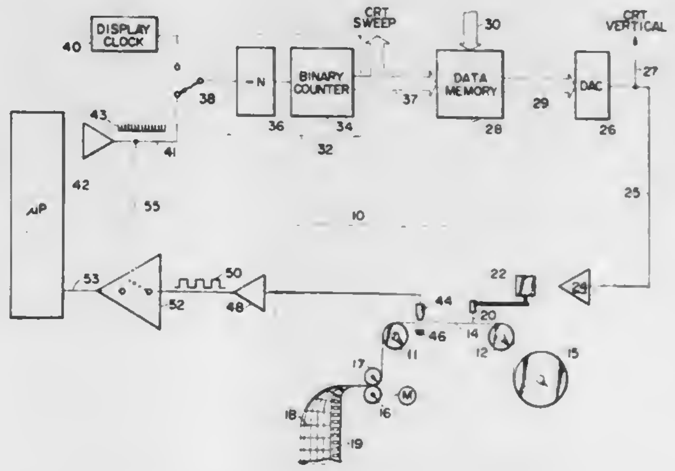
DATA SYNCHRONIZATION SYSTEM FOR GRAPHIC RECORDING APPARATUS

Gary B. O'Dell, Aloha, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Jan. 5, 1982, Ser. No. 337,197

Int. Cl.^{3} G01G *15/14*

U.S. Cl. 346—136 **4 Claims**



1. A system for recording graphic image information, stored in digital form, on a moving record medium, comprising:

storage means for storing digital signals representative of an image to be recorded,

digital-to-analog converter means for converting digital signals read out from the storage means into corresponding analog signals,

recording means for transcribing analog signals on a moving record medium,

means for producing a pulse train having a repetition frequency proportional to the travel rate of the moving medium,

means for determining the period of the pulse train, and

means for supplying digital signals from the storage means to the recording means by way of the converter means at a rate dependent on the period of the pulse train.

4,442,443

APPARATUS AND METHOD TO EJECT INK DROPLETS ON DEMAND

John G. Martner, Brookfield, Conn., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jun. 18, 1982, Ser. No. 389,785

Int. Cl.^{3} G01D *15/18*

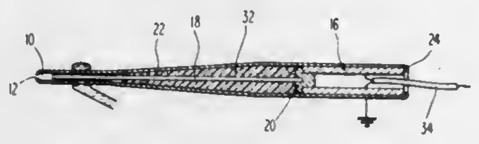
U.S. Cl. 346—140 R **18 Claims**

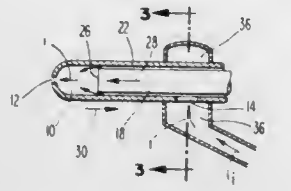
1. An ink jet apparatus comprising:

an ink jet chamber including a droplet ejection orifice and an ink supply inlet;

transducer means capable of displacement in different directions; and

coupling means coupled between said transducer means and said chamber, said coupling means coupling displacement of said transducer in one of said directions to said chamber





so as to produce a first change of volume of said chamber and coupling displacement of said transducer in another of said directions to said chamber so as to produce a second change in volume of said chamber such that displacement of said transducer in different directions are additive in producing a change in volume of said chamber.

4,442,444
AVALANCHE PHOTODIODES

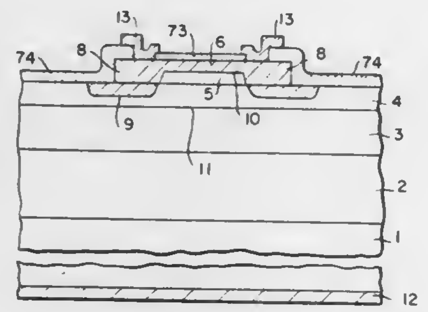
Fukunobu Osaka, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 8, 1981, Ser. No. 281,304

Claims priority, application Japan, Jul. 8, 1980, 55-93025; Aug. 28, 1980, 55-118592

Int. Cl.^{3} H01L *29/90*

U.S. Cl. 357—13 **15 Claims**



1. An avalanche photodiode comprising:

a light absorbing semiconductor layer comprising a first semiconductor material having a first band gap and doped with a first conductivity type impurity to a first concentration;

a first window semiconductor layer formed on said light absorbing semiconductor layer, comprising a semiconductor material having a larger band gap than said first band gap, and doped with the first conductivity type imprurity to a second concentration at least as high as said first concentration;

a second window semiconductor layer having an outer perimeter, formed on a predetermined portion of said first window semiconductor layer, comprising the same semiconductor material as that of said first window layer, doped with the first conductivity type impruity to a concentration higher than said second concentration;

a first region of said second window semiconductor layer being of highly doped with a second conductivity type impurity to a third concentration higher than said second concentration, said first region providing a p-n junction for avalanche multiplication and a light sensitive region;

a second region of said second window semiconductor layer adjacent to said first region, and a top region of said first window layer surrounding said outer perimeter of said second widow semiconductor layer, both said second region and said top region being highly doped with the second conductivity type impurity to a concentration higher than said second concentration, said second region being doped to a first depth above the junction between said light absorbing layer and said first window layer and said top region being doped to a second depth above the junction between said light absorbing layer and said first window layer, said second region and said top region forming a p-n junction guard ring effect.

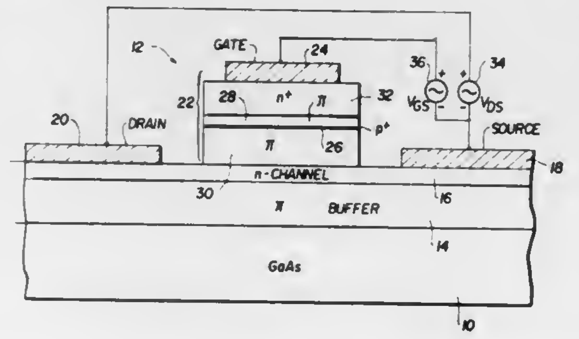
4,442,445
PLANAR DOPED BARRIER GATE FIELD EFFECT TRANSISTOR

Roger J. Malik, Little Silver, and Thomas R. AuCoin, Ocean City, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 23, 1981, Ser. No. 323,858

Int. Cl.^{3} H01L *29/80, 29/12, 27/12*

U.S. Cl. 357—22 **14 Claims**



1. A three terminal epitaxial layer field effect semiconductor device comprising in combination:

a substrate of semiconductor material;

a planar channel region of semiconductor material of a first predetermined type formed on said substrate and being adapted to operate as a lateral conductive channel for charge carriers associated with said predetermined type;

first and second charge carrier terminal means providing respective source and drain electrodes located on said planar region of said semiconductor material in spaced apart relationship; and

control terminal means located intermediate said first and second terminal means for controlling the lateral flow of said charge carriers between said first and second terminal means through said planar channel region, said control terminal means including a planar doped barrier gate layered structure having a pair of substantially undoped planar regions one of which is contiguous to said planar channel region, a relatively thin planar region of highly doped semiconductor material of a second predetermined type positioned between said pair of undoped regions, an outer planar region of highly doped semiconductor material of said first type contiguous to the other of said pair of substantially undoped planar regions, and a gate electrode on said outer region spaced vertically from said planar channel region.

4,442,446
SENSITIZED EPITAXIAL INFRARED DETECTOR

Alan C. Bouley, Silver Spring; Harold R. Riedl, Adelphi; James D. Jensen, Highland, all of Md., and Steven R. Jost, Baldwinsville, N.Y., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 17, 1982, Ser. No. 358,941

Int. Cl.^{3} H01L *27/14, 33/00, 29/167, 23/48*

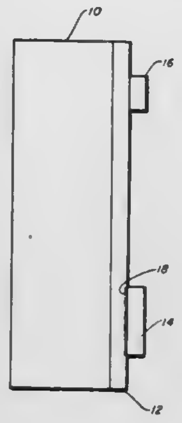
U.S. Cl. 357—30 **4 Claims**

1. In an infrared sensitive diode comprising:

(1) an infrared transparent, electrically insulating single

crystal substrate composed of a material selected from the group consisting of (a) akali halides and (b) alkaline earth halides;

(2) an epitaxial layer of a semiconductor alloy material selected from the grup consisting of PbS, PbSe, PbTe, PbS_xSe_{1-x}, PbS_xTe_{1-x}, $PbSe_xTe_{1-x}$, $Pb_ySn_{1-y}S$, $Pb_ySn_{1-y}Se$, $Pb_ySn_{1-y}Te$, $Pb_ySn_{1-y}S_xSe_{1-x}$, $Pb_ySn_{1-y}S_xTe_{1-x}$, $Pb_ySn_{1-y}Se_xTe_{1-x}$, $Pb_zCd_{1-z}S$, $Pb_zCd_{1-z}Se$, $Pb_zCd_{1-z}Te$, $Pb_zCd_{1-z}S_xSe_{1-x}$, $Pb_zCd_{1-z}S_xTe_{1-x}$, and $Pb_zCd_{1-z}Se_xTe_{1-x}$, wherein $0<x<1$, $0<y<1$ and $0<z<1$, wherein the epitaxial layer



of semiconductor material covers at least a portion of the substrate;

(3) a non-Ohmic Pb metal contact deposited on the epitaxial layer to form a Schottky barrier junction; and

(4) an Ohmic contact deposited on the epitaxial layer of the semiconductor material;

the improvement comprising: the inclusion of halide ions selected from the group consisting of chloride ions, bromide ions, fluoride ions, and mixtures thereof at the interface between the non-Ohmic Pb metal contact and the epitaxial layer of semiconductor alloy material.

4,442,447
ELECTRICALLY ALTERABLE NONVOLATILE FLOATING GATE MEMORY DEVICE

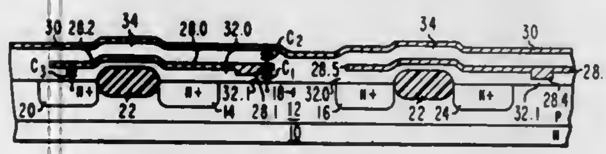
Alfred C. Ipri, Princeton, and Roger G. Stewart, Neshanic Station, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 7, 1983, Ser. No. 472,636

Claims priority, application United Kingdom, Mar. 9, 1982, 8206906

Int. Cl.^{3} H01L *27/02, 29/78;* **G11C** *11/40*

U.S. Cl. 357—41 **6 Claims**



1. An array of nonvolatile floating gate memory devices arranged in rows and columns in a body of semiconductor material of a first conductivity type, alternate first and second doped regions of a second conductivity type arranged in columns embedded in the semiconductor body and spaced one from the other to define a channel region therebetween, a plurality of floating gate members in rows insulated from the substrate, each of the plurality of floating gate members defining a row having its one end thereof disposed over a respective channel region to define a first capacitance between the floating gate member and the body of the semiconductor material, the improvement comprising:

a plurality of rows of conductive layers, the layer of each row insulated from and aligned with the floating gate members in a given row to define a second capacitance between the conductive layer and the overlying floating gate member; and

an extended floating gate portion affixed to the other end of the floating gate member and extending therefrom over a first doped region associated with the respective channel region of one memory device to an adjacent second doped region of the next adjacent memory device to define a third capacitance between the other end of the floating gate member and to the adjacent doped region whereby, when a first source of potential is applied to the first and second regions and the body of semiconductor material and a second source of potential is applied to the adjacent doped region and a conductive layer, the second and third capacitances are effectively in parallel.

4,442,448
LOGIC INTEGRATED CIRCUIT DEVICE

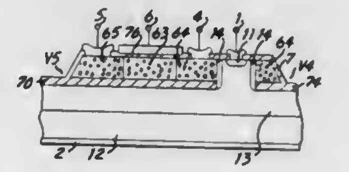
Masafumi Shimbo, Tokyo, Japan, assignor to Seiko Instruments & Electronics Ltd., Tokyo, Japan

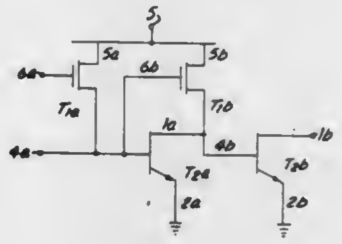
Filed Oct. 21, 1980, Ser. No. 199,268

Claims priority, application Japan, Oct. 26, 1979, 54-138557

Int. Cl.^{3} H01L *27/04;* **H03K** *19/091, 19/094*

U.S. Cl. 357—42 **1 Claim**





1. An integrated logic circuit device including a first unit logic circuit comprising a lateral load transistor and a vertical static induction driving transistor, wherein said static induction transistor comprises a first semiconductor region of a first conductivity type with a high impurity concentration, a second semiconductor region of the first conductivity type with a low impurity concentration and disposed on and adjacent to said first region and defining a channel region of said static induction transistor, a third semiconductor region of the first conductivity with a high impurity concentration disposed on and adjacent to said second region, and a fourth semiconductor region defining a gate region of a second conductivity type opposite to said first conductivity type and surrounding a side portion of said channel region defined by said second semiconductor region to control the current between said first and said third regions, and said lateral transistor comprises an insulating film overlying a portion of said first region extending thereunder, a fifth semiconductor region of said second conductivity type disposed on said insulating film and defining an injector, a sixth semiconductor region having a low impurity concentration and disposed adjacent to said fifth region and on said insulating film and defining a channel region of said lateral transistor, and a seventh semiconductor region comprised of a portion of said fourth region adjacent to said sixth region and at least partially disposed on said insulating film, said lateral transistor comprising an insulating gate field effect transistor comprised of said fifth, said sixth, and said seventh regions, a second insulating film disposed on the surface of said sixth region of said first conductivity type and defining a gate insula-

tor, and a gate electrode on said second insulating film; and a second unit logic circuit wherein said gate electrode of said lateral transistor and said fourth region of said static induction transistor are respectively wired to a gate region and a drain region of a static induction transistor as a driving transistor of said second unit logic circuit, said second unit logic circuit comprising a lateral transistor and a static induction transistor.

4,442,449

BINARY GERMANIUM-SILICON INTERCONNECT AND ELECTRODE STRUCTURE FOR INTEGRATED CIRCUITS

William I. Lehrer, Los Altos, and Bruce E. Deal, Palo Alto, both of Calif., assignors to Fairchild Camera and Instrument Corp., Mountain View, Calif.

Filed Mar. 16, 1981, Ser. No. 243,986
Int. Cl.^{3} H01L *29/163, 29/54*
U.S. Cl. 357—67 7 Claims

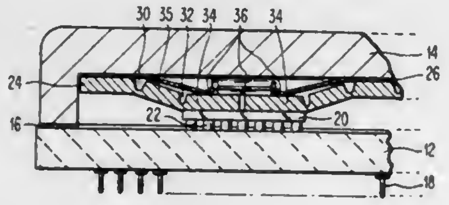
1. An integrated circuit semiconductor structure comprising a semiconductor substrate, a plurality of selectively doped regions in said substrate as part of an integrated circuit and means for conductively interconnecting said regions, said interconnecting means comprising a germanium-silicon binary alloy.

4,442,450

COOLING ELEMENT FOR SOLDER BONDED SEMICONDUCTOR DEVICES

Lewis D. Lipschutz, Poughkeepsie, N.Y.; Ralph E. Meagher, Vicksburg, Mich., and Frank P. Presti, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 30, 1981, Ser. No. 249,262
Int. Cl.^{3} H01L *23/02;* H02B *1/00;* H05K *7/20;* F28F *7/00*
U.S. Cl. 357—81 7 Claims



1. In an electronic package having a support substrate, at least one electronic device mounted on the substrate, a cover mounted on said substrate disposed over said device having a surface in spaced proximity to said device, the improvement comprising,

a thermal bridge for conducting heat from said device to said cover comprising a relatively thick metal sheet with a thickness in the range of 0.005 to 0.050 inches and provided with cuts that define at least one tab element,

at least two grooves in said tab element that make it bendable, with a portion positionable in a plane that is parallel and laterally displaced from the plane of said sheet, said grooves extending through 50 to 98 percent of the thickness of said metal sheet,

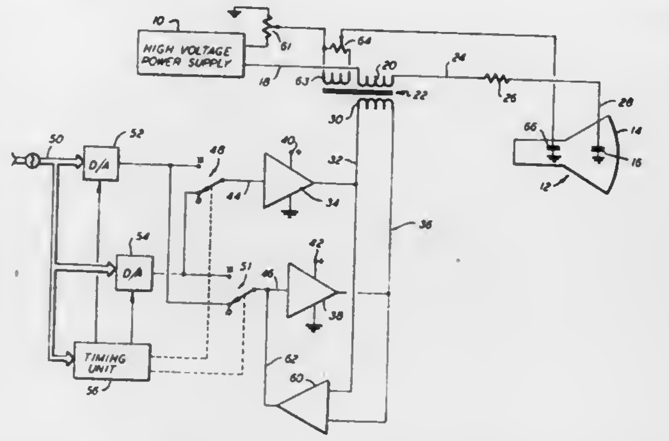
a leaf-like spring element positioned in overlying relation to said metal sheet to selectively urge said tab element into contact with said device.

4,442,451

DIFFERENTIAL RANDOM COLOR SWITCH FOR BEAM PENETRATION CRT

Michael H. Kalmanash, Fairfield, and Edward L. Young, West Haven, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed May 1, 1981, Ser. No. 259,381
Int. Cl.^{3} H04N *9/27;* H01J *23/34*
U.S. Cl. 358—73 5 Claims



1. A high voltage color switch for a beam penetration cathode-ray tube in which a first color write period in a randomly selected color is immediately followed by a second color write period in a complementary color in response to an input waveform, comprising:

a high voltage power supply having an output selected to provide a baseline color when presented to the anode of said cathode-ray tube;

a high voltage transformer connected between the output of the anode of said high voltage power supply and said cathode-ray tube, said transformer including a primary winding for applying said input waveform to said anode of said CRT;

driver means including a pair of operational amplifiers, each having an input, and an output which are respectively connected to one side of said primary winding; and

switch means presenting said input waveform to said inputs of said amplifiers in said first color write period and differentially presenting said input waveform to said inputs of said amplifiers in said second color write period.

4,442,452

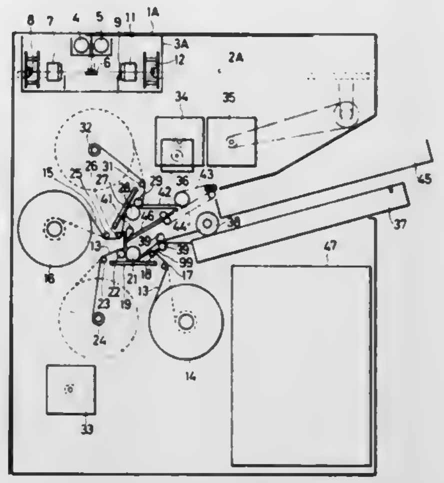
TWO-COLOR COPYING MACHINE

Masami Kurata; Fujio Moriguchi; Takashi Ohmori, and Katsuo Makino, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Dec. 24, 1981, Ser. No. 334,337
Claims priority, application Japan, Dec. 26, 1980, 55-183841
Int. Cl.^{3} H04N *1/46*
U.S. Cl. 358—75 15 Claims

1. A two-color copying machine comprising a platen for placing thereon an original document to be copied, a scanner unit for reading out one line at a time from said original document during relative movement between said platen and scanner unit and for generating picture signals representing at least two different colors, first and second thermal heads having respective heaters and responsive to reception of picture signals for selectively heating said heaters, first ink donor sheet supply means for supplying a first ink donor sheet which records in a first recording color to the heaters of said first thermal head, second ink donor sheet supply means for supplying a second ink donor sheet which records in a second recording color different from said first recording color to the heaters of said second thermal head, first transfer means for pressing a severed sheet of recording paper intimately against said first thermal head with said first ink donor sheet interposed therebetween to record a first color image on said sheet, second transfer means for pressing said sheet of recording paper against

said second thermal head with said second ink donor sheet interposed therebetween to record a second color image on



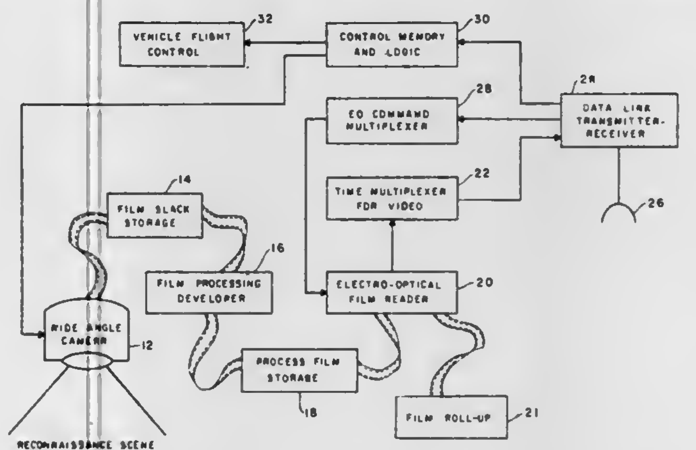
said sheet, and paper discharge means for discharging said sheet of recording paper.

4,442,453

PHOTO-RECONNAISSANCE SYSTEM

James E. Verdier, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 9, 1982, Ser. No. 347,383
Int. Cl.^{3} H04N *7/18*
U.S. Cl. 358—109 9 Claims



6. A method of performing aerial reconnaissance missions from an airborne station, said method comprising the steps of:

photographing a scene on film with a camera having a wide angle lens, with a field of view having a long axis transverse to the direction of flight;

developing said film;

reading said developed film using an electro-optical reader and converting information found on the film to a video signal which includes dividing said field of view into N photo frames and converting at least a portion of each photo frame into a video frame; the electro-optical reading means being controllable to select a particular location of a frame of said film of a particular size for full video frames to be displayed on a full video screen thereby resulting in an enlargement effect;

transmitting said video signal to a receiver at an associated ground station;

displaying said video signal at said ground station, on N video screens, with each video screen corresponding to a frame of the field of view so that the display on each screen remains motionless for a short period of time;

inputting commands from an operator at each screen at the ground station, which may include commands to select a particular portion of the corresponding frame to be displayed on a full video screen; and

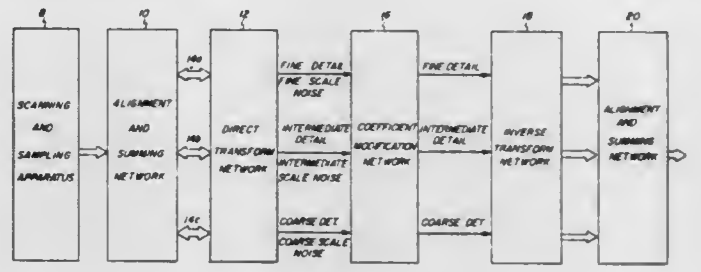
transmitting said commands to a receiver on said airborne station.

4,442,454

IMAGE PROCESSING METHOD USING A BLOCK OVERLAP TRANSFORMATION PROCEDURE

Philip G. Powell, Pinner, England, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 15, 1982, Ser. No. 441,826
Int. Cl.^{3} H04N *5/21*
U.S. Cl. 358—167 8 Claims



1. A method of processing an original image in order to generate a processed image having fewer unwanted components than the original image, said method comprising the steps of

A. generating image signals related to the brightness of respective elements of the original image;

B. grouping the image signals into arrays of image signals corresponding to overlapping blocks of image elements, wherein each block includes at least one image element in common with at least one other block;

C. processing the arrays in a hierarchy of separate stages in which the image signals generated for each stage subsequent to the first represent derived signals responsive to combinations of large signals from a preceding stage, each stage comprising the steps of

(1) transforming each array of image signals by a set of independent functions into a corresponding set of coefficient signals representing combinations of image signals sensitive to general brightness and image detail, and

(2) subjecting the coefficient signals to modification in order to minimize the unwanted components in the processed image; and

D. generating a processed image from the sets of coefficient signals, some of which may be modified,

whereby the processed image is generated without a characteristic block-like structure due to block transform processing while the wanted components of the image are rendered with minimal image loss or distortion.

4,442,455

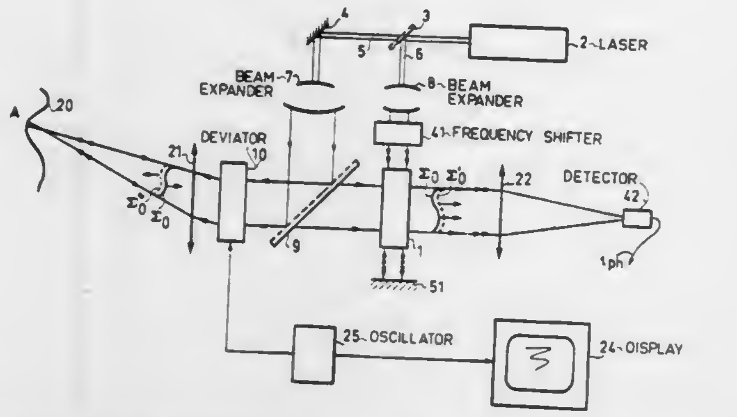
OPTICAL SYSTEM FOR OBSERVATION IN REAL TIME WITH SCANNING

Jean P. Huignard, and Marcel Malard, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 5, 1981, Ser. No. 260,784
Claims priority, application France, May 8, 1980, 80 10245
Int. Cl.^{3} H04N *5/30*
U.S. Cl. 358—209 3 Claims

1. An optical system for the real time observation of an object comprising a coherent radiation source, a deviator ensuring the scanning of the object by means of a concentrated beam of radiated energy from the source, optical means for the detection of the radiation emerging from the illuminated area of the object, the radiation from the object being transmitted by inverse return, via the deviator and means for the display of an image of the object produced from the signals from the optical detection means, the coherent source applying in addition to the concentrated beam a pumping beam, the beam from the object and the pumping beam interfering in an interaction medium in which the spatial modulation of light intensity

resulting from the interference fringes induces in the said medium a spatial modulation of the refractive index, the system of layers photoinduced in this way diffracting a fraction of the



energy of the pumping wave in the form of a wave front isomorphic of that emanating from the object and frequency changing means on the pumping beam path in order to perform a heterodyne detection.

4,442,456
SOLID-STATE IMAGING DEVICE

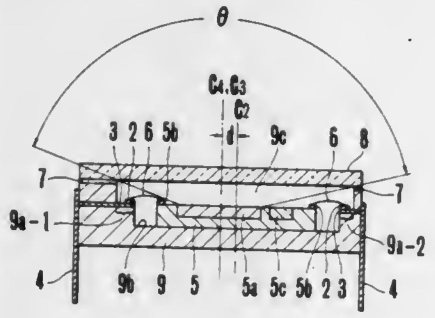
Yoshio Iwata, Tachikawa; Tsutomu Fujita, Mobara; Tsunehisa Horiuchi, and Youichi Shimizu, both of Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 21, 1981, Ser. No. 265,809

Claims priority, application Japan, Jun. 2, 1980, 55-72761

Int. Cl.^{3} H04N *3/14*

U.S. Cl. 358—213 **2 Claims**



1. In a solid-state imaging device comprising a light-receiving element which has a light-receiving portion and a circuit portion for driving said light-receiving portion, that are formed on the same plane, and a package which has an accommodation portion of a recessed shape in section to accommodate said light-receiving element in such a manner that the bottom surface of said light-receiving element is adhered onto the accommodation portion, the improvement wherein the center axis of the light-receiving portion of said light-receiving element is brought into agreement with the center axis of said imaging device.

4,442,457
CHARGE COUPLED DEVICE FOCAL ZOOM

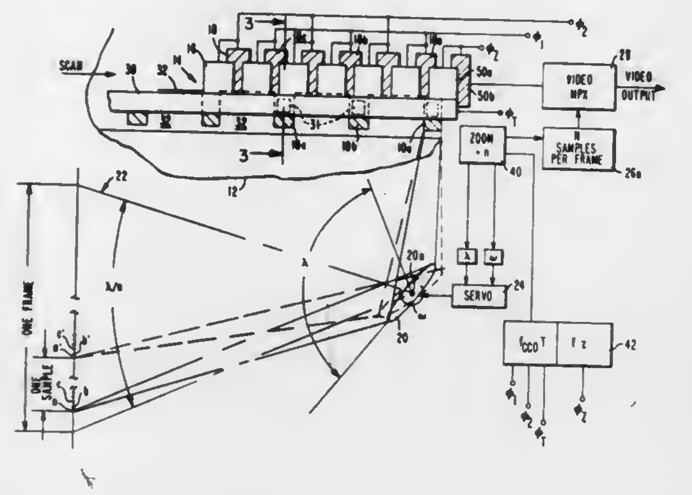
Michael Y. Pines, Los Angeles, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Dec. 17, 1981, Ser. No. 331,505

Int. Cl.^{3} H04N *3/15*

U.S. Cl. 358—213 **12 Claims**

1. A charge coupled device focal zoom comprising:
a semiconductive substrate;
a column of photodetector diodes formed in said substrate;
a charge coupled device serial register adjacent said photodetector column, said register comprising a plurality of charge storage cells, certain ones of said cells periodically receiving charge from corresponding ones of said detectors in said column;
means for serially transferring charge stored in said register through said register in serial succession in one direction in synchronism with a clock signal having a frequency f_{ccd};
means for scanning a field of view subtended by an angle α across said detector column at a scanning rate ω in synchronism with said charge transfer means; and



means for reducing said scanning rate ω, said clock signal frequency f_{ccd} and said scan angle α by a zoom magnification factor n so that said scanning rate becomes ω/n, said frequency f_{ccd} becomes f_{ccd}/n and said angle becomes α/n.

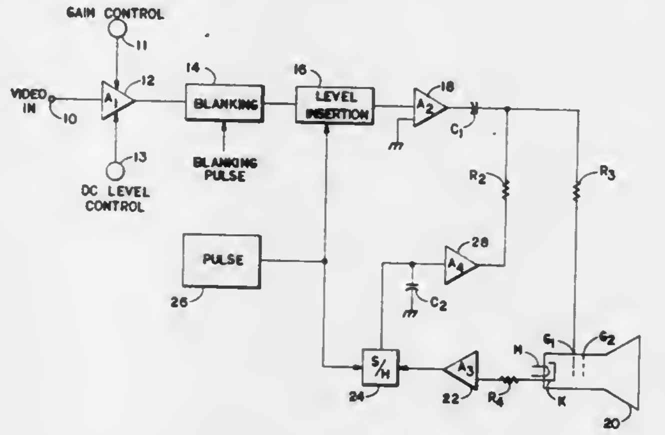
4,442,458
CRT VIDEO DRIVE CIRCUIT WITH BEAM CURRENT STABILIZATION

Archie M. Barter, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Mar. 29, 1982, Ser. No. 363,342

Int. Cl.^{3} H04N *5/68, 5/18*

U.S. Cl. 358—243 **3 Claims**



1. A video amplifier for driving a cathode-ray tube in response to a video signal, said tube including a control grid and a cathode, comprising:
first amplifier means having an output terminal connected to said control grid and responsive to said video signal for amplifying said video signal thereby generating a control signal for driving said control grid;
converter means connected to said cathode of said cathode-ray tube for sensing the current from said cathode and for converting the sensed current into a voltage representative thereof in response thereto; and
second amplifier means connected to the converter means for amplifying said voltage thereby generating an amplified voltage signal, said second amplifier means having an output terminal connected to the output terminal of said first amplifier means,
the bandwidth of said first amplifier means being wider than the bandwidth of said second amplifier means, the dynamic range of said amplified voltage signal from said second amplifier means being larger than the dynamic range of said control signal from said first amplifier means.

4,442,459
FACSIMILE TRANSCEIVER

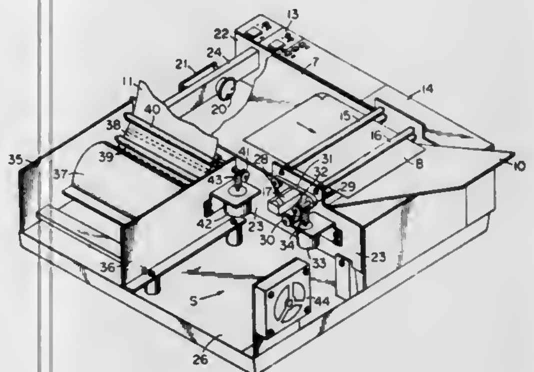
Masahisa Fukui, and Yoshio Ito, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 121,655, Feb. 15, 1980, abandoned. This application Sep. 9, 1981, Ser. No. 300,583

Claims priority, application Japan, Mar. 3, 1979, 54-24939; Mar. 29, 1979, 54-37383

Int. Cl.^{3} H04W *1/04*

U.S. Cl. 358—286 **4 Claims**



1. A facsimile transceiver comprising:
an emitting unit having a carrying surface at its upper portion and which defines a rectilinear path along which an original to be transmitted is guided, original advancing means for advancing the original carried on said carrying surface, and means disposed under said carrying surface for reading the original during its rectilinear advancement; and
a receiving unit combined into an integral structure with said emitting unit, said receiving unit being juxtaposed side-by-side with said emitting unit so that said units do not overlap with each other when viewed from above, and said receiving unit including means for supporting roll-formed recording material such that the rotating axis of the roll is parallel to the advancing direction of the original, means for recording image information on the recording material in accordance with received signals, advancing means for advancing the recording material with the information recorded thereon in a direction which is perpendicular to the advancing direction of the original, and means defining a discharge port in a top cover of said receiving unit through which the recording material advanced by said advancing means is discharged, the discharge port extending in a direction parallel and to one side of the advancing path of the original;
wherein the advancing path along which the original advances after being scanned does not overlap with the receiving unit, when viewed from above.

4,442,460
COPYING MACHINE

Masami Kurata; Fujio Moriguchi; Toshiharu Inui, and Tomio Murayama, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Kanagawa, Japan

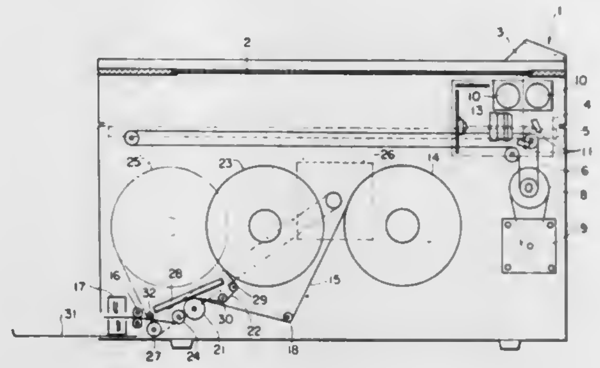
Filed Dec. 10, 1981, Ser. No. 329,466

Claims priority, application Japan, Dec. 10, 1980, 55-174075; Dec. 10, 1980, 55-174076

Int. Cl.^{3} H04M *1/22*

U.S. Cl. 358—296 **23 Claims**

1. A thermal recording type copying machine, comprising:
a platen for arranging an original thereon, said original having image information thereon;
a read unit for reading the image information of the original during relative movement of said platen and read unit and for converting the read image into electrical picture signals;
a stationary thermal recording head having heating elements for generating heat in accordance with said electrical picture
an ink donor member stored in a first source;
a continuous recording paper web stored in a second source;



conveying means for conveying said ink donor member and said recording paper web in juxtaposition to each other from said first and second sources, while being in close contact under pressure, past said heating elements of said thermal recording head;
means for taking up said ink donor member; and
means for cutting only said recording paper and for discharging said cut recording paper from said machine.

4,442,461
SIGNAL RECORDING AND/OR REPRODUCING TECHNIQUE

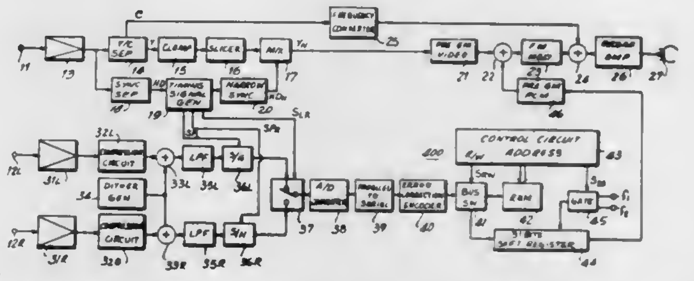
Hidemichi Shirai, Tokyo; Kenji Nakano, Ebina, and Hisayoshi Moriwaki, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 29, 1981, Ser. No. 316,328

Claims priority, application Japan, Oct. 31, 1980, 55-154128

Int. Cl.^{3} H04N *7/04, 5/76*

U.S. Cl. 358—343 **19 Claims**



1. A method of transmitting a video signal containing regularly spaced blanking intervals alternating with video information intervals containing video information, with pulse code modulated digital information being inserted in a portion of each of said blanking intervals, comprising:
emphasizing said video information with one amount of preemphasis;
emphasizing said digital information with another amount of preemphasis independent of the first-mentioned amount of preemphasis;
inserting the preemphasized digital information into said portions of the blanking intervals to form a combined video signal; and
transmitting said combined video signal on a carrier.

4,442,462
VIDEO RECORDER/CAMERA HAVING A SHARED DRIVE

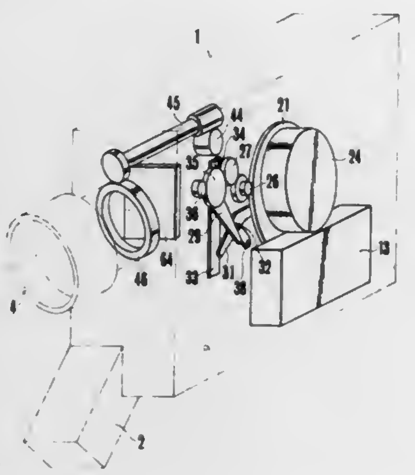
Takashi Kimura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 31, 1981, Ser. No. 298,332

Claims priority, application Japan, Sep. 4, 1980, 55-122857

Int. Cl.^{3} H04N *5/782*

U.S. Cl. 360—33.1 **7 Claims**



1. A video recorder comprising:
- (a) image pick-up means for converting an optical image into an electrical signal;
- (b) an optical system which forms the optical image by guiding light flux from an object to be recorded to said image pick-up means;
- (c) control means responsive to a driving force for controlling the condition of the light flux to be guided to the image pick-up means, said control means driving at least a part of the optical system;
- (d) recording means for recording the electrical signal from the image pick-up means on a recording medium;
- (e) displacement means responsive to a driving force for displacing the recording medium between a first position at which a case for housing the recording medium is loaded from the outside of the video recorder, and a second position at which a recording operation by the recording means can be performed;
- (f) a drive source for providing a driving force; and
- (g) transmission means arranged to be shiftable to selectively transmit the driving force of the drive source to one of said displacement means and said control means.

4,442,463
SAFEGUARDING OF DATA RECORDED ON DISK BY TUNNEL ERASE MAGNETIC HEAD ASSEMBLY

Rajan Krishnamurty, Austin, and John A. Voltin, Round Rock, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

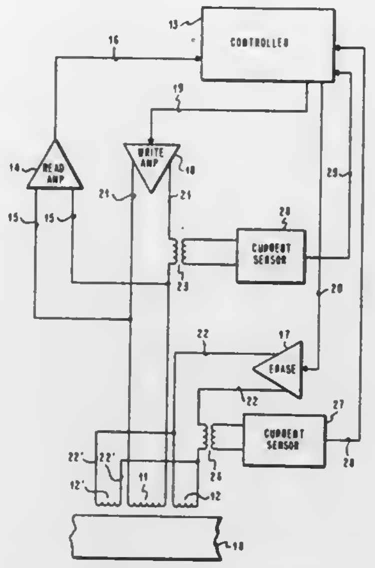
Continuation of Ser. No. 208,736, Nov. 20, 1980. This application Nov. 29, 1982, Ser. No. 445,123

Int. Cl.^{3} G11B *15/04, 5/47*

U.S. Cl. 360—60 **7 Claims**

1. In apparatus for recording data in tracks on magnetic storage disks including a tunnel erase magnetic head recording assembly movable along said tracks and comprising a magnetic read/write transducer for magnetically recording data along said tracks and at least one magnetic erase transducer adjacent to said write transducer for limiting the width of recorded data, means for safeguarding data recorded on said disks comprising:

means operative during quiescent conditions when said apparatus is not writing nor reading and during operating conditions when said apparatus is reading or writing for sensing the activation of said erase transducer, and



means responsive to said sensed activation for determining if said activation is erroneous.

4,442,464
DEVICE FOR DETECTING A SPACE BETWEEN ADJACENT BLOCKS OF DATA RECORDED IN A RECORDING MEDIUM

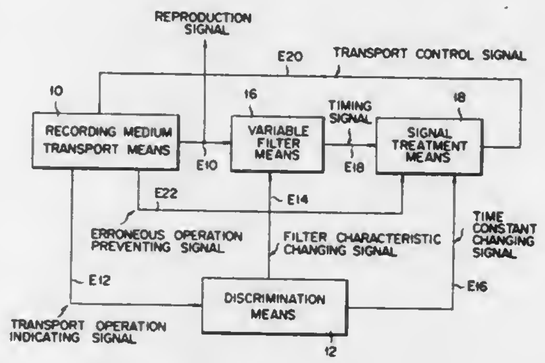
Takeshi Ito, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 151,916, May 21, 1980, abandoned. This application Mar. 25, 1982, Ser. No. 361,789

Claims priority, application Japan, May 24, 1979, 54-64191

Int. Cl.^{3} G11B *15/16, 15/52, 19/10*

U.S. Cl. 360—72.1 **47 Claims**


REPRODUCTION SIGNAL
E20
TRANSPORT CONTROL SIGNAL
10
16
TIMING SIGNAL
18
RECORDING MEDIUM TRANSPORT MEANS
VARIABLE FILTER MEANS
SIGNAL TREATMENT MEANS
E10
E18
E22
E14
ERRONEOUS OPERATION PREVENTING SIGNAL
FILTER CHARACTERISTIC CHANGING SIGNAL
TIME CONSTANT CHANGING SIGNAL
E12
E16
DISCRIMINATION MEANS
TRANSPORT OPERATION INDICATING SIGNAL
12

18. A detector for detecting a space between adjacent blocks of data recorded on a recording medium, comprising:
- (a) a recording medium transport means for transporting a recording medium with a given speed, said recording medium transport means having several operation modes and providing a reproduction signal corresponding to information recorded on the recording medium and a transport operation indicating signal identifying the operation mode of said transport means;
- (b) a discrimination means for discriminating the transport operation indicating signal, said discrimination means providing a filter characteristic changing signal in accordance with the transport operation indicating signal;
- (c) a variable filter means for filtering the reproduction signal and providing a timing signal, the filtering characteristic of said variable filter means changing in accordance with the filter characteristic changing signal; and

wherein the operation mode of the recording medium transport means is changed by a transport control signal corresponding to the timing signal.

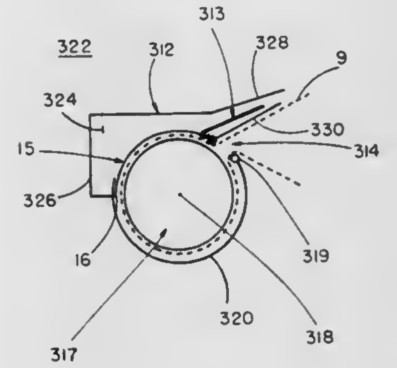
4,442,465
TUNNEL FOR TAPE ACCUMULATION DURING WIND-OFF

Lee V. Hedlund, Maple Shade, and Jerome D. Shields, Somerdale, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 20, 1981, Ser. No. 313,314

Int. Cl.^{3} G11B *15/60*

U.S. Cl. 360—130.23 **4 Claims**



1. An improved tape transport arrangement comprising:
- a tape supply reel adapted for supplying tape;
- a tape takeup reel adapted for taking up tape from said supply reel;
- a generally cylindrical headwheel about which said tape is adapted to be disposed for transducing signals therewith;
- a peripheral shield extending about at least a portion of the cylindrical surface of said headwheel and spaced therefrom,
- guide means located near an end of said peripheral shield, said guide means being located at a predetermined distance form said cylindrical surface of said headwheel, said predetermined distance being on the order of magnitude of the thickness of said tape;
- drive means coupled to said tape for transferring tape from said supply reel to said takeup reel, whereby said tape will come loose from said supply reel thereby creating a free end of tape;
- drive means coupled to said headwheel for rotating said headwheel for peripheral rotation in the direction of said tape motion resulting from said transfer of tape from said supply reel to said takeup reel whereby the rotation of said headwheel imparts to said tape a motion which drives a portion of said tape including said free end of said tape towards said guide means, whereby said motion imparted to said tape may cause said tape to accumulate near said guide means and jam between said guide means and said cylindrical surface of said headwheel;

the improvement comprising:
- a tunnel formed of walls which together with the walls of said peripheral shield enclose substantially the entire periphery of said headwheel, the walls of said tunnel defining a tunnel axis projecting away from said cylindrical surface beginning at a location near said guide means and defining a tunnel having a decreasing width with increasing distance from said cylindrical surface to provide a location for accumulation of said tape away from said cylindrical surface of said headwheel; and
- a smooth curve on the tape-engaging portion of said guide means for guiding tape from said tunnel with a radius of curvature much larger than the thickness of said tape.

4,442,466
HEAD DRIVE MECHANISM FOR A CASSETTE DECK

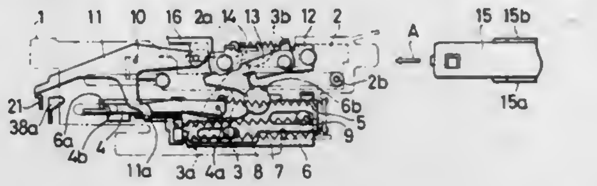
Mikio Isaki, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 19, 1982, Ser. No. 350,484

Claims priority, application Japan, Feb. 20, 1981, 56-24714; Feb. 20, 1981, 56-24715

Int. Cl.^{3} G11B *5/54, 21/02*

U.S. Cl. 360—75 **15 Claims**



1. A head drive mechanism for a cassette deck, comprising:
- a movable member which, when rotation of a reel unit is stopped, is reciprocated by the drive of a drive motor for said reel unit;
- a head drive lever which is coupled to a head, for advancing said head when driven;
- an operating member which is operated in association with the reciprocation of said movable member;
- an elastic member which elastically couples said operating member to said head drive memeber; and
- locking means for locking said head when said head is advanced a predetermined distance and for unlocking said head and advancing said head quickly when said movable member reciprocates over a predetermined distance.

4,442,467
DRIVE MECHANISM FOR CASSETTE TAPE RECORDING/REPRODUCING APPARATUS

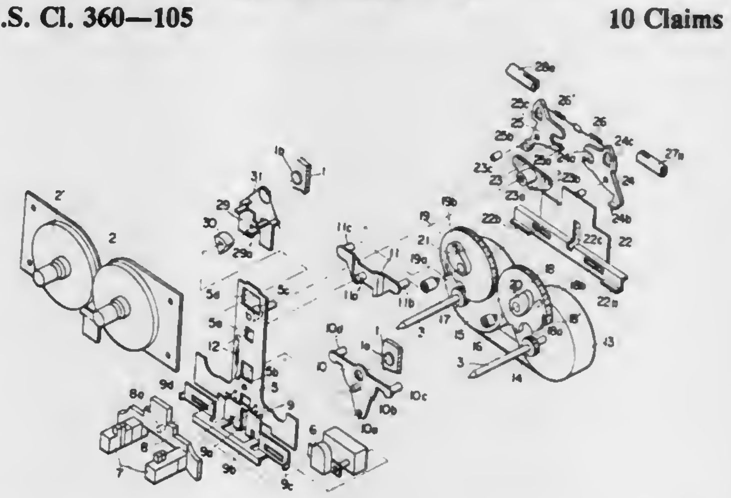
Yuji Ikedo, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 28, 1981, Ser. No. 306,530

Claims priority, application Japan, Sep. 30, 1980, 55-135268

Int. Cl.^{3} G11B *5/54*

U.S. Cl. 360—105 **10 Claims**



1. In a drive mechanism for a cassette tape recording/reproducing apparatus comprising a head base movable among the stop, pause and playback positions, normally biased to the stop position and having a recording/reproducing head mounted thereon, a pair of forward and reverse capstans, and a pair of forward and reverse pinch rollers adapted to be moved in contact with the capstans,

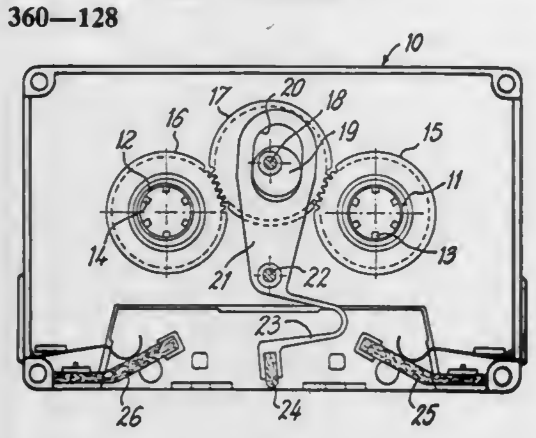
the improvement comprising
- a pair of assist gears adapted to be driven by the capstans,
- actuating means for independently placing one of the assist gears in rotating engagement with the corresponding capstan,
- selector means mounted on the head base so as to be movable between the positions engageable with the forward and reverse pinch rollers under the control of the rotating assist gear, and
- means associated with said actuating means for advancing the head base,

whereby when one assist gear is rotated, the head base is advanced with said selector means being at the position engageable with the corresponding pinch roller.

4,442,468

CASSETTE CLEANING DEVICE

Stephane M. d'Alayer de Costemore d'Arc, Brussels, Belgium, assignor to Allsop, Inc., Bellingham, Wash.
Filed Oct. 16, 1981, Ser. No. 312,370
Claims priority, application Belgium, Oct. 24, 1980, 885871
Int. Cl.^{3} G11B *5/10*
U.S. Cl. 360—128 **9 Claims**



1. A cleaning device for cleaning a head of a tape cassette player, where said player has a cassette receiving area to receive a tape cassette in a playing position, and a pair of spaced spindles to engage first and second spools of said tape cassette, which spindles are at predetermined spindle locations in said cassette receiving area, said device comprising:

(a) a cassette housing adapted to be inserted in said cassette receiving area in an operating location;

(b) a drive system comprising:

(1) a first drive member rotatably mounted in said cassette housing at a first drive location where, with said housing in its operating position, said first drive member engages said first spindle in drive relationship so as to be rotatable with said first spindle;

(2) a second drive member rotatably mounted in said cassette housing at a second drive location where, with the housing in its operating position, said second drive member engages said second spindle in drive relationship so as to be rotatable with said second spindle;

(3) an interconnecting drive means operatively engaging said first and second drive members in a manner that rotational movement of one of said first and second drive members causes the other of said first and second drive members to rotate in the same direction as the one of said first and second drive members;

(c) a cleaning member having an end cleaning portion positioned to engage the head of the player, said cleaning member being mounted in said housing for oscillating movement by which said cleaning portion moves in an oscillating path to wipe the head of the player;

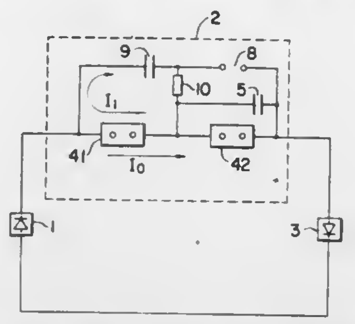
(d) a drive transmitting member operatively connected between the drive system and the cleaning member to translate rotating motion of said first and second drive members to oscillating movement of said cleaning member; whereby when either spindle of the player is rotated under power from the player, the drive member engaging that spindle is caused to rotate to insure that the other of the spindles is rotating, and the cleaning member is caused to move in its oscillating path to clean the head of the player.

4,442,469

DC CIRCUIT BREAKER APPARATUS

Satoru Yanabu, Tokyo; Tohoru Tamagawa, Chigasaki, and Takumi Funahashi, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan
Filed Aug. 18, 1982, Ser. No. 409,174
Claims priority, application Japan, Aug. 26, 1981, 56-132679
Int. Cl.^{3} H02H *7/22*
U.S. Cl. 361—4 **5 Claims**

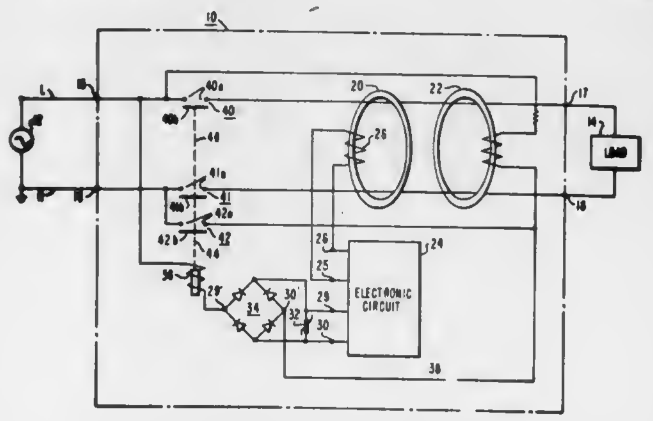
1. A DC circuit breaker apparatus comprising a first interrupter and a second interrupter connected in series in a DC power supply line, a first capacitor and a discharge gap respectively connected in parallel with said first and second interrupters so that said first capacitor and said discharge gap are connected in series, an impedance element connected between a first junction between said first capacitor and said discharge gap and a second junction between said first and second interrupters, and a second capacitor connected in parallel with said second interrupter.



4,442,470

GROUND FAULT RECEPTACLE WITH ARRANGEMENT FOR PROTECTING INTERNAL ELECTRONICS

John J. Misencik, Shelton, Conn., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Sep. 10, 1982, Ser. No. 416,786
Int. Cl.^{3} H02H *3/33*
U.S. Cl. 361—46 **5 Claims**



1. A ground fault receptacle comprising:

first and second pairs of cooperable contacts, each of said pairs of contacts being operable between an open position and a closed position with one of said contacts of each of said pairs of contacts being stationary and the other of said contacts of each of said pairs of contacts being movable, said first pair of contacts being connectable in series with a hot line conductor (L) of the electrical distribution system and said second pair of contacts being connectable in series with a neutral conductor (N) of the electrical distribution system;

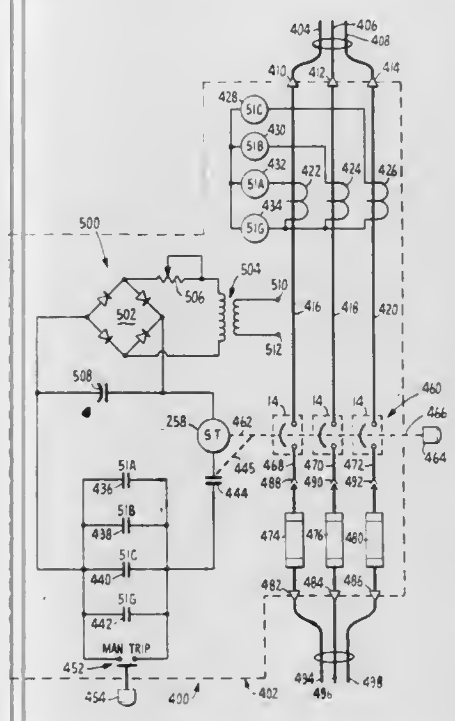
ground fault sensing and interrupting means associated with conductors L and N for causing opening of said first and second pairs of contacts upon a ground fault, said ground fault sensing means comprising an electronic circuit responsive to a sensed ground fault to energize a solenoid trip coil whose plunger causes release of a latch member holding said pairs of contacts in the closed position and resulting in movement of said movable contacts of said pairs of contacts to the open position;

means for suppling operating power to said electronic circuit comprising conductive connections from said conductors L and N wherein said conductive connection from one of said conductors N comprises said latch member which has a closed position in contact with said one conductor and an open position spaced therefrom, and said latch member moves from said closed position to said open position upon a trip prior to the opening of either of said first and second pairs of contacts.

4,442,471

METHOD AND APPARATUS FOR SHORT CIRCUIT PROTECTION OF HIGH VOLTAGE DISTRIBUTION SYSTEMS

Frank C. Trayer, 25690 LaLanne Ct., Los Altos Hills, Calif. 94022
Division of Ser. No. 172,211, Jul. 25, 1980, Pat. No. 4,336,520. This application Mar. 15, 1982, Ser. No. 358,200
Int. Cl.^{3} H02H *7/00*
U.S. Cl. 361—63 **15 Claims**



1. A short circuit protection system for a high voltage alternating current distribution system, comprising:

current limiting fuse means adapted to be connected in circuit in a high voltage power line extending between said high voltage alternating current distribution system and a source of high voltage alternating current power;

vacuum circuit breaker means, including solenoid-operated tripping means, adapted to be connected in series with said current limiting fuse means between said distribution system and said source of power;

overload current detecting means for detecting fault currents in said distribution system and providing a tripping signal to trip said vacuum circuit breaker means;

winding means inductively coupled to at least one conductor of said power line and insulated from said power line;

rectifying means for rectifying an alternating current voltage derived from said winding means and producing a unidirectional current;

electrical energy storage means for storing electrical energy derived from said uni-directional current; and

circuit means for energizing the solenoid means of said solenoid-operated tripping means from said electrical energy storage means under the control of said overload current detecting means.

4,442,472

SOLID STATE TRIP CIRCUIT WITH DIGITAL TIMER

Peter N. C. Pang, Lawrenceville, Ga., and Boris Rozhansky, Skokie, Ill., assignors to Siemens-Allis, Inc., Atlanta, Ga.
Filed Mar. 26, 1982, Ser. No. 362,431
Int. Cl.^{3} H02H *7/26*
U.S. Cl. 361—96 **57 Claims**

28. An electrical circuit for actuating the trip mechanism of a circuit interrupter comprising:

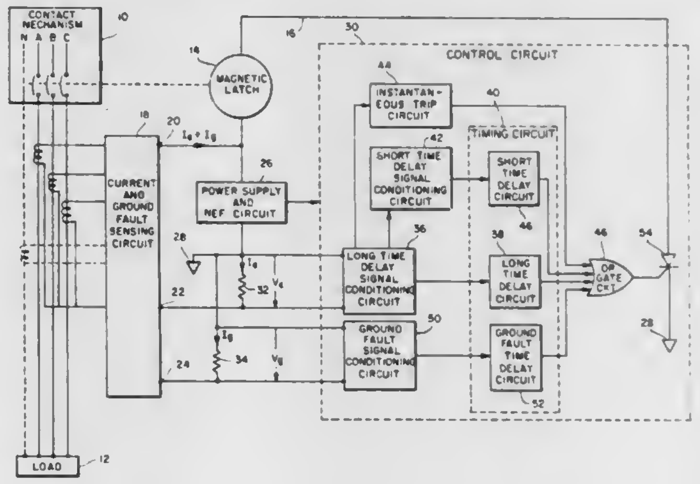
current sensing means cooperating with at least one electrical power conductor for sensing the amount of current flowing in said electrical power conductor and producing a sensed current signal indicative thereof;

power supply means for receiving said sensed current signal and for deriving power therefrom;

means for developing a voltage signal proportional to said sensed current signal;

control means connected to said power supply means for receiving power therefrom and responsive to the magnitude of said voltage signal for actuating the trip mechanism of said circuit interrupter when said current flowing in said electrical power conductor exceeds a predetermined level, said control means including a first amplifier circuit for amplifying said voltage signal to a desired level, said first amplifier circuit including input and output terminals and means for changing the gain of said first amplifier circuit to thereby adjust the level at which said trip mechanism will be actuated;

said control means further including a second amplifier circuit connected to the output of said first amplifier circuit for amplifying the output of said first amplifier circuit to a desired level, said second amplifier circuit including input and output terminals and means for changing the gain of said second amplifier circuit to thereby adjust another level at which said trip mechanism will be actuated;


CONTACT MECHANISM
N A B C
10
14
MAGNETIC LATCH
16
30
CONTROL CIRCUIT
44
INSTANTANEOUS TRIP CIRCUIT
40
18
20
$I_\phi + I_g$
TIMING CIRCUIT
42
SHORT TIME DELAY SIGNAL CONDITIONING CIRCUIT
SHORT TIME DELAY CIRCUIT
26
POWER SUPPLY AND REF CIRCUIT
CURRENT AND GROUND FAULT SENSING CIRCUIT
46
28
36
38
48
54
LONG TIME DELAY SIGNAL CONDITIONING CIRCUIT
LONG TIME DELAY CIRCUIT
OR GATE CKT
I_ϕ
32
V_ϕ
22
50
I_g
34
V_g
24
GROUND FAULT SIGNAL CONDITIONING CIRCUIT
GROUND FAULT TIME DELAY CIRCUIT
52
LOAD
12

a ground fault current sensing means cooperating with said current sensing means for sensing ground fault currents in one or more electrical power conductors and producing a ground fault current signal indicative thereof, and means for developing a ground fault voltage signal proportional to said sensed ground fault current signal, said control means further including a third amplifier circuit for amplifying said ground fault voltage signal to a desired level, said third amplifier circuit including input and output terminals and means for changing the gain of said third amplifier circuit to thereby adjust the level at which said trip mechanism will be actuated;

said control means further including a timing circuit having input and output terminals and a priority circuit connected to said first, second and third amplifier circuits for determining which of of the output terminals of said first, second and third amplifier circuits will be connected to the input terminal of said timing circuit.

4,442,473

MULTI-SECTION POWER CAPACITOR WITH INTERNAL FUSING ARRANGEMENT

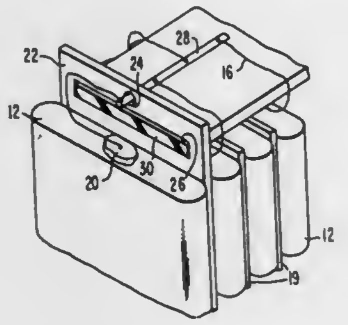
Barry L. Holtzman, Richland, and George E. Mercier, Bloomington, both of Ind., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jul. 13, 1982, Ser. No. 397,754
Int. Cl.^{3} H01G *1/11, 4/38*
U.S. Cl. 361—275 **5 Claims**

1. A power capacitor comprising:

a plurality of wound capacitor sections in an enclosure having first and second terminals extending through said enclosure;

each of said capacitor sections comprising first and second electrodes and one or more sheets of dielectric material between said electrodes on both sides of said respective electrodes, said plurality of wound capacitor sections being assembled in a stack within said enclosure with ends of said sections being substantially aligned;

connection means for selectively connecting said sections into electrically parallel groups of sections and for selectively connecting said electrically parallel groups of sections in series with said terminals, said connection means comprising fusing means for opening the connection of an individual one of said sections upon a dielectric breakdown within said individual section;



said fusing means comprising a plurality of fuse wires each having one end connected to one end of one of said sections of one of said electrically parallel groups of sections and having a second end connected to a common electrical bus extending over said group of sections;

means for insulatively supporting said common electrical bus in spaced relation to said group of sections comprising a plurality of insulative spacer elements disposed between certain adjacent ones of said sections and having an extended portion beyond said ends of said sections; and,

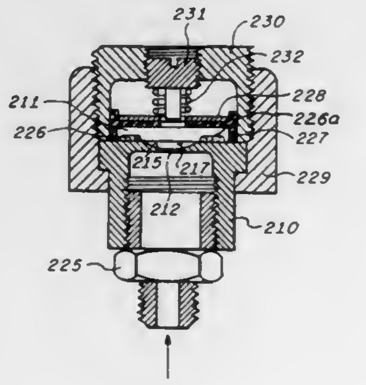
means for insulatively locating said plurality of fuse wires comprising an insulative locater member supported by said insulative spacer elements that support said bus with each of said fuse wires extending from a point on one of said sections around said locater member to said bus.

4,442,474

CAPACITIVE PRESSURE TRANSDUCER

Joannes N. M. de Jong, West Ford, and Richard L. Earle, Mendon, both of Mass., assignors to Sperry Corporation, New York, N.Y.

Filed Dec. 14, 1981, Ser. No. 330,527
Int. Cl.³ H01G *5/34;* G01L *9/12*
U.S. Cl. 361—283 **5 Claims**



1. A capacitive pressure transducer comprising:

a housing;

a threaded cylindrical diaphragm disposed in said housing and including a flexible plate having a concave surface region therein;

a relatively rigid plate having a groove conductive plate dielectrically separated from said flexible plate and disposed in said housing with insulation therebetween to be substantially parallel to regions of said flexible plate external to said concave surface region such that an airgap is formed between said relatively rigid plate and said concave surface region;

adapter means threaded into said cylindrical diaphragm for directing fluid to said flexible plate;

a cover for said housing; and

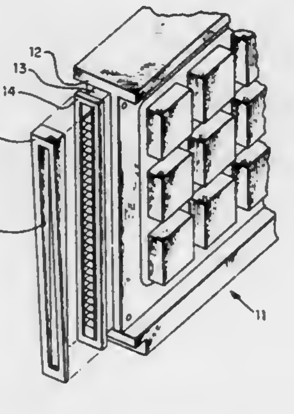
spring-screw means mounted on said cover for exerting an adjustable force on said relatively rigid plate.

4,442,475

TAPERED SEAL FOR FLOW-THROUGH MODULE

James L. Franklin, Kent, and Ted J. Kramer, Seattle, both of Wash., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 6, 1982, Ser. No. 395,566
Int. Cl.³ H05K *7/20*
U.S. Cl. 361—383 **4 Claims**



1. In a modular electronic system having a plurality of electronic modules each having a metallic frame with the ends of each said metallic frame being slidably mounted in opposed grooves in first and second parallel side plates, an improvement comprising,

a heat exchanger core said metallic frame,

a tapered seal on each end of said heat exchanger core, said tapered seal having an opening therethrough,

a complementary tapered surface on a face in each groove whereby said tapered seal wedges said electronic module in said groove and provides an air seal between said electronic module and said side plates, and

means for passing cooling air through said heat exchanger core.

4,442,476

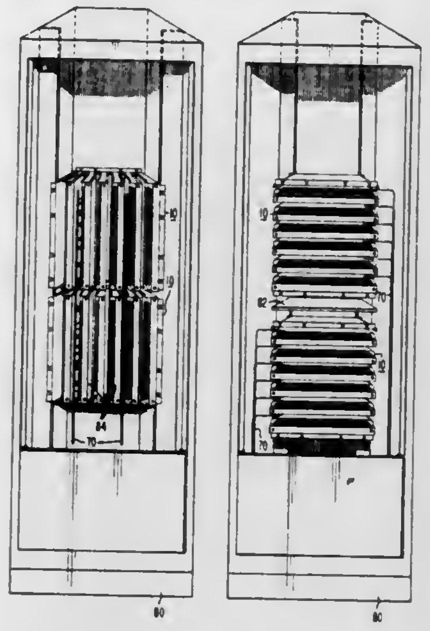
VERSATILE PRINTED CIRCUIT BOARD TERMINATION RACK

Bruce N. Lenderking, Glen Burnie, and Casper J. Bocklage, Jr., Baltimore, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 17, 1981, Ser. No. 293,551
Int. Cl.³ H05K *7/18*
U.S. Cl. 361—395 **2 Claims**

1. A versatile printed circuit board termination rack assembly for mounting in an instrument cabinet, comprising,

a rack means including means for securing said rack means within an instrument cabinet, said rack means including alternate electrical cable troughs and printed circuit board enclosures, said printed circuit board enclosures are elongated rectangular enclosures having an open end to accomodate the insertion of a printed circuit board assembly, said enclosures including electrical connector means to mate with a printed circuit board assembly inserted within the enclosure, said cable troughs alternately located between said printed circuit board enclosures corresponding to passages provided by the spacing between adjacent printed circuit board enclosures to accommodate the electrical cabling for connection to a printed circuit board assembly positioned within the printed circuit board enclosure, the height and width dimensions of said rack means being equal such that said rack means may be mounted in an instrument cabinet with said printed circuit board enclosures being oriented vertically or horizontally, the horizontal mounting of the rack means resulting in isolation between the cable troughs of adjacently mounted rack means, the vertical mounting of adjacent rack means resulting in vertical alignment of the cable troughs of adjacently mounted rack means.

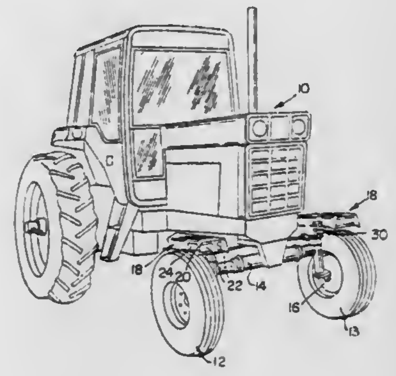


4,442,477

STEERING LIGHT ARRANGEMENT

Richard G. Hennessey, Oak Lawn, Ill., assignor to International Harvester Co., Chicago, Ill.

Filed Dec. 21, 1981, Ser. No. 333,206
Int. Cl.³ B60Q *1/12, 1/24*
U.S. Cl. 362—52 **6 Claims**



1. A steering light arrangement mounted on a land vehicle and connected to at least one vehicle guide wheel for synchronous angular movement therewith comprising:

a height adjustable fenderlet, partially covering said guide wheel and synchronously rotatable therewith, including a built-in light pod located above and in close proximity to said guide wheel and comprising multi-directional light emitting means;

said guide wheel having an axle mechanically connected to a vehicle steering mechanism for rotating said axle and said wheel in a substantially horizontal plane;

a fenderlet support element rigidly connecting said pod with said steering mechanism and

said fenderlet support element comprising an extendible bracket facilitating adjustment of said fenderlet location correlating to various dimensions of said guide wheel;

said light emitting means comprising a headlight lamp lighting the area essentially aligned with the line of a guide wheel movement and a flood lamp generating a wide angle beam light illuminating a territory along a vehicle side and substantially transversely to the line of said guide wheel movement;

said vehicle comprising another fenderlet with its light pod mounted on another guide wheel;

said another guide wheel interconnected with said one guide wheel via a bolster;

said light pods being independently interconnected with said vehicle steering mechanism;

an electrical conduit connecting said light emitting means with a vehicle electrical system, and

said conduit disposed within said bolster;

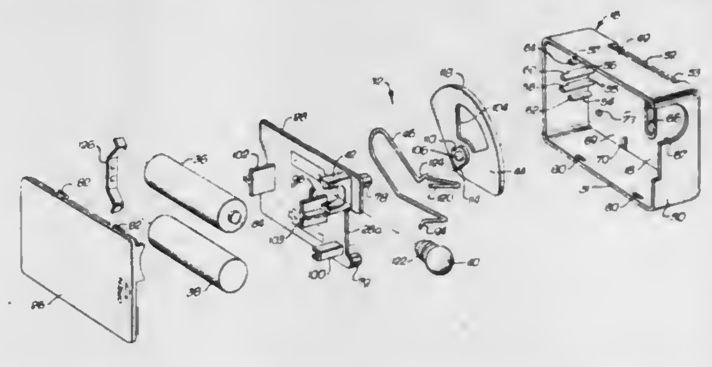
said light emitting means defining a vehicle width in all wheel positions.

4,442,478

AUTOMATICALLY ACTUATED ENCLOSURE LIGHT

Benjamin H. Stansbury, 409 N. Foothill Rd., Beverly Hills, Calif. 90210

Filed Feb. 19, 1982, Ser. No. 350,419
Int. Cl.³ F21L *7/00*
U.S. Cl. 362—191 **2 Claims**



1. A battery-powered light for an enclosure which turns on when the enclosure is opened and turns off when the enclosure is closed, said light comprising

(a) a housing mountable to said enclosure having a base with interior and exterior surfaces, and wall means which are integral with the base and joined together to form the housing, said interior surface having a recess therein and a stop member extending outwardly therefrom, and said wall means having a first opening therein through which projects an arcuate edge portion of the actuator means defined below in paragraph (cii) when the light is turned on and a second opening therein for receiving a lightbulb,

(b) a divider wall in the housing to form therein a first compartment adapted to receive switching means and a second compartment adapted to receive battery means, said compartments being in communication with each other through a passageway and said divider wall having therein an elongated slot and thereon socket means for holding a lightbulb, and being located within the housing so that the elongated slot is aligned with the recess in the interior surface of the base and the socket means is aligned with said second opening, and

(c) switching means disposed in the first compartment which includes

  (i) conductive spring means moveable between a bulb engagement position and a bulb disengagement position, said spring means having one end secured to the divider wall and adapted to contact battery means in the second compartment and an intermediate segment passing through the passageway between the compartments, said intermediate segment terminating in a bulb contact end adapted to contact a lightbulb in the socket means when the spring means is in the bulb engagement position and disengages from contact with the lightbulb when the spring means is in the bulb disengagement position,

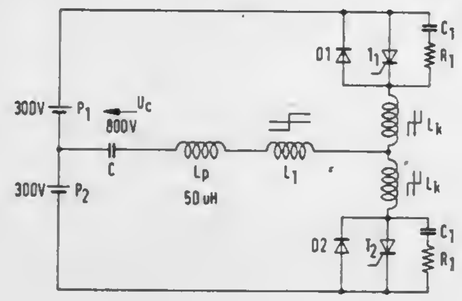
  (ii) actuator means for the spring means including a body member having cam means for engaging the spring means, an enlarged opening in the body member, axle means outwardly projecting from the body member, and an arcuate edge along a portion of the body member, said actuator means being disposed in the first compartment so that the axle means is received within the elongated slot in the divider wall and the recess in the base, with the stop member passing through the enlarged opening in body member and the arcuate edge portion of the body member passing through the first opening in the wall means

whereby, upon opening and closing of the enclosure, the arcuate edge portion engages a surface of the enclosure during relative movement between such enclosure surface and the arcuate edge portion, and depending upon the type of enclosure and the manner of mounting said housing to said enclosure, causing in one mode the body member to rotate about the axle means, and in another mode to move linearly inwardly and outwardly relative to the housing with the axle means moving within and being guided by said elongated slot and recess, and in a third mode to rotate and to move linearly simultaneously, with the cam means moving the spring means between the bulb engagement position and the bulb disengagement position.

4,442,479
INVERTER WITH SATURABLE REACTOR PROTECTION CIRCUIT

Tapani Mäkimaa, Lahti, Finland, assignor to Kemppi Oy, Lahti, Finland

Filed Feb. 2, 1982, Ser. No. 345,150
Claims priority, application Finland, Feb. 13, 1981, 810456
Int. Cl.^{3} H02M *7/515*
U.S. Cl. 363—136 **1 Claim**

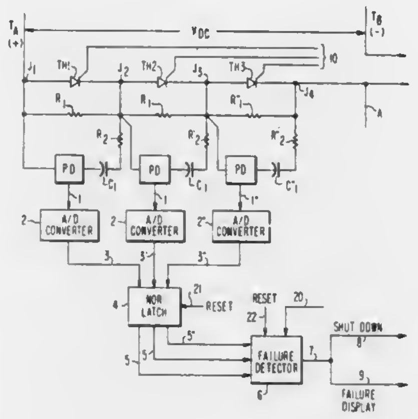


1. An inverter circuit comprising a DC voltage source provided with a center tap in the source itself or in a voltage divider circuit connected across the source;
- two thyristor switches connected in series in the forward direction across the DC voltage source;
- two RC protection circuits, each one being connected across one of the thyristors, respectively;
- two commutation diodes, each one being connected antiparallel with one of the thyristors, respectively; and
- two reactors, each one being saturable and connected in series with one of the thyristors, respectively, a center branch branching out from a point between the thyristor switches to said center tap, said center branch including at least one capacitor and at least one saturable reactor.

4,442,480
PROTECTIVE CIRCUIT FOR THYRISTOR CONTROLLED SYSTEMS AND THYRISTOR CONVERTER EMBODYING SUCH PROTECTIVE CIRCUIT

Francis H. Downhower, Jr., Alden, and Paul T. Finlayson, Depew, both of N.Y., assignors to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed Feb. 24, 1982, Ser. No. 351,808
Int. Cl.^{3} H02M *1/18*
U.S. Cl. 363—57 **3 Claims**

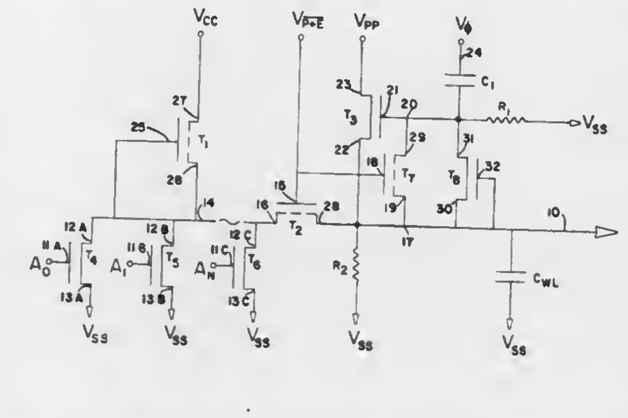


1. In an array of thyristors serially connected and sharing a voltage common to said array, the thyristors being controlled independently and selectively for conduction by natural commutation under said common voltage, the provision of:
- a plurality of capacitor means each associated individually with a corresponding one of said thyristors, said capacitor means being adapted to be charged under said common voltage when the associated thyristor is non-conductive, and adapted to be discharged through the associated thyristor when the latter is turned ON;
- a like plurality of means responsive to a discharge condition of a corresponding one of said capacitor means for generating a representative pulse; and
- means responsive to the respective said representative pulses for detecting the absence of at least one of said representative pulses as an indication of thyristor failure under a shorted condition in one of the thyristors of said array.

4,442,481
LOW POWER DECODER CIRCUIT

Dhaval J. Brahmbhatt, San Jose, Calif., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 7, 1982, Ser. No. 366,441
Int. Cl.^{3} H02M *3/00*
U.S. Cl. 363—60 **24 Claims**

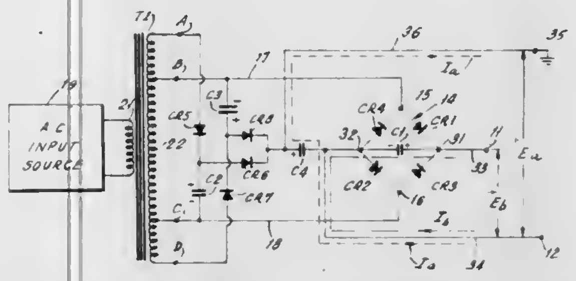


1. A system capable of providing a selected one of a plurality of voltage levels at a system output terminating region, said system comprising:
- a pull up means having first and second terminating regions and a control terminating region, said pull up means being capable of providing an effective electrical conductivity between said pull up means first and second terminating regions in response to electrical conditions at said pull up means control terminating region, said pull up means first terminating region being adapted to be electrically connected to a first voltage source and said pull up means second terminating region being electrically connected to a first electrical conductor means;
- a first electrical coupling means for electrically coupling said first electrical conductor means to said system output terminating region;
- a pumping means having first and second terminating regions and a control terminating region, said pumping means being capable of providing an effective electrical conductivity between said pumping means first and second terminating regions in response to electrical conditions at said pumping means control terminating region, said pumping means first terminating region being electrically connected to said pull up means control terminating region, said pumping means second terminating region being electrically connected to said first electrical conductor means, and said pumping means control terminating region being electrically connected to said first electrical conductor means;
- a coupling capacitive means having first and second terminating regions, said coupling capacitive means first terminating region being adapted to be electrically connected to a second voltage source and said coupling capacitive means second terminating region being electrically connected to said pumping means first terminating region;
- a maintaining means having first, second, and third terminating regions, said maintaining means first terminating region being electrically connected to said pull up means control terminating region, a selected one of said maintaining means second and third terminating regions being adapted to receive a first control signal, and the remaining one of said maintaining means second and third terminating regions being adapted to be electrically connected to a third voltage source, said maintaining means being adapted to maintain said maintaining means first terminating region at a first voltage level in response to a corresponding first control signal appearing at said selected one of said maintaining means first and second terminating regions.

4,442,482
DUAL OUTPUT H.V. RECTIFIER POWER SUPPLY DRIVEN BY COMMON TRANSFORMER WINDING

George C. Gallios, Setauket, N.Y., assignor to Venus Scientific Inc., Farmingdale, N.Y.

Filed Sep. 30, 1982, Ser. No. 429,449
Int. Cl.^{3} H02M *7/02*
U.S. Cl. 363—61 **6 Claims**

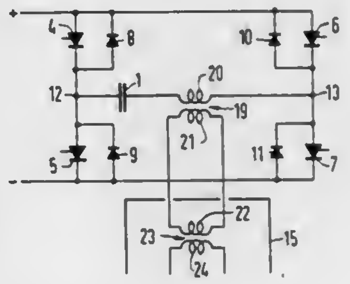


1. A power supply including a transformer having magnetically coupled primary and secondary winding means; a rectifier-capacitor type first circuit energized by said secondary winding means to produce a first output voltage; a rectifier-capacitor type second circuit energized by said secondary winding means to produce a second output voltage referenced to said first output voltage; said first circuit including a first main capacitor across which said first output voltage appears and said second circuit including a second main capacitor across which said second output voltage appears; said secondary winding means including a common winding portion through which charging currents for both said first and second main capacitors flow; said charging current for said first main capacitor by-passing said second main capacitor; said charging current for said second main capacitor flowing through rectifier elements of said first circuit while by-passing said first main capacitor; said second circuit having a full wave voltage doubler type configuration.

4,442,483
RESONANT CIRCUIT INVERTER

Heinz Baumann; Werner Kühnel, both of Uttenreuth, and Manfred Rattner, Buckenhof, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 21, 1982, Ser. No. 420,868
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1981, 3139340
Int. Cl.^{3} H02M *7/537*
U.S. Cl. 363—131 **1 Claim**



1. A resonant inverter circuit comprising:
- an LC series resonant circuit;
- a switch means for connecting said resonant circuit with periodically alternating polarity to a dc voltage source;
- a high voltage transformer having a primary winding and a secondary winding; and
- an interstage transformer interconnected between said resonant circuit and said high voltage transformer, said interstage transformer having a primary winding in said resonant circuit and a secondary winding connected to the primary winding of said high voltage transformer such that the primary voltage of said interstage transformer is twice stepped up, first to an intermediate voltage which is the primary voltage for said high voltage transformer and subsequently to the secondary voltage of said high voltage transformer at said secondary winding thereof, a load voltage being tapped at, said high voltage transformer secondary winding.

4,442,484
MICROPROCESSOR MEMORY MANAGEMENT AND PROTECTION MECHANISM

Robert H. E. Childs, Jr., Cupertino; Jack L. Klebanoff, Sunnyvale, both of Calif., and Frederick J. Pollack, Aloha, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Oct. 14, 1980, Ser. No. 197,052
Int. Cl.^{3} G06F *9/19*
U.S. Cl. 364—200 **12 Claims**

1. For use in a data processing system having a memory for storing information which is classified into various categories called objects of said system, and a central processing unit connected to said memory,
- said central processing unit including a protection mechanism having levels of privilege, wherein said central processing unit has access to tables stored in said memory, said tables containing object descriptors, said object descriptors providing controlled access to real memory space in said memory by a task (processing path) executing on said central processing unit,
- each of said object descriptors being typed and assigned a

descriptor privilege level (DPL), such that access is allowed to some of said objects within said memory and access is denied to others of said objects within said memory, depending upon the descriptor privilege level assigned to said objects, the type assigned in the object descriptor, the type of operation requested in said executing task, and the current privilege level (CPL) of execution of said executing task,

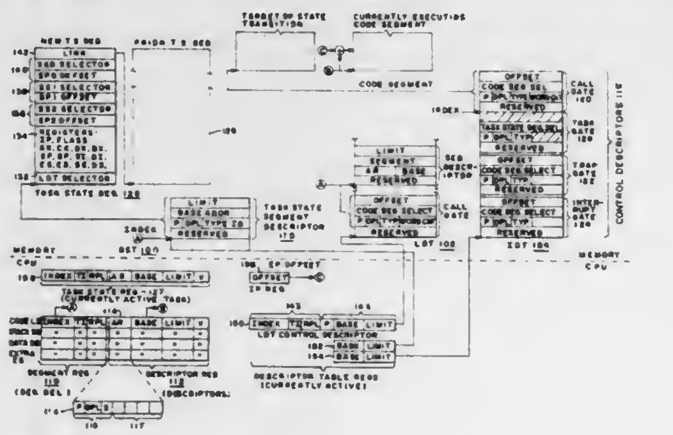
said central processing unit comprising:

memory accessing means connected to said memory, said memory accessing means including memory address registering means for registering memory addresses for use by said memory in accessing said objects stored in said memory,

first means connected to said memory accessing means for registering first access information, said first access information providing first memory address information for locating said tables of object descriptors stored in said memory;

second means for registering a plurality of privilege levels, said privilege levels being assigned to a linearly ordered set of more privileged and lesser privileged levels;

third means for registering a task state segment, said task state segment including indicators which associated one or more of said tables of object descriptors with a task (processing path), said associated tables of object descriptors, in the aggregate, representing the entire set of objects in the address space of the task;



fourth means, connected to said second means, for registering a current privilege level (CPL) at any instant for a currently executing task, said current privilege level being a single unique member of said plurality of privilege levels registered in said second means, said CPL being based upon the progress of execution of said currently executing task;

fifth means for registering a segment selector, said segment selector including identifying means for uniquely identifying a particular object descriptor, said particular object descriptor being one of said object descriptors of said associated tables of object descriptors, within said address space of said task;

said fifth means including means for registering access rights information, said access rights information comprised of a number of bits of information, including descriptor privilege level bits (DPL) and type bits;

said type bits including bits for classification of said object descriptors into segment descriptors and control descriptors, said segment descriptors being permitted usage only for memory access and said control descriptors being permitted usage only for change of the operation path; and,

logic means connected to said third, fourth, and fifth means, said logic means including comparing means connected to said fourth means and to said fifth means for comparing said CPL and said DPL of said particular object descriptor,

said logic means including output means, connected as an input to said first means, for permitting access to said particular object indicated by said selector (registered in said said fifth means), by use of said first memory address information, said access being permitted only upon the condition that said access is from a more privileged current privilege level (registered in said fourth means) to the same or a less privileged level as specified by the DPL (registered in said fifth means) of said particular object descriptor.

4,442,485

DYNAMICALLY BUFFERED DATA TRANSFER SYSTEM FOR LARGE CAPACITY DATA SOURCE

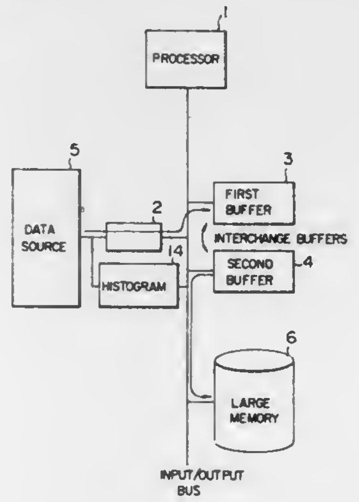
Hideo Ota, and Yutaka Kubo, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 5, 1980, Ser. No. 213,403

Claims priority, application Japan, Dec. 7, 1979, 54-158065; Feb. 18, 1980, 55-17833

Int. Cl.^{3} G06F *3/04, 9/06*

U.S. Cl. 364—200 **18 Claims**



1. A data input/output method for transferring data between a large-capacity data source and a large-capacity memory connected to a processor by means of at least two buffer memories connected to said processor through an input/output bus, wherein the data transfer on the input/output bus is controlled by input/output control information decoded by a control section, said processor supplying a control register with said input/output control information having a command, a data count, a data address and a next-command address, comprising the steps of:

transmitting said input/output control information from said control register to said control section to be decoded therein;

supplying said control register with second input/output information from said next-command address in said input/output control information after said transmitting step;

transferring data up to the amount of said data count in said input/output control information through said input/output bus from or to one of said buffer memories on the basis of a result of said decoding;

transmitting said second input/output information from said control register to said control section to be decoded therein after said data transfer; and

transferring data in accordance with said second input/output information from or to the other of said buffer memories.

4,442,486

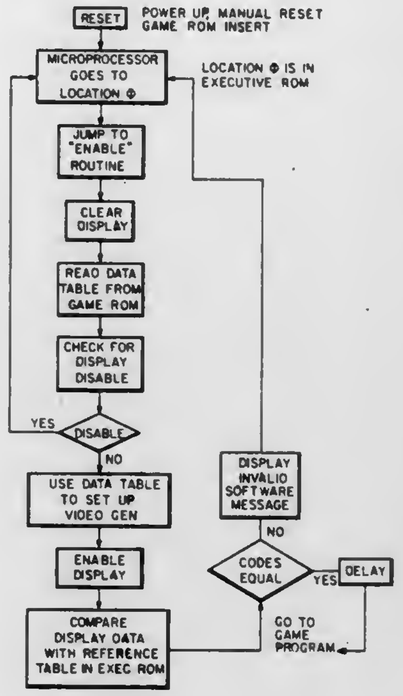
PROTECTED PROGRAMMABLE APPARATUS

Robert T. Mayer, Rye, N.Y., assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 25, 1981, Ser. No. 324,744

Int. Cl.^{3} G06F *3/14, 13/00*

U.S. Cl. 364—200 **13 Claims**


RESET
POWER UP, MANUAL RESET
GAME ROM INSERT
MICROPROCESSOR GOES TO LOCATION Φ
LOCATION Φ IS IN EXECUTIVE ROM
JUMP TO "ENABLE" ROUTINE
CLEAR DISPLAY
READ DATA TABLE FROM GAME ROM
CHECK FOR DISPLAY DISABLE
YES
DISABLE
NO
USE DATA TABLE TO SET UP VIDEO GEN
ENABLE DISPLAY
COMPARE DISPLAY DATA WITH REFERENCE TABLE IN EXEC ROM
DISPLAY INVALID SOFTWARE MESSAGE
NO
CODES EQUAL
YES
DELAY
GO TO GAME PROGRAM

1. Improved apparatus including computer equipment; program material including a plurality of instructions, part of which is a prescribed display instruction; said computer equipment being removably connectable to said program material; said computer equipment when connected to said program material operating to produce signals in accordance with said instructions; a display device responsive to said signals and producing displays in accordance therewith; said prescribed display instruction causing said computer equipment to produce signals which if received by said display device would cause it to produce a particular display; said computer equipment including means preventing said equipment from operating with program material not containing said prescribed display instruction, and wherein the improvement comprises a prescribed display instruction which produces a particular display including the phrase "This apparatus uses the invention of U.S. patent application entitled Protected Programmable Apparatus filed on Nov. 25, 1981 and any patent issuing thereon."

4,442,487

THREE LEVEL MEMORY HIERARCHY USING WRITE AND SHARE FLAGS

Robert P. Fletcher, Poughkeepsie; David M. Stein, Pleasantville, and Irving Wladawsky-Berger, New York, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1981, Ser. No. 336,521

Int. Cl.^{3} G06F *13/00*

U.S. Cl. 364—200 **10 Claims**

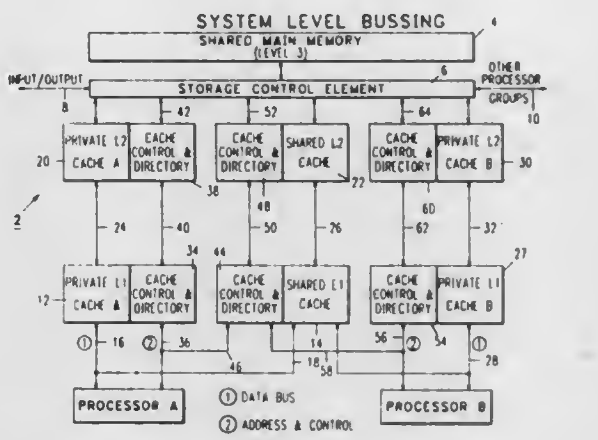
8. In a multiprocessor system, including a three level memory hierarchy, the combination comprising:

n processors, where n is an integer ≧ 2;

a main memory at memory level three, in which pages of information, each page comprised of a plurality of lines, are stored at addressable locations, with each page including a WRITE flag and a SHARE flag, with the state of the WRITE flag determining if each line in the page is writeable or read only by a processor, and the state of the SHARE flag determining if each line in the page is shareable or non-shareable by all processors, with each flag being set in a predetermined state;

a first shared cache at memory level two, which is operative with each of said n processors, including means for transferring a page of information from main memory to said first shared cache when the WRITE and SHARE flags are each in a given predetermined state, indicative of said page of information being both writeable and shareable;

a first set of n private caches at memory level two, with the first and second processors being exclusively operative with the first and second private caches, respectively, and the nth private cache being exclusively operative with the nth private cache, including means for transferring a page of information to one of said n private caches from main memory when at least one of the WRITE and SHARE flags are not in said given predetermined state, indicative of a page not being both writeable and shareable;



a second shared cache at memory level one, which is operative with each of said n processors, including means for transferring lines of information from said first shared cache to said second shared cache; and

a second set of n private caches at memory level one, with the first and second processors being exclusively operative with the first and second private caches, respectively, and the nth private cache being exclusively operative with the nth private cache, including means for transferring lines of information from the first set of n private caches to the second set of n private caches.

4,442,488

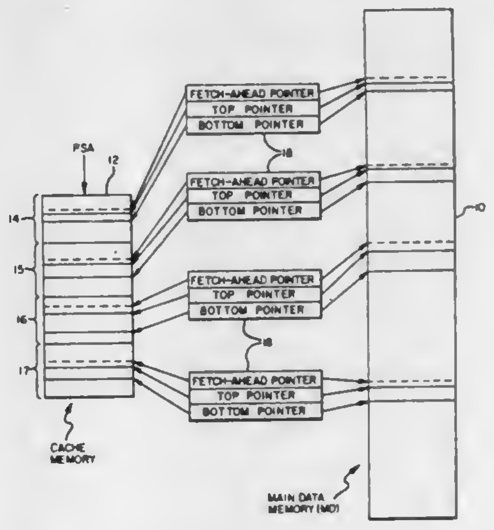
INSTRUCTION CACHE MEMORY SYSTEM

William E. Hall, Portland, Oreg., assignor to Floating Point Systems, Inc., Beaverton, Ohio

Continuation of Ser. No. 146,674, May 5, 1980, abandoned. This application Feb. 22, 1983, Ser. No. 468,506

Int. Cl.^{3} G06F *9/00, 13/00*

U.S. Cl. 364—200 **28 Claims**



1. In a memory system including a first memory means,

a higher speed memory means for receiving information from said first memory means for storage and fast retrieval,

means for loading a first address location in said higher speed memory means with information from said first memory means in response to a first presentation of an address, which address is capable of accessing information in either memory means, said first address location being identified by said address,

means for substantially immediately outputting said information,

and means for bringing about repeated loading of further information into said higher speed memory means from said first memory means at further address locations consecutively beyond the first address location and in advance of further access to retrieve the further information, while retaining the loaded information in the higher speed memory means, at least within predetermined limits of the higher speed memory means, to provide a gradually expanding segment of information from said first memory means in said higher speed memory means for retrieval.

4,442,489

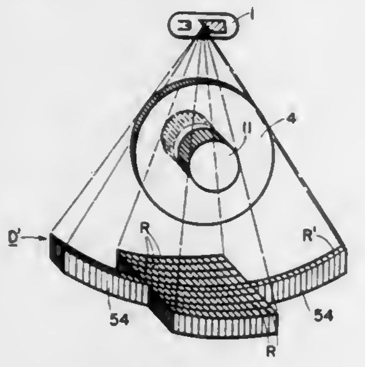
DEVICE FOR COMPUTED TOMOGRAPHY

Wolfgang Wagner, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 216,478, Dec. 15, 1980, Pat. No. 4,394,738. This application Feb. 18, 1983, Ser. No. 468,026

Int. Cl.³ A61B ***6/00;*** **G01N** ***23/00***

U.S. Cl. 364—414 **2 Claims**



1. Computed tomography apparatus for determining a radiation absorption distribution in a planar examination zone within a slice of a body comprising:

radiation source means for generating a beam of penetrating radiation which irradiates the body from a plurality of directions in the plane of the slice;

detector means for measuring radiation in the beam which has passed through the body to supply absorption values which are a measure of radiation attenuation along measuring paths which pass through the body in the plane;

support means for retaining the radiation source means and the detector means on opposite sides of the body and which define a positioning zone for the body which is situated therebetween;

central processing means for calculating absorption coefficients of the radiation distribution from the absorption values;

memory means for storing the absorption values and the absorption coefficients; and

display means for displaying the radiation absorption distribution;

wherein, as an improvement, the detector means comprise:

a short row of detector elements disposed on the support means so that detector elements at the ends of the short row detect radiation from the source means along paths which are tangent to the perimeter of the examination zone; and

at least one long row of detector elements disposed parallel to the short row of detector elements, so that detector elements which are situated at the ends of the long row detect radiation from the source means along paths which are tangent to the perimeter of the positioning zone.

4,442,490

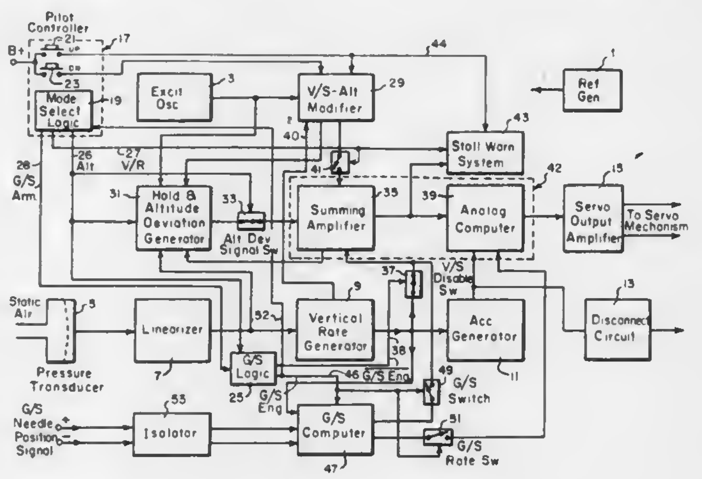
AIRCRAFT PITCH STABILIZATION APPARATUS

James E. Ross, Mineral Wells, Tex., assignor to S-Tec Corporation, Fort Walters, Tex.

Continuation of Ser. No. 191,263, Sep. 26, 1980, abandoned. This application Feb. 28, 1983, Ser. No. 468,803

Int. Cl.³ G06G ***7/78***

U.S. Cl. 364—433 **43 Claims**



1. A control apparatus to provide complete control of pitch of an aircraft in response to a command signal, comprising a gyroscopic free device having:

(a) means for producing an altitude signal responsive to atmospheric pressure;

(b) means derivative of atmospheric pressure responsive to rate of change of altitude for generating a vertical rate signal;

(c) means derivative of atmospheric pressure responsive to rate of change of said vertical rate signal for generating a vertical acceleration signal; and

(d) means for combining said command signal, said vertical rate signal and said vertical acceleration signal to produce said control signal.

4,442,491

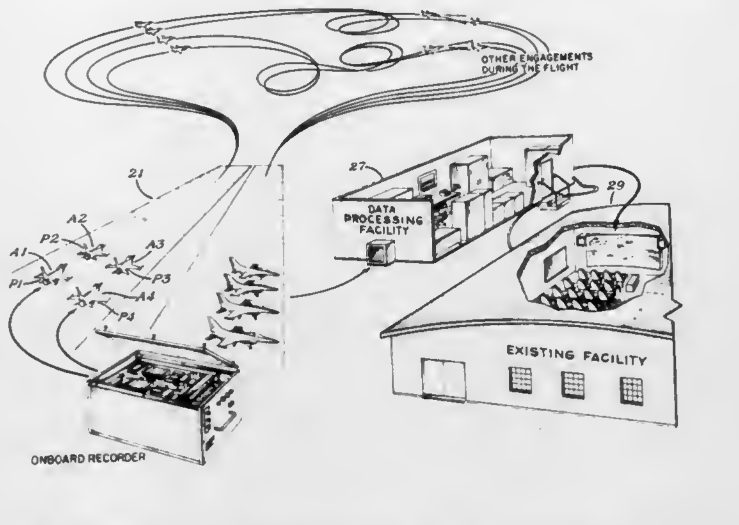
TRAINING EVALUATION PROCESS

James N. Olhausen, Jr., Benbrook, Tex., assignor to General Dynamics Corporation, Fort Worth, Tex.

Filed Jun. 23, 1981, Ser. No. 276,650

Int. Cl.³ G06F ***15/20***

U.S. Cl. 364—454 **23 Claims**



1. A method of correcting data on an aircraft's position relative to the earth, said data being obtained during flight with an inertial navigation system (INS) on board said aircraft, comprising the steps of:

prior to commencing an aircraft engagement, determining the pre-engagement position of said aircraft relative to the earth independently of said INS,

at said pre-engagement position, operating said INS to obtain pre-engagement INS data on the position of said aircraft relative to the earth,

recording said pre-engagement INS data on position obtained by said INS at said pre-engagement position,

flying said aircraft in an engagement,

during said engagement of said aircraft continuing to operate said INS to obtain INS data on the position of said aircraft relative to the earth,

recording the INS data obtained on position during said engagement,

after the termination of said engagement by said aircraft, determining the post-engagement position of sad aircraft relative to the earth independently of said INS,

at said post-engagement position, operating said INS to obtain post-engagement INS data on the position of said aircraft relative to the earth,

recording said post-engagement INS data on position obtained by said INS at said post-engagement position,

comparing said independently determined pre-engagement position of said aircraft with the pre-engagement INS data on position to obtain pre-engagement error functions of position,

comparing said independently determined post-engagement position of said aircraft with the post-engagement INS data on position to obtain post-engagement error functions of position.

employing said pre-engagement error functions of position, said post-engagement error functions of position and the known time-variant drift characteristics of position of said INS to derive position correction functions during said engagement,

employing said position correction functions to correct the recorded INS data obtained on position during said engagement to obtain corrected INS data on position during said engagement, and

storing said corrected INS data on position.

4,442,492

DEVICE FOR CENTRAL READING AND REGISTRATION OF CUSTOMERS' POWER CONSUMPTION

Björn G. E. Karlsson, Fyrklöversgatan 125, Nödinge, Sweden (440 45), and Ingvar Jönson, Slottervallsgatan 9, Mölndal, Sweden (431 40)

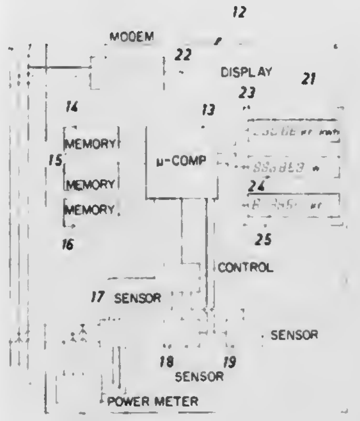
PCT No. PCT/SE80/00213, 371 Date Apr. 17, 1981, 102(e) Date Apr. 17, 1981, PCT Pub. No. WO81/00619, PCT Pub. Date Mar. 5, 1981

PCT Filed Aug. 20, 1980, Ser. No. 255,240

Claims priority, application Sweden, Aug. 21, 1979, 7906983

Int. Cl.³ G01R ***21/06;*** **G06F** ***15/20***

U.S. Cl. 364—464 **3 Claims**



1. A system for automatically reading and registering at a central location the consumption of a meterable quantity at least at one remote consumer location, wherein electric power distribution lines extend through said central and consumer location, said system comprising:

at said at least one consumer location:

modulator-demodulator means connected to said power distribution lines for receiving control signals from and transmitting data signals to said central location via said power distribution lines;

sensor means for measuring consumption of said meterable quantity at said each consumer location;

storage means for storing a selectively modifiable current billing rate charged for consumption of said meterable quantity;

means responsive to reception of a first predetermined control signal at said modulator-demodulator means for changing the current billing rate stored in said storage means;

accumulator means for accumulating data representing the amount of said meterable quantity measured at said sensor means;

means responsive to reception of a second predetermined control signal at said modulator-demodulator means for transmitting via said power distribution lines data signals representing the accumulated data in said accumulator means and for resetting the accumulator means; and

indicator means for providing an indication of the current billing rate stored in said storage means;

at said central location:

means for selectively transmitting said first and second predetermined control signals to said consumer location via said power distribution lines; and

means for receiving data signals transmitting from said consumer location via said power distribution lines.

4,442,493

CUTTING TOOL RETREAT AND RETURN FOR WORKPIECE PROTECTION UPON ABNORMALITY OCCURRENCE IN A PREPROGRAMMED MACHINE TOOL

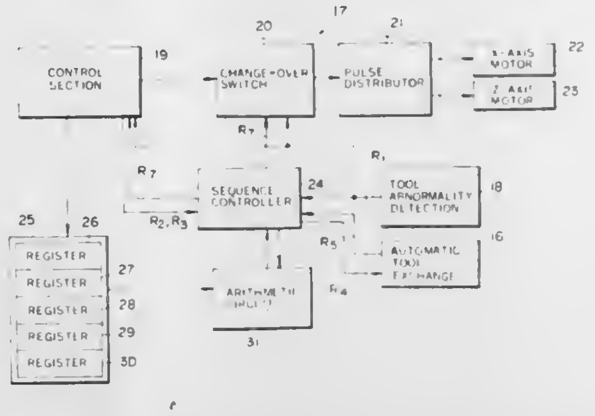
Hideyuki Wakai; Masataka Kashimoto; Chiaki Sakamoto, and Eiji Mizutani, all of Hirakata, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Jun. 30, 1981, Ser. No. 279,033

Claims priority, application Japan, Jul. 4, 1980, 55-91368; Jul. 4, 1980, 55-91369

Int. Cl.³ G06F ***15/46;*** **G05B** ***19/18***

U.S. Cl. 364—475 **11 Claims**



1. A method for automatically retreating and returning a cutting tool of a numerically controlled machine tool comprising:

a step for retreating said cutting tool, when an abnormality arises in said cutting tool, into a first position, said retreat being in a direction and by a distance corresponding to a predetermined computational parameter selected in accordance with the type of machining operation to be performed on a workpiece; and

a step for returning said cutting tool, after resolution of the cutting tool abnormality, via said first position into a second position determined by said parameter, said second position being such that machining of the workpiece is resumed to overlap a determined area machined prior to the occurrence of the cutting tool abnormality.

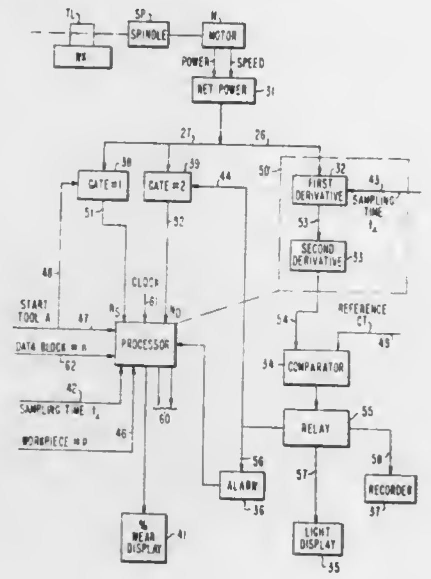
4,442,494
TOOL WEAR AND TOOL FAILURE MONITOR SYSTEM

Robert E. Fromson, Wilkins Township, Allegheny County, and Lanson Y. Shum, Salem Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 18, 1981, Ser. No. 322,619

Int. Cl.³ G06F *15/46;* G01N *19/02*

U.S. Cl. 364—511 **5 Claims**



3. A numerical controlled machine tool for operating a plurality of tools with a plurality of workpieces comprising:

means associated with each of said tools in operation with a corresponding workpiece for deriving respective instantaneous values of net power applied to operate a given tool with a given workpiece;

central processor means for deriving the second derivative of net power for each of said instantaneous values;

comparator means responsive to each of said instantaneous values and for each of said tools for deriving a critical signal when the second derivative exceeds a reference level;

diagnostic means for determining with said comparator means and in response to a critical signal therefrom, any of said tools should be maintained.

4,442,495
REAL TIME TOROIDAL PAN

Josef Sukonick, Cupertino, Calif., assignor to Cadtrak Corporation, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 125,238, Feb. 27, 1980, abandoned. This application Jun. 17, 1981, Ser. No. 274,355

Int. Cl.³ G06F *3/153*

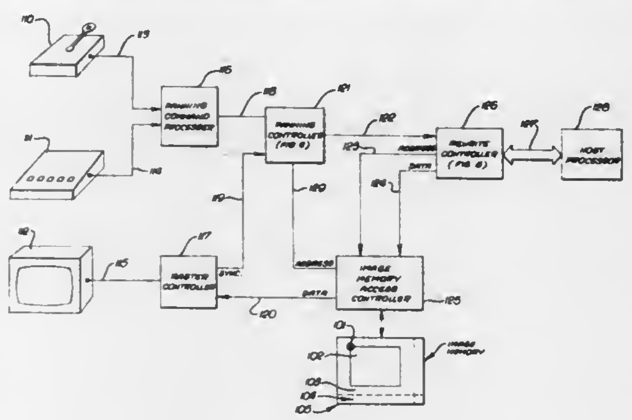
U.S. Cl. 364—521 **28 Claims**

1. In a raster scan video display system having a display device, a panning control system comprising:

image memory means for storing graphic data to be displayed, said image memory means being capable of storing more graphic data than can be simultaneously displayed on said display device, said image memory means being accessible in accordance with a specified coordinate system having defined coordinate boundaries;

raster readout control means for reading out graphic image data from a portion of said image memory means in raster scanning order and in synchronism with the video timing of said display device beginning at an arbitrarily specifiable origin address, said control means recognizing during raster readout when a coordinate boundary is reached and continuing said readout from the corresponding opposite boundary, the read out image data being translatable into a video graphics signal to said display device; and

rewrite means for entering data into an area of said image memory means outside of the portion from which said data is read out, so that said entered data will be available for inclusion in the read out image data upon subsequent raster readout from a different origin address.



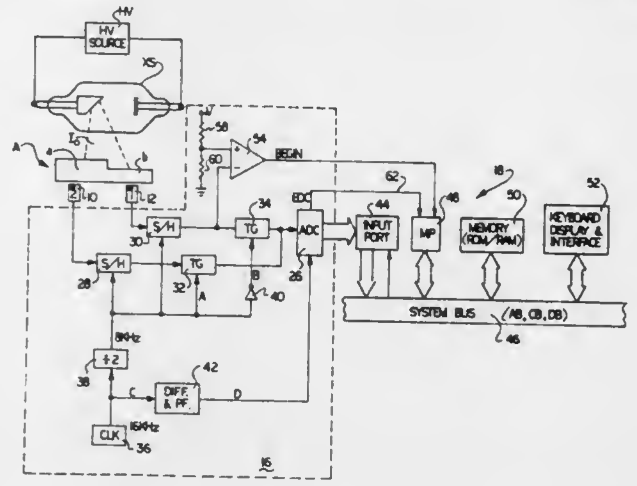
4,442,496
RADIATION ENERGY MEASUREMENT APPARATUS

William E. Simon, Cleveland, and Richard D. Richards, Bay Village, both of Ohio, assignors to Victoreen, Inc., Cleveland, Ohio

Continuation of Ser. No. 173,661, Jul. 29, 1980, abandoned. This application Dec. 3, 1982, Ser. No. 446,501

Int. Cl.³ G01D *18/00*

U.S. Cl. 364—524 **6 Claims**



1. Apparatus for determining the peak energy of radiation being emitted by a radiation source whose output radiation energy varies with time in a cyclical manner, comprising:

at least fire and second radiation detector means adapted to be disposed in the path of radiation emitted by said radiation source for providing respective first and second analog signals having values which vary in known relation to the intensity of said radiation;

at least first and second radiation absorber means for each absorbing a corresponding portion of said radiation, each adapted to be disposed between said radiation source and a corresponding one of said first and second detector means, wherein the portion of said radiation absorbed varies with the energy of said radiation, said first and second absorber means having different radiation absorption values;

means responsive to said first and second analog signals for sampling and digitizing each said signal at regular time intervals smaller than the time required for the radiation level to vary substantially, so as to thereby provide first and second digital signals, each having digital values which represent and vary with a corresponding one of said first and second analog signals;

digital memory means for storing the digital values of each of said digital signals taken over a plurality of cycles of said radiation energy; and

computer means for digitally processing said stored digital values to determine the peak energy level of said radiation.

4,442,497
MEASURING SYSTEM FOR ALIGNMENT AND MEASUREMENT WITH AN ELECTRONIC TACHYMETER

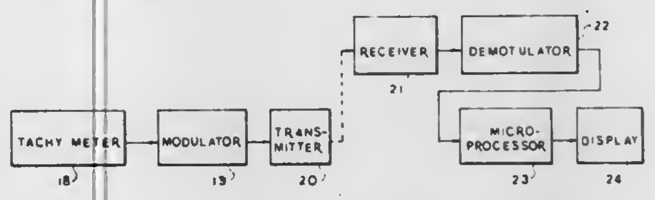
Hermann Göring, Jena; Peter Hentschel, and Wolfgang Meyl, both of Dresden, all of German Democratic Rep., assignors to Jenoptik Jena GmbH, Jena, German Democratic Rep.

Continuation-in-part of Ser. No. 69,944, Aug. 27, 1979, Pat. No. 4,321,683. This application May 28, 1981, Ser. No. 267,831

Claims priority, application German Democratic Rep., May 25, 1978, 205575

Int. Cl.³ G01C *3/08;* G01B *11/26*

U.S. Cl. 364—561 **5 Claims**



1. A measuring device for aligning and measuring points in a terrain, comprising an electronic tachymeter system and a reflector system, said tachymeter system comprising range finding means for providing output signals corresponding to the position of the reflector system, in a given coordinate system, computer means for calculating the difference between the position of said reflector system and a second position of known coordinates, and electromagnetic energy transmitting means for transmitting signals corresponding to said difference to said reflector system, said reflector system comprising receiving means for receiving said signals, and display means for visually displaying said difference, in response to said signals.

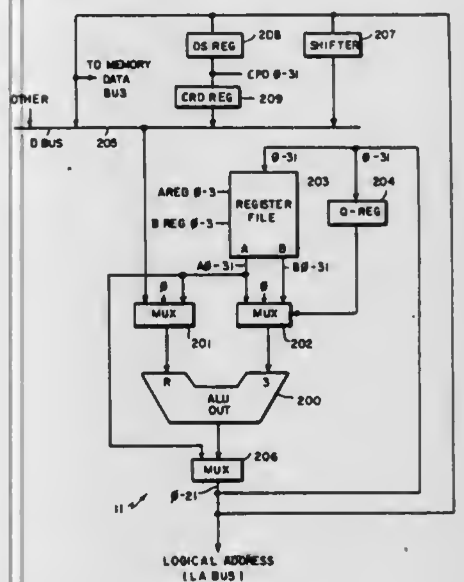
4,442,498
ARITHMETIC UNIT FOR USE IN DATA PROCESSING SYSTEMS

Josh Rosen, 9A Lincoln St., Westboro, Mass. 01581

Filed Apr. 23, 1981, Ser. No. 256,726

Int. Cl.³ G06F *7/48*

U.S. Cl. 364—745 **5 Claims**



1. In a data processing system, an arithmetic logic unit for performing floating point arithmetic which requires unbiased rounding of the floating point arithmetic result, said unit comprising

means for computing an unrounded floating point result comprising a plurality of bit groups, a first selected number of said bit groups being used to form the rounded floating point result and a second selected number of said bit groups being used to determine the round bit for said rounded result;

a plurality of look-ahead logic means for generating carry bits, for insertion into selected ones of said bit groups of said unrounded floating point result, substantially simultaneously with the computation of said unrounded floating point result;

means responsive to said second selected number of bit groups of said unrounded floating point result for determining said round bit;

a portion of a selected one of said look-ahead logic means being responsive to said round bit for inserting said round bit into the least significant bit group of said first selected number of bit groups substantially simultaneously with the insertion of the carry bits into the remaining bit groups of said first selected number thereof to produce said rounded floating point result.

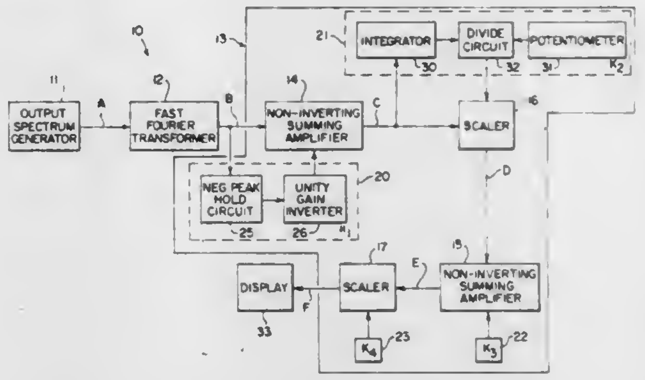
4,442,499
DEVICE AND METHOD FOR PRODUCING PNEUMATIC TIRES HAVING PRESELECTED NOISE CHARACTERISTICS

Paul J. Sekula, Mogadore, Ohio, and Gerald R. Potts, Edina, Minn., assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 199,678, Oct. 22, 1980, abandoned. This application Feb. 2, 1982, Ser. No. 345,195

Int. Cl.³ B60C *11/10*

U.S. Cl. 364—574 **16 Claims**



1. A device for producing a design element pattern of a preselected total length for a load supporting apparatus, the apparatus having a preselected, periodic audio frequency spectrum signal, the design element pattern including a plurality of individual design elements of varying lengths, the device comprising:

means for generating the preselected audio frequency spectrum signal;

means receiving the preselected, periodic audio frequency spectrum signal and generating an inverse Fourier transform signal thereof; and,

circuit means receiving said inverse Fourier transform signal and generating a periodic signal the period of which is substantially proportional to the preselected total length for the design element pattern and the relative amplitude of which at various points in time throughout one period is substantially proportional to the length of the individual design elements at similarly spaced locations over the preselected total length for the design element pattern.

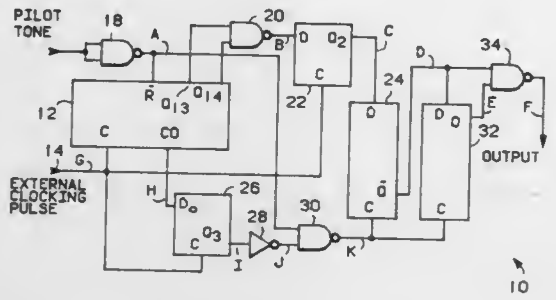
4,442,500
NARROW BAND DIGITAL FILTER

Lowell S. Kongable, Paradise Valley, Ariz., and Clint E. Bauer, Kaysville, Utah, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 16, 1981, Ser. No. 312,062

Int. Cl.^{3} H04B *1/16*

U.S. Cl. 364—724 **15 Claims**



10. A digital filter for activating circuitry of a stereo AM radio receiver, having a first input means adapted to receive pilot tone pulses of a transmitted stereo AM signal, said pulses having a period which may vary, and a second input means adapted to receive a clock signal from circuitry within said stereo AM radio receiver, said filter comprising:

timing means coupled to said first and second input means and responsive to said pilot tone pulses and said clock signal for generating a first signal having a first and a second state, said first state corresponding to a period of time within a predetermined range and for generating a second signal coincident with the end of said period of time;

first delay means coupled to said timing means and to said second input means and responsive to said second signal and said clock signal for delaying said second signal;

circuit means coupled to said first delay means and to said first input means and responsive to said delayed second signal and said input signal for generating an internal clock signal; and

logic means coupled to said timing means, said circuit means and said second input means and responsive to said first signal, said internal clock signal, and said clock signal for generating an output of a first polarity when said pilot tone pulses are within a predetermined frequency range and for generating an output of a second polarity when said pilot tone pulses are outside said predetermined frequency range.

4,442,501
ELECTRONIC POSTAGE METER WITH WEAK MEMORY INDICATION

Alton B. Eckert, Jr., Norwalk, and Edward C. Duwel, Trumbull, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Feb. 26, 1981, Ser. No. 238,330

Int. Cl.^{3} G06F *1/00*

U.S. Cl. 364—900 **14 Claims**

1. An accounting section for an electronic postage meter, comprising:

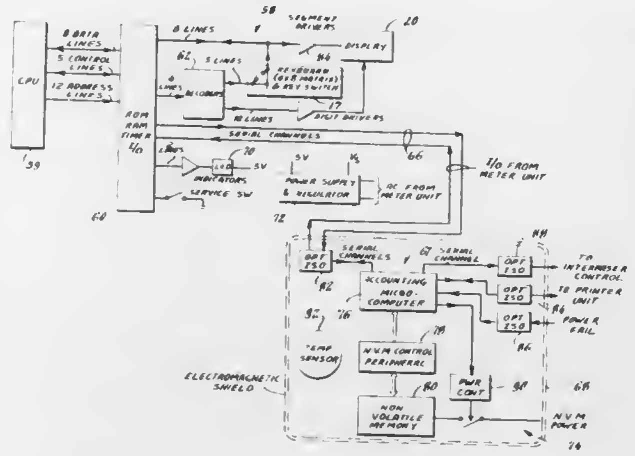
a nonvolatile memory having a plurality of normal data fields and a predetermined data field;

means for exercising said predetermined data field by erasing any data therein and writing a predetermined value therein;

computer means communicatingly connected to said nonvolatile memory for determining the data retention condition of said predetermined data field during a power-up cycle of the meter by reading said predetermined retention data field on every power-up cycle of said meter while reading a different one of said normal data fields on each power-up cycle, so that said predetermined retention data field is purposely cycled and degraded faster than said normal data fields;

means for establishing a constant value;

means for storing a value which results from a reading of said predetermined data field by said computer means; and



means for generating a signal when said stored value fails to correspond to said constant value obtained from a reading of said predetermined data field.

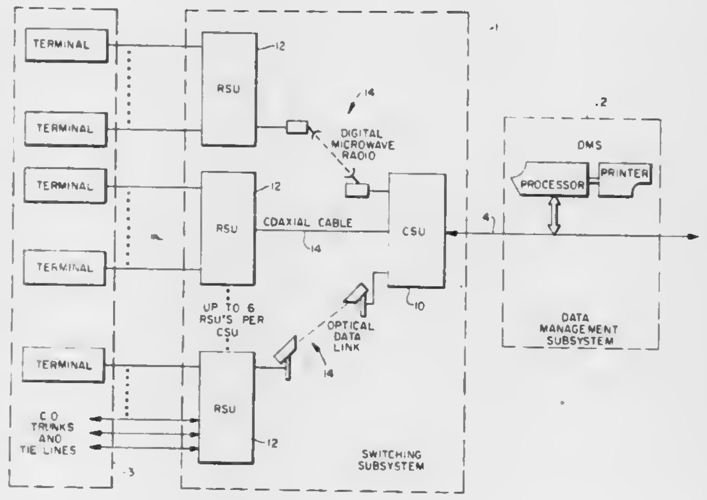
4,442,502
DIGITAL INFORMATION SWITCHING SYSTEM

George E. Friend, Dallas; John D. Meyers, Plano, and Steve Van Dyke, Dallas; James R. Carreker, San Antonio, all of Tex., assignors to Datapoint Corporation, San Antonio, Tex.

Filed Mar. 3, 1981, Ser. No. 248,821

Int. Cl.^{3} G06F *11/20, 3/04*

U.S. Cl. 364—900 **29 Claims**



1. A digital information switching system comprising

a plurality of terminal devices providing respective digital information signals;

a plurality of processor controlled first switching means each connected to a respective group of terminal devices for effecting interconnection between the devices connected thereto on a time slot exchange basis;

a second processor controlled switching means connected to each of said first switching means via a respective interswitch link for effecting interconnection on a time slot exchange basis between terminal devices connected to different ones of said first switching means; and

each of said first and second switching means including switching matrix means for selectively interconnecting inputs thereto and outputs therefrom by time slot interchange and controller means for controlling said switching matrix means on the basis of control information from said terminal devices;

wherein said controller means in each of said first and second switching means comprises a plurality of devices including a system processor, a random access memory device and a bus interface circuit connected in parallel to a controller bus for effecting transfer of address and data signals between said devices, said first and second switching means each further including terminal bus means for connecting said bus interface circuit to said switching matrix means for effecting control thereof by said system processor, maintenance processor means connected to said controller bus for detecting failure of a device connected to said controller bus and transmission means connected to said maintenance processor means for automatically transmitting data to a remotely-located service center identifying said failure.

4,442,503
DEVICE FOR STORING AND DISPLAYING GRAPHIC INFORMATION

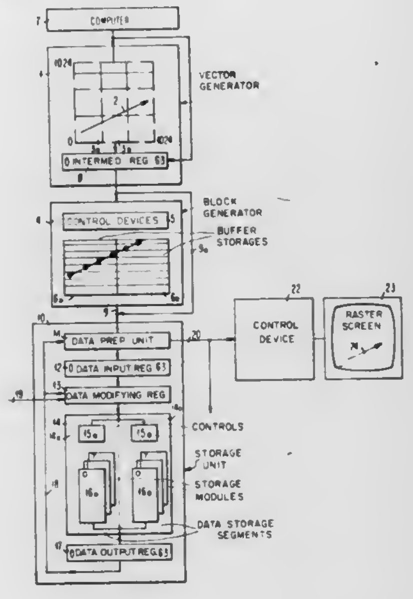
Dieter Schütt, Munich; Manfred Schwengler, Sindelfingen; Hartmut Ulland, Stuttgart, and Helmut H. Weis, Waldenbuch, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 16, 1981, Ser. No. 254,711

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1980, 3015125

Int. Cl.^{3} G06F *3/14*

U.S. Cl. 364—900 **12 Claims**



1. In a device for storing and displaying graphic information with a raster display having an image field, a storage unit comprising:

a plurality of storage modules, each for storing one of a plurality of elements of a plurality of information blocks, each of said plurality of elements representing a row of the image field;

a storage control for addressing said storage modules in a two-dimensional manner, such that (a) said plurality of elements of each of said plurality of information blocks are stored in successive ones of said storage modules, and that (b) the rows of the image field are stored in the modules in such a manner that storage locations of the same address within each of said plurality of storage modules store a row of the image field; and

a data preparation unit receiving the graphic information and communicating with said storage control, said data preparation unit aligning the graphic information prior to storage in said plurality of storage modules and aligning in the inverse order graphic information from said plurality of storage modules prior to transferral to the raster display, said data preparation unit comprising a register whose capacity corresponds to at least the size of one of said plurality of information blocks, said register having a feedback for cyclic shifting.

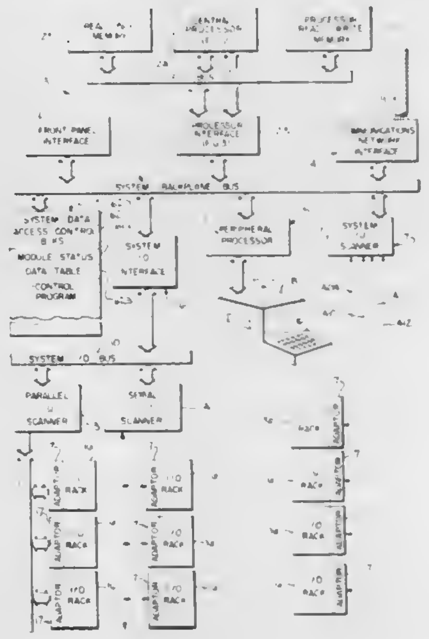
4,442,504
MODULAR PROGRAMMABLE CONTROLLER

Ernst H. Dummermuth, Chesterland; Daniel J. Galdun, Huntsburg; Raymond A. Grudowski, South Euclid, and Daniel L. Stewart, Parma, all of Ohio, assignors to Allen-Bradley Company, Milwaukee, Wis.

Continuation-in-part of Ser. No. 241,723, Mar. 9, 1981, abandoned. This application Oct. 21, 1981, Ser. No. 313,365

Int. Cl.^{3} G06F *7/00, 9/30*

U.S. Cl. 364—900 **17 Claims**



1. A programmable controller which comprises:

a backplane bus having leads for conducting data signals, leads for conducting address signals, and leads for conducting control signals;

a memory module connected to the leads in the backplane bus for conducting data, address and control signals and including means for storing a control program comprised of a set of macroinstructions, and means for storing a data table;

a CPU module connected to the leads in the backplane bus for conducting data, address and control signals and including

- (a) CPU arbitration means for obtaining access to the backplane bus,
- (b) fetch means coupled to the CPU arbitration means and being responsive to a FETCH signal to generate address and control signals on the backplane bus and to thereby obtain a macroinstruction from the control program in said memory module through the backplane bus and store it in a macroinstruction register,
- (c) memory means for storing an I/O image table,
- (d) CPU processor means coupled to said fetch means, said memory means and said CPU arbitration means, said processor means being operable to repeatedly execute the control program by sequentially executing macroinstructions in said macroinstruction register and generating FETCH signals to said fetch means, and in doing so, to read and write data to the I/O image table in said memory means and to read and write data to the data table in said memory module through said CPU arbitration means and said backplane bus.

4,442,505
CONTROL DEVICE OF COPYING MACHINE

Shouji Takano, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 20, 1981, Ser. No. 323,557

Claims priority, application Japan, Nov. 28, 1980, 55-167436

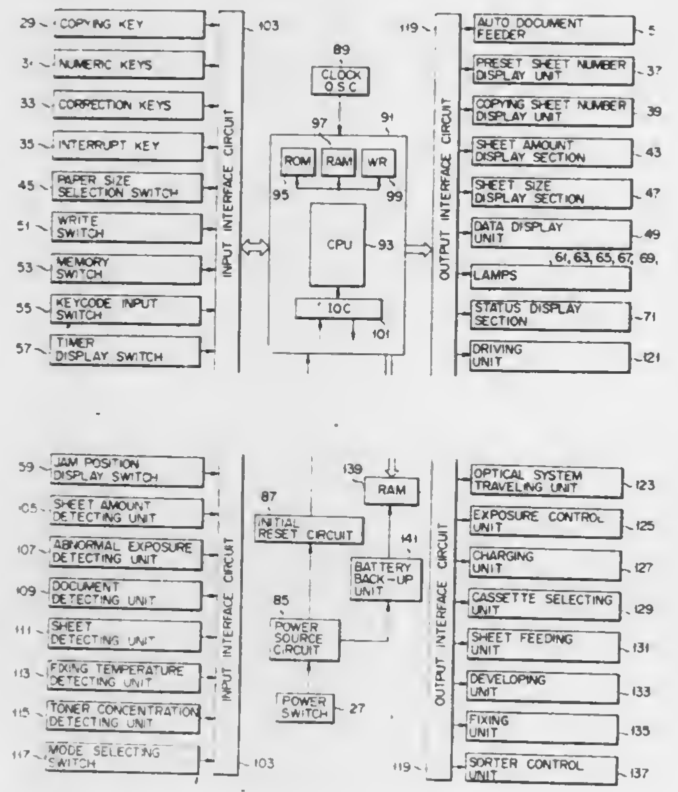
Int. Cl.^{3} G06F *9/06;* G03G *15/00*

U.S. Cl. 364—900 **3 Claims**

1. A control device of a copying machine wherein said control device is capable of actuating a plurality of processing components, including an automatic document feeder, a semi-automatic document feeder and a sorter, to continuously perform automatic copying with time sequence, comprising:

(A) means for setting copying conditions, including selection between said automatic document feeder and said semi-automatic document feeder, and a copying sheet number, based on the copying conditions;

(B) memory means for storing the copying conditions and the copying sheet number set by said setting means in correspondence with each other;



(C) means for judging if the number of copies produced has reached the copying sheet number which is stored in said memory means; and

(D) control means for reading out a copying condition from said memory means according to judging results obtained by said judging means, and including means for executing a copying operation based on said read out copying condition.

4,442,506

PORTABLE WORD-PROCESSOR

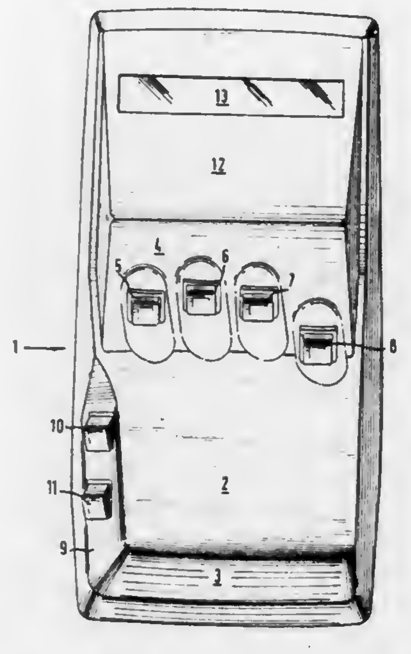
Cyril Endfield, London, England, assignor to Microwriter Limited, London, England

Division of Ser. No. 188,571, Sep. 18, 1980, Pat. No. 4,360,892, which is a continuation-in-part of Ser. No. 13,824, Feb. 22, 1979, abandoned. This application Jun. 14, 1982, Ser. No. 388,266

Int. Cl.³ G06F *3/023*

U.S. Cl. 364—900 **9 Claims**

1. A hand portable word-processor which can be held by one of an operator's hands to be operated only by the other hand or supported against a surface for operation only by one hand, comprising a manually operable input keyboard having four non-thumb finger keys and a first thumb key, means responsive to operation of the first thumb key and the non-thumb keys for generating different coded character signals each representing a different character in a particular alphabetic system, the number of said coded signals which are generatable by operation of said keys greatly exceeding the number of the keys themselves, a casing supporting said means and said keyboard, a microprocessor forming a part of said means, and a second thumb key forming a part of said keyboard and operable with pre-selected ones of said non-thumb finger keys to supply process instructions to said microprocessor to process said coded character signals, said first and second thumb keys and said non-thumb keys being positioned on said casing for operation with a single hand.



4,442,507

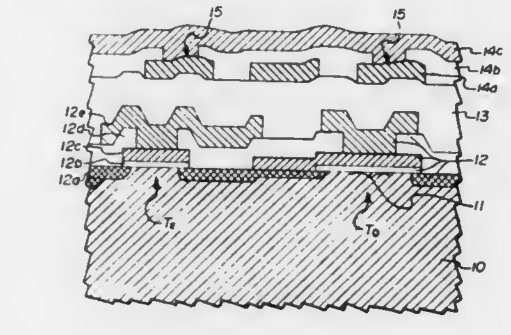
ELECTRICALLY PROGRAMMABLE READ-ONLY MEMORY STACKED ABOVE A SEMICONDUCTOR SUBSTRATE

Bruce B. Roesner, San Diego, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Feb. 23, 1981, Ser. No. 237,428

Int. Cl.³ G11C *11/40, 11/36*

U.S. Cl. 365—100 **12 Claims**



1. An electrically programmable read only memory having memory cells on an insulating layer which overlies a semiconductor substrate; each of said memory cells comprising:

a first semiconductor material having a polycrystalline grain structure;

a metallic compound in contact with said first semiconductor material forming a Schottky diode therewith; and

a second semiconductor material serially coupled within said cell to said Schottky diode; said second semiconductor material consisting essentially of a single element semiconductor selected from the group of Si, Ge, C, and α-Sn, having a crystalline grain size which is smaller than that of said polycrystalline semiconductor material, and having a concentration of dopant atoms of less than 10^{17} atoms/cm^3;

whereby said second semiconductor material will exhibit a high resistance that will irreversibly switch to a low resistance without the flowing of any metal therethrough upon the application of a threshold voltage thereacross.

4,442,508

STORAGE CELLS FOR USE IN TWO CONDUCTOR DATA COLUMN STORAGE LOGIC ARRAYS

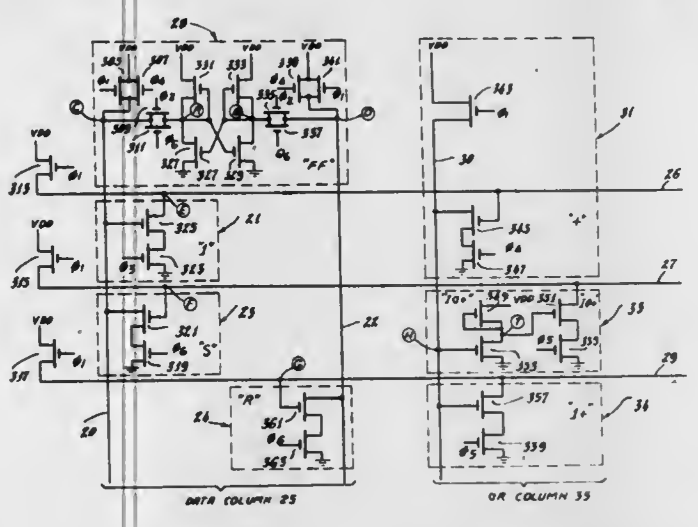
William Knapp, Chandler; William Dunn, Scottsdale, both of Ariz., and Kent F. Smith, Salt Lake City, Utah, assignors to General Instrument Corporation, New York, N.Y.

Filed Oct. 16, 1981, Ser. No. 311,925

Claims priority, application United Kingdom, Aug. 5, 1981, 8123966

Int. Cl.³ G11C *17/00, 11/40*

U.S. Cl. 365—104 **17 Claims**



1. A storage cell for use in a storage logic array having a plurality of columns and a plurality of rows interconnecting the columns, said storage cell comprising:

a pair of data column conductors;

a memory element;

means for transferring data from said memory element to said data column conductors upon activation by a clock pulse during a first time period; and

means for transferring data to said memory element from said data column conductors upon activation by a clock pulse during a second time period.

4,442,509

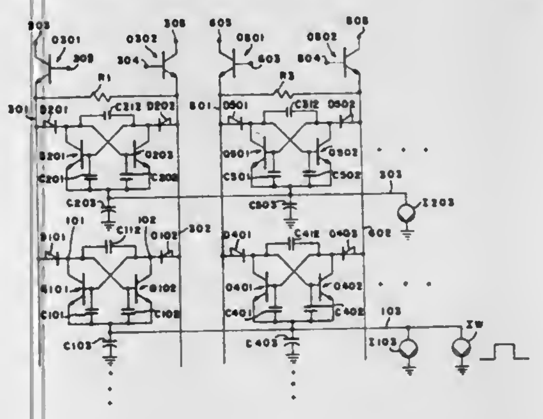
BIT LINE POWERED TRANSLINEAR MEMORY CELL

William H. Herndon, Sunnyvale, Calif., assignor to Fairchild Camera & Instrument Corporation, Mountain View, Calif.

Filed Oct. 27, 1981, Ser. No. 315,679

Int. Cl.³ G11C *13/00*

U.S. Cl. 365—154 **14 Claims**



14. A memory cell circuit comprising:

a word line;

a pair of bit lines;

a first and a second NPN transistor, each having a base, and an emitter, and a collector, the first emitter and the second emitter being coupled to the word line, the first base being coupled to the second collector and the second base being coupled to the first collector;

a first diode coupled between one of the bit lines and the first base, and a second diode coupled between the other bit line and the second base;

a first capacitance coupled between the base and the emitter of the first transistor and a second capacitance coupled between the base and the emitter of the second transistor;

a third capacitance coupled between the collector of the first transistor and the collector of the second transistor;

a fourth capacitance coupled between the word line and ground potential;

a first resistance coupled between the bit lines; and

means for applying electrical signals to each of the bit lines and the word line.

4,442,510

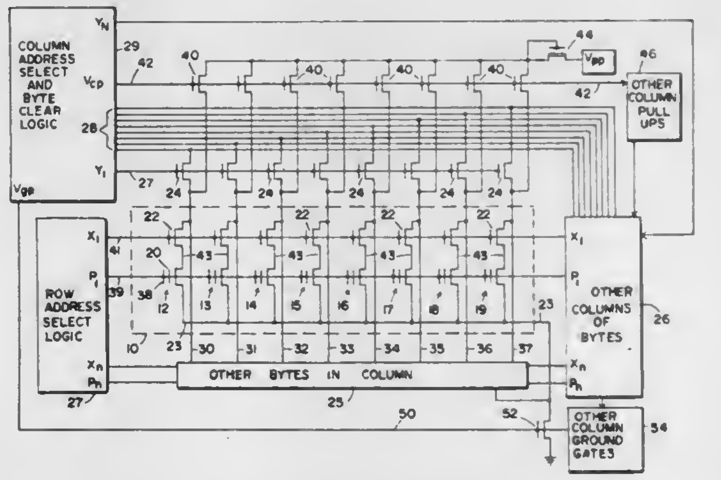
SEMICONDUCTOR MEMORY BYTE CLEAR CIRCUIT

Ury Priel; Giora Yaron, both of Cupertino, and Mark S. Ebel, Santa Clara, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Dec. 28, 1981, Ser. No. 334,698

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—218 **10 Claims**



1. Apparatus to permit clearing individual bytes in an electrically alterable read-only memory of the type having a clear signal generating means for generating a clear signal, a row and column address select means, and an array of rows and columns of bytes, each byte comprising a plurality of storage cells, each of which cells include at least one switching device that can be cleared by the application of said clear signal thereto, said switching device connected between a ground line and an output line, comprising:

ground isolating means, operable in response to the reception of a first signal, to isolate the ground lines for the switching devices in the bytes in one column from the ground lines for the switching devices in the bytes of the other columns;

first connecting means, operable in response to the reception of a second signal, to connect the output lines for the switching devices in the bytes in said one column to the clear signal generating means;

a clear prevention signal generating means for generating a clear prevention signal; and

second connecting means, operable in response to the reception of a third signal, to connect said output lines for the switching devices in the bytes in said columns to the clear prevention signal generating means, said clear signal being sufficient to overcome said clear prevention signal when both said clear signal and said clear prevention signal are applied to said output lines.

4,442,511

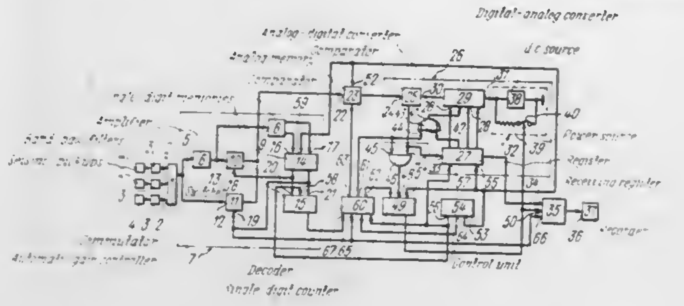
DIGITAL OUTPUT TELEMETERING SYSTEM FOR RECORDING SEISMIC SIGNALS

Vadim V. Meer; Vladimir I. Nesterov, and Boris G. Lapshin, all of Ryazan, U.S.S.R., assignors to Ryazansky Radiotekhnichesky Institut, Ryazan, U.S.S.R.

Filed Aug. 31, 1981, Ser. No. 298,336

Int. Cl.^{3} G01V *1/22*

U.S. Cl. 367—78 **4 Claims**



1. A digital output telemetering system for recording seismic signals, comprising:

a group of seismic pickups each of which having an output;

a group of seismic signal band-pass filters in a number equal to the number of said seismic pickups, each of said filters having an output, and an input connected to said output of a respective seismic pickup;

a seismic channels commutator having inputs in a number equal to the number of said seismic signal band-pass filters, and an output, said inputs of said seismic channels commutator being connected to respective outputs of said seismic signal band-pass filters;

an instantaneous automatic gain controller having an input connected to said output of said commutator, said instantaneous automatic gain controller comprising: an amplifier having an input and an output, said input being connected to said output of said seismic channels commutator; a voltage comparator having an input, a set output and a reset output, said input being connected to said output of said amplifier; a first switch having a signal input, a control input and an output, said signal input being connected to said output of said amplifier; a second switch having a signal input, a control input and an output, said signal input being connected to said output of said seismic channels commutator; a first single-digit memory having a set input, a reset input, a write input, a reset output and a set output, said reset and set inputs being respectively connected to said reset and set outputs of said voltage comparator, said reset output being connected to said control input of said first switch, and said set output being connected to said control input of said second switch; a second single-digit memory having a reset input, a set input, a write input, and an output, said reset and set inputs being respectively connected to said reset and set outputs of said first single-digit memory;

an analog memory having a signal input, a first control input, a second control input, and an output, said signal input being connected to said output of said first switch and to said output of said second switch, said first control input being connected to said write input of said first single-digit memory;

an analog-digital converter comprising: a comparator having a signal input, an input and a logic output, said signal input being connected to said output of said analog memory; a digital-analog converter having digital inputs, a calibrating input, an analog input, and an output, said output being connected to said input of said comparator; a calibrating current source serving as a power source of the digital-analog converter and having a control input and an output, said output being connected to said analog input of said digital-analog converter; a register having a trigger input, a setting input, a control input connected to said logic output of said comparator, and a group of digital outputs which are connected to respective digital inputs of said digital-analog converter; an OR gate having a first input, a second input, and an output, said first input being connected to a digital output of said group of digital outputs of said register, said output being connected to said calibrating input of said digital-analog converter;

an AND gate having a first input, a second input, and an output, said first input being connected to said second input of said OR gate, said second input of said AND gate being connected to said logic output of said comparator;

a counter having a count input, a reset input, a set input, and an output, said count input being connected to said output of said AND gate, said output of said counter being connected to said control input of said calibrating current source for effecting instantaneous automatic calibration of said analog-digital converter;

a control unit for controlling said digital-analog converter, having a trigger output, a setting output and a calibrating output, said trigger output being connected to said trigger input of said register and to said write input of said second single-digit memory, said setting output being connected to said setting input of said register and to said first control input of said analog memory, said set input of said counter, and said write input of said first single-digit memory;

a decoder having a first input, a second input, a third input, a fourth input, a first output, a second output, and a third output, said first input being connected to said output of said second memory, said second input being connected to said set output of said first single-digit memory, said third input being connected to said calibrating output of said control unit, said fourth input being connected to said trigger output of said control unit, said first output being connected to said second control input of said analog memory, said second output being connected to said first input of said AND gate and said second input of said OR gate, said third output being connected to said reset input of said counter;

a receiving register having a first input, a second input, a third input, and an output, said first input being connected to said digital outputs of said register, said second input being connected to said output of said counter, said third input being connected to said set output of said first signal-digit memory; and

a recorder having an input connected to said output of said receiving register.

4,442,512

ULTRASONIC WAVE TRANSMITTING AND RECEIVING DEVICE FOR VEHICLES

Masao Kodera, and Sigeyuki Akita, both of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Apr. 17, 1981, Ser. No. 255,275

Claims priority, application Japan, Jul. 1, 1980, 55-93372[U]

Int. Cl.^{3} G01S *15/93*

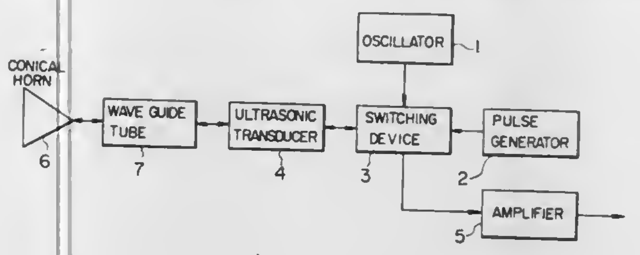
U.S. Cl. 367—87 **1 Claim**

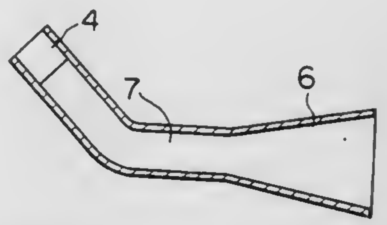
1. An ultrasonic wave transmitting and receiving device adapted to be mounted on a vehicle, particularly at the rear end portion of said vehicle, said device having an ultrasonic transducer adapted for transmitting an ultrasonic transducer wave which is an attenuated oscillation when a pulse is generated and for receiving an echo reflected by an obstruction, characterized by comprising:

a horn opening rearwardly from said vehicle;

an ultrasonic transducer attached to said vehicle at a position spaced in the forward direction of said vehicle from a rear bumper; and

a waveguide tube connecting to said ultrasonic transducer and said horn, said waveguide tube being long enough to sufficiently lower the level of the attenuated oscillation of the pulse ultrasonic wave and being bent at a predetermined radius of curvature.





4,442,513

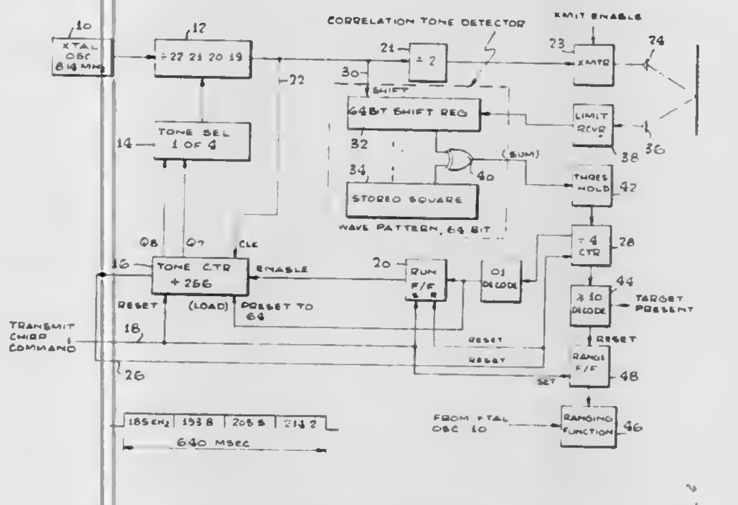
SONAR TRANSCEIVER SYSTEM AND METHOD

Ronald C. Mead, Van Nuys, Calif., assignor to The Bendix Corporation, Southfield, Mich.

Filed Feb. 5, 1982, Ser. No. 345,987

Int. Cl.^{3} G01S *15/14, 7/66*

U.S. Cl. 367—100 **14 Claims**



1. A sonar transceiver system including transducer means for transmitting and receiving sonar signals in the water, including means for generating chirp-like electrical signals connected to said transducer, means to convert said electrical signals to acoustic transmitted signals and means for receiving echo signals including said transducer means and a correlator for correlating the received signals with the transmitted signals and which responds to a recognized correlation by producing an output signal, characterized in that said system includes:

(a) means including said transducer means for generating and transmitting sonar signals consisting of a plurality of n ultrasonic tones closely spaced in frequency and consecutive such as to form a pseudo chirp pulse,

(b) means for receiving and detecting echo signals including said transducer means, and a receiver including hard limiting means for converting said received signals into binary signals,

(c) a shift register for receiving said binary signals,

(d) clock means connected to said shift register for processing samples of said binary signals through said register for a predetermined number of counts at a rate corresponding to the frequency of the first of said tones,

(e) storage means for storing a binary wave pattern corresponding to said transmitted tones as limited,

(f) correlation means comprising said received binary signals with said stored pattern and producing an output signal when said shift register binary signal and said stored pattern reach a desired correlation,

(g) means responsive to the occurence of said output signal to reset said clock to change the rate of sampling said received binary signals in said shift register to correspond to the frequency of the second of said tones, said correlation means then comparing said received binary signals with said stored pattern and producing a second output signal when said shift register binary signal and said stored pattern reach a desired correlation,

(h) means responsive to the completion of the number of counts of said clock means at each of said second and subsequent output signals to the nth output signals for successively resetting said clock to change the rate of processing said binary signals in said shift register to correspond to the frequencies of said second and successive tones to the nth tone, said correlation means producing an output signals each time said shift register binary signal and said stored pattern reach a desired correlation,

(i) circuit means determining whether said output signals represent the reception of said tones in the proper order as transmitted, and

(j) majority test means responsive to the occurence of a desired majority of said "n" tones and providing an output if said desired majority of tones is present.

10. A system for correlating a series of uniform alternating current signals closely spaced in frequency and consisting of first through nth tones with unknown alternating current signals believed to contain said tones comprising,

means hard limiting said unknown alternating current signals to produce a series of binary signals,

a shift register including a clock terminal for clocking samples of said binary signals therethrough,

a storage register for storing a pattern of binary signals corresponding to the pattern of a sine wave as hard limited,

programmable counter means connected to said clock terminal for providing variable frequency clock pulses to said shift register, the frequencies of said clock pulses corresponding to the order of said first through nth tones,

comparator circuit and summing means connected to said shift register and said storage register for continuously comparing the binary signals thereon and for producing output signals of a desired magnitude upon the occurence of correlations between said binary signals,

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4,442,514

SECURITY SYSTEM SIGNAL PROCESSOR

Roger R. Roth, Minnetonka, Minn., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 17, 1981, Ser. No. 329,560

Int. Cl.^{3} G08B *13/00*

U.S. Cl. 367—136 **7 Claims**

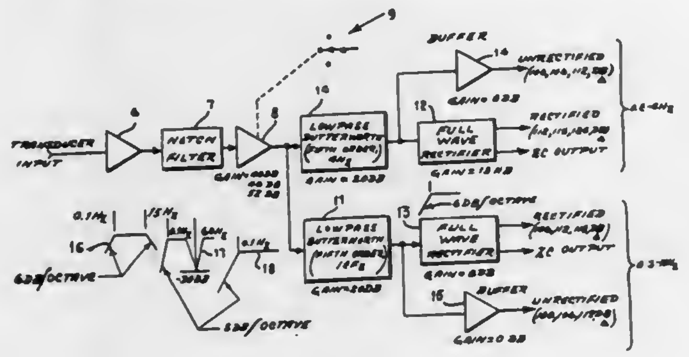
1. In combination with a security system having transducer means responsive to intrusion event detection, a signal processor comprising:

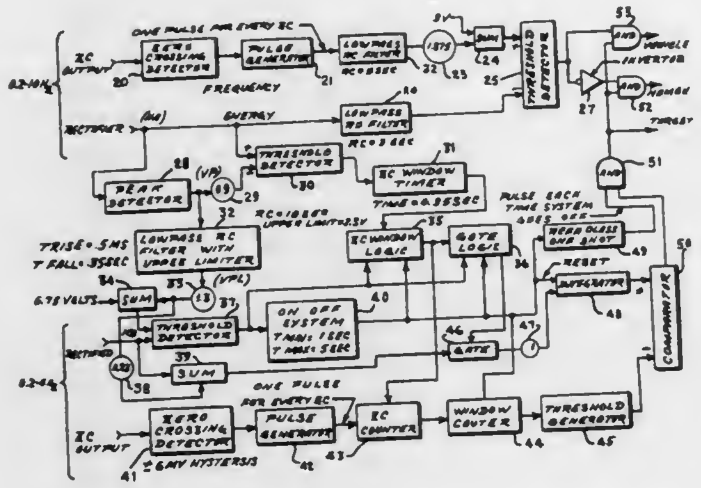
a signal conditioning circuit receiving transducer means output signals and developing therefrom rectified and unrectified high pass frequency signals and rectified and unrectified low pass frequency signals,

an intrusion type identification circuit receiving said rectified and unrectified high pass frequency signals and developing therefrom signals representing human intrusions and signals representing vehicle intrusions,

an intrusion event detection circuit receiving said rectified and unrectified low pass frequency signals and said rectified high pass frequency signal and developing therefrom discrete intrusion event signals, and

a classification logic circuit receiving said intrusion event signals, said signals representing human intrusions and said signals representing vehicle intrusions and providing output signals in response to human intrusion events and output signals in response to vehicle intrusion events.





4,442,515

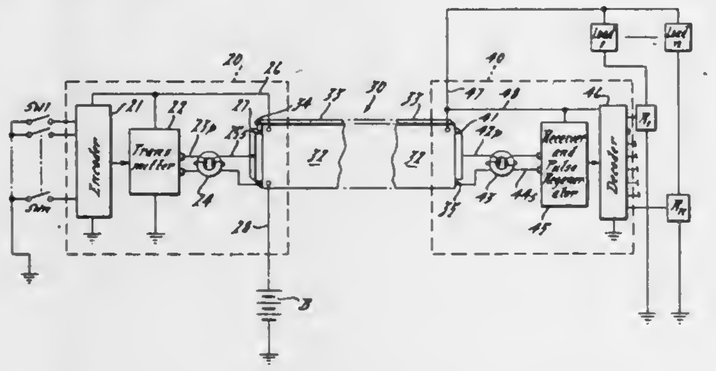
MULTIPLEX TRANSMISSION MEDIUM FOR APPLICATION IN MULTIPLEX VEHICLE CONTROL SYSTEMS

Allen H. Meitzler, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 17, 1981, Ser. No. 331,721

Int. Cl.³ B60Q *1/26*

U.S. Cl. 367—197 **11 Claims**



1. An electrical control system for command switching and controlling a plurality of remotely located electrical devices from a command station including:

means for supplying electrical power to said system;

means for converting commands from said command station to corresponding coded ultrasonic control signals;

means connected to each of said electrical devices for receiving said ultrasonic control signals and switching said electrical power to an appropriate electrical device according to said code; and

means interconnecting said command station, said electrical supply means, said converting means, said electrical devices and said receiving and switching means, for transmitting both said ultrasonic control signals and said electrical power, wherein said transmission means comprises a unitary strip of material having low resistance to both electrical current conduction and to stress wave propagation.

4,442,516

DRIVE MECHANISM FOR DISC PLAYER WITH BEARING SUPPORTED SLIDER

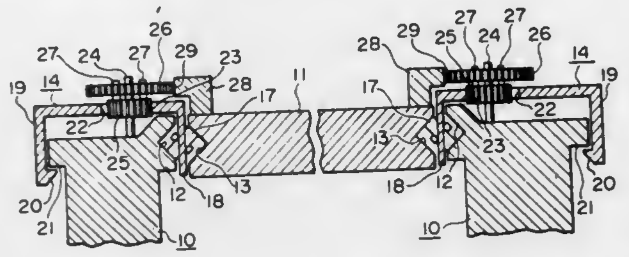
Tadashi Funabashi, Saitama, Japan, assignor to Universal Pioneer Corporation, Tokyo, Japan

Filed Jun. 1, 1981, Ser. No. 269,163

Claims priority, application Japan, May 31, 1980, 55-72919; May 31, 1980, 55-72920; May 31, 1980, 55-72921; May 31, 1980, 55-72922

Int. Cl.³ G11B *21/08*

U.S. Cl. 369—43 **16 Claims**



1. A drive mechanism for a disc player comprising: a chassis; a pair of guide rails spaced at a predetermined distance and fixed to said chassis parallel to each other; a plurality of bearings; a slider having both sides thereof contacting corresponding sides of said guide rails through said bearings; a retainer for restricting deviation of said bearings, said retainer having first means for restricting said bearings and second means for engaging said guide rails, said retainer engaging said slider through said bearings, said retainer being slidable in a longitudinal direction of said guide rails.

4,442,517

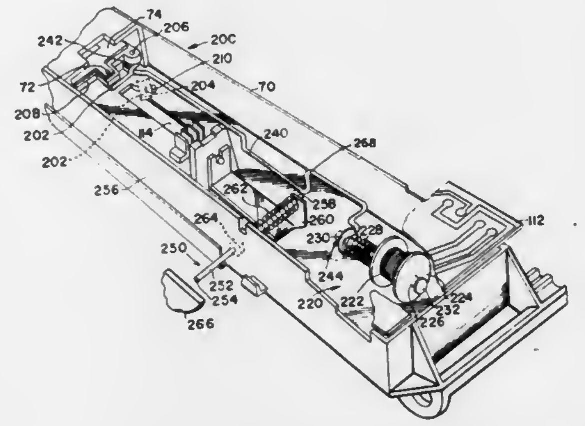
STYLUS PROTECTING MECHANISM FOR VIDEO DISC PLAYER

Eric A. Brauer, Danville, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 13, 1982, Ser. No. 449,315

Int. Cl.³ G11B *3/58*

U.S. Cl. 369—71 **5 Claims**



1. In a record player including a pickup stylus subject to engagement with a turntable-supported record during playback; said stylus being mounted at one end of a stylus arm having its other end yieldably supported in a translatable carriage which is subject to lateral motion between a rest position clear of said turntable and playback positions over said turntable; said player further having a selectively-activated means mounted in said carriage for lifting and lowering said stylus arm; said player additionally including a carriage-mounted stylus cleaning means for selectively cleaning said stylus; an apparatus comprising:

sensing means subject to conditioning in a first state and a second state in response to the disposition of said carriage away from said rest position and at said rest position respectively;

said sensing means, when disposed in said second state, disabling said carriage-mounted stylus cleaning means.

4,442,518

CHANNEL SWITCHING SYSTEM FOR USE IN A DIGITAL COMMUNICATION SYSTEM

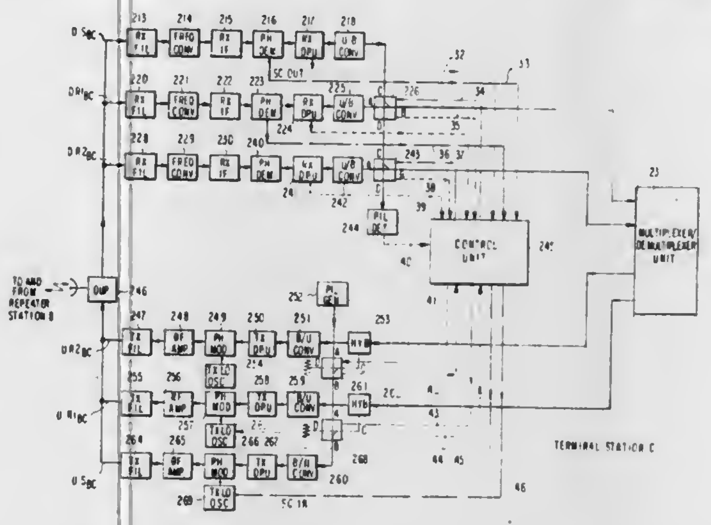
Hideaki Morimoto, Tokyo, Japan, assignor to Nippon Electric Company, Ltd., Tokyo, Japan

Filed Apr. 21, 1981, Ser. No. 256,225

Claims priority, application Japan, Apr. 28, 1980, 55-57252

Int. Cl.³ H04L *1/22*

U.S. Cl. 371—8 **10 Claims**



1. A channel switching method for use in a digital communication system having a repeater station linking first and second stations with at least first and second regular channels and a standby channel, said first and second regular channels including a regenerative relay channel and a dropping/insertion channel at said repeater station, respectively, and each of said channels being capable of carrying a digital signal, said method comprising the steps of:

(1) detecting at said second station a channel fault condition on each of said first channel and said standby channel and providing a first control signal upon detections of a fault on said first regular channel and a non-fault on said standby channel;

(2) transmitting at said second station said first control signal from said second station to said first station through said repeater station;

(3) transmitting at said first station said digital signal over said first regular channel and said standby channel in response to said first control signal, providing a second control signal indicative of said transmitting, and transmitting said second control signal to said repeater station;

(4) transmitting at said repeater station a third control signal indicative of the presence or absence of a fault on said standby channel between said first station and said repeater station to said second station in response to at least said second control signal;

(5) providing at said repeater station a fourth control signal in response to at least said second control signal;

(6) connecting at said repeater station said standby channel between said first station and said repeater station to the standby channel between said repeater station and second station in response to said fourth control signal, and providing a fifth control signal indicative of said connecting;

(7) transmitting at said repeater station said fifth control signal to said second station; and

(8) switching over at said second station said first regular channel to said standby channel in response to at least said third and fifth control signals at said second station.

4,442,519

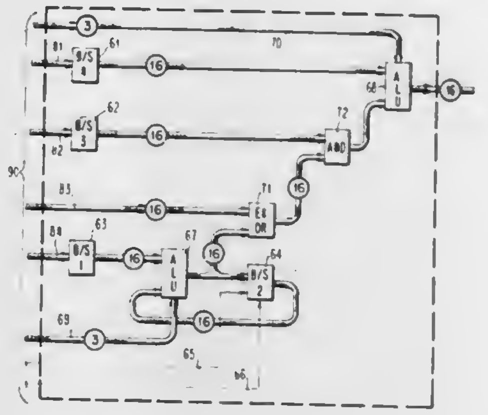
MEMORY ADDRESS SEQUENCE GENERATOR

Robert E. Jones, Fishkill, and Donald H. Wood, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 5, 1982, Ser. No. 354,971

Int. Cl.³ G11C *29/00;* **G01R** *31/28*

U.S. Cl. 371—27 **7 Claims**



1. In a device for testing the operation of a multi-dimensional data storage memory, an apparatus for producing a selected one of a plurality of sequences of numerical values manifestive of the successive memory elements to be tested comprising;

(a) a plurality of pairs of address generating means, each pair consisting of a first and a second address generating means, each of said first and said second address generating means being operative responsive to preset numerical values and the receipt of timing impulses to produce a sequence of numerical values manifestive of the respective addresses of the memory elements to be tested;

(b) selecting means connected to the outputs of said first and second address generating means of each of said pairs and operative responsive to predetermined timing impulses for selecting the outputs of said first or said second address generating means;

(1) each of said first and said second address generating means comprising;

i. counting means operative responsive to a succession of timing impulses and a preset differential value for producing a succession of numerical values each differing from the preceding one in the succession by the preset value;

ii. control means operative responsive to a preset control and connected to the output of said counting means for causing the output of said counting means to ascend or descend in value;

iii. masking means connected to the output of said control means and operative responsive to a preset value to inhibit the value of the numerical sequence from exceeding a value one less than the preset value;

iiii. and means for adding a constant value to each of the sequence of numerical values of the sequence of numbers after the sequence is inhibited by said masking means,

whereby said first of said address generating means produces a first unique sequence of memory addresses and said second of said address generating means produces a second unique sequence of memory addresses and said selecting means selects the intermixing of the first and second sequences.

4,442,520

SIGNAL ERROR DETECTING

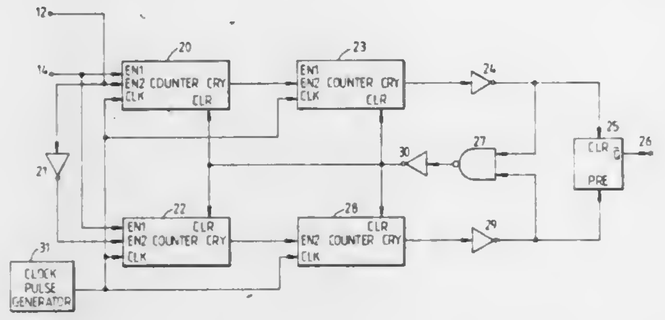
John G. S. Ive, and Alan C. Thirlwall, both c/o Sony Broadcast Limited, City Wall House, Basing View, Basingstoke, Hampshire, England

Filed Nov. 2, 1981, Ser. No. 317,295

Claims priority, application United Kingdom, Nov. 18, 1980, 8036934

Int. Cl.^{3} G06F *11/08*

U.S. Cl. 371—55 **14 Claims**



1. Apparatus for correcting errors in a square-wave input signal which alternates between first and second levels in periodic sequences, comprising:

first and second counter means supplied with said input signal and connected so that said first counter means is enabled to count when said input signal is of said first level and said second counter means is enabled to count when said input signal is of said second level;

a clock pulse source for supplying to said first and second counter means a clock pulse signal of high frequency relative to the frequency of said input signal;

error detector means connected to said input signal for detecting errors therein and supplying an error signal to disable both said first and second counter means; and

a bistable circuit arranged to be triggered to a first stable condition by an overflow signal from said first counter means and to a second stable condition by an overflow signal from said second counter means, whereby said bistable circuit supplies an output signal forming a corrected replica of said input signal.

4,442,521

SWITCHING DEVICE FOR DETECTING INTERRUPTIONS IN TRANSMISSION LINES

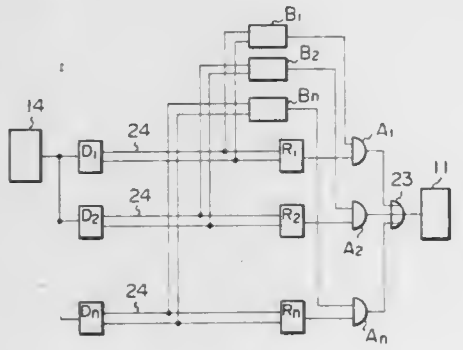
Hajimu Inaba, and Hideo Miyashita, both of Hino, Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Aug. 24, 1981, Ser. No. 295,318

Claims priority, application Japan, Sep. 1, 1980, 55-119828

Int. Cl.^{3} G06F *11/00*

U.S. Cl. 371—68 **2 Claims**



2. A switching system for a plurality of parallel transmission lines carrying a serial digital signal between an input circuit and an output circuit comprising:

a plurality of driving means connected to said input circuit, each of said driving means producing a first digital output corresponding to said digital signal and a second digital output of opposite plurality to said first digital output;

a receiver means connected to each of said driving means for receiving said first and second digital outputs and reconverting them to produce an output signal corresponding to said digital signal;

an exclusive OR gate connected to each of said driving means having inputs for receiving said first and second digital outputs and providing an output only when said first and second digital outputs of opposite polarity are received;

an AND gate having inputs connected to the output of said receiver means and exclusive OR gate of each driving means, said AND gate functioning as a switch to stop passage of said receiver output signal if no exclusive OR gate output is present; and

an OR gate having inputs connected to the outputs of each of said AND gates, for combining the output signals received from each receiver means.

4,442,522

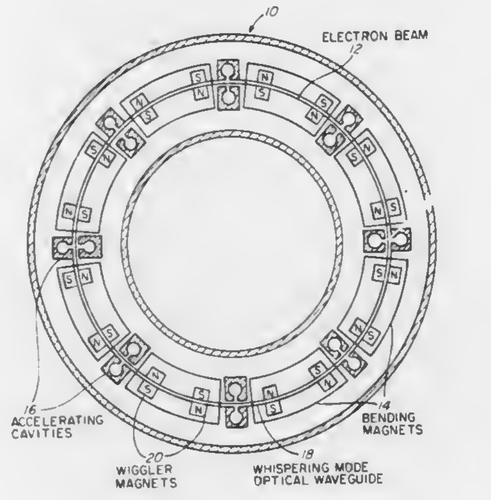
CIRCULAR FREE-ELECTRON LASER

Charles A. Brau, Los Alamos; Norman A. Kurnit, Santa Fe, and Richard K. Cooper, Los Alamos, all of N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 26, 1982, Ser. No. 342,682

Int. Cl.^{3} H01S *3/00*

U.S. Cl. 372—2 **12 Claims**



1. A high power, high efficiency free electron laser comprising:

circular relativistic electron beam accelerator means for producing a circular relativistic electron beam;

free electron laser wiggler means disposed in said circular relativistic electron beam accelerator for generating a periodic magnetic field to transform energy from said circular relativistic electron beam to optical energy;

circular whispering mode optical waveguide means for guiding said optical energy in a circular path in said circular relativistic electron beam accelerator such that said circular relativistic electron beam and said optical energy are spatially contiguous in a resonant condition for free electron laser operation.

4,442,523

HIGH POWER METAL VAPOR LASER

Bernard G. Bricks, Berwyn, Pa., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 17, 1981, Ser. No. 331,750

Int. Cl.^{3} H01S *3/22*

U.S. Cl. 372—56 **3 Claims**

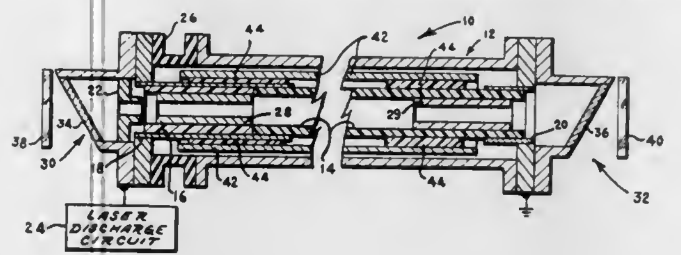
1. In a high power metal vapor laser having a housing; means situated adjacent each end of said housing for defining a resonant cavity therebetween, said resonant cavity containing a lasing medium therein; means located adjacent one end of said housing for initiating a lasing action in said housing; a longitudinally extending, non-electrically conductive discharge tube within said housing; means made of an electrically conductive material adjacent the other end of said housing for supporting an end of said discharge tube; and a recirculating wick structure; the improvement therein comprising:

said recirculating wick structure being positioned at said one end of said housing adjacent said initiating means and being located adjacent to and outside of the confines of said discharge tube;

means made of an electrically conductive material adjacent said one end of said housing for supporting both another end of said discharge tube and said wick structure, said supporting means for said discharge tube and said wick structure being of sufficient length so as to be positioned directly in line with and circumscribing both said wick structure and a portion of said discharge tube; and

means made of a non-electrically conductive material being directly interposed between said wick structure and said supporting means for said discharge tube and said wick structure for electrically separating said wick structure from said supporting means for said discharge tube and said wick structure;

whereby said metal vapor laser produces a high output and substantially eliminates the problem of discharge tube breakge.



4,442,524

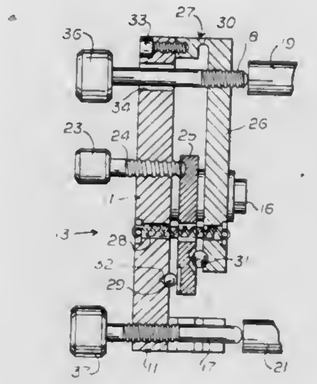
MULTIPLE LEVER APPARATUS FOR POSITIONING AN OPTICAL ELEMENT

Dennis J. Reeder, Cupertino, Calif.; John S. Campbell, Indianapolis, Ind.; Keith J. Kasunic, Los Altos Hills, and Lee H. Laiterman, Santa Clara, both of Calif., assignors to Spectra-Physics, Inc., San Jose, Calif.

Filed Jun. 3, 1982, Ser. No. 384,459

Int. Cl.^{3} H01S *3/08*

U.S. Cl. 372—107 **7 Claims**



1. An apparatus for making fine adjustments in the positioning of a mirror in a laser cavity and comprising,

a mirror base plate to which the mirror is attached,

a first fine-adjustment mechanism for making an angular adjustment of the base plate and mirror about one axis, said mechanism comprising,

an input link and an output link arranged generally parallel to one edge of the base plate with each link acting as a lever and first pivot means for imparting great mechanical advantage to motion at one end of the output link as a result of input motion of one end of the input link,

output link fulcrum means associated with fixed structure of the laser and located near the opposite end of the output link for establishing still greater mechanical advantage through the pivoting of the output link,

second pivot means connecting one end of the base plate edge to the output link at a point of reduced motion of the output link near said opposite end of the output link,

base plate fulcrum means associated with fixed structure of the laser and located at the end of the base plate edge opposite said one end and positioned so that said reduced motion of the output link pivots the base plate about the base plate fulcrum means for adjusting the mirror about one axis, and

an input fine-adjustment screw engaging said one end of the input link and threaded through screw threads associated with the base plate so that rotation of the input fine-adjustment screw effects very fine adjustment of the angular position of the base plate and mirror about said one axis.

4,442,525

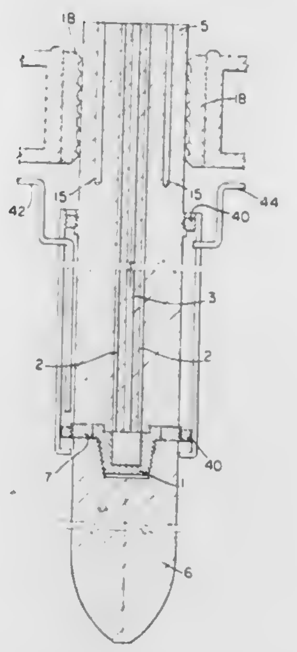
ELECTRODE FOR ARC FURNACES

Dieter H. Zölner, Claremorris, Ireland; Friedrich Rittmann, Rückersdorf b. Nünberg, Fed. Rep. of Germany; Herbert Dung, Dortmund, Fed. Rep. of Germany; Johannes Haremsa, Herne, Fed. Rep. of Germany; Georg Bauer, Witten-Bommern, Fed. Rep. of Germany; Josef Otto; Josef Mühlenbeck, both of Wetter, Fed. Rep. of Germany, and Inge Lauterbach-Dammler, Nuremberg, Fed. Rep. of Germany, assignors to Arc Technologies Systems Ltd., Cayman Island

Filed Jan. 26, 1982, Ser. No. 342,813

Int. Cl.^{3} H05B *7/08*

U.S. Cl. 373—93 **30 Claims**



1. An arc furnace electrode comprising a metallic top portion having a lower region, a consumable replaceable bottom portion, a threadable interconnection joining said top portion and said bottom portion, a liquid cooling means for cooling said top portion including a feed and a return duct, and a protective covering provided over at least a portion of the top portion particularly including said bottom region, said protective covering being constituted by a sheath of electrically conductive, mechanically resistant material detachably surmounted upon the top portion.

4,442,526

ELECTRIC ARC FURNACE ARCING ELECTRODE SEAL

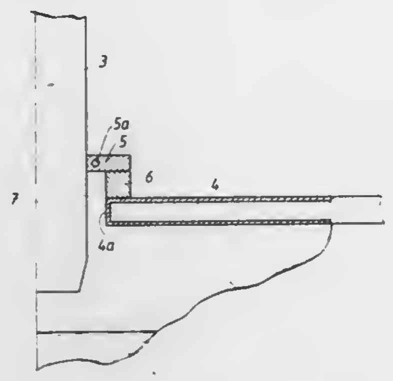
Bo Rappinger, and Sven-Einar Stenkvist, both of Västerås, Sweden, assignors to ASEA AB, Västerås, Sweden

Filed Apr. 19, 1982, Ser. No. 369,619

Claims priority, application Sweden, Apr. 21, 1981, 8102527

Int. Cl.³ H05B *7/12*

U.S. Cl. 373—95 **3 Claims**



1. An electric arc furnace having an electrically conductive roof forming an opening through which an arcing electrode depends, the opening having a periphery forming a space around the electrode so as to prevent arcing between the roof and electrode when the furnace is operating, an electrically non-conductive tubular column surrounding the electrode and extending upwardly from said periphery and forming an upwardly extending space around the electrode, and an electrically conductive seal positioned around the electrode on the upper end of the column and closing the upper end of the upwardly extending space, the seal being water cooled and providing a sliding contact between itself and the electrode so that it is in electrical contact with the electrode and the column spacing the seal from the roof so as to prevent arcing between the seal and the furnace roof when the furnace is operating, said column having an inside diameter not less than the diameter of said periphery so as to cause the latter and the adjacent portion of said roof to shield said inside from direct exposure to the inside of the furnace below the roof.

4,442,527

SYNCHRONIZATION SYSTEMS

Peter J. Munday, Reading, England, assignor to Racal Research Limited, Bracknell, England

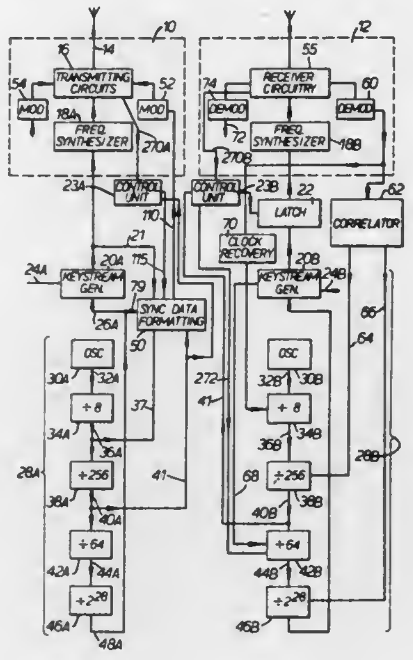
Filed Dec. 18, 1981, Ser. No. 332,192

Claims priority, application United Kingdom, Jun. 24, 1981, 8119492

Int. Cl.³ H04L *7/00*

U.S. Cl. 375—1 **16 Claims**

1. A radio transmitting and receiving system, comprising
a radio transmitter,
transmitter control means operative to control the transmitter so that it transmits successively at each one in a predetermined sequence of different transmitting frequencies each of which is held for a respective predetermined transmitting period,
a radio receiver,
receiver control means operative to control the receiver so that it receives successively at each of the frequencies in the said sequence, and
synchronisation means operative to synchronise the transmitter control means and the receiver control means by means of the provision of timing information which tends to make the receiver frequency at any time the same as the transmitter frequency,
the synchronisation means comprising formatting means at ~~the~~ transmitter for producing, and transmitting to the receiver during some, only, of the said predetermined transmitting periods, a synchronisation signal whose value represents part of the timing information and whose time of occurrence represents another part of the timing information, and sync receiving means at the receiver for extracting the value of the synchronisation signal and its time of occurrence.



4,442,528

PULSE COMMUNICATION METHOD AND SYSTEM USING CMI TO 3-LEVEL CMI CONVERSION

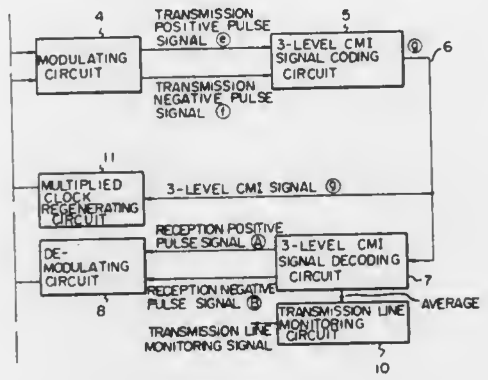
Akira Fukuda, Yokohama, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Apr. 14, 1982, Ser. No. 368,846

Claims priority, application Japan, Apr. 27, 1981, 56-64898; Mar. 5, 1982, 57-34983

Int. Cl.³ H03K *13/24*

U.S. Cl. 375—20 **11 Claims**


4
MODULATING CIRCUIT
TRANSMISSION POSITIVE PULSE SIGNAL ⓔ
TRANSMISSION NEGATIVE PULSE SIGNAL ⓕ
5
3-LEVEL CMI SIGNAL CODING CIRCUIT
ⓖ
6
11
MULTIPLIED CLOCK REGENERATING CIRCUIT
3-LEVEL CMI SIGNAL ⓖ
DE-MODULATING CIRCUIT
8
RECEPTION POSITIVE PULSE SIGNAL Ⓐ
RECEPTION NEGATIVE PULSE SIGNAL Ⓑ
3-LEVEL CMI SIGNAL DECODING CIRCUIT
7
AVERAGE
TRANSMISSION LINE MONITORING CIRCUIT
TRANSMISSION LINE MONITORING SIGNAL
10

1. A pulse communication method comprising the steps of:
converting a data signal to be transmitted into a CMI code in synchronism with a clock signal;
converting said CMI code into a 3-level CMI signal and thereafter transmitting it from the transmission side to the reception side through a transmission line; and
decoding the 3-level CMI signal into the CMI code and thereafter regenerating and extracting the data signal and the clock signal separately on the reception side.

4,442,529

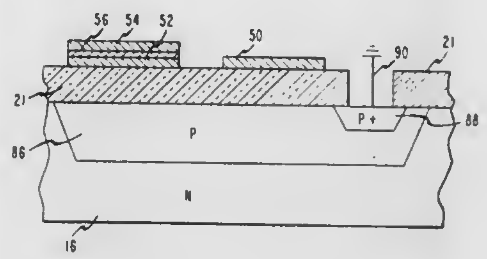
POWER SUPPLY REJECTION CHARACTERISTICS OF CMOS CIRCUITS

Bhupendra K. Ahuja, Sunnyvale, Calif., and Mirmira R. Dwarakanath, Berkeley Heights, N.J., assignors to AT&T Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 4, 1981, Ser. No. 231,478

Int. Cl.³ H01L *27/04, 29/78;* H04L *3/00*

U.S. Cl. 375—34 **8 Claims**



1. In combination in a CMOS integrated circuit that includes both N-channel and P-channel type transistors,
multiple interconnected node points including some each characterized by a relatively high impedance,
and transistors of only one type directly connected to selected ones of said high impedance node points,
wherein said CMOS circuit is formed on a single integrated circuit chip,
wherein each of said transistors connected to said selected high-impedance node points comprises an N-channel transistor each of which comprises
a P-tub formed in an N-substrate, and N+ source and drain regions formed in said P-tub,
and wherein said combination further includes a regulated power supply on said chip for maintaining the P-to-N+ junctions of the N-channel transistors connected to said selected points reverse biased under all circuit operating conditions,
and means connecting the P-tubs of the N-channel transistors connected to said selected points to said regulated supply,
wherein the circuit on said chip includes conductive runners overlying said substrate and connected to high impedance node points,
and wherein said combination further includes P-tubs formed in said substrate under at least some portions of said conductive runners,
and means connecting said last-mentioned P-tubs to a point of reference potential,
said reference potential being different from the output of said regulated supply and more positive than the most negative supply on said chip.

4,442,530

DIGITAL TRANSMITTER WITH VECTOR COMPONENT ADDRESSING

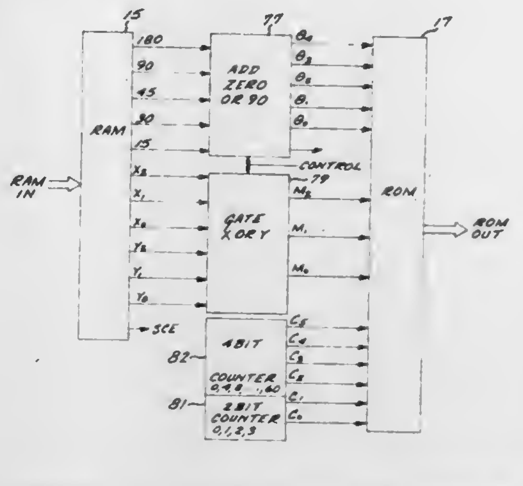
Henry H. Parrish, Jr., Miami Springs, and Rangarajan Srinivasagopalan, Miami, both of Fla., assignors to Racal Data Communications Inc., Miami, Fla.

Filed Sep. 21, 1981, Ser. No. 304,018

Int. Cl.³ H04L *27/20*

U.S. Cl. 375—67 **11 Claims**

1. A method of utilizing a first memory in a transmitter wherein said first memory stores values to be addressed and operated upon to construct a composite waveform for transmission by said transmitter comprising the steps of:
addressing said first memory with a first address including a first vector component subaddress and an angle subaddress to produce a first output from said first memory;
addressing said first memory with a second address including a second vector component subaddress and a modified subaddress formed as a mathematical function of said angle subaddress to produce a second output from said first memory; and



utilizing said first and second outputs in formation of said composite waveform.

4,442,531

METHOD AND APPARATUS FOR RECOGNIZING DIGITAL INFORMATION IN DIGITAL INFORMATION TRANSMISSION, PARTICULARLY IN MOBIL RADIO COMMUNICATIONS SYSTEMS

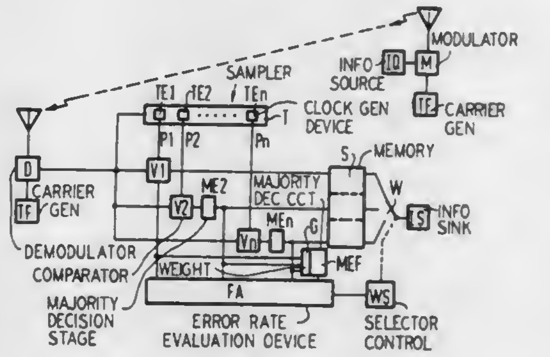
Probodh D. Gupta, Germering, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 27, 1981, Ser. No. 296,821

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1980, 3036612

Int. Cl.³ H04L *1/22*

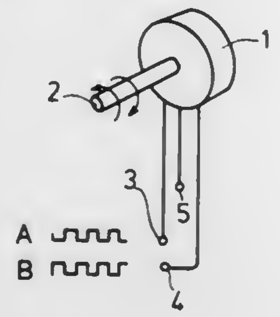
U.S. Cl. 375—94 **5 Claims**



1. A method for recognizing digital information of a digital information transmission, comprising the steps of:
first sampling, at a whole multiple of the information clock frequency, a pulse in a respective area of the pulse representing an information element in which the pulse assumes its suspected, quasi-stationary state;
then sampling the pulse of the information element at least one more time at a further multiple of the information clock frequency a corresponding number of sampling times within a further extended sampling range of the pulse representing the information element;
performing a majority decision with the sampling results to obtain respective information signals;
temporarily storing the information signals;
selecting one of the stored information signals as representing the information content of the sampled information element; and
erasing the non-selected stored information signals.

4,442,532
ENCODER OUTPUT PULSE DETECTION USING TWO STAGE SHIFT REGISTER AND CLOCK OSCILLATOR

Takehide Takemura, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed May 19, 1981, Ser. No. 265,323
Int. Cl.³ H03K *13/02;* **G01G** *3/00;* **G01R** *19/14*
U.S. Cl. 377—3 **2 Claims**



1. A pulse detection circuit for detecting output signals of an encoder, which comprises:

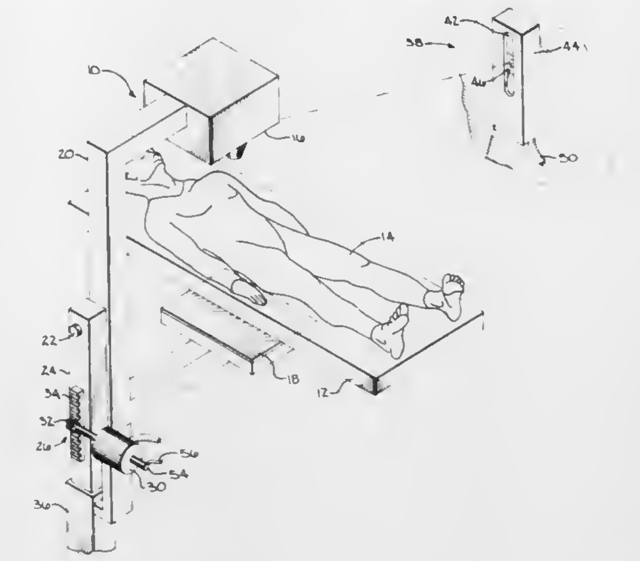
- a first and a second input terminals, each for receiving either one of said encoder output signals containing two successions of pulses being shifted in phase with each other;
- a first and a second rise-up detectors for detecting the rise-up edges of the pulses being fed to said first and second input terminals;
- a first and a second fall-down detectors for detecting the fall-down edges of said pulses;
- a first gate circuit composed of AND gates, each for obtaining a logical product of the output of either one of said first rise-up and fall-down detectors and the signal level at said second input terminal, or for obtaining a logical product of the output of either one of said second rise-up and fall-down detectors and the signal level at said first input terminal; and
- a second gate circuit composed of OR gates each for obtaining a logical sum of the logical products obtained by said AND gates in said first gate circuit,
- said second gate circuit comprising a first OR gate which issues a logical sum of the outputs of a part of said AND gates, representing a clockwise rotation of the encoder shaft, and a second OR gate which issues a logical sum of the outputs of a part of the AND gates representing an anti-clockwise rotation of the encoder shaft, and
- each combination of said first rise-up and fall-down detectors, and of second rise-up and fall-down detectors being constituted by a two stage shift-register, a clock oscillator which feeds a clock pulse to said shift-register, a third gate circuit which receives the outputs of said shift-register and an RS-flip-flop, output terminals of said third gate circuit being connected to said RS-flip-flop which is adjusted to be reset by said clock pulse.

4,442,533
IMAGE PLANE INDICATOR

Charles Lescrenier, 660 Crescent Ct., Wauwatosa, Wis. 53213
Filed Aug. 20, 1981, Ser. No. 294,706
Int. Cl.³ G03B *41/16*
U.S. Cl. 378—21 **6 Claims**

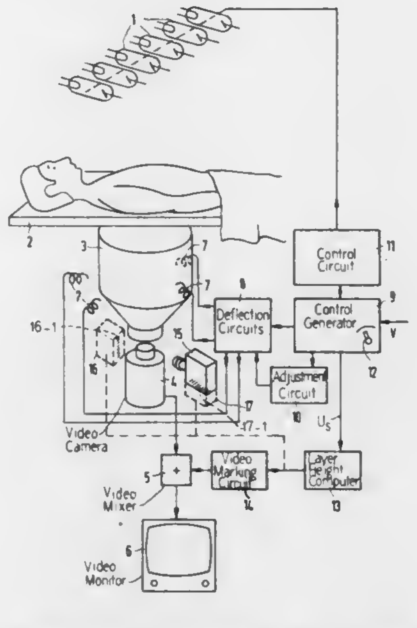
1. In an X-ray device in which the X-ray generator and image receptor are movable about a fulcrum that defines the plane of the image appearing on the receptor, the fulcrum being movable relative to an object being imaged and normal to the image plane to establish the location of the image plane in the object, an image plane indicator comprising:

- indicating means movable with respect to the object normal to the plane of the image for providing a visually perceptible indication on the object of the image plane location;
- detection means operably connected to the movable fulcrum, said detection means generating a signal responsive to movement of the fulcrum; and
- positioning means operably connected to said detection means and to said indicating means, said positioning means moving said indicating means in response to said signal generated by said detection means for maintaining the visually perceptible indication at the image plane location as the fulcrum is moved.



4,442,534
X-RAY DIAGNOSTIC INSTALLATION FOR X-RAY TOMOGRAPHIC IMAGES

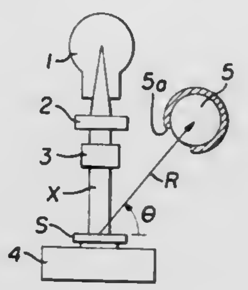
Joerg Haendle, and Hartmut Sklebitz, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Jul. 9, 1982, Ser. No. 396,757
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1981, 3128380
Int. Cl.³ A61B *6/00;* **H04N** *5/32;* **H05G** *1/64, 1/70*
U.S. Cl. 378—21 **10 Claims**



1. An x-ray diagnostic installation for x-ray tomographic images, comprising x-ray source means (**1**) for the generation of an x-ray beam, a patient support (**2**), an image detector (**3**) and a control generator (**9**), connected with the x-ray source means (**1**) and the image detector (**3**), for the purpose of movement of the x-ray beam and, synchronously thereto, of the image field of the image detector (**3**), characterized in that a layer height computer (**13**) is connected to the control generator (**9**) for calculating the enlargement from the geometric data for the tomogram, and that the image detector (**3**) has circuit means (**14, 16**) connected with the layer height computer (**13**) for fading-in a marking for representing the dimensions in the layer plane.

4,442,535
FLUORESCENT X-RAY FILM THICKNESS GAUGE FOR VERY SMALL AREAS

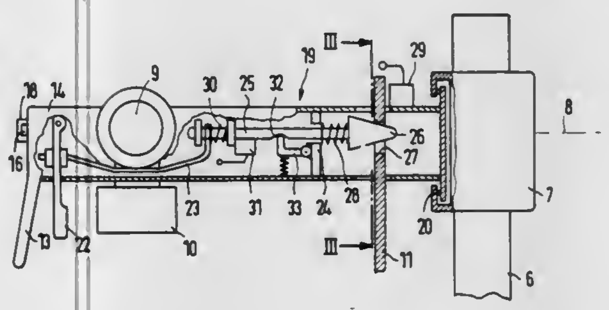
Hiroshi Ishijima, and Toshiyuki Koga, both of Tokyo, Japan, assignors to Seiko Instruments & Electronics Ltd., Tokyo, Japan
Filed Mar. 23, 1982, Ser. No. 360,909
Claims priority, application Japan, Apr. 7, 1981, 56-49995
Int. Cl.³ G01B *15/02*
U.S. Cl. 378—50 **10 Claims**



2. In a fluorescent X-ray film thickness gauge having means for irradiating a film-coated sample with X-rays: detector means spaced from the sample for detecting fluorescent X-rays emitted by the sample and producing an output signal representative of the film thickness, said detector means having a longitudinal axis and being angularly displaceable about its longitudinal axis and having a detector opening for receiving therethrough the fluorescent X-rays emitted by the sample; and means for angularly displacing the detector means about its longitudinal axis to accordingly adjust the position of the detector opening relative to the sample so as to effectively minimize variations in the intensity of the detected fluorescent X-rays due to variations in the distance of the sample from the detecting means.

4,442,536
X-RAY EXAMINATION APPARATUS

Willi Schaefer, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Jul. 16, 1981, Ser. No. 284,101
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1980, 3030379
Int. Cl.³ G03B *41/16*
U.S. Cl. 378—26 **18 Claims**

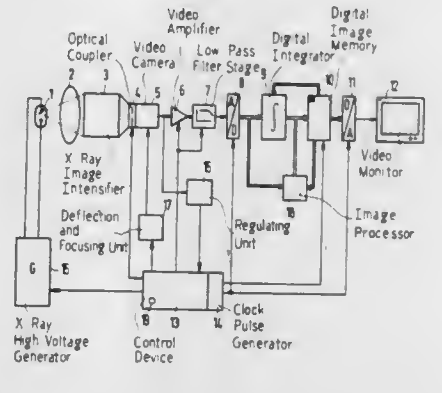


1. An x-ray examination apparatus comprising a patient support platform, a tube stand displaceable parallel to the longitudinal axis of the horizontally positioned patient support platform, a tube support arm mounted by the tube stand, an x-ray tube support-mounted on the tube support arm on one side of the patient support platform, and a radiographic installation having an image recording means displaceable along the patient support platform at an opposite side of the patient support platform, said radiographic installation having a coupling rod capable of being coupled with the tube support arm for aligning the x-ray tube relative to the image recording means, characterized in the coupling rod being longitudinally displaceable at the image recording means and being longitudinally shiftable relative to the tube support arm and having surfaces longitudinally movable with the coupling rod so as to be moved into positive locking engagement with the tube support arm,

- said coupling rod having a first end connected with said tube support arm and having a second end coupled directly with said image recording means and rigidly connected with said first end,
- said first end of said coupling rod in a first mode of operation having said surfaces thereof in said positive locking engagement with said tube support arm such that pivotal movement of said tube support arm causes conjoint swinging movement of the first and second ends of said coupling rod without change in the length of said coupling rod, the second end of said coupling rod moving longitudinally relative to the image recording means as the image recording means moves along the patient support platform, and
- said coupling rod being shiftable as a unit in the longitudinal direction thereof to move said surfaces out of positive locking engagement with the tube support arm to allow pivotal movement of the tube support arm in a second mode of operation without requiring a corresponding swinging movement of said coupling rod and without requiring complete disconnection of the first end of the coupling rod from the tube support arm.

4,442,537
DIAGNOSTIC X-RAY INSTALLATION

Joerg Haendle, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed May 12, 1982, Ser. No. 377,465
Claims priority, application Fed. Rep. of Germany, May 18, 1981, 3119751
Int. Cl.³ G03B *41/16*
U.S. Cl. 378—99 **16 Claims**



12. A method of operating a diagnostic x-ray installation to selectively increase the signal to noise ratio of the video signal supplied by an x-ray image intensifier television chain while minimizing the x-ray exposure of a patient, wherein the installation includes an x-ray high voltage generator and an x-ray tube for energization by the high voltage generator to produce an x-ray beam for use in the examination of a patient, the x-ray image intensifier television chain including an x-ray image intensifier responsive to an input x-ray image for producing a light image in according with the input x-ray image, and a video camera coupled with the x-ray image intensifier for scanning of the light image therefrom to produce a video signal, said method comprising: operating said x-ray tube with a x-ray tube high voltage for normal fluoroscopy operation and regulating the intensity of the high voltage and current of the X-ray tube to maintain a first relatively constant average illumination of the video camera, and operating said video camera at a first scanning rate so as to supply a video signal having a normal television line rate; and selectively, in order to obtain an image with higher signal to noise ratio, switching over the high voltage generator to pulse operation, and regulating the intensity of the high voltage and current of the X-ray tube to maintain a second relatively constant average illumination of the video camera which is substantially higher than said first relatively constant average illumination, but operating the high voltage generator with a pulse duration and a pulse period such that the average dose rate for the patient is not substantially increased, and operating said video camera with a second scanning rate which is substantially lower than said first scanning rate so as to supply a video signal having a reduced video line rate and having a correspondingly reduced essential bandwidth, whereby an improved signal to noise ratio can be insured.

4,442,538

X-RAY DIAGNOSTIC INSTALLATION

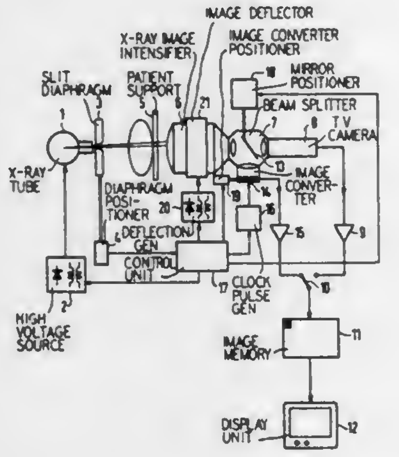
Joerg Haendle, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 22, 1982, Ser. No. 421,283

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1981, 3141987

Int. Cl.³ G03B *41/16*

U.S. Cl. 378—146 10 Claims



1. An X-ray diagnostic installation comprising:

an X-ray tube for emitting a fan-shaped radiation beam;

an X-ray image intensifier having an input fluorescent screen and an output fluorescent screen;

a patient support means disposed between said X-ray tube and said X-ray image intensifier;

a means disposed in front of said X-ray tube for generating movement of said radiation beam for sweeping said beam over a subject on said support device;

an image recording means connected to the output of said image intensifier, said image recording means having a solid state image converter optically coupled to said output fluorescent screen of said image intensifier, said solid state image converter having a recording region;

a control means connected to at least one of said means for generating movement of said radiation beam, said image intensifier or said image converter for controlling transmission of the image from said image intensifier to said image converter such that a linear image on said output fluorescent screen of said image intensifier during movement of said radiation beam is always directed at said recording region of said image converter; and

a display unit connected to said image recording device for visually displaying a reproduction of the output of said image intensifier.

4,442,539

MEASURING INSTRUMENT FOR THE OPTICAL FOCAL SPOT

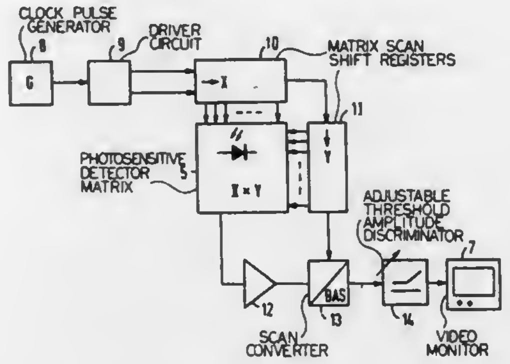
Horst Aichinger, Fuerth, and Kurt Franke, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 1, 1981, Ser. No. 268,811

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1980, 3022968

Int. Cl.³ H05G *1/26*

U.S. Cl. 378—207 2 Claims


CLOCK PULSE GENERATOR
DRIVER CIRCUIT
MATRIX SCAN SHIFT REGISTERS
PHOTOSENSITIVE DETECTOR MATRIX
ADJUSTABLE THRESHOLD AMPLITUDE DISCRIMINATOR
SCAN CONVERTER
VIDEO MONITOR

1. A measuring instrument for measuring the optical focal spot of an x-ray tube, comprising a pinhole camera for the purpose of forming an image of the focal spot, and a radiation-sensitive detector, said detector comprising a radiation-electrical transducer in the form of a matrix of photo-sensitive individual detectors for supplying respective output signals, a processing circuit comprising output means connected with the photo-sensitive individual detectors of said matrix for reading out the output signals of said detectors to generate a video signal in accordance with a visible light image incident on said matrix, and a video monitor connected with said output means for displaying the focal spot as represented by said video signal, said processing circuit including an adjustable amplitude selector means for selecting a desired amplitude range of said output signals for transmission to said video monitor via said output means, and an intensifier foil arranged in front of said matrix of photo-sensitive individual detectors for the conversion of an x-ray image of the focal spot into a visible light image incident on said matrix.

4,442,540

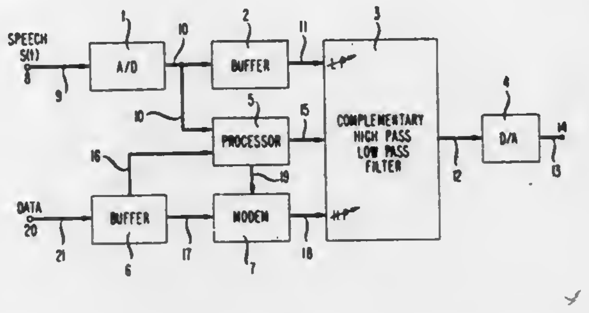
DATA OVER VOICE TRANSMISSION ARRANGEMENT

Jonathan B. Allen, Westfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 4, 1981, Ser. No. 270,543

Int. Cl.³ G10L *1/00*

U.S. Cl. 381—31 6 Claims



1. A method for interpolating data and speech signals into a common transmission band comprising the steps of:

(a) converting the speech signal from analog to digital form,

(b) determining a frequency spectrum of the digital speech signal,

(c) determining a total energy content of the digital speech signal,

(d) determining the actual percentage of the total energy within each spectral line,

(e) summing the actual percentages of energy within a number of spectral lines,

(f) comparing the summed actual percentages of energy to the total energy content of the speech signal until a predetermined percentage is reached,

(g) determining the cutoff frequency of the digital speech signal when the predetermined percentage is reached,

(h) modulating the data signal to a position above the cutoff frequency of the speech signal, and

(i) sending the speech and modulated data signal to a receiver.

4,442,541

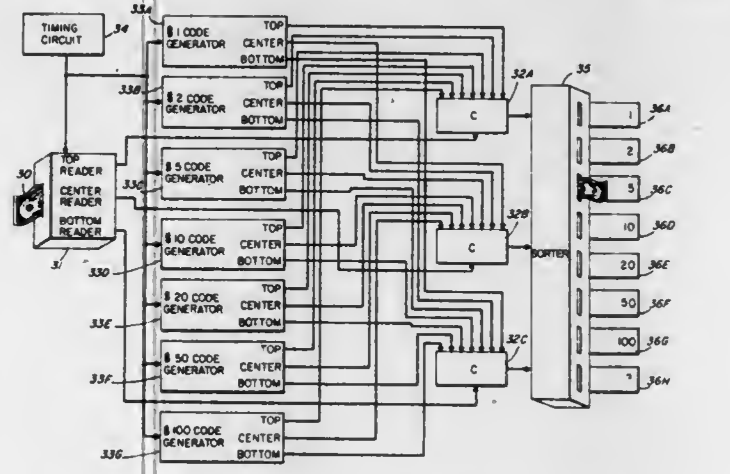
METHODS OF AND APPARATUS FOR SENSING THE DENOMINATION OF PAPER CURRENCY

Joel R. Finkel, Wayland; William E. Freudenthal, Marlborough, both of Mass., and John G. Stoides, Culpeper, Va., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Aug. 15, 1979, Ser. No. 67,064

Int. Cl.³ G06K *7/08;* B07C *5/00*

U.S. Cl. 382—7 2 Claims



1. A method for sensing the denomination of U.S. Federal Reserve Notes comprising

magnetically scanning at least three parallel predetermined paths along an obverse surface of a Note to be denomination sensed;

comparing the results of said scanning against a like plurality of standards for each of the various denominations: one, two, five, ten twenty, fifty, and one hundred dollars;

determining whether the scanned Note is of said one dollar denomination, said two dollar denomination, said five dollar denomination, said ten dollar denomination, said twenty dollar denomination, said fifty dollar denomination, said one hundred dollar denomination or is questionable; and

sorting said scanned Note in accordance with such determination.

4,442,542

PREPROCESSING CIRCUITRY APPARATUS FOR DIGITAL DATA

Ta-Tung Lin, deceased, late of Harleysville, Pa.; by Meei H. Lin, Executrix, North Wales, Pa., and George A. Fedde, Perkiomenville, Pa., assignors to Sperry Corporation, New York, N.Y.

Filed Jan. 29, 1982, Ser. No. 344,245

Int. Cl.³ G06K *9/46*

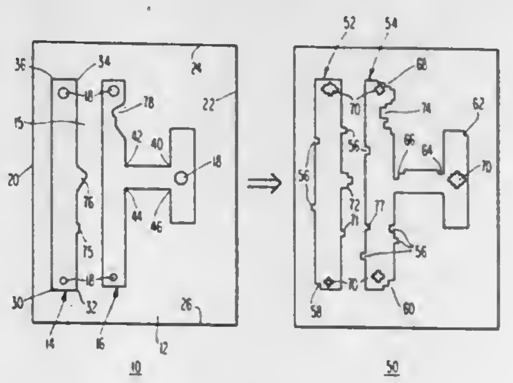
U.S. Cl. 382—8 5 Claims

1. A preprocessing circuit for recognizing a plurality of different conductor/substrate corner features present in a plurality of lines of binary signals representing a conductor pattern present on a printed circuit board, said lines of binary signals generated by a scanning apparatus which scans said printed circuit board in a plurality of row scans, there being a plurality of scan clock pulses during each of said row scans, said plurality of scan clock pulses being associated with said binary signals in each of said plurality of lines of binary signals, said binary signals also containing various errors, said errors comprising horizontally or vertically adjacent corner feature pairs, said preprocessing circuit comprising:

arraying means for providing a corner array of output signals formed from said binary signals in portions of a plurality of adjacent row scans, said arraying means providing a separate corner array of output signals associated with each of said plurality of scan clock pulses;

corner code generating means connected to said arraying means for receiving a plurality of selected ones of each of said corner array of output signals and for generating corner code signals associated with said corner features when said plurality of selected ones of each of said corner array of output signals indicates the presence of one of said corner features therein and for transmitting said corner code signals in response to an enable signal;

excess corner feature elimination means connected to said arraying means and to said corner code generating means for disabling transmission of said corner code signals when any of said horizontally adjacent or vertically adjacent corner feature pair includes said corner feature indicated by said selected ones of said corner array whereby at least one excess corner feature is eliminated;



a plurality of row delay means each storing a row scan of binary signals and each providing at an output terminal a row shifted output signal whereby said plurality of delay means provides a plurality of row shifted output signals from a plurality of adjacent row scans;

a plurality of column delay means coupled to each of said output terminals of said row delay means for providing a plurality of column shifted output signals associated with each of said row scans;

said arraying means comprises:

serial/parallel register means for converting said lines of binary signals into lines of byte wide binary signals;

said row delay means comprises:

memory means for storing substantially a row scan of byte wide binary signals; and

parallel/serial register means connected to the output terminals of said memory means, said parallel/serial register means for converting said lines of byte wide binary signals to lines of sequential binary signals.

4,442,543

BIT ENABLE CIRCUITRY FOR AN IMAGE ANALYZER SYSTEM

Stanley R. Sternberg, and Robert M. Lougheed, both of Ann Arbor, Mich., assignors to Environmental Research Institute, Ann Arbor, Mich.

Continuation of Ser. No. 73,817, Sep. 10, 1979, Pat. No. 4,301,443. This application Aug. 12, 1981, Ser. No. 292,062

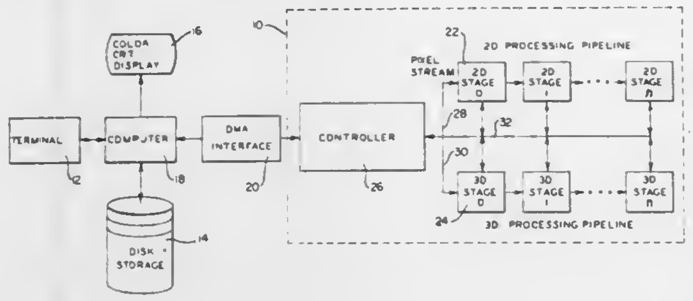
The portion of the term of this patent subsequent to Nov. 17, 1998, has been disclaimed.

Int. Cl.³ G06K *9/36*

U.S. Cl. 382—49 2 Claims

1. In a system for analyzing images made up of a matrix of points, with each point being represented by a multibit digital data signal, said system including at least one transformation

stage for transforming said data signals into a new value depending upon the values of neighboring points in the image, the improvement comprising:

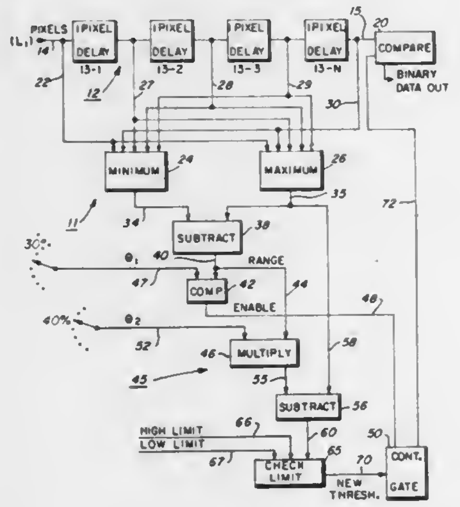


means for selectively disabling the transformation of particular bits in the digital signals for a given stage such that said particular bits pass unmodified in value to an output of the stage.

4,442,544
ADAPTIVE THRESHOLDER

John F. Moreland, Fairport, and James C. Stoffel, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 9, 1981, Ser. No. 281,816
Int. Cl.^{3} G06K *9/00*
U.S. Cl. 382—53 **5 Claims**



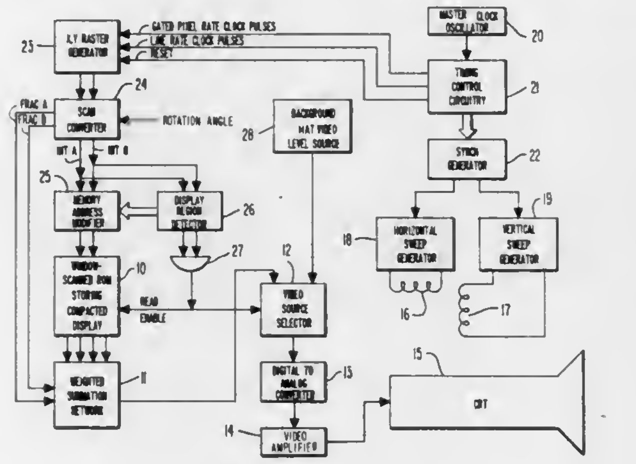
5. Apparatus for adaptively thresholding image pixels, comprising, in combination:

(a) buffer means for storing a plurality of successive ones of said pixels including the pixel to be thresholded;
(b) means for identifying the maximum pixel in said plurality of pixels;
(c) means for identifying the minimum pixel in said plurality of pixels;
(d) first subtractor means for subtracting the output of said maximum pixel identifying means from said minimum pixel identifying means;
(e) multiplier means for multiplying the output of said first subtractor means by a predetermined constant representing a desired change in threshold level; and
(f) second subtractor means for subtracting the output of said multiplier means from said maximum pixel identifying means to provide a threshold for use in thresholding said one pixel.

4,442,545
COMPACTION OF TELEVISION DISPLAY GRAPHICS IN PHANTOM-RASTER-SCANNED IMAGE MEMORY

Glenn A. Reitmeier, Trenton, N.J., and Christopher H. Strolle, Philadelphia, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 24, 1981, Ser. No. 305,174
Claims priority, application United Kingdom, May 27, 1981, 8116111
Int. Cl.^{3} G06K *9/00*
U.S. Cl. 382—56 **6 Claims**



1. Apparatus for generating a video signal descriptive of an area in a raster-scanned display, said apparatus comprising:

means for recurrently generating first and second series of digital electric signals respectively specifying in numeric form first and second orthogonal coordinates of phantom raster scan through said display area, there being a number m of signals in said first series and a number n of signals in said second series, where m and n may be equal or unequal integers;

a display memory having a plurality of storage locations each accessable in response to a unique pair of column and row addresses for read-out of a video sample concerning a point in one of selected regions of said display area for which graphic information is stored in the display memory in compacted form, there being a number p of column addresses and a number q of row addresses, where p and q may be equal or unequal integers, where p is no larger than m and q is no larger than n, and where one of the numbers p and q is smaller than the number it is specified as being no larger than;

means responsive to digital electric signals in said first series for generating purely in spatial coordinate terms corresponding column addresses for p selected ones of those digital electric signals;

means responsive to digital electric signals in said second series for generating purely in spatial coordinate terms corresponding row addresses for q selected ones of those digital electric signals;

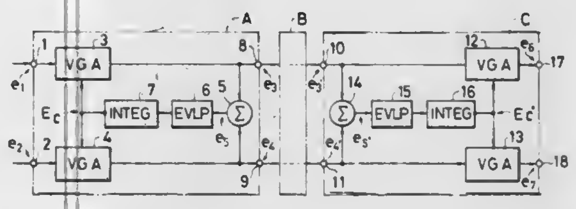
means responsive to digital electric signals other than the p selected ones of said first series and q selected ones of said second series for supplying a source of video samples alternate to that provided by read-out of said display memory responsive to its being simultaneously addressed by column address generated responsive to a corresponding one of said p selected digital electronic signals of said first series and by column address generated responsive to a corresponding one of said q selected digital electric signals of said second series; and

means responding to video samples read-out from said display memory in response to its said being simultaneously addressed, and to video samples supplied by said alternate source to provide said video signal.

4,442,546
NOISE REDUCTION BY INTEGRATING FREQUENCY-SPLIT SIGNALS WITH DIFFERENT TIME CONSTANTS

Yukinobu Ishigaki, Machida, Japan, assignor to Victor Company of Japan, Limited, Kanagawa, Japan

Filed Oct. 18, 1982, Ser. No. 434,850
Claims priority, application Japan, Oct. 19, 1981, 56-166603
Int. Cl.^{3} H04B *1/64*
U.S. Cl. 455—72 **6 Claims**



5. A noise reduction system having a pair of first and second audio channels between first and second ends, comprising:

a compression circuit at said first end including: first and second variable gain amplifiers connected in said first and second channels respectively for amplifying first and second audio signals each having frequency components in the audio spectrum at a variable gain in response to a first common control signal applied thereto and generating first and second gain-controlled audio output signals;

first frequency splitting means connected to be responsive to said first audio channel for splitting the output signal of said first variable gain amplifier into high and low frequency components and generating therefrom a first set of high and low frequency signals, and second frequency splitting means connected to be responsive to said second audio channel for splitting the output signal of said second variable gain amplifier into high and low frequency components and generating therefrom a second set of high and low frequency signals;

a first pair of envelope detecting means connected to be responsive to the outputs of said first frequency splitting means respectively for detecting the envelopes of said high and low frequency signals of said first set, and a second pair of envelope detecting means connected to be responsive to the outputs of said second frequency splitting means for detecting the envelopes of said high and low frequency signals of said second set;

first combining means for combining the detected envelopes of the high frequency signals of said first and second sets and generating a first combined high frequency output, and second combining means for combining the detected envelopes of the low frequency signals of said first and second sets and generating a first combined low frequency output;

first integrator means for integrating said combined high frequency output with a first time constant, and second integrator means for integrating said combined low frequency output with a second time constant greater than the first time constant; and

means for combining the output signals of said first and second integrator means to generate said first control signal; and

an expansion circuit at said second end including:

third and fourth variable gain amplifiers connected in said first and second channels respectively for amplifying said gain-controlled first and second audio output signals at a variable gain in response to a second common control signal applied thereto and generating a pair of output signals for application to a utilization means;

third frequency splitting means connected to be responsive to said first channel for splitting said first audio output signal into high and low frequency components and generating therefrom a fourth set of high and low frequency signals;

a third pair of envelope detecting means connected to be responsive to the outputs of said third frequency splitting means respectively for detecting the envelope of said high and low frequency signals of said third set, and a fourth pair of envelope detecting means connected to be responsive to the outputs of said fourth frequency splitting means respectively for detecting the envelope of said high and low frequency signals of said fourth set;

third combining means for combining the detected envelopes of the high frequency signals of said third and fourth sets and generating therefrom a second combined high frequency output, and fourth combining means for combining the detected envelopes of the low frequency signals of said third and fourth sets and generating therefrom a second combined and low frequency output;

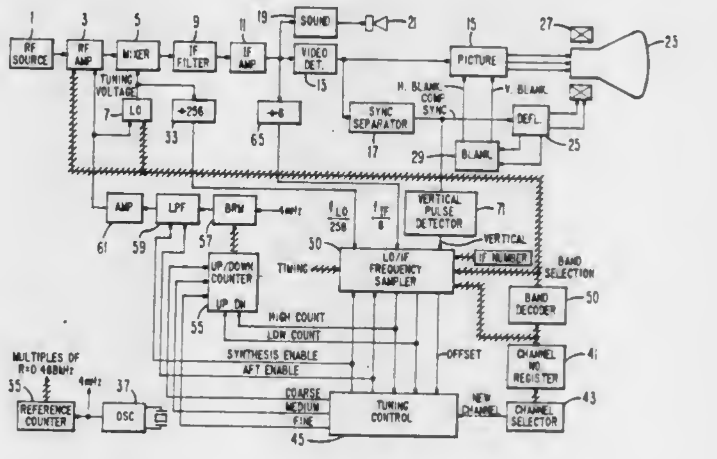
third integrator means for integrating said second combined high frequency output with a smaller time constant, and fourth integrator means for integrating said second combined low frequency output with a greater time constant; and

means for combining the output signals of said third and fourth integrator means to generate said second control signal.

4,442,547
COUNTER ARRANGEMENT USEFUL IN A FREQUENCY LOCKED LOOP TUNING SYSTEM FOR MEASURING THE FREQUENCY OF A LOCAL OSCILLATOR SIGNAL

Juri Tults, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 1, 1982, Ser. No. 413,768
Int. Cl.^{3} H04B *1/16;* **H04N** *5/44*
U.S. Cl. 455—180 **6 Claims**



1. In a television receiver including an RF input for receiving a plurality of RF signals corresponding to respective channels in frequency bands within the television range, each of said RF signals having a picture carrier; a RF stage for selecting one of said RF signals corresponding to a selected channel in response to a tuning control signal; a local oscillator for generating a local oscillator (LO) signal having a frequency corresponding to said selected channel in response to said tuning control signal; a mixer for combining said selected RF signal and said LO signal to produce an IF signal having a picture carrier corresponding to that of said selected RF signal; tuning control apparatus for generating said tuning control signal comprising:

a main down counter having a clock input;

coupling means for coupling said LO signal to said clock input of said main counter;

said main down counter counting in response to said LO signal when enabled to do so during an LO measurement interval;

main counter presetting means coupled to said main down counter means for selectively presetting said main counter to one of a first initial count corresponding to the channel number of the selected channel or a second initial count

corresponding to the particular frequency band of the selected channel prior to said LO measurement interval;
said main counter presetting means presetting said main down counter to said one of said first and second initial counts whenever said main down counter having a clock input has counted to zero;
an auxiliary down counter;
auxiliary down counter presetting means for presetting said auxiliary counter to an initial count equal to (P)(S)+(P), where P is an integer number and S is the frequency spacing, in mHz, between said channels
within said frequency bands, prior to auxiliary down counter control means coupled to said clock input of said auxiliary down counter and responsive to the count of the main down counter and said auxiliary down counter for causing said LO measurement interval;
said auxiliary down counter to count whenever said main down counter has counted to zero during said LO measurement interval and to be stopped from counting when said auxiliary down counter has counted to one during said LO measurement interval;
said main presetting means presetting said main down counter to the other one of said first and second initial counts when said auxiliary counter means has counted to P if said main down counter is preset to said first initial count and to (P)(S) if said main down counter is preset to said second initial count during said LO measurement interval;
count evaluating means coupled to said main down counter for evaluating the relationship between the count of said main counter at the end of said measurement interval and zero; and
tuning control signal generating means coupled to said count evaluating means for generating said tuning control signal in response to said relationship between the count of said main counter at the end of said LO measurement interval and zero.

4,442,548

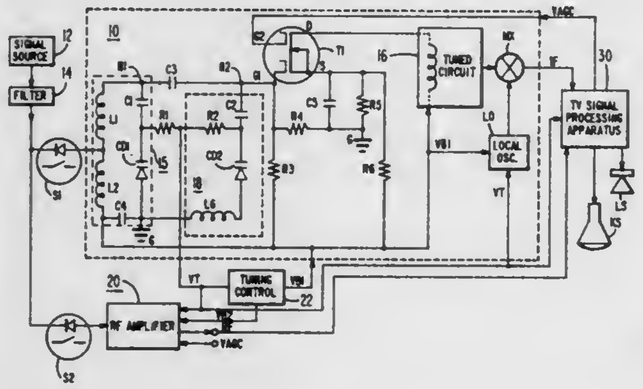
TELEVISION RECEIVER TUNING CIRCUIT TUNABLE OVER A WIDE FREQUENCY RANGE

William L. Lehmann, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed May 14, 1982, Ser. No. 378,115

Int. Cl.^{3} H04B *1/16;* H03F *3/191*

U.S. Cl. 455—195 **11 Claims**



1. In a receiver, apparatus comprising:
a signal source of radio frequency carrier signals in a frequency band;
a signal path between an input terminal for receiving said carrier signals and an output terminal including amplifying means for amplifying said carrier signals;
a control source for supplying a tuning signal having different magnitudes corresponding to respective radio frequency carrier signals;
first signal selecting means coupled to said signal path at a point between said input terminal and said amplifying means and having a peaked response which is tunable in response to said tuning signal for selecting ones of said carrier signals included within a portion of said frequency band;
second signal selecting means coupled to said signal path at a point between said input terminal and said amplifying means for exhibiting a peaked response at a resonant frequency no greater than the lowest frequency of any of said selected ones of said carrier signals, said second signal selecting means including
means tunable in response to said tuning signal for varying the resonant frequency of said second signal selecting means in tracking relationship to the peaked response of said first signal selecting means.

4,442,549

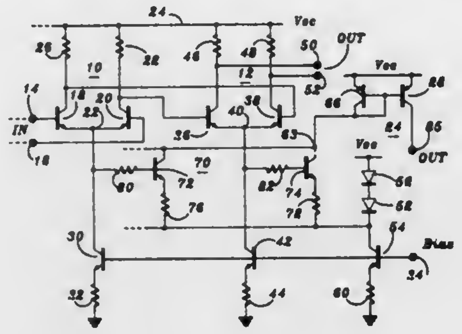
METER DRIVE CIRCUIT

William E. Main, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 27, 1982, Ser. No. 382,753

Int. Cl.^{3} H04B *1/26*

U.S. Cl. 455—211 **10 Claims**



1. A method for producing an output signal the magnitude of which varies linearly with the logarithm of an input signal that is supplied to the input of a plurality of cascaded differential amplifier stages, each stage having a differential amplifier common node associated therewith, comprising the steps of:
producing a D.C. voltage change at said common node of each of said amplifier stages in response to variations in the magnitude of the input signal;
detecting said D.C. voltage change at the common node of each of said amplifier stages to provide corresponding current changes;
accumulating said current changes; and
supplying said accumulated current changes at an output.

4,442,550

DEVICE FOR RECOGNIZING A BINARY WORD

Ulrich Killat, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 27, 1981, Ser. No. 296,655

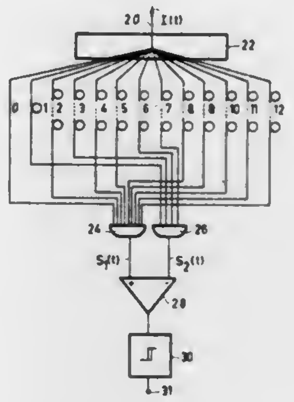
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1980, 3034640

Int. Cl.^{3} H04B *9/00*

U.S. Cl. 455—608 **10 Claims**

1. A device for recognizing a predetermined pulse pattern from a pulse stream, said pulse pattern having a predetermined number of pulses and absences of pulses, said device comprising:
a number of delay elements equal to the number of pulses plus the number of absences of pulses in the predetermined pulse pattern, each delay element being associated with a pulse or absence of a pulse from the pulse pattern to be recognized, the relative time delay of each delay element being equal to the time between the pulse or absence of pulse associated with the delay element and the last pulse or absence of a pulse in the pulse pattern, each of said delay elements having an input and an output;

a conductor for transporting the pulse stream to the input of each delay element;
a first adder having inputs and an output, the output of each delay line associated with a pulse from the pulse pattern to be recognized being connected to an input of the first adder;
a second adder having inputs and an output, the output of each delay line associated with an absence of a pulse from the pulse pattern to be recognized being connected to an input of the second adder; and
a differential amplifier having inputs and an output, the output of the first adder being connected to one input of the differential amplifier and the output of the second adder being connected to another input of the differential amplifier, the output of the differential amplifier representing the difference between the outputs of the first and second adders.



DESIGNS

APRIL 10, 1984

273,339
COMBINED HELMET AND ORNAMENTATION THEREFOR

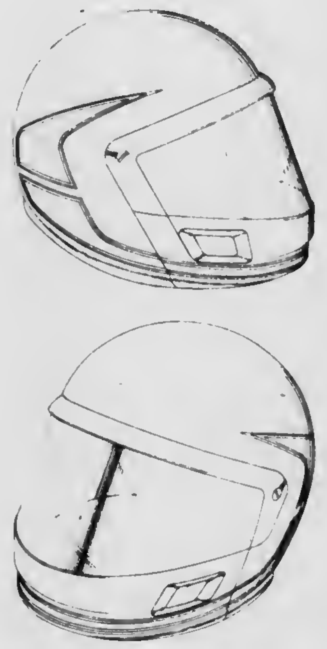
Klaus V. Gevert, Munich, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 16, 1981, Ser. No. 243,786

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1980, MR 12260

Term of patent 14 years

U.S. Cl. D2—232



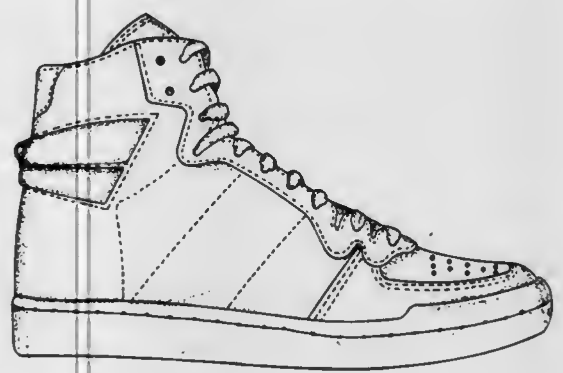
273,340
CUSHION PLUG FOR ATHLETIC SHOE COLLAR

Robert J. Gamm, St. Louis, Mo., assignor to Kangaroos U.S.A., Inc., St. Louis, Mo.

Filed Apr. 9, 1982, Ser. No. 366,854

Term of patent 14 years

U.S. Cl. D2—310



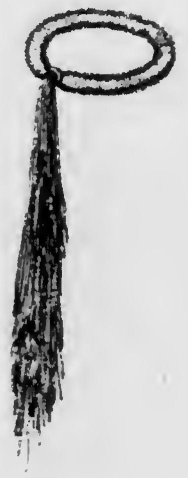
273,341
FUR PIECE

Gabriel Rol, St-Lambert, Canada, assignor to Gabriel Francis Rol Inc., Montreal, Canada

Filed Dec. 24, 1981, Ser. No. 334,309

Term of patent 14 years

U.S. Cl. D2—344



273,342

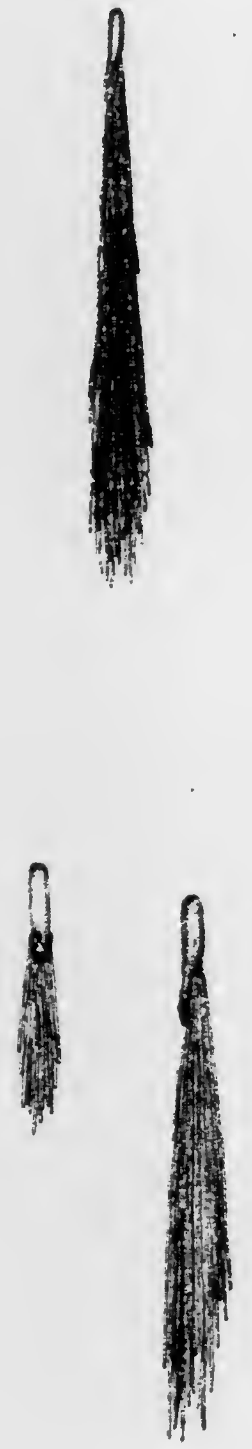
FUR PIECE

Gabriel Rol, St-Lambert, Canada, assignor to Gabriel Francis Rol Inc., Montreal, Canada

Filed Dec. 24, 1981, Ser. No. 334,310

Term of patent 14 years

U.S. Cl. D2—344



273,343

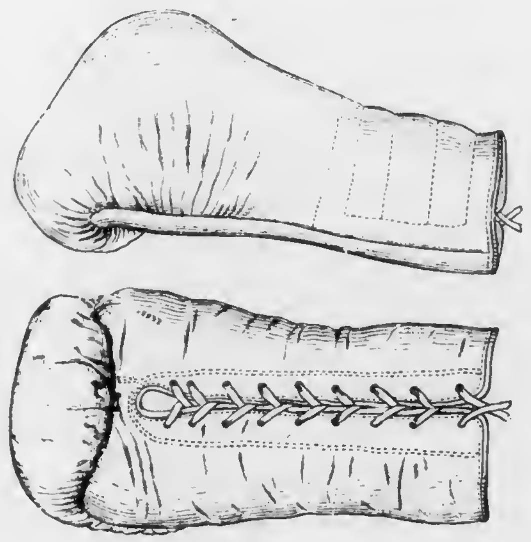
BOXING GLOVE

Howard Albert, 625 Main St., Apt. 1432, Roosevelt Island, N.Y. 10044

Filed Nov. 12, 1981, Ser. No. 320,759

Term of patent 14 years

U.S. Cl. D2—361



273,344

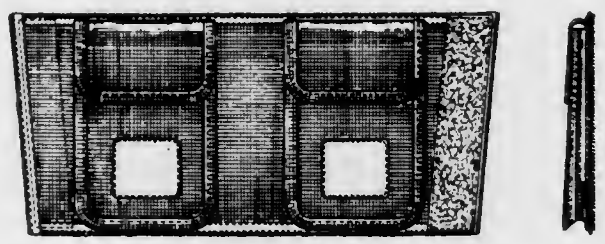
ANKLE WALLET

Yoong N. Lee, 2235 Trenton Dr., San Bruno, Calif. 94066

Filed Dec. 4, 1981, Ser. No. 327,329

Term of patent 14 years

U.S. Cl. D2—383



273,345

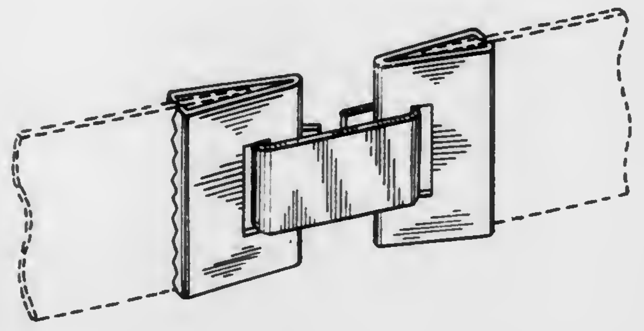
BELT BUCKLE

Edward D. Degenshein, New York, N.Y., assignor to Accessories by Pearl, New York, N.Y.

Filed Jul. 22, 1983, Ser. No. 517,207

Term of patent 14 years

U.S. Cl. D2—414



273,346

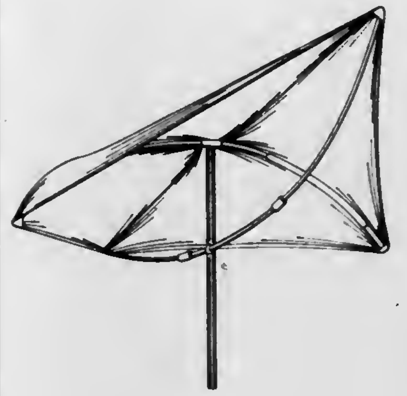
LAWN UMBRELLA

Edward Secon, Trumbull, Conn., assignor to The Sherwood Corporation, Spring City, Tenn.

Filed May 22, 1981, Ser. No. 266,495

Term of patent 14 years

U.S. Cl. D3—5



273,347

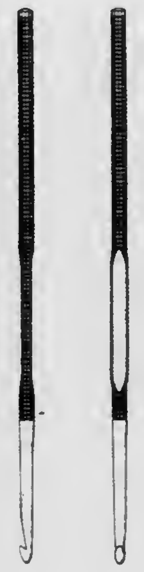
CROCHET HOOK

Hidekazu Okada, Ashiya, Japan, assignor to Clover Mfg. Co., Ltd., Osaka, Japan

Filed Jan. 26, 1981, Ser. No. 228,203

Term of patent 14 years

U.S. Cl. D3—28



273,348

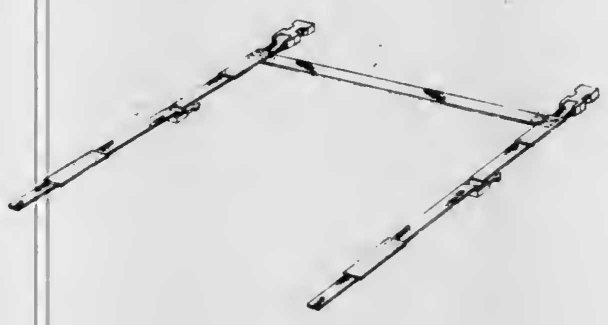
SKI AND SKI POLE CARRIER

Richard S. Risch, 1719 Labrador Dr., Costa Mesa, Calif. 92626, and Wayne Callaway, #6 Compass Ct., Long Beach, Calif. 90803

Filed Mar. 8, 1982, Ser. No. 355,692

Term of patent 14 years

U.S. Cl. D3—36



273,349

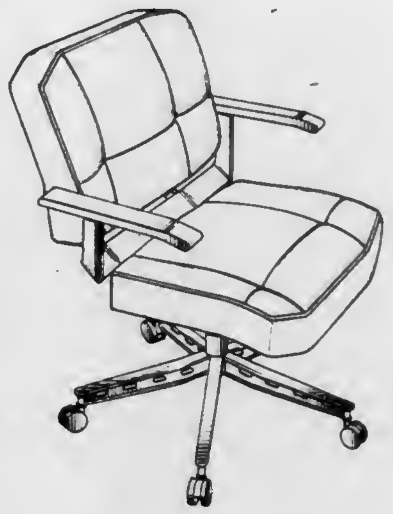
ARM CHAIR

Vincent Cafiero, Irvington, N.Y., assignor to Simmons Universal Corporation, New York, N.Y.

Filed Nov. 12, 1981, Ser. No. 320,809

Term of patent 14 years

U.S. Cl. D6—31



273,350

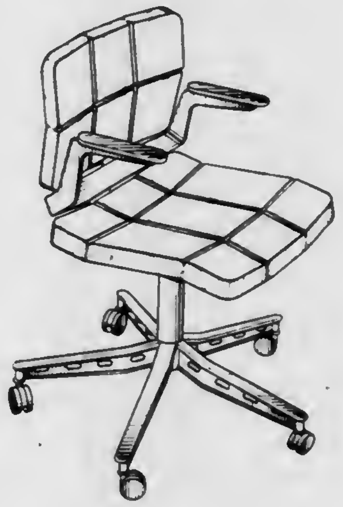
ARM CHAIR

Vincent Cafiero, Irvington, N.Y., assignor to Simmons Universal Corporation, New York, N.Y.

Filed Nov. 12, 1981, Ser. No. 320,811

Term of patent 14 years

U.S. Cl. D6—31



273,351

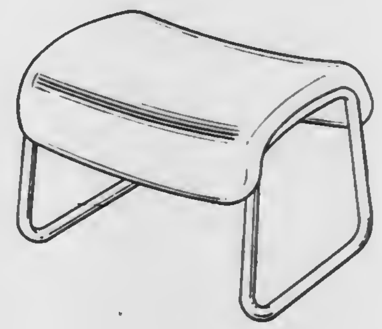
OTTOMAN

Arthur C. Crockett, Cincinnati, Ohio, assignor to Simmons Universal Corporation, New York, N.Y.

Filed Oct. 14, 1981, Ser. No. 311,693

Term of patent 14 years

U.S. Cl. D6—36



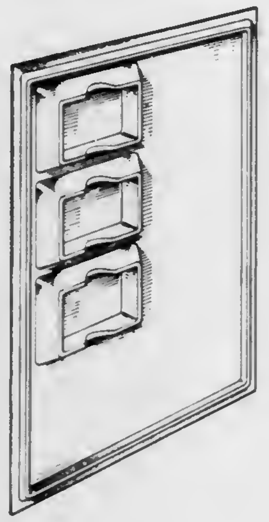
273,352
WALL MOUNTED HOLDER FOR THE EXPOSURE OF VARIOUS KINDS OF BANDAGING MATERIALS

Roger Adolfsson, Stockholm, Sweden, assignor to Cederroths AB, Sweden

Filed Mar. 5, 1981, Ser. No. 240,781

Term of patent 14 years

U.S. Cl. D6—130



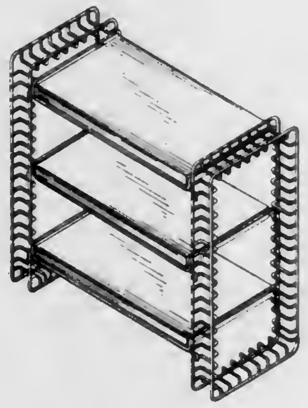
273,353
SHELF UNIT

Edward Secon, Trumbull, Conn., assignor to The Sherwood Corporation, Spring City, Tenn.

Filed Oct. 9, 1981, Ser. No. 309,987

Term of patent 14 years

U.S. Cl. D6—186



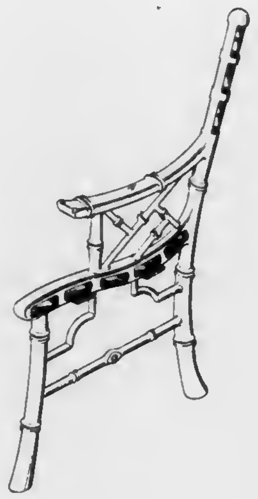
273,354
CHAIR OR SEAT END FRAME COMPONENT

Lewis F. Fitts, Tuscaloosa, Ala., assignor to Fitts Industries, Inc., Tuscaloosa, Ala.

Filed Jan. 19, 1982, Ser. No. 341,083

Term of patent 14 years

U.S. Cl. D6—192



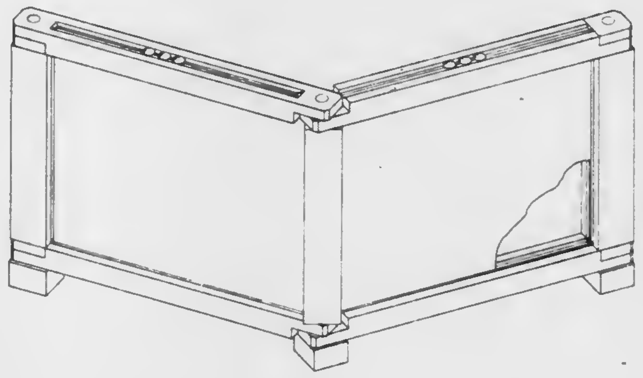
273,355
MODULAR PICTURE FRAME

Robert E. Grind, 512 Fairviw Ct., Placerville, Calif. 95667

Filed Feb. 16, 1979, Ser. No. 12,881

Term of patent 14 years

U.S. Cl. D6—235



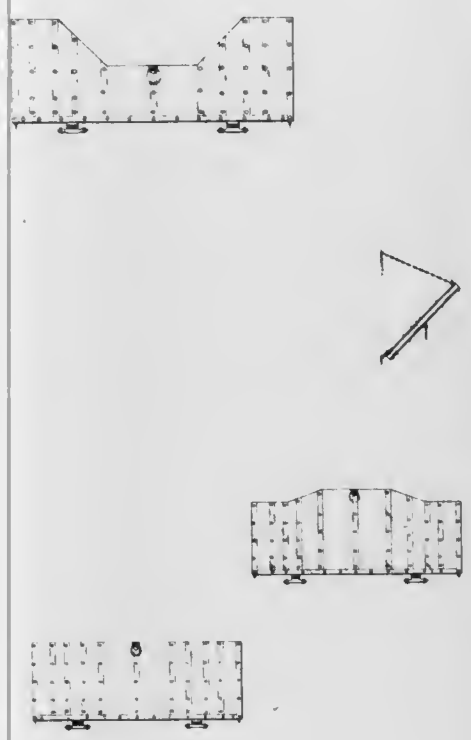
273,356
KNIFE HOLDER

Murry J. Miller, P.O. Box 3781, Springfield, Ill. 62708

Filed Feb. 22, 1982, Ser. No. 351,134

Term of patent 14 years

U.S. Cl. D7—74



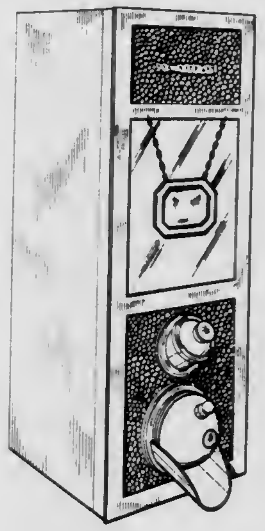
273,357
FOOD DISPENSER

Radivoj Alfirevic, 111 Industrial Dr., Whitby, Ontario, Canada

Filed Sep. 28, 1981, Ser. No. 306,311

Term of patent 14 years

U.S. Cl. D7—306



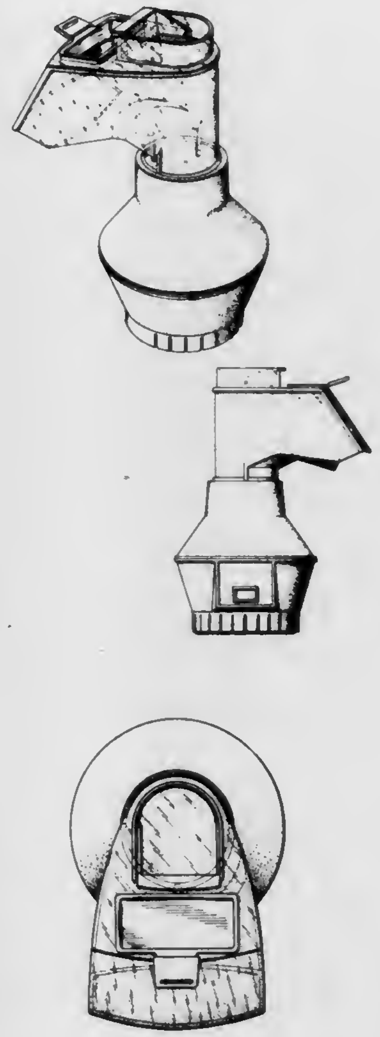
273,358
HOT AIR CORN POPPER

Marshall B. Johnson, and Robert S. Myerly, both of Chillicothe, Ohio, assignors to Wear-Ever Aluminum, Inc., Chillicothe, Ohio

Filed Mar. 9, 1981, Ser. No. 241,624

Term of patent 14 years

U.S. Cl. D7—325



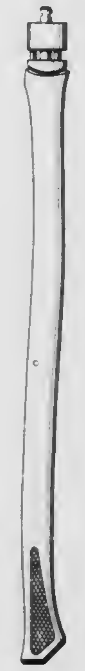
273,359
AXE HANDLE

Robert A. Kolonia, 81 Stockton St., Phillipsburg, N.J. 08865

Filed Aug. 12, 1981, Ser. No. 292,120

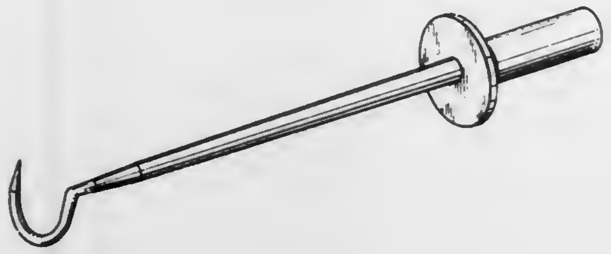
Term of patent 14 years

U.S. Cl. D8—80



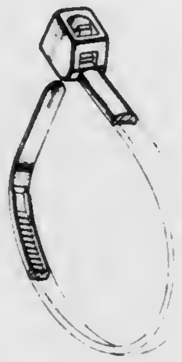
273,360
COMBINATION KNIFESTEEL AND HOOK DESIGN

Ronald J. Hill, 3213 Willow Bend, Bedford, Tex. 76021, assignor to Ronald J. Hill, Bedford, Tex.
Filed Feb. 11, 1982, Ser. No. 348,099
Term of patent 14 years
U.S. Cl. D8—93



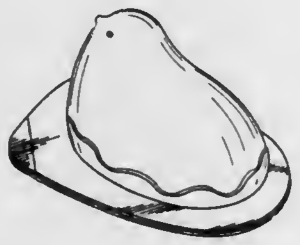
273,361
LOCKING TIE FOR FASTENING, BINDING OR THE LIKE

Tadashi Suzuki, 37-16, Oaza Fujikubo, Miyoshi-cho, Iruma-gun, Saitama-ken, Japan
Filed Jul. 22, 1981, Ser. No. 285,925
Claims priority, application Japan, Feb. 13, 1981, 56-5244
Term of patent 14 years
U.S. Cl. D8—394



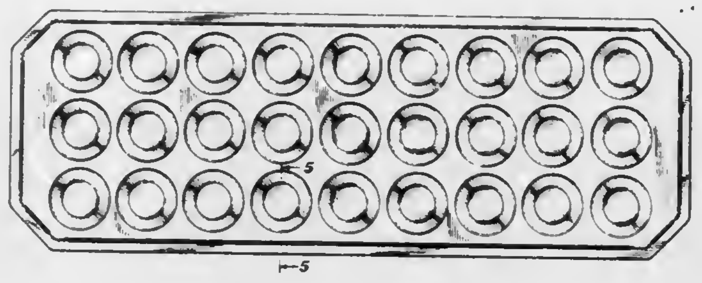
273,362
PACKAGING CONTAINER

Hisao Ishii, Fukuoka, Japan, assignor to Tokyo Hiyoko Co., Ltd., Tokyo, Japan
Filed Oct. 19, 1981, Ser. No. 312,630
Claims priority, application Japan, Apr. 27, 1981, 56-18101
Term of patent 14 years
U.S. Cl. D9—317



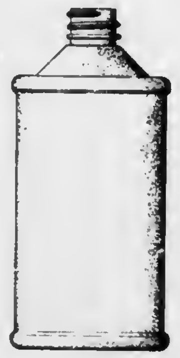
273,363
PACKAGING TRAY FOR WIRE LEADS

Walter Hagedorn, Ossining, and Bernard Ricci, Yonkers, both of N.Y., assignors to Stewart Stamping Corp., a Div. of Insilco Corp., Yonkers, N.Y.
Filed Aug. 10, 1981, Ser. No. 291,767
Term of patent 14 years
U.S. Cl. D8—341



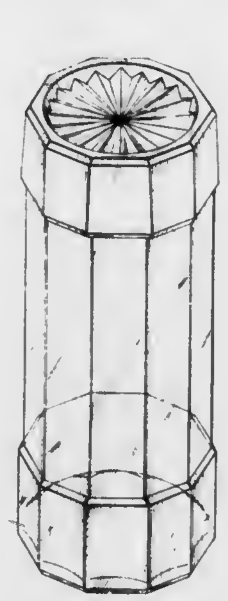
273,364
BOTTLE

James H. Jalutkewicz, Pawcatuck; Richard D. Warrell, Mystic, and Richard B. Wetherell, Jr., Gales Ferry, all of Conn., assignors to Monsanto Company, St. Louis, Mo.
Filed Mar. 18, 1981, Ser. No. 244,992
Term of patent 14 years
U.S. Cl. D9—352



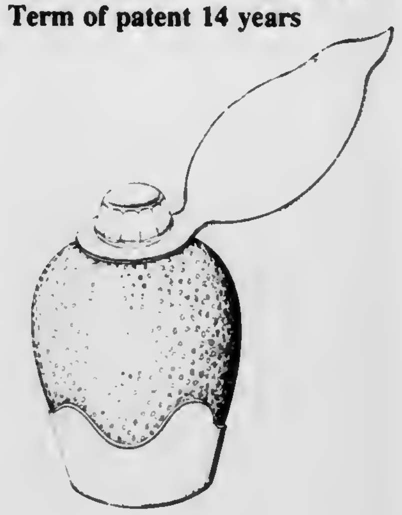
273,365
CONTAINER FOR COMESTIBLES

Sheila Lukins, and Julee Rosso, both of New York, N.Y., assignors to The Silver Palate, Inc., New York, N.Y.
Filed Aug. 27, 1981, Ser. No. 297,032
Term of patent 14 years
U.S. Cl. D9—400



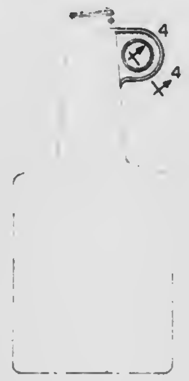
273,366
BOTTLE

Giancarlo Polenghi, Santo Stefano Lodigiano, Italy, assignor to L.A.S. s.a.s. di Polenghi Giancarlo & C., Milan, Italy
Filed Jul. 31, 1981, Ser. No. 288,868
Term of patent 14 years
U.S. Cl. D9—329



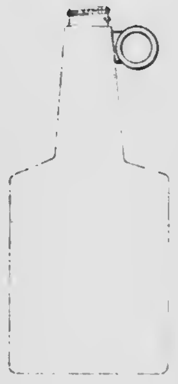
273,367
CONTAINER HANDLE OR SIMILAR ARTICLE

Thomas H. Hayes, Westport, Conn., assignor to Hoover Universal, Inc., Ann Arbor, Mich.
Filed Jun. 3, 1981, Ser. No. 269,539
The portion of the term of this patent subsequent to Dec. 2, 1994, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—434



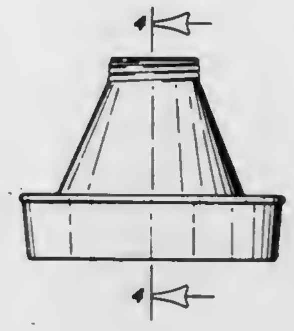
273,368
CONTAINER HANDLE OR SIMILAR ARTICLE

Thomas H. Hayes, Westport, Conn., assignor to Hoover Universal, Inc., Ann Arbor, Mich.
Filed Jun. 3, 1981, Ser. No. 269,544
The portion of the term of this patent subsequent to Mar. 17, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—434



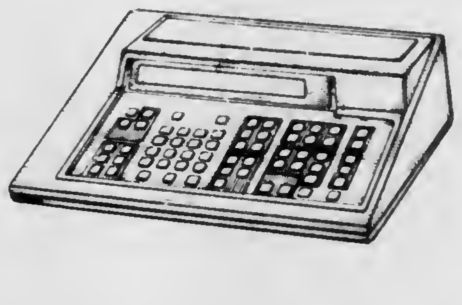
273,369
COMBINED POUR SPOUT AND DRIP GUARD

Carlo A. Fantozzi, 1515 Wilson Ave., Columbus, Ohio 43207
Continuation-in-part of Ser. No. 32,463, Apr. 23, 1979. This application May 6, 1981, Ser. No. 261,265
Term of patent 14 years
U.S. Cl. D9—436



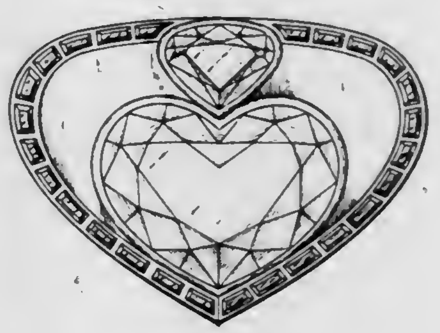
273,370
ELECTRONIC SYSTEM TEST INSTRUMENT

Randall N. Eilert, Bothell, Wash., assignor to John Fluke Mfg. Co., Inc., Everett, Wash.
Filed Aug. 26, 1980, Ser. No. 181,644
Term of patent 14 years
U.S. Cl. D10—75



273,371
EARRING FACE

Marina Bulgari, Athens, Greece, assignor to Zoldia Anstalt, Vaduz, Liechtenstein
Filed May 6, 1981, Ser. No. 261,019
Claims priority, application Italy, Feb. 10, 1981, 35 554 B/81
Term of patent 14 years
U.S. Cl. D11—56



273,372
GEM

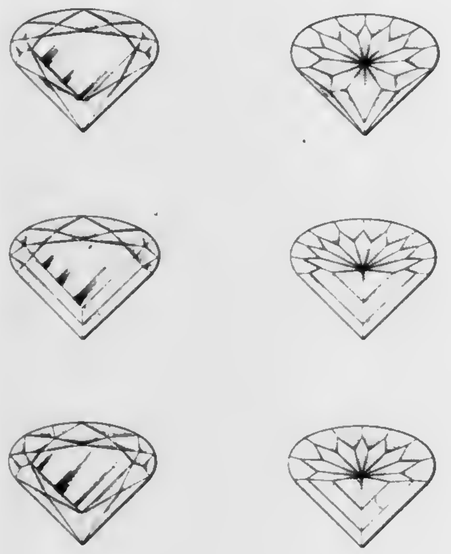
Francois Gennari, Paris, France, assignor to Zoldia Anstalt, Vaduz, Liechtenstein

Division of Ser. No. 114,967, Jan. 24, 1980, Pat. No. Des. 268,398. This application Jul. 30, 1981, Ser. No. 288,399

Claims priority, application France, Jul. 31, 1979, 42,679

Term of patent 14 years

U.S. Cl. D11—90



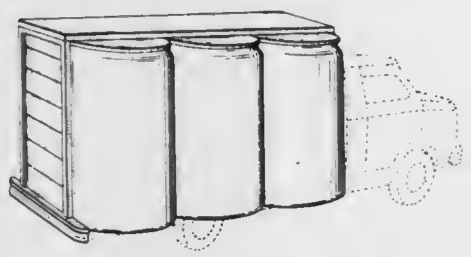
273,373
VEHICLE BODY

Allan Levine, 3028 Fallstaff Rd., Baltimore, Md. 21209; Robert Pinkner, 6 Ice Pond Ct., Baltimore, Md. 21208, and Robert Footlick, 8 Calypso Ct., Baltimore, Md. 21209

Filed Oct. 21, 1981, Ser. No. 313,708

Term of patent 14 years

U.S. Cl. D12—83



273,374
TRAILER

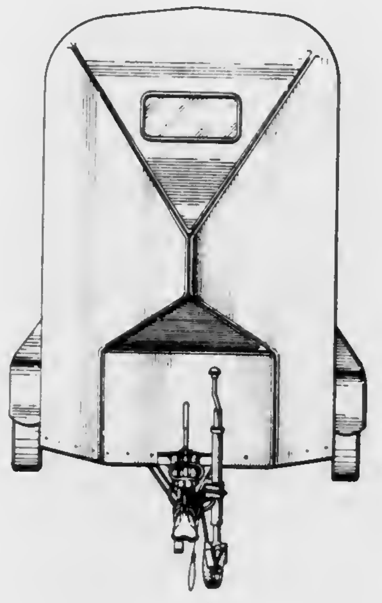
Trevor J. Dew, Leicester, England, assignor to Dunlop Limited, London, England

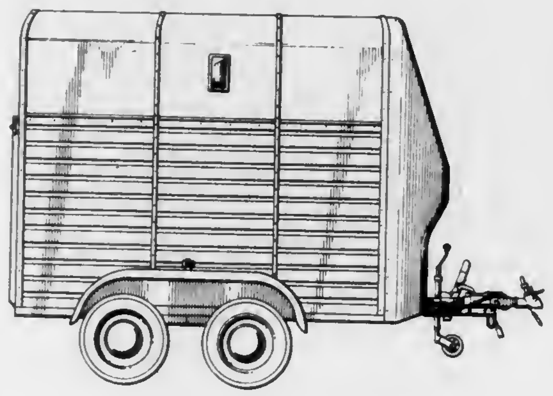
Filed Nov. 18, 1980, Ser. No. 207,887

Claims priority, application United Kingdom, May 27, 1980, 55-995025

Term of patent 14 years

U.S. Cl. D12—102





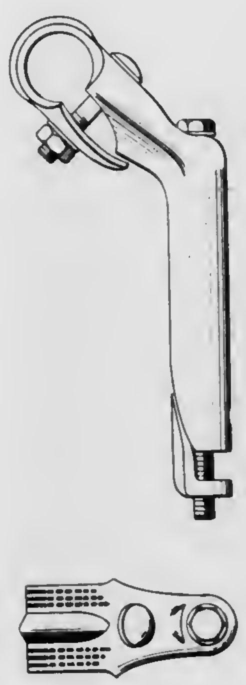
273,375
BICYCLE STEERING POST

Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.

Filed Jun. 12, 1980, Ser. No. 158,716

Term of patent 14 years

U.S. Cl. D12—118



273,376
FOLDABLE WHEELCHAIR

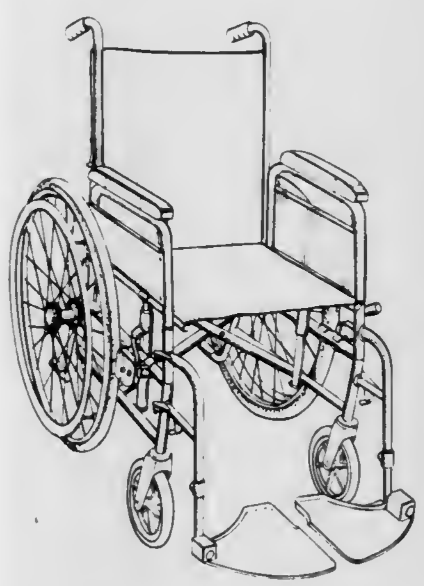
Derek A. Charles, Four Marks, England, assignor to Vessa Limited, Hampshire, England

Filed Nov. 7, 1979, Ser. No. 91,884

Claims priority, application United Kingdom, May 10, 1979, 989862

Term of patent 14 years

U.S. Cl. D12—131



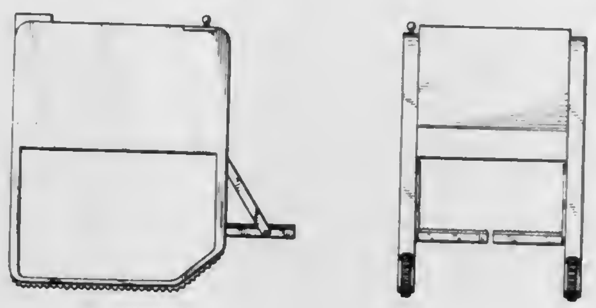
273,377
WHEELCHAIR OR SIMILAR ARTICLE

Bernard Kotyuk, New York, N.Y., assignor to Primary Design Group, Inc., New York, N.Y.

Filed Nov. 27, 1981, Ser. No. 325,170

Term of patent 14 years

U.S. Cl. D12—131



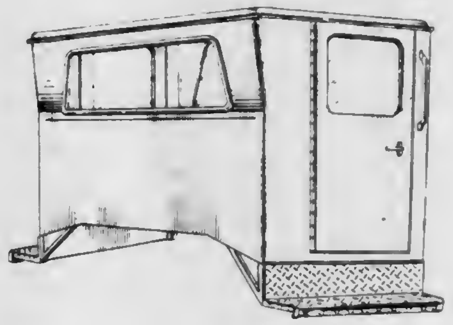
273,378
CREW CAB

Joseph A. Prusak, 145 DeVries Ave., North Tarrytown, N.Y. 10591

Filed May 3, 1982, Ser. No. 374,417

Term of patent 14 years

U.S. Cl. D12—156



273,379
COMBINED PORTABLE RADIO AND CASSETTE TAPE RECORDER

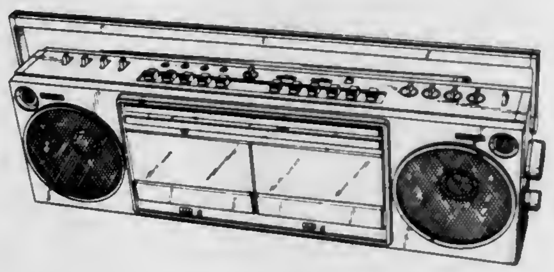
Masanori Hamada; Akio Ohno, both of Osaka; Takao Okada, Kyoto, and Kikuo Ohta, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 22, 1981, Ser. No. 313,846

Claims priority, application Japan, Apr. 24, 1981, 56-17931

Term of patent 14 years

U.S. Cl. D14—5



273,380
COMBINED RADIO AND CASSETTE TAPE RECORDER

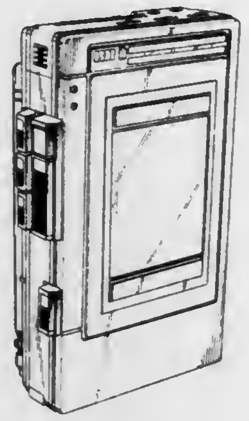
Kazumasa Takenaka, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 22, 1981, Ser. No. 313,851

Claims priority, application Japan, Apr. 24, 1981, 56-17930

Term of patent 14 years

U.S. Cl. D14—5



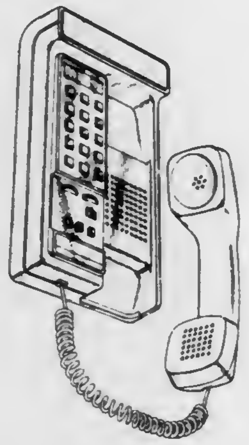
273,381
TELEPHONE

Takeshi Abe, Tokyo; Masato Shibayama, Mitaka; Yoshifumi Asakawa, Yokosuka, and Seiji Kinoshita, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 19, 1981, Ser. No. 312,900

Term of patent 14 years

U.S. Cl. D14—53



273,382
RADIO RECEIVER

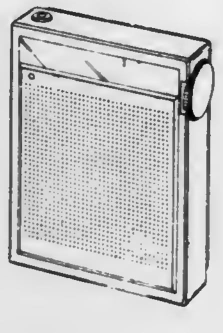
Takao Okada, Kyoto, and Kikuo Ohta, Nara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 10, 1981, Ser. No. 320,033

Claims priority, application Japan, May 18, 1981, 56-21463

Term of patent 14 years

U.S. Cl. D14—71



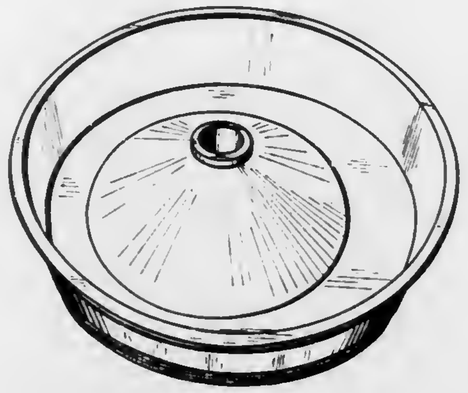
273,383
PUMP INTAKE MANIFOLD

Paul E. Griggs, Jr., 9900 Par La., Wichita, Kans. 67212

Filed Feb. 23, 1981, Ser. No. 237,267

Term of patent 14 years

U.S. Cl. D15—7



273,384
EARTH MOVING MACHINE

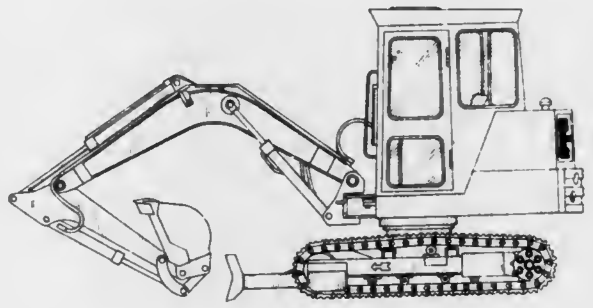
Hitoo Nasu; Yoshishioro Okita; Masami Hirooka; Yoshiaki Yanoshita; Yoshio Tomiyama, all of Sakai, and Kinichi Murata, Izumisano, all of Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Oct. 14, 1982, Ser. No. 434,296

Claims priority, application Japan, Apr. 27, 1982, 57-18709

Term of patent 14 years

U.S. Cl. D15—24



273,385
ROTARY COMBINE

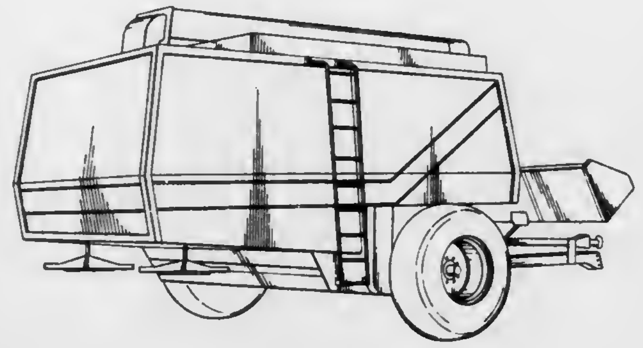
Daniel Pakosh, Winnipeg, Canada, assignor to Versatile Corporation, Vancouver, Canada

Filed Mar. 23, 1981, Ser. No. 246,635

Claims priority, application Canada, Feb. 27, 1981, 270281

Term of patent 14 years

U.S. Cl. D15—27



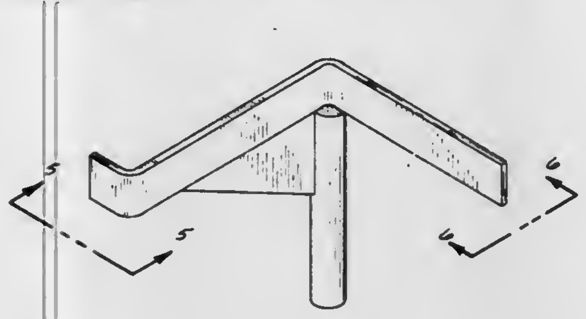
273,386
TOOL REST FOR A LATHE

Morton S. Adler, 600 United Central Bank Building, Des Moines, Iowa 50309

Filed Aug. 3, 1981, Ser. No. 289,809

Term of patent 14 years

U.S. Cl. D15—138



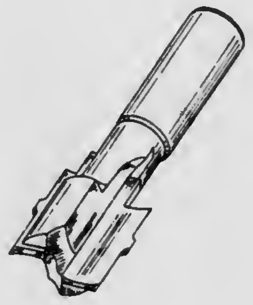
273,387
CUTTER BIT

Will M. Lassiter, 1703 Deep River Rd., High Point, N.C. 27260

Division of Ser. No. 7,100, Jan. 29, 1979, Pat. No. D. 263,598. This application Jan. 9, 1981, Ser. No. 223,913

Term of patent 14 years

U.S. Cl. D15—139



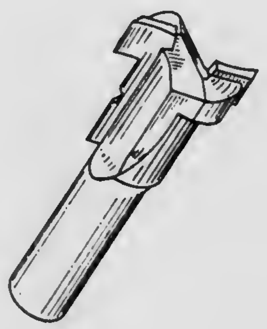
273,388
CUTTER BIT

Will M. Lassiter, 1703 Deep River Rd., High Point, N.C. 27260

Division of Ser. No. 7,100, Jan. 29, 1979, Pat. No. Des. 263,598. This application Jan. 9, 1981, Ser. No. 223,915

Term of patent 14 years

U.S. Cl. D15—139



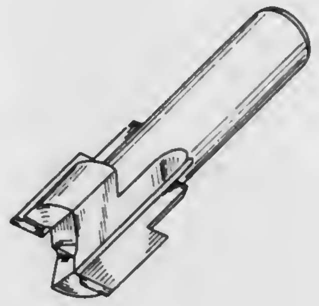
273,389
CUTTING BIT

Will M. Lassiter, 1703 Deep River Rd., High Point, N.C. 27260

Division of Ser. No. 911,739, Jun. 2, 1978, Pat. No. Des. 262,219. This application Jan. 9, 1981, Ser. No. 223,916

Term of patent 14 years

U.S. Cl. D15—139



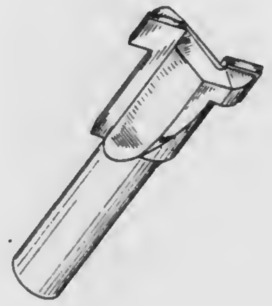
273,390
CUTTING BIT

Will M. Lassiter, 1703 Deep River Rd., High Point, N.C. 27260

Division of Ser. No. 911,739, Jun. 2, 1978, Pat. No. Des. 262,219. This application Jan. 9, 1981, Ser. No. 223,918

Term of patent 14 years

U.S. Cl. D15—139



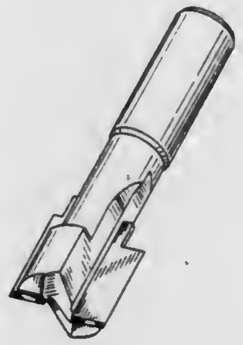
273,391
CUTTING BIT

Will M. Lassiter, 1703 Deep River Rd., High Point, N.C. 27260

Division of Ser. No. 911,739, Jun. 2, 1978, Pat. No. Des. 262,219. This application Jan. 9, 1981, Ser. No. 223,919

Term of patent 14 years

U.S. Cl. D15—139



273,392

ELECTRONIC CALCULATOR

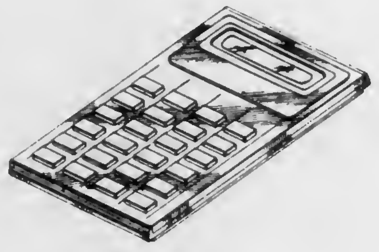
Keiji Sakata, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan

Filed Mar. 24, 1982, Ser. No. 361,490

Claims priority, application Japan, Sep. 30, 1981, 56-43797

Term of patent 14 years

U.S. Cl. D18—7



273,393

ELECTRONIC CALCULATOR

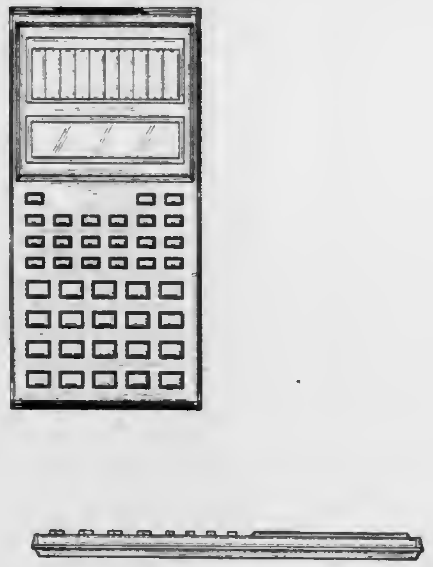
Harumi Sakamoto, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan

Filed May 3, 1982, Ser. No. 374,279

Claims priority, application Japan, Nov. 6, 1981, 56-49763

Term of patent 14 years

U.S. Cl. D18—7



273,394

EMBOSSING TOOL

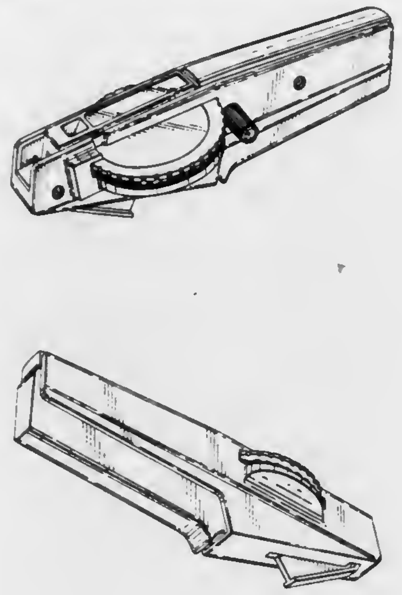
James Lee, Oakland, Calif., assignor to Esselte Dymo N V, Belgium

Filed Mar. 9, 1982, Ser. No. 356,412

Claims priority, application United Kingdom, Sep. 9, 1981, 1002391

Term of patent 14 years

U.S. Cl. D18—19



273,395

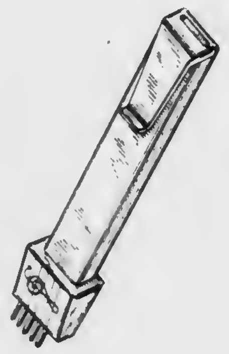
MULTIPLE POINT BALL POINT PEN

Steven K. Wilkinson, 2204 Zosimo Pl., Herndon, Va. 22070

Filed Apr. 30, 1982, Ser. No. 373,614

Term of patent 14 years

U.S. Cl. D19—36



273,396

FOUNTAIN PEN

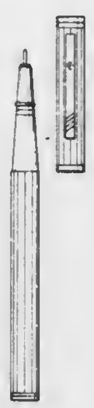
Daniel Hechter, 62, Avenue Foch, Paris XVT, France

Filed Oct. 7, 1981, Ser. No. 309,391

Claims priority, application France, Apr. 9, 1981, 81 1330

Term of patent 14 years

U.S. Cl. D19—49



273,397

FOUNTAIN PEN

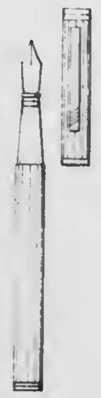
Daniel Hechter, 62, Avenue Foch, Paris XVI, France

Filed Oct. 7, 1981, Ser. No. 309,394

Claims priority, application France, Apr. 9, 1981, 811330

Term of patent 14 years

U.S. Cl. D19—49



273,398

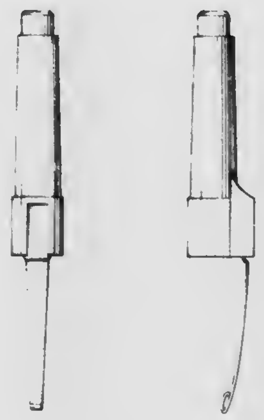
WRITING INSTRUMENT CAP

Clarence Zierhut, Richardson, Tex., assignor to The Gillette Company, Boston, Mass.

Filed Jun. 10, 1982, Ser. No. 387,087

Term of patent 14 years

U.S. Cl. D19—57



273,399

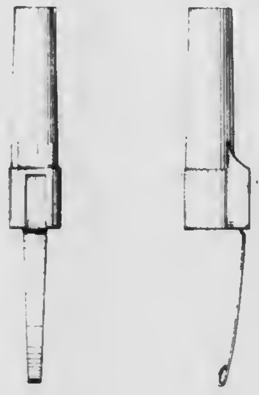
WRITING INSTRUMENT CAP

Clarence Zierhut, Richardson, Tex., assignor to The Gillette Company, Boston, Mass.

Filed Jun. 10, 1982, Ser. No. 387,088

Term of patent 14 years

U.S. Cl. D19—57



273,400

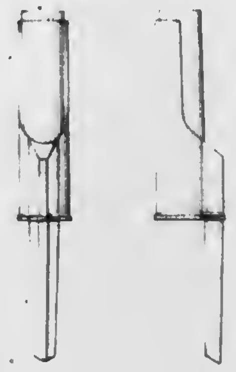
WRITING INSTRUMENT CAP

Clarence Zierhut, Richardson, Tex., assignor to The Gillette Company, Boston, Mass.

Filed Jun. 17, 1982, Ser. No. 389,323

Term of patent 14 years

U.S. Cl. D19—57



273,401

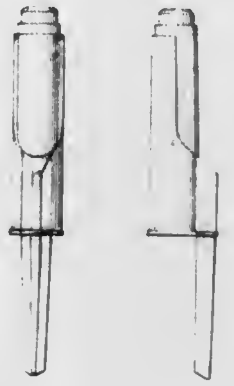
WRITING INSTRUMENT CAP

Clarence Zierhut, Richardson, Tex., assignor to The Gillette Company, Boston, Mass.

Filed Jun. 17, 1982, Ser. No. 389,324

Term of patent 14 years

U.S. Cl. D19—57



273,402

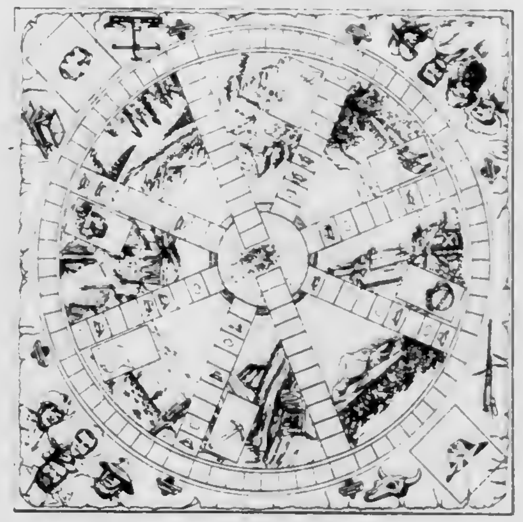
GAMEBOARD

Helen D. Adkins, Rte. 2, Box 575, Stewart Hollow Rd., Sciotoville, Ohio 45662

Filed Jan. 25, 1982, Ser. No. 342,175

Term of patent 14 years

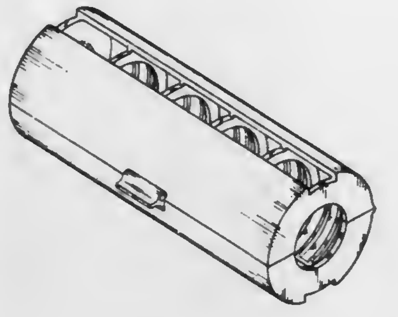
U.S. Cl. D21—35



273,403

CHIP HOLDER

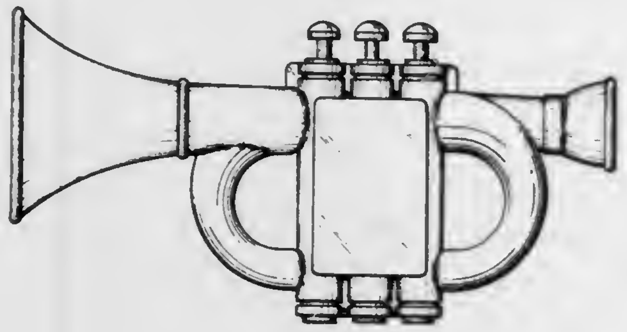
Joseph C. DeLuca, 214 Chapel Ave., Cherry Hill, N.J. 08034
Filed Mar. 18, 1981, Ser. No. 244,887
Term of patent 14 years
U.S. Cl. D21—56



273,404

TOY TRUMPET

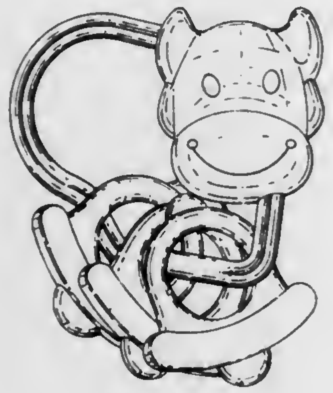
Yuichi Takahashi, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Japan
Filed Feb. 5, 1982, Ser. No. 346,286
Claims priority, application Japan, Aug. 31, 1981, 56-38443
Term of patent 14 years
U.S. Cl. D21—64



273,405

CHILD'S TOY RATTLE

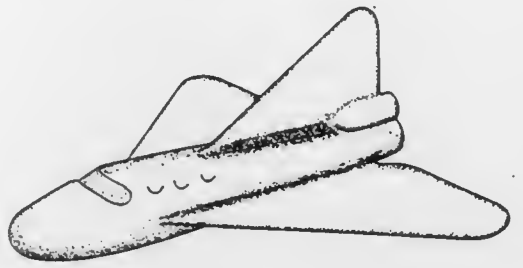
David M. Raffo, and John A. Pape, both of Hitchin, England, assignors to Hestair Kiddicraft Limited, Surrey, England
Filed Mar. 8, 1982, Ser. No. 356,209
Claims priority, application United Kingdom, Dec. 3, 1981, 1003965
Term of patent 14 years
U.S. Cl. D21—65



273,406

TOY SPACE SHUTTLE

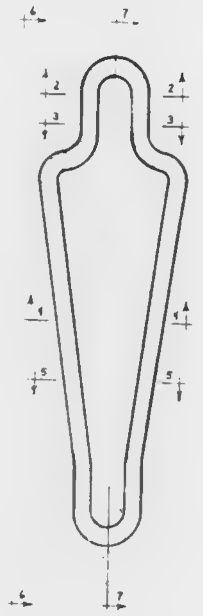
Albert G. Young, P.O. Box 966, Jupiter, Fla. 33408
Filed Jun. 22, 1981, Ser. No. 274,306
Term of patent 14 years
U.S. Cl. D21—87



273,407

EXERCISING DEVICE BODY

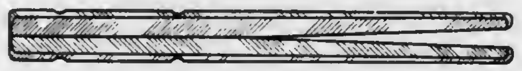
Roger C. Evans, 10214 Dogwood Ave., Palm Beach Gardens, Fla. 33410
Filed Apr. 6, 1981, Ser. No. 251,683
Term of patent 14 years
U.S. Cl. D21—191



273,408

COMBINED WEIGHT AND RECOIL COMPENSATOR FOR SHOTGUNS

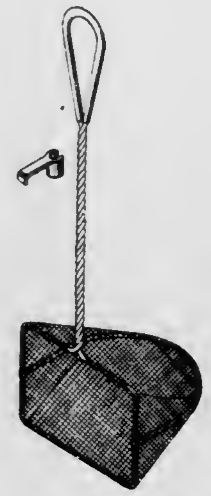
Louis J. Palmieri, R.F.D. Touisset Point Rd., Warren, R.I. 02885
Filed Feb. 26, 1982, Ser. No. 352,727
Term of patent 14 years
U.S. Cl. D22—7



273,409

COMBINED AQUARIUM FISHNET AND SUPPORT

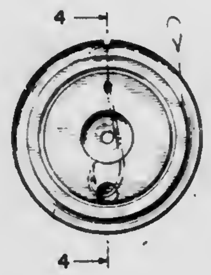
Allan H. Willinger, New York, N.Y., assignor to Willinger Bros. Inc., Englewood, N.J.
Filed Jan. 21, 1981, Ser. No. 226,782
Term of patent 14 years
U.S. Cl. D22—22



273,410

COMBINED FISH HOOK AND LINE DISPENSER AND STORAGE CONTAINER

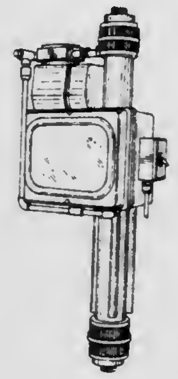
Geza Tomosy, 626 Hillview Rd., Allentown, Pa. 18103
Filed Apr. 7, 1982, Ser. No. 366,170
Term of patent 14 years
U.S. Cl. D22—99



273,411

WATER PURIFICATION IONIC GAS GENERATOR

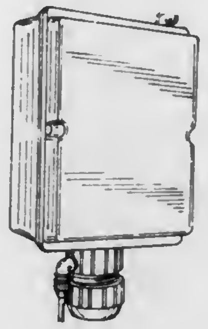
Dennis E. J. Johnson, and Scott J. Johnson, both of 1025 Garfield Ave., Aurora, Ill. 60506
Filed Aug. 27, 1982, Ser. No. 412,307
Term of patent 14 years
U.S. Cl. D23—3



273,412

WATER PURIFICATION IONIC GAS GENERATOR

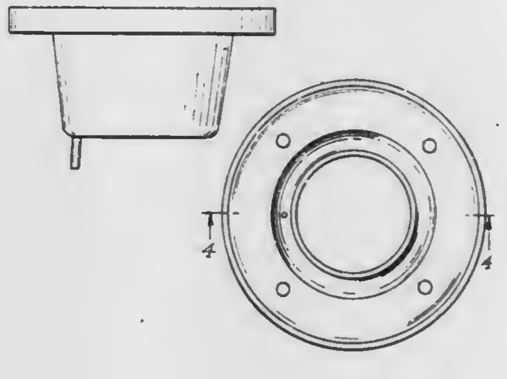
Dennis E. J. Johnson, and Scott J. Johnson, both of 1025 Garfield Ave., Aurora, Ill. 60506
Filed Sep. 29, 1982, Ser. No. 428,397
Term of patent 14 years
U.S. Cl. D23—3



273,413

MOISTURE DIVERTING SLEEVE FOR TOILET DRAINPIPE

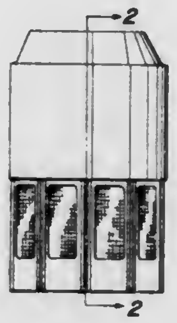
Kenneth E. McMurray, 3411 Buckner Dr., San Jose, Calif. 95127
Filed Oct. 19, 1981, Ser. No. 312,514
Term of patent 14 years
U.S. Cl. D23—69



273,414

SHELL FOR INDUCED DRAFT COOLING TOWER

Joachim R. Sinek, Hudson, Ohio, assignor to Kennecott Corporation, Cleveland, Ohio
Filed Dec. 3, 1981, Ser. No. 326,948
Term of patent 14 years
U.S. Cl. D23—139



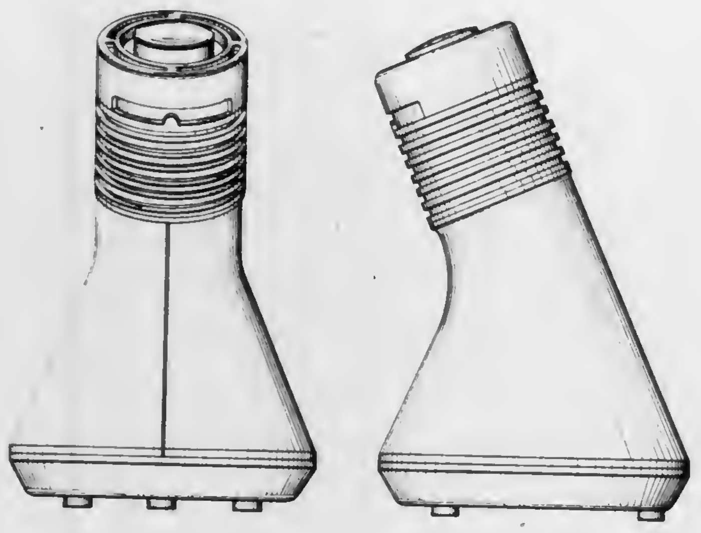
273,415
FACIAL SAUNA

Meyrick K. Rogers, Lancaster, Pa., assignor to Clairol Incorporated, New York, N.Y.

Filed Jun. 23, 1981, Ser. No. 276,575

Term of patent 14 years

U.S. Cl. D23—148



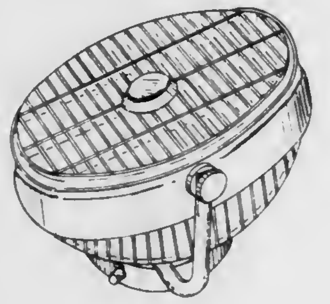
273,416
FAN

Arthur J. Scotto, 619 Shore Rd., N. Palm Beach, Fla. 33408

Filed May 11, 1983, Ser. No. 493,650

Term of patent 14 years

U.S. Cl. D23—156



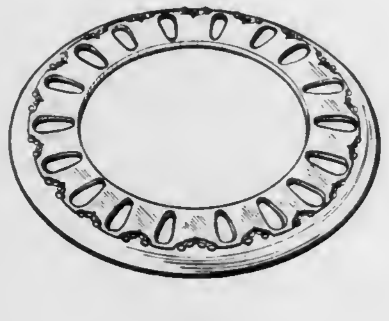
273,417
FAN HOUSING COVER

William A. Conner, 114 Fourteenth St., Ramona, Calif. 92065

Filed Dec. 7, 1981, Ser. No. 328,463

Term of patent 14 years

U.S. Cl. D23—163



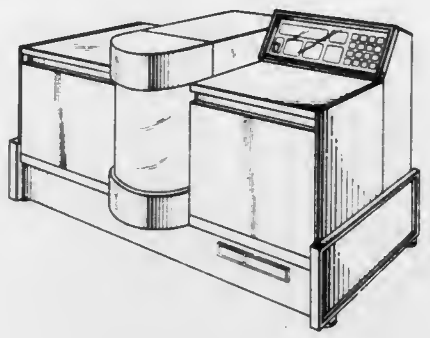
273,418
SLIDE SPINNER

Kenneth D. Collister, and Mohammad Kheiri, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Oct. 19, 1981, Ser. No. 312,787

Term of patent 14 years

U.S. Cl. D24—1.1



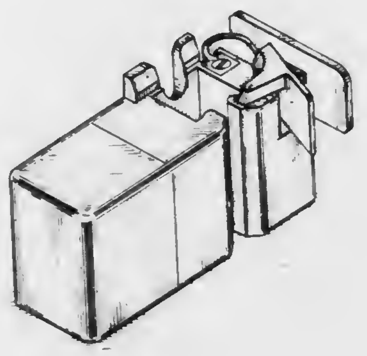
273,419
FLOW DETECTOR FOR AN INTRAVENOUS ADMINISTRATION SET

Herbert F. D'Alo, Crystal Lake; Joseph N. Genese, and Ronald W. Smith, both of Waukegan, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Nov. 30, 1981, Ser. No. 325,709

Term of patent 14 years

U.S. Cl. D24—8



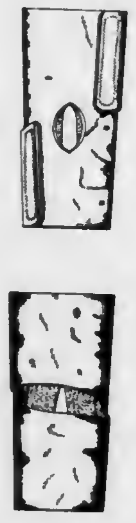
273,420
KNEE BRACE

Robert Gruber, Cincinnati, Ohio, assignor to Surgical Appliance Industries, Inc., Cincinnati, Ohio

Filed Feb. 10, 1982, Ser. No. 347,515

Term of patent 14 years

U.S. Cl. D24—64



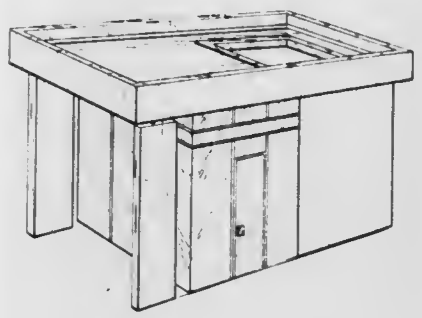
273,421
WALK-IN AUTOMATIC TELLER BUILDING

Randall L. Elliott, Oklahoma City, Okla., assignor to Vector Specialized Construction, Inc., Oklahoma City, Okla.

Filed Mar. 3, 1982, Ser. No. 354,221

Term of patent 14 years

U.S. Cl. D25—33



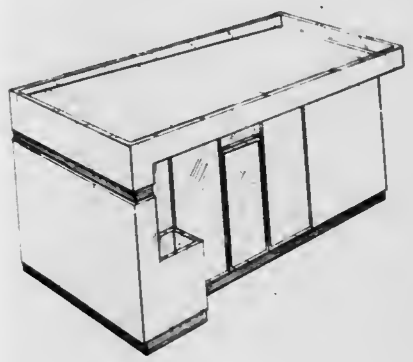
273,422
WALK-IN AUTOMATIC TELLER BUILDING

Randall L. Elliott, Oklahoma City, Okla., assignor to Vector Specialized Construction, Inc., Oklahoma City, Okla.

Filed Mar. 3, 1982, Ser. No. 354,222

Term of patent 14 years

U.S. Cl. D25—33



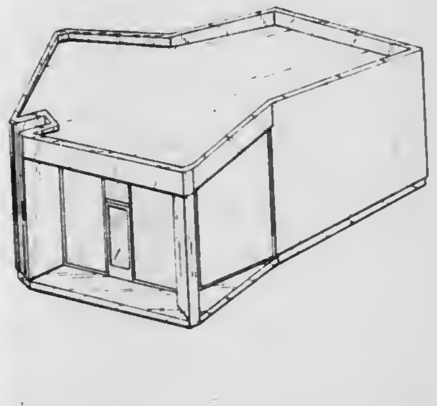
273,423
WALK-IN AUTOMATIC TELLER BUILDING

Randall L. Elliott, Oklahoma City, Okla., assignor to Vector Specialized Construction, Inc., Oklahoma City, Okla.

Filed Mar. 3, 1982, Ser. No. 354,234

Term of patent 14 years

U.S. Cl. D25—33



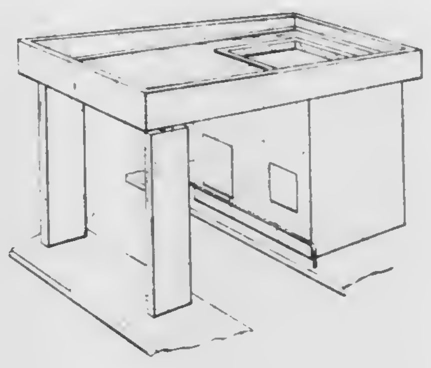
273,424
DRIVE-UP AUTOMATIC TELLER BUILDING

Randall L. Elliott, Oklahoma City, Okla., assignor to Vector Specialized Construction, Inc., Oklahoma City, Okla.

Filed Mar. 3, 1982, Ser. No. 354,235

Term of patent 14 years

U.S. Cl. D25—33



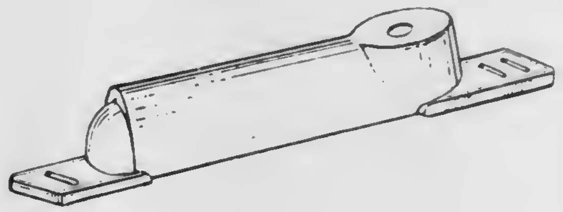
273,425
FLASHLIGHT

Andrew E. Campbell, 3233 Skyway Dr., Santa Maria, Calif. 93455, and Jack LeVan, 17401 Mt. Cliffwood Cir., Fountain Valley, Calif. 92708

Filed Apr. 8, 1981, Ser. No. 252,185

Term of patent 14 years

U.S. Cl. D26—37



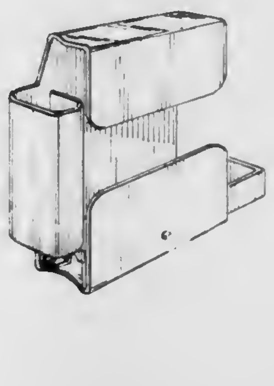
273,426
COMBINED HOLDER FOR A CIGARETTE PACK AND LIGHTER

Anchel Zucker, 20 Memory Lane Pkwy., North Syracuse, N.Y. 13212

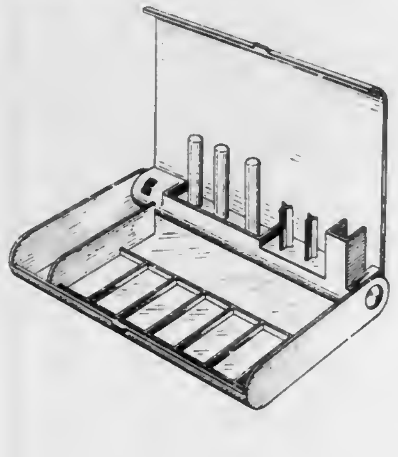
Filed Jun. 12, 1980, Ser. No. 158,739

Term of patent 14 years

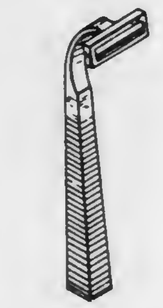
U.S. Cl. D27—49



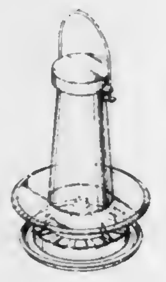
273,427
HAIR SETTING CASE
George Barradas, Greenwich, Conn., assignor to Appliance Design Probe Inc., Scarborough, Canada
Filed Mar. 16, 1981, Ser. No. 243,785
Term of patent 14 years
U.S. Cl. D28—38



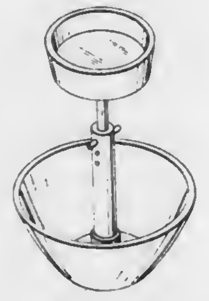
273,428
TRIM RAZOR
James A. Ferretti, 203 Salina St., Liverpool, N.Y. 13088
Filed Aug. 25, 1982, Ser. No. 411,573
Term of patent 14 years
U.S. Cl. D28—46



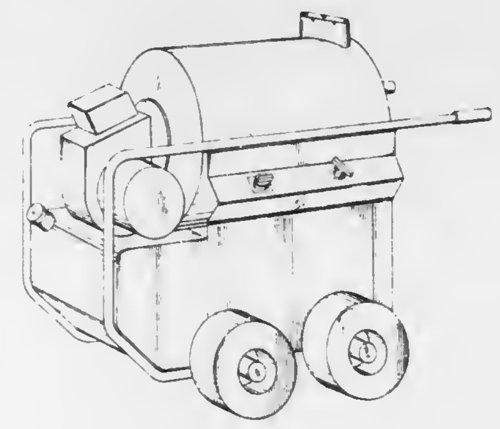
273,429
BIRD FEEDER
Peter Kilham, Mill Rd., Foster, R.I. 02825
Filed Apr. 12, 1982, Ser. No. 367,246
Term of patent 14 years
U.S. Cl. D30—15



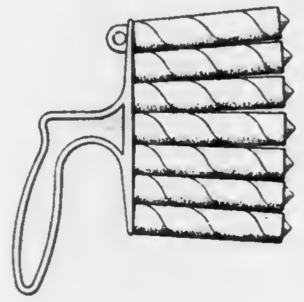
273,430
ANIMAL FEEDER
Rufus C. Salinas, 19321 Ramsey Rd., Crosby, Tex. 77532
Filed Feb. 8, 1982, Ser. No. 357,491
Term of patent 14 years
U.S. Cl. D30—16



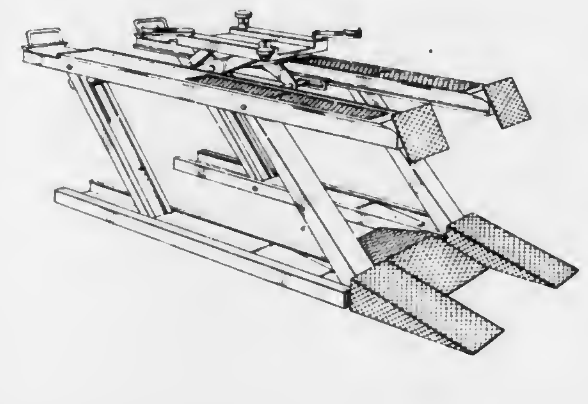
273,431
OIL FIRED HOT WATER PRESSURE CLEANING APPARATUS
Paul W. Linton, 2722 SE. Evans, Troutdale, Oreg. 97060
Filed Jul. 2, 1981, Ser. No. 279,729
Term of patent 14 years
U.S. Cl. D32—15



273,432
BLIND CLEANER
Jeff A. Jacobson, 22 Woodgrove, Irvine, Calif. 92714
Filed Aug. 1, 1983, Ser. No. 519,023
Term of patent 14 years
U.S. Cl. D32—52



273,433
VEHICLE LIFT
Saburo Masui, Tokyo, Japan, assignor to Yasui Sangyo Co., Ltd., Fujinomiya, Japan
Filed Sep. 28, 1981, Ser. No. 306,973
Term of patent 14 years
U.S. Cl. D34—28



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 10TH DAY OF APRIL, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name
(in accordance with city and telephone directory practice).

- A/S Ferrosan: *See—*
  - Lassen, Joergen B.; Skrumsager, Birte K.; and Christensen, Joergen A., 4,442,113, Cl. 424-267.000.
- A/S Niro Atomizer: *See—*
  - Donelly, James R.; Felsvang, Karsten S.; Morsing, Per; and Veltman, Preston L., 4,442,079, Cl. 423-239.000.
  - Donnelly, James R.; Felsvang, Karsten S.; Morsing, Per; and Veltman, Preston L., 4,442,080, Cl. 423-239.000.
- AB Celleco: *See—*
  - Frykhult, Rune H., 4,441,999, Cl. 210-354.000.
- Abbondanti, Alberto, to Westinghouse Electric Corp. Apparatus and method for determining the operation of an induction motor. 4,442,393, Cl. 318-802.000.
- Abbott Laboratories: *See—*
  - Larkin, Mark E.; and Meyer, Leonard J., 4,441,538, Cl. 604-415.000.
- Abe, Atsushi: *See—*
  - Minohara, Kiyomi; and Abe, Atsushi, 4,441,375, Cl. 74-5.460.
- Abe, Toshio; Ishikawa, Hiroshi; and Suhara, Shigeo, to Kogyo Gijutsuin. Thermal shield structure with ceramic wall surface exposed to high temperature. 4,441,324, Cl. 60-753.000.
- Abel, Heinz; and Schafer, Paul, to Ciba-Geigy Corporation. Anticrease finishing composition and use thereof in the dyeing or whitening of textile material which contains polyester fibres. 4,441,885, Cl. 8-603.000.
- Abell, Irwin R., to Hartwig-Hartoglass, Inc. Glazing fastener for mounting either rigid or flexible storm windows. 4,441,290, Cl. 52-202.000.
- Abernathy, Marshall; and Bailey, Darrell E., to Cosden Technology, Inc. Method and apparatus for controlling the formation of polymer accumulations during distillation of a vinylaromatic monomer. 4,442,048, Cl. 261-114.00R.
- Abiko, Ichimatsu: *See—*
  - Kotani, Shintaro; Abiko, Ichimatsu; Arae, Takashi; Chiba, Mio; Araki, Tomoo; and Kanno, Hiromasa, 4,442,429, Cl. 340-786.000.
- Abouzahr, Saad M.: *See—*
  - Taylor, Ronald P.; Dewhurst, John E.; and Abouzahr, Saad M., 4,442,235, Cl. 521-122.000.
- ACF Chemiefarma N.V.: *See—*
  - Trijzelaar, Hans B.; de Bode, Ronus; and Welle, Hendricus B. A., 4,442,106, Cl. 424-258.000.
  - Trijzelaar, Hans B.; de Bode, Ronus; and Welle, Hendricus B. A., 4,442,107, Cl. 424-258.000.
- ACF Industries, Incorporated: *See—*
  - Carney, John L., Jr.; and Gilbert, Richard L., 4,441,431, Cl. 105-377.000.
- Adachi, Hiromi, to Mitsubishi Denki Kabushiki Kaisha. Discharge tube firing device. 4,442,380, Cl. 315-101.000.
- Adger Kogyo Co., Ltd.: *See—*
  - Iijima, Zenshiro, 4,441,928, Cl. 106-21.000.
- Adolph Coors Company: *See—*
  - Hahn, Roger A., 4,441,418, Cl. 101-38.00R.
- Advanced Energy Systems Inc.: *See—*
  - Carman, Vincent E.; Anderson, David H.; and Lucas, Eugene F., 4,441,573, Cl. 180-165.000.
- Aerazur EFA: *See—*
  - Aglae, Gilbert R.; Alavoine, Jacques J.; Contensou, Claude; Rousseau, Jacques R.; and Cerati, Celestin, 4,441,672, Cl. 244-110.00C.
- Agarwal, Pawan K.: *See—*
  - Lundberg, Robert D.; Thaler, Warren A.; and Agarwal, Pawan K., 4,442,253, Cl. 524-211.000.
- Agency of Industrial Science and Technology, The: *See—*
  - Ishida, Masahiko; Haga, Ryooichi; and Odawara, Yoji, 4,442,006, Cl. 210-613.000.
- AGFA-Gevaert AG: *See—*
  - Bartel, Siegfried; Ermer, Wolfgang; and Payrhammer, Bernd, 4,441,667, Cl. 242-197.000.
  - Nagel, Erich; and Turcke, Rainer, 4,441,702, Cl. 271-177.000.
- Aglae, Gilbert R.; Alavoine, Jacques J.; Contensou, Claude; Rousseau, Jacques R.; and Cerati, Celestin, to Aerazur EFA. Retractile support unit for an arresting cable disposed across a take-off or landing strip for aircraft. 4,441,672, Cl. 244-110.00C.
- Ahlquist, Norman: *See—*
  - Gargini, Paolo; Beinglass, Israel; and Ahlquist, Norman, 4,441,247, Cl. 29-571.000.
- Ahr, Nicholas A.; and Moret, David M., to Procter & Gamble Company, The. Bib. 4,441,212, Cl. 2-49.00R.
- Ahuja, Bhupendra K.; and Dwarakanath, Mirmira R., to Bell Telephone Laboratories, Incorporated. Power supply rejection characteristics of CMOS circuits. 4,442,529, Cl. 375-34.000.
- Aichinger, Horst; and Franke, Kurt, to Siemens Aktiengesellschaft. Measuring instrument for the optical focal spot. 4,442,539, Cl. 378-207.000.
- Aigner, Helmut: *See—*
  - Marquarding, Dieter; and Aigner, Helmut, 4,442,029, Cl. 260-112.50R.
- Air Products and Chemicals, Inc.: *See—*
  - Garg, Diwakar, 4,441,983, Cl. 208-10.000.
  - Klee, David J.; and Nelson, Peter C., 4,441,327, Cl. 62-51.000.
- Aisin Seiki Kabushiki Kaisha: *See—*
  - Onda, Tsutomu; Kano, Keiichi; and Itakura, Shinji, 4,441,966, Cl. 204-26.000.
- Ajinomoto Co., Inc.: *See—*
  - Suzuki, Hirohisa; and Takahashi, Hironiro, 4,442,034, Cl. 260-236.600.
  - Tsuchida, Takayasu; Miwa, Kiyoshi; and Nakamori, Shigeru, 4,442,208, Cl. 435-116.000.
- Akasaka, Yoichi; and Tsukamoto, Katsuhiro, to Mitsubishi Denki Kabushiki Kaisha. Process for preparing semiconductor device having active base region implanted therein using walled emitter opening and the edge of dielectric isolation zone. 4,441,932, Cl. 148-1.500.
- Akashi, Goro: *See—*
  - Dezawa, Shin-ichiro; Akashi, Goro; and Kitamoto, Tatsuji, 4,442,159, Cl. 428-212.000.
  - Sato, Masami; Akashi, Goro; Okuzawa, Yasutoshi; and Okutu, Toshimitu, 4,442,171, Cl. 428-336.000.
- Akashi, Kageyasu: *See—*
  - Shiga, Tetsuo; Kimura, Takeo; Ito, Yoshinobu; Akashi, Kageyasu; Akiyama, Minoru; and Matsui, Takeki, 4,442,202, Cl. 430-600.000.
- Akita, Sigeyuki: *See—*
  - Kodera, Masao; and Akita, Sigeyuki, 4,442,512, Cl. 367-87.000.
- Akiyama, Minoru: *See—*
  - Shiga, Tetsuo; Kimura, Takeo; Ito, Yoshinobu; Akashi, Kageyasu; Akiyama, Minoru; and Matsui, Takeki, 4,442,202, Cl. 430-600.000.
- A.B. Bonnierforetagen: *See—*
  - Fogelberg, Ernst R., 4,442,242, Cl. 523-200.000.
- Aktiebolaget Draco: *See—*
  - Olsson, O. A. Torsten; Svensson, Leif Å; and Wetterlin, Kjell I. L., 4,442,300, Cl. 560-66.000.
- AKZO nv: *See—*
  - Hentschel, Peter; Brodowski, Walter; and Zengel, Hans, 4,442,281, Cl. 528-79.000.
- Akzona Incorporated: *See—*
  - Mehaffey, Joseph L., 4,442,010, Cl. 210-729.000.
  - van der Hauw, Tjerk; and Jaspers, Hans, 4,442,022, Cl. 502-150.000.
- Alavoine, Jacques J.: *See—*
  - Aglae, Gilbert R.; Alavoine, Jacques J.; Contensou, Claude; Rousseau, Jacques R.; and Cerati, Celestin, 4,441,672, Cl. 244-110.00C.
- Albrecht, Konrad; Frensch, Heinz; and Schumacher, Hans, to Hoechst Aktiengesellschaft. Herbicidal compositions. 4,441,919, Cl. 71-120.000.
- Alex S. Reinharcz Enterprises, Inc.: *See—*
  - Snooks, Laura K., 4,441,382, Cl. 74-558.000.
- Alfred University Research Foundation Inc.: *See—*
  - Funk, James E., 4,441,887, Cl. 44-51.000.
- Allen-Bradley Company: *See—*
  - Dummermuth, Ernst H.; Galdun, Daniel J.; Grudowski, Raymond A.; and Stewart, Daniel L., 4,442,504, Cl. 364-900.000.
- Allen, Clayton H. Nonlinear passive acoustic filtering. 4,441,576, Cl. 181-129.000.
- Allen, Jerome D.: *See—*
  - Short, Edward H., III; Allen, Jerome D.; and Wood, Loren E., deceased, 4,441,350, Cl. 72-55.000.
- Allen, Jonathan B., to Bell Telephone Laboratories, Incorporated. Data over voice transmission arrangement. 4,442,540, Cl. 381-31.000.
- Alley, Robert P.; Relyea, John W.; and Sidebottom, Donald L., to General Electric Company. Air conditioning thermostatic control system having modular inclusion of remote temperature set-back capability. 4,441,545, Cl. 165-26.000.
- Allied Corporation: *See—*
  - Sampson, Stephen A., 4,441,778, Cl. 339-99.00R.
  - Vavala, Louis M., 4,441,883, Cl. 8-457.000.
- Allied Surveyor Supplies Mfg. Company: *See—*
  - Feldman, Gilbert J.; and Feldman, Richard A., 4,441,288, Cl. 52-103.000.
- Allied Tube & Conduit Corporation: *See—*
  - Hijuelos, Humberto; Scartozzi, Giulio; Vollmuth, Lawrence P.; and Basile, Raffaele, 4,441,238, Cl. 29-33.00D.
- Allis-Chalmers Corporation: *See—*
  - Busboom, Garry W., 4,441,512, Cl. 130-27.00Z.

  - Enzmann, Michael H., 4,441,307, Cl. 56-208.000.
  - Herwig, Warren E., 4,441,513, Cl. 130-27.00B.
- Allsop, Inc.: *See—*
  - d'Alayer de Costemore d'Arc, Stephane M., 4,442,468, Cl. 360-128.000.
- Alps Electric Co., Ltd.: *See—*
  - Suzuki, Tadashi, 4,442,367, Cl. 310-91.000.
- Alspector, Joshua; Kinsbron, Eliezer; and Sternheim, Marek A., to Bell Telephone Laboratories, Incorporated. Semiconductor integrated circuit capacitor. 4,441,249, Cl. 29-577.00C.
- Alter, Hobart L.; Wake, Lewis F.; and Platten, Myron G., to Coast Catamaran Corporation. Removable rudder assembly. 4,441,447, Cl. 114-167.000.
- Amdahl Corporation: *See—*
  - Chiang, Ping-Wang, 4,442,188, Cl. 430-5.000.
- American Air Filter Company, Inc.: *See—*
  - Revell, Alan E., 4,441,898, Cl. 55-350.000.
- American Cyanamid Company: *See—*
  - Quinlan, James M., 4,442,086, Cl. 424-79.000.
- American Food Equipment Co.: *See—*
  - Baccetti, Valerio A., 4,441,231, Cl. 17-25.000.
- American Hospital Supply Corporation: *See—*
  - White, Fred K., 4,441,373, Cl. 73-864.020.
- American Sterilizer Company: *See—*
  - Taylor, Laurence D., 4,441,724, Cl. 277-166.000.
- Ames, Adolf: *See—*
  - Wagner, Alfred; Ames, Adolf; and Hodel, Ulf, 4,441,646, Cl. 228-116.000.
- AMF Inc.: *See—*
  - Jung, Wilhelm H., 4,441,444, Cl. 112-311.000.
- Amos, Lynn G.; and Rogers, Charles H., to Corning Glass Works. Method of measuring degree of partitioning. 4,442,218, Cl. 436-525.000.
- AMP Incorporated: *See—*
  - Forney, Edgar W., Jr.; and Hogendobler, Richard S., 4,441,781, Cl. 339-177.00R.
  - Grubb, Daniel B., 4,441,251, Cl. 29-861.000.
- Amsted Industries Incorporated: *See—*
  - Buzinski, Robert W., 4,441,696, Cl. 266-57.000.
- Amtel, Inc.: *See—*
  - Griffin, Michael D., 4,441,522, Cl. 137-615.000.
- Anderson Bros. Mfg. Co.: *See—*
  - Stohlquist, Roger H., 4,441,664, Cl. 242-75.420.
- Anderson, David H.: *See—*
  - Carman, Vincent E.; Anderson, David H.; and Lucas, Eugene F., 4,441,573, Cl. 180-165.000.
- Anderson, Michael P., to Kovan Engineering Pty. Ltd. Metering apparatus. 4,441,393, Cl. 83-360.000.
- Anderson, Robert A.: *See—*
  - Curran, Donald G.; and Anderson, Robert A., 4,441,694, Cl. 264-163.000.
- Andersson, Borje, to Robert Bosch GmbH. Package having a resealing device. 4,441,625, Cl. 220-257.000.
- Ando, Kunio: *See—*
  - Maekawa, Hitoshi; Osawa, Michitaka; and Ando, Kunio, 4,442,384, Cl. 315-399.000.
- Andrejasich, Raymond J.; and Perry, Ralph A., to Emhart Industries, Inc. Float assembly for a sensor. 4,442,405, Cl. 324-439.000.
- Angeles, Marshall R.: *See—*
  - Engelhart, John E.; Angeles, Marshall R.; and D'Errico, Michael J., 4,442,122, Cl. 424-304.000.
- Anhalt, John W., to ITT Corporation. Quick detachable coupling. 4,441,776, Cl. 339-91.00R.
- Anritsu Electric Company Limited: *See—*
  - Izumi, Takusuke, 4,441,815, Cl. 356-328.000.
- Antoniak, Nickolas J. Resilient closure. 4,441,623, Cl. 220-90.400.
- Aoki, Osamu: *See—*
  - Ochiai, Kuniaki; Horii, Masami; and Aoki, Osamu, 4,441,828, Cl. 400-124.000.
- Apel, Thomas R., to United States of America, Army. Two loop automatic level control for power amplifier. 4,442,407, Cl. 330-128.000.
- Apple, David L.: *See—*
  - Hutchison, Wayne R.; and Apple, David L., 4,441,735, Cl. 280-771.000.
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  - Kotani, Shintaro; Abiko, Ichimatsu; Arae, Takashi; Chiba, Mio; Araki, Tomoo; and Kanno, Hiromasa, 4,442,429, Cl. 340-786.000.
- Arakawa, Yoshio; Takanabe, Atsuyuki; Uemura, Yahiro; Funakoshi, Satoshi; and Suyama, Tadakazu. Water-soluble cholesterol derivative. 4,442,037, Cl. 260-397.200.
- Araki, Ken: *See—*
  - Matsumura, Sowjun; Araki, Ken; Otaka, Tetsuo; and Tanigawa, Masumi, 4,441,965, Cl. 204-16.000.
- Araki, Tomoo: *See—*
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- Araki, Yoshihiko: *See—*
  - Kawabata, Nobuaki; Yokoyama, Nobuo; and Araki, Yoshihiko, 4,442,140, Cl. 427-154.000.
- Aratani, Yutaka, to Sumitomo Chemical Company, Limited. Polyamide resin composition. 4,442,254, Cl. 524-413.000.
- Arbed S.A.: *See—*
  - Block, Franz-Rudolf, 4,441,541, Cl. 164-453.000.
- Arbib, Gordon F., to Multicore Solders Limited. Soft solder material for use in the formation of a solder bath. 4,441,924, Cl. 75-65.00R.
- Arc Technologies Systems Ltd.: *See—*
  - Zolner, Dieter H.; Rittmann, Friedrich; Dung, Herbert; Haremsa, Johannes; Bauer, Georg; Otto, Josef; Muhlenbeck, Josef; and Lauterbach-Dammler, Inge, 4,442,525, Cl. 373-93.000.
- Architectural Specialties Co., Inc.: *See—*
  - Benson, Henry E., 4,441,301, Cl. 52-804.000.
- Argyle, Charles S.; Beldam, Richard P.; and Hope, Robert J., to Borg-Warner Corporation. Radiator mounting fittings. 4,441,547, Cl. 165-67.000.
- Armco Inc.: *See—*
  - Cowan, William S.; and Galle, Edward M., Jr., 4,441,740, Cl. 285-18.000.
  - Galle, Edward M., Jr., 4,441,741, Cl. 285-18.000.
  - Owens, James H., III, 4,441,742, Cl. 285-18.000.
- Arndt, Friedrich; and Boroschewski, Gerhard, to Schering Aktiengesellschaft. Diurethanes and herbicidal compositions containing the same. 4,441,915, Cl. 71-100.000.
- Arnold, Fred E.: *See—*
  - Tsai, Tsu-Tzu; and Arnold, Fred E., 4,442,293, Cl. 548-152.000.
- Arntz, Dietrich; Prescher, Gunter; and Heilos, Johannes, to Degussa Aktiengesellschaft. Process for preparing by catalytic oxidation in oxygen-containing gas mixtures, acrolein from propylene and methacrolein from isobutylene or tertiary butanol. 4,442,308, Cl. 568-480.000.
- Arpe, Hans-Jurgen: *See—*
  - Leupold, Ernst I.; Schmidt, Hans-Joachim; Wunder, Friedrich; Arpe, Hans-Jurgen; and Hachenberg, Horst, 4,442,228, Cl. 518-714.000.
- Asahi Glass Company, Ltd.: *See—*
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- Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
  - Shiga, Tetsuo; Kimura, Takeo; Ito, Yoshinobu; Akashi, Kageyasu; Akiyama, Minoru; and Matsui, Takeki, 4,442,202, Cl. 430-600.000.
- Asao, Yasuzi, to Fuji Photo Film Co., Ltd. Process for the preparation of photographic resin-coated paper. 4,442,200, Cl. 430-538.000.
- Asari, Akira; Yamamura, Takashige; and Veno, Tsuneya, to Kabushiki Kaisha Kobe Seiko Sho. Clamp mechanism for upsetter. 4,441,353, Cl. 72-316.000.
- ASEA AB: *See—*
  - Rappinger, Bo; and Stenkvist, Sven-Einar, 4,442,526, Cl. 373-95.000.
- Ashcombe Products Company: *See—*
  - Thornton, Henry M.; and Thornton, John S., 4,441,245, Cl. 29-564.000.
- Ashida, Shigeaki, to Nippon Electric Co., Ltd. Multichannel frequency modulator. 4,442,415, Cl. 332-16.00T.
- AT&T Technologies, Inc.: *See—*
  - Seaman, Gary G., 4,441,391, Cl. 83-165.000.
- Atkinson, Joseph G.; Baldwin, John J.; and McClure, David E., to Merck & Co., Inc. (3-Aralkylamino-2-or-propoxy)heterocyclic compounds. 4,442,094, Cl. 424-246.000.
- Atlantic Richfield Company: *See—*
  - Neiditch, David S.; Bullano, Gerald A.; DiLullo, Robert J.; and Ofstein, David E., 4,442,273, Cl. 526-88.000.
- Atom Sciences, Inc.: *See—*
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- AuClair, Christopher J.: *See—*
  - Lu, Chin H.; and AuClair, Christopher J., 4,442,189, Cl. 430-45.000.
- AuCoin, Thomas R.: *See—*
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- Automation Industries, Inc.: *See—*
  - Walters, Gerald E., 4,441,775, Cl. 339-89.00R.
  - Walters, Gerald E., 4,441,780, Cl. 339-143.00R.
- Autrey, Harry S.; and Hunnell, John W., to Riviana Foods, Inc. Continuous processing of rice. 4,442,130, Cl. 426-462.000.
- Avions Marcel Dassault-Breguet Aviation: *See—*
  - Seurin, Georges J. C., 4,442,008, Cl. 210-683.000.
- AVM Corporation: *See—*
  - Stark, Forest G., 4,441,767, Cl. 312-216.000.
- Avon Products Inc.: *See—*
  - Graham, George W.; and McCally, Richard P., 4,441,389, Cl. 83-140.000.
- Axel, Hartmut: *See—*
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- AXIA Incorporated: *See—*
  - Robinson, Robert J.; Johnson, David B.; and Schroeder, Verdell H., 4,441,442, Cl. 112-256.000.
- Axiuk, Oleg: *See—*
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- Axthammer, Ludwig, to Fichtel & Sachs AG. Vibration damper arrangement for vehicles. 4,441,593, Cl. 188-322.110.
- Aya, Masahiro; Saito, Junichi; Yasui, Kazuomi; Shiokawa, Kozo; and Moriya, Koichi, to Nihon Tokushu Noyaku Seizo K.K. Substituted phenoxypropionates and herbicidal compositions. 4,441,913, Cl. 71-94.000.
- Ayerst, McKenna & Harrison, Inc.: *See—*
  - Dvornik, Dushan M.; and Simard-Duquesne, Nicole, 4,442,118, Cl. 424-274.000.
- B. F. Goodrich Company, The: *See—*
  - Kolycheck, Edmond G., 4,442,282, Cl. 528-83.000.

  - Murphy, Walter T.; and Guiley, Clifford D., Jr., 4,442,039, Cl. 260-465.400.
  - Ward, James H., Jr., 4,441,582, Cl. 182-48.000.
- Baba, Keikichi: *See—*
  - Takitani, Masaru; Tomiyasu, Shizuo; and Baba, Keikichi, 4,442,224, Cl. 502-112.000.
  - Takitani, Masaru; Tomiyasu, Shizuo; and Baba, Keikichi, 4,442,225, Cl. 502-112.000.
- Babcock & Wilcox Company, The: *See—*
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- Baccetti, Valerio A., to American Food Equipment Co. Massager for large meat sections. 4,441,231, Cl. 17-25.000.
- Backes, Michael: *See—*
  - Bosinger, Gerhard; Backes, Michael; and Beyhl, Eberhard F., 4,442,346, Cl. 235-379.000.
- Baduel, Francois; Dumazy, Christian; and Sarrailh, Jean-Paul, to Societe Nationale Elf Aquitaine. Eccentric fluid delivery column for articulated drilling platform in deep water petroleum production. 4,441,839, Cl. 405-202.000.
- BAE Automated Systems, Inc.: *See—*
  - Schlig, Harold W.; and Staehs, Joel L., 4,441,604, Cl. 198-598.000.
- Baekgaard, Knud E., to Bang & Olufsen A/S. Antenna circuit of the negative impedance type. 4,442,434, Cl. 343-701.000.
- Baglin, Elizabeth G.; and Gomes, John M., to United States of America, Interior. Selective recovery of base metals and precious metals from ores. 4,442,072, Cl. 423-22.000.
- Bahr, Dennis E.: *See—*
  - Kahn, Alan R.; Clark, Kenneth R.; and Bahr, Dennis E., 4,441,357, Cl. 73-40.000.
- Bailey, Darrell E.: *See—*
  - Abernathy, Marshall; and Bailey, Darrell E., 4,442,048, Cl. 261-114.00R.
- Bailey, Donald L.: *See—*
  - Packo, Joseph J.; and Bailey, Donald L., 4,442,015, Cl. 252-68.000.
- Bailey, Gerald M. Self-loading material transporter. 4,441,848, Cl. 414-439.000.
- Bailey, Kent T., to Thornhill Craver Company. Quad bolt. 4,441,725, Cl. 277-167.500.
- Baird Corporation: *See—*
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- Baker, Billy E.: *See—*
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- Baker, Don R.; and Gutman, Arnold D., to Stauffer Chemical Company. Haloalkyloxime herbicidal antidotes. 4,441,916, Cl. 71-100.000.
- Baker, Geoffrey; and Lockett, Roger A., to U.S. Philips Corporation. Differential radiation detection apparatus. 4,442,357, Cl. 250-338.000.
- Baker, Newman T. Anchor device for bass drum. 4,441,398, Cl. 84-421.000.
- Baldwin, John J.: *See—*
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- Balmar Crimp Tool Corp.: *See—*
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- Balzano, Quirino: *See—*
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- Ban, Kaoru: *See—*
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- Bang & Olufsen A/S: *See—*
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- Banov, Mikhail D.: *See—*
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- Barber-Greene Co.: *See—*
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- Barcza, Nicholas A.: *See—*
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- Barnard, Richard H., to ITT Industries, Inc. Vortex flowmeter. 4,441,372, Cl. 73-861.220.
- Barnes, Adrian G.: *See—*
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- Barnes-Hind/Hydrocurve, Inc.: *See—*
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- Barrable, Victor E.: *See—*
  - McQueen, George; and Barrable, Victor E., 4,441,293, Cl. 52-377.000.
- Barrett, Joseph A. F., to ICI Americas Inc. Liquid desensitized, electrically activated detonator assembly resistant to actuation by radio-frequency and electrostatic energies. 4,441,427, Cl. 102-202.600.
- Barsotti, Mario. Table saw guide apparatus. 4,441,394, Cl. 83-409.000.
- Bartch, Donald W.: *See—*
  - Poff, Wayne R.; and Bartch, Donald W., 4,441,957, Cl. 156-656.000.
- Bartel, Siegfried; Ermer, Wolfgang; and Payrhammer, Bernd, to AGFA-Gevaert AG. Cassette for winding band-like photographic material. 4,441,667, Cl. 242-197.000.
- Bartels-Keith, James R.; and Puttick, Anthony J., to Polaroid Corporation. Development restrainer release compounds. 4,442,290, Cl. 544-310.000.
- Barter, Archie M., to Tektronix, Inc. CRT Video drive circuit with beam current stabilization. 4,442,458, Cl. 358-243.000.
- Bartsch, Heinz: *See—*
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- Bartz, Gisela. Method and apparatus for attracting useful insects. 4,441,272, Cl. 43-1.000.
- Bartz, Stephen A., to Lucht Engineering, Inc. Photographic printing system including an improved masking card. 4,441,807, Cl. 355-40.000.
- Base Ten Systems, Inc.: *See—*
  - James, Rolland T.; and Chebra, Ronald J., 4,442,320, Cl. 179-5.00R.
- BASF Aktiengesellschaft: *See—*
  - Brandstetter, Franz; Hambrecht, Juergen; Stephan, Rudolf; Overhoff, Heinz-Juergen; Schwaab, Josef; Bernhard, Claus; Swoboda, Johann; and Echte, Adolf, 4,442,263, Cl. 525-83.000.
  - Degner, Dieter; and Hannebaum, Heinz, 4,441,970, Cl. 204-59.00R.
  - Hartwig, Ernst; and Krallmann, Reinhold, 4,442,287, Cl. 544-187.000.
  - Marx, Hans-Norbert; and Gottsche, Reimer, 4,442,157, Cl. 428-173.000.
  - Mueller, Herbert; Axel, Hartmut; and Wittwer, Arnold, 4,442,306, Cl. 564-479.000.
  - Prinzbach, Horst; Schwesinger, Reinhard; and Keller, Reinhold, 4,442,299, Cl. 549-545.000.
  - Rau, Wolfgang; Klamann, Helmut; and Hennenberger, Peter, 4,442,271, Cl. 526-61.000.
- Basile, Raffaele: *See—*
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- Bassier, Friedrich; and Goldschmidt, Klaus, to Ruhrkohle AG; and Steag AG. Process for the disposal and economic use of the residue of the exhaust gas washers of furnaces in relation to waste products. 4,441,840, Cl. 405-267.000.
- Baubron, Jean-Claude C., to Bureau de Recherches Geologiques et Minieres. High-precision method and apparatus for in-situ continuous measurement of concentrations of gases and volatile products. 4,442,353, Cl. 250-281.000.
- Baudis, Ulrich; Biberbach, Peter; and Weber, Wolfgang, to Degussa Aktiengesellschaft. Process for removal of sand mold residues from cast parts. 4,441,930, Cl. 134-2.000.
- Bauer, Clint E.: *See—*
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- Bauer, Georg: *See—*
  - Zolner, Dieter H.; Rittmann, Friedrich; Dung, Herbert; Haremsa, Johannes; Bauer, Georg; Otto, Josef; Muhlenbeck, Josef; and Lauterbach-Dammler, Inge, 4,442,525, Cl. 373-93.000.
- Baugh, John L.; and Montgomery, James W., to Hughes Tool Company. Setting tool. 4,441,560, Cl. 166-382.000.
- Baumann, Hans-Peter; and Mosimann, Urs, to Sandoz Ltd. Quaternary ammonium compounds and their use as dyeing assistants for polyamide fibers. 4,441,884, Cl. 8-542.000.
- Baumann, Heinz; Kuhnel, Werner; and Rattner, Manfred, to Siemens Aktiengesellschaft. Resonant circuit inverter. 4,442,483, Cl. 363-131.000.
- Baumard, Ulysse, to Etablissements Briand S.A. Single or multiple head for extraction of bulk materials. 4,441,603, Cl. 198-518.000.
- Baumen, William C.: *See—*
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- Baumgardner, H. Richard: *See—*
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- Baxter Travenol Laboratories, Inc.: *See—*
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- Bayer Aktiengesellschaft: *See—*
  - Fauss, Rudolf; Sonntag, Michael; Wagner, Kuno; Findeisen, Kurt; and Mennicken, Gerhard, 4,442,279, Cl. 528-44.000.
  - Grogler, Gerhard; and Kallert, Wilhelm, 4,442,280, Cl. 528-54.000.
  - Meyer, Horst; Sitt, Rudiger; Thomas, Gunter; Garthoff, Benward; Towart, Robertson; and Rosentreter, Ulrich, 4,442,100, Cl. 424-250.000.
  - Probst, Joachim; Riberi, Bernd; Kolb, Gunter, deceased; and Hohlein, Peter, 4,442,145, Cl. 427-385.500.
  - Rasshofer, Werner; Schafer, Hermann; Paul, Reiner; and Beuth, Josef, 4,442,236, Cl. 521-130.000.
  - Zabrocki, Karl; and Pischtschan, Alfred, 4,442,264, Cl. 525-86.000.
- Bayer, Josef: *See—*
  - Mehlan, Bernd; and Bayer, Josef, 4,441,628, Cl. 221-90.000.
- Bayerische Motoren Werke A.G.: *See—*
  - Wimmer, Robert; and Levai, Laslo, 4,441,737, Cl. 280-804.000.
- Beard, Walter C. Direct high flow aerosol-type valve with moveable cup. 4,441,635, Cl. 222-402.220.
- Bechtold, Stephen K. Double dome skylight assembly. 4,441,284, Cl. 52-72.000.
- Becker, Kenneth W.; Friedrichs, Louis G., Jr.; Kropp, Lev; and Straka, Richard B., to Miller Brewing Company. Pasteurization apparatus. 4,441,406, Cl. 99-275.000.
- Beckmann, Georg, to Waagner Biro Aktiengesellschaft. Method and apparatus for cooling hot bulk material. 4,441,261, Cl. 34-20.000.
- Becton Dickinson and Company: *See—*
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  - Hicswa, Daniel, 4,441,495, Cl. 128-325.000.
- Beecham Group Limited: *See—*
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Gardner, Derek V.; and Gaster, Laramie M., 4,442,098, Cl. 424-248.510.

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Beinglass, Israel: *See—*

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Beldam, Richard P.: *See—*

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Vasiliev, Boris P.; Borisov, Nikolai L.; Semenov, Mikhail K.; Ponomarev, Ivan K.; Tyryshkina, Galina B.; and Gorbatenko, Igor V., 4,441,549, Cl. 165-145.000.

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Hams, Kenneth A., 4,442,347, Cl. 235-474.000.

Bell Telephone Laboratories, Incorporated: *See—*

Ahuja, Bhupendra K.; and Dwarakanath, Mirmira R., 4,442,529, Cl. 375-34.000.

Allen, Jonathan B., 4,442,540, Cl. 381-31.000.

Alspector, Joshua; Kinsbron, Eliezer; and Sternheim, Marek A., 4,441,249, Cl. 29-577.00C.

Besomi, Paul R.; Degani, Joshua; and Wilt, Daniel P., 4,442,402, Cl. 324-158.00D.

Chu, Ta-Shing; and England, Robert W., 4,442,437, Cl. 343-786.000.

Levin, Rafael M., 4,441,931, Cl. 148-1.500.

Weinraub, William C. L., 4,441,309, Cl. 57-212.000.

Belletire, John L.; and Sarges, Reinhard, to Pfizer Inc. Imide derivatives. 4,442,114, Cl. 424-267.000.

Belsky, Don M.: *See—*

Belsky, Jerome; and Belsky, Don M., 4,441,731, Cl. 280-495.000.

Belsky, Jerome; and Belsky, Don M. Towing system for vehicles with rear bumpers. 4,441,731, Cl. 280-495.000.

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Brown, Arthur K., 4,441,319, Cl. 60-548.000.

Gaiser, Robert F., 4,441,320, Cl. 60-578.000.

Mead, Ronald C., 4,442,513. Cl. 367-100.000.

Beneke, Wolfgang; and Leifeld, Ferdinand, to Trutzschler GmbH & Co. KG. Apparatus for separating foreign bodies from fiber tufts. 4,441,994, Cl. 209-139.00R.

Bennett, Garry K. Cable tension gluing process. 4,442,149, Cl. 428-53.000.

Bennett, Robert A. Child resistant trigger pump. 4,441,633, Cl. 222-153.000.

Benson, Henry E., to Architectural Specialties Co., Inc. Garage door panel apparatus and method. 4,441,301, Cl. 52-804.000.

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Bergmann, Wilfried H. Method and means for the noninvasive, local, in-vivo examination of endogeneous tissue, organs, bones, nerves and circulating blood on account of spin-echo techniques. 4,442,404, Cl. 324-309.000.

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McMickle, Robert L.; and Rumbaugh, James T., 4,441,273, Cl. 43-18.100.

McMickle, Robert L.; and Foote, Danny R., 4,441,453, Cl. 119-3.000.

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Betts, Max W.; and Robinson, Frank, to Courtaulds PLC. Presser foot device for a knitting machine. 4,441,338, Cl. 66-64.000.

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O'Leary, Richard P.; and Reichgott, David W., 4,442,009, Cl. 210-697.000.

Beuth, Josef: *See—*

Rasshofer, Werner; Schafer, Hermann; Paul, Reiner; and Beuth, Josef, 4,442,236, Cl. 521-130.000.

Bevan, Peter C.: *See—*

Mitchell, Terence G.; Barnes, Adrian G.; Jackson, Julia S.; and Bevan, Peter C., 4,441,514, Cl. 131-276.000.

Beyhl, Eberhard F.: *See—*

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Bhatti, Mohinder S., to Owens-Corning Fiberglas Corporation. Method of making glass fiber forming feeders and feeder formed thereby. 4,441,903, Cl. 65-1.000.

Bhatti, Mohinder S., to Owens-Corning Fiberglas Corporation. Method of making glass fiber forming feeders and feeder formed thereby. 4,441,904, Cl. 65-1.000.

Biaggi, Jacques, to MacGregor International, S.A. Port ramp for access to a roll-on roll-off ship. 4,441,449, Cl. 114-263.000.

Bianchi, Nereo, to NECCHI. Needle bar drive in sewing machines. 4,441,441, Cl. 112-221.000.

Biberbach, Peter: *See—*

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BICC Public Limited Company: *See—*

Dey, Philip, 4,442,364, Cl. 307-147.000.

Bich, George J.; Burke, Thomas M.; and Smith, James D. B., to Westinghouse Electric Corp. Substrate pretreatment with a metal-beta keto ester complex in the method of curing an anaerobic resin. 4,442,138, Cl. 427-116.000.

Biffle, Morris S. Modified rotating head assembly for rotating blowout preventors. 4,441,551, Cl. 166-84.000.

Biohol Corporation: *See—*

Roth, Ernest R., 4,441,891, Cl. 44-56.000.

Bisco, Inc.: *See—*

Suh, Byoung I., 4,442,240, Cl. 523-116.000.

Bishop, Keith C., III; Earls, David E.; Robinson, Richard C.; Blakely, Donald W., deceased; and by Jacobson, Robert L., administrator, to Chevron Research Company. Process for regenerating a spent copper composite sulfur sorbent 4,442,221, Cl. 502-25.000.

Biswas, Bimal K.; and Kochie, Joseph E., to Foster Wheeler Energy Corporation. Apparatus for mixing and distributing solid particulate material. 4,441,822, Cl. 366-101.000.

Bither, Tom A., Jr., to Du Pont de Nemours, E. I., and Company. Catalyst for vapor phase oxidation of n-butane to maleic anhydride. 4,442,226, Cl. 502-209.000.

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Cuneo, Giuseppe, 4,442,366, Cl. 310-50.000.

Walton, Richard E., II, 4,441,563, Cl. 173-163.000.

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Blanchard, Senior N.; Flint, William T.; Tibbetts, George C.; and Sawyer, Joseph A., to Tibbetts Industries, Inc. Encapsulated backplate for electret transducers. 4,442,324, Cl. 179-111.00E.

Blaschke, Kurt; and Roob, Josef, to Stahl- und Apparatebau Hans Leffer GmbH. Elevator for casing. 4,441,749, Cl. 294-88.000.

Bleakney, William M., to Hughes Aircraft Company. Airborne missile guidance system. 4,442,431, Cl. 343-7.0ED.

Bless, Franz: *See—*

Limque, Ferdinand; Luiten, Cornelis H.; Bless, Franz; Neubauer, Reinhard; and Lange, Dietmar, 4,441,698, Cl. 266-249.000.

Block, Franz-Rudolf, to Arbed S.A. Method of and apparatus for determining the melt level in a continuous-casting mold. 4,441,541, Cl. 164-453.000.

Blom, Sture R.; and Osborne, Theodore M., to Baird Corporation. Circuitry for the generation and synchronous detection of optical pulsed signals. 4,442,349, Cl. 250-222.100.

Bloomer, Ivan, to Haden Schweitzer Corporation. Apparatus for ensuring heat exchange between a gas flow and a heat exchanger. 4,442,049, Cl. 261-148.000.

Blumberg, Morris; and Swasey, Chester C., to Sandoz, Inc. Additive blends for polymeric materials. 4,442,017, Cl. 252-301.210.

Blumhardt, Harold, to Blumhardt Manufacturing Co. Agricultural spraying apparatus. 4,441,655, Cl. 239-163.000.

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Blumhardt, Harold, 4,441,655, Cl. 239-163.000.

Bochot, Jean C., to Valeo. Reaction assembly for a torque converter and a torque converter comprising such a reaction assembly. 4,441,315, Cl. 60-345.000.

Bocklage, Casper J., Jr.: *See—*

Lenderking, Bruce N.; and Bocklage, Casper J., Jr., 4,442,476, Cl. 361-395.000.

Boda, James C., to Brunswick Corporation. Cable connection. 4,441,836, Cl. 403-154.000.

Bodega, Sergio, to Tubettificio Ligure S.p.A. Process for manufacturing thin unitary hollow metal bodies. 4,441,354, Cl. 72-342.000.

Bodie, Elizabeth A.: *See—*

Schwartz, Robert D.; and Bodie, Elizabeth A., 4,442,128, Cl. 426-41.000.

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Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Muacevic, Gojko; and Traunecker, Werner, 4,442,120, Cl. 424-282.000.

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Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Muacevic, Gojko; and Traunecker, Werner, 4,442,121, Cl. 424-282.000.

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Berger, Dieter; Braun, Franz; Frey, Gunter; Guthlein, Werner; and Kuhr, Manfred, 4,442,033, Cl. 260-158.000.

Michel, Helmut; Kampe, Wolfgang; and Ofenloch, Roland, 4,442,295, Cl. 548-505.000.

Boehringer, Wilfred E.; and Verhoeven, Teunes, to McDonnell Douglas Corporation. High lift surface actuation system. 4,441,675, Cl. 244-213.000.

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Franklin, James L.; and Watkins, Dale F., 4,441,548, Cl. 165-104.260.

Boelens, Harmannus; van der Weerdt, Antonius J. A.; and Hesp, Theodorus G. M., to Naarden international, N.V. Perfume compositions and perfumed articles containing esters of substituted bicyclo [2.2.1]heptene- and heptine-carboxylic acids as perfume base. 4,442,025, Cl. 252-522.00R.

Bohl, Thomas L., to Babcock & Wilcox Company, The. Temperature actuated air flow control and gas sampler. 4,441,356, Cl. 73-23.000.

Boisen, Henrik: *See—*

Vognsen, Anders M.; and Boisen, Henrik, 4,442,215, Cl. 435-262.000.

Boller, Edward, to Hydrovane Compressor Company Limited. Rotary compressors with primary and secondary oil separation means. 4,441,871, Cl. 418-97.000.

Ben-Mardion, Gilbert; Claudet, Gerard; and Lacaze, Albert, to Commissariat a l'Energie Atomique. Refrigerating or heat pumping process and apparatus. 4,441,325, Cl. 62-3.000.

Bonne, Ulrich, to Honeywell Inc. Heat pump. 4,441,335, Cl. 62-324.600.

Bonsack, James P., to SCM Corporation. Entrained downflow chlorination of fine titaniferous material. 4,442,076, Cl. 423-78.000.

Boots Company Limited, The: *See—*

Davies, Roy V., 4,442,109, Cl. 424-258.000.

Borg-Warner Corporation: *See—*

Argyle, Charles S.; Beldam, Richard P.; and Hope, Robert J., 4,441,547, Cl. 165-67.000.

Lamarche, Paul E., 4,441,595, Cl. 192-3.290.

Underwood, Herbert N., 4,441,729, Cl. 280-278.000.

Borisov, Nikolai L.: *See—*

Vasiliev, Boris P.; Borisov, Nikolai L.; Semenov, Mikhail K.; Ponomarev, Ivan K.; Tyryshkina, Galina B.; and Gorbatenko, Igor V., 4,441,549, Cl. 165-145.000.

Borner, Alfred. Kitchen utensil for cutting fruit, vegetables and the like into strips and a blade therefor. 4,441,254, Cl. 30-124.000.

Boroschewski, Gerhard: *See—*

Arndt, Friedrich; and Boroschewski, Gerhard, 4,441,915, Cl. 71-100.000.

Borovicka, David A., Sr.; Hahn, Kenneth G., Jr.; and Tupa, John T., to SCM Corporation. Low temperature cure latexes. 4,442,257, Cl. 524-555.000.

Bosch, Jack L. Isometric exerciser belt for joggers and the like. 4,441,707, Cl. 272-119.000.

Bosinger, Gerhard; Backes, Michael; and Beyhl, Eberhard F. Money deposit and/or dispensing device. 4,442,346, Cl. 235-379.000.

Bouchard, Patrick M.; and King, Jack B., to General Motors Corporation. Supplementary fuel system for enhancing low temperature engine operation. 4,441,475, Cl. 123-525.000.

Bouiller, Jean G.: *See—*

Joubert, Raymond J. M.; and Bouiller, Jean G., 4,441,313, Cl. 60-262.000.

Bouley, Alan C.; Riedl, Harold R.; Jensen, James D.; and Jost, Steven R., to United States of America, Navy. Sensitized epitaxial infrared detector. 4,442,446, Cl. 357-30.000.

Boutin, Francois-Regis; and Kubie, Jan, to SCAL Societe de Conditionnements en Aluminium. Method of making products of aluminium alloy suitable for drawing. 4,441,933, Cl. 148-2.000.

Bouvard, Andre: *See—*

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Bouverot, Noel; Medard, Paul; and Viale, Alain, to Rhone-Poulenc Industries. Injection-molding of pasty, thermosetting organopolysiloxane compositions. 4,442,060, Cl. 264-328.200.

Bowman, Clyde L.; DeVries, Charles R.; and Saur, Charles W., to Lear Siegler, Inc. Mode changing means for accumulator conveyors. 4,441,607, Cl. 198-781.000.

Boyce, Norman A. Rigid building frame with inflatable member. 4,442,059, Cl. 264-228.000.

Boyd, Ronald J.: *See—*

Tipple, Neil A.; Gibson, Jerome W.; and Boyd, Ronald J., 4,441,831, Cl. 400-134.300.

Bracher, Gustav: *See—*

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Bradley, Hugh W., Jr.: *See—*

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Bradley, William: *See—*

Huie, Nicholas C.; and Bradley, William, 4,441,657, Cl. 241-14.000.

Bradshaw, John: *See—*

Clitherow, John W.; Bradshaw, John; Mackinnon, John W. M.; Price, Barry J.; Martin-Smith, Michael; and Judd, Duncan B., 4,442,110, Cl. 424-263.000.

Brahmbhatt, Dhaval J., to Honeywell Inc. Low power decoder circuit. 4,442,481, Cl. 363-60.000.

Brahme, Anders, to Instrument AB Scanditronix. Scanning system for charged and neutral particle beams. 4,442,352, Cl. 250-251.000.

Brandenburg, Robert C.: *See—*

Miller, Jack E.; and Brandenburg, Robert C., 4,441,606, Cl. 198-751.000.

Brandstetter, Franz; Hambrecht, Juergen; Stephan, Rudolf; Overhoff, Heinz-Juergen; Schwaab, Josef; Bernhard, Claus; Swoboda, Johann; and Echte, Adolf, to BASF Aktiengesellschaft. Thermoplastic molding materials. 4,442,263, Cl. 525-83.000.

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Crepin, Roger, 4,441,670, Cl. 244-3.220.

Brau, Charles A.; Kurnit, Norman A.; and Cooper, Richard K., to United States of America, Energy. Circular free-electron laser. 4,442,522, Cl. 372-2.000.

Brauer, Eric A., to RCA Corporation. Stylus protecting mechanism for video disc player. 4,442,517, Cl. 369-71.000.

Braun, Franz: *See—*

Berger, Dieter; Braun, Franz; Frey, Gunter; Guthlein, Werner; and Kuhr, Manfred, 4,442,033, Cl. 260-158.000.

Breider, Edmund J., to Linde Aktiengesellschaft. Method of and apparatus for the biological decontamination of waste water. 4,442,005, Cl. 210-614.000.

Brembo S.p.A.: *See—*

Giorgetti, Alberto, 4,441,590, Cl. 188-195.000.

Brentham, Jerry D. Double leg curl exercising device. 4,441,708, Cl. 272-130.000.

Brezec, Joze: *See—*

Hrovatin, Albert; and Brezec, Joze, 4,441,443, Cl. 112-258.000.

Brezosky, Bernard J., to General Electric Company. Appliance anti-tip device. 4,441,770, Cl. 312-276.000.

Bricks, Bernard G., to United States of America, Air Force. High power metal vapor laser. 4,442,523, Cl. 372-56.000.

Briggs, Anglis R., to Du Pont de Nemours, E. I., and Company. Monothioglycerol as thiol-protector in lyophilized materials. 4,442,212, Cl. 435-188.000.

Briggs, Peter J.; McAloon, Kevin; and Rideal, Graham R., to Imperial Chemical Industries Ltd. Fibrous composite materials and the production and use thereof. 4,442,164, Cl. 428-283.000.

Brigham, Alan, to Raychem Corporation. Elements comprising fibrous materials. 4,442,139, Cl. 427-122.000.

Briski, Lawrence M.: *See—*

Ostroski, Joseph; and Briski, Lawrence M., 4,441,602, Cl. 194-100.00A.

Brister, Beryle D., to Brister, Incorporated. Method and apparatus for forming a temporary plug in a submarine conduit. 4,441,328, Cl. 62-53.000.

Brister, Incorporated: *See—*

Brister, Beryle D., 4,441,328, Cl. 62-53.000.

British Aerospace Public Limited Company: *See—*

Carter, Walter S., 4,442,414, Cl. 332-7.510.

Rowarth, Ralph, 4,441,676, Cl. 244-234.000.

Thorby, Douglas C.; and Sullivan, Michael C. W., 4,441,671, Cl. 244-63.000.

British-American Tobacco Co., Ltd.: *See—*

Mitchell, Terence G.; Barnes, Adrian G.; Jackson, Julia S.; and Bevan, Peter C., 4,441,514, Cl. 131-276.000.

Broadhurst, Thomas E., to Exxon Research & Engineering Company. Dewaxing process using agitated heat exchanger to chill solvent-oil and wax slurry to wax filtration temperature. 4,441,987, Cl. 208-33.000.

Brochand, Max, to Pomagalski S.A. Aerial monocable transport installation. 4,441,430, Cl. 104-209.000.

Brodowski, Walter: *See—*

Hentschel, Peter; Brodowski, Walter; and Zengel, Hans, 4,442,281, Cl. 528-79.000.

Brody, Harry, to Imperial Chemical Industries Limited. Melt spinning process. 4,442,057, Cl. 264-176.00F.

Brody, Harry, to Imperial Chemical Industries Limited. Melt spinning of polypropylene. 4,442,266, Cl. 525-173.000.

Brokaw, Kim C. Portable waste agitator. 4,441,824, Cl. 366-266.000.

Bron, Jose. Safety lock. 4,441,236, Cl. 292-336.300.

Brooks, Herbert; and Waite, Frederick A., to Imperial Chemical Industries PLC. Production of copolymers using shortstop agent at end of polymerization. 4,442,272, Cl. 526-82.000.

Brophy, John, to Cos Cob Research Associates. Device for use with the intake manifold of an internal combustion engine. 4,441,470, Cl. 123-306.000.

Brown, Arthur K., to Bendix Corporation, The. Brake booster. 4,441,319, Cl. 60-548.000.

Brown Boveri Electric Inc.: *See—*

Gray, Keith I.; and Meier, Henry G., 4,442,329, Cl. 200-148.00B.

Brown, George L.; and Spencer, Arthur T., to SCM Corporation. Aqueous coating composition comprising self-emulsifiable ester of epoxy and acid containing addition polymer. 4,442,246, Cl. 523-404.000.

- Brown, Lawrence G. Exercising apparatus. 4,441,705, Cl. 272-73.000.
- Brown, Timothy M.: *See—*
  - Hartman, Seymour; and Brown, Timothy M., 4,441,954, Cl. 156-291.000.
- Brown, Wade R.; and Gumble, Thomas N., to Eaton Corporation. Appliance control valve assembly with opposite magnetic polarity solenoid coils. 4,441,521, Cl. 137-613.000.
- Brunswick Corporation: *See—*
  - Boda, James C., 4,441,836, Cl. 403-154.000.
  - Hogan, Mark J.; and Cooke, Ernest R., 4,441,518, Cl. 135-98.000.
  - Kuester, Frank E., 4,442,162, Cl. 428-245.000.
- Bruso, Frederick G.; Walker, Frank H.; and Lyon, Harry H., to General Motors Corporation. Hydraulic fluid reservoir system. 4,441,520, Cl. 137-44.000.
- Bryington, Clayton W., II. Separable tool. 4,441,747, Cl. 294-51.000.
- BS&B Safety Systems, Inc.: *See—*
  - Short, Edward H., III; Allen, Jerome D.; and Wood, Loren E., deceased, 4,441,350, Cl. 72-55.000.
- BTR Limited: *See—*
  - Pickering, John; Woodhouse, Ian; and Ganendran, Araspillai N., 4,442,053, Cl. 264-36.000.
- Buan, Danilo P.; and Navok, Ezra, to Pitney Bowes. Envelope ejection mechanism for a mailing machine. 4,441,420, Cl. 101-69.000.
- Buchanan, William T. Spectrograph providing spectral reference marks. 4,441,814, Cl. 356-305.000.
- Bucher, Robert R., to Jakob Muller Forschungs- und Finanz AG. Ribbon loom or the like. 4,441,530, Cl. 139-432.000.
- Budd Company, The: *See—*
  - Hulse, David O., 4,441,539, Cl. 152-417.000.
- Budinski, John A., to General Motors Corporation. Hybrid mechanical and electrical drive and engine cooling fan arrangement. 4,441,462, Cl. 123-41.110.
- Buehrig, Gordon M., to Kughn, Richard P. Automobile rear end construction. 4,441,752, Cl. 296-1.00S.
- Buirley, William L.; Koopman, Donald E.; McQuain, David B.; and Reeves, William H., to Vectra International Corporation. Thermographic cholesteric coating compositions and plates. 4,441,508, Cl. 128-736.000.
- Buisson, Pierre: *See—*
  - Mercier, Georges; Mercier, Jacques; and Buisson, Pierre, 4,441,396, Cl. 83-871.000.
- Buljan, Sergej-Tomislav: *See—*
  - Sarin, Vinod K.; and Buljan, Sergej-Tomislav, 4,441,894, Cl. 51-295.000.
- Bullano, Gerald A.: *See—*
  - Neiditch, David S.; Bullano, Gerald A.; DiLullo, Robert J.; and Ofstein, David E., 4,442,273, Cl. 526-88.000.
- Bunnell Plastics, Inc.: *See—*
  - Curran, Donald G.; and Anderson, Robert A., 4,441,694, Cl. 264-163.000.
- Burba, John L., III: *See—*
  - Lee, John M.; Baumen, William C.; Wolcott, Richard A.; and Burba, John L., III, 4,442,230, Cl. 521-28.000.
- Burchfield, James E.; and Green, Robert C., to Exxon Research and Engineering Co. Process for supplying the heat requirement of a retort for recovering oil from solids by partial indirect heating of in situ combustion gases, and combustion air, without the use of supplemental fuel. 4,441,985, Cl. 208-11.00R.
- Bureau de Recherches Geologiques et Minieres: *See—*
  - Baubron, Jean-Claude C., 4,442,353, Cl. 250-281.000.
- Burge, Theodor; and Bracher, Gustav, to Sika AG, vorm. Kaspar Winkler & Co. Method of protecting reinforcing bars, pre-stressing cables and similar articles inside of structures. 4,442,021, Cl. 252-389.00R.
- Burke, Thomas M.: *See—*
  - Bich, George J.; Burke, Thomas M.; and Smith, James D. B., 4,442,138, Cl. 427-116.000.
- Burkhart, George M.; and Dohnalik, Martin F., to Barber-Greene Co. Apparatus for increasing the delivery range of a mixing and delivery auger trough. 4,441,821, Cl. 366-61.000.
- Burnley, William S., III: *See—*
  - Price, Abner B.; and Burnley, William S., III, 4,441,429, Cl. 102-526.000.
- Burns, Christopher D.; Obrascovs, Guntis; and Pipe, Andrew L. Athletic shoe with ankle support strap. 4,441,265, Cl. 36-117.000.
- Burroughs Corporation: *See—*
  - Roesner, Bruce B., 4,442,507, Cl. 365-100.000.
- Busboom, Garry W., to Allis-Chalmers Corporation. Combined air intake screen and access door for combine. 4,441,512, Cl. 130-27.00Z.
- Buschulte, Winfried: *See—*
  - Wagner, Ulrich; and Buschulte, Winfried, 4,441,879, Cl. 431-284.000.
- Buswell, Richard G.: *See—*
  - Watson, Kenneth; Buswell, Richard G.; and Saunders, James E., 4,441,384, Cl. 74-665.0GA.
- Butts, Michael L.: *See—*
  - Peterson, Donny L.; and Butts, Michael L., 4,441,697, Cl. 266-170.000.
- Buzinski, Robert W., to Amsted Industries Incorporated. Helical coil spring end forming. 4,441,696, Cl. 266-57.000.
- Byerly, Robert M., to TA Mfg., Inc. Clamp device. 4,441,677, Cl. 248-74.00B.
- C.G.V. S.a.S. di Claudio Castiglioni & C.: *See—*
  - Castiglioni, Claudio, 4,441,346, Cl. 70-312.000.
- C. L. Frost & Son, Inc.: *See—*
  - Rood, William R., 4,441,601, Cl. 193-37.000.
- C. Uyemura & Co., Ltd.: *See—*
  - Matsumura, Sowjun; Araki, Ken; Otaka, Tetsuo; and Tanigawa, Masumi, 4,441,965, Cl. 204-16.000.
- C.V. Chemie Combinatie Amsterdam C.C.A.: *See—*
  - Kim, Jong C., 4,442,132, Cl. 426-549.000.
- Cabot Corporation: *See—*
  - Getz, Marlyn F.; Maggio, Michael J.; and Hitch, Billy F., 4,441,927, Cl. 75-229.000.
- Cadtrak Corporation: *See—*
  - Sukonick, Josef, 4,442,495, Cl. 364-521.000.
- Calcavecchio, Peter: *See—*
  - Drake, Evelyn N.; and Calcavecchio, Peter, 4,442,241, Cl. 523-130.000.
- Calderone, Nicholas; Watkins, Hugh; and Yoshida, Takao, to International Flavors & Fragrances Inc. Use of 4-methyl-3-cyclohexene-1-carboxylic acid for augmenting or enhancing the aroma of fabric softener compositions or drier-added articles. 4,442,012, Cl. 252-8.600.
- Caldwell, David H.; and Hurley, Robert M., to GTE Products Corporation. Lamp package. 4,441,650, Cl. 229-39.00B.
- Caldwell, Donald L., to Dow Chemical Company, The. Substituted cobalt oxide spinels for catalytic decomposition of hypochlorite. 4,442,227, Cl. 502-243.000.
- Caldwell, Edward N., to Dalen Products, Inc. Shelf mounting system, parts therefor and method of making the same. 4,441,433, Cl. 108-152.000.
- Calet, Rudolph J. Post assembly. 4,441,679, Cl. 248-156.000.
- California Institute of Technology: *See—*
  - Jamieson, Robert S., 4,442,401, Cl. 323-351.000.
- Camelot Industries Corporation: *See—*
  - Lobdell, Alban J., 4,441,795, Cl. 351-169.000.
- Campbell, John S.: *See—*
  - Reeder, Dennis J.; Campbell, John S.; Kasunic, Keith J.; and Laiterman, Lee H., 4,442,524, Cl. 372-107.000.
- Canales, Manuel J.; and Reynolds, John, to Stauffer Chemical Company. Method of desulfurizing waste gases containing sulfur dioxide. 4,442,083, Cl. 423-567.00R.
- Canalizo, Carlos R. Well production apparatus and method. 4,441,861, Cl. 417-54.000.
- Canfield, Sheldon A.: *See—*
  - Daws, John W.; Bradley, Hugh W., Jr.; and Canfield, Sheldon A., 4,441,367, Cl. 73-597.000.
- Cannon, John P., to Plattner Industries, Inc. Cooler having freeze bottle insert. 4,441,336, Cl. 62-457.000.
- Canon Kabushiki Kaisha: *See—*
  - Fukui, Masahisa; and Ito, Yoshio, 4,442,459, Cl. 358-286.000.
  - Katayama, Masahiro; Yoshida, Nobutoshi; and Kuge, Tsukasa, 4,441,417, Cl. 100-176.000.
  - Kimura, Takashi, 4,442,462, Cl. 360-33.100.
  - Kitajima, Tadayuki; and Kasama, Nobuhiro, 4,442,190, Cl. 430-53.000.
  - Kosugi, Masao, 4,441,853, Cl. 414-757.000.
  - Mashimo, Yukio; and Iwashita, Tomonori, 4,441,801, Cl. 354-173.110.
  - Tateoka, Masamichi, 4,441,792, Cl. 350-415.000.
- Cantatore, Giuseppe, to Chimosa Chimica Organica S.p.A. Piperidyl derivatives of macrocyclic triazine compounds, possessing a stabilizing activity for polymers, and processes for their preparation. 4,442,250, Cl. 524-98.000.
- Cape Boards & Panels Limited: *See—*
  - McQueen, George; and Barrable, Victor E., 4,441,293, Cl. 52-377.000.
- Caprara, Giuseppe: *See—*
  - Gozzo, Franco; Caprara, Giuseppe; Roberti, Lamberto; Paparatto, Giuseppe; and Santoro, Ettore, 4,442,301, Cl. 560-124.000.
- Caray, Andre, to Valeo. Diaphragm clutch cover assemblies. 4,441,600, Cl. 192-89.00B.
- Carbon Gas Technologie GmbH: *See—*
  - Schuster, Ernst, 4,441,892, Cl. 48-197.00R.
- Cardellini, Claudio B. Loose leaf binder. 4,441,834, Cl. 402-55.000.
- Cardio-Pace Medical, Inc.: *See—*
  - Nordling, Neal F., 4,441,498, Cl. 128-419.00P.
  - Nordling, Neal F., 4,441,498, Cl. 128-419.00P.
- Carl Freudenberg, Firma: *See—*
  - Lohmar, Ernst; and Wenneis, Wolffried, 4,442,233, Cl. 521-98.000.
- Carless, John E.: *See—*
  - Rowe, James S.; and Carless, John E., 4,442,051, Cl. 264-4.300.
- Carlson, David E.; and Williams, Brown F., to RCA Corporation. Photodetector having enhanced back reflection. 4,442,310, Cl. 136-256.000.
- Carlson, Norman R.; Roesner, Raymond E.; and Lanuke, Edward W., to Dresser Industries, Inc. Method and apparatus for measurement of fluid density and flow rates in multi-phase flow regimes. 4,441,361, Cl. 73-155.000.
- Carlson, Norman R., to Dresser Industries, Inc. Method for determining volumetric fractions and flow rates of individual phases within a multi-phase flow regime. 4,441,362, Cl. 73-155.000.
- Carlton, Charles D., to Tiffany Industries, Inc. Tilting table. 4,441,432, Cl. 108-5.000.
- Carman, Vincent E.; Anderson, David H.; and Lucas, Eugene F., to Advanced Energy Systems Inc. Fuel-efficient energy storage automotive drive system. 4,441,573, Cl. 180-165.000.
- Carney, John L., Jr.; and Gilbert, Richard L., to ACF Industries, Incorporated. Railway hatch cover and strap safety tab latching assembly. 4,441,431, Cl. 105-377.000.

- Carter, Walter S., to British Aerospace Public Limited Company. Magneto-optical phase-modulating devices. 4,442,414, Cl. 332-7.510.
- Carter, William A.; and Martin, Frank A., to Inland Steel Company. Electrotreating apparatus with electrode roll. 4,441,975, Cl. 204-206.000.
- Cason, George A., Jr., to Dresser Industries, Inc. Sealed bearing rotary rock bit assembly. 4,441,244, Cl. 29-434.000.
- Castiglioni, Claudio, to C.G.V. S.a.S. di Claudio Castiglioni & C. Combination lock with a single knob both for controlling the opening and for changing the lock combination. 4,441,346, Cl. 70-312.000.
- Castillo, Michael S. Portable variable angle drilling machine. 4,441,564, Cl. 175-122.000.
- Cato, Craig J.: *See—*
  - Wiggins, Richard H.; Doddington, George; and Cato, Craig J., 4,441,399, Cl. 84-470.00R.
- Causby, Barry D.: *See—*
  - Lees, Gerard D.; and Causby, Barry D., 4,442,249, Cl. 523-455.000.
- Cavalcante, Mario, to Ivalda S.p.A. Container for the storage and withdrawal of ear cleaning sticks or similar articles. 4,441,610, Cl. 206-361.000.
- Caves, Thomas J. Hair trimming devices. 4,441,252, Cl. 30-30.000.
- Centro Ricerche Fiat S.p.A.: *See—*
  - Iemmi, Giuliano; Raimondo, Michele; and Mo, Luigi, 4,441,976, Cl. 204-224.00M.
- Cerati, Celestin: *See—*
  - Aglae, Gilbert R.; Alavoine, Jacques J.; Contensou, Claude; Rousseau, Jacques R.; and Cerati, Celestin, 4,441,672, Cl. 244-110.00C.
- Chadwick, Duane G.: *See—*
  - Hill, Geoffrey E.; Woffinden, Duard S.; and Chadwick, Duane G., 4,441,363, Cl. 73-170.00R.
- Champion International Corporation: *See—*
  - Hain, Paul O.; and Lepisto, J. George, 4,441,613, Cl. 206-621.000.
  - Hartman, Seymour; and Brown, Timothy M., 4,441,954, Cl. 156-291.000.
- Chance, Britton. NMR System for determining relationship between work output and oxidative phosphorylation capability in an exercising body member. 4,441,502, Cl. 128-653.000.
- Chance Manufacturing, Inc.: *See—*
  - Goepner, Siegfried E., 4,441,515, Cl. 133-5.00R.
- Charles Stark Draper Laboratory, Inc., The: *See—*
  - Kumar, Kaplesh; and Das, Dilip K., 4,441,874, Cl. 425-78.000.
- Charnock, Ronald S., to Loctite (Ireland) Limited. Heat resistant toughened adhesive composition. 4,442,267, Cl. 525-309.000.
- Chart, John E., to Teledyne Penn-Union. One-piece, composite electrical connector. 4,442,182, Cl. 428-654.000.
- Chase, A. Timothy, to Struthers Wells Corporation. Cross-over bundle for heat exchanger. 4,441,550, Cl. 165-145.000.
- Chebra, Ronald J.: *See—*
  - James, Rolland T.; and Chebra, Ronald J., 4,442,320, Cl. 179-5.00R.
- Chemical Engineering Technology, Inc.: *See—*
  - Foster, David I.; Scott, Paul T.; Pierick, Mark W.; and Shaddock, Clarence L., Jr., 4,442,077, Cl. 423-210.000.
- Chemische Werke Huels, AG: *See—*
  - Weiss, Jorn-Volker; Riemer, Heinz; and Mutzberg, Friedhelm, 4,442,245, Cl. 523-401.000.
- Chen, Chin H.; Young, Ralph H.; and Scozzafava, Michael, to Eastman Kodak Company. Photoconductive compositions and elements containing naphthalene bis-dicarboximide compounds. 4,442,193, Cl. 430-83.000.
- Chen, Juh W.: *See—*
  - Muchmore, Charles B.; Chen, Juh W.; and Tempelmeyer, Kenneth E., 4,441,886, Cl. 44-15.00R.
- Chen, Richard M. Golf ball including alignment markings and golf ball marking device. 4,441,716, Cl. 273-183.00C.
- Chernyshev, Alexandr N.: *See—*
  - Oshkin, Anatoly I.; Banov, Mikhail D.; and Chernyshev, Alexandr N., 4,442,312, Cl. 174-15.0WF.
- Chester, Arthur W.; and Stover, William A., to Mobil Oil Corporation. Catalyst and catalyst support compositions. 4,442,223, Cl. 502-68.000.
- Chevron Research Company: *See—*
  - Bishop, Keith C., III; Earls, David E.; Robinson, Richard C.; Blakely, Donald W., deceased; and Jacobson, Robert L., administrator, 4,442,221, Cl. 502-25.000.
  - Hubred, Gale L.; and Van Leirsburg, Dean A., 4,442,074, Cl. 423-54.000.
- Chiang, Ping-Wang, to Amdahl Corporation. System for specifying critical dimensions, sequence numbers and revision levels on integrated circuit photomasks. 4,442,188, Cl. 430-5.000.
- Chiba, Mio: *See—*
  - Kotani, Shintaro; Abiko, Ichimatsu; Arae, Takashi; Chiba, Mio; Araki, Tomoo; and Kanno, Hiromasa, 4,442,429, Cl. 340-786.000.
- Chikaraishi, Takayo, to Nissan Motor Co., Ltd. Window regulating device for a window glass of a vehicle door or the like. 4,441,276, Cl. 49-352.000.
- Childs, Robert H. E., Jr.; Klebanoff, Jack L.; and Pollack, Frederick J., to Intel Corporation. Microprocessor memory management and protection mechanism. 4,442,484, Cl. 364-200.000.
- Chimosa Chimica Organica S.p.A.: *See—*
  - Cantatore, Giuseppe, 4,442,250, Cl. 524-98.000.
- Chiu Technical Corporation: *See—*
  - Fleck, William C., 4,442,382, Cl. 315-287.000.
- Christensen, Joergen A.: *See—*
  - Lassen, Joergen B.; Skrumsager, Birte K.; and Christensen, Joergen A., 4,442,113, Cl. 424-267.000.
- Christinger, Werner, to Becton Dickinson and Company. Multiple sampling device having molded valve and hub. 4,441,951, Cl. 156-245.000.
- Chu, Ta-Shing; and England, Robert W., to Bell Telephone Laboratories, Incorporated. Small dual frequency band, dual-mode feedhorn. 4,442,437, Cl. 343-786.000.
- Ciba-Geigy Corporation: *See—*
  - Abel, Heinz; and Schafer, Paul, 4,441,885, Cl. 8-603.000.
  - Bentz, Rolf; and Schori, Christian, 4,441,896, Cl. 55-85.000.
  - Kunz, Walter; Eckhardt, Wolfgang; Hubele, Adolf; and Riebli, Peter, 4,442,117, Cl. 424-273.00R.
- Cieslak, Leonard K.: *See—*
  - Cieslak, Stanley; and Cieslak, Leonard K., 4,441,483, Cl. 126-206.000.
- Cieslak, Stanley; and Cieslak, Leonard K. Portable furnace for wearing apparel. 4,441,483, Cl. 126-206.000.
- Cipelletti, Alberto. Ice-cream machine. 4,441,334, Cl. 62-258.000.
- Citizen Watch Co., Ltd.: *See—*
  - Morokawa, Shigeru, 4,441,825, Cl. 368-204.000.
  - Morokawa, Shigeru; and Koga, Keiichiro, 4,441,826, Cl. 368-204.000.
- Claassen, Karl-Heinz: *See—*
  - Oelsch, Jurgen; Volk, Richard; and Claassen, Karl-Heinz, 4,442,055, Cl. 264-105.000.
- Clarion Co., Ltd: *See—*
  - Kurihara, Masaki, 4,441,577, Cl. 181-147.000.
- Clark, Kenneth R.: *See—*
  - Kahn, Alan R.; Clark, Kenneth R.; and Bahr, Dennis E., 4,441,357, Cl. 73-40.000.
- Clark, Michael T.; and Gilmore, Ian J., to Shell Oil Company. Herbicidal heterocyclic pentalenes. 4,441,911, Cl. 71-91.000.
- Clarkson, Joseph, to Thatchcode Limited. Office cabinet. 4,441,768, Cl. 312-257.0SM.
- Claudet, Gerard: *See—*
  - Bon-Mardion, Gilbert; Claudet, Gerard; and Lacaze, Albert, 4,441,325, Cl. 62-3.000.
- Clitherow, John W.; Bradshaw, John; Mackinnon, John W. M.; Price, Barry J.; Martin-Smith, Michael; and Judd, Duncan B., to Glaxo Group Limited. 1H-1,2,4-Triazole-3,5-diamine derivatives and use as selective histamine H_2-antagonists. 4,442,110, Cl. 424-263.000.
- Cloud, Nathan; Marin, Robert A.; and McErlane, James E., to Du Pont de Nemours, E. I., and Company. Apparatus for automatically doffing yarn packages and donning empty bobbins on a winder. 4,441,660, Cl. 242-35.50A.
- Clough, Douglas O.: *See—*
  - Parker, Alan; and Clough, Douglas O., 4,441,310, Cl. 57-401.000.
- Cluff, David W.: *See—*
  - Cluff, Warren S.; and Cluff, David W., 4,441,739, Cl. 281-16.000.
- Cluff, Warren S.; and Cluff, David W. Booklet. 4,441,739, Cl. 281-16.000.
- Coast Catamaran Corporation: *See—*
  - Alter, Hobart L.; Wake, Lewis F.; and Platten, Myron G., 4,441,447, Cl. 114-167.000.
- Coca-Cola Company, The: *See—*
  - Credle, William S., Jr., 4,441,684, Cl. 248-674.000.
- Cockshott, Charles P.; and Evans, Kenneth S., to Lucas Industries Limited. Gas flow meters. 4,441,371, Cl. 73-861.090.
- Coderre, Andre. Travelling surface temperature probe. 4,441,827, Cl. 374-153.000.
- Cohen, Stanley N.: *See—*
  - Michaels, Alan S.; Robertson, Channing R.; Cohen, Stanley N.; Inloes, Douglas S.; and Smith, William J., 4,442,206, Cl. 435-68.000.
- Colgate-Palmolive Company: *See—*
  - Fraikin, Marie-Helene; and Dillarstone, Alan, 4,442,013, Cl. 252-8.800.
- Colley, Rowan H., to Rolls-Royce Limited. Combustion equipment for a gas turbine engine including a fuel burner capable of accurate positioning and installation as a unit in a flame tube. 4,441,323, Cl. 60-737.000.
- Collins Company, Ltd.: *See—*
  - Liou, Tony; and Wang, Richard, 4,441,756, Cl. 297-39.000.
- Collins, David J.: *See—*
  - Griffin, David A.; and Collins, David J., 4,441,917, Cl. 71-103.000.
- Colman, Geoffrey; and Russell, Roy R. B., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Social Services in Her Britannic Majesty's Government of the. Protection against dental caries. 4,442,085, Cl. 424-49.000.
- Columbia Helicopters, Inc.: *See—*
  - Reber, Dwight E., 4,441,750, Cl. 294-83.00R.
- Comau S.p.A.: *See—*
  - Rossi, Cristiano, 4,442,335, Cl. 219-79.000.
- Commissariat a l'Energie Atomique: *See—*
  - Bon-Mardion, Gilbert; Claudet, Gerard; and Lacaze, Albert, 4,441,325, Cl. 62-3.000.
- Compagnie Internationale pour l'Informatique CII Honeywell Bull (Societe Anonyme): *See—*
  - Mollier, Jean H.; and Ugon, Michel, 4,442,345, Cl. 235-380.000.
- Comparetto, John E.; and Glaser, Paul R. Dynamic orthotic platform. 4,441,499, Cl. 128-595.000.
- Compen, Johannes M. A. A.: *See—*
  - Van Der Waal, Jan; and Compen, Johannes M. A. A., 4,442,376, Cl. 313-402.000.
- Compur-Electronic GmbH: *See—*
  - Heuschmann, Herr F.; and Plank, Herr A., 4,442,426, Cl. 340-539.000.

- Conoco Inc.: *See—*
  - Yoon, Heeyoung; and Rutledge, Gerald D., 4,441,461, Cl. 123-3.000.
- Consumers Glass Company Limited: *See—*
  - Mancini, Derek V., 4,441,618, Cl. 211-49.00D.
- Contensou, Claude: *See—*
  - Aglae, Gilbert R.; Alavoine, Jacques J.; Contensou, Claude; Rousseau, Jacques R.; and Cerati, Celestin, 4,441,672, Cl. 244-110.00C.
- Continental Group, Inc., The: *See—*
  - Harry, Ieuan L., 4,441,878, Cl. 425-534.000.
  - Supik, Helmuth, 4,441,699, Cl. 266-255.000.
- Cooke, Ernest R.: *See—*
  - Hogan, Mark J.; and Cooke, Ernest R., 4,441,518, Cl. 135-98.000.
- Cooke, Larry: *See—*
  - Zasio, John; Cooke, Larry: and Paul, Raymond, 4,442,361, Cl. 250-491.100.
- Cookson, Alan H.: *See—*
  - Fischer, William H.; Cookson, Alan H.; and Yoon, Kue H., 4,442,311, Cl. 174-14.00R.
- Cooper, Gary: *See—*
  - Genuit, James E.; and Cooper, Gary, 4,442,343, Cl. 219-433.000.
- Cooper, Hugh E. Foldable tillage implement. 4,441,562, Cl. 172-311.000.
- Cooper Industries, Inc.: *See—*
  - Lichtenberger, Rosemary K., 4,441,787, Cl. 350-96.230.
- Cooper, Richard K.: *See—*
  - Brau, Charles A.; Kurnit, Norman A.; and Cooper, Richard K., 4,442,522, Cl. 372-2.000.
- Corboy, Edward D., Jr. Tool for retrieving out-of-reach objects. 4,441,746, Cl. 294-19.00R.
- Corning Glass Works: *See—*
  - Amos, Lynn G.; and Rogers, Charles H., 4,442,218, Cl. 436-525.000.
  - Flannery, James E.; Shoup, Robert D.; and Wexell, Dale R., 4,442,175, Cl. 428-404.000.
  - Malmendier, Joseph W.; Pride, Carol F.; Rhoads, Randy L.; Schlaufman, Robert J.; and Shoup, Robert D., 4,441,905, Cl. 65-21.300.
  - Melezoglu, Cevdet; and Smith, David J., 4,441,811, Cl. 356-128.000.
- Cos Cob Research Associates: *See—*
  - Brophy, John, 4,441,470, Cl. 123-306.000.
- Cosden Technology, Inc.: *See—*
  - Abernathy, Marshall; and Bailey, Darrell E., 4,442,048, Cl. 261-114.00R.
- Cossart, Alain M., to Metalex. Element for tunnel-type metal shuttering. 4,441,838, Cl. 405-150.000.
- Costa, Maurizio D. Machine for forming croissants and the like confectionery products. 4,441,408, Cl. 99-450.200.
- Cotton, Incorporated: *See—*
  - Underbrink, Gary L.; Wilkes, Lambert H.; and Jones, Joseph K., 4,441,232, Cl. 19-48.00R.
- Council for Mineral Technology: *See—*
  - Curr, Thomas R.; and Barcza, Nicholas A., 4,441,921, Cl. 75-10.00R.
- Courtaulds PLC: *See—*
  - Betts, Max W.; and Robinson, Frank, 4,441,338, Cl. 66-64.000.
- Covey, George H., III, to Presray Corporation, The. Mounting for endless sealing strips. 4,441,278, Cl. 49-477.000.
- Cowan, William S.; and Galle, Edward M., Jr., to Armco Inc. Connectors for securing members together under large clamping force. 4,441,740, Cl. 285-18.000.
- Cozean, Charles H., Jr. Intraocular lenses. 4,441,217, Cl. 3-13.000.
- CPG Products Corp.: *See—*
  - Cummings, Charles A.; and La Dow, William R., 4,441,256, Cl. 33-27.00L.
- Craft, Richard A.: *See—*
  - Smith, Edwin B.; and Craft, Richard A., 4,442,412, Cl. 331-1.000.
- Craw, Carol S.: *See—*
  - Craw, Craig A.; and Craw, Carol S., 4,441,639, Cl. 224-237.000.
- Craw, Craig A.; and Craw, Carol S. Quick-release and quick-deploy container for emergency equipment. 4,441,639, Cl. 224-237.000.
- Creative Tool Company: *See—*
  - Dooley, Daniel J.; and Williamson, Warren L., 4,441,360, Cl. 73-119.00A.
- Credle, William S., Jr., to Coca-Cola Company, The. Pump mounting bracket. 4,441,684, Cl. 248-674.000.
- Cremer, Gerard: *See—*
  - Beeley, Nigel R. A.; Cremer, Gerard; Dimsdale, Michael J.; and Manoury, Philippe, 4,442,126, Cl. 424-324.000.
- Crepin, Roger, to Brandt Armements. Guided projectile. 4,441,670, Cl. 244-3.220.
- Cresta Technology Limited: *See—*
  - Morris, Peter A., 4,442,002, Cl. 210-411.000.
- Crivello, James V.; and Lee, Julia L., to General Electric Company. Photocurable compositions. 4,442,197, Cl. 430-280.000.
- Crone, John M., Jr., to Texaco Inc. Catalyst and method of making the same. 4,442,024, Cl. 502-334.000.
- Crott, Kurt: *See—*
  - Wetzels, Walter; Crott, Kurt; and Voell, Erich, 4,441,280, Cl. 51-103.00R.
- Crowell, Christopher S.; and Dennison, Warren, to Structural Graphics, Inc. Staggered flip-page display folder. 4,441,270, Cl. 40-534.000.
- Crowley, Patrick J., to Beecham Group Limited. Pharmaceutical compositions. 4,441,609, Cl. 206-204.000.
- Crown Metal Manufacturing Company: *See—*
  - Varon, David S.; and Siegal, Burton L., 4,441,300, Cl. 52-732.000.
- Cummings, Charles A.; and La Dow, William R., to CPG Products Corp. Manipulator for creating a multiplicity of varied line designs. 4,441,256, Cl. 33-27.00L.
- Cummins Engine Company, Inc.: *See—*
  - McCutchen, Norman L., 4,441,643, Cl. 227-110.000.
  - Peters, Lester L., 4,441,654, Cl. 239-89.000.
- Cuneo, Giuseppe, to Black & Decker Inc. Switch-plug module for portable electric tool. 4,442,366, Cl. 310-50.000.
- Curr, Thomas R.; and Barcza, Nicholas A., to Council for Mineral Technology; and Middelburg Steel and Alloys (Proprietary) Limited. Production and treatment of ferrochromium. 4,441,921, Cl. 75-10.00R.
- Curran, Donald G.; and Anderson, Robert A., to Bunnell Plastics, Inc. Method of manufacturing a safety shield for flanged pipe couplings. 4,441,694, Cl. 264-163.000.
- Curtis, Charles L.: *See—*
  - Williams, David M.; and Curtis, Charles L., 4,441,790, Cl. 350-302.000.
- Custom-Bilt Machinery, Inc.: *See—*
  - Faltin, Hans G., 4,441,703, Cl. 271-243.000.
- Custom Stamping Mfg. Co.: *See—*
  - Werner, Linda B.; and Werner, William A., 4,441,214, Cl. 2-174.000.
- D.E.P. Systems, Inc.: *See—*
  - Pohl, Herbert A., 4,441,972, Cl. 204-180.00R.
- Dahl, Byron M., to Esco, Inc. Sign frame. 4,441,269, Cl. 40-156.000.
- Dai Ichi High Frequency Company, Ltd.: *See—*
  - Watanabe, Yasuo, 4,442,331, Cl. 219-10.430.
- Dai Nippon Insatsu Kabushiki Kaisha: *See—*
  - Takeuchi, Hideo; Horiguchi, Satoru; and Tamaki, Ryuzo, 4,441,819, Cl. 356-380.000.
- Daicel Chemical Industries, Ltd.: *See—*
  - Toba, Hirotaka; Itoh, Masanori; Nakano, Keita; Wakoh, Shoji; Toyoshima, Toshihiko; and Todo, Hidemasa, 4,442,160, Cl. 428-215.000.
- Daido Metal Company, Ltd.: *See—*
  - Mori, Sanae, 4,441,240, Cl. 29-156.50A.
- Daikyo Gomu Seiko, Ltd.: *See—*
  - Matukura, Yoshiharu; and Sudo, Denpei, 4,441,621, Cl. 215-247.000.
- Dailey, Leo L., to Fischer & Porter Company. Nutating probe for gas analysis. 4,441,979, Cl. 204-402.000.
- Daimler-Benz Aktiengesellschaft: *See—*
  - Bernauer, Otto; Holzt, Hans-Peter; and Lenz, Hermann, 4,441,3[illegible]6, Cl. 62-7.000.
- Dainippon Pharmaceutical Co., Ltd.: *See—*
  - Ichihashi, Hitoshi; Tanaka, Terukazu; and Imasato, Yu, 4,442,101, Cl. 424-250.000.
- Daisaku, Matsukuma: *See—*
  - Oshima, Hiroyo; Daisaku, Matsukuma; Yutaka, Kojima; Yukio, Kobayashi; and Koichi, Nagai, 4,442,172, Cl. 428-342.000.
- d'Alayer de Costemore d'Arc, Stephane M., to Allsop, Inc. Cassette cleaning device. 4,442,468, Cl. 360-128.000.
- Dalen Products, Inc.: *See—*
  - Caldwell, Edward N., 4,441,433, Cl. 108-152.000.
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- Damm, Sverre. Steering device for many-axled goose-neck trailers. 4,441,730, Cl. 280-426.000.
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- Daniel, Joseph T., to Halliburton Company. Temperature stabilized amplifier for borehole use. 4,442,410, Cl. 330-289.000.
- Daniel, Roy M.: *See—*
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- d'Argembeau, Etienne Y. Brushes and the manufacture thereof. 4,441,227, Cl. 15-167.00R.
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  - Kumar, Kaplesh; and Das, Dilip K., 4,441,874, Cl. 425-78.000.
- Datapoint Corporation: *See—*
  - Friend, George E.; Meyers, John D.; and Van Dyke, Steve, 4,442,502, Cl. 364-900.000.
- Daugherty, Carol A.; Siebens, Larry N.; and Daugherty, Ronald R., to R. D. Design Co., Inc. Cosmetic and therapeutic appliance. 4,441,487, Cl. 128-24.200.
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- Davis, James W., to Mead Corporation, The. Document exposure apparatus. 4,441,806, Cl. 355-23.000.
- Davis, Kenneth W. Feedback system for a linear actuator. 4,442,390, Cl. 318-663.000.

- Davis, Kent L., to WesTech Engineering, Inc. Rotary vacuum filter. 4,442,001, Cl. 210-402.000.
- Davis, Ronald P., to Interlock Industries Limited. Pivot joints. 4,441,835, Cl. 403-24.000.
- Dawley, Robert E. Temperature control system. 4,441,329, Cl. 62-126.000.
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  - Tipple, Neil A.; Gibson, Jerome W.; and Boyd, Ronald J., 4,441,831, Cl. 400-134.300.
- Deal, Bruce E.: *See—*
  - Lehrer, William I.; and Deal, Bruce E., 4,442,449, Cl. 357-67.000.
- Dean, Mark E.; Kummer, David A.; and Saenz, Jesus A., to International Business Machines Corporation. Composite video color signal generation from digital color signals. 4,442,428, Cl. 340-703.000.
- Deans, David R., to Imperial Chemical Industries PLC. Sample injection. 4,442,217, Cl. 436-161.000.
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  - Johnson, Stanley J., 4,441,846, Cl. 414-335.000.
  - Kuhn, John B., 4,441,306, Cl. 56-15.900.
  - Westimayer, David A., 4,441,266, Cl. 37-244.000.
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  - Arntz, Dietrich; Prescher, Gunter; and Heilos, Johannes, 4,442,308, Cl. 568-480.000.
  - Baudis, Ulrich; Biberbach, Peter; and Weber, Wolfgang, 4,441,930, Cl. 134-2.000.
  - Kuhner, Gerhard; Wolff, Siegfried; and Rothbuhr, Lothar, 4,442,163, Cl. 428-262.000.
  - Panster, Peter; and Kleinschmit, Peter, 4,442,040, Cl. 260-429.00R.
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- DeLuca, Raymond F., to Georgia-Pacific Corporation. Cut web material dispenser with web centering and tension control. 4,441,392, Cl. 83-337.000.
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- Dennison, Warren: *See—*
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- Dessau, Ralph M.; and Haag, Werner O., to Mobil Oil Corporation. Process for the production of fermentation ethanol. 4,442,210, Cl. 435-161.000.
- Detection Systems, Inc.: *See—*
  - Lederer, David B., 4,442,359, Cl. 250-342.000.
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- Deutsche Forschungs-und Versuchsanstalt fur Luft- und Raumfahrt E.V.: *See—*
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- De Weck, Roger. Self-righting multihull boat. 4,441,445, Cl. 114-39.000.
- Dewhurst, John E.: *See—*
  - Taylor, Ronald P.; Dewhurst, John E.; and Abouzahr, Saad M., 4,442,235, Cl. 521-122.000.
- Dey, Philip, to BICC Public Limited Company. Overhead electric transmission systems. 4,442,364, Cl. 307-147.000.
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- Dietrich, Wolfgang: *See—*
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  - Pryor, Timothy R., 4,441,817, Cl. 356-375.000.
- Dill, Terry A., to Jefferson Industries Company. Hydraulic fan control. 4,441,651, Cl. 236-49.000.
- Dillarstone, Alan: *See—*
  - Fraikin, Marie-Helene; and Dillarstone, Alan, 4,442,013, Cl. 252-8.800.
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- Di Matteo, Paul; and Ross, Joseph, to Robotic Vision Systems, Inc. Controlling positioning systems upon removal of power. 4,441,854, Cl. 414-787.000.
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- Distler, James A. Food package of plastic laminate. 4,442,158, Cl. 428-195.000.
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  - Dixon, Paul H., 4,441,852, Cl. 414-733.000.
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- Dizmang, Michael J. Apparatus for hoisting loads to elevated building locations. 4,441,849, Cl. 414-490.000.
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  - Muller, Erich; Nickl, Josef; Narr, Berthold; Roch, Josef; Haarmann, Walter; and Weisenberger, Johannes M., 4,442,111, Cl. 424-263.000.
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- Doherty, William G.: *See—*
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- Dohnalik, Martin F.: *See—*
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- Don Fell Limited: *See—*
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- Donat, William F.: *See—*
  - Schroeder, Edward A.; and Donat, William F., 4,441,709, Cl. 273-1.50R.
- Donelly, James R.; Felsvang, Karsten S.; Morsing, Per; and Veltman, Preston L., to A/S Niro Atomizer. Process for removal of nitrogen oxides and sulfur oxides from waste gases. 4,442,079, Cl. 423-239.000.
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- Donzis, Byron A., to Houston Protective Equipment, Inc. Protective batting jacket. 4,441,211, Cl. 2-2.000.
- Dooley, Daniel J.; and Williamson, Warren L., to Creative Tool Company. Engine timing instrument. 4,441,360, Cl. 73-119.00A.
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- Dorpmund, Willi, to Graaff Kommanditgesellschaft. Mounting for a tank receptacle in a supporting framework. 4,441,678, Cl. 248-146.000.
- Dose, Ludwig; and Dose, Werner. Tanning apparatus. 4,441,342, Cl. 69-30.000.
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- Doss, Albert S. Pelt stretcher. 4,441,267, Cl. 38-102.800.
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- Downhower, Francis H., Jr.; and Finlayson, Paul T., to United States of America, Energy. Protective circuit for thyristor controlled systems and thyristor converter embodying such protective circuit. 4,442,480, Cl. 363-57.000.
- Drake, Evelyn N.; and Calcavecchio, Peter, to Exxon Research and Engineering Co. Shear thickening composition. 4,442,241, Cl. 523-130.000.
- Dreeben, Lionel. Capillary stencil printer with improved replenishment of the printing pad and re-inking of the reservoir. 4,441,422, Cl. 101-125.000.

- Dresser Industries, Inc.: *See—*
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  - Cason, George A., Jr., 4,441,244, Cl. 29-434.000.
  - Wilke, Charles F., 4,441,469, Cl. 123-295.000.
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- Dubar, Kenneth W.; and Onofrio, Armadio J. Wrist and ring finger support for bowler. 4,441,711, Cl. 273-54.00B.
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- Dudley, James R.; and Gorham, Barry J. Method and apparatus for determining position. 4,441,809, Cl. 356-1.000.
- Dudley, Russell D., to Reclamet, Inc. Chunk separator and process of separation for machine tool scrap. 4,441,995, Cl. 209-137.000.
- Duerksen, Charles J.; and Rodriquez, Benjamin P., to Stauffer Chemical Company. Dichloroacetyl oxazolidine herbicide antidotes. 4,441,914, Cl. 71-95.000.
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- Dullis, Gerhard: *See—*
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- Dumazy, Christian: *See—*
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- Dummermuth, Ernst H.; Galdun, Daniel J.; Grudowski, Raymond A.; and Stewart, Daniel L., to Allen-Bradley Company. Modular programmable controller. 4,442,504, Cl. 364-900.000.
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  - Zolner, Dieter H.; Rittmann, Friedrich; Dung, Herbert; Haremsa, Johannes; Bauer, Georg; Otto, Josef; Muhlenbeck, Josef; and Lauterbach-Dammler, Inge, 4,442,525, Cl. 373-93.000.
- Dunn, William: *See—*
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  - Briggs, Anglis R., 4,442,212, Cl. 435-188.000.
  - Cloud, Nathan; Marin, Robert A.; and McErlane, James E., 4,441,660, Cl. 242-35.50A.
  - Foederer, Wilhelmus T. M.; and Voorn, Francesco G. M., 4,441,779, Cl. 339-99.00R.
  - Kirayoglu, Birol; and Zafiroglu, Dimitri P., 4,442,161, Cl. 428-219.000.
  - Larsen, Howland A., 4,442,260, Cl. 524-845.000.
  - Miller, Lester I., 4,442,256, Cl. 524-539.000.
  - Shapiro, Rafael, 4,441,910, Cl. 71-90.000.
  - Sommerfeld, Eugene G.; and Stamegna, Andrew P., 4,442,269, Cl. 525-440.000.
- Durcan, John W. Load carrying apparatus. 4,441,727, Cl. 280-62.000.
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- Dwyer, Francis G.; and Garwood, William E., to Mobil Oil Corporation. Catalytic dewaxing of oils containing ammonia over highly siliceous porous crystalline materials of the zeolite ZSM-5 type. 4,441,991, Cl. 208-111.000.
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- E. J. Brooks Company: *See—*
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- E. R. Squibb & Sons, Inc.: *See—*
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- Eaton Corporation: *See—*
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- Echte, Adolf: *See—*
  - Brandstetter, Franz; Hambrecht, Juergen; Stephan, Rudolf; Overhoff, Heinz-Juergen; Schwaab, Josef; Bernhard, Claus; Swoboda, Johann; and Echte, Adolf, 4,442,263, Cl. 525-83.000.
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- Edwards, William B., III, to Philip Morris Incorporated. Optically active nicotine analogs and process for their preparation. 4,442,292, Cl. 546-281.000.
- Eibner, Jules A., to Sperry Corporation. Passive fiber optic keyboard. 4,442,425, Cl. 340-365.00S.
- El Paso Products Company: *See—*
  - Mims, Samuel S., 4,442,303, Cl. 560-191.000.
- Elchinger, Gilbert M., to Xerox Corporation. Ink jet gutter method and apparatus. 4,442,440, Cl. 346-1.100.
- Electric Power Development Co. Ltd.: *See—*
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- Electrolux Constructor Aktiebolag: *See—*
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- Elkins, Carlos D. Microscopic evaluation slide. 4,441,793, Cl. 350-536.000.
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- Emhart Industries, Inc.: *See—*
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  - Wagle, William F., 4,442,326, Cl. 200-38.00R.
- Emmer, Ivan; Hajek, Zdenek; and Repa, Petr, to Matematicko-fyzikalni fakulta University Karlovy v Praze. Method of manufacture of an electric humidity detecting sensing element. 4,441,968, Cl. 204-35.00N.
- Emmett, James R., to Northern Engineering Industries plc. Regeneration of ion exchange materials. 4,442,229, Cl. 521-26.000.
- Empie, Howard L., Jr., to International Paper Company. Recovery of heat and chemical values from spent pulping liquors. 4,441,959, Cl. 162-30.100.
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- Engel, John F., to FMC Corporation. 4-Heterocyclic-substituted-2-indanyl alcohols and insecticidal ester derivatives. 4,442,296, Cl. 548-563.000.
- Engelhart, John E.; Angeles, Marshall R.; and D'Errico, Michael J., to Merck & Co., Inc. 1,2-Dibromo-2-cyanoalkane antimicrobial compounds. 4,442,122, Cl. 424-304.000.
- Engels, Johannes C. A.: *See—*
  - Dane, Lambertus M.; Engels, Johannes C. A.; and Stevens, Cornelis L., 4,442,054, Cl. 264-40.100.
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- Enste, Klemens; and Giessmann, Sigrun, to Enste, Klemens. Child support wedge. 4,441,221, Cl. 5-431.000.

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  - Sternberg, Stanley R.; and Lougheed, Robert M., 4,442,543, Cl. 382-49.000.
- Enzmann, Michael H., to Allis-Chalmers Corporation. Harvester header with floating cutter bar. 4,441,307, Cl. 56-208.000.
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- Ericsson, Axel B. R., to Profoment Utvecklings AB. Floor. 4,441,292, Cl. 52-309.700.
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  - Hobson, James C., 4,441,401, Cl. 89-37.00F.
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  - Broadhurst, Thomas E., 4,441,987, Cl. 208-33.000.
  - Burchfield, James E.; and Green, Robert C., 4,441,985, Cl. 208-11.00R.
  - Drake, Evelyn N.; and Calcavecchio, Peter, 4,442,241, Cl. 523-130.000.
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  - Lundberg, Robert D.; Thaler, Warren A.; and Agarwal, Pawan K., 4,442,253, Cl. 524-211.000.
  - Martner, John G., 4,442,443, Cl. 346-140.00R.
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  - Hill, William E.; and McAuliffe, Charles A., 4,442,297, Cl. 549-206.000.
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- Farian, Gerhard, to Karl M. Reich Maschinenfabrik GmbH. Buffer system for fastener driving devices. 4,441,644, Cl. 227-130.000.
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  - Griffith, Ronald L.; and Favstritsky, Nicolai A., 4,442,058, Cl. 264-176.00R.
- Fedde, George A.: *See—*
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  - Pichler, Gerald P., 4,441,722, Cl. 277-134.000.
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  - Sekula, Paul J.; and Potts, Gerald R., 4,442,499, Cl. 364-574.000.
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- Fischer, William H.; Cookson, Alan H.; and Yoon, Kue H., to United States of America, Energy. Particle trap to sheath contact for a gas-insulated transmission line having a corrugated outer conductor. 4,442,311, Cl. 174-14.00R.
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  - Howald, Frank P., 4,441,993, Cl. 209-5.000.
- FMC Corporation: *See—*
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- Foertsch, Johann; and Meltsch, Hans-Juergen, to Siemens Aktiengesellschaft. Longitudinally divided cable sleeve of shrinkable material having closure elements along its longitudinal edges. 4,442,155, Cl. 428-99.000.
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  - Fridolfsson, Bengt E., 4,441,285, Cl. 52-73.000.
- Fogelberg, Ernst R., to A.B. Bonnierforetagen. Process and composition for insulation of surfaces, and product thereby obtained. 4,442,242, Cl. 523-200.000.
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  - Holubka, Joseph W., 4,442,146, Cl. 427-386.000.
  - Meitzler, Allen H., 4,442,515, Cl. 367-197.000.
  - Novak, Robert F., 4,442,420, Cl. 338-34.000.
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  - Stojek, Dieter, 4,441,243, Cl. 29-433.000.
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- Forsberg, Klas Y., to Electrolux Constructor Aktiebolag. Storage structure comprising movable racks. 4,441,617, Cl. 211-1.500.
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- Fortsch, Johann; and Meltsch, Hans-Jurgen, to Siemens Aktiengesellschaft. Longitudinally split sleeve. 4,442,154, Cl. 428-99.000.
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- Franklin, James L.; and Kramer, Ted J., to United States of America, Navy. Tapered seal for flow-through module. 4,442,475, Cl. 361-383.000.
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  - Asao, Yasuzi, 4,442,200, Cl. 430-538.000.
  - Dezawa, Shin-ichiro; Akashi, Goro; and Kitamoto, Tatsuji, 4,442,159, Cl. 428-212.000.
  - Igarashi, Akira; and Nakamura, Sukenori, 4,442,179, Cl. 428-220.000.
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  - Kikuchi, Yoshiki; Omori, Takashi; Moriguchi, Haruhiko; Moriguchi, Fujio; and Murayama, Tomio, 4,442,441, Cl. 346-74.400.
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- Gaiser, Robert F., to Bendix Corporation, The. Fast-fill master cylinder. 4,441,320, Cl. 60-578.000.
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- Garay, Oscar M.: *See—*
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  - Greenwald, Fred A., 4,441,723, Cl. 277-164.000.
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  - Olhausen, James N., Jr., 4,442,491, Cl. 364-454.000.
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  - Alley, Robert P.; Relyea, John W.; and Sidebottom, Donald L., 4,441,545, Cl. 165-26.000.
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  - Clitherow, John W.; Bradshaw, John; Mackinnon, John W. M.; Price, Barry J.; Martin-Smith, Michael; and Judd, Duncan B., 4,442,110, Cl. 424-263.000.
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  - Baglin, Elizabeth G.; and Gomes, John M., 4,442,072, Cl. 423-22.000.
- Goodrich, D. Stephen. Stackable tray. 4,441,615, Cl. 206-511.000.
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- Grantland, Gary, to GTE Automatic Electric Inc. Electronic common switch having an improved receiver mating arrangement. 4,442,322, Cl. 179-81.00R.
- Gray, Keith I.; and Meier, Henry G., to Brown Boveri Electric Inc. Dead tank housing for high voltage circuit breaker employing puffer interrupters. 4,442,329, Cl. 200-148.00B.
- Greco, Ralph S.; and Harvey, Richard A. Antibiotic bonding of vascular prostheses and other implants. 4,442,133, Cl. 427-2.000.
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- Greenlee, William J., to Merck & Co., Inc. Process for preparing carboxyalkyl dipeptides. 4,442,030, Cl. 260-112.50R.
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- Gries, Richard C. Metallic security bar system for window and patio doors. 4,441,299, Cl. 52-656.000.
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- Grupping, Arnold W. J. Method for the underground gasification of coal or browncoal. 4,441,554, Cl. 166-261.000.
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  - Finkel, Joel R.; Freudenthal, William E.; and Stoides, John G., 4,442,541, Cl. 382-7.000.
  - Sarin, Vinod K.; and Buljan, Sergej-Tomislav, 4,441,894, Cl. 51-295.000.
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  - Morris, Merle E.; Rice, Lawrence M.; and Meade, Steven L., 4,442,374, Cl. 313-316.000.
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  - Hantz-Guibas, Diane; and Guibas, John C., 4,441,264, Cl. 36-72.00B.
- Guiley, Clifford D., Jr.: *See—*
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- Gulf States Paper Corporation: *See—*
  - Gulliver, Richard F., 4,441,614, Cl. 206-624.000.
- Gulf & Western Industries, Inc.: *See—*
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- Gulliver, Richard F., to Gulf States Paper Corporation. Front loaded and closed carton with hinged top cover. 4,441,614, Cl. 206-624.000.
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- Gutman, Arnold D.: *See—*
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- Hahm, Gerhard H., to Zimmerman, Jos. Axially telescopic coil carrier. 4,441,665, Cl. 242-129.000.

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- Hahn, Roger A., to Adolph Coors Company. Overvarnish apparatus for decorator machine. 4,441,418, Cl. 101-38.00R.
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  - Hamman, Reed K., 4,441,552, Cl. 166-133.000.
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- Hamman, Reed K., to Halliburton Company. Hydraulic setting tool with flapper valve. 4,441,552, Cl. 166-133.000.
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- Handte, Reinhard; Sander, Jurgen; and Tammer, Thomas, to Hoechst Aktiengesellschaft. Process for the preparation of halo-2-mercaptobenzoxazoles. 4,442,294, Cl. 548-221.000.
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- Hanson, Richard A., to Sundstrand Data Control, Inc. Flexure with electrical conductor. 4,441,366, Cl. 73-517.00B.
- Hantel, Alwin, to Thyssen Industrie Aktiengesellschaft. Rear door for armored vehicles. 4,441,754, Cl. 296-51.000.
- Hantz-Guibas, Diane; and Guibas, John C. Driver's heel guard. 4,441,264, Cl. 36-72.00B.
- Hanyu, Susumu; and Takenoya, Hideaki, to Janome Sewing Machine Co., Ltd. Stitch function switching system for sewing machines. 4,441,439, Cl. 112-158.00E.
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- Hara, Akio; and Yazu, Shuji, to Sumitomo Electric Industries, Ltd. Sintered body for use in a cutting tool and the method for producing the same. 4,442,180, Cl. 428-551.000.
- Harbison, William C.: *See—*
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  - Leiper, Fred B., 4,441,773, Cl. 312-330.00R.
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- Harootion, Aramis, to Whittaker Corporation. Electrically sealed connector and cable assembly. 4,441,777, Cl. 339-94.00M.
- Harris, Allen E.; and Szarka, David D., to Halliburton Company. High temperature packer with low temperature setting capabilities. 4,441,721, Cl. 277-26.000.
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  - Klein, Robert E., 4,442,373, Cl. 313-35.000.
- Harris, David A., to Owens-Corning Fiberglas Corporation. Aesthetic acoustical air distribution duct system. 4,441,402, Cl. 98-40.00C.
- Harry, Ieuan L., to Continental Group, Inc., The. Bottle ejector. 4,441,878, Cl. 425-534.000.
- Harry Major Machine and Tool Co.: *See—*
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- Hartwig, Ernst; and Krallmann, Reinhold, to BASF Aktiengesellschaft. Anthraquinone dyes. 4,442,287, Cl. 544-187.000.
- Hartwig-Hartoglass, Inc.: *See—*
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- Harvey, Christian D.: *See—*
  - Harvey, Douglas G., deceased; Harvey, Dolores C., executrix; and Harvey, Christian D., 4,442,216, Cl. 435-288.000.
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- Harvey, Richard A.: *See—*
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- Haskel, Inc.: *See—*
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- Haugk, Charles A., to General Engineering & Manufacturing Corp. Locking and positioning apparatus for reclining seats. 4,441,381, Cl. 74-531.000.
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  - Sommerhalder, Rudolf, 4,441,581, Cl. 181-286.000.
- Hawkins, Peter A. T. Crusher for scrap metal and the like. 4,441,415, Cl. 100-35.000.
- Haws, John R., to Phillips Petroleum Company. Polymeric blends. 4,442,265, Cl. 525-91.000.
- Hayashi, Nobuhiko, to Noma, Takumi. Solid fuel burning methods and apparatus. 4,441,436, Cl. 110-315.000.
- Hayashida, Shizuo; and Masuko, Akinori, to Tokyo Shibaura Denki Kabushiki Kaisha. Television receiver phase locked loop tuning arrangement. 4,442,413, Cl. 331-1.00A.
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  - Welch, William R.; and Heard, Thomas J., 4,441,558, Cl. 166-317.000.
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- Hebert, Raymond A., Jr.; Levine, Lewis J.; and Shipp, Kenneth O., Jr., to International Business Machines. Method for performing a multiple page get operation in a text processing system. 4,441,829, Cl. 400-63.000.
- Heck, Roland H.; Rosinski, Edward J.; and Shih, Stuart S., to Mobil Oil Corporation. Hydrotreating hydrocarbon feedstocks. 4,442,023, Cl. 502-222.000.
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- Hedlund, Lee V.; and Shields, Jerome D., to RCA Corporation. Tunnel for tape accumulation during wind-off. 4,442,465, Cl. 360-130.230.
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  - MacDiarmid, Alan G.; Heeger, Alan J.; and Nigrey, Paul J., 4,442,187, Cl. 429-213.000.
- Heffner, Edna V. Weighting scale hand support device. 4,441,568, Cl. 177-129.000.
- Heide, Helga: *See—*
  - Konig, Rainer; Freund, Hans-Ulrich; Heide, Helga; and Sieglen, Rolf A., 4,441,616, Cl. 209-44.100.
- Heilos, Johannes: *See—*
  - Arntz, Dietrich; Prescher, Gunter; and Heilos, Johannes, 4,442,308, Cl. 568-480.000.
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  - Heber, Helmut; Schwinn, Horst; Heimburger, Norbert; Kumpe, Gerhardt; and Schick, Manfred, 4,442,213, Cl. 435-217.000.
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  - Tsao, Jung-Hsien; and Hein, Paul R., 4,442,198, Cl. 430-311.000.
- Heinemann, Henning; Jasserand, Daniel; Milkowski, Wolfgang; Yavordios, Dimitri; and Zeugner, Horst, to Kali-Chemie Pharma GmbH. 1,5-Diphenylpyrazolin-3-one compounds, process and intermediates for preparation thereof and pharmaceutical compositions containing same. 4,442,102, Cl. 424-250.000.
- Hencken, Kenneth R.; Tichenor, Daniel A.; and Wang, James C. F., to United States of America, Energy. Optical double-slit particle measuring system. 4,441,816, Cl. 356-335.000.
- Hendricks, Bacel G. Open end ratchet wrench. 4,441,387, Cl. 81-61.000.
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  - Rau, Wolfgang; Klamann, Helmut; and Hennenberger, Peter, 4,442,271, Cl. 526-61.000.
- Hennessey, Richard G., to International Harvester Co. Steering light arrangement. 4,442,477, Cl. 362-52.000.
- Henriksen, Niels J.: *See—*
  - Beierholm, Hans M.; and Henriksen, Niels J., 4,442,394, Cl. 318-807.000.
- Hentschel, Peter; Brodowski, Walter; and Zengel, Hans, to AKZO nv. Thermoplastic polyurethane-elastomers from cyclohexane-1,4-diisocyanate. 4,442,281, Cl. 528-79.000.
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  - Goring, Hermann; Hentschel, Peter; and Meyl, Wolfgang, 4,442,497, Cl. 364-561.000.
- Henzler, Roland: *See—*
  - Dettelbach, Alfred; and Henzler, Roland, 4,441,450, Cl. 118-681.000.

- Hercules Incorporated: *See—*
  - Pohl, Rudolph L., 4,442,302, Cl. 204-159.230.
  - Younkin, Harry A.; Mehnert, Gottfried; and Roos, Uwe V., 4,442,063, Cl. 264-532.000.
- Hermann, Bodo: *See—*
  - Lux, Werner; Vahlensieck, Jurgen; Zell, Jakob; Hermann, Bodo; Bartsch, Heinz; and Zimmermann, Horst, 4,442,334, Cl. 219-73.000.
- Herndon, William H., to Fairchild Camera & Instrument Corporation. Bit line powered translinear memory cell. 4,442,509, Cl. 365-154.000.
- Herrick, Benjamin M.: *See—*
  - Taft, Charles K.; and Herrick, Benjamin M., 4,441,526, Cl. 137-831.000.
- Herwig, Warren E., to Allis-Chalmers Corp. Tailings monitor for combine harvester. 4,441,513, Cl. 130-27.00B.
- Hesp, Theodorus G. M.: *See—*
  - Boelens, Harmannus; van der Weerdt, Antonius J. A.; and Hesp, Theodorus G. M., 4,442,025, Cl. 252-522.00R.
- Hess, Joachim. Protective equipment cabinet. 4,441,766, Cl. 312-214.000.
- Heuschmann, Herr F.; and Plank, Herr A., to Compur-Electronic GmbH. Signal transmission. 4,442,426, Cl. 340-539.000.
- Hicken, Michael G.; Kirschensteiner, Fred; True, Duane A.; and Taleff, Alexander, to Westinghouse Electric Corp. Spent fuel consolidation system. 4,441,242, Cl. 29-419.00R.
- Hicswa, Daniel, to Becton, Dickinson and Company. Detachable balloon catheter device and method of use. 4,441,495, Cl. 128-325.000.
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  - Phillips, Edward H., 4,441,517, Cl. 134-113.000.
- Higashi, Hidejiro: *See—*
  - Yoshida, Satoshi; and Higashi, Hidejiro, 4,442,323, Cl. 179-110.00A.
- Higton, Malcolm; and Vecht, Aron, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Phosphors. 4,442,377, Cl. 313-503.000.
- Higuchi, Yoshihiro: *See—*
  - Watanabe, Koji; Higuchi, Yoshihiro; Yagi, Michio; and Shiozawa, Kazuo, 4,441,798, Cl. 354-483.000.
- Hijuelos, Humberto; Scartozzi, Giulio; Vollmuth, Lawrence P.; and Basile, Raffaele, to Allied Tube & Conduit Corporation. Continuous production of polished and buffed tubing. 4,441,238, Cl. 29-33.00D.
- Hill, Alan E. Plasma switch. 4,442,383, Cl. 315-349.000.
- Hill, Geoffrey E.; Woffinden, Duard S.; and Chadwick, Duane G., to Utah State University Foundation. Apparatus and method for measuring concentrations of supercooled liquid water. 4,441,363, Cl. 73-170.00R.
- Hill, William E.; and McAuliffe, Charles A., to Facilitated Separations, Inc. Manganese compounds and sorption of gases using manganese compounds. 4,442,297, Cl. 549-206.000.
- Hillberg, Ernest T. Controlled mooring. 4,441,448, Cl. 114-230.000.
- Hines, Alex E., to Occidental Oil Shale, Inc. Method for closing a drift between adjacent in situ oil shale retorts. 4,441,760, Cl. 299-2.000.
- Hirabayashi, Yuzi: *See—*
  - Shirasaki, Shinji; Tsuzuki, Yoshihiko; Hirabayashi, Yuzi; Okazaki, Hiroshi; Matsuyama, Masahiro; Kobayashi, Masanobu; and Ito, Yoji, 4,442,424, Cl. 340-52.00F.
- Hirai, Kiyoshi: *See—*
  - Sumi, Masao; Suenaga, Junichi; Takenaka, Masazo; Murano, Itaru; Tanabe, Mikio; and Hirai, Kiyoshi, 4,442,252, Cl. 524-183.000.
- Hiraishi, Hisashi; Yamakami, Yoshiaki; and Shintani, Atsunobu, to Kubota Ltd. Non-magnetic alloy having high hardness. 4,441,926, Cl. 75-128.00A.
- Hirano, Takashi, to Yamato Scale Company, Limited. Combination weighing machine. 4,441,567, Cl. 177-25.000.
- Hirasawa, Kunio: *See—*
  - Oshita, Youichi; Sato, Shunji; Takahashi, Takeshi; and Hirasawa, Kunio, 4,442,330, Cl. 200-148.00A.
- Hitachi, Ltd.: *See—*
  - Ikegawa, Masato; Sato, Eiji; and Tojo, Kenji, 4,441,870, Cl. 418-55.000.
  - Iwata, Yoshio; Fujita, Tsutomu; Horiuchi, Tsunehisa; and Shimizu, Youichi, 4,442,456, Cl. 358-213.000.
  - Kanoi, Minoru; Hori, Yasuro; and Maejima, Masaaki, 4,442,419, Cl. 336-100.000.
  - Maekawa, Hitoshi; Osawa, Michitaka; and Ando, Kunio, 4,442,384, Cl. 315-399.000.
  - Mitsui, Nobuo; Maeda, Yasuyuki; Kurihara, Tomiaki; Shima, Seiya; Hatakeyama, Takanobu; and Komuro, Katsu, 4,441,584, Cl. 187-29.00R.
  - Miyamoto, Akira, 4,441,435, Cl. 110-245.000.
  - Okamoto, Hiroshi; Seki, Michiharu; and Ohayashi, Hidehito, 4,441,981, Cl. 204-426.000.
  - Oshita, Youichi; Sato, Shunji; Takahashi, Takeshi; and Hirasawa, Kunio, 4,442,330, Cl. 200-148.00A.
  - Ota, Hideo; and Kubo, Yutaka, 4,442,485, Cl. 364-200.000.
  - Ueno, Sadayasu, 4,441,982, Cl. 204-426.000.
- Hitachi Medical Corporation: *See—*
  - Suzuki, Atsushi; Yamada, Hiromichi; Uchida, Yoko; Kohno, Hideki; Fukino Tadashi; and Yoshida, Minoru, 4,442,360, Cl. 250-486.100.
- Hitachi Metals, Ltd.: *See—*
  - Yamashita, Keitaro; and Kashiwagi, Hiromi, 4,441,636, Cl. 222-541.000.
- Hitch, Billy F.: *See—*
  - Getz, Marlyn F.; Maggio, Michael J.; and Hitch, Billy F., 4,441,927, Cl. 75-229.000.
- Hobson, James C., to Ex-Cell-O Corporation. Rack and pinion weapon elevation mechanism. 4,441,401, Cl. 89-37.00F.
- Hochtemperatur-Reaktorbau GmbH: *See—*
  - Schoening, Josef; Schwiers, Hans-Georg; Elter, Claus; Fritz, Rolf; and Kissel, Karl-Friedrich, 4,442,066, Cl. 376-302.000.
- Hodel, Ulf: *See—*
  - Wagner, Alfred; Ames, Adolf; and Hodel, Ulf, 4,441,646, Cl. 228-116.000.
- Hoechst Aktiengesellschaft: *See—*
  - Albrecht, Konrad; Frensch, Heinz; and Schumacher, Hans, 4,441,919, Cl. 71-120.000.
  - Erpenbach, Heinz; Gehrmann, Klaus; Lork, Winfried; and Prinz, Peter, 4,442,304, Cl. 560-232.000.
  - Handte, Reinhard; Sander, Jurgen; and Tammer, Thomas, 4,442,294, Cl. 548-221.000.
  - Johannes, Gerhard; Shroff, Fali; Dullis, Gerhard; and Steidl, Dieter, 4,442,244, Cl. 523-221.000.
  - Leupold, Ernst I.; Schmidt, Hans-Joachim; Wunder, Friedrich; Arpe, Hans-Jurgen; and Hachenberg, Horst, 4,442,228, Cl. 518-714.000.
  - Meininger, Fritz; Otten, Joachim W., deceased; Otten, Ursla, heir; and Rudolph, Anna G., heir, 4,442,288, Cl. 544-189.000.
  - Moraw, Roland; and Schadlich, Renate, 4,441,945, Cl. 156-108.000.
- Hoeffken, Russell W., to Snyder General Corporation. Method of manufacturing a heat exchanger unit. 4,441,241, Cl. 29-157.30R.
- Hoff, Kurt W.: *See—*
  - TenEyck, John D.; Smith, Russell D.; and Hoff, Kurt W., 4,442,219, Cl. 501-95.000.
- Hoffman, Simon J. Holder for saber saw blade. 4,441,255, Cl. 30-392.000.
- Hoffmann-La Roche Inc.: *See—*
  - Berger, Leo; and Olson, Gary L., 4,442,291, Cl. 546-150.000.
  - Felix, Arthur M.; Ishitsuka, Hideo; Meienhofer, Johannes A.; and Ohta, Yumiko, 4,442,031, Cl. 260-112.50R.
  - Kienzle, Frank, 4,442,289, Cl. 544-280.000.
- Hogan, Mark J.; and Cooke, Ernest R., to Brunswick Corporation. Collapsible support fixture for camouflage screens or the like. 4,441,518, Cl. 135-98.000.
- Hogendobler, Richard S.: *See—*
  - Forney, Edgar W., Jr.; and Hogendobler, Richard S., 4,441,781, Cl. 339-177.00R.
- Hohlein, Peter: *See—*
  - Probst, Joachim; Riberi, Bernd; Kolb, Gunter, deceased; and Hohlein, Peter, 4,442,145, Cl. 427-385.500.
- Hohman, Charles M.: *See—*
  - Propster, Mark A.; Seng, Stephen; and Hohman, Charles M., 4,441,906, Cl. 65-27.000.
- Hollinger, William K., Jr. Heat sealing machine and process for heat sealing plastic film edges. 4,441,953, Cl. 156-290.000.
- Hollingsworth (U.K.) Limited: *See—*
  - Parker, Alan; and Clough, Douglas O., 4,441,310, Cl. 57-401.000.
- Holman, George B.: *See—*
  - Powers, Charles A.; and Holman, George B., 4,441,556, Cl. 166-290.000.
- Holmes, Gordon J., to Northern Telecom Limited. Resoldering tool for ceramic substrate hybrid electronic circuits. 4,441,647, Cl. 228-119.000.
- Holt, Earl R., to Hose Specialties Company. Filter assembly. 4,442,003, Cl. 210-445.000.
- Holt, George. Economizer. 4,441,477, Cl. 123-557.000.
- Holtrop, John W., to United States of America, Navy. Constrained store ejector. 4,441,674, Cl. 244-137.00R.
- Holtzman, Barry L.; and Mercier, George E., to Westinghouse Electric Corp. Multi-section power capacitor with internal fusing arrangement. 4,442,473, Cl. 361-275.000.
- Holubka, Joseph W., to Ford Motor Company. Diblocked diisocyanate diurea oligomers and coating compositions comprising same. 4,442,146, Cl. 427-386.000.
- Holzt, Hans-Peter: *See—*
  - Bernauer, Otto; Holzt, Hans-Peter; and Lenz, Hermann, 4,441,326, Cl. 62-7.000.
- Honda Giken Kogyo Kabushiki Kaisha: *See—*
  - Kohyama, Mikihiro; and Ohta, Kozo, 4,441,574, Cl. 180-219.000.
- Honeywell Inc.: *See—*
  - Bonne, Ulrich, 4,441,335, Cl. 62-324.600.
  - Brahmbhatt, Dhaval J., 4,442,481, Cl. 363-60.000.
- Hope, Robert J.: *See—*
  - Argyle, Charles S.; Beldam, Richard P.; and Hope, Robert J., 4,441,547, Cl. 165-67.000.
- Hopefl, Richard M.: *See—*
  - Wedral, Elaine R.; Hopefl, Richard M.; and Ivie, Rufus A., 4,442,104, Cl. 426-250.000.
- Hore, Donald L., to Hornet Electrical Company Limited. Electric indexing drive and stepping motor with drive retardation therefor. 4,442,392, Cl. 318-696.000.
- Hori, Yasuro: *See—*
  - Kanoi, Minoru; Hori, Yasuro; and Maejima, Masaaki, 4,442,419, Cl. 336-100.000.
- Horiguchi, Satoru: *See—*
  - Takeuchi, Hideo; Horiguchi, Satoru; and Tamaki, Ryuzo, 4,441,819, Cl. 356-380.000.

- Horii, Masami: *See—*
  - Ochiai, Kuniaki; Horii, Masami; and Aoki, Osamu, 4,441,828, Cl. 400-124.000.
- Horinishi, Katsumi: *See—*
  - Maruyama, Yuji; and Horinishi, Katsumi, 4,441,797, Cl. 354-416.000.
- Horiuchi, Tsunehisa: *See—*
  - Iwata, Yoshio; Fujita, Tsutomu; Horiuchi, Tsunehisa; and Shimizu, Youichi, 4,442,456, Cl. 358-213.000.
- Hornbeck, Larry J., to Texas Instruments Incorporated. Deformable mirror light modulator. 4,441,791, Cl. 350-360.000.
- Hornet Electrical Company Limited: *See—*
  - Hore, Donald L., 4,442,392, Cl. 318-696.000.
- Horovitz, Zola P., to E. R. Squibb & Sons, Inc. Method for treating glaucoma with topical or systemic ACE inhibitor compositions. 4,442,089, Cl. 424-177.000.
- Horwath, Robert O.; and Ibrahim, Osama O., to Nabisco Brands, Inc. Process for production of glucosone. 4,442,207, Cl. 435-105.000.
- Hose Specialties Company: *See—*
  - Holt, Earl R., 4,442,003, Cl. 210-445.000.
- Hoshino, Mitsuru: *See—*
  - Yusa, Haruhiko; Hoshino, Mitsuru; Kurosaki, Akira; Furusawa, Hironobu; and Sugitawa, Chikara, 4,442,262, Cl. 525-69.000.
- Hoshino, Yasushi: *See—*
  - Momose, Haruhiko; Takahashi, Toshiaki; and Hoshino, Yasushi, 4,441,810, Cl. 356-1.000.
- Hosie, Alistair M. Opener and pouring spout with holder for flexible wall containers. 4,441,631, Cl. 222-86.000.
- Hotta, Teruyuki; Kurokawa, Yoshiki; Nagasaku, Eiichi; and Yasunaga, Masao, to Nippondenso Co., Ltd. Variable discharge rotary compressor. 4,441,863, Cl. 417-281.000.
- Houghton, Alexander J.; and Knasel, Thomas M., to Science Applications, Inc. Vessel navigation lights. 4,441,783, Cl. 350-96.100.
- Houston Protective Equipment, Inc.: *See—*
  - Donzis, Byron A., 4,441,211, Cl. 2-2.000.
- Howald, Frank P., to Fluor Corporation. Flotation process. 4,441,993, Cl. 209-5.000.
- Howard, Henry R. Apparatus for dispensing particulate matter. 4,441,434, Cl. 110-101.00R.
- Howie, Robert K., Jr., to Grigoleit Company, The. Molded knob with resilient friction fit finger. 4,441,230, Cl. 16-121.000.
- Hoyt, Richard E.: *See—*
  - Nielsen, Anker J., Jr.; and Hoyt, Richard E., 4,441,343, Cl. 70-34.000.
- HRI Inc.: *See—*
  - Kydd, Paul H., 4,441,943, Cl. 149-109.400.
- Hrovatin, Albert; and Brezec, Joze, to Do-Mehanotehnika, Proizvodnja in Prodaja Igrac, Kovinskih in Plasticnih Izdelkov N.Sol.O. Sewing-machine frame. 4,441,443, Cl. 112-258.000.
- Hrubesh, Charles F., to United States of America, Army. Apparatus and method for generating single droplets. 4,441,532, Cl. 141-1.000.
- Hsu, Chao-Yang; and Lyons, James E., to Sun Tech, Inc. Process for oxidizing phenol to benzoquinone. 4,442,036, Cl. 260-396.00R.
- Huang, Yun-Yang, to Mobil Oil Corporation. Hollow shaped catalytic extrudates. 4,441,990, Cl. 208-111.000.
- Hubble, William S.: *See—*
  - Most, Ivan G.; and Hubble, William S., 4,441,922, Cl. 75-25,000.
- Hubele, Adolf: *See—*
  - Kunz, Walter; Eckhardt, Wolfgang; Hubele, Adolf; and Riebli, Peter, 4,442,117, Cl. 424-273.00R.
- Huber, Willi, to J. Wagner AG. Electrostatic disabling switch for electrostatic spray guns. 4,441,656, Cl. 239-708.000.
- Hubred, Gale L.; and Van Leirsburg, Dean A., to Chevron Research Company. Recovery of cobalt, molybdenum, nickel and vanadium from an aqueous ammonia and ammonium salt solution by serial extraction of nickel and cobalt and coextracting molybdenum and vanadium. 4,442,074, Cl. 423-54.000.
- Huchett, Michael: *See—*
  - Gosset, Serge; and Huchett, Michael, 4,441,937, Cl. 148-18.000.
- Hucker, David J., to Sundstrand Corporation. Generator system with fault condition excitation. 4,442,396, Cl. 322-21.000.
- Huggins, Orville C., to Monarch Marking Systems, Inc. Printing apparatus. 4,441,425, Cl. 101-292.000.
- Hughes Aircraft Company: *See—*
  - Bleakney, William M., 4,442,431, Cl. 343-7.0ED.
  - Giants, Thomas W., 4,442,278, Cl. 526-261.000.
  - Pines, Michael Y., 4,442,457, Cl. 358-213.000.
- Hughes Tool Company: *See—*
  - Baugh, John L.; and Montgomery, James W., 4,441,560, Cl. 166-382.000.
  - Evans, Robert W.; and Montgomery, James W., 4,441,559, Cl. 166-382.000.
  - Pessier, Rudolf C. O.; Ippolito, Rodolfo M.; and Baker, Billy E., 4,441,566, Cl. 175-374.000.
- Huie, Nicholas C.; and Bradley, William, to Standard Oil Company (Indiana). Decreasing static charge of a particulate solid product which causes product to plug metal line used for pneumatic fluidized solid conveyance. 4,441,657, Cl. 241-14.000.
- Huignard, Jean P.; and Malard, Marcel, to Thomson-CSF. Optical system for observation in real time with scanning. 4,442,455, Cl. 358-209.000.
- Hulin, Jean P.; Bouvard, Andre; and LeMaitre, Patrick, to Lignes Telegraphiques et Telephoniques. Device for positioning optical fibers in a terminal connector for splicing two optical fiber transmission cables. 4,441,786, Cl. 350-96.210.
- Hulse, David O., to Budd Company, The. Tire pressurization control system. 4,441,539, Cl. 152-417.000.
- Hunnell, John W.: *See—*
  - Autrey, Harry S.; and Hunnell, John W., 4,442,130, Cl. 426-462.000.
- Hunter Douglas International N.V.: *See—*
  - Rijnders, Willem, 4,441,297, Cl. 52-478.000.
- Hunter Douglas International N.V. Rooi Catootje: *See—*
  - Thual, Jacques G. L., 4,441,282, Cl. 52-39.000.
- Hurley, Robert M.: *See—*
  - Caldwell, David H.; and Hurley, Robert M., 4,441,650, Cl. 229-39.00B.
- Hurst, G. Samuel; Parks, James E.; and Schmitt, Harold W., to Atom Sciences, Inc. Sputter initiated resonance ionization spectrometry. 4,442,354, Cl. 250-281.000.
- Hurst, Richard F. Apparatus for producing bacteria free drinking water. 4,441,996, Cl. 210-241.000.
- Hutchins, Ned M.; Studebaker, Irving G.; Kvapil, Rudolf; and Ricketts, Thomas E., to Occidental Oil Shale, Inc. In situ oil shale retort system. 4,441,759, Cl. 299-2.000.
- Hutchinson, Earl. Combination portable seat cushion and pennant. 4,441,271, Cl. 40-584.000.
- Hutchison, Wayne R.; and Apple, David L., to Deere & Company. Steering gear assembly for a lawn and garden tractor. 4,441,735, Cl. 280-771.000.
- Hydrovane Compressor Company Limited: *See—*
  - Boller, Edward, 4,441,871, Cl. 418-97.000.
- Ibrahim, Osama O.: *See—*
  - Horwath, Robert O.; and Ibrahim, Osama O., 4,442,207, Cl. 435-105.000.
- Ichihashi, Hitoshi; Tanaka, Terukazu; and Imasato, Yu, to Dainippon Pharmaceutical Co., Ltd.; and Laboratoire Roger Bellon. Sesquihydrate of naphthyridine derivative, and process for the preparation thereof. 4,442,101, Cl. 424-250.000.
- ICI Americas Inc.: *See—*
  - Barrett, Joseph A. F., 4,441,427, Cl. 102-202.600.
- Idei, Toshio: *See—*
  - Uchida, Ryohei; Yamasaki, Tatsuo; Idei, Toshio; Tatsutani, Toshio; and Hagiwara, Ippei, 4,442,386, Cl. 318-254.000.
- Iemmi, Giuliano; Raimondo, Michele; and Mo, Luigi, to Centro Ricerche Fiat S.p.A. Device for electrolytic surface treatment of mechanical workpieces. 4,441,976, Cl. 204-224.00M.
- Igarashi, Akira; and Nakamura, Sukenori, to Fuji Photo Film Co., Ltd. Heat-sensitive recording paper. 4,442,179, Cl. 428-220.000.
- Ihle, Nathan C.: *See—*
  - Wolf, Gary A.; Smith, Jeffrey W.; and Ihle, Nathan C., 4,442,028, Cl. 252-628.000.
- Iijima, Zenshiro, to Adger Kogyo Co., Ltd. Ink composition. 4,441,928, Cl. 106-21.000.
- Iizuka, Yutaka, to Nippon Kogaku K.K. Albada finder device. 4,441,802, Cl. 354-224.000.
- Ikeda, Tokuzo: *See—*
  - Fujii, Shigeo; Ikeda, Tokuzo; Mikami, Takashi; and Okano, Shuji, 4,442,062, Cl. 264-518.000.
- Ikedo, Yuji, to Pioneer Electronic Corporation. Drive mechanism for cassette tape recording/reproducing apparatus. 4,442,467, Cl. 360-105.000.
- Ikegawa, Masato; Sato, Eiji; and Tojo, Kenji, to Hitachi, Ltd. Scroll member. 4,441,870, Cl. 418-55.000.
- Ikuo, Yamaguchi; Yasuo, Higashibata; and Masaru, Fujimura, to Takenaka Komuten Co., Ltd. Earthquake-resistant reinforcement structure for an existing building with compression braces or tension braces. 4,441,289, Cl. 52-167.000.
- Imahashi, Issei, to Telmec Co., Ltd. Apparatus for registering a mask pattern in a photo-etching apparatus for semiconductor devices. 4,441,250, Cl. 29-578.000.
- Imai, Iwao: *See—*
  - Endo, Hiroshi; Sone, Masazumi; Imai, Iwao; and Ishikawa, Yasuki, 4,441,479, Cl. 123-605.000.
- Imamura, Ryuichi; Shimazaki, Kanzo; Yahashi, Satoru; Yamamoto, Takashi; and Yano, Noriyuki, to Yanma Agricultural Equipment Company Limited; and Seirei Industry Company Limited. Driving device of sorting cylinder for use in a rotary type rice hulling and sorting device. 4,441,412, Cl. 99-601.000.
- Imamura, Yoshiyuki: *See—*
  - Uchida, Isamu; and Imamura, Yoshiyuki, 4,441,704, Cl. 271-303.000.
- Imasato, Yu: *See—*
  - Ichihashi, Hitoshi; Tanaka, Terukazu; and Imasato, Yu, 4,442,101, Cl. 424-250.000.
- Imax Systems Corporation: *See—*
  - Shaw, William C., 4,441,796, Cl. 352-184.000.
- Imperial Chemical Industries Ltd.: *See—*
  - Briggs, Peter J.; McAloon, Kevin; and Rideal, Graham R., 4,442,164, Cl. 428-283.000.
  - Brody, Harry, 4,442,057, Cl. 264-176.00F.
  - Brody, Harry, 4,442,266, Cl. 525-173.000.
- Imperial Chemical Industries PLC: *See—*
  - Brooks, Herbert; and Waite, Frederick A., 4,442,272, Cl. 526-82.000.
  - Deans, David R., 4,442,217, Cl. 436-161.000.
  - Griffin, David A.; and Collins, David J., 4,441,917, Cl. 71-103.000.
- Inaba, Hajimu; and Miyashita, Hideo, to Fujitsu Fanuc Limited. Switching device for detecting interruptions in transmission lines. 4,442,521, Cl. 371-68.000.

Inco Limited: *See—*
Young, Charles E.; and Drzewiecki, George, 4,441,897, Cl. 55-112.000.
Industri AB Thule: *See—*
Kurpershoek, Cornelis, 4,441,344, Cl. 70-231.000.
Industrie Pirelli S.p.A.: *See—*
Tangorra, Giorgio, 4,441,466, Cl. 123-179.00S.
Inland Steel Company: *See—*
Carter, William A.; and Martin, Frank A., 4,441,975, Cl. 204-206.000.
Inloes, Douglas S.: *See—*
Michaels, Alan S.; Robertson, Channing R.; Cohen, Stanley N.; Inloes, Douglas S.; and Smith, William J., 4,442,206, Cl. 435-68.000.
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Inoue, Kiyoshi, 4,442,333, Cl. 219-69.00W.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Capacitor-type pulse generator for electrical discharge machining, especially for wire-cutting EDM. 4,442,333, Cl. 219-69.00W.
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Sawada, Yasuhiro; Inoue, Tadashi; and Nishida, Toyoaki, 4,442,389, Cl. 318-642.000.
Instrument AB Scanditronix: *See—*
Brahme, Anders, 4,442,352, Cl. 250-251.000.
Intel Corporation: *See—*
Childs, Robert H. E., Jr.; Klebanoff, Jack L.; and Pollack, Frederick J., 4,442,484, Cl. 364-200.000.
Gargini, Paolo; Beinglass, Israel; and Ahlquist, Norman, 4,441,247, Cl. 29-571.000.
Interlock Industries Limited: *See—*
Davis, Ronald P., 4,441,835, Cl. 403-24.000.
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Hebert, Raymond A., Jr.; Levine, Lewis J.; and Shipp, Kenneth O., Jr., 4,441,829, Cl. 400-63.000.
International Business Machines Corporation: *See—*
Dean, Mark E.; Kummer, David A.; and Saenz, Jesus A., 4,442,428, Cl. 340-703.000.
Fletcher, Robert P.; Stein, David M.; and Wladawsky-Berger, Irving, 4,442,487, Cl. 364-200.000.
Jones, Robert E.; and Wood, Donald H., 4,442,519, Cl. 371-27.000.
Konig, Rainer; Freund, Hans-Ulrich; Heide, Helga; and Sieglen, Rolf A., 4,441,616, Cl. 209-44.100.
Korth, Hans-Erdmann, 4,441,784, Cl. 350-96.150.
Krishnamurty, Rajan; and Voltin, John A., 4,442,463, Cl. 360-60.000.
Kumar, Ananda H., 4,442,137, Cl. 427-57.000.
Le, Trung, 4,442,408, Cl. 330-261.000.
Lipschutz, Lewis D.; Meagher, Ralph E.; and Presti, Frank P., 4,442,450, Cl. 357-81.000.
Ludwick, Sandra L.; Pond, Stanley L.; and Rhodes, Robert T., 4,442,356, Cl. 250-324.000.
Petrozello, James R., 4,441,785, Cl. 350-96.200.
Pipkin, David J., 4,442,144, Cl. 427-355.000.
Poliak, Richard M.; Rivenburgh, Dennis L.; and Sambucetti, Carlos J., 4,441,938, Cl. 148-23.000.
Schutt, Dieter; Schwengler, Manfred; Ulland, Hartmut; and Weis, Helmut H., 4,442,503, Cl. 364-900.000.
Smith, Gerald L., 4,441,805, Cl. 355-14.00R.
International Flavors & Fragrances Inc.: *See—*
Calderone, Nicholas; Watkins, Hugh; and Yoshida, Takao, 4,442,012, Cl. 252-8.600.
International Harvester Co.: *See—*
Hennessey, Richard G., 4,442,477, Cl. 362-52.000.
International Paper Company: *See—*
Empie, Howard L., Jr., 4,441,959, Cl. 162-30.100.
Nowacki, Ulrich G., 4,441,377, Cl. 74-105.000.
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Kurata, Masami; Moriguchi, Fujio; Inui, Toshiharu; and Murayama, Tomio, 4,442,460, Cl. 358-296.000.
Ionescu, Marian I.; Lenker, Jay A.; and Rosenbluth, Robert F., to Shiley, Inc. Tissue heart valve and stent. 4,441,216, Cl. 3-1.500.
Ionics Incorporated: *See—*
Jain, Surendar M., 4,441,978, Cl. 204-301.000.
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Pessier, Rudolf C. O.; Ippolito, Rodolfo M.; and Baker, Billy E., 4,441;566, Cl. 175-374.000.
Ipri, Alfred C.; and Stewart, Roger G., to RCA Corporation. Electrically alterable nonvolatile floating gate memory device. 4,442,447, Cl. 357-41.000.
Irie, Namio: *See—*
Ito, Hideo; and Irie, Namio, 4,441,572, Cl. 180-140.000.
Irvine, Robert L. Catalytic reformer process. 4,441,988, Cl. 208-64.000.
Isaki, Mikio, to Pioneer Electronic Corporation. Head drive mechanism for a cassette deck. 4,442,466, Cl. 360-75.000.
Isgur, Irving E.; and DelVecchio, William D., to W. R. Grace & Co. Aqueous-based polyurethane compositions and method of preparation. 4,442,259, Cl. 524-839.000.
Ishida, Masahiko; Haga, Ryooichi; and Odawara, Yoji, to Agency of Industrial Science and Technology, The. Anaerobic digestion process. 4,442,006, Cl. 210-613.000.
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Ishiguro, Tomoji; and Kizaki, Yoshimi, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Process and apparatus for reducing soot. 4,441,971, Cl. 204-164.000.
Ishijima, Hiroshi; and Koga, Toshiyuki, to Seiko Instruments & Electronics Ltd. Fluorescent X-ray film thickness gauge for very small areas. 4,442,535, Cl. 378-50.000.
Ishikawa, Hiroichi; and Mikami, Toshio, to Toko Kabushiki Kaisha. Direct current power circuit. 4,442,397, Cl. 323-275.000.
Ishikawa, Hiroshi: *See—*
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Felix, Arthur M.; Ishitsuka, Hideo; Meienhofer, Johannes A.; and Ohta, Yumiko, 4,442,031, Cl. 260-112.50R.
Ishizuka, Hiroshi. Method and an apparatus for producing titanium metal from titanium tetrachloride. 4,441,925, Cl. 75-84.500.
Isomura, Shigenori; Kodama, Katsuhiko; Kondo, Toshio; and Kobayashi, Akio, to Nippondenso Co., Ltd. Closed loop mixture control using learning data resettable for fuel evaporation compensation. 4,441,473, Cl. 123-440.000.
Itakura, Shinji: *See—*
Onda, Tsutomu; Kano, Keiichi; and Itakura, Shinji, 4,441,966, Cl. 204-26.000.
Italiano, Victor J., to NCR Corporation. Printing solenoid. 4,441,830, Cl. 400-124.000.
Itaya, Kingo: *See—*
Shibayama, Kimio; Itaya, Kingo; and Fujimoto, Teruo, 4,442,199, Cl. 430-323.000.
Ito, Akio: *See—*
Matsuda, Shunsuke; Ito, Akio; Katsuaki, Mitani; Yoshinobu, Murakami; and Tooru, Tamura, 4,442,061, Cl. 264-328.700.
Ito, Hideo; and Irie, Namio, to Nissan Motor Company, Limited. Method and a system for steering a wheeled vehicle. 4,441,572, Cl. 180-140.000.
Ito, Masazumi: *See—*
Shibazaki, Kenji; and Ito, Masazumi, 4,441,804, Cl. 355-14.00R.
Ito, Takeshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Device for detecting a space between adjacent blocks of data recorded in a recording medium. 4,442,464, Cl. 360-72.100.
Ito, Yoji: *See—*
Shirasaki, Shinji; Tsuzuki, Yoshihiko; Hirabayashi, Yuzi; Okazaki, Hiroshi; Matsuyama, Masahiro; Kobayashi, Masanobu; and Ito, Yoji, 4,442,424, Cl. 340-52.00F.
Ito, Yoshinobu: *See—*
Shiga, Tetsuo; Kimura, Takeo; Ito, Yoshinobu; Akashi, Kageyasu; Akiyama, Minoru; and Matsui, Takeki, 4,442,202, Cl. 430-600.000.
Ito, Yoshinori: *See—*
Nishikawa, Reiji; Satoyama, Shozo; Ito, Yoshinori; and Jyo, Hidetaka, 4,441,974, Cl. 204-192.00R.
Ito, Yoshio: *See—*
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ITT Corporation: *See—*
Anhalt, John W., 4,441,776, Cl. 339-91.00R.
ITT Industries, Inc.: *See—*
Barnard, Richard H., 4,441,372, Cl. 73-861.220.
Ivalda S.p.A.: *See—*
Cavalcante, Mario, 4,441,610, Cl. 206-361.000.
Ive, John G. S.; and Thirlwall, Alan C. Signal error detecting. 4,442,520, Cl. 371-55.000.
Ivie, Rufus A.: *See—*
Wedral, Elaine R.; Hopefl, Richard M.; and Ivie, Rufus A., 4,442,104, Cl. 426-250.000.
Iwagaki, Masaru: *See—*
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Iwaki, Akio; Kita, Noriyasu; Sasazawa, Tatsuya; and Yamaguchi, Hiroyoshi, to Konishiroku Photo Industry Co., Ltd. Photosensitive composition. 4,442,196, Cl. 430-195.000.
Iwasa, Tadanobu; and Ushida, Mituo, to Toyoda Gosei Kabushiki Kaisha. Weather resisting extruded rubbery articles having on the surface thereof a thin layer of a colored rubbery material. 4,442,167, Cl. 428-323.000.
Iwashita, Tomonori: *See—*
Mashimo, Yukio; and Iwashita, Tomonori, 4,441,801, Cl. 354-173.110.
Iwata, Yoshio; Fujita, Tsutomu; Horiuchi, Tsunehisa; and Shimizu, Youichi, to Hitachi, Ltd. Solid-state imaging device. 4,442,456, Cl. 358-213.000.
Iwataki, Isao; Kaeriyama, Minoru; Matsui, Nobuo; and Yamada, Tomio, to Nippon Soda Company, Limited. Heterocyclic compounds. 4,442,116, Cl. 424-270.000.
Izumi, Takusuke, to Anritsu Electric Company Limited. Self-modulating spectrometer. 4,441,815, Cl. 356-328.000.

J. Wagner AG: *See—*
Huber, Willi, 4,441,656, Cl. 239-708.000.
Jackson, John E.; and Doherty, William G., to Union Carbide Corporation. Wear resistant fan blade for centrifugal fan. 4,441,857, Cl. 415-213.00R.
Jackson, Julia S.: *See—*
Mitchell, Terence G.; Barnes, Adrian G.; Jackson, Julia S.; and Bevan, Peter C., 4,441,514, Cl. 131-276.000.
Jackson, William B.; Harvey, Ian G.; and Warren, Philip H., to Electricity Council, The. Heat treatment of rotationally symmetrical workpieces by induction heating. 4,442,332, Cl. 219-10.670.
Jacobson, Robert L., administrator: *See—*
Bishop, Keith C., III; Earls, David E.; Robinson, Richard C.; Blakely, Donald W., deceased; and Jacobson, Robert L., administrator, 4,442,221, Cl. 502-25.000.
Jacobus, Otha J.; and Owen, Donald R. Semiconducting coordination polymers and electrical applications thereof. 4,442,421, Cl. 338-35.000.
Jacquinet, Jean C.: *See—*
Kolar, Cenek; Paulsen, Hans; and Jacquinet, Jean C., 4,442,284, Cl. 536-17.900.
Jain, Surendar M., to Ionics Incorporated. Separation of proteins using electrodialysis - isoelectric focusing combination. 4,441,978, Cl. 204-301.000.
Jakob Muller Forschungs- und Finanz AG: *See—*
Bucher, Robert R., 4,441,530, Cl. 139-432.000.
Jalan, Vinod M.; and Frost, David G., to United States of America, Energy. Method of removing hydrogen sulfide from gases utilizing a zinc oxide sorbent and regenerating the sorbent. 4,442,078, Cl. 423-230.000.
James River-Dixie/Nortern, Inc.: *See—*
Pawlowski, Thomas D., 4,441,608, Cl. 206-45.140.
James, Rolland T.; and Chebra, Ronald J., to Base Ten Systems, Inc. Remote subscriber interaction system. 4,442,320, Cl. 179-5.00R.
Jamieson, Robert S., to California Institute of Technology. Negative coupled inductors for polyphase choppers. 4,442,401, Cl. 323-351.000.
Jandrell, Louis H. M., to Sun-Flex Company, Inc. Coordinate sensing device. 4,442,317, Cl. 178-18.000.
Janome Sewing Machine Co., Ltd.: *See—*
Hanyu, Susumu; and Takenoya, Hideaki, 4,441,439, Cl. 112-158.00E.
Japan Exlan Company, Limited: *See—*
Takegami, Shinsuke; Ban, Kaoru; and Wakitani, Mitsuru, 4,442,173, Cl. 428-372.000.
Jardine, Douglas M., to Kaman Sciences Corporation. Heat reclaiming method and apparatus. 4,441,902, Cl. 62-238.600.
Jarrett, Boaz A.; and Mowbray, Dorian F., to Lucas Industries Limited. Fuel injection pumping apparatus. 4,441,474, Cl. 123-450.000.
Jaspers, Hans: *See—*
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Jasserand, Daniel: *See—*
Heinemann, Henning; Jasserand, Daniel; Milkowski, Wolfgang; Yavordios, Dimitri; and Zeugner, Horst, 4,442,102, Cl. 424-250.000.
Jefferson Industries Company: *See—*
Dill, Terry A., 4,441,651, Cl. 236-49.000.
Jenoptik Jena GmbH: *See—*
Feist, Wieland, 4,441,812, Cl. 356-147.000.
Goring, Hermann; Hentschel, Peter; and Meyl, Wolfgang, 4,442,497, Cl. 364-561.000.
Pohlack, Hubert, 4,441,789, Cl. 350-166.000.
Jensen, James D.: *See—*
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Jeol, Ltd.: *See—*
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Jeslis, Jerome: *See—*
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Johannes, Gerhard; Shroff, Fali; Dullis, Gerhard; and Steidl, Dieter, to Hoechst Aktiengesellschaft. Process for preparing heat-curable, water-dilutable coating compositions for coating metal substrates. 4,442,244, Cl. 523-221.000.
Johnson, David B.: *See—*
Robinson, Robert J.; Johnson, David B.; and Schroeder, Verdell H., 4,441,442, Cl. 112-256.000.
Johnson, Grannis S.: *See—*
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Johnson, James D.: *See—*
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Johnson, Marvin M.: *See—*
McDaniel, Max P.; and Johnson, Marvin M., 4,442,274, Cl. 526-95.000.
Johnson, Milo R., to Texas Instruments Incorporated. Electroluminescent display with laser annealed phosphor. 4,442,136, Cl. 427-53.100.
Johnson, Roger E., to White Consolidated Industries, Inc. Multi-nozzle spray desuperheater. 4,442,047, Cl. 261-66.000.
Johnson, Stanley J., to Deere & Company. Auto spout aimer with delay. 4,441,846, Cl. 414-335.000.
Johnston, David B. R., to Merck & Co., Inc. N-[(5-Halo-2,6-(substituted)pyrazinyl)methylene]amine antimicrobial compounds, compositions and use. 4,442,095, Cl. 424-248.500.
Johnston, David B. R., to Merck & Co., Inc. 2-(Substituted)amino-3-cyano-5-halo-6-(substituted)-pyrazine antimicrobial compounds, compositions and use. 4,442,096, Cl. 424-248.500.
Johnston, David B. R., to Merck & Co., Inc. 3-Acyl-2-(substituted) amino-5-halo-6-(substituted) pyrazine antimicrobial compounds, compositions and use. 4,442,097, Cl. 424-248.500.
Jones, Gordon H.; and Young, John M., to Syntex (U.S.A.) Inc. Naphthoquinone anti-psoriatic agents. 4,442,127, Cl. 424-331.000.
Jones, Joseph K.: *See—*
Underbrink, Gary L.; Wilkes, Lambert H.; and Jones, Joseph K., 4,441,232, Cl. 19-48.00R.
Jones, Robert E.; and Wood, Donald H., to International Business Machines Corporation. Memory address sequence generator. 4,442,519, Cl. 371-27.000.
Jonson, Ingvar: *See—*
Karlsson, Bjorn G. E.; and Jonson, Ingvar, 4,442,492, Cl. 364-464.000.
Jost, Steven R.: *See—*
Bouley, Alan C.; Riedl, Harold R.; Jensen, James D.; and Jost, Steven R., 4,442,446, Cl. 357-30.000.
Joubert, Raymond J. M.; and Bouiller, Jean G., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, "S.N.E.C.M.A.". Mounting devices for multiple flow turbojet engines. 4,441,313, Cl. 60-262.000.
Judd, Duncan B.: *See—*
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Jujo Paper Co., Ltd.: *See—*
Oshima, Hiroyo; Daisaku, Matsukuma; Yutaka, Kojima; Yukio, Kobayashi; and Koichi, Nagai, 4,442,172, Cl. 428-342.000.
Julich, Werner, to Sulzer Brothers Limited. Clutch arrangement for controlling the heddles of a weaving machine. 4,441,528, Cl. 139-66.00R.
Juneau, Paul W., Jr.: *See—*
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Jung, Wilhelm H., to AMF Inc. Anti-friction apparatus for cloth feedplate. 4,441,444, Cl. 112-311.000.
Jyo, Hidetaka: *See—*
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Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo: *See—*
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Kabushiki Kaisha Ishida Koki Seisakusho: *See—*
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Kabushiki Kaisha Kobe Seiko Sho: *See—*
Asari, Akira; Yamamura, Takashige; and Veno, Tsuneya, 4,441,353, Cl. 72-316.000.
Kabushiki Kaisha Komatsu Seisakusho: *See—*
Nagahara, Hiroshi; and Uchimura, Tosio, 4,441,691, Cl. 254-344.000.
Nakahara, Teruo; Ota, Shingo; and Nakamura, Masaru, 4,441,596, Cl. 192-13.00R.
Wakai, Hideyuki; Kashimoto, Masataka; Sakamoto, Chiaki; and Mizutani, Eiji, 4,442,493, Cl. 364-475.000.
Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*
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Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
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Kadowaki, Takashi: *See—*
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Kahn, Alan R.; Clark, Kenneth R.; and Bahr, Dennis E., to Meadox Instruments, Inc. Pressure monitoring and leak detection method and apparatus. 4,441,357, Cl. 73-40.000.
Kajimura, Mutsuhiko; and Maeda, Tetsuji, to Sekisui Plastic Co., Ltd. Expandable styrene-maleic anhydride copolymer particles and a process for molding the same. 4,442,232, Cl. 521-56.000.
Kakeya, Nobuharu; Kitao, Kazuhiko; and Nishimura, Ken-ichi, to Kyoto Yakuhin Kogyo Kabushiki Kaisha. Absorption-promoting compounds, compositions thereof with pharmaceuticals and/or bases for rectal administration and method of use. 4,442,090, Cl. 424-178.000.
Kalen, Ragnar: *See—*
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Kali-Chemie Pharma GmbH: *See—*
Heinemann, Henning; Jasserand, Daniel; Milkowski, Wolfgang; Yavordios, Dimitri; and Zeugner, Horst, 4,442,102, Cl. 424-250.000.
Kallert, Wilhelm: *See—*
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Kalmanash, Michael H.; and Young, Edward L., to United Technologies Corporation. Differential random color switch for beam penetration CRT. 4,442,451, Cl. 358-73.000.
Kaman Sciences Corporation: *See—*
Jardine, Douglas M., 4,441,902, Cl. 62-238.600.

Kamei, Takao: *See—*
Nakabayashi, Yasuyuki; Matsura, Yoshio; Kurihara, Michio; Kamei, Takao; Nakamura, Akira; Komai, Keiichi; Simotamari, Akira; and Matsuno, Izumi, 4,441,260, Cl. 34-15.000.

Kamio, Kazuyoshi: *See—*
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Kamoda, Masaru: *See—*
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Kampe, Wolfgang: *See—*
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Kanda, Kazunori; and Ishikura, Shinichi, to Nippon Paint Co., Ltd. Aqueous coating compositions. 4,442,248, Cl. 523-414.000.

Kanda, Kazunori: *See—*
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Kanno, Hiromasa: *See—*
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Kano, Keiichi: *See—*
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Kanoi, Minoru; Hori, Yasuro; and Maejima, Masaaki, to Hitachi, Ltd. Static induction apparatus. 4,442,419, Cl. 336-100.000.

Kantor, Frederick W. Rotary thermodynamic apparatus and method. 4,441,337, Cl. 62-499.000.

Kaplan, Darryl. Energy saving laundry system. 4,441,340, Cl. 68-12.00R.

Karl M. Reich Maschinenfabrik GmbH: *See—*
Farian, Gerhard, 4,441,644, Cl. 227-130.000.

Karl Mengele & Sohne GmbH & Co.: *See—*
Lippl, Wilhelm, 4,441,305, Cl. 56-15.600.

Karlsson, Bjorn G. E.; and Jonson, Ingvar. Device for central reading and registration of customers power consumption. 4,442,492, Cl. 364-464.000.

Karnis, Alkibiadis; and Shallhorn, Paul M. Method and apparatus for on-line monitoring of specific surface of mechanical pulps. 4,441,960, Cl. 162-49.000.

Kasai, Shinichi; Nakagawa, Sotoji; and Osawa, Nobuyuki, to Nippon Seiko Kabushiki Kaisha. Track guide bearing. 4,441,765, Cl. 308-6.00C.

Kasama, Nobuhiro: *See—*
Kitajima, Tadayuki; and Kasama, Nobuhiro, 4,442,190, Cl. 430-53.000.

Kashimoto, Masataka: *See—*
Wakai, Hideyuki; Kashimoto, Masataka; Sakamoto, Chiaki; and Mizutani, Eiji, 4,442,493, Cl. 364-475.000.

Kashiwa, Norio; and Ushida, Yoshihisa, to Mitsui Petrochemical Industries, Ltd. Process for polymerizing or copolymerizing olefins. 4,442,276, Cl. 526-125.000.

Kashiwagi, Hiromi: *See—*
Yamashita, Keitaro; and Kashiwagi, Hiromi, 4,441,636, Cl. 222-541.000.

Kaster, Robert L. Vascular graft. 4,441,215, Cl. 3-1.400.

Kasunic, Keith J.: *See—*
Reeder, Dennis J.; Campbell, John S.; Kasunic, Keith J.; and Laiterman, Lee H., 4,442,524, Cl. 372-107.000.

Kataoka, Yushin; Matsuda, Masaaki; and Kamoda, Masaru, to Sumitomo Chemical Company, Limited. Aminophosphonic acid chelate resin. 4,442,231, Cl. 521-32.000.

Katayama, Masahiro; Yoshida, Nobutoshi; and Kuge, Tsukasa, to Canon Kabushiki Kaisha. Pressure fixing device. 4,441,417, Cl. 100-176.000.

Kato, Tadaaki: *See—*
Maeda, Yuji; Fujii, Takayoshi; Kobayashi, Yasuhiko; Saito, Kenichi; Kato, Tadaaki; and Yoshikumi, Chikao, 4,442,093, Cl. 424-236.000.

Kato, Tomozo. Bonnetless compact design gate valve. 4,441,688, Cl. 251-327.000.

Kato, Tomozo. Bonnetless compact design globe valve. 4,441,689, Cl. 251-366.000.

Katsuaki, Mitani: *See—*
Matsuda, Shunsuke; Ito, Akio; Katsuaki, Mitani; Yoshinobu, Murakami; and Tooru, Tamura, 4,442,061, Cl. 264-328.700.

Kaufman, Martin H., to United States of America, Navy. Nitrile elastomer treating solution and method of treating nitrile elastomer therewith. 4,442,142, Cl. 427-316.000.

Kaule, Wittich; Schwenk, Gerhard; and Stenzel, Gerhard, to GAO Gesellschaft fur Automation und Organisation mbH. Security document with security features in the form of luminescing substances. 4,442,170, Cl. 428-333.000.

Kawabata, Fumimaru; Shiga, Atsushi; and Yamaguchi, Tadamasa, to Kawasaki Steel Corporation. Four-electrode submerged arc welding process. 4,442,340, Cl. 219-137.0PS.

Kawabata, Nobuaki; Yokoyama, Nobuo; and Araki, Yoshihiko, to Nippon Oil Co. Ltd. Aqueous composition for the protection of paint surfaces. 4,442,140, Cl. 427-154.000.

Kawaguchi, Hiroshi; and Nishina, Shuho, to Toyota Jidosha Kabushiki Kaisha. Foot-operated control device for parking brake. 4,441,380, Cl. 74-512.000.

Kawaguchi, Yoshio: *See—*
Nakata, Shuji; Kawaguchi, Yoshio; and Nishimura, Akira, 4,442,337, Cl. 219-117.100.

Kawahara, Hiroshi: *See—*
Noda, Akinori; Miyasaka, Seiichi; and Kawahara, Hiroshi, 4,442,177, Cl. 428-412.000.

Kawakami, Masamichi, to Koike Sanso Kogyo Co., Ltd. Process and apparatus for exhausting fumes and oxide particles generated by plasma-arc cutting machine. 4,441,934, Cl. 148-9.00R.

Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Nakabayashi, Yasuyuki; Matsura, Yoshio; Kurihara, Michio; Kamei, Takao; Nakamura, Akira; Komai, Keiichi; Simotamari, Akira; and Matsuno, Izumi, 4,441,260, Cl. 34-15.000.

Kawasaki Kasei Chemicals Ltd.: *See—*
Nagaoka, Kazuya; and Yoshii, Sigeru, 4,442,176, Cl. 346-208.000.

Kawasaki Steel Corporation: *See—*
Kawabata, Fumimaru; Shiga, Atsushi; and Yamaguchi, Tadamasa, 4,442,340, Cl. 219-137.0PS.

Kawashima, Syunichiro: *See—*
Ouchi, Hiromu; Kawashima, Syunichiro; Nishida, Masamitsu; and Ueda, Ichiro, 4,442,220, Cl. 501-139.000.

Kazami, Kazuyuki; and Ohtsubo, Yoshiaki, to Nippon Kogaku K.K. Flash device of a camera. 4,441,774, Cl. 315-241.00P.

Keller, Reinhold: *See—*
Prinzbach, Horst; Schwesinger, Reinhard; and Keller, Reinhold, 4,442,299, Cl. 549-545.000.

Kelly, Thomas L. Grid system adhering technique and method of practicing same. 4,441,295, Cl. 52-408.000.

Kemppi Oy: *See—*
Makimaa, Tapani, 4,442,479, Cl. 363-136.000.

Kennecott Corporation: *See—*
TenEyck, John D.; Smith, Russell D.; and Hoff, Kurt W., 4,442,219, Cl. 501-95.000.

Kennedy, Joseph P.; and Frisch, Kurt C., Jr., to University of Akron, The. Cationically polymerizable macromolecular monomers and graft copolymers therefrom. 4,442,261, Cl. 525-324.000.

Kern, Werner, to RCA Corporation. Chemical deposition termination. 4,442,134, Cl. 427-9.000.

Kernforschungszentrum Karlsruhe GmbH: *See—*
Lieser, Karl H.; and Stojanik, Bernd, 4,442,071, Cl. 423-10.000.

Kerr-McGee Chemical Corporation: *See—*
Rado, Theodore A., 4,442,075, Cl. 423-76.000.

Kessler, Willi: *See—*
Pfeifer, Friedrich; and Kessler, Willi, 4,441,940, Cl. 148-121.000.

Khorsand, Hossein. Print hammer apparatus. 4,441,421, Cl. 101-93.040.

Kiel, Bernd-Joachim: *See—*
Fauck, Gerhard; and Kiel, Bernd-Joachim, 4,441,763, Cl. 303-23.00R.

Kienzle, Frank, to Hoffmann-La Roche Inc. 4-Oxothieno[3,2-d]pyrimidine acetic acid esters. 4,442,289, Cl. 544-280.000.

Kikuchi, Yoshiki; Omori, Takashi; Moriguchi, Haruhiko; Moriguchi, Fujio; and Murayama, Tomio, to Fuji Xerox Co., Ltd. Magnetic recording device. 4,442,441, Cl. 346-74.400.

Killat, Ulrich, to U.S. Philips Corporation. Device for recognizing a binary word. 4,442,550, Cl. 455-608.000.

Kim, Chulho; and Weimer, Raymond J., to United States of America, Navy. Inhomogenous anisotropic kinetic energy penetrators. 4,441,237, Cl. 29-1.200.

Kim, Jong C., to C.V. Chemie Combinatie Amsterdam C.C.A. Light bakery products for diabetics and method for the preparation of these products. 4,442,132, Cl. 426-549.000.

Kimble, James B., to Phillips Petroleum Company. Demetallization of hydrocarbon containing feed streams. 4,441,992, Cl. 208-251.00H.

Kimura, Minoru; and Takeuchi, Bunzi, to Tokyo Shibaura Denki Kabushiki Kaisha. SOS Substrate for semiconductor device. 4,442,178, Cl. 428-446.000.

Kimura, Takashi, to Canon Kabushiki Kaisha. Video recorder/camera having a shared drive. 4,442,462, Cl. 360-33.100.

Kimura, Takeo: *See—*
Shiga, Tetsuo; Kimura, Takeo; Ito, Yoshinobu; Akashi, Kageyasu; Akiyama, Minoru; and Matsui, Takeki, 4,442,202, Cl. 430-600.000.

Kinetics Measurement Corp.: *See—*
Edwards, Raymond A.; and Edwards, Keith F., 4,441,505, Cl. 128-726.000.

King, Jack B.: *See—*
Bouchard, Patrick M.; and King, Jack B., 4,441,475, Cl. 123-525.000.

Kingsley, Richard T.; and Sherman, Larry, to Eastman Kodak Company. Easy open carton. 4,441,612, Cl. 206-620.000.

Kinsbron, Eliezer: *See—*
Alspector, Joshua; Kinsbron, Eliezer; and Sternheim, Marek A., 4,441,249, Cl. 29-577.00C.

Kinugawa Rubber Industrial Co., Ltd.: *See—*
Yamaguchi, Toshiaki, 4,442,156, Cl. 428-142.000.

Kirayoglu, Birol; and Zafiroglu, Dimitri P., to Du Pont de Nemours, E. I., and Company. Woodpulp-polyester spunlaced fabrics. 4,442,161, Cl. 428-219.000.

Kirchkamp, Josef: *See—*
Schulz, Wilhelm; and Kirchkamp, Josef, 4,441,365, Cl. 73-331.000.

Kirk, Arthur G. Marker member. 4,442,152, Cl. 428-77.000.

Kirschensteiner, Fred: *See—*
Hicken, Michael G.; Kirschensteiner, Fred; True, Duane A.; and Taleff, Alexander, 4,441,242, Cl. 29-419.00R.

Kiryu, Rikio; and Bessho, Takeshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Gyro stabilization platform for scanning antenna. 4,442,435, Cl. 343-709.000.

Kiss, Gunter H. Process for lining moulded articles and apparatus for performing the process. 4,441,949, Cl. 156-212.000.

Kiss, Gunter H. Apparatus for tucking the edge zone of a surface covering over a supporting edge. 4,441,956, Cl. 156-479.000.

Kissel, Karl-Friedrich: *See—*
Schoening, Josef; Schwiers, Hans-Georg; Elter, Claus; Fritz, Rolf; and Kissel, Karl-Friedrich, 4,442,066, Cl. 376-302.000.

Kita, Noriyasu: *See—*
Iwaki, Akio; Kita, Noriyasu; Sasazawa, Tatsuya; and Yamaguchi, Hiroyoshi, 4,442,196, Cl. 430-195.000.

Kitajima, Tadayuki; and Kasama, Nobuhiro, to Canon Kabushiki Kaisha. Method and apparatus for image formation utilizing a blocking member for blocking an ion flow through a photosensitive screen to provide a non-image area. 4,442,190, Cl. 430-53.000.

Kitamoto, Tatsuji: *See—*
Dezawa, Shin-ichiro; Akashi, Goro; and Kitamoto, Tatsuji, 4,442,159, Cl. 428-212.000.

Kitao, Kazuhiko: *See—*
Kakeya, Nobuharu; Kitao, Kazuhiko; and Nishimura, Ken-ichi, 4,442,090, Cl. 424-178.000.

Kitao, Shoichi: *See—*
Murata, Michihiro; Kitao, Shoichi; and Okabe, Shinsei, 4,442,422, Cl. 338-35.000.

Kitasato Institute, The: *See—*
Kojima, Yasuhiko; Konno, Seishi; Tamamura, Sadao; Hashimoto, Takashi; and Shibukawa, Nobuyuki, 4,442,087, Cl. 424-85.000.

Kizaki, Yoshimi: *See—*
Ishiguro, Tomoji; and Kizaki, Yoshimi, 4,441,971, Cl. 204-164.000.

Klamann, Helmut: *See—*
Rau, Wolfgang; Klamann, Helmut; and Hennenberger, Peter, 4,442,271, Cl. 526-61.000.

Klebanoff, Jack L.: *See—*
Childs, Robert H. E., Jr.; Klebanoff, Jack L.; and Pollack, Frederick J., 4,442,484, Cl. 364-200.000.

Klee, David J.; and Nelson, Peter C., to Air Products and Chemicals, Inc. Temperature actuated valve and phase separation method. 4,441,327, Cl. 62-51.000.

Klein, Robert E., to Harris Corporation. Apparatus for reducing aerodynamic drag in system for air cooling a high power vacuum tube. 4,442,373, Cl. 313-35.000.

Kleinschmit, Peter: *See—*
Panster, Peter; and Kleinschmit, Peter, 4,442,040, Cl. 260-429.00R.

Knapp, William; Dunn, William; and Smith, Kent F., to General Instrument Corporation. Storage cells for use in two conductor data column storage logic arrays. 4,442,508, Cl. 365-104.000.

Knasel, Thomas M.: *See—*
Houghton, Alexander J.; and Knasel, Thomas M., 4,441,783, Cl. 350-96.100.

Kneer, Manfred M., to Leviton Manufacturing Company, Inc. Lampsocket mechanism. 4,441,782, Cl. 339-199.00R.

Knorreck, Peter, to Robert Bosch GmbH. Charge-pressure-dependent control apparatus for supercharged fuel-injection engines, in particular for Diesel motor vehicle engines. 4,441,472, Cl. 123-383.000.

Knowles, Philip: *See—*
Ramsden, Christopher A.; Knowles, Philip; Lewis, Edward J.; Lunt, Edward; and Wright, Derek E., 4,442,115, Cl. 424-269.000.

Kobayashi, Akio: *See—*
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Kobayashi, Masanobu: *See—*
Shirasaki, Shinji; Tsuzuki, Yoshihiko; Hirabayashi, Yuzi; Okazaki, Hiroshi; Matsuyama, Masahiro; Kobayashi, Masanobu; and Ito, Yoji, 4,442,424, Cl. 340-52.00F.

Kobayashi, Noboru: *See—*
Sashiki, Takashi; Matsuno, Masaaki; Kobayashi, Noboru; and Mikami, Yoshiharu, 4,441,569, Cl. 177-211.000.

Kobayashi, Yasuhiko: *See—*
Maeda, Yuji; Fujii, Takayoshi; Kobayashi, Yasuhiko; Saito, Kenichi; Kato, Tadaaki; and Yoshikumi, Chikao, 4,442,093, Cl. 424-236.000.

Kochie, Joseph E.: *See—*
Biswas, Bimal K.; and Kochie, Joseph E., 4,441,822, Cl. 366-101.000.

Kodama, Katsuhiko: *See—*
Isomura, Shigenori; Kodama, Katsuhiko; Kondo, Toshio; and Kobayashi, Akio, 4,441,473, Cl. 123-440.000.

Kodera, Masao; and Akita, Sigeyuki, to Nippon Soken, Inc. Ultrasonic wave transmitting and receiving device for vehicles. 4,442,512, Cl. 367-87.000.

Koelmel, Donald F.: *See—*
Shalaby, Shalaby W.; and Koelmel, Donald F., 4,441,496, Cl. 128-335.500.

Koenig & Bauer Aktiengesellschaft: *See—*
Germann, Albrecht J., 4,441,423, Cl. 101-175.000.

Koffee Keeper, Inc.: *See—*
Genuit, James E.; and Cooper, Gary, 4,442,343, Cl. 219-433.000.

Koga, Keiichiro: *See—*
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Koga, Toshiyuki: *See—*
Ishijima, Hiroshi; and Koga, Toshiyuki, 4,442,535, Cl. 378-50.000.

Kogyo Gijutsuin: *See—*
Abe, Toshio; Ishikawa, Hiroshi; and Suhara, Shigeo, 4,441,324, Cl. 60-753.000.

Kohno, Hideki: *See—*
Suzuki, Atsushi; Yamada, Hiromichi; Uchida, Yoko; Kohno, Hideki; Fukino Tadashi; and Yoshida, Minoru, 4,442,360, Cl. 250-486.100.

Kohyama, Mikihiro; and Ohta, Kozo, to Honda Giken Kogyo Kabushiki Kaisha. Rear cover device for motorcycles. 4,441,574, Cl. 180-219.000.

Koichi, Nagai: *See—*
Oshima, Hiroyo; Daisaku, Matsukuma; Yutaka, Kojima; Yukio, Kobayashi; and Koichi, Nagai, 4,442,172, Cl. 428-342.000.

Koike, Masao: *See—*
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Koike Sanso Kogyo Co., Ltd.: *See—*
Kawakami, Masamichi, 4,441,934, Cl. 148-9.00R.

Kojima, Yasuhiko; Konno, Seishi; Tamamura, Sadao; Hashimoto, Takashi; and Shibukawa, Nobuyuki, to Kitasato Institute, The. Interferon inducer, a process for producing the same and pharmaceutical composition containing the same. 4,442,087, Cl. 424-85.000.

Kolar, Cenek; Paulsen, Hans; and Jacquinet, Jean C., to Behringwerke Aktiengesellschaft. Chemical compounds, aminoacid attached to glycoside. 4,442,284, Cl. 536-17.900.

Kolb, Gunter, deceased: *See—*
Probst, Joachim; Riberi, Bernd; Kolb, Gunter, deceased; and Hohlein, Peter, 4,442,145, Cl. 427-385.500.

Kolb, Ingeborg, heiress: *See—*
Probst, Joachim; Riberi, Bernd; Kolb, Gunter, deceased; and Hohlein, Peter, 4,442,145, Cl. 427-385.500.

Kolycheck, Edmond G., to B. F. Goodrich Company, The. Polyurethane covered golf balls. 4,442,282, Cl. 528-83.000.

Komai, Keiichi: *See—*
Nakabayashi, Yasuyuki; Matsura, Yoshio; Kurihara, Michio; Kamei, Takao; Nakamura, Akira; Komai, Keiichi; Simotamari, Akira; and Matsuno, Izumi, 4,441,260, Cl. 34-15.000.

Komura, Tamotsu: *See—*
Tsunekawa, Masayoshi; Yoshida, Shinzo; and Komura, Tamotsu, 4,442,239, Cl. 523-116.000.

Komuro, Katsu: *See—*
Mitsui, Nobuo; Maeda, Yasuyuki; Kurihara, Tomiaki; Shima, Seiya; Hatakeyama, Takanobu; and Komuro, Katsu, 4,441,584, Cl. 187-29.00R.

Kondo, Toshio: *See—*
Isomura, Shigenori; Kodama, Katsuhiko; Kondo, Toshio; and Kobayashi, Akio, 4,441,473, Cl. 123-440.000.

Kongable, Lowell S.; and Bauer, Clint E., to Motorola, Inc. Narrow band digital filter. 4,442,500, Cl. 364-724.000.

Konig, Rainer; Freund, Hans-Ulrich; Heide, Helga; and Sieglen, Rolf A., to International Business Machines Corporation. Process for sorting coarse to fine materials according to their chemical composition. 4,441,616, Cl. 209-44.100.

Konishiroku Photo Industry Co., Ltd.: *See—*
Iwaki, Akio; Kita, Noriyasu; Sasazawa, Tatsuya; and Yamaguchi, Hiroyoshi, 4,442,196, Cl. 430-195.000.
Momose, Haruhiko; Takahashi, Toshiaki; and Hoshino, Yasushi, 4,441,810, Cl. 356-1.000.
Takada, Syun; Kadowaki, Takashi; Okumura, Mitsuhiro; Nakamura, Shinichi; and Iwagaki, Masaru, 4,442,201, Cl. 430-569.000.
Watanabe, Koji; Higuchi, Yoshihiro; Yagi, Michio; and Shiozawa, Kazuo, 4,441,798, Cl. 354-483.000.
Yamamoto, Takeshi; and Goto, Kiyoshi, 4,442,195, Cl. 430-191.000.

Konno, Seishi: *See—*
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Kool-Fire Limited: *See—*
VanderVaart, Gerry, 4,441,546, Cl. 165-29.000.

Kool-Stop International Inc.: *See—*
Everett, Richard C., 4,441,592, Cl. 188-264.00A.

Koonce, George R.: *See—*
Pfeifer, George F.; Koonce, George R.; and Phillips, Jack E., 4,442,351, Cl. 250-237.00G.

Koopman, Donald E.: *See—*
Buirley, William L.; Koopman, Donald E.; McQuain, David B.; and Reeves, William H., 4,441,508, Cl. 128-736.000.

Koopmans, Luitzen B. Displaceable winch device. 4,441,690, Cl. 254-279.000.

Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Muacevic, Gojko; and Traunecker, Werner, to Boehringer Ingelheim KG. 1-Aryloxy-3-alkylamino-propan-2-ols. 4,442,120, Cl. 424-282.000.

Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Muacevic, Gojko; and Traunecker, Werner, to Boehringer Ingelheim K.G. 1-Aryloxy-3-alkinylamino-propan-2-ols. 4,442,121, Cl. 424-282.000.

Korth, Hans-Erdmann, to International Business Machines Corporation. Paraboloidal coupler for light wave guides. 4,441,784, Cl. 350-96.150.

Korzaniewski, Mark M. Weight lifting type exercising device. 4,441,706, Cl. 272-118.000.

Kosa, Bruce G., to Rogers Corporation. Nylon foam. 4,442,234, Cl. 521-112.000.

Kosmoski, Jeffrey P., to McDonnell Douglas Corporation. Foot actuated latch. 4,441,842, Cl. 410-81.000.

Kosugi, Masao, to Canon Kabushiki Kaisha. Disc orienting device. 4,441,853, Cl. 414-757.000.

Kotani, Shintaro; Abiko, Ichimatsu; Arae, Takashi; Chiba, Mio; Araki, Tomoo; and Kanno, Hiromasa, to Oki Electric Industry Co., Ltd. Display apparatus utilizing a thermally color reversible display medium which has a hysteresis effect. 4,442,429, Cl. 340-786.000.

Kotsifas, Peter N.; Wetzel, Victor H.; and Gilson, Richard W., to Sherwood Medical Company. Endometrial sampling device. 4,441,509, Cl. 128-757.000.

- Kovaleski, Joseph J., to Wyrepak Industries, Inc. Rubber-lagged sheave. 4,441,692, Cl. 254-390.000.
- Kovan Engineering Pty. Ltd.: *See—*
  - Anderson, Michael P., 4,441,393, Cl. 83-360.000.
- Kowa Shoji Kabushiki Kaisha: *See—*
  - Mori, Kashichi, 4,441,413, Cl. 99-542.000.
- Krallmann, Reinhold: *See—*
  - Hartwig, Ernst; and Krallmann, Reinhold, 4,442,287, Cl. 544-187.000.
- Kramer, Charles F., to Steel Heddle Manufacturing Company. Stabilized shuttle grip. 4,441,529, Cl. 139-207.000.
- Kramer Industries, Inc.: *See—*
  - Most, Ivan G.; and Hubble, William S., 4,441,922, Cl. 75-25.000.
- Kramer, Ted J.: *See—*
  - Franklin, James L.; and Kramer, Ted J., 4,442,475, Cl. 361-383.000.
- Kratt, Alfred; Kraus, Bernd; and Plapp, Gunther, to Robert Bosch GmbH. Apparatus for regulating the idling rpm of internal combustion engines. 4,441,471, Cl. 123-339.000.
- Kraus, Bernd: *See—*
  - Kratt, Alfred; Kraus, Bernd; and Plapp, Gunther, 4,441,471, Cl. 123-339.000.
- Kreiner, Hans-Jurg, to Munchener Apparatebau fur elektronische Ger/e Kimmel GmbH. Apparatus for detecting α-rays present in a specified energy range. 4,442,358, Cl. 250-435.000.
- Krishnamurty, Rajan; and Voltin, John A., to International Business Machines Corporation. Safeguarding of data recorded on disk by tunnel erase magnetic head assembly. 4,442,463, Cl. 360-60.000.
- Kropp, Lev: *See—*
  - Becker, Kenneth W.; Friedrichs, Louis G., Jr.; Kropp, Lev; and Straka, Richard B., 4,441,406, Cl. 99-275.000.
- Kubie, Jan: *See—*
  - Boutin, Francois-Regis; and Kubie, Jan, 4,441,933, Cl. 148-2.000.
- Kubis, Heribert; and Schott, Karl, to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Oil pump arrangement. 4,441,866, Cl. 417-364.000.
- Kubo, Seitoku; Kuramochi, Koujiro; and Kyushima, Tatsuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Fluid type torque converter apparatus. 4,441,594, Cl. 192-3.280.
- Kubo, Yutaka: *See—*
  - Ota, Hideo; and Kubo, Yutaka, 4,442,485, Cl. 364-200.000.
- Kubota Ltd.: *See—*
  - Hiraishi, Hisashi; Yamakami, Yoshiaki; and Shintani, Atsunobu, 4,441,926, Cl. 75-128.00A.
  - Sugitani, Junichi; Yoshimoto, Teruo; and Takahashi, Makoto, 4,442,068, Cl. 420-584.000.
- Kuester, Frank E., to Brunswick Corporation. Chemical and biological resistant material and method of fabricating same. 4,442.162, Cl. 428-245.000.
- Kuge, Tsukasa: *See—*
  - Katayama, Masahiro; Yoshida, Nobutoshi; and Kuge, Tsukasa, 4,441,417, Cl. 100-176.000.
- Kughn, Richard P.: *See—*
  - Buehrig, Gordon M., 4,441,752, Cl. 296-1.00S.
- Kuhn, John B., to Deere & Company. Implement working height-adjustment mechanism. 4,441,306, Cl. 56-15.900.
- Kuhnel, Werner: *See—*
  - Baumann, Heinz; Kuhnel, Werner; and Rattner, Manfred, 4,442,483, Cl. 363-131.000.
- Kuhner, Gerhard; Wolff, Siegfried; and Rothbuhr, Lothar, to Degussa Aktiengesellschaft. Resorcinol-filler preparation, process for the production and use of the same. 4,442,163, Cl. 428-262.000.
- Kuhr, Manfred: *See—*
  - Berger, Dieter; Braun, Franz; Frey, Gunter; Guthlein, Werner; and Kuhr, Manfred, 4,442,033, Cl. 260-158.000.
- Kumar, Ananda H., to International Business Machines Corporation. Maskless coating of metallurgical features of a dielectric substrate. 4,442,137, Cl. 427-57.000.
- Kumar, Kaplesh; and Das, Dilip K., to Charles Stark Draper Laboratory, Inc., The. Apparatus for differential expansion volume compaction. 4,441,874, Cl. 425-78.000.
- Kummer, David A.: *See—*
  - Dean, Mark E.; Kummer, David A.; and Saenz, Jesus A., 4,442,428, Cl. 340-703.000.
- Kummer, Werner: *See—*
  - Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Muacevic, Gojko; and Traunecker, Werner, 4,442,120, Cl. 424-282.000.
  - Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Muacevic, Gojko; and Traunecker, Werner, 4,442,121, Cl. 424-282.000.
- Kumpe, Gerhardt: *See—*
  - Heber, Helmut; Schwinn, Horst; Heimburger, Norbert; Kumpe, Gerhardt; and Schick, Manfred, 4,442,213, Cl. 435-217.000.
- Kunz, Walter; Eckhardt, Wolfgang; Hubele, Adolf; and Riebli, Peter, to Ciba-Geigy Corporation. Homoserine derivatives and their use as microbicides. 4,442,117, Cl. 424-273.00R.
- Kupisiewicz, Stefan; and Schoebrechts, Jacques J. F. Rotating electrical machine. 4,442,368, Cl. 310-201.000.
- Kuramochi, Koujiro: *See—*
  - Kubo, Seitoku; Kuramochi, Koujiro; and Kyushima, Tatsuo, 4,441,594, Cl. 192-3.280.
- Kurashima, Hideo. Decorative cufflink. 4,441,234, Cl. 24-41.000.
- Kurashima, Hideo: *See—*
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- Kurata, Masami; Moriguchi, Fujio; Ohmori, Takashi; and Makino, Katsuo, to Fuji Xerox Co., Ltd. Two-color copying machine. 4,442,452, Cl. 358-75.000.
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- Kurihara, Michio: *See—*
  - Nakabayashi, Yasuyuki; Matsura, Yoshio; Kurihara, Michio; Kamei, Takao; Nakamura, Akira; Komai, Keiichi; Simotamari, Akira; and Matsuno, Izumi, 4,441,260, Cl. 34-15.000.
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- Kurokawa, Yoshiki: *See—*
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  - Le Polles, Jean-Bernard; Martin, Michel; Nadler, Guy; and Saias, Edmond, 4,442,108, Cl. 424-258.000.
- Lacaze, Albert: *See—*
  - Bon-Mardion, Gilbert; Claudet, Gerard; and Lacaze, Albert, 4,441,325, Cl. 62-3.000.
- La Dow, William R.: *See—*
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- Langen, Marinus J. M., to H. J. Langen & Sons Limited. Carton-closing machine. 4,441,303, Cl. 53-374.000.
- Langer, Arthur W., Jr., to Exxon Reserch and Engineering Co. Preparation of linear olefin products. 4,442,309, Cl. 585-523.000.
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  - Carlson, Norman R.; Roesner, Raymond E.; and Lanuke, Edward W., 4,441,361, Cl. 73-155.000.
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  - Zolner, Dieter H.; Rittmann, Friedrich; Dung, Herbert; Haremsa, Johannes; Bauer, Georg; Otto, Josef; Muhlenbeck, Josef; and Lauterbach-Dammler, Inge, 4,442,525, Cl. 373-93.000.
- Lawrence Fell Limited: *See—*
  - Takeuchi, Seiji, 4,441,627, Cl. 220-461.000.
- Lay, Larry D. Bowling ramp attachment for wheelchairs. 4,441,710, Cl. 273-54.00R.
- Le, Trung, to International Business Machines Corporation. Differential amplifier with auto bias adjust. 4,442,408, Cl. 330-261.000.
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  - Bowman, Clyde L.; DeVries, Charles R.; and Saur, Charles W., 4,441,607, Cl. 198-781.000.
- Lebrun, Philippe; and de Saint Georges-Gridelet, Daniele, to Gist-Brocades N.V. Process for combatting and/or preventing allergic diseases employing natamycin. 4,442,091, Cl. 424-181.000.
- Lederer, David B., to Detection Systems, Inc. Multiple field-of-view optical system. 4,442,359, Cl. 250-342.000.
- Ledex, Inc.: *See—*
  - Myers, John L., 4,442,418, Cl. 335-230.000.
- Lee, Gim F., Jr.: *See—*
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- Lee, John M.; Baumen, William C.; Wolcott, Richard A.; and Burba, John L., III, to Dow Chemical Company, The. Higher density ion exchange resins of metal compound precipitated within pores. 4,442,230, Cl. 521-28.000.
- Lee, Julia L.: *See—*
  - Crivello, James V.; and Lee, Julia L., 4,442,197, Cl. 430-280.000.
- Lees, Gerard D.; and Causby, Barry D., to Fiber Industries, Inc. Partially oriented polyester yarn finish. 4,442,249, Cl. 523-455.000.
- Lehmann, William L., to RCA Corporation. Television receiver tuning circuit tunable over a wide frequency range. 4,442,548, Cl. 455-195.000.
- Lehrer, William I.; and Deal, Bruce E., to Fairchild Camera and Instrument Corp. Binary germanium-silicon interconnect and electrode structure for integrated circuits. 4,442,449, Cl. 357-67.000.
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  - Beneke, Wolfgang; and Leifeld, Ferdinand, 4,441,994, Cl. 209-139.00R.
- Leiper, Fred B., to Hardware Designers, Inc. Bottom mounted drawer slide assembly. 4,441,773, Cl. 312-330.00R.
- Leiper, Fred S.: *See—*
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  - Pounds, Douglas W., 4,441,486, Cl. 128-24.00A.
- LeMaitre, Patrick: *See—*
  - Hulin, Jean P.; Bouvard, Andre; and LeMaitre, Patrick, 4,441,786, Cl. 350-96.210.
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- Lenderking, Bruce N.; and Bocklage, Casper J., Jr., to Westinghouse Electric Corp. Versatile printed circuit board termination rack. 4,442,476, Cl. 361-395.000.
- Lenker, Jay A.: *See—*
  - Ionescu, Marian I.; Lenker, Jay A.; and Rosenbluth, Robert F., 4,441,216, Cl. 3-1.500.
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- Leonard, Murray: *See—*
  - Rickman, Mark A.; and Leonard, Murray, 4,441,480, Cl. 126-42.000.
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  - Hain, Paul O.; and Lepisto, J. George, 4,441,613, Cl. 206-621.000.
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  - Salina, Louis E.; and Lescovich, Joseph E., 4,442,395, Cl. 320-48.000.
- Lescrenier, Charles. Image plane indicator. 4,442,533, Cl. 378-21.000.
- Lesquereux, Pierre-Andre: *See—*
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- Lessard, Dennis E.; and Sabourin, Paul F., to General Electric Company. Ultrasonic detection of extended flaws. 4,441,369, Cl. 73-602.000.
- Leszkiewicz, Edmund E. Swimming spoon lure. 4,441,275, Cl. 43-42.060.
- Leupold, Ernst I.; Schmidt, Hans-Joachim; Wunder, Friedrich; Arpe, Hans-Jurgen; and Hachenberg, Horst, to Hoechst Aktiengesellschaft. Process for the manufacture of ethanol from synthesis gas. 4,442,228, Cl. 518-714.000.
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- Lever Brothers Company: *See—*
  - Ruppert, Ronald M.; and Padron, Tamara, 4,441,881, Cl. 8-137.000.
- Levin, Rafael M., to Bell Telephone Laboratories, Incorporated. Method of making self-aligned guard regions for semiconductor device elements. 4,441,931, Cl. 148-1.500.
- Levine, Lewis J.: *See—*
  - Hebert, Raymond A., Jr.; Levine, Lewis J.; and Shipp, Kenneth O., Jr., 4,441,829, Cl. 400-63.000.
- Leviton Manufacturing Company, Inc.: *See—*
  - Kneer, Manfred M., 4,441,782, Cl. 339-199.00R.
- Lew, Hyok S. Variable camber fluid power machine. 4,441,858, Cl. 416-17.000.
- Lewis, Edward J.: *See—*
  - Ramsden, Christopher A.; Knowles, Philip; Lewis, Edward J.; Lunt, Edward; and Wright, Derek E., 4,442,115, Cl. 424-269.000.
- Lewis, Robert M.; Ryan, Robert C.; and Slaugh, Lynn H., to Shell Oil Company. Conversion of dimethyl ether to formaldehyde using Bi-Mo-Fe catalyst. 4,442,307, Cl. 568-470.000.
- Lewis, Shelton E.: *See—*
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- Li, Yao T. Distillation apparatus. 4,441,963, Cl. 202-172.000.
- Libit, Sidney M. Dispensing type cap closure. 4,441,637, Cl. 222-556.000.
- Lichtenberger, Rosemary K., to Cooper Industries, Inc. Fiber optic cable and method of manufacture. 4,441,787, Cl. 350-96.230.
- Lieser, Karl H.; and Stojanik, Bernd, to Kernforschungszentrum Karlsruhe GmbH. Extraction of plutonium ions from aqueous sulfuric acid solutions with D_2EHPA or D_2EHPA/TOPO. 4,442,071, Cl. 423-10.000.
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  - Hulin, Jean P.; Bouvard, Andre; and LeMaitre, Patrick, 4,441,786, Cl. 350-96.210.
- Likins, Merle R., Jr.; and Stacy, Galen D., to Phillips Petroleum Company. Carbon black furnace apparatus. 4,442,069, Cl. 422-62.000.
- Liljekvist, Bernt S., to Santrade Ltd. Guiding device for percussion drills. 4,441,565, Cl. 175-325.000.
- Lilly Industries Limited: *See—*
  - Simmonds, Robin G., 4,442,032, Cl. 260-149.000.
- Lim, Drahoslav, to Barnes-Hind/Hydrocurve, Inc. Treatment of cellulose acetate butyrate contact lenses. 4,442,141, Cl. 427-164.000.
- Limousin, Louis. Nesting modular elements, and their method of assembly. 4,441,298, Cl. 52-594.000.
- Limque, Ferdinand; Luiten, Cornelis H.; Bless, Franz; Neubauer, Reinhard; and Lange, Dietmar, to Limque, Ferdinand. Furnace for the heat treatment of drills. 4,441,698, Cl. 266-249.000.
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- Lindbom, Torsten H., to Unimation, Inc. Safe programming system for industrial robots. 4,442,387, Cl. 318-568.000.
- Linde Aktiengesellschaft: *See—*
  - Breider, Edmund J., 4,442,005, Cl. 210-614.000.
- Lindner, Friedrich; and Scheunemann, Kurt, to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt E.V. Increasing the cycle stability of a sodium sulfate heat exchange medium by adding sulfuric acid. 4,442,016, Cl. 252-70.000.
- Liou, Tony; and Wang, Richard, to Collins Company, Ltd. Lounge chair with improved arm rests. 4,441,756, Cl. 297-39.000.
- Lippl, Wilhelm, to Karl Mengele & Sohne GmbH & Co. Multi-row corn cutter forage harvester and/or corn picker forage harvester. 4,441,305, Cl. 56-15.600.
- Lipschutz, Lewis D.; Meagher, Ralph E.; and Presti, Frank P., to International Business Machines Corporation. Cooling element for solder bonded semiconductor devices. 4,442,450, Cl. 357-81.000.
- Liquid Carbonic Inc.: *See—*
  - Reed, Gordon A. D., 4,442,143, Cl. 427-340.000.
- Livingston, William T.: *See—*
  - McKelvey, Harold E.; Livingston, William T.; and Sheldon, Edward D., 4,441,909, Cl. 65-273.000.
- Lobdell, Alban J., to Camelot Industries Corporation. Molded multifocal lens and mold assembly. 4,441,795, Cl. 351-169.000.
- Lockett, Roger A.: *See—*
  - Baker, Geoffrey; and Lockett, Roger A., 4,442,357, Cl. 250-338.000.
- Lockwood International B.V.: *See—*
  - Douwenga, Rudolf, 4,441,304, Cl. 53-568.000.
- Loctite (Ireland) Limited: *See—*
  - Charnock, Ronald S., 4,442,267, Cl. 525-309.000.
- Lohmar, Ernst; and Wenneis, Wolffried, to Carl Freudenberg, Firma. Method for the manufacture of cross-linked and optionally foamed polypropylene. 4,442,233, Cl. 521-98.000.
- Lohr, Raymond J. Balloon game. 4,441,719, Cl. 273-402.000.
- Lolli, Carla P. Universal file with inner gluing back for thermal gluing systems. 4,441,950, Cl. 156-216.000.
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  - Gagliani, John; and Long, John V., 4,442,283, Cl. 528-323.000.

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Lottick, Edward A. Non-spillable drinking container. 4,441,640, Cl. 224-252.000.

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Lower, Ralph C.; and Shirley, Roger D., to Robinair Manufacturing Corporation. Refrigerant recovery and recharging system. 4,441,330, Cl. 62-149.000.

Lowry, Gary H.; and Simmons, John A. Teat cup stopper. 4,441,455, Cl. 119-14.470.

Lu, Chin H.; and AuClair, Christopher J., to Xerox Corporation. Toner compositions containing polyanhydride resins. 4,442,189, Cl. 430-45.000.

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Ludwick, Sandra L.; Pond, Stanley L.; and Rhodes, Robert T., to International Business Machines Corporation. Corona wire assembly and method. 4,442,356, Cl. 250-324.000.

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Lundberg, Robert D.; Thaler, Warren A.; and Agarwal, Pawan K., to Exxon Research and Engineering Co. Blend compounds of sulfonated polymers and compositions thereof. 4,442,253, Cl. 524-211.000.

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Lunt, Edward: *See—*
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Lyon, Harry H.: *See—*
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Heckler, Hatto; Petersen, Godber; and Frick, Alfons, 4,441,390, Cl. 83-154.000.

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Macabee, L. Cedric, 4,441,488, Cl. 128-66.000.

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Macnab, John E., to Towmotor Corporation. Lift mast assembly. 4,441,585, Cl. 187-95.000.

Maeda, Tetsuji: *See—*
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Maeda, Yuji; Fujii, Takayoshi; Kobayashi, Yasuhiko; Saito, Kenichi; Kato, Tadaaki; and Yoshikumi, Chikao, to Kureha Kagaku Kogyo Kabushiki Kaisha. Method for administering 24,25-dihydroxycholecalciferol to persons suffering from hypercalcemia. 4,442,093, Cl. 424-236.000.

Maejima, Masaaki: *See—*
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Main, William E., to Motorola, Inc. Meter drive circuit. 4,442,549, Cl. 455-211.000.

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Malik, Roger J.; and AuCoin, Thomas R., to United States of America, Army. Planar doped barrier gate field effect transistor. 4,442,445, Cl. 357-22.000.

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Mancini, Derek V., to Consumers Glass Company Limited. Container chute for fast reception of nested containers. 4,441,618, Cl. 211-49.00D.

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Manor, Henry A., to Balmar Crimp Tool Corp. Hand tool linkage. 4,441,388, Cl. 81-300.000.

Manoury, Philippe: *See—*
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Marc, Michel. Flow molding. 4,441,876, Cl. 425-174.80E.

Marcellis, Alphonso W.; Johnson, Grannis S.; and Fleming, Joseph P., to Diamond Shamrock Chemicals Company. Superplasticizers for cementitious compositions. 4,441,929, Cl. 106-90.000.

Marciandi, Franco; and Relvini, Pasquale, to Montedison S.p.A. Self-extinguishing polyolefinic compositions. 4,442,255, Cl. 524-414.000.

Margaret's Fine Food Ltd.: *See—*
Nagy, Alex J.; and Reed, William G., 4,442,131, Cl. 426-518.000.

Marin, Robert A.: *See—*
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Mark, Seymour, to Gulf & Western Industries, Inc. Coal-aqueous mixtures. 4,441,889, Cl. 44-51.000.

Marklund, Olle E. Arrangement in drum mills. 4,441,659, Cl. 241-70.000.

Marks, Alvin M. Electroordered dipole suspension. 4,442,019, Cl. 252-309.000.

Marquarding, Dieter; and Aigner, Helmut. Process for the preparation of acid amides and application of the process. 4,442,029, Cl. 260-112.50R.

Marquardt GmbH: *See—*
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Marquart, Vernon W.; and Pawlikowski, Walter W., to Minnesota Mining and Manufacturing Company. Dust mop. 4,441,228, Cl. 15-229.0BP.

Martensson, Anders K.: *See—*
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Martin, Frank A.: *See—*
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Martin, Ivan E.: *See—*
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Martin, Joel L., to Phillips Petroleum Company. Polymerization process using catalyst having aqueous titanation of support with solubilized $Ti(OR)_4$. 4,442,275, Cl. 526-96.000.

Martin, Joel L., to Phillips Petroleum Company. Process and catalyst for olefin polymerization. 4,442,277, Cl. 526-125.000.

Martin Marietta Corporation: *See—*
Tobey, William H., 4,441,376, Cl. 74-89.150.

Martin, Michel: *See—*
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Martin-Smith, Michael: *See—*
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Martinka, Michael: *See—*
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Martner, John G., to Exxon Research and Engineering Co. Apparatus and method to eject ink droplets on demand. 4,442,443, Cl. 346-140.00R.

Maruyama, Yuji; and Horinishi, Katsumi, to West Electric Co., Ltd. Electronic flash device capable of automatically controlling the quantity of a flash of light. 4,441,797, Cl. 354-416.000.

Marx, Hans-Norbert; and Gottsche, Reimer, to BASF Aktiengesellschaft. Fireproofing composition and door rabbet coated therewith. 4,442,157, Cl. 428-173.000.

Masaru, Fujimura: *See—*
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Maschinenfabrik Hennecke GmbH: *See—*
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Mashimo, Yukio; and Iwashita, Tomonori, to Canon Kabushiki Kaisha. Motor driven camera. 4,441,801, Cl. 354-173.110.

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Mason, Stuart V., to Forster, Paul. Airfoils for land vehicles. 4,441,753, Cl. 296-1.00S.

Massachusetts Institute of Technology: *See—*
Fan, John C. C., 4,442,166, Cl. 428-323.000.
Varshavsky, Alexander J., 4,442,203, Cl. 435-6.000.

Massey, David H., to PMP Corporation. Building board composition and method of making same. 4,441,944, Cl. 156-71.000.

Mastroni, Joseph. Golf club coupling assembly. 4,441,837, Cl. 403-300.000.

Masuko, Akinori: *See—*
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Masur, John J. Fishing lure holder. 4,441,274, Cl. 43-25.200.

Matematicko-fyzikalni fakulta University Karlovy v Praze: *See—*
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Matsuda, Masaaki: *See—*
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Matsuda, Shunsuke; Ito, Akio; Katsuaki, Mitani; Yoshinobu, Murakami; and Tooru, Tamura, to Matsushita Electric Industrial Co., Ltd. Heat cycle injection compression molding method and a temperature control apparatus. 4,442,061, Cl. 264-328.700.

Matsui, Nobuo: *See—*
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Matsumura, Sowjun; Araki, Ken; Otaka, Tetsuo; and Tanigawa, Masumi, to C. Uyemura & Co., Ltd. Codeposition method. 4,441,965, Cl. 204-16.000.

Matsuno, Izumi: *See—*
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Matsuno, Masaaki: *See—*
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Matsushita Electric Industrial Co., Ltd.: *See—*
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Sakurada, Okinobu, 4,441,370, Cl. 73-651.000.
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Matsuyama, Masahiro: *See—*
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Matt, Joseph; and Ferrara, John M., to Nalco Chemical Company. Coal-water slurry viscosity reduction using olefin/maleic acid salt copolymers. 4,441,888, Cl. 44-51.000.

Matukura, Yoshiharu; and Sudo, Denpei, to Takeda Chemical Industries, Ltd.; and Daikyo Gomu Seiko, Ltd. Pierceable closure member for vial. 4,441,621, Cl. 215-247.000.

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Mauries, Reinhard: *See—*
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Maxon, Glenway W., III, to Maxon Industries, Inc. Concrete mix surge bin. 4,441,820, Cl. 366-26.000.

Maxon Industries, Inc.: *See—*
Maxon, Glenway W., III, 4,441,820, Cl. 366-26.000.

May & Baker Limited: *See—*
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Mayer, Donald K., to Thermo King Corporation. Transport refrigeration unit combination airflow straightener and defrost damper. 4,441,333, Cl. 62-239.000.

Mayer, Gilbert: *See—*
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Mayer, Robert T., to U.S. Philips Corporation. Protected programmable apparatus. 4,442,486, Cl. 364-200.000.

Mayne, Richard G. Musical instrument holder for attachment to vertical and horizontal surfaces. 4,441,683, Cl. 248-558.000.

McAloon, Kevin: *See—*
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McAuliffe, Charles A.: *See—*
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McBrayer, Bob W. Sesame nematocidal composition. 4,442,092, Cl. 424-195.000.

McBride, Paul: *See—*
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McCally, Richard P.: *See—*
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McClure, David E.: *See—*
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McCombs, Grace N.: *See—*
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McCombs, Norman: *See—*
McCombs, Norman R.; and McCombs, Grace N., 4,441,506, Cl. 128-728.000.

McCombs, Norman R.; and McCombs, Grace N., to McCombs, Norman. Respiratory exerciser. 4,441,506, Cl. 128-728.000.

McCoy, David R.; Gipson, Robert M.; and Naylor, Carter G., to Texaco Inc. Oil recovery method utilizing a dicyclopentadiene derived ethoxysulfonate. 4,442,043, Cl. 260-513.00R.

McCurley, Jack, to Q-dot Corporation. Waste heat recovery system having thermal sleeve support for heat pipe. 4,441,544, Cl. 165-1.000.

McCutchen, Norman L., to Cummins Engine Company, Inc. Pallet-forming apparatus. 4,441,643, Cl. 227-110.000.

McDaniel, Charles R.; and Baumgardner, H. Richard, to Firestone Tire & Rubber Company, The. Coded tape for determining tire size. 4,441,258, Cl. 33-179.000.

McDaniel, Kenneth G.: *See—*
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McDaniel, Max P.; and Johnson, Marvin M., to Phillips Petroleum Company. Polymerization process using a phosphate containing support for vanadium catalyst. 4,442,274, Cl. 526-95.000.

McDermott, Noel C., to Larus Corporation. Switchable incremental attenuation for telephone line interface. 4,442,325, Cl. 179-190.000.

McDonagh, Andrew J.; and Duke, Charles B., to Mesta Engineering Company. Vertical mill. 4,441,352, Cl. 72-249.000.

McDonnell Douglas Corporation: *See—*
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Kosmoski, Jeffrey P., 4,441,842, Cl. 410-81.000.

McDougall, Lee A.: *See—*
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McErlane, James E.: *See—*
Cloud, Nathan; Marin, Robert A.; and McErlane, James E., 4,441,660, Cl. 242-35.50A.

McKelvey, Harold E.; Livingston, William T.; and Sheldon, Edward D., to Shatterproof Glass Corporation. Apparatus for curving and tempering glass sheets. 4,441,909, Cl. 65-273.000.

McMickle, Robert L.; and Rumbaugh, James T., to Berkley and Company, Inc. Resilient ferrule cover for fishing rods. 4,441,273, Cl. 43-18.100.

McMickle, Robert L.; and Foote, Danny R., to Berkley and Company, Inc. Artificial fish habitat. 4,441,453, Cl. 119-3.000.

McQuain, David B.: *See—*
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McQueen, George; and Barrable, Victor E., to Cape Boards & Panels Limited. Construction panels. 4,441,293, Cl. 52-377.000.

McRoskey, Jack W., to Republic Tool & Manufacturing Corporation. Tube punching method. 4,441,395, Cl. 83-862.000.

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Frey, Robert G.; and McVey, Charles I., 4,442,379, Cl. 315-47.000.

Mead Corporation, The: *See—*
Davis, James W., 4,441,806, Cl. 355-23.000.

Mead, Ronald C., to Bendix Corporation, The. Sonar transceiver system and method. 4,442,513, Cl. 367-100.000.

Meade, Steven L.: *See—*
  Morris, Merle E.; Rice, Lawrence M.; and Meade, Steven L., 4,442,374, Cl. 313-316.000.
Meadox Instruments, Inc.: *See—*
  Kahn, Alan R.; Clark, Kenneth R.; and Bahr, Dennis E., 4,441,357, Cl. 73-40.000.
Meagher, Ralph E.: *See—*
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Medard, Paul: *See—*
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Meer, Vadim V.; Nesterov, Vladimir I.; and Lapshin, Boris G., to Ryazansky Radiotekhnichesky Institut. Digital output telemetering system for recording seismic signals. 4,442,511, Cl. 367-78.000.
Mehaffey, Joseph L., to Akzona Incorporated. Polyalkoxylated amines as dewatering aids for feldspathic minerals. 4,442,010, Cl. 210-729.000.
Mehlan, Bernd; and Bayer, Josef, to Sielaff GmbH & Co. Trap door chute for vending machines. 4,441,628, Cl. 221-90.000.
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Meier, Henry G.: *See—*
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Meininger, Fritz; Otten, Joachim W., deceased; by Otten, Ursla, heir; and by Rudolph, Anna G., heir, to Hoechst Aktiengesellschaft. Anthraquinone compounds. 4,442,288, Cl. 544-189.000.
Meitzler, Allen H., to Ford Motor Company. Multiplex transmission medium for application in multiplex vehicle control systems. 4,442,515, Cl. 367-197.000.
Melezoglu, Cevdet; and Smith, David J., to Corning Glass Works. Apparatus and method for determining refractive index profile in a cylindrical article. 4,441,811, Cl. 356-128.000.
Meltsch, Hans-Juergen: *See—*
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  Greenlee, William J., 4,442,030, Cl. 260-112.50R.
  Johnston, David B. R., 4,442,095, Cl. 424-248.500.
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  Saari, Walfred S., 4,442,103, Cl. 424-250.000.
Mese, Hisayoshi, to Fuji Kinzoku Kohsaku Co. Ltd. Ball valve. 4,441,524, Cl. 137-625.470.
Meshberg, Philip. Dispenser adapted for fast pressure filling. 4,441,634, Cl. 222-402.160.
Mesta Engineering Company: *See—*
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Meyer, Horst; Sitt, Rudiger; Thomas, Gunter; Garthoff, Benward; Towart, Robertson; and Rosentreter, Ulrich, to Bayer Aktiengesellschaft. Substituted 2-amino-3,4-dihydropyridine derivatives, their production and their medicinal use. 4,442,100, Cl. 424-250.000.
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Michaels, Alan S.; Robertson, Channing R.; Cohen, Stanley N.; Inloes, Douglas S.; and Smith, William J., to Stanford University. Method of using isotropic, porous-wall polymeric membrane, hollow-fibers for culture of microbes. 4,442,206, Cl. 435-68.000.
Michel, Helmut; Kampe, Wolfgang; and Ofenloch, Roland, to Boehringer Mannheim GmbH. 3-Cyano indoles as intermediates for cardioselective compounds. 4,442,295, Cl. 548-505.000.
Microwriter Limited: *See—*
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Middelburg Steel and Alloys (Proprietary) Limited: *See—*
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Mikami, Takashi: *See—*
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Mikkers, Franciscus E. P.; and Wierenga, Peter E., to U.S. Philips Corporation. Method of depositing a metal. 4,441,964, Cl. 204-15.000.
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Miller, Curtis D. Portable panel separation device. 4,441,844, Cl. 414-117.000.
Miller, Jack E.; and Brandenburg, Robert C., to Harry Major Machine and Tool Co. Accumulating transfer unit. 4,441,606, Cl. 198-751.000.
Miller, Lester I., to Du Pont de Nemours, E. I., and Company. Additive for alkyd resin coating compositions. 4,442,256, Cl. 524-539.000.
Mims, Samuel S., to El Paso Products Company. Recovery of water miscible organic acids from aqueous solution as alkyl esters. 4,442,303, Cl. 560-191.000.
Minami, Masahumi, to Miyawaki Steam Trap Mfg. Co., Ltd. Exchangeable unit steam trap. 4,441,652, Cl. 236-56.000.
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  Thuermer, Joerg H. W., 4,442,316, Cl. 174-84.00C.
Minohara, Kiyomi; and Abe, Atsushi, to Furuno Electric Co., Ltd. Gyroscopic instrument. 4,441,375, Cl. 74-5.460.
Minolta Camera Kabushiki Kaisha: *See—*
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Misencik, John J., to Westinghouse Electric Corp. Ground fault receptacle with arrangement for protecting internal electronics. 4,442,470, Cl. 361-46.000.
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Mistral Windsurfing AG: *See—*
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Mitchell, Terence G.; Barnes, Adrian G.; Jackson, Julia S.; and Bevan, Peter C., to British-American Tobacco Co., Ltd. Smoke flavor enhancing agents. 4,441,514, Cl. 131-276.000.
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  Mizuno, Takaji; Suwahara, Hiroshi; and Segawa, Hirohisa, 4,442,339, Cl. 219-130.330.
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  Uchida, Ryohei; Yamasaki, Tatsuo; Idei, Toshio; Tatsutani, Toshio; and Hagiwara, Ippei, 4,442,386, Cl. 318-254.000.
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  Yuyama, Hiroshi, 4,441,331, Cl. 62-196.300.
Mitsui, Nobuo; Maeda, Yasuyuki; Kurihara, Tomiaki; Shima, Seiya; Hatakeyama, Takanobu; and Komuro, Katsu, to Hitachi, Ltd. AC Elevator control system. 4,441,584, Cl. 187-29.00R.
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  Kashiwa, Norio; and Ushida, Yoshihisa, 4,442,276, Cl. 526-125.000.
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Miyake, Toshio; Ohno, Shoichi; and Sakai, Shuzo, to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo. Process for the production of monascus-pigment. 4,442,209, Cl. 435-119.000.
Miyamoto, Akira, to Hitachi, Ltd. Fluidizing gas control system in fluidized-bed incinerator. 4,441,435, Cl. 110-245.000.
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Mizuno, Takaji; Suwahara, Hiroshi; and Segawa, Hirohisa, to Mitsubishi Denki Kabushiki Kaisha. Constant voltage DC arc welding apparatus. 4,442,339, Cl. 219-130.330.
Mizutani, Eiji: *See—*
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  Iemmi, Giuliano; Raimondo, Michele; and Mo, Luigi, 4,441,976, Cl. 204-224.00M.
Mobay Chemical Corporation: *See—*
  Taylor, Ronald P.; Dewhurst, John E.; and Abouzahr, Saad M., 4,442,235, Cl. 521-122.000.
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  Chester, Arthur W.; and Stover, William A., 4,442,223, Cl. 502-68.000.
  Dessau, Ralph M.; and Haag, Werner O., 4,442,210, Cl. 435-161.000.
  Dwyer, Francis G.; and Garwood, William E., 4,441,991, Cl. 208-111.000.
  Heck, Roland H.; Rosinski, Edward J.; and Shih, Stuart S., 4,442,023, Cl. 502-222.000.
  Huang, Yun-Yang, 4,441,990, Cl. 208-111.000.
  Myers, Donald W.; and Vivlamore, Samantha L., 4,442,064, Cl. 264-551.000.
  Schmitt, Kirk D., 4,442,042, Cl. 260-512.00R.
  Shu, Winston R., 4,441,555, Cl. 166-272.000.
  Stowe, Lawrence R., 4,441,986, Cl. 208-11.00R.
Molins Limited: *See—*
  Gabbitas, Denbigh M.; and Shawyer, Peter J., 4,441,302, Cl. 53-52.000.
Mollier, Jean H.; and Ugon, Michel, to Compagnie Internationale pour l'Informatique CII Honeywell Bull (Societe Anonyme). Apparatus for and method of recycling recording carriers, such as credit cards, including non-volatile erasable memories for identification data. 4,442,345, Cl. 235-380.000.
Momose, Haruhiko; Takahashi, Toshiaki; and Hoshino, Yasushi, to Konishiroku Photo Industry Co., Ltd. Range finder. 4,441,810, Cl. 356-1.000.
Monarch Marking Systems, Inc.: *See—*
  Huggins, Orville C., 4,441,425, Cl. 101-292.000.
Monsanto Company: *See—*
  Purdum, William R., 4,442,044, Cl. 260-969.000.
  Reynertson, Philip S., 4,442,052, Cl. 264-30.000.
  Tou, Jacob S.; and Schleppnik, Alfred A., 4,442,298, Cl. 549-252.000.
Monson, Clifford L. Rotary cleaner-polisher. 4,441,229, Cl. 15-322.000.
Montalbano, Anthony P. Cold weather breathing device. 4,441,494, Cl. 128-204.170.
Montedison S.p.A.: *See—*
  Gozzo, Franco; Caprara, Giuseppe; Roberti, Lamberto; Paparatto, Giuseppe; and Santoro, Ettore, 4,442,301, Cl. 560-124.000.
  Marciandi, Franco; and Relvini, Pasquale, 4,442,255, Cl. 524-414.000.
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  Baugh, John L.; and Montgomery, James W., 4,441,560, Cl. 166-382.000.
  Evans, Robert W.; and Montgomery, James W., 4,441,559, Cl. 166-382.000.
Montie, Douglas L., to Thomas G. Faria Corp. Liquid-level transducer-/indicator. 4,441,364, Cl. 73-313.000.
Moody, George W., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Energy in Her Britannic Majesty's Government of the. Wave energy device. 4,441,316, Cl. 60-398.000.
Moraw, Roland; and Schadlich, Renate, to Hoechst Aktiengesellschaft. Method for selective lamination of thermoplastic layers. 4,441,945, Cl. 156-108.000.
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  Szkaradek, Edward J., 4,441,658, Cl. 241-46.170.
Moreland, John F.; and Stoffel, James C., to Xerox Corporation. Adaptive thresholder. 4,442,544, Cl. 382-53.000.
Moret, David M.: *See—*
  Ahr, Nicholas A.; and Moret, David M., 4,441,212, Cl. 2-49.00R.
Morgan, Hugh W.; and Daniel, Roy M., to Development Finance Corporation of New Zealand. Thermo-stable micro-organism. 4,442,214, Cl. 435-253.000.
Mori, Kashichi, to Kowa Shoji Kabushiki Kaisha. Pineapple cutter. 4,441,413, Cl. 99-542.000.
Mori, Sanae, to Daido Metal Company, Ltd. Method of producing connecting rod of a radial piston motor. 4,441,240, Cl. 29-156.50A.
Mori, Yoshikatsu, to Sumitomo Electric Industries, Ltd. Throw away insert. 4,441,841, Cl. 407-114.000.
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  Kurata, Masami; Moriguchi, Fujio; Ohmori, Takashi; and Makino, Katsuo, 4,442,452, Cl. 358-75.000.
  Kurata, Masami; Moriguchi, Fujio; Inui, Toshiharu; and Murayama, Tomio, 4,442,460, Cl. 358-296.000.

Moriguchi, Haruhiko: *See—*
  Kikuchi, Yoshiki; Omori, Takashi; Moriguchi, Haruhiko; Moriguchi, Fujio; and Murayama, Tomio, 4,442,441, Cl. 346-74.400.
Morimoto, Hideaki, to Nippon Electric Company, Ltd. Channel switching system for use in a digital communication system. 4,442,518, Cl. 371-8.000.
Moriwaki, Hisayoshi: *See—*
  Shirai, Hidemichi; Nakano, Kenji; and Moriwaki, Hisayoshi, 4,442,461, Cl. 358-343.000.
Moriya, Koichi: *See—*
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Morokawa, Shigeru, to Citizen Watch Co., Ltd. Low-power integrated circuit for an electronic timpeiece. 4,441,825, Cl. 368-204.000.
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Morrell, Roberto I.; and Peters, Charles F., to W. R. Grace & Co. Process for producing a stabilized phosphoric acid. 4,442,081, Cl. 423-321.00R.
Morris, Merle E.; Rice, Lawrence M.; and Meade, Steven L., to GTE Products Corporation. Dual length copier lamp. 4,442,374, Cl. 313-316.000.
Morris, Peter A., to Cresta Technology Limited. Filtration devices. 4,442,002, Cl. 210-411.000.
Morsing, Per: *See—*
  Donelly, James R.; Felsvang, Karsten S.; Morsing, Per; and Veltman, Preston L., 4,442,079, Cl. 423-239.000.
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Mort, John S.: *See—*
  Poole, A. Robin; Mort, John S.; and Recklies, Anneliese D., 4,442,088, Cl. 424-85.000.
Morton, David C. Door locking alarm device. 4,442,427, Cl. 340-546.000.
Mosimann, Urs: *See—*
  Baumann, Hans-Peter; and Mosimann, Urs, 4,441,884, Cl. 8-542.000.
Moskau, Gerhard, to Saarberg-Fernwarme GmbH. Process for thermic treatment of sludges, particularly treatment of clarification sludges. 4,441,437, Cl. 110-346.000.
Most, Ivan G.; and Hubble, William S., to Kramer Industries, Inc. Treatment method for metal bearing oily waste. 4,441,922, Cl. 75-25.000.
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  Epsom, Robert L.; Gailus, Paul H.; and van den Heuvel, Anthony P., 4,442,416, Cl. 333-263.000.
  Kongable, Lowell S.; and Bauer, Clint E., 4,442,500, Cl. 364-724.000.
  Main, William E., 4,442,549, Cl. 455-211.000.
  Myers, Michael H.; and Daniel, Sam, 4,442,433, Cl. 343-378.000.
  Siwiak, Kazimierz; Garay, Oscar M.; and Balzano, Quirino, 4,442,438, Cl. 343-792.000.
Mowbray, Dorian F.: *See—*
  Jarrett, Boaz A.; and Mowbray, Dorian F., 4,441,474, Cl. 123-450.000.
MPS - Multi Packaging Services S.r.l.: *See—*
  Sommariva, Gabriella, 4,441,611, Cl. 206-431.000.
Muacevic, Gojko: *See—*
  Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Muacevic, Gojko; and Traunecker, Werner, 4,442,120, Cl. 424-282.000.
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Muchmore, Charles B.; Chen, Juh W.; and Tempelmeyer, Kenneth E., to Southern Illinois University Foundation. Process for removing organic sulphur from coal and material resulting from the process. 4,441,886, Cl. 44-15.00R.
Mueller, Herbert; Axel, Hartmut; and Wittwer, Arnold, to BASF Aktiengesellschaft. Production of tertiary amines. 4,442,306, Cl. 564-479.000.
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  Zolner, Dieter H.; Rittmann, Friedrich; Dung, Herbert; Haremsa, Johannes; Bauer, Georg; Otto, Josef; Muhlenbeck, Josef; and Lauterbach-Dammler, Inge, 4,442,525, Cl. 373-93.000.
Muir, William, to Engineered Roof Trusses Pty. Ltd. Framed building construction. 4,441,287, Cl. 52-93.000.
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  Welch, Richard D.; and Mulder, John G., 4,441,663, Cl. 242-65.000.
Mullane, William I., Jr., to Procter & Gamble Company, The. Method and apparatus for uniformly debossing and aperturing a resilient plastic web. 4,441,952, Cl. 156-222.000.
Mullen, Gerald H., to Virginia Industries, Inc. Method for manufacture of bearings. 4,441,239, Cl. 29-148.40A.
Muller, Erich; Nickl, Josef; Narr, Berthold; Roch, Josef; Haarmann, Walter; and Weisenberger, Johannes M., to Dr. Karl Thomae Gesellschaft mit beschrankter Haftung. Antithrombotic sulfimino and sulfoximino indolinones-2. 4,442,111, Cl. 424-263.000.
Muller-Schweinitzer, Else, to Sandoz Ltd. Dihydropyridine derivatives useful in treating vascular headaches. 4,442,112, Cl. 424-263.000.
Mullins, James N., Jr. Slicer for ham or the like. 4,441,411, Cl. 99-538.000.
Multicore Solders Limited: *See—*
  Arbib, Gordon F., 4,441,924, Cl. 75-65.00R.

- Munchener Apparatebau fur elektronische Ger/e Kimmel GmbH: *See—*
  - Kreiner, Hans-Jurg, 4,442,358, Cl. 250-435.000.
- Munday, Peter J., to Racal Research Limited. Synchronization systems. 4,442,527, Cl. 375-1.000.
- Mune, Isao: *See—*
  - Sunakawa, Makoto; Moroishi, Yutaka; and Mune, Isao, 4,442,258, Cl. 524-767.000.
- Muranaka, Yutaka; and Sadahiro, Haruji, to Nisshin Steel Co., Ltd. Method of enlarging width of continuously cast strand. 4,441,543, Cl. 164-491.000.
- Murano, Itaru: *See—*
  - Sumi, Masao; Suenaga, Junichi; Takenaka, Masazo; Murano, Itaru; Tanabe, Mikio; and Hirai, Kiyoshi, 4,442,252, Cl. 524-183.000.
- Murata Manufacturing Co., Ltd.: *See—*
  - Murata, Michihiro; Kitao, Shoichi; and Okabe, Shinsei, 4,442,422, Cl. 338-35.000.
- Murata, Michihiro; Kitao, Shoichi; and Okabe, Shinsei, to Murata Manufacturing Co., Ltd. Humidity sensitive resistor. 4,442,422, Cl. 338-35.000.
- Murayama, Shigeru: *See—*
  - Utsunomiya, Yumiteru; and Murayama, Shigeru, 4,442,371, Cl. 310-260.000.
- Murayama, Tomio: *See—*
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- Murphy, Walter T.; and Guiley, Clifford D., Jr., to B. F. Goodrich Company, The. Process for treating hydroxyl terminated liquid polymers. 4,442,039, Cl. 260-465.400.
- Muscatell, Ralph P. Airfoil fuel ejection device. 4,441,673, Cl. 244-135.00R.
- Mutzberg, Friedhelm: *See—*
  - Weiss, Jorn-Volker; Riemer, Heinz; and Mutzberg, Friedhelm, 4,442,245, Cl. 523-401.000.
- Myers, Donald W.; and Vivlamore, Samantha L., to Mobil Oil Corporation. Thermoforming and self-alignment trimming method and apparatus. 4,442,064, Cl. 264-551.000.
- Myers, John L., to Ledex, Inc. Trip solenoid. 4,442,418, Cl. 335-230.000.
- Myers, Michael H.; and Daniel, Sam, to Motorola Inc. Adaptive signal processing apparatus. 4,442,433, Cl. 343-378.000.
- Naarden International, N.V.: *See—*
  - Boelens, Harmannus; van der Weerdt, Antonius J. A.; and Hesp, Theodorus G. M., 4,442,025, Cl. 252-522.00R.
- Nabisco Brands, Inc.: *See—*
  - Horwath, Robert O.; and Ibrahim, Osama O., 4,442,207, Cl. 435-105.000.
  - Portsmouth, Joseph P., 4,441,648, Cl. 229-37.00R.
- Nadler, Guy: *See—*
  - Le Polles, Jean-Bernard; Martin, Michel; Nadler, Guy; and Saias, Edmond, 4,442,108, Cl. 424-258.000.
- Nagahara, Hiroshi; and Uchimura, Tosio, to Kabushiki Kaisha Komatsu Seisakusho. Hoisting winch mounted on crane or the like. 4,441,691, Cl. 254-344.000.
- Nagami, Akira, to Nippon Electric Co., Ltd. High speed latch circuit. 4,442,365, Cl. 307-279.000.
- Nagano, Katsumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Current source circuit. 4,442,399, Cl. 323-315.000.
- Nagano, Katsumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Voltage-to-current converting circuit. 4,442,400, Cl. 323-315.000.
- Nagaoka, Kazuya; and Yoshii, Sigeru, to Kawasaki Kasei Chemicals Ltd. Heat-sensitive recording sheet. 4,442,176, Cl. 346-208.000.
- Nagasaku, Eiichi: *See—*
  - Hotta, Teruyuki; Kurokawa, Yoshiki; Nagasaku, Eiichi; and Yasunaga, Masao, 4,441,863, Cl. 417-281.000.
- Nagel, Erich; and Turcke, Rainer, to Agfa-Gevaert AG. Device for collecting and stacking photographic prints. 4,441,702, Cl. 271-177.000.
- Nagy, Alex J.; and Reed, William G., to Margaret's Fine Food Ltd. Angled dough cutter. 4,442,131, Cl. 426-518.000.
- Nakabayashi, Yasuyuki; Matsura, Yoshio; Kurihara, Michio; Kamei, Takao; Nakamura, Akira; Komai, Keiichi; Simotamari, Akira; and Matsuno, Izumi, to Electric Power Development Co. Ltd.; and Kawasaki Jukogyo Kabushiki Kaisha. Process and apparatus for dehydrating organic solid material. 4,441,260, Cl. 34-15.000.
- Nakagawa, Sotoji: *See—*
  - Kasai, Shinichi; Nakagawa, Sotoji; and Osawa, Nobuyuki, 4,441,765, Cl. 308-6.00C.
- Nakagawa, Yasuo: *See—*
  - Saito, Takahide; and Nakagawa, Yasuo, 4,441,875, Cl. 425-3.000.
- Nakahara, Teruo; Ota, Shingo; and Nakamura, Masaru, to Kabushiki Kaisha Komatsu Seisakusho. Vehicle inching mechanism interlocked with a braking mechanism. 4,441,596, Cl. 192-13.00R.
- Nakamori, Shigeru: *See—*
  - Tsuchida, Takayasu; Miwa, Kiyoshi; and Nakamori, Shigeru, 4,442,208, Cl. 435-116.000.
- Nakamura, Akira: *See—*
  - Nakabayashi, Yasuyuki; Matsura, Yoshio; Kurihara, Michio; Kamei, Takao; Nakamura, Akira; Komai, Keiichi; Simotamari, Akira; and Matsuno, Izumi, 4,441,260, Cl. 34-15.000.
- Nakamura, Masaru: *See—*
  - Nakahara, Teruo; Ota, Shingo; and Nakamura, Masaru, 4,441,596, Cl. 192-13.00R.
- Nakamura, Shinichi: *See—*
  - Takada, Syun; Kadowaki, Takashi; Okumura, Mitsuhiro; Nakamura, Shinichi; and Iwagaki, Masaru, 4,442,201, Cl. 430-569.000.
- Nakamura, Shinya: *See—*
  - Taga, Yutaka; Watanabe, Kazuaki; and Nakamura, Shinya, 4,441,385, Cl. 74-867.000.
- Nakamura, Sukenori: *See—*
  - Igarashi, Akira; and Nakamura, Sukenori, 4,442,179, Cl. 428-220.000.
- Nakamura, Yukio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Lash adjuster oil-supplying device. 4,441,465, Cl. 123-90.340.
- Nakano, Keita: *See—*
  - Toba, Hirotaka; Itoh, Masanori; Nakano, Keita; Wakoh, Shoji; Toyoshima, Toshihiko; and Todo, Hidemasa, 4,442,160, Cl. 428-215.000.
- Nakano, Kenji: *See—*
  - Shirai, Hidemichi; Nakano, Kenji; and Moriwaki, Hisayoshi, 4,442,461, Cl. 358-343.000.
- Nakano, Yoshiyuki, to Nippon Kogaku K.K. Driving system in camera. 4,441,800, Cl. 354-152.000.
- Nakata, Shuji; Kawaguchi, Yoshio; and Nishimura, Akira, to Nissan Motor Company, Limited. Method and system for dual control of resistance welding. 4,442,337, Cl. 219-117.100.
- Nalco Chemical Company: *See—*
  - Matt, Joseph; and Ferrara, John M., 4,441,888, Cl. 44-51.000.
- Napflin, Hans. Ski binding with a foot support. 4,441,732, Cl. 280-614.000.
- Narita, Masahisa; and Tomita, Osamu, to Fujitsu Limited. Adaptive high speed serial printer. 4,441,832, Cl. 400-144.200.
- Narr, Berthold: *See—*
  - Muller, Erich; Nickl, Josef; Narr, Berthold; Roch, Josef; Haarmann, Walter; and Weisenberger, Johannes M., 4,442,111, Cl. 424-263.000.
- National Business Systems, Inc.: *See—*
  - Sours, William A, 4,441,419, Cl. 101-45.000.
- National Gypsum Company: *See—*
  - Winkowski, Daniel A., 4,442,151, Cl. 428-54.000.
- National Research Development Corporation: *See—*
  - Evans, David M.; and Weightman, Barry O., 4,441,489, Cl. 128-77.000.
- National Semiconductor Corporation: *See—*
  - Priel, Ury; Yaron, Giora; and Ebel, Mark S., 4,442,510, Cl. 365-218.000.
- Naumann, Johannes; Pohl, Wolfgang; and Forster, Karl-Heinz, to Veb Kombinat Polygraph "Werner Lamberz" Leipzig. Control system for controlling regulating members of printing machines. 4,441,424, Cl. 101-248.000.
- Navok, Ezra: *See—*
  - Buan, Danilo P.; and Navok, Ezra, 4,441,420, Cl. 101-69.000.
- Naylor, Carter G.: *See—*
  - McCoy, David R.; Gipson, Robert M.; and Naylor, Carter G., 4,442,043, Cl. 260-513.00R.
- Naylor, Donald B., deceased (Trust, Marshall County Bank and, executor). Invertible prefabricated door. 4,441,277, Cl. 49-380.000.
- NCR Corporation: *See—*
  - Italiano, Victor J., 4,441,830, Cl. 400-124.000.
- NDM Corporation: *See—*
  - Parent, James R., 4,441,501, Cl. 128-641.000.
- Neal, Dennis E. Disposable kitty litter box. 4,441,451, Cl. 119-1.000.
- NECCHI: *See—*
  - Bianchi, Nereo, 4,441,441, Cl. 112-221.000.
- Nederveld, Terril L., to Packaging Corporation of America. Collapsible receptacle. 4,441,649, Cl. 229-38.000.
- Negen, Anno G.: *See—*
  - Oostenbrink, Albertus A.; Negen, Anno G.; and van Kaam, Marinus L. G.. 4,441,744, Cl. 285-162.000.
- Neiditch, David S.; Bullano, Gerald A.; DiLullo, Robert J.; and Ofstein, David E., to Atlantic Richfield Company. Process and apparatus for continuous polymerization of a monovinyl aromatic monomer. 4,442,273, Cl. 526-88.000.
- Neilsen, Hildaur L. Key retaining device. 4,441,348, Cl. 70-389.000.
- Nelson, Gary L.: *See—*
  - White, William H.; Harbison, William C.; and Nelson, Gary L., 4,442,168, Cl. 428-331.000.
- Nelson, Peter C.: *See—*
  - Klee, David J.; and Nelson, Peter C., 4,441,327, Cl. 62-51.000.
- Nesterov, Vladimir I.: *See—*
  - Meer, Vadim V.; Nesterov, Vladimir I.; and Lapshin, Boris G., 4,442,511, Cl. 367-78.000.
- Neubauer, Reinhard: *See—*
  - Limque, Ferdinand; Luiten, Cornelis H.; Bless, Franz; Neubauer, Reinhard; and Lange, Dietmar, 4,441,698, Cl. 266-249.000.
- Neumann, Kurt; and Dietrich, Wolfgang, to Wilhelm Leeser Gummi- und Kunststoffverarbeitung GmbH & Co., KG. Rubber sealing member. 4,442,174, Cl. 428-376.000.
- Neuzil, Richard W.; and Priegnitz, James W., to UOP Inc. Process for separating glucose from fructose by selective adsorption. 4,442,285, Cl. 536-127.000.
- Newcomb, Donald R. Vertical antenna. 4,442,436, Cl. 343-722.000.
- Newton, Ronald O., to General Signal. Relay valve assembly. 4,441,764, Cl. 303-40.000.
- NGK Spark Plug Co., Ltd.: *See—*
  - Nishio, Kanemitsu; Takagi, Shunichi; and Suzuki, Yasuhiko, 4,442,375, Cl. 313-142.000.

- Nicholas Proprietary Limited: *See—*
  - Rowe, James S.; and Carless, John E., 4,442,051, Cl. 264-4.300.
- Nicholas, Terry G., to Wavin B.V. Coupling pipe part for interconnecting corrugated pipe parts. 4,441,745, Cl. 285-417.000.
- Nickl, Josef: *See—*
  - Muller, Erich; Nickl, Josef; Narr, Berthold; Roch, Josef; Haarmann, Walter; and Weisenberger, Johannes M., 4,442,111, Cl. 424-263.000.
- Nicolaou, Kyriacos C.; Petasis, Nicos A.; and Seitz, Steven P., to Research Corporation. Leukotriene analogues. 4,442,099, Cl. 424-248.570.
- Nielsen, Anker J., Jr.; and Hoyt, Richard E., to Omco Inc. High security locks and key. 4,441,343, Cl. 70-34.000.
- Nigrey, Paul J.: *See—*
  - MacDiarmid, Alan G.; Heeger, Alan J.; and Nigrey, Paul J., 4,442,187, Cl. 429-213.000.
- Nihon Tokushu Noyaku Seizo K.K.: *See—*
  - Aya, Masahiro; Saito, Junichi; Yasui, Kazuomi; Shiokawa, Kozo; and Moriya, Koichi, 4,441,913, Cl. 71-94.000.
- Niklaus, Zemp J., to Texcontor-Anstalt. Valproic acid ester with antiepileptic and anticonvulsant activity and pharmaceutical compositions therefrom. 4,442,124, Cl. 424-311.000.
- Nippon Crucible Co., Ltd.: *See—*
  - Takuo, Hosaka, 4,442,050, Cl. 264-30.000.
- Nippon Electric Co., Ltd.: *See—*
  - Ashida, Shigeaki, 4,442,415, Cl. 332-16.00T.
  - Morimoto, Hideaki, 4,442,518, Cl. 371-8.000.
  - Nagami, Akira, 4,442,365, Cl. 307-279.000.
  - Noguchi, Kesao, 4,441,973, Cl. 204-192.00N.
- Nippon Kogaku K.K.: *See—*
  - Iizuka, Yutaka, 4,441,802, Cl. 354-224.000.
  - Kazami, Kazuyuki; and Ohtsubo, Yoshiaki, 4,441,774, Cl. 315-241.00P.
  - Nakano, Yoshiyuki, 4,441,800, Cl. 354-152.000.
- Nippon Oil Co. Ltd.: *See—*
  - Kawabata, Nobuaki; Yokoyama, Nobuo; and Araki, Yoshihiko, 4,442,140, Cl. 427-154.000.
- Nippon Paint Company, Ltd.: *See—*
  - Ishikura, Shinichi; Kanda, Kazunori; and Yamaguchi, Shohachiro, 4,442,247, Cl. 523-414.000.
  - Kanda, Kazunori; and Ishikura, Shinichi, 4,442,248, Cl. 523-414.000.
- Nippon Petrochemicals Company Ltd.: *See—*
  - Sato, Atsushi; Takahashi, Naoya; Endo, Keiji; and Yanagishita, Hitoshi, 4,442,027, Cl. 252-574.000.
- Nippon Seiko Kabushiki Kaisha: *See—*
  - Kasai, Shinichi; Nakagawa, Sotoji; and Osawa, Nobuyuki, 4,441,765, Cl. 308-6.00C.
- Nippon Soda Company, Limited: *See—*
  - Iwataki, Isao; Kaeriyama, Minoru; Matsui, Nobuo; and Yamada, Tomio, 4,442,116, Cl. 424-270.000.
- Nippon Soken, Inc.: *See—*
  - Kodera, Masao; and Akita, Sigeyuki, 4,442,512, Cl. 367-87.000.
  - Takagi, Shigeru; and Tomita, Masahiro, 4,441,899, Cl. 55-485.000.
  - Tsuge, Noboru; Shimogawa, Toshiaki; Kuwakado, Satosi; and Takei, Toshihiro, 4,441,738, Cl. 280-806.000.
- Nippon Steel Corporation: *See—*
  - Saito, Takao; and Ezure, Kazuya, 4,442,181, Cl. 428-623.000.
  - Sawada, Yasuhiro; Inoue, Tadashi; and Nishida, Toyoaki, 4,442,389, Cl. 318-642.000.
  - Takahashi, Nobuyuki; Shibata, Masaaki; and Furuno, Yoshikuni, 4,441,936, Cl. 148-12.00C.
- Nippondenso Co., Ltd.: *See—*
  - Hotta, Teruyuki; Kurokawa, Yoshiki; Nagasaku, Eiichi; and Yasunaga, Masao, 4,441,863, Cl. 417-281.000.
  - Isomura, Shigenori; Kodama, Katsuhiko; Kondo, Toshio; and Kobayashi, Akio, 4,441,473, Cl. 123-440.000.
  - Shirasaki, Shinji; Tsuzuki, Yoshihiko; Hirabayashi, Yuzi; Okazaki, Hiroshi; Matsuyama, Masahiro; Kobayashi, Masanobu; and Ito, Yoji, 4,442,424, Cl. 340-52.00F.
- Nirschl, Robert P. Wrist brace. 4,441,490, Cl. 128-77.000.
- Nirschl, Robert P. Elbow brace. 4,441,493, Cl. 128-165.000.
- Nishida, Masamitsu: *See—*
  - Ouchi, Hiromu; Kawashima, Syunichiro; Nishida, Masamitsu; and Ueda, Ichiro, 4,442,220, Cl. 501-139.000.
- Nishida, Toyoaki: *See—*
  - Sawada, Yasuhiro; Inoue, Tadashi; and Nishida, Toyoaki, 4,442,389, Cl. 318-642.000.
- Nishikawa, Masaji, to Olympus Optical Company Ltd. Electrophotographic copying process for producing a plurality of copies. 4,442,191, Cl. 430-55.000.
- Nishikawa, Reiji; Satoyama, Shozo; Ito, Yoshinori; and Jyo, Hidetaka, to Tokyo Shibaura Denki Kabushiki Kaisha; and Tokuda Seisakusho, Ltd. Magnetron sputtering apparatus. 4,441,974, Cl. 204-192.00R.
- Nishimura, Akira: *See—*
  - Nakata, Shuji; Kawaguchi, Yoshio; and Nishimura, Akira, 4,442,337, Cl. 219-117.100.
- Nishimura, Ken-ichi: *See—*
  - Kakeya, Nobuharu; Kitao, Kazuhiko; and Nishimura, Ken-ichi, 4,442,090, Cl. 424-178.000.
- Nishina, Shuho: *See—*
  - Kawaguchi, Hiroshi; and Nishina, Shuho, 4,441,380, Cl. 74-512.000.
- Nishio, Kanemitsu; Takagi, Shunichi; and Suzuki, Yasuhiko, to NGK Spark Plug Co., Ltd. Electrical self-purification ignition plug. 4,442,375, Cl. 313-142.000.
- Nissan Motor Co., Ltd.: *See—*
  - Chikaraishi, Takayo, 4,441,276, Cl. 49-352.000.
  - Endo, Hiroshi; Sone, Masazumi; Imai, Iwao; and Ishikawa, Yasuki, 4,441,479, Cl. 123-605.000.
  - Endo, Toshiaki; and Yoshiyuki, Kazuhiko, 4,441,755, Cl. 296-93.000.
  - Ezoe, Mitsuhiko, 4,441,359, Cl. 73-117.000.
  - Ito, Hideo; and Irie, Namio, 4,441,572, Cl. 180-140.000.
  - Nakata, Shuji; Kawaguchi, Yoshio; and Nishimura, Akira, 4,442,337, Cl. 219-117.100.
  - Oda, Takaaki; and Otsuka, Hidehiro, 4,441,681, Cl. 248-475.100.
  - Suzuki, Kunihiko, 4,441,575, Cl. 180-248.000.
  - Takagishi, Haruyoshi; Kamio, Kazuyoshi; and Fujikawa, Tsuneo, 4,441,645, Cl. 228-47.000.
  - Takeuchi, Yasuhisa, 4,441,405, Cl. 98-201.000.
  - Umezawa, Hidetsugu; Ogasawara, Takashi; and Shimazaki, Haruo, 4,441,531, Cl. 139-452.000.
  - Yoneda, Kenji; Sanezawa, Fumio; Takagi, Yasuo; and Ushijima, Yuji, 4,441,468, Cl. 123-198.00E.
- Nisshin Steel Co., Ltd.: *See—*
  - Muranaka, Yutaka; and Sadahiro, Haruji, 4,441,543, Cl. 164-491.000.
- Nitschke, John S., to Glasstech, Inc. Apparatus and method for locally heating conveyed glass sheets. 4,441,907, Cl. 65-106.000.
- Nitto Electric Industrial Co., Ltd.: *See—*
  - Sunakawa, Makoto; Moroishi, Yutaka; and Mune, Isao, 4,442,258, Cl. 524-767.000.
- Niwa, Susumu; and Koike, Masao, to Kabushiki Kaisha Hosokawa Yoko. Process for sealing glass container openings. 4,442,129, Cl. 426-399.000.
- Noda, Akinori; Miyasaka, Seiichi; and Kawahara, Hiroshi, to Asahi Glass Company, Ltd. Alkyl ether methylolmelamine coating composition, coating process and transparent product. 4,442,177, Cl. 428-412.000.
- Noguchi, Kesao, to Nippon Electric Co., Ltd. Method for preparing a thin film amorphous silicon having high reliability. 4,441,973, Cl. 204-192.00N.
- Noma, Takumi: *See—*
  - Hayashi, Nobuhiko, 4,441,436, Cl. 110-315.000.
- Nordling, Neal F., to Cardio-Pace Medical, Inc.; and Cardio-Pace Medical, Inc. Planar receiver antenna coil for programmable electromedical pulse generator. 4,441,498, Cl. 128-419.00P.
- Northern Engineering Industries plc: *See—*
  - Emmett, James R., 4,442,229, Cl. 521-26.000.
- Northern Telecom Limited: *See—*
  - Holmes, Gordon J., 4,441,647, Cl. 228-119.000.
  - Porter, John F.; Walling, Joerg-Heim J.; and Axiuk, Oleg, 4,441,961, Cl. 162-106.000.
  - Trumble, William P.; Martin, Ivan E.; and Berthiaume, Clement E., 4,441,213, Cl. 2-161.00R.
- Northwest Blueprint & Supply Co.: *See—*
  - Pelis, Giovanni, 4,441,803, Cl. 354-299.000.
- Norton, Larry A.: *See—*
  - West, Frank L.; and Norton, Larry A., 4,442,327, Cl. 200-51.00R.
- Norwich Eaton Pharmaceuticals, Inc.: *See—*
  - Skuster, James R., 4,442,038, Cl. 260-455.00R.
- Novak, Robert F., to Ford Motor Company. Partial pressure of oxygen sensor-II. 4,442,420, Cl. 338-34.000.
- Nowacki, Ulrich G., to International Paper Company. Linkage for actuating a carton erecting apparatus. 4,441,377, Cl. 74-105.000.
- Nozawa, Hiroshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing a semiconductor device employing element isolation using insulating materials. 4,441,941, Cl. 148-187.000.
- Numata, Saburo, to Fuji Photo Optical Co., Ltd. Auto strobe control circuit. 4,442,381, Cl. 315-151.000.
- Nusbaumer, Joseph M.: *See—*
  - Snyder, George H.; Snyder, George H., III; and Nusbaumer, Joseph M., 4,441,533, Cl. 141-59.000.
- Obrascovs, Guntis: *See—*
  - Burns, Christopher D.; Obrascovs, Guntis; and Pipe, Andrew L., 4,441,265, Cl. 36-117.000.
- Occidental Oil Shale, Inc.: *See—*
  - Hines, Alex E., 4,441,760, Cl. 299-2.000.
  - Hutchins, Ned M.; Studebaker, Irving G.; Kvapil, Rudolf; and Ricketts, Thomas E., 4,441,759, Cl. 299-2.000.
- Ochiai, Kuniaki; Horii, Masami; and Aoki, Osamu, to Tokyo Electric Co., Ltd. Printing head of dot printer. 4,441,828, Cl. 400-124.000.
- Oda, Takaaki; and Otsuka, Hidehiro, to Nissan Motor Company, Limited. Mounting apparatus for outside rear view mirror assembly. 4,441,681, Cl. 248-475.100.
- Odawara, Yoji: *See—*
  - Ishida, Masahiko; Haga, Ryooichi; and Odawara, Yoji, 4,442,006, Cl. 210-613.000.
- O'Dell, Gary B., to Tektronix, Inc. Data synchronization system for graphic recording apparatus. 4,442,442, Cl. 346-136.000.
- O'Donnell, Matthew, to General Electric Company. Collimation of ultrasonic linear array transducer. 4,441,503, Cl. 128-660.000.
- Oelsch, Jurgen; Volk, Richard; and Claassen, Karl-Heinz, to Preh Elektrofeinmechanische Werke Jakob Preh Nachf. GmbH & Co. Process for the manufacture of a contact mat. 4,442,055, Cl. 264-105.000.
- Ofenloch, Roland: *See—*
  - Michel, Helmut; Kampe, Wolfgang; and Ofenloch, Roland, 4,442,295, Cl. 548-505.000.

Ofstein, David E.: *See—*
  Neiditch, David S.; Bullano, Gerald A.; DiLullo, Robert J.; and Ofstein, David E., 4,442,273, Cl. 526-88.000.
Ogasawara, Takashi: *See—*
  Umezawa, Hidetsugu; Ogasawara, Takashi; and Shimazaki, Haruo, 4,441,531, Cl. 139-452.000.
Ohayashi, Hidehito: *See—*
  Okamoto, Hiroshi; Seki, Michiharu; and Ohayashi, Hidehito, 4,441,981, Cl. 204-426.000.
Ohline Corporation: *See—*
  Tsuhako, Parker I., 4,441,540, Cl. 160-168.00R.
Ohmori, Takashi: *See—*
  Kurata, Masami; Moriguchi, Fujio; Ohmori, Takashi; and Makino, Katsuo, 4,442,452, Cl. 358-75.000.
Ohno, Shoichi: *See—*
  Miyake, Toshio; Ohno, Shoichi; and Sakai, Shuzo, 4,442,209, Cl. 435-119.000.
Ohta, Kozo: *See—*
  Kohyama, Mikihiro; and Ohta, Kozo, 4,441,574, Cl. 180-219.000.
Ohta, Yumiko: *See—*
  Felix, Arthur M.; Ishitsuka, Hideo; Meienhofer, Johannes A.; and Ohta, Yumiko, 4,442,031, Cl. 260-112.50R.
Ohtsubo, Yoshiaki: *See—*
  Kazami, Kazuyuki; and Ohtsubo, Yoshiaki, 4,441,774, Cl. 315-241.00P.
Okabe, Shinsei: *See—*
  Murata, Michihiro; Kitao, Shoichi; and Okabe, Shinsei, 4,442,422, Cl. 338-35.000.
Okamoto, Hiroshi; Seki, Michiharu; and Ohayashi, Hidehito, to Hitachi, Ltd. Gas sensor. 4,441,981, Cl. 204-426.000.
Okamoto, Kouichi; Sakuyama, Masaki; and Tanaka, Mitsuo, to Mitsubishi Denki Kabushiki Kaisha. Rotor of a superconductive rotary electric machine. 4,442,369, Cl. 310-214.000.
Okano, Shuji: *See—*
  Fujii, Shigeo; Ikeda, Tokuzo; Mikami, Takashi; and Okano, Shuji, 4,442,062, Cl. 264-518.000.
Okayama Paper Mill Co., Ltd.: *See—*
  Sumi, Masao; Suenaga, Junichi; Takenaka, Masazo; Murano, Itaru; Tanabe, Mikio; and Hirai, Kiyoshi, 4,442,252, Cl. 524-183.000.
Okazaki, Hiroshi: *See—*
  Shirasaki, Shinji; Tsuzuki, Yoshihiko; Hirabayashi, Yuzi; Okazaki, Hiroshi; Matsuyama, Masahiro; Kobayashi, Masanobu; and Ito, Yoji, 4,442,424, Cl. 340-52.00F.
Oki Electric Industry Co., Ltd.: *See—*
  Kotani, Shintaro; Abiko, Ichimatsu; Arae, Takashi; Chiba, Mio; Araki, Tomoo; and Kanno, Hiromasa, 4,442,429, Cl. 340-786.000.
Okumura, Mitsuhiro: *See—*
  Takada, Syun; Kadowaki, Takashi; Okumura, Mitsuhiro; Nakamura, Shinichi; and Iwagaki, Masaru, 4,442,201, Cl. 430-569.000.
Okutu, Toshimitu: *See—*
  Sato, Masami; Akashi, Goro; Okuzawa, Yasutoshi; and Okutu, Toshimitu, 4,442,171, Cl. 428-336.000.
Okuzawa, Yasutoshi: *See—*
  Sato, Masami; Akashi, Goro; Okuzawa, Yasutoshi; and Okutu, Toshimitu, 4,442,171, Cl. 428-336.000.
O'Leary, Richard P.; and Reichgott, David W., to Betz Entec, Inc. Boiler water treatment. 4,442,009, Cl. 210-697.000.
Olhausen, James N., Jr., to General Dynamics Corporation. Training evaluation process. 4,442,491, Cl. 364-454.000.
Olin Corporation: *See—*
  Ford, James M., 4,441,977, Cl. 204-252.000.
  Pryor, Michael J.; and Sevier, Peter E., 4,441,542, Cl. 164-485.000.
Olson, Gary L.: *See—*
  Berger, Leo; and Olson, Gary L., 4,442,291, Cl. 546-150.000.
Olson, Mark J. Biblical game. 4,441,718, Cl. 273-254.000.
Olsson, O. A. Torsten; Svensson, Leif Å; and Wetterlin, Kjell I. L., to Aktiebolaget Draco. Therapeutically active compounds. 4,442,300, Cl. 560-66.000.
Olympus Optical Co., Ltd.: *See—*
  Enomoto, Fujio, 4,441,799, Cl. 354-145.100.
  Nishikawa, Masaji, 4,442,191, Cl. 430-55.000.
  Suzuki, Nobuyoshi, 4,441,374, Cl. 73-864.120.
Omco Inc.: *See—*
  Nielsen, Anker J., Jr.; and Hoyt, Richard E., 4,441,343, Cl. 70-34.000.
OMI International Corporation: *See—*
  Tremmel, Robert A., 4,441,969, Cl. 204-49.000.
Omori, Takashi: *See—*
  Kikuchi, Yoshiki; Omori, Takashi; Moriguchi, Haruhiko; Moriguchi, Fujio; and Murayama, Tomio, 4,442,441, Cl. 346-74.400.
Onda, Tsutomu; Kano, Keiichi; and Itakura, Shinji, to Aisin Seiki Kabushiki Kaisha. Electroplating apparatus and method. 4,441,966, Cl. 204-26.000.
Onofrio, Armadio J.: *See—*
  Dubar, Kenneth W.; and Onofrio, Armadio J., 4,441,711, Cl. 273-54.00B.
Oostenbrink, Albertus A.; Negen, Anno G.; and van Kaam, Marinus L. G., to Wavin B.V. Branch pipe part. 4,441,744, Cl. 285-162.000.
Optimetrix Corporation: *See—*
  Phillips, Edward H., 4,442,388, Cl. 318-640.000.
Orion Industries, Inc.: *See—*
  Segal, William J., 4,441,762, Cl. 301-37.00R.
Osaka, Fukunobu, to Fujitsu Limited. Avalanche photodiodes. 4,442,444, Cl. 357-13.000.
Osawa, Michitaka: *See—*
  Maekawa, Hitoshi; Osawa, Michitaka; and Ando, Kunio, 4,442,384, Cl. 315-399.000.
Osawa, Nobuyuki: *See—*
  Kasai, Shinichi; Nakagawa, Sotoji; and Osawa, Nobuyuki, 4,441,765, Cl. 308-6.00C.
Osawa Press Mfg., Co., Ltd.: *See—*
  Hara, Akinori, 4,441,386, Cl. 81-9.510.
Osborn, Thomas W., III, to Procter & Gamble Company, The. Soft, absorbent tissue paper. 4,441,962, Cl. 162-111.000.
Osborne, Robert L. Automated ultrasonic solution viscometer. 4,441,358, Cl. 73-55.000.
Osborne, Theodore M.: *See—*
  Blom, Sture R.; and Osborne, Theodore M., 4,442,349, Cl. 250-222.100.
Oshima, Hiroyo; Daisaku, Matsukuma; Yutaka, Kojima; Yukio, Kobayashi; and Koichi, Nagai, to Jujo Paper Co., Ltd. Ink jet recording sheet. 4,442,172, Cl. 428-342.000.
Oshita, Youichi; Sato, Shunji; Takahashi, Takeshi; and Hirasawa, Kunio, to Hitachi, Ltd. Puffer type current interrupter. 4,442,330, Cl. 200-148.00A.
Oshkin, Anatoly I.; Banov, Mikhail D.; and Chernyshev, Alexandr N. End piece of bipolar water-cooled cable. 4,442,312, Cl. 174-15.0WF.
Osmonics, Inc.: *See—*
  Smith, Zan P.; and Haimbach, Frank, IV, 4,442,004, Cl. 210-448.000.
Ostroski, Joseph; and Briski, Lawrence M. Electronic coin verification mechanism. 4,441,602, Cl. 194-100.00A.
Ota, Hideo; and Kubo, Yutaka, to Hitachi, Ltd. Dynamically buffered data transfer system for large capacity data source. 4,442,485, Cl. 364-200.000.
Ota, Shingo: *See—*
  Nakahara, Teruo; Ota, Shingo; and Nakamura, Masaru, 4,441,596, Cl. 192-13.00R.
Otaka, Tetsuo: *See—*
  Matsumura, Sowjun; Araki, Ken; Otaka, Tetsuo; and Tanigawa, Masumi, 4,441,965, Cl. 204-16.000.
Otis Engineering Corporation: *See—*
  Setterberg, John R., Jr.; and Patel, Dhirajlal C., 4,441,553, Cl. 166-138.000.
  Welch, William R.; and Heard, Thomas J., 4,441,558, Cl. 166-317.000.
Otsuka, Hidehiro: *See—*
  Oda, Takaaki; and Otsuka, Hidehiro, 4,441,681, Cl. 248-475.100.
Otten, Joachim W., deceased: *See—*
  Meininger, Fritz; Otten, Joachim W., deceased; Otten, Ursla, heir; and Rudolph, Anna G., heir, 4,442,288, Cl. 544-189.000.
Otten, Ursla, heir: *See—*
  Meininger, Fritz; Otten, Joachim W., deceased; Otten, Ursla, heir; and Rudolph, Anna G., heir, 4,442,288, Cl. 544-189.000.
Otting, Billy J., to Otting International, Inc. Apparatus for treating textile materials. 4,441,341, Cl. 68-205.00R.
Otting International, Inc.: *See—*
  Otting, Billy J., 4,441,341, Cl. 68-205.00R.
Otto, Josef: *See—*
  Zolner, Dieter H.; Rittmann, Friedrich; Dung, Herbert; Haremsa, Johannes; Bauer, Georg; Otto, Josef; Muhlenbeck, Josef; and Lauterbach-Dammler, Inge, 4,442,525, Cl. 373-93.000.
Ouchi, Hiromu; Kawashima, Syunichiro; Nishida, Masamitsu; and Ueda, Ichiro, to Matsushita Electric Industrial Co., Ltd. Dielectric ceramics. 4,442,220, Cl. 501-139.000.
Overhoff, Heinz-Juergen: *See—*
  Brandstetter, Franz; Hambrecht, Juergen; Stephan, Rudolf; Overhoff, Heinz-Juergen; Schwaab, Josef; Bernhard, Claus; Swoboda, Johann; and Echte, Adolf, 4,442,263, Cl. 525-83.000.
Owen, Donald R.: *See—*
  Jacobus, Otha J.; and Owen, Donald R., 4,442,421, Cl. 338-35.000.
Owens-Corning Fiberglas Corporation: *See—*
  Bhatti, Mohinder S., 4,441,903, Cl. 65-1.000.
  Bhatti, Mohinder S., 4,441,904, Cl. 65-1.000.
  Daws, John W.; Bradley, Hugh W., Jr.; and Canfield, Sheldon A., 4,441,367, Cl. 73-597.000.
  Harris, David A., 4,441,402, Cl. 98-40.00C.
  Propster, Mark A.; Seng, Stephen; and Hohman, Charles M., 4,441,906, Cl. 65-27.000.
Owens-Illinois, Inc.: *See—*
  Zauner, Otto, 4,441,908, Cl. 65-109.000.
Owens, James H., III, to Armco Inc. Connectors for securing members together under large clamping. 4,441,742, Cl. 285-18.000.
Oxford Hill, Ltd.: *See—*
  Thiele, Geraldine H., 4,442,125, Cl. 424-318.000.
Packaging Corporation of America: *See—*
  Nederveld, Terril L., 4,441,649, Cl. 229-38.000.
Packo, Joseph J.; and Bailey, Donald L., to Packo, Joseph J. Self-sealing refrigerant. 4,442,015, Cl. 252-68.000.
Padron, Tamara: *See—*
  Ruppert, Ronald M.; and Padron, Tamara, 4,441,881, Cl. 8-137.000.
Pagnoni, Giorgio, to F.lli Pagnoni S.p.A. Double opening press for manufacturing wood chipboard and fibre-board or their substitutes, provided with four heating platens, in which the two central platens are separated by a rigid plate. 4,441,877, Cl. 425-338.000.
Pai, Damodar M., to Xerox Corporation. Photoresponsive device containing an electron donating layer. 4,442,192, Cl. 430-59.000.
Pang, Peter N. C.; and Rozhansky, Boris, to Siemens-Allis, Inc. Solid state trip circuit with digital timer. 4,442,472, Cl. 361-96.000.

Panster, Peter; and Kleinschmit, Peter, to Degussa Aktiengesellschaft. Polymeric rhodium, iridium and ruthenium phosphine complex compounds, processes for their production and use. 4,442,040, Cl. 260-429.00R.
Paparatto, Giuseppe: *See—*
  Gozzo, Franco; Caprara, Giuseppe; Roberti, Lamberto; Paparatto, Giuseppe; and Santoro, Ettore, 4,442,301, Cl. 560-124.000.
Paragon Resources, Inc.: *See—*
  Grudich, George, 4,441,653, Cl. 236-93.00R.
Parent, James R., to NDM Corporation. Medical electrode. 4,441,501, Cl. 128-641.000.
Parker, Alan; and Clough, Douglas O., to Hollingsworth (U.K.) Limited. Friction spinning apparatus. 4,441,310, Cl. 57-401.000.
Parks, James E.: *See—*
  Hurst, G. Samuel; Parks, James E.; and Schmitt, Harold W., 4,442,354, Cl. 250-281.000.
Parrish, Henry H., Jr.; and Srinivasagopalan, Rangarajan, to Racal Data Communications Inc. Digital transmitter with vector component addressing. 4,442,530, Cl. 375-67.000.
Passmore, David T.; Wooten, Willis C.; and McBride, Paul, to Eastman Kodak Company. Thermosetting powder coating compositions. 4,442,270, Cl. 525-440.000.
Patel, Dhirajlal C.: *See—*
  Setterberg, John R., Jr.; and Patel, Dhirajlal C., 4,441,553, Cl. 166-138.000.
Patten, Kenneth S. Internal combustion engine or pumping device. 4,441,587, Cl. 188-70.00R.
Paudler, Franklin T. Universal suture passer. 4,441,497, Cl. 128-339.000.
Paul, Raymond: *See—*
  Zasio, John; Cooke, Larry; and Paul, Raymond, 4,442,361, Cl. 250-491.100.
Paul, Reiner: *See—*
  Rasshofer, Werner; Schafer, Hermann; Paul, Reiner; and Beuth, Josef, 4,442,236, Cl. 521-130.000.
Pauliukonis, Richard S. O-ring solenoid valve. 4,441,687, Cl. 251-139.000.
Paulsen, Hans: *See—*
  Kolar, Cenek; Paulsen, Hans; and Jacquinet, Jean C., 4,442,284, Cl. 536-17.900.
Pawlikowski, Walter W.: *See—*
  Marquart, Vernon W.; and Pawlikowski, Walter W., 4,441,228, Cl. 15-229.0BP.
Pawlowski, Thomas D., to James River-Dixie/Nortern, Inc. Display carton. 4,441,608, Cl. 206-45.140.
Pawnee Products,Inc.: *See—*
  Scheer, Daniel J., 4,441,456, Cl. 119-45.00R.
Payrhammer, Bernd: *See—*
  Bartel, Siegfried; Ermer, Wolfgang; and Payrhammer, Bernd, 4,441,667, Cl. 242-197.000.
Pelis, Giovanni, to Northwest Blueprint & Supply Co. Diazo copy machine with ammonia fume eliminator. 4,441,803, Cl. 354-299.000.
Pento, Joseph T.: *See—*
  Magarian, Robert A.; and Pento, Joseph T., 4,442,119, Cl. 424-274.000.
Perrin, Christian: *See—*
  Bertails, Jean-Claude; and Perrin, Christian, 4,442,398, Cl. 323-315.000.
Perry, Ralph A.: *See—*
  Andrejasich, Raymond J.; and Perry, Ralph A., 4,442,405, Cl. 324-439.000.
Pessier, Rudolf C. O.; Ippolito, Rodolfo M.; and Baker, Billy E., to Hughes Tool Company. Drill bit with dispersed cutter inserts. 4,441,566, Cl. 175-374.000.
Petasis, Nicos A.: *See—*
  Nicolaou, Kyriacos C.; Petasis, Nicos A.; and Seitz, Steven P., 4,442,099, Cl. 424-248.570.
Peters, Charles F.: *See—*
  Morrell, Roberto I.; and Peters, Charles F., 4,442,081, Cl. 423-321.00R.
Peters, Lester L., to Cummins Engine Company, Inc. Fuel injector assembly including a blow-back prevention cam. 4,441,654, Cl. 239-89.000.
Petersen, Godber: *See—*
  Heckler, Hatto; Petersen, Godber; and Frick, Alfons, 4,441,390, Cl. 83-154.000.
Peterson, Donald A.; and Skrzypczak, Henry K., to Stoelting Company. Electronic cuff to monitor blood pressure in polygraph instruments. 4,441,504, Cl. 128-686.000.
Peterson, Donny L.; and Butts, Michael L., to Tipton, William E., Jr. Silver recovery unit. 4,441,697, Cl. 266-170.000.
Peterson, Lester W. Recreational apparatus. 4,441,220, Cl. 5-431.000.
Petri, Bernd: *See—*
  Stadler, Werner; and Petri, Bernd, 4,441,516, Cl. 133-8.00A.
Petrolite Corporation: *See—*
  Redmore, Derek, 4,442,286, Cl. 544-178.000.
Petrozello, James R., to International Business Machines Corporation. Rotary fiber optic switch. 4,441,785, Cl. 350-96.200.
Petruschke, John W.: *See—*
  Wright, Andrew C. W.; and Petruschke, John W., 4,441,843, Cl. 411-349.000.
Pfeifer, Friedrich; and Kessler, Willi, to Vacuumschmelze GmbH. Method for producing toroidal tape cores for fault current safety switches and use of such cores. 4,441,940, Cl. 148-121.000.
Pfeifer, George F.; Koonce, George R.; and Phillips, Jack E., to General Electric Company. Optoelectronic incremental position encoder. 4,442,351, Cl. 250-237.00G.
Pfizer Inc.: *See—*
  Belletire, John L.; and Sarges, Reinhard, 4,442,114, Cl. 424-267.000.
Pfordt, Hartwig: *See—*
  Damm, Horst; and Pfordt, Hartwig, 4,441,570, Cl. 180-9.620.
Pharos AB: *See—*
  Wickman, Kjell J., 4,441,818, Cl. 356-372.000.
Philip Morris Incorporated: *See—*
  Edwards, William B., III, 4,442,292, Cl. 546-281.000.
Phillips, Edward H., to Hidden Valley Associates. Apparatus for sonically facilitating the cleaning of oil storage and transport vessels. 4,441,517, Cl. 134-113.000.
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  Haws, John R., 4,442,265, Cl. 525-91.000.
  Kimble, James B., 4,441,992, Cl. 208-251.00H.
  Likins, Merle R., Jr.; and Stacy, Galen D., 4,442,069, Cl. 422-62.000.
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Pickering, John; Woodhouse, Ian; and Ganendran, Araspillai N., to BTR Limited. Method of and apparatus for repairing a leak in a pipe or pipeline. 4,442,053, Cl. 264-36.000.
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  Pielkenrood, Jacob, 4,442,000, Cl. 210-256.000.
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  Ikedo, Yuji, 4,442,467, Cl. 360-105.000.
  Isaki, Mikio, 4,442,466, Cl. 360-75.000.
  Yoshida, Satoshi; and Higashi, Hidejiro, 4,442,323, Cl. 179-110.00A.
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Piper, Douglas E., to Woven Electronics Corporation. Shielded woven cable assembly and method of making same. 4,442,314, Cl. 174-36.000.
Pipkin, David J., to International Business Machines Corporation. Method for forming a coating on a substrate. 4,442,144, Cl. 427-355.000.
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  Zabrocki, Karl; and Pischtschan, Alfred, 4,442,264, Cl. 525-86.000.
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  Buan, Danilo P.; and Navok, Ezra, 4,441,420, Cl. 101-69.000.
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  Eckert, Alton B., Jr.; and Duwel, Edward C., 4,442,501, Cl. 364-900.000.
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  Vartiainen, Jorma, 4,441,537, Cl. 144-357.000.
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  Heuschmann, Herr F.; and Plank, Herr A., 4,442,426, Cl. 340-539.000.
Plapp, Gunther: *See—*
  Kratt, Alfred; Kraus, Bernd; and Plapp, Gunther, 4,441,471, Cl. 123-339.000.
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  Cannon, John P., 4,441,336, Cl. 62-457.000.
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Pohler, Carl-Ludwig. Testing installation for pipes having an internal testing unit driven by the rotation of the pipe. 4,442,403, Cl. 324-220.000.
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  - Bartels-Keith, James R.; and Puttick, Anthony J., 4,442,290, Cl. 544-310.000.
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- Ponczek, George M., to Stewart-Warner Corporation. Gearbox drive for a speedometer. 4,441,378, Cl. 74-414.000.
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  - Ludwick, Sandra L.; Pond, Stanley L.; and Rhodes, Robert T., 4,442,356, Cl. 250-324.000.
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  - Vasiliev, Boris P.; Borisov, Nikolai L.; Semenov, Mikhail K.; Ponomarev, Ivan K.; Tyryshkina, Galina B.; and Gorbatenko, Igor V., 4,441,549, Cl. 165-145.000.
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  - Malivoir, Roger; and Mayer, Gilbert, 4,441,847, Cl. 414-31.000.
- Poole, A. Robin; Mort, John S.; and Recklies, Anneliese D., to Shriners Hospitals for Crippled Children. Tumor enzyme detection. 4,442,088, Cl. 424-85.000.
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  - Schroeder, Edward A.; and Donat, William F., 4,441,709, Cl. 273-1.50R.
- Porter, John F.; Walling, Joerg-Heim J.; and Axiuk, Oleg, to Northern Telecom Limited. Pulp insulated telecommunications conductor. 4,441,961, Cl. 162-106.000.
- Portsmouth, Joseph P., to Nabisco Brands, Inc. Single piece packaging container. 4,441,648, Cl. 229-37.00R.
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- Pounds, Douglas W., to Leland Stanford Jr. University, Board of Trustees of. Hyperthermia system. 4,441,486, Cl. 128-24.00A.
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- Powell, Thomas M., to General Motors Corporation. Supplementary fuel system for enhancing low temperature engine operation. 4,441,467, Cl. 123-179.00G.
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  - Van Sickle, Robert J., 4,442,385, Cl. 318-140.000.
- Power, Harold H. Static line mixer. 4,441,823, Cl. 366-167.000.
- Powers, Charles A.; and Holman, George B., to Standard Oil Company. Diverter tool and its use. 4,441,556, Cl. 166-290.000.
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  - Oelsch, Jurgen; Volk, Richard; and Claassen, Karl-Heinz, 4,442,055, Cl. 264-105.000.
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  - Arntz, Dietrich; Prescher, Gunter; and Heilos, Johannes, 4,442,308, Cl. 568-480.000.
- Preslar, Donald R., to RCA Corporation. Push-pull non-complementary transistor amplifier. 4,442,409, Cl. 330-274.000.
- Presray Corporation, The: *See—*
  - Covey, George H., III, 4,441,278, Cl. 49-477.000.
- Presti, Frank P.: *See—*
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- Price, Abner B.; and Burnley, William S., III, to United States of America, Navy. Retainer for a projectile rotating band. 4,441,429, Cl. 102-526.000.
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  - Clitherow, John W.; Bradshaw, John; Mackinnon, John W. M.; Price, Barry J.; Martin-Smith, Michael; and Judd, Duncan B., 4,442,110, Cl. 424-263.000.
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- Priegnitz, James W.: *See—*
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- Priel, Ury; Yaron, Giora; and Ebel, Mark S., to National Semiconductor Corporation. Semiconductor memory byte clear circuit. 4,442,510, Cl. 365-218.000.
- Prinz, Peter: *See—*
  - Erpenbach, Heinz; Gehrmann, Klaus; Lork, Winfried; and Prinz, Peter, 4,442,304, Cl. 560-232.000.
- Prinzbach, Horst; Schwesinger, Reinhard; and Keller, Reinhold, to BASF Aktiengesellschaft. Diepoxycyclohexane derivatives. 4,442,299, Cl. 549-545.000.
- Probst, Joachim; Riberi, Bernd; Kolb, Gunter, deceased (by Kolb, Ingeborg, heiress); and Hohlein, Peter, to Bayer Aktiengesellschaft. Process for coating substrates with polyisocyanates and polyhydroxy polyacrylates. 4,442,145, Cl. 427-385.500.
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  - Ahr, Nicholas A.; and Moret, David M., 4,441,212, Cl. 2-49.00R.
  - Leonard, Edward F., 4,441,947, Cl. 156-158.000.
  - Mullane, William I., Jr., 4,441,952, Cl. 156-222.000.
  - Osborn, Thomas W., III, 4,441,962, Cl. 162-111.000.
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  - Ericsson, Axel B. R., 4,441,292, Cl. 52-309.700.
- Proksa, Ferdinand; Sulzbach, Hans-Michael; and Raffel, Reiner, to Maschinenfabrik Hennecke GmbH. Apparatus for the production of a flowable reaction mixture. 4,442,070, Cl. 422-133.000.
- Propster, Mark A.; Seng, Stephen; and Hohman, Charles M., to Owens-Corning Fiberglas Corporation. Method of preheating glass batch. 4,441,906, Cl. 65-27.000.
- Pryor, Michael J.; and Sevier, Peter E., to Olin Corporation. Process for cooling and solidifying continuous or semi-continuously cast material. 4,441,542, Cl. 164-485.000.
- Pryor, Timothy R., to Diffracto Ltd. Electro-optical sensors with fiber optic bundles. 4,441,817, Cl. 356-375.000.
- Purdum, William R., to Monsanto Company. Process for preparing monoesters and diesters of N-alkyl substituted amino methyl phosphonic acid. 4,442,044, Cl. 260-969.000.
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  - McCurley, Jack, 4,441,544, Cl. 165-1.000.
- Quantz, James B., to Machine Design Incorporated. Cracking die assembly for high production nut cracking apparatus. 4,441,414, Cl. 99-571.000.
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- Quigley, William L. Electronic navigation method and system. 4,442,432, Cl. 343-394.000.
- Quinlan, James M., to American Cyanamid Company. Diethylcarbamazine resinate and styrylpyridinium resinate-diethylcarbamazine resinate edible anthelmintic tablets for companion animals. 4,442,086, Cl. 424-79.000.
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  - Latter, Albert L.; Hammond, R. Philip; and Dooley, James L., 4,442,065, Cl. 376-280.000.
  - Ridgway, Stuart L., 4,441,321, Cl. 60-641.700.
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  - Daugherty, Carol A.; Siebens, Larry N.; and Daugherty, Ronald R., 4,441,487, Cl. 128-24.200.
- R. W. Simon Limited: *See—*
  - Simon, Johnathan G., 4,441,404, Cl. 98-96.000.
- Racal Data Communications Inc.: *See—*
  - Parrish, Henry H., Jr.; and Srinivasagopalan, Rangarajan, 4,442,530, Cl. 375-67.000.
- Racal Research Limited: *See—*
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- Rado, Theodore A., to Kerr-McGee Chemical Corporation. Titanium ore chlorination process using a molten salt. 4,442,075, Cl. 423-76.000.
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- Raimondo, Michele: *See—*
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- Rand, Peter B., to United States of America, Energy. Stabilized aqueous foam systems and concentrate and method for making them. 4,442,018, Cl. 252-307.000.
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- Rao, Basrur R., to Sperry Corporation. Short pulse generator. 4,442,362, Cl. 307-108.000.
- Rappinger, Bo; and Stenkvist, Sven-Einar, to ASEA AB. Electric arc furnace arcing electrode seal. 4,442,526, Cl. 373-95.000.
- Rashleigh, Scott C., to United States of America, Navy. Fiber optic sensor with enhanced immunity to random environmental perturbations. 4,442,350, Cl. 250-227.000.
- Rasshofer, Werner; Schafer, Hermann; Paul, Reiner; and Beuth, Josef, to Bayer Aktiengesellschaft. Process for the production of molded articles. 4,442,236, Cl. 521-130.000.
- Rathbone, Elner B.; Waites, Geoffrey M. H.; and Ford, William C. L., to Tate & Lyle Public Limited Company. 6-Chloro-6-deoxy-D-hexitols, compositions containing them and their use in fertility control. 4,442,123, Cl. 424-308.000.
- Rattner, Manfred: *See—*
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- Rau, Wolfgang; Klamann, Helmut; and Hennenberger, Peter, to BASF Aktiengesellschaft. Preparation of propylene homopolymers or copolymers. 4,442,271, Cl. 526-61.000.
- Rautio, Kauko. Machine for hewing square timbers. 4,441,536, Cl. 144-39.000.
- Raychem Corporation: *See—*
  - Brigham, Alan, 4,442,139, Cl. 427-122.000.
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  - Brauer, Eric A., 4,442,517, Cl. 369-71.000.
  - Carlson, David E.; and Williams, Brown F., 4,442,310, Cl. 136-256.000.
  - Hedlund, Lee V.; and Shields, Jerome D., 4,442,465, Cl. 360-130.230.
  - Ipri, Alfred C.; and Stewart, Roger G., 4,442,447, Cl. 357-41.000.
  - Kern, Werner, 4,442,134, Cl. 427-9.000.
  - Lehmann, William L., 4,442,548, Cl. 455-195.000.
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  - Smith, Edwin B.; and Craft, Richard A., 4,442,412, Cl. 331-1.000.
  - Tults, Juri, 4,442,547, Cl. 455-180.000.
- Reber, Dwight E., to Columbia Helicopters, Inc. Cargo sling system for a helicopter. 4,441,750, Cl. 294-83.00R.
- Recklies, Anneliese D.: *See—*
  - Poole, A. Robin; Mort, John S.; and Recklies, Anneliese D., 4,442,088, Cl. 424-85.000.
- Reclamet, Inc.: *See—*
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- Redmore, Derek, to Petrolite Corporation. Preparation of amines by the reduction of imines with phosphorous acid. 4,442,286, Cl. 544-178.000.
- Redwine, Donald J., to Texas Instruments Incorporated. Method of making memory cell by selective oxidation of polysilicon. 4,441,246, Cl. 29-571.000.
- Reed, Gordon A. D., to Liquid Carbonic Inc. Catalytic curing of coatings. 4,442,143, Cl. 427-340.000.
- Reed, William G.: *See—*
  - Nagy, Alex J.; and Reed, William G., 4,442,131, Cl. 426-518.000.
- Reeder, Dennis J.; Campbell, John S.; Kasunic, Keith J.; and Laiterman, Lee H., to Spectra-Physics, Inc. Multiple lever apparatus for positioning an optical element. 4,442,524, Cl. 372-107.000.
- Reeves, William H.: *See—*
  - Buirley, William L.; Koopman, Donald E.; McQuain, David B.; and Reeves, William H., 4,441,508, Cl. 128-736.000.
- Rehberg, Bobby E., to Estech, Inc.. Ethylene inhibition in plants. 4,441,918, Cl. 71-113.000.
- Rehm, Russell H. Activated seawater wastewater treatment system. 4,442,007, Cl. 210-631.000.
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  - Dettelbach, Alfred; and Henzler, Roland, 4,441,450, Cl. 118-681.000.
- Reichgott, David W.: *See—*
  - O'Leary, Richard P.; and Reichgott, David W., 4,442,009, Cl. 210-697.000.
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- Relyea, John W.: *See—*
  - Alley, Robert P.; Relyea, John W.; and Sidebottom, Donald L., 4,441,545, Cl. 165-26.000.
- Repa, Petr: *See—*
  - Emmer, Ivan; Hajek, Zdenek; and Repa, Petr, 4,441,968, Cl. 204-35.00N.
- Republic Tool & Manufacturing Corporation: *See—*
  - McRoskey, Jack W., 4,441,395, Cl. 83-862.000.
- Research Corporation: *See—*
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- Revell, Alan E., to American Air Filter Company, Inc. Discharge apparatus for removing granular filter material from a filter housing and a filter apparatus having same. 4,441,898, Cl. 55-350.000.
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- Reynertson, Philip S., to Monsanto Company. Form for refractory-faced tube sheets. 4,442,052, Cl. 264-30.000.
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- Reynolds, William V. Movement dampening ear speculum. 4,441,485, Cl. 128-9.000.
- Rhoads, Randy L.: *See—*
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- Rhodes, Robert T.: *See—*
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- Rhone-Poulenc Industries: *See—*
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  - Probst, Joachim; Riberi, Bernd; Kolb, Gunter, deceased; and Hohlein, Peter, 4,442,145, Cl. 427-385.500.
- Rice, Lawrence M.: *See—*
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- Richards, Richard D.: *See—*
  - Simon, William E.; and Richards, Richard D., 4,442,496, Cl. 364-524.000.
- Richardson, Bryan D.; and Lewis, Shelton E., to Standard Oil Company (Indiana). Base cup applicator. 4,441,955, Cl. 156-423.000.
- Ricketts, Thomas E.: *See—*
  - Hutchins, Ned M.; Studebaker, Irving G.; Kvapil, Rudolf; and Ricketts, Thomas E., 4,441,759, Cl. 299-2.000.
- Rickman, Mark A.; and Leonard, Murray, to Vernitron Corporation. Ignition indicator for gas grills. 4,441,480, Cl. 126-42.000.
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- Rideal, Graham R.: *See—*
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- Ridgway, Stuart L., to R & D Associates. Compact mist flow power generator. 4,441,321, Cl. 60-641.700.
- Riebli, Peter: *See—*
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- Riedl, Harold R.: *See—*
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- Rieger, Herbert. Horizontal container for processing wine grape must. 4,441,407, Cl. 99-277.200.
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- Riley, Robert E. Support for roof insulation in metal buildings and method for insulating the roof of such buildings. 4,441,294, Cl. 52-404.000.
- Ritter, Ernst: *See—*
  - Fiedler, Helmut; and Ritter, Ernst, 4,441,868, Cl. 417-490.000.
- Rittmann, Friedrich: *See—*
  - Zolner, Dieter H.; Rittmann, Friedrich; Dung, Herbert; Haremsa, Johannes; Bauer, Georg; Otto, Josef; Muhlenbeck, Josef; and Lauterbach-Dammler, Inge, 4,442,525, Cl. 373-93.000.
- Ritzi, Emil W., to Transamerica Delaval Inc. Multi-stage, wet steam turbine. 4,441,322, Cl. 60-649.000.
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  - Autrey, Harry S.; and Hunnell, John W., 4,442,130, Cl. 426-462.000.
- Rivkin, Bernard; and Wolfe, Marshall W. Anchor for a perforated board hanger. 4,441,680, Cl. 248-220.400.
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  - Andersson, Borje, 4,441,625, Cl. 220-257.000.
  - Fiedler, Helmut; and Ritter, Ernst, 4,441,868, Cl. 417-490.000.
  - Knorreck, Peter, 4,441,472, Cl. 123-383.000.
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  - Seyffer, Siegfried, 4,441,686, Cl. 251-127.000.
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  - Gozzo, Franco; Caprara, Giuseppe; Roberti, Lamberto; Paparatto, Giuseppe; and Santoro, Ettore, 4,442,301, Cl. 560-124.000.
- Roberts, James E.; and Lenarth, Edward L. Charge air cooling system. 4,441,476, Cl. 123-542.000.
- Roberts, Peter, to Thrush Incorporated. Tail-pipe replacement kit. 4,441,579, Cl. 181-243.000.
- Roberts, Walter M., to Walton Energy Systems Co. Piezo electric apparatus for generating electricity. 4,442,372, Cl. 310-339.000.
- Robertshaw Controls Company: *See—*
  - Wolfe, Denis G.; and Wada, Naohisa, 4,441,317, Cl. 60-527.000.
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  - Michaels, Alan S.; Robertson, Channing R.; Cohen, Stanley N.; Inloes, Douglas S.; and Smith, William J., 4,442,206, Cl. 435-68.000.
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- Saito, Takao; and Ezure, Kazuya, to Nippon Steel Corporation. Steel strip having differentiated multilayer coatings and being useful for manufacturing of cans. 4,442,181, Cl. 428-623.000.
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  - Baumann, Hans-Peter; and Mosimann, Urs, 4,441,884, Cl. 8-542.000.
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  - Romer, Dietmar, 4,442,084, Cl. 424-251.000.
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  - Tsunekawa, Masayoshi; Yoshida, Shinzo; and Komura, Tamotsu, 4,442,239, Cl. 523-116.000.
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  - Liljekvist, Bernt S., 4,441,565, Cl. 175-325.000.
- Sarges, Reinhard: *See—*
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- Sauer, Robert L. Rotary head tray dropper. 4,441,630, Cl. 221-297.000.
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  - Boutin, Francois-Regis; and Kubie, Jan, 4,441,933, Cl. 148-2.000.
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  - Moraw, Roland; and Schadlich, Renate, 4,441,945, Cl. 156-108.000.
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- Schaffeler, Alois, to Marquardt GmbH. Electrical switch. 4,442,328, Cl. 200-76.000.
- Scheer, Daniel J., to Pawnee Products,Inc. Roll out nest system and method. 4,441,456, Cl. 119-45.00R.
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- Schick, Manfred: *See—*
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- Schlissel, Ann R. Telescopic shopping cart. 4,441,734, Cl. 280-638.000.
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- Schneider, Bernard A. Identification technique for air traffic. 4,442,430, Cl. 343-6.50R.
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- Schroeder, Warren C, Bicycle sail. 4,441,728, Cl. 280-213.000.
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  - Houghton, Alexander J.; and Knasel, Thomas M., 4,441,783, Cl. 350-96.100.
- Sciolla, Lussoria A. Apparatus for admixing a gas to a liquid, in particular for admixing oxygen to polluted water. 4,442,045, Cl. 261-36.00R.
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  - Bonsack, James P., 4,442,076, Cl. 423-78.000.
  - Borovicka, David A., Sr.; Hahn, Kenneth G., Jr.; and Tupa, John T., 4,442,257, Cl. 524-555.000.
  - Brown, George L.; and Spencer, Arthur T., 4,442,246, Cl. 523-404.000.
- Scott, Doug. Picture framing device. 4,441,268, Cl. 40-152.100.

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  - Foster, David I.; Scott, Paul T.; Pierick, Mark W.; and Shaddock, Clarence L., Jr., 4,442,077, Cl. 423-210.000.
- Scozzafava, Michael: *See—*
  - Chen, Chin H.; Young, Ralph H.; and Scozzafava, Michael, 4,442,193, Cl. 430-83.000.
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- Seale, Joseph B. Fluid energy conversion system. 4,441,872, Cl. 417-282.000.
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- Segal, William J., to Orion Industries, Inc. Decorative wheel covering for providing a multiplicity of designs. 4,441,762, Cl. 301-37.00R.
- Segawa, Hirohisa: *See—*
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- Seiko Instruments & Electronics Ltd.: *See—*
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  - Okamoto, Hiroshi; Seki, Michiharu; and Ohayashi, Hidehito, 4,441,981, Cl. 204-426.000.
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- Siebens, Larry N.: *See—*
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  - Aichinger, Horst; and Franke, Kurt, 4,442,539, Cl. 378-207.000.
  - Baumann, Heinz; Kuhnel, Werner; and Rattner, Manfred, 4,442,483, Cl. 363-131.000.
  - Foertsch, Johann; and Meltsch, Hans-Juergen, 4,442,155, Cl. 428-99.000.
  - Fortsch, Johann; and Meltsch, Hans-Jurgen, 4,442,154, Cl. 428-99.000.
  - Gehring, Gerhard, 4,442,411, Cl. 330-296.000.
  - Gupta, Probodh D., 4,442,531, Cl. 375-94.000.
  - Haendle, Joerg; and Sklebitz, Hartmut, 4,442,534, Cl. 378-21.000.
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  - Schaefer, Willi, 4,442,536, Cl. 378-26.000.
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- Sitt, Rudiger: *See—*
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- Skuster, James R., to Norwich Eaton Pharmaceuticals, Inc. Converting enzyme inhibitors. 4,442,038, Cl. 260-455.00R.
- Skvaril, Joseph. Prefabricated cube construction system for housing and civic development. 4,441,286, Cl. 52-79.100.
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- Slepcevic, Dusan. Encapsulation mold with gate plate and method of using same. 4,442,056, Cl 264-161.000.
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- Smith, Gerald L., to International Business Machines Corporation. Means for positioning optical components for a variable magnification/reduction copier optics system. 4,441,805, Cl 355-14.00R.
- Smith, James D. B.: *See—*
  - Bich, George J.; Burke, Thomas M.; and Smith, James D. B., 4,442,138, Cl. 427-116.000.
- Smith, Jeffrey W.: *See—*
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- Smith, John R., to United States of America, Air Force. Combined cycle ramjet engine. 4,441,312, Cl. 60-245.000.
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  - Knapp, William; Dunn, William; and Smith, Kent F., 4,442,508, Cl. 365-104.000.
- Smith, Russell D.: *See—*
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- Snaddon, Robert W. L., to General Electric Company. Method for coating with an atomizable material. 4,442,135, Cl. 427-31.000.
- Snooks, Laura K., to Alex S. Reinharcz Enterprises, Inc. Steering wheel cover. 4,441,382, Cl. 74-558.000.
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- Snyder, George H.; Snyder, George H., III; and Nusbaumer, Joseph M. Automatic fuel dispenser. 4,441,533, Cl. 141-59.000.
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  - Wissgott, Ulrich, 4,442,105, Cl. 426-250.000.
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  - Joubert, Raymond J. M.; and Bouiller, Jean G., 4,441,313, Cl. 60-262.000.
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  - Reeder, Dennis J.; Campbell, John S.; Kasunic, Keith J.; and Laiterman, Lee H., 4,442,524, Cl. 372-107.000,
- Spencer, Arthur T.: *See—*
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- Spencer, Peter. Process and apparatus for thermal cracking and fractionation of hydrocarbons. 4,441,989, Cl. 208-76.000.
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  - Eibner, Jules A., 4,442,425, Cl. 340-365.00S.
  - Lin, Ta-Tung, deceased; Lin, Meei H., Executrix; and Fedde, George A., 4,442,542, Cl. 382-8.000.
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  - Sanjurjo, Angel, 4,442,082, Cl. 423-350.000.
- Srinivasagopalan, Rangarajan: *See—*
  - Parrish, Henry H., Jr.; and Srinivasagopalan, Rangarajan, 4,442,530, Cl. 375-67.000.
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- Stacy, Galen D.: *See—*
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  - Schlig, Harold W.; and Staehs, Joel L., 4,441,604, Cl. 198-598.000.
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  - Huie, Nicholas C.; and Bradley, William, 4,441,657, Cl. 241-14.000.
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- Stanley Electric Company, Ltd.: *See—*
  - Sherman, Rand C.; and Wood, Van E., 4,441,248, Cl. 29-574.000.
- Stansbury, Benjamin H. Automatically actuated enclosure light. 4,442,478, Cl. 362-191.000.
- Stark, Forest G., to AVM Corporation. Cabinet drawer anti-tip lock device. 4,441,767, Cl. 312-216.000.
- Starkweather, Robert G., to Escort Systems, Inc. Wrecker attachment. 4,441,851, Cl. 414-563.000.
- Starline Products, Inc.: *See—*
  - West, Frank L.; and Norton, Larry A., 4,442,327, Cl. 200-51.00R.
- Stauffer Chemical Company: *See—*
  - Baker, Don R.; and Gutman, Arnold D., 4,441,916, Cl. 71-100.000.
  - Canales, Manuel J.; and Reynolds, John, 4,442,083, Cl. 423-567.00R.
  - Duerksen, Charles J.; and Rodriquez, Benjamin P., 4,441,914, Cl. 71-95.000.
  - Schwartz, Robert D.; and Bodie, Elizabeth A., 4,442,128, Cl. 426-41.000.
  - Subramanian, N., 4,442,041, Cl. 260-502.50F.
- Steag AG: *See—*
  - Bassier, Friedrich; and Goldschmidt, Klaus, 4,441,840, Cl. 405-267.000.
- Steel Heddle Manufacturing Company: *See—*
  - Kramer, Charles F., 4,441,529, Cl. 139-207.000.
- Steelcase Inc.: *See—*
  - Webster, Michael P., 4,441,580, Cl. 181-286.000.
- Steenbergen, Johannes F., to Wavin B.V. Adhesively joined pipe connection. 4,441,743, Cl. 285-21.000.
- Steenkamp, Gezinus A.: *See—*
  - Middel, Jan; and Steenkamp, Gezinus A., 4,441,935, Cl. 148-9.500.
- Steffin, Morris. High speed single electrode membrane voltage clamp. 4,441,507, Cl. 128-734.000.
- Stehman, Carl J., to Rockwell International Corporation. Transparent dialing between interconnected telecommunication switching systems. 4,442,321, Cl. 179-18.0EB.
- Steidl, Dieter: *See—*
  - Johannes, Gerhard; Shroff, Fali; Dullis, Gerhard; and Steidl, Dieter, 4,442,244, Cl. 523-221.000.
- Stein, David M.: *See—*
  - Fletcher, Robert P.; Stein, David M.; and Wladawsky-Berger, Irving, 4,442,487, Cl. 364-200.000.
- Steinmair, Karl, to Voest-Alpine Aktiengesellschaft. Apparatus for storing strip, particularly metal strip. 4,441,661, Cl. 242-55.000.
- Stenkvist, Sven-Einar: *See—*
  - Rappinger, Bo; and Stenkvist, Sven-Einar, 4,442,526, Cl. 373-95.000.
- Stenzel, Gerhard: *See—*
  - Kaule, Wittich; Schwenk, Gerhard; and Stenzel, Gerhard, 4,442,170, Cl. 428-333.000.
- Stephan, Rudolf: *See—*
  - Brandstetter, Franz; Hambrecht, Juergen; Stephan, Rudolf; Overhoff, Heinz-Juergen; Schwaab, Josef; Bernhard, Claus; Swoboda, Johann; and Echte, Adolf, 4,442,263, Cl. 525-83.000.
- Sternberg, Stanley R.; and Lougheed, Robert M., to Environmental Research Institute. Bit enable circuitry for an image analyzer system. 4,442,543, Cl. 382-49.000.
- Sternheim, Marek A.: *See—*
  - Alspector, Joshua; Kinsbron, Eliezer; and Sternheim, Marek A., 4,441,249, Cl. 29-577.00C.
- Stevens, Cornelis L.: *See—*
  - Dane, Lambertus M.; Engels, Johannes C. A.; and Stevens, Cornelis L., 4,442,054, Cl. 264-40.100.
- Stevens, Fred C. Controlled wheel braking system. 4,441,589, Cl. 188-181.00T.
- Stewart, Daniel L.: *See—*
  - Dummermuth, Ernst H.; Galdun, Daniel J.; Grudowski, Raymond A.; and Stewart, Daniel L., 4,442,504, Cl. 364-900.000.
- Stewart, Roger G.: *See—*
  - Ipri, Alfred C.; and Stewart, Roger G., 4,442,447, Cl. 357-41.000.
- Stewart-Warner Corporation: *See—*
  - Ponczek, George M., 4,441,378, Cl. 74-414.000.
- Stiemert, Ward L.: *See—*
  - Flinn, John W.; Johnson, James D.; and Stiemert, Ward L., 4,441,535, Cl. 144-3.00K.
- Stierli, Robert F., to W. R. Grace & Co. Waterproofing laminate. 4,442,148, Cl. 428-40.000.
- Stoelting Company: *See—*
  - Peterson, Donald A.; and Skrzypczak, Henry K., 4,441,504, Cl. 128-686.000.
- Stoffel, James C.: *See—*
  - Moreland, John F.; and Stoffel, James C., 4,442,544, Cl. 382-53.000.
- Stohlquist, Roger H., to Anderson Bros. Mfg. Co. Apparatus for feeding web material from a supply roll. 4,441,664, Cl. 242-75.420.
- Stoides, John G.: *See—*
  - Finkel, Joel R.; Freudenthal, William E.; and Stoides, John G., 4,442,541, Cl. 382-7.000.
- Stojanik, Bernd: *See—*
  - Lieser, Karl H.; and Stojanik, Bernd, 4,442,071, Cl. 423-10.000.
- Stojek, Dieter, to Ford Motor Company. Camshaft bearing and method for mounting the camshaft. 4,441,243, Cl. 29-433.000.
- Stoll, Kurt. Sequencing valve. 4,441,523, Cl. 137-624.180.
- Stoody, William R. Soft shell aerosol dispenser unit. 4,441,632, Cl. 222-129.000.
- Storage Technology Partners (through STC Computer Research Corporation): *See—*
  - Zasio, John; Cooke, Larry; and Paul, Raymond, 4,442,361, Cl. 250-491.100.
- Storm, Gregory A.: *See—*
  - Storm, Nelson; and Storm, Gregory A., 4,441,279, Cl. 51-69.000.
- Storm, Nelson; and Storm, Gregory A., to E-Z Products, Inc., by said Nelson Storm. Portable sharpener. 4,441,279, Cl. 51-69.000.
- Storz, Werner, to Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. KG. Fluid clutch. 4,441,599, Cl. 192-58.00B.
- Stover, William A.: *See—*
  - Chester, Arthur W.; and Stover, William A., 4,442,223, Cl. 502-68.000.
- Stowe, Lawrence R., to Mobil Oil Corporation. Shale retorting with inorganic removal prior to combustion. 4,441,986, Cl. 208-11.00R.
- Strain, Ernest D., Jr. Method and apparatus for aerating fish ponds. 4,441,452, Cl. 119-3.000.
- Straka, Richard B.: *See—*
  - Becker, Kenneth W.; Friedrichs, Louis G., Jr.; Kropp, Lev; and Straka, Richard B., 4,441,406, Cl. 99-275.000.

- Strolle, Christopher H.: *See—*
  - Reitmeier, Glenn A.; and Strolle, Christopher H., 4,442,545, Cl. 382-56.000.
- Structural Graphics, Inc.: *See—*
  - Crowell, Christopher S.; and Dennison, Warren, 4,441,270, Cl. 40-534.000.
- Struthers Wells Corporation: *See—*
  - Chase, A. Timothy, 4,441,550, Cl. 165-145.000.
- Studebaker, Irving G.: *See—*
  - Hutchins, Ned M.; Studebaker, Irving G.; Kvapil, Rudolf; and Ricketts, Thomas E., 4,441,759, Cl. 299-2.000.
- Su, Fu-Chu. Rear view mirror locking mechanism. 4,441,682, Cl. 248-475.00R.
- Subramanian, N., to Stauffer Chemical Company. Method for preparation of N-phosphonomethylglycine. 4,442,041, Cl. 260-502.50F.
- Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. KG: *See—*
  - Storz, Werner, 4,441,599, Cl. 192-58.00B.
- Sudo, Denpei: *See—*
  - Matukura, Yoshiharu; and Sudo, Denpei, 4,441,621, Cl. 215-247.000.
- Suenaga, Junichi: *See—*
  - Sumi, Masao; Suenaga, Junichi; Takenaka, Masazo; Murano, Itaru; Tanabe, Mikio; and Hirai, Kiyoshi, 4,442,252, Cl. 524-183.000.
- Sugimoto, Sakae: *See—*
  - Saito, Yoshinobu; and Sugimoto, Sakae, 4,442,067, Cl. 420-428.000.
- Sugitani, Junichi; Yoshimoto, Teruo; and Takahashi, Makoto, to Kubota Ltd. Heat resistant cast iron-nickel-chromium alloy. 4,442,068, Cl. 420-584.000.
- Sugitawa, Chikara: *See—*
  - Yusa, Haruhiko; Hoshino, Mitsuru; Kurosaki, Akira; Furusawa, Hironobu; and Sugitawa, Chikara, 4,442,262, Cl. 525-69.000.
- Suh, Byoung I., to Bisco, Inc. Dental filling materials. 4,442,240, Cl. 523-116.000.
- Suhara, Shigeo: *See—*
  - Abe, Toshio; Ishikawa, Hiroshi; and Suhara, Shigeo, 4,441,324, Cl. 60-753.000.
- Sukonick, Josef, to Cadtrak Corporation. Real time toroidal pan. 4,442,495, Cl. 364-521.000.
- Sullivan, Michael C. W.: *See—*
  - Thorby, Douglas C.; and Sullivan, Michael C. W., 4,441,671, Cl. 244-63.000.
- Sulzbach, Hans-Michael: *See—*
  - Proksa, Ferdinand; Sulzbach, Hans-Michael; and Raffel, Reiner, 4,442,070, Cl. 422-133.000.
- Sulzer Brothers Limited: *See—*
  - Julich, Werner, 4,441,528, Cl. 139-66.00R.
- Sumi, Masao; Suenaga, Junichi; Takenaka, Masazo; Murano, Itaru; Tanabe, Mikio; and Hirai, Kiyoshi, to Unitika Ltd.; and Okayama Paper Mill Co., Ltd. Cold-set adhesive compositions comprising polyvinyl alcohol for paper and paper board. 4,442,252, Cl. 524-183.000.
- Sumitomo Bakelite Company Limited: *See—*
  - Saito, Takahide; and Nakagawa, Yasuo, 4,441,875, Cl. 425-3.000.
- Sumitomo Chemical Company, Limited: *See—*
  - Aratani, Yutaka, 4,442,254, Cl. 524-413.000.
  - Kataoka, Yushin; Matsuda, Masaaki; and Kamoda, Masaru, 4,442,231, Cl. 521-32.000.
- Sumitomo Electric Industries, Ltd.: *See—*
  - Fukuda, Akira, 4,442,528, Cl. 375-20.000.
  - Hara, Akio; and Yazu, Shuji, 4,442,180, Cl. 428-551.000.
  - Mori, Yoshikatsu, 4,441,841, Cl. 407-114.000.
- Sun-Dor-Co.: *See—*
  - Grabendike, James F.; and Grabendike, Donald E., 4,441,296, Cl. 52-456.000.
- Sun-Flex Company, Inc.: *See—*
  - Jandrell, Louis H. M., 4,442,317, Cl. 178-18.000.
- Sun Tech, Inc.: *See—*
  - Hsu, Chao-Yang; and Lyons, James E., 4,442,036, Cl. 260-396.00R.
- Sunakawa, Makoto; Moroishi, Yutaka; and Mune, Isao, to Nitto Electric Industrial Co., Ltd. Water-soluble pressure-sensitive adhesive composition. 4,442,258, Cl. 524-767.000.
- Sundstrand Corporation: *See—*
  - Hucker, David J., 4,442,396, Cl. 322-21.000.
- Sundstrand Data Control, Inc.: *See—*
  - Hanson, Richard A., 4,441,366, Cl. 73-517.00B.
- Supik, Helmuth, to Continental Group, Inc., The. Apparatus for annealing of end rim. 4,441,699, Cl. 266-255.000.
- Suwahara, Hiroshi: *See—*
  - Mizuno, Takaji; Suwahara, Hiroshi; and Segawa, Hirohisa, 4,442,339, Cl. 219-130.330.
- Suyama, Tadakazu: *See—*
  - Arakawa, Yoshio; Takanabe, Atsuyuki; Uemura, Yahiro; Funakoshi, Satoshi; and Suyama, Tadakazu, 4,442,037, Cl. 260-397.200.
- Suzuki, Atsushi; Yamada, Hiromichi; Uchida, Yoko; Kohno, Hideki; Fukino Tadashi; and Yoshida, Minoru, to Hitachi Medical Corporation. Radiation detector. 4,442,360, Cl. 250-486.100.
- Suzuki, Hirohisa; and Takahashi, Hironiro, to Ajinomoto Co., Inc. Process for producing corn oil. 4,442,034, Cl. 260-236.600.
- Suzuki, Kunihiko, to Nissan Motor Company, Limited. Four-wheel vehicle drive system. 4,441,575, Cl. 180-248.000.
- Suzuki, Masaru, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Timer switch for vehicle. 4,442,363, Cl. 307-141.400.
- Suzuki, Nobuyoshi, to Olympus Optical Co. Ltd. Device for diluting liquid sample. 4,441,374, Cl. 73-864.120.
- Suzuki, Tadashi, to Alps Electric Co., Ltd. Elastomeric member for suspending a motor while positioning its magnet. 4,442,367, Cl. 310-91.000.
- Suzuki, Yasuhiko: *See—*
  - Nishio, Kanemitsu; Takagi, Shunichi; and Suzuki, Yasuhiko, 4,442,375, Cl. 313-142.000.
- Svensson, Leif Å: *See—*
  - Olsson, O. A. Torsten; Svensson, Leif Å; and Wetterlin, Kjell I. L., 4,442,300, Cl. 560-66.000.
- Swallow, Brian R., to Union Carbide Corporation. Method of treating carbon-dioxide-containing natural gas. 4,441,900, Cl. 62-29.000.
- Swanson, Rollan. Integrated process using non-stoichiometric sulfides or oxides of potassium for making less active metals and hydrocarbons. 4,441,923, Cl. 75-28.000.
- Swasey, Chester C.: *See—*
  - Blumberg, Morris; and Swasey, Chester C., 4,442,017, Cl. 252-301.210.
- Swedlow, Inc.: *See—*
  - White, William H.; Harbison, William C.; and Nelson, Gary L., 4,442,168, Cl. 428-331.000.
- Swift, Allan W., to E. J. Brooks Company. Security seal with weakened portion in stud. 4,441,233, Cl. 24-16.0PB.
- Swiss Aluminium Ltd.: *See—*
  - Wagner, Alfred; Ames, Adolf; and Hodel, Ulf, 4,441,646, Cl. 228-116.000.
- Swoboda, Johann: *See—*
  - Brandstetter, Franz; Hambrecht, Juergen; Stephan, Rudolf; Overhoff, Heinz-Juergen; Schwaab, Josef; Bernhard, Claus; Swoboda, Johann; and Echte, Adolf, 4,442,263, Cl. 525-83.000.
- Symons, James D., to General Motors Corporation. Method of making a cast iron sealing ring. 4,441,349, Cl. 72-53.000.
- Symons, Robert S., to Varian Associates, Inc. Uniform field solenoid magnet with openings. 4,442,417, Cl. 335-210.000.
- Syntex (U.S.A.) Inc.: *See—*
  - Jones, Gordon H.; and Young, John M., 4,442,127, Cl. 424-331.000.
- Synthelabo: *See—*
  - Beeley, Nigel R. A.; Cremer, Gerard; Dimsdale, Michael J.; and Manoury, Philippe, 4,442,126, Cl. 424-324.000.
- Szarka, David D.: *See—*
  - Harris, Allen E.; and Szarka, David D., 4,441,721, Cl. 277-26.000.
- Szkaradek, Edward J., to Morehouse Industries, Inc. Sandmill screen mounting assembly. 4,441,658, Cl. 241-46.170.
- TA Mfg., Inc.: *See—*
  - Byerly, Robert M., 4,441,677, Cl. 248-74.00B.
- Taft, Charles K.; and Herrick, Benjamin M. Analog electro-fluidic signal transducer. 4,441,526, Cl. 137-831.000.
- Taga, Yutaka; Watanabe, Kazuaki; and Nakamura, Shinya, to Toyota Jidosha Kabushiki Kaisha. Transmission control system with positive lockup clutch disengaging system. 4,441,385, Cl. 74-867.000.
- Takada, Syun; Kadowaki, Takashi; Okumura, Mitsuhiro; Nakamura, Shinichi; and Iwagaki, Masaru, to Konishiroku Photo Industry Co., Ltd. Method for production of a silver halide photographic light-sensitive material. 4,442,201, Cl. 430-569.000.
- Takagi, Shigeru; and Tomita, Masahiro, to Nippon Soken, Inc. Dust collecting filter. 4,441,899, Cl. 55-485.000.
- Takagi, Shunichi: *See—*
  - Nishio, Kanemitsu; Takagi, Shunichi; and Suzuki, Yasuhiko, 4,442,375, Cl. 313-142.000.
- Takagi, Yasuo: *See—*
  - Yoneda, Kenji; Sanezawa, Fumio; Takagi, Yasuo; and Ushijima, Yuji, 4,441,468, Cl. 123-198.00E.
- Takagishi, Haruyoshi; Kamio, Kazuyoshi; and Fujikawa, Tsuneo, to Nissan Motor Company, Limited. Automatic vehicle-body assembling system. 4,441,645, Cl. 228-47.000.
- Takahashi, Hironiro: *See—*
  - Suzuki, Hirohisa; and Takahashi, Hironiro, 4,442,034, Cl. 260-236.600.
- Takahashi, Kihei, to Yoshida Kogyo K.K. Apparatus for manufacturing a continuous slide fastener stringer chain with element-free space portions. 4,441,438, Cl. 112-104.000.
- Takahashi, Makoto: *See—*
  - Sugitani, Junichi; Yoshimoto, Teruo; and Takahashi, Makoto, 4,442,068, Cl. 420-584.000.
- Takahashi, Naoya: *See—*
  - Sato, Atsushi; Takahashi, Naoya; Endo, Keiji; and Yanagishita, Hitoshi, 4,442,027, Cl. 252-574.000.
- Takahashi, Nobuyuki; Shibata, Masaaki; and Furuno, Yoshikuni, to Nippon Steel Corporation. High-strength, low-yield-point, cold-rolled steel sheet or strip suitable for deep drawing. 4,441,936, Cl. 148-12.00C.
- Takahashi, Takeshi: *See—*
  - Oshita, Youichi; Sato, Shunji; Takahashi, Takeshi; and Hirasawa, Kunio, 4,442,330, Cl. 200-148.00A.
- Takahashi, Toshiaki: *See—*
  - Momose, Haruhiko; Takahashi, Toshiaki; and Hoshino, Yasushi, 4,441,810, Cl. 356-1.000.
- Takanabe, Atsuyuki: *See—*
  - Arakawa, Yoshio; Takanabe, Atsuyuki; Uemura, Yahiro; Funakoshi, Satoshi; and Suyama, Tadakazu, 4,442,037, Cl. 260-397.200.
- Takano, Shouji, to Tokyo Shibaura Denki Kabushiki Kaisha. Control device of copying machine. 4,442,505, Cl. 364-900.000.
- Takara Kogyo Co., Ltd.: *See—*
  - Ueda, Yoshihiko, 4,441,998, Cl. 210-275.000.
- Takashima, Susumu: *See—*
  - Tamura, Nobuaki; and Takashima, Susumu, 4,442,355, Cl. 250-310.000.

- Takeda Chemical Industries, Ltd.: *See—*
  - Matukura, Yoshiharu; and Sudo, Denpei, 4,441,621, Cl. 215-247.000.
- Takegami, Shinsuke; Ban, Kaoru; and Wakitani, Mitsuru, to Japan Exlan Company, Limited. Novel water-absorbing acrylic fibers. 4,442,173, Cl. 428-372.000.
- Takei, Toshihiro: *See—*
  - Tsuge, Noboru; Shimogawa, Toshiaki; Kuwakado, Satosi; and Takei, Toshihiro, 4,441,738, Cl. 280-806.000.
- Takemura, Takehide, to Matsushita Electric Industrial Co., Ltd. Encoder output pulse detection using two stage shift register and clock oscillator. 4,442,532, Cl. 377-3.000.
- Takenaka Komuten Co., Ltd.: *See—*
  - Ikuo, Yamaguchi; Yasuo, Higashibata; and Masaru, Fujimura, 4,441,289, Cl. 52-167.000.
- Takenaka, Masazo: *See—*
  - Sumi, Masao; Suenaga, Junichi; Takenaka, Masazo; Murano, Itaru; Tanabe, Mikio; and Hirai, Kiyoshi, 4,442,252, Cl. 524-183.000.
- Takenoya, Hideaki: *See—*
  - Hanyu, Susumu; and Takenoya, Hideaki, 4,441,439, Cl. 112-158.00E.
- Takeuchi, Bunzi: *See—*
  - Kimura, Minoru; and Takeuchi, Bunzi, 4,442,178, Cl. 428-446.000.
- Takeuchi, Hideo; Horiguchi, Satoru; and Tamaki, Ryuzo, to Dai Nippon Insatsu Kabushiki Kaisha. Calibration method for printing plate picture pattern area meter. 4,441,819, Cl. 356-380.000.
- Takeuchi, Seiji, to Don Fell Limited; and Lawrence Fell Limited. Bag system for transportation of bulk liquids. 4,441,627, Cl. 220-461.000.
- Takeuchi, Yasuhisa, to Nissan Motor Company, Limited. Solar radiation heat influx sensor for an automotive vehicle. 4,441,405, Cl. 98-201.000.
- Takitani, Masaru; Tomiyasu, Shizuo; and Baba, Keikichi, to Toyo Stauffer Chemical Co., Ltd. Catalytic component for polymerization of α-olefin and method for homo- or co-polymerization of α-olefin. 4,442,224, Cl. 502-112.000.
- Takitani, Masaru; Tomiyasu, Shizuo; and Baba, Keikichi, to Toyo Stauffer Chemical Co., Ltd. Catalytic component for polymerization of α-olefin and method for homo- or co-polymerization of α-olefin. 4,442,225, Cl. 502-112.000.
- Takuo, Hosaka, to Nippon Crucible Co., Ltd. Spray method of applying of monolithic refractory material. 4,442,050, Cl. 264-30.000.
- Taleff, Alexander: *See—*
  - Hicken, Michael G.; Kirschensteiner, Fred; True, Duane A.; and Taleff, Alexander, 4,441,242, Cl. 29-419.00R.
- Tamagawa, Tohoru: *See—*
  - Yanabu, Satoru; Tamagawa, Tohoru; and Funahashi, Takumi, 4,442,469, Cl. 361-4.000.
- Tamaki, Ryuzo: *See—*
  - Takeuchi, Hideo; Horiguchi, Satoru; and Tamaki, Ryuzo, 4,441,819, Cl. 356-380.000.
- Tamamura, Sadao: *See—*
  - Kojima, Yasuhiko; Konno, Seishi; Tamamura, Sadao; Hashimoto, Takashi; and Shibukawa, Nobuyuki, 4,442,087, Cl. 424-85.000.
- Tammer, Thomas: *See—*
  - Handte, Reinhard; Sander, Jurgen; and Tammer, Thomas, 4,442,294, Cl. 548-221.000.
- Tamura, Nobuaki; and Takashima, Susumu, to Jeol, Ltd. Device for detecting secondary electrons in a scanning electron microscope. 4,442,355, Cl. 250-310.000.
- Tanabe, Mikio: *See—*
  - Sumi, Masao; Suenaga, Junichi; Takenaka, Masazo; Murano, Itaru; Tanabe, Mikio; and Hirai, Kiyoshi, 4,442,252, Cl. 524-183.000.
- Tanahashi, Toshio: *See—*
  - Toyoda, Shuhei; and Tanahashi, Toshio, 4,441,464, Cl. 123-52.0MB.
- Tanaka, Mitsuo: *See—*
  - Okamoto, Kouichi; Sakuyama, Masaki; and Tanaka, Mitsuo, 4,442,369, Cl. 310-214.000.
- Tanaka, Terukazu: *See—*
  - Ichihashi, Hitoshi; Tanaka, Terukazu; and Imasato, Yu, 4,442,101, Cl. 424-250.000.
- Tangorra, Giorgio, to Industrie Pirelli S.p.A. Energy accumulator and internal-combustion engine starter comprising said accumulator. 4,441,466, Cl. 123-179.00S.
- Tanigawa, Masumi: *See—*
  - Matsumura, Sowjun; Araki, Ken; Otaka, Tetsuo; and Tanigawa, Masumi, 4,441,965, Cl. 204-16.000.
- Tascarella, Peter J. Automatic bed maker. 4,441,222, Cl. 5-488.000.
- Tate & Lyle Public Limited Company: *See—*
  - Rathbone, Elner B.; Waites, Geoffrey M. H.; and Ford, William C. L., 4,442,123, Cl. 424-308.000.
- Tateoka, Masamichi, to Canon Kabushiki Kaisha. Telecentric projection lenses. 4,441,792, Cl. 350-415.000.
- Tatsutani, Toshio: *See—*
  - Uchida, Ryohei; Yamasaki, Tatsuo; Idei, Toshio; Tatsutani, Toshio; and Hagiwara, Ippei, 4,442,386, Cl. 318-254.000.
- Tayler, Colin A. M., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Compressors. 4,441,855, Cl. 415-53.00T.
- Taylor, James L. Lock assembly with interchangeable noses for safe deposit boxes. 4,441,347, Cl. 70-370.000.
- Taylor, Laurence D., to American Sterilizer Company. Fluid-tight seal. 4,441,724, Cl. 277-166.000.
- Taylor, Ronald P.; Dewhurst, John E.; and Abouzahr, Saad M., to Mobay Chemical Corporation. Process and composition for the production of polyurethane elastomer moldings. 4,442,235, Cl. 521-122.000.
- Tektronix, Inc.: *See—*
  - Barter, Archie M., 4,442,458, Cl. 358-243.000.
  - O'Dell, Gary B., 4,442,442, Cl. 346-136.000.
- Teledyne Penn-Union: *See—*
  - Chart, John E., 4,442,182, Cl. 428-654.000.
- Telmec Co., Ltd.: *See—*
  - Imahashi, Issei, 4,441,250, Cl. 29-578.000.
- Tempelmeyer, Kenneth E.: *See—*
  - Muchmore, Charles B.; Chen, Juh W.; and Tempelmeyer, Kenneth E., 4,441,886, Cl. 44-15.00R.
- TenEyck, John D.; Smith, Russell D.; and Hoff, Kurt W., to Kennecott Corporation. Two part castable ceramic cement. 4,442,219, Cl. 501-95.000.
- Ten Haken, Pieter; and Webb, Shirley B., to Shell Oil Company. N-Pyrazinyl-N-benzylcarbamates, having fungicidal and plant growth regulating properties. 4,441,912, Cl. 71-92.000.
- Teraoka, Masao, to Tochigi-Fuji Sangyo Kabushiki Kaisha. Automatic hub clutch. 4,441,597, Cl. 192-35.000.
- Terral, Ben D., to Schlumberger Technology Corporation. Gas lift valve and method of presetting. 4,441,519, Cl. 137-15.000.
- Teucci, Giampaolo. Forced-circulation evaporator plant. 4,441,958, Cl. 159-2.0MS.
- Texaco Inc.: *See—*
  - Crone, John M., Jr., 4,442,024, Cl. 502-334.000.
  - McCoy, David R.; Gipson, Robert M.; and Naylor, Carter G., 4,442,043, Cl. 260-513.00R.
  - Smolin, William; and Estes, John H., 4,442,222, Cl. 502-60.000.
  - Zimmerman, Robert L.; and McDaniel, Kenneth G., 4,442,237, Cl. 521-131.000.
  - Zimmerman, Robert L.; and Speranza, George P., 4,442,238, Cl. 521-164.000.
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  - Hornbeck, Larry J., 4,441,791, Cl. 350-360.000.
  - Johnson, Milo R., 4,442,136, Cl. 427-53.100.
  - Redwine, Donald J., 4,441,246, Cl. 29-571.000.
  - Wiggins, Richard H.; Doddington, George; and Cato, Craig J., 4,441,399, Cl. 84-470.00R.
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  - Niklaus, Zemp J., 4,442,124, Cl. 424-311.000.
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- Thaler, Warren A.: *See—*
  - Lundberg, Robert D.; Thaler, Warren A.; and Agarwal, Pawan K., 4,442,253, Cl. 524-211.000.
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  - Clarkson, Joseph, 4,441,768, Cl. 312-257.0SM.
- Theckston, Alexander. Method and apparatus for obtaining work from heat energy. 4,441,318, Cl. 60-527.000.
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  - Mayer, Donald K., 4,441,333, Cl. 62-239.000.
- Thiele, Geraldine H., to Oxford Hill, Ltd. Process for detaching or preventing attachment of microorganisms to a surface. 4,442,125, Cl. 424-318.000.
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  - Ive, John G. S.; and Thirlwall, Alan C., 4,442,520, Cl. 371-55.000.
- Thomas G. Faria Corp.: *See—*
  - Montie, Douglas L., 4,441,364, Cl. 73-313.000.
- Thomas, Gunter: *See—*
  - Meyer, Horst; Sitt, Rudiger; Thomas, Gunter; Garthoff, Benward; Towart, Robertson; and Rosentreter, Ulrich, 4,442,100, Cl. 424-250.000.
- Thomas, Michael D.; and Ryder, Francis E., to Ryder International Corporation. Lens disinfecting unit. 4,441,769, Cl. 312-270.000.
- Thompson, Arthur M. Automobile roof mounting bracket and cartridge holder assembly. 4,441,641, Cl. 224-311.000.
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  - Lemkey, Franklin D.; and Thompson, Earl R., 4,441,939, Cl. 148-31.000.
- Thompson, Noel A. Coconut grater. 4,441,410, Cl. 99-538.000.
- Thomson-CSF: *See—*
  - Huignard, Jean P.; and Malard, Marcel, 4,442,455, Cl. 358-209.000.
- Thorby, Douglas C.; and Sullivan, Michael C. W., to British Aerospace Public Limited Company. Take-off ramps for aircraft. 4,441,671, Cl. 244-63.000.
- Thorley, Graham R., to Transporation Design Technology, Inc. Auxiliary step for wheelchair lift. 4,441,850, Cl. 414-545.000.
- Thornhill Craver Company: *See—*
  - Bailey, Kent T., 4,441,725, Cl. 277-167.500.
- Thornton, Henry M.; and Thornton, John S., to Ashcombe Products Company. Gang cutting tool assembly. 4,441,245, Cl. 29-564.000.
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  - Thornton, Henry M.; and Thornton, John S., 4,441,245, Cl. 29-564.000.
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  - Roberts, Peter, 4,441,579, Cl. 181-243.000.
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- Thuermer, Joerg H. W., to Minnesota Mining and Manufacturing Company. Crimp connector for electrical wires. 4,442,316, Cl. 174-84.00C.
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  - Hantel, Alwin, 4,441,754, Cl. 296-51.000.

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  - Blanchard, Senior N.; Flint, William T.; Tibbetts, George C.; and Sawyer, Joseph A., 4,442,324, Cl. 179-111.00E.
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  - Blanchard, Senior N.; Flint, William T.; Tibbetts, George C.; and Sawyer, Joseph A., 4,442,324, Cl. 179-111.00E.
- Tichenor, Daniel A.: *See—*
  - Hencken, Kenneth R.; Tichenor, Daniel A.; and Wang, James C. F., 4,441,816, Cl. 356-335.000.
- Tiffany Industries, Inc.: *See—*
  - Carlton, Charles D., 4,441,432, Cl. 108-5.000.
- Ting, Sei P.: *See—*
  - Haaf, William R.; Lee, Gim F., Jr.; and Ting, Sei P., 4,442,251, Cl. 524-141.000.
- Tippetts, Thomas B.; and Manion, Francis M., to Garrett Corporation, The; and United States Government. Fluidic stabilization control. 4,441,525, Cl. 137-814.000.
- Tipple, Neil A.; Gibson, Jerome W.; and Boyd, Ronald J., to DBS, Inc. Apparatus for embossing plates of different sizes and shapes. 4,441,831, Cl. 400-134.300.
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  - Peterson, Donny L.; and Butts, Michael L., 4,441,697, Cl. 266-170.000.
- Titus, Stephen C. Spherical puzzle. 4,441,715, Cl. 273-153.00S.
- TMC Corporation: *See—*
  - Spitaler, Engelbert, 4,441,733, Cl. 280-633.000.
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  - Fujii, Shigeo; Ikeda, Tokuzo; Mikami, Takashi; and Okano, Shuji, 4,442,062, Cl. 264-518.000.
- Toba, Hirotaka; Itoh, Masanori; Nakano, Keita; Wakoh, Shoji; Toyoshima, Toshihiko; and Todo, Hidemasa, to Daicel Chemical Industries, Ltd.; and Fuji Xerox Co., Ltd. Electrostatic recording medium having an electrically conductive layer containing pre-dispersed electrically conductive carbon black and polyurethane binder resin. 4,442,160, Cl. 428-215.000.
- Tobey, William H., to Martin Marietta Corporation. Motor driven hinge assembly. 4,441,376, Cl. 74-89.150.
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  - Teraoka, Masao, 4,441,597, Cl. 192-35.000.
- Todo, Hidemasa: *See—*
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  - Saito, Yoshinobu; and Sugimoto, Sakae, 4,442,067, Cl. 420-428.000.
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  - Saito, Kazuo, 4,441,588, Cl. 188-73.380.
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  - Ishikawa, Hiroichi; and Mikami, Toshio, 4,442,397, Cl. 323-275.000.
- Tokuda Seisakusho, Ltd.: *See—*
  - Nishikawa, Reiji; Satoyama, Shozo; Ito, Yoshinori; and Jyo, Hidetaka, 4,441,974, Cl. 204-192.00R.
- Tokyo Electric Co., Ltd.: *See—*
  - Ochiai, Kuniaki; Horii, Masami; and Aoki, Osamu, 4,441,828, Cl. 400-124.000.
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  - Hayashida, Shizuo; and Masuko, Akinori, 4,442,413, Cl. 331-1.00A.
  - Ito, Takeshi, 4,442,464, Cl. 360-72.100.
  - Kimura, Minoru; and Takeuchi, Bunzi, 4,442,178, Cl. 428-446.000.
  - Kiryu, Rikio; and Bessho, Takeshi, 4,442,435, Cl. 343-709.000.
  - Nagano, Katsumi, 4,442,399, Cl. 323-315.000.
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  - Nozawa, Hiroshi, 4,441,941, Cl. 148-187.000.
  - Takano, Shouji, 4,442,505, Cl. 364-900.000.
  - Tsujimura, Kazunari; and Hadano, Yoshikazu, 4,441,856, Cl. 415-155.000.
  - Tsutsumi, Teruo, 4,441,416, Cl. 100-171.000.
  - Yamazaki, Takashi, 4,442,338, Cl. 219-121.0PE.
  - Yanabu, Satoru; Tamagawa, Tohoru; and Funahashi, Takumi, 4,442,469, Cl. 361-4.000.
- Tolliver, Wilbur E. Concrete pipe reinforcement spacer bar. 4,441,527, Cl. 138-175.000.
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  - Takagi, Shigeru; and Tomita, Masahiro, 4,441,899, Cl. 55-485.000.
- Tomita, Osamu: *See—*
  - Narita, Masahisa; and Tomita, Osamu, 4,441,832, Cl. 400-144.200.
- Tomiyasu, Shizuo: *See—*
  - Takitani, Masaru; Tomiyasu, Shizuo; and Baba, Keikichi, 4,442,224, Cl. 502-112.000.
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  - Matsuda, Shunsuke; Ito, Akio; Katsuaki, Mitani; Yoshinobu, Murakami; and Tooru, Tamura, 4,442,061, Cl. 264-328.700.
- Tou, Jacob S.; and Schleppnik, Alfred A., to Monsanto Company. Chemical synthesis of ethylene/maleic anhydride dimer with phenylethyl end group. 4,442,298, Cl. 549-252.000.
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  - Meyer, Horst; Sitt, Rudiger; Thomas, Gunter; Garthoff, Benward; Towart, Robertson; and Rosentreter, Ulrich, 4,442,100, Cl. 424-250.000.
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  - Tower, Ronald H.; and Tower, Elizabeth S., 4,441,666, Cl. 242-134.000.
- Tower, Ronald H.; and Tower, Elizabeth S. Sewing machine adapter. 4,441,666, Cl. 242-134.000.
- Towmotor Corporation: *See—*
  - Macnab, John E., 4,441,585, Cl. 187-95.000.
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  - Yusa, Haruhiko; Hoshino, Mitsuru; Kurosaki, Akira; Furusawa, Hironobu; and Sugitawa, Chikara, 4,442,262, Cl. 525-69.000.
- Toyo Seikan Kaisha, Ltd.: *See—*
  - Shibasaki, Kyuichi; and Kurashima, Hideo, 4,441,813, Cl. 356-237.000.
- Toyo Soda Manufacturing Co., Ltd.: *See—*
  - Shibayama, Kimio; Itaya, Kingo; and Fujimoto, Teruo, 4,442,199, Cl. 430-323.000.
- Toyo Stauffer Chemical Co., Ltd.: *See—*
  - Takitani, Masaru; Tomiyasu, Shizuo; and Baba, Keikichi, 4,442,224, Cl. 502-112.000.
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- Toyoda Gosei Kabushiki Kaisha: *See—*
  - Iwasa, Tadanobu; and Ushida, Mituo, 4,442,167, Cl. 428-323.000.
- Toyoda, Shuhei; and Tanahashi, Toshio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Intake system of a multi-cylinder internal combustion engine. 4,441,464, Cl. 123-52.0MB.
- Toyoshima, Toshihiko: *See—*
  - Toba, Hirotaka; Itoh, Masanori; Nakano, Keita; Wakoh, Shoji; Toyoshima, Toshihiko; and Todo, Hidemasa, 4,442,160, Cl. 428-215.000.
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  - Kawaguchi, Hiroshi; and Nishina, Shuho, 4,441,380, Cl. 74-512.000.
  - Taga, Yutaka; Watanabe, Kazuaki; and Nakamura, Shinya, 4,441,385, Cl. 74-867.000.
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  - Kubo, Seitoku; Kuramochi, Koujiro; and Kyushima, Tatsuo, 4,441,594, Cl. 192-3.280.
  - Nakamura, Yukio, 4,441,465, Cl. 123-90.340.
  - Sakurada, Okinobu, 4,441,370, Cl. 73-651.000.
  - Toyoda, Shuhei; and Tanahashi, Toshio, 4,441,464, Cl. 123-52.0MB.
- Transamerica Delaval Inc.: *See—*
  - Ritzi, Emil W., 4,441,322, Cl. 60-649.000.
- Transporation Design Technology, Inc.: *See—*
  - Thorley, Graham R., 4,441,850, Cl. 414-545.000.
- Traunecker, Werner: *See—*
  - Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Muacevic, Gojko; and Traunecker, Werner, 4,442,120, Cl. 424-282.000.
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- Trayer, Frank C. Method and apparatus for short circuit protection of high voltage distribution systems. 4,442,471, Cl. 361-63.000.
- TRE Semiconductor Equipment Corp.: *See—*
  - Giacomelli, Thomas P., 4,441,808, Cl. 355-53.000.
- Treidl, Bernhard L. Telephone accessible appliance control system. 4,442,319, Cl. 179-2.00A.
- Tremmel, Robert A., to OMI International Corporation. Coumarin process and nickel electroplating bath. 4,441,969, Cl. 204-49.000.
- Trijzelaar, Hans B.; de Bode, Ronus; and Welle, Hendricus B. A., to ACF Chemiefarma N.V. Quinoline derivatives, pharmaceutical compositions containing such compounds, and methods of treating cardiovascular conditions with them. 4,442,106, Cl. 424-258.000.
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- Tropic Industries, Inc.: *See—*
  - Goott, Joseph, 4,441,714, Cl. 273-144.00B.
- True, Duane A.: *See—*
  - Hicken, Michael G.; Kirschensteiner, Fred; True, Duane A.; and Taleff, Alexander, 4,441,242, Cl. 29-419.00R.
- Trumble, William P.; Martin, Ivan E.; and Berthiaume, Clement E., to Northern Telecom Limited. Flexible tear resistant protective glove for use on high voltage systems. 4,441,213, Cl. 2-161.00R.
- Trust, Marshall County Bank and, executor: *See—*
  - Naylor, Donald B., deceased, 4,441,277, Cl. 49-380.000.
- Trutzschler GmbH & Co. KG: *See—*
  - Beneke, Wolfgang; and Leifeld, Ferdinand, 4,441,994, Cl. 209-139.00R.
- TRW Inc.: *See—*
  - Shoup, Thomas E., 4,442,336, Cl. 219-98.000.
- Trybom, Stig H. E. Position adjusting device for sanitary and plumbing units using water under pressure. 4,441,218, Cl. 4-252.00R.
- Tsai, Tsu-Tzu; and Arnold, Fred E., to United States of America, Air Force. Di-acetylenyl-substituted 2-phenylbenzothiazoles. 4,442,293, Cl. 548-152.000.
- Tsao, Jung-Hsien; and Hein, Paul R., to W. R. Grace & Co. Polymer composition having terminal alkene and terminal carboxyl groups. 4,442,198, Cl. 430-311.000.
- Tsolis, Alexandros K. N-(Substituted phosphinyl) polyamides. 4,442,268, Cl. 525-420.000.
- Tsuchida, Takayasu; Miwa, Kiyoshi; and Nakamori, Shigeru, to Ajinomoto Co., Inc. Method for producing L-isoleucine by fermentation. 4,442,208, Cl. 435-116.000.

- Tsuge, Noboru; Shimogawa, Toshiaki; Kuwakado, Satosi; and Takei, Toshihiro, to Nippon Soken, Inc. Seat belt tensioning device. 4,441,738, Cl. 280-806.000.
- Tsuhako, Parker I., to Ohline Corporation. Bottom rail structural configuration for a venetian blind. 4,441,540, Cl. 160-168.00R.
- Tsujimoto, Haruo. Water level detector apparatus of float type. 4,441,860, Cl. 417-40.000.
- Tsujimura, Kazunari; and Hadano, Yoshikazu, to Tokyo Shibaura Denki Kabushiki Kaisha. Steam turbine for geothermal power generation. 4,441,856, Cl. 415-155.000.
- Tsukamoto, Katsuhiro: *See—*
  - Akasaka, Yoichi; and Tsukamoto, Katsuhiro, 4,441,932, Cl. 148-1.500.
- Tsunekawa, Masayoshi; Yoshida, Shinzo; and Komura, Tamotsu, to Sankin Industry Co., Ltd. Phosphate derivatives, process for producing phosphate derivatives and fillers for human hard tissues containing the same. 4,442,239, Cl. 523-116.000.
- Tsutsumi, Teruo, to Tokyo Shibaura Denki Kabushiki Kaisha. Pressure fixing device. 4,441,416, Cl. 100-171.000.
- Tsuzuki, Yoshihiko: *See—*
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- Tubettificio Ligure S.p.A.: *See—*
  - Bodega, Sergio, 4,441,354, Cl. 72-342.000.
- Tults, Juri, to RCA Corporation. Counter arrangement useful in a frequency locked loop tuning system for measuring the frequency of a local oscillator signal. 4,442,547, Cl. 455-180.000.
- Tune, Joel A., to Baxter Travenol Laboratories, Inc. Heatseal plug with resealing feature. 4,441,620, Cl. 215-232.000.
- Tupa, John T.: *See—*
  - Borovicka, David A., Sr.; Hahn, Kenneth G., Jr.; and Tupa, John T., 4,442,257, Cl. 524-555.000.
- Turcke, Rainer: *See—*
  - Nagel, Erich; and Turcke, Rainer, 4,441,702, Cl. 271-177.000.
- Tyryshkina, Galina B.: *See—*
  - Vasiliev, Boris P.; Borisov, Nikolai L.; Semenov, Mikhail K.; Ponomarev, Ivan K.; Tyryshkina, Galina B.; and Gorbatenko, Igor V., 4,441,549, Cl. 165-145.000.
- Uchida, Isamu; and Imamura, Yoshiyuki, to Luarel Bank Machine Co., Ltd. Three direction changeable guide device for use in a bank note handling machine. 4,441,704, Cl. 271-303.000.
- Uchida, Ryohei; Yamasaki, Tatsuo; Idei, Toshio; Tatsutani, Toshio; and Hagiwara, Ippei, to Mitsubishi Denki Kabushiki Kaisha. Control apparatus of transistor motor. 4,442,386, Cl. 318-254.000.
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  - Suzuki, Atsushi; Yamada, Hiromichi; Uchida, Yoko; Kohno, Hideki; Fukino Tadashi; and Yoshida, Minoru, 4,442,360, Cl. 250-486.100.
- Uchimura, Tosio: *See—*
  - Nagahara, Hiroshi; and Uchimura, Tosio, 4,441,691, Cl. 254-344.000.
- Ueda, Ichiro: *See—*
  - Ouchi, Hiromu; Kawashima, Syunichiro; Nishida, Masamitsu; and Ueda, Ichiro, 4,442,220, Cl. 501-139.000.
- Ueda, Yoshihiko, to Takara Kogyo Co., Ltd., a part interest. Water purification device. 4,441,998, Cl. 210-275.000.
- Uemura, Yahiro: *See—*
  - Arakawa, Yoshio; Takanabe, Atsuyuki; Uemura, Yahiro; Funakoshi, Satoshi; and Suyama, Tadakazu, 4,442,037, Cl. 260-397.200.
- Ueno, Sadayasu, to Hitachi, Ltd. Combustion sensing apparatus. 4,441,982, Cl. 204-426.000.
- Ufrecht, Martin: *See—*
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- Ugon, Michel: *See—*
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- Uhl, Larry A., to Shan-Rod, Inc. Heat and vibration resistant seal. 4,441,726, Cl. 277-230.000.
- Ulland, Hartmut: *See—*
  - Schutt, Dieter; Schwengler, Manfred; Ulland, Hartmut; and Weis, Helmut H., 4,442,503, Cl. 364-900.000.
- Umezawa, Hidetsugu; Ogasawara, Takashi; and Shimazaki, Haruo, to Nissan Motor Co., Ltd. Weft detaining device of shuttleless loom. 4,441,531, Cl. 139-452.000.
- Underbrink, Gary L.; Wilkes, Lambert H.; and Jones, Joseph K., to Cotton, Incorporated. Method and apparatus for removing a fiber fraction from seed cotton. 4,441,232, Cl. 19-48.00R.
- Underwood, Herbert N., to Borg-Warner Corporation. Folding bicycle. 4,441,729, Cl. 280-278.000.
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  - Lindbom, Torsten H., 4,442,387, Cl. 318-568.000.
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  - Fuderer, Andrija, 4,442,020, Cl. 252-373.000.
  - Jackson, John E.; and Doherty, William G., 4,441,857, Cl. 415-213.00R.
  - Spanur, Frank G., 4,442,184, Cl. 429-54.000.
  - Swallow, Brian R., 4,441,900, Cl. 62-29.000.
  - Urry, Lewis F., 4,442,186, Cl. 429-142.000.
- United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
  - Higton, Malcolm; and Vecht, Aron, 4,442,377, Cl. 313-503.000.
  - Tayler, Colin A. M., 4,441,855, Cl. 415-53.00T.
- United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Energy in Her Britannic Majesty's Government of the: *See—*
  - Moody, George W., 4,441,316, Cl. 60-398.000.
- United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Social Services in Her Britannic Majesty's Government of the: *See—*
  - Colman, Geoffrey; and Russell, Roy R. B., 4,442,085, Cl. 424-49.000.
- United States Government: *See—*
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    - Bricks, Bernard G., 4,442,523, Cl. 372-56.000.
    - Roth, Roger R., 4,442,514, Cl. 367-136.000.
    - Smith, John R., 4,441,312, Cl. 60-245.000.
    - Tsai, Tsu-Tzu; and Arnold, Fred E., 4,442,293, Cl. 548-152.000.
    - Verdier, James E., 4,442,453, Cl. 358-109.000.
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    - Hrubesh, Charles F., 4,441,532, Cl. 141-1.000.
    - Malik, Roger J.; and AuCoin, Thomas R., 4,442,445, Cl. 357-22.000.
    - Pohlmann, Juergen L. W.; and Martinka, Michael, 4,441,967, Cl. 204-29.000.
    - Sayles, David C., 4,441,942, Cl. 149-19.600.
  - Energy: *See—*
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    - Downhower, Francis H., Jr.; and Finlayson, Paul T., 4,442,480, Cl. 363-57.000.
    - Fischer, William H.; Cookson, Alan H.; and Yoon, Kue H., 4,442,311, Cl. 174-14.00R.
    - Fischer, William H.; and Yoon, Kue H., 4,442,313, Cl. 174-28.000.
    - Greenbaum, Elias, 4,442,211, Cl. 435-168.000.
    - Hencken, Kenneth R.; Tichenor, Daniel A.; and Wang, James C. F., 4,441,816, Cl. 356-335.000.
    - Jalan, Vinod M.; and Frost, David G., 4,442,078, Cl. 423-230.000.
    - Rand, Peter B., 4,442,018, Cl. 252-307.000.
    - Skotheim, Terje, 4,442,185, Cl. 429-111.000.
    - Weitl, Frederick L.; and Raymond, Kenneth N., 4,442,305, Cl. 562-451.000.
    - Wolf, Gary A.; Smith, Jeffrey W.; and Ihle, Nathan C., 4,442,028, Cl. 252-628.000.
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    - Franklin, James L.; and Kramer, Ted J., 4,442,475, Cl. 361-383.000.
    - Holtrop, John W., 4,441,674, Cl. 244-137.00R.
    - Kaufman, Martin H., 4,442,142, Cl. 427-316.000.
    - Kim, Chulho; and Weimer, Raymond J., 4,441,237, Cl. 29-1.200.
    - Price, Abner B.; and Burnley, William S., III, 4,441,429, Cl. 102-526.000.
    - Rashleigh, Scott C., 4,442,350, Cl. 250-227.000.
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  - Baker, Geoffrey; and Lockett, Roger A., 4,442,357, Cl. 250-338.000.
  - Killat, Ulrich, 4,442,550, Cl. 455-608.000.
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  - Wagner, Wolfgang, 4,442,489, Cl. 364-414.000.
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- University of Akron, The: *See—*
  - Kennedy, Joseph P.; and Frisch, Kurt C., Jr., 4,442,261, Cl. 525-324.000.
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  - Magarian, Robert A.; and Pento, Joseph T., 4,442,119, Cl. 424-274.000.
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  - MacDiarmid, Alan G.; Heeger, Alan J.; and Nigrey, Paul J., 4,442,187, Cl. 429-213.000.

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  - Vedenpa , Timo, 4,441,263, Cl. 34-115.000.
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  - Higton, Malcolm; and Vecht, Aron, 4,442,377, Cl. 313-503.000.
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  - Mullen, Gerald H., 4,441,239, Cl. 29-148.40A.
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  - Stierli, Robert F., 4,442,148, Cl. 428-40.000.
  - Tsao, Jung-Hsien; and Hein, Paul R., 4,442,198, Cl. 430-311.000.
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  - Schirmer, Henry G., 4,442,147, Cl. 428-35.000.
- W. Schlafhorst & Co.: *See—*
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- Waagner Biro Aktiengesellschaft: *See—*
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  - Staisch, Diether, 4,441,865, Cl. 417-319.000.
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  - Thaler, Warren A.; Walker, Thad O.; Lundberg, Robert D.; and Wagensommer, Joseph, 4,442,011, Cl. 252-8.50M.
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- Wagner, Wolfgang, to U.S. Philips Corporation. Device for computed tomography. 4,442,489, Cl. 364-414.000.
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  - Brooks, Herbert; and Waite, Frederick A., 4,442,272, Cl. 526-82.000.
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  - Alter, Hobart L.; Wake, Lewis F.; and Platten, Myron G., 4,441,447, Cl. 114-167.000.
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  - Thaler, Warren A.; Walker, Thad O.; Lundberg, Robert D.; and Wagensommer, Joseph, 4,442,011, Cl. 252-8.50M.
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  - Shepherd, Michael, 4,441,598, Cl. 192-58.00B.
- Walling, Joerg-Heim J.: *See—*
  - Porter, John F.; Walling, Joerg-Heim J.; and Axiuk, Oleg, 4,441,961, Cl. 162-106.000.
- Walter, Bert: *See—*
  - Greenquist, Alfred C.; and Walter, Bert, 4,442,204, Cl. 435-7.000.
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- Walters, Gerald E., to Automation Industries, Inc. Plug and receptacle electrical connector. 4,441,780, Cl. 339-143.00R.
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  - Roberts, Walter M., 4,442,372, Cl. 310-339.000.
- Walton, Richard E., II, to Black & Decker Inc. Tool collet and control means. 4,441,563, Cl. 173-163.000.
- Wang, James C. F.: *See—*
  - Hencken, Kenneth R.; Tichenor, Daniel A.; and Wang, James C. F., 4,441,816, Cl. 356-335.000.
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- Watts, Donald R. Pipe cutting machine. 4,441,695, Cl. 266-57.000.
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  - Nicholas, Terry G., 4,441,745, Cl. 285-417.000.
  - Oostenbrink, Albertus A.; Negen, Anno G.; and van Kaam, Marinus L. G., 4,441,744, Cl. 285-162.000.
  - Steenbergen, Johannes F., 4,441,743, Cl. 285-21.000.
- Webb, Shirley B.: *See—*
  - Ten Haken, Pieter; and Webb, Shirley B., 4,441,912, Cl. 71-92.000.
- Weber, Wolfgang: *See—*
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- Weimer, Raymond J.: *See—*
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  - Muller, Erich; Nickl, Josef; Narr, Berthold; Roch, Josef; Haarmann, Walter; and Weisenberger, Johannes M., 4,442,111, Cl. 424-263.000.
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- Weitl, Frederick L.; and Raymond, Kenneth N., to United States of America, Energy. Polycatecholamide chelating agents. 4,442,305, Cl. 562-451.000.
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- Welch, William R.; and Heard, Thomas J., to Otis Engineering Corporation. Valve. 4,441,558, Cl. 166-317.000.
- Welle, Hendricus B. A.: *See—*
  - Trijzelaar, Hans B.; de Bode, Ronus; and Welle, Hendricus B. A., 4,442,106, Cl. 424-258.000.
  - Trijzelaar, Hans B.; de Bode, Ronus; and Welle, Hendricus B. A., 4,442,107, Cl. 424-258.000.
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- Werner, Linda B.; and Werner, William A., to Custom Stamping Mfg. Co. Protective head shield. 4,441,214, Cl. 2-174.000.
- Werner, William A.: *See—*
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- Wesley, William M. Collapsible high speed extension for motor vehicles. 4,441,751, Cl. 296-1.00S.
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- West, Frank L.; and Norton, Larry A., to Starline Products, Inc. Manually portable start control for electrically powered apparatus. 4,442,327, Cl. 200-51.00R.
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- Westimayer, David A., to Deere & Company. Skid shoe mounting arrangement for snow blower. 4,441,266, Cl. 37-244.000.
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  - Bich, George J.; Burke, Thomas M.; and Smith, James D. B., 4,442,138, Cl. 427-116.000.
  - Fromson, Robert E.; and Shum, Lanson Y., 4,442,494, Cl. 364-511.000.
  - Hicken, Michael G.; Kirschensteiner, Fred; True, Duane A.; and Taleff, Alexander, 4,441,242, Cl. 29-419.00R.
  - Holtzman, Barry L.; and Mercier, George E., 4,442,473, Cl. 361-275.000.
  - Lenderking, Bruce N.; and Bocklage, Casper J., Jr., 4,442,476, Cl. 361-395.000.
  - Misencik, John J., 4,442,470, Cl. 361-46.000.
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  - Watson, Kenneth; Buswell, Richard G.; and Saunders, James E., 4,441,384, Cl. 74-665.0GA.
- Wetterlin, Kjell I. L.: *See—*
  - Olsson, O. A. Torsten; Svensson, Leif Å; and Wetterlin, Kjell I. L., 4,442,300, Cl. 560-66.000.
- Wetzel, Victor H.: *See—*
  - Kotsifas, Peter N.; Wetzel, Victor H.; and Gilson, Richard W., 4,441,509, Cl. 128-757.000.
- Wetzels, Walter; Crott, Kurt; and Voell, Erich, to Schumag GmbH. Device for centerless grinding of rotation-symmetrical surfaces on work pieces. 4,441,280, Cl. 51-103.00R.
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- Weyant, Lowell E., to Seabrook Blanching Corporation. Apparatus for blanching peanuts. 4,441,409, Cl. 99-523.000.
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  - Johnson, Roger E., 4,442,047, Cl. 261-66.000.
- White, Fred K., to American Hospital Supply Corporation. Collection tube for drawing samples of biological fluids. 4,441,373, Cl. 73-864.020.

- White, William H.; Harbison, William C.; and Nelson, Gary L., to Swedlow, Inc. Coated substrate comprising a cured transparent abrasion resistant filled organo-polysiloxane coatings containing colloidal antimony oxide and colloidal silica. 4,442,168, Cl. 428-331.000.
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- Wich, Harald, to Diehl GmbH & Co. Apparatus for the production of a guide pattern of light beams. 4,441,669, Cl. 244-3.130.
- Wickman, Kjell J., to Pharos AB. Deflection unit. 4,441,818, Cl. 356-372.000.
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- Wilke, Charles F., to Dresser Industries, Inc. Stratified fuel injection for gaseous fuel internal combustion engine. 4,441,469, Cl. 123-295.000.
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- Wilkes, Lambert H.: *See—*
  - Underbrink, Gary L.; Wilkes, Lambert H.; and Jones, Joseph K., 4,441,232, Cl. 19-48.00R.
- Wilkinson, William H., to Gas Research Institute. Absorption refrigeration and heat pump system. 4,441,332, Cl. 62-238.300.
- Willcox, Leland J. Golf ball practice driving apparatus. 4,441,717, Cl. 273-201.000.
- Williams, Brown F.: *See—*
  - Carlson, David E.; and Williams, Brown F., 4,442,310, Cl. 136-256.000.
- Williams, David M.; and Curtis, Charles L. Lift truck safety mirror. 4,441,790, Cl. 350-302.000.
- Williamson, Warren L.: *See—*
  - Dooley, Daniel J.; and Williamson, Warren L., 4,441,360, Cl. 73-119.00A.
- Willy Fleischer Metalwarenfabrik GmbH & Co. KG: *See—*
  - Fleischer, Willy; and von Schuckmann, Alfred, 4,441,758, Cl. 297-439.000.
- Wilson, James. Apparatus for cutting and/or grinding of tree stumps. 4,441,534, Cl. 144-2.00N.
- Wilson, Thomas A. Conical shaped charge liner of depleted uranium. 4,441,428, Cl. 102-307.000.
- Wilt, Daniel P.: *See—*
  - Besomi, Paul R.; Degani, Joshua; and Wilt, Daniel P., 4,442,402, Cl. 324-158.00D.
- Wimmer, Robert; and Levai, Laslo, to Bayerische Motoren Werke A.G. Vehicle with a passive belt system. 4,441,737, Cl. 280-804.000.
- Winkowski, Daniel A., to National Gypsum Company. Wood plank wallcovering system using widths of 3 to 8 inches. 4,442,151, Cl. 428-54.000.
- Wissgott, Ulrich, to Societe d'Assistance Technique pour Produits Nestle S.A. Fruit coloring process. 4,442,105, Cl. 426-250.000.
- Witt, Horst: *See—*
  - Schuette, Heinz G., 4,441,283, Cl. 52-57.000.
- Wittwer, Arnold: *See—*
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- Wladawsky-Berger, Irving: *See—*
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- Woffinden, Duard S.: *See—*
  - Hill, Geoffrey E.; Woffinden, Duard S.; and Chadwick, Duane G., 4,441,363, Cl. 73-170.00R.
- Wolcott, Richard A.: *See—*
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- Wolf, Gary A.; Smith, Jeffrey W.; and Ihle, Nathan C., to United States of America, Energy. Method for incorporating radioactive phosphoric acid solutions in concrete. 4,442,028, Cl. 252-628.000.
- Wolfe, Denis G.; and Wada, Naohisa, to Robertshaw Controls Company. Piston and cylinder type thermal device part therefor and methods of making the same. 4,441,317, Cl. 60-527.000.
- Wolfe, Marshall W.: *See—*
  - Rivkin, Bernard; and Wolfe, Marshall W., 4,441,680, Cl. 248-220.400.
- Wolff, Siegfried: *See—*
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- Wood, Donald H.: *See—*
  - Jones, Robert E.; and Wood, Donald H., 4,442,519, Cl. 371-27.000.
- Wood, Kenneth G. Fluid bearing. 4,441,571, Cl. 180-128.000.
- Wood, Loren E., deceased: *See—*
  - Short, Edward H., III; Allen, Jerome D.; and Wood, Loren E., deceased, 4,441,350, Cl. 72-55.000.
- Wood, Van E.: *See—*
  - Sherman, Rand C.; and Wood, Van E., 4,441,248, Cl. 29-574.000.
- Woodhams, Raymond T. Reinforced resin composites. 4,442,243, Cl. 523-212.000.
- Woodhouse, Ian: *See—*
  - Pickering, John; Woodhouse, Ian; and Ganendran, Araspillai N., 4,442,053, Cl. 264-36.000.
- Wooten, Willis C.: *See—*
  - Passmore, David T.; Wooten, Willis C.; and McBride, Paul, 4,442,270, Cl. 525-440.000.
- Worley, Michael W., deceased; and by Worley, Shauna, legal representative. Method and apparatus for fetal pH scalp studies. 4,441,510, Cl. 128-763.000.
- Worley, Shauna, legal representative: *See—*
  - Worley, Michael W., deceased; and Worley, Shauna, legal representative, 4,441,510, Cl. 128-763.000.
- Woven Electronics Corporation: *See—*
  - Piper, Douglas E., 4,442,314, Cl. 174-36.000.
- Wright, Andrew C. W.; and Petruschke, John W., to Dzus Fastener Co., Inc. Adjustable quarter-turn fastener. 4,441,843, Cl. 411-349.000.
- Wright, Derek E.: *See—*
  - Ramsden, Christopher A.; Knowles, Philip; Lewis, Edward J.; Lunt, Edward; and Wright, Derek E., 4,442,115, Cl. 424-269.000.
- Wunder, Friedrich: *See—*
  - Leupold, Ernst I.; Schmidt, Hans-Joachim; Wunder, Friedrich; Arpe, Hans-Jurgen; and Hachenberg, Horst, 4,442,228, Cl. 518-714.000.
- Wyatt, William G., to Vapor Energy, Inc. Apparatus for heating and utilizing fluids. 4,441,460, Cl. 122-31.00R.
- Wyrepak Industries, Inc.: *See—*
  - Kovaleski, Joseph J., 4,441,692, Cl. 254-390.000.
- Xerox Corporation: *See—*
  - Elchinger, Gilbert M., 4,442,440, Cl. 346-1.100.
  - Lu, Chin H.; and AuClair, Christopher J., 4,442,189, Cl. 430-45.000.
  - Moreland, John F.; and Stoffel, James C., 4,442,544, Cl. 382-53.000.
  - Pai, Damodar M., 4,442,192, Cl. 430-59.000.
- Yagi, Michio: *See—*
  - Watanabe, Koji; Higuchi, Yoshihiro; Yagi, Michio; and Shiozawa, Kazuo, 4,441,798, Cl. 354-483.000.
- Yahashi, Satoru: *See—*
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- Yamada, Hiromichi: *See—*
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- Yamada, Tomio: *See—*
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- Yamaguchi, Hiroyoshi: *See—*
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- Yamaguchi, Shohachiro: *See—*
  - Ishikura, Shinichi; Kanda, Kazunori; and Yamaguchi, Shohachiro, 4,442,247, Cl. 523-414.000.
- Yamaguchi, Tadamasa: *See—*
  - Kawabata, Fumimaru; Shiga, Atsushi; and Yamaguchi, Tadamasa, 4,442,340, Cl. 219-137.0PS.
- Yamaguchi, Toshiaki, to Kinugawa Rubber Industrial Co., Ltd. Window weather stripping and the manufacturing method. 4,442,156, Cl. 428-142.000.
- Yamakami, Yoshiaki: *See—*
  - Hiraishi, Hisashi; Yamakami, Yoshiaki; and Shintani, Atsunobu, 4,441,926, Cl. 75-128.00A.
- Yamamoto, Takashi: *See—*
  - Imamura, Ryuichi; Shimazaki, Kanzo; Yahashi, Satoru; Yamamoto, Takashi; and Yano, Noriyuki, 4,441,412, Cl. 99-601.000.
- Yamamoto, Takeshi; and Goto, Kiyoshi, to Konishiroku Photo Industry Co., Ltd. Photosensitive composition and article with o-quinone diazide and 6-membered cyclic acid-anhydride. 4,442,195, Cl. 430-191.000.
- Yamamura, Takashige: *See—*
  - Asari, Akira; Yamamura, Takashige; and Veno, Tsuneya, 4,441,353, Cl. 72-316.000.
- Yamasaki, Tatsuo: *See—*
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- Yamashita, Keitaro; and Kashiwagi, Hiromi, to Hitachi Metals, Ltd. Toner cartridge. 4,441,636, Cl. 222-541.000.
- Yamato Scale Company, Limited: *See—*
  - Hirano, Takashi, 4,441,567, Cl. 177-25.000.
- Yamazaki, Takashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Plasma etching apparatus. 4,442,338, Cl. 219-121.0PE.
- Yanabu, Satoru; Tamagawa, Tohoru; and Funahashi, Takumi, to Tokyo Shibaura Denki Kabushiki Kaisha. DC Circuit breaker apparatus. 4,442,469, Cl. 361-4.000.
- Yanagishita, Hitoshi: *See—*
  - Sato, Atsushi; Takahashi, Naoya; Endo, Keiji; and Yanagishita, Hitoshi, 4,442,027, Cl. 252-574.000.
- Yang, Ling-Kuo. Healthful quilt. 4,441,223, Cl. 5-494.000.
- Yanma Agricultural Equipment Company Limited: *See—*
  - Imamura, Ryuichi; Shimazaki, Kanzo; Yahashi, Satoru; Yamamoto, Takashi; and Yano, Noriyuki, 4,441,412, Cl. 99-601.000.
- Yano, Noriyuki: *See—*
  - Imamura, Ryuichi; Shimazaki, Kanzo; Yahashi, Satoru; Yamamoto, Takashi; and Yano, Noriyuki, 4,441,412, Cl. 99-601.000.
- Yardney Electric Corporation: *See—*
  - Fields, Larry D., 4,441,997, Cl. 210-266.000.

Yaron, Giora: *See—*
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Yasuda, Takatoshi, to Sharp Kabushiki Kaisha. Sensor controlled cooking apparatus. 4,442,344, Cl. 219-497.000.
Yasui, Kazuomi: *See—*
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Hotta, Teruyuki; Kurokawa, Yoshiki; Nagasaku, Eiichi; and Yasunaga, Masao, 4,441,863, Cl. 417-281.000.
Yasuo, Higashibata: *See—*
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Yazu, Shuji: *See—*
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Yokoyama, Nobuo: *See—*
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Yoneda, Kenji; Sanezawa, Fumio; Takagi, Yasuo; and Ushijima, Yuji, to Nissan Motor Company, Ltd. Secondary air supply system. 4,441,468, Cl. 123-198.00E.
Yoneda, Shigeo, to Sharp Kabushiki Kaisha. Thermal printer with print density control. 4,442,342, Cl. 219-216.000.
Yoon, Heeyoung; and Rutledge, Gerald D., to Conoco Inc. Alcohol dissociation and waste heat recovery process for automobiles. 4,441,461, Cl. 123-3.000.
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Fischer, William H.; Cookson, Alan H.; and Yoon, Kue H., 4,442,311, Cl. 174-14.00R.
Fischer, William H.; and Yoon, Kue H., 4,442,313, Cl. 174-28.000.
Yorisue, Shozo, to Precision Fukuhara Works, Ltd. Two-piece yarn carriers for circular knitting machines. 4,441,339, Cl. 66-111.000.
Yoshida, Keiichiro. Method of and apparatus for producing metallic tape. 4,441,351, Cl. 72-189.000.
Yoshida Kogyo K. K.: *See—*
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Yoshida, Satoshi; and Higashi, Hidejiro, to Pioneer Electronic Corporation. Microphone with vibration cancellation. 4,442,323, Cl. 179-110.00A.
Yoshida, Shinzo: *See—*
Tsunekawa, Masayoshi; Yoshida, Shinzo; and Komura, Tamotsu, 4,442,239, Cl. 523-116.000.
Yoshida, Takao: *See—*
Calderone, Nicholas; Watkins, Hugh; and Yoshida, Takao, 4,442,012, Cl. 252-8.600.
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Yoshiyuki, Kazuhiko: *See—*
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Young, Charles E.; and Drzewiecki, George, to Inco Limited. Wet electrostatic precipitator having removable nested hexagonal collector plates and magnetic aligning and rapping means. 4,441,897, Cl. 55-112.000.
Young, Edward L.: *See—*
Kalmanash, Michael H.; and Young, Edward L., 4,442,451, Cl. 358-73.000.
Young, John M.: *See—*
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Young, Ralph H.: *See—*
Chen, Chin H.; Young, Ralph H.; and Scozzafava, Michael, 4,442,193, Cl. 430-83.000.
Younkin, Harry A.; Mehnert, Gottfried; and Roos, Uwe V., to Hercules Incorporated. Container forming process. 4,442,063, Cl. 264-532.000.
Yu-Kuang, Lee. Automatic control system for position following and reciprocating motion of a controlled object. 4,442,391, Cl. 318-663.000.
Yukio, Kobayashi: *See—*
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Yusa, Haruhiko; Hoshino, Mitsuru; Kurosaki, Akira; Furusawa, Hironobu; and Sugitawa, Chikara, to Kureha Kagaku Kogyo Kabushiki Kaisha; and Toyo Boseki Kabushiki Kaisha. Composition of polyester-block copolymer. 4,442,262, Cl. 525-69.000.
Yutaka, Kojima: *See—*
Oshima, Hiroyo; Daisaku, Matsukuma; Yutaka, Kojima; Yukio, Kobayashi; and Koichi, Nagai, 4,442,172, Cl. 428-342.000.
Yuyama, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Airconditioner with refrigerant temperature responsive controller for compressor bypass valve. 4,441,331, Cl. 62-196.300.
Zabrocki, Karl; and Pischtschan, Alfred, to Bayer Aktiengesellschaft. Graft rubbers for modifying thermoplastic moulding compositions. 4,442,264, Cl. 525-86.000.
Zafiroglu, Dimitri P.: *See—*
Kirayoglu, Birol; and Zafiroglu, Dimitri P., 4,442,161, Cl. 428-219.000.
Zasio, John; Cooke, Larry; and Paul, Raymond, to Storage Technology Partners (through STC Computer Research Corporation). System and method for calibrating electron beam systems. 4,442,361, Cl. 250-491.100.
Zauner, Otto, to Owens-Illinois, Inc. Vial tooling apparatus. 4,441,908, Cl. 65-109.000.
Zell, Jakob: *See—*
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Zimmerman, Jos.: *See—*
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Zimmerman, Robert L.; and McDaniel, Kenneth G., to Texaco Inc. Novel aromatic amide polyols from the reaction of phthalic acid residues, alkylene glycols and amino alcohols. 4,442,237, Cl. 521-131.000.
Zimmerman, Robert L.; and Speranza, George P., to Texaco Inc. Aromatic amide polyols for rigid polyurethane foams. 4,442,238, Cl. 521-164.000.
Zimmermann, Horst: *See—*
Lux, Werner; Vahlensieck, Jurgen; Zell, Jakob; Hermann, Bodo; Bartsch, Heinz; and Zimmermann, Horst, 4,442,334, Cl. 219-73.000.
Zolner, Dieter H.; Rittmann, Friedrich; Dung, Herbert; Haremsa, Johannes; Bauer, Georg; Otto, Josef; Muhlenbeck, Josef; and Lauterbach-Dammler, Inge, to Arc Technologies Systems Ltd. Electrode for arc furnaces. 4,442,525, Cl. 373-93.000.
Zublin, Casper W., to Downhole Services, Inc. Method and device for hydraulic jet well cleaning. 4,441,557, Cl. 166-312.000.
Zumfeld, Heinz: *See—*
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LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 10TH DAY OF APRIL, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name.
(in accordance with city and telephone directory practice).

Ballard, James W.; and Ballard, Larry R., to Bonnici, Charles. One-piece roof vent device and methods of constructing and utilizing same. Re. 31,549, Cl. 98-42.00R.
Ballard, Larry R.: *See—*
Ballard, James W.; and Ballard, Larry R., Re. 31,549, Cl. 98-42.00R.
Barbin, Robert L., to RCA Corporation. Electron beam and deflection yoke alignment for producing convergence of plural in-line beams. Re. 31,552, Cl. 315-13.00C.
Bjorke, Merlin D., to Honeywell Inc. Digital delay generator. Re. 31,551, Cl. 307-597.000.
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Ballard, James W.; and Ballard, Larry R., Re. 31,549, Cl. 98-42.00R.
Honeywell Inc.: *See—*
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Isogai, Yo: *See—*
Shudo, Koichi; Okamoto, Toshihiko; Isogai, Yo; and Takahashi, Soshiro, Re. 31,550, Cl. 71-94.000.
Okamoto, Toshihiko: *See—*
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RCA Corporation: *See—*
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Shudo, Koichi; Okamoto, Toshihiko; Isogai, Yo; and Takahashi, Soshiro, to Shudo, Koichi; Okamoto, Toshihiko; Isogai, Yo; and Takahashi, Soshiro. N-(2-Chloro-4-pyridyl) ureas. Re. 31,550, Cl. 71-94.000.
Takahashi, Soshiro: *See—*
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Abbott Laboratories: *See—*
D'Alo, Herbert F.; Genese, Joseph N.; and Smith, Ronald W., 273,419, Cl. D24-8.000.
Abe, Takeshi; Shibayama, Masato; Asakawa, Yoshifumi; and Kinoshita, Seiji, to Hitachi, Ltd. Telephone. 273,381, 4-10-84, Cl. D14-53.000.
Accessories by Pearl: *See—*
Degenshein, Edward D., 273,345, Cl. D2-414.000.
Adkins, Helen D. Gameboard. 273,402, 4-10-84, Cl. D21-35.000.
Adler, Morton S. Tool rest for a lathe. 273,386, 4-10-84, Cl. D15-138.000.
Adolfsson, Roger, to Cederroths AB. Wall mounted holder for the exposure of various kinds of bandaging materials. 273,352, 4-10-84, Cl. D6-130.000.
Albert, Howard. Boxing glove. 273,343, 4-10-84, Cl. D2-361.000.
Alfirevic, Radivoj. Food dispenser. 273,357, 4-10-84, Cl. D7-306.000.
Appliance Design Probe Inc.: *See—*
Barradas, George, 273,427, Cl. D28-38.000.
Asakawa, Yoshifumi: *See—*
Abe, Takeshi; Shibayama, Masato; Asakawa, Yoshifumi; and Kinoshita, Seiji, 273,381, Cl. D14-53.000.
Barradas, George, to Appliance Design Probe Inc. Hair setting case. 273,427, 4-10-84, Cl. D28-38.000.
Bayerische Motoren Werke Aktiengesellschaft: *See—*
Gevert, Klaus V., 273,339, Cl. D2-232.000.
Bulgari, Marina, to Zoldia Anstalt. Earring face. 273,371, 4-10-84, Cl. D11-56.000.
Cafiero, Vincent, to Simmons Universal Corporation. Arm chair. 273,349, 4-10-84, Cl. D6-31.000.
Cafiero, Vincent, to Simmons Universal Corporation. Arm chair. 273,350, 4-10-84, Cl. D6-31.000.
Callaway, Wayne: *See—*
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Campbell, Andrew E.; and LeVan, Jack. Flashlight. 273,425, 4-10-84, Cl. D26-37.000.
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Charles, Derek A., to Vessa Limited. Foldable wheelchair. 273,376, 4-10-84, Cl. D12-131.000.
Clairol Incorporated: *See—*
Rogers, Meyrick K., 273,415, Cl. D23-148.000.
Clover Mfg. Co., Ltd.: *See—*
Okada, Hidekazu, 273,347, Cl. D3-28.000.
Collister, Kenneth D.; and Kheiri, Mohammad, to Miles Laboratories, Inc. Slide spinner. 273,418, 4-10-84, Cl. D24-1.100.
Conner, William A. Fan housing cover. 273,417, 4-10-84, Cl. D23-163.000.
Crockett, Arthur C., to Simmons Universal Corporation. Ottoman. 273,351, 4-10-84, Cl. D6-36.000.
D'Alo, Herbert F.; Genese, Joseph N.; and Smith, Ronald W., to Abbott Laboratories. Flow detector for an intravenous administration set. 273,419, 4-10-84, Cl. D24-8.000.
Degenshein, Edward D., to Accessories by Pearl. Belt buckle. 273,345, 4-10-84, Cl. D2-414.000.
DeLuca, Joseph C. Chip holder. 273,403, 4-10-84, Cl. D21-56.000.
Dew, Trevor J., to Dunlop Limited. Trailer. 273,374, 4-10-84, Cl. D12-102.000.
Dunlop Limited: *See—*
Dew, Trevor J., 273,374, Cl. D12-102.000.
Eilert, Randall N., to John Fluke Mfg. Co., Inc. Electronic system test instrument. 273,370, 4-10-84, Cl. D10-75.000.
Elliott, Randall L., to Vector Specialized Construction, Inc. Walk-in automatic teller building. 273,421, 4-10-84, Cl. D25-33.000.
Elliott, Randall L., to Vector Specialized Construction, Inc. Walk-in automatic teller building. 273,422, 4-10-84, Cl. D25-33.000.
Elliott, Randall L., to Vector Specialized Construction, Inc. Walk-in automatic teller building. 273,423, 4-10-84, Cl. D25-33.000.
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Esselte Dymo N V: *See—*
Lee, James, 273,394, Cl. D18-19.000.
Evans, Roger C. Exercising device body. 273,407, 4-10-84, Cl. D21-191.000.
Fantozzi, Carlo A. Combined pour spout and drip guard. 273,369, 4-10-84, Cl. D9-436.000.
Ferretti, James A. Trim razor. 273,428, 4-10-84, Cl. D28-46.000.
Fitts Industries, Inc.: *See—*
Fitts, Lewis F., 273,354, Cl. D6-192.000.
Fitts, Lewis F., to Fitts Industries, Inc. Chair or seat end frame component. 273,354, 4-10-84, Cl. D6-192.000.
Footlick, Robert: *See—*
Levine, Allan; Pinkner, Robert; and Footlick, Robert, 273,373, Cl. D12-83.000.
Gabriel Francis Rol Inc.: *See—*
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Rol, Gabriel, 273,342, Cl. D2-344.000.
Gamm, Robert J., to Kangaroos U.S.A., Inc. Cushion plug for athletic shoe collar. 273,340, 4-10-84, Cl. D2-310.000.
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Griggs, Paul E., Jr. Pump intake manifold. 273,383, 4-10-84, Cl. D15-7.000.
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Hagedorn, Walter; and Ricci, Bernard, to Stewart Stamping Corp., a Div. of Insilco Corp. Packaging tray for wire leads. 273,363, 4-10-84, Cl. D9-341.000.
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- Hayes, Thomas H., to Hoover Universal, Inc. Container handle or similar article. 273,367, 4-10-84, Cl. D9-434.000.
- Hayes, Thomas H., to Hoover Universal, Inc. Container handle or similar article. 273,368, 4-10-84, Cl. D9-434.000.
- Hechter, Daniel. Fountain pen. 273,396, 4-10-84, Cl. D19-49.000.
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- Jacobson, Jeff A. Blind cleaner. 273,432, 4-10-84, Cl. D32-52.000.
- Jalutkewicz, James H.; Warrell, Richard D.; and Wetherell, Richard B., Jr., to Monsanto Company. Bottle. 273,364, 4-10-84, Cl. D9-352.000.
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- Lukins, Sheila; and Rosso, Julee, to Silver Palate, Inc., The. Container for comestibles. 273,365, 4-10-84, Cl. D9-400.000.
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- Rogers, Meyrick K., to Clairol Incorporated. Facial sauna. 273,415, 4-10-84, Cl. D23-148.000.
- Rol, Gabriel, to Gabriel Francis Rol Inc. Fur piece. 273,341, 4-10-84, Cl. D2-344.000.
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- Scotto, Arthur J. Fan. 273,416, 4-10-84, Cl. D23-156.000.
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- Sinek, Joachim R., to Kennecott Corporation. Shell for induced draft cooling tower. 273,414, 4-10-84, Cl. D23-139.000.
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- Wilkinson, Steven K. Multiple point ball point pen. 273,395, 4-10-84, Cl. D19-36.000.
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- Zucker, Anchel. Combined holder for a cigarette pack and lighter. 273,426, 4-10-84, Cl. D27-49.000.

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CLASS 98

40 C	4,441,402
42 R	Re.31,549
55	4,441,403
96	4,441,404
201	4,441,405

CLASS 99

275	4,441,406
277.2	4,441,407
450.2	4,441,408
523	4,441,409
538	4,441,410
	4,441,411
542	4,441,413
571	4,441,414
601	4,441,412

CLASS 100

35	4,441,415
171	4,441,416
176	4,441,417

CLASS 101

38 R	4,441,418
45	4,441,419
69	4,441,420
93.04	4,441,421
125	4,441,422
175	4,441,423
248	4,441,424
292	4,441,425
376	4,441,426

CLASS 102

202.6	4,441,427
307	4,441,428
526	4,441,429

CLASS 104

209	4,441,430

CLASS 105

377	4,441,431

CLASS 106

21	4,441,928
90	4,441,929

CLASS 108

5	4,441,432
152	4,441,433

CLASS 110

101 R	4,441,434
245	4,441,435
315	4,441,436
346	4,441,437

CLASS 112

104	4,441,438
158 C	4,441,440
158 E	4,441,439
221	4,441,441
256	4,441,442
258	4,441,443
311	4,441,444

CLASS 114

39	4,441,445
	4,441,446
167	4,441,447
230	4,441,448
263	4,441,449

CLASS 118

681	4,441,450

CLASS 119

1	4,441,451
3	4,441,452
	4,441,453
14.36	4,441,454
14.47	4,441,455
45 R	4,441,456
51 R	4,441,457
	4,441,458
72	4,441,459

CLASS 122

31 R	4,441,460

CLASS 123

3	4,441,461
41.11	4,441,462
41.27	4,441,463
52 MB	4,441,464
90.34	4,441,465
179 G	4,441,467
179 S	4,441,466
198 E	4,441,468
295	4,441,469
306	4,441,470
339	4,441,471
383	4,441,472
440	4,441,473
450	4,441,474
525	4,441,475
542	4,441,476
557	4,441,477
602	4,441,478
605	4,441,479

CLASS 126

42	4,441,480
121	4,441,481
123	4,441,482
206	4,441,483
436	4,441,484

CLASS 128

9	4,441,485
24 A	4,441,486
24.2	4,441,487
66	4,441,488
77	4,441,489
	4,441,490
79	4,441,491
92 EB	4,441,492
165	4,441,493
204.17	4,441,494
325	4,441,495
335.5	4,441,496
339	4,441,497
419 P	4,441,498
595	4,441,499
641	4,441,500
	4,441,501
653	4,441,502
660	4,441,503
686	4,441,504
726	4,441,505
728	4,441,506
734	4,441,507
736	4,441,508
757	4,441,509
763	4,441,510

CLASS 130

27 B	4,441,513
27 Z	4,441,511
	4,441,512

CLASS 131

276	4,441,514

CLASS 133

5 R	4,441,515
8 A	4,441,516

CLASS 134

2	4,441,930
113	4,441,517

CLASS 135

98	4,441,518

CLASS 136

256	4,442,310

CLASS 137

15	4,441,519
44	4,441,520
613	4,441,521
615	4,441,522
624.18	4,441,523
625.47	4,441,524
814	4,441,525
831	4,441,526

CLASS 138

175	4,441,527

CLASS 139

66 R	4,441,528
207	4,441,529
432	4,441,530
452	4,441,531

CLASS 141

1	4,441,532
59	4,441,533

CLASS 144

2 N	4,441,534
3 K	4,441,535
39	4,441,536
357	4,441,537

CLASS 148

1.5	4,441,931
	4,441,932
2	4,441,933
9 R	4,441,934
9.5	4,441,935
12 C	4,441,936
18	4,441,937
23	4,441,938
31	4,441,939
121	4,441,940
187	4,441,941

CLASS 149

19.6	4,441,942
109.4	4,441,943

CLASS 152

417	4,441,539

CLASS 156

71	4,441,944
108	4,441,945
158	4,441,947
189	4,441,948
212	4,441,949
216	4,441,950
222	4,441,952
245	4,441,951
290	4,441,953
291	4,441,954
307.3	4,441,946
423	4,441,955
479	4,441,956
656	4,441,957

CLASS 159

2 MS	4,441,958

CLASS 160

168 R	4,441,540

CLASS 162	
30.1	4,441,959
49	4,441,960
106	4,441,961
111	4,441,962
CLASS 164	
453	4,441,541
485	4,441,542
491	4,441,543
CLASS 165	
1	4,441,544
26	4,441,545
29	4,441,546
67	4,441,547
104.26	4,441,548
145	4,441,549
	4,441,550
CLASS 166	
84	4,441,551
133	4,441,552
138	4,441,553
261	4,441,554
272	4,441,555
290	4,441,556
312	4,441,557
317	4,441,558
382	4,441,559
	4,441,560
387	4,441,561
CLASS 172	
311	4,441,562
CLASS 173	
163	4,441,563
CLASS 174	
14 R	4,442,311
15 WF	4,442,312
28	4,442,313
36	4,442,314
	4,442,315
84 C	4,442,316
CLASS 175	
122	4,441,564
325	4,441,565
374	4,441,566
CLASS 177	
25	4,441,567
129	4,441,568
211	4,441,569
CLASS 178	
18	4,442,317
CLASS 179	
2 A	4,442,319
2 C	4,442,318
5 R	4,442,320
18 EB	4,442,321
81 R	4,442,322
110 A	4,442,323
111 E	4,442,324
190	4,442,325
CLASS 180	
9.62	4,441,570
128	4,441,571
140	4,441,572
165	4,441,573
219	4,441,574
248	4,441,575
CLASS 181	
129	4,441,576
147	4,441,577
222	4,441,578
243	4,441,579
286	4,441,580
	4,441,581
CLASS 182	
48	4,441,582
150	4,441,583
CLASS 187	
29 R	4,441,584
95	4,441,585
CLASS 188	
32	4,441,586
70 R	4,441,587
73.38	4,441,588
181 T	4,441,589
195	4,441,590
202	4,441,591
264 A	4,441,592
322.11	4,441,593
CLASS 192	
3.28	4,441,594
3.29	4,441,595
13 R	4,441,596
35	4,441,597
58 B	4,441,598
	4,441,599
89 B	4,441,600
CLASS 193	
37	4,441,601
CLASS 194	
100 A	4,441,602
CLASS 198	
518	4,441,603
598	4,441,604
731	4,441,605
751	4,441,606
781	4,441,607
CLASS 200	
38 R	4,442,326
51 R	4,442,327
76	4,442,328
148 A	4,442,330
148 B	4,442,329
CLASS 202	
172	4,441,963
CLASS 204	
15	4,441,964
16	4,441,965
26	4,441,966
29	4,441,967
35 N	4,441,968
49	4,441,969
59 R	4,441,970
159.23	4,442,302
164	4,441,971
180 R	4,441,972
192 N	4,441,973
192 R	4,441,974
206	4,441,975
224 M	4,441,976
252	4,441,977
301	4,441,978
402	4,441,979
409	4,441,980
426	4,441,981
	4,441,982
CLASS 206	
45.14	4,441,608
204	4,441,609
361	4,441,610
431	4,441,611
511	4,441,615
620	4,441,612
621	4,441,613
624	4,441,614
CLASS 208	
10	4,441,983
11 LE	4,441,984
11 R	4,441,985
	4,441,986
33	4,441,987
64	4,441,988
76	4,441,989
111	4,441,990
	4,441,991
251 H	4,441,992
CLASS 209	
5	4,441,993
44.1	4,441,616
137	4,441,995
139 R	4,441,994
CLASS 210	
241	4,441,996
256	4,442,000
266	4,441,997
275	4,441,998
354	4,441,999
402	4,442,001
411	4,442,002
445	4,442,003
448	4,442,004
613	4,442,006
614	4,442,005
631	4,442,007
683	4,442,008
697	4,442,009
729	4,442,010
CLASS 211	
1.5	4,441,617
49 D	4,441,618
60 T	4,441,619
CLASS 215	
232	4,441,620
247	4,441,621
CLASS 217	
99	4,441,622
CLASS 219	
10.43	4,442,331
10.67	4,442,332
69 W	4,442,333
73	4,442,334
79	4,442,335
98	4,442,336
117.1	4,442,337
121 PE	4,442,338
130.33	4,442,339
137 PS	4,442,340
201	4,442,341
216	4,442,342
433	4,442,343
497	4,442,344
CLASS 220	
90.4	4,441,623
254	4,441,624
257	4,441,625
443	4,441,626
461	4,441,627
CLASS 221	
90	4,441,628
297	4,441,630
CLASS 222	
86	4,441,631
129	4,441,632
153	4,441,633
324	4,441,629
402.16	4,441,634
402.22	4,441,635
541	4,441,636
556	4,441,637
CLASS 224	
35	4,441,638
237	4,441,639
252	4,441,640
311	4,441,641
CLASS 225	
46	4,441,642
CLASS 227	
110	4,441,643
130	4,441,644
CLASS 228	
47	4,441,645
116	4,441,646
119	4,441,647
CLASS 229	
37 R	4,441,648
38	4,441,649
39 B	4,441,650
CLASS 235	
379	4,442,346
380	4,442,345
474	4,442,347
CLASS 236	
49	4,441,651
56	4,441,652
93 R	4,441,653
CLASS 239	
89	4,441,654
163	4,441,655
708	4,441,656
CLASS 241	
14	4,441,657
46.17	4,441,658
70	4,441,659
CLASS 242	
35.5 A	4,441,660
55	4,441,661
58	4,441,662
65	4,441,663
75.42	4,441,664
129	4,441,665
134	4,441,666
197	4,441,667
CLASS 244	
3.11	4,441,668
3.13	4,441,669
3.22	4,441,670
63	4,441,671
110 C	4,441,672
135 R	4,441,673
137 R	4,441,674
213	4,441,675
234	4,441,676
CLASS 248	
74 B	4,441,677
146	4,441,678
156	4,441,679
220.4	4,441,680
475 R	4,441,682
475.1	4,441,681
558	4,441,683
674	4,441,684
CLASS 249	
51	4,441,685
CLASS 250	
203 R	4,442,348
222.1	4,442,349
227	4,442,350
237 G	4,442,351
251	4,442,352
281	4,442,353
	4,442,354
310	4,442,355
324	4,442,356
338	4,442,357
342	4,442,359
435	4,442,358
486.1	4,442,360
491.1	4,442,361
CLASS 251	
127	4,441,686
139	4,441,687
327	4,441,688
366	4,441,689
CLASS 252	
8.5 M	4,442,011
8.55 C	4,442,014
8.6	4,442,012
8.8	4,442,013
68	4,442,015
70	4,442,016
301.21	4,442,017
307	4,442,018
309	4,442,019
373	4,442,020
389 R	4,442,021
522 R	4,442,025
574	4,442,027
628	4,442,028
CLASS 254	
279	4,441,690
344	4,441,691
390	4,441,692
420	4,441,693
CLASS 260	
112.5 R	4,442,029
	4,442,030
	4,442,031
149	4,442,032
158	4,442,033
236.6	4,442,034
239.55 R	4,442,035
396 R	4,442,036
397.2	4,442,037
429 R	4,442,040
455 R	4,442,038
465.4	4,442,039
502.5 F	4,442,041
512 R	4,442,042
513 R	4,442,043
969	4,442,044
CLASS 261	
36 R	4,442,045
44 B	4,442,046
66	4,442,047
114 R	4,442,048
148	4,442,049
CLASS 264	
4.3	4,442,051
30	4,442,050
	4,442,052
36	4,442,053
40.1	4,442,054
105	4,442,055
161	4,442,056
163	4,441,694
176 F	4,442,057
176 R	4,442,058
228	4,442,059
328.2	4,442,060
328.7	4,442,061
518	4,442,062
532	4,442,063
551	4,442,064
CLASS 266	
57	4,441,695
	4,441,696
170	4,441,697
249	4,441,698
255	4,441,699
281	4,441,700
287	4,441,701
CLASS 271	
177	4,441,702
243	4,441,703
303	4,441,704
CLASS 272	
73	4,441,705
118	4,441,706
119	4,441,707
130	4,441,708
CLASS 273	
1.5 R	4,441,709
54 B	4,441,711
54 R	4,441,710
73 D	4,441,712
73 J	4,441,713
144 B	4,441,714
153 S	4,441,715
183 C	4,441,716
201	4,441,717
254	4,441,718
402	4,441,719
CLASS 277	
3	4,441,720
26	4,441,721
134	4,441,722
164	4,441,723
166	4,441,724
167.5	4,441,725
230	4,441,726
CLASS 280	
62	4,441,727
213	4,441,728
278	4,441,729
426	4,441,730
495	4,441,731
614	4,441,732
633	4,441,733
638	4,441,734
754	4,441,736
771	4,441,735
804	4,441,737
806	4,441,738
CLASS 281	
16	4,441,739
CLASS 285	
18	4,441,740
	4,441,741
	4,441,742
21	4,441,743
162	4,441,744
417	4,441,745
CLASS 292	
336.3	4,441,236
CLASS 294	
19 R	4,441,746
51	4,441,747
74	4,441,748
83 R	4,441,750
88	4,441,749
CLASS 296	
1 S	4,441,751
	4,441,752
	4,441,753
51	4,441,754
93	4,441,755
CLASS 297	
39	4,441,756
55	4,441,757
439	4,441,758
CLASS 299	
2	4,441,759
	4,441,760
64	4,441,761
CLASS 301	
37 R	4,441,762
CLASS 303	
23 R	4,441,763
40	4,441,764
CLASS 307	
108	4,442,362
141.4	4,442,363
147	4,442,364
279	4,442,365
597	Re.31,551
CLASS 308	
6 C	4,441,765
CLASS 310	
50	4,442,366
91	4,442,367
201	4,442,368
214	4,442,369
239	4,442,370
260	4,442,371
339	4,442,372
CLASS 312	
214	4,441,766
216	4,441,767
257 SM	4,441,768
270	4,441,769
276	4,441,770
322	4,441,771
330 R	4,441,772
	4,441,773
CLASS 313	
35	4,442,373
142	4,442,375
316	4,442,374
402	4,442,376
503	4,442,377
CLASS 315	
13 C	Re.31,552
47	4,442,378
	4,442,379
101	4,442,380
151	4,442,381
241 P	4,441,774
287	4,442,382
349	4,442,383
399	4,442,384
CLASS 318	
140	4,442,385
254	4,442,386
568	4,442,387
640	4,442,388
642	4,442,389
663	4,442,390
	4,442,391
696	4,442,392
802	4,442,393
807	4,442,394
CLASS 320	
48	4,442,395
CLASS 322	
21	4,442,396
CLASS 323	
275	4,442,397
315	4,442,398
	4,442,399
	4,442,400
351	4,442,401
CLASS 324	
158 D	4,442,402
220	4,442,403
309	4,442,404
439	4,442,405
CLASS 328	
134	4,442,406
CLASS 330	
128	4,442,407
261	4,442,408
274	4,442,409
289	4,442,410
296	4,442,411
CLASS 331	
1	4,442,412
1 A	4,442,413
CLASS 332	
7.51	4,442,414
16 T	4,442,415
CLASS 333	
263	4,442,416
CLASS 335	
210	4,442,417
230	4,442,418
CLASS 336	
100	4,442,419
CLASS 338	
34	4,442,420
35	4,442,421
	4,442,422
CLASS 339	
89 R	4,441,775
91 R	4,441,776
94 M	4,441,777
99 R	4,441,778
	4,441,779
143 R	4,441,780
177 R	4,441,781
199 R	4,441,782
CLASS 340	
52 F	4,442,424
347 P	4,442,423
365 S	4,442,425
539	4,442,426
546	4,442,427
703	4,442,428
786	4,442,429
CLASS 343	
6.5 R	4,442,430

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7 ED	4,442,431
378	4,442,433
394	4,442,432
701	4,442,434
709	4,442,435
722	4,442,436
786	4,442,437
792	4,442,438
CLASS 346	
1.1	4,442,439
	4,442,440
74.4	4,442,441
136	4,442,442
140 R	4,442,443
208	4,442,176
CLASS 350	
96.10	4,441,783
96.15	4,441,784
96.20	4,441,785
96.21	4,441,786
96.23	4,441,787
96.34	4,441,788
166	4,441,789
302	4,441,790
360	4,441,791
415	4,441,792
536	4,441,793
580	4,441,794
CLASS 351	
169	4,441,795
CLASS 352	
184	4,441,796
CLASS 354	
145.1	4,441,799
152	4,441,800
173.11	4,441,801
224	4,441,802
299	4,441,803
416	4,441,797
483	4,441,798
CLASS 355	
14 R	4,441,804
	4,441,805
23	4,441,806
40	4,441,807
53	4,441,808
CLASS 356	
1	4,441,809
	4,441,810
128	4,441,811
147	4,441,812
237	4,441,813
305	4,441,814
328	4,441,815
335	4,441,816
372	4,441,818
375	4,441,817
380	4,441,819
CLASS 357	
13	4,442,444
22	4,442,445
30	4,442,446
41	4,442,447
42	4,442,448
67	4,442,449
81	4,442,450
CLASS 358	
73	4,442,451
75	4,442,452
109	4,442,453
167	4,442,454
209	4,442,455
213	4,442,456
	4,442,457
243	4,442,458
286	4,442,459
296	4,442,460
343	4,442,461
CLASS 360	
33.1	4,442,462
60	4,442,463
72.1	4,442,464
75	4,442,466
105	4,442,467
128	4,442,468
130.23	4,442,465
CLASS 361	
4	4,442,469
46	4,442,470
63	4,442,471
96	4,442,472
275	4,442,473
283	4,442,474
383	4,442,475
395	4,442,476
CLASS 362	
52	4,442,477
191	4,442,478
CLASS 363	
57	4,442,480
60	4,442,481
61	4,442,482
131	4,442,483
136	4,442,479
CLASS 364	
200	4,442,484
	4,442,485
	4,442,486
	4,442,487
	4,442,488
414	4,442,489
433	4,442,490
454	4,442,491
464	4,442,492
475	4,442,493
511	4,442,494
521	4,442,495
524	4,442,496
561	4,442,497
574	4,442,499
724	4,442,500
745	4,442,498
900	4,442,501
	4,442,502
	4,442,503
	4,442,504
	4,442,505
	4,442,506
CLASS 365	
100	4,442,507
104	4,442,508
154	4,442,509
218	4,442,510
CLASS 366	
26	4,441,820
61	4,441,821
101	4,441,822
167	4,441,823
266	4,441,824
CLASS 367	
78	4,442,511
87	4,442,512
100	4,442,513
136	4,442,514
197	4,442,515
CLASS 368	
204	4,441,825
	4,441,826
CLASS 369	
43	4,442,516
71	4,442,517
CLASS 371	
8	4,442,518
27	4,442,519
55	4,442,520
68	4,442,521
CLASS 372	
2	4,442,522
56	4,442,523
107	4,442,524
CLASS 373	
93	4,442,525
95	4,442,526
CLASS 374	
153	4,441,827
CLASS 375	
1	4,442,527
20	4,442,528
34	4,442,529
67	4,442,530
94	4,442,531
CLASS 376	
280	4,442,065
302	4,442,066
CLASS 377	
3	4,442,532
CLASS 378	
21	4,442,533
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146	4,442,538
207	4,442,539
CLASS 381	
31	4,442,540
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49	4,442,543
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56	4,442,545
CLASS 400	
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144.2	4,441,832
180	4,441,833
CLASS 402	
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CLASS 403	
24	4,441,835
154	4,441,836
300	4,441,837
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150	4,441,838
202	4,441,839
267	4,441,840
CLASS 407	
114	4,441,841
CLASS 410	
81	4,441,842
CLASS 411	
349	4,441,843
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490	4,441,849
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787	4,441,854
CLASS 415	
53 T	4,441,855
155	4,441,856
213 R	4,441,857
CLASS 416	
17	4,441,858
96 A	4,441,859
CLASS 417	
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319	4,441,864
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475	4,441,867
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CLASS 418	
51	4,441,869
55	4,441,870
97	4,441,871
CLASS 420	
428	4,442,067
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62	4,442,069
133	4,442,070
CLASS 423	
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567 R	4,442,083
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263	4,442,110
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311	4,442,124
318	4,442,125
324	4,442,126
331	4,442,127
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3	4,441,875
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338	4,441,877
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518	4,442,131
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323	4,442,166
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332	4,442,169
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336	4,442,171
342	4,442,172
372	4,442,173
376	4,442,174
404	4,442,175
412	4,442,177
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551	4,442,180
623	4,442,181
654	4,442,182
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142	4,442,186
213	4,442,187
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59	4,442,192
83	4,442,193
137	4,442,194
191	4,442,195
195	4,442,196
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311	4,442,198
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284	4,441,879
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262	4,442,215
288	4,442,216
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161	4,442,217
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72	4,442,546
180	4,442,547
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95	4,442,219
139	4,442,220
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25	4,442,221
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112	4,442,234
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130	4,442,236
131	4,442,237
164	4,442,238
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116	4,442,239
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130	4,442,241
200	4,442,242
212	4,442,243
221	4,442,244
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455	4,442,249
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98	4,442,250
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183	4,442,252
211	4,442,253
413	4,442,254
414	4,442,255
539	4,442,256
555	4,442,257
767	4,442,258
839	4,442,259
845	4,442,260
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69	4,442,262
83	4,442,263
86	4,442,264
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173	4,442,266
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324	4,442,261
420	4,442,268
440	4,442,269
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61	4,442,271
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88	4,442,273
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96	4,442,275
125	4,442,276
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261	4,442,278
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44	4,442,279
54	4,442,280
79	4,442,281
83	4,442,282
323	4,442,283
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17.9	4,442,284
127	4,442,285
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178	4,442,286
187	4,442,287
189	4,442,288
280	4,442,289
310	4,442,290
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150	4,442,291
281	4,442,292
CLASS 548	
152	4,442,293
221	4,442,294
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523	4,442,309
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415	4,441,538

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	383	273,344
	414	273,345
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	28	273,347
	36	273,348
D6—	31	273,349
		273,350
	36	273,351
	130	273,352
	186	273,353
	192	273,354
	235	273,355
D7—	74	273,356
	306	273,357
	325	273,358
D8—	80	273,359
	93	273,360
	394	273,361
D9—	317	273,362
	329	273,366
	341	273,363
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	400	273,365
	434	273,367
		273,368
	436	273,369
D10—	75	273,370
D11—	56	273,371
	90	273,372
D12—	83	273,373
	102	273,374
	118	273,375
	131	273,376
		273,377
	156	273,378
D14—	5	273,379
		273,380
	53	273,381
	71	273,382
D15—	7	273,383
	24	273,384
	27	273,385
	138	273,386
	139	273,387
		273,388
		273,389
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		273,391
D18—	7	273,392
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	19	273,394
D19—	36	273,395
	49	273,396
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	57	273,398
		273,399
		273,400
		273,401
D21—	35	273,402
	56	273,403
	64	273,404
	65	273,405
	87	273,406
	191	273,407
D22—	7	273,408
	22	273,409
	99	273,410
D23—	3	273,411
		273,412
	69	273,413
	139	273,414
	148	273,415
	156	273,416
	163	273,417
D24—	1.1	273,418
	8	273,419
	64	273,420
D25—	33	273,421
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D26—	37	273,425
D27—	49	273,426
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	16	273,430
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	4,442,256		4,442,223		4,442,137		4,442,379		4,442,138		4,442,238
	4,442,318		4,442,241		4,442,151		4,442,418		4,442,165		4,442,307
	4,442,335		4,442,246		4,442,175		4,442,430		4,442,182		4,442,343
	4,442,420		4,442,253		4,442,185		4,442,453		4,442,187		4,442,348
	4,442,427		4,442,269		4,442,189		4,442,496		4,442,235		4,442,408
	4,442,515		4,442,291		4,442,192		4,442,499		4,442,302		4,442,410
	4,442,543		4,442,309		4,442,193		4,442,504		4,442,310		4,442,436
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	4,441,215		4,442,382		4,442,206		4,441,552		4,442,313		4,442,490
	4,441,220		4,442,402		4,442,218		4,441,556		4,442,347		4,442,491
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	4,441,498		4,442,445		4,442,296		4,442,069		4,442,494		4,441,510
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29 :	4,441,217	35 :	4,441,428		4,442,450		4,442,275		4,441,434		4,441,429
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	4,442,286		4,441,278		4,441,309		4,441,592		4,442,211		4,441,883
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30 :	4,441,714		4,441,337		4,441,582		4,441,844	48 :	4,441,211		4,441,967
	4,441,845		4,441,340		4,441,782		4,442,442		4,441,232		4,442,292
31 :	4,441,274		4,441,369		4,442,058		4,442,458		4,441,244		4,442,350
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DESIGN PATENTS

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PLANT PATENTS

06 :	5,216		5,217		5,218						

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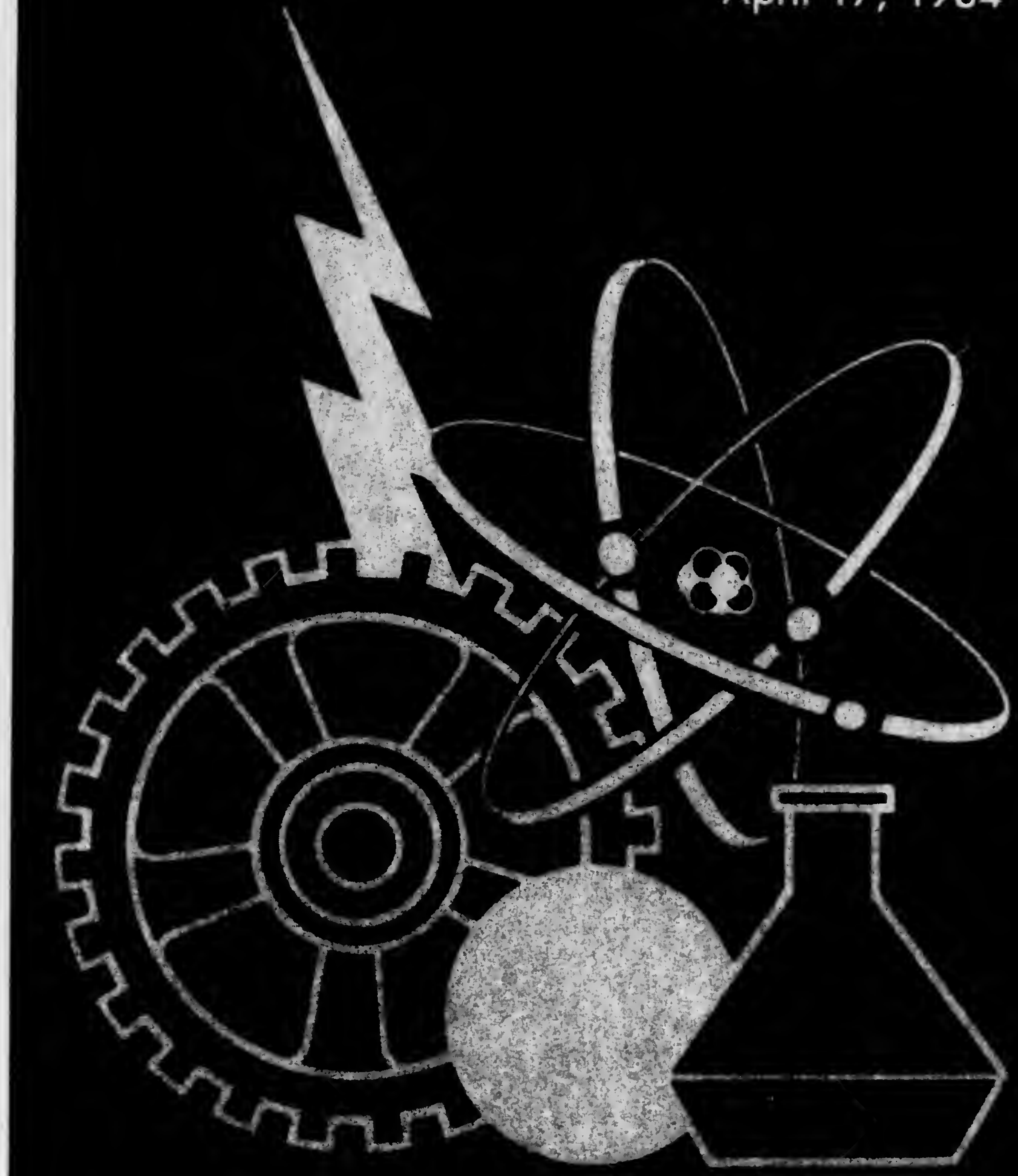
April 17, 1984



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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1037 O.G. 12 on Dec. 13, 1983. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. International PCT fees were changed by the PCT Assembly effective Jan. 1, 1984 and were announced at 1037 O.G. 12 on Dec. 13, 1983. The search fee for the European Patent Office was changed as of Feb. 14, 1984 and was announced at 1039 O.G. 142 on Feb. 21, 1984.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
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· No corresponding prior U.S. national application filed	500.00
· Prior corresponding U.S. national application filed	250.00
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· All cases	620.00
International Fees	
Basic fee (first 30 pages)	295.00
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Designation fee (for each national or regional office)	70.00

GERALD J. MOSSINGHOFF,
Jan. 30, 1984. *Commissioner of Patents*
and Trademarks.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,270,004, Re. S.N. 575,323, Filed Jan. 31, 1984, Cl. 568/314, CHEMICAL PROCESS FOR THE PREPARATION OF 4(6-METHOXY-2-NAPHTHYL)BUTAN-2-ONE, Carl John Rose, et al., Owner of Record: *Beecham Group Ltd., Brentford, Middlesex, England,* Attorney or Agent: Albert L. Jacobs, et al., Ex. Gp.: 126

4,302,014, Re. S.N. 574,695, Filed Nov. 21, 1983, Cl. 273/182.3, GOLF TRAINING DEVICE, Michael S. Shull, Owner of Record: *Speshull Products, Inc., Evansville, Ind.,* Attorney or Agent: Warren D. Flackbert, Ex. Gp.: 334

4,313,785, Re. S.N. 575,931, Filed Jan. 31, 1984, Cl. 159/6W, METHOD AND APPARATUS FOR TREATING WASTE ROCK CUTTINGS, Herman J. Schellstede, Owner of Record: *Inventor,* Attorney or Agent: Thomas B. Van Poole, et al., Ex. Gp.: 177

4,315,965, Re. S.N. 567,809, Filed Jan. 3, 1984, Cl. 428/198, METHOD OF MAKING NONWOVEN FABRIC AND PRODUCT MADE THEREBY HAVING BOTH STICK BONDS AND MOLTEN BONDS, Charles R. Mason, et al., Owner of Record: *Scott Paper Co., Philadelphia, Pa.,* Attorney or Agent: Joseph H. Yamaoka, Ex. Gp.: 164

4,374,319, Re. S.N. 561,512, Filed Dec. 14, 1983, Cl. 219/400, COUNTER-TOP OVEN, Paul Guibert, Owner of Record: *Sunset Ltd., Los Angeles, Calif.,* Attorney or Agent: Michael Ebert, Ex. Gp.: 231

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,121,159, Reexam. No. 90/000,499, Requested: Feb. 10, 1984, Cl. 364/900, CENTRAL OFFICE MASSIVE MEMORY RECORDING SYSTEM, Edward Rogal, Owner of Record: *Valutron, N. V., Southport, Conn.,* Attorney or Agent: Frank F. Scheck, Ex. Gp.: 230, Requester: IBM Corp., Research Triangle Park, N.C.

3,778,626, Reexam. No. 90/000,528, Requested: Mar. 19, 1984, Cl. 250/492.1, MECHANICAL SCAN SYSTEM FOR ION IMPLANTATION, Gordon Ian Robertson, Owner of Record: *Requester,* Attorney or Agent: Douglas J. Kirk, Ex. Gp.: 256, Requester: AT & T Technologies, Inc., New York, N.Y.

3,875,017, Reexam. No. 90/000,525, Requested: Mar. 8, 1984, Cl. 202/174, MULTI-STAGE THIN FILM EVAPORATOR HAVING A HELICAL VAPOR FLOW PATH, Risto V. J. Saari, et al., Owner of Record: *Oy Finn-Aqua Ltd., Helsinki, Finland,* Attorney or Agent: Martin G. Raskin, Ex. Gp.: 170, Requester: Owner

3,888,815, Reexam. No. 90/000,521, Requested: Mar. 2, 1984, Cl. 524/703, SELF-BONDING TWO-PACKAGE ROOM TEMPERATURE VULCANIZABLE SILICONE RUBBER COMPOSITIONS, Stanley J. Bessmer, et al., Owner of Record: *General Electric Co., Waterford, N.Y.,* Attorney or Agent: Gary Loser, Ex. Gp.: 140, Requester: Owner

4,161,004, Reexam. No. 90/000,530, Requested: Mar. 19, 1984, Cl. 360/106, HEAD POSITIONING MECHANISM FOR RECORD/PLAYBACK MACHINE, Warren L. Dalziel, Owner of Record: *Shugart Associates, Sunnyvale, Calif.,* Attorney or Agent: Ronald Zibelli, Ex. Gp.: 235, Requester: Shugart Corp., c/o Xerox Corp., Rochester, N.Y.

4,352,045, Reexam. No. 90/000,523, Requested: Mar. 8, 1984, Cl. 315/291, ENERGY CONSERVATION SYSTEM USING CURRENT CONTROL, Don F. Widmayer, Owner of Record: *Flexiwatt Corp., Rockville, Md.,* Attorney or Agent: Larson & Taylor, Ex. Gp.: 250, Requester: Jack M. Wiseman, San Jose, Calif.

Service by Publication

A petition to cancel the registration listed below having been filed, and the notice of such proceeding sent by registered mail to registrant at the last known address having been returned by the Postal Service as undeliverble, notice is hereby given that unless the registrant listed herein, its assign or legal representative, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Meridian Engineering, Inc., Philadelphia, Pa., Reg. No. 891,081, for the Mark MERIDIAN, Canc. No. 13,874.

ERMA S. BROWN,
Deputy Clerk,
Trademark Trial and
Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner
for Trademarks.

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents and Trademarks on or before May 1, 1984.

Abers, Julia E., 2450 Walters Way, #4, Concord, Calif. 94520
Aufrichtig, Peter D., 209 Garth Rd., #3M, Scarsdale, N.Y. 10583
Bak, Mary E., 815 Judson Ave., Evanston, Ill. 60202
Brogan, Marilyn, Post Office Rd., S. Salem, N.Y. 10590
Brown, Randall C., 4441 S. 34th St., Arlington, Va. 22205
Conger, William G., 41251 Appleby Ct., Northville, Mich. 48167
Connors, William J., 22 Quinn Cir., Madison, Wis. 53713
Hampilos, Gus T., P.O. Box 472, Florham Park, N.J. 07932-0472
Hawkins, Jackson T., 2032 Dundee Rd., Rockville, Md. 20850
Hovell, William P., 12 Fort Hill Cir., Staten Island, N.Y. 10301
Kadlubowski, Marian F., 334 Meade Terr., Union, N.J. 07083
Lewis, Linda L., 6 Maplewood Dr., Wilbraham, Mass. 01095
Long, Joseph F., 8912 Laurel Grove, Austin, Tex. 78758
Mirabel, Eric-Paul, 1330 Grayburn Rd., Pasadena, Calif. 91107
Patterson, Joanne W., 5505 Limeric Cir., #14, Wilmington, Del. 19808
Pismenny, Boris M., 25 E. Ruby Ave., Palisades Park, N.J. 07650
Shedd, Wayne L., 7825 Lee Ave., Alexandria, Va. 22308
Shudy, John G., Jr., 2016 Coral Sea Cir., Ridgecrest, Calif. 93555
Stagg, William W., 110 Valencia Dr., Lafayette, La. 70516
Welch, James D., 10328 Pinehurst, Omaha, Nebr. 48124

WILLIAM FELDMAN
Mar. 20, 1984. *Director, Office of*
Enrollment and Discipline.

U.S. GOVERNMENT-OWNED INVENTIONS

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The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverge for U.S. companies and may also be available for licensing.

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Office of Government Inventions and Patents
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Springfield, Va. 22151

Please cite the number and title of inventions of interest.

DOUGLAS J. CAMPION,
Patent Licensing,
Office of Governmental Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

DEPARTMENT OF AGRICULTURE

SN 6–352,661 (4,431,039). INVOLUTED DISC SLICER.
SN 6–566,380. ALKALINE PEROXIDE TREATMENT OF NONWOODY LIGNOCELLULOSICS.
SN 6–566,469. SESBANIMIDE AND THE USE THEREOF IN TREATING LEUKEMIC TUMORS.

DEPARTMENT OF HEALTH AND HUMAN SERVICES

SN 6–249,229 (4,431,742). RADIORECEPTOR ASSAY FOR BENZODIAZEPINES IN SALIVA.

DEPARTMENT OF THE AIR FORCE

SN 6–306,843 (4,414,670). E-BEAM MAINTAINED PLASMA DISCHARGE ELECTRODES.
SN 6–324,348 (4,418,127). BATTERY CELL MODULE.
SN 6–324,349 (4,415,993). FAST ACCESS NON-VOLATILE MEMORY.
SN 6–324,913 (4,415,132). AIRCRAFT HAVING VARIABLE INCIDENCE FORWARD-SWEPT WING.
SN 6–399,661 (4,417,039). CIS-ENYNE AROMATIC AND AROMATIC HETEROCYCLIC POLYMERS.
SN 6–434,648. TECHNIQUE FOR THE GROWTH OF COMPOSITIONALLY UNGRADED SINGLE CRYSTALS OF SOLID SOLUTIONS.
SN 6–478,589. PENTAFLUOROTELLURIUM OXIDE FLUOROCARBONS.
SN 6–562,263. IMPROVED FLAMEHOLDER WITH REMOVABLE FLAMEHOLDER ATTACHMENTS.
SN 6–564,547. HEAT RESISTANT SHEATHED INSULATED ELECTRICAL CONDUCTORS.
SN 6–564,548. SEAL PART SUPPORTED ON ROTOR DISC LUG.
SN 6–566,351. ELECTROLUMINESCENT (EL) REMOTELY-CONTROLLED LANDING ZONE MARKER LIGHT SYSTEM.
SN 6–566,352. VARIABLE RADIUS LEAD FORMER.
SN 6–566,444. APPARATUS FOR ETCHING VERTICAL JUNCTION SOLAR CELL WAFERS.
SN 6–566,445. FUEL PUMP VENT DRAIN SYSTEM.
SN 6–566,753. MULTIPLE JET BLOWING AROUND THE BLUNT TRAILING EDGE OF A CIRCULATION CONTROLLED AIRFOIL.

DEPARTMENT OF THE ARMY

SN 6–020,145 (4,225,224). PROCESS AND APPARATUS FOR LASER ILLUMINATION OF PRINTING PLATES.
SN 6–090,809 (4,262,381). AMPHIBIOUS VEHICLE BRIDGE APPARATUS.
SN 6–124,873 (4,347,410). MICROPHONE DROOP AND SENSITIVITY MEASUREMENT DEVICE.
SN 6–132,592 (4,304,120). AUTOMATIC GAS MEASUREMENT AND ANALYSIS FOR A TEST CELL.
SN 6–152,441 (4,360,799). HYBRID OPTICAL-DIGI-

TAL PATTERN RECOGNITION APPARATUS AND METHOD.

SN 6–164,490 (4,397,126). ENVIRONMENTALLY ADAPTABLE ROOF STRUCTURE.

SN 6–181,495 (4,422,181). BI-DIRECTIONAL FIBRE-OPTIC COUPLER.

SN 6–183,878 (4,301,208). METHOD FOR REDUCING THE ADHESION OF ICE TO THE WALLS OF NAVIGATION LOCKS.

SN 6–193,495 (4,002,708). METHOD FOR PRODUCING POLYMER IMPREGNATED FOAMED MASONARY ELEMENTS.

SN 6–195,821 (4,326,420). KERF PRESSURE PLATE MATERIAL TESTER.

SN 6–198,977 (4,346,602). APPARATUS AND METHOD FOR MEASURING ADHESIVE BOND STRENGTH.

SN 6–217,335 (4,397,548). DISTANCE MEASURING SYSTEM.

SN 6–248,934 (4,346,612). LIQUID SAMPLER.

SN 6–255,184 (4,352,322). PREFABRICATED VEHICLE MAINTENANCE APPARATUS.

SN 6–265,886. APPARATUS FOR DETERMINING BREAK LOCATIONS IN FENCING.

SN 6–274,602 (4,398,787). OPTICAL LEVERAGE TELECENTRIC SCANNING APPARATUS.

SN 6–285,889. METHOD FOR DISPERSING OR ARRESTING LAVA FLOW.

SN 6–315,551 (4,379,050). GRANULAR FLUID BIOFILTER REVERSING.

SN 6–318,500. A MICROWAVE SYSTEM FOR PARTICLE AND SHOCK VELOCITY MEASUREMENT IN A GEOLOGICAL TYPE MATERIAL.

SN 6–322,306. RETICLE PLATE AND METHOD FOR ESTABLISHMENT OF A NORTH-ORIENTED OR SOUTH-ORIENTED LINE BY CIRCUMPOLAR ORIENTATION.

SN 6–328,765 (4,425,654). ULTRAVIOLET PRE-IONIZER FOR HIGH POWER LASER.

SN 6–479,631 ELECTRONIC MONITORING SYSTEM.

SN 6–496,700. MEASUREMENT TECHNIQUES OF ELECTRICAL PARAMETERS OF SURFACE MATERIALS IN THE X-BAND REGION.

SN 6–828,796 (4,110,912). TRIAXIAL DEFLECTION METER.

SN 6–895,881 (4,167,260). BRACKET MEANS FOR MOUNTING TEST FIXTURES ON BOILER TUBES.

PATENT NOTICES

Certificates of Correction for the Week of Apr. 17, 1984

PP. 5,163
Re. 30,979
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Disclaimers

3,447,978.—*Harold F. Bluhm,* Tamaqua, Pa. AMMONIUM NITRATE EMULSION BLASTING AGENT AND METHOD OF PREPARING SAME. Patent dated June 3, 1969. Disclaimer filed Jan. 27, 1984, by the assignee, *Atlas Powder Co.*

Hereby enters this disclaimer to claims 18 through 30 of said patent.

3,821,906.—*Winfred M. Berg,* E. Rockaway, N.Y. TRANSMISSION BELT. Patent dated July 2, 1974. Disclaimer filed Feb. 23, 1984, by the assignee, *Winfred M. Berg, Inc.*

The term of this patent subsequent to July 31, 1990 has been disclaimed.

3,980,956.—*Kenneth R. Woolling, Jr.,* Indianapolis, Ind. COUNTER TYPE REMOTE CONTROL RECEIVER INCLUDING NOISE IMMUNITY SYSTEM. Patent dated Sept. 14, 1976. Disclaimer filed Feb. 21, 1984, by the assignee, *RCA Corp.*

Hereby enters this disclaimer to claims 1 through 5 of said patent.

4,028,520.—*Sumner H. Torrey,* West Lafayette, Ind. AIR FLOW SYSTEM FOR COMMON CAVITY MICROWAVE OVEN. Patent dated June 7, 1977. Disclaimer filed Feb. 13, 1984, by the assignee, *Roper Corp.*

Hereby enters this disclaimer to claim 1 of said patent.

4,107,125.—*Elwyn R. Lovejoy,* Hockessin, Del. CROSSLINKED AROMATIC POLYIMIDES AND ARTICLES MADE THEREFROM. Patent dated Aug. 15, 1978. Disclaimer filed Feb. 17, 1984, by the assignee, *E. I. Du Pont De Nemours and Co.*

Hereby enters this disclaimer to claims 7 and 8 of said patent.

4,256,945.—*Philip S. Carter,* Palo Alto and *John F. Krumme,* Woodside, Calif. ALTERNATING CURRENT ELECTRICALLY RESISTIVE HEATING ELEMENT HAVING INTRINSIC TEMPERATURE CONTROL. Patent dated Mar. 17, 1981. Disclaimer filed Jan. 16, 1984, by the assignee, *Oximetrix, Inc.*

Hereby enters this disclaimer to claims 1, 2, 4, 5, 9 and 11 of said patent.

4,272,830.—*Jerry D. Moench,* Austin, Tex. ROM STORAGE LOCATING HAVING MORE THAN TWO STATES. Patent dated June 9, 1981. Disclaimer filed Feb. 13, 1984, by the assignee, *Motorola, Inc.*

Hereby enters this disclaimer to claims 4, 5, and 6 of said patent.

4,302,295.—*Masayuki Shimada,* Tokyo, Japan. NUCLEAR FUEL ELEMENT. Patent dated Nov. 24, 1981. Disclaimer filed Feb. 28, 1984, by the assignee, *Tokyo Shibaura Denki Kabushiki Kaisha.*

Hereby enters this disclaimer to claims 1–6 of said patent.

4,312,707.—*Tatsuo Miyazawa,* Chiba, Japan. NUCLEAR FUEL ROD. Patent dated Jan. 26, 1982. Disclaimer filed Feb. 29, 1984, by the assignee, *Tokyo Shibaura Denki Kabushiki Kaisha.*

Hereby enters this disclaimer to claims 1–8 of said patent.

Disclaimer and Dedication

3,509,833.—*Richard L. Cook,* Phoenix, Ariz. HARD FACED CERAMIC AND PLASTIC ARMOR. Patent dated May 5, 1970. Disclaimer and Dedication filed Oct. 14, 1983, by the assignee, *Goodyear Aerospace Corp.*

Hereby disclaims and dedicates to the Public the term of the patent subsequent to Aug. 8, 1983.

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	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
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	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
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*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF March 17, 1984

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-28-82
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	5-12-76
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	1-06-83
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	7-26-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-16-76
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	3-22-82
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	6-01-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	7-06-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	7-19-82
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	1-26-81
DESIGN, GROUP 290—KENNETH L. CAGE, Director Industrial Arts; Household, Personal and Fine Arts.	1-14-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	3-16-82
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—STEPHEN G. KUNIN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	8-03-82
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	11-04-76
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-20-81
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	7-23-81

Expiration of patents: The patents within the range of numbers indicated below expire during March 1984, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 3,307,200 to 3,311,920, inclusive
Plant Patents	Numbers 2,723 to 2,729 inclusive

REISSUES

APRIL 17, 1984

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,553

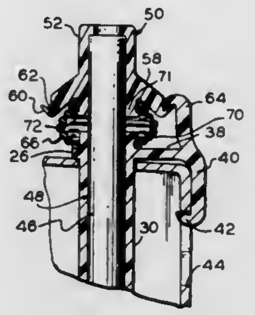
PIVOT AND GUIDE ROD ASSEMBLY FOR BI-FOLD DOOR

Ralph E. Ford, Harper Woods, and Kim W. Wright, Roseville, both of Mich., assignors to Slimfold Manufacturing Company, Inc., Dothan, Ala.

Original No. 3,810,274, dated May 14, 1974, Ser. No. 382,486, Jul. 25, 1973. Application for reissue Jul. 25, 1980, Ser. No. 172,255

Int. Cl.^{3} E05D *5/12*

U.S. Cl. 16—380 **4 Claims**



1. In a metal door assembly:
- a door panel comprising a face sheet,
- a stiffening channel secured to one surface of said sheet along an edge thereof, said channel having a pair of spaced apart flanges extending outwardly from said surface and a connecting web,
- a pivot rod assembly mounted in said channel,
- said assembly comprising an elongated plastic sleeve extending through corresponding openings in said flanges,
- *a collar on said sleeve,*
- sleeve retaining means operatively arranged between said sleeve and said channel to retain said sleeve in said channel,
- a pivot rod having a shank portion positioned in said sleeve and slidable therein and an enlarged head portion,
- a compression spring operatively arranged between said channel and said head portion for urging said head portion away from said channel,
- and releasable latch means operatively arranged between said head portion and said sleeve for releasably retaining said head in a retracted position adjacent said collar.

Re. 31,554

ROLL DEVICE

Sture Giege, Spanga, and Torgny C. B. Lagerqvist, Enskede, both of Sweden, assignors to Sandvik Aktiebolag, Sandviken, Sweden

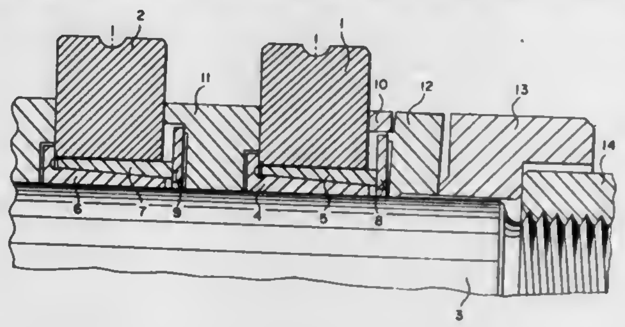
Original No. 4,208,147, dated Jun. 17, 1980, Ser. No. 888,615, Mar. 21, 1978. Application for reissue Jan. 21, 1981, Ser. No. 226,696

Claims priority, application Sweden, Mar. 21, 1977, 7703169

Int. Cl.^{3} B60B *9/00*

U.S. Cl. 29—117 **17 Claims**

1. A roll device comprising:
- a roll shaft,
- at least one roll ring mounted on the roll shaft,
- a lock member securable to the roll shaft,
- centering means interposed radially between the roll ring and the roll shaft to radially center the roll ring,
- a first resilient spring element arranged to resiliently transmit axial forces from said lock means to said centering means to radially center said roll ring,
- a second resilient spring element arranged to resiliently transmit axial forces from said lock means to said roll ring to axially clamp the latter, *the axial forces transmitted to said roll ring being greater than the axial forces transmitted to said centering means.*



Re. 31,555

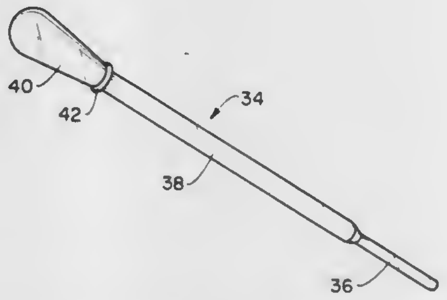
PIPETTE

Ralph F. Garren, Canoga Park, and B. Sarver, Burbank, both of Calif., assignors to Beral Enterprises, Inc., Arleta, Calif.

Original No. 3,834,241, dated Sep. 10, 1974, Ser. No. 355,714, Apr. 30, 1973. Application for reissue Mar. 2, 1976, Ser. No. 663,069

Int. Cl.^{3} B01L *3/02*

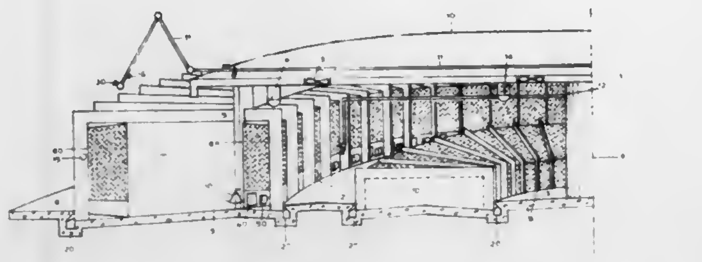
U.S. Cl. 73—864.11 **2 Claims**



1. A single piece pipette formed in an integral manner of plastic material, said pipette comprising:
- a drawing tube section adapted to draw fluid from a vessel;
- a container portion connected to said drawing tube, said drawing tube having an opening therethrough communicating with an enlarged interior chamber located within said container portion, both said container portion and said drawing tube being [formed] substantially rigid;
- a bulbous *imperforate* portion connected to the free end of said container portion, said bulbous portion being readily felxible so that it is capable of being squeezed to apply an air pressure force or a vacuum within said chamber of said container portion;
- [the wall thickness of said container portion being approximately one-half the wall thickness of said drawing tube, the wall thickness of said bulbous portion being approximately one-half the wall thickness of said container portion;] *the wall thickness of said container being less than the wall thickness of said drawing tube and greater than the wall thickness of said bulbous portion* and
- means interconnecting said bulbous portion and said container portion for preventing local collapse of said container portion during squeezing of said bulbous portion.

Re. 31,556
KENNEL, CIRCULAR FACILITY

Robert R. Buchanan, 340 Rosewood Ave., San Jose, Calif. 95117
Original No. 3,991,717, dated Nov. 16, 1976, Ser. No. 632,841, Dec. 4, 1975. Continuation of Ser. No. 961,274, Nov. 16, 1978, abandoned. Application for reissue Aug. 15, 1980, Ser. No. 178,306
Int. Cl.^{3} A01K *1/02*
U.S. Cl. 119—19 13 Claims

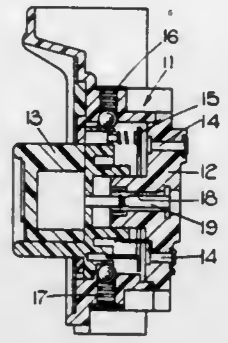


1. A circular kennel building having a floor, at least one annular ring of wedge-shaped kennel compartments located on said floor within a perimeter of said kennel buildings, each said compartment having two solid side walls *with at least one of said walls being shared with an adjacent compartment*, an innermost end gate and an outermost end gate, each said compartment being [bisected into an outboard run and a feeding watering section by a bisecting wall extending between two sidewalls, swinging door means located in said bisecting wall, automatic swinging door latch means to control opening of said swinging door means, access swinging door means located in said bisecting wall, animal feeder means located in said wedge-shaped compartment,] *covered by a ceiling of perforated material, each of said two solid sidewalls extending substantially above said ceiling and past said innermost and said outermost gates;* servicing corridor means located annularly in said kennel building, each said compartment having one end [wall] *gate* in contact with said corridor *and a bisecting wall extending between said two side walls dividing said compartment into an outboard run and a feeding-watering section*, [annular gutter means located in said floor adjacent said inner most end wall and said outermost end gate of each said compartment,] a circular roof extending from center of said building toward said perimeter and covering said feeding-watering section of each said compartment and covering or partially covering said outboard run section of each said compartment[, means for providing uncontaminated fresh air to each said compartment, decontamination means for sterilizing egress air leaving each said compartment, exhaust fan means located in said roof, automatic compartment cleaner means comprising radially movable hose means extending from center of said roof toward said perimeter of said building, controllable valve means on said hose means to permit control of ejectioon of wash fluid from said hose means, drive means for selectively moving said hose means successively from compartment to compartment in turn, means for motivating an animal to move from one section of each said compartment to the other section of each said compartment and control means located in said building for programming and controlling all above said means].

Re. 31,557
ELECTRICAL SWITCHES

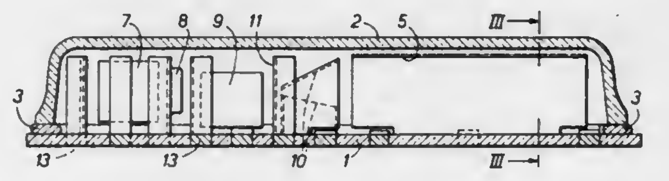
David Aspden, Burnley, England, assignor to Lucas Industries Limited, Birmingham, England
Original No. 4,245,141, dated Jan. 13, 1981, Ser. No. 63,400, Aug. 3, 1979. Application for reissue May 7, 1981, Ser. No. 261,456
Claims priority, application United Kingdom, Aug. 11, 1978, 33070/78
Int. Cl.^{3} H01H *19/14*
U.S. Cl. 200—314 7 Claims

1. An electrical switch comprising a body including a base, an operating member supported by the body for rotational and axial movement relative thereto, an aperture extending through the base and a light source support member received in said aperture, said support member and the wall of the aperture being so shaped that the support member can be located in the base in either of first and second different axial positions relative to the base, and the support member including a blocking element, which in the first axial location of the support member relative to the base, extends into the path of either axial or rotational movement of the operating member relative to the body to prevent such movement of the operating member relative to the body, the second location of the support member relative to the base being such that said blocking element lies out of the path of either axial or rotational movement of the operating member so that both movements of the operating member relative to the body are permitted.



Re. 31,558
FLAT CATHODE RAY TUBE WITH REPELLER ELECTRODE AND OPTICAL MAGNIFYING MEANS

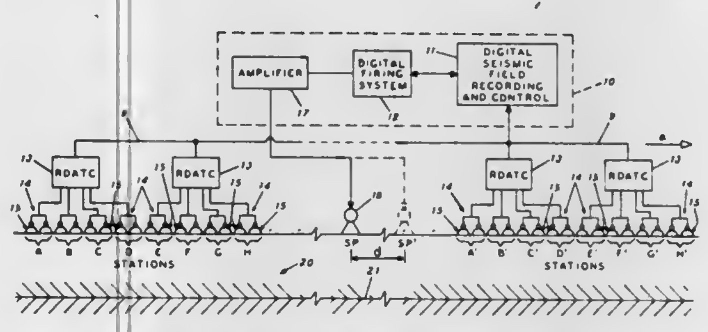
Clive M. Sinclair, 18 Newton Rd., Cambridge, Cambridgeshire, and Anthony V. Krause, London Rd., St. Ives, Huntingdon, Cambridgeshire PE17 4HJ, both of England
Original No. 4,205,252, dated May 27, 1980, Ser. No. 906,062, May 15, 1978. Application for reissue Oct. 13, 1981, Ser. No. 311,155
Claims priority, application United Kingdom, May 18, 1977, 20962/77
Int. Cl.^{3} H01J *29/72, 29/80, 29/90*
U.S. Cl. 313—422 13 Claims



1. A cathode ray tube, comprising
(a) an evacuated envelope including a plurality of sections (1,2) at least one of which (1) is planar and formed of a transparent material;
(b) a generally planar fluorescent screen (5) arranged in said envelope opposite, parallel with and spaced from said one transparent envelope section;
(c) an electron gun (7) arranged within said envelope in laterally spaced relation to said screen for projecting an electron beam between said screen and said one transparent envelope section along a path generally parallel with the plane of said screen;
(d) first deflecting means (10) arranged in said envelope for causing the electron beam to scan a line;
(e) second deflecting means (9) arranged in said envelope for causing the electron beam to scan a frame including a plurality of lines, thereby to produce an image on the screen; [and]
(f) beam directing means compensating for the increase of the angle of incidence of the beam at the screen relative to the direction of the electron beam, said beam directing means comprising a single electrically conductive repeller electrode (12) mounted in said envelope opposite said screen;
(g) one of said first and second deflecting means being arranged to deflect the electron beam through an angle less than the angle required to produce on the screen an image of the same dimensions as the desired dimensions of the display, thereby to produce an image one dimension of which is less than the desired corresponding dimension of the display;
(h) and further including optical means (6) for magnifying the image to produce a display of the desired dimensions.

Re. 31,559
COMBINATION FLYER-JUMPER ASSOCIATED WITH A GEOPHYSICAL DATA ACQUISITION SYSTEM AND METHOD OF MANUFACTURE

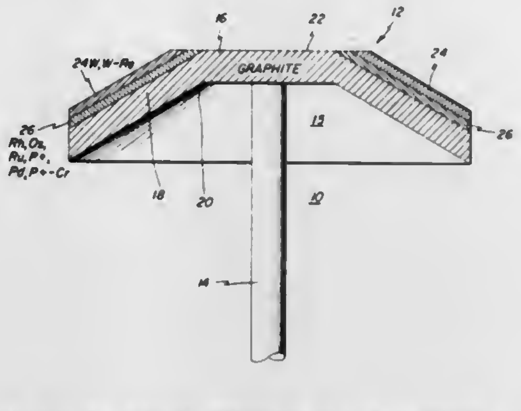
Reid F. Carter, Houston, Tex., assignor to Chevron Research Company, San Francisco, Calif.
Original No. 4,146,872, dated Mar. 27, 1979, Ser. No. 819,317, Jul. 27, 1977. Continuation of Ser. No. 700,689, Jun. 28, 1976. Application for reissue Jan. 19, 1981, Ser. No. 225,930
Int. Cl.^{3} G01V *1/22;* H01R *25/00*
U.S. Cl. 367—76 14 Claims



12. A geophone flyer-jumper for use in conjunction with a remote digital acquisition and telemetering circuit (RDATC) equipped to receive several channels of information simultaneously, comprising:
a central geophone cable segment including a plurality of conductors and a multiplicity of interconnected geophones therein connected to certain of said plurality of conductors; and
a series of N/2 hermaphroditic connectors connected to said plurality of conductors each of said hermaphroditic connectors having an outer housing but matched at the opposite end to a like identification coded and similarly electrically connected connector, whereby at least one paired, like coded set of connector pins is electrically connected to said geophones and at least another pair of like coded set of connector pins is electrically connected to certain other of said plurality of conductors but electrically isolated from said geophones.

Re. 31,560
GRAPHITE DISC ASSEMBLY FOR A ROTATING X-RAY ANODE TUBE

Thomas M. Devine, Jr., Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Original No. 4,119,879, dated Oct. 10, 1978, Ser. No. 788,130, Apr. 18, 1977. Application for reissue Apr. 5, 1982, Ser. No. 365,078
Int. Cl.^{3} H01J *35/08*
U.S. Cl. 378—125 8 Claims



1. A disc for an anode assembly for a rotating x-ray anode tube comprising
a graphite substrate having two opposed major surfaces which are, respectively, the inner and outer surface of [the] *said* substrate [and] *with each major surface having* an inner portion and an integral outer portion;
an anode target affixed to a predetermined surface area of [the] *said* integral outer portion of [the] *said* substrate wherein the material of [the] *said* anode target is one selected from the group consisting of tungsten and a tungsten-rhenium alloy;
[a layer of metal joining the anode target to the predetermined surface area of the outer surface of the integral outer portion of the substrate wherein the material of the layer of metal is one within which carbon is not soluble in the temperature range of from about 1000° C. to about 1300° C. but may have a solubility therein of from 1 to 4 atomic percent at the temperature of joining the anode target to the substrate;]
[the material of the layer of metal has some solubility in the material of the anode target;]
[the material of the layer of metal is one selected from the group consisting of rhodium, osmium, ruthenium, platinum, palladium and an alloy of platinum and chromium; and
the] *a metallic layer extending between and joining said anode target and said predetermined surface area; said metallic layer consisting of a barrier metal lamina flanked on opposite sides by first and second brazed regions; the metal constituting said barrier metal lamina providing an effective barrier against carbon diffusion and being selected from the group consisting of rhodium, osmium, ruthenium, palladium, platinum and an alloy of platinum and chromium; said first and second brazed regions consisting of alloys formed with the metal selected for said barrier metal lamina; said first brazed region, in which the metal selected for said barrier metal lamina was reacted with carbon, extending between one side of said barrier metal lamina and said predetermined surface area adjacent thereto; and said metallic* layer has a thickness of at least ¾ mil.

PLANT PATENTS

GRANTED APRIL 17, 1984

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,219

ROSE PLANT CV. AROART

Herbert C. Swim, and Jack E. Christensen, both of Ontario, Calif., assignors to Armstrong Nurseries, Inc., Ontario, Calif.

Filed Aug. 31, 1982, Ser. No. 413,454

Int. Cl.^{3} A01H *5/00*

U.S. Cl. Plt.—21 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, being particularly characterized in its extremely large foliage; its very velvety texture on the inside of each petal; its uniform red coloration throughout the flower life; its slow opening; and its abundant production of long-stemmed flowers.

5,220

PEAR TREE ("AUTUMN RED")

Robert E. Fowler, Newcastle, Calif., assignor to Fowler Nurseries, Inc., Newcastle, Calif.

Filed Nov. 8, 1982, Ser. No. 440,168

Int. Cl.^{3} A01H *5/00*

U.S. Cl. Plt.—36 **1 Claim**

1. A new and distinct variety of pear tree, substantially as illustrated and described, characterized by the bearing of late ripening fruit having a waxy, highly glossy, deep red to purple-red skin, and which fruit is in harvest for approximately one month, extending about three weeks beyond the last picking of the Rosired.

5,221

GINKGO TREE NAMED SHANGRI-LA

Willet N. Wandell, Myra Station Rd., Rte. 3, Box 158, Urbana, Ill. 61801

Filed Mar. 18, 1981, Ser. No. 245,154

Int. Cl.^{3} A01H *5/00*

U.S. Cl. Plt.—51 **1 Claim**

1. A new and distinct variety of *Ginkgo biloba*, substantially as herein shown and described, characterized by its rapid, compact growth habit growing 55 feet in height with a 40 foot branch spread in 17 years, dense full crown caused by in addition to the basic scaffold, the supplementary or secondary branches occurring throughout the center of the crown giving the tree crown a heavy, full appearance, straight trunk, ease of propagation and freedom from production of foul smelling fruit.

PATENTS

GRANTED APR. 17, 1984

ERRATA

For CLASS	See PATENT NO.
411–552	4,442,572
384–428	4,443,044
156–064	4,443,494

PATENTS

GRANTED APRIL 17, 1984

GENERAL AND MECHANICAL

4,442,551

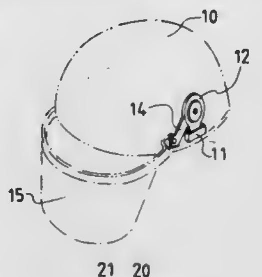
ADAPTER FOR A PROTECTIVE HELMET

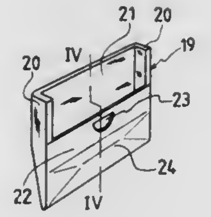
Arne Hellberg, Gråbo, Sweden, assignor to Hellberg Protection AB, Lerum, Sweden

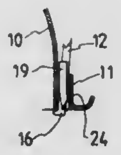
Filed Dec. 22, 1982, Ser. No. 452,034

Int. Cl.^{3} A42B *1/06, 3/00*

U.S. Cl. 2—10 **5 Claims**







1. An adapter for removable attachment to an arm of a fitting for mounting the fitting in a pocket at the margin of a protective helmet, said fitting arm having a sidewardly directed projection extending from a resilient tongue, said adapter comprising a sleeve-shaped member having two at least partly tapering end walls, and front and rear walls interconnecting said end walls, said rear wall extending from the wider end of said tapering end walls to approximately midway thereof, said front wall extending from the narrower ends of said tapering end walls to about midway thereof, and said front wall having an opening for the reception of the projection of said fitting.

4,442,552

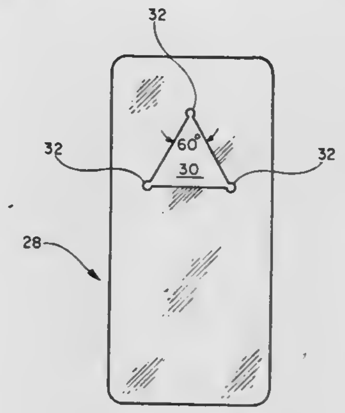
BIB

Martha E. Bolick; Rebecca J. Weber, both of Winnebago County, and Theodore B. Lang, Outagamie County, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jan. 16, 1981, Ser. No. 225,616

Int. Cl.^{3} A41B *13/00*

U.S. Cl. 2—49 R **11 Claims**



1. In a bib formed from a flexible material and having a size consistent with its intended use and means defining an opening for placing the bib over the wearer,

the improvement wherein said defined opening comprises a triangular shape having three corners and a base line side of the triangle 30% to 95% of the total bib width and in a position to be generally parallel to the shoulders of the wearer in use and the other two sides of the triangle meet forming an angle opposite the longest side in the range of about 30° to 120°.

4,442,553

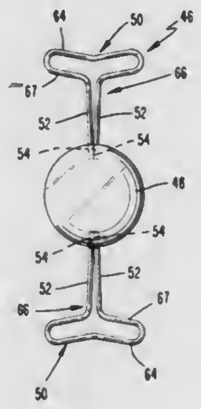
INTRAOCULAR LENS

Philip C. Hessburg, 801 Park La., Grosse Pointe Park, Mich. 48230

Filed Sep. 17, 1981, Ser. No. 303,084

Int. Cl.^{3} A61F *1/16, 1/24*

U.S. Cl. 3—13 **3 Claims**



1. In an intraocular lens having a plastic lens body with a pair of opposed haptic supports of strand material extending radially outward substantially in the plane of the lens body, the improvement comprising:

each haptic support is divided into a horizontal portion for contacting the periphery of the space in the eye where placed and a resiliently flexible strut portion connecting the lens body to said horizontal portion, said strut portion comprising a pair of strands disposed on radius lines passing through the optical center of the lens body and subtending an angle of from 2° to 10°.

4,442,554

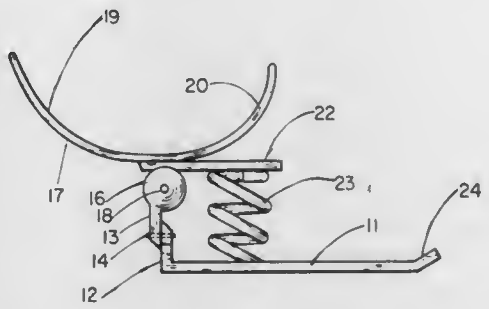
BIOMECHANICAL ANKLE DEVICE

Arthur Copes, P.O. Box 42, French Settlement, La. 70733

Filed Feb. 12, 1982, Ser. No. 348,284

Int. Cl.^{3} A61F *11/04*

U.S. Cl. 3—35 **3 Claims**



1. Biomechanical ankle prosthesis means comprising:

(a) a substantially flat main base plate means adapted for connection to an artifical foot; having a perpendicularly extending portion integrally connected to one end of said main base plate means, said perpendicularly extending portion being bored to receive a pin means disposed in a parallel relationship to a longitudinal axis of said main base plate means;

(b) a vertically extended connector hinge means having its lower portion pivotally connected to said perpendicularly extending portion of said main base plate means through said pin means so as to pivot relative thereto about the longitudinal axis of said main base plate means, thus imitating a rotation in subtalar joint of an ankle, said connector hinge means being further defined as comprising a hinged portion having a longitudinal axis transverse to that of said main base plate means;

(c) leg attachment assembly having an upper portion adapted for connection to an artificial leg means and rigidly attached lower portion comprising a spring base connector member being provided with a hinged portion connected to an upper portion of said connector hinge means to form a clevis joint and to allow said leg attachment assembly to move in a vertical plane relative to said main base plate means, so as to imitate rotation at an ankle axis; and

(d) spring coil means interposed between said leg attachment assembly and said main base plate means.

4,442,555
TOILET BOWL ODOR REMOVAL SUCTION CONTROL

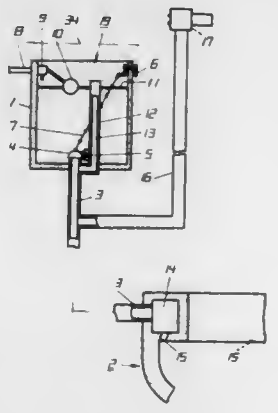
Yoshitaka Aoyama, 20-11 Makitsukadai 2-chome, Sakai-shi, Osaka 590-01, Japan

Filed Jun. 3, 1981, Ser. No. 269,973

Claims priority, application Japan, Jul. 6, 1980, 55-76812

Int. Cl.^{3} E03D *9/05*

U.S. Cl. 4—213 **3 Claims**



1. A toilet bowl odor removal suction control device for use with a water closet having a flush passageway leading from a flush tank to a toilet bowl, an overflow pipe in said flush tank extending above the water line and in communication with said flush passageway,

said device being characterized in that an exhaust passageway is connected to said flush passageway, a suction fan is installed in said exhaust passageway, and a ventilation control means is installed in an opening of said overflow pipe, said ventilation control means comprising an annular valve seat fitted on the upper end of said overflow pipe and a ball valve seatable on said valve seat,

said annular valve seat is turnable relative to said overflow pipe and has a plurality of holes in the peripheral wall thereof, and said overflow pipe is formed with holes cooperating with said holes in said valve seat to form ventilation holes whose area of opening is variable.

4,442,556
SOFA BED WITH INFLATABLE MATTRESS

William A. Craigie, 3602 W. 40th St., Minneapolis, Minn. 55410

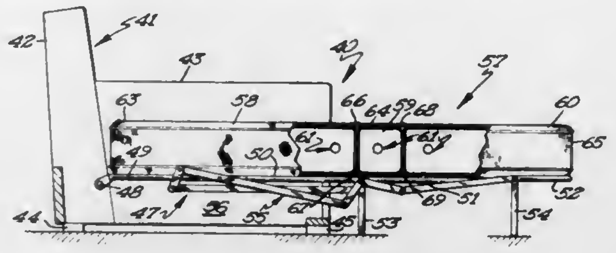
Filed Mar. 1, 1983, Ser. No. 470,925

Int. Cl.^{3} A47C *17/04, 27/10*

U.S. Cl. 5—13 **3 Claims**

1. A foldable, inflatable sectional mattress and a sofa bed of the type including a fixed frame having a pair of upright side frame members, an upright back frame member extending between and secured to the side frame members, a front board extending between and secured to the side frame members, a foldable sectional sofa frame including inner, intermediate and outer frame sections pivotally connected together for movement between a folded, collapsed position within the fixed frame and an extended, horizontal position extending outwardly from the fixed frame, said foldable sectional mattress comprising:

an air inflated inner mattress section, an air inflated intermediate mattress section, and an air inflated outer mattress section, said inner mattress section having a length dimension greater than the combined length dimensions of said intermediate and said outer mattress sections, said outer mattress section having a length dimension greater than said intermediate section, each section having a cover, an upper slide fastener and a lower slide fastener releasably interconnecting the cover of the inner mattress section with the cover of the intermediate mattress section to dispose the sections in end-to-end relation,



an upper slide fastener and a lower slide fastener releasably securing the cover of the intermediate mattress section with the cover of the outer mattress section to dispose said sections in end-to-end relation, said mattress being foldable to a collapsed position when one of said slide fasteners between said inner section and said intermediate section is unfastened, whereby the other slide fastener between the inner mattress section and the intermediate mattress section functions as a hinge to permit swinging movement between the inner section relative to the intermediate and outer sections to a folded position, said inner section overlying said intermediate and outer sections when in the folded position and defining a seat for the fixed frame of the sofa bed, said intermediate section when in the folded position being positioned rearwardly of the outer section and below the rear end portion of the inner section, said sectional mattress being folded and unfolded independently of the folding and unfolding of the foldable sofa frame.

4,442,557
CARRIER APPARATUS FOR FIRE FIGHTERS

Robert M. Clemens, 3700 Sellman Rd., Beltsville, Md. 20705

Continuation of Ser. No. 147,211, May 6, 1980, abandoned. This application Feb. 4, 1982, Ser. No. 345,674

Int. Cl.^{3} A61G *1/00;* B65D *75/00*

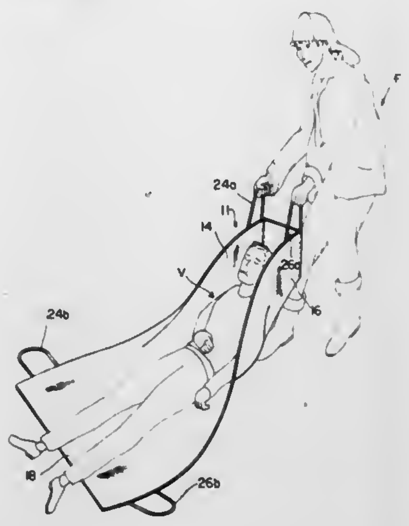
U.S. Cl. 5—82 R **5 Claims**

1. Carrier apparatus for use by fire fighters for carrying hose to a fire site as a package of a size to contain a substantial length of fire hose and of a weight which may be carried by a single fire fighter, and for use as a person carrier to support supine adult victim for rescue by dragging by a single fire fighter or for lifting by plural fire fighters, comprising, an elongate, flaccid carrier body made of flaccid material, and having a length approximately equal to the distance from the head to the calf of an adult, said carrier body having an elongate bottom, a single end wall and a pair of spaced side wall means for cradling the head of a victim there between, said single end wall being at an end of and substantially perpendicular to said bottom, said carrier body having an open end opposite said single end wall, said side wall means extending from said single end wall, and being subtantially perpendicular to said end wall at their junctions therewith, said side wall means extending from said end wall in the same direction as said bottom, and being spaced apart approximately the width of a head at said end wall, sid side wall means each having a longitudinally

extending edge remote from said bottom, and extending to said bottom, handle means on each of said side wall means for lifting said carrier body and a load supported thereby, and comprising:

(a) first handle means adjacent said end wall for lifting the head and upper body portion of the victim on said carrier body and for causing said side wall means to cradle the head of a victim therebetween, and

(b) second handle means remote from said first handle means for lifting the lower body of a victim on said carrier body, and



strap means extending from one side wall means to the other side wall means across the edge thereof, and releasable securing means for said strap means,

whereby a fire hose may be placed in said carrier body with an end of the fire hose placed adjacent the open end of said carrier body for ready withdrawal from said carrier body, and whereby an adult victim may be dragged or carried on said carrier body, with the victim's head adjacent said end wall, supported on said bottom, and cradled between said side wall means.

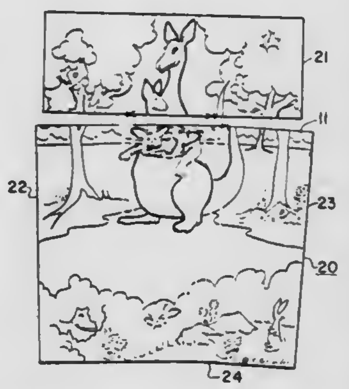
4,442,558
BED COVERING HAVING AN OVERALL PATTERN AND A POCKET INTEGRATED THEREIN

Carolyn Alexander, 173 Highland Pl., Monrovia, Calif. 91016

Filed Dec. 8, 1980, Ser. No. 214,339

Int. Cl.^{3} A47G *9/02*

U.S. Cl. 5—494 **4 Claims**



1. A bed covering for use on an infant or child's bed comprising:

a body of fabric material dimensioned to cover at least the top surface of a bed;

said body having imprinted thereon a pattern depicting a scene;

a pocket in said body having an opening therein extending generally transverse to the length of the covering over a part of the width of the cover;

said pocket being expandable by outward extension of the body of fabric material upward and outward from the remaining surface of the body;

wherein said pattern in the region below the opening of the pocket is expanded and the material defining the pocket is of greater fullness than the bed covering above the pocket opening whereby the pattern appears relatively undistorted whether the pocket is occupied or not.

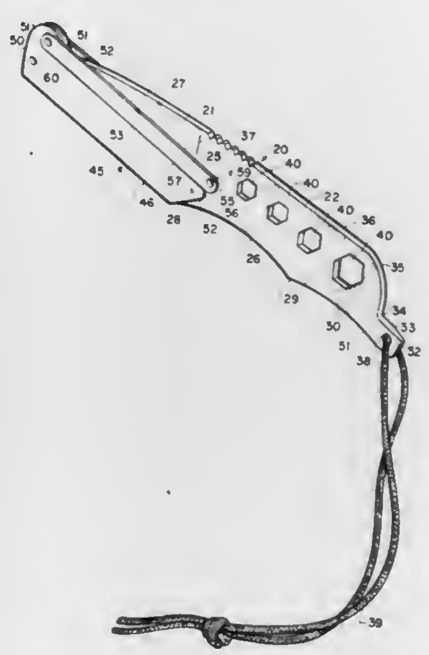
4,442,559
UTILITY KNIFE

Walter W. Collins, Rock Hill, S.C., assignor to Jenkins Metal Corporation, Gastonia, N.C.

Filed Jul. 2, 1981, Ser. No. 279,789

Int. Cl.^{3} B26B *11/00*

U.S. Cl. 7—158 **10 Claims**



1. A utility knife comprising a fixed knife blade having a sharpened edge and a tool-shaped shank, said blade and shank extending in axial alignment with each other and formed as an integral unit, positioning links on each side of the shank and a first pivot pin extending transversely through the medial portion of the shank and pivotally connecting the positioning links to the shank, a channel-shaped housing having a free end and pivotally connected at its other end by a second pivot pin to the ends of the links opposite the first pivot pin, means supporting the housing in a first position about one edge of the shank, and means supporting the housing in a second position about the sharpened edge of the blade.

4,442,560
METHOD FOR CONTINUOUSLY FINISHING AND/OR DYEING PLANAR TEXTILE STRUCTURES

Kurt van Wersch, Wegberg, and Manfred Pabst, Cologne, both of Fed. Rep. of Germany, assignors to A. Monforts, Monchen-Gladbach, Fed. Rep. of Germany

Filed Sep. 30, 1980, Ser. No. 192,303

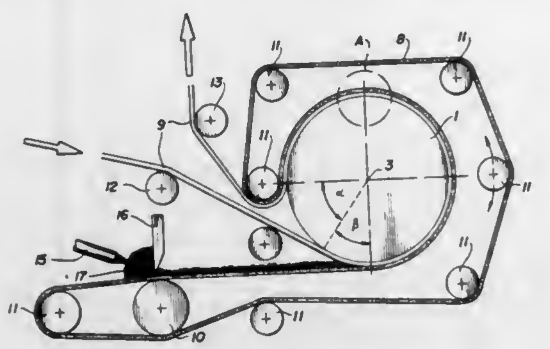
Claims priority, application Fed. Rep. of Germany, Oct. 1, 1979, 2939796

Int. Cl.^{3} D06B *5/08*

U.S. Cl. 8—151 **2 Claims**

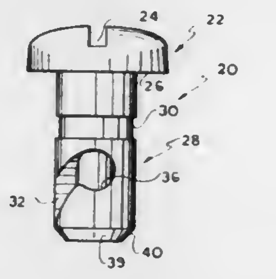
1. Method of continuously treating a planar textile structure by applying thereto a treatment medium in the form of foam which comprises applying the foam medium to a continuous air-impermeable surface and sandwiching the applied foam medium thereafter between the continuous air-impermeable surface and a surface of the planar textile structure, subsequently applying underpressure to the opposite surface of the planar textile structure at a magnitude at which the foam is completely destroyed without any appreciable flow through the material of the planar textile structure, the underpressure being applied to the planar textile structure by passing the

latter through a chamber maintained at the underpressure, the magnitude of the underpressure being low when compared to the internal pressure of the bubbles of the foam so that the bubbles are completely destroyed without appreciable flow of the foam through the textile structure.



4,442,561
SLOTTED FASTENER

Conrad J. Gunther, Uniondale, N.Y., assignor to Dzus Fastener Co., Inc., West Islip, N.Y.
Division of Ser. No. 964,451, Nov. 29, 1978, Pat. No. 4,250,600. This application Mar. 17, 1980, Ser. No. 130,981
Int. Cl.³ B23C *3/00*
U.S. Cl. 10—1 R **3 Claims**

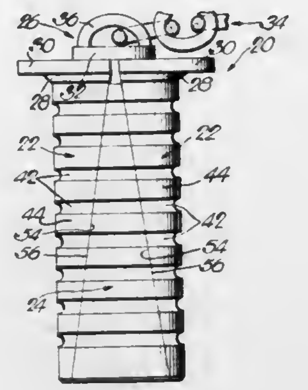


1. A method of forming a fastener adapted to be coupled and uncoupled with a receptable having a cam follower thereon to form a fastener assembly comprising; providing the fastener with an enlarged head portion and a reduced diameter shank portion extending from the head portion and terminating in a distal end, cutting a spiral cam slot in the shank by milling the slot in the surface of the shank along a substantially continuously radius of curvature from the entrance point at the distal end of the shank to a termination point spaced from the distal end in order to form a slot of predetermined width, length, and a depth less than the cross section of the shank in order to form a base and two opposing side walls of the slot, thereafter, widening the entrance end of the slot by back milling one side wall along a predetermined portion of the slot adjacent the entrance point to relieve the surface of the slot forming the wall at an angle to the radius of curvature of the slot and outward therefrom so that coupling and uncoupling of the cam slot with a cam follower will be facilitated.

4,442,562
METHOD OF FORMING ANCHOR BOLTS

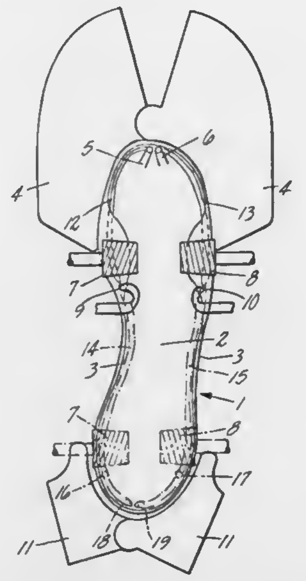
Peter J. Russo, 719 Nut Plains Rd., Guilford, Conn. 06437
Filed May 7, 1982, Ser. No. 375,804
Int. Cl.³ B21K *1/74*
U.S. Cl. 10—27 R **5 Claims**

1. The method of making an anchor bolt with outer prongs and an inner expander, which comprises lengthwise cutting a cylindrical metal blank with an axis in first planes which subtend different parts of the blank periphery and are inclined inwardly to one end of the blank at identical wedge angles to said axis to thereby separate the blank into different prongs and an expander with a narrow end, with said prongs and expander having plane companion wedge faces, respectively, and said prongs having cylindrical gripping surfaces, and then securing to said expander an anchor at said narrow end.



4,442,563
SHOE LASTING MACHINE

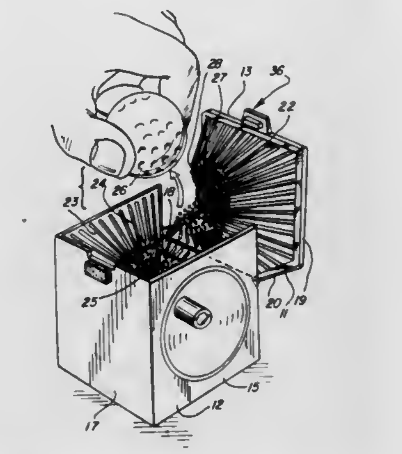
Gerhard Lauckhardt, Rodelheim; Rudi Fichtner, Rosbach, and Manfred Bröning, Ffm-Sossenheim, all of Fed. Rep. of Germany, assignors to USM Corporation, Farmington, Conn.
Division of Ser. No. 144,331, Apr. 28, 1980, Pat. No. 4,319,373. This application Feb. 24, 1982, Ser. No. 351,667
Int. Cl.³ A43D *21/00*
U.S. Cl. 12—145 **3 Claims**



1. Method of lasting shoes comprising the steps of applying adhesive between lasting marginal portions of the shoe upper and corresponding marginal portions of an insole along the side portions and in the heel seat region of the shoe, and lasting said side portions and the heel seat, wherein the side portions are lasted progressively, using lasting rolls starting from the ball region of the shoe bottom and terminating at the heel seat region thereof, adhesive being applied progressively, in advance of the lasting rolls, along the side portions of the shoe, and the heel seat is lasted using wiper plates which overlap the area previously lasted by the lasting rolls, and further wherein, when the lasting of the side portions is completed, the lasting rolls are maintained in contact with the shoe bottom, and thus pressure is applied thereby to the shoe bottom, at the point of termination of the side lasting, while adhesive continues to be applied progressively in the heel seat region, whereafter the applied pressure is removed by retraction of the lasting rolls and the heel seat region is lasted.

4,442,564
GOLF BALL CLEANER

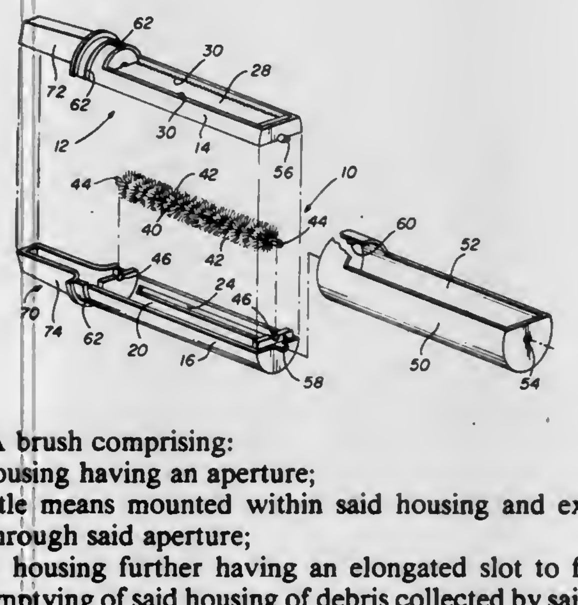
William J. Berry, 498 Franklin La., Elk Grove Village, Ill. 60007
Filed Sep. 30, 1982, Ser. No. 429,841
Int. Cl.³ A63B *47/04*
U.S. Cl. 15—21 A **15 Claims**



1. A portable golf ball cleaner comprising:
a container having a bottom wall and sidewalls defining a cleaning liquid receptacle portion and a movable cover portion cooperatively defining an internal, sealed ball cleaning space;
fixed bristles projecting inwardly from at least one of said container portions to define an inner ball receiving space at the inner distal ends thereof;
a carrier rotatably, sealingly mounted to said container to define a portion of a sidewall thereof and having bristles projecting inwardly to said ball receiving space to generally horizontally engage a ball supported therein on said fixed bristles; and
means for rotating said carrier portion of the sidewall to cause random rotative movement of a golf ball received in said ball receiving space for cleaning of the ball surface by the distal ends of the bristles, said sealed container portions preventing discharge of cleaning liquid from the container in a closed arrangement thereof.

4,442,565
PORTABLE POCKET CLOTHES BRUSH

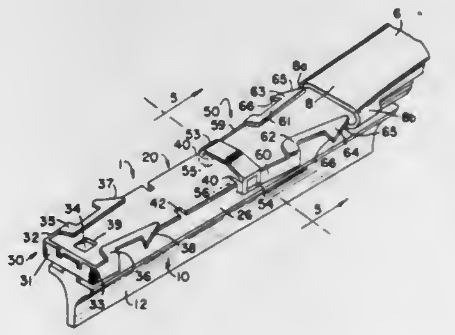
Clarence D. Zierhut, Richardson, Tex., assignor to Clarence Zierhut Incorporated, Richardson, Tex.
Filed Sep. 2, 1982, Ser. No. 414,351
Int. Cl.³ A46B *13/08*
U.S. Cl. 15—27 **8 Claims**



1. A brush comprising:
a housing having an aperture;
bristle means mounted within said housing and extending through said aperture;
said housing further having an elongated slot to facilitate emptying of said housing of debris collected by said bristle means;
cover means including an aperture, said cover means being mounted to said housing, said housing being selectively rotatable within said cover means to a first position exposing said bristle means through said aperture of said cover means for use of the brush and said housing being rotatable to a second position for covering said housing aperture and said bristle means when the brush is not in use; and
means for preventing said housing from rotating to prevent said elongated slot from aligning with said aperture of said cover means.

4,442,566
WINDSHIELD WIPER BLADE REFILL UNIT

Bernard C. Sharp, White Plains, N.Y., assignor to Parker-Hannifin Corporation, Shelton, Conn.
Filed Nov. 6, 1981, Ser. No. 318,840
Int. Cl.³ B60S *1/02, 1/38*
U.S. Cl. 15—250.42 **10 Claims**



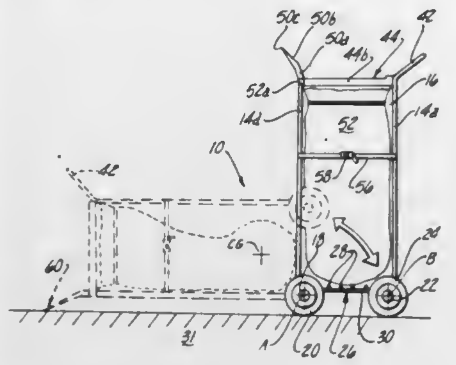
1. A windshield wiper blade refill unit for use in any one of a plurality of pressure-applying wiper blade holders each of which comprises sets of claws spaced apart therealong for slidably receiving and holding a wiper blade unit and which respectively have different lengths to span different lengths of a blade unit between their respective endmost sets of claws, said refill unit including an elastic wiper blade and an elongate resilient spline affixed to said blade for supporting it in wiping position, said spline being slidable into and supportable by the claws of any one of said holders and having an end portion that extends beyond the position relative thereto of an endmost set of claws of the longest of said blade holders when the refill unit is in wiping position thereon, said spline end portion being formed at each of a plurality of locations spaced apart therealong, each of which is suited to a certain one of said holder lengths, with cut-away rigid detent means interengageable with a detent of a clip means for attaching said spline to an endmost set of the claws of a blade holder having that length.

4,442,567
DUST PAN AND REFUSE CONTAINER

John P. Pravettone, 23807 Karen, Warren, Mich. 48091
Continuation of Ser. No. 171,976, Jul. 24, 1980, Pat. No. 4,357,728. This application Sep. 28, 1982, Ser. No. 425,590
Int. Cl.³ A47L *13/52*
U.S. Cl. 15—257.4 **20 Claims**

1. A portable dust pan and refuse container for supporting and transporting a flexible bag having a mouth, said portable dust pan and refuse container comprising:
a bag supporting frame operative to distend and substantially enclose said bag in an open mouthed and elongated condition;
means operative to rigidly hold said mouth of said bag open for receiving refuse;
a plurality of spaced, ground contacting wheels rotatably mounted to said bag supporting frame on a common axis to permit selective rotational repositioning of said container about said common axis from a first substantially vertical refuse position to a second, substantially horizon-

tal refuse collecting position, said ground contacting wheels remaining in contact with the ground in each of said first and second transporting positions and in all rotational positions of said frame therebetween; and



a dust pan depending from said bag supporting frame adjacent said mouth and projecting angularly outwardly therefrom, said dust pan operating to abut the ground when said container is in said second position such that said portable dust pan and refuse container is supported by said wheels and said dust pan in said second position.

4,442,568

DEVICE FOR SIMULTANEOUSLY DESHIRRING, SMOOTHING AND BRAKING A SHIRRED TUBULAR CASING

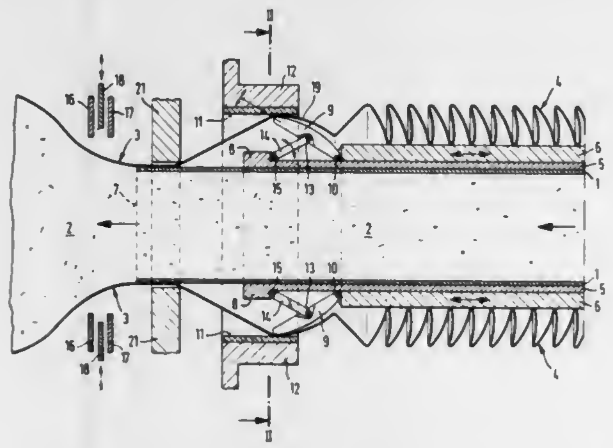
Rudolf Petry, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfort am Main, Fed. Rep. of Germany

Filed Jun. 11, 1982, Ser. No. 387,370

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1981, 3124025

Int. Cl.^{3} A22C ***11/00***

U.S. Cl. 17—33 **7 Claims**



1. A device for deshirring, smoothing and braking a shirred tubular casing during the stuffing of the tubular casing with a fluid mass which flows under pressure out of the stuffing horn of a stuffing machine into the tubular casing, said device comprising first and second outer tubes arranged coaxially over each other on the stuffing horn whereby the innermost, first outer tube surrounds the stuffing horn, one of said outer tubes being fixed in position and the other outer tube being longitudinally displaceable and lockable into position, said device further comprising elements which deshirr, smooth ahd brake the tubular casing during the stuffing operation comprising pivotable bodies with smooth surfaces which are pivotably fastened at one of their ends by pivotable mounts to the end of one of said outer tubes and further are pivotably attached by pivotable joints to a connecting arm which in turn is pivotably fastened to a supporting mount at the end of the other outer tube, and a fixed stop cylinder having a substantially annular cross-sectional configuration surrounding said elements and spaced therefrom.

4,442,569

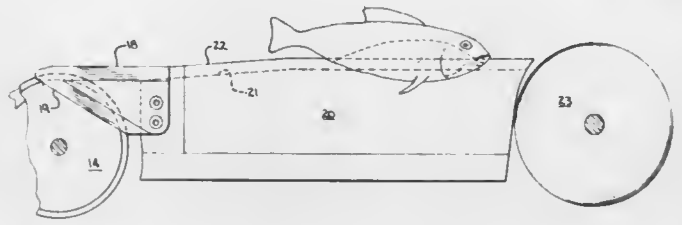
METHOD AND APPARATUS FOR REMOVING GILLS, VISCERA AND KIDNEY FROM HEAD ON FISH

Bernard C. Brower, and Trevor T. Wastell, both of Gladstone, Mich., assignors to A. W. Manufacturing Inc., Gladstone, Mich.

Filed Jul. 10, 1981, Ser. No. 282,024

Int. Cl.^{3} A22C ***25/14***

U.S. Cl. 17—52 **18 Claims**



15. A method of removing the gills, viscera and bloodline kidney from head on fish comprising the steps of aligning the mouth and belly of the fish with a pair of belly cutting blades, passing the fish over the belly cutting blades to make a pair of spaced longitudinal incisions in the fish at a cutting height whereby the tongue is cut from the jaw but not from the gills, removing the tongue and gills of the fish by passing the fish over a gill removal wheel having a plurality of radially extending bores in its circumference that pulls on the tongue to extract the gills from their gill cavities leaving the head intact, and transporting the fish respectively over viscera and kidney removal means.

4,442,570

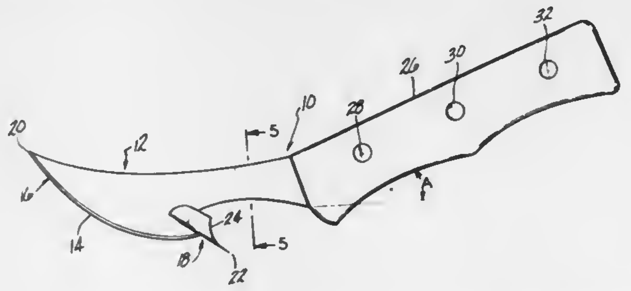
STUFFED SHRIMP PREPARATION TOOL

Alan W. Lynn, 2 Murphy's La., Shelton, Conn. 06484, assignor to Alan W. Lynn, Shelton, Conn.

Filed Sep. 3, 1982, Ser. No. 414,613

Int. Cl.^{3} A22C ***29/02***

U.S. Cl. 17—73 **6 Claims**



1. A tool particularly adapted for removing the legs and bottom part of a shell of a shrimp or prawn and for cutting the meat of said partially deshelled shrimp comprising:

an integral body defining a blade portion and a handle portion;

said blade portion having two opposite sides with one side having both a continuous cutting edge portion and a cup-shaped portion, said cup-shaped portion positioned between said cutting edge portion and said handle portion and reversely facing said handle portion;

said two opposite sides of said blade portion meet at a point away from said handle portion and said point forms one end of said continuous cutting edge portion and said continuous cutting edge portion is continuously curved upward from said cup shaped portion toward said other opposite side of the blade portion;

said cup-shaped portion having

(a) a point at the outer end of said cup-shaped portion adapted to hook under the bottom part of the shell of a shrimp when in use; and

(b) edges on each side of said cup-shaped portion to catch the legs of said shrimp when in use;

said handle portion adapted to be held in a user's hand during said shell removing and meat-cutting steps, and said continuous cutting edge and said cup-shaped portion adapted to make both cutting and leg-removing operations on the bottom of a shrimp in one draw.

4,442,571

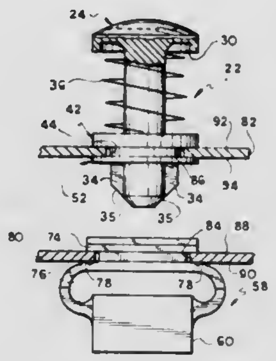
SELF-EJECTING FASTENER STUD

George R. Davis, Islip; Robert Hildebrand, Wantagh, and Harold Purcell, East Northport, all of N.Y., assignors to Dzus Fastener Co., Inc., West Islip, N.Y.

Filed Aug. 4, 1982, Ser. No. 405,256

Int. Cl.^{3} A44B ***17/00***

U.S. Cl. 411—552 **2 Claims**



1. In a self-locking quick acting fastener of the type having a receptacle and a stud interengageable therewith upon relative rotation, the improved self-ejecting fastener assembly comprising:

a stud element having an enlarged head portion and a shank portion extending therefrom and having coupling means near its opposite end for locking interengagement with the receptacle, said head portion having a dependent peripheral flange forming an annular recess in the undersurface of the head;

a collar member positioned on and slidable along the shank portion of the stud element and having a central opening through which the shank portion of the stud element extends and which has a configuration generally similar to but smaller than the combined cross-section of the shank portion and coupling means, said collar portion being made of resilient material so that distention of the material permits insertion of the coupling means and shank portion of the stud through the central opening but providing a frictional fit that will prevent accidental removal of the collar member therefrom, said collar member having an upstanding flange of the same diameter as the flange on the head portion of the stud element and in alignment therewith forming a recessed upper surface on the collar member; and

a spring member surrounding the shank of the stud member and extending between the undersurface of the head portion and the collar member, to normally hold them in spaced relationship, but so as to permit the shank portion to be projected through the collar member so that the coupling means can be interengaged with the receptacle upon rotation of the stud member and so that the flange of the head portion of the stud element engages the flange of the collar member forming an enclosed recess with the spring being encased therein.

4,442,572

CLIP FOR FIXING MALE AND FEMALE PARTS OF GROUND GLASS JOINTS

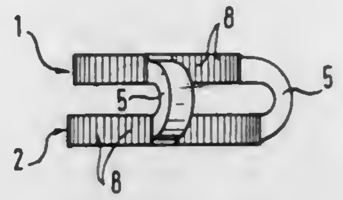
Hermann Keck, Blauenstrasse 13, 4106 Therwil, Switzerland

Filed Sep. 30, 1982, Ser. No. 429,863

Claims priority, application Switzerland, Oct. 6, 1981, 6405/81

Int. Cl.^{3} A44B ***21/00***

U.S. Cl. 24—562 **8 Claims**



1. Device for holding together the male and female part of glass joints, consisting of two rings (1+2) concentrically placed one above the other, characterized in that each of the rings has an opening (3+4) at the side which extends entirely through the side of said ring in a direction perpendicular to the centerline axis of said rings and that said rings are connected on the outside by bow-shaped side-pieces (5).

4,442,573

DEVICE FOR INTERMEDIATE STORAGE OF THREAD

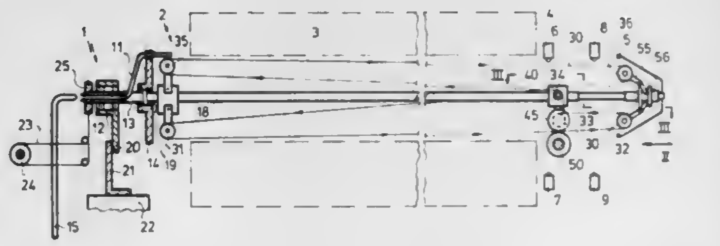
Kurt Hirschburger, Der Schöne Weg 90, D-7410 Reutlingen, Fed. Rep. of Germany

Filed Aug. 31, 1981, Ser. No. 297,537

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1980, 3033827

Int. Cl.^{3} D02G ***1/16;*** **B65H** ***51/20***

U.S. Cl. 28—271 **2 Claims**



1. A device for intermediate storage of thread comprising a belt conveyor, a winding head having a thread guide arranged along a circular path through which the thread, in the form of loops, is laid upon a front area of the belt conveyor moving in a feed direction, and having a device for taking off the thread at a rear area of the belt conveyor, wherein there is provided a rotating drive member for activating the belt conveyor, which member rotates in said feed direction, in frictional contact with the belt conveyor, the moving speed of the drive member in said feed direction of the belt conveyor essentially corresponding to the moving speed of said belt conveyor in said feed direction, wherein the belt conveyor is arranged horizontally and is provided with a horizontal shaft, the weight of the belt conveyor being at least partially borne by the drive member which braces support means connected to the horizontal shaft and arranged within the inside of the loops, and whereby the belt conveyor is arranged around the shaft and extends essentially in longitudinal direction of the shaft, and wherein the winding head is positioned at one end of the shaft and wherein the winding head lays thread loops upon the conveyor in such a way that during operation of the device at least part of the length of the shaft is located inside the thread loops, wherein the belt conveyor is mounted in a manner providing rotation around its longitudinal axis and wherein the rotating drive wheel forms a support extending from the outside within the area of the loops, which support prevents pivoting of the belt conveyor around its longitudinal axis.

4,442,574

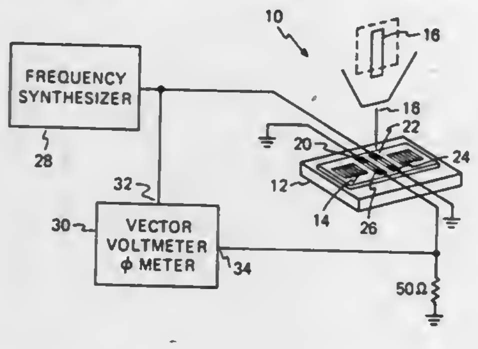
FREQUENCY TRIMMING OF SAW RESONATORS

Stephen Wanuga; Wendell M. T. Kong, both of Liverpool, and Cleo M. Stearns, Jamesville, all of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Filed Jul. 26, 1982, Ser. No. 402,025

Int. Cl.³ H01L *41/22*

U.S. Cl. 29—25.35 **7 Claims**



1. A method of frequency trimming surface acoustic wave devices having a pair of reflecting gratings and a pair of interdigitated transducers located in a resonance cavity comprising the steps of:

(a) depositing a plurality of frequency trimming metallizations in gaps separating said reflecting gratings from said transducers;

(b) measuring the resonance frequency of said SAW device;

(c) removing a portion of at least one of said plurality of metallizations from said SAW device by laser vaporization to alter said resonance frequency until a desired predetermined operating frequency is achieved.

4,442,575

TOOL-SUPPORTING DEVICE FOR MACHINING A CYLINDRICAL ROD AND A MACHINING HEAD FITTED WITH SAID DEVICE

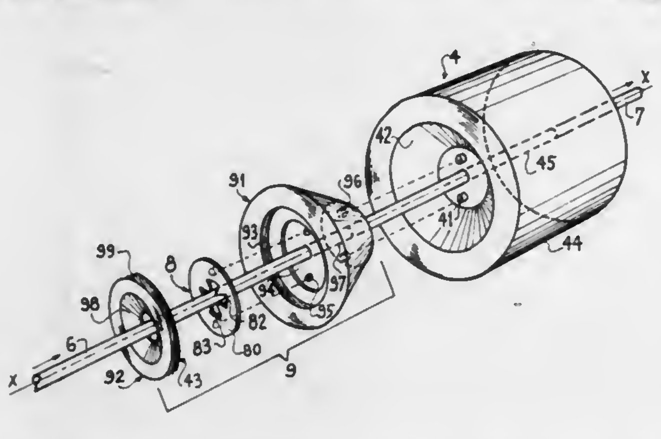
Jean-Pierre Hulin; Gilles DuBois, and Marcel Paumier, all of Conflans Ste Honorine, France, assignors to Lignes Telegraphiques et Telephoniques, Conflans Ste Honorine, France

Filed Oct. 30, 1981, Ser. No. 316,943

Claims priority, application France, Dec. 31, 1980, 80 27888

Int. Cl.³ B23P *13/02;* B23D *5/02*

U.S. Cl. 29—33.5 **9 Claims**



1. In combination: a machining head provided with a recess of a generally conical shape and a bore extending therethrough and through which a cylindrical rod to be machined is capable of passing, a tool supporting device for supporting a tool for machining a cylindrical rod, said tool supporting device comprising a support member of generally conical shape having substantially the same slope as said recess in said machining head, and being positioned in said recess, said support member also being provided with a bore extending through said member and with a further recess for receiving a tool, the bore of said machining head and the bore of said support member being in aligned relation with each other.

4,442,576

TOOL COOLING DEVICE FOR MACHINE TOOLS

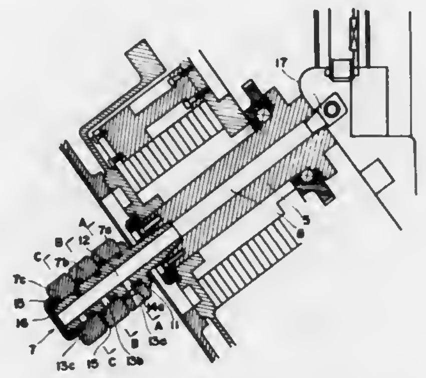
Koichiro Kitamura, Takaoka, Japan, assignor to Kitamura Machinery Co., Ltd., Takaoka, Japan

Filed Mar. 8, 1982, Ser. No. 355,454

Claims priority, application Japan, Mar. 16, 1981, 56-37479

Int. Cl.³ B23B *9/00, 51/06*

U.S. Cl. 29—39 **1 Claim**



1. A tool cooling device for machine tools said device comprising:

distributing unit means provided with a fixed shaft and a plurality of annular members rotatably mounted on the outer surface of said fixed shaft and each having a pipe fitting portion, said fixed shaft including a hole formed therethrough in the axial direction thereof and a plurality of passages arranged at predetermined spaces and opening to said axial hole and to the outer surface of said fixed shaft in the same direction, and each of said annular members is connected with a pipe at said pipe fitting portion to one of a plurality of tools requiring cooling and accommodated at suitable spaces in a tool magazine, and said pipe fitting portions of each said annular member is aligned communicating with only one of said plurality of passages whereby said tools are automatically and selectively supplied with a cooling fluid through said axial hole formed through said fixed shaft upon placement of said tools in a work position.

4,442,577

PROCESSING OF STEEL PIPES OR ROUND BARS

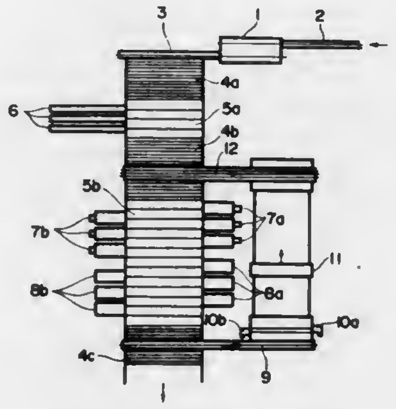
Masachik Numano, Yokosuka, and Minoru Morita, Kawasaki, both of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 18, 1981, Ser. No. 332,217

Claims priority, application Japan, Dec. 19, 1980, 55-178814

Int. Cl.³ B23Q *7/16*

U.S. Cl. 29—33 T **3 Claims**



1. Apparatus for conditioning cylindrical workpieces, said apparatus comprising:

an axial transfer line system for axially feeding cylindrical workpieces such as steel tubes and round bars formed by a preceding forming operation;

a single transverse transfer line system connected transversely with said axial transfer line system for transversely feeding said workpieces;

conditioning means arranged on at least one side of said transverse transfer system for performing cutting processing operations on the end portions of the workpieces including beveling for welding, chamfering for starting thread cutting, thread cutting, and lead cutting;

inspection means for performing inspection operations on processed portions of said workpieces including inspection of beveled and chamfered portions and inspection of threaded portions;

said single transverse transfer line system having a portion with a feed pitch that is variable in steps, said portion positioned within the end processing area for each workpiece; and

said conditioning means and said inspection means being multifunctional and capable of performing plural functions and positioned at a variable feed pitch portion of the transverse transfer line system in a number corresponding to the maximum value of the feed pitch steps of said transverse transfer line.

4,442,578

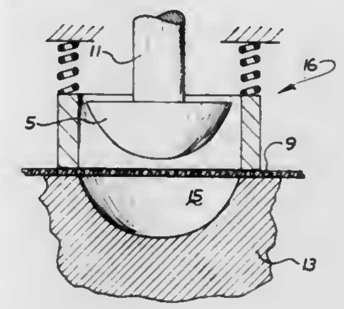
METHOD OF MAKING HOT DRAWN LOW FRICTION BEARING

Charles S. White, 35815 42nd St., Palmdale, Calif. 93550

Filed Mar. 20, 1980, Ser. No. 132,263

Int. Cl.³ B21D *53/10*

U.S. Cl. 29—149.5 S **5 Claims**



1. A process for making a low friction bearing having a metal backing and a nonflat fabric bearing surface, said process comprising the steps of:

placing in overlapping relationship a low friction fabric having a generally flattened condition and a metal backing having a nonflat surface;

using the metal backing as a punch or die and urging said nonflat surface of said metal backing and said low friction fabric together with sufficient force to adhere said fabric to said backing across their mutually engaged surfaces and to form said fabric into a nonflat low friction bearing surface.

4,442,579

METHOD OF AND APPARATUS FOR PRODUCING VALVE ROTORS

Barry J. Millard, Reading, England, assignor to Adwest Engineering Limited, Reading, England

Filed Oct. 28, 1981, Ser. No. 315,743

Claims priority, application United Kingdom, Dec. 12, 1980, 8038610

Int. Cl.³ B21D *53/00, 53/10*

U.S. Cl. 29—157.1 R **14 Claims**

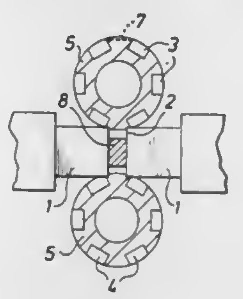
1. Apparatus for imparting a required metering form to the longitudinal outer edges of a plurality of axially extending and circumferentially spaced grooves formed in a rotor member of a rotary valve with arcuate segments extending between the circumferentially spaced grooves, the apparatus comprising at least one impressing tool having the required metering form thereon, holding means for supporting a said rotor member, means for moving said tool into deforming contact against a one longitudinal edge to be formed along a path of travel described by a chord extending between said one edge and the adjacent edge of the nearest adjacent groove to displace the material of said one edge, supporting means for engaging said adjacent edge of the nearest adjacent groove to provide support therefor whilst said edge is being formed, and indexing means for said holding means for positioning each arcuate segment of the rotor member between said impressing tool and said supporting means so that said impressing tool travels into a respective groove.

7. The method of producing a rotor member for a rotary valve, the method including the steps of

providing a cylindrical rotor member having a plurality of axially disposed and circumferentially spaced grooves formed in the outer surface thereof with each groove being defined by a pair of longitudinal outer edges on the periphery of the cylindrical rotor member whereby the longitudinal outer edge on one groove is generally parallel with the adjacent edge on the next adjacent groove,

contacting two adjacent outer edges on two adjacent grooves with a pair of coacting impressing tools by positioning said tool in said grooves, each of said tools having a required metering form on its contacting surface,

moving the tools simultaneously towards each other along a path of travel described by a chord that passes through the two adjacent edges whereby material in the contact region is displaced generally inwardly and upwardly away from the groove.



4,442,580

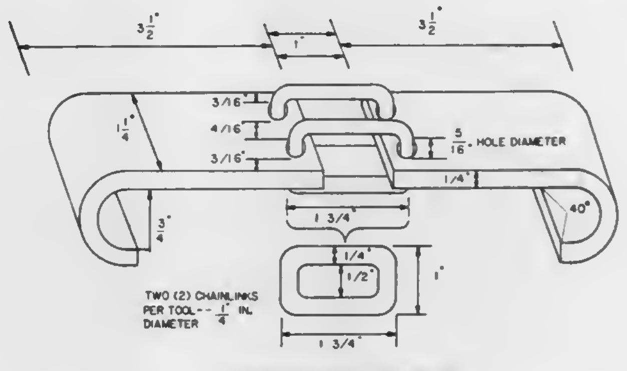
COIL SPRING TOOL

Dimitrios Antoniadis, 3475 Bivona St., Bronx, N.Y. 10475

Filed Apr. 3, 1981, Ser. No. 219,939

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—227 **4 Claims**



THE ENTIRE TOOL IS MADE OF FORGED STEEL

1. A tool for maintaining an automotive coil spring in a compressed state during installation in an automobile chassis comprising:

two elongated flat plates, each of which is curved in a hook-like fashion at one end thereof for releasably gripping a coil of said coil spring, the other end of each said plate having two spaced apart circular apertures extending therethrough generally perpendicular to the plane of said plate, the spacing between the apertures in one said plate being substantially equal to the spacing between the apertures in the other said plate, the apertures in each said plate being spaced equidistant from the respective curved end of said plate; and

two substantially identical parallel chain link means having cross-sectional diameters substantially equal to said apertures respectively extending through said apertures in the elongated plates for interconnecting said plates in such manner as to form a pivoted connection therebetween with the curved ends of said plates being substantially parallel, whereby the two chain link means prevent twisting of either said elongated plate about its longitudinal axis relative to the other said elongated plate.

4,442,581

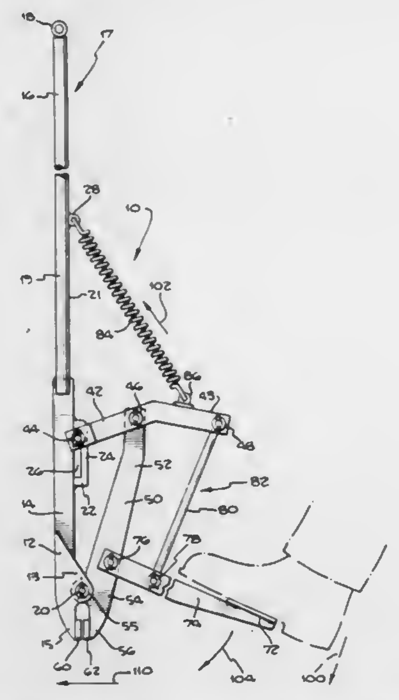
BUTTON PUNCHER OR CRIMPER

Melvin Molnick, 924 W. Ninth St., Upland, Calif. 91786

Filed Feb. 2, 1982, Ser. No. 345,815

Int. Cl.^{3} B23P *11/00*

U.S. Cl. 29—243.5 **8 Claims**



1. An improved button puncher or crimper comprising:

a. a lower base fixed jaw receiving member comprising a rearwardly protruding portion and a lower substantially flat rearward portion beneath the rearwardly protruding portion;

b. an elongated lower fixed body rigidly attached at its lower end to the upper portion of said lower base fixed jaw receiving member;

c. an elongated upper body rigidly attached at its lower end to the upper end of said elongated lower body;

d. a handle rigidly attached to the upper end of said elongated upper fixed body;

e. said lower base fixed jaw, said elongated lower body, and said elongated upper body having a uniform forward face;

f. said elongated lower body and said elongated upper body having a uniform rear face;

g. a fixed jaw rigidly attached to the lower substantially flat rearward portion of said lower base fixed jaw receiving member;

h. a cantilever arm receiving member rigidly attached to the rear face of said elongated lower body member;

i. said cantilever arm receiving member comprising a bracket with an elongated chamber between the bracket and the rear face of said elongated lower body member;

j. a movable cantilever arm;

k. said movable cantilever arm containing a first pivot means adjacent one end, a second pivot means adjacent its central longitudinal area, and a third pivot means adjacent its opposite end;

l. said movable cantilever means being slidably and rotatably supported within said elongated chamber of said cantilever arm receiving member by said first pivot means;

m. a spring interconnecting said movable cantilever arm to the rear face of said elongated upper body member;

n. a movable jaw receiving member comprising an upper shaft portion and a lower base portion which further comprises a forwardly protruding upper portion and a lower substantially flat forward portion beneath the forwardly protruding portion;

o. a movable jaw rigidly attached to the lower substantially flat forward portion of said lower base portion of the movable jaw receiving member;

p. the upper end of the upper shaft portion of said movable jaw receiving member being movably and rotatably attached to said movable cantilever arm by said second pivot means;

q. the rearwardly protruding protion of said lower base fixed jaw receiving member being movably and rotatably connected to the forwardly protruding portion of the lower base portion of said movable jaw receiving member by a movable jaw receiving means such that said fixed jaw and said movable jaw face each other;

r. said movable jaw receiving member containing a fourth pivot means located in the lower area of its upper shaft portion;

s. an elongated cantilever foot pedal arm containing a foot pedal at one end;

t. said elongated cantilever foot pedal arm being movably and rotatably connected at its end opposite the foot pedal to said movable jaw receiving member by said fourth pivot means;

u. said elongated cantilever foot pedal arm containing a fifth pivot means between said fourth pivot means and said foot pedal; and

v. an elongated connecting arm being movably and rotatably attached at one end to said movable cantilever arm by said third pivot means and being movably and rotatably attached at its other end to said elongated cantilever foot pedal arm by said fifth pivot means;

w. whereby a downward force applied to said foot pedal is transmitted through said elongated cantilever foot pedal arm to said elongated connecting arm, to said movable cantilever arm and then to said movable jaw receiving member thereby causing said movable jaw receiving member to rotate about said movable jaw receiving means so that the movable jaw is forced to close against the fixed jaw with the result that any adjacent pieces of metal which may have been placed between the jaws when open will then be button punched, pressed or crimped together, and further wherein the force applied to said foot pedal is substantially enhanced at the site of the fixed and movable jaws by a double leverage action arising from the distance between said second pivot means and said third pivot means and further by the height of the upper shaft portion of the movable jaw receiving member over the height of the lower base portion of the movable jaw receiving member and wherein said spring causes that fixed and movable jaws to return to their opened position and said foot pedal to return to its elevated position once the downward force on the foot pedal is released.

4,442,582

METHOD OF RECLAIMING COMPONENT MATERIALS

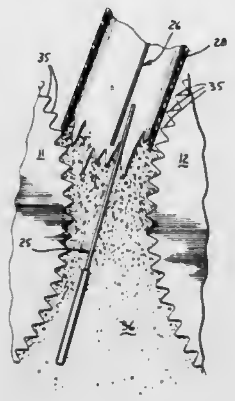
George Foo, Princeton; Raymond W. Grodkiewicz, Bridgewater; Stanley E. Kubis, Bayonne, and Gordon C. Lindsay, Red Bank, all of N.J., assignors to AT&T Technologies, Inc., New York and Nassau Recycle Corporation, Staten Island, both of, N.Y.

Filed Jun. 21, 1982, Ser. No. 390,717

Int. Cl.^{3} B23Q *17/00*

U.S. Cl. 29—403.3 **6 Claims**

1. A method of reclaiming component materials of an article of manufacture having a metallic element at least partially encased within a brittle bulb with a portion of the element encased within the bulb being of a predetermined thickness, and which method comprises the steps of passing the article between two rotating rollers spaced apart a distance less than a dimension of the brittle bulb but greater than the thickness of the metallic element encased portion thereby shattering the bulb without altering the structure of the metallic element encased portion substantially, and then separating the shattered brittle material from the metallic element.



4,442,583

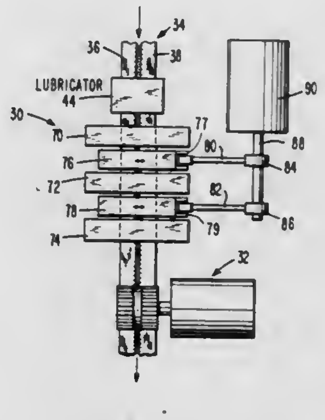
SHEARING SLIDE FASTENER CHAIN

George B. Moertel, Conneautville, Pa., assignor to Talon, Inc., Meadville, Pa.

Filed Jul. 26, 1982, Ser. No. 401,777

Int. Cl.^{3} B21D *53/50;* **A41H** *37/06*

U.S. Cl. 29—408 **15 Claims**



1. A method of manufacturing a slide fastener chain comprising the steps of

forming a length of slide fastener chain having a pair of support tapes and a pair of rows of interlocking fastening elements secured on inner edges of the tapes,

moving the length of slide fastener chain through a shearing station, and

shearing the interlocking fastening elements and inner edges of the tapes as the slide fastener chain passes through the shearing station so as to substantially lower operating resistance of the slide fastener chain,

said shearing at least partially being in a direction parallel to the plane of the tapes of the slide fastener chain and crosswise to the rows of interlocking fastening elements.

4,442,584

NUT INSTALLATION APPARATUS, METHOD AND CONTROLS

Jon M. Smallegan, Farmington Hills, Mich., assignor to Multifastener Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 118,931, Feb. 6, 1980, Pat. No. 4,348,796. This application Jul. 13, 1982, Ser. No. 397,946

Int. Cl.^{3} B23P *11/00, 21/00, 19/00*

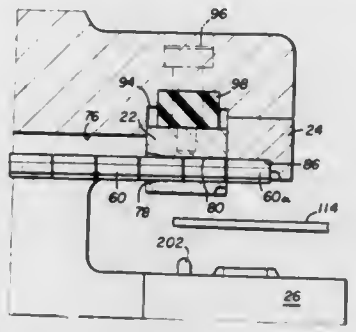
U.S. Cl. 29—432 **12 Claims**

1. A method of attaching self-locking nuts to a panel, said nuts having a projecting pilot adapted to pierce the panel and mechanically interlock with said panel, the method comprising the following steps:

(a) supporting said panel on a movable die opposite a stationary nut anchor,

(b) disposing the end nut of a plurality of serially aligned nuts in said nut anchor opposite said panel with said nut pilot projecting toward said panel,

(c) moving said die member toward said nut anchor and said panel into engagement with said end nut, flexing said panel and biasing the remaining nuts out of alignment with said end nut and sensing the movement of said remaining nuts relative to said end nut and discontinuing the movement of said die if the relative movement of said remaining nuts indicates that said end nut is not properly located in said nut anchor, thereby preventing fracture of a nut partially located beneath said nut anchor, and



(d) continuing to move said die and the supported panel into locking engagement with said end nut if said end nut is properly located in said nut anchor, said pilot piercing said panel and locking said end nut on said panel.

4,442,585

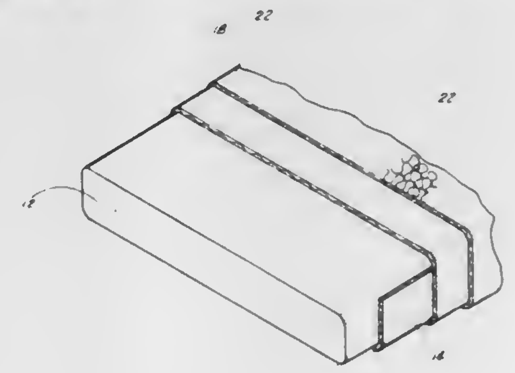
METHOD OF CONSTRUCTION FOR THERMAL AND ACOUSTIC INSULATION BLANKETS

Fred N. McGehee, Sr.; Billy J. Peck; Clyde B. Betz, and Calvin R. Morgan, Jr., all of P.O. Box 568, Harvey, La. 70058

Filed Mar. 31, 1982, Ser. No. 363,871

Int. Cl.^{3} B23P *11/00*

U.S. Cl. 29—432 **1 Claim**



1. A method of constructing thermal and acoustic insulation blankets, which comprises the following steps:

a. providing a ceramic fiber thermal insulation core, said core being substantially the basic shape of the object to be insulated; cutting said insulation core material along pattern lines with a cutter means;

b. providing noise abatement means, said noise abatement means comprising a thin sheet of lead, substantially in the shape of said insulation core means;

c. enveloping said insulation core with said lead sheet to provide substantially the same shape as said insulation core; further providing a contamination insulation means, wherein said means comprises a thin stainless steel foil/-fiberglass cloth laminate;

d. placing said stainless steel laminate along the innermost surface of said insulation core, so that said laminate serves as a barrier between said insulation core and the object to be insulated;

- e. enveloping said insulation core blanket with a silicone-rubber coated fiberglass cloth;
- f. stitching the seams of said cloth around said inner core insulation means with stainless steel staple means;
- g. providing an outer jacket of a flexible knitted stainless steel wire mesh means, said wire mesh means forming a "stocking" containing the insulation blanket;
- h. stitching the ends of said stocking with said stainless steel staples;
- i. wrapping the object to be insulated in said insulation blanket;
- j. mating the ends of said insulation blanket along a single seam so that an entire circumferential surface of said pipe to be insulated is completely insulated;
- k. providing a secondary insulation means, which comprises a velcro lead-lined flap along said mating edge of said insulation section; and
- l. lacing the ends of said insulation section against one another for providing a barrier substantially impermeable to thermal and acoustic radiation.

4,442,586

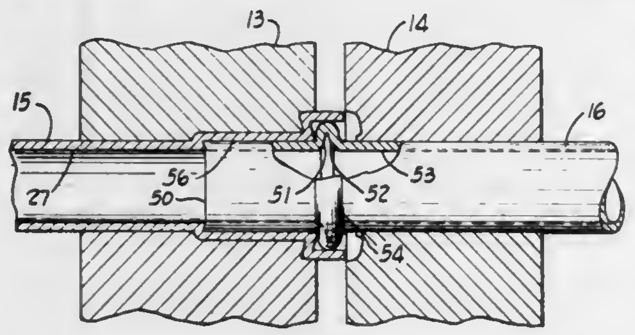
TUBE-TO-TUBE JOINT METHOD

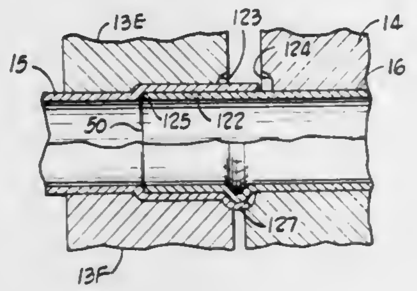
Ralph G. Ridenour, 626 Lexington-Ontario Rd., Mansfield, Ohio 44903

Continuation of Ser. No. 951,579, Oct. 16, 1978, Pat. No. 4,269,438, which is a continuation-in-part of Ser. No. 527,683, Nov. 27, 1974, Pat. No. 4,200,314, which is a division of Ser. No. 425,561, Nov. 17, 1973, abandoned. This application May 14, 1981, Ser. No. 263,493

Int. Cl.^{3} B21D *39/00;* B23P *11/02*

U.S. Cl. 29—511 **14 Claims**





1. The method of making a tube-to-tube joint directly between a first tube and a cylindrical end of a second tube, and utilizing mandrel means and first and second die means, comprising the steps of:

grasping the first tube with the first die means;

moving the mandrel means and the first die means relatively axially together to form in one end of the first tube a radially enlarged first portion and to form a first shoulder at the junction between said enlarged first portion and the main body of the first tube;

said enlarged first portion having an inner diameter slightly larger than the nominal outside diameter of one cylindrical end portion of the second tube;

removing the mandrel means;

grasping the second tube at said one cylindrical end portion thereof with the second die means;

relatively axially moving together the grasped portions of the tubes to cause said end of the second tube to enter said enlarged first portion of the first tube and to abut and have movement arrested at said first shoulder and continued axial relative movement of the grasped portions of the tubes causing first and second annular portions of the inner wall of the second tube to bulge outwardly from a cylindrical shape to form an annular bead;

forming in said first tube a second enlarged portion closer to said one end than said first enlarged portion and a second shoulder between said first and second enlarged portions;

continued relative axial movement between the grasped portions of the tubes causing said first and second annular portions of the inner wall of the second tube to be compressed into mutual engagement;

continued relative axial movement between the grasped tubes establishing fluidtight seal means between said annular bead of the second tube and said second shoulder of the first tube; and

said fluidtight seal means capable of withstanding pressures of several atmospheres.

4,442,587

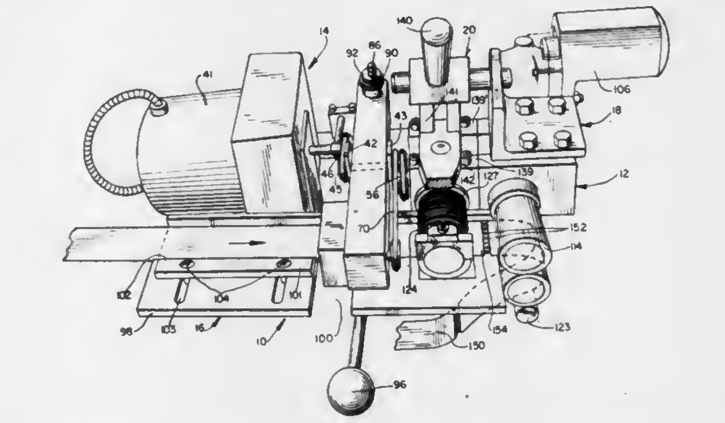
STRIPPING MACHINE FOR REMOVING INSULATION FROM FLAT CABLE

Charles E. Shields, 655 Woodland Dr., Crystal Lake, Ill. 60014, and Leonard R. Giese, 1307 Post Dr., Rockford, Ill. 61108

Filed Jun. 22, 1981, Ser. No. 275,838

Int. Cl.^{3} H02G *1/12*

U.S. Cl. 29—564.4 **9 Claims**



1. A stripping machine for removing insulation from flat cable having a plurality of conductors contained therein, wherein the conductors are in substantially the same plane, comprising:

a frame;

a pair of rotatable grinding wheels mounted to said frame and being engageable with opposite sides of the flat cable for grinding insulation from the cable above and below the conductors;

means for rotatably mounting said pair of grinding wheels on said frame, said means for rotatably mounting comprising a motor means;

a pair of rotatable slitting rollers for cutting portions of the insulation between conductors, one of said pair of slitting rollers being mounted oppositely to the other of said pair of slitting rollers to form a space therebetween through which the cable portion to be prepared is positioned;

means for rotatably mounting said pair of slitting rollers to said frame; and

means for moving one of said pair of slitting rollers/toward and away from the other of said pair of rollers in a direction transverse to said direction parallel to the length of the cable,

drive means for moving the cable along a direction parallel to the length of the cable, whereby the insulation of the cable is removed above, below, and on the sides of the conductors at a portion of the cable to prepare it for subsequent attachment to a connector.

4,442,588

AUTOMATIC SYSTEM FOR PRODUCING ELECTROLYTE IMPREGNATED CAPACITOR ELEMENTS

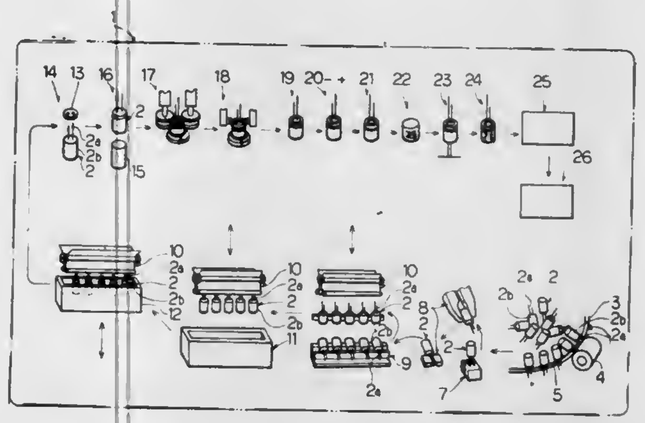
Katsumori Omata, Hachioji, Japan, assignor to Far East Engineering Co., Ltd., Hachioji, Japan

Filed Mar. 25, 1981, Ser. No. 247,243

Claims priority, application Japan, Apr. 10, 1980, 55-47232

Int. Cl.^{3} H01G *9/00*

U.S. Cl. 29—570 **8 Claims**



1. A system for automatically producing electrolyte impregnated capacitor elements each having a head and a pair of leads, said system comprising means for clamping the leads of each capacitor element to straighten and place the leads in parallel alignment as the capacitor element is conveyed thereto; means for aligning a predetermined number of reformed capacitor elements; holder means for taking up the aligned capacitor elements from the capacitor element aligning means as the holder means holds the leads of aligned capacitor elements; means vacuumized to impregnate the aligned capacitor elements with the electrolyte as the capacitor elements are brought thereinto and as such capacitor elements are held by the holder means; and transmission means including a first transmission device for conveying each capacitor element from the lead reforming means to the capacitor element aligning means, and a second transmission device for conveying the holder means into the electrolyte impregnating means.

4,442,589

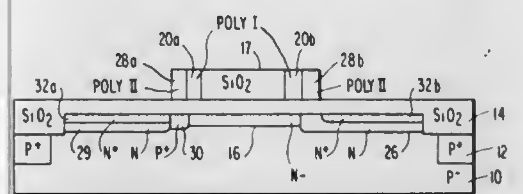
METHOD FOR MANUFACTURING FIELD EFFECT TRANSISTORS

Ven Y. Doo, San Jose, Calif., and Paul J. Tsang, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 5, 1981, Ser. No. 240,677

Int. Cl.^{3} H01L *21/265, 21/28*

U.S. Cl. 29—571 **9 Claims**



1. A method of forming a transistor which comprises:

(a) providing a semiconductor substrate of one conductivity type having a shallow surface layer of opposite conductivity type;

(b) forming a thick mesa of dielectric material on said substrate;

(c) forming a first layer of polycrystalline silicon only on the vertical surfaces of said mesa by reactive ion etching;

(d) introducing at least one impurity into said substrate, said mesa and said first layer of polycrystalline silicon masking said substrate against the introduction of said at least one impurity;

(e) forming a second layer of polycrystalline silicon by reactive ion etching;

(f) introducing at least one impurity of a different conductivity type from said first at least one impurity into said substrate at areas other than those masked by said mesa, said first polycrystalline silicon layer and said second polycrystalline silicon layer to thereby form the gate of said transistor.

4,442,590

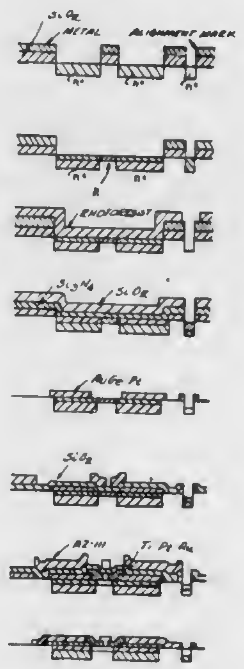
MONOLITHIC MICROWAVE INTEGRATED CIRCUIT WITH INTEGRAL ARRAY ANTENNA

Ronald J. Stockton, Nederland, and Robert E. Munson, Boulder, both of Colo., assignors to Ball Corporation, Muncie, Ind.

Division of Ser. No. 207,289, Nov. 17, 1980. This application Jun. 22, 1982, Ser. No. 390,859

Int. Cl.^{3} H01L *21/82*

U.S. Cl. 29—571 **1 Claim**



1. A method for fabricating planar phase shifter for a monolithic microwave system comprising the steps of:

lapping and polishing a layer of semi-insulating GaAs to a plane parallel thickness compatible with microstrip propagation, said layer serving as a substrate for said monolithic microwave system;

covering the substrate with SiO_2 and a metal;

opening windows in said metal;

removing the SiO_2, exposed through said windows by dry etching;

ion implanting to form N+ regions;

removing the remaining metal and SiO_2 from a source to drain gap region;

ion implanting an active layer;

defining an alignment mark by ion milling;

removing any remaining metal and photo-resist material;

depositing a nitride and an oxide;

annealing the implantations;

removing the insulators;

defining ohmic contact holes using a photolithographic technique;

depositing metallizations of AuGe-Pt;

depositing a layer of SiO_2;

defining gate and ohmic contact holes;

removing exposed SiO_2 by plasma etching;

depositing metallizations of TiPtAu;

defining gate and circuit path areas using a photo-resist technique; and removing exposed metal by ion-milling to form microstrip transmission lines, radiating elements and biasing interconnect metallizations.

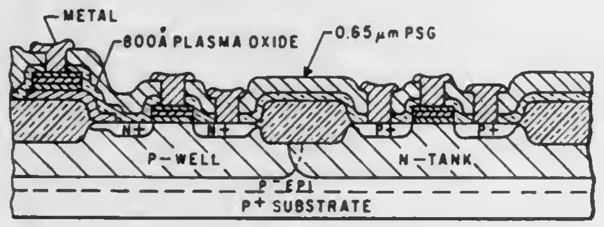
4,442,591
HIGH-VOLTAGE CMOS PROCESS

Roger A. Haken, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 1, 1982, Ser. No. 344,588

Int. Cl.³ H01L *21/265, 21/76*

U.S. Cl. 29—571 **11 Claims**



1. A high-voltage CMOS process, comprising the steps of:
providing a silicon surface;
providing N-type device regions in said surface;
providing P-type device regions in said surface;
depositing a moat masking layer on respective moat areas of said N-type and P-type device regions;
applying a channel stop implant into portions both of said N-type device regions which are exposed by said moat masking layer, said channel stop implant comprising at least 5×10^{12} cm^{-2} of boron at an energy of at least 45 keV;
selectively oxidizing said silicon surface where not masked by said moat masking layer;
stripping said moat masking layer; and
forming desired NMOS and PMOS devices in said respective moat regions.

11. A process for forming desired CMOS circuits for operating at an operating voltage expressed as (10+x), where x is in the range between 0 and 10, comprising the steps of:
providing a heavily doped P-type silicon substrate;
providing a P-type epitaxial layer on said substrate, said epitaxial layer having a thickness in microns of approximately 13+0.6x;
implanting N-type impurities to form N-tanks, said N-tanks having a surface dopant concentration of approximately 10^{16} per cm^3, and said tanks having a depth in microns of approximately 3+0.2x;
implanting P-wells into selected areas of said epitaxial layer, said P-wells having a dopant concentration of approximately 2×10^{15} per cm^3;
depositing a moat masking layer on respective moat areas of said N-tanks and of said P-wells, where devices are to be formed;
applying a channel stop implant into portions both of said N-type device regions which are exposed by said moat masking layer, said channel stop implant comprising at least 5×10^{12} per cm^2 of boron at an energy of at least 50 keV;
selectively oxidizing said epitaxial layer where not masked by said moat masking layer, said oxidizing step being performed to form a field oxide having a thickness expressed in microns of at least 0.8+0.06x;
stripping said moat masking layer;
forming NMOS source/drain regions in said P-wells, and forming PMOS source/drain regions in said N-tanks, said source/drain regions having a maximum depth in microns are 0.5+0.05x, respective pairs of said source/drain regions defining channel regions therebetween, and said channel regions having a length expressed in microns which is not less than 3+0.4x;
depositing gate dielectrics atop said respective channel regions, said gate dielectrics having a minimum thickness expressed in nanometers of 60+4x; and
depositing gates atop said respective gate dielectrics.

4,442,592
PASSIVATED SEMICONDUCTOR PN JUNCTION OF HIGH ELECTRIC STRENGTH AND PROCESS FOR THE PRODUCTION THEREOF

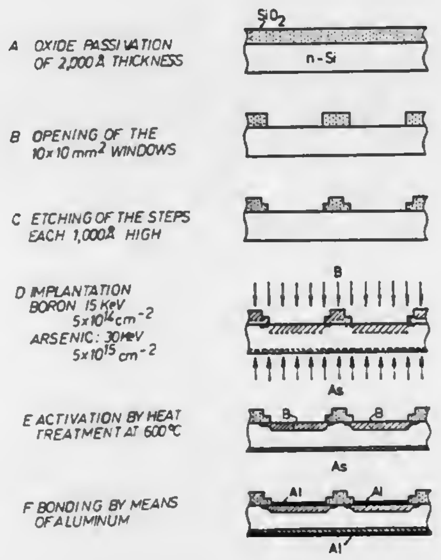
Josef Kemmer, No. 41 D, Hauptstrasse, 8041 Haimhausen, Fed. Rep. of Germany

Filed Jan. 14, 1981, Ser. No. 225,069

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1980, 3003391

Int. Cl.³ H01L *31/18*

U.S. Cl. 29—572 **12 Claims**


A OXIDE PASSIVATION OF 2,000 Å THICKNESS
SiO₂
n-Si
B OPENING OF THE 10x10 mm² WINDOWS
C ETCHING OF THE STEPS EACH 1,000Å HIGH
D IMPLANTATION BORON 15 KeV 5x10¹⁴cm⁻² ARSENIC: 30KeV 5x10¹⁵ cm⁻²
B
As
E ACTIVATION BY HEAT TREATMENT AT 600°C
B
B
As
F BONDING BY MEANS OF ALUMINUM
Al
Al
Al

1. A process for the production of a detector chip for detecting radiation and having a semi-conductor pn junction, comprising the steps of:
(a) applying a passivating layer of predetermined thickness to a surface on an n-Si slice for surface passivation of said n-Si slice;
(b) removing a portion of said passivating layer from said surface of said n-Si slice to form a window surrounded by an edge of said passivating layer;
(c) forming a step portion of said edge of said passivating layer about said window; and
(d) implanting a doping material in said n-Si slice within said window and, through said step portion, the portion of said n-Si slice beneath said step portion of said passivating layer surrounding said window;
(e) said step portion having a substantially uniform thickness less than said determined thickness of the remaining portion of said passivating layer, said thickness of said step portion being such that a predetermined fraction of the doping material implanted in the surface of said n-Si slice within said window is implanted in said surface of said n-Si slice beneath said step portion;
(f) whereby the peripheral portion of the doped surface of said n-Si slice beneath said step portion of said passivating layer has a uniform doping concentration and thickness across its entire width which thickness is a fraction of the thickness of the doped surface portion within said peripheral portion and said fraction of said doping material penetrating said step portion being sufficient to compensate the accumulated charge in the surface channel beneath said step portion, thus enabling a depletion channel beneath said step portion.

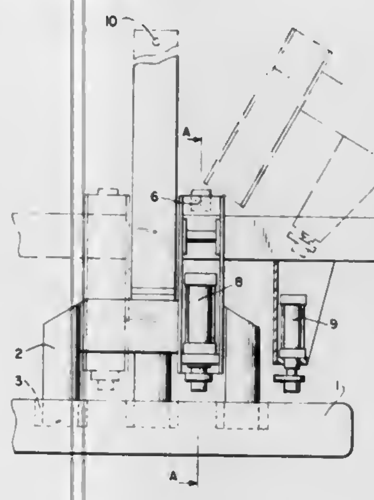
4,442,593
ANODE BUTT REMOVER

Paul M. Holmberg, Oslo, Norway, assignor to Årdal og Sunndal Verk a.s., Oslo, Norway

Filed Aug. 25, 1982, Ser. No. 411,475

Int. Cl.³ B23P *19/04;* C25D *17/04*

U.S. Cl. 29—825 **16 Claims**



1. A method for removing an anode butt from anode studs having fixed thereto a yoke, said method comprising:
providing plural hydraulic piston-cylinder assemblies;
operating said assemblies in synchronization and exerting a force, parallel to said studs, on the upper surface of said anode butt by said assemblies; and
exerting the reaction force to said force of said assemblies on said yoke, thereby pushing said anode butt from said studs without the need for absorbing said reaction force in an external structure.

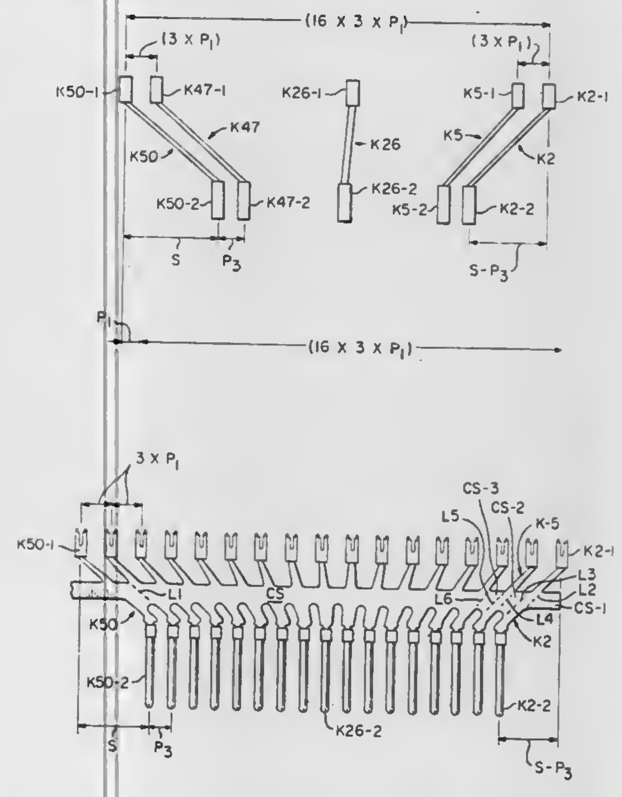
4,442,594
METHOD FOR MAKING AN ELECTRICAL CONNECTOR

Ronald S. Narozny, Panorama City, Calif., assignor to Thomas & Betts Corporation, Raritan, N.J.

Division of Ser. No. 221,396, Dec. 30, 1980. This application Sep. 24, 1982, Ser. No. 422,613

Int. Cl.³ H01R *43/00*

U.S. Cl. 29—884 **3 Claims**



1. In a method for making an electrical connector, the steps of:
(a` forming first and second identical elongate contact strips in manner (1) providing each strip with a continuous central longitudinally extending member which has first and second opposed contact element end portions extending therefrom, and (2) forming each strip to have different spacings in a longitudinal direction between first and second contact element end portions at respective longitudinal ends of such strip;
(b) supporting said first and second strips by securing said first contact element end portions thereof in respective first and second support members and selectively removing material from said central longitudinally extending member to form electrically independent contact elements, each such contact element comprising one of said first contact element end portions and one of said second contact end portions; and then
(c) disposing said first and second support members in a housing and in longitudinally facing relation whereby said second contact element end portions are in positional registry and said first contact end portions are not in registry.

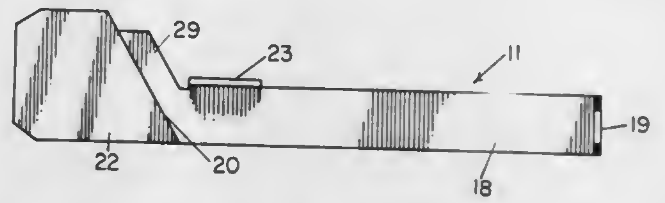
4,442,595
KNIFE GUIDE

Robert F. Sharrow, 224 Longacre Ave., and Sidney L. Sherman, 5956 Jodie La., both of Erie, Pa. 16509

Filed Apr. 5, 1982, Ser. No. 365,170

Int. Cl.³ B65B *7/00*

U.S. Cl. 30—2 **3 Claims**



1. In combination a utility knife and knife guide and support comprising,
a handle part,
a guide part,
a blade support,
a stop,
an end part,
said handle part, guide part, blade support, stop part and end part being integral with each other and of generally uniform thickness,
and having opposite sides lying in planes,
a first plane disposed in one said handle part sides and a second plane disposed in one said guide part sides,
said first plane and said second plane being disposed generally parallel to each other and spaced from each other,
said handle part having a first end and a second end,
said blade support having a first end and a second end,
said first end of said blade support being integrally connected to said first end of said handle part,
said second end of said blade support being integrally connected to a first end of said guide part,
a third plane disposed in one of said blade support sides and generally perpendicular to said first plane and said second plane,
a fourth plane disposed in one of said stop part sides and generally perpendicular to said first plane and said second plane,
said stop part being integrally attached to a side edge of said handle part,
said end part being integrally attached to said second end of said handle part and extending from said handle part in the same direction as said blade support part,
a slot in said blade support part extending generally parallel to said guide part and spaced therefrom,
said utility knife guide being adapted to support a utility knife having a handle having a first end and a second end

with a blade attached to said first end and disposed in said slot and disposed generally parallel to said first plane and spaced therefrom,

said first end of said utility knife handle resting on said blade support part and said second end of said knife handle resing on said end part and said stop engaging a side edge of said utility knife handle whereby said guide part may guide said blade in a path generally paralled to the side edge of a carton engaged by said guide part.

4,442,596
CASING OF A WASHABLE ELECTRIC APPLIANCE

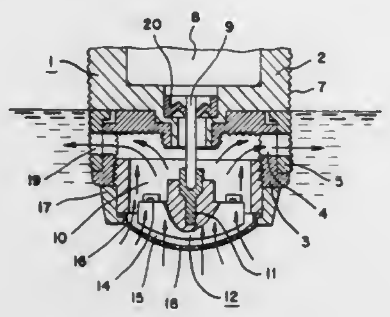
Sataroh Nasu; Kouichi Iwanaga, and Hiroshi Kikuchi, all of Osaka, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed May 20, 1982, Ser. No. 380,428

Claims priority, application Japan, Jun. 29, 1981, 56-101819

Int. Cl.³ B26B ***19/38***

U.S. Cl. 30—41.5 **3 Claims**



1. A casing for an electric appliance characterized in that a plurality of tapered minute projections are formed on the surface thereof, said minute projections being 15–30 microns in height and 15–30 microns in bottom diameter and being arranged in intervals of 15–30 microns from each other.

4,442,597
SHAVING APPARATUS

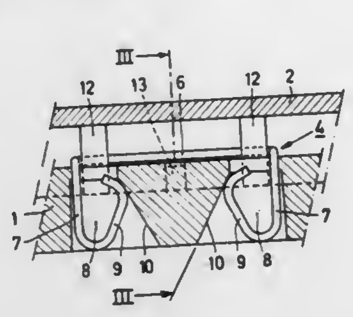
Wijtse Bergsma, and Eelke S. Venema, both of Drachten, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 189,463, Sep. 22, 1980, abandoned. This application Nov. 12, 1982, Ser. No. 441,188

Claims priority, application Netherlands, Oct. 18, 1979, 7907682

Int. Cl.³ B26B ***19/30***

U.S. Cl. 30—43.6 **2 Claims**



1. A shaving apparatus comprising a housing; a shaving head; a separate one-piece resilient metal wire hinge element for pivotally securing the shaving head to the housing, said wire hinge element being substantially U-shaped, the section between the limbs of the U constituting a hinge pin portion and each limb constituting a connecting portion, each limb being at its outer end at substantially a right angle to the plane of the U, the end of each limb being formed with a hook shape; means on the shaving head for engaging said hinge pin portion and retaining the same in place under tension; and two slots in a wall of the housing for respectively receiving said connecting portions, each slot being formed with a downwardly and inwardly sloping wall for engaging the hook-shaped end of the corresponding connecting portion and retaining the same in place under elastic tension without play.

4,442,598
RAZOR BLADE ASSEMBLY

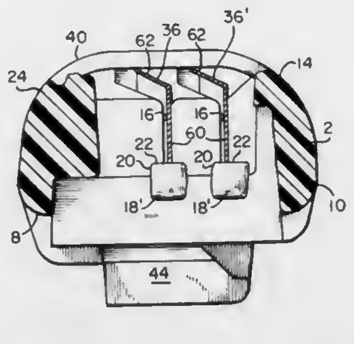
Chester F. Jacobson, Southboro, Mass., assignor to The Gillette Company, Boston, Mass.

Continuation-in-part of Ser. No. 229,976, Jan. 30, 1981, Pat. No. 4,378,634, which is a continuation-in-part of Ser. No. 101,101, Dec. 7, 1979, Pat. No. 4,270,268. This application Mar. 1, 1982, Ser. No. 353,856

The portion of the term of this patent subsequent to Jun. 2, 1998, has been disclaimed.

Int. Cl.³ B26B ***21/06, 21/22***

U.S. Cl. 30—47 **8 Claims**



1. A razor blade assembly comprising a body member, a guard member fixed to said body member, blade means mounted on said body member for movement thereon, said blade means being independently movable in response to forces encountered during a shaving operation, and spring finger biasing means integral with said body portion and exercising a bias against said blade means, said blade means comprising a shaped member having a base portion and a cutter portion, said base and cutter portions defining therebetween an obtuse angle.

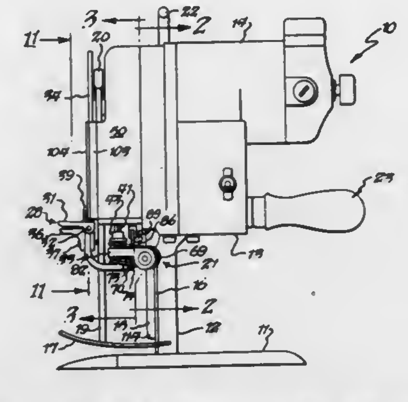
4,442,599
SHARPENER CONSTRUCTION FOR FABRIC CUTTING MACHINE

Frederick G. Clark, Naples, Fla., assignor to Eastman Machine Company, Buffalo, N.Y.

Filed Nov. 12, 1981, Ser. No. 320,724

Int. Cl.³ B25F ***3/00***

U.S. Cl. 30—139 **6 Claims**



6. A sharpener drive for a fabric cutting machine having a straight blade comprising a housing, a crank wheel and associated linkage for driving said straight blade, a sharpener mechanism, a drive wheel, link means associated with said drive wheel, gear means coupled between said drive wheel and said sharpener mechanism for driving said sharpener mechanism, and a single shaft for both transmitting motion through said link means to effect selective engagement between said crank wheel and said drive wheel and for transmitting motion from said gear means to said sharpener mechanism, said sharpener mechanism comprising first and second sharpener means, actuating means for moving said first and second sharpener means axially of said knife, means for alternately moving said first and second sharpener means into engagement with opposite sides of said knife including a second linkage which causes said first and second sharpener means to rise before said second sharpener means can engage said knife, said second sharpener means being located at a lower elevation than said first sharpener means to compensate for said rise produced by said second linkage.

4,442,600
JACK-KNIFE

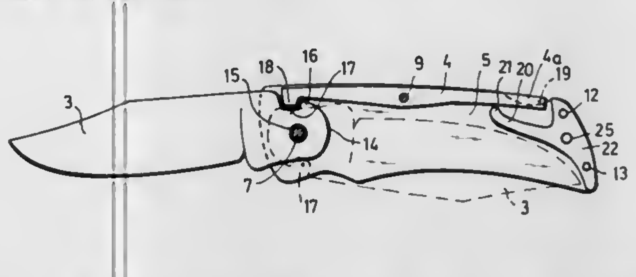
Ernst-Wilhelm Felix-Dalichow, Brauereistrasse 14, D-5650 Solingen, Fed. Rep. of Germany

Filed Oct. 5, 1981, Ser. No. 308,493

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1980, 3037588

Int. Cl.³ B26B ***1/02***

U.S. Cl. 30—161 **7 Claims**



1. Jack-knife, having a holder and a blade hinged to said holder thus that it can be turned between a closed position in which its cutting edge is in a longitudinal slot of said holder and an opened position which is 180° offset to the closed position and in which the blade can be fixed, the holder being composed of two plastics molded joint parts, one of which having an integral spring means which acts against a tiltable latch lever which is pivotable inserted at the back of said holder into said longitudinal slot thus that its latch portion engages a notch in the back of said blade to fix the blade when it is in its opened position.

4,442,601
TOOL HANDLE

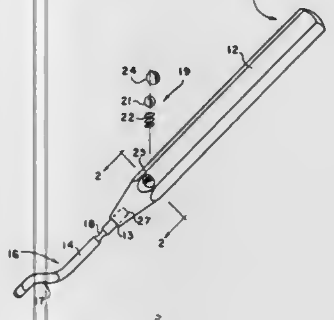
Gustav M. Hirsch, Nahariya, and Moshe Bar-Nof, Shlomi, both of Israel, assignors to Noga Engineering Ltd., Shlomi, Israel

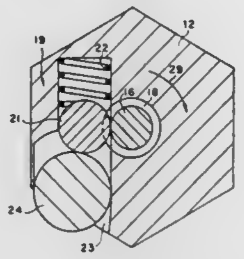
Filed Feb. 2, 1982, Ser. No. 345,137

Claims priority, application Israel, Feb. 12, 1981, 62120

Int. Cl.³ B23D ***79/08***

U.S. Cl. 30—169 **3 Claims**





1. A handle for a tool having a cylindrical shank with a peripheral notch therein, the handle comprising:

an axial cylindrical aperture defined in said handle for accomodating said tool shank therein; and

retaining means, substantially in said handle having a retaining position and a release position, for retaining said tool by engaging said notch, said retaining means being normally in said retaining position and switchable to said release position upon rotation of said handle with respect to said tool shank in a preselected direction with simultaneous application of an axial force thereto, said shank being rotatable in either of two opposite directions with respect to said handle when the shank is in the axial cylindrical aperture of said handle and said retaining means is in said retaining position.

4,442,602
HORN AND BONE CUTTING DEVICE

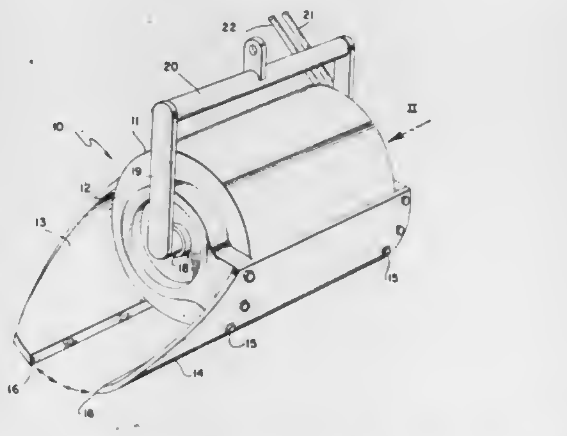
Richard F. Byrne, Cromer, and Samuel E. Pierce, Calga, both of Australia, assignors to Jarvis A. N. Z. Pty. Limited, New South Wales, Australia

Filed Jun. 29, 1981, Ser. No. 278,693

Claims priority, application Australia, Nov. 14, 1980, 64408/80

Int. Cl.³ B26B ***17/00***

U.S. Cl. 30—180 **4 Claims**



1. A horn or bone cutter comprising a rotary hydraulic driving means; and a pair of cutting blades, each including a cutting edge, said blades extending from said driving means and being driven by said driving means reciprocatably about an arcuate path with unlimited access on each side of each blade and an open end therebetween so that said cutting edges may be introduced transversely of the bone or horn to the cutting position thereof.

4,442,603
SAWING AND PRUNING APPARATUS OF THE COMPOUND ACTION PASSBY BLADE TYPE

Edward M. Wallace, Longmeadow; Robert G. Gosselin, Springfield, and Ernest D. Labarre, Holyoke, all of Mass., assignors to Wallace Mfg. Corp., Enfield, Conn.

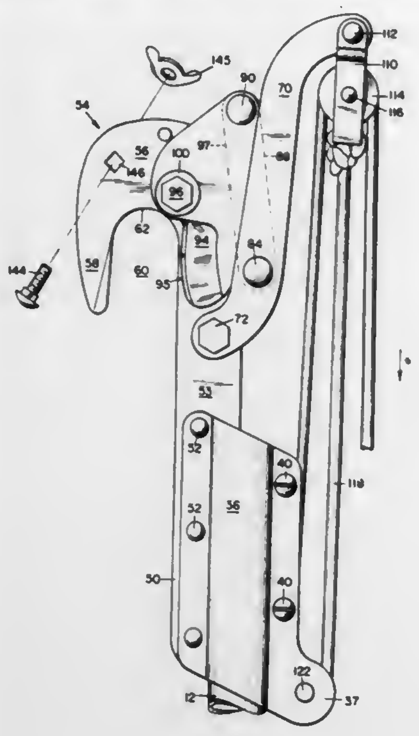
Division of Ser. No. 277,927, Jun. 26, 1981, Pat. No. 4,420,883. This application Jan. 21, 1983, Ser. No. 460,054

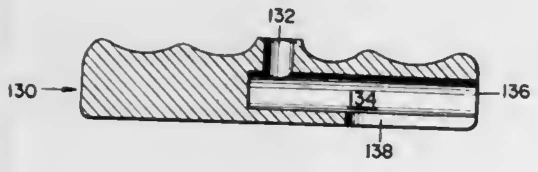
Int. Cl.³ F16G ***11/04***

U.S. Cl. 30—249 **2 Claims**

1. In a pruner operable by a means of a rope and pulley for cutting a limb from a tree, an adjustable one-piece hand grip selectively positionable relative to the rope and consisting of a body member having an outer configuration for convenient hand grasping and having an opening extended therethrough

inwardly from an entrance on one side of and outwardly through an exit on another side of the body member with a Vee



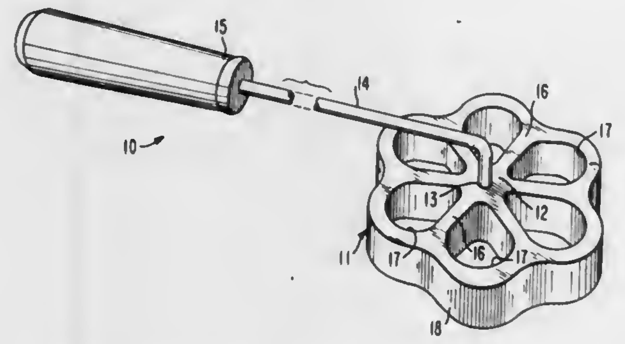


notch communicating with the exit for effecting a bight on the rope extended through the body member.

4,442,604

PASTRY FORMING AND CUTTING UTENSIL

Ronald R. Altman, 9109 Barberry La., Hickory Hills, Ill. 60457
Filed Jan. 13, 1982, Ser. No. 339,112
Int. Cl.³ B26B *3/04*
U.S. Cl. 30—302 **3 Claims**

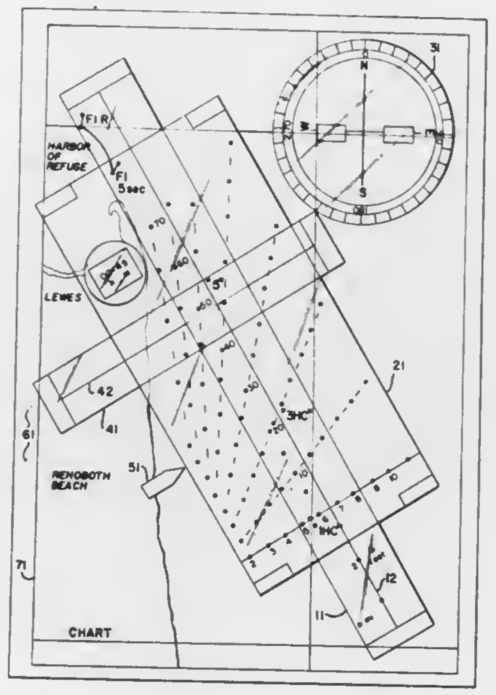


1. A pastry forming and cutting utensil, comprising, in combination, a main body having a central hub portion, a geometrically-shaped, peripheral endless wall in spaced relation around said hub portion, a plurality of equally spaced-apart arms extending radially between said hub portion and said endless wall forming together a unitary member in a single flat plane, with openings being formed between said arms, said body defining a rosette design, said hub portion, said peripheral wall and said arms being cross-sectionally tapered between one flat side of said main body and an opposite flat side thereof, whereby a face of one said sides is narrower in width than a face of the other said side, said narrower face forming a cutting edge when said main body is impressed in a rolled out dough for cutting out cookies therein, said cutting edge of said arms comprising a row of spaced-apart, plurality of additionally narrowed teeth whereby only said teeth cut fully through said dough while intermittent spaces formed between said teeth serve only for said arms to impress a continuous design of said arms in an upper surface of said rolled out dough; and a selectively detachable handle for said main body being screw-threaded in a threaded opening on a wider said face of said hub portion.

4,442,605

DEAD RECKONING NAVIGATION INSTRUMENT

Vernon I. Weihe, 4133 33rd Rd., Arlington, Va. 22207
Filed Jun. 21, 1982, Ser. No. 390,399
Int. Cl.³ G01C *21/20;* **G06G** *1/16*
U.S. Cl. 33—1 SD **3 Claims**



1. A navigation instrument for measuring the progress of a vessel relative to a designated track, comprising:
a ferrous baseplate;
a navigation chart;
a transparent tracking plate having a trackline marked thereon; and
a transparent overlay plate having a navigation grid marked thereon with said grid comprising time marked lines defined by straight rows of dots emanating from a point beyond the lower left edge of said transparent overlay plate, the horizontal spacing between said dots being proportional to the speed of said vehicle and the vertical spacing of said dots being proportional to the distance traveled by said vehicle, such that the intersection of a timeline with said trackline in said transparent trackline plate defines the position of said vehicle on said navigation chart at the time represented by the said timeline;
said navigation chart being manually positioned on said ferrous base plate; said transparent trackline plate being manually positioned over said navigation chart and affixed by magnetic means to said ferrous baseplate; and said transparent overlay plate being manually positioned over said transparent trackline plate and affixed by magnetic means to said ferrous base plate.

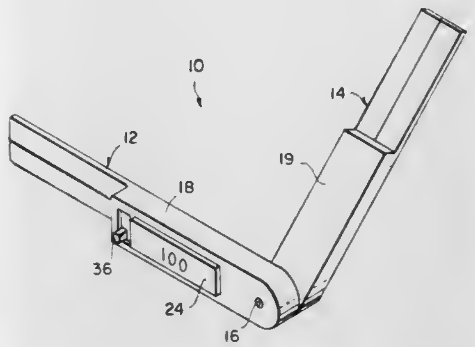
4,442,606

DIGITAL GONIOMETER

Douglas A. Graham, 13 N. Maryland Ave.; Douglas G. Baillet, 16 Oakland Dr., both of Port Washington, N.Y. 11050, and Mark Sankey, 18 Henshaw Ter., Newton, Mass. 02165
Filed Apr. 12, 1982, Ser. No. 367,578
Int. Cl.³ G01B *3/56, 5/24, 7/30*
U.S. Cl. 33—1 N **6 Claims**

1. A system for measuring an angle, in combination comprising:

first and second elongated arm members, each arm member being substantially similar in structure to the other and each comprising a flat bottom surface, a pair of opposing parallel flat side edges, a rectangular housing portion forming the medial half thereof, a clear plastic flat rectangular plate portion longitudinally extending from the housing portion and forming the distal half thereof, and a longitudinal centerline positioned along the plate portion, the housing of one of said arm members including a hollow compartment;
pin means for pivotally coupling said arm members together at their medial ends, said pin means extending through both said housing portions;
potentiometer means located in said hollow compartment and associated with said pin means for providing an electrical signal indicative of the angle formed between said arm members;



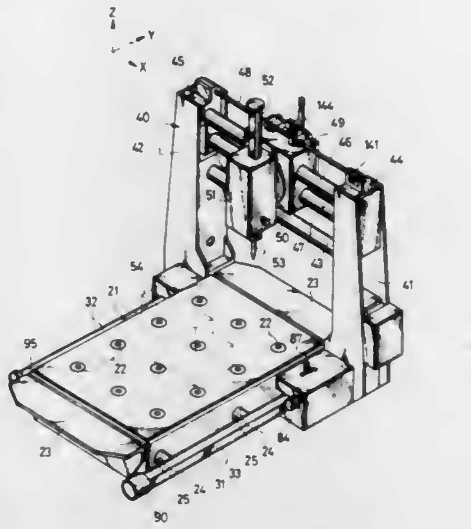
battery means located in said hollow compartment for providing a source of reference voltage to said potentiometer means;
decoding means located in said hollow compartment for translating said electrical signal into a desired angular measurement of the angle formed between said arm members; and
digital display means on the housing of said one arm for displaying the angular measurement provided by said decoding means, whereby said arm members form straight side edges at angles of 0 degrees, 180 degrees, and 360 degrees, and said display can display the angle between 0 and 360 degrees.

4,442,607

MEASURING INSTRUMENT

Hideo Sakata, and Masami Saito, both of Kawasaki, Japan, assignors to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan
Filed Nov. 15, 1982, Ser. No. 441,965
Claims priority, application Japan, Nov. 25, 1981, 56-188930; Nov. 25, 1981, 56-188931
Int. Cl.³ G01B *7/28;* **B23Q** *3/02*
U.S. Cl. 33—1 M **5 Claims**

1. A measuring instrument comprising:
a bedplate supporting a workpiece to be measured, and provided at a side surface thereof with a recessed portion;
a rail support member bonded at proximal end thereof to said recessed portion through a bonding agent, and provided at the forward end thereof with a positioning end face;
guide rails detacheably mounted at the forward end of said rail support member, and positioned by said positioning end face;
an eccentric positioning means provided between the rail support member and the guide rail and pressing the guide rail against the positioning end face of the rail support member in mounting the guide rail to the rail support member;
a movable member movably supported on said guide rail; and

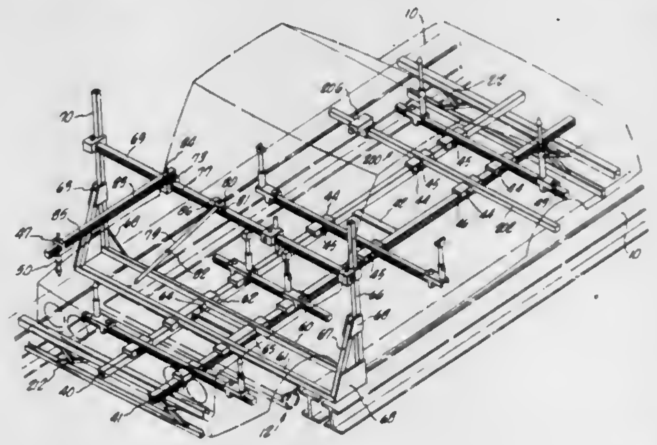


a displacement detector for detecting a displacement of said movable member.

4,442,608

VEHICLE FRAME MEASUREMENT DEVICE

Allan H. Clausen, Lomita, Calif., assignor to Continental Custom Bridge Company, Alexandria, Minn.
Filed Sep. 30, 1982, Ser. No. 431,810
Int. Cl.³ G01B *5/255*
U.S. Cl. 33—288 **6 Claims**



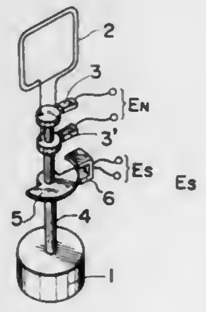
1. A vehicle body-and-frame measurement apparatus for use in realigning the entire structure of a damaged unibody vehicle having reference points when the vehicle is supported on ramps, the ramps having a longitudinal axis and a horizontal plane, the apparatus comprising means for measuring the lower portion of the vehicle body-and-frame comprising:
(a) at least two elongated rails to be supported by the ramps without fixably securing the rails to the ramps, the rails to be supported by the ramps substantially parallel to the longitudinal axis of the ramps;
(b) cross-members between the rails for holding the rails in fixed parallel relationship relative to each other;
(c) a plurality of reference members retained by the rails and means for slideably securing the reference members to the rails so that the reference members can slide along the longitudinal axis of the rails and can slide horizontally perpendicular to the rails;
(d) at least two slideable vertical locators for each of at least two of the reference members slideably retained on the respective reference members, the locators being sufficiently long to reach reference points of the vehicle;
(e) means for fixably securing each vertical locator to its respective reference member;
(f) a pair of vertical uprights supported by the rails and having a vertical axis substantially perpendicular to the horizontal plane of the ramps;
(g) a vertically adjustable horizontal bar slideably attached

to the uprights for positioning above the vehicle frame or within the passenger compartment with the windows open, substantially perpendicular to both the longitudinal axis of the ramps and the vertical axis of the uprights;
(h) means for affixing the horizontal bar to the uprights so that the bar is vertically adjustable;
(i) at least to upper vertical locators slideably attached to the horizontal bar;
(j) a rigid tram rail having at least one scale, the tram being attached to the horizontal bar, the bar being substantially parallel to the longitudinal axis of the rails and perpendicular to the horizontal bar;
(k) means for affixing the tram rail to the horizontal bar so that the tram rail can slide along the length of the horizontal bar; and
(l) a vertical locating base including a vertical locator slideably attached to the tram rail, the base being movable along the longitudinal axis of the tram rail.

4,442,609
VEHICLE ORIENTATION DETECTING DEVICE FOR AN AUTOMOTIVE VEHICLE OR ANOTHER VEHICLE

Tetsuo Senoo, Inagi, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Sep. 23, 1981, Ser. No. 305,349
Claims priority, application Japan, Sep. 25, 1980, 55-132369
Int. Cl.^{3} G01C *17/30, 17/38*
U.S. Cl. 33—356 **14 Claims**



1. A vehicle orientation detecting device for an automotive or other vehicles, comprising:
(a) means including a rotating conductor for generating a first alternating voltage signal induced when said rotating conductor is rotated so as to intersect the geo-magnetic field;
(b) means for generating a second alternating voltage signal having a period equal to an interval of one turn of said rotating conductor; and
(c) means for adjusting the second alternating voltage signal so as to cancel an erroneous signal component of the first alternating voltage signal derived from said first alternating voltage signal generating means so as to provide a normal alternating voltage signal in accordance with the direction of the geo-magnetic field when the vehicle is oriented to a predetermined direction.
whereby a correct indication of the vehicle orientation can be made on a basis of the phase difference between the normal alternating voltage signal and a second alternating voltage signal;
said adjusting means comprising:
(a) a first inverting amplifier connected to said second alternating voltage signal generating means for shifting the phase of the second alternating voltage signal by 180°;
(b) a first variable resistor connected between the input and output terminals of said first inverting amplifier for adjustably deriving the second alternating voltage signal as a voltage with absolute levels ranging from zero to the amplitude of the second alternating voltage signal and which switches in phase so it is the same and 180° out of phase with respect to that of the second alternating voltage signal;
(c) a phase shifter connected to said second alternating voltage signal generating means for shifting the phase of the second alternating voltage signal by 90°;
(d) a second inverting amplifier connected to said phase shifter for shifting the phase of the 90° phase shifted second alternating voltage signal by 180°;
(e) a second variable resistor connected between the input and output terminals of said second inverting amplifier for adjustably deriving the 90° phase shifted second alternating voltage signal as a voltage with absolute levels ranging from zero to the amplitude of the second alternating voltage signal and which switches in phase so it is the same and 180° out of phase with respect to that of the 90° phase shifted alternating voltage signal; and
(f) an adder connected to said first alternating voltage signal generating means and to the output terminals of said first and second inverting amplifiers for adding the output voltage signal from said first alternating voltage signal generating means to a resultant signal component of the adjusted output signals from said first and second variable resistors to obtain the normal alternating voltage signal when the vehicle is oriented to the predetermined direction.

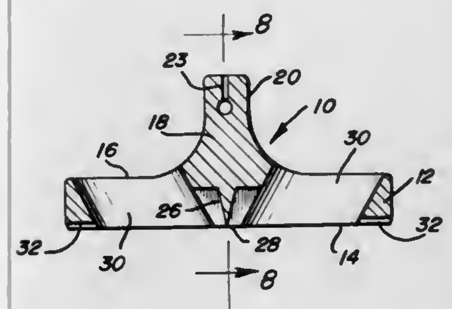
4. A vehicle orientation detecting device for an automotive or other vehicles, comprising:
(a) means including a rotating conductor for generating a first alternating voltage signal induced when said rotating conductor is rotated so as to intersect the geo-magnetic field;
(b) means for generating a second alternating voltage signal having a period equal to an interval of one turn of said rotating conductor; and
(c) means for adjusting the second alternating voltage signal so as to cancel an erroneous signal component of the first alternating voltage signal derived from said first alternating voltage signal generating means so as to provide a normal alternating voltage signal in accordance with the direction of the geo-magnetic field when the vehicle is oriented to a predetermined direction,
whereby a correct indication of the vehicle orientation can be made on a basis of the phase difference between the normal alternating voltage signal and second alternating voltage signal;
said second alternating voltage signal generating means comprising:
(a) means for generating a rectangular pulse signal having a repetition rate coinciding with an interval of one turn of said rotating conductor; and
(b) means for deriving the second alternating voltage signal in response to the rectangular pulse signal from said rectangular pulse signal generating means so as to be synchronized with the generated rectangular pulse signal.

8. A vehicle orientation detecting device for an automotive vehicle, comprising:
(a) means including a rotating conductor for generating a first alternating voltage signal induced when said rotating conductor is rotated so as to intersect the geo-magnetic field;
(b) means for generating a second alternating voltage signal having a period equal to an interval of one turn of said rotating conductor; and
(c) means for vectorially adjusting the second alternating voltage signal with the vehicle oriented in a predetermined direction;
said adjusting means including:
a first circuit for 180° phase shifting said second alternating voltage signal from the original phase of said second alternating voltage signal to derive a 180° phase-shifted second alternating voltage signal, a phase shifter for shifting the original phase of said second alternating voltage signal by 90°, and a second circuit for 180° phase shifting said 90° phase-shifted second alternating voltage signal from the phase of the output of said phase shifter to derive a 270° phase-shifted second alternating voltage signal, and
means for controlling the relative amplitudes of the output signals derived by said first and second circuits so they are equal in amplitude and opposite in phase with respect to an erroneous signal component of said first alternating voltage signal;
whereby the erroneous signal component of the first alternating voltage signal is cancelled by the resultant of the two signal and the phase of the first alternating voltage signal indicates the true orientation of the vehicle.

4,442,610
MAGNETIC PLUMB BOB HOLDER

George H. Owens, Jr., 2215 Windsor Ave., Montgomery, Ala. 36107

Filed Mar. 24, 1983, Ser. No. 479,863
Int. Cl.^{3} G01C *15/10*
U.S. Cl. 33—392 **7 Claims**



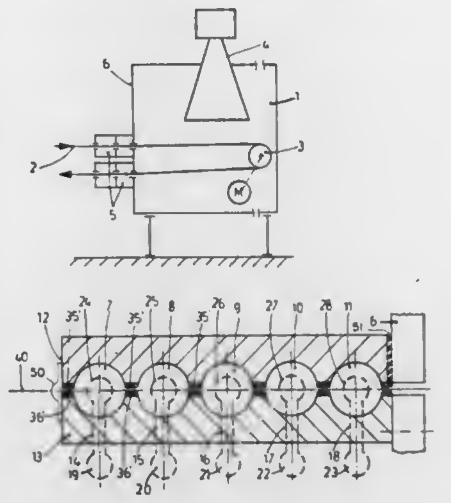
1. A plumb line support body having first and second opposite sides, one of said opposite sides including reference plane defining abutment surface means facing outwardly of said one side and lying in a predetermined reference plane, the other of said opposite sides including a central outward projection including line anchoring means for anchoring one end portion of a plumb line thereto in a manner such that the other end portion of the plumb line may extend outwardly and away from said other side along a straight path disposed generally normal to the reference plane, said one side of said body defining an outwardly opening recess therein, said body including projection means projecting outwardly by an inner portion of said recess and including a pointed outer extremity terminating outwardly at least partially adjacent said reference plane and centered relative to said path, said body including window means therein opening through the other side of said body and into said recess for viewing said outer extremity from outwardly of said other side.

4,442,611
AIR LOCK, PARTICULARLY TO PERMIT DRYING OF A PRINTED WEB IN A CONTROLLED ATMOSPHERE

Siegfried Günther, Munich, and Cohann Winterholler, Friedberg, both of Fed. Rep. of Germany, assignors to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Continuation of Ser. No. 237,576, Feb. 23, 1981, abandoned. This application Sep. 24, 1982, Ser. No. 422,380
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1980, 3009019
Int. Cl.^{3} F26B *25/08*
U.S. Cl. 34—41 **12 Claims**

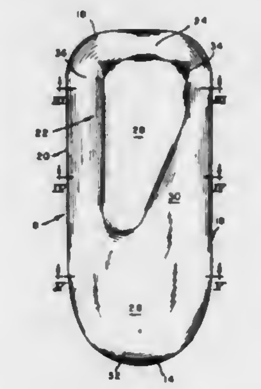
1. Air lock to separate ambient air from a confined space (1) within a chamber permitting non-contacting movement of a web between the ambient air and the confined space, particularly for movement of freshly printed paper web subject to smearing into and out of said chamber defining the confined space, in which vacuum or gas compositions prevail which differ from ambient atmospheric condition or composition and especially for hardening, curing or drying of printing ink on a paper web,
comprising
two plate elements (**12**, **13**; **32**, **33**) positioned parallel to each other and spaced from each other to form a web passage slit which is contiguous with a pass-through slit into the chamber, to permit passage of the web through the slit and into the chamber,
each of said plate elements being formed with a plurality of essentially similarly shaped and dimensioned, symmetrical grooves or recesses, or depressions (**7–11**; **29**) extending transversely to the direction of movement of the web, mutually aligned and positioned symmetrically with respect to the pass-through slit into the chamber and located along the path of travel of the web from outer edges of the plates to the pass-through slit;
and means (**14–23**) for exclusively providing suction, communicating with the recesses of both of the plates to apply equal suction to the web both from the top as well as the bottom thereof and thereby draw air leaking through said slit into said web passage above the web and below the web;
said plates being sealed laterally of said slit to confine the suction to the slit;
the two plate elements being positioned immediately adjacent the pass-through slit of the chamber, and sealed to the side wall (6) of the chamber to form an air throttle or choke with respect to air communication between the chamber and ambient air.



4,442,612
ORTHOPEDIC PADS

Theodor E. Hauser, Bethel Park, Pa., assignor to Hapad, Inc., Bethel Park, Pa.

Filed Jul. 22, 1982, Ser. No. 400,724
Int. Cl.^{3} A43B *13/40, 19/00*
U.S. Cl. 36—43 **4 Claims**



1. A resilient and compressible one-piece generally oblong

pad adapted to be placed in a shoe and extending from the heel to a position under the longitudinal and metatarsal arches of the foot, said pad comprising a substantially flat bottom surface adapted to contact the inner sole of the shoe, the rear end of said surface being convex arcuate and adapted to closely approach the inside rear of the shoe, the forward end of said surface being relatively straight, longitudinal sides of said flat surface being generally parallel to one another, and convex rounded corners of said flat surface connecting said forward end to said longitudinal sides; a contoured upper surface having a maximum thickness portion, a foward end sloping upwardly and rearwardly to said maximum thickness portion, said maximum thickness portion extending rearwardly across the major portion of the front a distance sufficient to support said metatarsal arch and rearwardly along one longitudinal side a distance and for a width sufficient to support said longitudinal arch, a substantially flat portion of less thickness than the maximum thickness portion extending over the heel portion of the shoe, and a sloping portion extending upwardly from the heel portion to said maximum thickness portion, and the portion of the pad adjacent said longitudinal sides sloping upwardly from each longitudinal side toward the other longitudinal side to the top surface, said maximum thickness portion including a rectangular forward section, and a triangular rearwardly extending section having its hypotenuse extending rearwardly from said other side toward said one side.

4,442,613

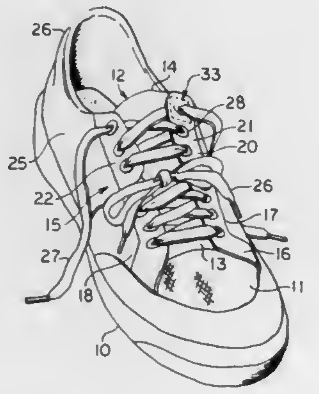
SHOE TONGUE HOLDER ASSEMBLY

Thomas M. Dobbin, Denver, Colo., assignor to Kaepa, Inc., San Antonio, Tex.

Filed May 10, 1982, Ser. No. 376,425

Int. Cl.^{3} A43B *11/00, 23/26*

U.S. Cl. 36—50 **6 Claims**



1. A shoe comprising:
(a) a tongue,
(b) a vamp including oppositely disposed upper portions overlying the tongue,
(c) securing means interconnecting the uppers for selectively adjusting the fit of the upper portions over and on the tongue and the fit of the vamp for the comfort of the wearer,
(d) a hook and loop fastener operatively interconnecting the tongue and vamp for holding the tongue in place during fitting and wearing of the shoe,
(e) the tongue including opposed side margins underlying the upper portions of the vamp, one of said margins being selectively operatively interconnected to its overlying vamp upper portion, and the other of said margins being free of operative interconnection to its overlying vamp upper portion, and
(f) the hook and loop fastener including a hook portion and a loop portion, one portion of the hook and loop fastener being fixed to said one of said side margins of the tongue, and said other portion of the hook and loop fastener being fixed to the upper portion of the vamp overlying the said one side margin of the tongue, the said hook and loop portions being selectively alignable and engageable to hold the tongue to the said one upper portion of the vamp.

4,442,614

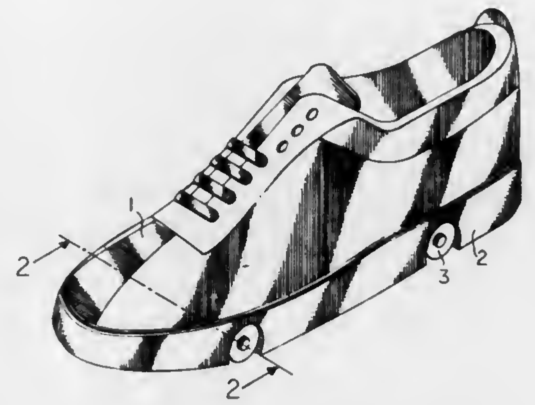
ARTICLE OF FOOTWEAR

Iosef Farberov, 868 E. 7th St., Brooklyn, N.Y. 11230

Filed Dec. 28, 1981, Ser. No. 334,884

Int. Cl.^{3} A43B *13/00, 3/28*

U.S. Cl. 36—103 **8 Claims**



1. An article of footwear, comprising
an upper part; and
a lower part formed as an integral member and connected with said upper part, said lower part having at least one roller-shaped portion extending above the lower surface of said lower part and a groove which partially circumferentially surrounds said roller-shaped portion and separates said roller-shaped portion from a remaining portion of said lower part, wherein said roller-shaped portion and said remaining portion of said lower part are of one piece with one another.

4,442,615

SPORTS FOOTWEAR

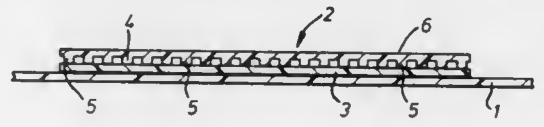
Jack Danks, 73 Knowles Rd., Rowley Regis, Warley, West Midlands B 65 8HE, England

Filed Oct. 2, 1981, Ser. No. 307,998

Claims priority, application United Kingdom, Oct. 6, 1980, 8032187

Int. Cl.^{3} A43B *5/00*

U.S. Cl. 36—133 **12 Claims**



1. A sports boot or shoe having a stippled material secured to at least a portion of the outer surface of the upper of the boot or shoe, with the stippled surface of the material facing inwardly thereof.

4,442,616

IRONING TABLE WITH A MOVABLE BLOWER UNIT

Georg Hauser, Munich, and Rolf Höggenstaller, Wessling, both of Fed. Rep. of Germany, assignors to J. Strobel & Sohne GmbH & Co., Munich, Fed. Rep. of Germany

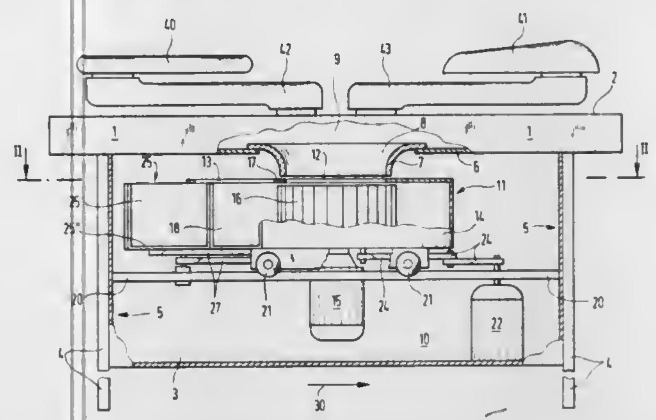
Filed Sep. 30, 1982, Ser. No. 429,620

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1981, 3146539

Int. Cl.^{3} D06F *71/34, 81/08*

U.S. Cl. 38—14 **7 Claims**

1. An ironing table provided with a hollow table and a blower arranged under the table, said blower being connected to the table for the selective application applying suction and blowing air to an ironing surface of the table through an orifice in a bottom section of said table, characterized in that the blower may be displaced between a first position and a second position, in said first position said blower applies suction to said ironing surface through said orifice in said bottom section and in said second position said blower blows air to said ironing surface through said orifice in said bottom section.



4,442,617

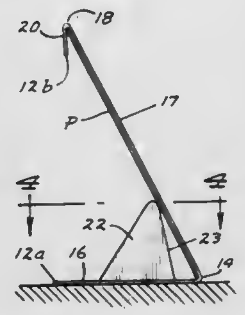
PHOTOGRAPHIC PRINT DISPLAY DEVICE

Bruce J. Frye, P.O. Box 783, Milltown, Wis. 54858, and Paul A. Luedtke, Rte. 1, Box 594, Grantsburg, Wis. 54840

Filed Jan. 21, 1983, Ser. No. 459,757

Int. Cl.^{3} G09F *1/12*

U.S. Cl. 40—152.1 **2 Claims**



1. A unitary self standing device for displaying a photographic print, comprising
a single layer planar blank in plan of a suitable material,
a transverse crease of said blank defining a base portion,
said base portion being angled along said crease at less than a right angle relative to the remaining portion of said blank,
a second transverse crease spaced from the upper edge portion of said blank forming a flap of narrow width,
said flap being angled outwardly relative to the adjacent remaining portion of said blank,
the body portion of said blank being formed between said first and second mentioned creases,
a portion struck from said base portion adjacent said first mentioned crease bendable on an axis at right angles to said first mentioned crease, and
the leading edge of said struck portion being angled to engage and position said body portion at a desirable viewing angle.

4,442,618

DECORATIVE ORNAMENTATION FOR A RUBBER ARTICLE AND METHOD FOR MAKING SAME

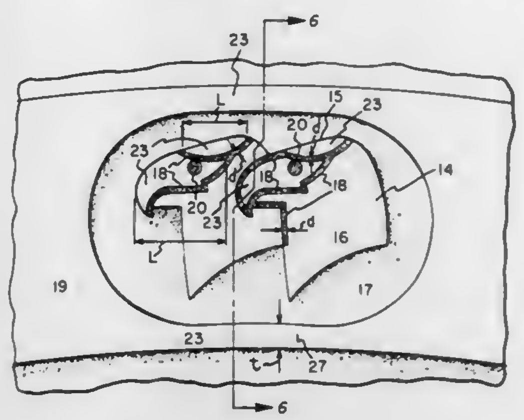
Thomas F. Minter; Lawrence G. Jansen, both of Akron, and Richard H. Springford, Stow, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 16, 1982, Ser. No. 349,409

Int. Cl.^{3} G09F *21/04;* **B60C** *13/00*

U.S. Cl. 40—587 **14 Claims**

1. An indicium for a rubber article comprising at least one nonlinear narrow groove having a cross-sectional thickness not greater than about 0.152 cm (0.060 inches), a depth of at least 0.102 cm and, a pair of sidewalls disposed at an angle of substantially 90° to the surface of said rubber article, the surface of said indicium being made of a rubber of a first color such that said at least one narrow groove is perceived as a narrow line of a contrasting color in said rubber of said first color, said indicium being surrounded by a recessed portion, the surface portion of said recessed portion being made of a rubber having a second color different from said first color.



4,442,619

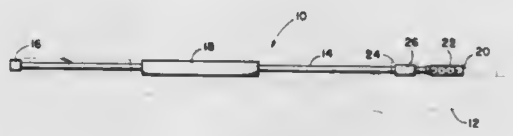
CARTRIDGE EXTRACTION TOOL

Roy J. McCarley, Red Eagle Rte., Box 68, Pawhuska, Okla. 74056

Filed Dec. 21, 1981, Ser. No. 332,960

Int. Cl.^{3} F41C *27/00;* **B25B** *27/00*

U.S. Cl. 42—1 R **3 Claims**



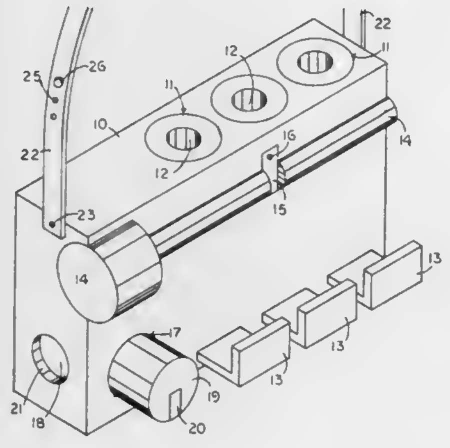
1. A cartridge extraction tool adapted to remove a live round of amniunition struck in the barrel of a breech loading bolt action firearm comprising:
(a) a rod with an end cap;
(b) a movable knocker circumferentially displaced about said rod and adapted to manually slide on said rod and strike said end cap thus creating an extraction force longitudinal to said rod;
(c) a compressible fastening means for circumferentially fitting over the rim of a stuck cartridge when in the uncompressed state and under compression closing and gripping a stuck cartridge wherein said compressible fastening means is attached at the other end of said rod and is an externally threaded cylindrical surface that terminates in a hollow right frustro-conical surface with the larger end directed away from said threads and rod, and wherein said frustro-conical surface contains a plurality of cuts longitudinal to the direction of the rod such as to allow for compression of said frustro-conical surface, and wherein the outer segmented edge of said longitudinally cut frustro-conical surface contains a segmented circumferential ledge directed into the hollow interior of said frusto-conical surface such as to close around and grip the rim of a stuck cartridge when compressed; and
(d) a means for compressing said compressible fastening means wherein said means for compressing said frustro-conical surface consists of (i) an internally threaded member circumferentially engaged to said external threaded cylindrical surface such that when threaded towards said larger end moves a cylindrical concentric member surrounding said first frustro-conical surface and (ii) a cylin-

drical concentric member surrounding said first frustro-conical surface having an interior second frustro-coincal surface engaged to said first frustro-conical surface such that said compression takes place.

4,442,620

FAST MUZZLE-LOADING DEVICE

Stephen C. Drake, R.D. #3 Box 38-A, Slatington, Pa. 18080, and Richard G. Bosse, R.D. 2 Box 386-6AA, Coplay, Pa. 18037
Filed Apr. 5, 1982, Ser. No. 366,375
Int. Cl.^{3} F41C *27/00*
U.S. Cl. 42—90 **4 Claims**

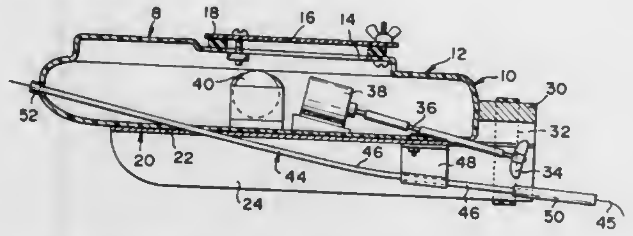


1. A self-contained loading device for loading muzzle-loading firearms, comprising:
(a) an elongated block having a top face, a bottom face and a vertical dimension;
(b) a plurality of longitudinally spaced, cylindrical bores, extending vertically through said block, each of said bores having a diameter consistent with that of the caliber of a gun muzzle to be loaded;
(c) each of said bores having a height sufficient to allow the pre-loading of gunpowder, a patch, and a projectile;
(d) a plurality of cylindrical recesses bored into said bottom face with each cylindrical recess concentric with one of said longitudinally spaced bores and having a diameter consistent with that of the outside diameter of said gun muzzle to be loaded; and
(e) a plurality of circular indentations on said top face, each circular indentation being concentrically located around one of said longitudinal bores and having a diameter consistent with the diameter of a patch for centering the patch over the longitudinal bore.

4,442,621

SELF-PROPELLED TROLLER

John E. Kent, #A-3, 900 Siskiyou Blvd., Medford, Oreg. 97501
Filed Apr. 21, 1982, Ser. No. 370,538
Int. Cl.^{3} A01K *97/00*
U.S. Cl. 43—26.1 **9 Claims**

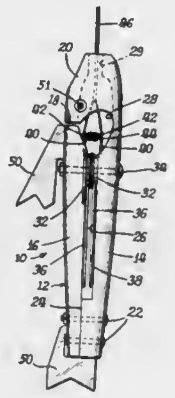


1. A self-propelled troller comprising
an elongate flotation hull having bow and stern ends,
a powered propeller mounted adjacent the stern end of said hull for propelling the hull in a forward direction in water, and
an elongate tube mounted on said hull, having one end adjacent the bow end of said hull and the tube extending from said one end to an opposite end disposed rearwardly of and below said propeller, said tube being adapted slidably to receive a fishing line and serving to position the fishing line where it first extends from said opposite end in a region below where the propeller operates.

4,442,622

FISHING LURE WITH RETRACTABLE HOOKS

Don M. Sartain, Wabasso, Fla., assignor to Robert T. Esdale and Dorothy A. Esdale, both of Vero Beach, Fla.
Filed Jan. 3, 1983, Ser. No. 455,205
Int. Cl.^{3} A01K *83/02*
U.S. Cl. 43—35 **1 Claim**

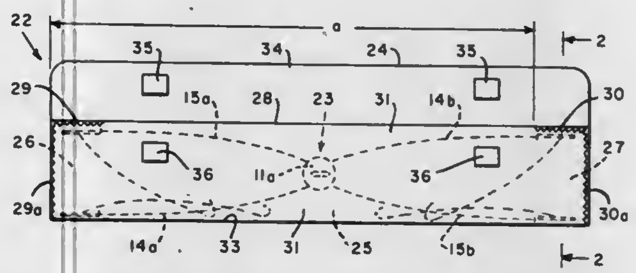


1. A fishing gear comprising,
a plug made up of a pair of parts fitted together in side-by-side relation and simulating a fish in size and shape,
one of the parts constituting a bottom part and extending the full length of and determining the length of the plug, and having a head portion extending the depth of the plug, and having a hole of substantial size leading rearwardly from the front end through the head portion, and having a front cavity element at the rear of the head portion and the hole opening rearwardly into the cavity element,
the other of the parts constituting a top part, and fitted on the bottom part, and the two parts being dimensioned and shaped in depth direction such that when they are so fitted together, they form therebetween a rear cavity element of relatively flat shape and of less depth than the front cavity element, and the two cavity elements intercommunicating and forming a common cavity opening sideways to the exterior throughout its length,
a pair of fishhooks in the cavity, and means mounting them therein, the mounting means including a pin mounted in the plug parts and extending through the cavity and serving to secure the plug parts together at least at that position, the fishhooks each including a washer pivotally mounted on the pin, a main shank element and a hook element at one end and a second shank element at the other end, the shank elements being secured to the washer, the fishhooks being movable between a collapsed position in which they are substantially entirely within the cavity and an extended position in which the hook elements are positioned on the exterior, the second shank elements being in the front cavity element in both positions of the fishhooks,
the fishing gear also including a compression spring between the second shank elements operable for normally moving the fishhooks to collapsed position, and
a line element having branches connected respectively with the front ends of the second shank elements and leading forwardly through said hole, and adapted for connection to a fish line,
the construction being operable, in response to a bite by a fish and effectively pulling rearwardly on the plug, and correspondingly producing a relatively forward reaction on the line, for effecting the swinging movement of the fishhooks to their extended position,
the plug also including means securing the plug parts together at the rear end of the plug.

4,442,623

CONTAINER FOR UMBRELLA RIG

Robert L. Hawie, Stratford, Conn., assignor to The Hawie Mfg. Co., Bridgeport, Conn.
Filed Sep. 22, 1982, Ser. No. 421,292
Int. Cl.^{3} A01K *97/00*
U.S. Cl. 43—54.1 **19 Claims**

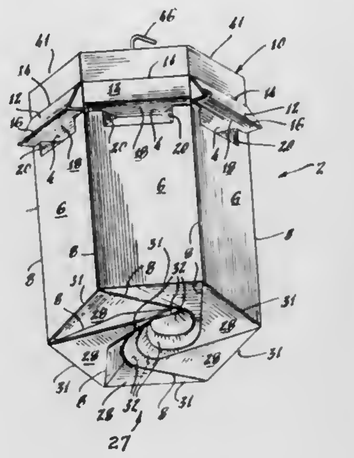


1. A retainer-container for an umbrella rig having a central support and four flexible wire arms extending radially therefrom at angles of 90° relative to each other, adjacent pairs of said arms being capable of being flexed together so that the extremities thereof are parallel to each other, said retainer-container comprising a narrow, elongate container section which is sufficiently long to receive an umbrella rig in flexed condition and which comprises an elongate fabric panel having opposed transverse spaced retainer means attached to said fabric panel, each of said transverse retainer means having an entrance which is open to the center of said container section, whereby a pair of adjacent wire arms of an umbrella rig can be flexed together and inserted into said container section and into the entrance of one of said retainer means for confinement therein in flexed condition and the other pair of adjacent wire arms can be flexed together and inserted into said container section and into the entrance of the other said retainer means for confinement therein in flexed condition to contain and retain said umbrella rig in said narrow elongate container section.

4,442,624

METHOD AND APPARATUS FOR FORMING A COLLAPSIBLE TRAP FOR FLYING INSECTS

Lloyd E. Browne, Easton, Pa., assignor to J. T. Baker Chemical Co., Phillipsburg, N.J.
Filed Dec. 18, 1981, Ser. No. 332,009
Int. Cl.^{3} A01M *1/10*
U.S. Cl. 43—107 **24 Claims**

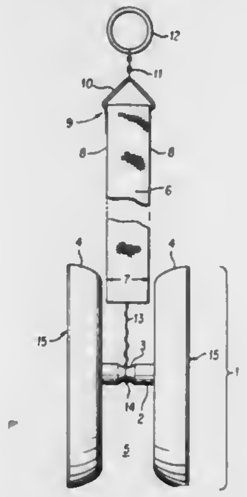


1. The method of forming a collapsible trap for flying insects comprising the steps of:
providing a plurality of panels hinged at their lateral edges to adjacent panels along respective hinge lines for enabling said hinged panels to be collapsed into a flat configuration with said panels in face-to-face contact for convenience in shipping and storing,
providing an entrance port for flying insects in at least one of said panels,
forming the trap enclosure by orienting said panels around said hinge lines to form the side walls of the enclosure,
forming a top for said enclosure,
forming a bottom for said enclosure,
to each panel having an entrance port affixing a shade flap above the respective port,
orienting each such shade flap in a downward outward inclination with respect to the respective panel to provide a downwardly outwardly sloping shade above the respective port,
bending the lower free end portion of each flap inwardly, and
inserting the free end portion of each flap into the respective port for holding the flap in its downwardly and outwardly sloping position forming a shade above the port.

4,442,625

TAPE-SUPPORTED SLEEPER YO-YO

Patrick MacCarthy, 37 Mines Park, Golden, Colo. 80401
Continuation-in-part of Ser. No. 138,729, Apr. 9, 1980, Pat. No. 4,290,224. This application Sep. 2, 1981, Ser. No. 298,720
Int. Cl.^{3} A63H *27/12*
U.S. Cl. 46—61 **15 Claims**



1. A toy capable of combined rotational motion about a horizontal axis and translational motion in a vertical direction, comprising:
an axle;
a first disc connected at a center point to said axle;
a second disc connected at a center point to said axle;
a string connected at a first end to said axle at a position between said first disc and said second disc;
a torsionally resistant tape connected to a second end of said string.

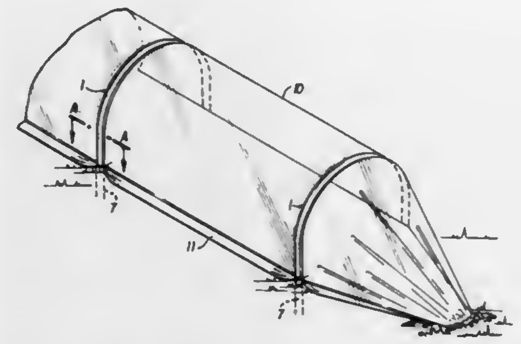
4,442,626

CLOCHES

Errol C. Hammond, Auckland, New Zealand, assignor to Kerilea International Limited, Auckland, New Zealand
Filed Aug. 12, 1981, Ser. No. 292,174
Claims priority, application New Zealand, Aug. 15, 1980, 194678
Int. Cl.^{3} A01G *13/04;* **A45F** *1/16*
U.S. Cl. 47—29 **7 Claims**

1. A cloche frame comprising a substantially U-shaped non-tubular support and a securing means, said support being formed from a flat strip and having substantially M-shaped cross-section, the top of the M being outwardly facing to provide a channel on the outer surface of the support, the free ends of the support each having an attachment means provided in the channel on the outer surface of the support; said securing

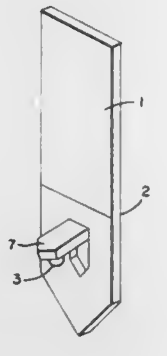
means being adapted to be engaged within the channel in order to secure a covering in the channel and being substantially



U-shaped when engaged within the channel, the free ends of the securing means being adapted for attachment to the attachment means of the support.

4,442,627
SEED PLANTING DEVICE

James E. Adams, Billericay, and Alexander S. Laurie, Royston, both of England, assignors to Wilkinson Sword Limited, England
PCT No. PCT/GB81/00031, 371 Date Sep. 25, 1981, 102(e) Date Sep. 25, 1981, PCT Pub. No. WO81/02503, PCT Pub. Date Sep. 17, 1981
PCT Filed Mar. 2, 1981, Ser. No. 306,915
Int. Cl.³ A01C *1/04*
U.S. Cl. 47—56 **7 Claims**



1. A seed planting device of the type comprising a flat strip insertable into the ground and carrying thereon one or more seeds, wherein the seed(s) is/are adhesively secured on the underside of a tongue projecting from one face of the strip and lying at an angle to the plane thereof.

4,442,628
ROOT-PRUNING CONTAINER

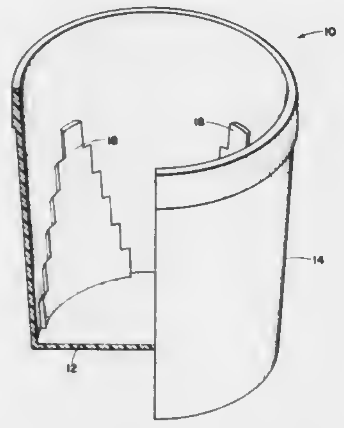
Carl E. Whitcomb, Stillwater, Okla., assignor to Board of Regents for Oklahoma Agricultural & Mechanical Colleges Acting for Oklahoma State University, Stillwater, Okla.
Filed Apr. 20, 1983, Ser. No. 486,985
Int. Cl.³ A01G *31/00*
U.S. Cl. 47—66 **5 Claims**

1. A container adapted to contain a growing medium and a plant comprising:

(a) a bottom wall;

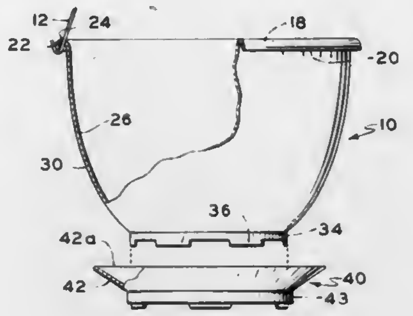
(b) a circumferentially upwardly extending sidewall attached to the perimeter of said bottom wall thus forming an open-topped container: and

(c) at least one root pruning means comprising an inner sidewall segment essentially parallel to said circumferentially upwardly extending sidewall and displaced to the inside of said open-topped container wherein the perimeter of said inner sidewall segment is a plurality of vertical and horizontal intersecting edges proceeding from the bottom of said container to the top of said inner sidewall segment on both sides of said inner sidewall segment thus forming a pyramid like series of steps and wherein the vertical and horizontal edges of said pyramid like series of steps are connected to said circumferentially upwardly extending sidewall by essentially flat surfaces that recede behind said inner sidewall segment at an acute angle to said circumferential upwardly extending sidewall, thus forming root-pruning traps at the toe position of each of said steps.



4,442,629
EASILY ASSEMBLED COMBINATION FLOWER POT AND TRAY

Dennis C. Anderson, Northfield, Minn., assignor to National Polymers Inc., Lakeville, Minn.
Filed Jul. 6, 1982, Ser. No. 395,681
Int. Cl.³ A01G *9/02*
U.S. Cl. 47—71 **16 Claims**



1. An easily assembled combination flower pot and water collection tray both formed from semiflexible plastic resinous material comprising,

a flower pot body of one piece construction having side and bottom walls,

a water collection tray of one piece construction including bottom and side walls,

at least one drain hole in the flower pot body to allow excess water in the pot to drain into and collect in the tray,

one of said bottom walls having a lug retaining opening at the center thereof with an integral retaining means at the edge of the opening,

the other of said bottom walls including a unitary centrally located vertically extending hollow lug integral with said other bottom wall and having a free end projecting in the direction of the opening in said one bottom wall,

said lug having an end portion engageable within said opening and being generally conical in configuration,

said free end being of reduced cross-section compared with the rest of the lug,

said end portion of the lug terminating in a circular enlarged section,

said lug having a base and a circular groove located between the base and the enlarged section,

the free end of said lug being closed and non-deflectable and said lug having a yieldable hollow central wall region that is deflectable radially inward,

said retaining means forming a releasable snap fit connection over said generally conical end portion of the lug as the central wall region and enlarged section is deflected radially inwardly when the tray is pressed toward the body of the flower pot to retain them together,

said combination flower pot and tray including at least two locating means to held center the tray at the bottom of the pot including:

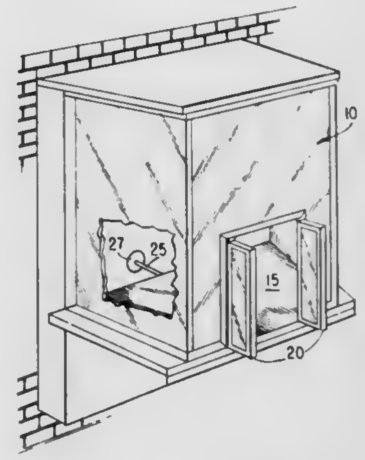
(a) said side wall of the tray and the side wall of the pot being positioned in proximity with respect to one another after assembly such that the proximity of the respective side walls help to center the tray on the pot during manual assembly,

(b) the reduced cross-section at the free end of the lug and said conical end portion helping to guide the lug into the opening,

whereby the tray can be quickly centered and properly oriented with respect to the pot for rapid assembly.

4,442,630
DOOR CONTROL

John R. Radek, Hinsdale, Ill., assignor to Ready Metal Manufacturing Company, Chicago, Ill.
Continuation-in-part of Ser. No. 78,095, Sep. 24, 1979, abandoned, and Ser. No. 179,961, Aug. 20, 1980, Pat. No. 4,411,102. This application Feb. 18, 1982, Ser. No. 349,711
Int. Cl.³ E05C *7/06*
U.S. Cl. 49—115 **14 Claims**



1. In combination with an inclosure having a passage therein and a pair of swinging doors closing said passage, said doors having opposed vertical hinges and substantially meeting edges when closed, and means for simultaneously opening and closing said doors comprising,

a. straight line reciprocable means actuable by human muscular force to open the doors,

b. a fixed member carried by the inclosure and slidably mounting said reciprocable means,

c. a cam follower carried by said reciprocable means,

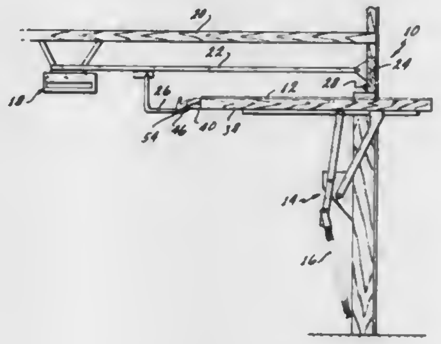
d. a crank arm pivoted at one end and having a cam at the opposite end in engagement with said cam follower,

e. mechanical transmission means extending between said pivoted end of said crank arm and said doors for opening the latter, and

f. energy storing means operable automatically to close the doors when force is withdrawn from the reciprocable means.

4,442,631
LOCK FOR GARAGE DOOR EQUIPPED WITH AUTOMATIC GARAGE DOOR OPENER

Harvey L. Weber, 123 W. Wilken Way, Anaheim, Calif. 92802
Filed Jun. 18, 1982, Ser. No. 389,714
Int. Cl.³ E05F *11/00*
U.S. Cl. 49—199 **12 Claims**



1. In combination with an automatic garage door opener used for opening and closing a garage door a locking device which comprises:

a housing means attaching to said garage door;

a bracket means attaching to the garage with which said garage door is associated, said bracket means attaching to said garage and said housing attaching to said garage door in positions such that when said garage is closed said housing means and said bracket means are located in association with one another;

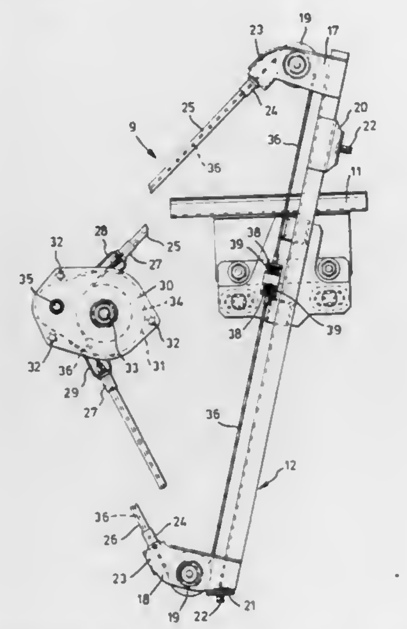
an element rotatably mounted on said housing to rotate on said housing between an unlocked position and a locked position, sad automatic garage door opener directly attaching to said element and capable of moving said element betwen its unlocked and its locked position, said automatic garage door opener further capable of moving said garage door by imparting motion to said garage door, said motion imparted to said garage door for both opening and closing said garage door by said automatic garage door opener interacting with said element which in turn interacts with said housing which in turn interacts with said garage door;

said element in moving from its unlocked position to its locked position when said garage door is closed capable of engaging with said bracket means to lock said garage door against opening said garage door by an outside influence and when said garage door is in its closed position and said element moves from its locked position to its unlocked position said element disengaging from said bracket means allowing said garage door to be opened by said automatic garage door opener;

element positioning means associated with said element and capable of holding said element in both its unlocked and locked position, said element positioning means interactng with said element such that when said garage door is open and said element is in its unlocked position movement imparted to said element and said garage door by said automatic garage door opener moves said garage door from its open to its closed position and when said garage door is in its closed position subsequently moves said element from its unlocked to its locked position engaging said element with said bracket means and when said garage door is closed and said element is in its locked position engaged with said bracket means movement imparted to said garage door by said automatic garage door opener first moves said element from its locked position to its unlocked position disengaging said element from said bracket means and subsequently moves said garage door from its closed to its open position.

4,442,632
WINDOW REGULATOR, PARTICULARLY FOR MOTOR VEHICLES

Claudio Greco, Rivoli, and Gianfranco Fiorito, Nichelino, both of Italy, assignors to IAO Industrie Riunite S.p.A., Italy
Filed Dec. 3, 1981, Ser. No. 327,048
Int. Cl.³ E05F *11/48*
U.S. Cl. 49—352 6 Claims

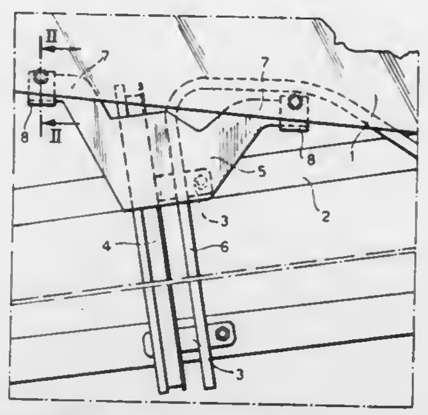


1. A regulator for controlling the raising and lowering movement of a window within the door of a motor vehicle within a channel along one margin of a window opening of the vehicle, said regulator including a rigid guide affixed to said door adjacent said window opening and substantially parallel to said channel, a flexible drive cable linearly movable along a path generally parallel to said guide and externally thereof for raising and lowering said window, a first slide member secured to said window for movement therewith, a second slide member resiliently secured to said cable and tracked to said guide for movement therealong under control of said cable, said second slide member constrained to linear motion along said guide and means for connecting said first and second slide members to couple said members together for movement of said window in response to movement of the cable, said connecting means enabling a controlled amount of transverse movement between said slide members during raising and lowering movement of said window, means confining transverse movement to a direction generally transverse to the direction of said channel, and means coupling said second slide member to said guide to allow hinge motion of the member about the guide.

4,442,633
SUPPORTING DEVICE FOR THE VERTICALLY MOVABLE WINDOW PANEL OF A MOTOR-VEHICLE WINDOW

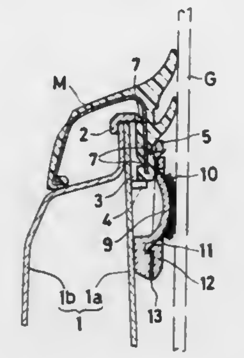
Giovanni Gianotti, Beinasco, Italy, assignor to Fiat Auto S.p.A., Turin, Italy
Filed Jul. 13, 1982, Ser. No. 397,725
Claims priority, application Italy, Jul. 22, 1981, 68015 A/81
Int. Cl.³ E05F *11/00*
U.S. Cl. 49—375 2 Claims

1. A supporting device for a vertically movable window panel of a motor vehicle window, said device comprising a guide element intended to be mounted on the motor vehicle, a slide member slidably mounted on said guide element and arranged to carry the said window panel, and a pair of support elements for supporting the window panel on said slide member, said support elements being mounted on the slide member for sliding movement in a direction substantially perpendicular to the direction of sliding of the slide member on the said guide element, and each said support element being provided with a resiliently deformable lug snap engageable in a corresponding hole in the window panel.



4,442,634
RETAINER DEVICE FOR CAR WIND-UP WINDOW

Shigeru Kimura, Kamakura, Japan, assignor to Nifco Inc., Yokohama, Japan
Filed Apr. 5, 1983, Ser. No. 482,354
Claims priority, application Japan, Apr. 6, 1982, 57-48812[U]
Int. Cl.³ E06B *7/16*
U.S. Cl. 49—493 3 Claims



1. A retainer device for the glass of an automobile window which consists of a baseplate provided at the upper part of its outer surface with a fixing means and at its inner surface with an inward facing lip portion; an upright member at the inner edge of the lip portion in opposition to the baseplate to clamp a waist molding therebetween, said upright member being provided in its central portion with an opening; a support member with an outwardly curved surface which is located in the said opening of the upright member; and a fabric portion provided on its surface with a flock portion and replaceably set on the outer surface of the said support member; the said retainer device being attached so as to urge the said flock portion against the outer surface of the glass of a vertically openable window.

4,442,635
SHARPENER FOR INDUSTRIAL KNIFE BLADES

Leward N. Smith, Milbrook at Coldwater Rd., Remus, Mich. 49430
Continuation of Ser. No. 79,353, Sep. 27, 1979, Pat. No. 4,313,283. This application Aug. 31, 1981, Ser. No. 297,930
Int. Cl.³ B24B *3/55, 7/02*
U.S. Cl. 51—56 R 31 Claims

1. In a sharpener for machinery knife blades, the improvement comprising:

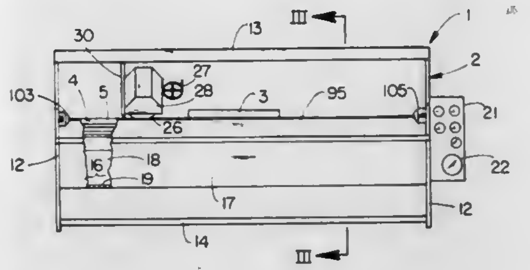
a frame having a grinder head with an abrasive element mounted thereon;

an elongate bracket having means for retaining a knife blade

with a cutting edge in a predetermined relationship with respect to said abrasive element;

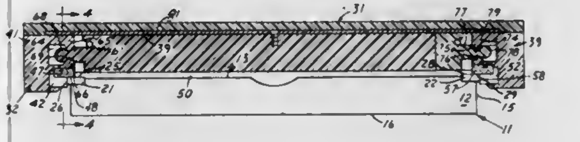
means for translating said grinder head with said abrasive element along a plane generally parallel to a knife blade; and

means for mounting said elongated bracket to said frame, and including means for adjusting the position of one end of said elongated bracket with respect to the other end of said bracket to align a knife blade held thereby with the translation plane of said grinder head, said adjusting means comprising at least three threaded studs, threadedly mounted in three associated tabs which project inwardly from an end portion of said frame, and are arranged in a spaced apart relationship thereon; said studs having inwardly directed terminal ends which form a socket in which said one bracket end is received, and abuttingly and adjustably supported.



4,442,636
DUAL HEAD EDGE SHARPENING DEVICE FOR SKIS

Donald R. Obland, 6750 S. Clermont St., Littleton, Colo. 80122
Filed Jan. 22, 1982, Ser. No. 341,837
Int. Cl.³ B24B *9/02*
U.S. Cl. 51—205 WG 15 Claims



1. An edge sharpening device for snow skis and the like comprising:

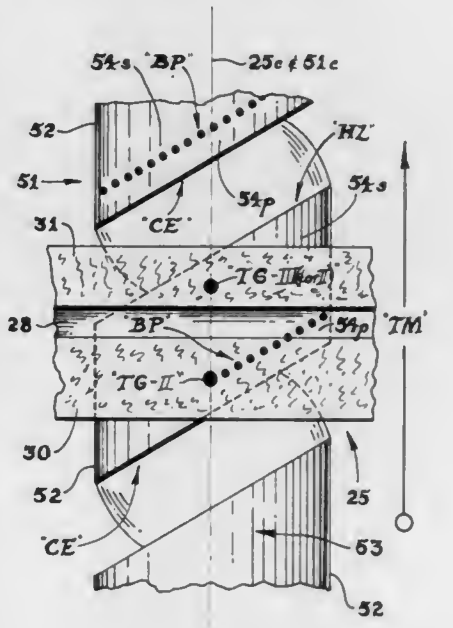
a support that is adjustable in length having oppositely extending end support portions;

a pair of edge sharpening heads supported by said end support portions for reciprocal movement along opposite sides of a ski, each said head having a side sharpening face for engaging an adjacent side surface of a metal edge strip and a bottom sharpening face for engaging an adjacent bottom face of a metal edge strip, said heads being flexibly mounted on said end support portions to enable said side sharpening faces to turn from side to side to follow the taper of a metal edge strip of a ski of varying width; and

biasing means associated with said support for enabling said edge sharpening heads to be spread apart and then be brought closer together to position said heads on the ski for edge sharpening and for simultaneously urging said heads toward one another and against adjacent side surfaces of the pair of metal edge strips on the ski.

4,442,637
SIMULTANEOUS DOUBLE-ACTING SPLIT ABRASIVE WHEEL FOR PERIPHERAL SHARPENING OF HELIX TOOLS AND USE THEREOF

Alexander Ahejew, 5082 E. Holland Rd., Saginaw, Mich. 48601
Continuation of Ser. No. 24,380, Mar. 27, 1979, abandoned, which is a continuation-in-part of Ser. No. 864,005, Dec. 30, 1977, abandoned. This application Aug. 25, 1981, Ser. No. 296,030
Int. Cl.³ B24B *3/24, 5/00*
U.S. Cl. 51—288 50 Claims



1. A double-banded, split abrasive wheel for the sharpening by abrading grind dressing of helix tools,

said wheel being characterized in its unique adaptability and capability of accomplishing in a single, simultaneously-performable, one-pass operation to impart completely in the peripheral surface of teeth flight(s) of the tool being sharpened the appropriate desired primary relief surface both as to width and angulation from the intended cutting edge of the tool and the appropriate desired secondary clearance surface leading to the heel of the tooth profile and broken away from and more highly angulated than said primary relief surface;

said wheel comprising as an apparatus combination:

(a) a generally circular central support member having a round peripheral edge that is spaced from and coaxial with the central axis center line of rotation of the wheel;

(b) a pair of constantly-layered, continuously-uninterrupted, equally- and uniformly-thick, abrasive bands split so as to be substantially disproportionate in width and mounted side-by-side on the peripheral edge of said central support member (a) and coaxial with said axial center line of said support member;

each of the bands in said pair (b) of abrasive bands having essentially the same abrading hardness; so that

(c) each of said pair of abrasive bands (b) has an exposed, continuous and integral effectively at least about equivalent grinding surface face thereon relevant to grind dressing capability;

(d) each of said pair of abrasive bands (b) having an independently and distinct uniform width, the determining side edges of which limit the grinding face(s) (c) thereof; with

(e) the grinding surface face (c) of each of said abrasive bands (b) being distendingly disposed with a lay in the same line passing generally in crossing traverse contact and running across said respective and aligned faces of both bands;

(f) a gap of softer material including the material of said central support member (a) separating and uniformly spacing said pair of split abrasive bands (b) between one of the laterally-extending width edges (d) thereof of each of said pair in the mounted placement position of said bands about central support member (a);

(g) the width of the first one of said bands in said pair (b) which for application of forward shank-to-nose tool feeding to be sharpened with said wheel is intended and adapted to initially contact and form the cutting edge and provide material removal for primary relief from and into the tooth projection(s) of of a helix tool being passed into contact for its sharpening by means of said wheel being relatively wider than

(h) the width of the relatively narrower second one of said bands in said pair (b) which, also in forward tool-feeding application, is intended and adapted to immediately subsequently contact and cut secondary relief and angulation after initial action by said first band on said tooth projection(s) of said helix tool; and with and wherein

the width of said wider band (g) is between about one-and-one-half-times (1½) and about four-times (4×) that of said narrower band (h); so that as a further characterizing feature of the wheel

the rate of wear experienced as a result of abrading grind dressing sharpening action by said abrasive wheel on a helix tool is substantially the same insofar as concerns respective thickness reductions encountered after any given period of usage in both said wider band (g) and said relatively narrower second band (g) in said pair (b) of abrasive bands in said wheel.

36. Method of single-stage, one-step sharpening of helix tools, including end mills, comprising the Step of:

(1) taking an unground, pre-formed helix tool having a nose end and a shank end and spiral tooth flight(s) therebetween;

(2) slowly twist-feeding said helix tool by rotating it about its center line axis of rotation and passing it longitudinally by and laterally against the aapparatus combination,

said wheel being a double-banded, split abrasive wheel for the sharpening by abrading grind dressing of helix tools and which is characterized in its unique adaptability and capability of accomplishing in a single, simultaneously-performable, one-pass operation to impart completely in the peripheral surface of teeth flight(s) of the tool being sharpened the appropriate desired primary relief surface both as to width and angulation from the intended cutting edge of the tool and the appropriate desired secondary clearance surface leading to the heel of the tooth profile and broken away from and more highly angulated than said primary relief surface, said wheel being comprised of:

(a) a generally circular central support member having a round peripheral edge that is spaced from and coaxial with the central axis center line of rotation of the wheel;

(b) a pair of constantly-layered, continuously-uninterrupted, equally- and uniformly-thick, abrasive bands substantially disproportionate in width and mounted side-by-side on the peripheral edge of said central support member (a) and coaxial with said axial center line of said support member;

(c) each of said pair of abrasive bands (b) having an exposed, continuous and integral effectively at least about equivalent grinding surface face thereon relevant to grind dressing capability;

(d) each of said pair of abrasive bands (b) having an independently and distinct uniform width, the determining side edges of which limit the grinding face(s) (c) thereof;

(e) the grinding face (c) of each of said abrasive band (b) distendingly disposed with a lay in the same line passing generally in crossing traverse contact over and running across said respective and aligned faces of both bands;

(f) a gap of softer material including the material of said central support member (a) separating and uniformly spacing said pair of split abrasive bands (b) between one of the laterally-extending width edges (d) thereof of each of said pair in the mounted placement position of said bands about said central support member (a);

(g) the width of the first one of said bands in said pair (b) which for application of forward shank-to-nose tool feeding to be sharpened with said wheel is intended and adapted to initially contact and form the cutting edge and provide material removal for primary relief from and into the tooth projection(s) of a helix tool being passed into contact for its sharpening by means of said wheel being relatively wider than

(h) the width of the relatively narrower second one of said bands in said pair (b) which, also in forward tool-feeding application, is intended and adapted to immediately subsequently contact and cut secondary relief and angulation after initial action by said first band on said tooth projection(s) of said helix tool;

(3) setting said wheel with respect to said tool so that its wider band (g) makes first cutting contact contact with said passing tool so as to initially excavate the greater proportion of material to be removed from the tooth profile of the tool being sharpened in order to form at least the bulk of one of the peripheral relief surfaces and associated peripheral relief angle on the tooth flight(s) of said tool; and so that after which in immediate subsequent sequence

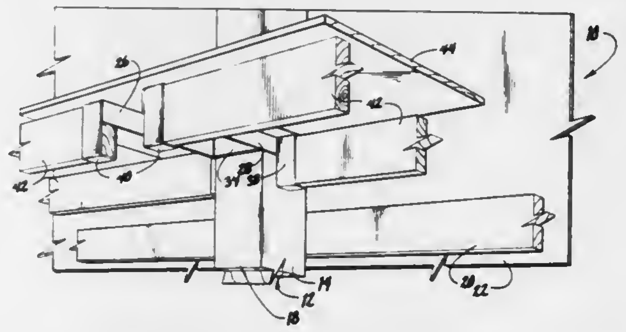
(4) said narrower band (h) setting of said wheel is such that it makes following cutting contact taking a lesser proportion of remaining tooth profile material in excavation to complete the peripheral relief surfaces and associated peripheral relief angle on said tooth flight(s); during which time there is carried out

(5) rapid, power-driven, grinding rotation of said wheel; then

(6) withdrawing the thereby completely dressed and finished tool from grinding contact with said wheel.

4,442,638
SHELF BRACKET

Luke C. Hamilton, R.R. #1 - Box 77, Bancroft, Iowa 50517
Filed Jun. 21, 1982, Ser. No. 390,786
Int. Cl.³ E04G *3/00*
U.S. Cl. 52—36 3 Claims



1. The combination of a building wall comprised of a plurality of poles rectangular in cross-section and having two opposite sides, and an inner face and an outer face, parallel horizontal spaced stringers extending between said poles, and skin material secured to and extending over said stringers and being in close spaced relation to the inner faces of said poles and being separated therefrom by the width of said stringers, and a shelf structure, comprising, a shelf bracket secured to at least two of said poles,

said shelf brackets each including a pair of spaced parallel arms having inner and outer ends and being adapted to embrace the sides of the respective poles upon which they are mounted,

a fixed cross member extending laterally between said arms and being located away from the inner ends of said arms to engage the outer faces of said rectangular poles,

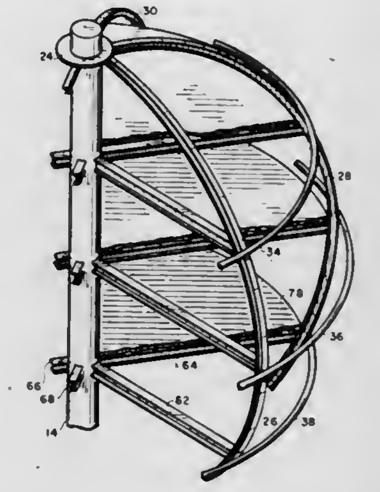
a fastening means detachably secured to said arms and extending between said arms at the inner ends thereof adjacent the inner face of said poles and extending through a narrow space between the inner face of said poles and said skin material as defined by the thickness of said stringers,

a pair of sockets on each of said arms adapted to receive the ends of second stringers to support a shelf surface, second stringers received in the adjacent sockets of adjacent shelf brackets,

and a shelf surface secured to said second stringers.

4,442,639
BUILDING STRUCTURE METHOD

Stanley D. Lindsey; Socrates A. Ioannides; Jack R. Horner, all of 3716 Hillsboro Rd., Nashville, Tenn. 37215; William S. Denton, 1317 Bales Dr., Morristown, Tenn. 37814; Donald P. Shell, 8904 Ripon Cir., Knoxville, Tenn. 37923, and Hubert Bebb, Rte. 3, Buckhorn Rd., Gatlinburg, Tenn. 37738
Filed Nov. 27, 1981, Ser. No. 325,506
Int. Cl.³ E04B *1/32*
U.S. Cl. 52—73 9 Claims



1. A building having a shape wherein horizontal cross-sections of the building define a circle, said building comprising:

a base;

a vertical core structure, said core structure being fixedly and permanently attached to said base and extending vertically to a top end;

a circular tension ring fixedly attached to said vertical core structure proximate said top end of said vertical core structure;

a circular compression ring fixedly attached to said vertical core structure at a location below said tension ring;

a multiplicity of curved meridian members attached to and extending between said tension ring and said compression ring, said multiplicity of meridian members having a single selected shape and being substantially uniformly spaced around said tension ring and said compression ring;

a multiplicity of radial members extending horizontally between and attached to said core structure and said curved meridian members; and

a multiplicity of horizontal circular hoop members attached to said multiplicity of meridian members at selected vertical locations between said tension ring and said compression ring, each of said circular hoop members surrounding said core structure, said meridian members and said circular hoop members defining a three dimensional building structure wherein a horizontal cross-section taken at any selected vertical location through said building structure defines a circle.

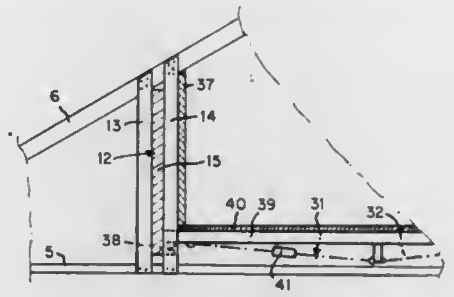
4,442,640
METHOD OF CONVERTING A ROOF FRAME AND FRAME ELEMENTS FOR PERFORMING THIS METHOD

Jean-Pierre Gary, Z. I. du Fort, rue de haut de la Cruppe, 59650 Villeneuve d'Ascq, France
Filed Mar. 25, 1983, Ser. No. 478,844
Int. Cl.³ E04B *7/04*
U.S. Cl. 52—90 9 Claims

1. A method of converting a roof frame bearing the roofing of a construction having at least two gable walls and two facade walls, the frame being located between two gable walls and comprising a plurality of trusses spaced from one another and extending from one facade wall to another, on which walls the trusses bear, each truss comprising a horizontal tie-beam and two inclined principal rafters which are connected to one another by triangulation elements supporting the principal rafters in order to enable them to resist the bending stress to which they are subjected owing to the load of the roofing, the method comprising the following steps:

(a) fixing a vertical channel between each of the principal rafters and the tie-beam of at least a plurality of the trusses;

(b) bringing into the roof and engaging in the channels, beams which have previously been divided into a plurality of sections, the ends of the beams bearing on the gable walls;



(c) connecting the sections of each beam together by connection means;

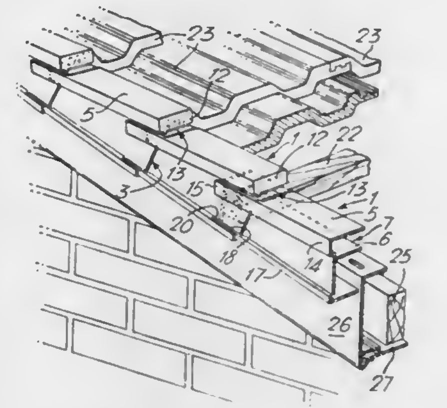
(d) securing a king post below each of the said connection means;

(e) engaging the base of each king post with two ties whose other ends are connected at least indirectly to the ends of the beam sections located either side of the king post in question, and

(f) stressing the ties so that, owing to their reaction on the king posts with which they form triangulations, they support the beams, which themselves support the principal rafters and the roofing at least indirectly, thereby enabling the initial triangulation of the trusses to be removed and subsequently the roof to be fitted out.

4,442,641
VERGE MEMBER FOR A PITCHED ROOF AND ROOFING SYSTEM INCORPORATING THE SAME

Geoffrey C. Quinnell, Pembury, England, assignor to Marley Tile A.G., Switzerland
PCT No. PCT/GB80/00205, 371 Date Jul. 28, 1981, 102(e) Date Jul. 28, 1981, PCT Pub. No. WO81/01583, PCT Pub. Date Jun. 11, 1981
PCT Filed Nov. 28, 1980, Ser. No. 287,567
Claims priority, application United Kingdom, Oct. 28, 1979, 7940986
Int. Cl.³ E04D *13/15*
U.S. Cl. 52—94 9 Claims



9. A roof system comprising: a plurality of longitudinally overlapping and laterally engaged tiles (**24**) adjacent the verge

of the roof and verge members (**1**) capping the tiles having a longitudinally extending planar portion (**2**) tapering in height from one end (**3**) of the member to the other (**4**), a first flange (**5**) substantially normal to said planar portion and extending along the upper edge thereof, a second flange (**6**) substantially normal to said planar portion and extending therealong, said second flange being spaced from said first flange and defining therewith a channel (**7**) of substantially constant height receiving the edge of a tile, a protruding element (**14**) extending along said planar portion adjacent the upper edge thereof on the side remote from said flanges, there being defined between said element and the face of the planar portion a space (**16**) at least equal to the thickness of said planar portion, said space extending along the planar portion from the shorter end thereof, said verge members being telescopically engaged with their taller ends (**3**) facing down the roof.

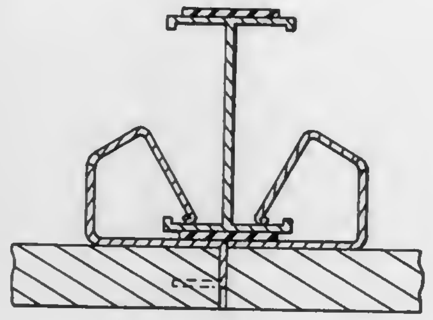
4,442,642
WALL ASSEMBLY

Robert L. Lindner, 3154 Valley Green La., Napa, Calif. 94558, and Luther Marshall, 21 View Ridge Dr., Novato,, Calif. 94947

Filed Mar. 27, 1981, Ser. No. 248,397

Int. Cl.³ E04B *1/00;* E06B *3/54*

U.S. Cl. 52—98 **5 Claims**



1. In a wall assembly: a study having a flat flange; a wall panel having a side margin; and a spring clip carried by the side margin of the wall panel and having a resilient part provided with an outer marginal edge movable into engagement with one face of the flange of the stud when the wall panel is adjacent to the opposite face of the flange for releasably mounting the wall panel on the study, said resilient part having a resilience permitting the wall panel to move generally horizontally toward the stud when the stud is vertical until the resilient part has yielded and moved about one outer extremity of the flange and then has sprung back to cause said outer marginal edge to engage said one face of the flange to releasably connect the clip to the flange, said resilient part having breaking means permitting it to be breakable from the reminder of the clip to separate said clip remainder from the flange when the wall panel is moved away from the stud.

4,442,643
VENT PIPE INSULATING SLEEVE

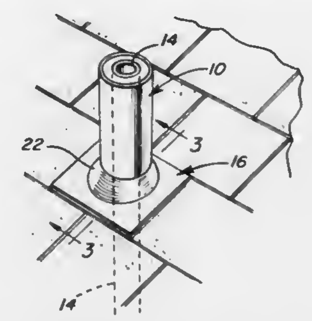
James S. Stadheim, R.R. 2, Watertown, S. Dak. 57201

Filed Apr. 23, 1981, Ser. No. 256,776

Int. Cl.³ E04F *17/04;* E04D *13/14*

U.S. Cl. 52—219 **4 Claims**

1. In combination with an upstanding sewer vent pipe projecting upwardly through a roof structure and terminating upwardly a spaced distance above the portion of the roof structure through which said vent pipe projects, said vent pipe being subject to upward flow of high humidity air and sewer gas therethrough and a build up of accumulated ice thereacross as a result of condensation and ice build up within said upper end portion during periods of very cold ambient temperature, an insulation sleeve assembly for preventing said build up solely through utilization and prevention of loss of the inherent heat of vented high humidity sewer gas, said assembly including an outer sleeve of waterproof material, an inner sleeve body of heat insulative material snugly received within, extending the full length of and supported from said outer sleeve, the upper end of said outer sleeve including an annular upper end portion lapped over the upper end of said inner sleeve body, said sleeve assembly being snugly telescoped over substantially the entire upper end portion of said vent pipe projecting above said roof structure with said inner sleeve at least substantially filling annular area defined between the outer surfaces of said pipe and the inner surfaces of said outer sleeve, said outer sleeve and annular upper end portion being of nonmetallic low heat conductive construction, said sleeve assembly being of portions extending across the upper end thereof in registry with the upper end of said pipe, whereby there exists no obstruction to the gentle egress of vented gases from the pipe upper end and maximum heating of the pipe upper end and minimum condensation of moisture occurs within the pipe upper end as result of unobstructed venting of sewer gases upwardly through said pipe.



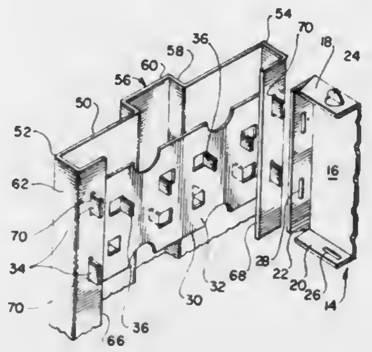
4,442,644
FRAME MEMBER FOR USE WITH CONSTRUCTION BLOCKS

Christoher E. Jukes, Vancouver, Canada, assignor to Mod-Lok Industries, Ltd., Vancouver, Canada

Filed Jun. 22, 1981, Ser. No. 276,077

Int. Cl.³ E06B *1/04*

U.S. Cl. 52—213 **6 Claims**



1. A frame member for use with a plurality of consumable modular building blocks to form an opening therein, said blocks being stacked in courses forming a wall of a building structure and each block includes a pair of side plates and a pair of transverse spacer members at each end of said plates spacing one plate from the other to create a block of rectangular configuration, and adapted to receive concrete therein, each side plate having top edges including spaced apart upward lug projections and lower edges including corresponding slots, and each side having end edges including slots, said frame member including:

a pair of upright structural column jambs, each including a face plate portion having exterior edge walls with a stop projection extending therefrom the length of each of said column jambs and spaced between said exterior edge walls thereof, and said column jambs at each of said exterior edge walls bent inwardly therefrom forming flanges spaced from said face plate portion generally parallel with said face plate portion and extending toward each other, and a plurality of slots formed through each flange;

a header member extending between said upright structural column jambs and united thereto, said header member having a cross sectional configuration similar to said jambs including slots formed through said flanges and with the stop projection aligned with said stop projections of said jambs;

said column jambs and said header member positioned in said wall whereby the flanges of said column jambs abut the end edges of said building blocks of various courses and the flanges of said header abuts said lower edges of a plurality of blocks forming a course above said header; and

tie means to unite said column jambs, and said header member with said blocks whereby said combination of wall and frame member are fixed to each other; said tie means for said header is a clip member of a thickness adapted to extend through said slots and is generally T shaped and the leg of said T extends through adjacent aligned slots of said header and said block and the top of said T is longer than said slots and said leg of said T is bent whereby the members are locked one to the other.

4,442,645
CONSTRUCTION PANEL FOR DOUBLE FLOORS IN AIR CONDITIONED ROOMS

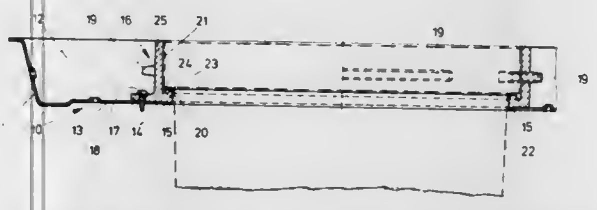
Wolfgang Hiller, Karlstadt/Laudenbach, and Hans Kramer, Mainbernheim, both of Fed. Rep. of Germany, assignors to MERO-Werke Dr.-Ing. Max Mengeringhausen GmbH & Co., Wurzburg, Fed. Rep. of Germany

Filed Nov. 5, 1980, Ser. No. 204,352

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1979, 2944842

Int. Cl.³ E04D *29/14*

U.S. Cl. 52—221 **3 Claims**



1. An overhanging compound construction panel for double floors used in room air conditioning, the panel having an external, tub-shaped sheathing means made of a high tensile-strength and high Young's modulus material, said sheathing means having an upper portion and a bottom with an aperture therein, and a filler means introduced in said tub-shaped sheathing means when in the flowing or pourable state and of a low tensile-strength and low Young's modulus, characterized by at least one rigid annular body (**16**) fixed in said aperture (**14**) to the bottom (**13**) of the tub-shaped sheathing means (**11**) in essentially hermetically sealing relation therewith and anchored in the filler means (**12**), said annular body (**16**) having a lower portion and extending up to the upper portion of the sheathing means and being provided with a radially inwardly projecting annular flange (**20**) at the lower portion thereof for supporting an air discharge nozzle (**21**) within said annular body and a dirt-catcher (**22**) beneath said nozzle (**21**), said annular body (**16**) comprising an inner wall (**25**), and said annular flange (**20**) having an upper portion (**23**) that is separated from said inner wall (**25**) by an annular groove (**24**).

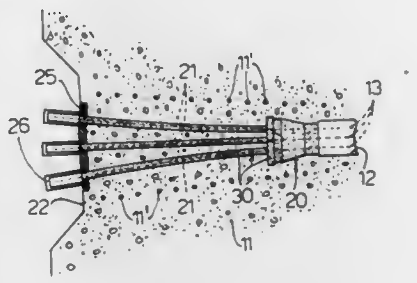
4,442,646
DEVICE FOR ANCHORING TENSIONING ELEMENTS

Cesare Prevedini, Milan, Italy, assignor to Ponteggi Est S.p.A., Italy

Continuation of Ser. No. 201,570, Oct. 28, 1980, abandoned. This application Jul. 13, 1983, Ser. No. 512,949

Int. Cl.³ E04C *5/12*

U.S. Cl. 52—230 **2 Claims**



1. A device for anchoring a plurality of tensioning strands to a structure, which device comprises:

(a) a box encasing intermediate portions of the strands therein;

(b) a plate spaced from the box for securing the free ends of the strands and distributing tension loading;

(c) corrugated sheaths extending from the plate to the box, each sheath encasing a strand, each sheath being filled with epoxy resin for embedding the strand therein and spacing same from adjacent strands, said sheath being embedded in concrete;

(d) the box including a packing of epoxy resin embedding the portions of the strands contained therein and avoiding load peaks in the transition area where strands depart from the box.

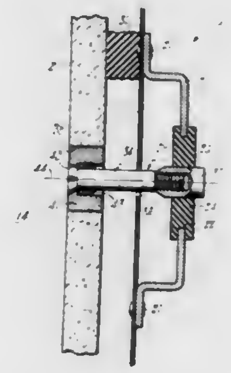
4,442,647
SOUNDPROOFING PANEL MOUNTED TO EFFECT VIBRATION ISOLATION

Eric G. Olsen, Woodbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jul. 6, 1982, Ser. No. 395,166

Int. Cl.³ E04B *1/62*

U.S. Cl. 52—393 **3 Claims**



1. In combination:

a vibration prone wall member,

a rigid soundproofing panel adapted to be supported in spaced relation to said wall,

means to support said soundproofing panel from said wall while providing vibration isolation therebetween comprising:

elastomeric gasket means extending between said wall and said rigid soundproofing panel and extending throughout the full periphery of said panel, yet to prevent acoustic flanking between the wall and the panel,

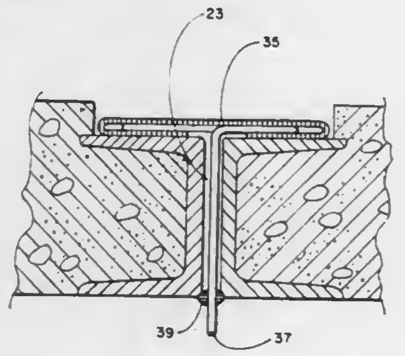
an attachment bracket member attached to said wall,

an elastic plate isolator supported from an aperture in the said center of said bracket member so as to extend substantially parallel to said wall and being of selected spring rate to tune the support means so that minimal wall vibration is imparted therethrough to said panel,

a connecting member extending through aligned apertures in said wall and said soundproofing panel and connected to said plate isolator so as to support said soundproofing panel from said wall through said bracket member and said plate isolator, and being of selected length when in installed condition to selectively compress said elastomeric gasket means to a thickness at which it has a spring rate less than the plate isolator spring rate so as not to affect support means tuning.

4,442,648
CONCRETE PANEL

Chester A. Reece, 100 Bexhill Ct., Greenville, S.C. 29609
Filed Aug. 14, 1981, Ser. No. 292,786
Int. Cl.³ E04C *1/34*
U.S. Cl. 52—468 **10 Claims**



1. A generally rectangular concrete panel comprising;

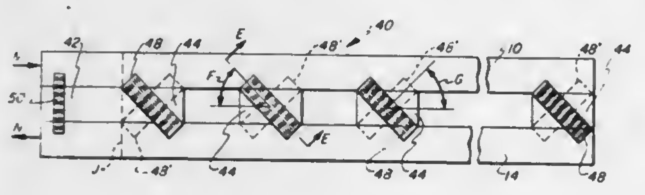
a concrete body portion;

a pair of curved edge defining members along each lateral edge of said panel, said edge defining member being curved such that the distance between the outer edges of said edge defining members are a maximum at the upper and lower extents of said panel and a mimimum at the mid-portion of said panel; and

wherein said concrete body portion has substantially straight parallel edges with a width less than said minimum distance between said edge defining members.

4,442,649
FABRICATED BEAM

Robert Birckhead, 3127 SW. Natura Ave., Deerfield Beach, Fla. 33441, and William R. McAlpine, 9451 NW. 40th St., Coral Springs, Fla. 33065
Filed Oct. 18, 1982, Ser. No. 434,962
Int. Cl.³ E04C *3/02;* **E04H** *12/06*
U.S. Cl. 52—693 **6 Claims**



1. A fabricated beam for use in building construction or the like, said beam comprising:

at least two longitudinal wooden members generally parallel and spaced apart from one another;

a plurality of wooden spacer blocks, each spacer block of said plurality of said spacer blocks positioned between and along the length of said at least two longitudinal wooden members;

a plurality of pairs of metal truss plates formed from sheet metal stock and having formed nail portions extending perpendicularly from one side of the plane of said truss plates;

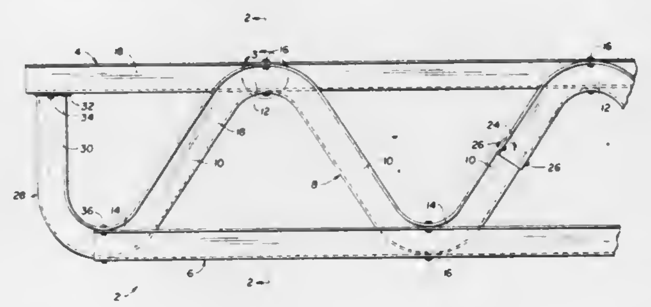
each of said pair of truss plate nail portions forcibly urged into two adjacent said at least two longitudinal members and into a different said spacer block;

the longitudinal axes of each truss plate of each said pair of truss plates intersecting over a said different spacer block into which said pair of truss plate nail portions is said forcibly urged;

said longitudinal axes of each truss plate of said pair of truss plates forming an acute angle with the longitudinal axis of said beam.

4,442,650
GIRDER CONSTRUCTION

Eugene W. Sivachenko, 6471 Riverside Dr., Redding, Calif. 96001
Filed Dec. 15, 1977, Ser. No. 860,798
Int. Cl.³ E04C *3/02*
U.S. Cl. 52—694 **4 Claims**



1. A high strength, relatively lightweight girder comprising a substantially rigid upper chord plate and a substantially rigid, spaced apart, parallel lower chord plate, the chord plates being constructed of corrugated plate, the corrugations of one chord plate being in substantial alignment with the corrugations of the other chord plate, the corrugations further having a generally trapezoidal cross-section, a corrugation pitch of at least about 16 inches and a corrugation depth of at leat about 5 inches; a substantially rigid connecting member disposed between the chord plates and defining a plurality of serially arranged diagonal webs and curved crown sections interconnecting the webs, the connecting member further defining corrugations extending over the substantially full length of the connecting member in the direction of and in substantial alignment with the corrugations in the chord plates so that the corrugations of the connecting member nest in corresponding corrugations of the chord plates; an end plate at each end of the girder interconnecting proximate ends of the chord plates; bosses formed in at least one of the chord plate and the connecting member establishing metal-to-metal contact between the chord plates and the crown sections; and means securing the crown sections in the area of the bosses to the chord plates and for connecting the end plates to corresponding ends of the chord plates.

4,442,651
PROCEDURE AND ARRANGEMENT FOR LAYING THE FOUNDATION OF PREFABRICATED PLANTS ASHORE

Carl Cappé, Stockholm, Sweden, assignor to NYA Asfalt AB, Stockholm, Sweden
PCT No. PCT/SE80/00022, 371 Date Oct. 3, 1980, 102(e) Date Oct. 3, 1980, PCT Pub. No. WO80/01581, PCT Pub. Date Aug. 7, 1980
PCT Filed Jan. 24, 1980, Ser. No. 261,234
Claims priority, application Sweden, Feb. 5, 1979, 7900955
Int. Cl.³ E04G *21/00*
U.S. Cl. 52—745 **2 Claims**

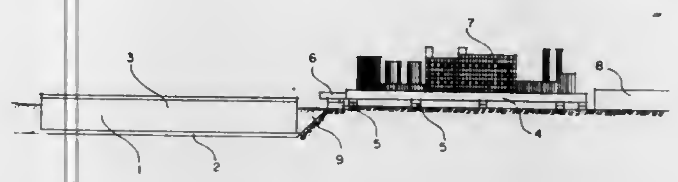
1. A method of erecting, transporting and installing a building structure comprising the steps of:

(a) erecting a building structure on a foundation member of the type having smooth undersurfaces for moving the foundation member with the building structure thereon in sliding contact with the sliding surfaces on a floating barge,

(b) sliding the foundation with the building structure thereon on said sliding surfaces on said floating barge from longitudinal sliding means on land until the foundation is carried fully on said floating barge, then,

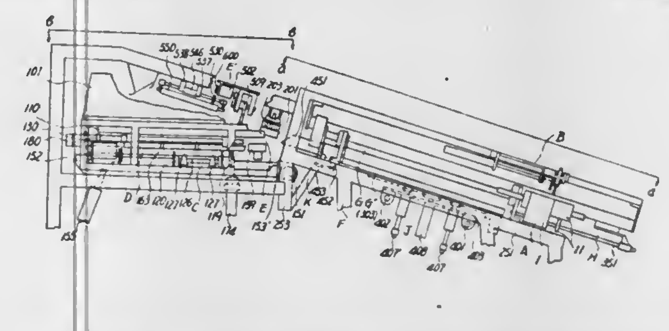
(c) transporting said barge to a site, and

(d) unloading said foundation by sliding the smooth surfaces of the foundation off said sliding surfaces of said floating barge to longitudinal sliding means at the site.



4,442,652
APPARATUS FOR AUTOMATICALLY PACKING END CLOSURES FOR CANS IN PAPER BAGS

Atsuyuki Wakamatsu, Shimizu, and Haruo Tsuwano, Shizuoka, both of Japan, assignors to Daiwa Can Company, Limited, Tokyo, Japan
Division of Ser. No. 204,622, Nov. 6, 1980, which is a continuation of Ser. No. 37,694, May 10, 1979, Pat. No. 4,251,977. This application May 20, 1983, Ser. No. 496,594
Claims priority, application Japan, Feb. 24, 1979, 54-21190
Int. Cl.³ B65B *35/42, 35/48, 43/34, 57/20*
U.S. Cl. 53—258 **6 Claims**



1. Apparatus for loading a stack of items into an elongate bag having an open end comprising:

(a) a tubular guide;

(b) means for inserting said guide endwise, into said bag;

(c) means for temporarily retaining the bag to maintain the portion of the bag adjacent the open end thereof in surrounding relation with said guide;

(d) means for positioning the stack of items in alignment with said guide;

(e) an elongated push rod;

(f) means for moving the push rod endwise into the guide so that the push rod forces the stack of items into the bag until the leading end of said push rod protrudes beyond the end of said guide within said bag, said moving means also being operative to temporarily retain said push rod in such protruding disposition so that the push rod bears on the stack of items within the bag to prevent dislocation of items within the stack;

(g) means for withdrawing said push rod through said guide; and

(h) means for pinching and thus partially closing the bag adjacent said open end concomitantly with withdrawal of the push rod so that the walls of the bag engage the stack of items and prevent dislocation of items within the stack upon withdrawal of the push rod.

4,442,653
MACHINE FOR FILLING BOTTLES AND CANS

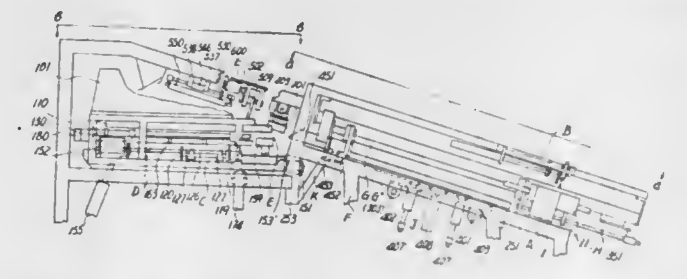
Friedrich Rademacher, Kamen-Suedkamen, Fed. Rep. of Germany, assignor to Holstein & Kappert GmbH, Dortmund, Fed. Rep. of Germany
Filed Sep. 18, 1981, Ser. No. 303,713
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1980, 3044597
Int. Cl.³ B65B *43/52*
U.S. Cl. 53—266 R **3 Claims**

1. An arrangement for guiding containers, like bottles and cans between a filling machine and a respectively associated closing machine, wherein the bottles of the filling are fed from a starwheel directly to the associated closing machine along a feed path, the arrangement comprising:

an endless feed chain for guiding the cans along a further feed path to the other associated closing machine, the feed chain extending between the starwheel and the other closing machine around horizontally extending axes spaced from each other and being arranged laterally to the feed path of the bottles so as to cooperate with each can fed from the filling machine in case the cans are to be filled and not to intefere with the bottles fed from the filling machine in case the bottles are to be filled, wherein the feed chain includes a plurality of fingers engageable behind the cans in such a manner that in direction of the further feed path the fingers of the feed chain are arranged to engage in an upstream position behind one side of the cans at a laterally offset position to the center line of the further feed path and in a downstream direction to engage behind the other side of the cans at a laterally offset position to the center line of the further feed path.

4,442,654
APPARATUS FOR AUTOMATICALLY PACKING END CLOSURES FOR CANS IN PAPER BAGS

Atsuyuki Wakamatsu, Shimizu, and Haruo Tsuwano, Shizuoka, both of Japan, assignors to Daiwa Can Company, Limited, Tokyo, Japan
Division of Ser. No. 204,622, Nov. 6, 1980, which is a continuation of Ser. No. 37,694, May 10, 1979, Pat. No. 4,251,977. This application May 20, 1983, Ser. No. 496,592
Claims priority, application Japan, Feb. 24, 1979, 54-21190
Int. Cl.³ B65B *35/42, 35/48, 43/34, 57/20*
U.S. Cl. 53—266 R **2 Claims**



1. Apparatus for loading a stack of items into an elongate bag having an open end comprising:

(a) a tubular guide;

(b) means for inserting said guide endwise, into said bag;

(c) means for temporarily retaining the bag to maintain the portion of the bag adjacent the open end thereof in surrounding relation with said guide;

(d) means for positioning the stack of items in alignment with said guide;

(e) an elongated push rod;

(f) means for moving the push rod endwise into the guide so that the push rod forces the stack of items into the bag until the leading end of said push rod protrudes beyond the end of said guide within said bag, said moving means also being operative to temporarily retain said push rod in such protruding disposition so that the push rod bears on

the stack of items within the bag to prevent dislocation of items within the stack;
(g) means for withdrawing said push rod through said guide;
(h) means for pinching and thus partially closing the bag adjacent said open end concomitantly with withdrawal of the push rod so that the walls of the bag engage the stack of items and prevent dislocation of items within the stack upon withdrawal of the push rod; and
(i) means for twisting the bag about its axis while the bag is engaged by said pinching means to further close the bag and thus tighten the walls of the bag against the items contained therein.

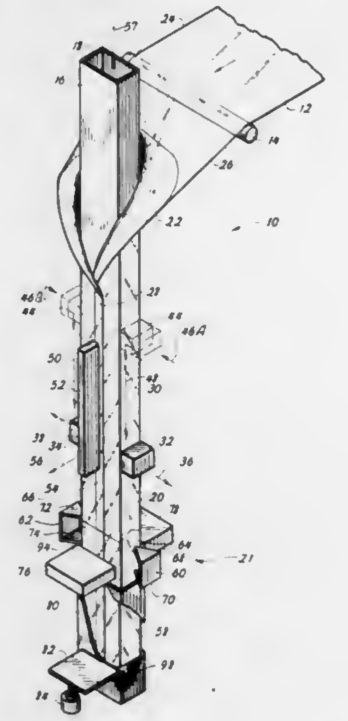
4,442,655
FIBRINOGEN-CONTAINING DRY PREPARATION, MANUFACTURE AND USE THEREOF

Michael Stroetmann, Münster, Fed. Rep. of Germany, assignor to Serapharm Michael Stroetmann, Münster, Fed. Rep. of Germany
Filed Jun. 25, 1982, Ser. No. 392,215
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1981, 3124962; Jun. 25, 1981, 3124933; Aug. 12, 1981, 3131827; European Pat. Off., Dec. 18, 1981, 81110615; May 26, 1982, 82104606
Int. Cl.³ A61K *9/14, 35/14, 37/00*
U.S. Cl. 53—428 **18 Claims**

1. Fibrinogen-containing dry preparation having a foam-like and fleece-like structure, especially adapted for use as a wound toilet material, filling material for bone cavities, and/or supporting material for further active substances, consisting essentially of thrombin in an at least catalytically active amount, about 10 to 95% by weight of fibrin, and about 5 to 90% by weight of fibrinogen.

4,442,656
FILLING AND SEALING MACHINE FOR PROVIDING A FLAT BOTTOM PACKAGE

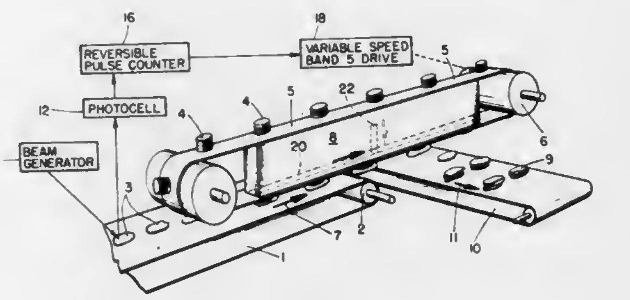
James C. Wylie, Sr., Houston, Tex., assignor to Universal Packaging, Inc., Houston, Tex.
Filed Oct. 26, 1981, Ser. No. 314,658
Int. Cl.³ B65B *9/08, 51/30*
U.S. Cl. 53—552 **6 Claims**



1. A filling machine for forming a package from a continuous roll of heat sealable pliable material and for sealing and separating said filled package from said continuous roll of material comprising:
a hollow guide form having a top and bottom end and a selected cross-sectional shape;
means for forming pliable sealable material from a continuous roll around said guide form to form a continuous seamed packaging preform having said selected cross-sectional shape;
a pair of opposed advancing members intermediate said top and bottom ends of said guide form for advancing said preform such that a portion of said preform extends below said bottom end of said guide form, said advancing members adapted for simultaneous vertical movement and movement toward said guide form for grasping the exterior surface of said preform supported by said guide form during downward vertical movement of said advancing members, and movement away from said guide form during upward vertical movement of said advancing members;
a pair of opposing and horizontally movable tucking jaws located proximate said bottom end of said guide form such that said portion of said preform extending below said bottom end of said guide form passes therebetween, each of said tucking jaws including a pair of pointed extension members separated a selected vertical distance, and each of said pointed extension members of said tucking jaws suitable for contacting and partially collapsing said preform extending below said guide form to form a tuck in opposite sides of said preform when said tucking jaws are moved toward each other;
a pair of opposing and horizontally movable sealing jaws located proximate said bottom end of said guide form and said tucking jaws such that said portion of said preform extending below said guide-form passes therebetween, said sealing jaws suitable for collapsing said preform and providing a seal portion of a selected width across said preform by moving said sealing jaws toward each other and between said pointed extension members of said tucking jaws; and
means for cutting through said continuous packaging preform at said seal portion to separate said seal portion into a first and remaining part such that said first part of said seal portion provides a square sealed top end of a package separated from said continuous preform and said remaining part of said sealed portion forms a sealed bottom end on said continuous preform.

4,442,657
DEVICE FOR TRANSFERRING FROM A CONVEYING BELT, GOODS SUCH AS BUT NOT EXCLUSIVELY, BISCUITS

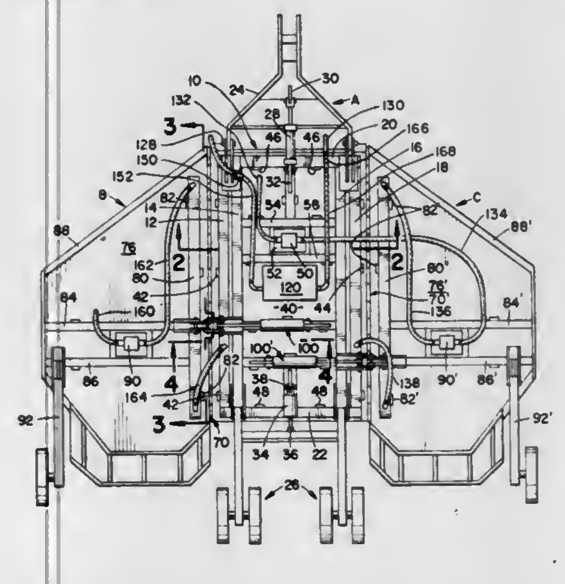
Roger Busseniers, Brussels, and Martial Deudon, Sint-Kruis-Brugge, both of Belgium, assignors to N.V. Biscuits Delacre S.A., Belgium
Filed Jun. 23, 1981, Ser. No. 276,707
Claims priority, application Belgium, Jun. 27, 1980, 0/201216
Int. Cl.³ B65G *43/00, 47/00;* **B65B** *25/16*
U.S. Cl. 53—500 **10 Claims**



1. Device for transferring goods such as but not exclusively, biscuits from a conveying band whereon said goods are so laid down that the spacing between said goods may vary within some determined limits, whereby said transferring can occur along the direction of one or a plurality of conveying tracks and the device comprises means to grip said goods on said conveying band and lay said goods down on one of said conveying tracks, generally into containers or boxes present on said conveying track or tracks, in which said goods are caught on the conveying band by gripping members fastened to an endless conveying band, said endless conveying band moving substantially in that plane where said conveying band moves and actually at least over such a distance which is long enough to bring a gripping member above a piece of goods to be gripped and to grip said piece of goods, whereby means are provided to sense the position of said piece of goods or of an apparatus cooperating with the passage of such a piece of goods, and according to said position of the piece of goods or apparatus, to bring said gripping member above the sensed piece of goods.

4,442,658
TRAILING WING MOWER

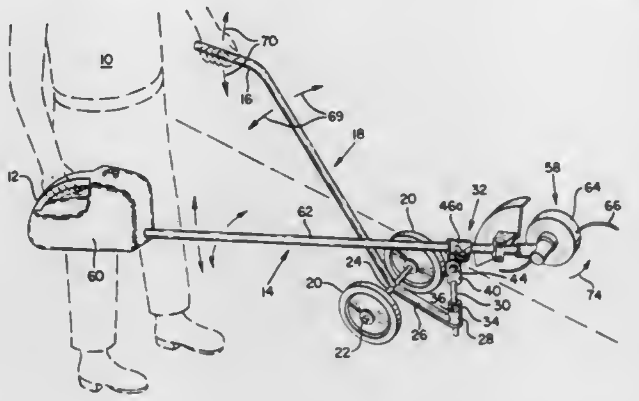
Jack O. Cartner, 1005 N. Eighth St., Cambridge, Ohio 43725
Filed May 12, 1982, Ser. No. 377,347
Int. Cl.³ A01D *69/00*
U.S. Cl. 56—11.9 **14 Claims**



11. A trailing wing mower comprising:
a. a central rotary mower section including:
(i) a central section deck;
(ii) a combined frame and heat exchanger including at least first and second side tubular channel members disposed adjacent opposite sides of the central section deck, front and rear tubular channel members disposed adjacent the front and rear of the central section deck, the first side, the second side, the front, and the rear tubular channel members being structurally and fluidically interconnected;
(iii) spacing means for fixedly connecting the central section deck to, below and spaced from the tubular members and thereby forming a structural supportive intersection between said deck and said tubular members such that the passage of air between the tubular members and the central section deck is substantially uninhibited, whereby cooling air is able to flow around the tubular members to facilitate the exchange of heat;
(iv) a first hydraulic motor mounted adjacent the central section deck;
(v) a cutting blade mounted below the central section deck and operatively connected with the first hydraulic motor to be driven thereby;
(vi) support means for supporting the central section for movement along the ground;
b. a wing rotary mower section pivotally mounted to the central section and including:
(i) a first wing deck;
(ii) a second hydraulic motor mounted adjacent the wing deck;
(iii) a second cutting blade mounted below the first wing deck and operatively connected with the second hydraulic motor to be driven thereby; and
c. a hydraulic system including:
(i) pump means operatively connected with the first and second hydraulic motors and with the tubular members for pumping hydraulic fluid to the hydraulic motors;
(ii) return line means for returning hydraulic fluid from the hydraulic motors to the first and second paths of the tubular members.

4,442,659
DOLLY FOR LAWN TRIMMER AND COMBINATION THEREOF

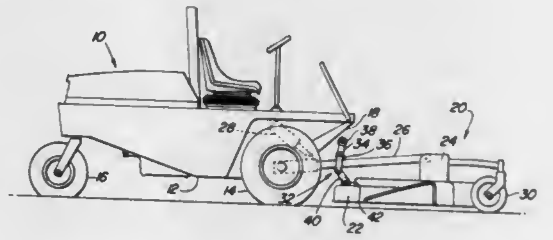
Henry J. Enbusk, Rt. 1, Box 1151, Clatskanie, Oreg. 97016
Filed Aug. 26, 1982, Ser. No. 411,667
Int. Cl.³ A01G *3/06*
U.S. Cl. 56—12.7 **11 Claims**



1. A support dolly for a trimmer for trimming and edging operations that includes a trimmer head adapted to be maneuvered in suspended relation to the ground, a handle adapted to be gripped by an operator while in a standing position, and a shaft connecting the handle and the trimmer head; said support dolly comprising: at least one wheel, a dolly frame, mounting means to mount the dolly frame to the wheel, and a bracket assembly carried by the dolly frame and adapted to mount the trimmer to the dolly frame; said dolly frame including a support member extending forward of the wheel and a handle member including a handle extending rearward and upward of the wheel being supported on the ground; and said bracket assembly including a bracket adapted for connection to the shaft of the trimmer, and a pivotal coupling means coupling the bracket to the support member forwardly of the wheel, said coupling means providing free horizontal pivoting of the bracket and free pivotal swinging of the trimmer carried thereby during trimming and edging operations whereby the operator can simultaneously control the handles of both the dolly and trimmer.

4,442,660
HIGH LIFT MECHANISM FOR REAR END OF FRONT MOUNTED MOWER

John B. Kuhn, Mayville, Wis., assignor to Deere & Company, Moline, Ill.
Filed Aug. 30, 1982, Ser. No. 412,733
Int. Cl.³ A01D *35/26*
U.S. Cl. 56—15.9 **3 Claims**



1. In a vehicle having a rotary mower mounted thereon by at least one lift arm extending between a frame of the vehicle and a central location between front and rear ends of a blade

housing of the mower, a lift mechanism for effecting elevation of the rear end of the blade housing in response to upward movement of the lift arm, comprising: a first link pivoted medially of its ends to the lift arm at a location above the rear end of the blade housing; surface means at one end of the first link being disposed beneath and closely adjacent to a surface of said frame when the lift arm is in a lowered position; and a second link having its opposite ends respectively pivotally connected to a second end of the first link and the rear end of the housing whereby raising of the lift arm will cause the one end of the first link to engage the frame surface so as to impart rotation to the first link and effect lifting of the rear end of the housing.

4,442,661

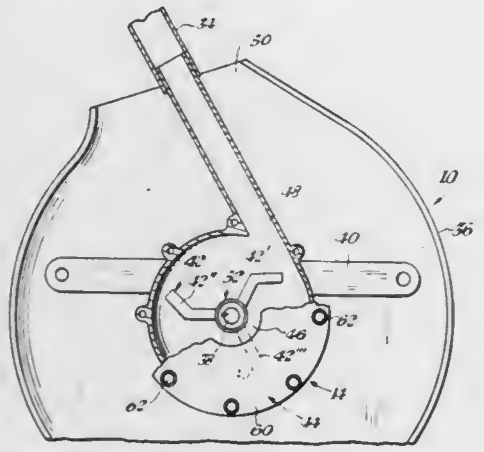
LAWN MOWER PUMP

Clifford H. Stuart, P.O. Box 367, Indiantown, Fla. 33456

Filed Aug. 30, 1982, Ser. No. 412,642

Int. Cl.³ A01D *35/26;* F03B *11/02*

U.S. Cl. 56—16.9 **4 Claims**



1. A rotary blade lawn mower pump movable on wheels from place to place comprising:

a rotary blade lawn mower including a mower housing with usable rotatable wheels connected to said housing;

a motor connected to said housing, said motor including a drive shaft means driven by and connected to said motor, said drive shaft means having a connecting portion, said drive shaft means extending outward to said connecting portion;

an impeller pump including a pump cover, an impeller freely rotatable in said pump cover, and a pump support, said pump support connected to said pump cover and removably connected to said mower housing, said impeller connected to said connecting portion of said drive shaft, said pump cover including an inlet opening and a discharge outlet, whereby said rotary blade lawn mower pump is easily movable from place to place on said usable rotatable wheels to pump out large areas of water of a relatively shallow depth.

4,442,662

METHOD AND APPARATUS FOR CONVERTING A HARVESTING MACHINE BETWEEN OPERATING AND TRANSPORT POSITIONS

Richard E. Jennings, New Holland, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Sep. 30, 1982, Ser. No. 431,521

Int. Cl.³ A01B *73/00*

U.S. Cl. 56—228 **20 Claims**

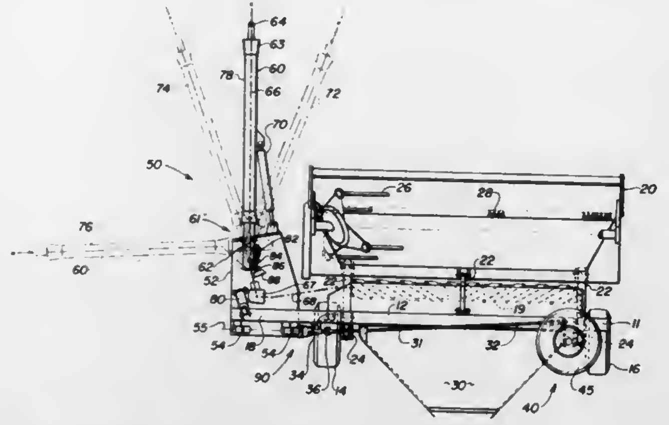
1. A crop harvesting machine movable between a crop harvesting position and a lateral transport position comprising:

a frame having first and second spaced apart wheels mounted thereon for mobilely supporting said frame on the ground;

a crop harvesting header mounted on said frame to harvest crop adjacent said ground, said header having harvesting means generally horizontally disposed adjacent the ground when in said harvesting position to engage crop material and initiate the crop harvesting process;

draft means connected to said frame and adapted for connection to a prime mover to move said header over the ground, said draft means having a hitch base pivotally connected to said frame along a pivot axis and a tongue pivotally connected at one end to said hitch base and adapted at an opposing end for connection to said prime mover, said first wheel being disposed adjacent said hitch base;

first power means interconnecting said tongue and said hitch base to selectively pivotally move said tongue relative to said hitch base between a forwardly extending operating position to a laterally extending transport position;



second power means interconnecting said frame and said hitch base to selectively pivotally move said frame relative to said hitch base about said pivot axis to move said machine between said crop harvesting position and said lateral transport position, said header rotating with said frame about said pivot axis such that said harvesting means is generally vertically oriented when in said lateral transport position;

wheel means mounted on said frame to engage said ground to mobilely support said frame when in said lateral transport position.

4,442,663

BELT-OPERATED FALSE-TWISTING UNIT

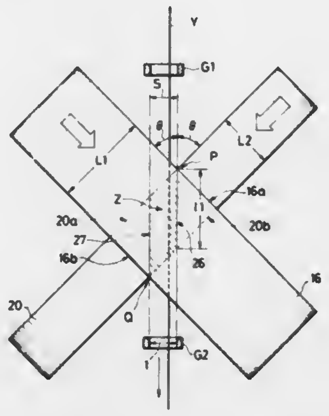
Noboru Shindo, Shiga, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Dec. 10, 1982, Ser. No. 448,496

Claims priority, application Japan, Dec. 11, 1981, 56-200375

Int. Cl.³ D01H *7/92;* D02G *1/06*

U.S. Cl. 57—336 **4 Claims**



1. A belt-operated false-twisting unit comprising two endless belts extending across each other and drivable to run in opposite directions at the intersection for nipping a yarn between the two belts to false-twist the yarn, characterized in that a yarn nipping portion comprises a parallelogrammatic region which is included in the intersecting area of the endless belts and is defined by two straight lines passing through points of intersection of the side edges of the belts and parallel to a line passing through the centers of yarn passage holes of yarn guides arranged at both sides of the intersecting area along the path of travel of the yarn.

4,442,664

FALSE-TWIST APPARATUS

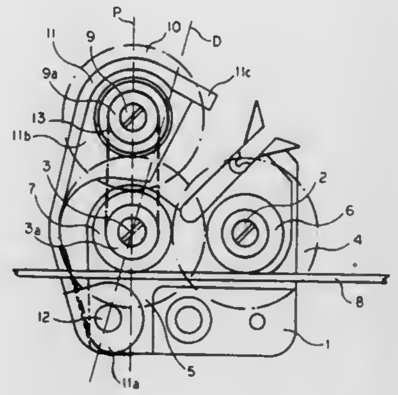
Günther Schmitt; Günter Oppl, both of Hammelburg, and Kirit Patel, Elfershausen, all of Fed. Rep. of Germany, assignors to FAG Kugelfischer Georg Schäfer & Co., Schweinfurt, Fed. Rep. of Germany

Filed May 28, 1982, Ser. No. 383,174

Claims priority, application Fed. Rep. of Germany, May 30, 1981, 3121614

Int. Cl.³ D02G *1/04*

U.S. Cl. 57—339 **6 Claims**



1. A false-twist device comprising:

a support;

a pair of spindles fixedly positioned on said support but rotatable about respective parallel axes thereof;

a further swingable spindle having an axis parallel to the first mentioned axes and spaced therefrom whereby said axes define the vertices of a triangle;

a first belt for driving at least one of said fixedly positioned spindles;

a second belt, separate from said first belt, connecting said one of said fixedly positioned spindles and said swingable spindle, all of said spindles having friction discs interdigitating or overlapping in a closed position of said swingable spindle and wherein a yarn can be inserted among said discs in an open position of said swingable spindle; and

means for pivotally mounting said swingable spindle to enable the angular displacement thereof between said positions about a pivot axis offset from the vertices of said triangle.

4,442,665

COAL GASIFICATION POWER GENERATION PLANT

Bruce R. Fick, Ballston Lake, and Robert M. Jones, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 17, 1980, Ser. No. 198,059

Int. Cl.³ F02C *3/28*

U.S. Cl. 60—39.12 **31 Claims**

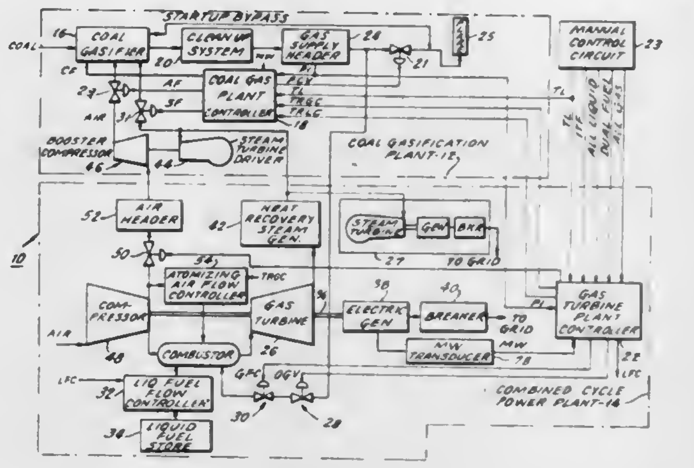
1. A power plant, comprising:

a coal gasification plant;

said coal gasification plant being effective to produce a gas pressure of coal gas;

a gas turbine effective to burn at least said coal gas and to produce an output power in response thereto;

a coal gas plant controller responsive to a selectable one of said gas pressure and said output power for controlling feed of materials to said coal gasification plant, said coal gasification plant producing said gas pressure in response to said feed of materials; and



a gas turbine plant controller responsive to the other of said gas pressure and said output power for controlling feed of at least said coal gas to said gas turbine.

4,442,666

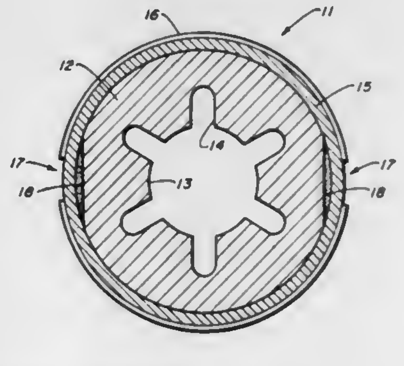
FUEL FIRE RESISTANT MOTOR

Ronald F. Vetter, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 21, 1982, Ser. No. 435,819

Int. Cl.³ F02K *9/00*

U.S. Cl. 60—39.47 **6 Claims**



1. A rocket motor comprising:

a metallic outer casing;

a cylindrical propellant grain within said metallic outer casing having a longitudinal central bore having radial grooves extending radially outward from said bore;

an insulating layer disposed about the outer surface of said metallic casing a having a plurality of gaps in said layer preferably positioned to overlie the spaces between said radial grooves; and

insulating material between said outer casing and said cylindrical propellant grain located adjacent said gaps.

4,442,667

ACCELERATION LIMIT RESET

Bernard D. MacIsaac, Ottawa, Canada, assignor to Aviation Electric Ltd., Montreal, Canada

Filed Jan. 14, 1981, Ser. No. 224,978

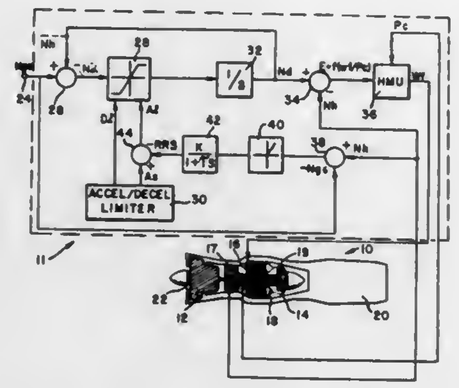
Int. Cl.³ F02C *9/28*

U.S. Cl. 60—39.281 **8 Claims**

1. An acceleration limit reset means for a fuel control of a gas turbine engine during thermal transient conditions including means for generating an acceleration limit, said reset means charactized by:

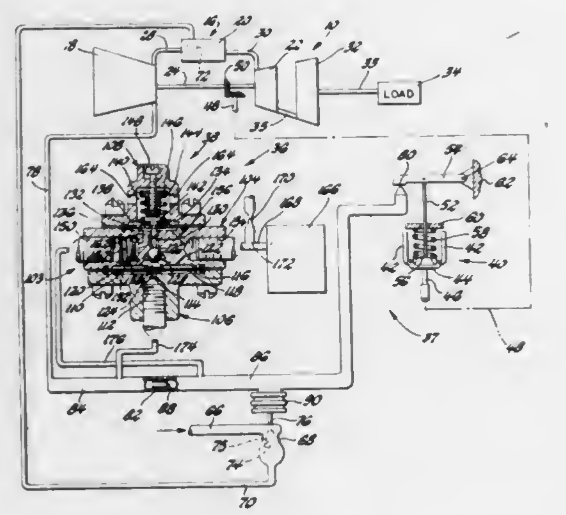
means for generating a deceleration signal proportional to the deceleration of the engine;

means, receiving said deceleration signal, for generating a reslam reset signal proportional to said deceleration signal; and



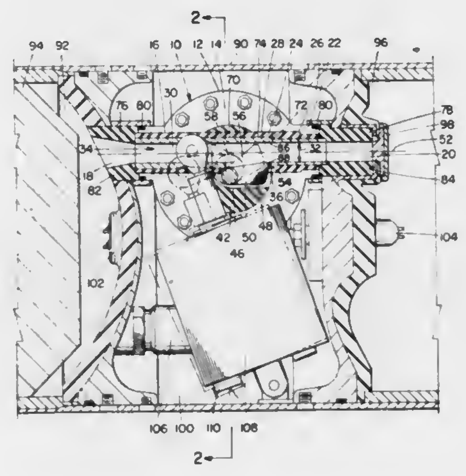
means, receiving said reslam reset signal, for reducing the acceleration limit by an amount proportional to the reslam reset signal.

4,442,668
GAS TURBINE ENGINE FUEL CONTROL SYSTEM
Francis E. Conn, Plainfield, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Mar. 26, 1982, Ser. No. 362,494
Int. Cl.^{3} F02C *9/28*
U.S. Cl. 60—39.281 **5 Claims**



1. In a gas turbine engine having a compressor delivering air at compressor discharge pressure to a combustor and a fuel control system including fuel valve means operative to meter fuel to said combustor in proportion to the magnitude of a control pressure and governor means connected to said fuel valve means operative in a first mode to regulate a supply of air at said compressor discharge pressure down to said control pressure and in a second mode to cause said control pressure to increase toward said compressor discharge pressure at a plurality of rates, the improvement comprising, valve means connected to said governor means operative independently of said governor means during said second mode to regulate said control pressure at a maximum pressure difference below said compressor discharge pressure, and feedback means connected to said valve means operative during said second mode to reduce said maximum pressure difference at a preselected rate so that said control pressure approaches said compressor discharge pressure at said preselected rate.

4,442,669
NOZZLE/VALVE DEVICE FOR A DUCTED ROCKET MOTOR
William M. Burkes, Jr., and William H. Miller, both of McGregor, Tex., assignors to Hercules Incorporated, Wilmington, Del.
Filed Feb. 12, 1981, Ser. No. 233,724
Int. Cl.^{3} F02K *9/72, 9/80*
U.S. Cl. 60—251 **7 Claims**



1. A nozzle/valve for controlling the flow of combustion products from a fuel generator to a secondary combustion chamber of a ducted rocket motor, said nozzle/valve comprising:

a valve body having
  a flow section comprising an outer flow member and a flow insulator for said outer flow member, housed within and extending throughout the length of the outer flow member, said flow insulator having side walls and a central longitudinal cavity defining a flow channel through said flow section, and a second cavity extending through the side wall of said flow insulator and said outer flow member,

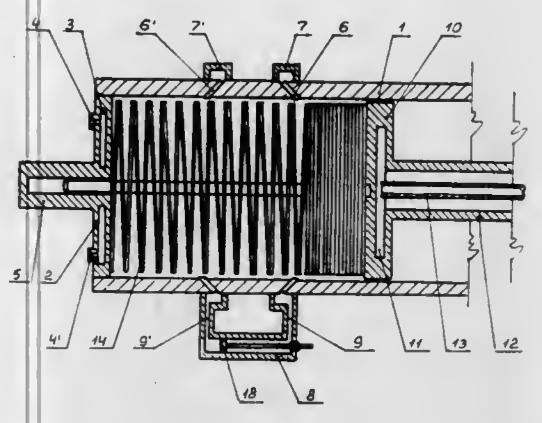
a blockage body housing section directly external to said second cavity and in direct communication with said flow section, said blockage body housing section comprising an outer housing member defining a housing enclosure, and a housing insulator within said housing enclosure and contiguous to the inner surface of said housing member of all of said inner surface, the interior periphery of said housing insulator defining an internal cavity communicating with the second cavity of the flow section,

a blockage body element endwise mounted within the internal cavity defined by said housing insulator, a section of said blockage body element being rotatable into and out of the flow channel of said flow section as desired to control the flow of combustion products from said fuel generator,

means for imparting movement to said blockage body element, comprising a spool-shaped actuator means eccentrically rotatably mounted with its long axis perpendicular to but displaced from the centerline of said flow channel and endwise secured to said blockage body element, said actuator means being linked at a point intermediate its axial ends to a separately mounted actuator device through linking means; and

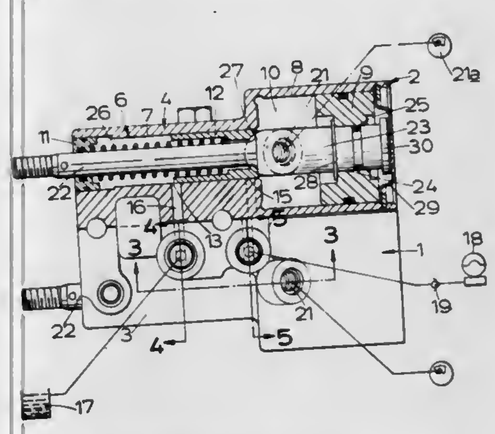
sensor controller means for activating said actuator device; whereby rotation is imparted to said actuator means and endwise secured blockage element, to move said blockage body element between a closed position in which said blockage body element partially blocks the flow channel, and an open position in which said blockage body element is removed from the flow channel.

4,442,670
CLOSED-CYCLE HEAT-ENGINE
Jacob Goldman, 11/6 Biram St., Haifa, Israel
Filed Jul. 12, 1982, Ser. No. 397,410
Int. Cl.^{3} F02G *1/04*
U.S. Cl. 60—517 **18 Claims**



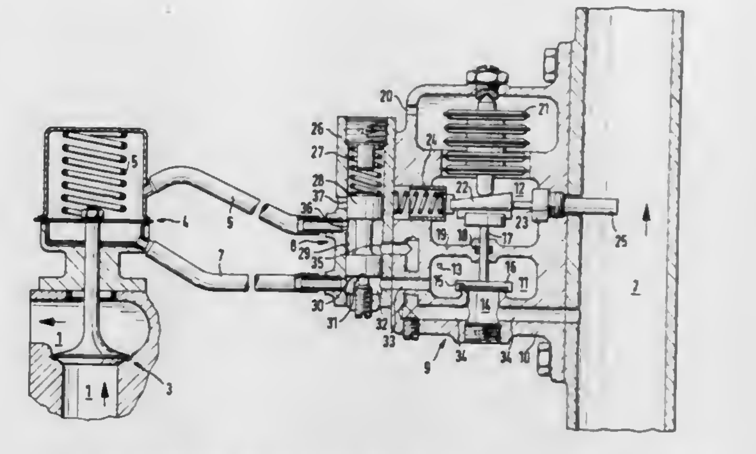
1. A closed-cycle heat engine comprising a gas-filled cylinder and a piston reciprocating therein, wherein the cylinder walls are heat-insulated and the cylinder head is permenently heated by a fluid in contact with a heat source, and wherein the piston is permanently cooled by a fluid in contact with a heat sink, the heat engine being characterized by that the cylinder space between the cylinder head and the piston contains an expansible and contractible chain of a plurality of interconnected, parallel-positioned flat discs of a thin sheet material of a diameter slightly smaller than the cylinder diameter, whereof the outermost disc at each end is firmly and heat-conductively connected to the piston and to the cylinder head respectively, the discs of the two end portions of the chain being of a highly heat conducting material with flat and smooth surfaces serving as "cooler" and "heater" portions respectively, while the discs in the central portion are of low heat conductivity serving as "regenerator" portion, means being provided for gradually shifting the discs of the chain from a first position of closely packed discs of the cooler and regenerator portions adjacent the piston to a second position of closely packed discs of the heater and regenerator portions adjacent the cylinder head, this shifting being carried out at the end of the expansion stroke, and similar means being provided for returning the discs from the second position into the first position at the end of the compression stroke.

4,442,671
CONTROL VALVE ASSEMBLIES FOR TWO PEDAL-OPERATED HYDRAULIC BRAKING SYSTEMS
Desmond H. J. Reynolds, West Midlands, England, assignor to Lucas Industries Public Limited Company, Birmingham, England
Filed May 20, 1982, Ser. No. 380,466
Claims priority, application United Kingdom, Jun. 9, 1981, 8117555
Int. Cl.^{3} B60T *13/00*
U.S. Cl. 60—547.1 **8 Claims**



1. A control valve assembly for vehicles comprising a pair of control valves each adapted to be operated by a separate respective pedal to apply a brake on a corresponding side of a vehicle, and pressure spaces in said control valves which are connected to the brakes are both interconnected by a transfer connection which is open when said pedals are operated simultaneously, in order to permit fluid to be transferred between said pressure spaces to compensate for differential wear of linings of said brakes, said transfer connection being closed to prevent such transfer when one pedal is operated on its own, each of said control valves incorporating a housing provided with a bore of stepped outline having a first bore portion of smaller area and a second bore portion of greater area, a spool working in said first bore portion, a back up piston separate from said spool and working in said second bore portion, a pressure space defined in said bore between said back-up piston and a closure for the opposite end of said bore, an outlet port in said housing to provide permanent open connection between said pressure space and said brake, a recuperation port in said housing for connection to a reservoir for fluid, a transfer port in said housing in permanent connection with said transfer connection, an inlet port in the housing connected to a source of high pressure fluid, and an imperforate rod for operating said spool and which is operated by said pedal, said rod being movable relative to said back-up piston through a limited distance determined by a degree of lost-motion and being sealingly slidable in a bore in said back-up piston, said spool normally being disposed in a retracted position in which said transfer port is closed and said recuperation port is in open communication with said pressure space, in turn placing said outlet port in communication with the reservoir, and operation of said pedal acting to move said rod relative to said back up piston in a brake-applying direction to urge said spool into a operative position to close said recuperation port, open said transfer port, and cause said pressure space to be pressurised from the source, subsequent movement of said rod upon failure of the source being adapted to take up the lost-motion and carry said back-up piston with it to pressurise the fluid trapped in said pressure space by said closed recuperation port.

4,442,672
BOOST CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINES WITH EXHAUST GAS TURBOCHARGER
Adolf Fischer, Haar, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke AG, Fed. Rep. of Germany
PCT No. PCT/EP81/00071, 371 Date Feb. 16, 1982, 102(e) Date Feb. 16, 1982, PCT Pub. No. WO81/03681, PCT Pub. Date Dec. 24, 1981
PCT Filed Jun. 11, 1981, Ser. No. 355,591
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1980, 3022345
Int. Cl.^{3} F02B *37/12*
U.S. Cl. 60—602 **4 Claims**



1. A boost control device for an internal combustion engine with an exhaust gas turbocharger, comprising bypass valve means for controlling charge air flow in a bypass line disposed

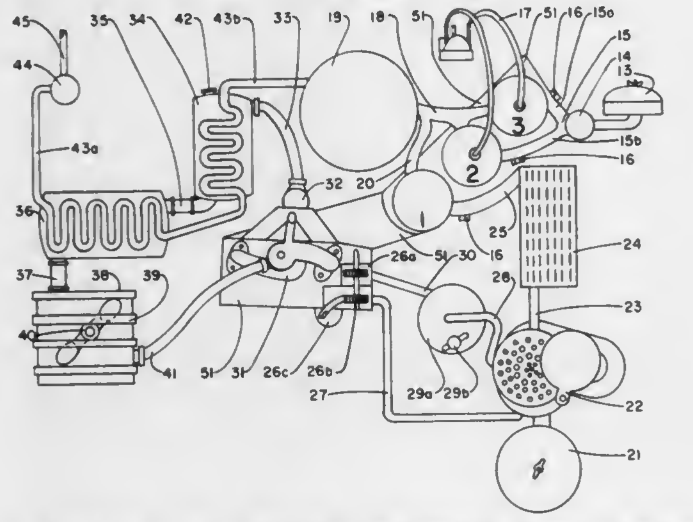
parallel to an exhaust gas turbine of the exhaust gas turbocharger, operator means for operating the bypass valve means adapted to be selectively loaded in the opening and closing directions by charge air, control valve means for feeding charge air to the motor operator as a function of boost pressure, said control valve means selectively feeding charge air to the operator means of the bypass valve means in the closing direction up to a pre-established boost pressure and venting the charge air to the environment, pressure control valve means for loading by charge air in the opening direction, barometric plug means which is exposed to ambient pressure for loading the pressure control valve means in the closing direction, means for prestressing said barometric plug means in response to at least one of the ambient temperature and the charge air temperature.

4,442,673

COMBINATION CYCLE, DUAL PROCESS ENGINE

Floy Haworth, Monett, Mo., assignor to Juanita J. Haworth, Monett, Mo.

Continuation of Ser. No. 210,037, Nov. 24, 1980, abandoned.
This application Aug. 9, 1982, Ser. No. 406,439
Int. Cl.³ F01K *23/14*
U.S. Cl. 60—618 **2 Claims**



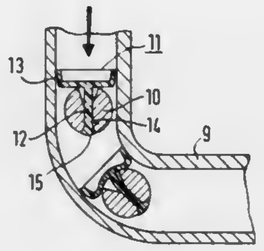
1. Apparatus for providing mechanical power from normally wasted engine heat comprising:
  at least one set of three adjacent in-line cylinders, two of said cylinders being engine cylinders and one of said cylinders being a compressor cylinder,
  a carburetor for supplying fuel to the engine cylinders, and means for igniting said fuel, said engine cylinders operating on a four-stroke cycle,
  means for supplying air to the compressor cylinder,
  said engine cylinders including a liquid cooling system, a lubricating system and an exhaust manifold,
  a steam generator connected to said exhaust manifold,
  means for supplying a liquid to said steam generator, said liquid being vaporized through heat exchange with the engine exhaust gases, the outlet of the compressor cylinder being connected to the exhaust manifold upstream of the steam generator, one of said engine cylinders firing each 360 degrees of crankshaft rotation and each compression stroke coinciding with every exhaust stroke of said engine cylinders in order to combust inburned fuel in the exhaust manifold,
  said lubricating system including a high pressure pump, a scavenging pump and an oil cooler, said oil cooler being located in heat exchange relationship with the means for supplying air to the compressor, said scavenging pump moving oil from the engine crankcase through said oil cooler,
  the means for supplying air to the compressor including an engine vavle cover having surface fins thereon,
  said engine liquid cooling system including a pump and two heat exchangers in series and in heat exchange relationship with the means for supplying liquid to said steam generator, a radiator and a coolant temperature controlled electric fan for regulating the temperature of the engine coolant,
and a steam engine connected to said steam generator.

4,442,674

DRIVING DEVICE

Artur Föhl, Schorndorf, Fed. Rep. of Germany, assignor to REPA Feinstanzwerk GmbH, Alfdorf, Fed. Rep. of Germany

Filed Sep. 10, 1981, Ser. No. 301,044
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1980, 3034258
Int. Cl.³ F02N *13/00;* F16J *15/00*
U.S. Cl. 60—632 **6 Claims**



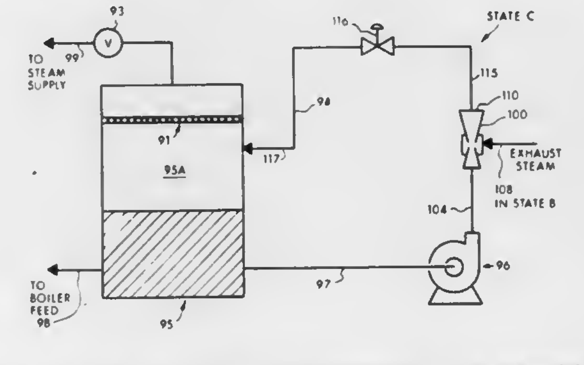
1. Driving device, including a pyrotechnical driving device for a backtightening device of a safety belt system comprising a cylinder having a curved cylinder section in which its cross-section deviates from a circular cross-section and its width is smaller than its length as measured by the cross-section's two axes, a non-resilient spherical piston in the cylinder unencumbered by a connecting rod and drive mechanism necessary to drive the piston but which piston can be driven by a fluid propellant, said spherical piston having a diameter smaller than the smallest inside width of the cylinder and a resilient sealing element which is cup-shaped with its cup rim in contact with the interior wall of the cylinder disposed on the driving side of the spherical piston which resilient sealing element during movement of the piston through the cylinder adapts itself to the changing cross-sectional shape of the curved cylinder and retains a constant position relative to the cylinder axis when passing through the cylinder curvature and, wherein the sealing element has a connecting pin which is axial to the cylinder axis and which connecting pin is fastened in an axial hole of the spherical piston.

4,442,675

METHOD FOR THERMODYNAMIC CYCLE

Joseph Wilensky, Houston, Tex., assignor to Soma Kurtis and Jack Sloan, both of Denver, Colo.

Filed May 11, 1981, Ser. No. 262,783
Int. Cl.³ F01K *19/10*
U.S. Cl. 60—654 **8 Claims**



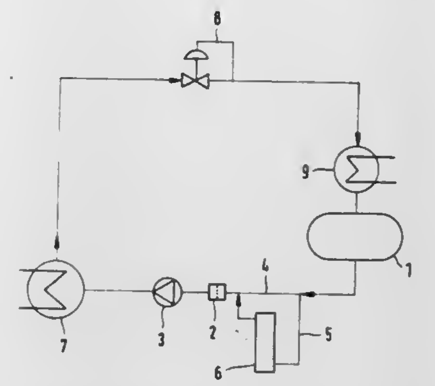
1. In a thermodynamic cycle having, (1) a transition of a working fluid from a State A (representing a pressure P_1 and a temperature T_1 outside a vapor/liquid phase region for the working fluid) to a State B′ (representing a pressure P_2 lower than P_1 and a temperature T_2 lower than T_1) and (2) a transition from a State C′ (representing a pressure P_3 which approximates P_1 and a temperature T_3 which is intermediate to temperature T_1 and temperature T_2) to State A, wherein the improvement comprises effecting a transition of the working fluid from State B′ to State C′ isenthalpically by:
  absorbing into the working fluid in State B′, energy provided by an incompressible motive fluid in an energized state and higher temperature than the working fluid by placing the two fluids in energy communication by educting the working fluid into the motive fluid of a jet eductor and thereby forcing the fluids, in attaining thermal equilibrium, to share their respective energies;
  providing by recycle accumulation of liquid and/or drawing upon external sources of the motive fluid the amount of motive fluid for the energy communication, as determined by:
    (1) fixing the quantity of working fluid introduced in State B′,
    (2) prescribing the State C′ for the working fluid, and
    (3) fixing the energized state of the motive fluid, to pressure the working fluid from State B′ (representing a pressure P_2 lower than P_1 and a temperature T_2 lower thant T_1 and also lower than the critical temperature of the combined motive fluid and working fluid in the proportions in which the fluids are employed) to State C′ adiabatically;
  energizing the motive fluid by pumping;
  separating the motive fluid from the working fluid between State C′ and State A by:
    (1) maintaining a constant motive fluid source inventory (at a temperature achieved in effecting the transition from State C′ to State A) within a vessel that receives the liquid thus formed in total, and
    (2) withdrawing any surplus liquid which will be perforce, working fluid.

4,442,676

PROCESS FOR IMPROVING THE THERMAL STABILITY OF FLUORO-CHLORO-HYDROCARBON

Werner Rudolph, and Guenter Fernschild, both of Hanover, Fed. Rep. of Germany, assignors to Kali-Chemie AG, Hanover, Fed. Rep. of Germany

Filed Apr. 28, 1981, Ser. No. 258,054
Claims priority, application Fed. Rep. of Germany, May 8, 1980, 3017531
Int. Cl.³ F01K *25/08*
U.S. Cl. 60—671 **17 Claims**



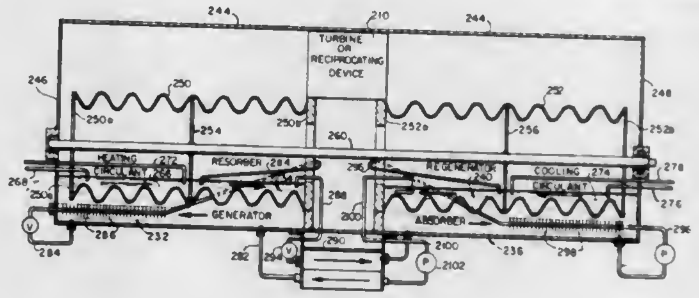
1. A process for improving the thermal stability of fluoro-chloro-hydrocarbons and for preventing corrosion damage in a system wherein a fluoro-chloro-hydrocarbon is exposed to elevated temperatures, comprising the steps of:
  circulating a fluoro-chloro-hydrocarbon around a system wherein the fluoro-chloro-hydrocarbon is exposed to a temperature between about 80° C. and 300° C. which is sufficiently high to cause decomposition of the fluoro-chloro-hydrocarbon; and
  selectively passing the fluoro-chloro-hydrocarbon over an adsorption filter containing an adsorption medium consisting essentially of a basic high activity Al_2O_3.

4,442,677

VARIABLE EFFECT ABSORPTION MACHINE AND PROCESS

Kenneth W. Kauffman, Philadelphia, Pa., assignor to The Franklin Institute, Philadelphia, Pa.

Filed Nov. 17, 1980, Ser. No. 207,791
Int. Cl.³ F01K *25/06*
U.S. Cl. 60—673 **24 Claims**



1. A thermal machine in which there are three pressure stages, at high, intermediate and low pressures relative to one another, said pressure stages having means, including sealed chambers permitting maintenance of the respective pressures but permitting flow of vapors from one vessel to another within a stage, the high and low pressure stages containing at least one of two types of vessels, generation and absorption vessels, said pressure stages having means, including sealed chambers permitting maintenance of the respective pressures, one type vessel at the high pressure stage and the other type at the low pressure stage, and resorption and regeneration vessels at the intermediate pressure stage, fluid flow connection means providing at least one closed loop at least between the generation vessel, one of the regeneration and resorption vessels, and the absorption vessel, the vessels and fluid flow connection means being provided to contain and convey from one vessel to another an absorbent solution in liquid phase, said solution being selected to have a vapor component with which it may interact, and means permitting selected heat exchange between stages and with external circulants which, together with flow of vapors between various vessels within a pressure stage will effect a variable effect of heat inputs and outputs over a wide range of operating temperatures.

4,442,678

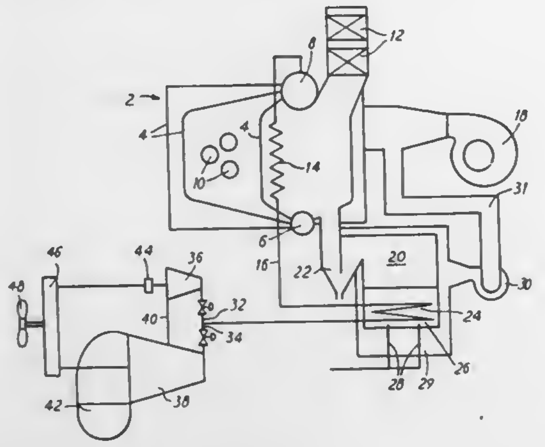
VAPOR GENERATING AND VAPOR SUPERHEATING INSTALLATIONS

Alan F. Hodgkin, Bovingdon, England, assignor to Babcock Power Limited, London, England

Filed Nov. 25, 1981, Ser. No. 324,979
Claims priority, application United Kingdom, Nov. 26, 1980, 8037926
Int. Cl.³ F01K *15/00*
U.S. Cl. 60—676 **4 Claims**

4. A method of operating a marine propulsion unit including selectively supplying superheated vapour to a main load turbine and to an intermediate load turbine, producing superheated vapour for supply to the main load turbine in a fluent fuel fired vapour generating and vapour superheating unit, producing superheated vapour for supply to the intermediate load turbine by superheating in a fluent fuel fired fluidised bed

furnace vapour generated and partially superheated in the vapour generating and vapour superheating unit and discharging vapour from the intermediate load turbine to an intermediate stage of the main load turbine.



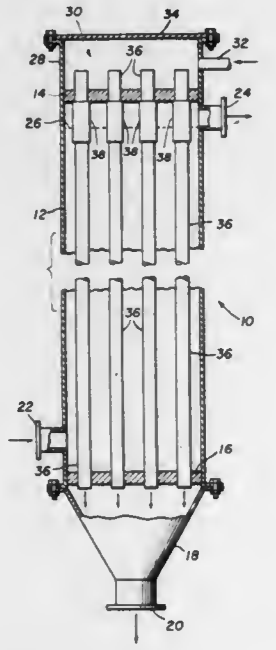
4,442,679
VERTICAL SHELL AND TUBE HEAT EXCHANGER WITH SLEEVES AROUND UPPER PART OF TUBES

Donald C. Stafford, Hinsdale; Tushar K. Shah, Cresthill, and Vincent F. Allo, Warrenville, all of Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Mar. 28, 1983, Ser. No. 479,666

Int. Cl.³ B01D *9/04*

U.S. Cl. 62—123 **3 Claims**



1. A freeze exchanger comprising:

a shell connected to vertically spaced apart horizontally arranged circular upper and lower tube sheets;

a plurality of vertically positioned parallel tubes, with each tube extending through and connected to a hole in each tube sheet;

means to feed a liquefied refrigerant gas to the lower part of the shell side of the heat exchanger and means to withdraw refrigerant vapor from the upper part of the shell side of the heat exchanger;

a liquid distribution box positioned above the upper tube sheet and means to deliver an aqueous feed liquid to the liquid distribution box;

a solid walled sleeve, surrounding and spaced outwardly from each tube, joined to the upper tube sheet and extending downwardly a short distance to terminate beneath the intended liquefied refrigerant level on the shell side, thereby providing a refrigerant vapor space between each sleeve and tube; and

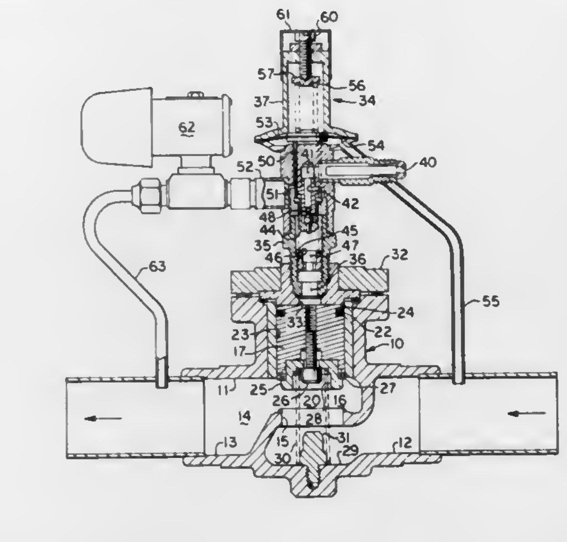
a hole in and through the upper part of the sleeve wall near the upper tube sheet.

4,442,680
PILOT-OPERATED PRESSURE REGULATOR VALVE

William J. Barbier, and J. George Leimbach, both of St. Louis, Mo., assignors to Sporlan Valve Company, St. Louis, Mo. Continuation of Ser. No. 202,462, Oct. 31, 1980, abandoned. This application Apr. 23, 1982, Ser. No. 371,127

Int. Cl.³ F25B *41/04*

U.S. Cl. 62—217 **4 Claims**



1. A pilot-operated pressure regulator valve in a refrigeration system having a compressor, a condensor, an expansion valve and an evaporator connected in series, comprising:

(a) a body having an inlet and an outlet interconnected by a passage for flow therethrough, the body inlet being connected to the outlet of the evaporator and the body outlet being connected to the inlet of the compressor,

(b) a main valve seat defining a main valve port in the passage,

(c) the valve body being provided with a chamber at one side of the main valve port,

(d) a main valve means movably mounted in the chamber for movement toward or away from the main valve seat to control flow through the main valve port, and subject to the pressure at the body inlet through the main valve port, the main valve means dividing the chamber into a first portion communicating with the main valve port on one side of the main valve means and a second portion on the opposite side of the main valve means from the main valve port,

(e) a first spring means tending to urge the main valve means toward an open position relative to the main valve port,

(f) a pilot valve seat defining a pilot valve port communicating with the second chamber portion,

(g) a pilot valve means movably mounted for movement toward or away from th pilot valve seat to control flow through the pilot valve port,

(h) a flexible motor element operatively connected to the pilot valve means for moving the pilot valve means,

(i) a second spring means subjecting one side of the flexible motor element to a predetermined pressure and tending to move the pilot valve means to an open position relative to the pilot valve port,

(j) means subjecting the other side of the flexible motor element to a pressure of the refrigerant upstream of the main valve port, and tending to move the pilot valve means to a closed position relative to the pilot valve port,

(k) means connecting the high pressure outlet of the compressor to the second chamber portion on the said opposite side of the main valve means through the pilot valve port for actuating the main valve means to control flow through the main valve port,

(l) bleed means communicating with the second chamber portion for bleeding the high pressure from the second chamber portion for regulating the main valve means,

(m) means selectively closing the bleed means for retaining the high pressure in the second chamber portion for closing of the main valve port by the main valve means,

(n) second bleed means bypassing the pilot valve means and interconnecting the high pressure outlet of the compressor and the second chamber portion, the second bleed means providing high pressure to the second chamber portion when the pilot valve means is closed.

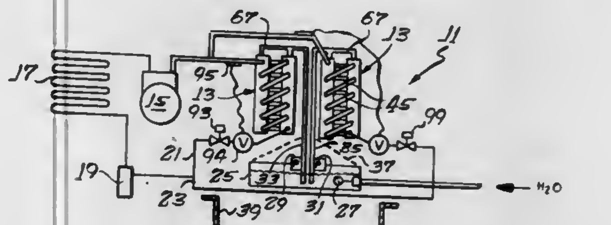
4,442,681
ICE-MAKER

Harry C. Fischer, P.O. Box 1687, Cocoa, Fla. 32922

Filed Sep. 28, 1981, Ser. No. 306,219

Int. Cl.³ F25C *1/12*

U.S. Cl. 62—347 **4 Claims**



3. An ice-making machine which includes an evaporator for making pieces of water ice and means for supplying water thereto, which evaporator comprises

metal tubing formed to provide a plurality of parallel segments which are interconnected at alternate ends to form a coil,

said tubing segments being oval in cross section with a long major axis and a short minor axis,

support means made of synthetic resin material having a thermal conductivity not greater than about that of water ice,

said support means being molded to said tubing segments to form an evaporator assembly and having web sections extending between adjacent tubing segments and transversely extending vertical rib sections,

said long major axis of said oval cross section tubing segments being aligned with the plane of said web section, and

the thickness of said web section being smaller than the thickness of said tubing segment minor axis, and

a refrigeration system including a compressor and a condensor for causing relatively low-pressure cold refrigerant to flow through said tubing segments during ice-making and including means for causing relatively high-pressure warm refrigerant to flow through said tubing segments during harvesting,

whereby when water is supplied to opposite surfaces of said coil-support means assembly and refrigerant passes through said tubing segments, ice pieces are formed upon the exposed surfaces of said tubing segments between adjacent rib sections growing outward in opposite directions and whereby application of higher pressure within said tubing segments causes outward bulging which change in outer contour causes said ice pieces to break loose from the surface of said evaporator during harvesting.

4,442,682
TURBINE FOR USE IN REFRIGERATION CYCLE

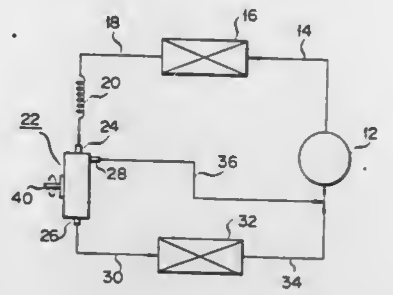
Hirotsugu Sakata, Chigasaki; Shigemi Nagatomo, Tokyo, and Takashi Matsuzaka, Fuji, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 23, 1982, Ser. No. 421,773

Claims priority, application Japan, Sep. 30, 1981, 56-155184

Int. Cl.³ F25D *9/00*

U.S. Cl. 62—401 **7 Claims**



1. A turbine for use in refrigeration cycle comprising:

a casing having an inner circumferential wall to define a closed space;

a turbine runner housed freely rotatable in the space of said casing;

an injection nozzle through which refrigerating medium having at least one of pressure-based energy and kinetic energy is introduced into the casing to blow upon and rotate the turbine runner;

a liquid refrigerating medium receiving section arranged at the lower end of said casing to collect liquid refrigerating medium;

a first liquid refrigerating medium discharging outlet through which the liquid refrigerating medium collected in said receiving section is fed to an evaporator arranged in the refrigeration cycle; and

a second refrigerating medium discharging outlet communicated with the space in said casing above the liquid refrigerating medium receiving section and feeding gaseous refrigerating medium present in said space above the receiving section to the refrigeration cycle at a point downstream from said evaporator.

4,442,683
STITCH PRESSING DEVICE FOR FLAT KNITTING MACHINE

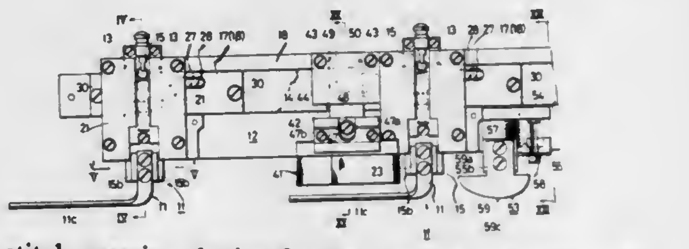
Masahiro Shima, and Hirotsugu Nishida, both of Wakayama, Japan, assignors to Shima Idea Center Co., Ltd., Wakayama, Japan

Filed Apr. 12, 1982, Ser. No. 367,407

Claims priority, application Japan, Apr. 28, 1981, 56-64490

Int. Cl.³ D04B *7/04*

U.S. Cl. 66—64 **11 Claims**



1. A stitch pressing device for flat knitting machine, comprising stitch pressing means arranged on a carriage and operable at substantially same phases as the operative zones of knitting and transfer locks on the carriage, and sub-presser means disposed on the carriage and operable at different phases from the operative zones of the knitting and transfer locks on the carriage, said stitch pressing means comprising a pair of one-way operable stitch pressing means, one provided on one cam box of the carriage and having a stitch presser bar adapted to

enter a gap between a pair of needle beds for slide contact with formed stitches during the movement of the carriage in one direction and the other provided on another cam box of the carriage and having a stitch presser bar adapted to enter said gap between the needle beds for slide contact with formed stitches during the movement of the carriage in the opposite direction, said one-way operable stitch presser means each comprising a support means mounted on the front top surface of one of the cam boxes, a pair of sliders, upper and lower, individually slidably supported on said support means in substantially parallel relation to the needle tricks of the needle bed below the cam box opposite to the cam box on which said support means is mounted, a stitch-presser-bar mounting block pivotally connected at the base portion thereof to the front end portion of the lower slider and coupled at the upper free end thereof to the front end portion of the upper slider, a stitch presser bar secured at the base portion thereof to the upper end portion of the stitch-presser-bar mounting block, and drive means for said pair of sliders, said stitch presser bar being L-shaped and comprising a portion corresponding to the upper part of the vertical portion of "L" and at which it is secured to said mounting block, a portion corresponding to the lower part of said vertical portion and downwardly inclined toward the mounting block, and a portion corresponding to the horizontal portion of "L" and constituting an operative portion extending longitudinally of said gap between the needle beds, said drive means for the pair of sliders comprising pins individually projecting from the sliders, a pair of cam grooves individually engaging said pins, and a grooved cam plate carried by said support means slidably along the length of the needle beds, said pair of cam grooves having a cam surface for moving said upper and lower sliders to impart movement involving a circular motion above the knockover comb to the front portion of said stitch presser bar for entry into and retraction from the gap between the needle beds, said sub-presser means comprising a mounting member having its lower end portion pivotally supported at a suitable location on said support means on the cam box and having its upper end portion adapted to move toward and away from the knockover comb, spring means urging the upper end portion of the mounting member in the forward direction, a stopper for stopping the urging force of the spring at a given forward position, and a sub-presser element secured at the base portion thereof to the upper end portion of the mounting member, said sub-presser element having its front end portion downwardly inclined at a point past the space right above the knockover comb and positioned in the gap between the needle beds, said front end portion having on its both sides a sled-shaped arcuate surface extending longitudinally of the needle beds and being constantly urged deeper into the gap than said stitch presser bar.

4,442,684

CONTROL OF WEFT THREAD INSERTION

Gerhard Bergmann, Heusenstamm, and Gerhard Hittel, Rodgau, both of Fed. Rep. of Germany, assignors to Karl Mayer Textilmaschinenfabrik GmbH, Obertshausen, Fed. Rep. of Germany

Filed Jul. 14, 1982, Ser. No. 398,202

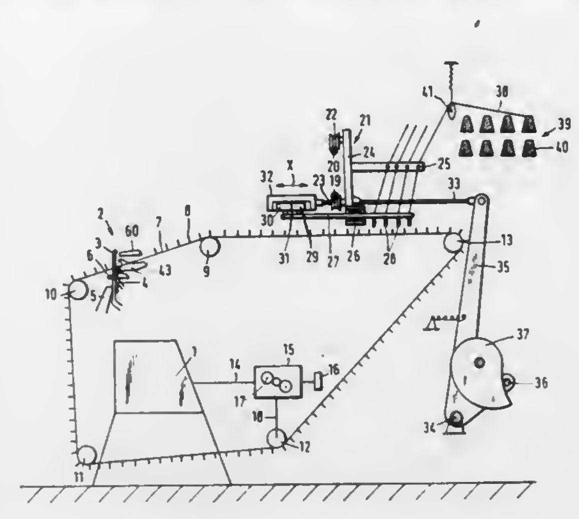
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1981, 3128024

Int. Cl.^{3} D04B ***23/06***

U.S. Cl. 66—84 A **19 Claims**

1. A warp knitting machine having a cyclically operable needle bed for producing ware inlayed with weft threads and having a weft thread insertion means comprising:

- a pair of spaced forwarding means carrying said weft threads toward said needle bed;
- a weft thread deflector mounted adjacent to and up stream of said needle bed for deflecting the forwardmost one of said weft threads to prevent its reaching said needle bed;
- a plurality of holders separately mounted equidistantly on each of said pair of forwarding means for holding transversely positioned, spaced sequences of said weft threads; drive means coupled to said pair of forwarding means and control means for said forwarding means to provide a weft thread arrival rate at the needle bed of less than one weft thread per cycle of said knitting machine.



4,442,685

SLIDE FASTENER STRINGER FOR KNIT FABRICS

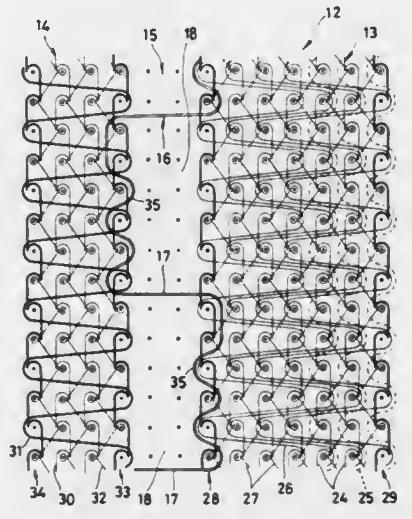
Nyuzen Matsuda, Nyuzen, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Jan. 7, 1981, Ser. No. 223,201

Claims priority, application Japan, Jun. 25, 1980, 55-89252[U]

Int. Cl.^{3} D04B ***23/08***

U.S. Cl. 66—193 **12 Claims**



1. A slide fastener stringer for knit fabrics, comprising:

(a) a warp-knit stringer tape including a pair of longitudinal warp-knit webs spaced transversely from each other with a longitudinal wale-free region therebetween defined by confronting wales, each said web comprised of warp and weft threads, one of said warp-knit webs being narrower than the other wider warp-knit web, and a thread independent of said weft threads interconnecting said webs and having a pair of series of first and second longitudinal portions extending respectively in said wider and narrower warp-knit webs at longitudinal intervals, said first longitudinal portions lying only in one of said confronting wales, and substantially parallel adjacent portions all extending transversely across said wale-free region and spaced longitudinally at an equal interval, thereby defining a plurality of substantially rectangular openings longitudinally in and along said wale-free region; and

(b) A row of coupling elements mounted on said wider warp-knit web remotely from said wale-free region; whereby loops of the knit fabric may be connected to said parallel portions of said thread.

4,442,686

SUPPORT TUBES FOR CROSS-WOUND COILS AND CROSS-WINDINGS

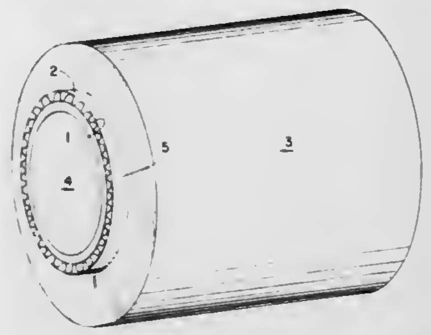
Hans Beffart, Mörlenbach-Voech, and Hans M. Ries, Jockgrim, both of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed May 3, 1982, Ser. No. 374,060

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1981, 3124135

Int. Cl.^{3} D06B ***23/04;*** **B65H** ***75/18***

U.S. Cl. 68—198 **14 Claims**



1. A cylindrical or conical support tube for taking up shrinkable yarns which are thereafter subjected to bleaching or dyeing while on said support tube, comprising a cylindrical or conical lower layer of a porous elastic non-woven fabric of synthetic fibers and/or endless fibers which are cemented together, said lower layer being corrugated in the direction parallel to the longitudinal direction of said tube, and an upper layer of a porous elastic non-woven fabric of synthetic fibers and/or endless fibers which are cemented together to form a continuous cylindrical or conical surface, said upper layer covering said lower layer and being connected thereto at the areas of the largest diameter of the folds in said corrugated lower layer.

4,442,687

APPARATUS FOR THE TENTERING OF SKINS OR HIDES IN THE MANUFACTURE OF LEATHER

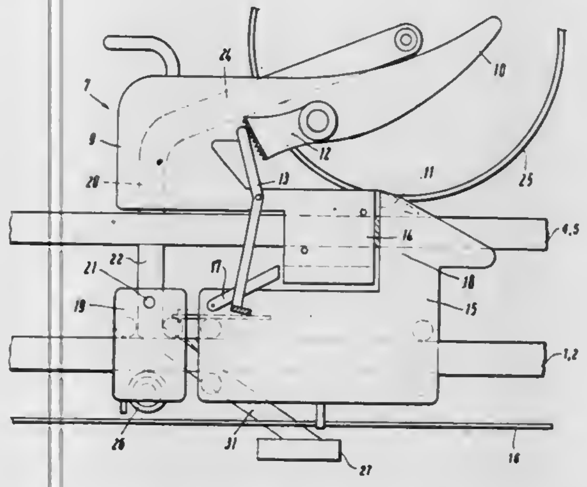
Wolfgang Müntjes, Mulheim an der Ruhr, Fed. Rep. of Germany, assignor to Ludw. Lindgens KG Lederfabrik, Mülheim an der Ruhr, Fed. Rep. of Germany

Filed Sep. 3, 1980, Ser. No. 183,693

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1979, 2936118

Int. Cl.^{3} C14B ***1/58***

U.S. Cl. 69—1 **23 Claims**



1. In a device for tentering skins or hides for the manufacture of leather, having a tentering frame arranged on a machine table, in which frame a plurality of tentering clamps are held displaceably on substantially radial guides, the improvement comprising

pressing means operatively coordinated adjacent to each said tentering clamp and such that said pressing means is displaceably mounted with said tentering clamp,

said pressing means for holding a skin to be tensioned fast in position in which it has been placed on the tentering frame.

4,442,688

VEHICLE STEERING LOCK ARRANGEMENT

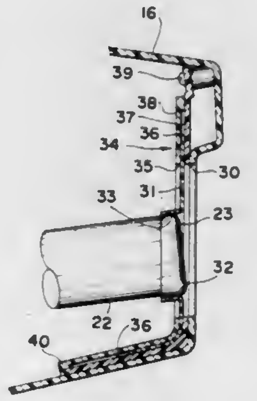
Nobuo Saegusa, Zama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 13, 1982, Ser. No. 377,808

Claims priority, application Japan, Jun. 11, 1981, 56-89994

Int. Cl.^{3} B62D ***1/18;*** **E05B** ***65/12***

U.S. Cl. 70—252 **10 Claims**



1. A steering lock arrangement for a vehicle with a steering wheel permitted to tilt within a predetermined range, comprising:

(a) a stationary instrument panel having an aperture;

(b) a key-receiving member associated with the steering wheel and moving within a predetermined range as the steering wheel tilts, the key-receiving member having a slot for receiving a steering lock operating key, the key-receiving member being located at the back of the instrument panel in such a manner that the slot faces the aperture;

(c) the aperture having such dimensions that the slot will remain inside the boundary of the aperture, as seen substantially from the normal position of the vehicle driver, throughout the range of movement of the key-receiving member; and

(d) a shielding member connected to the key-receiving member and engaging the instrument panel in such a manner as to cover the gap between the key-receiving member and the instrument panel to hide the back of the instrument panel, the shielding member being mounted for movement to permit movement of the key-receiving member, the shielding member continually covering the gap during movement of the key receiving member.

4,442,689

LUBRICATING DIE HOLDER

Arnold Senatore, 605 Benningron Dr., Union, N.J. 07083

Filed Feb. 16, 1982, Ser. No. 348,950

Int. Cl.^{3} B21C ***9/00***

U.S. Cl. 72—41 **8 Claims**

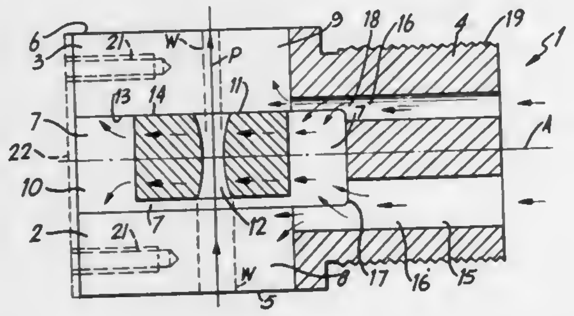
1. Lubricating die holder comprising

a body adapted to be mounted on a support,

the body having a front entrance side and a rear exit side, and containing a die holder chamber provided with an entrance opening extending therefrom to the entrance side and an exit opening extending therefrom to the exit side and defining a die drawing path extending through the body from the entrance opening into the chamber and in turn from the chamber to the exit opening,

the chamber being adapted to receive operatively movably therewithin a separate drawing die of the type capable of reducing the size of a wire or the like type article passing

along the drawing path from the entrance side to the exit side of the body, and
lubricating coolant flow conduit means extending into the body and terminating in feed aperture means flow communicating directly with the chamber and directly with the entrance and exit openings and arranged for feeding lubricating coolant in a direction crosswise of the drawing path and into direct contact with the die and article in the chamber and in the entrance and exit openings, wherein the body is provided with a substantially cylindrical elongated shape having a longitudinal axis extending in crosswise orientation to the drawing path for permitting the die holder to be mounted on a support via a coacting clamp means, for readily aligning the die holder precisely between an upstream feed means for feeding the wire or the like article along the drawing path to the separate drawing die through the entrance opening and a downstream recovery means for recovering the reduced size wire or the like article along the drawing path from the separate drawing die through the exit opening, both in terms of the axial position of the body along such longitudinal axis relative to the drawing path and the rotational angular position of the body and of the entrance opening and exit opening about such longitudinal axis relative to the drawing path.



4,442,690

COILER-FURNACE COMBINATION

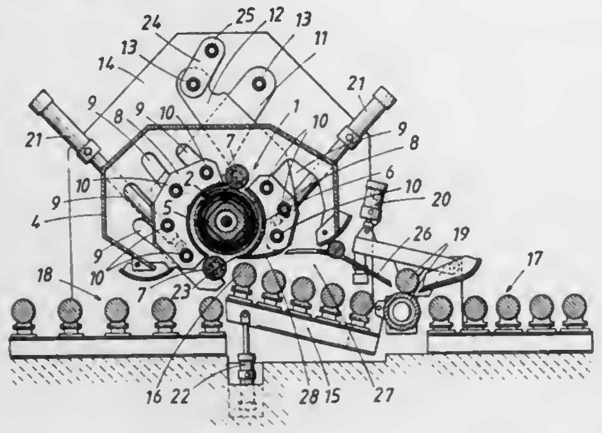
Franz Hirschmanner, Leonding, and Ernst Rom, St. Veit a.d. Glan, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Jul. 23, 1982, Ser. No. 401,370

Claims priority, application Austria, Aug. 24, 1981, 3669/81

Int. Cl.^{3} B21C *47/06, 47/18*

U.S. Cl. 72—128 **5 Claims**



1. In a coiler-furnace combination comprising
a heat-shielding hood,
a horizontal coiler mandrel disposed in said hood and rotatable in a predetermined sense to coil strip on said mandrel and in the opposite sense to uncoil said strip from said mandrel,
strip-guiding means for guiding said strip around said mandrel as it is coiled on and uncoiled from said mandrel, which strip-guiding means comprise pressure rollers for forcing said strip against said mandrel and two part-cylindrical guide segments which are disposed on opposite sides of and movable toward and away from said mandrel, one of said guide segments preceding the other in said predetermined direction, said other guide segment having a delivery edge for delivering said strip as it is coiled up on said mandrel,
actuating means for urging each of said guide segments toward said mandrel generally in a predetermined direction,
means for heating strip coiled on said mandrel,
a strip transfer bridge, which is pivoted below said mandrel and adapted to transfer said strip from and to said mandrel and is adjoined by said one guide segment, and
a pivoted strip lifter which is disposed above said bridge and adapted to lift the outer end of strip coiled on said mandrel from the remainder of said coiled strip,
the improvement residing in that
each of said guide segments is secured to a pivoted arm, which extends transversely to said predetermined direction and is mounted outside said hood on a pivot having an axis that is parallel to the axis of said mandrel,
said delivery edge constitutes said strip lifter, and
separate drive means are provided for imparting a pivotal movement to said bridge independently of said actuating means.

4,442,691

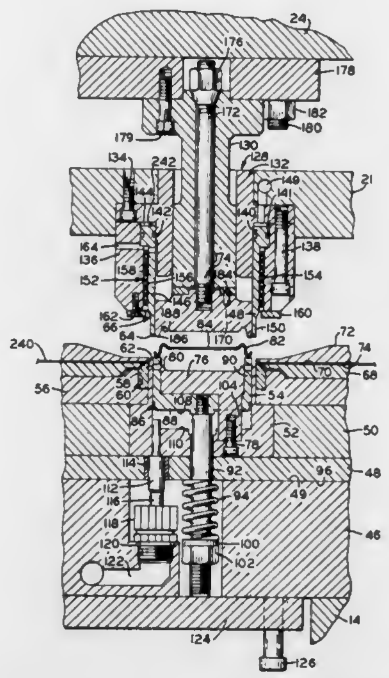
DOUBLE ACTION PRESS HAVING FLOATING PUNCH

Arthur L. Grow, Versailles; Charles J. Gregorovich, St. Marys, and Donald N. Seyfried, New Bremen, all of Ohio, assignors to The Minster Machine Company, Minster, Ohio

Continuation of Ser. No. 165,966, Jul. 7, 1980, abandoned. This application Feb. 22, 1983, Ser. No. 468,490

Int. Cl.^{3} B21D *28/02, 28/20*

U.S. Cl. 72—329 **17 Claims**



1. A blanking and forming punch assembly for a double action press having two slides reciprocated through separate strokes, said punch assembly comprising:
a guide housing connected to one of the press slides,
a blanking punch received in said guide housing for reciprocating movement relative to said housing along a given rectilinear direction,
a preloaded antifriction bearing positioned between said punch and housing and in continuous antifriction contact with said punch and housing during the entire stroke of said punch to accurately guide and align said punch relative to said housing,
means interposed between said punch and housing for yieldably urging said punch in a direction out of said housing toward one of the limits of travel of said punch relative to said housing,
a forming die received in said guide housing for reciprocating movement relative to said housing along said rectilinear direction, said forming die being connected to the other press slide, and
a die assembly mounted to the press and coacting with said punch and forming die.

5. A double action press comprising:
a bed portion,
a blanking slide,
a forming slide
drive means connected to said slides for reciprocating said slides along respective rectilinear paths on one side of said bed portion, said drive means comprising a crankshaft having at least two eccentrics thereon and at least two connecting rods connected to respective said slides and respective said eccentrics, said drive means causing said blanking slide to lead said forming slide,
a forming die comprising a first forming tool element connected to said forming slide and a second forming tool element connected to the bed portion of the press, said tool elements adapted to coact with each other to form a part therebetween when brought together by said forming slide,
a blanking die comprising a blanking punch connected to said blanking slide and a blanking tool element connected to the bed portion of the press, said punch and blanking tool element adapted to coact with each other to cut out a blank when brought together by said blanking slide at about the dead center position of the eccentric driving said blanking slide,
said punch being reciprocally connected to said blanking slide for movement relative to said blanking slide in a direction parallel to the rectilinear movement of said blanking slide,
said drive means causing said blanking slide to positively and non-yieldably engage said punch at about said dead center position of the eccentric driving said blanking slide to cut out a blank, and
means for yieldably urging said punch in said rectilinear direction of said blanking slide away from said blanking slide to extend relative to said blanking slide and exert a holding force on the blank as said blanking slide moves away.

4,442,692

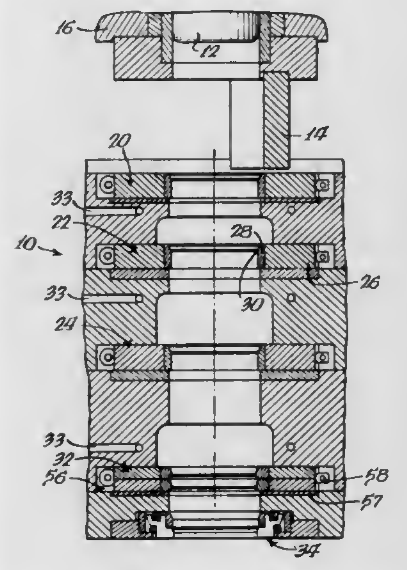
TANDEM IRONING LAND ASSEMBLY

Seung W. Lyu, Palos Hills, Ill., assignor to National Can Corporation, Chicago, Ill.

Filed Nov. 23, 1981, Ser. No. 323,747

Int. Cl.^{3} B21D *22/00*

U.S. Cl. 72—349 **9 Claims**



1. An ironing assembly for use with a punch to iron a sidewall of a thin-walled container having an integral end wall comprising a pair of spaced ironing lands with the first of said ironing lands having a diameter to produce a sidewall reduction of at least thirty-five percent and said second ironing land having a diameter in the range of about 1.00003 to about 1.0003 times greater than the diameter of said first ironing land to produce a sidewall reduction in the range of about 0.1 to about 1 percent.

4,442,693

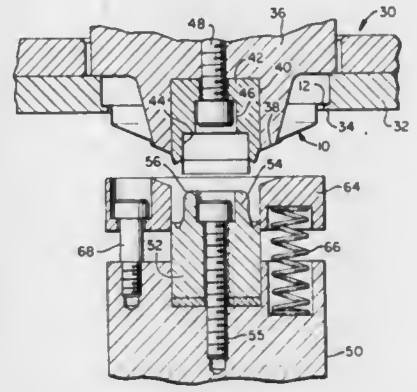
METHOD OF AND APPARATUS FOR SHAPING NECK AND PROVIDING TERMINAL CURL ON CAN END

John Walter, Evergreen Park, Ill., and Charles S. Kubis, Weston, Conn., assignors to The Continental Group, Inc., Stamford, Conn.

Filed Nov. 2, 1981, Ser. No. 317,644

Int. Cl.^{3} B21D *72/00*

U.S. Cl. 72—354 **15 Claims**



1. A method of forming a terminal neck portion and a terminal curl on a metal can end, said method comprising the steps of providing a partially formed can end having a tubular central portion, while supporting the partially formed can end backing up the can end surrounding the tubular central portion, effecting close relative telescoping between the tubular central portion and a die pin, and then forcing the terminal end of the tubular portion into a curling die surrounding the die pin to effect automatic radially outward curling of a terminal end part of said tubular portion.

4,442,694

FLOOR-MOUNTED FORGING PRESS HAVING A STATIONARY PISTON WITH A BORE FOR SUPPLYING A PRESSURE MEDIUM, AND A MOVING CYLINDER

Hermann Füsser, Haan; Horst Groos, Metzkausen, and Heinz Schmoll, Kaarst, all of Fed. Rep. of Germany, assignors to SMS Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Dec. 1, 1981, Ser. No. 326,368

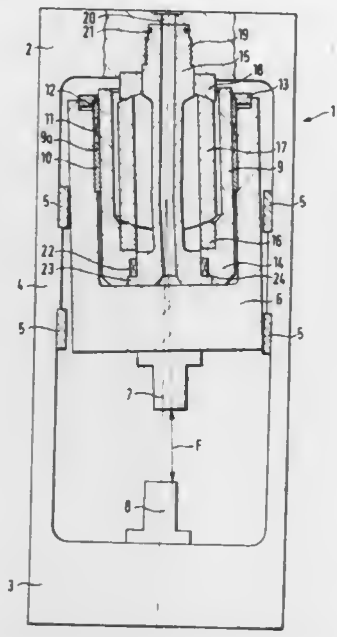
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1980, 3046110; Dec. 13, 1980, 3047068

Int. Cl.^{3} B21J *9/18*

U.S. Cl. 72—453.01 **12 Claims**

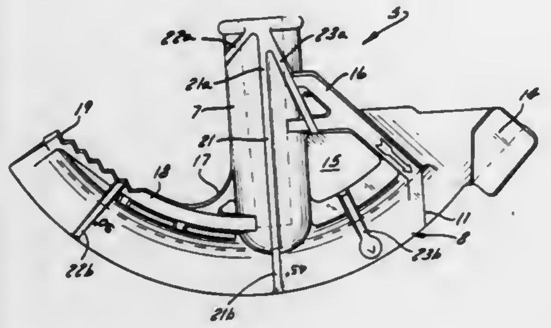
1. A floor-mounted forging press comprising a press frame, a top beam on said frame, a vertical hollow piston, piston supporting means for supporting said piston on said top beam stationary relative thereto in the direction of the press stroke, a vertically movable cylinder slidably mounted on said piston, a tool being mountable on said cylinder, an upper downwardly facing ball cup mounted on the top beam, a lower upwardly facing ball cup mounted in a lower region of the interior of the hollow piston, a bearing member interposed between said ball cups for transmitting axial loads while allowing said piston to tilt relative to said top beam, and a conduit means connected to

the top beam and extending through the top beam and the interior of the piston for supplying a pressure medium to the interior of the cylinder, and sealing means between said conduit and said top beam and piston.



4,442,695
CONDUIT BENDER WITH ANGLE INDICATIONS

William E. Gardner, 4448 Trillium La., Slinger, Wis. 53086
Filed Sep. 20, 1982, Ser. No. 419,802
Int. Cl.³ B21J ***13/08***
U.S. Cl. 72—459 **9 Claims**

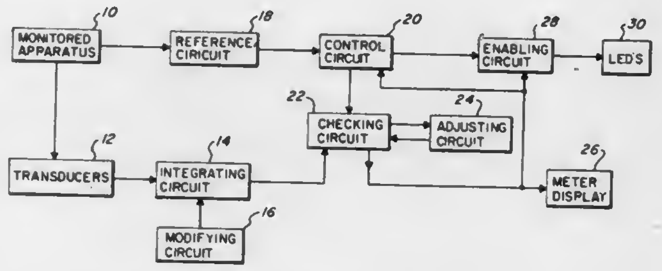


1. A tool for bending conduit and the like whereby conduit can be curved to establish a selected one of a plurality of predetermined bend angles therein, said tool comprising a body that has an elongated shoe portion with a bottom surface which is curved to a convex arc along its length and which is concavely curved from side to side symmetrically to a plane of symmetry, a substantially cylindrical handle supporting portion that projects upwardly from said shoe portion intermediate the ends thereof with its axis in said plane, and an upwardly opening hook portion projecting beyond one end of said shoe portion for engagement under conduit to apply bending force thereto in cooperation with said bottom surface and a supporting surface overlain by the conduit, said tool being characterized by:

A. said handle supporting portion having thereon a plurality of straight and narrow ridges that define first sighting line segments which
  (1) are contained in a sighting plane parallel to said plane of symmetry,
  (2) extend at acute angles to one another, and
  (3) diverge downwardly from a point near the top of said handle supporting portion;
B. said shoe portion having thereon a like plurality of straight and narrow ridges
  (1) which are spaced apart along the length of the shoe portion, and
  (2) each of which defines a second sighting line segment that
    (a) is contained in said sighting plane, and
    (b) is in lengthwise alignment with one of said first sighting line segments and cooperates therewith when extending perpendicular to a supporting surface to identify one of said bend angles.

4,442,696
CALIBRATION FAULT DETECTOR AND AUTOMATIC CALIBRATOR

Lowell H. Erickson, 1495 S. Steele St., Denver, Colo. 80210, and Marcellus S. Merrill, 678 Lafayette, Denver, Colo. 80218
Filed Mar. 10, 1980, Ser. No. 129,269
Int. Cl.³ G01C ***25/00***
U.S. Cl. 73—1 E **25 Claims**



1. A calibration fault detecting and automatic calibrating apparatus for observing the position of a monitored apparatus which varies in position, comprising:

first means for producing a first signal corresponding to the position of the monitored apparatus;

second means for generating a second signal indicating that the monitored apparatus is at a first preestablished reference position, said second means including reference means having target means, said target means being connected to the monitored apparatus and movable therewith, said reference means further having means communicating with said target means for producing an input to said target means, the input being used by said target means for providing an output to said means for producing, the output being used in generating the second signal; and

third means responsive to said first means and said second means, said third means including means for generating a predetermined output representing the first preestablished reference position of the monitored apparatus and also including means for determining whether the first signal corresponds to the predetermined output, this determination being made when the monitored apparatus is at the first preestablished reference position to determine whether the automatic calibrating apparatus is correctly calibrated.

4,442,697
PRE-STRESSED IMPACT TESTING DEVICE

Brian L. Jones; David L. Johnson, and Merlin H. Moseman, all of Omaha, Nebr., assignors to InterNorth, Inc., Omaha, Nebr.
Filed Mar. 19, 1982, Ser. No. 359,742
Int. Cl.³ G01N ***3/30***
U.S. Cl. 73—12 **11 Claims**

1. A pre-stressed impact testing device, comprising,

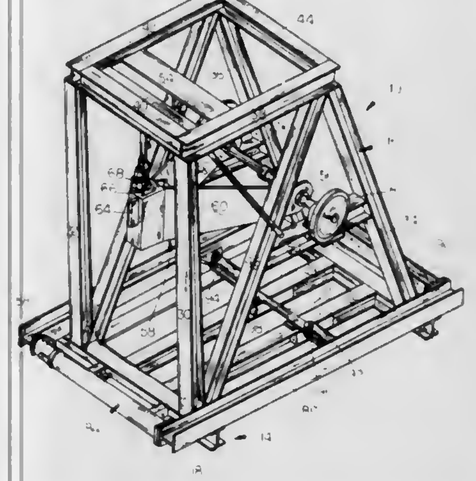
a frame means comprising a base portion and a pendulum supporting portion positioned thereabove,

said base portion including first and second elongated horizontally spaced frame members having opposite ends, and a third frame member secured to and extending between said first and second frame members to one end thereof,

a ram means secured to and extending between the other ends of said first and second frame members for selectively moving the said other ends of said first and second frame members away from each other whereby said first and second frame members are elastically bent,

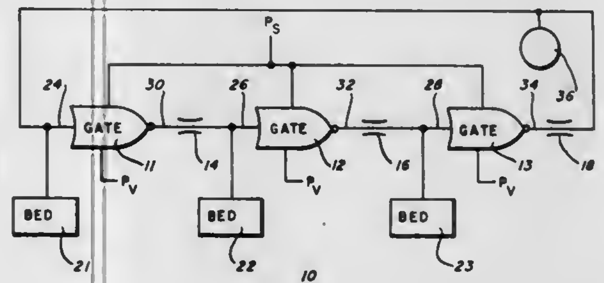
connector means on each of said first and second frame members intermediate the length thereof for attachment to the opposite ends of the sample material whereby said sample material will be placed in stress when said first and second frame members are elastically bent,

a pendulum means mounted on said pendulum supporting portion for impacting and fracturing the sample material, and means for measuring the amount of travel of said pendulum means after it fractures the sample material.



4,442,698
MOLECULAR SIEVE OXYGEN MONITOR

David N. Alftine, Bettendorf, Iowa, assignor to Litton Systems, Inc., Davenport, Iowa
Filed Jan. 24, 1983, Ser. No. 460,307
Int. Cl.³ G01N ***31/06***
U.S. Cl. 73—23 **3 Claims**



2. A monitoring system for determining the concentration of any particular gas in a system for producing a product gas enriched in that particular gas comprising:

a plurality of pneumatic nor gates coupled in a series to form a closed loop each nor gate in a first open condition, directing the flow of said product gas to an outlet port of said gate and, in a second closed condition, blocking the flow of said product gas and coupling the outlet port of said gate to a vent port of said gate,

means for coupling the outlet port of each gate to the control port of the subsequent gate to form said closed loop thereby causing the gates to sequentially open and close such that each subsequent gate assumes an open or closed condition opposite to the condition of the preceding gate,

the pneumatic pressure means at said outlet port for causing the subsequent gate to go to either an open or closed condition,

a corresponding plurality of molecular sieve beds each pneumatically connected to the control port of said nor gates to adsorb said particular gas from said product gas,

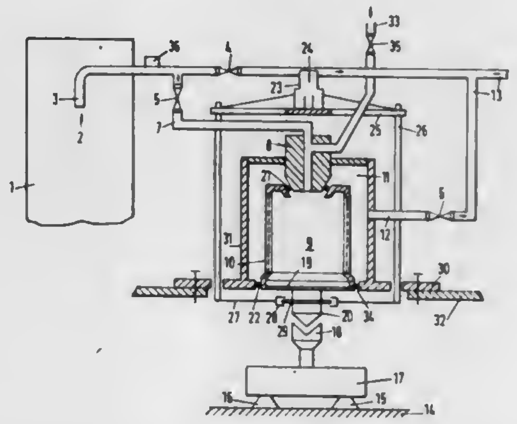
in said first open condition attenuate the rate of pressure rise in said control ports, and

in said second closed condition attenuate the rate of pressure decay in said control port, and

means for inferring the particular gas concentration of said product gas from the oscillation frequency of the monitor.

4,442,699
MONITORING THE DUST CONTENT OF GASEOUS FLUID

Daniel Ramelot, St-Nicolas, Belgium, assignor to Centre de Recherches Metallurgiques-Centrum Voor Research in de Metallurgie, Brussels, Belgium
Filed Feb. 23, 1981, Ser. No. 236,973
Claims priority, application Belgium, Feb. 25, 1980, 881910; Apr. 3, 1980, 882639
Int. Cl.³ G01N ***31/00***
U.S. Cl. 73—28 **9 Claims**



1. Apparatus for monitoring the dust content of a dust-laden gaseous fluid, comprising

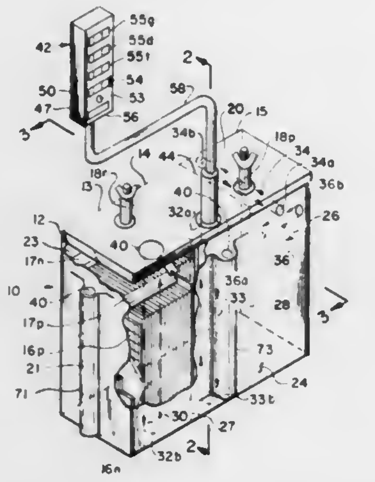
(a) a dust filter having an input side and an output side;
(b) means for moving the filter between a sampling position and a weighing position;
(c) a chamber which surrounds the filter in a leak-tight manner when the filter is in the sampling position, the chamber having an inlet conduit on the input side of the filter and an outlet conduit on the output side of the filter;
(d) means for weighing the filter in the weighing position, the weight of the filter in the weighing position being wholly supported by the weighing means, the filter in the weighing position being no longer surrounded in a leak-tight manner by the chamber;
(e) means for continuously taking a sample of the dust-laden gaseous fluid;
(f) means for conveying the sample to the inlet conduit of the chamber to pass through the filter in the sampling position; and
(g) means for preventing the sample from passing through the filter in the weighing position.

4,442,700
ULTRASONIC HYDROMETER

Carl A. Swoboda, Naperville, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Mar. 9, 1982, Ser. No. 356,567
Int. Cl.³ G01N ***9/00***
U.S. Cl. 73—32 A **6 Claims**

1. A portable ultrasonic hydrometer for determining the specific gravity of the electrolyte in a wet battery such as lead-acid battery having a case with one sonic surface formed on the inside of the battery case under the level of the electrolyte and with an opposing sonic surface boundary of the electrolyte spaced a distance "d" therefrom, the combination comprising sensing means for determining the temperature of the electrolyte, transduer means, a probe for holding the temperature sensing and transducer means whereby they can be hand held flush against the outside of the battery case opposite the

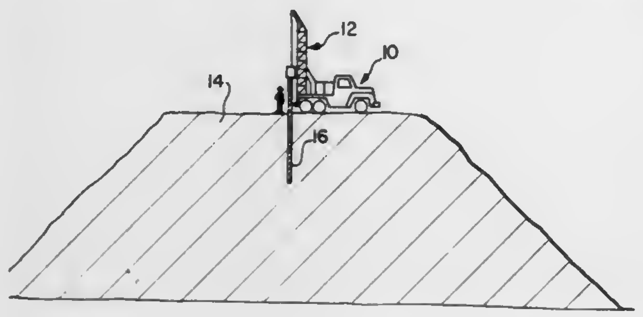
one sonic surface, means for exciting the transducer means to emit an ultrasonic impulse against the outside of the case for transmssion through the case and from the one sonic surface into the electrolyte, whereby the impulse traverses the electrolyte, reflects off the spaced opposing sonic surface boundary and returns through the electrolyte to and is detected by the transducer means, timer means for measuring the lapsed time "t" between the initial impulse of the transducer means and the detected returning impulse, means for calculating with the equation "$V=2d/t$" the sonic velocity "V" through the electrolyte, means including a database corelating the sonic velocity in and the temperature and specific gravity of the electrolyte for temperature values between 0° and 40° C. and for specific gravity values between 1.05 and 1.30, means for searching the database for specifically known inputs including the calculated sonic velocity in and measured temperature of the electrolyte for determining the corresponding specific gravity of the electrolyte, housing means, and said exciting means, timer means, calculating means and searching means being disposed in the housing, and flexible conductor means between the housing means and the probe.



4,442,701
METHOD FOR MEASURING DENSITY OF A BULK MATERIAL IN A STOCKPILE

David C. Cowherd, Centerville; Jerry L. DeWitte, Spring Valley; Kenneth A. Taylor, Dayton; William C. Whitaker, Xenia; Daniel S. Wolfe, Springfield, and Gene A. Wolfe, Fairborn, all of Ohio, assignors to Bowser-Morner, Inc., Dayton, Ohio

Filed Feb. 25, 1983, Ser. No. 470,028
Int. Cl.^{3} G01N *9/24, 9/02*
U.S. Cl. 73—32 R **10 Claims**



1. A method of determing the density of cohesionless bulk material in a stockpile, comprising the steps of:

completely boring a test hole substantially to the bottom of said stockpile;

following complete boring of said hole, positioning one end of a first section of steel casing of an outer diameter substantially equal to the diameter of said test hole at or near the opening to said hole;

applying a first force to the opposite end of said first section until said section is pushed partially into said hole;

connecting a second section of casing to the upper end of said first section;

applying a force substantially equivalent to said first applied force to the upper end of said second section until said second section is pressed partially into said test hole, whereby said first section is driven further into said test hole;

connecting additional sections of casing and inserting said sections into said test hole until said casing sections extend the full depth of said test hole;

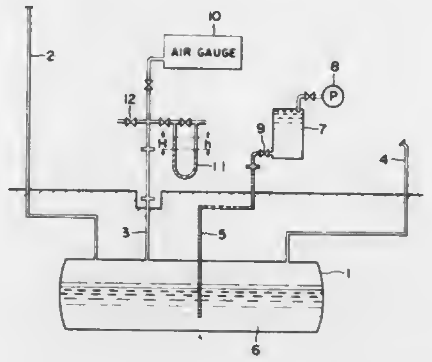
after said casing sections extend the full depth of said hole, inserting the probe of a nuclear depth-density gauge into said test hole and locating said probe at a predetermined depth along said hole, said probe having a length of cable attached thereto;

taking a series of timed readings with said gauge; and

moving said probe along said test hole such that at the beginning of each of said readings following the first thereof, said probe is at a location along said test hole separated by a predetermined interval from its location at the beginning of the last preceding one of said readings, whereby each of said readings taken corresponds to one of a plurality of predetermined depths along said test hole.

4,442,702
METHOD OF AND APPARATUS FOR INSPECTING LIQUID STORAGE TANKS FOR LEAKS BY MEANS OF PRESSURE DECREASE AND INCREASE

Koji Sawada, Tokyo, Japan, assignor to Nippon Engineer Service Kabushiki Kaisha, Tokyo, Japan
PCT No. PCT/JP81/00227, 371 Date Apr. 26, 1982, 102(e) Date Apr. 26, 1982, PCT Pub. No. WO82/00885, PCT Pub. Date Mar. 18, 1982
PCT Filed Sep. 9, 1981, Ser. No. 375,264
Claims priority, application Japan, Sep. 9, 1980, 55-123968
Int. Cl.^{3} G01M *3/32*
U.S. Cl. 73—49.2 **2 Claims**



1. A method of testing for leakage of a tank that contains a liquid having a high vapor pressure, said method being characterized by:

A. sealing the tank from the atmosphere;

B. with the tank thus sealed, withdrawing from the tank to a container a part of the liquid stored in the tank, to reduce pressure in the portion of the tank that is above the liquid therein to a subatmospheric value;

C. making a first measurement of the rate of increase per unit of time of pressure in said portion of the tank, during at least a final portion of a period long enough to ensure that said rate has attained a stable value;

D. while said part of the liquid remains in said container, venting the tank to atmosphere to equalize pressure in said portion of the tank with atmospheric pressure;

E. thereafter resealing the tank from the atmosphere;

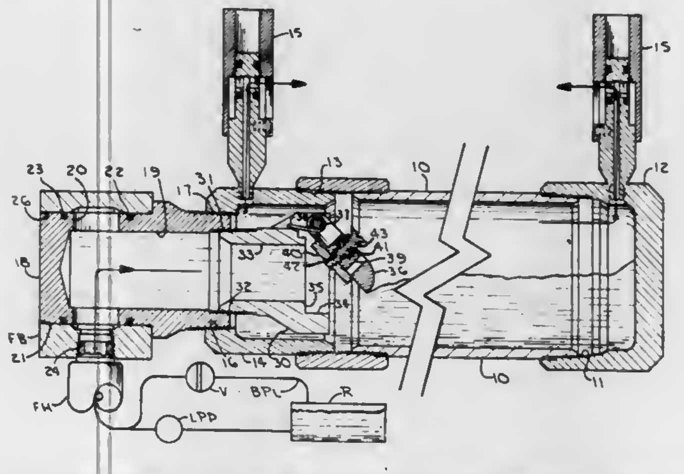
F. with the tank resealed, returning to the tank from said container the part of the liquid that had been withdrawn from the tank, to increase the pressure in said portion of the tank to an above-atmospheric value; and

G. making a second measurement of the rate of increase per unit of time of pressure in said portion of the tank, through at least a final portion of a period long enough to ensure that said rate has attained a stable value, for comparison with the rate found by said first measurement, the existence of a leak in the tank being signified by a difference between the compared rates.

4,442,703
PIPE TESTING APPARATUS

Fred L. Herman, 11931 Kemp Hollow La., Houston, Tex. 77043, and Kenneth H. Johns, Box 316, County Rd. 80, Manvel, Tex. 77578

Filed Mar. 15, 1982, Ser. No. 358,243
Int. Cl.^{3} G01M *3/28*
U.S. Cl. 73—49.5 **9 Claims**

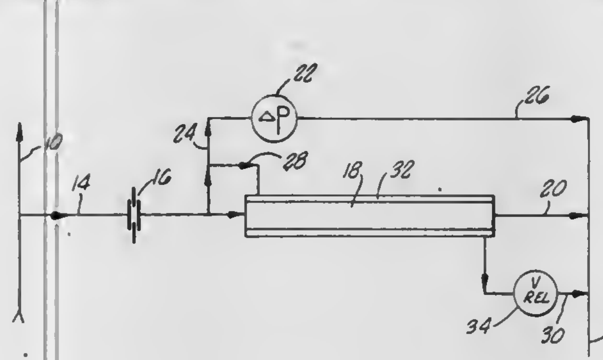


1. Apparatus for use in hydrostatically testing a length of pipe, comprising means for closing each end of the pipe, one such closing means having port means to which fill and pressure hoses from high volume, low pressure and low volume, high pressure pumps may be respectively interchangeably connected, and valve means within the one closing means for permitting water to flow into the pipe when the fill hose from the high volume, low pressure pump is connected to said port means, and, upon filling of the pipe with water and disconnection of the fill hose from the port means, holding the water in the pipe, and then, upon connection of the pressure hose from the low volume, high pressure pump to said port means and pressurizing of the water within the pipe, permitting such water to drain from the pipe when said low volume, high pressure pump is stopped.

4,442,704
VISCOSITY METER

Judson S. Swearingen, 27403 Pacific Coast Hwy., Malibu, Calif. 90265

Filed Jul. 12, 1982, Ser. No. 397,096
Int. Cl.^{3} G01N *11/08*
U.S. Cl. 73—55 **7 Claims**



1. A viscosity meter comprising

a fluid conduit including a main inlet, an orifice downstream of said main inlet, a main capillary downstream of said orifice, a main outlet downstream of said main capillary;

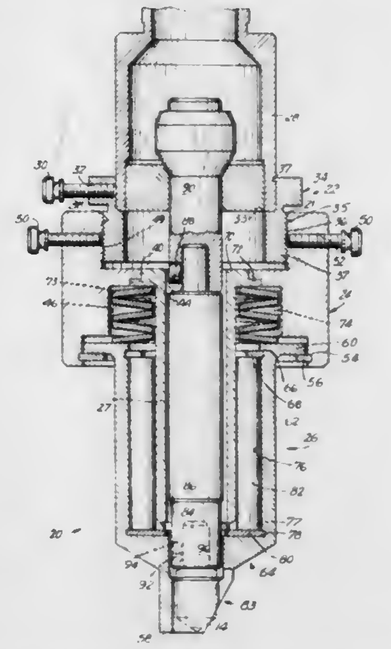
a shunt conduit across said main capillary including a shunt inlet from said fluid conduit downstream of said orifice, a shunt outlet to said main outlet, a shunt capillary between said shunt inlet and said shunt outlet, and means for controlling flow through said shunt conduit responsive to pressure across said main capillary; and

a differential pressure meter across said main capillary.

4,442,705
CLAMPING NOSEPIECE FOR HARDNESS TESTER

Elliot R. Lang, Hamden, and Edward L. Tobolski, Beacon Falls, both of Conn., assignors to Page-Wilson Corporation, Bridgeport, Conn.

Filed Jun. 14, 1982, Ser. No. 388,213
Int. Cl.^{3} G01N *3/44*
U.S. Cl. 73—83 **10 Claims**



1. A clamping nosepiece for a hardness tester, said hardness tester being conventional and having a head and an anvil connected to its base, a workpiece supported on said anvil and being raised thereon to contact the tip of said clamping nosepiece and be clamped thereby with a clamping force, said tester further comprising a penetrator recessed in said clamping nosepiece, said clamping nosepiece comprising:

attachment means to attach said clamping nosepiece to the head of the hardness tester, and

adjustment means coupled to said clamping nosepiece to adjust the position of the penetrator with respect to the tip of said clamping nosepiece to adjust the amount said penetrator is recessed in said clamping nosepiece,

wherein said adjustment means comprises a body attached to said head of the tester, said penetrator being fixedly attached to said body, a housing vertically adjustably coupled to said body, said nosepiece being coupled to said housing so that as said housing is vertically adjusted with respect to said body said nosepiece is adjusted with respect to said penetrator, the position of the penetrator being adjusted independent of the clamping force.

4,442,706

PROBE AND A SYSTEM FOR DETECTING WEAR OF REFRACTORY WALL

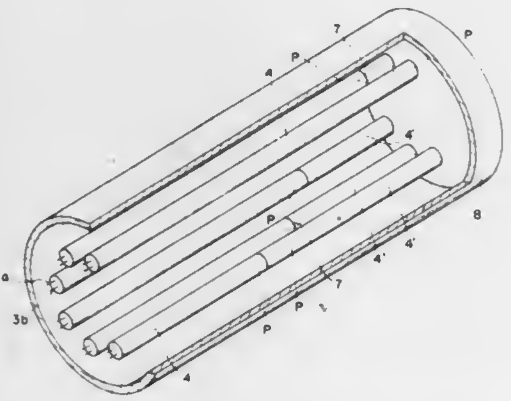
Yoshio Kawate, Toyonaka; Nobuyuki Nagai; Takefumi Horiuchi, both of Kobe; Saburo Tsurutani, Kawanishi; Minoru Kitamura, Nishinomiya; Shuzo Ito, Kobe; Masahiko Ohgami, Kakogawa; Kenichi Tochimori, and Toshio Inoue, both of Hyogo, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Mar. 1, 1982, Ser. No. 353,101

Claims priority, application Japan, Mar. 2, 1981, 56-29330[U]; Mar. 6, 1981, 56-32731; Mar. 11, 1981, 56-34738

Int. Cl.³ G01N *17/00*

U.S. Cl. 73—86 **10 Claims**



1. An apparatus for detecting the degree of wear of a refractory wall, comprising:

at least one probe adapted to be embedded in said wall, comprising,

plural sheathed probe elements each consisting of a pair of high melting point wires, said wires exhibiting a resistance low in thermal dependence and each pair of wires being formed of the same material, said wires having fore ends, said wires disposed in parallel and insulated from each other except at least the fore ends of said wires, said fore ends of each pair of wires forming a normally closed or normally open sensing point,

a sheath enclosure accommodating said probe elements such that the sensing points of the respective probe elements are located at different positions along the length of said sheath enclosure, and holding said probe elements in parallel relation and out of contact with each other, and

a number of dummy elements formed of a material similar to said probe elements and connected to the fore ends thereof to complement the lengths of the shorter of said probe elements.

4,442,707

METHOD AND CENTRIFUGAL APPARATUS FOR SLURRY EROSION TESTING

John J. Tuzson, Evanston, Ill., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 20, 1982, Ser. No. 451,556

Int. Cl.³ G01N *3/56*

U.S. Cl. 73—86 **11 Claims**

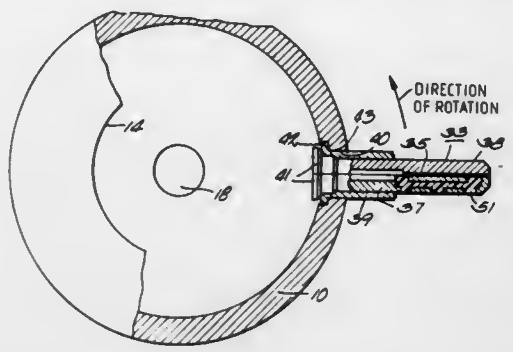
1. A centrifugal slurry erosion testing device including

a rotatable hollow cylindrical vessel,

means for feeding a slurry of abrasive particles into the interior of said vessel,

a specimen holder affixed to and extending radially from said vessel including first and second abutting members the first of which has a cavity in its abutting surface for receiving a specimen of material to be wear tested with a flat surface of the specimen facing the direction of rotation and the second member of which has a shallow, narrow radilly extending groove in its abutting surface which communicates with the interior of the rotating vessel and is disposed opposite said flat surface of said specimen and together therewith defines a radial passage for said slurry, and

means for rotating said cylindrical vessel at high angular velocity about its axis, whereby said slurry is urged by centrifugal force to flow through said passage and said abrasive particles are urged by Coriolis acceleration into a compacted layer against said flat surface and remove material therefrom by scouring action to a measurable depth as the particles flow radially outward, which depth is indicative of the erosion resistance of said specimen.



4,442,708

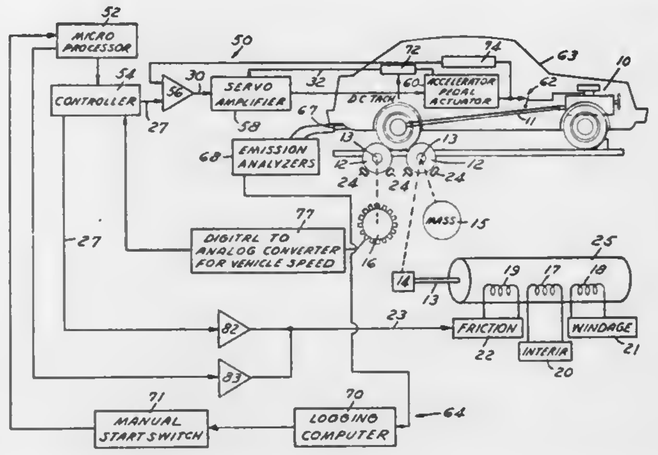
AUTOMATIC DRIVER SYSTEM

Stewart V. Gable, Ypsilanti, and Francis G. King, Birmingham, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 22, 1982, Ser. No. 421,556

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—117 **6 Claims**



1. An automatic driving means for operating a vehicle having an accelerator pedal for controlling the throttle, the vehicle being mounted on traction rollers of a chassis dynamometer, said automatic driving means including:

accelerator pedal actuator means for moving the accelerator pedal;

sensing means for sensing vehicle speed, accelerator pedal position and said accelerator pedal actuator means velocity; and

accelerator pedal control means for driving said accelerator pedal actuator means and being coupled to said sensing means for generating a triple loop accelerator pedal control signal using vehicle speed, accelerator pedal position and pedal actuator motor velocity feedbacks, so as to reduce throttle fluctuations.

4,442,709

MEASURING VEHICLES FOR ROADWAYS

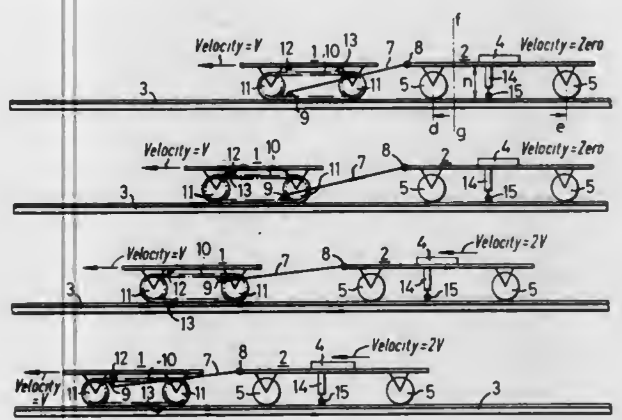
John M. Waters, Derby, England, assignor to British Railways Board, England

Filed Sep. 1, 1981, Ser. No. 298,352

Claims priority, application United Kingdom, Sep. 5, 1980, 8028813

Int. Cl.³ E01B *35/00;* **B60D** *1/00*

U.S. Cl. 73—146 **8 Claims**



1. A measuring vehicle for roadways comprising a tow vehicle supported on the roadway, an instrument carrying vehicle supported on the roadway at two positions which are at a spacing from each other along the length of the instrument carrying vehicle and a connection between the tow vehicle and the instrument carrying vehicle comprising a connecting member extending between the two vehicles and a lost motion arrangement on the tow vehicle comprising rotatable guide means including at least one roller or sprocket connected to be rotated at a speed proportional to the speed of the tow vehicle and an endless belt or chain running on said guide means and driven by said roller or sprocket, said connecting member being connected to said belt or chain and the length of said belt or chain being proportional to said spacing so that as the tow vehicle moves continuously along the roadway the instrument carrying vehicle automatically remains stationary periodically and between each stationary period moves forward a distance proportional to said spacing.

4,442,710

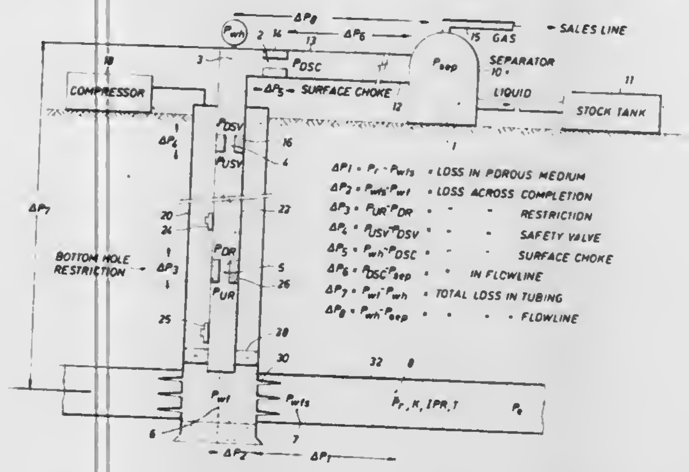
METHOD OF DETERMINING OPTIMUM COST-EFFECTIVE FREE FLOWING OR GAS LIFT WELL PRODUCTION

Hai-Zui Meng, Sugar Land, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Mar. 5, 1982, Ser. No. 355,115

Int. Cl.³ E21B *49/00*

U.S. Cl. 73—151 **10 Claims**


SALES LINE
GAS
SEPARATOR
LIQUID
STOCK TANK
COMPRESSOR
SURFACE CHOKE
BOTTOM HOLE RESTRICTION
ΔP1 = Pr - Pwfs = LOSS IN POROUS MEDIUM
ΔP2 = Pwfs-Pwf = LOSS ACROSS COMPLETION
ΔP3 = PUR-PDR = " " RESTRICTION
ΔP4 = PUSV-PDSV = " " SAFETY VALVE
ΔP5 = Pwh-PDSC = " " SURFACE CHOKE
ΔP6 = PDSC-Psep = " IN FLOWLINE
ΔP7 = Pwf-Pwh = TOTAL LOSS IN TUBING
ΔP8 = Pwh-Psep = " " " FLOWLINE
Pwh
Psep
PDSC
PDSV
PUSV
PDR
PUR
Pwf
Pwfs
Pr, K, IPR, T
Pe

1. A method of determining the optimal cost-effective steady state production rate for a producing well as a function of predetermined well parameters associated with the production of a fluid from subsurface formations forming a reservoir containing the fluid, the fluid produced through a well production system having subsystems thereof and where the reservoir pressure performance is characterized by type curves, the method comprising the steps of:

(a) obtaining measurements of physical properties of the reservoir;

(b) determining reservoir pressure response functions as a function of production rate for various values of a first well parameter, each pressure response function in the form of well bottomhole inflow performance relationships developed from the measurements of the physical properties of the reservoir and the use of the type curves derived from a mathematical solution to a model representing the reservoir;

(c) obtaining the production system pressure response function for each subsystem in the production system;

(d) obtaining from production system responses a second set of functions for the fluid pressure at the well bottomhole as a function of production rate, said second set of functions obtained by varying a second well parameter while holding all other parameters constant;

(e) obtaining a set of production rate response functions for various values of said second parameter where each production rate response function varies as a function of said first parameter; and

(f) analyzing said set of production rate response functions to determine the maximum cost-effective production rate as a function of the cost to obtain values of said first and second well parameters.

4,442,711

DEVICE FOR MEASURING THE FLOW OF FLUID IN A WELL

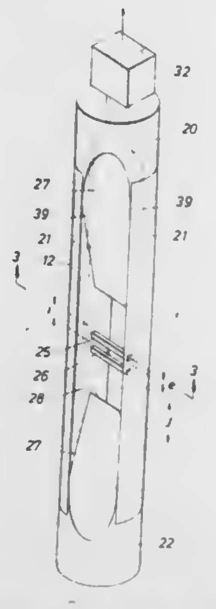
Jean-Pierre Hulin, Saint-Maur; Claude Fierfort, Lozere, and Roger Coudol, Clamart, all of France, assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed Dec. 7, 1981, Ser. No. 327,973

Claims priority, application France, Dec. 18, 1980, 80 26875

Int. Cl.³ G01F *1/32*

U.S. Cl. 73—155 **28 Claims**



1. A device for measuring the flowrate of fluid through a well, comprising an upper portion adapted for connection with a cable, two elongated side members, generally parallel to and spaced from each other and secured to said upper portion, a vortex generating assembly including at least one obstacle secured between said side members transversely of their longitudinal direction, said side members having, at least in the region of said assembly, facing walls which are substantially planar, defining an elongated structure substantially open along its length to the flow of fluid in the well when inserted on the cable into the well, and a transducer responsive to the

occurence of vortices generated by said assembly for producing a signal indicative of said flowrate.

4,442,712
METHOD AND APPARATUS FOR CORRECTING THE UNBALANCE PRESENT IN A ROTOR

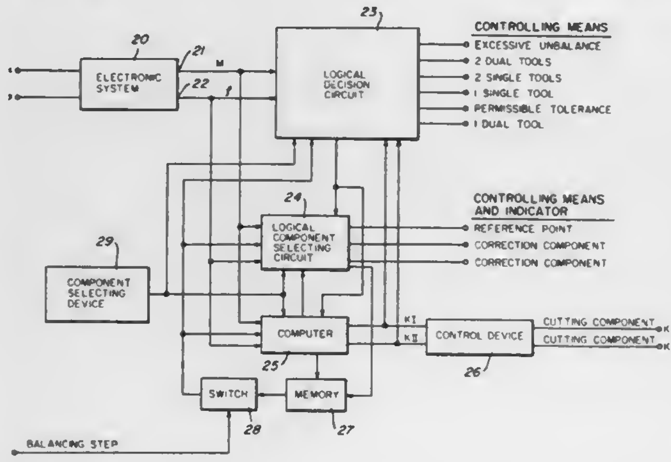
Günter Junck, Modautal; Hans Seidel, Rossdorf, and Jesus Varona, Darmstadt, all of Fed. Rep. of Germany, assignors to Gebr. Hofmann GmbH & Co. KG, Maschinenfabrik, Darmstadt, Fed. Rep. of Germany

Filed Feb. 26, 1982, Ser. No. 352,573

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1981, 3107539

Int. Cl.^{3} G01M *1/38*

U.S. Cl. 73—462 **15 Claims**



1. A method of correcting the unbalance present in a rotor in the minimum number of correction steps comprising performing mass correction by adding or removing material only to or from given points on the rotor, with only a limited quantity of material being available for correction at each point, with the unbalance being resolved into correction components determined by the design of the rotor, the correction being carried out in at least one of several components of the rotor and the unbalance determined being eliminated in said components so as to permit the least quantity of material to be added or removed in a minimum number of correction runs so that finally an uninterrupted sequence of correction points is determined for the rotor.

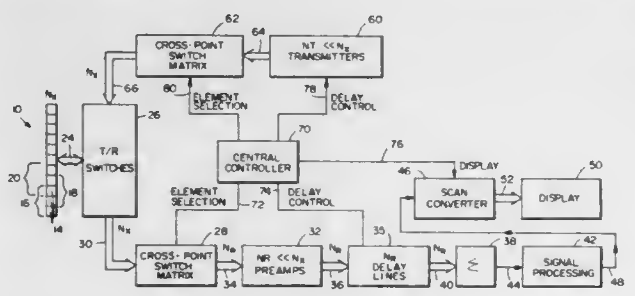
4,442,713
FREQUENCY VARIED ULTRASONIC IMAGING ARRAY

David A. Wilson, and James L. Buxton, both of Palo Alto, Calif., assignors to SRI International, Menlo Park, Calif.

Filed Mar. 9, 1982, Ser. No. 356,498

Int. Cl.^{3} G01N *29/00*

U.S. Cl. 73—599 **25 Claims**



1. An ultrasonic imaging apparatus, which comprises an array of transducer elements for transmitting ultrasonic signals having a first predetermined center frequency into an object to be examined through use of the transmitted signals reflected from within the object and sensed by the apparatus, the reflected signals sensed by the apparatus having a second center frequency less than the first center frequency as a result of signal attenuation by the object, and means connected to select a number of transducers in said array for transmitting the ultrasonic signals inversely proportional to the second center frequency.

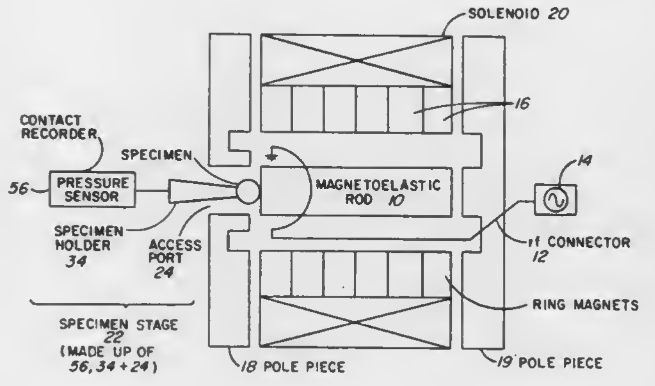
4,442,714
MICROSCOPE AND METHOD OF USE

Wayne L. Bongianni, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 18, 1981, Ser. No. 293,912

Int. Cl.^{3} G01N *29/00*

U.S. Cl. 73—606 **20 Claims**



1. An acoustic microscope comprising in operable communication:

(a) a magnetoelastic transducer to which an rf feed is to be connected wherein said transducer is in the shape of a rod which has an axis of symmetry;

(b) means for producing a magnetoelastic wave within said magnetoelastic transducer, a part of which wave is an acoustic wave having a wavelength less than about 10 μm which is generated in response to an rf signal which impinges upon said transducer;

(c) means for producing a uniform magnetic field the absolute value of which can be varied along said axis of symmetry of said rod so as to physically focus said acoustic wave onto a specimen and so as to produce a reflected signal reflected by and representative of said specimen; and

(d) means for transducing said reflected signal to a corresponding rf signal which is representative of said specimen and which can be processed, wherein said means for producing a uniform magnetic field is such that it allows physical contact of said transducer with a specimen being examined and wherein said rf feed to be connected is such that it avoids distorting said acoustic wave.

4,442,715
VARIABLE FREQUENCY ULTRASONIC SYSTEM

Axel F. Brisken, Shingle Springs, Calif., and Lowell S. Smith, Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 199,983, Oct. 23, 1980, abandoned. This application Oct. 20, 1982, Ser. No. 435,521

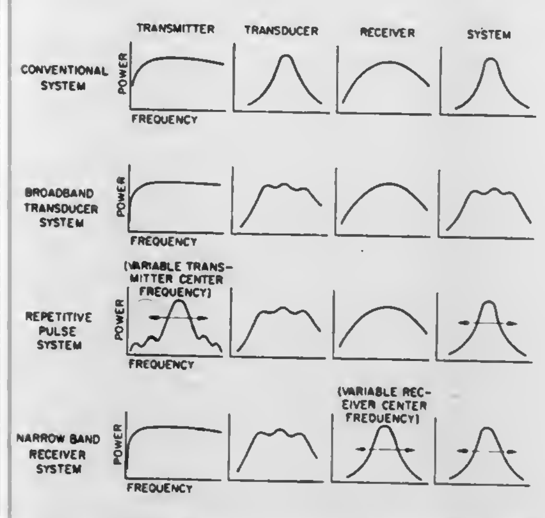
Int. Cl.^{3} G01N *29/00*

U.S. Cl. 73—626 **2 Claims**

1. In a steered beam, sector scan ultrasonic imaging system for medical examinations comprising a broadband linear phased array transducer having plural electroacoustic elements for transmitting pulses of ultrasound and for receiving echo signals, said transducer having a bandwidth greater than 40 percent of the center frequency when the power at any frequency in the band is no less than 6 decibels lower than the power at the frequency of maximum power, a transmitter for producing transducer excitation voltages which are fed to selected elements in sequence, a multichannel broadband receiver, a plurality of receiving channels each having an in-phase and a quadrature channel in which said echo signals are

coherently demodulated using emission frequency reference signals and are focused and summed to produce focused in-phase and quadrature signals, and a B-scan display device, said system having a radiative spectrum that is the product of the bandwidths of said transducer, transmitter, and receiver, the method of adjusting the system radiative spectrum which comprises:

varying the emission frequency of the pulses of ultrasound



between 2 and 5 megahertz, while examining the patient without changing said transducer, by exciting selected elements in sequence with an RF burst whose frequency is changed only between pulse transmissions, said RF burst frequency being varied over all or a portion of the transducer bandwidth; and

adjusting said receiving channel frequency reference signals between pulse transmissions to correspond with the RF burst frequency.

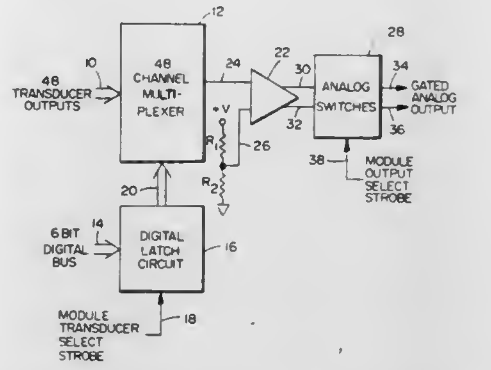
4,442,716
ELECTRONIC SCANNING PRESSURE MEASURING SYSTEM AND TRANSDUCER PACKAGE

Charles F. Coe, Los Altos, and Gilbert T. Parra, Sunnyvale, both of Calif., assignors to The United States of America as represented by the Administrator of the National Areonautics and Space Administration, Washington, D.C.

Filed Apr. 30, 1982, Ser. No. 373,771

Int. Cl.^{3} G01L *9/06;* G01M *9/00*

U.S. Cl. 73—756 **13 Claims**



1. A pressure system comprising a plurality of pressure transducers, means for obtaining an electrical signal indicative of a pressure measurement from each of said plurality of pressure transducers, multiplexing means connected for selectively supplying inputs from said plurality of pressure transducers to said signal obtaining means, a data bus connecting said plurality of pressure transducers to said multiplexing means, a latch circuit connected to supply control inputs to said multiplexing means, an address bus connected to supply an address signal of a selected one of said plurality of pressure transducers to said latch circuit, said signal obtaining means comprising a differential amplifier receiving a first signal from one of said pressure transducers as a first input and a second signal from a predetermined one of said pressure transducers constituting a reference transducer as a second input, the differential amplifier producing as an output, based on said first and second signals, the electrical signal indicative of the pressure measurement.

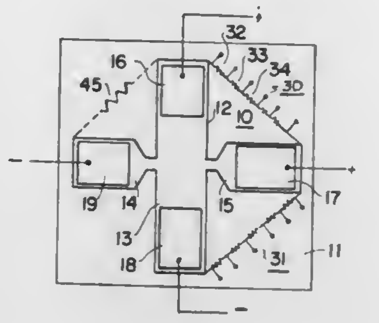
4,442,717
COMPENSATION AND NORMALIZATION APPARATUS FOR SHEAR PIEZORESISTIVE GAGE SENSORS

Anthony D. Kurtz, Englewood, and Joseph R. Mallon, Franklin Lakes, both of N.J., assignors to Kulite Semiconductor Products, Inc., Ridgefield, N.J.

Filed Sep. 20, 1982, Ser. No. 419,903

Int. Cl.^{3} G01B *7/18;* G01D *3/04*

U.S. Cl. 73—766 **17 Claims**



1. In a piezoresistive sensor of the type having a cross-shaped configuration including a central vertical arm having top and bottom contacts for receiving an excitation voltage and a horizontal arm located near the center of said vertical arm and relatively perpendicular thereto and having on each end a contact for providing an output voltage across said horizontal arm due to a current flow through said vertical arm and proportional to a force applied to a flexible diaphragm upon which said sensor is located, the combination therewith of apparatus for compensating and normalizing the output voltage, comprising:

impedance means coupled between one of said arms and another of said arms of said sensor and operative to provide a compensated output whereby said output voltage from said sensor exhibits a predetermined null for a zero pressure condition over a specified temperature range.

4,442,718
STRAIN GAUGE AND ELECTRIC CIRCUIT FOR ADJUSTMENT AND CALIBRATION OF SAME

Galina N. Komarova, ulitsa Dugina, 4, kv. 15; Nadezhda P. Klokova, ulitsa Pushkina, 8, kv. 44; Boris P. Podboronov, Molodezhnaya ulitsa, 30, kv. 50, and Georgy M. Piskov, ulitsa Dugina 29, kv. 30, all of Zhukovsky Moskovskoi oblasti, U.S.S.R.

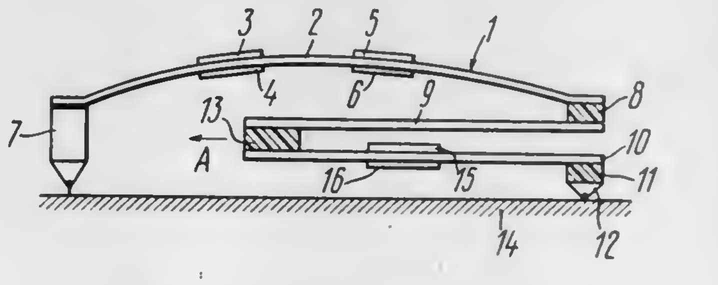
This PCT application filed Feb. 18, 1982, Ser. No. 355,561

PCT No. PCT/SU 80/00/09, § 371 Date Feb. 18, 1982, § 102(e) Date Feb. 18, 1982, PCT Pub. No WO 82/00054, PCT Pub Date Jan. 7, 1982

Claims priority, application U.S.S.R., Jun. 9, 1978, 2626337

Int. Cl.^{3} G01L *1/22*

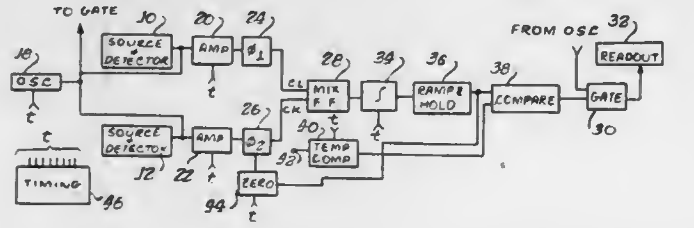
U.S. Cl. 73—766 **9 Claims**



1. A strain gauge comprising a tensoresistor sensitive element which interacts with a movable support through which a signal corresponding to the actual strain value is applied to the gauge, a thermoresistor compensating element and a mechanical thermocompensating element made of a material whose

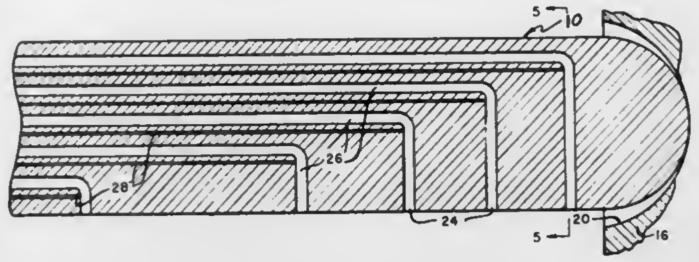
linear thermal expansion coefficient is about equal to the thermal expansion coefficient of the material of the article subjected to strain measurements and rigidly coupled to a second support and connected through the tensoresistor sensitive element to the movable support characterized in that it has a spacer element (9) separating the tensoresistor sensitive element (1) from the mechanical thermocompensating element (10) and made of a material whose linear thermal expansion coefficient is much lower than the thermal expansion coefficient of the material of the mechanical thermocompensating element (10), and in that a heater element (15) and a thermoresistor element (16) are arranged on the mechanical thermocompensating element (10) and intended for programmed straining of the mechanical thermocompensating element (10) in the course of the adjustment and calibration of the strain gauge after the latter is placed on the article which is to undergo testing.

4,442,719
ACOUSTIC FLOWMETER
Ollie J. Allen, 4037 High Point Rd., Ellicott City, Md. 21043, and Kelly M. Allen, 1015 Caren Dr., Sykesville, Md. 21784
Filed Jan. 11, 1982, Ser. No. 338,648
Int. Cl.^{3} G01F *1/66*
U.S. Cl. 73—861.29 21 Claims



1. An improvement in a monitoring circuit for an acoustic flowmeter of the type including a pair of ultrasonic transceivers at facing, longitudinally spaced locations along a conduit for producing alternating electrical output signals, each in response to the other, said electrical signals differing in phase by an amount corresponding to the rate of fluid flow in said conduit, oscillator means for feeding a predetermined alternating electrical input signal to said transceivers, said monitoring circuit being coupled to said transceivers for receiving the output signals produced thereby and for producing responsive output signals which correspond to the rate of fluid flow, the improvement comprising: a pair of phase responsive circuit means responsive respectively to the two transceivers output signals for producing pairs of pulse signals having a phase difference therebetween which corresponds in a predetermined fashion to the phase difference between said output signals from the respective transceivers, both of said phase responsive circuit means including phase shifting means for producing a pair of phase-shifted pulse signals having a predetermined minimum phase difference therebetween, even in response to a zero phase difference between the transceiver output signals, comparing means responsive to said pairs of pulse signals for producing a gating signal having a duration which corresponds to the difference in phase between said pairs of pulse signals and gating means coupled to said oscillator means and responsive to said gating signal for gating through a portion of said predetermined alternating signal corresponding in a predetermined fashion to the rate of fluid flow through said conduit means.

4,442,720
SAMPLING DEVICE FOR WITHDRAWING A REPRESENTATIVE SAMPLE FROM SINGLE AND MULTI-PHASE FLOWS
Walter J. Apley, Pasco; William C. Cliff, and James M. Creer, both of Richland, all of Wash., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Continuation of Ser. No. 173,247, Jul. 29, 1980, abandoned. This application Jan. 6, 1983, Ser. No. 456,146
Int. Cl.^{3} G01N *1/26*
U.S. Cl. 73—863.31 12 Claims



1. A probe device for simultaneously obtaining a plurality of representative samples from a multi-phase fluid stream flowing through a well pipe, said fluid stream having a plurality of zones of pre-determined cross-sectional area to be simultaneously sampled, comprising:

a right cylindrical probe,

drive rod means coupled to said probe which may be positioned within said fluid stream by said drive rod means, the maximum extension of said probe limited by said well pipe containing said fluid stream, said probe capable of being removed completely from said fluid stream,

a plurality of sampling lines, each sampling line terminating in a port at the surface of said probe, said sampling ports in said probe lying along a diameter of said well pipe, each port being positioned in the probe so as to withdraw a sample from a pre-determined zone of said fluid stream, the area of each port proportional to the cross-sectional area of the zone of the fluid stream it samples,

means for measuring the differences in static pressure among said sampling ports, said means including a plurality of static pressure tap lines branching off the sampling lines respectively, and further including a plurality of differential pressure transducers in fluid communication with said plurality of static pressure tap lines respectively, and

a plurality of throttle means for regulating the pressure in each sampling line respectively responsive to the pressure in each static pressure tap line respectively until the differences in pressure among said static pressure tap lines are a predetermined value, whereby the sampling lines simultaneously withdraw a plurality of representative samples from said fluid stream.

4,442,721
MOISTURE AND CONSISTENCY SOIL SAMPLER
Laura G. Singer, 221 Riverview Ave., Highland Park, N.J. 08904
Filed Aug. 6, 1982, Ser. No. 405,879
Int. Cl.^{3} G01N *1/08*
U.S. Cl. 73—863.31 2 Claims

1. A generally unitary moisture and consistency soil sampler comprising,

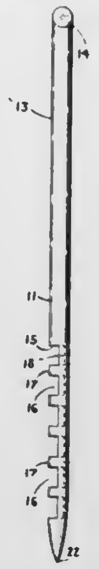
a. a shaped elongated member having, an inserting end, and a handle end remote from the inserting end,

b. said elongated member having a plurality of serially spaced generally transverse means defining continuously open soil collecting pockets along the elongated member near the inserting end,

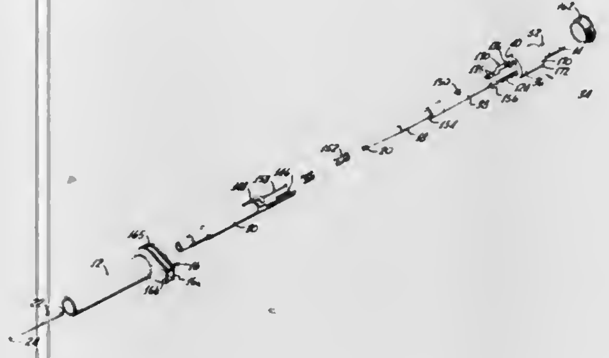
c. each of said means defining the soil collecting pockets including, at least two coacting and spaced transverse surface means to define a spaced opening therebetween for collecting soil in the soil collecting pockets,

d. said means defining each of the soil collecting pockets also including, a concave shaped section in said shaped elongated member forming an associated recess means for each of the said collecting pockets in communication with the respective spaced opening defined by the transverse surface means, and

e. each said concave shaped section terminating in substantially diametrically opposed shaped side edges to facilitate collection of soil during use of the moisture and consistency soil sampler.



4,442,722
PLUNGER OPERATED PIPET
Richard C. Meyer, La Habra, Calif., assignor to Beckman Instruments Inc., Fullerton, Calif.
Continuation of Ser. No. 351,568, Feb. 23, 1982, abandoned, which is a continuation of Ser. No. 165,908, Jul. 3, 1980, abandoned. This application Jan. 7, 1983, Ser. No. 456,201
Int. Cl.^{3} B01L *3/02*
U.S. Cl. 73—864.18 1 Claim



1. Pipetting apparatus comprising:

a generally tubular body having an open forward end for receiving and expelling fluid;

a plunger supported for axial movement in the body to draw fluid into and expel fluid from the body with axial movement away from and toward the open end;

stop means movable between first and second locations in the body to halt movement of the plunger in one direction at first and second axial positions thereby establishing different stroke lengths of plunger movement in the body;

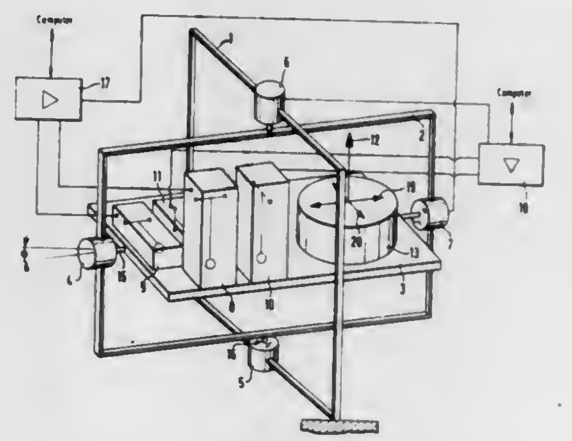
spring means for driving the stop means in one direction between the first and second locations;

arming means for energizing the spring means;

means for retaining the stop means in one of the first and second locations against action of the spring means; and

release means responsive to plunger movement away from the forward end during a first plunger stroke following energizing of the spring means for disabling the retaining means and allowing the spring means to drive the stop means to the other of the first and second locations whereby the first plunger stroke and the succeeding plunger stroke are of the different stroke lengths.

4,442,723
NORTH SEEKING AND COURSE KEEPING GYRO DEVICE
Werner Auer, Wiesenbach, Fed. Rep. of Germany, assignor to Teldix GmbH, Heidelberg, Fed. Rep. of Germany
Filed Nov. 27, 1981, Ser. No. 325,186
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1980, 3045507
Int. Cl.^{3} G01C *19/30, 19/38*
U.S. Cl. 74—5.47 7 Claims



1. In a gyro device arranged to be mounted in a vehicle and operable selectively as a directional gyro or as a gyro compass, which device includes:

a gyro component including a rotor rotatable about a spin axis;

a precession gimbal supporting the gyro rotor via its spin axis and pivotal about a precession axis;

first and second position sensors mounted for providing respective signals representing the inclination of the precession gimbal relative to the horizontal about each of two mutually perpendicular axes which are both perpendicular to the rotor spin axis, the first sensor providing an inclination representing signal relative to that one of the two axes which is parallel to the precession axis;

a second gimbal supporting the precession gimbal via its precession axis and pivotal about a pivot axis which is perpendicular to the precession axis;

a housing supporting the second gimbal via its associated pivot axis;

first drive means connected for pivoting the second gimbal about its pivot axis in response to signals from one of the position sensors,

control means connected for calculating the north deviation angle of the device relative to a reference direction in response to signals generated by the gyro component; the improvement wherein:

said gyro component generates signals relative to two measuring directions;

said second gimbal is mounted with its pivot axis oriented substantially vertically;

said device further comprises second drive means connected to receive the signal from said first position sensor and for pivoting said precession gimbal about the precession axis into a position in which the gyro rotor spin axis is parallel to the pivot axis of said second gimbal;

the signal provided by said second position sensor is representative of the inclination of said precession axis to the horizontal; and

said device further comprises switching means for effecting pivoting of said precession gimbal about the precession axis to bring the spin axis of said rotor into a horizontal orientation for permitting operation of said device as a directional gyro.

4,442,724
ROTARY DIAL UNIT

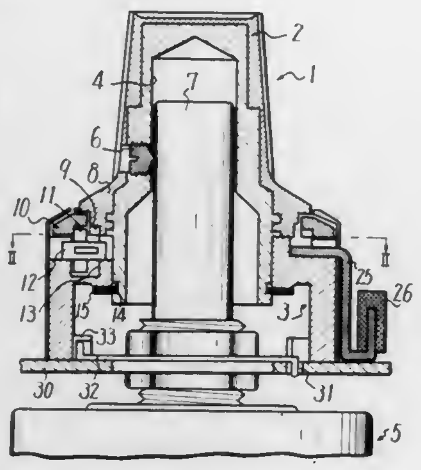
Masami Nirasawa, and Hideo Nigara, both of Kawasaki, Japan, assignors to Sakae Tsushin Kogyo Co. Ltd., Japan

Filed Mar. 12, 1981, Ser. No. 242,979

Claims priority, application Japan, Nov. 13, 1980, 55-162306[U]

Int. Cl.³ F16H *35/18;* **G05G** *5/06*

U.S. Cl. 74—10.41 **4 Claims**



1. A rotary dial unit comprising:

(a) a knob fixed to a rotary shaft to be rotatable therewith;

(b) a dial mechanism provided in association with said knob;

(c) a base for rotatably supporting thereon said knob and said dial mechanism;

(d) clamp means provided between said knob and said base; said clamp means consistingg of a brake shoe formed on a top surface of said base integral therewith, which is in contact with a lower surface of said knob, and a brake lever having a projection, said clamp means being so constructed that when said brake lever is rotated in its operating direction, said projection engages with said brake shoe to thereby urge said brake shoe against the lower surface of said knob to clamp said knob at a predetermined position, and

in which said brake shoe is formed by providing a slit in one of inner and outer flanges which are provided on the top surface of said base integrally therewith, said brake lever is formed to be of a substantially semi-circular shape which is rotatably located within a groove defined by said inner and outer flanges and the top surface of said base, and said projection is provided at one of free ends of said semi-circular brake lever.

4,442,725
SHOCK ABSORBING APPARATUS FOR TRAVELLING A TABLE OR TOOL REST IN MACHINE TOOLS

Hirokuni Urabe, Fukuyama, Japan, assignor to Shigiya Machinery Works, Ltd., Japan

Filed May 26, 1981, Ser. No. 266,765

Int. Cl.³ F16H *1/08*

U.S. Cl. 74—89.15 **4 Claims**

1. A shock-absorbing apparatus for sliding tables in machine tools, the table having a feed nut and a feed screw and being adapted to be moved by said feed nut mounted on said feed screw, comprising:

(a) a rigid bracket disposed on said feed screw,

(b) a sliding collar disposed on said rigid bracket,

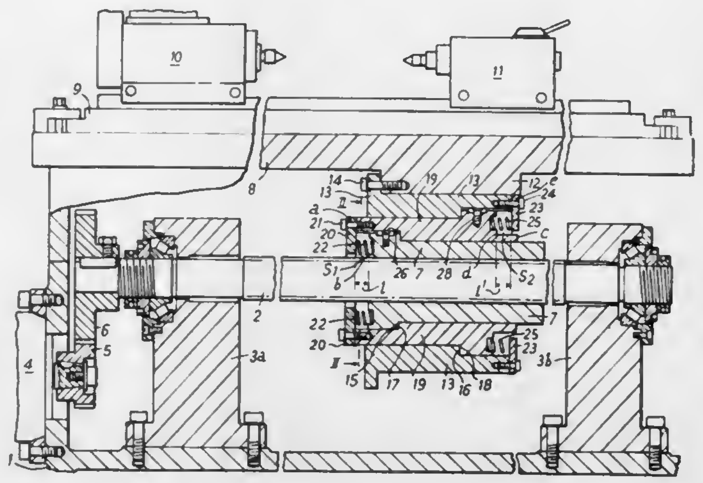
(c) a bushing disposed on said sliding collar,

(d) opposing staged notches on one of the rigid bracket and sliding collar or on the sliding collar and bushing, and further comprising:

(e) means for pressing the opposing staged notches of two adjacent parts against one another and thus prebiasing the parts against one another, characterized in that:

(f) said feed nut (7) serves as said rigid bracket,

(g) a table (8) in engagement with said bushing (13) adapted to be moved by rotating said feed screw (2); and



(h) a tongue and groove configuration between one of said feed nut (7) and sliding collar (10) or between the sliding collar (19) and bushing (13) to prevent rotational movement of these parts.

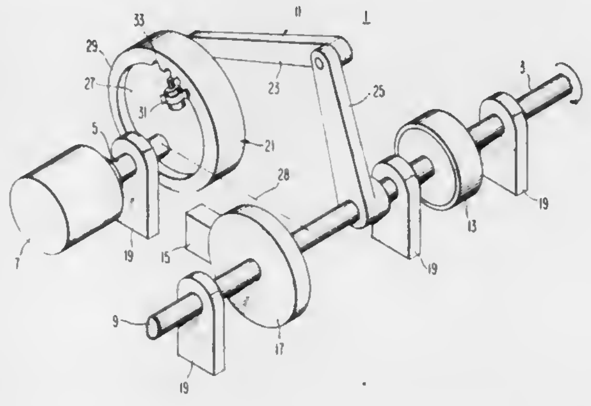
4,442,726
ADJUSTABLE STROKE ROTARY INDEXING MECHANISM

Michael J. Poccia, Rochester, N.Y., assignor to Burroughs Corporation, Detroit, Mich.

Filed Mar. 16, 1981, Ser. No. 243,976

Int. Cl.³ F16H *29/04*

U.S. Cl. 74—117 **9 Claims**



1. An apparatus for providing intermittent rotary output motion of adjustable angular stroke comprising:

a rotatable input shaft;

an intermediate shaft disposed in spaced parallel relationship with said input shaft, said intermediate shaft being drivably and mechanically coupled to said input shaft, said mechanical coupling yielding oscillatory motion in said driven intermediate shaft when said input shaft is driven at a constant angular speed;

said mechanical coupling between said input shaft and said intermediate shaft comprising an adjustable length crank mounted on said input shaft, a rocker link mounted on said intermediate shaft and a coupler link pivotably connected on its first end to said crank and on its second end to said rocker link, said mechanical coupling being dimensionally configured to be operated as a crank-rocker planar four-link mechanism for a predetermined set of crank length adjustments;

said adjustable length crank comprising a first member mounted on said input shaft and a second member rotatably mounted with respect to said first member, said second member being lockably engagable with said first member such that when said second member is locked, it will rotate with said first member, but when said second member is unlocked, it will be rotatable with respect to said first member; said second member being pivotably connected to said first end of said coupler link;

a rotatable output shaft coupled to said intermediate shaft by a one-way clutch, said output shaft having an angular stroke such that said output shaft is driven with said intermediate shaft in one cycle of said intermediate shaft's oscillatory stroke; and

means for adjusting the angular stroke of said output shaft comprising a brake for securing in place said intermediate shaft and said rocker link mounted on said intermediate shaft and drive means for turning said input shaft and said first member mounted on said input shaft.

4,442,727
CONTROL MEANS FOR ROTARY POWER TRANSMISSION

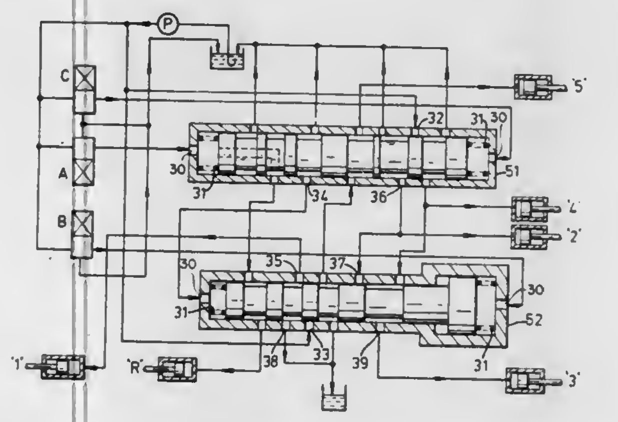
Alastair J. Young, 39 Roundshill, Kenilworth, England, assignor to Alastair John Young, Leamington Spa, England

Filed Sep. 16, 1981, Ser. No. 302,533

Claims priority, application United Kingdom, Oct. 29, 1980, 8034839

Int. Cl.³ F16H *5/52, 5/42;* **B60K** *41/16*

U.S. Cl. 74—336 R **6 Claims**



1. Control means for a rotary transmission having an input and an output and at least first, second and third gear trains in a series, selection means for individually selecting each gear train, a first clutch arranged to selectively connect the input with the output through an odd numbered gear train in the series selected by its selection means, a second clutch arranged to selectively connect the input with the output through an even numbered gear train in the series selected by its selection means, the control system comprising:

a fluid pressure source,

at least three fluid pressure operable actuation means, one for operating each of said selection means,

two single-spool valves having inlets connected from said pressure source and outlets connected to said actuation means and having control ports,

three solenoid operated valves arranged to supply fluid from said source selectively to said control ports to control the spool valves and thereby control distribution of pressure to said actuation means for operation of said selection means for selection of gear trains two at a time in overlapping pairs.

4,442,728
CLUTCHED MULTIPLE BRANCH GEAR TRANSMISSION SYSTEM AND METHOD

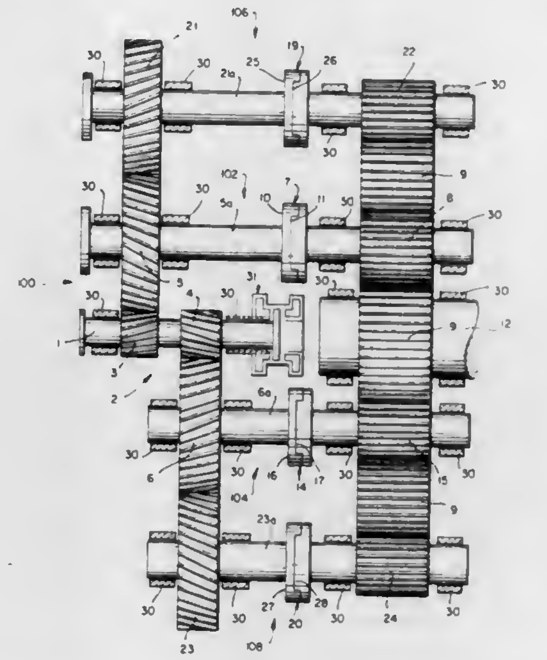
Ernst Jahnel, Augsburg, Fed. Rep. of Germany, assignor to Zahnraderfabrik Renk A.G., Augsburg, Fed. Rep. of Germany

Filed Jun. 22, 1981, Ser. No. 276,199

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1980, 3023283

Int. Cl.³ F16H *3/14*

U.S. Cl. 74—361 **16 Claims**



1. A transmission system comprising an input shaft, input gear means, means mounting the input gear means to the input shaft, the input shaft rotating the input gear means, an output gear, a pair of lay shaft gear trains, each lay shaft train including a spur gear, each spur gear being in engagement with the input gear means, each lay shaft train further including pinion means, each lay shaft pinion means being in driving engagement with the output gear, each lay shaft train further including clutch means intermediate the spur gear and the pinion means, the transmission further including adjustable bearing means, the input shaft engaging the adjustable bearing means, the adjustable bearing means including means for selectively varying the bearing play during different stages of clutch operation, the means for varying the bearing play including means for selectively providing a restraintive force inhibiting bearing movement and for selectively relieving the restraintive force to permit increased bearing play.

4,442,729
LUBRICATING SYSTEM FOR FOUR-WHEEL DRIVE TORQUE TRANSFER MECHANISM

Yoichi Hayakawa, Toyoake, Japan, assignor to Aisin Warner Kabushiki Kaisha, Aichi, Japan

Filed Oct. 6, 1981, Ser. No. 309,141

Claims priority, application Japan, Oct. 7, 1980, 55-140022

Int. Cl.³ F16H *1/44, 57/04*

U.S. Cl. 74—467 **13 Claims**

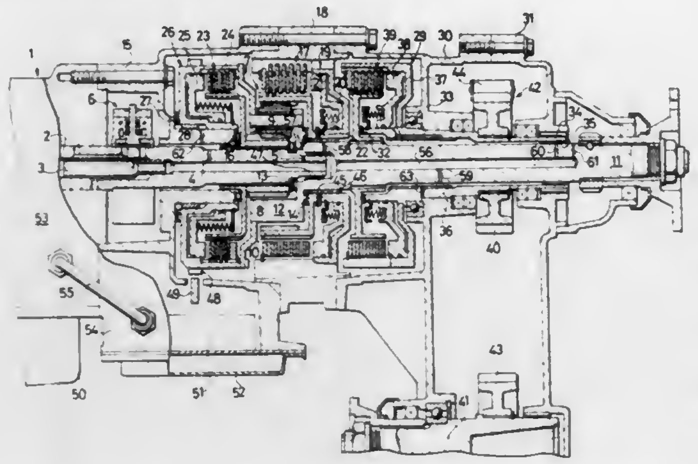
1. In a torque transfer mechanism mounted as a separate unit on the rear end of a transmission disposed next to an engine of a vehicle, the improvement therein comprising:

a common shaft functioning simultaneously as the output shaft of said transmission and the input shaft of said torque transfer mechanism;

a first output shaft of said torque transfer mechanism, said common shaft and said first output shaft being supported rotatably and disposed coaxially with each other;

a planetary gear train positioned between said common shaft and said first output shaft for selectively transmitting the rotational speed of said common shaft to said first output shaft with two different gear ratios, said gear train including a sun gear fitted onto said common shaft, pinions engaged with said sun gear, a ring gear engaged with said pinions and a carrier rotatably supporting said pinions thereon and connected to said first output shaft;

a lubricating system including lubricating oil passages communicating with each other and formed along the central portions of said common shaft and said first output shaft of said torque transfer mechanism, pressurized lubricating oil contained within said transmission being introduced into said torque transfer mechanism through said lubricating oil passages to lubricate said torque transfer mechanism and said planetary gear train.



4,442,730

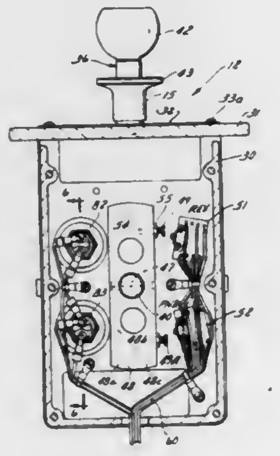
VEHICLE TRANSMISSION SYSTEM AND A SINGLE LEVER CONTROL DEVICE THEREFOR

Joseph B. Snoy, Rockford, Ill., assignor to Twin Disc, Incorporated, Racine, Wis.

Filed Aug. 31, 1981, Ser. No. 297,827

Int. Cl.³ B60K ***41/22;*** **G05G** ***9/12***

U.S. Cl. 74—475 **10 Claims**



2. In combination:

a transmission having an input shaft, an output shaft and a plurality of solenoid-operable clutches operable to put the transmission in any one of a plurality of ranges in either forward or reverse;

a plurality of solenoids connected for operating said clutches; and means for operating said solenoids comprising a control circuit connected to effect energization of said solenoids and a single lever control device;

said single lever control device comprising a support structure and a lever pivotably movable along a first path from neutral position in opposite directions to either a forward position or a reverse position, and said lever being further pivotably movable along another path transverse to said first path in opposition directions between two positions when in forward position or reverse position,

first and second switches connected to said control circuit and responsive to placement of said lever in forward and reverse position, respectively, to place said control circuit in readiness to effect forward or reverse shifting, respectively;

third and fourth switches connected to said control circuit and responsive to movements of said lever along said other path to effect upshift or downshift of said transmission in forward or reverse; first releasable means for maintaining said handle in forward or reverse positions; and second releasable means including a detent on said handle releasably engageable with said support structure for maintaining said handle in neutral position.

4,442,731

CRANK DRIVE FOR SOIL COMPACTING APPARATUS

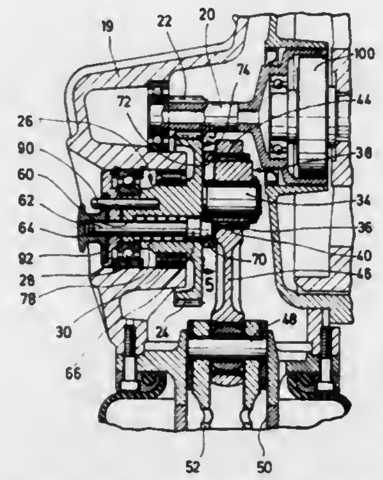
Hans Bürger, Esslingen, Fed. Rep. of Germany, assignor to Delmag-Maschinenfabrik Reinhold Dornfeld GmbH & Co., Esslingen, Fed. Rep. of Germany

Filed Jul. 6, 1981, Ser. No. 281,224

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1980, 3025667; May 27, 1981, 3121007

Int. Cl.³ G05G ***1/00***

U.S. Cl. 74—571 R **14 Claims**



1. A crank device for soil compacting apparatus having a crankshaft and a connecting rod and a pair of eccentric elements rotatable about parallel axes for coupling said connecting rod to said crankshaft, said eccentric elements being lockable relative to each other to set the overall eccentricity provided by said elements, characterized in that a first eccentric element is provided with a plurality of recesses and the second element is provided with a locking bolt, said elements being rotatable to relative positions at which said recesses respectively are generally aligned with said bolt, and means mounting said bolt on said second element for movement between a first position at which it can enter a first recess generally aligned therewith and cannot enter a second recess and a second position at which it cannot enter said first recess and can enter said second recess generally aligned therewith.

4,442,732

PEDAL FOR A BICYCLE

Shinpei Okajima, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

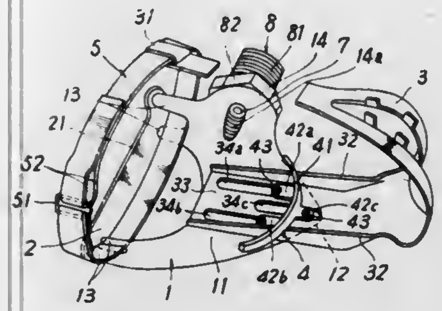
Continuation of Ser. No. 73,859, Sep. 10, 1979, abandoned. This application Feb. 27, 1981, Ser. No. 238,964

Claims priority, application Japan, Sep. 22, 1978, 53-130803; Sep. 22, 1978, 53-130804; Sep. 22, 1978, 53-130805; Sep. 22, 1978, 53-130806; Sep. 22, 1978, 53-130807

Int. Cl.³ G05G ***1/14***

U.S. Cl. 74—594.5 **6 Claims**

1. A pedal for a bicycle, having a pedal body and a bearing mechanism for rotatably supporting said pedal body to a crank arm, the pedal body being equipped with a toe clip and a toe strap, said pedal body being displaced downwardly with respect to an axis of rotation of said bearing mechanism, and having at opposite longitudinal ends a front side-plate and a rear side-plate, each having a respective foot bearing surface, said pedal body having a substantially triangular shaped forward extension extending forwardly of said axis, said extension having an upper surface and a bottom surface which tapers away from said upper surface in a direction of moving away from a fore end of said extension, said bottom surface of said extension being in continuation of and forming part of a bottom surface of said pedal body, said front side-plate being mounted on said extension and being curved forward along the outer edge of said extension.



4,442,733

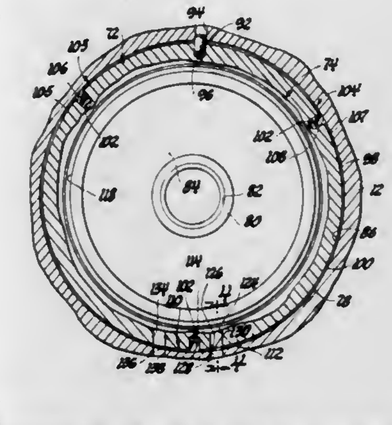
TRANSMISSION CENTER SUPPORT MOUNTING

James F. Hartz, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 28, 1982, Ser. No. 392,894

Int. Cl.³ F16H ***57/04, 57/02;*** **F02F** ***5/00;*** **F16C** ***9/00***

U.S. Cl. 74—606 R **3 Claims**



1. In a transmission having a range of operating temperatures above ambient and including a case having a main bore, a center support disposed in a non-rotatable assembled position in said main bore with a cylindrical surface thereof cooperating with said main bore in defining an annular gap, fluid supply means in said case intersecting said main bore, and passage means in said center support intersecting said cylindrical surface and registering with said fluid supply means in said assembled position of said center support, the improvement comprising elastomeric centralizing and sealing means including a plurality of spacer portions arranged around said center support and disposed in compression in said gap at ambient temperature so that radially directed balanced forces are exerted on said center support by said spacer portions operative to centralize said center support in said main bore, said centralizing and sealing means having a coefficient of thermal expansion sufficiently exceeding the coefficient of thermal expansion of at least one of said case and said center support to maintain said compression throughout said operating temperature range so that said center support is centralized throughout said operating temperature range, and means on one of said plurality of compressed spacer portions defining a gasket between said center support and said main bore permitting fluid tight communication between said fluid supply means and said passage means.

4,442,734

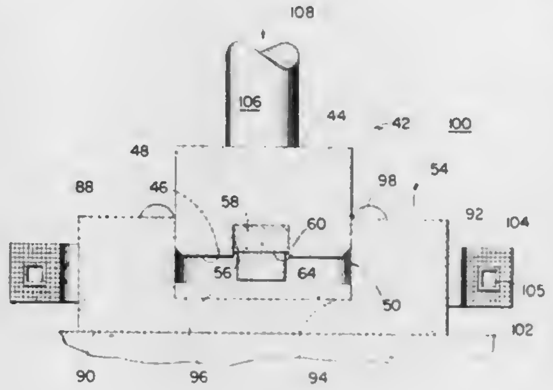
METHOD FOR MOUNTING HARD WEAR-RESISTANT INSERTS

Charles Carson, Fort Wayne, Ind., assignor to Fort Wayne Wire Die, Inc., Fort Wayne, Ind.

Filed May 28, 1982, Ser. No. 383,207

Int. Cl.³ B21K ***5/20***

U.S. Cl. 76—107 A **17 Claims**



1. In a method of mounting a hard insert element including the steps of providing a cylindrical metal casing with opposite front and back sides, the casing having a cylindrical cavity formed in the front side with a flat bottom spaced from the back side, providing a cylindrical plug having top and bottom ends and proportioned to have a close fit in the caity, positioning an insert element in the casing cavity adjacent the bottom thereof, inserting the plug in the casing cavity with the bottom end thereof spaced from the cavity bottom with the die element located in the space, securing the plug in the cavity and the insert element in the space, and forming tapered openings in the top end of the plug and the bottom side of the casing respectively communicating with the insert element, the plug-casing assembly having a reference position with the casing cavity bottom facing upwardly and the plug bottom end facing downwardly, the improvement comprising: prior to inserting the plug in the cavity, inverting one of said plug and casing so that one of said plug bottom end and casing cavity bottom is inverted from its reference position; centering said insert element with respect to the inverted one of said plug bottom end and casing cavity bottom and adhering said insert element thereto; and again inverting said one of said plug and casing to said reference position.

4,442,735

CHAMPAGNE CORK PULLER

Allan Chance, 100 Eldridge St., Mill Valley, Calif. 94941, and William T. Gray, 19612 Grandview Dr., Topanga, Calif. 90290

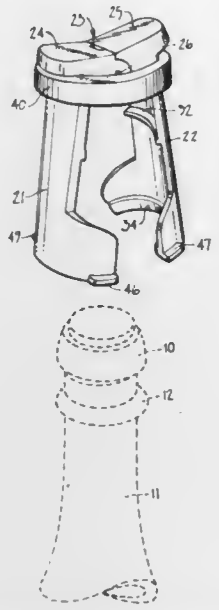
Filed Nov. 24, 1982, Ser. No. 444,406

Int. Cl.³ B67B ***7/06;*** **B65D** ***39/00***

U.S. Cl. 81—3.44 **20 Claims**

1. A device for removing a stopper from a container having a ridged neck, said device comprising:

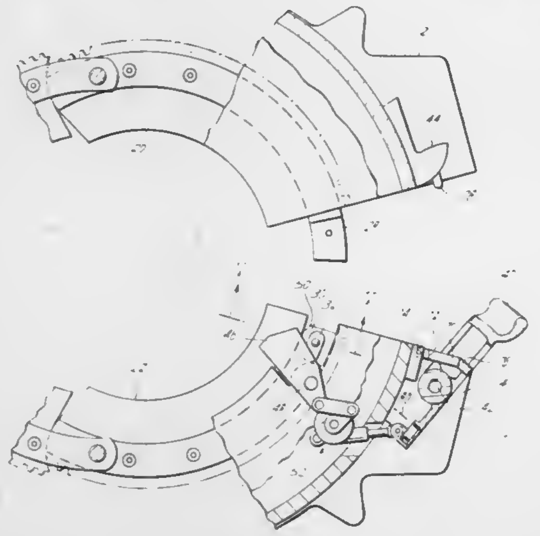
a body having a top and opposed leg portions each joined at an upper end to said top, said leg portions having an upper and a lower inner ledge portion, said upper ledge portions being located longitudinally of said body at a distance below said top to enable the stopper to be clinched between said upper ledge portions and said top, said lower ledge portions being located longitudinally of said body at a distance below said top to provide a limit stop with the ridged container neck during removal of the stopper; and



means for enabling said body to be arranged about the stopper and container neck.

4,442,736
POWER PIPE TONG ROTARY PLUNGER INSERTER

Martin E. True, and Terry D. Timmerman, both of Houston, Tex., assignors to Weatherford/Lamb, Inc., Houston, Tex.
Filed Sep. 9, 1982, Ser. No. 416,405
Int. Cl.³ B25B *17/00*
U.S. Cl. 81—57.15 **9 Claims**



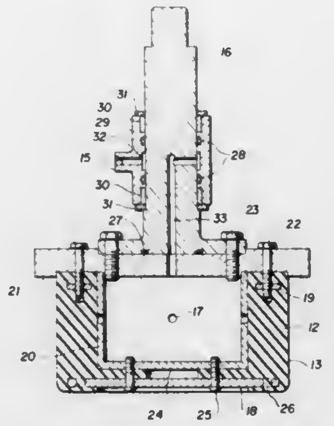
1. In a power pipe tong including doors with a latch handle and having a circular rotary having connecting ends for opening and closing for receiving pipe for make-up or break-out in which the connecting ends of the rotary are fastened together by a spring loaded plunger, the improvement in means for inserting the plunger into the connecting ends as the tong doors are closed comprising,

a cam pivotally mounted on the tong and positioned for engagement with the top of the plunger for inserting the plunger into the rotary and for releasing the plunger, and

a connecting linkage mechanism connected between the cam and the door latch handle and actuated by the handle for moving the cam into engagement with the plunger when the latch is closed and for moving the cam out of engagement with the plunger when the latch is opened.

4,442,737
THREAD PROTECTOR WRENCH

Robert M. Miner, P.O. Box 373, Casper, Wyo. 92602
Filed Apr. 14, 1982, Ser. No. 368,159
Int. Cl.³ B25B *15/00*
U.S. Cl. 81—448 **7 Claims**



1. A wrench for removing generally cylindrically shaped thread protector members having two generally cylindrical surfaces, namely a grasping surface and a threaded surface, the latter being adapted to screw on the threads at the end of a pipe section, said wrench, comprising in combination,

a rotary drive shaft adapted to rotate about the axis of a pipe section having a thread protector screwed thereon to remove the thread protector by unscrewing it,

a generally cylindrical resilient boot member coupled to turn with said drive shaft having a cylindrical surface positionable to abut the grasping surface of the thread protector, and

a housing engaging said boot member and said shaft to rotate therewith providing about said boot member a chamber for retaining and releasing fluid under pressure adapted with the boot member in place abutting the grasping surface to exert pressure against said boot member thereby to urge the boot member abutting surface into contact with substantially uniform pressure about the entire circumference of the grasping surface of the thread protector.

4,442,738
AUTOMATIC PUSH-TO-START SCREWDRIVER

Bob B. Spencer, Reno, Nev., assignor to Standard Pneumatic Motor Co., a Division of Hamilton Company, Reno, Nev.
Filed Mar. 29, 1982, Ser. No. 362,982
Int. Cl.³ B25B *23/14*
U.S. Cl. 81—470 **43 Claims**

1. An automatic push-to-start machine for automatically driving a threaded fastener into a work piece in response to engagement pressure between the threaded fastener and the work piece, comprising

a housing,

motor means,

a torque responsive clutch,

a rotary drive means interconnected with the motor means through the torque responsive clutch,

a fastener holder arranged adjacent the rotary drive means, the rotary drive means and holder being movable relative to each other,

a magazine mountable on the housing for providing a supply of fasteners,

gate means for regulating passage of individual fasteners from the magazine to the holder, and

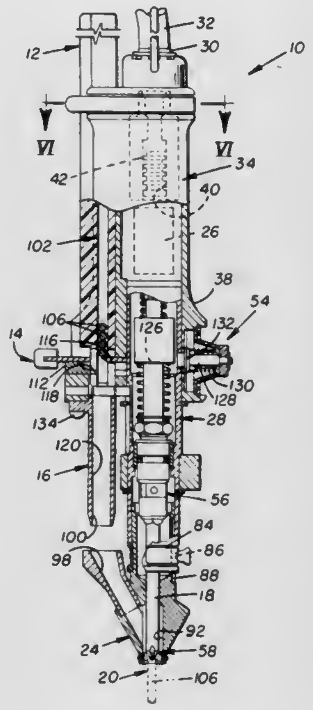
control means operatively coupled with the motor means, the torque responsive clutch, the relatively movable combination of the rotary drive means and holder and the gate means, the control means including means for functioning automatically in response to push-to-start engagement of the fastener with the work piece for

(a) initiating operation of the motor means through the torque responsive clutch and rotary drive means to rotate the fastener

(b) terminating operation of the motor means when a predetermined torque level is sensed by the clutch,

(c) causing a subsequent fastener to be released from the magazine,

(d) shifting the holder and the rotary drive means relative to each other for allowing the subsequent fastener to enter into alignment with the rotary drive means,

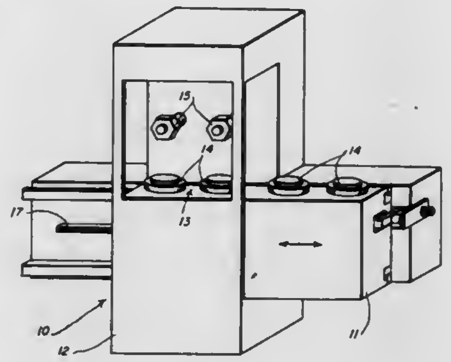


(e) returning the holder and rotary drive means to a position where the holder secures the fastener in engagement with the rotary drive means, and

(f) thereafter returning the control means to the condition prior to step (a) whereby the machine is automatically conditioned for driving the subsequent fastener upon push-to-start actuation thereof.

4,442,739
MULTI-SPINDLE WORK TRANSFER DEVICE

Sven V. Swanson, Jr., New Britain, and Richard G. Swanson, West Hartford, both of Conn., assignors to Litton Industrial Products, Inc., New Britain, Conn.
Filed Jun. 21, 1982, Ser. No. 390,178
Int. Cl.³ B23B *13/04*
U.S. Cl. 82—2.5 **2 Claims**



1. A machine tool comprising

a base having a work zone including a machine drive gear and tool means for performing a machining operation,

a work shuttle assembly including a pair of work stations each having at least one work spindle having a drive gear and an idler gear operatively associate with said spindle drive gear,

means for mounting said work shuttle assembly on said base for displacement between first and second positions selected to alternately locate each of said work stations at said work zone and at a load/unload zone, and

means for displacing said shuttle between said first and second positions,

means for presenting each of said work spindles at a predetermined orientation at said work and load/unload zones including

a gear rack mounted on said base for engaging each of said idler gears as said shuttle is displaced from one to the other of said positions,

said gear rack having at least a portion of the teeth thereof removed proximate said machine drive gear whereby the idler gear of the station located at said work zone will be operatively associated with said machine drive gear but will not be operatively associated with said gear rack,

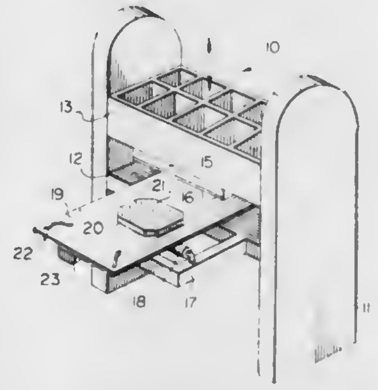
means for preventing the rotation of said machine drive gear as said work shuttle assembly is displaced between said two positions and for allowing the rotation of said machine drive gear when said work shuttle assembly is located at either of said two positions, and

means for locking said work shuttle assembly at either of said two positions, and

means for driving the work spindle located at said work zone including said machine drive gear.

4,442,740
APPARATUS AND METHOD FOR PRODUCING SLITTED PLASTIC PRODUCE WRAPPERS

Thomas R. Rayton, Calgary, Canada, assignor to 236913 Alberta Ltd., Calgary, Canada
Continuation-in-part of Ser. No. 202,603, Oct. 31, 1980, abandoned. This application Sep. 23, 1982, Ser. No. 422,133
Int. Cl.³ B26F *1/18*
U.S. Cl. 83—29 **7 Claims**



1. A method for producing thin, pliable plastic produce wrappers having a central slit area bounded by a solid, unslit margin which comprises the steps of

(a) disposing a die having a plurality of upwardly projecting blades having a thickness of about 0.01 to 0.02 inch on the surface of a support moveable horizontally between a vertically moveable upper ram and a lower platen of a punch press, the bottom face of the ram having a resilient pad,

(b) laying a stack of at least 40 thin, pliable plastic sheets on said die,

(c) moving said support horizontally to bring said die into vertical alignment with said ram,

(d) activating said ram to press down on the plastic sheets resting on the die, thereby cutting slits through the entire stack of sheets,

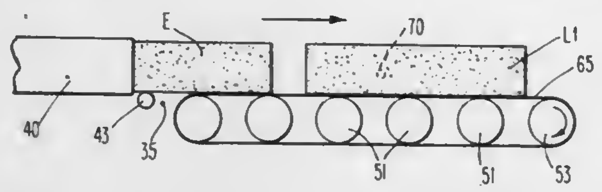
(e) moving said support out of vertical alignment with the ram and

(f) removing the stack of slitted wrappers from the die.

4,442,741
MEAT LOG CUTTER

Thomas D. Whittingham, 1127 N. Chester Rd., West Chester, Pa. 19380; William G. Hennig, 2146 Toluka Way, Boise, Id. 83702, and Thomas A. Brahler, 119 Governor Ct., Downingtown, Pa. 19335

Filed Sep. 7, 1982, Ser. No. 415,269
Int. Cl.^{3} B26D *5/38*
U.S. Cl. 83—80 **10 Claims**



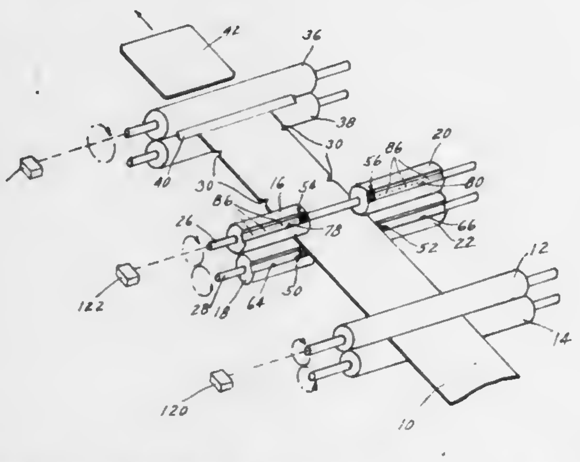
1. In cooperative association with a minced meat extruder having motor driven discharge conveyor means extending forwardly from the discharge end of the extruder, a cutting mechanism between the discharge end of the extruder and the conveyor for cutting continuous extrusions of minced meat into logs of preselected length, said cutting mechanism comprising:

a. a double-acting fluid cylinder having a piston;
b. support means for supporting the fluid cylinder and piston in vertical position above the discharge end of the extruder;
c. a cutter;
d. means connecting the end of the piston to the cutter;
e. sensing means positioned along the discharge conveyor at a preselected distance from the discharge end of the extruder for sensing the arrival of the front end of the meat extrusion;
f. means responsive to the sensing of the arrival of the front end of the extrusion at said sensing means location for actuating said fluid cylinder to drive the cutter transversely through the meat extrusion to form a meat log; and
g. means responsive to the sensing of the arrival of the front end of the extrusion at said sensing means location for speeding up the travel speed of the conveyor means to create a spaced distance between the severed rearward end of the meat log and the forward end of the meat extrusion.

4,442,742
ROTARY APPARATUS FOR FORMING SHEETS WITH ROUNDED CORNERS

Ralph S. Orlow, Anaheim, Calif., assignor to Box Innards, Inc., Orange, Calif.

Filed Dec. 29, 1981, Ser. No. 335,580
Int. Cl.^{3} B26D *1/56*
U.S. Cl. 83—303 **3 Claims**



1. In pad forming apparatus, rotary edge notching apparatus comprising, in combination:

two pairs of parallel rollers on respective shafts adapted for rotation in opposite directions;

a respective punch member secured to one roller of each pair,

each punch member having a portion of a configuration to be removed from the edges of material to be passed between the rollers, each of such portions projecting from the lateral surface of a respective one roller of each pair; and

respective female die means carried by the other roller of each pair,

each female die means including a radially movable element of said configuration; guide means surrounding each said element and defining an opening of said configuration; and means carried by said other roller of each pair to resiliently bias its said element to a position wherein it projects from the lateral surface of said other roller,

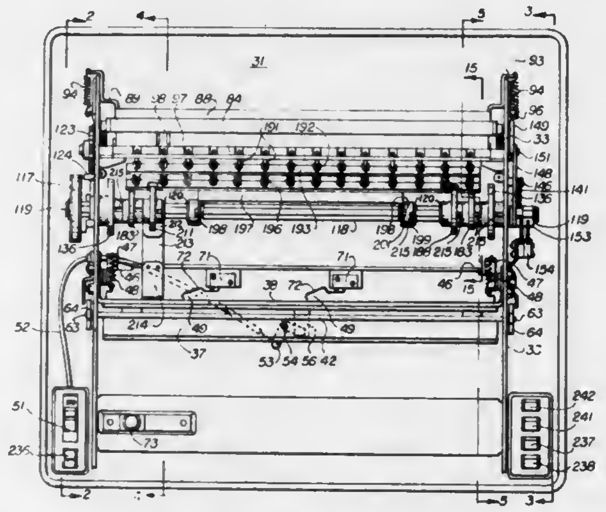
said punch members and female die means being operable upon sheet material being passed between said pairs of rollers so that said punch members depress said elements into said openings along with a portion of the material of said configuration,

said resilient biasing means and said elements being operable upon separation of said punch members and said elements to eject said portions of the material.

4,442,743
PUNCHING MACHINE

Elmer G. Szanto, Saratoga, Calif., assignor to Velo-Bind Inc., Sunnyvale, Calif.

Division of Ser. No. 150,049, May 15, 1980, Pat. No. 4,354,783. This application Apr. 23, 1982, Ser. No. 371,232
Int. Cl.^{3} B26D *7/01, 5/28;* B26F *1/02*
U.S. Cl. 83—372 **6 Claims**



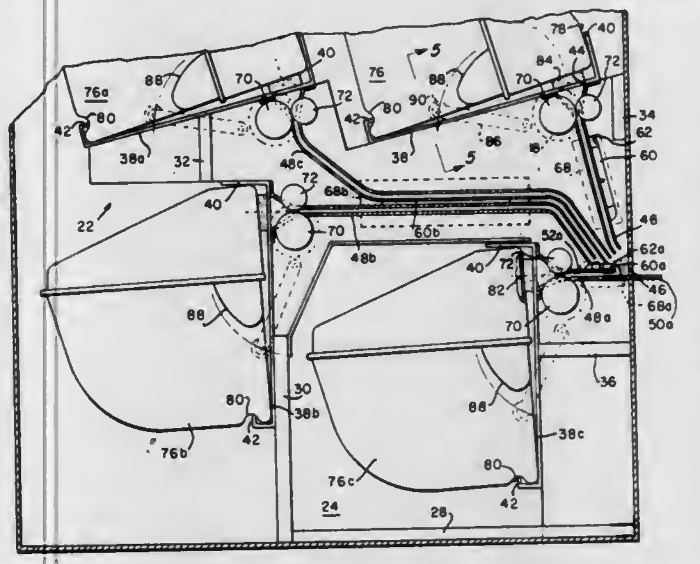
1. In a punch for paper and the like of the type having first means forming a throat into which leading edges of papers may be inserted, a plate having a plurality of punch means, second means mounting said plate for reciprocation relative to said first means, said first means including apertures for reciprocation of said punch means, and third means for reciprocation of said plate,

the improvement which comprises a slide having a stop, said stop limiting movement of said leading edges into said throat, fourth means mounting said slide relative to said throat means for movement of said stop toward and away from the path of said punch means, and selector means for moving said slide, whereby said selector means determines the location of holes punched by said punch means relative to said first edges, said selector means comprising a lever pivoted about an axis parallel to the path of said punch means relative to said first means, means interconnecting said slide and said lever, and manually actuated means for pivoting said lever, said manually actuated means comprising a selector slide and a flexible cable interconnecting said selector means and said lever.

4,442,744
APPARATUS FOR SUPPLYING PHOTOGRAPHIC SHEET MATERIALS, FOR USE IN A DARKROOM

Gary E. Raymond, 755 S. Rainbow Dr., Hollywood, Fla. 33021

Filed Nov. 30, 1981, Ser. No. 325,964
Int. Cl.^{3} B26D *5/08*
U.S. Cl. 83—614 **14 Claims**



1. Apparatus for supplying photographic sheet materials, for use in a darkroom, comprising:

a housing having a material-discharging opening formed therein;

means fixed within said housing for supporting a plurality of sheet material cassettes;

said supporting means comprising means defining a plurality of platforms;

chutes mounted within said housing for conveying photographic sheet materials therealong from said platforms to said opening; and

means mounted in said housing in adjacency to said chute, operative for gripping photographic sheet materials and moving such materials along said chutes to said opening; wherein

said platforms comprise means for gripping opposite sides of sheet material cassettes; and further including

means coupled to said supporting means for latchingly engaging sheet material cassettes and securing them to said platforms; and

a given plurality of sheet material cassettes; wherein

said platforms comprise a same given plurality as said cassettes;

each one of said cassettes being disposed upon one of said platforms;

each of said cassettes having a flat bearing surface at a forward end thereof, and means defining a relief at the opposite, rear end thereof; and

said gripping means comprises a flat wall in confronting, frictional engagement with said flat bearing surface of a cassette disposed on the respective platform, and a rib in fast engagement with said relief of such disposed cassette; wherein

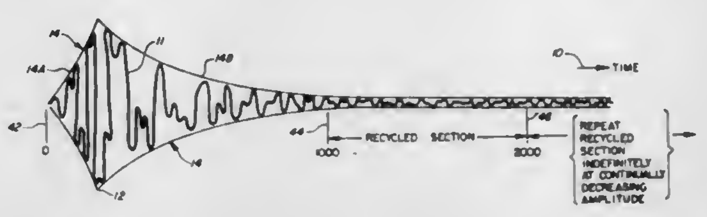
each of said cassettes has means formed thereon defining a prominent land; and

said latchingly-engaging means comprises a latch, movable relative to said supporting means, having a limb which, upon said latch being moved, effects a compressive engagement, and releasing disengagement, with said land.

4,442,745
LONG DURATION APERIODIC MUSICAL WAVEFORM GENERATOR

Glenn Gross, Chicago, and Douglas R. Moore, Vernon Hills, both of Ill., assignors to Norlin Industries, Inc., White Plains, N.Y.

Filed Apr. 28, 1980, Ser. No. 144,286
Int. Cl.^{3} G10H *1/00*
U.S. Cl. 84—1.01 **19 Claims**


14
14A
11
14B
10
TIME
42
0
44
RECYCLED SECTION
1000
2000
46
REPEAT RECYCLED SECTION INDEFINITELY AT CONTINUALLY DECREASING AMPLITUDE
14
12

1. In an electronic musical instrument of the type having a memory with a plurality of sample point waveform amplitude instructions stored at respective addresses therein, a counter for accessing said memory addresses in numerical sequence, said counter being reversible to count numerically up or down for accessing said memory addresses in forward or reverse numerical sequence, means for stepping said counter, means effective at the conclusion of one or more forward scans of said memory addresses to reverse the direction of said counter so as to initiate one or more rearward scans of said memory addresses, and means responsive to said memory to produce a waveform the amplitude of which at each sample point is a function of the respective amplitude instruction stored at the memory address corresponding thereto; the improvement wherein:

said memory is characterized by a selected boundary address, the waveform characteristics dictated by the amplitude instructions stored at memory addresses located numerically before said boundary address differing from the waveform characteristics dictated by the amplitude instructions stored at memory addresses located numerically after said boundary address;

and said instrument comprises means for effecting an initial forward scan between a first memory address numerically smaller than said boundary address and a last memory address numerically larger than said boundary address and further comprising means effective to terminate each of said forward and each of said rearward scans subsequent of said initial scan at one or more memory addresses each located at or numerically after said boundary address with at least some of said one or more memory addresses being different from said first and last memory addresses of said initial forward scan and from said boundary address;

whereby the waveform characteristics dictated by amplitude instructions stored at memory located numerically before said boundary address are not repetitively accessed.

4,442,746
ELECTRONIC ORGAN HAVING AN IMPROVED TONE GENERATOR SYSTEM

Carlton J. Simmons, Jr., Florence, Ky., and Dale M. Uetrecht, Cincinnati, Ohio, assignors to Baldwin Piano & Organ Company, Cincinnati, Ohio

Filed Jun. 26, 1980, Ser. No. 163,409
Int. Cl.^{3} G10H *1/00*
U.S. Cl. 84—1.01 **12 Claims**

1. An improved electronic musical instrument having a keyboard, function controls, voice controls, and an audio output system comprising:

a plurality of switches associated with the keys of the keyboard, the function controls and the voice controls;

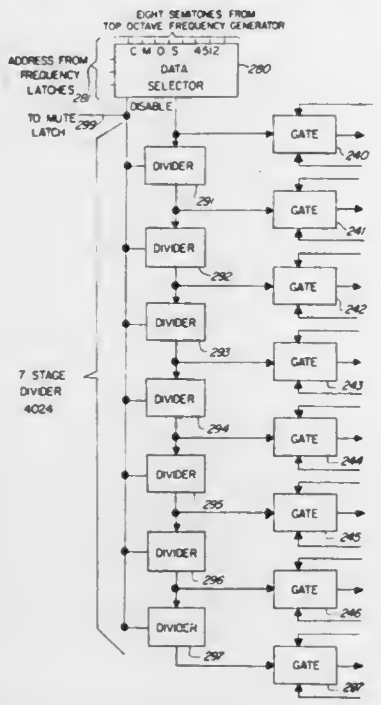
address means for generating multiple bit binary data identifying which of the switches are closed;

control means for processing the data generated by the address means and determining from the data the notes to be sounded;

a top octave generator for producing top octave generator signals; and

a plurality of programmable generators each capable of generating any one of a plurality of pitch frequencies of different chromatic nomenclatures numbering fewer than twelve and being progammable by the control means for converting a top octave generator signal specified by said control means to at least one octave specified by said control means in accordance with the data generated by the address means,

each programmable generator being capable, in conjunction with said control means, of passing signals for the same chromatic note in more than one octave to the audio output system simultaneously.


EIGHT SEMITONES FROM TOP OCTAVE FREQUENCY GENERATOR
ADDRESS FROM FREQUENCY LATCHES
281
C M O S 4512 DATA SELECTOR
280
DISABLE
TO MUTE LATCH
299
7 STAGE DIVIDER 4024
DIVIDER
GATE
240
291
241
292
242
293
243
294
244
295
245
296
246
297
287

4,442,747

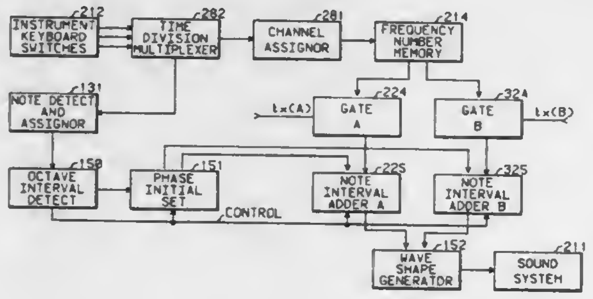
OCTAVE PHASE DECOUPLING IN AN ELECTRONIC MUSICAL INSTRUMENT

Ralph Deutsch, Sherman Oaks, and Leslie J. Deutsch, Sepulveda, both of Calif., assignors to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan

Filed May 11, 1982, Ser. No. 377,118

Int. Cl.^{3} G10H *1/00*

U.S. Cl. 84—1.01 **10 Claims**



1. In combination with a keyboard operated musical instrument having a keyboard containing a plurality of keyswitches and having a plurality of tone generators each operated at a musical frequency determined by a frequency number selected in response to an actuated keyswitch and wherein each one of said plurality of tone generators generates a musical waveshape, apparatus for initializing the starting phase of a generated musical waveshape comprising;

a frequency number memory means storing a table of frequency numbers,

a detection means for scanning said plurality of keyswitches in a sequence of keyswitch scans wherein a detection signal is generated for each actuated keyswitch,

a frequency addressing means for accessing a frequency number from said frequency memory means in response to said detection signal,

a plurality of tone generators each of which generates a musical waveshape and wherein each one of said plurality of tone generators comprises:

a waveshape memory containing a set of data values corresponding to points comprising said musical waveshape,

a waveshape addressing means responsive to a frequency number accessed from said frequency number means whereby data values from said set of data values are read out of said waveshape memory, and

a signal conversion means whereby said data values read out of said waveshape memory are converted to generate said musical waveform,

an assignor means responsive to said detection signal whereby a frequency number accessed from said frequency number memory means is assigned to one of said plurality of tone generators,

a note interval detection means responsive to said detection signal whereby a control signal is generated if the frequency number accessed from said frequency number memory means differs by a preselected ratio from a frequency number assigned to any other one of said plurality of tone generators, and

a phase initializing means responsive to said control signal and interposed between said frequency number memory means and said assignor means whereby if said control signal is generated the waveshape produced by the tone generator assigned the corresponding said frequency number is phase initialized by causing said associated waveshape addressing means to start addressing data values at a memory address equal to the current memory address of the waveshape addressing means corresponding to one of said plurality of tone generators having an assigned frequency number differing by said preselected ratio thereby causing said tone generator assigned said corresponding said frequency number to generate a musical waveshape having a starting waveshape phase corresponding to the current waveshape phase of a musical waveshape generated by one of said plurality of tone generators having an assigned frequency number differing by said preselected ratio.

9. In combination with a keyboard operated musical instrument having a keyboard containing a plurality of keyswitches in which a series of data values corresponding to the sample points of a composite musical waveform corresponding to a number of actuated keyswitches are generated at equal real time intervals by a discrete Fourier transform computation, apparatus for initializing the starting phase component of the composite musical waveform corresponding to a newly actuated keyswitch comprising;

a frequency number memory means storing a table of frequency numbers,

a detection means for scanning said plurality of keyswitches in a sequence of keyswitch scans wherein a detection signal is generated for each actuated keyswitch,

a frequency addressing means for accessing a frequency number from said frequency memory means in response to said detection signal,

a tone generator comprising a plurality of component waveshape generators each of which creates a component musical waveshape using said Fourier transform computation having a fundamental frequency component corresponding to a frequency number accessed from said frequency memory means,

an assignor means responsive to said detection signal whereby a frequency number accessed from said frequency number memory means is assigned to one of said plurality of component waveshape genertors,

a note interval detection means responsive to said detection signal whereby a control signal is generated if the frequency number accessed from said frequency number means differs by a preselected ratio from a frequency number assigned to any other one of said plurality of component waveshape generators,

a phase initializer means responsive to said control signal and interposed between said frequency number memory means and said assignor means whereby if said control signal is generated the waveshape produced by the component waveshape generator assigned the corresponding said frequency number is phase initialized causing it to generate a first component musical waveshape having a starting phase corresponding to the current waveshape phase of a component musical waveshape generated by one of said plurality of a second component waveshape generator having an assigned frequency number differing by said preselected ratio, and

a signal conversion means wherein each of said component musical waveshapes generated by said tone generator are combined to create said composite musical waveshape.

4,442,748

FREQUENCY DIVIDER FOR ELECTRONIC MUSICAL INSTRUMENT

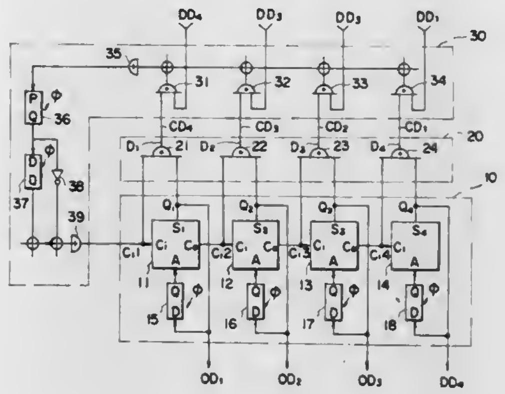
Makoto Kaneko, Hamakita, and Takatoshi Okumura, Hamamatsu, both of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jun. 22, 1982, Ser. No. 390,830

Claims priority, application Japan, Jun. 23, 1981, 56-96943

Int. Cl.^{3} G10H *1/00*

U.S. Cl. 84—1.01 **13 Claims**



1. A frequency divider for use in an electronic musical instrument comprising:

counter means driven by a predetermined clock pulse for producing a plural-bit count output, said count output having a certain number of different possible values;

cycle data forming means for forming, for each value of count output from said counter means, a certain plural-bit cycle data value in which only a specific single bit is in a first binary state and the rest of the bits are in a second binary state, whereby a certain cycle data value is formed for selected ones of said certain number of different count output possible values, the ratio of the number of cycle data values having a particular specific single bit in a first binary state to the total number of possible different count output values being proportional to the binary significance of said particular certain single bit; and

inhibit means for comparing a plural-bit dividing ratio data representative of a dividing ratio with said cycle data for every corresponding bit and for inhibiting counting operation of said counter means when corresponding bits of said dividing ratio data and said cycle data are first states, whereby dividing data is obtained from the output from said counter means.

4,442,749

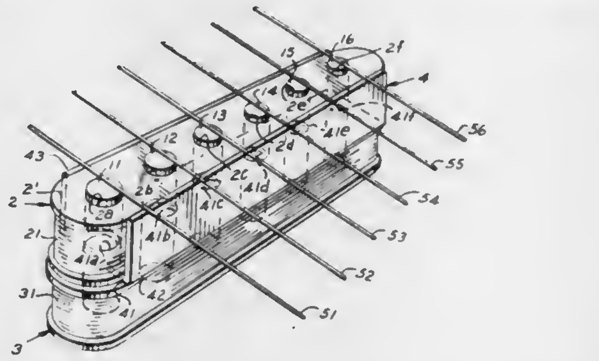
ELECTRICAL PICKUP FOR A STRINGED INSTRUMENT HAVING FERROMAGNETIC STRINGS

Lawrence P. DiMarzio, Staten Island, and Steven L. Blucher, New York, both of N.Y., assignors to DiMarzio Musical Instrument Pickups, Inc., Staten Island, N.Y.

Filed Aug. 6, 1982, Ser. No. 405,892

Int. Cl.^{3} G10H *3/18*

U.S. Cl. 84—1.15 **4 Claims**



1. An electrical pickup device for a stringed musical instrument having ferromagnetic strings, the device comprising:

a. a pair of superposed coaxial bobbins, each axially wound with a coil having its axis perpendicular to the instrument strings;

b. an integral plate of magnetic material comprising a base disposed between the two bobbins perpendicular to the coil axis and two side walls extending upwardly and perpendicularly from the base to at least immediately below the top face of the upper bobbin; and

c. a plurality of rod-like permanent magnets extending through at least the upper coil parallel to the axis thereof and in contact with the base of the integral plate and wherein the magnets have like polarities at the tops thereof.

4,442,750

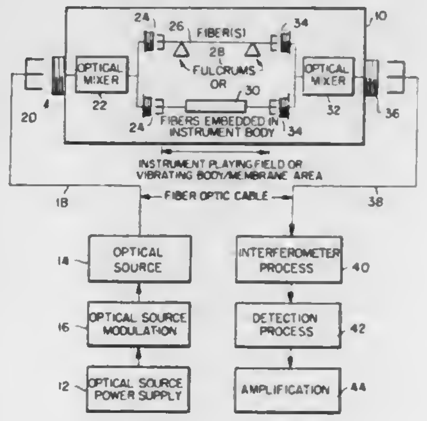
FIBER OPTIC MUSICAL INSTRUMENTS

George A. Bowley, McLean, Va., assignor to Optical Technologies, Inc., McLean, Va.

Continuation of Ser. No. 234,158, Feb. 13, 1981, abandoned. This application Apr. 14, 1983, Ser. No. 483,445

Int. Cl.^{3} G10H *3/06*

U.S. Cl. 84—1.18 **11 Claims**



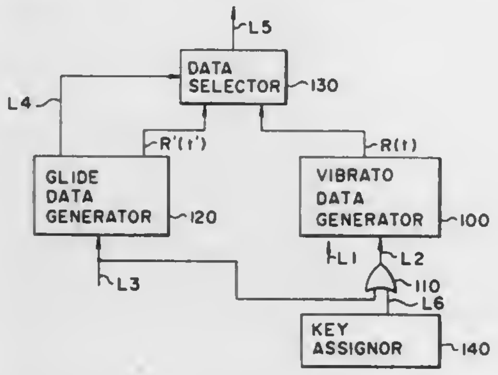
1. A musical instrument comprising a musical instrument housing, at least one optical fiber, means embedding or affixing said at least one optical fiber to said musical instrument housing unique to the particular musical instrument housing, means remote from the musical instrument housing for directing a light beam from one end of said fiber to the other, light detecting means remote from the musical instrument housing at the other end of said fiber, whereby when said at least one optical fiber is caused to vibrate the light beam in said fiber is modi-

fied, said detecting means including means for producing an electrical signal proportional to the modified light beam, and means for amplifying the electrical signal, including means for intensity modulating the light traveling in said at least one optical fiber.

4,442,751
EFFECT GENERATING SYSTEM FOR AN ELECTRONIC MUSICAL INSTRUMENT

Sadaaki Ezawa, Shizuoka, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Japan

Filed Jun. 28, 1982, Ser. No. 392,899
Claims priority, application Japan, Jul. 2, 1981, 56-103684
Int. Cl.³ G10H *1/04*
U.S. Cl. 84—1.25 1 Claim



1. In combination an effect generating system for producing a glide effect and vibrato effect and an electronic musical instrument having a keyboard, said effect generating system comprising:

a glide data generator for generating glide data with glide switch information indicating that a glide effect is being restored to an original pitch;

a vibrato data generator for generating vibrato data which comprise a delay vibrato effect in response to a key depression signal;

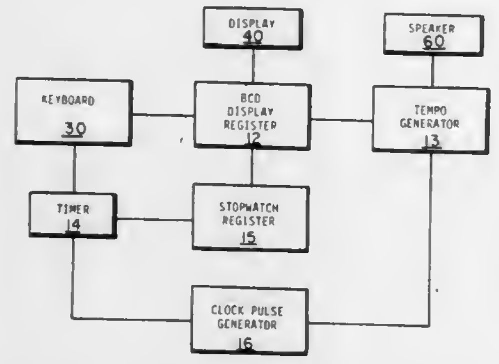
a data selector for selecting glide data from the glide data generator during performance of a glide effect and for selecting vibrato data from the vibrato data generator during performance of a vibrato effect except during performance of the glide effect; and

means for starting the delay vibrato effect upon the occurrence of either of said glide switch information during the performance of a glide effect or the occurence of a key depression signal when a glide effect is not being performed.

4,442,752
ELECTRONIC METRONOME

Paul Tsuchiya, 2226 Mohegan Dr., Apt. 301, Falls Church, Va. 22043

Filed Jan. 20, 1982, Ser. No. 315,420
Int. Cl.³ G04F *5/02*
U.S. Cl. 84—484 9 Claims



1. A programmable metronome, comprising:

a display register;

keyboard entry means for placing a binary coded digital value in said display register;

a timer adapted to be started and stopped by said keyboard;

a stop watch register incremented in a binary coded digital manner by said timer;

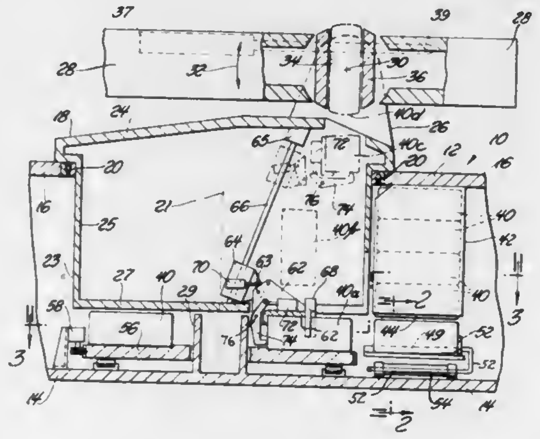
means for transferring the contents of said stop watch register into said display register; and

tempo generator means responsive to the contents of said display register for producing a repetitive cadence having a repetition rate in beats-per-minute approximating the digital value of the contents of said display register.

4,442,753
CAROUSEL AUTOMATIC AMMUNITION LOADER SYSTEM

Theodore H. Pouri, and Howard C. Mottin, both of Macomb, Mich., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 22, 1982, Ser. No. 421,602
Int. Cl.³ F41F *9/04*
U.S. Cl. 89—46 2 Claims

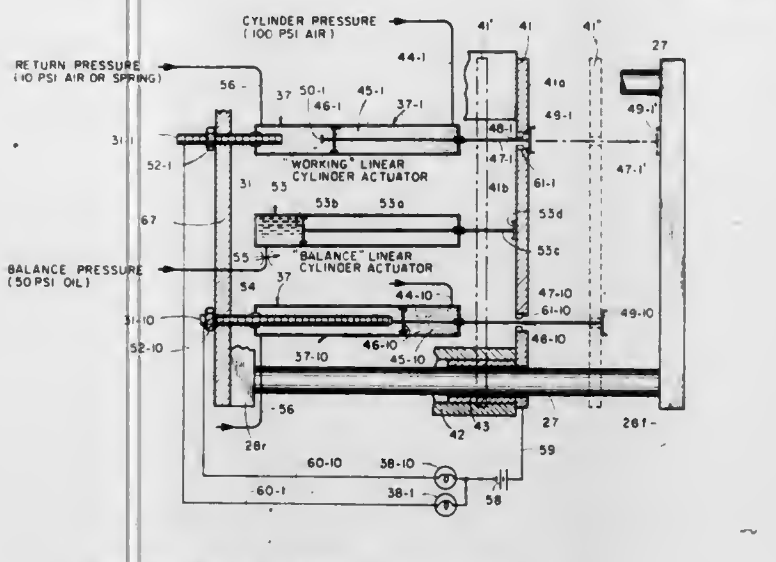


1. In a military vehicle comprising a hull having a longitudinal centerline and a bottom wall, a turret mounted on the hull for rotational movement in the azimuth plane, a gun mounted atop the turret for movement in the elevational plane, and a basket depending from the turret within the hull, said basket including a floor spaced a short distance above the hull bottom wall: the improvement comprising means for storing a multiple number of ammunition rounds within the hull is proximity to the basket; said ammunition storing means comprising a number of spaced vertical walls (**42**) extending parallel to the hull longitudinal centerline to define a series of vertical chutes, the width of each chute measured transverse to the hull longitudinal centerline corresponding to the diameter of an ammunition round whereby the various chutes are enabled to store ammunition rounds one above another in prone positions parallel to the hull longitudinal centerline; conveyor means (**46**) running beneath the vertical chutes along the hull bottom wall and transverse to the hull longitudinal centerline; a stationary round support means (**49**) located in the movement plane of the conveyor means for receiving an individual round of ammunition discharged from said conveyor means; a table (**56**) located beneath the basket floor in close proximity to the hull bottom wall, said table and said round support means occupying a common horizontal plane; power means (**58**) for rotating said table around a vertical axis (**21**) coincident with the turret rotational axis; power means (at **52,54**) for shifting an individual round of ammunition horizontally from the stationary round support means onto the upper surface of said table when the table is stationary; the table and turret being independently rotatable whereby the table can be moved to different rotated positions wherein different areas of the table are aligned with the stationary round support means; and means carried by the basket for transferring individual rounds of ammunition from the table into the space circumscribed by the basket, and thence into the aforementioned gun.

4,442,754
ROBOTICS POSITIONING SYSTEM

Vladimir K. Jezbera, 642 Encino Vista Dr., Thousand Oaks, Calif. 91630

Filed Oct. 14, 1980, Ser. No. 196,666
Int. Cl.³ F01B *25/26*
U.S. Cl. 91—1 10 Claims


CYLINDER PRESSURE (100 PSI AIR)
RETURN PRESSURE (10 PSI AIR OR SPRING)
"WORKING" LINEAR CYLINDER ACTUATOR
"BALANCE" LINEAR CYLINDER ACTUATOR
BALANCE PRESSURE (50 PSI OIL)

1. A positioning apparatus comprising:

a frame,

a sliding assembly mounted to said frame for movement relative thereto, said sliding assembly including a slide plate,

at least one "balance" linear cylinder actuator stationarily mounted to said frame and having a ram contactable with said slide plate, and first means for providing a first fluid to the cylinder of said "balance" actuator to bias said ram and hence said slide plate in a first direction,

at least one "working" linear cylinder actuator stationarily mounted to said frame and having a piston fixedly attached to a rod, said rod independently movably extending through said slide plate,

a stop flange fixedly attached to said "working" actuator rod for engagement with said slide plate, said stop flange being on the side of said slide plate opposite from said "working" actuator cylinder, said "working" actuator piston, rod and attached stop flange being unitarily movable independently of said slide plate, and second means for selectively providing a second fluid to the cylinder of said "working" actuator to force the piston and rod thereof in a second direction opposite to said first direction, said stop flange then urging said slide plate in said second direction,

an adjustable stop member, mounted to said frame and positioned to limit the travel of said "working" actuator rod in said second direction, so that when said second means provides fluid to said "working" actuator cylinder the piston and rod thereof can move said slide plate and sliding assembly in said second direction, overcoming the force of said "balance" actuator, until said rod is stopped against said adjustable stop member, said "balance" actuator and ram damping and correcting overshoot of said slide plate so that said sliding assembly is accurately positioned at a location set by the adjustment of said stop member.

4,442,755
POWER STAGE SERVO VALVE FOR A SEISMIC VIBRATOR

Marek L. Rozycki, Houston, Tex., assignor to Litton Resources Systems, Inc., Alvin, Tex.

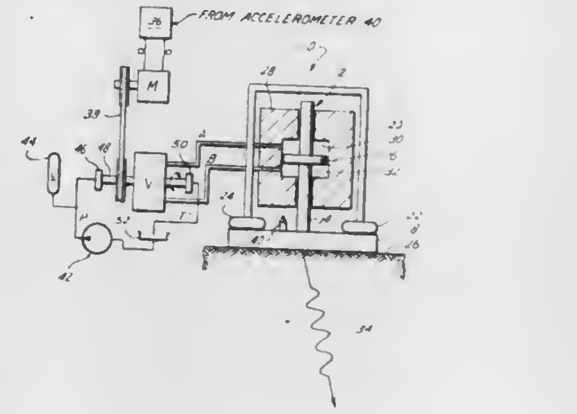
Filed Jan. 25, 1982, Ser. No. 342,274
Int. Cl.³ F15B *21/02*
U.S. Cl. 91—39 3 Claims

3. A rotary hydraulic power control servo valve comprising:

a valve body having pressurized-fluid inlet port and outlet ports and two peripheral ports

a stator mounted interiorly of said valve body, said stator including a stationary orifice plate, defining at least two diametrically opposite stationary orifices having desired geometric boundaries including full width radial lateral boundaries, the inner and outer boundaries being concentric circular arcs;

a rotary orifice plate that abuts said stationary orifice plate, said rotary orifice plate defining at least two diametrically opposite rotary orifices, the orifices having desired geometric boundaries including at least one full width radial lateral boundary at the leading edge of the orifice, the trailing boundaries being arcs of curves having different foci;



a shaft for supporting and rotating said rotary orifice plate relative to said stationary orifice plate, first and second non-communicating fluid passageways extending inwardly from each end of said shaft that fluidly communicate respectively with said inlet and outlet ports;

means for providing fluid communication between each said stationary orifice and a corresponding one of said peripheral orifices;

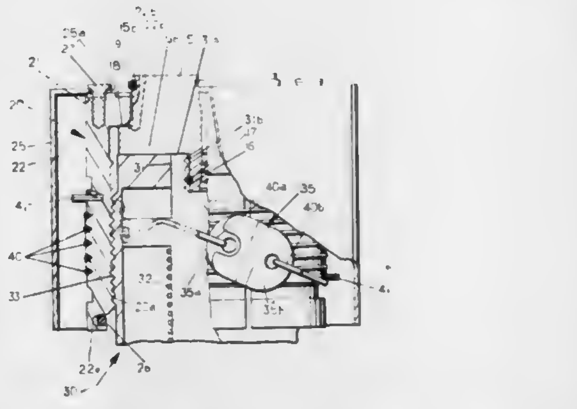
means for providing fluid communication between each said rotary orifices and a corresponding one of said noncommunicating passageways; and

means for rotating said rotary orifice plate in one direction relative to said stator.

4,442,756
HEAT SENSITIVE LOCKING DEVICE

Kip B. Goans, Harvey, La., assignor to Baker, CAC, Inc., Belle Chase, La.

Filed Aug. 24, 1981, Ser. No. 295,202
Int. Cl.³ F15B *15/26*
U.S. Cl. 92—23 9 Claims



1. A heat sensitive, fluid pressure actuator, comprising: a housing defining a cylinder chamber; a piston reciprocatingly mounted in said cylinder chamber for movement between two extreme axial positions; resilient means urging said piston to one of said extreme axial positions; said piston having a shaft portion with its end exposed relative to said housing when said

piston is in the other of said extreme axial positions; said housing having an external, annular, radially inclined shoulder surrounding said piston shaft portion, and fusible means for securing said piston shaft to said radially inclined shoulder comprising a stop block abutting said exposed piston shaft end; a latch having one end engaging and axially restraining said stop block, said latch having a complementary inclined surface abutting said radially inclined shoulder on said housing, whereby said latch is biased outwardly to a disengaging position by the force of said resilient means; a spring wire element forcibly wrapped around said latch and said housing to retain said latch in latching engagement with said radially inclined shoulder; and a fusible link holding said spring wire element in said wrapped position.

4,442,757

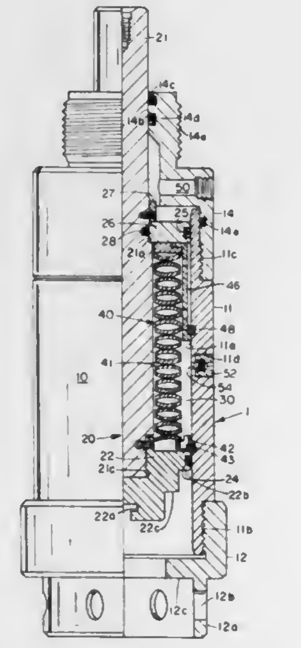
FLUID PRESSURE ACTUATOR HAVING BIAS ELEMENT IMMERSED IN NON-CORROSIVE ENVIRONMENT

Kip B. Goans, Harvey, La., assignor to Baker CAC, Inc., Belle Chasse, La.

Filed Aug. 24, 1981, Ser. No. 295,449

Int. Cl.^{3} F01B ***31/18***

U.S. Cl. 92—82 **8 Claims**



1. A fluid actuator, comprising: a hollow body defining a fluid pressure chamber having a cylindrical internal wall; a piston shaft mounted in said hollow body for axially slidable movement within said fluid pressure chamber; a pair of axially spaced, radially projecting shoulders on said piston shaft; sealing means on the peripheries of said shoulders for respectively slidably sealingly engaging said cylindrical internal wall, thereby defining an annular chamber surrounding and movable with said piston shaft and adapted to contain a corrosion protection fluid; biasing means disposed in said annular chamber, one end of said biasing means abutting a radial surface on one of said piston shaft shoulders; support means secured to said cylindrical internal wall within said annular chamber and engaging the other end of said biasing means; a radial piston face on said piston shaft exteriorly of said annular chamber; and fluid conduit means in said body for applying fluid pressure to said piston face to move said piston shaft axially relative to said hollow body in a direction to energize said biasing means without changing the volume of said annular chamber.

4,442,758

PISTON MACHINE

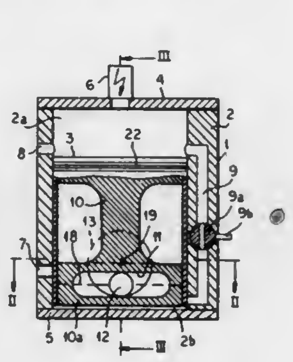
Robert C. Groll, Cosimastrasse 227, D-8000 München 81, Fed. Rep. of Germany

Filed Jul. 7, 1981, Ser. No. 281,183

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1980, 3039536

Int. Cl.^{3} F01B ***9/00;*** **F16J** ***1/10***

U.S. Cl. 92—138 **4 Claims**



1. A piston machine comprising a body formed with at least one cylinder having planar opposite walls and an elongated cross section with a width across said walls less than a width parallel thereto, a piston reciprocatable with said cylinder, said piston being flat and having substantially planar opposite sides, said piston having massive portions spaced apart in a direction of movement of said piston and rounded edges extending in said direction, and a crankshaft journaled in said body and having at least one crankpin, said piston being formed directly with a throughgoing transverse slot in one of said massive portions receiving said pin perpendicular to said sides, whereby said crankshaft is coupled to said piston, said pin having a length equal to said width across said walls.

4,442,759

POWER BOOSTER UNIT

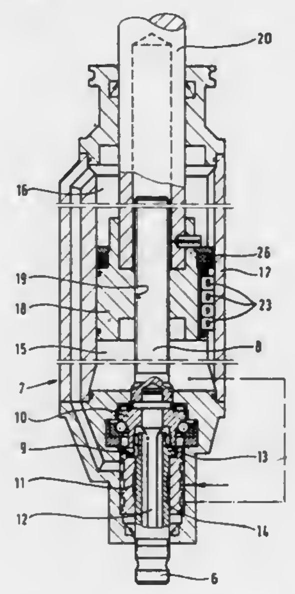
Dieter Elser, Essingen, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG, Friedrichshafen, Fed. Rep. of Germany

Filed Jun. 19, 1981, Ser. No. 275,272

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1980, 3027212

Int. Cl.^{3} F16J ***1/02***

U.S. Cl. 92—165 PR **4 Claims**



1. In a power steering unit having a cylinder and a piston therein, and means for overcoming torque force on said piston; the improvement of said means comprising respective longitudinal opposed grooves in said cylinder and said piston wherein the groove in said cylinder extends at least the length of traverse of said piston therein;

said grooves effecting a pocket; guide means in said pocket carried slidably by said piston within said grooves so as to prevent relative rotation between said cylinder and piston by sliding in the groove of said cylinder during reciprocation of said piston; wherein said guide means comprises at least one roller having axes parallel to the cylinder axis and bias means for biasing said roller against the groove of said cylinder.

4,442,760

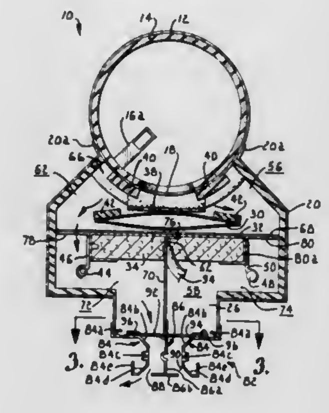
FLOW SPLITTING ARRANGEMENT FOR AIR CONDITIONING TERMINAL UNITS

Raymond H. Dean, and Ghassan Bader, both of Johnson County, Kans., assignors to Tempmaster Corporation, Kansas City, Mo.

Filed Sep. 30, 1982, Ser. No. 431,364

Int. Cl.^{3} F24F ***13/08***

U.S. Cl. 98—40 D **6 Claims**



1. A terminal unit for an air distribution system, said terminal unit comprising:

- a duct for receiving a supply of conditioned air, said duct having first and second outlets spaced apart from one another along the length of the duct for discharging conditioned air therefrom;
- flow control means for controlling the flow through said first and second outlets;
- a plenum connected with said duct, said plenum presenting an upper plenum chamber communicating with said outlets to receive conditioned air therefrom and a lower plenum chamber below the upper chamber;
- a transverse partition in said upper plenum chamber between said first and second outlets, said transverse partition dividing said upper plenum chamber into first and second compartments communicating with the respective first and second outlets, said compartments being arranged generally end to end and each extending substantially the entire width of the upper plenum chamber;
- a longitudinal partition in said lower plenum chamber dividing same into third and fourth compartments arranged generally side by side and each extending substantially the entire length of the lower plenum chamber;
- baffle means between the upper and lower plenum chambers for directing the conditioned air in said first compartment into said third compartment and the conditioned air in said second compartment into said fourth compartment; and
- an air diffuser having a first diffuser slot communicating with said third compartment to discharge the conditioned air therefrom and a second diffuser slot communicating with said fourth compartment to discharge the conditioned air therefrom, said diffuser slots extending generally side by side substantially the entire length of the plenum and arranged to direct the air passing therethrough to opposite sides of the air diffuser.

4,442,761

APPARATUS FOR MAKING PASTRY PRODUCTS

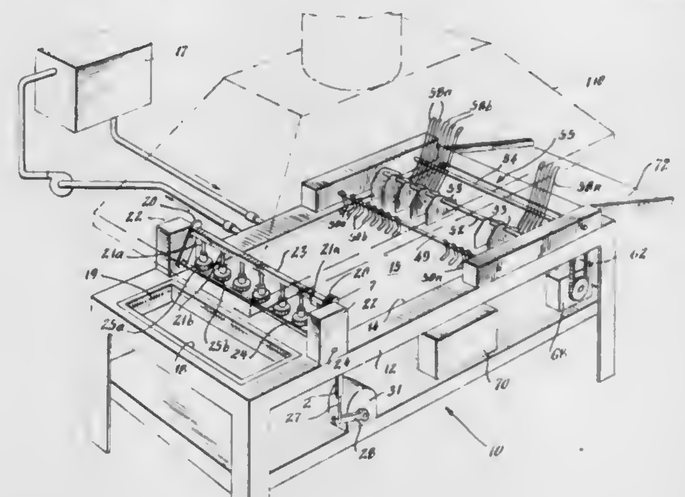
Johan Van Achterberg, Easton, and George N. Miles, Norwalk, both of Conn., assignors to Elsie Palmieri, Danbury, Conn.

Filed Sep. 23, 1980, Ser. No. 190,026

The portion of the term of this patent subsequent to Jul. 17, 2000, has been disclaimed.

Int. Cl.^{3} A47J ***37/12***

U.S. Cl. 99—404 **12 Claims**



1. In apparatus for making pastry products comprising batter holding means,

- tank means for holding heated cooking liquid,
- forming means including at least one forming iron for forming pastry products by dipping in batter contained in said batter holding means and in heated cooking liquid in said tank means, and dipping means for so dipping said iron sequentially according to an established time sequence,
- conveyor means for conveying pastry products after removal from said iron, from the region in said tank means where said forming means dips into such cooking liquid to the region thereof where pastry are removed from such liquid,
- extractor means for causing such pastry products to be removed from such liquid, and
- inverter means for inverting such products after they have been conveyed part way toward, but before they have reached, said extractor means,
- said iron being adapted for maintaining its temperature within prescribed limits, and said apparatus including means for causing said iron to be substantially entirely free from such cooking liquid upon being dipped in such batter after having been removed from such cooking liquid.

4,442,762

MEAT ROASTER

Frank W. Beller, Aurora, Ill., assignor to Belson Manufacturing Co., Inc., North Aurora, Ill.

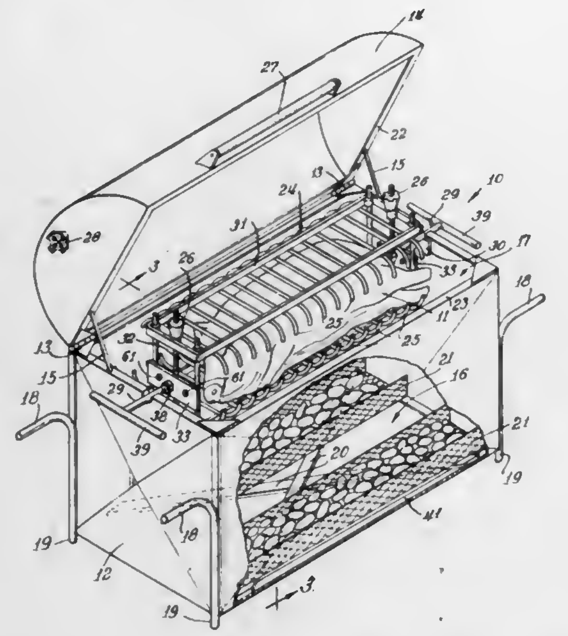
Filed Mar. 11, 1982, Ser. No. 357,330

Int. Cl.^{3} A47J ***37/07***

U.S. Cl. 99—427 **13 Claims**

1. In a food roasted comprising a firebox generally rectangular in plan having vertically standing end walls and sidewalls and an open top and an open bottom, means for supporting said firebox above the ground, a charcoal basket disposed and supported in the lower portion of said firebox, a lid hinged to the upper edge of one of said sidewalls and a spit for supporting food to be cooked in the upper portion of said roaster, said spit being supported by said end walls of said firebox, the improvement wherein said spit comprises a basket formed by two confronting sets of generally bow-shaped grate fingers, said basket having a long axis of rotation, a frame having two members, each of said two sets having a plurality of fingers, said fingers being secured to a frame member, and means for supporting said frame, said frame members each being secured at basket-outward surfaces of one set of grate-fingers whereby

the fingers alone provide food-gripping contact, said frame-supporting means being located at opposite basket ends and arranged generally transverse to said long axis and being adjustable to vary the space between said two sets of grate fingers and frame members, whereby to grip and retain the food to be roasted within said basket.



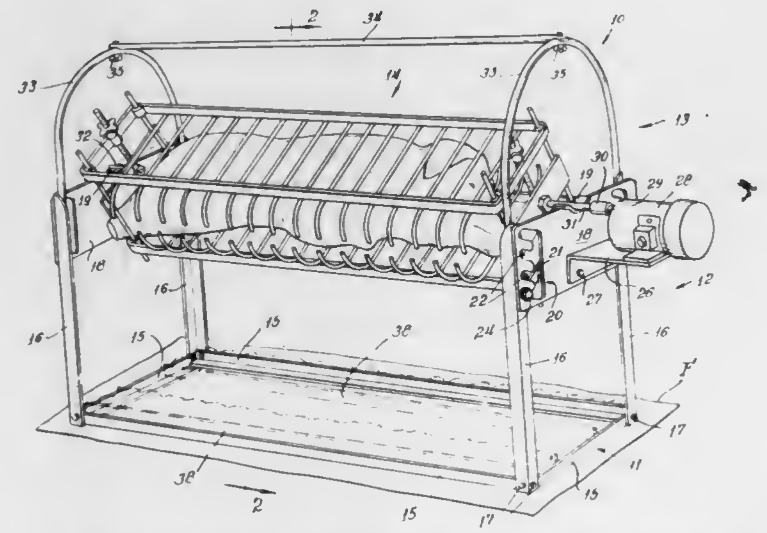
4,442,763
MEAT ROASTER

Frank W. Beller, Aurora, Ill., assignor to Belson Manufacturing Co., Inc., North Aurora, Ill.

Filed Jan. 10, 1983, Ser. No. 456,830

Int. Cl.^{3} A47J *43/18*

U.S. Cl. 99—427 **7 Claims**



1. A framework for a meat roaster, generally rectangular in plan and capable of rotationally supporting spit basket means, being adapted for enclosure by sheet-like metal and capable of accommodating a heating source below the spit basket means, the framework provides means for mounting a rotisserie motor in driving relationship with a spit basket means, said framework comprising:

lower frame means providing a framework support base and being generally rectangular in plan;

intermediate frame means associating with and supported by said lower frame means, including vertical cornerpost members disengageably fastened to said lower frame means at corners of the rectangle, opposing end plate members supported generally above opposite shorter sides of the rectangular lower frame means and means for releasably fastening said end plate members to said cornerpost members, said end plate members having longitudinally aligned bearing support means capable of supporting a spit basket means lengthwise in the framework and having means for supporting a rotisserie motor in driving relationship with a spit basket means, and said cornerpost members further including disengageable support means adjacent upper ends thereof;

upper frame means including opposite hoop-like members spanning across said intermediate frame means and removably supported at said disengageable support means of the cornerpost, members a longitudinal support member extending lengthwise of said framework and having opposite ends disengageably fastened to said hoop-like members;

whereby said intermediate frame means is adapted to be enclosed by sheet-like metal to form a four-wall firebox chamber, wherein charcoal baskets may be supported lengthwise by said lower frame means below and to the sides of a spit basket means, wherein said upper frame means is adpated to be enclosed by sheet-like metal forming a dome-shaped ceiling over said firebox chamber, and thereby said framework is capable of being completely enclosed forming a free standing, portable meat roaster, capable of disassembly.

4,442,764
MACHINE FOR PEELING AND CLEANING FOODSTUFFS, PARTICULARLY VEGETABLES SUCH AS ONIONS

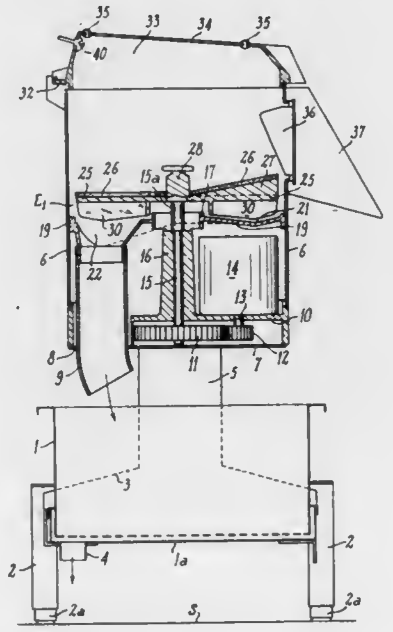
Pierre H. Bos; Joël R. Musseau, and Claude Rochez, all of Aubusson, France, assignors to Dito-Sama, Aubusson, France

Filed Sep. 20, 1982, Ser. No. 419,813

Claims priority, application France, Sep. 23, 1981, 81 17924

Int. Cl.^{3} A23N *7/00, 7/02;* A47J *17/00, 17/18*

U.S. Cl. 99—633 **10 Claims**



1. A machine for peeling and cleaning food products, particularly vegetables such as onions, said machine comprising a container supported by adjustable legs so a to enable vertical adjustment of said container, a filter in said container opening into a discharge duct, said filter having an upper portion support a cylinder having a base plate, a motor and reduction gear assembly mounted on said base plate and driving a central vertical shaft, a shaped plate covering said assembly and having a radial opening connected to a nozzle opening above said filter, a disc provided with at least one boss driven by said shaft, said disc having an upper surface coated with an abrasive layer, said cylinder having an open top closed by a releasable water tight cover through which the products to be cleaned are introduced, a discharge chute projecting laterally from said cylinder through which said products are discharged after having been cleaned, a door normally obturating said discharge chute, and means for introducing a washing liquid into said cylinder, wherein said disc has a diameter slightly smaller than the inner diameter of said cylinder such as to form an annular space therebetween, the shaped plate in said cylinder has a top shaped so as to cooperate with said rotating disc, said disc having a bottom comprising fins promoting disengagement of scraps and said washing liquid from said products by causing a pumping effect projecting a mixture of said washing liquid and scraps toward said discharge nozzle through said annular space.

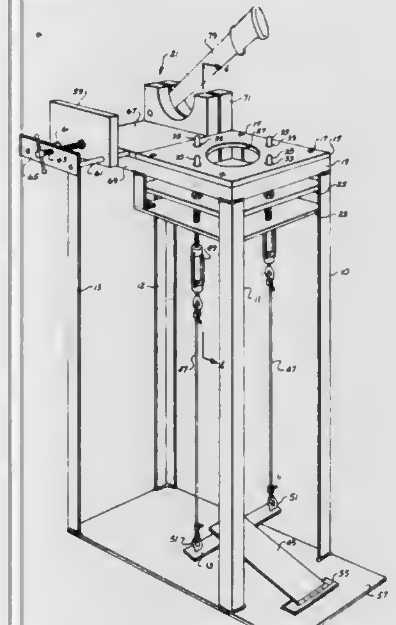
4,442,765
DEVICE FOR PREPARING A BUNCH OF PRODUCE FOR SHIPMENT, DISPLAY AND SALE

William L. Limehouse, 1468 S. Edgewater Dr., Charleston, S.C. 29407, and Thomas A. Miller, P.O. Box 602, Hastings, Fla. 32045

Filed Apr. 5, 1982, Ser. No. 365,151

Int. Cl.^{3} B65B *13/02*

U.S. Cl. 100—6 **6 Claims**



1. A device for placing a rubber band around the stalk portions of a bunch of produce having uneven stalk lengths and relatively evenly positioned head comprising:

a vertically extending frame member;

an upper plate member carried on said vertically extending frame member and being fixed thereto;

a lower plate member carried by said frame member vertically spaced below said upper plate member, said lower plate member being fixed to said frame member;

a vertically movable intermediate plate member carried between said upper and lower plate members;

centrally located stalk receiving holes provided in said plate members of sufficient diameter for a stalk portion of said bunch of produce to be inserted therethrough;

a plurality of holes located in said upper plate member concentrically about said stalk receiving hole;

a plurality of pins carried by said intermediate plate member, each extending vertically through a respective hole of said plurality of holes provided in said upper plate member;

resilient means forcing said intermediate plate member to a raised position wherein said plurality of pins project above said upper plate member for receiving a stretched rubber band therearound, and

means for depressing said intermediate plate member retracting said pins below said upper plate member for releasing said rubber band about the stalk portion of said bunch of produce that is inserted through said centrally located stalk receiving hole.

4,442,766
MOBILE CRUSHER VEHICLE

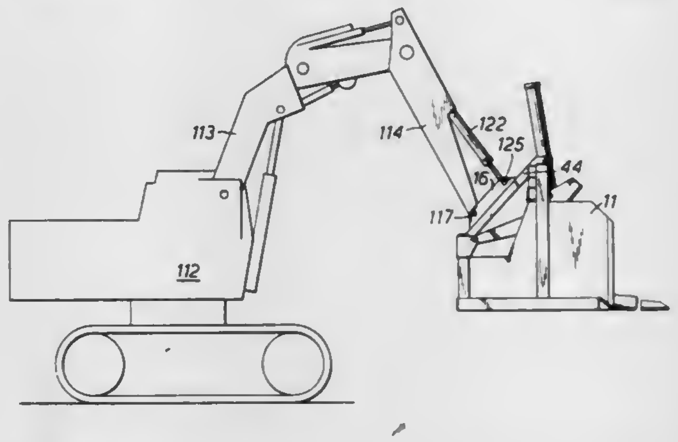
Peter A. T. Hawkins, White Cross Farm, Cholsey, Oxfordshire, England

Filed Dec. 1, 1981, Ser. No. 326,421

Claims priority, application United Kingdom, Dec. 5, 1980, 8039004; Jun. 26, 1981, 8119865

Int. Cl.^{3} B30B *9/32*

U.S. Cl. 100—35 **22 Claims**



19. A method of crushing an object, comprising providing a vehicle having a crusher jaw mechanism mounted in a forward position thereon, the crusher jaws mechanism comprising a platform affixed thereto, a press plate and closure means for urging the plate and the platform towards one another, the platform having a leading edge provided with guide means for the object, advancing the vehicle forwardly towards the object to drive the guide means and the platform under the object to load the object onto the platform, and crushing the object between the press plate and the platform.

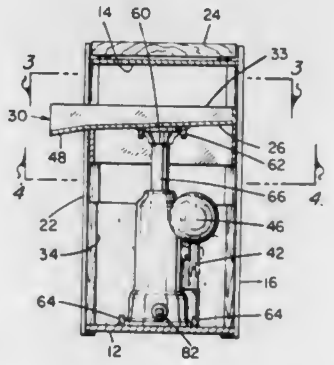
4,442,767
JUICE PRESS

Rick A. Johnson, 1926 Lindsley Park Dr., San Marcos, Calif. 92069

Filed Jun. 28, 1982, Ser. No. 392,739

Int. Cl.^{3} B30B *9/06*

U.S. Cl. 100—116 **6 Claims**



1. A juice squeezer comprising in combination:

an upper platen;

a base member;

a frame interconnecting the base member and upper platen such that they have fixed spacing and are in juxtaposition;

a lower platen disposed between said upper platen and said base in juxtaposition with each of them;

track means carried by said frame for guiding movement of said lower platen in a direction toward and away from said upper platen while the lower plate remains in juxtaposition with each of them;

pressing means for forcing the lower platen to move toward the upper platen along said track means and for releasing the lower platen from said force to permit retraction of the lower platen from said upper platen;

said pressing means comprising a jack interposed between said lower platen and said base;

said frame being formed by a plurality of elongated frame members each fixed at respectively associated ends to said base and said upper platen, said members being spaced around the periphery of said base and said upper platen, and in which said track means is formed by said frame members;

said lower platen comprising a plate which extends transversely across the space within said frame members; and the lower side of said upper platen which faces toward the lower platen, and the upper side of the plate of the lower platen which faces toward the upper platen lying at fixed angles relative to one another in non-parallel planes which intersect outside of said frame.

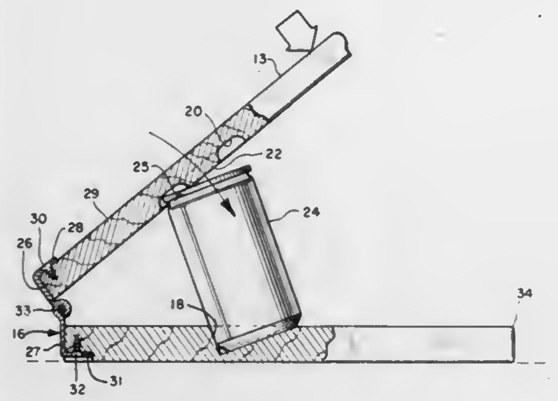
4,442,768
CAN CRUSHING APPARATUS

John R. Bailey, 3735 Geraghty Ave., Waukegan, Ill. 60085

Filed Feb. 1, 1982, Ser. No. 344,514

Int. Cl.³ B30B *9/32*

U.S. Cl. 100—233 **14 Claims**



1. A can crusher comprising:

a base having a pivot portion and a recess for receiving at least a portion of one end of a can to be crushed;

a crusher lever having a pivot portion, a handle portion, and a recess intermediate said lever pivot portion and handle portion for receiving at least a portion of the opposite end of the can to be crushed;

pivot means pivotally connecting said pivot portions of the base and lever for pivotal movement of the lever by forceful urging of the handle portion thereof from a can receiving position wherein a can to be crushed may be disposed with its ends received in said base and lever recesses respectively, to a partial crush position wherein the can is longitudinally crushed to a preselected longitudinal thickness wherein the plane of the top of the can is disposed at a partial crush angle to the plane of the bottom of the can; and

planar surface means on said base and lever respectively intermediate said recesses and said pivot means for receiving the partially crushed can therebetween with said top plane of the partially crushed can directed downwardly toward said pivot means, the angle of said surface means of said lever extending at an angle toward said pivot means to said surface means of the base which is less than said partial crush angle when the lever is pivoted to engage the top of the partially crushed can so disposed between said surface means for completion of the crushing of the entire can to a final desired crushed thickness as a result of further pivotal movement of the lever toward the base.

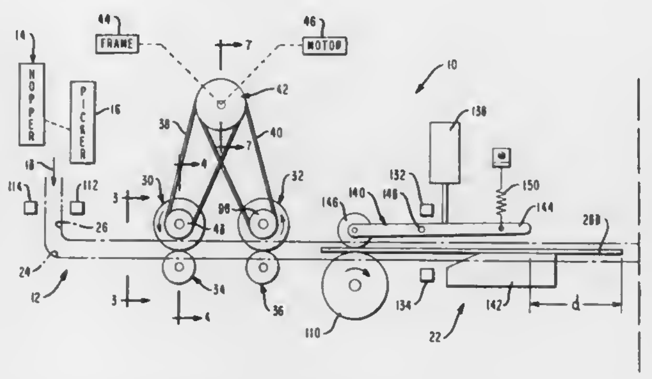
4,442,769
STAGING APPARATUS USED IN A SHEET FEEDING ENVIRONMENT

Fredrik L. N. Kallin, Kitchener, Canada, assignor to NCR Corporation, Dayton, Ohio

Filed Dec. 24, 1981, Ser. No. 334,399

Int. Cl.³ G06K *13/077*

U.S. Cl. 101—93.19 **4 Claims**



1. A sheet feeding apparatus comprising:

means for guiding a sheet therein; said guiding means having an upstream end and a downstream end, with a staging area located therebetween;

means for moving a said sheet from said upstream end towards said downstream end;

control means including a stationary member and a moveable member located at said staging area; said moveable member being moveable between first and second positions with regard to said stationary member and said moving means; said moveable member when in said first position being operatively uncoupled from said moving means and being operatively coupled to said stationary member to stop a said sheet therebetween at said staging area, and said moveable member when in said second position being operatively uncoupled from said stationary member and being operatively coupled to said moving means to move said sheet from said staging area towards said downstream end;

said control means also including means for moving said moveable member between said first and second position;

a utilization device located downstream from said staging area to receive a said sheet from said staging area; and

said control means also including means for determining the length of a said sheet which becomes positioned at said utilization device; said control means also responding to said determining means so as to enable said moving means to stop a subsequent sheet at said staging area so that the leading edge of said subsequent sheet is positioned at a predetermined distance from the trailing edge of said sheet at said utilization device.

4,442,770
PUSHROD FOR HIGH SPEED

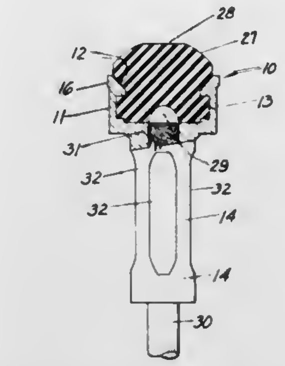
Hilliard Dozier, Morrow, Ohio, assignor to U.S. Terminals, Inc., Cincinnati, Ohio

Filed Apr. 21, 1982, Ser. No. 370,362

Int. Cl.³ B41J *9/26*

U.S. Cl. 101—93.32 **12 Claims**

1. A pushrod for an impact printer comprising an elongated pushrod wire, a concentric tip member mounted on at least one end of said wire in axial alignment with the longitudinal axis of said pushrod wire, said tip member comprising an annular body having an outer end surface and an inner end surface, an elongated shank projecting outwardly from the inner end surface of said annular body, an axial bore in said shank for receiving an end of said pushrod wire, a seat-forming recess in the outer end surface of said annular body, said seat-forming recess comprises a conical surface having its largest diameter outermost, an undercut cavity in said body underlying and in communication with said seat-forming recess, and a molded in situ impact button seated in said recess and having an integral portion thereof filling said cavity, said impact button projecting outwardly from said recess and having an impact surface at its outermost end which is concentric with respect to the axis of said axial bore.



4,442,771
APPARATUS FOR APPLYING A FOAMED TREATING MEDIUM TO A WORKPIECE

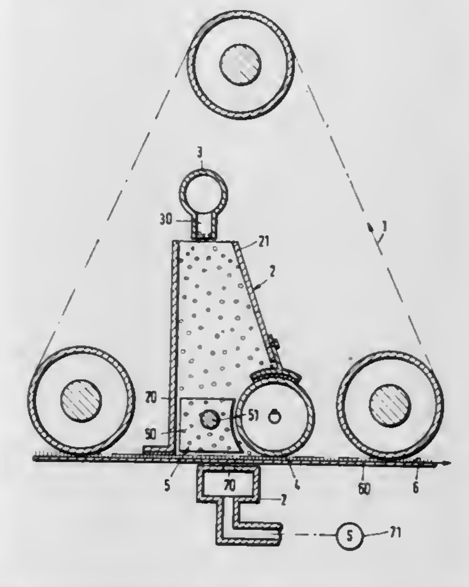
Mathias Mitter, Falkenstrasse 57, D-4815 Schloss Holte, Fed. Rep. of Germany

Filed Nov. 25, 1981, Ser. No. 324,822

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1980, 3044409

Int. Cl.³ B41L *13/02*

U.S. Cl. 101—122 **13 Claims**



1. Apparatus for applying a foamed treating medium to the upper side of a foraminous workpiece, comprising a screen disposed above the upper side of the workpiece and having at least one first portion of greater permeability and at least one second portion of lesser permeability; confining means defining a circumferentially enclosed space above said screen and having an open bottom side adjacent to the screen; foam generator means; means for admitting the foamed treating medium from said foam generator means into said space; applicator means for forcing the foamed treating medium from said space through said screen and into contact with the workpiece whereby the rate of penetration of foamed treating medium by way of the first portion of said screen exceeds the rate of penetration by way of the second portion of said screen with attendant accumulation of foamed treating medium above said second portion; means for moving at least some of the accumulated foamed treating medium from above said second portion to above said first portion of the screen; means for displacing said moving means in said space with reference to said confining means at a speed such that the movements of said moving means do not entail mechanical destruction of the foamed treating medium in said space; and suction generating means disposed below the screen and the workpiece and arranged to draw the treating medium through the screen and into the workpiece.

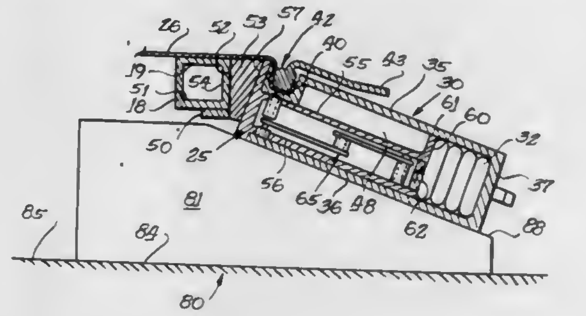
4,442,772
SCREEN TENSIONING APPARATUS

Henry J. Bubley, Deerfield, Ill., assignor to American Screen Printing Equipment Company, Chicago, Ill.

Filed Oct. 26, 1982, Ser. No. 436,855

Int. Cl.³ B05C *17/08*

U.S. Cl. 101—127.1 **9 Claims**



1. A screen fabric tensioning apparatus for stretching a fabric outwardly across a frame and for forcing one side screen frame member of the frame vertically against the fabric to facilitate securing of the fabric to the frame, said apparatus comprising:

a frame support means for supporting at least one side screen frame member of the frame,

a fabric carrying means connectable to the fabric and movable relative to the frame support means and the side screen frame member to pull and stretch the fabric outwardly across the frame,

power means to shift the fabric carrying means outwardly relative to the frame support means, and

means for shifting the frame support means and the one screen frame member vertically with stretching of the fabric so that the screen frame member is moved into tight engagement with the fabric as the power means is operated.

4,442,773
PRINTING MODE SHIFTING DEVICE FOR BLANKET CYLINDERS IN OFFSET ROTARY PRESS

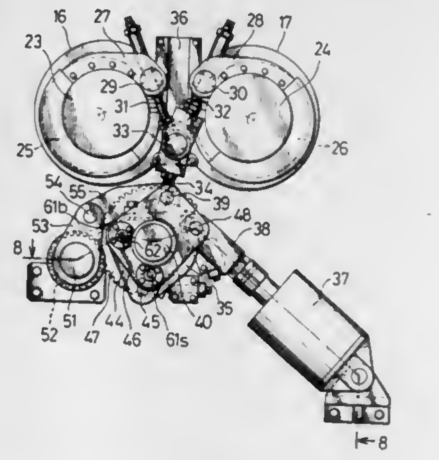
Haruyoshi Kobayashi, Yokohama, Japan, assignor to Kabushiki Kaisha Tokyo Kikai Seisakusho, Tokyo, Japan

Continuation of Ser. No. 193,085, Oct. 2, 1980, abandoned. This application Feb. 4, 1983, Ser. No. 463,672

Claims priority, application Japan, Feb. 6, 1980, 55-13268

Int. Cl.³ B41F *5/06, 7/12, 13/36*

U.S. Cl. 101—177 **4 Claims**



1. A printing mode shifting device for blanket cylinders in a rotary press which has cylinders arranged generally cross-sectionally in the shape of an equilateral triangle and including two plate cylinders disposed at two vertexes of the equilateral triangle, an impression cylinder disposed at the remaining vertex of the equilateral triangle, and blanket cylinders dis-

posed between said plate cylinders and said impression cylinder, eccentric sleeves provided at support portions at both ends of said blanket cylinders, and a common link mechanism for displacing said blanket cylinders with respect to each other and with respect to the other cylinders simultaneously and which permits obtaining two ultimate positions, a first of which is a blanket to blanket type printing mode with four series-contacting cylinders exclusive of the impression cylinder, and a second of which is a satellite type printing mode with five series-contacting cylinders including the impression cylinder, said shifting device comprising a cross shaft rotatably supported on right and left side frames, a pair of crank arms fixedly mounted on both end portions of said link mechanism, a reciprocating actuator, a conversion member provided at one side of one of said crank arms, rotatably supported on said cross shaft, and connected at one outer end portion thereof to a rod of said actuator to convert linear reciprocating movements of said rod into oscillatory movements, a relay gear rotatably mounted on a shaft projected from the outer surface of one of said side frames, and connected to said conversion member so as to be oscillated in the same direction as said conversion member, a driven relay gear engaged with said relay gear, rotatably mounted on said cross shaft, and positioned at the other side of said crank arm, a clutch for transmitting from said conversion member to said one of the crank arms to select two opposite rotations, one of which transmits direct rotation when said blanket cylinders are displaced between a first ultimate position and a first intermediate throw-off position and between a second ultimate position and a second intermediate throw-off position, and another of which transmits reverse rotation when said blanket cylinders are displaced between said first intermediate throw-off position and said second intermediate throw-off position, said blanket cylinders being displaceable between said first ultimate position and said second ultimate position through said first and second intermediate throw-off positions, the amount of displacement of said blanket cylinders between the two ultimate positions exceeding the tooth height of the driving gears for said blanket cylinders and the cylinders contacting with said blanket cylinders, and said first intermediate throw-off position being provided close to said first ultimate position and keeping gearing within a gear train in said first ultimate position; and said second intermediate throw-off position being provided close to said second ultimate position and keeping gearing within a gear train in said second ultimate position.

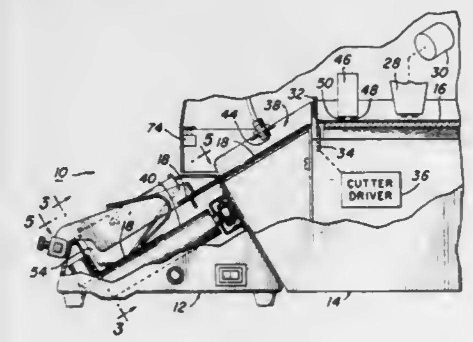
4,442,774
PRINTER WITH AUTOMATIC STACKER

Frederick M. Pou, Dayton, and Richard L. Straub, Miamisburg, both of Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Jun. 30, 1982, Ser. No. 393,674

Int. Cl.^{3} B41F *13/56*

U.S. Cl. 101—226 **21 Claims**



1. A printer for making imprints onto a web of sheet stock having indices disposed thereon at predetermined intervals, comprising:

means for making imprints on the web;

means for cutting the web into tags;

means for feeding the web past said imprint making means and said cutting means;

means for sensing the indices as the web is fed past the imprint making means; and

means responsive to the index sensing means for controlling the operation of the feeding means and the cutting means, said control means being operative to cause the feeding means selectively to feed the web such that one of the indices on the web is advanced one of at least two different increments past the sensing means after the sensing thereof prior to the cutting of the web by said cutting means, thereby to produce at least two different lengths of tags.

4,442,775
DEVICE FOR ADJUSTING AN INK KNIFE IN AN INK-APPLICATOR OF A PRINTING MACHINE

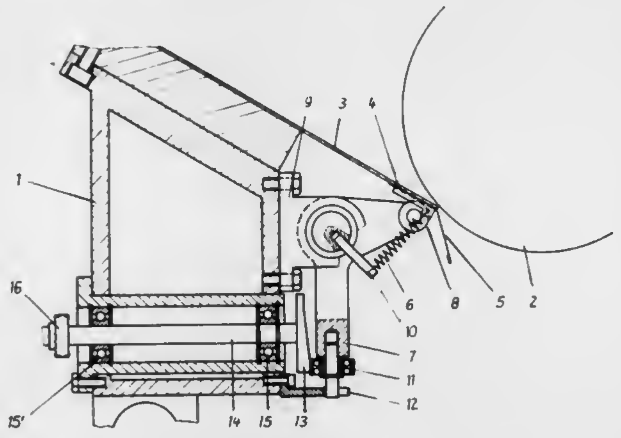
Arndt Jentzsch, Coswig; Hans Johne, Radebeul, and Wolfgang Müller, Coswig, all of German Democratic Rep., assignors to Veb Kombinat Polygraph "Werner Lamberz", Leipzig, German Democratic Rep.

Continuation-in-part of Ser. No. 412,859, Aug. 30, 1982. This application Sep. 27, 1982, Ser. No. 424,988

Claims priority, application German Democratic Rep., Aug. 31, 1981, 232885

Int. Cl.^{3} B41F *31/02*

U.S. Cl. 101—365 **4 Claims**



1. A device for adjusting an ink knife of an ink-applicator of a printing machine, comprising a plurality of adjusting means positioned below the ink knife successively one after another lengthwise of a ductor roller of the ink applicator and operated to forcefully move a stripped edge of the ink knife to and from the ductor roller to adjust a plurality of ink zones between said stripped edge and a circumferential surface of the ductor roller, said ink applicator having a housing, said adjusting means each comprising a pivotable lever having a first arm operatively connected to said stripped edge and a second arm; actuating means operatively connected to said second arm and adapted to pivot said lever in said housing so that the motion of the lever is translated into the motion of said ink knife to adjust a respective position thereof; a support element rigidly connected to said housing; and a tension spring interconnected between said stripped edge and said support element and extended substantially perpendicular to said ink knife, said tension spring biasing said lever in its adjusted position; said second arm being provided with a pin outwardly extended therefrom and carrying a self-aligning bearing, said actuating means including a usable spindle provided with a cam having a cam surface, said self-aligning bearing cooperating with said cam surface upon turning movement of said spindle.

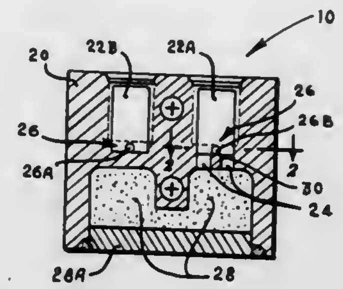
4,442,776
DETONATOR BLOCK

Bruce B. Jones, Mt. Aukum, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 21, 1982, Ser. No. 370,232

Int. Cl.^{3} F42C *19/08*

U.S. Cl. 102—275.12 **6 Claims**



1. A detonator block having a plurality of adjacent separated ports for detonators, with one of said ports having an outlet, means for supporting a different detonating cord adjacent each different port of said plurality of ports, a cavity in communication with said outlet of said port and a bridge portion spanning said outlet of said port.

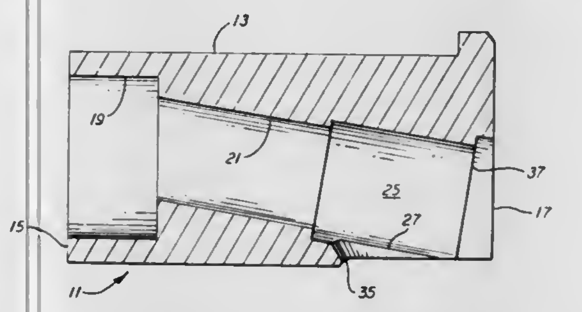
4,442,777
ADAPTOR CARTRIDGE

Edward Greene, 1497 Palenville Rd., Saugerties, N.Y. 12477

Continuation-in-part of Ser. No. 203,466, Nov. 3, 1980, abandoned. This application Dec. 27, 1982, Ser. No. 453,133

Int. Cl.^{3} F42B *5/22*

U.S. Cl. 102—444 **3 Claims**



1. A cartridge adaptor for firing a projectile from a center-fired weapon utilizing a rim-fired blank cartridge, said cartridge adaptor comprising:

a tubular casing have a mouth end and a head end, said mouth end having a concentrically-located cylindrical opening for locating a projectile, said tubular casing further having a passageway extending from the projectile opening to the head end, said passageway including a cartridge chamber at the head end and being located at an acute angle to said tubular casing for retaining a rim-fired blank cartridge, the circumference of said cylindrical passageway substantially intersecting the center point of the head end and said tubular casing having an open section along the cartridge chamber adjacent to the head end, said open section extending into the cartridge chamber from the head end along the tubular casing more than a major portion and less than the entire length of the cartridge chamber.

4,442,778
MULTIPLE STORY TOWER

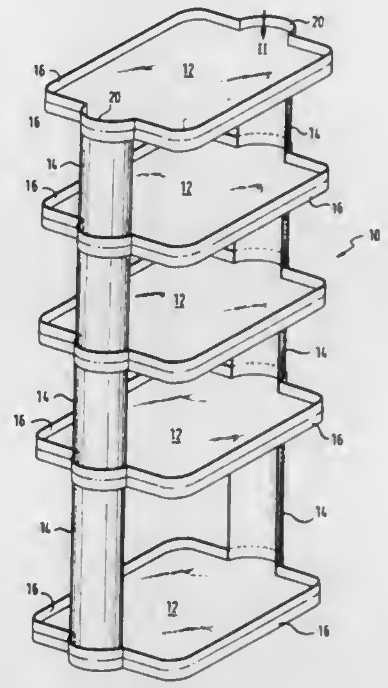
Franz J. Lang, Uhlandstrasse 5, D-6233 Kelkheim (Taunus), Fed. Rep. of Germany

Continuation of Ser. No. 234,571, Feb. 13, 1981, abandoned. This application May 16, 1983, Ser. No. 494,136

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1980, 3006377

Int. Cl.^{3} A47B *47/00*

U.S. Cl. 108—111 **7 Claims**



1. A multiple-story tower for the display of merchandise comprising:

A. a plurality of spaced story decks each encircled by an encircling wall extending around the edge of said story deck and each said story deck having a center spaced equidistantly from the opposite sides thereof,
B. two spacing supports extending between and connecting two adjacent said story decks,
C. each said story deck having a first axis and a second axis extending perpendicularly to one another and intersecting at said center and said story decks arranged symmetrically about each of said axes,
D. each spacing support located at an opposite end of the first axis where the first axis intersects said encircling wall,
E. each said spacing support, forming a groove-like configuration and having an outer surface facing away from said center and an inner surface facing toward said center,
F. said spacing supports between adjacent said spaced story decks having an approximately constant cross-section in a sectional plane parallel with said story decks,
G. said story decks include receiving shafts at the location of the intersection of the first axis with the encircling wall, said receiving shafts arranged to receive and align said spacing supports,
H. each said receiving shaft is formed by at least one outer shaft-limiting wall forming a part of said encircling wall and located at the intersection of the first axis with said encircling wall and at least one inner shaft-limiting wall located closer to the center of said story deck, said outer shaft-limiting wall is shaped complementary to the outer surface of said spacing support and said inner shaft limiting wall is shaped complementary to the inner surface of said spacing support,
I. snap securing means for securing said spacing support to at least one of said inner and outer shaft-limiting walls,
J. said securing means includes a cam and a depression arranged to receive said cam,
K. each said cam has a surface extending obliquely to the surfaces of said spacing support and the respective inner and outer limiting wall,

L. said story decks are closed in the area of said receiving shafts, and

M. the length of said spacing supports in the direction of the second axis is significantly less than the length of the second axis between its intersection with said encircling wall along the edges of said story decks.

4,442,779

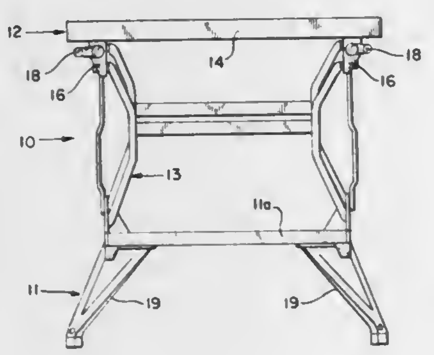
UNITARY LATCHING AND RELEASE MEANS FOR PORTABLE FOLDABLE WORKBENCH

Frank Basten, Brockville, and Peter Oxley, Mallorytown, both of Canada, assignors to Black & Decker Inc., Newark, Del.

Filed Dec. 24, 1981, Ser. No. 334,433

Int. Cl.³ A47B *3/00*

U.S. Cl. 108—131 **8 Claims**



1. In a portable foldable workbench having a raised erected position and a lowered storage position, the workbench including a base, a table having a pair of spaced parallel brackets secured thereto, and an intermediate supporting structure pivotably connected between the brackets and the base and including a pair of transverse pivoted supporting struts, one for each of the brackets, a unitary latching and release mechanism between the table and the supporting structure, and between the supporting structure and the base, respectively, the unitary latching and release mechanism comprising, in combination, a stud connected to one end of each supporting strut, each bracket having a slotted opening formed therein to slidably receive the stud, a raised emboss formed on the bracket near one end of the slotted opening therein, the stud being normally received at the one end of the slotted opening and adjacent to the raised emboss therein in the erected position of the workbench, resilient means constantly urging the stud in its normal position within the slotted opening, a manually-manipulatable button secured to the stud and accessible outwardly of the workbench, whereby the button may be pressed laterally inwardly against the bias of the resilient means to clear the stud from the raised emboss and enable the stud to slide in one direction within the slotted opening, and whereby the supporting strut will be carried conjointly with the stud, thereby enabling the workbench to be folded into its lowered position, the stud being received at the other end of the slotted opening in the lowered position of the workbench, a spring latch secured to the bracket transversely of the slotted opening and overlying the stud in the lowered position of the workbench, the latch having an end portion extending beyond the bracket, and the base having an opening formed therein to receive the end portion of the latch, thereby retaining the workbench in its lowered position, whereby the button may again be pressed laterally inwardly to push the stud against the latch and clear the end portion of the latch from the opening in the base, thereby enabling the workbench to be raised, and whereby the stud slides in the opposite direction within the slotted opening and rides over the raised emboss with a snap-action to retain the workbench in its erected position.

4,442,780

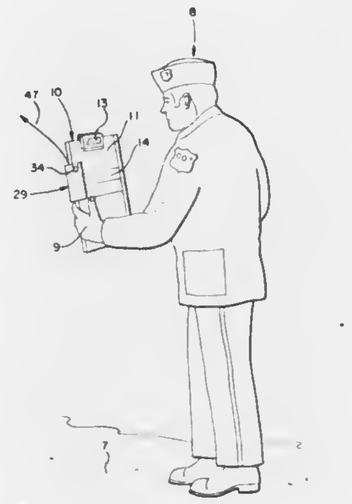
CLIPBOARD AND SHIELD

Francis W. Child, Eagle Bend, Minn., assignor to Child Laboratories Inc., Cody, Wyo.

Filed Jul. 21, 1980, Ser. No. 170,732

Int. Cl.³ F41H *5/08*

U.S. Cl. 109—29 **38 Claims**



1. An apparatus useable as a support for accommodating sheet means and as a shield comprising: board means having a core, a plurality of sheet members surrounding the core, one of said sheet members having a generally flat outside surface providing a first side of the board means for accommodating sheet means, a plurality of rib means secured to another of said sheet members providing a second side of the board means, said second side being opposite the first side, means attached to the board means for holding the sheet means on said surface, hand grip means attached to a portion of the board means, and fluid dispensing means mounted on the hand grip means, said dispensing means having fluid discharge means, and actuator means operable to allow fluid to be dispensed into the atmosphere via the fluid discharge means.

4,442,781

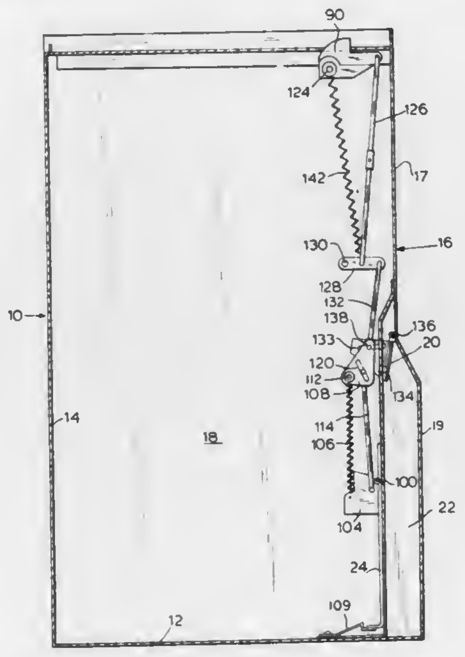
DEPOSIT BOX

Leonard A. Fish, Chicago, Ill., assignor to Avco Corporation, Huntsville, Ala.

Filed Dec. 5, 1978, Ser. No. 966,583

Int. Cl.³ E05G *1/026*

U.S. Cl. 109—53 **2 Claims**



1. The combination of a box, formed with a deposit chamber and an escrow-chamber, and a removable cover, said combination being adapted to be advanced into or retracted from an automatic teller,

said removable cover comprising
- a top sheet,
- a swingable gate pivotally mounted under said sheet and adapted to swing to provide access to said deposit-chamber, said gate being formed to provide a deposit-chamber door,
- said gate being further formed with a depressing portion,
- a gate cam lock for holding said gate in closed position but operable to permit opening and closing of the deposit-chamber door,
- a key-operated cover lock operable to release said gate cam lock,
- and means sensitive to linear displacement of said cover relative to said automatic teller for opening or closing said deposit-chamber door,

said box comprising
- a manually operable internal door between the chambers,
- an external door for the escrow chamber,
- means including a linkage-control cam and a linkage for opening and closing said external escrow-chamber door when said linkage-control cam moves to first and second limit positions, respectively, and safety interlock means responsive to said open position of said internal door for restraining said linkage to hold said linkage-control cam firmly in said first limit position to prevent the cover from assuming an assembled condition relative to said box,

said cover normally fitting on said box and placing said depressing surface and control element in cooperative relationship as the cover moves toward the assembled condition with the box, thereby to permit both escrow-chamber door and deposit-chamber door to open and close together, unless said linkage-control cam is held firmly in said first limit position by reason of the manually operable internal door being open, in which case the interlock responds.

4,442,782

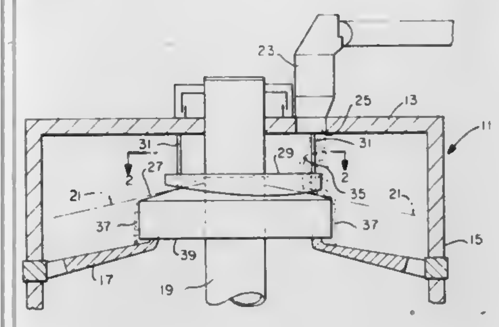
FEED DISTRIBUTOR FOR MULTIPLE HEARTH FURNACE

Frank Lilley, Palo Alto, Calif., and Clarence S. Rankin, deceased, late of San Francisco, Calif. (by Susan L. Rankin, executrix), assignors to Lurgi Corporation, River Edge, N.J.

Filed Jul. 16, 1982, Ser. No. 398,844

Int. Cl.³ F23G *5/04*

U.S. Cl. 110—225 **9 Claims**



1. A material feed distributor for use in a furnace having at least one hearth, a central vertical shaft rotatable within the furnace and a roof over said hearth defining a material inlet, said feed distributor comprising a conical table feeder attached to said central vertical shaft for rotation therewith, said conical table feeder including a conical surface defining at least one opening therethrough, said opening being positioned radially outward from said central vertical shaft substantially the same distance as is said material inlet whereby, upon rotation of said table with said shaft, said opening is periodically in vertical alignment with said material inlet; a convolute plow fixed to said furnace at a position above said table feeder, said convolute plow being generally concentric within said table feeder and extending around the major portion thereof.

4,442,783

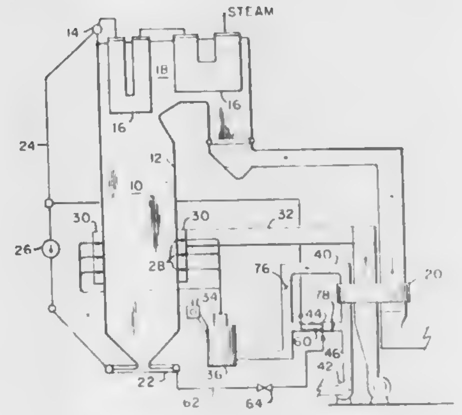
TEMPERING AIR HEATING ON PULVERIZING HIGH MOISTURE FUELS

Thomas L. Pajonas, Bristol; Gerald F. Barcikowski, West Simsbury, and Andrew J. Ennaco, Simsbury, all of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Aug. 20, 1982, Ser. No. 410,178

Int. Cl.³ F23K *1/04*

U.S. Cl. 110—347 **1 Claim**



1. In a combustion system for burning a moisture containing pulverized fuel having a mill wherein the fuel to be burned is pulverized and dried, a furnace formed of a plurality of water-cooled tube walls disposed between an inlet and an outlet header and defining a chamber wherein the dried pulverized fuel is burned thereby generating hot flue gas, cooling circuit means including circulating pump means interconnecting the inlet and outlet headers for circulating cooling water through the tubes forming said tube walls, burner means associated with said furnace for receiving the pulverized fuel entrained in primary air from the mill, an air heater for passing said primary air in heat exchange relationship with said hot flue gas thereby preheating said primary air, first duct means for supplying ambient primary air to said air heater, second duct means for conveying said preheated primary air from said air heater to the mill, and third duct means having flow damper means disposed therein interconnecting said first duct with said second duct for conveying ambient tempering air around said air heater and remixing the tempering air with said preheated primary air; a method of operating said combustion system comprising:

(a) measuring the temperature of the mixture of pulverized fuel and primary air leaving the mill;

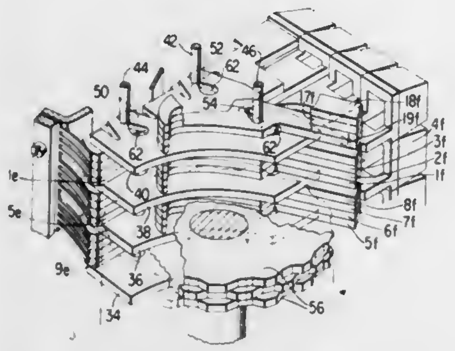
(b) closing the flow damper means disposed in said third duct means whenever the measured mixture temperature drops below a preselected minimum thereby reducing the flow of tempering air therethrough to a leakage flow leaking past the closed flow damper means; and

(c) circulating water from the water-cooled tube walls inlet header in heat exchange relationship with the tempering air leakage flow leaking past the closed flow damper means in said third duct means thereby preheating the tempering air leakage flow and thence returning the water to the water-cooled tube walls cooling circuit at a location upstream of the circulating pump means.

4,442,784
VERTICALLY STACKED COMPONENTS IN A CONTROL MODULE FOR A SEWING MACHINE

William Weisz, Tenafly, and Raymond S. Tyburcy, Middletown, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Dec. 14, 1982, Ser. No. 449,718
Int. Cl.^{3} D05B *3/02*
U.S. Cl. 112—158 C **9 Claims**

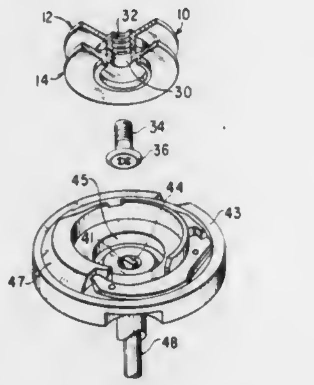


1. In a control module for a sewing machine, multiple rows of push-buttons each of which includes a rearward extension, a plurality of spaced apart plates which separate the push-button extensions into sets, and a plurality of posts upon which the plates are affixed, the push-button extensions in each of the said sets being contiguously stacked for relative sliding movement, and each set being supported on a separating plate.

4,442,785
SEWING MACHINE BOBBIN FOR A VERTICAL AXIS HOOK

Charles R. Odermann, Montville, and Thaddeus J. Zylbert, Morris Plains, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed May 24, 1982, Ser. No. 381,268
Int. Cl.^{3} D05B *59/00, 57/04*
U.S. Cl. 112—279 **7 Claims**

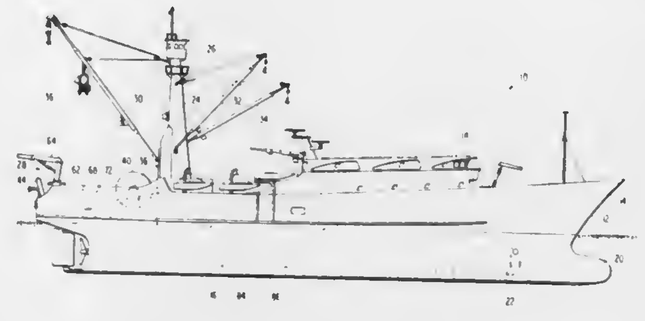


1. In combination, a driving clutch member, and a bobbin rotatable thereby for bobbin winding, the bobbin including a top flanged section and a bottom flanged section at least one of which includes a hub portion upon which sewing thread may be wound and each of which includes a hole on the rotational axis of the bobbin, the bobbin also including a drivable clutch member with an elongate threaded portion which extends through the hole in the bottom section and into threaded engagement with the top section in the hole therein, the drivable clutch member being formed with an enlarged head end portion which engages said bottom section to hold the sections in an assembled relationship, the head end portion of the drivable clutch member including one or more slots wherein the other clutch member is received to establish a driving connection between the clutch members.

4,442,786
FISHING VESSEL

Craig Conners, San Diego, Calif., assignor to Capt. Conners Inc., D.C.

Continuation of Ser. No. 170,226, Jul. 18, 1980, abandoned. This application May 10, 1982, Ser. No. 377,272
Int. Cl.^{3} B63B *35/14*
U.S. Cl. 114—255 **14 Claims**



1. An oceanic fishing system comprising;

a ship having a main propulsion system and an auxiliary bow thrustor, said bow thrustor providing forward as well as lateral thrust;

a stern working deck;

a net deploying and retrieving drum disposed on said stern working deck and positioned to deploy and retrieve a purse-seine net wrapped on said drum over the stern of said ship,

means to attach and selectively move a free end of said purse-seine net relative to said stern,

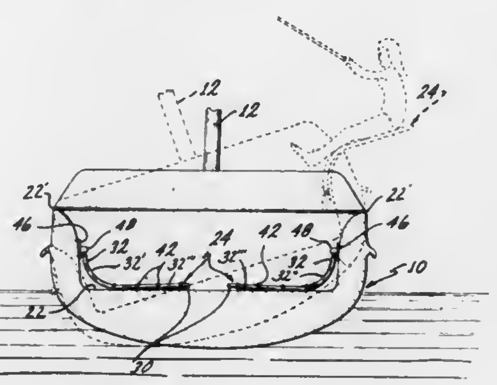
a brailing crane disposed on one side of said stern working deck movable over said stern and pivotable into said net to brail fish, said brailing crane having a rigid hydraulically extensible arm urged into said net, said arm pivotable over said stern working deck, and

fish handling means including a hopper disposed on an opposite side of said stern working deck from said brailing crane receiving fish from said hydraulic brailing crane and transporting them for processing and on-board storage.

4,442,787
BOAT PLATFORM HAVING OUTBOARD AND INBOARD POSITIONS

Steven H. Curran, 7514 W. 91st St., Los Angeles, Calif. 90045, and Alfred G. Kumalae, 2626 Clay, Newport Beach, Calif. 92660

Filed Jan. 29, 1982, Ser. No. 343,779
Int. Cl.^{3} B63B *17/00*
U.S. Cl. 114—363 **6 Claims**

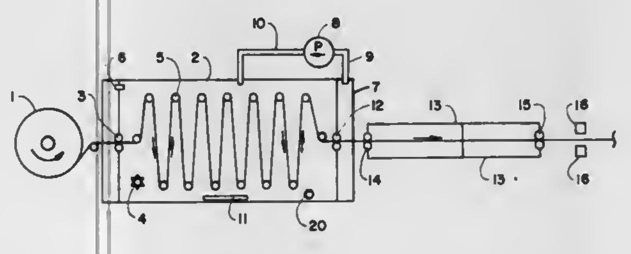


1. As an article of manufacture, an appurtenance for a boat having a hull with sides including an upper edge and a cockpit having a floor, in combination, a frame means comprising a self stowable and extendable seat platform, means providing a hinged mounting of the frame to the side of the boat whereby the frame means can be rotated about the hinged mounting to an outboard position extending outwardly from the side of the boat and can be roatated to an inward position inboard of the boat, the hinged mounting being positioned substantially midway between the upper edge of a side and the floor, the frame means having substantially L-shaped end portions shaped to contour to the inside and top of the side of the boat whereby in the outboard position it is supported in cantilevered posture solely by the side of the boat, and whereby in the inboard position said frame means is nested against the floor and an inner side of the boat as and for a seat and backrest therein.

4,442,788
CONTINUOUS GRADIENT DYEING OF PLASTIC RIBBON

Robert Weis, Leominster, Mass., assignor to Foster Grant Corporation, Del.

Filed Sep. 30, 1982, Ser. No. 429,653
Int. Cl.^{3} B05C *3/02*
U.S. Cl. 118—405 **11 Claims**



1. An apparatus for producing in a continuous manner a gradient dyed plastic ribbon which comprises:

(a) a feed reel which continuously unwinds and feeds a continuous ribbon of a plastic material;

(b) a take-up reel which continuously winds said ribbon after it has been gradient dyed;

(c) a ribbon drive means which drives the take-up reel and supplies a driving force for the forward movement of the ribbon;

(d) a dye tank containing a dye bath solution, said dye tank having associated therewith a liqud level control means which varies the liquid level of the dye bath repetitively with time between two pre-determined levels;

(e) a rinsing unit containing rinsing water through which the ribbon is allowed to travel to rinse off adhering dye solution from the surface of the ribbon; and

(f) a drying unit in which the dyed ribbon is dried while it passes therethrough;

the relative arrangement of the above elements being such that between the feed reel and the take-up reel the ribbon travels through the dye tank, the rinsing unit, and the drying unit in this sequence.

4,442,789
PARTICLE MOVING AND DISPENSING SYSTEM

Robert G. Pirwitz, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 16, 1982, Ser. No. 418,856
Int. Cl.^{3} G03G *15/08*
U.S. Cl. 118—653 **4 Claims**

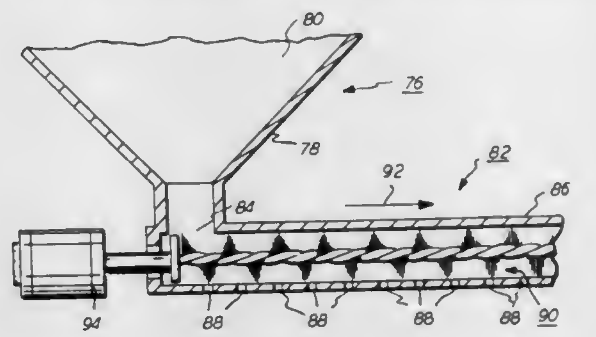
1. An apparatus for developing an electrostatic latent image recorded on a photoconductive member used in an electrophotographic printing machine, including:

a housing defining a chamber for storing a supply of developer material comprising at least carrier granules and toner particles therein;

means, defining an open ended chamber, for storing a supply of toner particles therein;

a tubular member having an entrance port in communication with the open end of the chamber in said storing means to receive toner particles therefrom and a plurality of substantially equally spaced exit ports for dispensing toner particles therefrom into the chamber of the housing storing the developer material therein;

means for moving the toner particles received in said tubular member from the entrance port to the exit ports therein for dispensing the toner particles therefrom into the chamber of the housing storing the developer material therein, said moving means comprising a support mounted rotatably in said tubular member, and a multiplicity of flexible fibers mounted on said support in a spiral configuration and extending outwardly therefrom with the free end portions thereof being closely adjacent to the interior surface of said tubular member; and

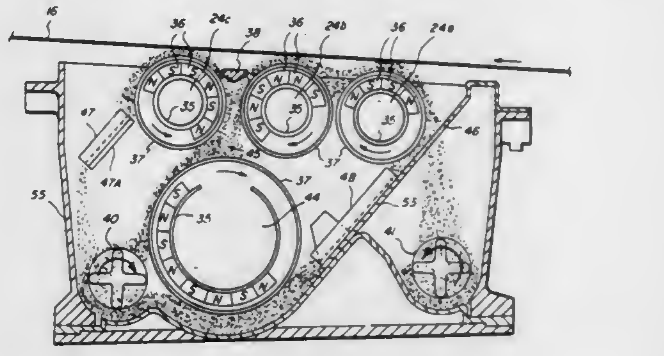


means for periodically deflecting and releasing the free end portions of said flexible fibers to prevent caking and clogging of the toner particles moving in said tubular member.

4,442,790
MAGNETIC BRUSH DEVELOPMENT APPARATUS

John P. Swapceinski, Bergen; Leon A. Rose, Honeoye Falls; Stewart D. Probst, Rush; Donald G. McKeown, Warsaw, and Thomas K. Hilbert, Spencerport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 29, 1982, Ser. No. 426,577
Int. Cl.^{3} G03G *15/09*
U.S. Cl. 118—657 **7 Claims**



1. In a development apparatus having three magnetic brushes which sequentially apply toner to an electrostatic image on a moving image-bearing member, the improvement comprising:

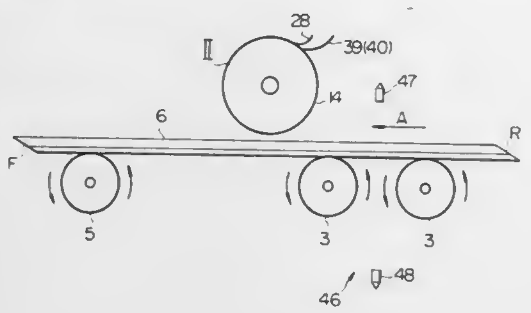
(a) means for rotating the two upstream brushes counter-current with respect to the movement of the image-bearing member, said upstream brushes having overlapping magnetic fields for transporting developer from one brush to the other while the developer contacts an electrostatic image on such image-bearing member; and

(b) means for rotating the downstream brush co-current with respect to the movement of the image-bearing member to develop any incompletely developed portions of such electrostatic image.

4,442,791
ADHESIVE COMPOUND COATING APPARATUS

Masami Adachi, Higashimurayama; Hirato Shimasaki, Tokyo; Isao Nomizu, Kaminokawa, and Taketo Matsuzaki, Akigawa, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Mar. 25, 1983, Ser. No. 479,132
Claims priority, application Japan, May 13, 1982, 57-80992
Int. Cl.^{3} B05C *1/16*
U.S. Cl. 118—669 **4 Claims**



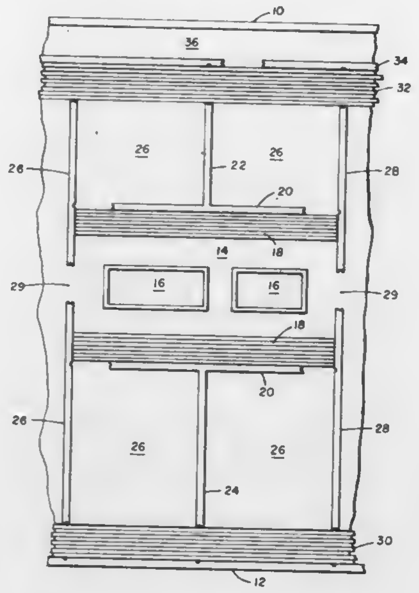
1. An adhesive compound coating apparatus for coating an adhesive compound on leading and trailing beveled end faces of a rubber strip material, the leading and trailing beveled end faces being bias-cut in parallel with each other with respect to the upper and lower surfaces of the rubber strip material, comprising:

- conveyor means for conveying the rubber strip material in its longitudinal direction;
- a coating roller disposed to have a center axis substantially perpendicular to the longitudinal direction of said rubber strip material and rotatable about its center axis, the coating roller being movable with respect to said conveyor means between a first position having the center axis of the coating roller positioned below the upper surface of said conveyor means and a second position having the peripheral surface of the coating roller positioned above the upper surface of said conveyor means;
- drive means for driving the coating roller to rotate about its center axis;
- adhesive compound supplying means for supplying and applying the adhesive compound on the peripheral surface of said coating roller;
- detecting means operative to detect the positions of the rubber strip material conveyed by said conveyor means and produce output signals; and
- control means responsive to the output signals delivered from said detecting means and operative to move said coating roller toward said second position from said first position when the leading beveled end face of the rubber strip material is advanced to said coating roller so that the leading beveled end face of the rubber strip material is brought into contact with the peripheral surface of said coating roller and is coated with the adhesive compound by said coating roller, and operative to move the coating roller toward said first position from said second position when the trailing beveled end face of the rubber strip material is advanced to said coating roller so that the trailing beveled end face of the rubber strip material is brought into contact with the peripheral surface of said coating roller and is coated with the adhesive compound by said coating roller.

4,442,792
HOG FINISHING BUILDING

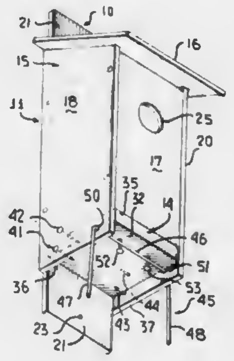
Arthur C. Nehring, 107 Michigan, Iowa Falls, Iowa 50126
Continuation of Ser. No. 875,407, Feb. 6, 1978, abandoned. This application Nov. 19, 1979, Ser. No. 95,634
Int. Cl.^{3} A01K *1/00*
U.S. Cl. 119—16 **6 Claims**

1. A hog finishing building for growing and finishing hogs and the like, said building comprising a pair of side walls, end walls joined to said side walls to provide an enclosure, a roof covering said enclosure, and a plurality of partitions within said enclosure, some of said partitions being positioned substantially parallel to said side walls while others of said partitions are positioned transversely thereto, said partitions being arranged to form a plurality of separate feed areas, rest areas, and pathways for the hogs housed in said building, each of said feed areas, rest areas and pathways having at least one normally open access opening between it and each adjacent one of said areas and pathways so as to provide for free movement of a hog in any one of said areas or pathways directly into an adjacent one of said areas or pathways without passing through any other area or pathway.



4,442,793
EASY-TO-CLEAN BIRDHOUSE

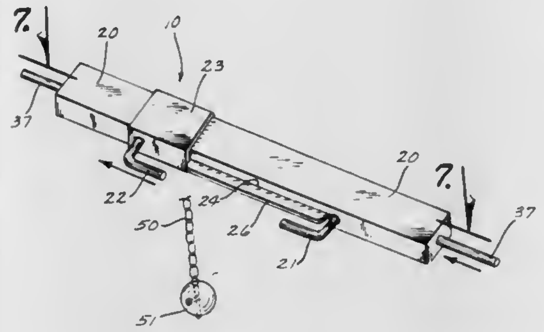
Charles D. Overpeck; Dorothy S. Overpeck, and George G. Overpeck, all of 725 Forest Ridge Dr., Great Falls, Va. 22066
Filed Jul. 9, 1982, Ser. No. 396,725
Int. Cl.^{3} A01K *31/00*
U.S. Cl. 119—23 **2 Claims**



1. An easy-to-clean birdhouse comprising a body defining a chamber, a roof closing an upper end portion of said body and said chamber, a floor closing a lower end portion of said body and said chamber, means in said body for defining a bird ingress and egress opening relative to said chamber whereby birds might build a nest within said chamber upon said floor, means for normally maintaining said floor normal to a longitudinal axis of said chamber whereby said floor is normally disposed essentially horizontally when said birdhouse is appropriately supported in its use position, said maintaining means including a rod of flexible material spanning and underlyingly supporting said floor, said rod passing through opposite openings in said body lower end portion, at least one end of said rod being bent transversely to the rod axis to prevent the accidental withdrawal of said rod from said openings but said one rod end being capable of being rebent into realignment with the rod axis to permit the intentional withdrawal of said rod from said openings and the subsequent opening of said floor whereby a nest can be removed through said opened lower end portion, means for pivotally/slidably connecting said floor to said body lower end portion whereby upon the withdrawal of said rod said floor can pivot and/or slide to open said chamber lower end portion, and said pivotally/slidably connecting means are two pairs of spaced pins at opposite sides of said body lower end portion each receiving therebetween a lateral edge of said floor.

4,442,794
APPARATUS FOR CATCHING CATTLE

Frank W. Redmann, Rte. 2, 1061 Hwy. 97 South, Athens, Wis. 54411
Filed May 19, 1982, Ser. No. 379,666
Int. Cl.^{3} A01K *1/06, 1/08*
U.S. Cl. 119—115 **8 Claims**

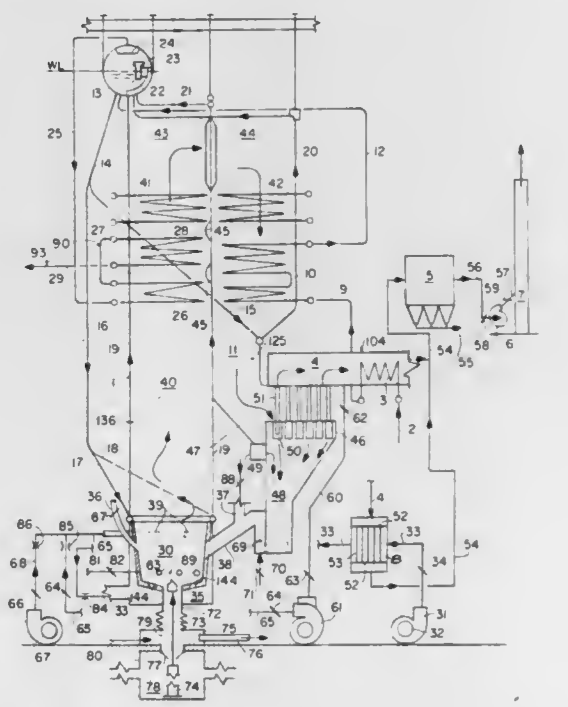


1. Apparatus for automatically tethering a cow in a tie stall, said tie stall being of a type including a milking pad for providing a place for a cow to stand and having partition means for separating a feed bunk from a milking pad, and feed bunk access means for allowing the head and neck of a cow to pass through from the milking pad to the feed bunk and preventing the rest of the cow from passing therethrough, whereby a cow can stand on the milking pad and eat feed in the feed bunk, said tethering apparatus comprising:

- a frame means for being operatively connected to said partition means below said access means;
- collar means for extending around the neck of a cow;
- tripping means connected to said collar for hanging below said collar means, said tripping means includes an enlarged member on one end thereof; and
- catching means operatively attached to said frame for automatically connecting the tripping means to said frame upon contact of said tripping means with said catching means, whereby when a cow having a collar means and tripping means connected thereto sticks its head through the access means, it will be automatically tethered in that position, said catching means comprises an L-shaped first rod rigidly connected to said frame means and extending toward said milking pad and having a free end;
- a second L-shaped rod extending toward said milking pad and having a free end thereon;
- mounting means for slideably attaching said second L-shaped rod to said frame means;
- rod biasing means for biasing said second L-shaped rod to a first position wherein the free ends of said first and second L-shaped rods are substantially in abutment;
- means for locking said second L-shaped rod in a second position spaced from said first position whereby the free ends of said first and second L-shaped rods are spaced a substantial distance apart;
- lock biasing means connected to said frame means for biasing said locking means to its locking position;
- said locking means being disposed between said first and second L-shaped rods in the locked position thereof when the second L-shaped rod is in the second position thereof, whereby contact of the tripping means with the locking means will unlock the locking means and automatically allow the rod biasing means to move the second L-shaped rod to the first position thereof thereby causing the first and second L-shaped rods to be disposed around the tripping means with the collar means disposed above the L-shaped rods and the enlarged member below the L-shaped rods, said enlarged member being of a size too large to pass through the space between the L-shaped rods and the frame when the second L-shaped rod is in the first position thereof; and
- resetting means for releasing a tethered cow and resetting said catching means for subsequent use.

4,442,795
RECIRCULATING FLUIDIZED BED COMBUSTION SYSTEM FOR A STEAM GENERATOR

Charles Strohmeyer, Jr., Gladwyne, Pa., assignor to Electrodyne Research Corporation, Gladwyne, Pa.
Continuation-in-part of Ser. No. 371,528, Apr. 26, 1982. This application Dec. 8, 1982, Ser. No. 448,028
Int. Cl.^{3} F22B *1/00*
U.S. Cl. 122—4 D **8 Claims**



1. A steam generator having a feedwater inlet and steam outlet and coolant filled heat absorption circuits disposed in between, a vertical up flow furnace, walls for said furnace including a first portion of said heat absorption circuits, a combustion system contained by said furnace comprising a first ignition and reaction zone at the bottom of said furnace, means for continuously feeding solid fuel and air to said first zone sustaining combustion and generating hot flue gas, a second zone above said bottom of said furnace including means for admission of secondary gas to said furnace, means for overflowing said hot flue gas and said solid fuel from said first zone along with recycled solids up into said second zone to form a combined gas stream, means to maintain velocity of the combined gas stream in and above said second zone sufficient for entraining in said combined gas stream a substantial portion of said overflowed solid fuel and recycled solids, additional portions of said heat absorption circuits disposed horizontally at the outlet of said furnace and provided with an enclosure interconnected with said furnace walls, means causing the volumetric relationship of said enclosure and gas temperature to drop across components of said additional portions for reducing velocity of said combined gas stream between said components below entrainment level for part of said entrained solids permitting said solids part to settle in a fluidized state, means for separation of said solids remaining in said main path of said combined gas stream at a downstream location, means for continuously draining said settled solids port away from the

main path of said combined gas stream, means to recycle said drained away settled solids part and said separated remaining solids between said first and second zones, and means to exhaust said main path of said combined gas stream after said remaining solids separation.

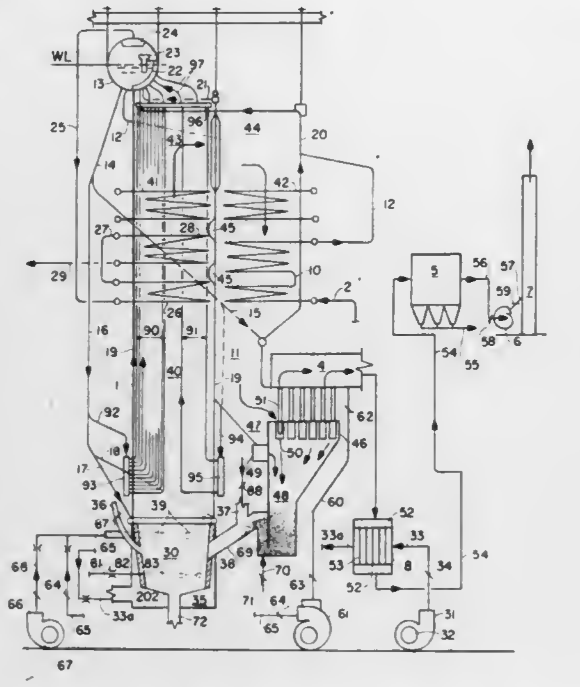
4,442,796
MIGRATING FLUIDIZED BED COMBUSTION SYSTEM FOR A STEAM GENERATOR

Charles Strohmeyer, Jr., Gladwyne, Pa., assignor to Electrodyne Research Corporation, Gladwyne, Pa.

Continuation-in-part of Ser. No. 448,028, Dec. 8, 1982. This application Jan. 7, 1983, Ser. No. 456,586

Int. Cl.³ F22B *1/00*

U.S. Cl. 122—4 D **5 Claims**



1. A steam generator having a feedwater inlet and steam outlet and coolant filled heat absorption circuits disposed in between, a vertical up flow furnace, walls for said furnace including a first portion of said heat absorption circuits, a combustion system contained by said furnace comprising a first ignition and reaction zone at the bottom of said furnace, means for continuously feeding solid fuel and air to said first zone sustaining combustion and generating hot flue gas, a second zone above said bottom of said furnace including means for admission of secondary gas to said furnace, said means for continuously feeding solid fuel concentrating supply of said solid fuel at location/s of said first zone below said secondary gas admission means, said means for feeding air adapted to discharge air uniformly, tangentially and in a distributed manner above and throughout said furnace bottom in a directional pattern driving said solid fuel along with recycled solids as a fluidized mixture migrating in a concentric, essentially horizontal, retraceable path following the periphery of said furnace walls below said second zone, displacement means for overflowing said mixture from said first zone into said second zone generating a screwlike trace through said first zone, said means for admission of secondary air adapted to admit gas at multiple points spaced in a horizontal, uniform, geometric pattern, said secondary gas flowing into said second zone in a substantially horizontal plane optionally tipped slightly up or down and in an essentially transverse direction to said path of said fluidized mixture containing said fuel, each of said multiple points tangentially in line with the same relative side of an imaginary horizontal circle at the center of said multiple points and disposed for sustaining said screwlike trace of said mixture from said first zone, said secondary gas having admission velocity sufficient for redirecting said mixture and uniformly distributing said fuel and said air throughout said first and said second zones, means to maintain velocity of the combined gas stream in and above said second zone sufficient for entraining in said combined gas stream a substantial portion of said overflowed recycled solids and solid fuel, means for separation of said substantial solids portion from said combined gas stream downsteram of said furnace, external means for recycling said separated solids to said second zone as said recycled solids, and means for exhausting said combined gas stream after said solids separation.

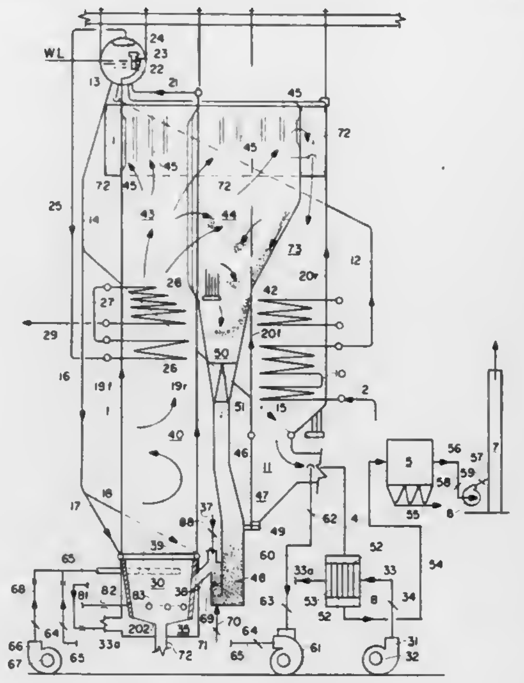
4,442,797
GAS AND PARTICLE SEPARATION MEANS FOR A STEAM GENERATOR CIRCULATING FLUIDIZED BED FIRING SYSTEM

Charles Strohmeyer, Jr., Gladwyne, Pa., assignor to Electrodyne Research Corporation, Gladwyne, Pa.

Filed Jan. 24, 1983, Ser. No. 462,016

Int. Cl.³ F22B *1/00*

U.S. Cl. 122—4 D **6 Claims**



1. A steam generator having a feedwater inlet and steam outlet and coolant filled heat absorption circuits disposed in between, a vertical up flow furnace, walls for said furnace including a first portion of said heat absorption circuits, a combustion system contained by said furnace comprising a first ignition and reaction zone at the bottom of said furnace, means for continuously feeding solid fuel and air to said first zone sustaining combustion and generating hot flue gas, a second zone above said bottom of said furnace including means for admission of secondary gas to said furnace, means for overflowing said hot flue gas and said solid fuel from said first zone along with recycled solids up into said second zone to form a combined gas stream, means to maintain velocity of the combined gas stream in and above said second zone in a relatively constant range and sufficient for entraining in said combined gas stream a substantial portion of said overflowed solid fuel and recycled solids, said combustion reaction continuing in and above said second zone consuming said solid fuel, said recycled solids in said substantial portion maintaining said combined gas stream in a suppressed and controlled temperature range, an enclosure for said combined gas stream at said furnace outlet to continuously expand said combined gas stream in an upward direction, said enclosure forming an expanding plenum and a baffle at the outlet end, said enclosure configuration and said combined gas stream expansion causing said velocity of said combined gas stream in said plenum to decrease sufficiently enabling inertial separation and settlement of most of said solids entrained in said combined gas stream, orificed ports uniformly distributed in said baffle comprising means to draw said combined gas stream discharging from said furnace up into said expanding plenum in an even and striated flow path, a hopper offset from the horizontal plane of said furnace at the bottom of said plenum, at least a portion of said combined gas stream discharge passing over said hopper and directing said separated solids during settlement toward said hopper for collection, means for recycling said collected solids as recycled solids between said first and second zones, means for collecting said combined gas discharged from said orifices and passing said combined gas through a convection section comprising a second portion of said heat absorption circuits, for cooling said combined gas, and means for disposing of said cooled combined gas.

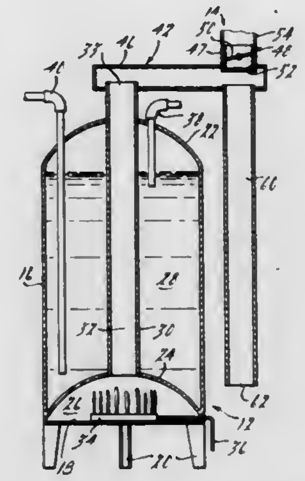
4,442,798
VENT ASSEMBLY

Theodore J. Zanias, Long Beach, Calif., assignor to Masco Corporation, Taylor, Mich.

Continuation of Ser. No. 352,186, Feb. 25, 1982, abandoned, which is a continuation of Ser. No. 182,832, Aug. 29, 1980, abandoned. This application Jun. 27, 1983, Ser. No. 508,424

Int. Cl.³ F22B *5/00*

U.S. Cl. 122—17 **2 Claims**



1. A vent assembly for venting into the atmosphere gasses of combustion from a flue exhaust port of a heater appliance disposed within an enclosure and having a burner, a tank disposed above the burner and at least one flue extending vertically through the tank and interconnecting a burner compartment and said flue exhaust port, said vent assembly comprising:

an exhaust duct having two ends, one of said ends being connected to said flue exhaust port and the other of said ends being open to the atmosphere outside said enclosure;

selectively operative closure means selectively opening said duct for the flow of said gasses of combustion therethrough when said burner operation is discontinued;

said selectively operative closure means comprises a thermally responsive damper constructed to respond to the temperature within said duct and opening when gasses within said exhaust duct are above a predetermined temperature;

a relief duct connected to said exhaust duct at a point along the flow path of said gasses of combustion upstream of said closure means; and

a continuously open relief aperture in said relief duct disposed at a height between the height of said burner and the height of said flue exhaust port but substantially closer to the height of said burner than to the height of said flue exhaust port.

4,442,799
HEAT EXCHANGER

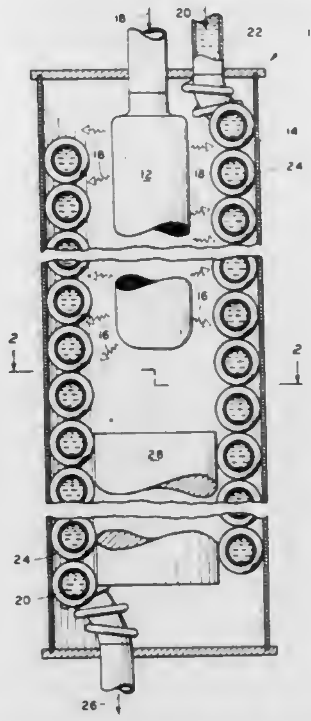
Laurence B. Craig, 116 Duck Pond Rd., Glen Cove, N.Y. 11542, and Alfred J. Farina, 1939 Anita Ct., Baldwin, N.Y. 11510

Filed Sep. 7, 1982, Ser. No. 415,402

Int. Cl.³ F22B *21/00*

U.S. Cl. 122—250 R **1 Claim**

1. An improved heat exchanger comprising, in combination, an elongated-shaped means operatively arranged to provide a source of heat eminating radially therefrom and along the length of said elongated shape, a fluid for use in heat exchange with said heat source, a combination cylindrical housing having an exit opening at one end and helical coil disposed in a clearance position in surrounding relation to and along said elongated-shaped heat source for the flowing through said helical coil of said fluid incident to establishing said heat exchange between said heat source and said fluid, said helical coil being in physical contact with said cylindrical housing and having surface helical fluting thereabout extending for the length thereof and arranged with the individual helical turns thereof in adjacent relation to each other so as to bound a compartment within said cylindrical housing about said heat source, a plug located at the end of said compartment to block the flow of air centrally therethrough directly to said exit opening of said cylindrical housing so as to assist in producing air movement radially outwardly therefrom into contact with said helical coil, and pressure means urging air through movement in said compartment for enhancing the transfer of heat from said heat source to said flowing fluid along at least one path that traces along the helical fluting of said helical coil and a second path that traces along the clearance between said helical coil and said cylindrical housing, whereby there is an optimum heat exchange which is provided by heat transfer from said heat source to said two paths of circulating air and from said circulating air to said flowing fluid.



4,442,800
SINGLE DRUM ALL-WELDED BOILER

Thomas P. Seifert, and Warren E. Longfield, both of Wadsworth, Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed May 3, 1982, Ser. No. 374,358

Int. Cl.³ F22B *37/18*

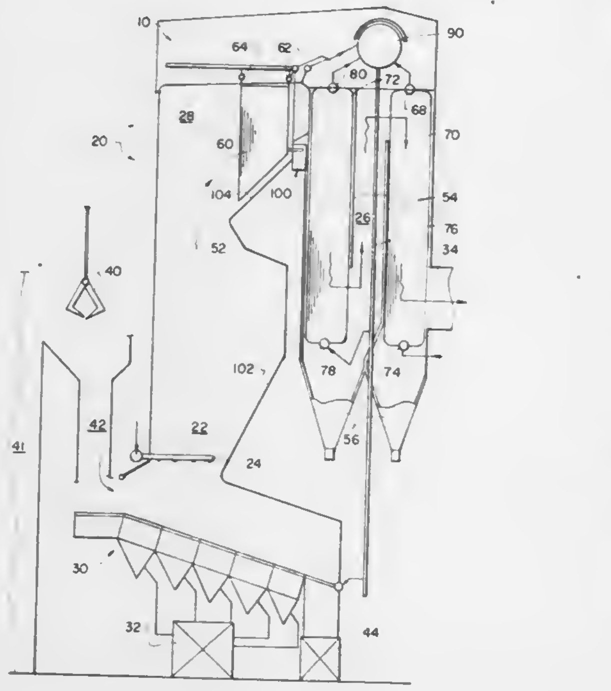
U.S. Cl. 122—379 **8 Claims**

1. A single drum all-welded boiler system for a furnace having a combustion chamber and a convection pass downstream of the combustion chamber and connected to the combustion chamber in a transition area, comprising:

a superheater disposed in the transition area having an inlet and an outlet;

an economizer disposed in the convection pass having an inlet and an outlet;

a boiler disposed in said convection pass between said economizer and said superheater, said boiler comprising at least one modular unit made up of a plurality of tubes welded at the bottom to a common inlet header and at the top to a common outlet header, wherein the boiler and economizer modular units have extended surface in the form of fins welded on each side of the tubes parallel to the direction of gas flow and have vertical upward flow of fluid in the tubes; a plurality of unheated downcomer pipes, not exposed to combustion gas, extending vertically downward from a single steam drum to supply water to the lower furnace wall headers and to the lower headers of the boiler modules; and

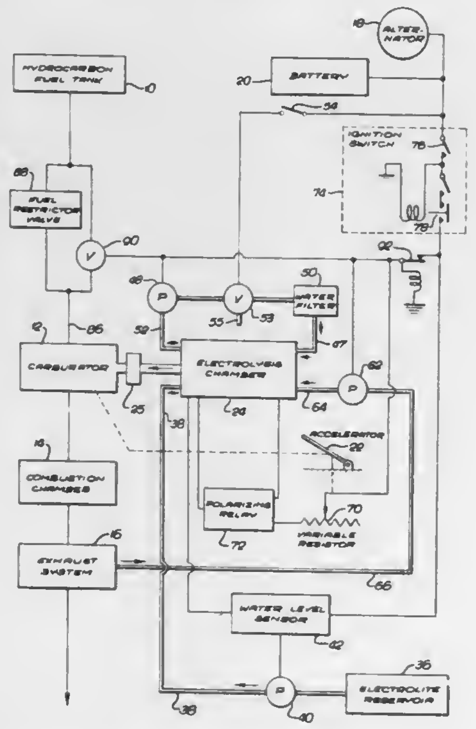


said single steam drum having at least one inlet connected to said economizer outlet and at least one outlet connected to said superheater inlet; the drum located in an area not exposed to combustion gas flow.

4,442,801
ELECTROLYSIS FUEL SUPPLEMENTATION APPARATUS FOR COMBUSTION ENGINES

John D. Glynn, One Century Plz., 2029 Century Park East, Los Angeles, Calif. 90067; Daniel R. Glynn, 2215 El Arbolito Dr., Glendale, Calif. 91208, and Arthur R. Andrews, 1049 Alcalde Dr., Glendale, Calif. 91207

Filed Dec. 16, 1981, Ser. No. 331,246
Int. Cl.³ F02B *43/10*
U.S. Cl. 123—3 **25 Claims**



1. In a combustion engine including at least one combustion chamber, a hydrocarbon fuel tank, fuel delivery means for mixing said fuel with air and delivering said fuel/air mixture to said combustion chamber, throttle means for adjustably controlling said fuel delivery means, and a source of electrical potential energized by the operation of said engine, the improvement to said engine comprising:

a reservoir containing an electrolyte that is at least part water;

an electrolysis chamber;

an electrolyte feed line leading from said reservoir to said chamber, whereby said chamber is filled with said electrolyte;

a pair of electrodes disposed within said chamber and at least partially immersed in said electrolyte, each of said electrodes including a plurality of perforated horizontal electrode plates, said electrodes being electrically connected to opposite sides of said source of electrical potential, whereby said electrolyte is broken down to yield hydrogen and oxygen;

voltage means for varying the electrical potential applied to said electrode plates in response to adjustment of said throttle means thereby producing hydrogen and oxygen at a rate responsive to the adjustment of said throttle means;

fuel supplement delivery means for supplying said hydrogen and oxygen to said fuel delivery means;

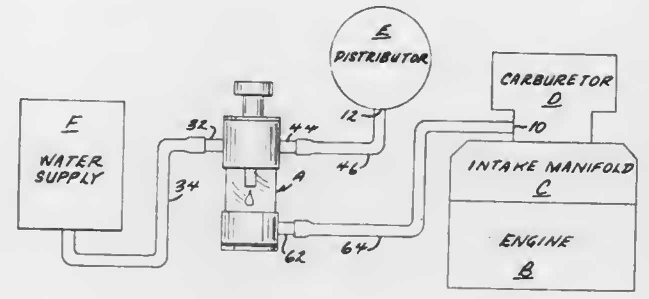
pump means for blowing a pusher gas under positive pressure through a pusher gas manifold, whereby said gas rises through said chamber and sweeps said hydrogen and oxygen from said plates; and

a perforated pusher gas manifold extending throughout the entire bottom of said chamber beneath said electrodes to distribute said pusher gas horizontally throughout the bottom of said chamber whereby said pusher gas instantaneously sweeps hydrogen and oxygen from said plates and prevents a hazardous and unsafe accumulation of hydrogen and oxygen within said chamber.

4,442,802
INTERNAL COMBUSTION ENGINE WATER INJECTOR

Earl H. Cook, 2 Chaparrel La., Rancho Palos Verdes, Calif. 90274, and Norman E. Booth, 7561 Keith Cir., La Palma, Calif. 90623

Filed Oct. 1, 1982, Ser. No. 432,181
Int. Cl.³ F02B *47/02;* F02D *19/00*
U.S. Cl. 123—25 L **1 Claim**



1. In combination with an internal combustion engine that has an intake manifold, a carburetor that has a vacuum passage therein, and a distributor that has a vacuum passage therein that controls a spark advance mechanism that forms a part of said distributor, a water injection assembly that includes:

a. a vertically positionable valve body that has a top and a bottom surface and a bore extending therebetween, a first transverse passage in said valve body, a first tubular member extending outwardly from said valve body in communication with said first transverse passage, a second tubular member that extends outwardly from said valve body and communicates with a downwardly extending passage therein;

b. a cylindrical valve member rotatably and sealingly supported in said bore, said valve member having a second transverse passage therein that lies in the same plane as said first passage, said second passage in communication with a downward passage in said valve member, and a circular recess in said bottom surface;

c. a base that includes a top surface and a bottom surface, said top surface having a circular recess therein, a third tubular member that extends outwardly from said base;

d. first and second resilient rings mounted in said first and second recesses;

e. a cylindrical transparent shell that has first and second end portions disposed in said first and second recesses;

f. a U-shaped supporting clip that has first and second legs that engage said top and bottom surfaces of said valve body and base and force said cylindrical shell into pressure sealing contact with first and second resilient rings, said valve body cylindrical shell and base cooperating to define a confined space;

g. first, second and third tubes connected to said first, second and third tubular members, said first tube connected to a source of water, said second tube to said distributor, and said third tube to said passage in said carburetor, with said engine when operating creating a vacuum in said confined space to draw water into said confined space drop by drop, and the rate at which said drops enter said confined space dependent on the positioning of said second transverse passage relative to said first transverse passage, and said drops flowing through said third tube to said intake manifold to be subsequently vaporized in the cylinders of said engine to augment the pressure to which the pistons therein are subjected.

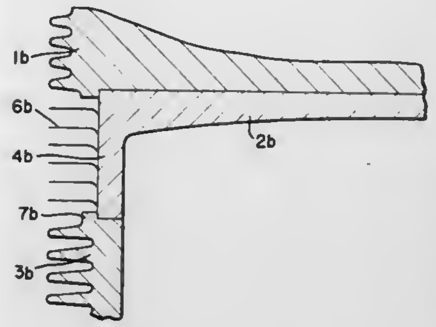
4,442,803
LIGHT METAL CYLINDER HEAD FOR INTERNAL COMBUSTION ENGINES

Paul Tholen, Bergisch Gladbach, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Division of Ser. No. 187,519, Sep. 15, 1980, Pat. No. 4,387,678. This application Feb. 23, 1983, Ser. No. 468,898

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1979, 2937788

Int. Cl.³ F02F *1/26*
U.S. Cl. 123—41.69 **1 Claim**



1. A light metal cylinder head arrangement in combination with combustion chambers of internal combustion engines, comprising in combination:

a light metal cylinder head having a bottom directed toward an associated combustion chamber, the cylinder head having an axially extending, annular shoulder extending toward the combustion chamber, which shoulder has a first surface facing radially inward and a second surface facing axially;

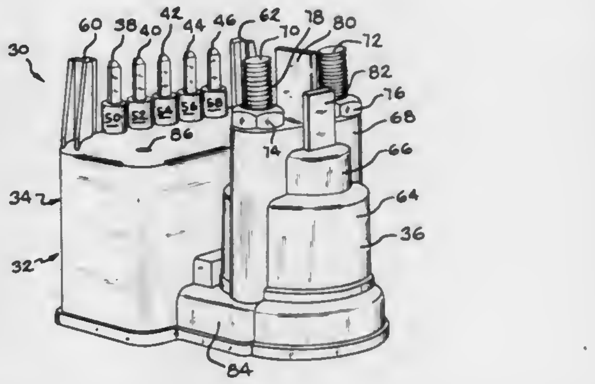
a cylinder barrel, spaced from the cylinder head, and having an axially extending annular shoulder extending toward the cylinder head, the shoulder of said cylinder barrel having a first surface facing radially inward and a second surface facing axially, the shoulder of said cylinder barrel being outboard of an axially facing surface;

an insert of ferris metal disposed between the cylinder head and cylinder barrel; the insert including a plate portion and an annular portion integral therewith; the plate portion having a flat surface abutting the bottom of the cylinder head and a concave surface facing the combustion chamber; the annular portion extending from the plate portion toward the cylinder barrel with the entire plate portion being inboard of the annular portion; the annular portion having a thickness no more than about three times the thickness of the shoulders as measured across the second surfaces thereof; the insert being in abutment with the first surfaces of the shoulders and the axially facing surface of the cylinder barrel; whereby during engine operation thermal expansion urges the insert and cylinder head snugly against one another.

4,442,804
GLOW PLUG CONTROLLER FOR DIESEL ENGINES

Richard L. Morgan, Utica, and David A. Pickett, Monroe, both of Mich., assignors to Allied Corporation, Morristown, N.J.

Filed Jul. 14, 1982, Ser. No. 398,006
Int. Cl.³ F02N *17/00*
U.S. Cl. 123—145 A **13 Claims**



1. A control device for use with a compression-ignition engine for energizing at least one glow plug when the engine is being started, comprising:

a source of electrical current;

first switch means for controlling the supply of said current to said device;

first relay contact means responsive to first relay coil means interposed between said source of electrical current and said at least one glow plug for energizing said glow plug when said first relay coil means is energized;

said first relay coil means being operably connected to said source of electrical current when said engine is being started, and electrically connected in series with a second temperature-actuated switch means which opens upon an increase in temperature and having second associated electrical heater means, and with a third temperature-actuated switch means which opens upon an increase in temperature and having a third associated electrical heater means and with a second relay contact means responsive to a second relay coil means;

said second relay coil means being connected electrically in parallel with said third temperature-actuated switch;

said third temperature-actuated switch being adapted to electrically open at a first predetermined time interval after said switch means is actuated to supply said current to said device;

said first relay coil means being energized when said switch means is actuated to supply said current and de-energized at said first predetermined time;

said second relay coil means being energized at said first predetermined time and remaining energized until said switch means is actuated to remove said current from said device.

4,442,805

INTERNAL COMBUSTION ENGINE PROVIDED WITH A PLURALITY OF POWER UNITS

Toru Yamakawa, Hachioji, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

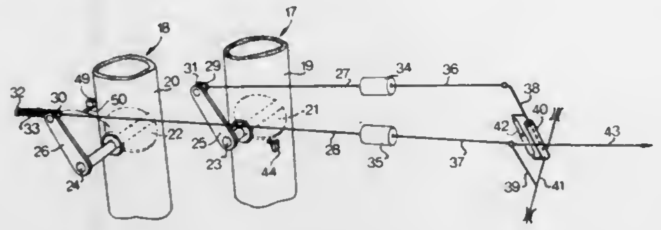
PCT No. PCT/JP81/00363, 371 Date Jul. 29, 1982, 102(e) Date Jul. 29, 1982, PCT Pub. No. WO82/01914, PCT Pub. Date Jun. 10, 1982

PCT Filed Nov. 30, 1981, Ser. No. 403,745

Claims priority, application Japan, Nov. 29, 1980, 55-168785; Nov. 29, 1980, 55-168790

Int. Cl.³ F02D *25/04*

U.S. Cl. 123—198 F **1 Claim**



1. An internal combustion engine for a vehicle, which comprises a plurality of independent engine units including a primary engine unit and an auxiliary engine unit, and an output shaft, characterized in that the primary engine is connected to the output shaft and the auxiliary engine unit is connected to the output shaft through a clutch, that a control system is so arranged that when a throttle valve of the primary engine unit is fully opened, a throttle valve of the auxiliary engine unit is opened to a half open position and the throttle valve of the primary engine unit is closed to a half open position, thereafter both throttle valves are opened together.

4,442,806

VALVE DRIVING CONTROL APPARATUS IN AN INTERNAL COMBUSTION ENGINE

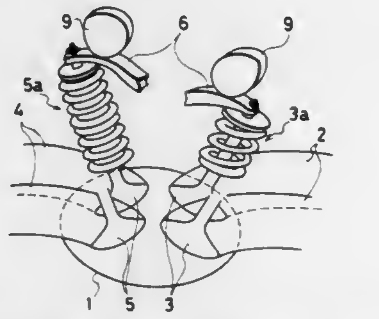
Masaaki Matsuura, Tokyo, and Yoshikatsu Nokano, Kawagoe, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 30, 1982, Ser. No. 445,637

Claims priority, application Japan, Dec. 3, 1981, 56-194815

Int. Cl.³ F01L *1/34;* **F02D** *13/06*

U.S. Cl. 123—198 F **5 Claims**



1. A valve driving control apparatus for an internal combustion engine having a crankshaft and a power cylinder provided with a plurality of intake or exhaust valves, comprising:

(a) an engine speed sensor means for generating an engine speed signal indicative of the rotational speed of the crankshaft;

(b) a camshaft driven by the crankshaft;

(c) a plurality of cam assembly means associated with said camshaft for opening one of the intake and exhaust valves in accordance with the rotation of said camshaft at a predetermined valve timing;

(d) a change-over means associated with at least one of said cam assembly means for selectively disabling an operation of opening the valve upon receiving a valve drive control signal; and

(e) a control means for producing said valve drive control signal in response to said engine speed signal, said control means being arranged to have a first threshold engine speed level which is used upon production of said valve drive control signal and a second threshold engine speed level which is used upon stopping of said valve drive control signal, thereby providing a hysteresis characteristic to a change-over operation between an operative and an inoperative state of the valve.

4,442,807

METHOD FOR IGNITING LEAN FUEL-AIR MIXTURES AND AN APPARATUS TO PERFORM THE METHOD

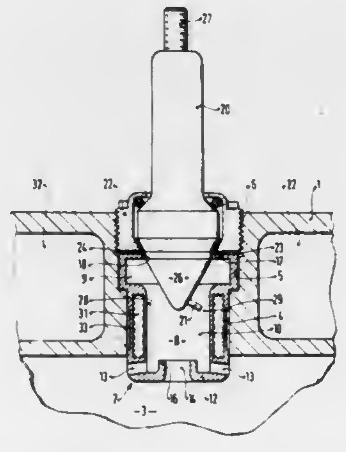
Reinhard Latsch, Vahingen; Hans Schlembach, Mühlacker, and Dieter Scherenberg, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 141,437, Apr. 17, 1980, abandoned. This application Jul. 30, 1982, Ser. No. 403,902

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1979, 2916285

Int. Cl.³ F02B *19/18, 31/00*

U.S. Cl. 123—263 **3 Claims**



1. A method for igniting lean fuel-air mixtures in an ignition chamber disposed in a combustion chamber wall of an internal combustion chamber, which ignition chamber communicates with a main combustion chamber via a plurality of overflow channels and having an ignition device igniting toward a wall of the ignition chamber, said method comprising the steps of:

during a compression stroke of the internal combustion engine introducing a first portion of a fresh charge comprising fuel and air from the main combustion chamber into the ignition chamber having a longitudinal axis and a rotationally symmetrical shape around said longitudinal axis through at least one first overflow channel,

delivering said charge introduced through at least one first overflow channel directly to a portion of the ignition chamber remote from the main combustion chamber,

establishing a contrary flow stream beginning in said remote portion of said ignition chamber towards an ignition chamber portion oriented toward the main combustion chamber, introducing a second portion of the fresh charge via at least one second overflow channel and discharging said second portion of the fresh charge tangentially in relation to a chamber wall portion surrounding said longitudinal axis into the ignition chamber on a side oriented toward the combustion chamber, and

establishing a fuel-air stream along the ignition chamber wall moving towards said first portion of a fresh charge and simultaneously rotating around said longitudinal axis of said ignition chamber, establishing between said first and said second portion of a fresh charge a boundary layer having a speed vector which in a longitudinal direction of the ignition chamber disappears to at least nearly zero, and establishing ignition of said introduced fuel at an outer periphery of the rotating stream in a location which is closer to said boundary layer as to said at least one second overflow channel.

4,442,808

COMBUSTION CHAMBER FOR SPARK IGNITION INTERNAL COMBUSTION ENGINE

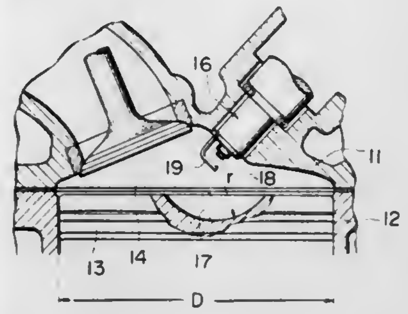
Saburo Tsutsumi, Yokohama; Kichihiko Dozono; Yutaka Matayoshi, both of Yokosuka, and Kazuya Kunii, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 10, 1980, Ser. No. 215,082

Claims priority, application Japan, Dec. 11, 1979, 54-171506[U]

Int. Cl.³ F02F *3/26*

U.S. Cl. 123—279 **6 Claims**



1. A combustion chamber for a spark ignition internal combustion engine comprising a cylinder bore, a piston reciprocating in said cylinder bore, a cylinder head having a non-spherical sinuous surface enclosing said cylinder bore and a spark plug disposed in said cylinder head, said piston having formed in a top thereof a volume formed by a part-spherical depression that has a surface which is so shaped and located as to permit a flame front during an initial stage of combustion to reach the entire surface of said depression substantially simultaneously, and wherein said spark plug has electrodes which extend into said combustion chamber by a distance less than a radius of curvature of said depression, in which the radius of curvature of said depression forms a ratio to that of the cylinder bore of 1:10 to 1:2, wherein the surface of said cylinder head bounds a volume which is substantially greater than said volume formed by said depression.

4,442,809

COMBUSTION CHAMBER OF AN INTERNAL COMBUSTION ENGINE WITH AN ACCUMULATION CHAMBER

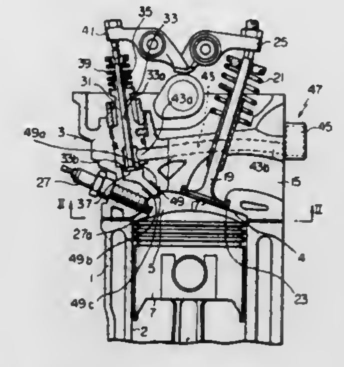
Hidetaka Nohira, Mishima; Sumio Ito, Susono, and Hisashi Oki, Numazu, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 22,491, Mar. 21, 1979, abandoned. This application Mar. 9, 1981, Ser. No. 241,610

Claims priority, application Japan, Jan. 24, 1978, 53-5816

Int. Cl.³ F02D *15/04*

U.S. Cl. 123—316 **4 Claims**



1. An internal combustion engine with an accumulation chamber, which engine comprises:

a cylinder block having a cylindrical bore formed therein for constituting a part of a combustion chamber in which a piston is reciprocated and a combustible gas mixture is burnt to generate engine power;

a cylinder head secured to said cylinder block, which head has formed therein a recess constituting the other part of said combustion chamber, an intake port for introduction of combustible gas, an exhaust port for removal of exhaust gas, a cavity constituting at least part of an outwardly closed accumulation chamber for temporarily accumulating a part of the combustible gas introduced into said combustion chamber, and a passage between the combustion chamber and the accumulation chamber;

a valve positioned in said passage for controlling communication between said combustion chamber and said accumulation chamber; and

means for opening said valve only once per engine cycle approximately at the time a compression stroke of said piston is commenced and for shutting said valve prior to ignition in the combustion chamber approximately at the time said compression stroke is completed, so that combustible gas under high pressure within said combustion chamber at the completion of said compression stroke is accumulated within said accumulation chamber and that said accumulated combustible gas is spouted into said combustion chamber at the beginning of the next compression stroke; wherein

said accumulation chamber is disposed in a heat exchange relation with exhaust gases of the engine only adjacent to the exhaust port in the cylinder head so that heat from exhaust gases flowing through said exhaust port can be transferred to the accumulated intake gas.

4,442,810

REGULATING DEVICE FOR A FUEL INJECTION PUMP

Franz Eheim, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

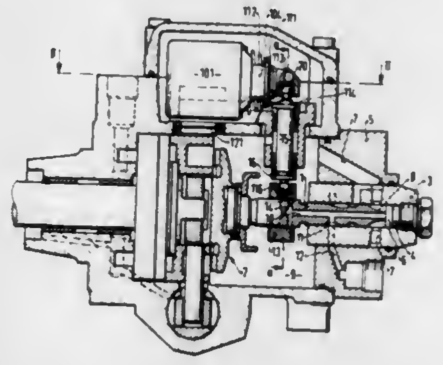
Filed Aug. 18, 1982, Ser. No. 409,249

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1981, 3138640

The portion of the term of this patent subsequent to Mar. 9, 1999, has been disclaimed.

Int. Cl.³ F02D *31/00*

U.S. Cl. 123—357 **10 Claims**



1. In a fuel injection pump for internal combustion engines, including a reciprocating pump piston having conduit means for distributing pumped fuel to respective engine cylinders, and means for precisely regulating the quantity of fuel pumped, during the compression stroke of said piston, to said cylinders, the improvement comprising:

annular means disposed about said piston for selectively blocking said conduits,

electromagnetic means for adjusting the position of said blocking means along said piston means, said adjusting means comprises a linear magnet and

means, coupling said adjusting means to said blocking means, for transmitting motion of said former to said latter,

whereby adjustment of the position of said blocking means along said piston results in said conduit means being selectively blocked at varying times during said compression stroke thus producing larger or smaller quantities of injected fuel and said blocking means comprises a sleeve slidable axially over the piston.

4,442,811

METHOD AND APPARATUS FOR EXPEDITING THE STARTING OF AN INTERNAL COMBUSTION ENGINE

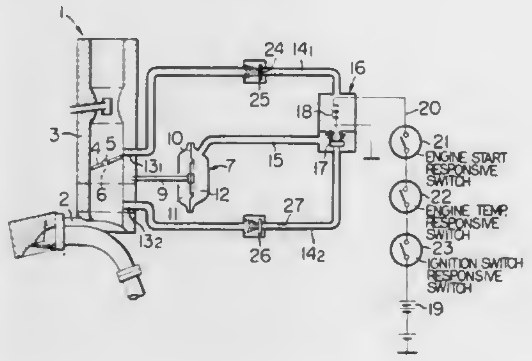
Haruo Shimamura, Kawashima, and Yasuhiro Yamaoka, Niiza, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 18, 1982, Ser. No. 359,195

Claims priority, application Japan, Mar. 31, 1981, 56-45874[U]

Int. Cl.^{3} F02M *1/10, 19/12*

U.S. Cl. 123—376 **11 Claims**


1
24
14₁
16
25
18
20
3
4
5
10
15
21
ENGINE START RESPONSIVE SWITCH
13₁
7
17
6
9
12
2
11
27
22
ENGINE TEMP. RESPONSIVE SWITCH
13₂
26
14₂
23
IGNITION SWITCH RESPONSIVE SWITCH
19

1. In an internal combustion engine having an intake system with an adjustable throttle valve therein and apparatus for expediting the hot-starting of the engine comprising a vacuum-operated actuator connected to the throttle valve to open the valve to a predetermined throttle position, said actuator having a vacuum chamber connected by a vacuum passage to a port located in the intake system such that suction in the intake system acts on the vacuum chamber to cause the actuator to open the throttle valve during engine operation, the improvement comprising a second vacuum passage extending from a second port located in said intake system to said vacuum chamber, and switch means controlling selective connection of said first vacuum passage and said second vacuum passage to said vacuum chamber of said actuator, said switch means being operable to selectively connect said second vacuum passage to said vacuum chamber when the engine is restarted after the engine has been warmed up and is at a predetermined elevated temperature, and to cut the connection of said second vacuum passage to the vacuum chamber after the engine has been restarted and simultaneously place said first passage into connection with the vacuum chamber.

9. In an internal combustion engine having an intake system with an adjustable throttle valve therein and apparatus for expediting the hot-starting of the engine comprising a vacuum-operated actuator connected to the throttle valve to open the valve to a predetermined throttle position, said actuator having a vacuum chamber connected by a vacuum passage to a port located in the intake system such that suction in the intake system acts on the vacuum chamber to cause the actuator to open the throttle valve during engine operation, the improvement comprising a method including the steps of sensing engine temperature, operating the actuator to open the throttle valve to a more open throttle position than its normal idling position when the engine is restarted after the engine has been warmed up and is at a predetermined elevated temperature and returning the throttle valve to its normal idling position after the hot engine has been restarted.

4,442,812

METHOD AND APPARATUS FOR CONTROLLING INTERNAL COMBUSTION ENGINES

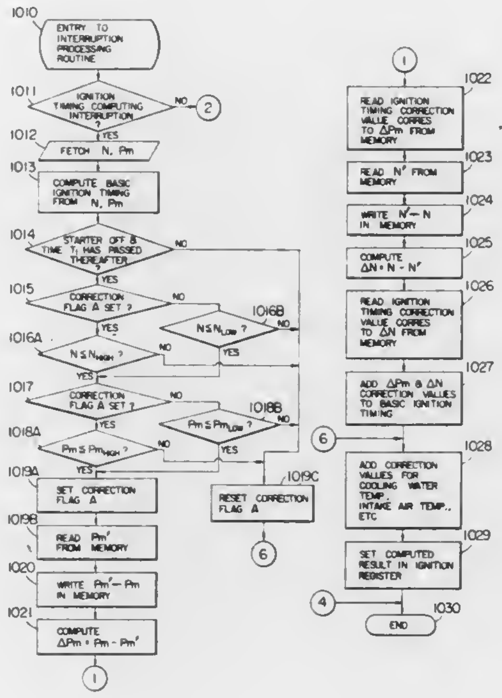
Toshiaki Mizuno, Nagoya, and Mitsunori Takao, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 19, 1981, Ser. No. 322,913

Claims priority, application Japan, Nov. 21, 1980, 55-164230

Int. Cl.^{3} F02D *5/00, 37/02*

U.S. Cl. 123—417 **14 Claims**


1010
ENTRY TO INTERRUPTION PROCESSING ROUTINE
1011
IGNITION TIMING COMPUTING INTERRUPTION ?
NO
2
YES
1012
FETCH N, Pm
1013
COMPUTE BASIC IGNITION TIMING FROM N, Pm
1014
STARTER OFF & TIME T₁ HAS PASSED THEREAFTER ?
1015
CORRECTION FLAG A SET ?
1016B
N ≤ N_LOW ?
1016A
N ≤ N_HIGH ?
1017
CORRECTION FLAG A SET ?
1018B
Pm ≤ Pm_LOW ?
1018A
Pm ≤ Pm_HIGH ?
1019A
SET CORRECTION FLAG A
1019C
RESET CORRECTION FLAG A
6
1019B
READ Pm' FROM MEMORY
1020
WRITE Pm' ← Pm IN MEMORY
1021
COMPUTE ΔPm = Pm − Pm'
1
1022
READ IGNITION TIMING CORRECTION VALUE CORRES TO ΔPm FROM MEMORY
1023
READ N' FROM MEMORY
1024
WRITE N' ← N IN MEMORY
1025
COMPUTE ΔN = N − N'
1026
READ IGNITION TIMING CORRECTION VALUE CORRES TO ΔN FROM MEMORY
1027
ADD ΔPm & ΔN CORRECTION VALUES TO BASIC IGNITION TIMING
1028
ADD CORRECTION VALUES FOR COOLING WATER TEMP., INTAKE AIR TEMP., ETC
1029
SET COMPUTED RESULT IN IGNITION REGISTER
4
1030
END

1. A method for controlling an internal combustion engine having an electronically controlled fuel injection system comprising the steps of:

detecting a first operating parameter indicative of engine load and a second operating parameter indicative of engine speed;

computing a basic quantity of a control variable for controlling the operation of said engine in accordance with the detected first and second operating parameters;

determining whether said engine is under any of a plurality of specific operating conditions where correction of the basic quantity of said control variable is inhibited, said plurality of specific operating conditions of said engine including a starting period and a state in which said engine operates in a predetermined range of at least one of said first and second operating parameters;

upon determining that said engine is out of said specific operating conditions:

(1) subtracting a preceding value of said first operating parameter from a present value thereof to obtain a difference $\Delta P_m'$ occurring in a predetermined period, and subtracting a preceding value of said second operating parameter from a present value thereof to obtain a difference $\Delta N'$ occurring in the predetermined period,

(2) computing a correction value of said control variable from the differences $\Delta P_m'$ and $\Delta N'$, and

(3) correcting the basic quantity of said control variable by the correction value of said control variable thereby to stabilize the operation of said engine; and

inhibiting the correction of the basic quantity of said control variable upon determining that said engine is under said specific operating conditions.

4,442,813

METHOD OF AND APPARATUS FOR CONTROLLING THE IGNITION TIMING OF AN INTERNAL COMBUSTION ENGINE

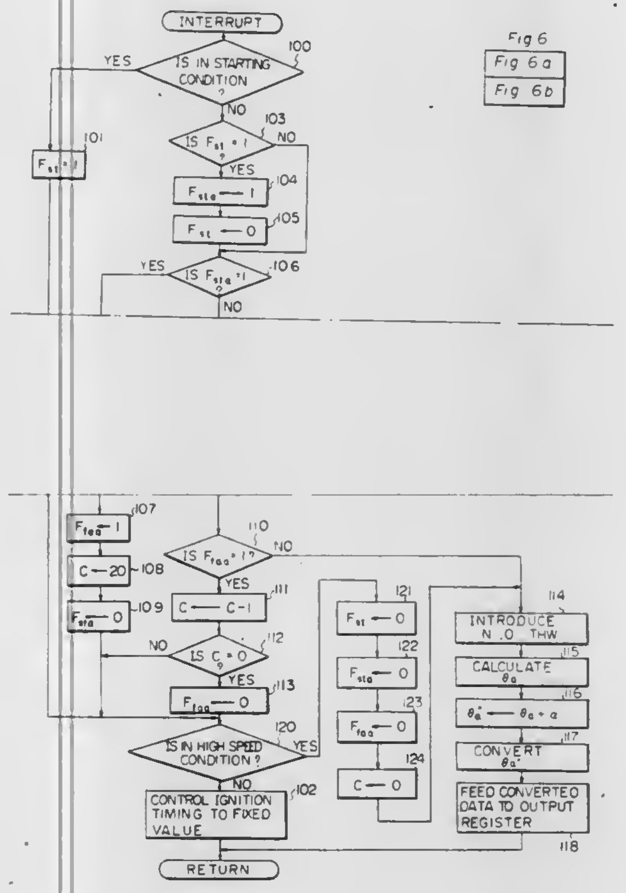
Masaomi Nagase, Toyota; Hideo Miyagi, Okazaki; Hironobu Ono, Toyota, and Jiro Nakano, Okazaki, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Sep. 22, 1981, Ser. No. 304,562

Claims priority, application Japan, Sep. 25, 1980, 55-132270

Int. Cl.^{3} F02P *5/04*

U.S. Cl. 123—418 **12 Claims**



1. A method of controlling the ignition timing of an internal combustion engine, comprising the steps of:

detecting the operating condition of the engine to produce at least one first electrical signal which indicates the detected operating condition;

calculating, in response to the produced first electrical signal, a spark advance angle which corresponds to an optimum ignition timing at the detected operating condition;

detecting whether or not the engine is in a first specific state in which said calculation is difficult to correctly perform, to produce a second electrical signal which indicates that the engine is in the first specific state;

producing an indication of a reference speed related to the coolant temperature of said engine, said reference speed increasing as said coolant temperature is decreasing;

detecting whether or not the engine is in a second specific state where the rotational speed of the engine is greater than said reference speed to produce a third electrical signal which indicates that the engine is in the second specific state;

adjusting the timing of the sparks applied to the engine depending upon said calculated spark advance angle; and

in response to said second and third electrical signals, only when the engine is in the first specific state but not in the second specific state, keeping the timing of the sparks applied to the engine at a predetermined fixed timing.

4,442,814

SPARK TIMING CONTROL SYSTEM

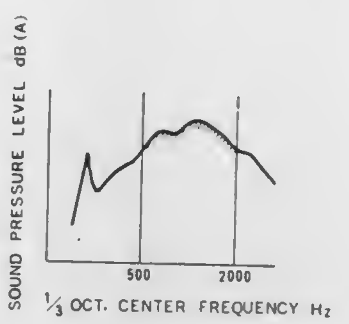
Takao Kubozuka, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 13, 1982, Ser. No. 367,925

Claims priority, application Japan, Apr. 15, 1981, 56-54001[U]

Int. Cl.^{3} F02P *5/04*

U.S. Cl. 123—425 **13 Claims**



1. A spark timing control system for reducing engine noise in an internal combustion engine, comprising:

means for sensing one of engine noise and engine vibration and for generating a sensor output signal corresponding thereto;

means responsive to said sensor output signal for filtering same, said filtering means passing frequency components within a range of 500 to 2,000 Hz;

means responsive to said passed frequency components for generating an output signal when the level of said passed frequency components of said filtering means exceeds a reference value; and

means for retarding the spark timing of the engine in response to the output signal of said generating means.

4,442,815

OPTIMUM AIR-FUEL RATIO CONTROL FOR INTERNAL COMBUSTION ENGINE

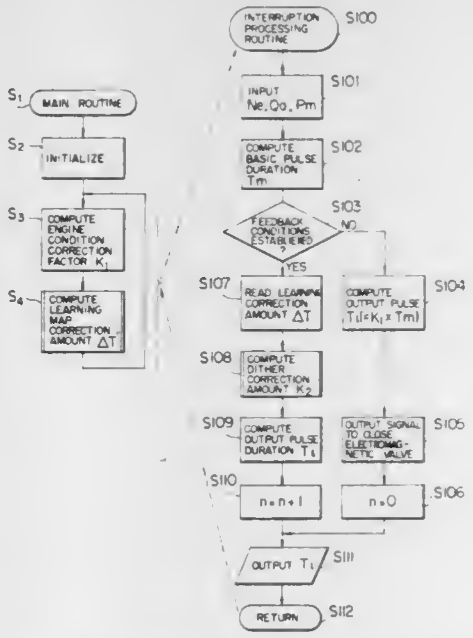
Masakazu Ninomiya, Kariya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 24, 1982, Ser. No. 391,687

Claims priority, application Japan, Jun. 26, 1981, 56-99305

Int. Cl.^{3} F02D *37/00*

U.S. Cl. 123—436 **8 Claims**


S₁
MAIN ROUTINE
S₂
INITIALIZE
S₃
COMPUTE ENGINE CONDITION CORRECTION FACTOR K₁
S₄
COMPUTE LEARNING MAP CORRECTION AMOUNT ΔT
INTERRUPTION PROCESSING ROUTINE
S100
INPUT Ne, Qa, Pm
S101
COMPUTE BASIC PULSE DURATION Tm
S102
FEEDBACK CONDITIONS ESTABLISHED ?
S103
NO
YES
S107
READ LEARNING CORRECTION AMOUNT ΔT
COMPUTE OUTPUT PULSE Ti(=K₁ × Tm)
S104
S108
COMPUTE DITHER CORRECTION AMOUNT K₂
S109
COMPUTE OUTPUT PULSE DURATION Ti
OUTPUT SIGNAL TO CLOSE ELECTROMAGNETIC VALVE
S105
S110
n = n + 1
n = 0
S106
OUTPUT Ti
S111
RETURN
S112

1. A method of controlling air-fuel ratios for an internal combustion engine comprising the steps of:

(i) systematically varying the air-fuel ratio applied to said engine by supplying or not supplying bypass air through a bypass air supply path;

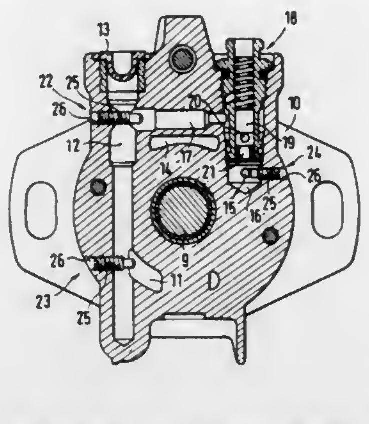
(ii) detecting signals representing the operating conditions of the engine at a plurality of operating points when the engine is operated at different air-fuel ratios produced by said varying step;
(iii) comparing the signals detected at said operating points and deciding whether the air-fuel ratios applied to said engine are rich or lean as compared with the air-fuel ratio associated with the optimum fuel consumption rate;
(iv) discriminating whether the bypass air is supplied or not supplied currently;
(v) changing the value of a correction amount on the basis of the result of the above discriminating step; and
(vi) changing a basic fuel injection amount by said correction amount to produce a modified fuel injection amount, said correction amount being chosen to maintain said modified fuel injection amount nearly constant despite changes in the air-fuel ratio caused by said varying step; and
(vii) correcting said modified fuel injection amount on the basis of said comparing step to optimize the air-fuel ratio for the operating conditions of the engine.

5. An apparatus for controlling the air-fuel ratio applied to an internal combustion engine comprising:
a rotational speed sensor means for detecting the engine rotation speed r;
main air supply means for supplying intake air to said engine;
air flow sensor means for detecting the amount of air p passing through said main air pipe;
bypass air supply means for supplying bypass air to said engine;
air valve means for controlling the supply of bypass air flowing through said bypass air supply means;
fuel injector means for injecting controllable amounts of fuel into said engine; and
computer means for:
  computing a basic fuel injection amount T_m in response to outputs of said rotational speed and air flow sensor means;
  operating said air valve means to alternate said air-fuel ratio between rich and lean by controlling said air valve means to alternate between the supply and non-supply of bypass air;
  discriminating between supply or nonsupply of the bypass air, and changing the value of a first correction amount K_2 on the basis of the result of the discrimination;
  changing said basic fuel injection amount by said first correction amount to produce a modified fuel injection amount which remains nearly constant despite change in the air-fuel ratio caused by said air valve means;
  detecting the operating condition of said engine at a plurality of predetermined operating points, said operating points including supply and non-supply of bypass air by said air valve means, to obtain a second correction amount T;
  correcting said modified injection amount by said second correction amount to obtain an optimum injection amount T_i; and
controlling the amount of fuel injected by said fuel injector means with said optimum injection amount.

4,442,816
FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

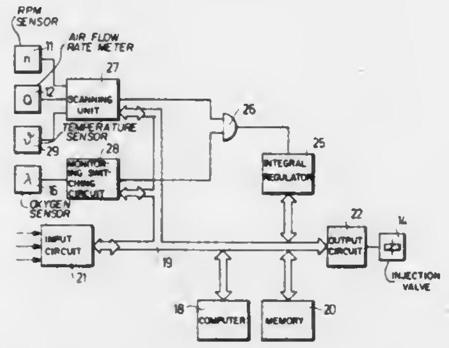
Siegfried Haberland, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Aug. 23, 1982, Ser. No. 410,667
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1981, 3138391
Int. Cl.^{3} F02M *63/00*
U.S. Cl. 123—457 **3 Claims**

1. A fuel injection pump and housing for internal combustion engines having a fuel supply pump, by means of which a suction chamber of said fuel injection pump is supplied with fuel, said chamber being under an rpm-dependent pressure, controllable by means of a pressure control valve having a piston which is acted upon by a pressure to be established, and being displaceable by said latter pressure counter to a restoring spring to thereby control an outflow cross section of an overflow conduit, said overflow conduit conntaining an adjustable throttle restriction, downstream of said throttle restriction said overflow conduit leads directly to the intake side of said fuel supply pump, wherein said throttling restriction comprises a threaded bolt, which fits into a threaded bore of said housing of said fuel injection pump and protrudes with one end thereof into said overflow conduit and is sealed off from the outside of said housing.



4,442,817
ELECTRONICALLY CONTROLLED FUEL METERING SYSTEM

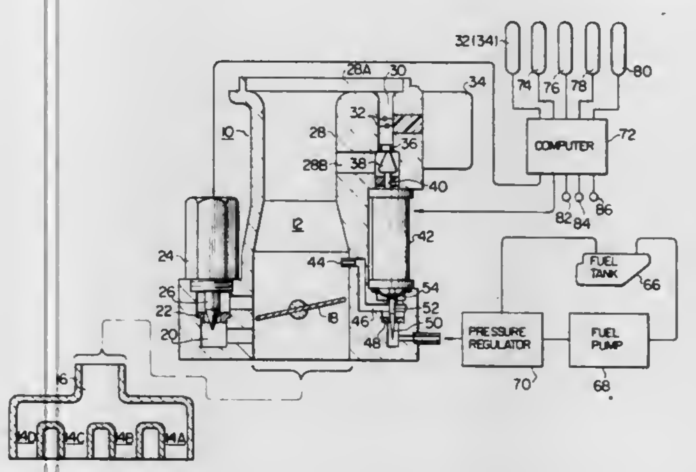
Werner Auth, Stuttgart, and Gunter Felger, Leonberg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Jun. 8, 1982, Ser. No. 386,376
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1981, 3124676
Int. Cl.^{3} F02M *7/00*
U.S. Cl. 123—489 **20 Claims**



1. An electronically controlled fuel metering device for an internal combustion engine having a mixture regulation system comprising
an integrator with a reversible integration direction for controlling said mixture regulation system
switching means connected to said integrator during steady and quasi-steady operational states of the engine,
a λ detection means connected to said switching means, and
said integrator having a time constant which is time-dependent after each occurrence of at least one switchover point of the integration slope thereof in response to said switching means.

4,442,818
FUEL INJECTION APPARATUS FOR INTERNAL COMBUSTION ENGINES

Mineo Kashiwaya, Katsuta; Tohru Nakagawa, Mito; Kinsaku Yamada, Katsuta; Hiroshi Kamifuji, Katsuta; Yoshishige Oyama, Katsuta; Hiroshi Kuroiwa, and Hisato Tsuruta, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Dec. 22, 1981, Ser. No. 333,296
Claims priority, application Japan, Dec. 29, 1980, 55-188494; Dec. 29, 1980, 55-188495; Dec. 29, 1980, 55-188496; Dec. 29, 1980, 55-188497; Dec. 29, 1980, 55-188498; Dec. 29, 1980, 55-188499; Dec. 29, 1980, 55-188500; Dec. 29, 1980, 55-188501; Dec. 29, 1980, 55-188502
Int. Cl.^{3} F02M *7/22;* F02B *33/00*
U.S. Cl. 123—494 **46 Claims**

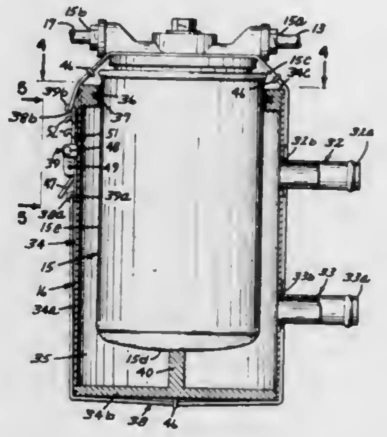


1. A fuel injection apparatus for internal combustion engine comprising:
an air-intake path connected to the upstream side of an air-intake tube meeting portion;
a Venturi portion formed in said air-intake path;
a throttle valve provided in said air-intake path on the downstream side of said Venturi portion;
an air bypass for connecting the upstream side of said Venturi portion and said Venturi portion;
an air flow meter provided in said air bypass so as to detect the amount of air flow in said air bypass;
an air-scaling valve provided in said air bypass on the downstream side of said air flow meter;
a fuel path through which fuel from a fuel pump is continuously fed into said air-intake path when the internal combustion engine is operating;
a fuel-scaling valve provided in said fuel path;
a drive means for controlling the degree to which said air-scaling valve and said fuel-scaling valve are opened, so that when said air-scaling valve is displaced to decrease the amount of air flow in said air bypass, said fuel-scaling valve is displaced to increase fuel; and
a control signal generating means for applying a control signal to said drive means so that the degree to which said air-scaling valve is opened is controlled for the output of said air flow meter to converge to a certain set level.

4,442,819
HEATER FOR A DIESEL FUEL FILTER

B. R. Veach, Maple Plain, Minn., assignor to Nationwide Carriers Incorporated, Maple Plain, Minn.
Filed May 3, 1982, Ser. No. 374,498
Int. Cl.^{3} F02M *31/00*
U.S. Cl. 123—557 **14 Claims**

1. In combination with a fuel system in a diesel engine having a liquid coolant system, a heater for heating diesel fuel in a fuel filter, the filter having a sidewall, a top end and a bottom end, said heater comprising:
(a) a receptacle having an open top, said receptacle defining an internal cavity, the bottom end of the fuel filter positioned in said cavity and the top of the fuel filter extending above said receptacle, a portion of the sidewalls of the fuel filter in a spaced relationship to said receptacle;
(b) first means for sealing said receptacle open top, said first means constructed and arranged to cooperatively engage the fuel filter sidewall and closing said receptacle open top;
(c) conduit means for connecting said internal cavity to the coolant system, said conduit means including an inlet conduit and an outlet conduit, said inlet conduit having a first end constructed to be cooperatively connected to and in fluid communication with the liquid coolant system, and a second end cooperatively connected to said receptacle and in fluid communication with said internal cavity, said outlet conduit having a first end constructed to be cooperatively connected to and in fluid communication with the liquid coolant system, and a second end cooperatively connected to said receptacle and in fluid communication with said internal cavity, whereby heated liquid in the coolant system is passed through said inlet conduit into said internal cavity and adjacent the fuel filter to heat diesel fuel in the fuel filter, said heated liquid exiting said internal cavity through said outlet conduit; and
(d) means, for fastening said receptacle to the fuel filter, said fastening means including a bail member having first and second ends, said bail member extending around said receptacle and across the top end of the fuel filter, and a latch mechanism having a first end cooperatively connected to said first end of said bail member and a second end releasably connected to said second end of said bail member.



4,442,820
EXHAUST RECIRCULATION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Toshikazu Ina, Aichi; Hisasi Kawai, Toyohashi; Tokio Kohama, Nishio; Akira Nishimatsu, Okazaki; Yasuhiko Ishida, Mishima, and Souichi Matsusita, Susono, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan
Filed Sep. 10, 1982, Ser. No. 416,696
Claims priority, application Japan, Sep. 16, 1981, 56-146877; Sep. 16, 1981, 56-146878
Int. Cl.^{3} F02M *25/06*
U.S. Cl. 123—571 **12 Claims**

1. An exhaust gas recirculation system for an internal combustion engine having a recirculation passage to provide a communication between an intake pipe and an exhaust pipe of said engine, a pneumatic servomotor to be operated by the pressure applied to its servo-chamber, flow control valve means associated with said servomotor for controlling the quantity of exhaust gas flowing through said recirculation passage in accordance with the level of pneumatic pressure in the servo-chamber of said servomotor, and first and second electrically operated valves to selectively apply negative pressure and the atmospheric pressure respectively from said in-

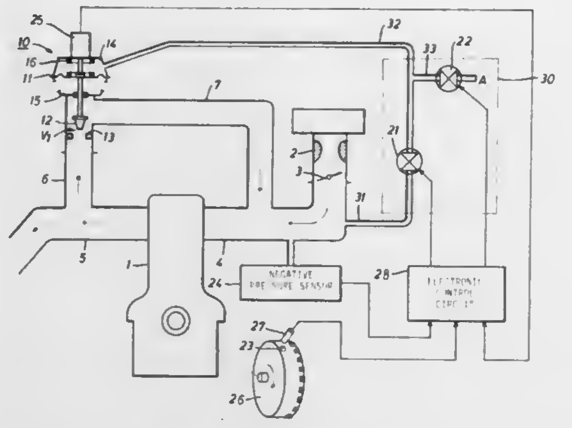
take pipe and the exterior to the servo-chamber of said servomotor in energization thereof and to maintain the level of pneumatic pressure in the servo-chamber at an adjusted value during deenergization thereof, said recirculation system comprising:

first detecting means for producing a first electric signal indicative of operating conditions of said engine;

second detecting means for producing a second electric signal indicative of the actual opening degree of said flow control valve means;

computer means to calculate a desired opening degree of said flow control valve means in response to said first electric signal for effecting recirculation of the exhaust gas in a desired quantity in accordance with the operating conditions of said engine, to calculate each energization time of said valves defined by a difference between the actual opening degree of said flow control valve means and the calculated value in response to the second electric signal, and to generate an output signal indicative of the calculated energization time; and

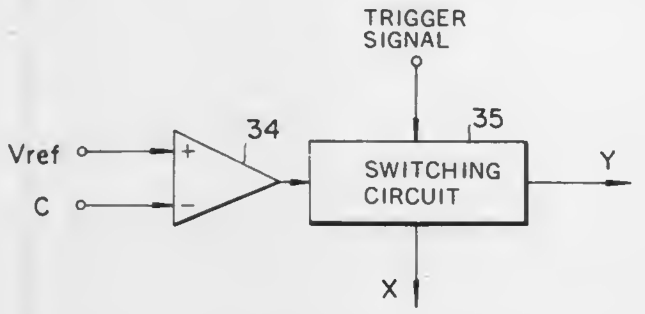
means for selectively energizing said valves in response to the output signal from said computer means for the calculated energization time and for deenergizing both said valves upon lapse of the calculated energization time.



4,442,821
INTERNAL COMBUSTION ENGINE IGNITION METHOD

Kyugo Hamai, Yokosuka; Yasuhiko Nakagawa, Kamakura; Meroji Nakai, Yokosuka, and Ryuzaburo Inoue, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 30, 1981, Ser. No. 335,831
Claims priority, application Japan, Jan. 12, 1981, 56-2190
Int. Cl.³ F02P *5/04*
U.S. Cl. 123—639 **8 Claims**



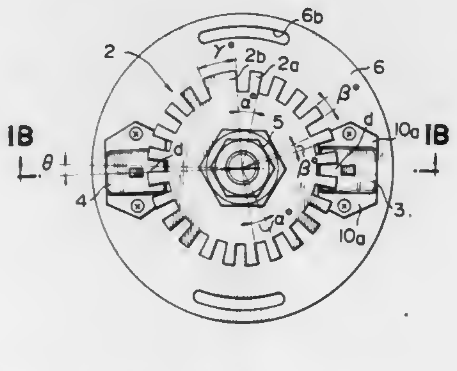
1. A method of controlling the ignition of an internal combustion engine having at least one combustion chamber, comprising: effecting a plurality of plasma ignitions in said combustion chamber per cycle of said engine during starting of said engine, effecting a single plasma ignition in said combustion chamber per cycle of said engine upon the occurrence of predetermined conditions after starting of said engine and below a predetermined engine speed, and effecting a single normal spark ignition in said combustion chamber per cycle of said engine when the engine is operating above said predetermined engine speed.

5. An ignition system for an internal combustion engine having at least one plasma ignition plug and at least one normal spark ignition plug, comprising: plasma ignition control means to effect a plurality of plasma ignitions at said plasma ignition plug per engine cycle during the staring of said engine and to effect a single plasma ignition at said plasma ignition plug per engine cycle upon the occurrence of predetermined conditions after starting of said engine and below a predetermined speed of said engine, and normal spark ignition control means to effect normal spark ignition at said normal spark ignition plug when the engine is operating above said predetermined engine speed.

4,442,822
IGNITION POSITION CONTROLLING APPARATUS FOR MULTICYLINDER INTERNAL COMBUSTION ENGINE

Tetsuya Kondo, and Tadashi Nishi, both of Shizuoka, Japan, assignors to Kokusan Denki Co., Ltd., Shizuoka, Japan

Filed Sep. 13, 1982, Ser. No. 416,910
Claims priority, application Japan, Oct. 22, 1981, 56-169031
Int. Cl.³ F02P *5/00*
U.S. Cl. 123—643 **8 Claims**



1. An ignition position controlling apparatus for a multicylinder internal combustion engine which is adapted to apply a microcomputer clock pulses generated every predetermined angle in synchronism with the rotation of the engine and a cylinder discriminating signal generated at a position predetermined with respect to each cylinder during one rotation of the engine and count a predetermined number of clock pulses on the basis of the position at which each of the cylinder discriminating signals is generated, to thereby obtain an angle data necessary to control the ignition position of each cylinder, comprising:

an inductor-type signal generator including a disc-like toothed inductor rotated in synchronism with said engine which has a plurality of first teeth and a single second tooth having a width larger than that of one of said first teeth arranged at regular angular intervals on the periphery thereof and signal generating means of n in number (n being an integer of 2 or more) adapted to induce signals due to the variation in magnetic flux caused by said teeth of said inductor, said signal generating means generating signals of n in number different in phase from each other;

a wave shaping circuit converting said signals of n in number generated from said signal generating means to pulse trains of n in number different in phase from each other and generating said pulse trains;

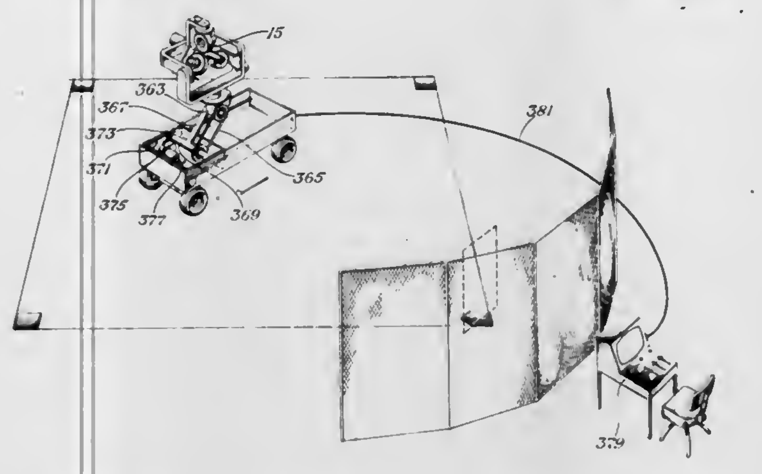
a clock pulse generating circuit selecting in turn any one of said pulse trains of n in number every 1/n rotation of said inductor and taking out from the selected pulse train pulse signals of a smaller width generated due to the facing of said first teeth with said signal generating means, to thereby generate said clock pulses; and

a cylinder discriminating circuit, when each pulse signal of one of said pulse trains different in phase from each other generated from said wave shaping circuit rises or falls, holding the level of pulse signals of the remaining pulse trains, to thereby generate said cylinder discriminating signals.

4,442,823
BALL THROWING MACHINE AND SYSTEM HAVING THREE INDIVIDUALLY CONTROLLABLE WHEEL SPEEDS AND ANGLES

Johnnie E. Floyd, 2609 East Side Dr., Austin, Tex. 78704, and Robert A. Brune, Jr., Austin, Tex., assignors to Johnnie E. Floyd, Austin, Tex.

Filed Mar. 8, 1982, Ser. No. 356,037
Int. Cl.³ F14B *15/00*
U.S. Cl. 124—78 **33 Claims**



1. A ball pitching machine comprising:

a. ball feeding means for feeding respective balls to a feeding point where they will be acted upon by rotating wheel;

b. a plurality of at least three rotatable wheels; said wheels having planes and centers of rotation; said centers of rotation being substantially co-planar and disposed at spaced apart locations in said plane, said wheels and their respective planes of rotation being disposed about said feeding point closely enough to act upon a fed ball and adapted to be oriented at a plurality of individual rifle angles independently of each to effect selectively a plurality of respective spin vectors with respect to a normal trajectory axis equivalent to a straight line of flight of said ball; said wheels having respective location lines from said feeding point to their respective centers of rotation; said location lines being at respective predetermined angles with respect to adjacent said location lines and being disposed so as to define a unique feeding point for said ball and contact said ball on at least three peripheral points;

c. rotation means for rotating respective said wheels at a plurality of individual respective rotational speeds for acting on a fed said ball and effecting a type of spin on the pitched ball, and

d. rifle angle means for orienting each of said wheels independent of the other wheels at a plurality of respective individual said rifle angles with respect to said normal trajectory axis and effecting a rifle spin on said pitched ball;

whereby said ball can be pitched with a spin of about any predetermined axis through a combination of said rotation means and said respective rifle angle means.

4,442,824
ACCESSORY GRILL CONVERTER

Carmine J. Amici, Allentown, Pa., assignor to C.G.J. Inc., Allentown, Pa.

Filed May 6, 1983, Ser. No. 492,463
Int. Cl.³ F24C *3/00*
U.S. Cl. 126—14 **11 Claims**

1. A top grill converter for a conventional outdoor electric or gas-fired grill comprising:

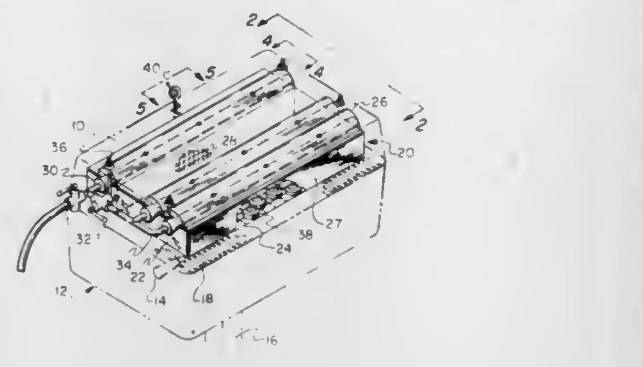
(a) a generally parallelpipedal cartridge having a foraminous floor;

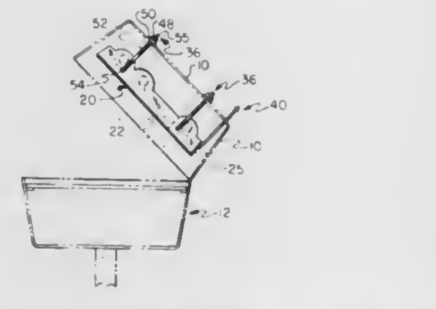
(b) a back wall, front wall and side walls attached along bases of said walls to said foraminous floor, said walls being of a sufficient height to provide containment for heat transferring bricks intended to rest on said foraminous floor;

(c) a roof-forming, undulated heat shield attached to said walls along the uppermost edges of said walls, said undulations paralleling the longitudinal axis of said cartridge, and said undualted heat shield's troughs being located proximate the top of said walls, and said undulated heat shield's peaks providing space and protection for heating elements;

(d) heating elements located longitudinally inside said parallelpipedal cartridge under said heat shield in spaces created by said undulated heat shield's peaks, one end each of said heating elements attached to an exterior heat source; and,

(e) means for suspending said cartridge beneath and inside a lid of said conventional outdoor grill.

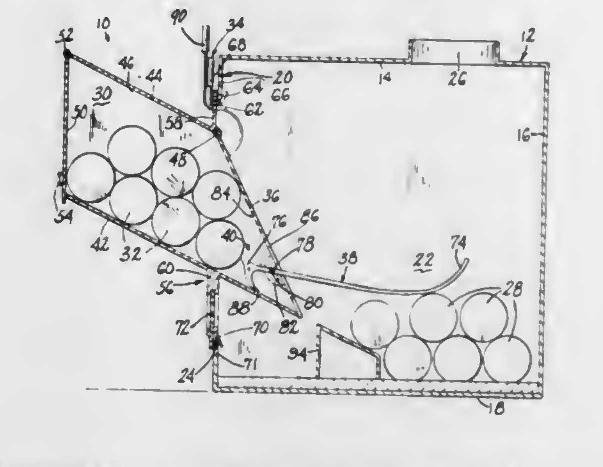




4,442,825
FUEL FEEDER DEVICE FOR SPACE HEATING STOVES

Geoffrey Waldau, 1570 Mt. Eagle Pl., Alexandria, Va. 22302

Continuation of Ser. No. 114,121, Jan. 21, 1980, abandoned. This application Dec. 14, 1981, Ser. No. 330,177
Int. Cl.³ F24B *7/00, 13/04*
U.S. Cl. 126—68 **34 Claims**



1. A fuel feeder device for wood-burning stoves comprising:

a fuel storage chamber having first and second end portions,

means for detachably mounting said storage chamber adjacent a wood stove so that said first end portion is aligned with the combustion chamber door opening of a wood stove,

a door pivotally mounted adjacent said first end of said storage chamber,

an elongated sensing member having first and second end portions with said first end portion adapted to extend into the combustion chamber of a wood stove to lie atop combusting fuel to sense the height thereof and said second end portion pivotally mounted adjacent said first end portion of said storage chamber,

a catch means releasably connecting said second end portion of said sensing member to said storage chamber to release additional wood fuel upon said sensing means sensing a predetermined amount of combusting wood fuel with said second end portion of said sensing member being pivotally connected to said door, and

means for delivering additional wood fuel from said storage chamber to the combustion chamber of a wood stove.

4,442,826

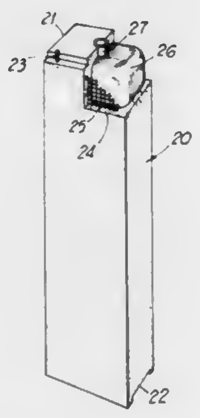
PREFABRICATED PANEL FOR BUILDING CONSTRUCTION AND METHOD OF MANUFACTURING

Frank M. Pleasants, Star Rte., Dawsonville, Ga. 30534

Filed Nov. 4, 1980, Ser. No. 203,910

Int. Cl.^{3} F24H *7/00;* **E04H** *14/00;* **F24D** *5/10*

U.S. Cl. 126—400 **3 Claims**



1. A rigid unitary substantially rectangular structural panel of a size suitable for spanning at least vertically a substantial portion of a building wall, said structural panel comprising a non-rigid thin wall collapsible plastics material containment adapted to hold a thermal fluid, said containment having a neck of substantially reduced size at one end thereof, the containment being otherwise closed and being fluid impermeable and resistant to corrosion, a thin shell of concrete cast onto and completely surrounding and enclosing the containment and externally supporting the walls of the containment, said neck of the containment being embedded in one end wall of the concrete shell and the neck having a mouth opening through the exterior of the concrete shell, whereby the interior of the containment communicates with the exterior of the structural panel, and a reinforcing mesh for the panel embedded within the concrete shell in surrounding relationship to the containment adjacent to all walls of the containment and being completely concealed and enclosed within said shell.

4,442,827

SOLAR HEAT COLLECTOR

Edward R. Helman; Herbert A. Helman; Henry B. Holtschneider; Sidney P. Buford, all of Baltimore; Donald C. Fava, Timonium, and Jeffrey N. Christopher, Baltimore, all of Md., assignors to Supreme Associates, Baltimore, Md.

Filed Oct. 8, 1981, Ser. No. 309,752

Int. Cl.^{3} F24J *3/02*

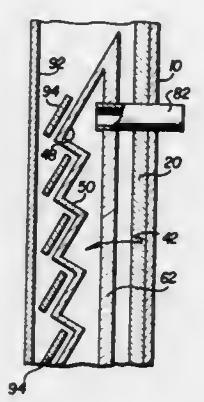
U.S. Cl. 126—430 **12 Claims**

1. An improved solar heat collector, comprising:

a housing having a front for facing the sun, a back for facing adjacent support structure and peripheral walls extending between said front and back;

at least one heat absorber element positioned within said housing, said absorber element having a first front surface for facing the sun, said first front surface having a low thermal emittance and a high solar absorptance, said absorber element also having a first rear surface for facing away from the sun, said first rear surface having a high thermal emittance and a low solar absorptance;

at least one heat storage element positioned within said housing and spaced from said first rear surface to define a volume therebetween, said storage element having a second front surface facing toward said first rear surface, said second front surface having, like said first rear surface, a high thermal emittance and a low solar absorptance, said storage element also having a second rear surface for facing away from the sun, said second rear surface having, like said first front surface, a low thermal emittance and a high solar absorptance;



means for closing said volume between said first rear surface and said second front surface to define a heat transfer cavity into which heat transfer is maximized from both said absorber element and said storage element but from which heat loss is minimized to both said absorber element and said storage element, as a result of the differences in thermal emittance and solar absorptance between said first front and rear surfaces and said second front and rear surfaces, respectively; and

means for directing a flow of air through said cavity, whereby said air is heated.

4,442,828

PORTABLE TYPE SOLAR HEAT COOKER ASSEMBLY

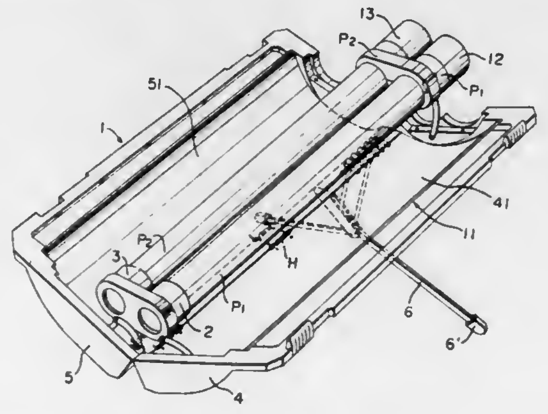
Hirosato Takeuchi, and Toshio Mikiya, both of Tokyo, Japan, assignors to Nitto Kohki Co., Ltd., Tokyo, Japan

Filed Nov. 5, 1984, Ser. No. 439,608

Claims priority, application Japan, Nov. 6, 1981, 56-177077

Int. Cl.^{3} F24J *3/02*

U.S. Cl. 126—451 **4 Claims**



1. A portable type solar heat cooker assembly including a cooking glass tube comprising:

an inner tube being constructed of glass having a closed bottom and an open end;

a selective absorption film having a high absorptivity in the solar radiation spectrum zone and a low absorptivity in the heat radiation spectrum zone being coated on an outer surface of said inner tube;

an outer tube being constructed of glass having a closed bottom and an open end and having a predetermined diameter for permitting said inner tube to be coaxially inserted therein;

a spacer being positioned on said inner tube for maintaining the coaxial spaced relationship between said inner and outer tubes;

said inner and outer tubes being hermetically sealed together at their open ends with said space therebetween being evacuated;

a lid removably positioned on said open end of said inner and outer tubes for permitting insertion of a substance into said inner tube to be cooked and for closing the open end of the inner tube;

a case having a predetermined length and width and a cover hinged thereto, said cooking glass tube being operatively positioned and extending along the length of the case;

said cover being a single element hinged to one of the width sides of said case and said cooking glass tube being hinged to said case and said cover for automatic movement to a central position when said cover is opened;

a curved reflector symmetrically positioned in said case forming a reflex mirror for the solar rays when said case is opened; and

a collapsible stand attached to an outer surface of said case for adjustably positioning said case in an inclined state.

4,442,829

MATERIAL FOR SELECTIVE ABSORPTION OF SOLAR ENERGY AND PRODUCTION THEREOF

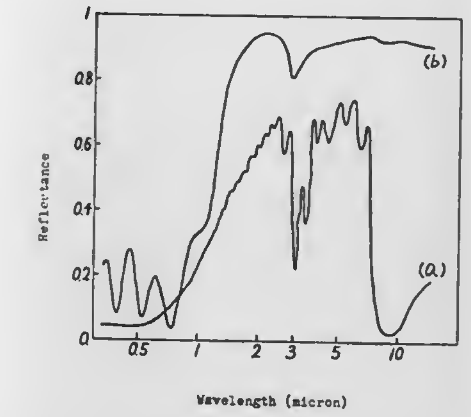
Kiyomi Yanagida, Suita; Tadashi Hirokane, Nagoya; Tadashi Tsukiyasu, Nagoya, and Tomoari Sato, Nagoya, all of Japan, assignors to Sumitomo Aluminium Smelting Company, Ltd., Osaka, Japan

Filed Jun. 13, 1978, Ser. No. 915,299

Claims priority, application Japan, Jun. 14, 1977, 52-70737

Int. Cl.^{3} F24J *3/02;* **C25D** *11/22*

U.S. Cl. 126—452 **10 Claims**



1. In a method for selectively absorbing solar energy with an aluminum material having a porous anodic oxide film thereon and metal particles electrochemically filled in the micropores of the anodic film by exposing the said aluminum material to solar energy to absorb said energy, the improvement which comprises using, as the aluminum material, aluminum having a purity of 99.92% by weight or more as a substrate and having a porous anodic oxide film of 1μ or less in thickness formed on the surface of the substrate, which film has metallic particles electrochemically filled in the micropores of the anodic film, said improved material having infrared solar energy absorbing characteristics in the visible and near infrared range, and lowered radiation of the absorbed thermal energy in the infrared range.

4,442,830

MOUTH DOUCHE

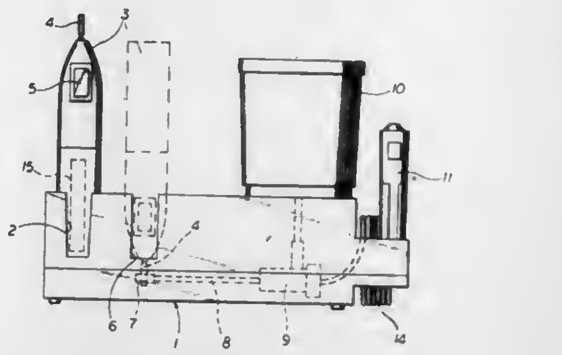
Dieter Markau, Murten, Switzerland, assignor to Gimelli + Co. AG, Zollikofen, Switzerland

Filed Sep. 29, 1982, Ser. No. 427,317

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1982, 3206843

Int. Cl.^{3} A61H *9/00*

U.S. Cl. 128—66 **9 Claims**



1. A device for oral hygiene, comprising:

a mouth douche including a base provided with a water reservoir, a nozzle insertable into the oral cavity of a user, and a water pump in a conduit linking said nozzle with said reservoir;

a toothbrush assembly including a power unit having a drive shaft having means for operatively connecting a bristle-carrying head thereto, said base being provided with a seat removably accommodating said assembly, said base further having a socket having means for receiving a part of said drive shaft; and

coupling means in said base engageable with said drive shaft upon insertion of said part thereof into said socket for operatively linking said power unit with said water pump to actuate the latter, said drive shaft being decoupled from said water pump upon removal of said assembly from said base to facilitate the use of said assembly for tooth brushing.

4,442,831

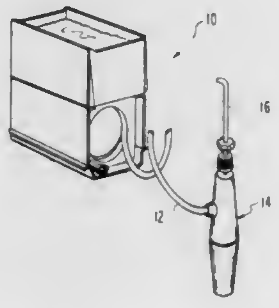
ON/OFF HANDLE FOR ORAL HYGIENE APPARATUS

John M. Trenary, Fort Collins, Colo., assignor to Teledyne Industries, Inc.

Filed Sep. 30, 1982, Ser. No. 428,904

Int. Cl.^{3} A61H *9/00*

U.S. Cl. 128—66 **6 Claims**



1. Oral hygiene apparatus comprising:

means for producing a succession of water pulses at a preselected pressure;

a handle shaped to be grasped by the human hand;

means for delivering said water pulses from said producing means into said handle;

an elongated nozzle projecting outwardly from said handle, manipulation of said handle permitting said water pulses, flowing through said nozzle from said handle, to be directed against the teeth and gums of the user;

means included within said handle to define a flow path from said delivering means into said nozzle;

storage means disposed to communicate with said flow path and accumulate pressure in said water pulses;

a valve member disposed in said flow path within said handle and movable between a first position, in which said flow path to said nozzle is opened and communication of said flow path with said storage means is closed, and a second position in which said flow path to said nozzle is closed and communication of said flow path with said storage means is open;

means included in said valve member and said handle for biasing said valve member by the pressure in said water pulses to remain in whichever one of said positions it resides;

and actuating means disposed in association with said handle for overcoming the bias by said pressure and moving said valve member from either one of said positions to the other.

4,442,832

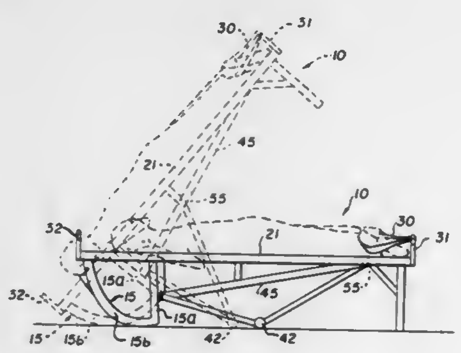
THERAPEUTIC COUCH

Eugene Ollenberger, 4305 Francis St., Burnaby, British Columbia, Canada V5C 2R2

Filed Nov. 28, 1980, Ser. No. 210,894

Int. Cl.^{3} A61F *5/00*

U.S. Cl. 128—71 **7 Claims**



1. A therapeutic couch comprising a frame having opposite ends, legs at the opposite ends normally supporting the frame in the horizontal position above a floor, the legs at one end including rocker portions normally having rolling contact with the floor, a bench mounted on the frame to accomodate a person in the prone position, a lever assembly on the underside of the frame, and operating means on the frame for moving the lever assembly relative to the frame and the floor so as to upend the frame on the lever assembly and the rocker portions of the legs at the one end of the frame, to a selected tilted position.

4,442,833

CASTING OR SPLINTING PACKAGE

Burton L. Dahlen, Benicia; L. John Odne, Walnut Creet, and John D. Ryan, San Rafael, all of Calif., assignors to Cutter Laboratories, Inc., Berkeley, Calif.

Filed Mar. 27, 1981, Ser. No. 248,610

Int. Cl.^{3} A61F *5/04*

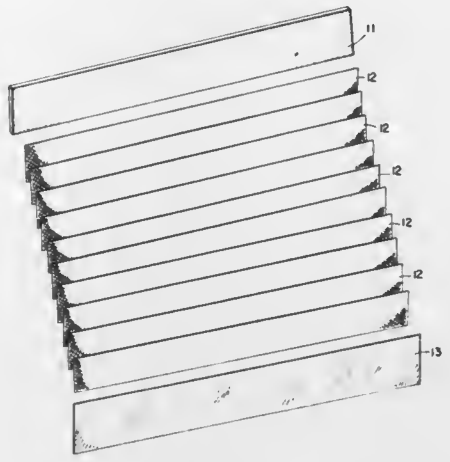
U.S. Cl. 128—90 **16 Claims**

1. A casting or splinting package for immersion in water and contact with and formation about a body part comprising -

a first sheet of resilient, closed cell foam material,

a plurality of second sheets comprising a textile substrate impregnated or coated with a water-curable resin system,

a third sheet of a flexible material disposed in overlying relationship to said first sheet and said second sheets to non-sealably confine said second sheets between said first sheet and said third sheet, the third sheet being substantially unable to absorb an amount of water greater than that absorbed from air after desiccation, and



a porous envelope wherein said first, second and third sheets are enclosed.

4,442,834

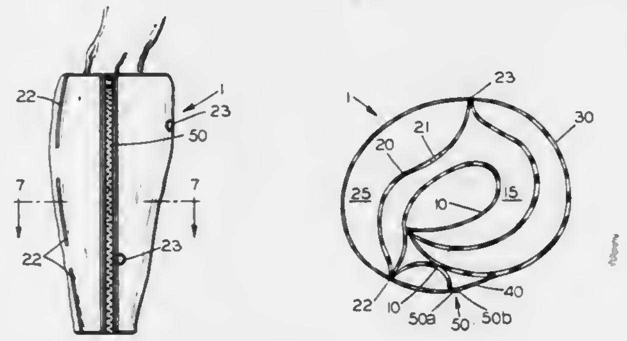
PNEUMATIC SPLINT

Kevin M. Tucker, and Terry L. Sandman, both of Toledo, Ohio, assignors to Jobst Institute, Inc., Toledo, Ohio

Filed Oct. 2, 1981, Ser. No. 307,658

Int. Cl.^{3} A61F *5/04*

U.S. Cl. 128—90 **5 Claims**



1. A pneumatic splint comprising an inner wall, an intermediate wall, and an outer wall, each of said walls being formed of thermoplastic sheet material and adapted to be rolled into an annular configuration to loosely surround a human limb; both peripheral edges and one longitudinal edge of said intermediate wall being bonded to respective peripheral and longitudinal edges of said outer wall and a second longitudinal edge of said intermediate wall being bonded to an intermediate portion of said outer wall so as to define a first air chamber therebetween; said intermediate wall having a plurality of spaced apertures therein and being bonded to said outer wall at localized regions spaced apart from said apertures; said outer wall being substantially identical in shape to said inner wall and having its peripheral and longitudinal edges respectively bonded to the peripheral and longitudinal edges of said inner wall to define a second air chamber between said inner and intermediate walls; one peripheral end portion of the inner surface of said outer wall lying in overlapped abutting relation to a peripheral end portion of the outer surface of the inner wall when said walls are rolled into said annular configuration; means on said outer wall for supplying and maintaining pressured air in said second chamber so as to maintain said inner wall in spaced apart relation to said intermediate wall such that a substantially uniform pressure is applied against the human limb when inflated; and fastening means on said overlapped abutting peripheral end portions of said outer wall and said inner wall for detachably securing said end portions in overlapped relation when said walls are rolled into said annular configuration.

4,442,835

DEEP DIVING BREATHING SYSTEMS

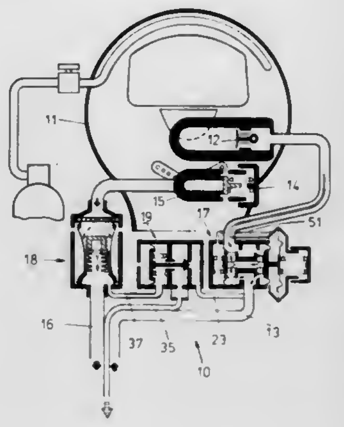
Alistair L. Carnegie, Yeovil, England, assignor to Normalair-Garrett (Holdings) Limited, Yeovil, England

Filed Dec. 3, 1981, Ser. No. 327,084

Claims priority, application United Kingdom, Dec. 4, 1980, 8038977

Int. Cl.^{3} A62B *7/00*

U.S. Cl. 128—201.27 **9 Claims**



9. Deep diving apparatus including a diving bell, at least one diving suit having a diving helmet, a breathing system, comprising push-pull pump means located on the diving bell for supplying breathable gas mixture by way of a gas supply line to the helmet of a diver operating out of the bell and for returning gas from the helmet to the bell by way of a gas return line, and helmet pressure control means mounted adjacent to the helmet having inlet valve means for controlling the rate of flow of breathable gas from the gas supply line to the helmet, outlet valve means for controlling flow of gas from the helmet to the gas return line, bleed valve means and a bleed gas return line connected between said bleed valve means and said diving bell, said bleed valve means operable in response to the difference in pressure of gas flowing from the outlet valve means and the hydrostatic pressure ambient to the bleed valve means for bleeding gas from the gas supply line upstream of the inlet valve means to said bleed gas return line.

4,442,836

BLOOD LANCET DEVICE

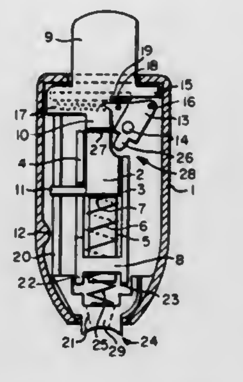
Dieter Meinecke; Werner Schmidt, both of Mannheim; Rudolf Schüssler, Lampertheim, and Rainer van Rijckevorsel, Brühl, all of Fed. Rep. of Germany, assignors to Clinicon Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Mar. 18, 1981, Ser. No. 245,010

Claims priority, application European Pat. Off., Mar. 22, 1980, 3011211; Fed. Rep. of Germany, Nov. 15, 1980, 80107078

Int. Cl.^{3} A61B *17/34*

U.S. Cl. 128—314 **13 Claims**



1. A blood lancet device comprising: a housing having a lancet exit opening; means receptive of a lancet for guiding same in the housing for movement between a retracted position and a puncturing position wherein the lancet projects from the exit opening; means for releasably spring loading the lancet into the retracted position for impulse-like movement into the puncturing position upon release with immediate return movement towards the retracted position, the releasable spring loading means comprising a movable stop membber for retaining the lancet in the retracted position, two springs, the first spring for applying a force to move the lancet towards the puncturing position and the second spring for applying a force to immediately thereafter move the lancet towards the retracted position and means for transmitting the force of the first spring to the lancet and for discontinuing the application of the force by the first spring during the movement of the lancet towards the puncturing position; and triggering means for moving the stop member to enable movement from the retracted position to the puncturing position.

4,442,837

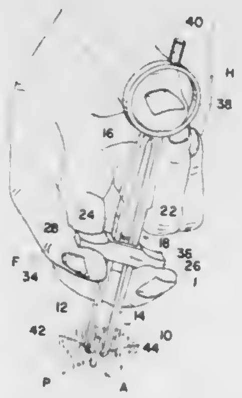
TWEEZERS FOR THE REMOVAL OF PARASITES FROM ANIMALS

Lawrence A. Keatley, 553 N. Harrison St., Fort Bragg, Calif. 95437

Filed Mar. 1, 1982, Ser. No. 353,372

Int. Cl.^{3} A01M *3/00*

U.S. Cl. 128—354 **3 Claims**



1. Tweezers for the removal of parasites from animals comprising:

a pair of flexible legs fixedly joined at their upper ends;

inwardly directed gripping portions on the distal ends of said legs; and

said gripping portions being normally separated but being engageable by squeezing said legs to flex them toward each other;

camming surfaces on the outside of said legs intermediate the ends thereof;

said camming surfaces including:

generally parallel open-leg, flat surfaces formed inward from the lateral surfaces of said legs toward the distal ends thereof;

generally parallel, closed-leg, flat lock surfaces near the lateral surfaces of said legs toward the joint between them; and

intermediate actuating surfaces diverging upward from said open-leg surface to said close-leg lock surfaces;

said tweezers further including:

a lock slide embracing said legs to slidably engage over said camming surfaces so that when raised from said open-leg surfaces it flexes said legs together and holds said gripping portions together when at said closed-leg lock surfaces;

a thumb ring secured to the joint between said legs;

a lateral extension on said lock slide the underside of which is engagable by a person's finger on one hand while the thumb of the same hand is positioned in said thumb ring thereby to raise said lock slide; and

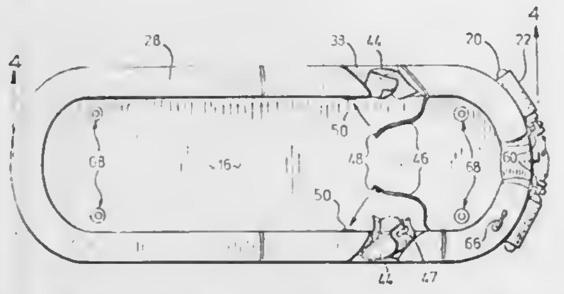
a knob fixed to the top of said thumb ring to be engaged by the thumb and a finger of said same hand while said lock slide is at said closed-leg lock surfaces to turn said legs about a longitudinal axis extending between them.

4,442,838

MALIGNANT HYPERTHERMIA MATTRESS

J. E. Benoit Samson, Nepean; Lawrence W. Duncan, Munster Hamlet, and Jean C. Steffler, Downsview, all of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Mar. 25, 1982, Ser. No. 361,606
Claims priority, application Canada, Apr. 1, 1981, 374428
Int. Cl.^{3} A47G *7/00;* **A47C** *27/10;* **A61H** *33/00;* **A61F** *7/00*
U.S. Cl. 128—369 17 Claims



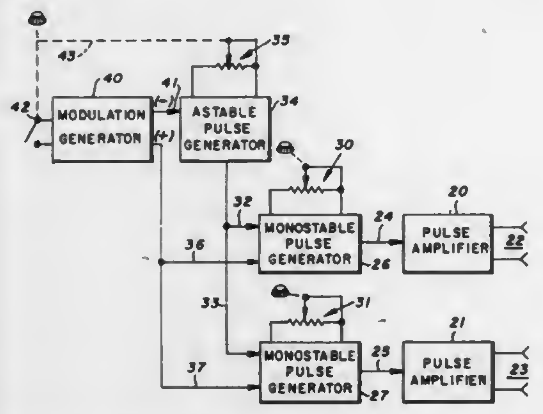
1. A mattress adapted to overlie an operating table for use in the treatment of malignant hyperthermia, comprising a base having a peripheral edge, an inflatable wall extending around said peripheral edge and having an upper portion delimiting said wall and a lower portion operatively connected to said base, said wall including a pair of recesses positioned in opposed areas of said wall and extending from said upper portion toward said lower portion, to accommodate the arms of a patient lying on said mattress, flexible flap means extending across each of said recesses, and inflation means associated with said wall to inflate said wall from a generally deflated condition in which said upper edge lies adjacent said base to an inflated condition in which said wall is upstanding.

4,442,839

METHOD OF MODULATING ENERGY IN TRAIN OF ELECTRICAL PULSES

Donald D. Maurer; David E. Swift, both of Anoka, and Zosim Ioffe, St. Paul, all of Minn., assignors to EMPI, Inc., Fridley, Minn.

Filed Apr. 27, 1981, Ser. No. 257,737
Int. Cl.^{3} A61N *1/36*
U.S. Cl. 128—419 R 8 Claims



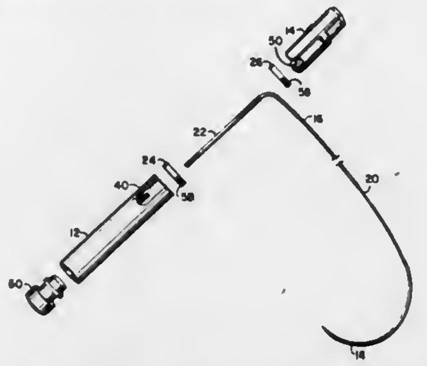
1. A method of controlling the average energy in a train of electrical pulses comprising: supplying a train of electrical pulses, selectively increasing and decreasing the repetition rate of said electrical pulses, counteracting the energy increase associated with an increase in repetition rate of the electrical pulses by simultaneously decreasing the width and amplitude of the electrical pulses and modulating the pulse rate range to reduce the average energy in said train of electrical pulses, and counteracting the energy decrease associated with a decrease in repetition rate of the electrical pulses by simultaneously modulating the pulse rate range and increasing the width and amplitude of the electrical pulses.

4,442,840

ELECTRICAL CONNECTOR APPARATUS AND METHOD FOR A TEMPORARY CARDIAC PACING WIRE

Alexander Wojciechowicz, Jr., 7 Herrontown Rd., Princeton, N.J. 08540

Filed Jun. 7, 1982, Ser. No. 385,931
Int. Cl.^{3} A61N *1/104*
U.S. Cl. 128—419 P 10 Claims



1. An electrical connector apparatus for connecting a rigid male electrical lead with a flexible wire attached thereto to medical electronic instruments, said apparatus comprising:

a non-conductive connector body having a closed end and an open end having an interior cavity therein, said closed end having an aperture therethrough extending from the outside of said connector body into said interior cavity, said aperture being of sufficient size to receive said rigid male electrical lead therein, said non-conductive connector body including indent means thereon;

a cap means receivable on said closed end of said connector body for holding said rigid male electrical lead in said aperture and for securing said flexible wire lead to said rigid male electrical lead in an orientation that is substantially perpendicular to said rigid male electrical lead; and,

cap locking means for locking said cap means to said connector body, said cap locking means comprising a bifurcated spring-action means including:

at least two resilient arm means attached to said cap means at one end; and,

tab means attached to said resilient arm means and oriented to be received in said indent means in said connector body,

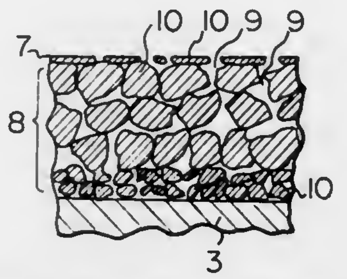
wherein said cap means positively locks said rigid male electrical lead in said non-conductive connector body.

4,442,841

ELECTRODE FOR LIVING BODIES

Masaru Uehara, Komaki; Teruyoshi Uchida, Nagoya, and Hirotaka Kojima, Kasugai, all of Japan, assignors to Mitsubishi Rayon Company Limited, Tokyo, Japan

Filed Apr. 30, 1981, Ser. No. 259,112
Int. Cl.^{3} A61B *5/00*
U.S. Cl. 128—635 6 Claims



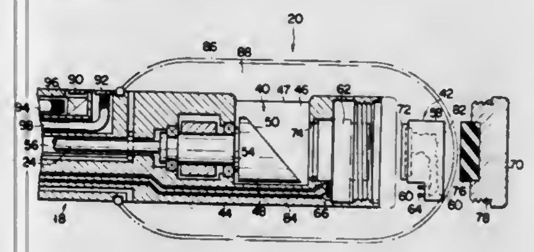
1. A fine wire electrode for measuring gas concentration in living bodies comprising an electrically conductive metal, a high molecular porous membrane of a thickness ranging from 10 to 200 μm directly coated on at least a portion of a surface of said electrically conductive metal, said membrane comprising a surface layer having fine pores of an average pore diameter greater 0.01 μm and smaller than 0.7 μm and an inner layer which is contiguous with the surface layer having pores of an average diameter greater than that of the surface layer, and an insulating material sheathing the remaining surface of said conductive metal.

4,442,842

ULTRASONIC SCANNER FOR EXAMINATION OF A COELIAC CAVITY

Kazuo Baba, 1079, Kitano-machi, Hachioji-shi, Tokyo, Japan

Filed Nov. 3, 1980, Ser. No. 203,511
Claims priority, application Japan, Nov. 12, 1979, 54-146240
Int. Cl.^{3} A61B *10/00*
U.S. Cl. 128—660 12 Claims



1. In an endoscope apparatus, an ultrasonic scanner for internal examination, comprising:

a flexible endoscope insertion body which is sized for introduction into a cavity of a living body such as a human body and having an end;

ultrasonic beam-scanning means, provided at said end of said insertion body to be introduced into said body cavity, and including scanning means for scanning a selected region of said body cavity with ultrasonic beams and guiding reflected echoes of said ultrasonic beams in a predetermined direction with respect to said insertion body, said beam-scanning means including a casing member carrying said scanning means having a transducer-receiving hollow receptacle at an end portion thereof and in the path of said guided reflected echoes, said transducer-receiving receptacle having an opening for receiving a transducer therein, said scanning means and said transducer-receiving receptacle being arranged adjacent each other in the axial direction of said endoscope insertion body;

ultrasonic transducer means mounted in said transducer-receiving receptacle of said casing member and having a predetermined conversion property, for (i) converting into an ultrasonic beam to be supplied to said beam-scanning means a high frequency electrical pulse which is transmitted to said transducer means through said insertion body and said casing member in accordance with said predetermined conversion property and (ii) converting said reflected echoes into a corresponding electrical signal for transmission to an external component through said casing member and said insertion body in accordance with said predetermined property, said transducer means being removably disposed in said transducer-receiving receptacle of said casing member, whereby said transducer means may be replaced with another transducer means having a different property, when so desired;

said casing member comprising a cap removably closing said opening of said transducer-receiving receptacle to retain a transducer means in said receptacle; and

an elastic element interposed between said cap and a transducer means received in said transducer-receiving receptacle to elastically press said transducer means into said receptacle.

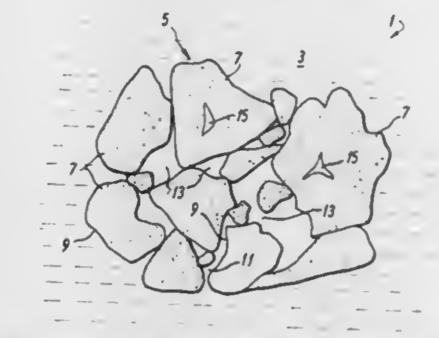
4,442,843

MICROBUBBLE PRECURSORS AND METHODS FOR THEIR PRODUCTION AND USE

Julia S. Rasor, Cupertino, and Ernest G. Tickner, Gilroy, both of Calif., assignors to Schering, AG, Berlin, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 207,741, Nov. 17, 1980, abandoned. This application Nov. 17, 1981, Ser. No. 322,138
Int. Cl.^{3} A61G *10/00*
U.S. Cl. 128—660 17 Claims

1. In a method for altering the transmission characteristics of a liquid to an electromagnetic or elastic wave transmitted therethrough by dispersing in the liquid an amount of microbubbles effective to substantially alter such transmission characteristics of the liquid in the area thereof containing the microbubbles, the improvement wherein the microbubbles are formed by dissolving in the liquid a solid which is particulate, is substantially free of microbubbles, and consists predominantly of particles which have a plurality of gas-filled voids communicating with the surface of the particles and a plurality of nuclei for microbubble formation and the ratio of the mass of the particles to the volume of gas in the voids is sufficient to render the liquid in which the particulate material is dissolved supersaturated with respect to the gas in the voids in the area of the liquid surrounding the microbubbles.

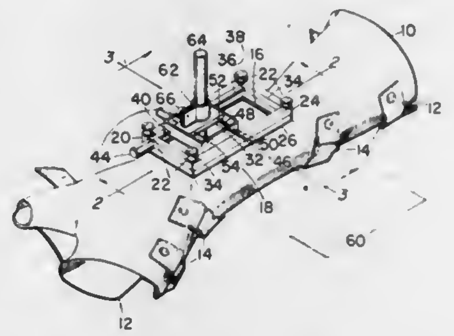


4,442,844

METHOD AND APPARATUS FOR MAKING PHYSIOLOGICAL MEASUREMENTS

Joseph H. Navach, 17240 Halsted St., Northridge, Calif. 91325

Filed Aug. 28, 1981, Ser. No. 297,513
Int. Cl.^{3} A61B *10/00*
U.S. Cl. 128—663 25 Claims



1. An apparatus for use in making measurements on a living body having an arteriovascular circulatory system which comprises:

a support means for engaging a part of the body adjacent to a location in the body where a length of any artery extends substantially linearly and is adjacent to and generally parallel with the surface of the skin so as to substantially immobilize said part without interfering with the circulation of blood within said artery, said support means being shaped so as to include an opening means adjacent to said length of said artery,

a radiation source means and a radiation detection means for use in making measurements by sending out radiation from said source means and by measuring radiation reaching said detection means,

holder means for holding said radiation source and detection means located in a location adjacent to said opening means, said holder means supporting said radiation source and detection means adjacent to said opening means,

positioning means for moving said holder means and said radiation source and detection means relative to said support means in a coordinate system into any of a series of locations along said length of said artery which have been established as normally being capable of transmitting at least some radiation in an amount having physiological significance from a radiation source, said positioning means being held on said said support means, said holder means and said positioning means serving to hold both said radiation source means and radiation detection means at a specific measurement location so that as said apparatus is used at such a location some radiation from said radiation source means will traverse a part of said body and will be detected by said radiation detection means.

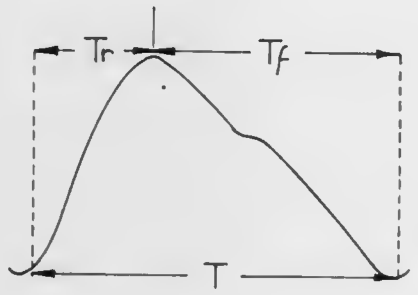
4,442,845
PULSE CURVE ANALYSER

Frederick R. N. Stephens, 67 Coolawin Rd., Northbridge, N.S.W., 2063, Australia

Filed Nov. 10, 1981, Ser. No. 319,963

Int. Cl.³ A61B *5/02*

U.S. Cl. 128—687 **4 Claims**



1. A pulse curve analyser comprising, in combination, light-responsive transducer means for sensing a patient's continuous physiological circulatory activity by responding to light modulated by changes in capillary blood micro-circulation and producing a voltage waveform which is an analog of said patient's body tissue pulsatile blood color and/or density changes,

means for processing said waveform to produce an output signal proportional to the time rate of change of the amplitude of said waveform, and

means for displaying quantitatively and instantaneously data representing at least one of the rise time and the fall time of a transient cycle of said waveform as a function of the period of said cycle,

said means for processing including a circuit wherein the output of said transducer means is fed to a notch filter, the output of which is fed to a operational amplifier whose output is buffered and then passed to a differentiator which in turn feeds a low pass filter having linear phase, the latter being offset whereby its output voltage is negative when said voltage waveform is rising, and positive when said voltage waveform is falling, and has a magnitude which is proportional to both the amplitude of said voltage waveform and its time rate of change.

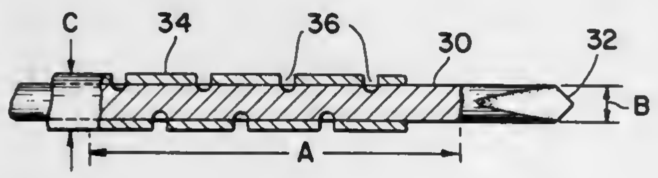
4,442,846
DISTRIBUTED PORT BONE-PIERCING CATHODE FOR ELECTRICALLY STIMULATED OSTEOGENESIS

Carl T. Brighton, Malvern, and Jonathan Black, King of Prussia, both of Pa., assignors to University of Pennsylvania, Philadelphia, Pa.

Filed Nov. 10, 1981, Ser. No. 320,110

Int. Cl.³ A61N *1/04*

U.S. Cl. 128—784 **8 Claims**



1. A cathode for use in stimulating osteogenesis in the vicinity of a human fracture site when connected to a suitable current source, said cathode comprising:

a biocompatible conductor means for drilling through bony tissue layers having at least one end; and

biocompatible non-conducting means for insulating said conductor means, said insulating means generally covering said conductor means except in the vicinity of said at least one end, said insulating means further including means for defining at least one port in said insulating means exposing a portion of the surface of said conductor means.

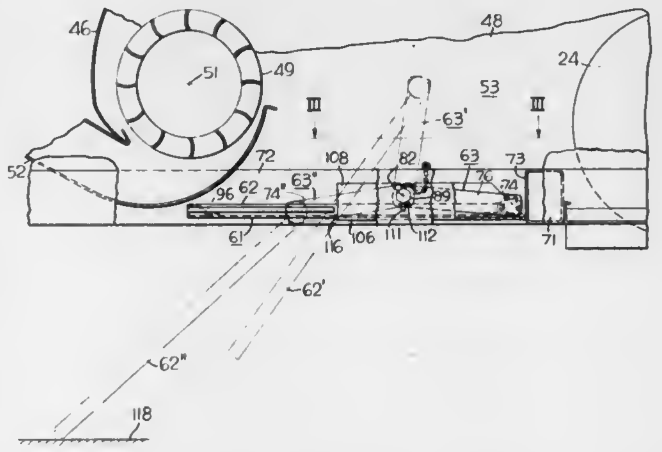
4,442,847
HARVESTER AIR INTAKE SCREEN AND ACCESS DOOR WITH OPENING AND CLOSING MECHANISM

Robert T. Buck, Independence, Mo., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Mar. 29, 1982, Ser. No. 362,832

Int. Cl.³ A01F *12/48*

U.S. Cl. 130—27 Z **9 Claims**



1. In a harvester having a main frame supported at its rear end by a pair of steerable wheels and at its front end by a pair of drive wheels, an engine, a power train including a change speed transmission between the engine and the drive wheels, an elevated crop processor, a header, means conveying crop material from the header to the crop processor including an upwardly and rearwardly extending conveyor with a housing, a pair of verical side walls, a fan between said side walls and a duct extending upwardly from said fan, said side walls, fan, duct and conveyor housing defining an interior cavity from which a person has servicing access to said fan, conveyor and transmission, a combined air inlet screen and access door arrangement characterized by

a screen door assembly at the bottom of said cavity including

a transverse screen having a horizontal closed position,

crank arm means including a pair of crank arms at laterally opposite sides of said screen having first corresponding ends pivotally connected to said screen on a first horizontal transverse pivot axis and second corresponding ends pivotally mounted on said main frame on a second horizontal transverse pivot axis by pivot means including a shaft part rigidly secured to one of said crank arms in coaxial relation to said second transverse axis and operable to rotate said one crank arm about said transverse axis, and

abutment means on said main frame and screen assembly engagable to limit rotation of said crank arm means in one direction about said second axis wherein said screen is in its horizontal closed position, said crank arm means being rotatable by rotation of said shaft part from a first position in which said screen is in a horizontal closed position to a second position in which said screen is shifted to an open position exposing a doorway at the bottom of said cavity through which a serviceperson may enter the cavity.

4,442,848
CIGARETTE-MAKING MACHINE

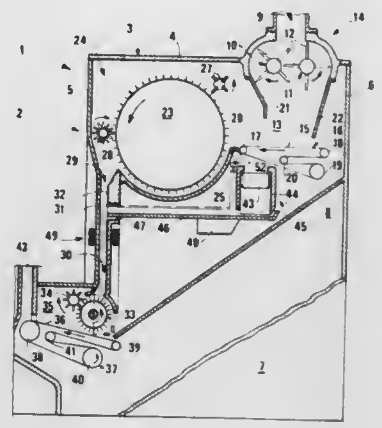
Enzo Seragnoli, Bologna, Italy, assignor to G.D. Societa' per Azioni, Bologna, Italy

Filed Feb. 2, 1982, Ser. No. 345,038

Claims priority, application Italy, Feb. 23, 1981, 47873 A/81

Int. Cl.³ A24C *5/39*

U.S. Cl. 131—108 **5 Claims**



1. A cigarette making machine comprising a main tobacco supply unit (**24**), a shaft (**30**) extending downwards from a bottom portion of said main tobacco supply unit (**24**), and an auxiliary supply unit (**45**) communicating with an intermediate portion of said shaft (**30**), said auxiliary supply unit (**45**) comprising at least two tobacco conveying means (**46**) independent of one another and extending alongside one another in a major transverse direction of said shaft (**30**), and tobacco-flow control means (**49**) associated with each said conveying means (**46**) and sensitive to the level of tobacco within said shaft (**30**).

4,442,849
CURLING IRON

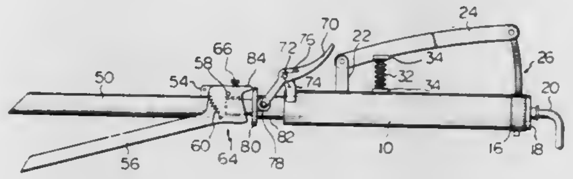
Shinichi Kawabe, Fukuoka, Japan, assignor to Idea Giken Ltd., Fukuoka, Japan

Filed Dec. 3, 1981, Ser. No. 326,860

Claims priority, application Japan, Dec. 9, 1980, 55-174296; Dec. 26, 1980, 55-188008; Mar. 3, 1981, 56-30672

Int. Cl.³ A45D *2/12*

U.S. Cl. 132—37 R **27 Claims**



1. A curling iron comprising:

a handle;

an iron rod having a shaft mounted rotatably within said handle;

a clamping member pivoted to said iron rod for opening and closing movement with respect thereto for clamping a lock of hair against said iron rod;

means associated with said clamping member for opening and closing said clamping member;

means for rotating said shaft to twine the lock of hair to be curled around said iron rod;

means being provided between said iron rod and said clamping member for biasing the clamping member towards the normally open position, said means for moving the clamping member comprising a slide sleeve mounted axially slidably around said rotatable shaft between said clamping member and said handle, said slide sleeve having a flange at the end adjacent to said clamping member;

an actuating lever pivoted at its middle to said handle and having at its lower end a roller engageable with said flange; and

at least one prong provided at an end of the clamping member in such a manner that engagement with said flange to move said slide sleeve lengthwise toward said clamping member, said flange pushes the prong to close the clamping member.

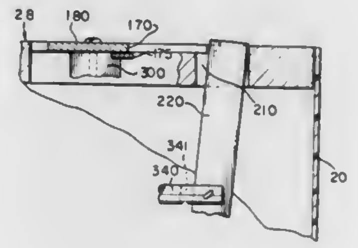
4,442,850
COIN COUNTER

Warren Austin, and Alex Penny, both of West Chester, Pa., assignors to Aaccurate Counters Company, West Chester, Pa.

Filed Feb. 26, 1982, Ser. No. 352,699

Int. Cl.³ G07D *3/12*

U.S. Cl. 133—3 H **8 Claims**



1. A coin counter comprising:

a housing;

coin inlet means for receiving coins to be counted;

coin outlet means for discharging counted coins;

means defining a coin passageway through said housing from said coin inlet means to said coin outlet means;

conveyor means for advancing coins successively through said coin passageway from said coin inlet means to said coin outlet means;

gate means and separator means disposed in said coin passageway enabling the conveyance of coins of a selected thickness and diameter through said coin passageway, said gate means and separator means having adjustment means for adjusting said selected thickness and diameter for a selected coin denomination;

counter means disposed in said coin passageway beyond said gate means and separator means for counting coins conveyed through said coin passageway to said coin outlet means and for storing the count; and

totalizer means cooperating with said counter means having input means for registering the monetary value of the selected denomination of coin and means for computing and storing the monetary value of the coins counted by said counter means.

4,442,851
CLEANING OF OBJECTS WITH SOLVENT

Kurt A. Holm, Skoghall, Sweden, assignor to Bycosin AB, Karlstad, Sweden

Filed Jun. 23, 1982, Ser. No. 391,225

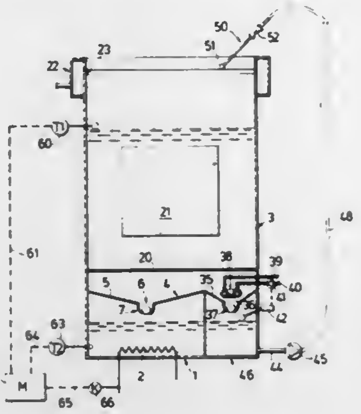
Claims priority, application Sweden, May 24, 1981, 8103968

Int. Cl.³ B08B *3/02*

U.S. Cl. 134—106 **2 Claims**

1. Apparatus for cleaning objects by means of solvent, comprising a container for liquid solvent, a heat-source arranged at the container for evaporation of solvent, and a vessel which is arranged to receive an object to be cleaned, said vessel communicating via an opening in the bottom thereof with the container to be fed with solvent vapour from the container, and said vessel being disposed on a higher level than the container to make possible the return of solvent condensate by gravity from the vessel to the container, characterized in that a valve means is arranged at the opening, the valve means comprises a seat surrounding the opening, and a body sealing against the seat and disposed to float up from contact with the

seat in the presence of liquid solvent, and that the valve means is disposed to permit solvent vapour pressurized by the heat source to pass from the container to the vessel and to prevent evaporation of solvent from the container to the vessel when the solvent in the container is kept at a temperature below the boiling point of the solvent.



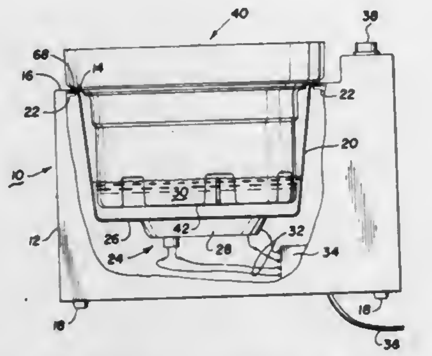
4,442,852
ULTRASONIC CLEANER APPARATUS

C. Dennis Lord, P.O. Box 47642, Dallas, Tex. 75247

Filed Jul. 30, 1982, Ser. No. 403,288

Int. Cl.³ B08B ***3/12***

U.S. Cl. 134—135 **19 Claims**



1. Apparatus for ultrasonic cleaning, said apparatus comprising:

(a) a support housing;

(b) an aperture of predetermined shape and size formed in a top surface of said support housing;

(c) a cleaning tank positioned within said aperture and supported from said support housing, said cleaning tank being configured to support a cleaning solution to a predetermined depth in said cleaning tank, said cleaning tank including a bottom portion lying substantially in a horizontal plane;

(d) transducer means physically attached to the exterior bottom surface of said bottom portion of said cleaning tank by fastening means;

(e) excitation means connected to said transducer means for excitation thereof to produce cavitation in said cleaning solution and provide resultant cleaning of predetermined items placed in said cleaning tank; and

(f) a basket-type container configured to be inserted into the cleaning tank while being supported by the top surface of said support housing.

4,442,853
SAFETY GAS VALVE WITH LATCH

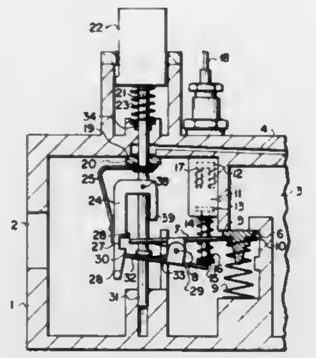
Ydo Gort, Aalden, Netherlands, assignor to Honeywell B.V., Amsterdam, Netherlands

Filed Sep. 27, 1982, Ser. No. 423,873

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1981, 3133075

Int. Cl.³ F23D ***17/46***

U.S. Cl. 137—66 **7 Claims**



1. Safety gas valve with latch which can be switched on and off by means of a shiftable and turnable operating rod, wherein

a closure member is borne by a lever turnable around a stationary axis and is spring biased in closing direction by means of a spring;

an operating rod carries a spring biased tiltable latch, the tilting axis of which extends perpendicularly with respect to the direction of movement of the operating rod; and

a projection of the latch is located opposite the lever arm of the lever which does not carry a closure member in such a way that during back movement of the operating rod from the ignition position into the operating position, the projection turns lever and with it closure member into the open position of the valve,

whereby, if the valve were closed by turning the operating rod, an abutment of the latch is positioned opposite a stationary abutment and prevents pressing the operating rod until the armature of the electromagnet turns the latch out of the latching position when the electromagnet ceases to be energized by the current of a thermocouple; comprising

an electromagnet of the ignition safety device is provided at the same side of the valve housing as is a push button borne by the operating rod;

a second lever is tiltable around the stationary axis;

a spring biased armature of the electromagnet engages at the one lever arm of the second lever;

a projection of the operating rod is positioned opposite the other lever arm of the second lever is such a manner that, when pushing the operating rod, the second lever presses the armature of the electromagnet against its core; and

another lever arm is positioned opposite an inclined surface of the latch and turns this latch when the armature drops out in such a manner that the operating rod is released.

4,442,854
ELECTRO-PNEUMATIC SIGNAL CONVERTER

Stig Norder, and Lars-Erik Nilsson, both of Säffle, Sweden, assignors to Aktiebolag Somas Ventiler, Saffle, Sweden

Filed Jan. 20, 1982, Ser. No. 341,018

Claims priority, application Sweden, Feb. 9, 1981, 8100874

Int. Cl.³ F16K ***31/02;*** **G05D** ***16/00***

U.S. Cl. 137—82 **5 Claims**

1. An electro-pneumatic signal converter for converting an electrical current signal into a pneumatic pressure, said converter comprising:

a coil through which an electrical current signal flows, said coil generating a coil magnetic field when said electrical current signal flows through said coil;

a magnetic circuit including a core of ferromagnetic material

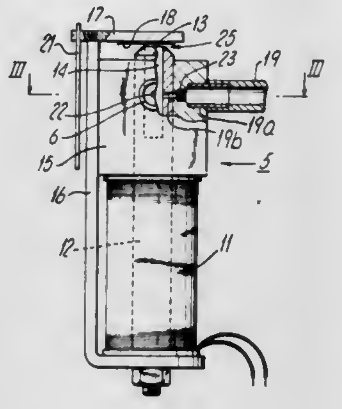
disposed in said coil, said core having a first end and a second end;

a nozzle chamber in said core having a mouth in the form of a nozzle in said first end of said core;

a flapper of ferromagnetic material extending over said nozzle and defining a gap between said nozzle and said flapper;

a link of ferromagnetic material completing a magnetic circuit between said flapper and said second end of said core;

a feed line for a constant flow of feed air into said nozzle chamber and out through said nozzle into said gap;



a body of electrically conducting non-ferromagnetic material surrounding said core in a region near said first end of said core, said body generating a core magnetic field in said core as a result generation of an induced current in said body due to alterations in current in said coil, said core magnetic field being oppositely directed to said coil magnetic field, said core magnetic field exerting a damping effect on movement of said flapper; and

a pressure sensing line extending from said nozzle chamber to a pressure-dependent member for transmitting a pneumatic pressure signal from said nozzle chamber to said pressure-dependent member.

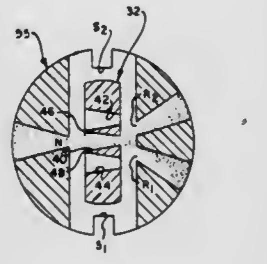
4,442,855
FAIL-SAFE SINGLE-STAGE SERVOVALVE

Stanley J. Hoffman, Jr., Cheektowaga, and William D. Waffner, East Aurora, both of N.Y., assignors to Moog Inc., East Aurora, N.Y.

Filed Oct. 28, 1981, Ser. No. 315,748

Int. Cl.³ G05D ***16/00***

U.S. Cl. 137—83 **27 Claims**



1. In a single-stage servovalve having a body, wherein a fluid jet is adapted to be discharged toward at least two receiver passages, and having a movable member mounted on said body, the position of said movable member relative to said body within an operating range of movement being adapted to divide said fluid jet between said receiver passages, the improvement which comprises:

a first stop mounted on said body and operatively arranged to limit further movement of said member in one direction; and

a first deflector surface mounted on one of said body and member and operatively arranged to create substantially equal jet impingement onto said receiver passages when said member engages said first stop.

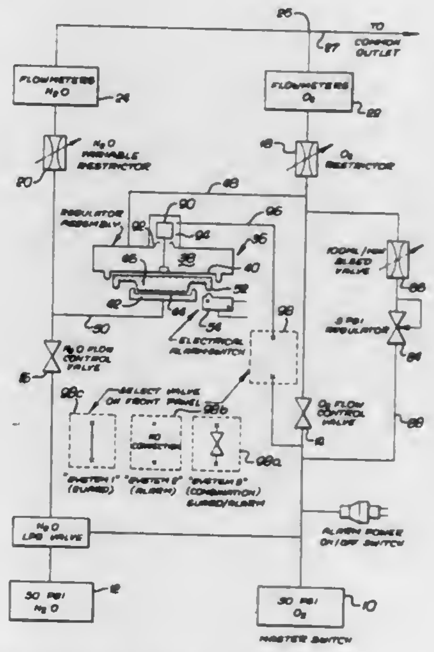
4,442,856
OXYGEN REGULATOR AND ALARM SYSTEM FOR AN ANESTHESIA MACHINE

Karl Betz, Dix Hills, N.Y., assignor to Puritan-Bennett, Kansas City, Mo.

Filed Aug. 18, 1981, Ser. No. 293,993

Int. Cl.³ A61M ***17/00***

U.S. Cl. 137—98 **11 Claims**



1. An oxygen regulator and alarm system for use in conjunction with a gas anesthesia machine, said system comprising:

a regulator assembly having

a first chamber,

a first diaphragm serving as a wall of said first chamber,

a second chamber,

a second diaphragm serving as a wall of said second chamber,

an intermediate member disposed between and in contact with said first and second diaphragms and movable therewith, and

an alarm switch operable by movement of said intermediate member;

an oxygen flow restrictor connected between a flow controllable oxygen supply and a common outlet;

an anesthesia gas flow restrictor connected between a flow controllable supply of anesthesia gas and the common outlet;

an oxygen pressure line between the supply side of said oxygen flow restrictor and said first chamber;

an anesthesia gas pressure line between the supply side of said anesthesia gas flow restrictor and said second chamber; and

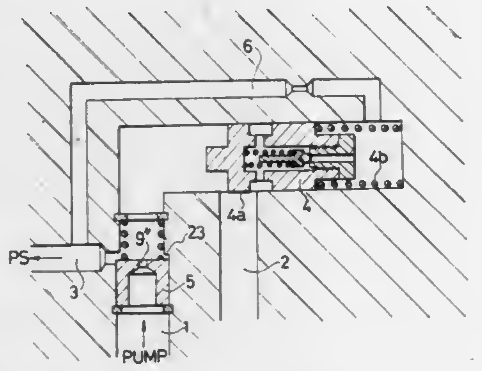
an oxygen bypass line for connecting said first chamber directly to a supply of oxygen;

wherein the area of said diaphragm is greater than the area of said second diaphragm by a factor suffucient to provide equal pressure forces on said diaphragms when the percentage flow rate of oxygen is at a desired safety level;

and wherein said regulator assembly further includes a regulator valve for controlling the flow of oxygen into said first chamber from said oxygen bypass line, in response to movement of said intermediate member, whereby a too low percentage of oxygen causes said regulator valve to open, increasing the oxygen pressure in said first chamber and supplying additional oxygen to the common outlet through said oxygen bypass line, said first chamber and said oxygen pressure line.

4,442,857
FLOW CONTROL VALVE

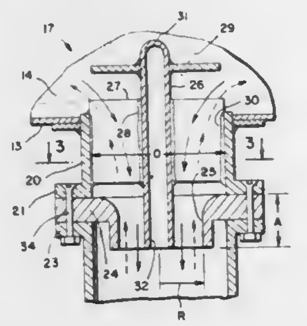
Takeshi Obe, and Haruo Okamoto, both of Saitama, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan
Division of Ser. No. 211,594, Dec. 1, 1980, Pat. No. 4,343,324, which is a continuation of Ser. No. 970,310, Dec. 18, 1978, abandoned. This application Feb. 5, 1982, Ser. No. 346,429
Int. Cl.^{3} G05D *11/02*
U.S. Cl. 137—117 **2 Claims**



1. A valving system for a power assist hydraulic system comprising: means defining an external utilization hydraulic circuit having an intake section; a pump for supplying hydraulic fluid and an internal hydraulic circuit receiving said fluid; said internal circuit including sensor means to divert fluid from delivery to said external circuit to a recirculation passage when a predetermined level exists; said sensor means including first valve means responsive to the pressure at said pump outlet, said first valve means comprising an orifice disposed for movement across the outlet of said pump, means to bias said orifice against the fluid pressure produced by said pump, and means to establish fluid communication between said pump and said intake section when the biasing force of said means to bias said orifice exceeds the fluid pressure produced by said pump, said first valve means being responsive to the pressure differential across said orifice, such that, upon said pressure differential exceeding a predetermined value, said first valve means operates to reduce fluid delivery to said external circuit to a predetermined minimum positive fluid delivery rate, and second valve means located upstream of, and responsive to, the pressure differential upstream and downstream of said first valve means, whereby when the fluid supply in said intake section reaches a predetermined level said second valve means diverts flow of hydraulic fluid from said intake to said recirculation passage while said first valve means allows at least said predetermined minimum positive fluid delivery rate.

4,442,858
SURGE CHAMBER

Wilhelm S. Everett, P.O. Box 1535, Ventura, Calif. 93001
Filed Feb. 8, 1982, Ser. No. 346,727
Int. Cl.^{3} F04D *27/02*
U.S. Cl. 137—207 **6 Claims**



1. A surge chamber having an outflow/inflow control fitting on its bottom, said fitting including, in combination:

(a) a surge chamber pipe section of given inside diameter secured in the bottom wall of said chamber in communication with the interior thereof, said pipe section extending downwardly away from the chamber and having a first exterior annular flange on its lower end;

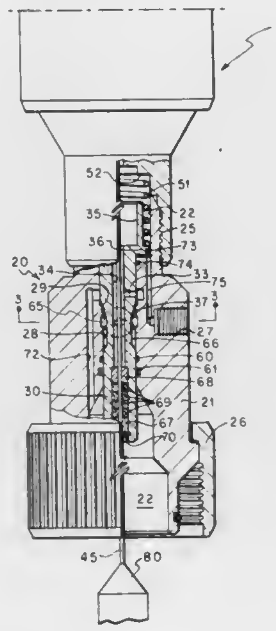
(b) an outlet pipe section of said given inside diameter and having a second exterior companion annular flange on its upper end;

(c) an annular nozzle member defining a reduced diameter opening less than said given diameter, positioned between and in coaxial alignment with the first and second annular flanges; and

(d) a coaxially positioned core member carrying radially extending anti-vortex blades centrally positioned in said surge chamber pipe section with the lower end of said core member passing coaxially within said reduced diameter opening in said nozzle member and terminating in the plane of the lower end of said reduced diameter opening, said outlet pipe section connecting to a pipeline carrying a column of fluid being pumped to a higher level by pumps in a pumping station, said inside diameter and reduced diameter opening, and the geometry of said nozzle member being sized to provide a controlled outflow of fluid from said surge chamber to said pipeline in a manner to avoid separation of said fluid column in the event of failure of the pumps, for example, as a result of a power outtage.

4,442,859
CONTROL VALVE

Ernest B. Gentry, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.
Filed May 13, 1981, Ser. No. 263,163
Int. Cl.^{3} F16K *15/00, 31/143*
U.S. Cl. 137—242 **8 Claims**



6. A valve comprising:

a. a housing having a first longitudinal passageway extending therethrough;

b. a poppet means slidably disposed within the first longitudinal passageway;

c. the poppet means having a longitudinal bore extending therethrough;

d. first seal means for blocking fluid flow between the exterior of the poppet means and the interior of the first longitudinal passageway;

e. second seal means for blocking fluid flow between the exterior of the poppet means and the interior of the first longitudinal passageway;

f. the first and second seal means spaced longitudinally from each other and partially defining a fluid chamber within the first longitudinal passageway;

g. port means for communicating fluid from the exterior of the housing to the fluid chamber;

h. the poppet means having a first position in which the first seal means blocks fluid communication between the chamber and other portions of the first longitudinal passageway and a second position in which the first seal means allows fluid communication between the chamber and other portions of the first longitudinal passageway;

i. means for biasing the poppet means towards its first position;

j. an opening through the poppet means communicating between the longitudinal bore and the first longitudinal passageway;

k. the first seal means located between the opening and the fluid chamber;

l. means for attaching the housing to a wireline lubricator assembly;

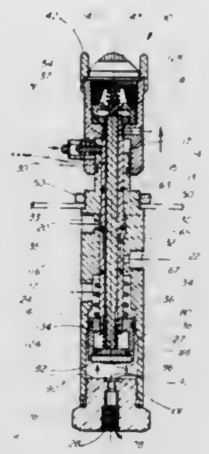
m. the biasing means comprising a spring disposed between a shoulder formed on the inside diameter of the housing and a similar shoulder on the poppet means;

n. the longitudinal bore extending completely through the poppet means and sized to slidably receive a flexible wireline therein; and

o. packing means carried within the longitudinal bore to wipe the wireline as it slides through the bore.

4,442,860
PILOT CONTROL RELAY VALVE APPARATUS

Donald K. Taylor, Humble, Tex., assignor to C.S.E. Automation Engineering & Services, Inc., Doucon, La.
Filed Oct. 26, 1981, Ser. No. 315,258
Int. Cl.^{3} F16K *17/00*
U.S. Cl. 137—557 **2 Claims**



1. A pilot operated relay control valve apparatus comprising:

a. a first elongated housing having a bore extending longitudinally thereof;

b. a second elongated housing having a bore coaxially aligned with the bore of said first housing;

c. an annular neck portion of said first housing for slidably engaging the inner wall of a portion of the bore of said second housing;

d. a slide valve mounted within said coaxial bores for longitudinal movement thereof, said slide valve having:

  i. a first piston on one end of said slide valve, mounted within an enlarged diameter portion of the bore of said first housing, a face of said first piston adapted with a plurality of apertures therethrough;

  ii. a counter-bore extending substantially the length of said slide valve;

  iii. displacement means mounted within said counter-bore for longitudinal movement thereof, said displacement means having a second piston on one end thereof coaxially mounted within said first piston;

e. means for continuously urging said first piston of said slide valve inwardly to a seated position;

f. means for continuously urging said second piston to a seated position against said first piston;

g. port means in fluid communication with said bore of said first housing and exposing the outer face of said first piston to fluid pressure;

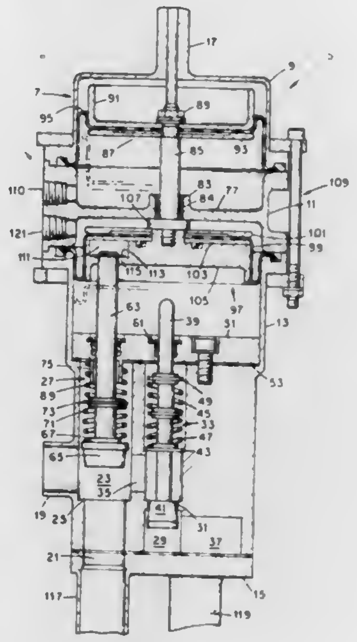
h. a raised annular portion on the outer face of said first piston in alignment with said port means;

i. a resilient annular seal between said port means and said raised annular portion on the outer face of said piston exposing a relatively small surface area of said first piston is in a seated position, said annular seal permitting the entire outer face of said first piston to be exposed to fluid pressure from said port means when said first piston is out of the seated position;

j. indicator means mounted on one end of said control valve for movement between a first position to indicate a first operating condition and a second position to indicate a second operating condition, said indicator means moving from said first and second positions thereof whenever a predetermined high fluid pressure is applied to and unseats said second piston the from the first piston.

4,442,861
VALVE FOR GAS CENTRIFUGES

Charles A. Hahs, and Charles H. Burbage, both of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Mar. 17, 1982, Ser. No. 358,963
Int. Cl.^{3} F16K *11/14, 31/126*
U.S. Cl. 137—595 **11 Claims**



1. A valve assembly, comprising:

(a) a casing having an axis, said casing including a portion formed with a vent,

(b) an axially displaceable diaphragm assembly sealably bridging said casing and including a shaft extending along said axis, said assembly and the vented portion said casing defining a vented chamber,

(c) a partition in said casing including means for slidably engaging said shaft, said partition and diaphragm assembly defining a sealed second chamber,

(d) a port in said casing for admitting, to the second chamber, actuating-fluid means for effecting displacement of said diaphragm assembly away from said partition to a normal operating position,

(e) an axially displaceable actuator-plate assembly sealably bridging said casing and supported by said shaft, said plate assembly and partition defining a third chamber,

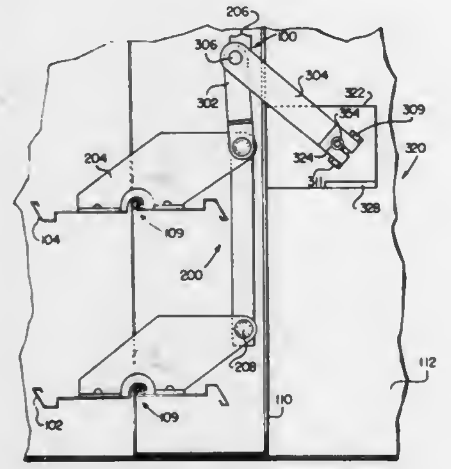
(f) a seal plate bridging said casing and formed with throughgoing bores extending in the direction of said axis, said seal plate and actuator-plate assembly defining a fourth chamber,

(g) a body in said casing having a plurality of passages respectively aligned with said bores and respectively containing valve seats, and

(h) a plurality of shafts which are coupled to said plate assembly to move axially therewith, said shafts respectively extending through said bores and into said passages and carrying plugs which are out of contact with said seats when said diaphragm assembly is in said normal position.

4,442,862
LINK BAR OPERATOR FOR ROTATING BLADE DAMPERS

Francis J. McCabe, 239 Hastings Ct., Doylestown, Pa. 18901
Continuation-in-part of Ser. No. 154,713, May 30, 1980, Pat. No. 4,338,967, which is a continuation-in-part of Ser. No. 16,514, Mar. 1, 1979, Pat. No. 4,301,569, which is a continuation-in-part of Ser. No. 896,299, Apr. 14, 1978, Pat. No. 4,195,384, which is a continuation-in-part of Ser. No. 799,044, Mar. 18, 1977, Pat. No. 4,099,292, which is a continuation of Ser. No. 676,483, Apr. 13, 1976, Pat. No. 4,041,570, and a continuation-in-part of Ser. No. 676,413, Apr. 13, 1976, Pat. No. 4,040,304, said Ser. No. 16,514, is a continuation-in-part of Ser. No. 764,774, Feb. 2, 1977, Pat. No. 4,114,646, which is a continuation of Ser. No. 689,994, May 26, 1976, Pat. No. 4,081,173, said Ser. No. 16,514, is a continuation-in-part of Ser. No. 896,237, Apr. 14, 1978, Pat. No. 4,219,041, said Ser. No. 16,514, is a continuation-in-part of Ser. No. 905,211, May 12, 1978, Pat. No. 4,183,129, which is a division of Ser. No. 729,813, Oct. 4, 1976, Pat. No. 4,113,232.
This application May 26, 1981, Ser. No. 267,334
The portion of the term of this patent subsequent to Jul. 13, 1999, has been disclaimed.
Int. Cl.^{3} F24F *13/14;* **F16K** *1/22*
U.S. Cl. 137—601 **29 Claims**



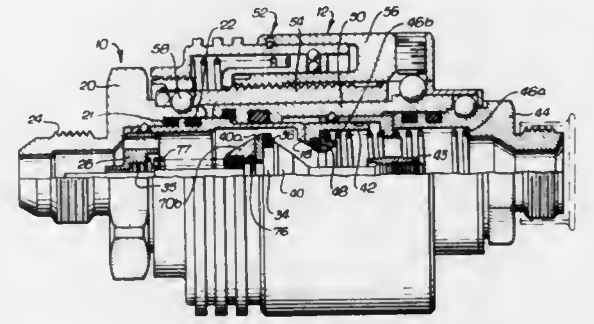
1. An operator for operating a damper having a frame and at least one blade adapted for rotation within the frame between an open position and a closed position, wherein said operator comprises:

(a) at least two, pivotally interconnected operator members, a first operator member being operatively associated with the frame of the damper and a second operator member being operatively associated with the damper blade; and
(b) acutator means operatively associated with at least one of the two operator members;

wherein operation of the actuator means causes articulation of the operator members, which in turn causes rotation of the damper blade, so that the amount of rotation of the damper blade which is caused by a given amount of operation of the actuator means increases as the damper blade moves toward the open position, and so that changes in air flow through the damper essentially directly relate to a given amount of operation of the actuator means.

4,442,863
FLUID LINE COUPLING DEVICE

Vincent G. Magorien, Granada Hills, Calif., assignor to Systron Donner Corp., Concord, Calif.
Filed Apr. 30, 1981, Ser. No. 258,919
Int. Cl.^{3} F16L *29/00*
U.S. Cl. 137—614.03 **8 Claims**

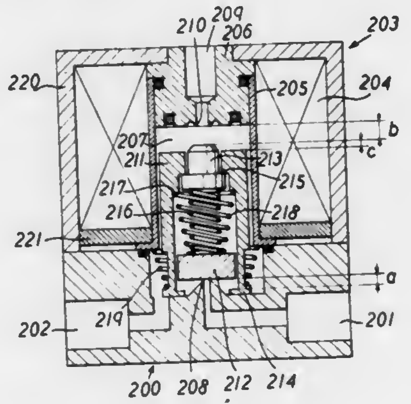


1. In a fluid line connector having a male half and a female half, each separately valved to open as the halves are connected and to close as the halves are disconnected, an improved male valve assembly, comprising:

a tubular body having an end wall with an opening therein forming a conical valve seat;
a valve having a corresponding concially tapered surface, an annular shoulder adjacent to said tapered surface and a valve stem mounted for axial sliding movement within said tubular body;
an O-ring seal disposed on said annular shoulder of said valve;
a cupped seal retainer mounted for sliding movement along said valve stem and having an annular retaining lip capable of extending around said seal over more than half of its thickness;
first biasing means for urging said valve into engagement with said valve seat; and
second biasing means for urging said seal retainer, and with it said seal, into sealing engagement with said valve seat when in the disconnected condition;
wherein said seal retainer is prevented from interfering with said end wall by reaction forces generated by said seal in the disconnected condition, and wherein said seal retainer retains said seal to an even greater extent in the connected condition, thereby minimizing seal washout in conditions of high flow.

4,442,864
ELECTROMAGNETIC SWITCHING VALVE

Seiji Kosugi, Soka, Japan, assignor to Shoketsu Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 9, 1981, Ser. No. 300,560
Int. Cl.^{3} F16K *11/16;* **F15B** *13/044*
U.S. Cl. 137—625.27 **1 Claim**



1. An electromagnetic switching valve, comprising:

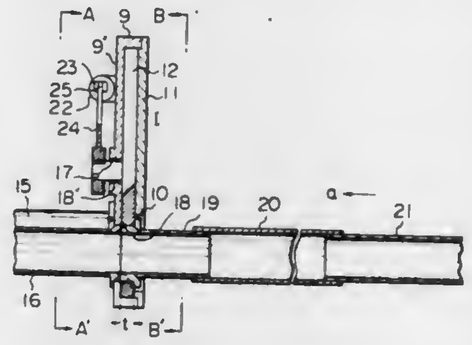
a valve main body including a valve chamber, an inlet port and an outlet port;

a stationary core disposed in said valve main body and including a fluid discharge port, said stationary core disposed in said valve main body so as to form an end of said valve chamber;
a guide cylinder disposed in said valve chamber adjacent said stationary core;
a feed valve seat formed in said valve main body for fluidically interconnecting said inlet port to said outlet port via said valve chamber;
a discharge valve seat formed in said stationary core in opposed relation to said feed valve seat and wherein said discharge valve seat is fluidically interconnected to said valve chamber and said fluid discharge port;
a movable core reciprocatably disposed in said guide cylinder;
a discharge valve body reciprocatably disposed in said movable core and adapted to cooperate with said discharge valve seat for opening and closing thereof;
a feed valve body reciprocatably disposed in said movable core and adapted to cooperate with said feed valve seat for opening and closing thereof;
a return spring disposed in said valve chamber and adapted to cooperate with said guide cylinder and said movable core to urge said movable core in a direction for closing said feed valve seat and to cause said discharge valve body and said feed valve body to move to decrease a linear distance therebetween to less than a predetermined maximum value;
an inter-valve spring compressedly disposed between said discharge valve body and said feed valve body and adapted to cooperate therewith so as to cause said discharge valve body and said feed valve body to move to increase said linear distance therebetween to said predetermined maximum value;
an auxiliary spring disposed in said movable core and adapted to cooperate with said movable core and said feed valve body to urge said feed valve body away from said discharge valve body and wherein a force of said return spring is greater than a combined force of said inter-valve spring and said auxiliary spring; and
means for generating an electromagnetic force such that when said electromagnetic force generating means is deenergized said movable core abuts a bottom of said valve chamber due to said force of said return spring, said feed valve body closes said feed valve seat due to said combined force of said inter-valve spring and said auxiliary spring and said linear distance between said discharge valve body and said feed valve body is less than said predetermined maximum value, and when said electromagnetic force generating means is energized said movable core is drawn into abuttment with said stationary core and said discharge valve body to close said discharge valve seat due to an inter-valve spring force.

4,442,865
MECHANISM FOR CHANGING OVER FLUID PASSAGES

Nakashima Shigeo, Muko, Japan, assignor to Nakashima Seisakusho Co., Ltd., Kyoto, Japan
Filed Oct. 21, 1981, Ser. No. 314,001
Claims priority, application Japan, Nov. 14, 1980, 55-161288
Int. Cl.^{3} F16K *11/06*
U.S. Cl. 137—874 **2 Claims**

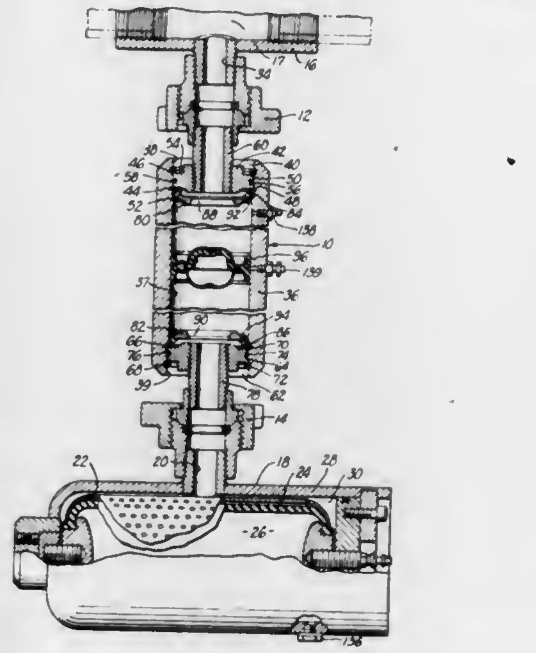
1. A fluid passages change-over mechanism, comprising:
a circular casing having a central opening;
a circular rotating plate axially aligned with said casing, having an axle extending outwardly from the center of one side thereof through said central opening in said casing so as to be rotatable therein about an axis rotation;
a circular casing cover axially aligned with said casing and said plate, having an arc-shaped opening surrounding said axis of rotation at a constant radial distance therefrom; said casing having first and second holes along a first arc about said axis, said first arc having a radius equal to said constant radial distance, said plate having a third hole at a distance equal to said constant radial distance from said axis, said plate being disposed between said casing and said cover so to be covered thereby;
first and second circuit pipes respectively mounted at one end to said casing in alignment with said first and second holes, the other end of said circuit pipes extending away from said plate;
one swing pipe mounted at one end thereof to said plate in alignment with said third hole, the other end of said one swing pipe extending through said arc-shaped opening so



as to be rotatable with said plate between opposite circumferential ends of said arc-shaped opening, said one swing pipe respectively communicating with said first and second circuit pipes through said first and second holes when said one swing pipe is at the respective opposite ends of said arc-shaped opening;
a main pipe;
a flexible pipe connecting said other end of said one swing pipe to one end of said main pipe; and
torque means, connected to said axle, for reciprocally rotating said one swing pipe with said plate between said opposite ends of said arc-shaped opening.

4,442,866
SLIDING SEPARATOR FOR PULSATING LINES

Ernest W. Loukonen, Box 1611, Long Beach, Calif. 90815
Filed Sep. 27, 1982, Ser. No. 423,855
Int. Cl.^{3} F16L *55/04*
U.S. Cl. 138—31 **10 Claims**



1. A separator to isolate a pulsating fluid from a pulsation damping fluid which passes pulsating energy therebetween including:

a body defining an inner cylindrical bore therein, said defined inner cylindrical bore having:
a first end for connection to the pulsating fluid; and

- a second end for connection to the pulsation damping fluid;
- a piston positioned in said defined inner cylindrical bore, said piston having:
  - a central diaphragm for passing high frequency energy pulsations between the pulsating fluid and the pulsation damping fluid;
  - a outer cylindrical surface positioned to slide on said defined inner cylindrical bore, whereby said piston can move on said defined inner cylindrical bore to pass low frequency energy pulsations between the pulsating fluid and the pulsation damping fluid;
  - a first side facing toward the pulsating fluid;
  - a second side facing toward the pulsation damping fluid;
  - a first cage on said first side of said piston shaped to allow limited movement of said diaphragm toward said first end of said defined inner cylindrical bore, said first cage including:
    - a central cup shaped portion to allow limited movement of said diaphragm toward said first end of said defined inner cylindrical bore; and
    - a plurality of first perforations to allow movement of the pulsating fluid therepast to act on said diaphragm; and
  - a second cage on said second side of said piston shaped to allow limited movement of said diaphragm toward said second end of said defined inner cylindrical bore, said second cage including:
    - a central cup shaped portion to allow limited movement of said diaphragm toward said second end of said defined inner cylindrical bore; and
    - a plurality of second perforations to allow movement of the pulsation damping fluid therepast to be acted upon by said diaphragm; and
- a sensor port positioned through said defined inner cylindrical bore generally equidistant from said first and second ends thereof, said sensor port being manually openable whereby any fluid flowing out thereof indicates the position of said piston along said defined inner cylindrical bore.

4,442,867

INTERNAL OBTURATORS FOR PIPES

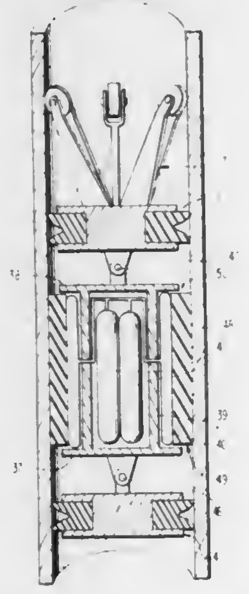
Bruno J. M. de Sivry; Jean-Louis Migliarese-Caputi, both of Paris, and Daniel Josien, Willems, all of France, assignors to Compagnie Francaise des Petroles, Paris, France

Continuation of Ser. No. 311,802, Oct. 15, 1981, abandoned. This application Apr. 15, 1983, Ser. No. 483,747

Claims priority, application France, Oct. 29, 1980, 80 23089; Feb. 25, 1981, 81 03716

Int. Cl.^{3} F16L *55/12*

U.S. Cl. 138—93 **4 Claims**



1. An internal obturator for a pipe, comprising: a rigid hollow cylindrical unit defined by a hollow central cylinder (**39**) closed at its opposite ends by two circular plates (**37, 38**) having annular flanges extending radially outwardly beyond said cylinder, an elongated torus shaped inflatable element (**40**) disposed around said cylinder, and a flexible sealing wall (**48**) of cylindrical shape disposed around said inflatable element for sealing application thereby against the internal wall of a pipe, said sealing wall comprising a cylindrical sleeve independent of said inflatable element and retained at its two ends against longitudinal displacement by said circular plates, said inflatable element comprising a single inflatable bladder of annular cross-section inserted between said cylinder and said cylindrical sleeve and having a length approximately the same as that of said cylindrical sleeve, wherein said cylindrical sleeve comprises a deformable cylindrical body freely inserted between said end plates, the axial length of said cylindrical sleeve substantially corresponds to the axial distance between said circular plates, and the portions of the axial ends of said cylindrical sleeve which are, in use, applied against said end plates are made of a stronger material than that of which the remainder of said sleeve is made.

4,442,868

FOOD CASING WHICH WILL TRANSFER A SMOKE COLOR AND FLAVOR TO FOOD ENCASED THEREIN AND BASIC NATURAL LIQUID SMOKE FOR USE THEREWITH

Burl L. Smith, Danville, Ill., and Ronald S. Kearby, State Line, Ind., assignors to Teepak, Inc., Chicago, Ill.

Filed Sep. 24, 1982, Ser. No. 423,410

Int. Cl.^{3} A22C *13/00*

U.S. Cl. 138—118.1 **33 Claims**

1. A casing for meat products comprising a tube, impregnated with a colorant and flavorant comprising a basic liquid smoke coloring and flavoring solution alkalized to a pH above about 10.

18. The method of forming a storage stable food casing of claim 1 capable of imparting a smoke color and flavor to a meat product cooked therein comprising providing a food casing and impregnating said casing with a natural smoke flavorant and colorant having a pH of from between about 10 and about 12.5.

4,442,869

APPARATUS FOR THE OPTICAL RETENTION OF THE TWO RECIPROCATINGLY DRIVEN CONTROL ELEMENTS OF THE SHED FORMING ARRANGEMENT ASSOCIATED WITH A LOOM

Francisco Speich, Gipf-Oberfrick, and Robert Bucher, Frick, both of Switzerland, assignors to Textilma AG, Hergiswil, Switzerland

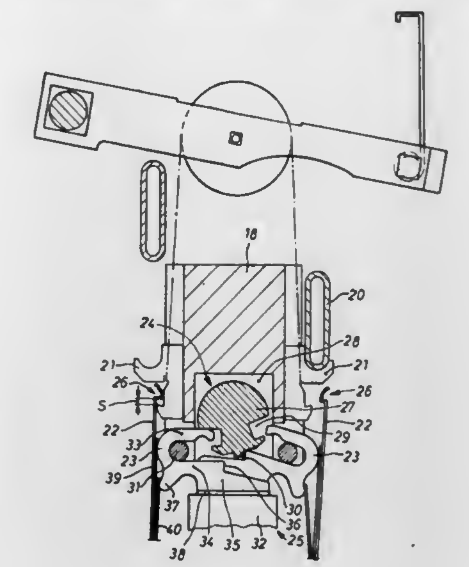
Filed Dec. 14, 1981, Ser. No. 330,328

Claims priority, application Switzerland, Dec. 22, 1980, 9530/80

Int. Cl.^{3} D03C *1/06*

U.S. Cl. 139—71 **16 Claims**

1. Apparatus for the optical retention in one of the limiting positions of two reciprocatingly driven control elements of a shed forming arrangement associated with a loom, comprising retaining elements associated with the control elements and adapted to be moved from a first position into a second position and projecting in one position into the path of motion of the control elements in order to retain these in one limiting position, an actuating means with actuating elements adapted to act on the retaining elements, a drive mechanism associated with the actuating elements adapted to move the retaining elements from the first into the second position, an electrically energizable control device for the selective control of the actuating elements, the actuating elements having an elongated slot, and wherein there is provided a pivot pin projecting into said slot such to allow a pivoting and translatory sliding motion of said actuating elements in order to move them into and out of contact with the control device and to slide the actuating elements towards the retaining elements when the control device is not energized.



4,442,870

BRAKE FOR A GRIPPER PROJECTILE OF A WEAVING MACHINE

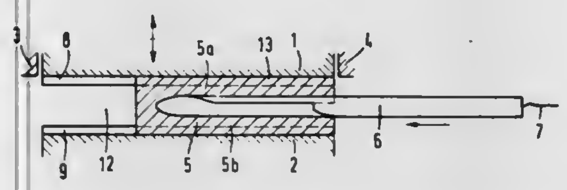
Frantisek Jankovsky, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Nov. 5, 1981, Ser. No. 318,612

Claims priority, application Switzerland, Nov. 7, 1980, 8275/80

Int. Cl.^{3} D03D *49/54*

U.S. Cl. 139—185 **7 Claims**



1. A brake for a gripper projectile of a weaving machine comprising
- a clamp-shaped receiving member for catching a moving gripper projectile; and
- a pair of brake shoes for slidably receiving said receiving member therebetween.

4,442,871

WEFT YARN GUIDE FOR A FLUID JET LOOM

Hajime Suzuki, Anjo; Yoshifumi Umemura, Toyoake; Yoshimi Iwano, Oobu, and Masahiko Kimbara, Kariya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Jun. 25, 1980, Ser. No. 163,212

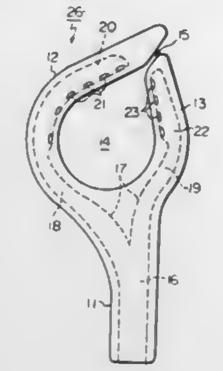
Claims priority, application Japan, Jun. 30, 1979, 54/090407[U]

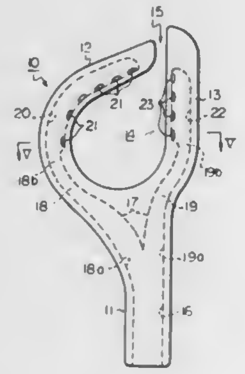
Int. Cl.^{3} D03D *47/30*

U.S. Cl. 139—435 **5 Claims**

1. A weft yarn guide for a fluid jet loom comprising:
- a base portion capable of being connected to a sley;
- a pair of guide members which are connected to the upper end of said base portion and which are forked to form a weft inserting opening therebetween;
- a base fluid passage formed within said base portion, and;
- a plurality of fluid blowing holes which are formed on the upper surface of said forked guide members but are not formed on the lower surface of said forked guide members and which are communicated with said base fluid passage,

characterized in that said guide further comprises:
- a branching wall which projects from the upper inner wall of said base fluid passage toward the inside of said fluid passage, and;





- a pair of branch passages, the lower ends of which communicate with said base fluid passage and which communicate with said fluid blowing holes.

4,442,872

APPARATUS AND METHOD FOR THE PRODUCTION OF WIRING LOOMS

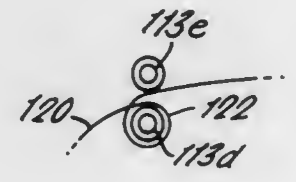
Ralph D. Gibbons, Basingstoke, England, assignor to Lansing Bagnall Limited, Hampshire, England

Continuation-in-part of Ser. No. 56,730, Jul. 11, 1979, abandoned. This application Sep. 18, 1981, Ser. No. 303,502

Claims priority, application United Kingdom, Jul. 17, 1978, 30134/78; Mar. 25, 1981, 8109431

Int. Cl.^{3} B21F *3/00*

U.S. Cl. 140—92.1 **25 Claims**

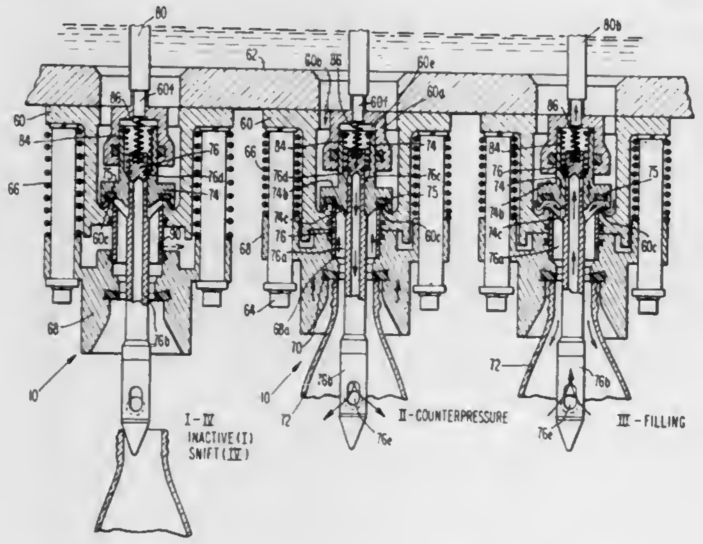


1. A wiring loom comprising a plurality of pins, each having end portions and an intermediate portion wider than the end portions, and a table adapted for receiving and releasably holding a plurality of said guide pins in a position to project on one side of the table at predetermined points thereon, the table comprising first and second superposed parallel layers of which said first layer has an array of apertures through which end portions but not intermediate portions of said pins can pass and of which said second layer is adapted to receive and inhibit lateral movement of end portions of the pins, whereby to hold each of said pins in position as aforesaid, and actuator means for effecting relative separation of said layers in a direction normal to said layers sufficient to release the end portions of the pins from the said second layer and effecting removal of the pins from the table.

(8) subsequently replacing the uppermost layer relative to the intermediate layer; and subsequent to the production of a multiplicity of similar harnesses, the further step of:
(9) separating the uppermost and intermediate layers from the lower layer in a direction normal to the layers to release the pins from the loom table.

4,442,873
CONTAINER ACTUATED COUNTERPRESSURE FILLING VALVE

Chung J. Yun, Baltimore, Md., assignor to Crown Cork & Seal Company, Inc., Philadelphia, Pa.
Filed Nov. 27, 1981, Ser. No. 325,289
Int. Cl.³ B67C ***3/06***
U.S. Cl. 141—39 **21 Claims**

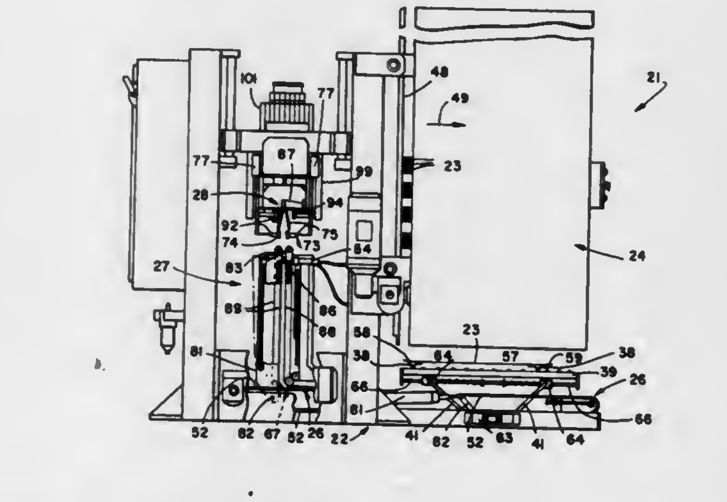


1. Apparatus for the counterpressure filling of a container with a pressurized carbonated liquid comprising:
a first valve member;
means for moving said container to sealably engage the mouth of the container with said first movable valve member and to move said first movable valve member to admit counterpressure gas into said container;
a second valve member in communication with a reservoir of said pressurized liquid and normally held closed by the pressure of the liquid thereon and biased to open when the counterpressure within said container is substantially equal to the pressure of said carbonated liquid, whereby said second valve member opens after said container is counterpressurized, to admit said carbonated liquid into said container; and
means for terminating flow of said carbonated liquid into said container at a predetermined point,
wherein said means for moving said container relative to said valve member additionally removes said container from said valve means after termination of flow of said carbonated liquid into said container and closes said first and second valves.

4,442,874
AUTOMATIC VALVE BAG PLACER

Jack V. Ballard, Jr., Morristown, N.J., assignor to John L. Macfarlane, Modesto, Calif.
Filed Jun. 17, 1982, Ser. No. 389,410
Int. Cl.³ B65B ***1/00***
U.S. Cl. 141—166 **15 Claims**

1. An automatic valve bag placer for opening and sequential positioning of valve bags for filling through a fill spigot, said valve bags each including an end flap folded against the bag body and a fill valve mounted in said end flap; and said valve bag placer including, a flap orienting assembly formed for rotation of said end flap to a position for opening of said valve, a bag feeding assembly formed to feed individual bags sequentially to said orienting assembly, a bag opening and filling assembly formed to open said valve after orientation by said orienting assembly and formed to displace one of said bags and said fill spigot to a position for filling of said bag, wherein the improvement in said valve bag placer comprises:
said flap orienting assembly including first clamp means formed to selectively grip and release said bags at a spaced distance below said end flap while positioned in said bag feeding assembly, deflector means formed to rotate said end flap to said position for opening of said valve, and first carriage means having said first clamp means mounted thereto for lateral displacement of said bag to remove said bag from said bag feeding assembly and to displace said end flap against said deflector means for cooperative engagement therewith to rotate said end flap to a position for opening of said valve; and



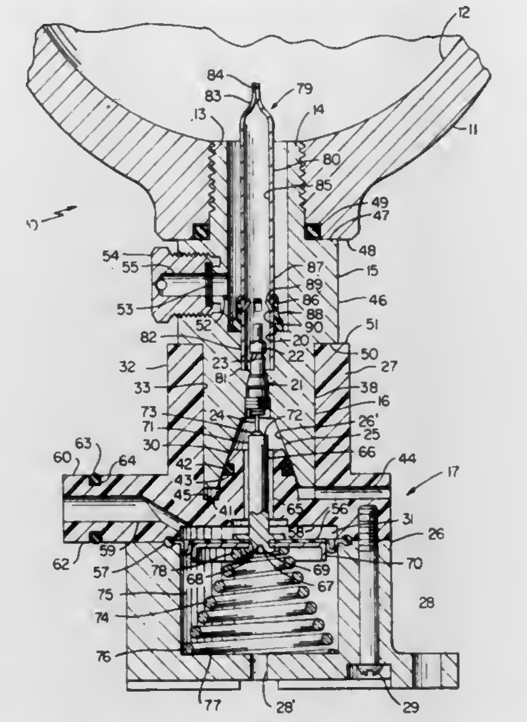
said bag opening and filling assembly including second clamp means formed to selectively grip and release said bag immediately below and proximate said end flap, second carriage means having said second clamp means mounted thereto, and valve opening means carried by said second carriage means and movably mounted to engage said end flap and to open said valve, said second clamp means and said valve opening means being formed to cooperate to hold said valve in an open condition and said second carriage means being formed for lateral displacement of said bag and insertion of said fill spigot into the open valve.

4,442,875
PROPELLANT CHARGING HEAD FOR FILLING A STORAGE CHAMBER OF A PROPELLANT STORAGE CONSTRUCTION

Francis S. Genbauffe, Irwin, and Joseph J. Erdelsky, Jeannette, both of Pa., assignors to Robertshaw Controls Company, Richmond, Va.
Filed Dec. 9, 1981, Ser. No. 328,959
Int. Cl.³ B65B ***3/04;*** **B67C** ***5/37***
U.S. Cl. 141—348 **7 Claims**

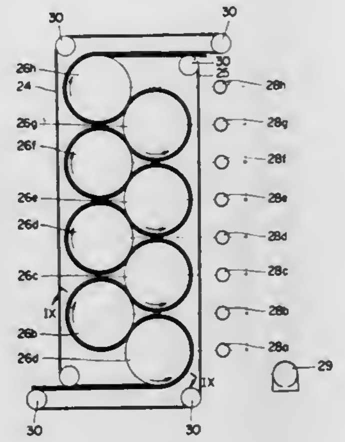
1. In a propellant charging head for filling a storing chamber of a propellant storage container with a charge of propellant through a passage defining means of said container that has a valve unit in the passage thereof, said head having a surface, said head having a projection that extends beyond said surface, said head having an opening that interrupts said surface and through which propellant is adapted to flow, said head being adapted to have said surface thereof disposed against said container and have said projection of said head engage a valve plunger of said valve unit to open said valve unit so that propellant can flow from said opening of said head through the opened valve unit to said chamber, the improvement wherein said head has a generally conical nose-like member having said

surface of said head thereon, said surface being a generally conical surface and being adapted to seat against a generally conical seat of said container to interconnect said opening of said head to said passage.



4,442,876
APPARATUS FOR DRYING VENEER SHEET

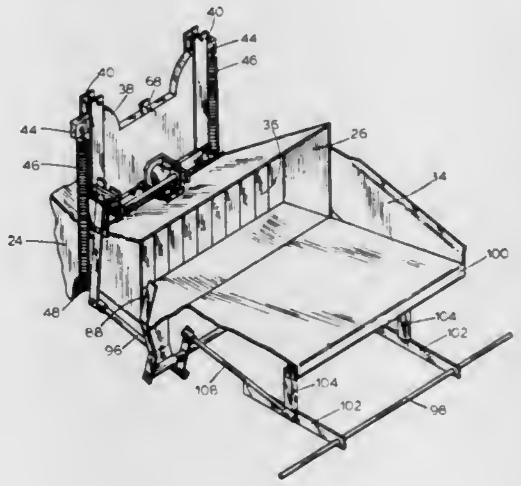
Masaru Koike; Yasumasa Hasegawa; Satoru Shimosaka; Nagara Aoyama, and Toshibiko Yoshizumi, all of Ohbu, Japan, assignors to Meinan Machinery Works, Inc., Ohbu, Japan
Division of Ser. No. 176,995, Aug. 11, 1980. This application Sep. 28, 1982, Ser. No. 425,924
Claims priority, application Japan, Aug. 20, 1979, 54-106408; Dec. 8, 1979, 54-159423
Int. Cl.³ B27M ***1/02***
U.S. Cl. 144—2 R **4 Claims**



2. An apparatus for drying a veneer sheet comprising:
a plurality of rollers arranged in two rows staggered such that said rollers have respective axes parallelly extending in corners of a zigzag path and any two adjacent rollers define veneer passages between peripheries thereof, said rollers being driven to feed veneers in a predetermined direction;
plural sets of elongate elements passed over said rollers in sequence along said zigzag path, each set holding a veneer sheet therebetween, said rollers having on peripheral surfaces thereof annular recesses adapted to fully receive roll side elements in said sets, said rollers being heated;
selected rollers being driven at successively decreasing speeds toward said predetermined direction to form a deceleration section; and
a tenderizing device for forming numerous small splits in veneer sheet and located in an upstream portion inclusive of said deceleration section with respect to said predetermined direction.

4,442,877
MACHINE CONTROL SYSTEM FOR A WOOD OR BRUSH CHIPPING MACHINE

Edward L. Uitermarkt, Pella, Iowa, assignor to Vermeer Manufacturing Company, Pella, Iowa
Filed May 17, 1982, Ser. No. 379,150
Int. Cl.³ B27L ***11/00***
U.S. Cl. 144—172 **8 Claims**



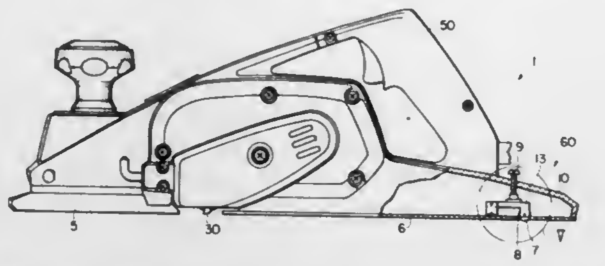
1. A material feed control mechanism for a wood or brush chipping machine having a housing with a material receiving inlet and an outlet for delivering material to a cutter located rearwardly of and adjacent to said outlet, said control mechanism comprising:
(a) an upright material stop gate located forwardly of and adjacent to the housing outlet,
(b) means guidably supporting the stop gate on said housing for vertical movement to an elevated position projected upwardly from the housing to open the outlet to said cutter, and to a lowered position to block material from passing through said outlet to said cutter,
(c) latch means on said housing for releasably holding the stop gate in the elevated position therefor,
(d) a mechanism on said housing for releasing said latch means to drop the stop gate to the lowered position therefor including an operating lever,
(e) a lever system mounted on said housing for actuating said operating lever,
(f) gate detachable means for manually raising said stop gate to the elevated position therefor to provide for a free fall of the stop gate to the lowered position therefor, and
(g) power means complementing said free fall to forcibly urge the stop gate to said lowered position concurrently with the release of said latch means.

4,442,878
HAND-HELD POWER TOOL WITH A MECHANISM

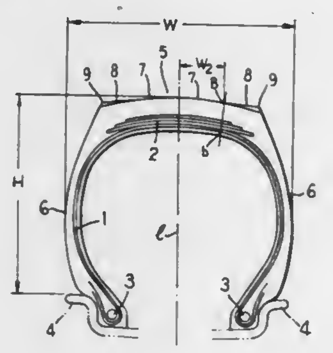
Seki Moriguchi; Katsuo Koizumi, and Sueji Nagayama, all of Katsuta, Japan, assignors to Hitachi Koki Company, Limited, Tokyo, Japan
Filed Aug. 4, 1981, Ser. No. 289,898
Claims priority, application Japan, Aug. 5, 1980, 55-107415
Int. Cl.³ B27C ***1/10***
U.S. Cl. 145—4 **13 Claims**

1. A hand-held power tool with a mechanism for straight forwarding, comprising:
(a) a body having at least one slide base arranged to be positioned on and contact a surface of a work piece to be machined, a blade, a blade driving mechanism, and a housing containing therein said blade and said blade driving mechanism; and

(b) a mechanism attached to said body for producing a high degree of friction with respect to the surface of said work piece when said body tends to travel in a direction other than a given direction on the surface of said work piece, said mechanism having a friction member arranged to contact said work piece, and biasing means connected between said body and said friction member such that a portion of said friction member projects outside beyond said slide base when said slide base is not in contact with the surface of said work piece, said friction member being depressed upwardly when said slide base is placed on the surface of said work piece, said biasing means being sufficiently elastic so that said friction member is pressed into contact with the surface of said work piece when said slide base is placed on the surface of in contact with said work piece.



4,442,879
IRREGULAR WEAR-RESISTANT RADIAL PLY TIRE
Yukihisa Uemura, Nara, Japan, assignor to The Toyo Rubber Industry Co., Ltd., Osaka, Japan
Continuation of Ser. No. 190,789, filed as PCT JP 79/00135, May 29, 1979, published as WO 80/00015, Jan. 10, 1980, § 102(e) Jan. 18, 1980, abandoned. This application Apr. 29, 1982, Ser. No. 372,852
Claims priority, application Japan, Jun. 7, 1978, 53-69209
Int. Cl.^{3} B60C *11/04, 13/00*
U.S. Cl. 152—209 R **2 Claims**



1. In a radial ply tire having irregular wear resistance comprising a tread portion that consists of central zones extending on both sides of the mid-circumferential line of the tire and near-shoulder zones extending laterally outwardly from said central zones to a lateral shoulder, said near-shoulder zones each being formed with a thickened rubber portion progressively increasing in thickness toward said shoulder, said near-shoulder zones, in the mold-in shape, having a larger radius of curvature (R_2) than that (R_1) of said central zones, the improvement comprising wherein said central zones each are within a straight distance of W_2 measured from said mid-circumferential line of said tire on both sides thereof, said distance W_2 being expressed as follows:

$$W_2 = W/2 - 0.365H$$

wherein W and H are, respectively, a section width and a section height outward of a rim flange of said tire when inflated to a prescribed air pressure, wherein only said control zones are provided with circumferential continuous grooves and said near-shoulder zones are free of continuous grooves; and wherein the mold-in shape of said central zone consists of a curved surface at said radius R_1 to said distance of W_2 from said mid-circumferential line of said tire and a curved surface at said radius R_2 over said near-shoulder zones from said lateral edges of said central zone to a lateral boundary of said near-shoulder zones, said near-shoulder zones being such that the spacing (d) between a position (C) thereon located at a distance of W_1 from said mid-circumferential line of said tire and a position (A) also located at the distance of W_1 from said mid-circumferential line but on an imaginary curved surface extrapolated from said radius of curvature R_1 is represented by the range:

$$0.4\times10^{-2}H \geqq d \geqq 1.5\times10^{-2}$$

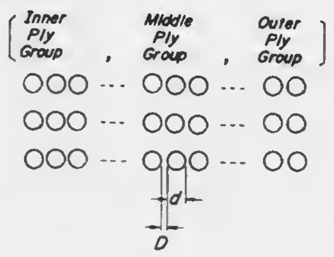
and wherein:

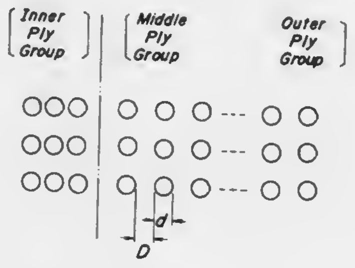
$$W_1 = W/2 - 0.2H$$

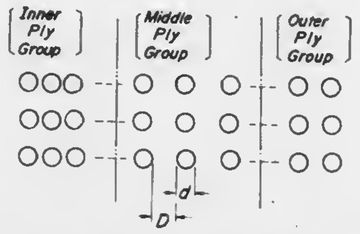
W and H being the same as defined above; and

wherein said tread portion has a curved surface that assumes a single radius of curvature from said central zone to said near-shoulder zone upon inflation.

4,442,880
HEAVY DUTY PNEUMATIC TIRES
Masanobu Takahashi, Iruma, Japan, assignor to Bridgestone Tire Company, Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 318,494, Nov. 5, 1981, abandoned. This application Apr. 13, 1983, Ser. No. 483,208
Claims priority, application Japan, Nov. 12, 1980, 55-158098; Feb. 16, 1981, 56-20222
Int. Cl.^{3} B60C *9/06*
U.S. Cl. 152—356 R **2 Claims**

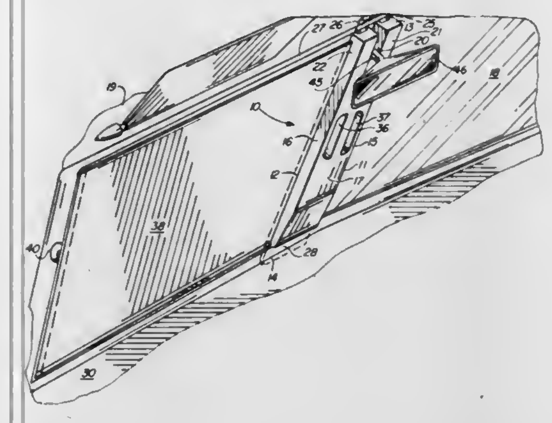






1. A heavy duty pneumatic tire comprising a carcass of a bias structure composed of a least 12 rubberized laminated ply layers each containing organic fiber cords embedded therein, and divided into three groups, an inner group, a middle group and an outer ply group by three bead cores, the cords in said inner, middle and outer ply groups having the same diameter, said cords crossed with each other as a reinforcement for a toroidal casing inclusive of a tread, wherein in a region extending from an upper area of a bead portion of said casing within a range of 0.15 to 0.45 times a tire height as measured from a bead base of the tire, at least an average cord distance between adjacent ply layers at said middle and outer ply groups is made substantially wider than at said inner ply group and, a cord distance between adjacent ply layers at said outer ply group is substantially equal to that at said middle ply group and is within a range of 0.6 to 3.5 times a diameter of said cord used in the outer portion of the toroidal casing.

4,442,881
VEHICLE WINDSHIELD PROTECTIVE CURTAIN
Don Monteath, and Thomas B. Wilson, Jr., both of 3405 N. Dakota, Chandler, Ariz. 85224
Filed Aug. 5, 1982, Ser. No. 405,502
Int. Cl.^{3} E06B *9/08;* **B60J** *3/00*
U.S. Cl. 160—25 **1 Claim**



1. A protective device for vehicle windshields comprising:

a unitary housing having sides, ends and a front,

one of said ends being bifurcated to form a pair of spaced protrusions for receiving therebetween when mounted adjacent the windshield the bracket of a rear view mirror of the vehicle,

each of said protrusions having a spring biased tab extending outwardly thereof,

a third tab mounted to extend outwardly of the other end of said housing,

a pair of roller curtains journaled in said housing to extend longitudinally thereof,

an upper end of each of said roller curtains being mounted, one within each of said protrusions of said housing,

the leading edge of said curtains extending out of opposite sides of said housing for withdrawal of at least a part of said curtains from said housing,

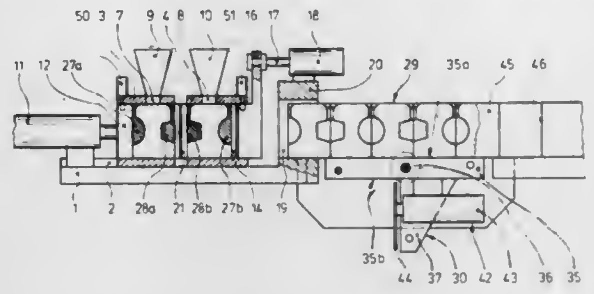
means attached to the leading edge of each of said curtains for detachably securing said curtains in their extended positions to the sides of the vehicle adjacent to the windshield, and

spaced finger gripping indentations formed in the front of said housing for use when mounting and removing the device from the windshield of a vehicle,

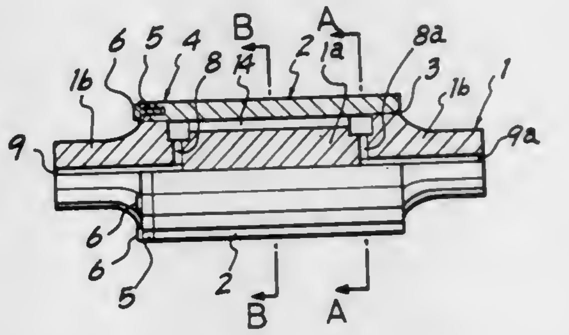
whereby when said protective device is placed adjacent the windshield of a vehicle interiorly thereof and the third tab is inserted between the window and dash board of a vehicle and the tab on each of said protrusions is retracted against its biasing means and then released to extend between the top of the windshield and its molding, the housing is firmly held in place juxtapositioned to the windshield.

4,442,882
MACHINE FOR PRODUCING FLASKLESS MOLDS
Michael Achinger, Bgm. Ebnerstr. 20, 8904 Friedberg-Stätzling; Walter Streitenberger, Friedberg-Derching; Otto K. H. Voigt, and Hans Wolter, both of Augsburg, all of Fed. Rep. of Germany, assignors to Michael Achinger, Friedberg-Statzling, Fed. Rep. of Germany
Filed Sep. 4, 1981, Ser. No. 299,278
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1980, 3033652; Sep. 19, 1980, 3035335
Int. Cl.^{3} B22D *15/08*
U.S. Cl. 164—187 **17 Claims**

1. A machine for producing flaskless molds having a first molding box open at both sides and a horizontally extending center line passing through the open sides, one open side of which is closable by a horizontally operating pressure piston and the opposite open side is closable by an outwardly pivotable pressing device, and in which one half of a pattern is secured to each of the pressure piston and the pressing device oriented toward one another, a stacking device onto which a completed, pressed mold body, after outward pivoting of the pressing device, is pressed horizontally all the way through the first molding box with the aid of the pressure piston, characterized in that at least one further molding box open at both sides is disposed in alignment with the first molding box between the pressure piston and the pressing device, all the molding boxes are displaceable along the center line of the molding boxes in a common, horizontal guideway, located in the direction of pressure and discharge, and that between each two adjacent molding boxes a pattern carrier plate is provided, the number of which is equal to the number of the molding box seams, whose cross section in a direction perpendicular to the center line corresponds to the inside cross section of the molding boxes so that said pattern carrier plate can enter into said molding boxes, each pattern carrier plate being displaceable along said center line in the pressure and discharge direction, and each carrier plate being constructed and arranged to be extracted from between the molding boxes when taken apart.



4,442,883
ROLL FOR CONTINUOUS CASTING
Yoshiaki Yamakami, Toyonaka, and Arata Yoshimitsu, Katano, both of Japan, assignors to Kubota Ltd., Osaka, Japan
Filed Mar. 9, 1982, Ser. No. 356,529
Claims priority, application Japan, Apr. 13, 1981, 56-53717[U]
Int. Cl.^{3} B22D *11/128*
U.S. Cl. 164—448 **10 Claims**

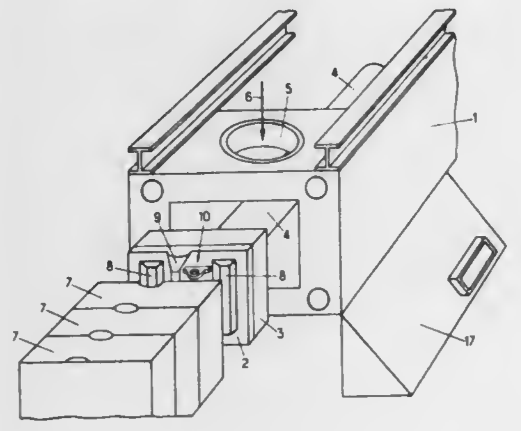


1. A roll for continuous casting comprising a roll body having a cooling water bore coaxially therewith, and a sleeve fitted around the roll body and having one end fixed to the roll body and the other end as a free end, the roll body having a trunk portion and a shaft portion at each end of the trunk portion, a plurality of cooling water channels being provided between the trunk portion and the sleeve and extending in parallel over at least ½ the length of the sleeve axially thereof, the water channels having opposite ends in communication with the cooling water bore, the sleeve being fitted around the roll body by a shrink fit with interference values of 0.07/1000 to 3.70/1000 on one side thereof toward the fixed end and 0 to 1.50/1000 on the other side thereof toward the free end based on the outside diameter of the trunk portion, the interference value on the side toward the free end within said range being smaller than the interference value on the side toward the fixed end at all times to permit free thermal deformation of the sleeve toward the free end.

4,442,884

PROCESS AND APPARATUS FOR AUTOMATIC AND CONTINUOUS MEASUREMENT OF THE SHEARING RESISTANCE OF GREEN SAND USED IN MODERN MOLDING MACHINES

Robert Kunsch, Rueil Malmaison, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France
Filed Sep. 13, 1982, Ser. No. 416,967
Claims priority, application France, Sep. 11, 1981, 81 17244
Int. Cl.^{3} B22D *46/00;* **B22C** *15/02, 19/00*
U.S. Cl. 164—456 **6 Claims**



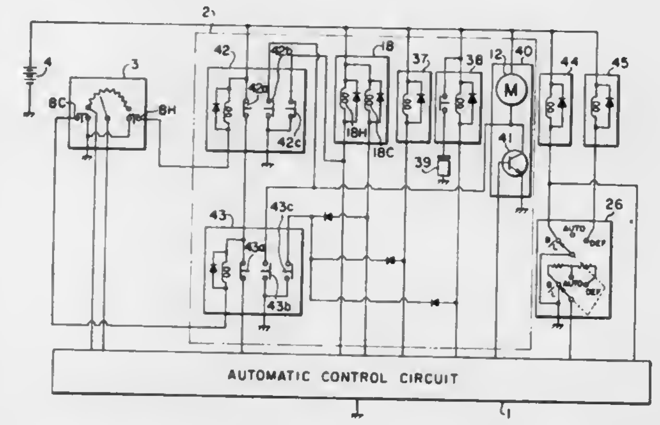
1. A process for automatically measuring the shearing resistance of green sand used in a repetitive sand molding process, comprising the steps of:
introducing green sand in a first direction between opposing pattern plates of a mold press;
positioning a measuring ring on the pattern face of one of said pattern plates, said ring including a central opening and stress gauges fixed to sections of said ring, said sections being narrower than the remainder of said ring;
electrically connecting said stress gauges to electronic means for determining stresses measured by said rings;
forming a sand block in said mold press, the sand block including a sand cylinder formed in said central opening of said ring;
separating said pattern plates from the sand block to shear the cylinder from the block; and
using said electronic means to determine the shearing resistance of said sand cylinder.

4,442,885

CONTROL SYSTEM FOR AIR CONDITIONER OF MOTOR VEHICLE

Yoshitomi Matsuzaki, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan
Filed Mar. 12, 1982, Ser. No. 357,480
Claims priority, application Japan, Mar. 14, 1981, 56-35973
Int. Cl.^{3} F25B *29/00;* **H01C** *10/36*
U.S. Cl. 165—25 **4 Claims**

1. A control system for an air conditioner of a motor vehicle, comprising:
automatic control circuit means operative to enable said air conditioner to operate within a range of desired levels of heating or cooling performance thereof;
emergency circuit means operative to enable said air conditioner to operate only at the maximum level of heating or cooling performance thereof, said emergency circuit means including first and second normally closed contact means through which power is supplied to said automatic control circuit means; and
switch means connected to said automatic control circuit means and said emergency circuit means, said switch means including:
first and second fixed contact means provided in spaced relationship with each other in a first plane and electrically connected to said first and second normally closed contact means of said emergency circuit means;
third fixed elongate contact means provided intermediate between said first and second fixed contact means in a second plane disposed in substantially parallel spaced relationship with said first plane, said third fixed elongate contact means being electrically connected to said automatic control circuit means;
movable contact means carried on a rotary shaft which is spring-biased in the axial direction thereof, so that said movable contact means is normally disposed in slidable contact with said third fixed contact means, said movable contact means being arranged to be rotated with said rotary shaft about the axis of said rotary shaft so as to be selectively disposed into engagement with one of said first, second and third fixed contact means, said movable contact means being also arranged to be displaceable with said rotary shaft against said spring-bias in the axial direction of said rotary shaft; and
means provided between said first and second planes for blocking further rotation of said movable contact means beyond either end of said third fixed elongate contact means unless said movable contact means is displaced against said spring-bias, thereby preventing said movable contact means from being unintentionally brought into engagement with either one of said first and second fixed contact means;
wherein when said movable contact means is disposed in engagement with said third fixed contact means, said automatic control circuit means is energized to enable said air conditioner to operate within said desired levels of the heating or cooling performance thereof, while said emergency circuit means is deenergized; and
wherein when said movable contact means is disposed into engagement with either one of said first and second fixed contact means while being displaced against said spring-bias, the associated one of said first and second normally closed contact means of said emergency circuit means is opened to interrupt the power supply to said automatic control circuit means so that the latter is deenergized, while said emergency circuit means is energized to enable said air conditioner to operate at the maximum level of heating or cooling performance thereof.

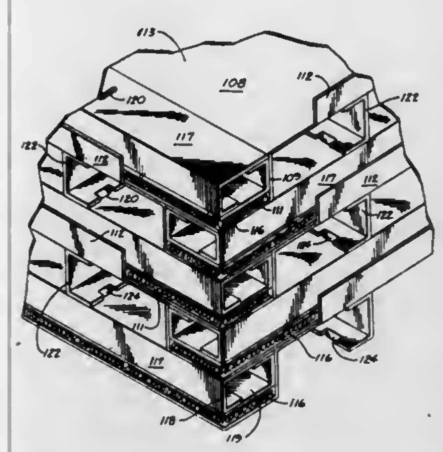


4,442,886

FLOATING PLATE HEAT EXCHANGER

Horia A. Dinulescu, Minneapolis, Minn., assignor to North Atlantic Technologies, Inc., Bloomington, Minn.
Continuation-in-part of Ser. No. 369,279, Apr. 19, 1982. This application Apr. 6, 1983, Ser. No. 480,391
Int. Cl.^{3} F28F *3/10*
U.S. Cl. 165—76 **29 Claims**

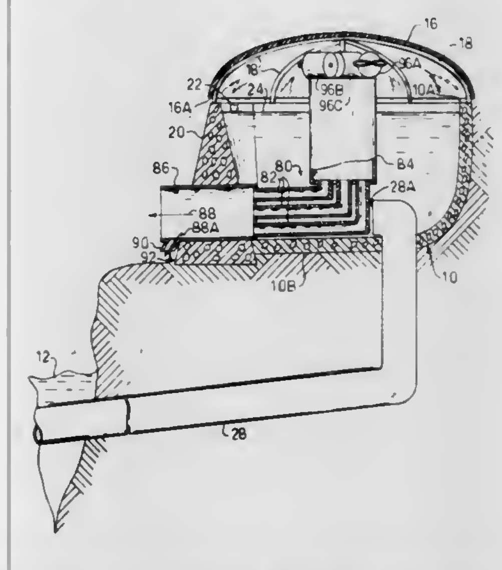
1. A heat exchanger plate block providing alternating crossflow channels for heat exchange between two fluid streams and comprising a stack of consecutive, spaced, parallel, generally rectangular plates mounted within an enclosing frame having generally rectangular end walls parallel to the plates and corner posts extending between and joining corners of the end walls, characterized by including resilient separators between said plates to render the stack of plates resiliently compressible as a unit in a direction normal to the planes of the plates, each separator having an elongated, generally flat, resilient spacer elastically compressible through its thickness and in operative contact with a plate, and a rigid spacer between and in operative contact with the resilient spacer and the next consecutive plate.



4,442,887

APPARATUS FOR HARNESSING WAVE MOTION AND SOLAR ENERGY AND CORIOLIS ACCELERATION OF NATURE FOR SOLAR DISTILLATION USE

Max F. Anderson, R.R. #1, Stewardson, Ill. 62463
Filed Jul. 2, 1979, Ser. No. 53,828
Int. Cl.^{3} F24J *3/02*
U.S. Cl. 165—85 **8 Claims**

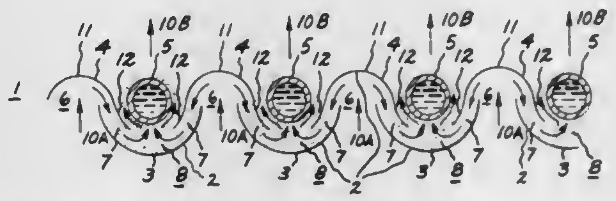


1. In a system for obtaining air movement, the combination comprising,
a basin of water,
a solar energy-transmitting cover over said basin for heating water contained therein,
air inlet means for providing air from a location outside said system to a location beneath said cover above the surface of water in the basin,
surface type heat exchange means adjacent the bottom of said basin for cooling air passing therethrough by cooling water pumped thereto,
vertically extending air inlet passage means having an upper end terminating above the surface of the water beneath said cover in a source of air to be cooled and a lower end connected to said heat exchange means for supplying air thereto, said air inlet passage means providing communication between said heat exchange means and air source beneath said cover above the surface of the water in the basin,
air outlet passage means for the heat exchange means extending downwardly therefrom for unpumped gravity flow of cooled air downwardly through said heat exchange means from said air inlet passage means to a location outside said basin, and
wind-operated means under the cover for operation by air flowing therebeneath.

4,442,888

FLUIDIZED PARTICLE TRAY HEAT EXCHANGER

Masayoshi Kuwata, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Oct. 26, 1981, Ser. No. 314,817
Int. Cl.^{3} F28D *13/00*
U.S. Cl. 165—104.16 **6 Claims**



1. A heat exchanger system comprising:
(a) a housing;
(b) means for introducing a gas into said housing;
(c) means for removing said gas from said housing;
(d) a stage in gas flow communication with the gas introduction and removing means comprising:
(1) at least one fluidization tray unit disposed within said housing, said fluidization tray unit including at least a pair of elongated fluidization trays having upturned sides, each tray containing a shallow bed of particulate matter and being laterally disposed and spaced from each other to form a gas passage therebetween having an input in gas flow communication with said gas introduction means and an output, and an elongated fluidization tray cap disposed on said output side of said gas passage covering said upturned sides and spaced from said elongated fluidization trays to form a gas communication path between said output side of said gas passage and the volume bounded by said upturned sides; and
(2) heat transfer means for heat extraction disposed upwardly spaced, respectively, from each of said at least a pair of trays and spaced from said fluidization tray cap such that each of said heat transfer means is in heat flow communication with and immersed in the respective shallow bed of particulate matter only when the bed is fluidized, whereby only one heat transfer means is associated with each respective tray; and
(e) means for fluidizing each shallow bed of particles.

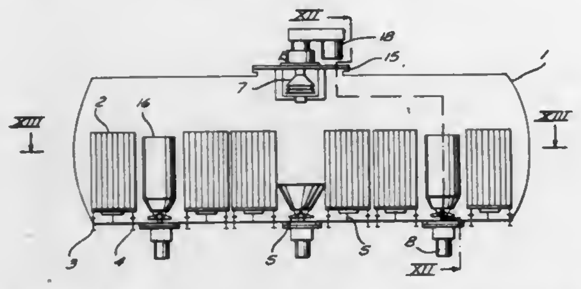
4,442,889

APPARATUS FOR COMBINED COOLING AND AERATION OF BIOCHEMICAL-ACTION VESSELS

Hans Müller, Im Almendli, Erlenbach/Zurich, Switzerland
Continuation of Ser. No. 966,132, Dec. 1, 1978, abandoned, which is a division of Ser. No. 837,706, Sep. 29, 1977, abandoned, which is a division of Ser. No. 559,362, Mar. 17, 1975, Pat. No. 4,073,696. This application May 22, 1981, Ser. No. 266,341
Claims priority, application Switzerland, Mar. 18, 1974, 3808/74; Sep. 10, 1974, 12389/74
Int. Cl.^{3} F28F *13/12*
U.S. Cl. 165—109 R **5 Claims**

1. An apparatus for cooling and aerating a substrate in a fermentation process, comprising a substantially cylindrical container elongated in a substantially horizontal direction and accommodating the substrate to be cooled and aerated; a plurality of heat-exchange sections located in said container and each including a number of parallel passages; means for advancing the substrate in said container in the direction of said passages; means for supplying gaseous aerating medium into

said passages to be entrained by the substrate advancing through the passages; and said heat-exchange sections encircling said advancing means to provide a uniform aerating and cooling of the substrate through said elongated container.



4,442,890

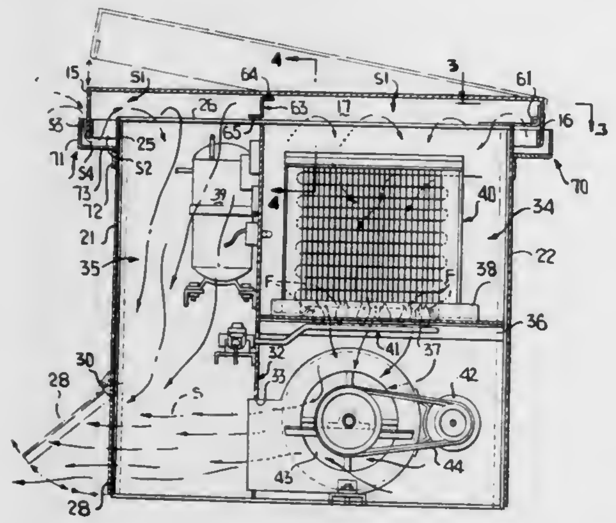
HEAT EXCHANGER HOUSING WITH FAN OPERATED DOOR

Gerry Vandervaart, Niagara Falls, Canada, assignor to Kool-Fire Limited, Niagara Falls, Canada

Filed Jun. 3, 1981, Ser. No. 269,946

Int. Cl.³ F28F *9/22*

U.S. Cl. 165—124 **28 Claims**



1. A housing for a heat exchanger comprising a generally upstanding peripheral wall, partition means for setting off a pair of chambers within said housing, first means for admitting ambient air from the exterior of said housing into a first of said pair of chambers, second means for admitting air from a second of said pair of chambers to the exterior of said housing, third means for admitting ambient air from the exterior of said housing into said second chamber, means for normally closing said second air admitting means, and means for creating air flow along first and second flow paths in said respective first and second chambers and conducting air along said first flow path from said first chamber into said second chamber and thereafter directing the air toward said closing means to open said closing means and maintaining it opened under the combined effects of the air flow of both flow paths to effectively discharge air of both flow paths from said second chamber through said second air admitting means to atmosphere.

4,442,891

CUTTERS

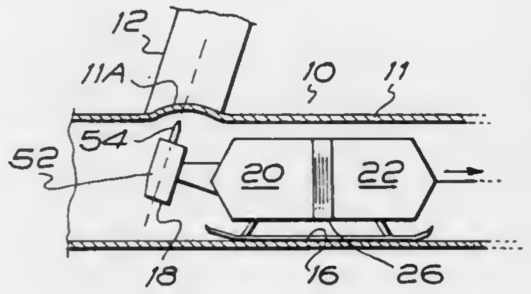
Eric Wood, Northants, England, assignor to Insituform International N.V., Netherlands Antilles

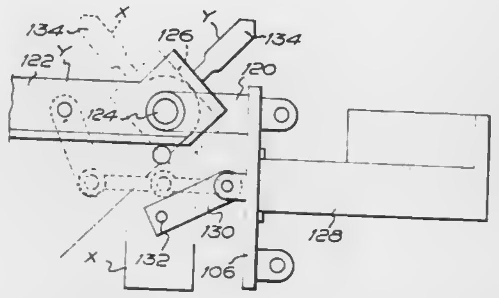
Filed Mar. 1, 1982, Ser. No. 353,178

Int. Cl.³ E03F *3/06*

U.S. Cl. 166—55.2 **5 Claims**

1. A cutting device, especially but not exclusively for cutting apertures in the lining of an underground pipeline or passageway, wherein said device is adapted to be located in the pipeline or passageway and includes a powered cutter bit having an axis of operation which is transverse to the pipeline or passageway axis when the cutter device is positioned therein, and cutter bit mounting means enabling the cutter bit to move bodily in an orbital path while keeping approximately the same angular relationship between the axis of operation of the cutter bit and the axis of a side connection or lateral where it meets the main pipeline or passageway and including adjustment means for adjusting the angle between the cutter bit axis and the axis of the pipeline or passageway.





4,442,892

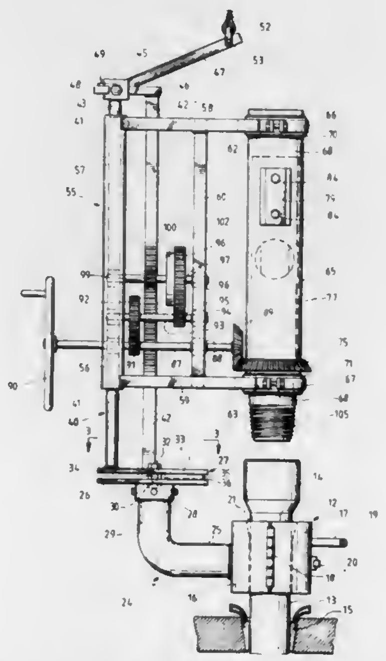
APPARATUS FOR STABBING AND THREADING A SAFETY VALVE INTO A WELL PIPE

Domenico Delesandri, 3319 Delesandri, P.O. Box 428, League City, Tex. 77573

Filed Aug. 16, 1982, Ser. No. 408,443

Int. Cl.³ E21B *19/16*

U.S. Cl. 166—85 **17 Claims**



1. Apparatus for use in shutting off upward flow from a conduit extending into a well, said conduit having a threaded joint at its upper end, comprising: clamp means adapted to be removably attached to said conduit adjacent and below said threaded joint; bracket means on said clamp means including a swivel base defining a vertical pivot axis that is laterally offset from and parallel to the longitudinal axis of said clamp means; an upstanding frame assembly pivotally mounted on said swivel base; carriage means slidably mounted on said frame assembly and movable vertically with respect thereto, tubular canister means rotatably mounted on said carriage means and adapted to house a flow control device, said carriage means, frame assembly and canister being arranged to be pivoted about said vertical pivot axis between a first position where said canister is misaligned with said conduit and a second position where the longitudinal axis of said canister is aligned with the longitudinal axes of said clamp means and conduit; and drive means for simultaneously rotating said canister and lowering the same toward said clamp means to automatically thread a flow control device into the threaded joint of said conduit, whereby the flow control device can be actuated to shut off upward flow through the conduit.

4,442,893

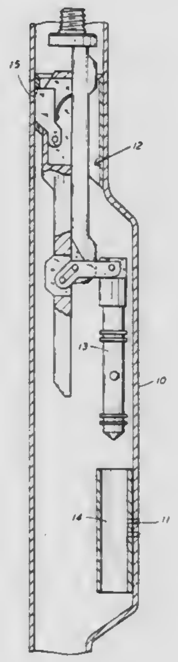
KICKOVER TOOL

Tommy C. Foust, Watauga, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Feb. 17, 1982, Ser. No. 349,441

Int. Cl.³ E21B *23/02*

U.S. Cl. 166—117.5 **15 Claims**



1. A kickover tool comprising,

an elongate body having a flat side and connector at its upper end,

an elongate actuator having a flat side and locator key at its upper end,

means slidably interconnecting the flat sides of said body and actuator in confronting relationship,

an arm pivoted to one of said body and actuator adjacent its lower end,

said arm having a support section,

a tool carrier pivoted to the free end of said support section of said arm,

means between said arm and the other of said body and actuator moving said arm between a position substantially coaxial with said body and a position transverse thereof, and

means releasably latching said body and actuator together in a first position with said support section extending substantially aligned with said body and in a second position with said support section extending transverse of said body.

4,442,894

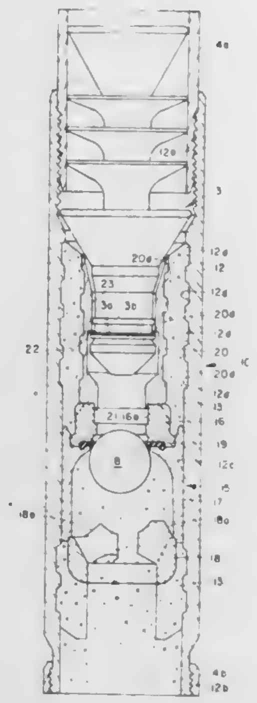
UNITARY FLOAT VALVE AND WIPING PLUG RETAINER

Rudy B. Callihan, San Antonio, and Clyde Wainwright, McQueeney, both of Tex., assignors to Baker Oil Tools, Inc., Orange, Calif.

Filed Jun. 7, 1982, Ser. No. 385,615

Int. Cl.³ E21B *33/14*

U.S. Cl. 166—156 **2 Claims**



1. A drillable cementing float valve for subterranean wells comprising: a tubular housing; means on at least one end of said housing for connection of a well conduit; a unidirectional flow valve unit having an annular housing assemblage including a cylindrical portion snugly fitting within the bore of said tubular housing and operable to permit only downward flow of cementing fluid; a sleeve mounted in said tubular housing above said valve unit; said sleeve having a depending annular flange extending into the bore of said annular housing assemblage and engagable therewith to maintain the concentricity of the sleeve with the axis of said tubular housing; means in said sleeve defining a downwardly facing, latching shoulder; and means for rigidly securing said valve unit and said sleeve within said tubular housing, whereby a conduit wiping plug may be sealingly latched to said downwardly facing latching shoulder to resist movement in one direction, said wiping plug being sealingly engaged with the bore of said sleeve.

4,442,895

METHOD OF HYDROFRACTURE IN UNDERGROUND FORMATIONS

Peter L. Lagus, Olivenhain, and Edward W. Peterson, Del Mar, both of Calif., assignors to S-Cubed, La Jolla, Calif.

Filed Sep. 7, 1982, Ser. No. 415,538

Int. Cl.³ E21B *47/06, 47/10, 49/00*

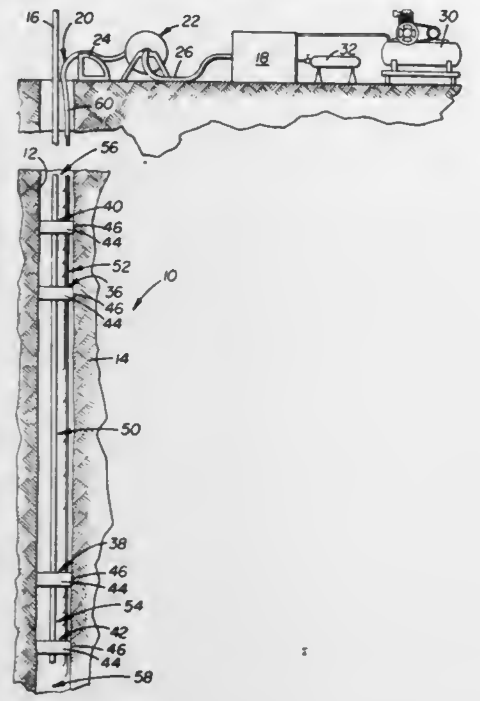
U.S. Cl. 166—250 **10 Claims**

1. In a method for causing hydrofracture in an underground formation having a borehole extending therethrough and/or thereinto, the steps comprising

defining an isolated test interval along the borehole with at least one primary packer,

defining at least one isolated guard region at one end of the test interval with a guard packer spaced apart from the one primary packer,

filling the test interval with a selected fluid and increasing



pressure within the test interval to a level for initiating fracture of the formation surrounding the borehole, and simultaneously and separately monitoring selected conditions such as pressure and/or flow in the test interval and guard region.

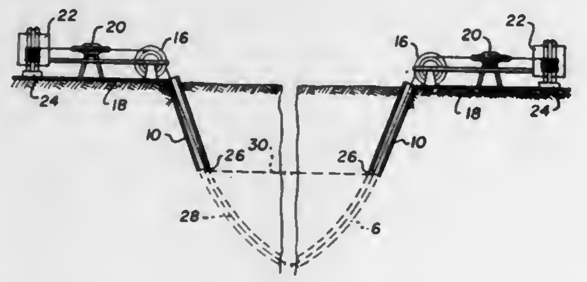
4,442,896
TREATMENT OF UNDERGROUND BEDS

Lucio V. Reale, 1371 Lake Ontario Dr., SE., Lake Bonavista, Clagary, Calberta, Canada, and William R. McKay, 2700 Carlton St., SW., Calgary, Alberta, Canada

Filed Jul. 21, 1982, Ser. No. 400,323

Int. Cl.^{3} E21B *43/04;* E21C *25/54*

U.S. Cl. 166—278 **9 Claims**



1. A method of preparing an underground bed for treatment that comprises:

forming a channel in the bed with a drill having an attached drill string and detachably securing a cutting device to the drill string, such that said cutting device is inserted while forming the channel, the channel extending from the ground at a first point, down through the bed to a predetermined depth and up to the ground at a second point;

operating the cutting device to form a pathway in a substantially vertical plane.

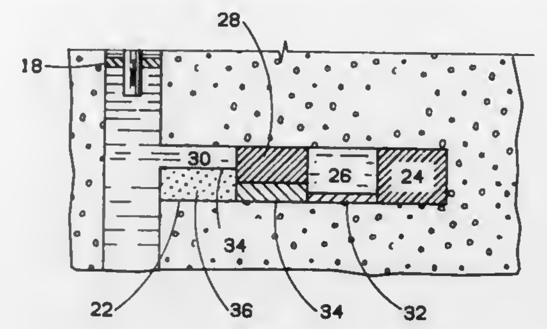
4,442,897
FORMATION FRACTURING METHOD

Ronald F. Crowell, Jenks, Okla., assignor to Standard Oil Company, Chicago, Ill.

Continuation of Ser. No. 152,938, May 23, 1980, abandoned. This application May 13, 1982, Ser. No. 377,657

Int. Cl.^{3} E21B *43/267*

U.S. Cl. 166—280 **4 Claims**



1. The method of extending a fracture in a subterranean formation, comprising injecting into a fracture in the formation through a wellbore an oil-in-water emulsion fluid at a sufficient pressure and rate to extend the fracture in said formation, followed by injecting into the fracture a cross-linked polymer gel containing a quantity of propping agents therein at a sufficient pressure and rate to extend the fracture into the formation so that said fracture is lengthened and the propping agent is carried into said formation, and shutting in the wellbore.

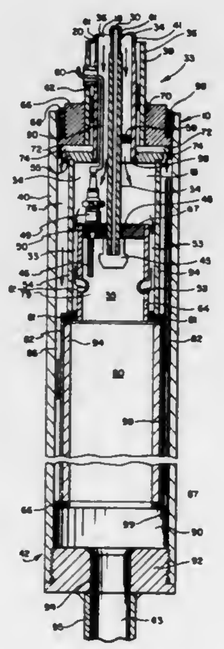
4,442,898
DOWNHOLE VAPOR GENERATOR

William G. Wyatt, Arlington, Tex., assignor to Trans-Texas Energy, Inc., Dallas, Tex.

Filed Feb. 17, 1982, Ser. No. 349,208

Int. Cl.^{3} E21B *36/02, 43/24*

U.S. Cl. 166—303 **23 Claims**



1. A method of generating steam within a well bore with a vapor generator disposed therein of the type having a combustion chamber for heating water and the gases present in the water to produce steam and hot gases for injection into a formation adjacent the well bore, said method comprising the steps of:

delivering a combustible fuel, oxidant, and water to the vapor generator within the well bore;

mixing the fuel and oxidant within the combustion chamber of the vapor generator;

igniting the fuel and oxidant mixture within the combustion chamber and sustaining combustion therein for generating radiant heat;

flowing water around the combustion chamber and establishing a water level therein;

absorbing radiant heat from the combustion within the combustion chamber by the water flowing therearound for converting the water into steam;

providing a vent tube longitudinally disposed within the water around said combustion chamber substantially along the length thereof and disposing one end of said vent tube above said established water level;

venting gases and steam emitted by the water while being heated around said combustion chamber through said vent tube;

discharging the steam formed from the heated water and the gases emitted by the water into a mixing region beneath the combustion occurring within the combustion chamber; and

exhausting the steam and gas mixture from the vapor generator into the well bore formation.

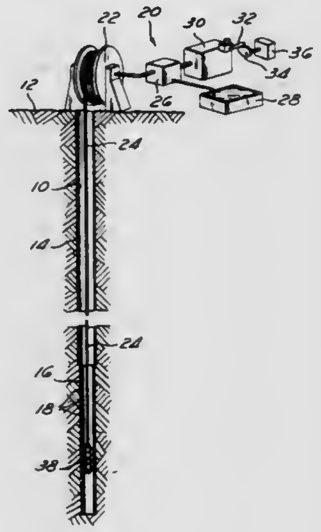
4,442,899
HYDRAULIC JET WELL CLEANING ASSEMBLY USING A NON-ROTATING TUBING STRING

Casper W. Zublin, Bakersfield, Calif., assignor to Downhole Services, Inc., Bakersfield, Calif.

Filed Jan. 6, 1982, Ser. No. 337,371

Int. Cl.^{3} E21B *37/00;* B08B *9/02*

U.S. Cl. 166—312 **16 Claims**



1. A system for washing pipes, comprising:

a non-rotating tubing string;

a jet carrier attached to said string having a generally tubular body with a hollow center which provides a path for a fluid, said body having a central axis;

nozzles mounted to said carrier body;

means for supplying fluid under pressure to said nozzles, each of said nozzles being adapted to expel said fluid against said pipe with a force against the pipe, said force having an equal and opposite reactive force, one or more of said nozzles being mounted in said carrier body such that said reactive force is directionally offset from said carrier axis creating a twisting moment about said axis tending to rotate said carrier about said axis;

means for vertically moving said carrier along the length of said pipe; and

means for alternating said pressure to oscillate said carrier as it moves vertically along said pipe to clean said pipe.

4,442,900
SUBSEA WELL COMPLETION SYSTEM

Joseph R. Padilla, Houston; Emmett M. Richardson, Duncanville, and Angelos T. Chatas, Dallas, all of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 28, 1982, Ser. No. 343,634

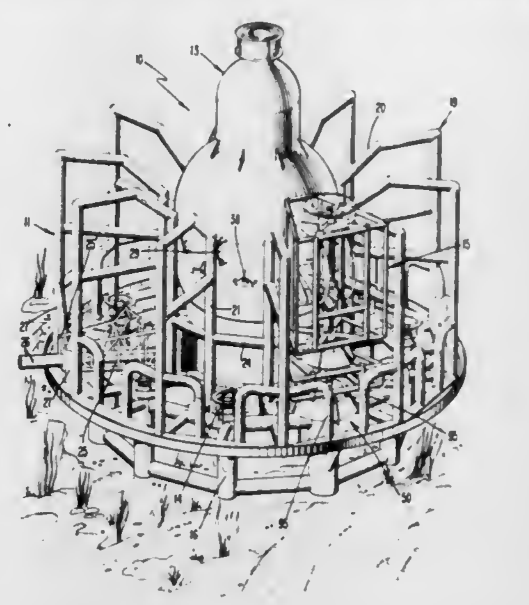
Int. Cl.^{3} E21B *33/043*

U.S. Cl. 166—342 **35 Claims**

1. A subsea well completion system for multiple subsea wells, comprising:

a fluid-tight work enclosure hull containing manifold means, the hull having a plurality of radially-disposed lateral penetration means extending therethrough, the penetration means being operatively connected to the manifold means; and

a base template lowered to the marine floor in a substantially horizontal position and having a lower support structure for supporting the work enclosure hull, the template further having an upper guidance structure comprising a plurality of substantially vertical guide members mounted in spaced radial array, each guide member extending inwardly toward the center of the template, forming an opening at the central portion of the template for receiving the work enclosure hull, a portion of the upper peripheral surface of each guide member sloping downwardly towad the opening for guiding the hull as it is lowered during installation of the hull onto the template.



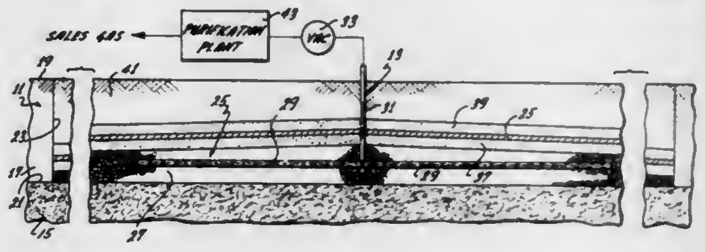
4,442,901
LANDFILL GAS RECOVERY METHOD

Stanley W. Zison, Irvine, Calif., assignor to Getty Synthetic Fuels, Inc., Signal Hill, Calif.

Filed Mar. 8, 1982, Ser. No. 355,478

Int. Cl.^{3} E21B *43/22*

U.S. Cl. 166—369 **31 Claims**



1. A method of collecting landfill gas from a landfill wherein the landfill gas is produced by refuse in the landfill and migrates upwardly toward the upper surface of the landfill, said method comprising:

providing a porous collector near the upper surface of the landfill with the collector including a network of apertured conduits and having a relatively broad collection zone in and generally transverse to the path of the migrating landfill gas;

placing the collector at a pressure so that at least substantial quantities of the landfill gas in said path are induced to flow into the collector;

removing the landfill gas from the collector; and

substantially preventing air from the atmosphere from being drawn into the landfill gas-producing refuse when the collector is collecting landfill gas.

4,442,902

REMOTE HYDRAULIC CONTROL METHOD AND APPARATUS, NOTABLY FOR UNDERWATER VALVES

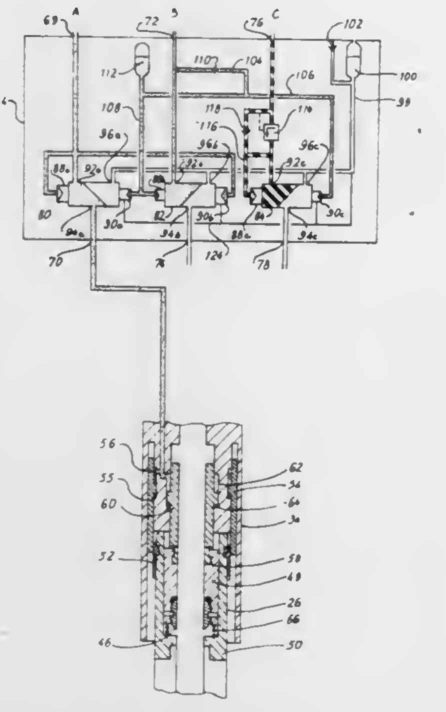
Bernard Doremus, Echouboulains, and Jean-Pierre Muller, Cesson, both of France, assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Oct. 27, 1981, Ser. No. 315,573

Claims priority, application France, Oct. 31, 1980, 80 23656

Int. Cl.^{3} E21B *43/12*

U.S. Cl. 166—374 **7 Claims**



1. A method for the remote hydraulic control of a device coupled to a hydraulic source by at least one flexible line filled with hydraulic fluid, comprising the steps of hydraulically isolating said at least one line from said device; accumulating hydraulic energy in said at least one line by increasing the pressure of said hydraulic fluid to deform said at least one line; and making available the hydraulic energy thus accumulated for rapid control of said device by remotely and controllably establishing hydraulic communication between said at least one line and said device.

4,442,903

SYSTEM FOR INSTALLING CONTINUOUS ANODE IN DEEP BORE HOLE

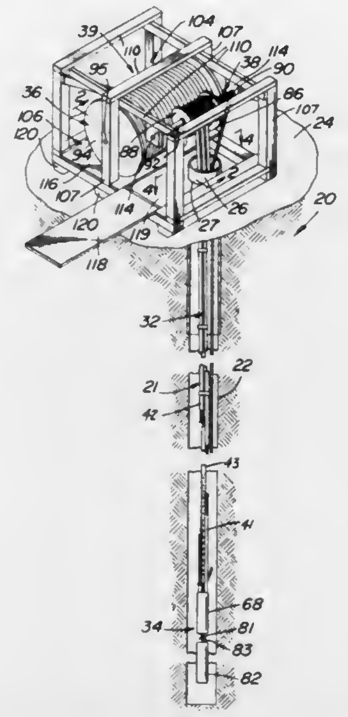
William R. Schutt, R.D. 5, Curley Hill Rd., Doylestown, Pa. 18901, and Stephen R. Booth, 13835 Cherry Hollow La., Houston, Tex. 77082

Filed Jun. 17, 1982, Ser. No. 389,195

Int. Cl.^{3} E21B *19/08*

U.S. Cl. 166—385 **24 Claims**

1. A system for installing an anode assembly for a cathodic protection system in a deep bore hole, said anode assembly having a first end, said system comprising reel means, support means for said reel means to enable a coiled continuous anode and at least one associated coiled component to be unreeled into said bore hole together as a single assembly, and weight means secured to said assembly adjacent its first end for assisting in the carrying of said component and said anode to the bottom of said bore hole.



4,442,904

VEHICLE MOUNTED HOLE FORMING MACHINE

Gustav H. O. Wibom, Skogsvägen 12, S-181 41 Lidingö, Sweden

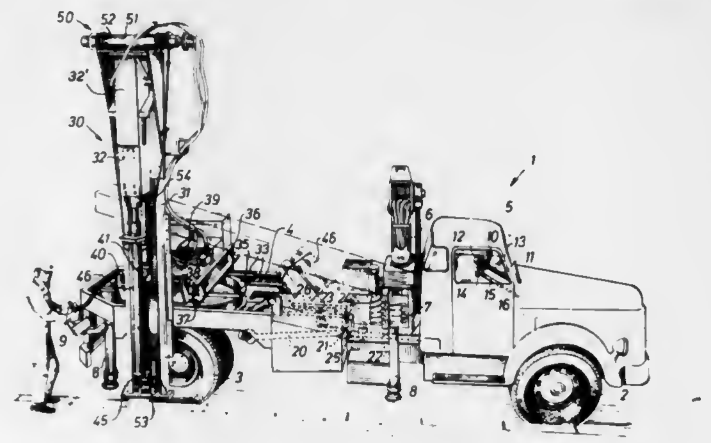
PCT No. PCT/SE79/00244, 371 Date Aug. 1, 1980, 102(e) Date Jul. 24, 1980, PCT Pub. No. WO80/01154, PCT Pub. Date Jun. 12, 1980

PCT Filed Nov. 30, 1979, Ser. No. 204,402

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1978, 7812412

Int. Cl.^{3} E21C *11/02*

U.S. Cl. 173—28 **2 Claims**



1. In a vehicle of the type having a rear floor, a front driving cabin, main drive means for driving the rear wheels of the vehicle, and main steering means for controlling the front wheels of the vehicle, wherein said main drive means and said main steering means are operated from said driving cabin, the improvement comprising a stationary turn plate mounted on said rear floor adjacent the rear end of said vehicle, a pair of parallel spaced apart guide means carried by said turn plate for rotation on said turn plate, slide means mounted for horizontal reciprocating movement in said guide means, a working machine having an elongated support frame, first horizontal pivot means connecting said support frame to said slide means whereby said support frame may be pivoted between a substantially vertical position and a horizontal position overlying said vehicle with the lower end of said support frame directed forwardly of the vehicle, second horizontal pivot means disposed orthogonal to said first horizontal pivot means for pivotally connecting said support frame to said slide means, hammer means arranged to be moved vertically along said support frame, hydraulic means for moving said hammer means, a drift member carried by said hammer means, a casing tube surrounding said drift member, winch means having a line disposed on both sides of said hammer means and connected to said casing tube for lifting said casing tube, and means on said line being arranged to co-act with said hammer means in a manner such that when such hammer means is lifted vertically, said hydraulic means assists in lifting said casing tube, thereby relieving strain on said winch means.

4,442,905

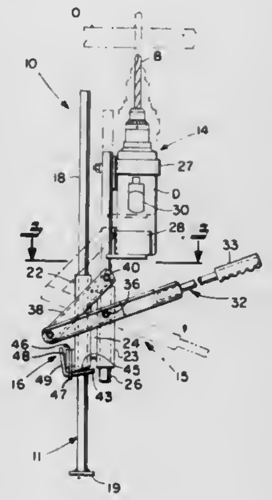
JIG ASSEMBLY FOR DRILLING VERTICALLY UPWARD

Edward E. Agoston, 11535 Dunham Rd., Sagamore Hills, Ohio 44067

Filed Aug. 6, 1981, Ser. No. 290,682

Int. Cl.^{3} E21C *11/00*

U.S. Cl. 173—36 **12 Claims**



1. A portable jig assembly for supporting a power drill and for advancing and retracting the drill towards and away from an overhead workpiece to drill a hole therein, comprising an upright standard, a carriage mounted for vertical movement on said standard, a drill holder mounted on said carriage for vertical movement relative to said carriage, said holder being adapted to support a power drill for movement therewith, feed means on said carriage and cooperative with said holder to advance and retract the holder so that a drill supported by said holder may be caused to drill a hole in the workpiece and thereafter be removed from the workpiece, releasable lock means in cooperative relation with said carriage and standard for preventing downward movement of said carriage on said standard while permitting upward movement of said carriage on said standard whereby said carriage may be selectively positioned on said standard by lifting same and then released to lock same in place, and means for releasing said releasable lock means to permit downward movement of said carriage, said feed means including means cooperative with said means for releasing to effect release of said releasable lock means upon retraction of said drill holder.

4,442,906

PERCUSSIVE DRILLS

Frank F. Simpson, Middlesex, England, assignor to Black & Decker Inc., Newark, Del.

Filed Nov. 17, 1981, Ser. No. 322,389

Claims priority, application United Kingdom, Nov. 18, 1981, 8036916

Int. Cl.^{3} E02D *7/02*

U.S. Cl. 173—48 **13 Claims**

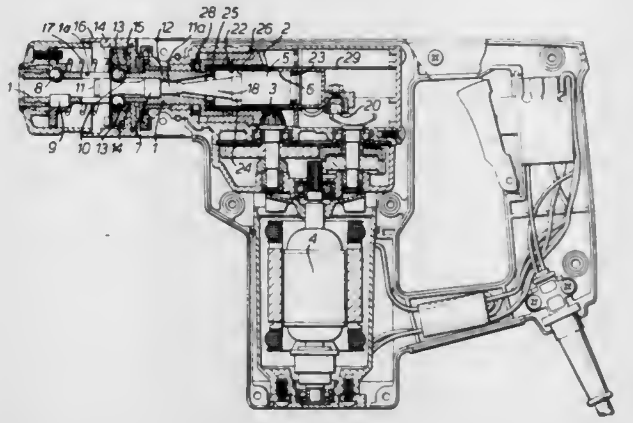
1. A percussive drill, comprising:

a bit holder;

a percussive drive including a ram slidably mounted in a hollow piston;

drive means for reciprocating the ram in the piston via an air cushion formed between said piston and said ram, the forward travel of the ram during percussive action of the drill being limited by a drill bit or an intermediate member interposed between the drill bit and the ram;

a resilient annular hollow-section member for holding the ram, when percussive action is not desired, in a position further forward than the forward travel to which the ram is limited during percussive action;



said resilient annular hollow-section member being entered by the ram as the latter moves to said position further forward and the ram forming a seal with said hollow-section member, the latter also absorbing the energy of an impact by the ram thereagainst; and

said piston having a forward portion of wider internal cross-section than a rear portion of said piston and in which rear portion said ram reciprocates during percussive action of the drill, and said ram being located fully in said forward portion in said position further forward whereby the air cushion between the piston and the ram is vented.

4,442,907

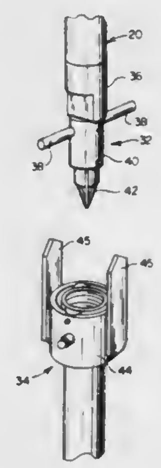
APPARATUS FOR STRINGING WELL PIPE OR CASING

John L. Sexton, R.D. 2, New Concord, Ohio 43762

Filed Aug. 16, 1982, Ser. No. 408,113

Int. Cl.^{3} E21B *19/16*

U.S. Cl. 173—164 **3 Claims**



1. An apparatus for stringing a plurality of threaded pipe to one another in a vertical configuration within a deep well bore comprising, in combination; a conventional well drilling apparatus including a vertically movable platform carrying a rotary drive means; a drive spindle removably mounted to said rotary drive means and including a pair of opposed lugs extending outwardly at right angles to the length of said spindle and a centering guide means at the lower end of said spindle; a friction collar means adapted for removable mounting to a conventional coupling member mounted on the end of a conven-

tional length of pipe, said collar means including a generally cylindrical body portion having an inner diameter larger than the outer diameter of said coupling member, a plurality of adjustable gripping means disposed within said collar means and inwardly movable for frictional engagement with said coupling member, and a pair of ears fixed to the walls of said body and extending vertically beyond the upper portion of said body for cooperative engagement with said lugs on said drive spindle when said centering guide means on said drive spindle is disposed within said coupling member of a length of pipe which is positioned to be added to the pipe string to transfer rotational torque of said rotary drive means to the pipe engaged by said collar means.

4,442,908

TOOL FOR DRILLING CURVED SECTIONS OF WELL HOLES

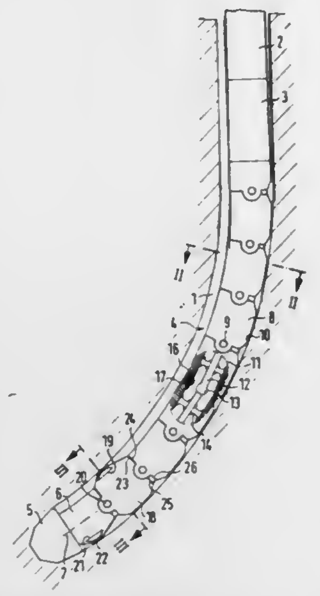
Arno Steenbock, Barsinghausen, Fed. Rep. of Germany, assignor to Preussag Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 8, 1981, Ser. No. 281,334

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1980, 3026559; Mar. 3, 1981, 3107973

Int. Cl.³ E21B *7/08*

U.S. Cl. 175—74 **13 Claims**



1. A drilling tool for drilling curved sections of deep well holes by means of a drill bit operated by a downhole drive disposed at the downhole end of a drill pipe string which is secured against rotation, the angular deviation of the drill bit from the well axis being controlled by said drill pipe string, characterized in that a segment of the drill string is flexible in one plane only and comprises a series of generally-tubular individual link members pivotally connected to each other by means of pins, the next to the last link member of the downhole end of said drill string having a width dimension equal to the diameter of the drill bit, and means on the last link member of the drill string for controlling the pivotal position of said last member with respect to the penultimate member, said last member being located immediately adjacent the drill bit and forming a pivot bearing for said drill bit.

4,442,909

DRILL BIT

Robert P. Radtke, Kingwood, Tex., assignor to Strata Bit Corporation, Houston, Tex.

Filed Sep. 21, 1981, Ser. No. 303,960

Int. Cl.³ E21B *10/46*

U.S. Cl. 175—329 **3 Claims**

1. A drill bit comprising

a drill body having a hollow tubular body adapted to be connected to a drill string,

said drill body having an exterior peripheral stabilizer surface and an end cutting face,

said end cutting face having a plurality of cylindrical recesses spaced therearound in a selected pattern,

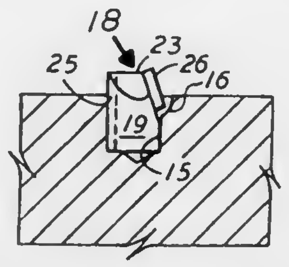
each of said recesses having a milled offset recess at its surface opening edge, of circular curvature in section and intersecting the circumferential edge of said recess for substantially less than 180° of the circumference thereof,

said milled offset recesses each being of circular cross section taken longitudinally of the cutting element recess and circular cross section taken normal thereto,

a plurality of cutting elements, one for each of said recesses, said cutting elements each comprising a cylindrical supporting stud of sintered carbide having an angularly oriented supporting surface with a disc shaped element bonded thereon comprising a sintered carbide disc having a cutting surface comprising polycrystalline diamond,

each of said cutting elements being positioned in one of said recesses by an interference fit with said disc shaped element partially recessed in and having the lower edge thereof continuously abutting the curved surface of said milled offset recess,

said milled offset recesses each being positioned to orient said discs with their cutting surfaces facing the direction of rotation of the bit and being of a size relieving stresses on said supporting studs during cutting operation and resisting twisting movement of said studs.



4,442,910

COMBINATORIAL WEIGHING APPARATUS

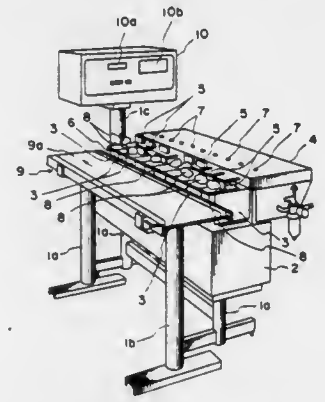
Yoshiharu Mikami, Kyoto, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Apr. 16, 1982, Ser. No. 368,915

Claims priority, application Japan, Apr. 23, 1981, 56-59322[U]

Int. Cl.³ G01G *19/22, 19/00;* **B65G** *25/04*

U.S. Cl. 177—25 **8 Claims**



1. A combinatorial weighing apparatus for combining weight values of articles not suitable for distributive supply respectively manually placed, selecting a combination of the articles having weight equal or closest to a target weight and delivering the selected articles, said apparatus comprising:

a plurality of juxtaposed closely spaced weighing machines each having a bowl for receiving the manually placed articles;

pushing members which can move frontward and backward on the respective closely spaced bowls of the plurality of juxtaposed weighing machines;

a driving unit which selectively moves the pushing members frontward and backward, said pushing members corresponding to the weighing machines with selected batches of the articles placed thereon, said driving unit comprising:

electromagnetic valves, air cylinders coupled to said valves and having piston rods attached to said pushing members which are respectively disposed in correspondence with said weighing machines; and

a driver circuit which drives the electromagnetic valves corresponding to said weighing machines with said selected batches placed thereon, and selected ones of said electromagnetic valves are energized, thereby to extend and contract the piston rods connected to said air cylinders and to move said pushing members frontward and backward; and

a conveyor which is disposed along the juxtaposed weighing machines and which conveys said batches of the articles delivered by said pushing members.

4,442,911

METHOD AND APPARATUS FOR CONTROLLING ZERO ADJUSTMENT OF WEIGHT SENSOR

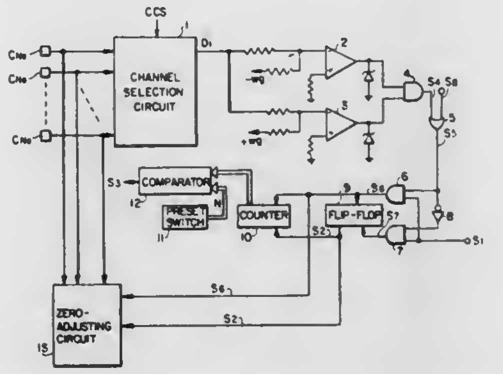
Masao Fukuda, Shiga, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Mar. 12, 1982, Ser. No. 357,755

Claims priority, application Japan, Mar. 14, 1981, 56-37061

Int. Cl.³ G01G *23/14, 19/22, 23/18*

U.S. Cl. 177—165 **10 Claims**



1. A method of controlling the zero adjustment of weight sensors for measuring the weight of articles, comprising the steps of:

discriminating whether the zero point deviation of each weight sensor lies within preset allowed limits;

applying a zero adjustment to each weight sensor when the zero point deviation thereof lies within said allowed limits and generating a signal for inhibiting the zero adjustment when the respective weight sensor zero point deviation lies outside of said allowed limits;

counting a number of times the zero adjustment inhibit signal is generated; and

comparing the counted value with a predetermined value and producing an alarm signal when said counted value and said predetermined value coincide.

4,442,912

TILT-CAB TRUCK INCLUDING APPARATUS TO SECURE UNIFORM ADVANCE AND RETRACTION OF THE TILT CYLINDERS

Friedrich Vette, Holland, Netherlands, assignor to Applied Power Inc., Milwaukee, Wis.

Filed Jul. 13, 1982, Ser. No. 397,682

Int. Cl.³ B62D *33/06;* **F15B** *11/05, 13/02, 20/00*

U.S. Cl. 180—89.15 **3 Claims**

1. A tilt-cab truck comprising:

(a) a chassis;

(b) a cab mounted on said chassis and pivotable with respect to said chassis about an axis;

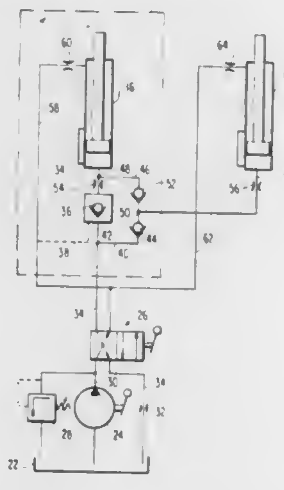
(c) first and second hydraulic jacks for tilting said cab about said axis back and forth between a lowered first position and a raised second position;

(d) a control valve for selectively applying hydraulic fluid to the push sides of said hydraulic jacks;

(e) a first path of fluid communication connecting said control valve to the push side of said first hydraulic jack;

(f) a pilot-operated check valve disposed in said first path of fluid communication between said control valve and the push side of said first hydraulic jack;

(g) a second path of fluid communication connecting the push side of said second hydraulic jack to said first path of fluid communication at a first point between said control valve and said pilot-operated check valve;



(h) a first check valve disposed in said second path of fluid communication, said first check valve permitting flow towards the push side of said second hydraulic jack but preventing flow in the opposite direction;

(i) a third path of fluid communication connecting said first path of fluid communication at a second point between said pilot-operated check valve and the push side of said first hydraulic jack to said second path of fluid communication at a third point between said first check valve and the push side of said second hydraulic jack; and

(j) a second check valve disposed in said third path of fluid communication, said second check valve permiting flow towards the push side of said first hydraulic jack but preventing flow in the opposite direction.

4,442,913

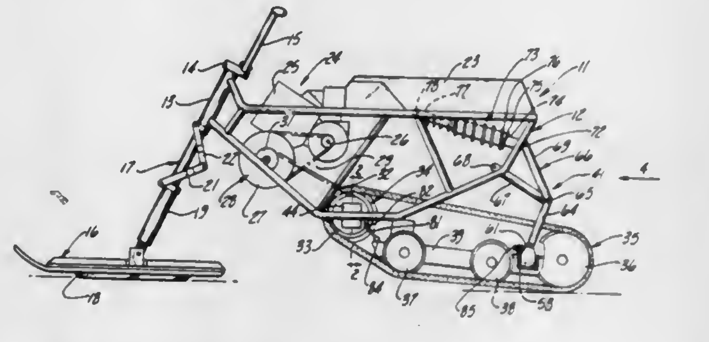
SNOW VEHICLE

James E. Grinde, Anoka, Minn., assignor to Yamaha Hatsudoki Kabushiki Kaisha, Japan

Filed Feb. 8, 1982, Ser. No. 346,945

Int. Cl.³ B62M *27/02*

U.S. Cl. 180—190 **10 Claims**



1. A small, lightweight snow vehicle having frame means, a front ski supported for steering movement about a steering axis by said frame, an endless drive belt disposed to the rear of said front ski, power means including a driving connection for

driving said driving belt, the input to said driving belt from said power means being positioned at the forwardmost portion of said driving belt, suspension means for suspending said driving belt for suspension movement relative to said frame means, said suspension movement including a component that is pivotal about a horizontal, transverse axis disposed adjacent the forwardmost portion of said driving belt whereby the driving portion of said driving belt assumes different angles relative to the terrain in response to different degrees of suspension travel, said suspension means further including means for permitting pivotal movement of said frame means relative to said driving belt about a longitudinally extending axis for leaning of said frame means relative to said driving belt without affecting the contact area between said driving belt and the terrain over which said vehicle is travelling, said front ski having a runner no greater than 8 inches in width, and said driving belt having a width no greater than 10 inches.

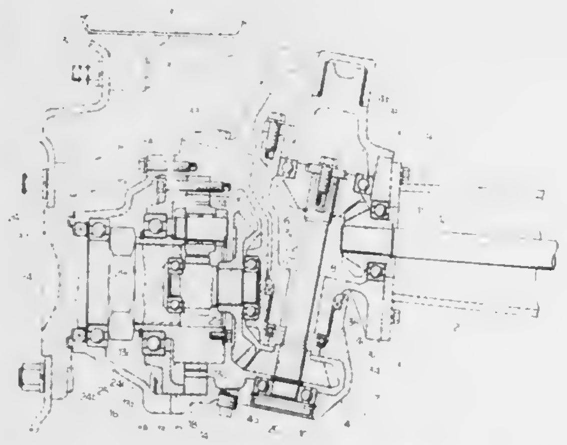
4,442,914
FRONT WHEEL DRIVING DEVICE OF VEHICLE

Tadao Nishihara, Department of Technology, Iseki & Co., Ltd. 588-1, Doitacho, Matsuyama-shi, Ehime-ken, Japan

Filed Sep. 13, 1982, Ser. No. 417,333

Int. Cl.³ B60K *17/30*

U.S. Cl. 180—255 **6 Claims**



1. A front wheel driving device for vehicles comprising: a front axle housing accommodating a front wheel driving shaft; an inner gear case attached to an outer end of the front axle housing; an outer gear case fitted to the inner gear case for free steering rotation; a planetary gear mechanism adapted to be driven by said front wheel driving shaft through a bevel gear mechanism and supported by an intermediate seat adapted to be fitted in the outer gear case; and a front wheel axle to which a front wheel is secured and supported by a cover, the front wheel axle being adapted to fit an output shaft of the planetary gear mechanism when the cover is coupled to an outer end of the outer gear case.

4,442,915
VEHICLE CONTROL APPARATUS

James Steel, Newcastle Upon Tyne, England, assignor to Ogden Electronics Ltd., Yorkshire, England

Filed Mar. 31, 1981, Ser. No. 249,636

Claims priority, application United Kingdom, Sep. 25, 1980, 8030905

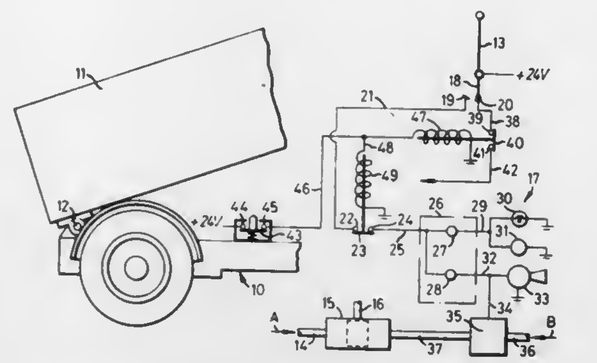
Int. Cl.³ B60T *7/12*

U.S. Cl. 180—271 **1 Claim**

1. Apparatus for automatically controlling the braking system of a truck having a tiltable bed which is normally in a predetermined rest position during safe motion of the truck and which truck has a gear selection mechanism for effecting motion of the truck, said apparatus comprising:

detection means for detecting a first condition when said tiltable bed is removed from its safe rest position and a second condition when said gear selection mechanism is placed in a gear for effecting motion of the truck and for producing a control output in response to concurrent detection of the first and second conditions;

timing control means for producing a time-delayed control signal in response to a continuation of said control output after a predetermined elapsed time interval from the time when said control signal is initially produced so as to thus allow the truck to effect motion for the duration of such an elapsed time interval; and



automatic brake actuation means connected to respond to said time-delayed control signal by automatically actuating the braking system of the truck and thus retarding its further motion.

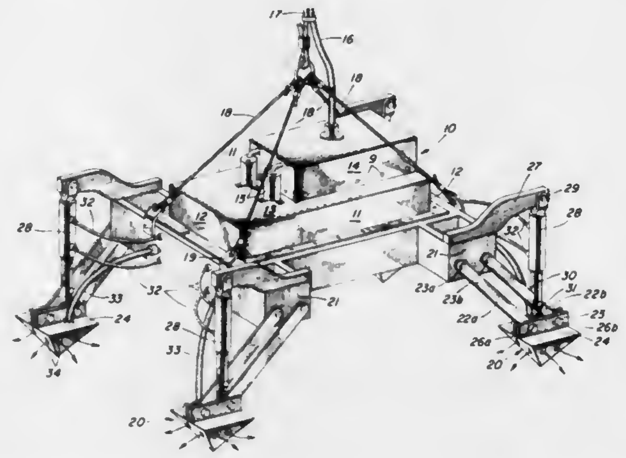
4,442,916
UNDERWATER SHEAR WAVE VIBRATOR COUPLING

Delbert W. Fair, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Filed Dec. 4, 1980, Ser. No. 212,937

Int. Cl.³ G01V *1/14, 1/38*

U.S. Cl. 181—120 **17 Claims**



1. An underwater shear wave vibrator apparatus for generating a shear wave force into a seabed, said vibrator including a housing having sidewalls, a top and a bottom, a vibratory generating means mounted inside said housing for generating a force along an axis substantially parallel to said seabed surface and a seabed engagement means having an attachment surface and an underside surface for engaging said seabed, an improvement in attaching said seabed engagement means to said housing comprising:

(a) arm means;

(b) means for pivotally attaching said arm means at one end to said housing and pivotally attaching the other end to said attachment surface of said seabed engaging means;

(c) means for positioning said seabed engaging means normal to the force axis of said vibratory generating means by movement about said pivotal attachment to maintain contact of said seabed engagement means with said seabed as said vibratory generating means is applying force against said seabed; and

(d) sensing means for maintaining the orientation of said underside surface as said positioning means moves said seabed engaging means.

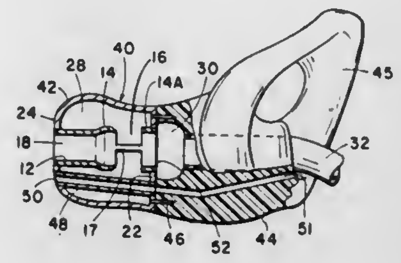
4,442,917
VENTED ACOUSTIC EAR MOLD FOR HEARING AIDS

Rubein V. Johnson, 2432 Court St., Muskogee, Okla. 74401

Division of Ser. No. 226,030, Jan. 19, 1981. This application Sep. 30, 1982, Ser. No. 429,037

Int. Cl.³ A61B *7/02*

U.S. Cl. 181—135 **8 Claims**



1. In a hearing aid ear mold insertable into the auditory canal of the user and having a longitudinal conduit for the passage of sound wave energy from a hearing aid to the tympanic membrane of the ear, the improvement comprising a metal structure having:

(a) an inner central thin-walled metal tube forming said longitudinal conduit, connected at its outer end by tubular means to said hearing aid, the inner end inserted into the ear;

(b) an outer thin-walled metal tube coaxial with said inner central tube, and forming a first annular space closed by annular end walls sealing the annular space between said inner and said outer thin-walled metal tube;

(c) said inner metal tube constructed by cutting a groove of selected width through the wall of said inner tube near one end forming two portions, a long portion on the inner end, toward said tympanic membrane, and a short portion on the outer end; and including at least one slender post holding said two portions in fixed coaxial and spaced relation, whereby the opening between the space in said conduit and in said first annular space is a narrow circumferential gap forming a first resonance chamber.

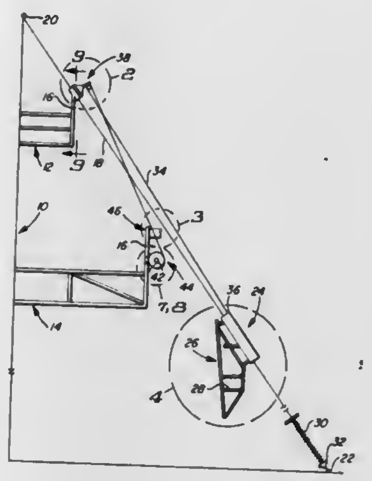
4,442,918
EMERGENCY ESCAPE DEVICE

Gerald A. Rhoads, Sr., Yuma, Ariz., assignor to X-Pert Well Service, Inc. and Gerald A. Rhoads, Jr., both of Hobbs, N. Mex., a part interest

Filed Jun. 15, 1983, Ser. No. 504,584

Int. Cl.³ A62B *1/02, 1/12*

U.S. Cl. 182—10 **16 Claims**



1. An escape device for allowing an endangered person to be lowered from an elevated structure in the event of an emergency, the escape device comprising in combination;

a. an escape cable having an upper end secured to the elevated structure and a lower end secured to an anchor remote from the elevated structure, said escape cable extending at an angle to the vertical;

b. a trolley assembly including a seat for supporting the endangered person to be lowered from the elevated structure, said trolley assembly also including at least one pulley for engaging said escape cable and suspending said seat therefrom for allowing said seat to descend the escape cable by rolling downwardly therealong;

c. braking means extending between the elevated structure of said trolley assembly for automatically regulating the descent of said seat along said escape cable, said braking means permitting the initial rate of descent of said seat along said escape cable to be relatively rapid for removing the endangered person from the site of the emergency and automatically causing the rate of descent of said seat to decrease as said seat approaches the lower end of said escape cable.

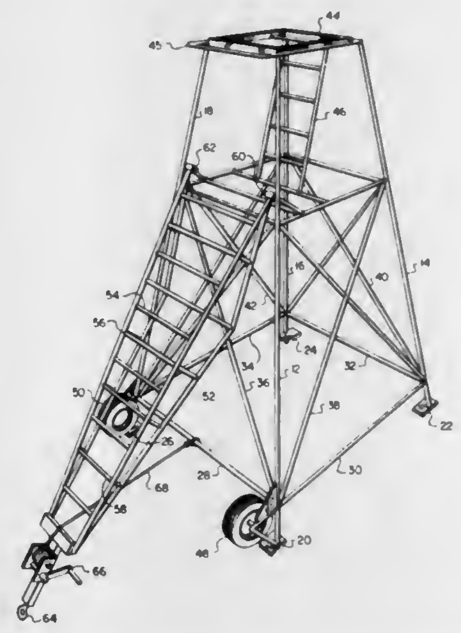
4,442,919
PORTABLE TOWER

Rodney D. Fulcher, 2039 Brookhollow, Abilene, Tex. 79605

Continuation of Ser. No. 291,562, Aug. 10, 1981, abandoned. This application Aug. 17, 1983, Ser. No. 524,461

Int. Cl.³ E04G *1/00*

U.S. Cl. 182—63 **8 Claims**



1. A portable tower for transport between erection sites behind a tow vehicle, said tower comprising:

a tower assembly including support leg means for supporting said tower in an erect position, said support leg means including means at a base of said support leg means for engagement with the ground when said tower is in said erect position;

tower transport wheels mounted on said tower assembly at substantially the end of said tower including said base of said support leg means; and

an elongated tongue assembly pivotally connected at one end of said tongue assembly to said tower assembly at a pivot point on said tower assembly which is spaced from and above the axes of rotation of said transport wheels when said tower is in said erect position, said tongue assembly including means at its other end for coupling said tongue assembly to said tow vehicle for towing said tower in a substantially reclined transport position, said tower assembly including means engageable with said tongue assembly upon movement of said tower assembly to said transport position from said erect position whereby said tower assembly is supported in said transport position by said tongue assembly and said transport wheels and whereby said tongue assembly is supported by and between said tow vehicle and said tower assembly during transport of said tower, the spacing of said pivot point in relation to the axes of rotation of said transport wheels being sufficient to provide for movement of said tower assembly toward said erect position by exerting a tower erecting force on said tongue assembly to pivot said tower about said pivot point and with respect to said tongue assembly to said erect position.

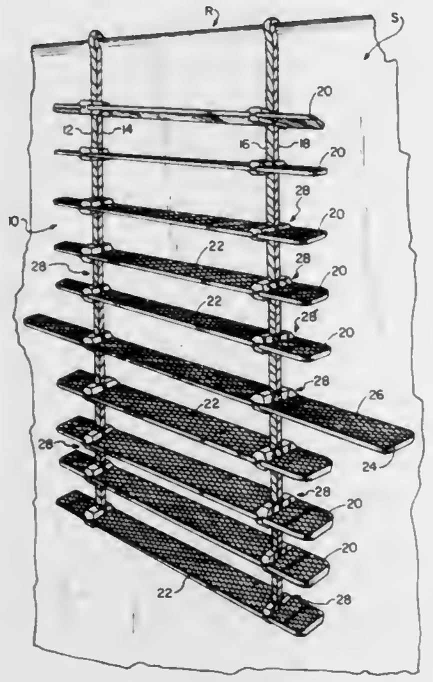
4,442,920
COLLAPSIBLE LADDER

Peter W. Gronbeck, Highlands; Dennis Mullaney, Belford, and Kimberly M. Smith, Colts Neck, all of N.J., assignors to Steelstran Industries, Incorporated, Matawan, N.J.

Filed Sep. 30, 1982, Ser. No. 430,593

Int. Cl.³ E06C *1/56*

U.S. Cl. 182—199 **18 Claims**



1. A collapsible ladder comprising:

a plurality of elongated platforms each having a pair of spaced apart longitudinal side edges and a pair of spaced apart transverse end edges, a first pair of adjacent notches being disposed in each of said platforms adjacent to one of said end edges, the first notch of said first pair of notches opening through one of said side edges of the associated said platform, the second notch of said first pair of notches opening through the other of said side edges of the associated said platform, a second pair of adjacent notches being disposed in each of said platforms adjacent to the other of said end edges, the first notch of said second pair of notches opening through one of said side edges of the associated said platform, the second notch of said second pair of notches opening through the other of said side edges of the associated said platform;

a plurality of rope segments extending between said elongated platforms for supporting said platforms in a spaced apart use position, selected portions of selected rope segments being disposed in said first and second pairs of notches; and

a plurality of clamp means, some of said clamp means for clamping said selected portions of said selected rope segments in said first pairs of notches, the balance of said clamp means for clamping selected said rope segments in said second pairs of notches, each of said clamp means being divided into two halves, a rope engaging portion of each half of each of said clamp means being dimensioned for at least a portion thereof to reside within the corresponding said notch, each of said clamp means including means for securing the halves thereof together to wedge said selected portions of said rope segments between said rope engaging portions of said clamp means and said elongated platforms.

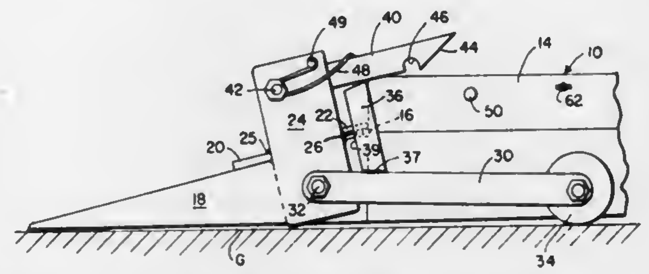
4,442,921
LIFT PLATFORM AUTOMATIC RAMP BARRIER

William D. Sherman, Upper Sandusky, Ohio, assignor to REB Manufacturing, Inc., Carey, Ohio

Filed Feb. 23, 1981, Ser. No. 236,838

Int. Cl.³ B60S *13/00*

U.S. Cl. 187—8.52 **26 Claims**



1. A safety barrier for a platform lift comprising:

(A) a vertical movable platform having an exposed edge,

(B) a barrier means hinged along said edge of said platform,

(C) means for urging and maintaining said barrier means into its barrier position, said maintaining means comprising a latch means between said barrier means and said platform, and

(D) a single lever member directly pivotally attached, for limited movement, at one of its ends to said barrier means and having a ground-engaging means on its other end for moving said barrier means into its non-barrier position, said lever member including means for abutting said latch means for releasing said latch means when said other end of said lever member engages the ground.

4,442,922
ADJUSTABLE SLIDER BEARING ASSEMBLY

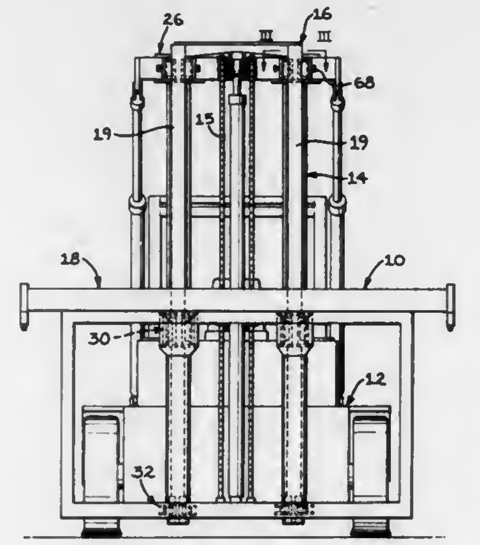
Richard J. Johannson, Dallas, Oreg., assignor to Towmotor Corporation, Mentor, Ohio

PCT No. PCT/US81/00330, 371 Date Mar. 16, 1981, 102(e) Date Mar. 16, 1981, PCT Pub. No. WO82/03215, PCT Pub. Date Sep. 30, 1982

PCT Filed Mar. 16, 1981, Ser. No. 277,749

Int. Cl.³ B66B *9/20*

U.S. Cl. 187—9 E **9 Claims**



1. A lift mast (10) for a lift truck (12) comprising:

a support frame (14) attached to said lift truck (12);

an upper upright-support frame support assembly (26) attached to said support frame (14);

a lower upright-support frame support assembly (28) attached to said support frame (14);

an upright assembly (16) retained by said upper and lower upright-support frame support assemblies (26,28), said upright assembly (16) having at least one I-beam (19), said I-beam having flanges (21,22) and a web (24), said web (24) having opposite sides and said upright assembly (16) being longitudinally movable through said support assemblies (26,28);

a carriage (18);

an upper upright-carriage support assembly (30) attached to said carriage (18) and connecting said carriage (18) to said upright assembly (16);

a lower upright-carriage support assembly (32) attached to said carriage (18) and connecting said carriage (18) to said upright assembly (16);

at least one of said support assemblies (26,28,30,32) having two slider bearings (36), one of said two slider bearings contacting one of said flanges (21,22) on one side of said web (24) and the other of said two slider bearings (36) contacting said one flange (21,22) on the other side of said web (24), said slider bearings (36) each being supported by a fulcrum (68).

4,442,923
AUTOMATIC REGULATOR FOR INTERNALLY EXPANDING DRUM BRAKE

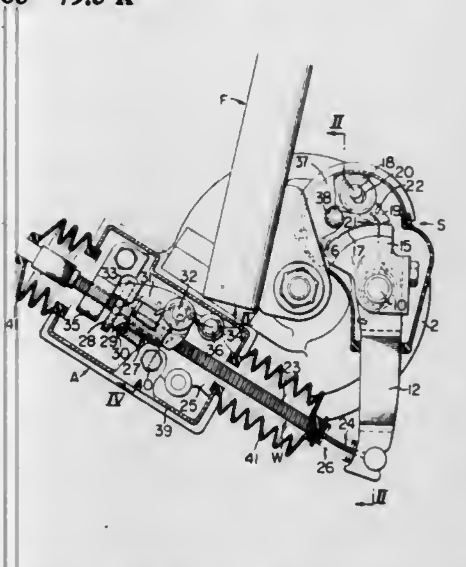
Goroei Wakatsuki, Fujimi, and Sadashi Yamamoto, Wako, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 15, 1981, Ser. No. 283,618

Claims priority, application Japan, Jul. 18, 1980, 55-98316; Jul. 18, 1980, 55-98315

Int. Cl.³ F16D *65/56*

U.S. Cl. 188—79.5 K **7 Claims**



1. An automatic regulator for an internally expanding drum brake comprising in combination: a brake drum rotatable with a rotary shaft and having a brake surface; a stationary brake panel; a pair of brake shoes housed in said brake drum and mounted on said stationary brake panel for outwardly expanding movement in a brake applying operation and inward return movement in a brake releasing operation; a brake cam rotatably interposed between opposed free ends of said first and second brake shoes and being rotatable to outwardly expand said first and second brake shoes toward said brake surface of said brake drum for frictional engagement in said braking operation; a brake lever secured to said brake cam; a stationary support member; a brake wire means connected to said brake lever, said brake wire means comprising an externally threaded outer wire member supported by said stationary support member for axial movement relative thereto, and an inner wire member inserted through said outer wire member and connected to said brake lever; a return spring for urging said brake shoes in a contracting direction; stopper means for controlling a return angle of said brake lever to be constant upon a brake releasing operation; and a regulating means for automatically regulating an amount of play of said brake wire to be constant in response to one of said operations, said regulating means comprising a biasing means for biasing said outer wire member in a direction away from said brake lever, an adjusting nut movably supported on said stationary support member and threaded on said outer wire member, and a nut-turning means on said stationary support member for turning said adjusting nut relative to said outer wire member in response to said one brake operation to axially displace said outer wire member relative to said inner wire member for adjustment of the relative position between said outer and inner wire members when the brake is not operated.

4,442,924
INTERNAL SHOE DRUM BRAKES

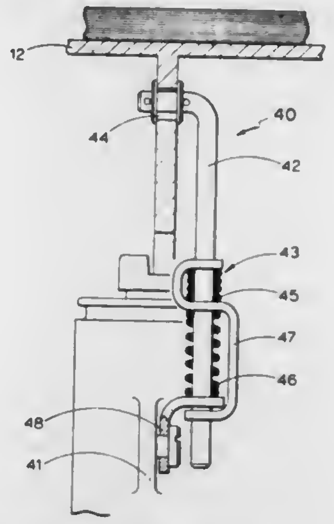
Harold Hodkinson, Coventry, and William E. Haines, Southam, both of England, assignors to Automotive Products Limited, Leamington Spa, England

Continuation of Ser. No. 314,868, Oct. 26, 1981, abandoned. This application Jul. 6, 1983, Ser. No. 511,001

Claims priority, application United Kingdom, Oct. 29, 1980, 8034841

Int. Cl.³ F16D *65/54*

U.S. Cl. 188—79.5 GT **5 Claims**



1. An internal shoe drum brake having:

a drum;

a back plate;

a pair of brake shoes mounted on the back plate;

a pair of double ended expanders each mounted on the back plate so that its operating axis is substantially vertical, said expanders each being located between adjacent ends of said shoes so that one of said shoes is above the expanders and the other of said shoes is below the expanders;

adjustment means in one of said expanders for maintaining a constant shoe to drum clearance;

a strut assembly located in one of said expanders and being slidable therein to transmit braking loads from one brake shoe to the other;

return springs interconnecting the shoes to pull the shoes against the expanders; and

a variable length support means having one connection with a position fixed relative to the back plate and another connection with the upper brake shoe near to said one of the expanders, said support means comprising a strut connected at one end to one of said connections, a friction grip device encircling the strut and having frictional engagement therewith, a stop member connected to the other of said connections, a bracket member having one end portion, another end portion and a central portion, each of said portions being slidable on the strut, a compression spring encircling the strut and arranged between said central portion and the stop member and biasing said one end portion against the stop member, the friction grip device being arranged between said central portion and said other end portion, the arrangement being such that the strut can move in one direction through the friction grip device to elongate said support means and allow the upper brake shoe to maintain a fixed shoe to drum clearance but under braking loads which tend to shorten said support means the compression spring collapses and the strut does not move in the other direction through the friction grip device.

4,442,925
VORTEX FLOW HYDRAULIC SHOCK ABSORBER

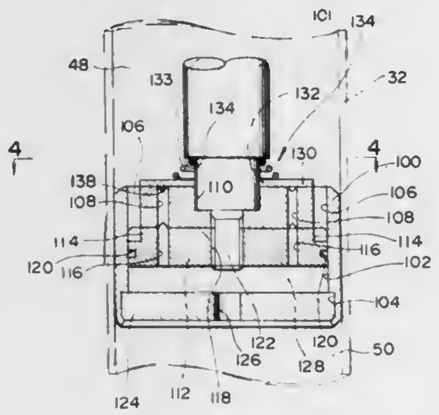
Naoto Fukushima, Fujisawa; Kazuroh Iwata, Kamakura; Kunihiko Hidaka, and Keiichiro Yabuta, both of Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Kanagawa, Japan

Filed Sep. 3, 1981, Ser. No. 299,155

Claims priority, application Japan, Sep. 12, 1980, 55-129926[U]

Int. Cl.³ F16F *9/19*

U.S. Cl. 188—282 **9 Claims**



1. A vortex flow shock absorber comprising:
a hollow cylinder defining therein a fluid chamber filled with a working fluid;
a piston reciprocally disposed within said fluid chamber and dividing said chamber into upper first chamber and lower second chamber and defining therein a vortex chamber in which said working fluid flows in vortex fashion to produce an absorbing force;
first fluid passage means for establishing communication between one of said first and second chambers and said vortex chamber, which first fluid passage means extends through one of horizontal sections of said piston and having an inner end tangentially opening to said vortex chamber on the horizontal periphery of the vortex chamber for discharging the fluid into said vortex chamber in vortex fashion;
said fluid passage means for communication between the other fluid chamber and said vortex chamber.

4,442,926
SIMPLIFIED HYDRAULIC DAMPER

Toshiaki Muto, Kamakura, Japan, assignor to Tokiko Kabushiki Kaisha, Japan

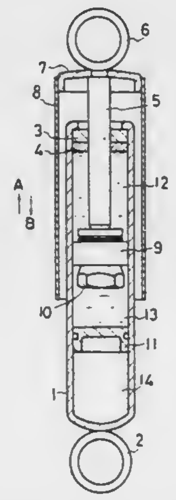
Continuation of Ser. No. 269,596, Jun. 2, 1981, abandoned. This application Jul. 25, 1983, Ser. No. 516,864

Claims priority, application Japan, Jun. 6, 1980, 55-79038[U]

Int. Cl.³ F16F *9/19*

U.S. Cl. 188—317 **14 Claims**

1. A hydraulic damper comprising:
a tube with a bottom end thereof closed and defining a working space therein;
a piston slidably movable within the working space of the tube and dividing the working space into upper and lower chambers which are at least partially filled with hydraulic fluid;
a piston rod, the piston secured to an end thereof by a hollow nut having a cavity therein opening toward the lower chamber, such that the piston is disposed between the piston rod and the hollow nut, the other end of the piston rod extending outside the tube through a rod guide and a sealing member which are fitted to a mouth end of the tube and which serve to guide the piston rod and maintain the sealing engagement among the tube, the piston rod and the sealing member;
a first communication path provided in the piston through the thickness of the piston to communicate the upper and lower chambers therethrough;
a second communication path comprised of the cavity in the hollow nut and a hole bored in the piston rod, one end of the hole being opened to the upper chamber and the other end being opened to said cavity;
first and second damping valve means adapted to open and close the first and second communication paths respectively;
said second damping valve means being located within the cavity of said hollow nut and comprising a disc valve, a valve seat, and a screw member;



said disc valve being fixedly sandwiched between said valve seat and said screw member within said cavity of said hollow nut;
said first damping valve means being provided in the first communication path and being adapted to communicate the upper and lower chambers in a contraction stroke;
said second damping valve means being adapted to communicate the upper and lower chambers in an extension stroke;
and
means for urging the hydraulic fluid in the lower chamber upwardly so as to compensate the varied volume of the piston rod within the tube as the piston rod enters or retracts from the tube, said means being located adjacent to the lower chamber.

4,442,927
CARRIER FOR GARMENT BAGS AND THE LIKE

Brooks Walker, 1280 Columbus Ave., San Francisco, Calif. 94133

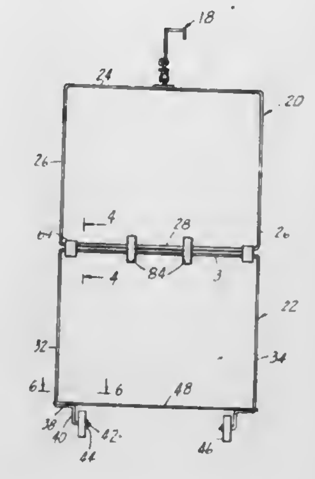
Filed Apr. 22, 1982, Ser. No. 370,855

Int. Cl.³ A45C *5/14, 13/04*

U.S. Cl. 190—18 A **2 Claims**

1. In combination with a generally rectangular elongated garment bag adapted to be folded on itself along a transverse fold line, a carrier for said bag comprising:
a frame within said bag for stiffening the lower folded portion of said bag,
said frame including a pair of elongated side members extending along the longitudinally extending side edges of said bag and a transversely extending central member adjacent the upper end of said lower portion of said bag,
a bearing fixedly secured to said bag adjacent said fold line for swingable supporting said central member, said central member being split at a point within said bearing,
the lower end wall of said bag being apertured to receive said side members therethrough,

said side members being bent to form a pair of horizontally extending terminal portions external of said bag, and



a pair of ground wheels rotatably supported on said terminal portions.

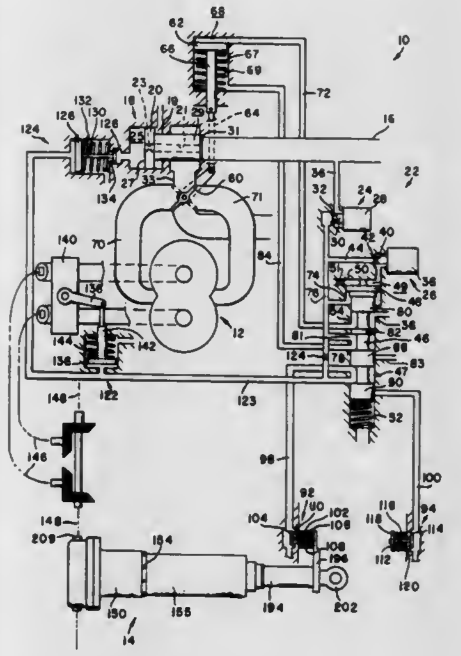
4,442,928
ACTUATOR

James M. Eastman, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 2, 1981, Ser. No. 307,737

Int. Cl.³ B60K *41/20;* **F16D** *71/00, 7/02*

U.S. Cl. 192—3 N **17 Claims**



1. In an actuator having a housing with a bore therein, a shaft located in said bore, a nut carried on said shaft and rotationally restrained in said bore, an input member, an output member connected to said nut, and a linkage member for connecting said input member to said shaft, said linkage member transmitting a rotary torque from the input member to said shaft causing said nut to move in said bore and provide said output member with linear movement, said linkage being characterized by a drive member connected to said input member, a driven member connected to said shaft by a torsionally flexible member and an axially resilient member for urging said driven member into engagement with said drive member, said torsionally flexible member transferring a rotary torque from said driven member into said shaft until rotary movement of said nut is restrained, said rotary torque thereafter rotating said driven member to reduce the force of the axially resilient member and allow the drive member to rotate independent of said driven member.

4,442,929
HYDRAULIC CLUTCH

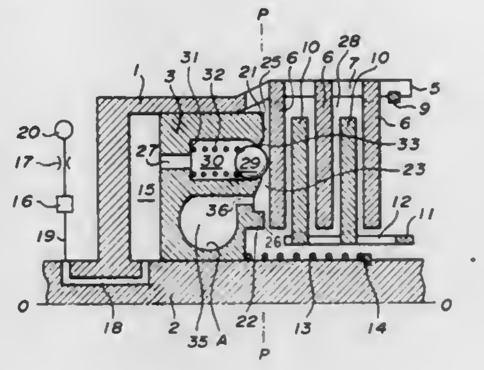
Shinobu Uchida, Hirakata, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan

Filed Apr. 26, 1982, Ser. No. 372,007

Claims priority, application Japan, Apr. 30, 1981, 56-63975[U]

Int. Cl.³ F16D *25/06*

U.S. Cl. 192—52 **3 Claims**



1. A hydraulic clutch comprising friction plates; a hydraulic piston for pressing the friction plates; a pair of annular protrusion respectively formed at radially outer and relatively inner portions of the piston with an annular space therebetween, said protrusions being designed to press the adjacent friction plate; an oil passage formed in the piston through which the annular space is connected to a pressure chamber at the back of the piston; a check valve arranged in the oil passage, said check valve including a ball forced to close toward the friction plates and partially projecting beyond the protrusions toward the friction plates and an accumulation chamber formed in the piston and connected to the annular space.

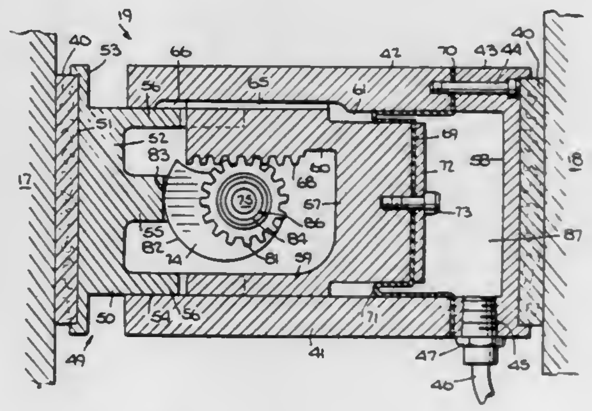
4,442,930
AIR ACTUATED FORCE INTENSIFYING PISTON AND CYLINDER ASSEMBLY FOR BRAKES AND CLUTCHES

Edwin J. Montalvo, Sr., 200 Riverside Industrial Pkwy., Portland, Me. 04103

Filed Jun. 15, 1981, Ser. No. 273,760

Int. Cl.³ F16D *25/04*

U.S. Cl. 192—85 AB **13 Claims**



1. A mechanism for selectively frictionally coupling two relatively rotatable bodies of the type comprising two parallel friction plates connected to a first one of said bodies transverse to the axis of rotation of said first body, the second of said bodies carrying an expandible fluid actuated piston and cylinder means mounted between said friction plates for engagement of friction members carried by said piston and cylinder means with said friction plates upon expansion of said piston and cylinder means, said piston and cylinder means being mounted to float in a cylinder carrying member on said second body for applying equal force against both said friction plates upon expansion of said piston and cylinder means, wherein the improvement comprises said piston and cylinder means having

cam means therein for mechanically intensifying said force against said friction plates upon expansion of said piston and cylinder means, said cam means comprising a cam having an arcuate surface of gradually increasing radius mounted on a pin within said cylinder.

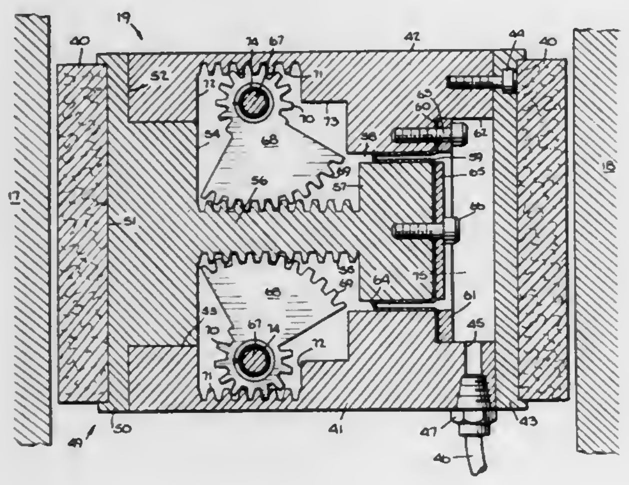
4,442,931
AIR ACTUATED FORCE INTENSIFYING PISTON AND CYLINDER ASSEMBLY FOR BRAKES AND CLUTCHES

Edwin J. Montalvo, Sr., 200 Riverside Industrial Pkwy., Portland, Me. 04103

Filed Jun. 15, 1981, Ser. No. 273,908

Int. Cl.^{3} F16D *25/063*

U.S. Cl. 192—85 AB **6 Claims**



1. A mechanism for selectively frictionally coupling two relatively rotatable bodies of the type comprising two parallel friction plates connected to a first one of said bodies transverse to the axis of rotation of said first body, the second of said bodies carrying an expandible fluid actuated piston and cylinder means mounted between said friction plates for engagement of friction members carried by said piston and cylinder means with said friction plates upon expansion of said piston and cylinder means, said piston and cylinder means being mounted to float in a cylinder carrying member on said second body for applying equal force against both said friction plates upon expansion of said piston and cylinder means, wherein the improvement comprises said piston and cylinder means having gear means therein for mechanically intensifying said force against said friction plates upon expansion of said piston and cylinder means, said gear means comprising a pair of diametrically opposed members mounted to rotate within the cylinder of said piston and cylinder means, each of said members having gear teeth at opposite ends of the member for meshing with teeth formed on the piston and cylinder.

4,442,932
COMBINATORIAL WEIGHING APPARATUS

Takashi Sashiki, Nagaokakyo, and Keiko Sakaeda, Kyoto, both of Japan, assignors to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Apr. 12, 1982, Ser. No. 367,667

Claims priority, application Japan, Apr. 10, 1981, 56-54830; Sep. 4, 1981, 56-139983

Int. Cl.^{3} B65G *37/00*

U.S. Cl. 198—366 **9 Claims**

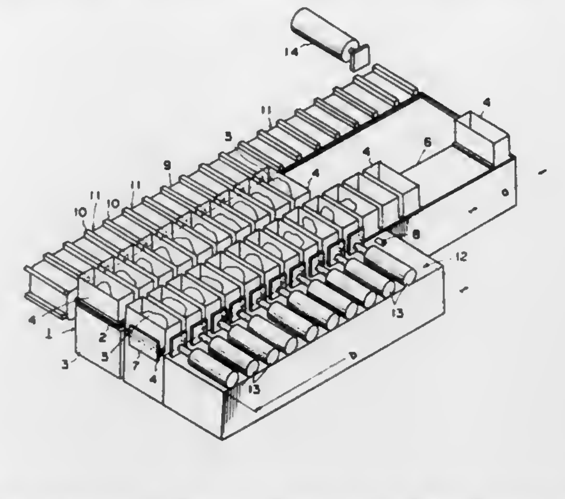
1. A combinatorial weighing apparatus, having a plurality of juxtaposed weighing machines each of which is provided with a scale, for weighing articles supplied to the weighing machines, selecting the combination of articles that gives a total weight equal or closest to a preset target weight, and discharging the articles so selected, which apparatus comprises:

a carry-in conveyor disposed alongside said juxtaposed weighing machines for continuously delivering vessels, filled with a suitable quantity of articles, from a filling station to a selective transfer station;

transfer means for selectively transferring the filled vessels on said carry-in conveyor from said conveyor to the scales of individual ones of the weighing machines;

a discharge conveyor for retaining and conveying filled vessels received selectively from the scales of said weighing machines and for discharging the articles from said vessels; and

means for pushing the emptied vessels on said discharge conveyor from said discharge conveyor onto the filling station of said carry-in conveyor.



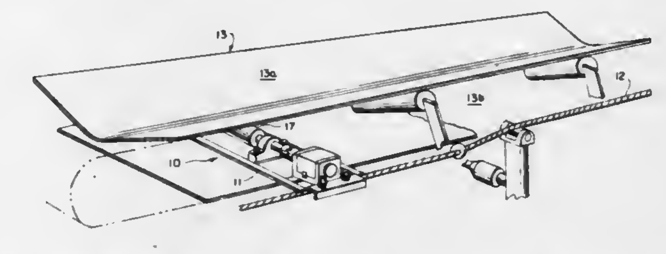
4,442,933
CENTRIFUGAL SWITCH FOR CONTROLLING BELT HAULING SYSTEMS

George E. Conn, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, and George Spector, 3615 Woodworth Bldg., 233 Broadway, both of N.Y. 10007

Filed Jan. 17, 1978, Ser. No. 870,220

Int. Cl.^{3} B65G *43/00;* **H01H** *35/02*

U.S. Cl. 198—502 **2 Claims**



1. A centrifugal switch assembly controlling a coal belt hauling system, comprising in combination an endless belt, and an assembly including a conventional centrifugal control switch positioned underneath and in operative engagement with the top run of said belt wherein said switch is enclosed in a housing, including means for adjusting the vertical position of the assembly relative to said belt, wherein said assembly additionally comprises a frame having said centrifugal switch mounted upon one end thereof including a roller at the center of said frame which bears against an underside of said belt top run, said roller being secured on a shaft supported rotatably free in bearings of pillows mounted on said frame, one end of said shaft being connected by means of a coupling to a switch shaft and said frame being supported at its opposite ends upon a pair of wire cables positioned parallel to and along each opposite edge of said belt, said cables extending through parallel inverted channels forming opposite ends of said frame, and being secured to said channels by rope locks mounted on said channels, including a cover, removably snap fitted over said centrifugal switch protectively enclosing the same, wherein said cover includes a sleeve intergal therewith extending over said coupling.

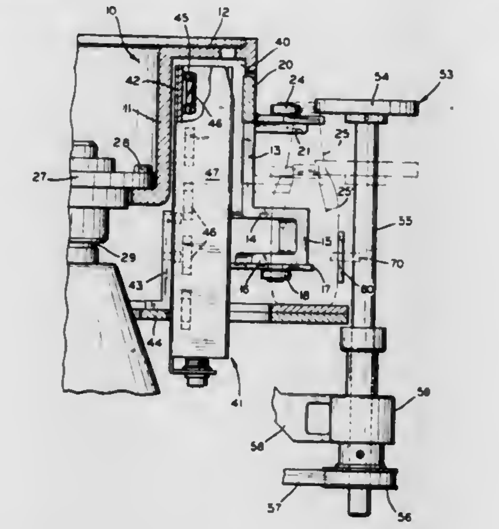
4,442,934
GLASS CONTAINER INSPECTION HANDLING SYSTEM

Arthur L. Dorf; Sam Lovalenti; John J. Pezzin, all of Toledo, Ohio, and Darius O. Riggs, Ottawa Lake, Mich., assignors to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 203,024, Nov. 3, 1980, Pat. No. 4,378,493. This application Nov. 24, 1982, Ser. No. 444,278

Int. Cl.^{3} B65G *29/00*

U.S. Cl. 198—344 **9 Claims**



1. Apparatus for handling glass containers in spaced apart series into an inspection position in front of an illuminating means with an uninterrupted view of the container from the side thereof opposite the illuminating means and with means to rotate the container while the container is so positioned comprising:

a generally cylindrical hub, said hub having a horizontally extending periphery which is at a height greater than the height of a container to be inspected;

means connected to said hub for indexing the hub about its vertical axis;

a plurality of spaced-apart, downwardly extending arms connected to the periphery of said hub, said arms being of a length sufficient to extend below the center of gravity of a container positioned adjacent thereto;

container-engaging rollers mounted on said arms at, at least two vertically spaced points, the uppermost rollers located at the finish of the container and said lowermost rollers located below the center of gravity of the container with each arm supporting rollers that are in engagement with the two adjacent containers;

a peripherally spaced guide rail system extending around said hub adapted to engage containers and maintain them in contact with the rollers;

means connected to said hub for indexing said hub; and

means at one of the inspection stations for engaging the finish of the container at said station for rotating the container positioned thereat about its central vertical axis.

4,442,935
PALLET MAGAZINE

Hans Gregg, Woerthsee, Fed. Rep. of Germany, assignor to Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co., Munich, Fed. Rep. of Germany

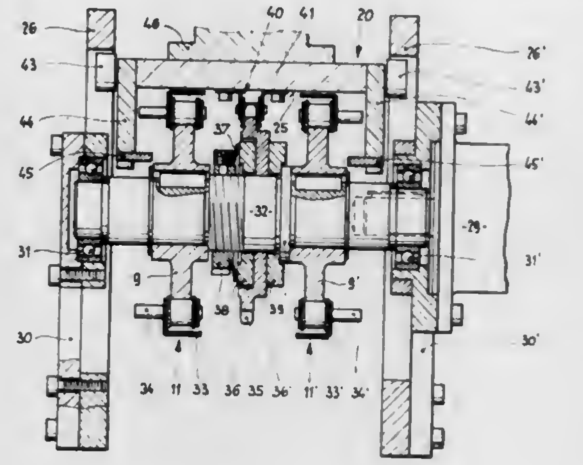
Filed Jul. 8, 1981, Ser. No. 281,525

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1980, 3033373

Int. Cl.^{3} B65G *35/08*

U.S. Cl. 198—648 **7 Claims**

1. In a pallet magazine for transporting workpieces from a loading station to a working station and to an unloading station, said pallet magazine having a frame and two endless rotating chains arranged parallel to one another and which undergo a 180° turn at said loading station and at said unloading station by being guided around sprocket wheels having horizontal axles supported on said frame, a sprocket wheel located at one of said loading station and said unloading station being driven for rotation by a motor, said pallet magazine further including plural pallets, which carry said workpieces thereon, having first means at least partially gripping around said two chains, the improvement comprising wherein said first means is spaced freely below an upper conveyor reach of said chains and hanging freely on a lower conveyor reach of said chains so that a frictional force alone effects a carrying of said pallet with said upper and lower conveyor reaches, and wherein at each 180° turn of said chains, there is arranged a gear oriented coaxially with said sprocket wheels, between said sprocket wheels and rotated at the same speed as said sprocket wheels, which gear engages second means arranged on the underside of each said pallet to effect a controlled driving movement of said pallet from a location on said upper conveyor reach to a location on said lower conveyor reach and vice versa.



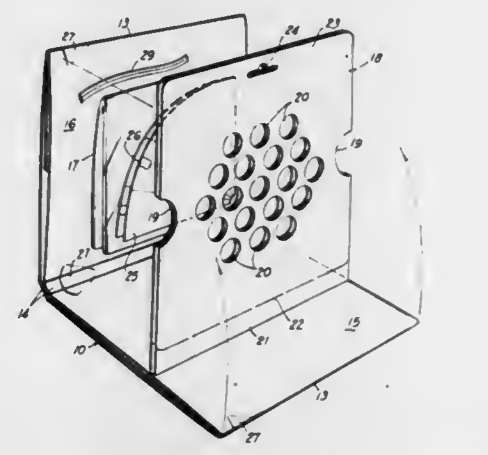
4,442,936
ENGINE OIL DRAINING ASSEMBLY

Robert L. Densham, 513 N. Peachtree Rd., Dunwoody, Ga. 30338

Filed Nov. 13, 1978, Ser. No. 959,886

Int. Cl.^{3} B65D *69/00*

U.S. Cl. 200—223 **2 Claims**



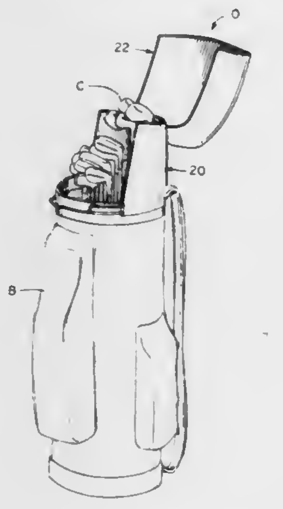
1. An engine oil change kit comprising a receptacle body formed of sheet material and being erectable to produce an open top receptacle and foldable into a collapsed state, a flexible bag liner for the receptacle body and being oil impermeable, a strainer adapted to span the open top of the erected receptacle, integral support elements for the strainer on the erected receptacle, a collapsible and erectable funnel for use in delivering fresh oil to an engine, and an outer package for said receptacle body and said funnel in the collapsed state, for said liner in a folded state and said strainer, whereby said kit is essentially flat and compact when packaged, said receptacle body having an intermediate book-like form including hinged sides, said folded liner, said strainer and said funnel in the collapsed state being insertable between said hinged sides with

said sides folded toward each other in substantial parallelism for placement as a unit in said outer package, said outer package being formed from a snug fitting flexible wrapper fully enclosing and confining said kit, said strainer comprising a flat plate-like element including a detachable strip along one edge thereof, the far edge portion of the strainer having a support aperture, said strip adapted to bottom against the hinge of the collapsed receptacle body in said intermediate form with said far edge portion and aperture extending beyond the ends of said hinged sides remote from the hinge, whereby a display rack package suspension element may engage through said aperture.

4,442,937

COVER FOR GOLF BAG

Roscoe E. Delauder, 8300 Harris Ave., Baltimore, Md. 21234
Filed Sep. 29, 1982, Ser. No. 428,137
Int. Cl.³ A63D *55/00;* **B65D** *85/00*
U.S. Cl. 206—315.4 **3 Claims**



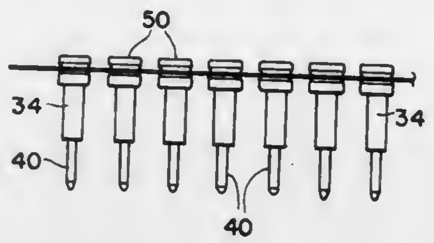
1. In a system providing a pivotal cover for the top of an elongate golf bag having a rim that is substantially rigid and defines: a top opening area for golf club access and front and a back and sides, and being of the type which may have a strap, means for extending a back portion of a said golf bag and top opening area adjacent thereto in an upward direction, said pivotal cover including: means for covering said upwardly extended back portion and top opening area, and means for pivoting said means for covering clear of said top opening area to a fully open position for golf club access the improvement comprising: means for detachably clamping the extending means around a part of a said golf bag rim, said extending means comprising a substantially rigid hemi-cylindrical upright member providing substantially a half-circle arc of golf club access, and said means for covering comprising a substantially rigid helmet-shaped member with dome and brim, cutaway sides and hemi-cylindrical skirt depending downwardly from the dome.

4,442,938

SOCKET TERMINAL POSITIONING METHOD AND CONSTRUCTION

James V. Murphy, Warwick, R.I., assignor to Advanced Interconnections, Warwick, R.I.
Filed Mar. 22, 1983, Ser. No. 477,622
Int. Cl.³ B65D *73/02, 85/24*
U.S. Cl. 206—329 **14 Claims**

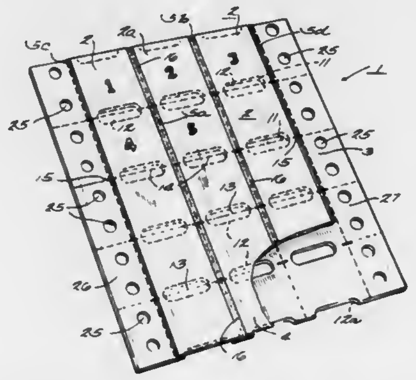
1. A construction for temporarily positioning a plurality of socket terminals on an electrical circuit board in a predetermined configuration prior to solder connection thereto, comprising a sheet of relatively thin, flexible, electrically insulative, resinous plastic material having a plurality of holes extending therethrough, said holes arranged in a planar configuration about said sheet to correspond with said predetermined positioning of said socket terminals in said circuit board, a plurality of socket terminals each having a pin adapted for insertion into an opening in said board at their lower end and an enlarged generally cylindrical head at their upper end, said enlarged head having upper and lower sections defined by an inwardly extending perimetal groove intermediate the height thereof and of a lateral extent less said upper and lower sections, said holes of a perimetal extent less than said head sections but generally corresponding to or slightly greater than that of said groove, said terminals adapted for positioning upon said sheet with the heads thereof extending through said holes and the sheet extending into said grooves and wherein the leading edge of at least one of said upper and lower head sections is provided with a longitudinally oriented, sheet contacting surface to enable said terminals to be push positioned into said grooves.



4,442,939

LONGITUDINALLY-SEAMED ASSEMBLY OF SLEEVE MARKERS

Gerald T. Downing, Port Washington, Wis., assignor to W. H. Brady Co., Milwaukee, Wis.
Filed Jun. 7, 1982, Ser. No. 385,426
Int. Cl.³ B65D *85/20, 63/00*
U.S. Cl. 206—345 **6 Claims**



1. In an assembly of sleeve markers comprising webs of flexible sheet material and means defining individual tubular sleeve markers that are manually detachable from the assembly,

the improvement wherein:

(1) the assembly is made with two webs arranged in face-to-face relationship and having longitudinal axes disposed parallel to one another;

(2) the means defining individual sleeve markers consist of longitudinal seams joining the two webs together and transverse severance lines extending across the webs,
  (a) there being a plurality of spaced longitudinal seams in the assembly, and
  (b) there being a plurality of spaced transverse severance lines, with each transverse severance line extending at least between the outermost longitudinal seams in the assembly,

(3) spaced rows of transverse apertures defined in at least one of the webs and extending transversely across the assembly, there being at least one transverse aperture for each individual sleeve marker, with each row of transverse apertures being positioned to be intersected by a transverse severance line; and

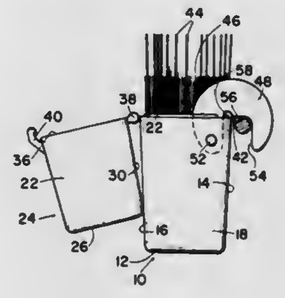
(4) a longitudinal separation line extending along each longitudinal seam;

an individual sleeve marker being manually detachable from the assembly along the transverse severance lines and longitudinal separation lines, each individual sleeve marker having opposed closed edge portions defined by parts of an adjacent pair of longitudinal seams and opposed open end portions defined by parts of an adjacent pair of transverse severance lines and having a portion of a transverse aperture along at least one of its open ends.

4,442,940

CONTAINER FOR USE IN STORING COUPONS

Burt H. McIntosh, 320 S. Boston #911, Tulsa, Okla. 74103
Filed Sep. 30, 1982, Ser. No. 430,938
Int. Cl.³ B65D *85/00*
U.S. Cl. 206—425 **2 Claims**

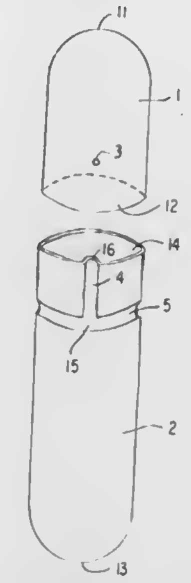


1. A container for use in storing coupons, notes, and the like between index cards and providing means for supporting the container on the edge of a shopping cart or the like, comprising:
- a container lower portion having a closed bottom, front and rearward sidewalls, end walls and an open top,
- a container upper portion having a closed top, front and rearward sidewalls, end walls and an open bottom;
- the container upper portion rearward sidewall, being hinged to the lower container portion rearward sidewall whereby the upper portion can be pivoted to a closed position on the lower portion or pivoted to an open position in which the open tops of the upper and lower portions are exposed;
- the lower and upper container portions being dimensioned to receive index cards therein, the upper portion of the cards extending into the container upper portion when the upper portion is in the closed position and the upper portion being dimensioned to receive coupons, notes and the like in a vertical manner when in an opened position;
- a first support tab secured to one end wall of said container lower portion; and
- a second support tab secured to the other end wall of said container lower portion, the support tabs being of relatively thin planar configuration and pivotal in planes parallel said end walls, said tabs being pivotal forwardly of said container lower portion forward wall, and each support tab having means forming a hook to receive a support edge, such as the upper edge of a shopping cart, whereby the container may be supported with said bottom portion held uprightly and with said top portion hinged to the open position, the contents of the container lower portion, such as index cards, coupons, etc. being readily available for examination and retrieval and storable in the container opened top portion, said tabs being pivotal rearwardly to extend within said container lower and upper portions when said container upper portion is closed, the interior of said container lower portion being unencumbered to receive contents therein.

4,442,941

ANTI-SPILLING DRUG CAPSULE

Alec D. Keith, Miami, Fla., assignor to Key Pharmaceuticals, Inc., Miami, Fla.
Filed Jan. 11, 1982, Ser. No. 338,257
Int. Cl.³ B65D *85/56, 6/02*
U.S. Cl. 206—540 **4 Claims**

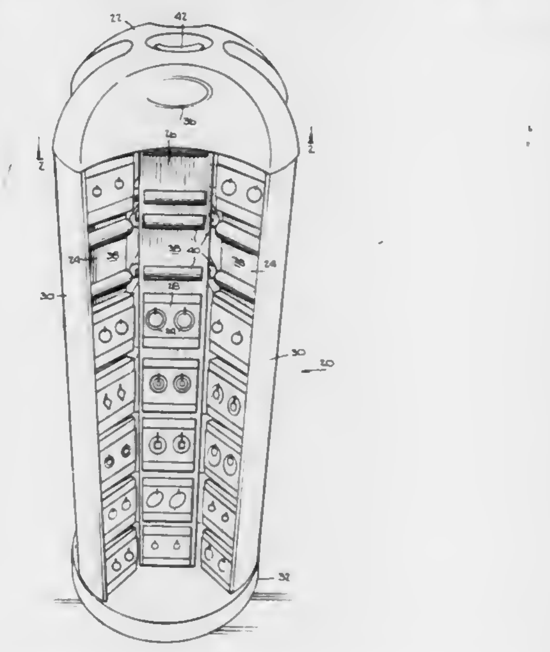


3. A capsule suitable for housing a plurality of pellets having a first member and a second member, said first member having a raised portion and said second member having a connecting communication with said annular groove, each of said connecting groove and said annular groove having a depth at least as great as the height of said raised portion and said annular groove having a width approximately the same as the width of said raised portion, said connecting groove touching the open end of said second member to permit the mating of said raised portion with said connecting groove, said first member being locked into said second member by positioning said raised portion in said annular groove at a position remote from said connecting groove.

4,442,942

CARDED MERCHANDISE DISPLAY

Raymond J. Cuminale, New York, N.Y.; Stanley W. Otto, Platte City; Jerry L. Knipp, Grand View; Bernard P. Seibolt, Kansas City, all of Mo., and Fred E. Yarkoni, Paramus, N.J., assignors to Hallmark Cards, Inc., Kansas City, Mo.
Filed Mar. 15, 1982, Ser. No. 358,101
Int. Cl.³ A47F *7/02*
U.S. Cl. 211—163 **10 Claims**



1. Apparatus for displaying merchandise mounted on display

cards generally "C"-shaped in cross-section having an upper channel and a bottom channel, one channel being wider than the other channel, said apparatus comprising:

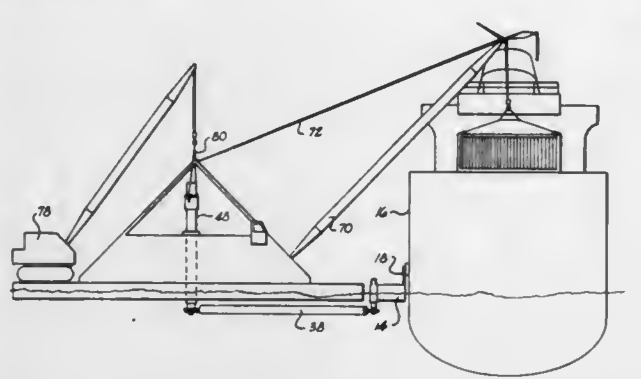
(a) a vertical central upright having at least two faces, each face having at least one pair of upper and lower rungs of different widths that can mesh, respectively, with the upper and lower channels of a display card so that the card can be removed easily from the rungs only by sliding it from the rungs in a direction essentially parallel to the length of the rungs;

(b) a plurality of vertical rotatably mounted side uprights having at least two faces, each face having at least one pair of upper and lower rungs of different widths that can mesh, respectively, with the upper and lower channels of a display card so that the card can be removed easily from the rungs only by sliding it from the rungs in a direction essentially parallel to the length of the rungs; and

(c) means for rotating each side upright from a first position to a second position, the vertical sides of the side uprights being sufficiently close to the vertical sides of the central upright when each side upright is in its first position so that display cards cannot be slid free from the rungs of any face of any upright and the vertical sides of the side uprights being sufficiently distant from the vertical sides of the central upright when each side upright is in its second position so that display cards can be slid free from the rungs of any face of any upright.

4,442,943
FLOATING CRANE STABILIZER

James T. Triplett, P.O. Box 4, Chester, S.C. 29706
Filed Nov. 19, 1981, Ser. No. 322,954
The portion of the term of this patent subsequent to Nov. 16, 1999, has been disclaimed.
Int. Cl.³ B66L *23/52*
U.S. Cl. 212—192 **5 Claims**

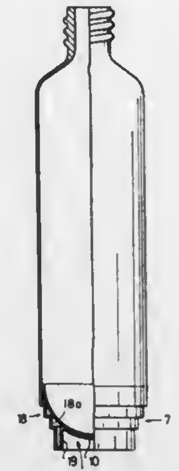


1. A device for attaching a floating crane to a structure, said floating crane including a generally annular float assembly, a boom carried on said assembly, and a power-operated means for rotating said crane about a vertical axis when moving a load supported on said boom said device comprising:

a spacing member having one end attached to said structure;
a vertically extending spud extending between said floating crane and the other end of said spacing member on said vertical axis.
means for connecting said spud to said spacing member and said floating crane so that said floating crane can be rotated relative to said structure on said vertical axis.

4,442,944
SATURATED POLYESTER RESIN BOTTLE AND STAND

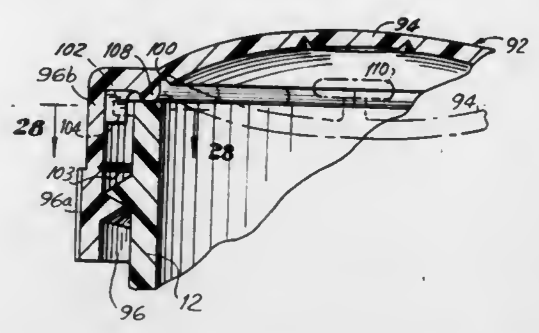
Yataro Yoshino, Tokyo; Takami Tsukada, Chiba; Tadao Saito, and Takamitsu Nozawa, both of Tokyo, all of Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan
Division of Ser. No. 251,530, Mar. 3, 1980, Pat. No. 4,367,820.
This application Sep. 23, 1982, Ser. No. 422,061
Int. Cl.³ B65D *23/00, 8/12*
U.S. Cl. 215—1 C **5 Claims**



1. In combination: a bottle and a stand, said bottle comprising a body portion and a bottom, said body portion including at its top an opening and connecting at its lower most end to said bottom, said bottom being hemispherical in shape and of smaller diameter than said body portion whereby a step is defined where said bottom meets said body portion; said stand comprising an inside surface and an outside surface, said inside surface receiving said bottom, said outside surface having an upper circumference at least equal to said body portion and a narrower lower circumference said inside surface having an upper circumference at least equal to said bottom portion and a narrower lower circumference and defining between said inside upper circumference and said inside lower circumference more than two right-angled stepped shoulders such that said bottle rests in point line contact only with the corners of at least two of said stepped shoulders.

4,442,945
UNITARY SCREW-TYPE SAFETY CLOSURE AND CLOSURE-CONTAINER COMBINATION

Jeffrey Sandhaus, Rte. 9W, Snedens Landing, N.Y. 10956
Continuation-in-part of Ser. No. 335,216, Dec. 28, 1981, Pat. No. 4,413,742. This application Jul. 19, 1982, Ser. No. 399,237
Int. Cl.³ B65D *55/02*
U.S. Cl. 215—218 **36 Claims**

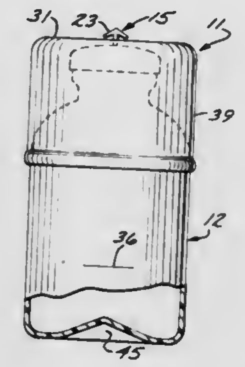


1. A safety closure having a unitary or one-piece construction comprising:

a closed top having a peripheral edge region;
an interiorly threaded skirt integral with and depending from the peripheral edge region of said top;
locking means formed integrally with said closure and movable under the action of actuating means from a locking position to a non-locking position; and
actuating means for moving said locking means from the locking position to the non-locking position, said actuating means being constituted by said top of said closure which has a substantially dish-shaped locking configuration such that the application of a pressure on said top in excess of a certain minimum required pressure will deform said top into a non-locking configuration and result in movement of said locking means from the locking to the non-locking position.

4,442,946
TAMPER RESISTANT CLOSURE APPARATUS

Christopher MacDonald, 2300 Fairview Ave., Apt. D-203, Costa Mesa, Calif. 92626, and Vesta J. Crow, 21138 Adriatic Ave., Long Beach, Calif. 90810
Filed Dec. 17, 1982, Ser. No. 433,388
Int. Cl.³ B65D *41/48*
U.S. Cl. 215—230 **10 Claims**

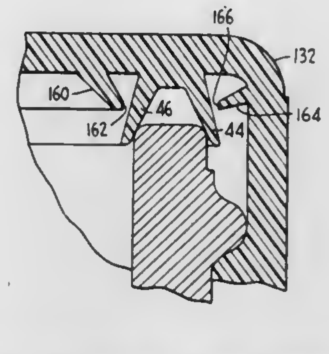


1. Tamper resistant closure apparatus comprising:

a container formed with a body having an opening;
a cap removably secured to said opening;
a fastener stem on said cap;
a cup shaped shroud for covering said cap and including a top wall spaced from and overlying the top of said cap and being formed centrally with an aperture receiving said stem, said shroud further including a peripheral skirt spaced from and projecting in covering relationship over the periphery of said cap to block access to said cap and;
a fastener head integral with said stem and operable to non-releasably lock said shroud over said cap to block access thereto whereby removal of said cap necessitates permanent physical alteration of said stem, head or shroud thus leaving perceivable evidence that said cap has been removed.

4,442,947
PLASTIC CLOSURE WITH SEALING FLAPS

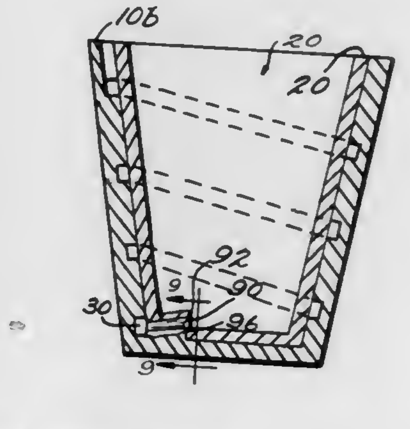
John N. Banich, Sr., Chicago, Ill., assignor to Continental White Cap, Inc., Northbrook, Ill.
Filed Jan. 18, 1983, Ser. No. 459,064
Int. Cl.³ B65D *53/00*
U.S. Cl. 215—344 **10 Claims**



1. A closure for a container, said closure comprising a cap-like member having an end panel and a depending skirt, said skirt carrying retaining means for locking engagement with a container and said end panel carrying sealing means for sealing engagement with a container, said sealing means including a frustoconical sealing flap depending from said end panel and having radially inner and outer surfaces, one of said surfaces being adapted to engage a container neck finish in sealing engagement, a protruding abutment having a primary flap engaging face facing the other of said surfaces and spaced from said other surface at only generally mid-length of said flap for restricting deflection of said flap when engaged with a container, said other surface being joined to said end panel in an area axially beyond and radially spaced from an area in which said one surface is joined to said end panel whereby said flap will automatically wrap around a container neck finish.

4,442,948
DRINKING VESSEL

Richard C. Levy, 6737 Newbold Dr., Bethesda, Md. 20817, and Bryan McCoy, 3139-9 University Blvd., Kensington, Md. 20795
Filed Sep. 16, 1982, Ser. No. 418,653
Int. Cl.³ A47G *19/22;* G09F *3/00*
U.S. Cl. 220—90.2 **18 Claims**



1. A drinking vessel comprising:

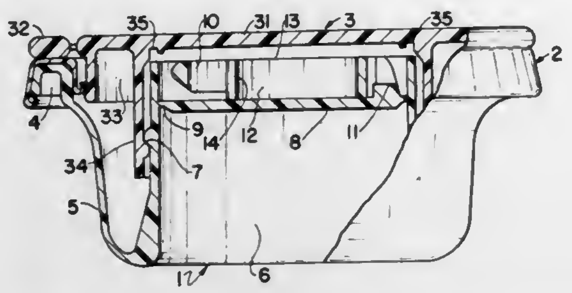
an inner shell and an outer shell, said outer shell being adapted to removably receive said inner shell in the interior thereof; and
means for forming at least one fluid flow path of predetermined non-linear configuration between said inner and outer shells, the interior of said fluid flow path being substantially exposed to facilitate cleaning when said inner shell is removed from said outer shell;
said outer shell including a transparent portion disposed to display fluid flow through at least a portion of said non-linear fluid flow path;
said inner shell including at least one aperture disposed to communicate between the interior of said inner shell and said fluid flow path when said inner shell is received by said outer shell;
said fluid flow path including an access to a user when said inner shell is received by said outer shell, whereby said user can draw fluid from the interior of said inner shell through said aperture into said fluid path and through said fluid path access.

4,442,949
TEAR OPEN CLOSURE ASSEMBLY

Davis B. Dwinell, Warren, and Jeremiah J. Laurizio, New Providence, both of N.J., assignors to American Flange & Manufacturing Co. Inc., Linden, N.J.
Filed Mar. 21, 1983, Ser. No. 476,999
Int. Cl.³ B65D *49/12*
U.S. Cl. 220—257 **10 Claims**

10. In container closure construction, a molded plastic closure having circumferentially disposed container wall engaging means, a central fluid passage closed off by a recessed integrally molded sealing diaphragm, a weakened tearing zone of reduced cross sectional thickness surrounding said diaphragm, a pull member integrally connected to said diaphragm

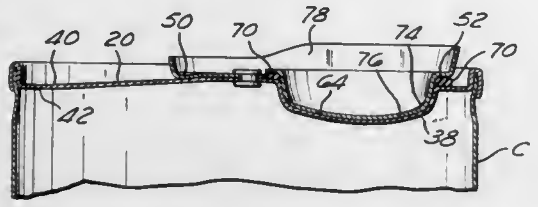
adjacent said tearing zone and substantially overlying said diaphragm, a closure cap forming part of said closure construction and overlying said fluid passage in spaced relation to said diaphragm so as to create a cylindrical void within which said pull member is housed and axially extending support means within said void adapted to restrain said diaphragm against excessive deflection in response to instantaneous pressure surge.



4,442,950
OPENING AND CLOSING MEANS FOR A CONTAINER TOP

Thomas P. Wilson, 4063 Deervale Dr., Sherman Oaks, Calif. 91403

Filed Jan. 24, 1983, Ser. No. 460,394
Int. Cl.^{3} B65D *41/32*
U.S. Cl. 220—269 **12 Claims**



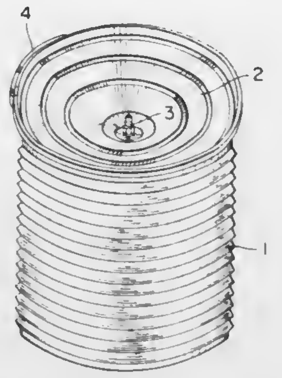
1. A top for initially closing and sealing a container, adapted to enable selective opening, reclosing, and reopening of the container, as desired by the user, comprising:
(a) a body member, adapted to be mounted on the container, and to initially close and seal the conainer, including means for enabling an opening to be formed therein;
(b) a tab, adapted to be mounted on the body member, including means for enabling the tab to be selectively operable for engaging or disengaging the body member, means for selectively engaging the opening-forming means in the body member so as to enable the opening to be formed, for selectively opening the container, and means for selectively engaging or disengaging the opening formed in the body member, for selectively reclosing or reopening the container; and
(c) means for mounting the tab on the body member, to enable selective operation of the tab relative to the body member.

4,442,951
HERMETICALLY SEALED CONTAINER

Hiroshi Nakazawa, Funabashi, and Makoto Kuji, Saitama, both of Japan, assignors to Toho Sheet Frame Co., Ltd., Tokyo, Japan

Filed Jan. 13, 1983, Ser. No. 457,571
Claims priority, application Japan, Aug. 18, 1982, 57-124012[U]
Int. Cl.^{3} B65D *45/32*
U.S. Cl. 220—319 **20 Claims**

1. A hermetically sealed container with an openable top lid, comprising:
a container body (1);
a top lid (2);
a binding member (4) for mutually binding said container body and said top lid;
packings (5)(6) for sealing respectively mounted on said container body and said top lid;

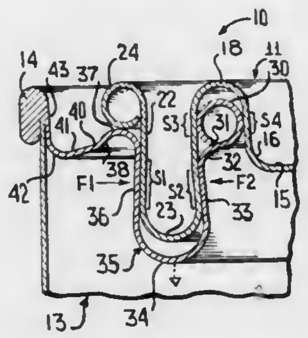


wherein said top lid (2) is recessed toward the center thereof and is provided at said center with a valve for pressure releasing, filling and pressure measuring, the upper end of said valve being positioned not exceeding a plane containing the upper rim of the top lid.

4,442,952
QUAD-SEAL SNAP LOCK

Leon M. Patarini, Palos Hills, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

Filed Dec. 28, 1981, Ser. No. 335,305
Int. Cl.^{3} B65D *43/06*
U.S. Cl. 220—354 **21 Claims**



1. A two-piece closure for use with a container comprising a ring and a plug, said plug including an annular axially projecting plug portion, said ring including an axially opening annular channel adapted to receive said plug portion, said annular channel being defined by inner and outer channel walls and a bight wall therebetween, and means radially outboard of said outer channel wall responsive to insertion of said plug portion into said annular channel for radially inwardly deflecting said outer channel wall to bring the same into intimate friction engagement with said plug portion.

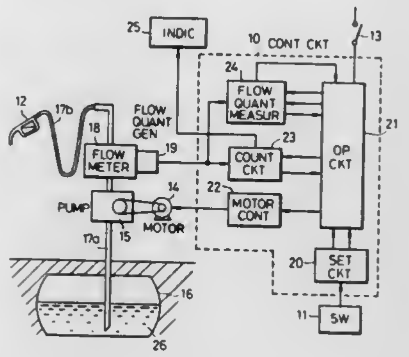
4,442,953
APPARATUS FOR SUPPLYING FLUID OF PRESET QUANTITY

Yoshikazu Miyamoto, Kokubunji; Tetsuya Kakimoto, Tatomi, and Wasaburo Tanida, Tokyo, all of Japan, assignors to Tokico Ltd., Kawasaki, Japan

Filed Sep. 2, 1981, Ser. No. 298,878
Claims priority, application Japan, Sep. 5, 1980, 55-123350
Int. Cl.^{3} B67D *5/08*
U.S. Cl. 222—14 **6 Claims**

1. An apparatus for supplying fluid of preset quantity comprising:
a fluid supplying pump provided in a fluid supplying pipe arrangement;
a motor for driving said fluid supplying pump;
metering means for metering the fluid flowing in said fluid supplying pipe arrangement;

presetting means for presetting a quantity of fluid to be supplied; and
control means coupled to said motor, said metering means, and said presetting means, for detecting that supplied quantity of fluid measured by said metering means has reached a quantity smaller than the preset fluid supplying quantity preset by said presetting means by an estimated oversupply quantity of fluid, and stopping said motor from being driven,

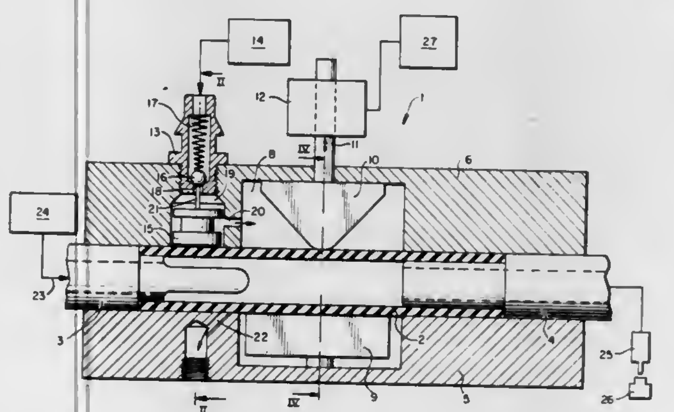


said estimated oversupply quantity of fluid being a quantity equal to a quantity of fluid supplied by said fluid supplying pump after said motor is stopped from being driven and rotates due to inertia,
said control means including a first register prestored with a coefficient, and estimating means for estimating said estimated oversupply quantity of fluid from said coefficient stored in said first register.

4,442,954
SELF-PRESSURIZING PINCH VALVE

Wieslaw Bergandy, Arnold, Md., assignor to National Instrument Company, Inc., Baltimore, Md.

Filed Jul. 30, 1982, Ser. No. 403,331
Int. Cl.^{3} B67D *5/08;* F16L *55/14*
U.S. Cl. 222—55 **9 Claims**

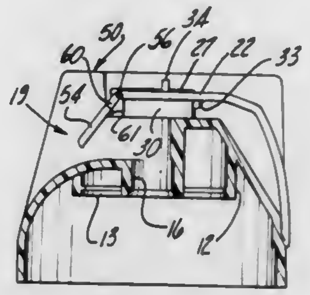


9. In a liquid filling machine for dispensing predetermined quantities of liquid comprising a flow line for conveying liquid under pressure from a supply to nozzle means for dispensing said liquid, the improvement comprising a self-pressurizing pinch valve means provided in said flow line between said nozzle means and said supply for controlling the flow of liquid in said flow line, said pinch valve means including flexible hose means for conveying said liquid, chamber means about at least a portion of said flexible hose means, said flexible hose means being adapted to be pinched in said chamber means for valving the flow of liquid therethrough, and means responsive to movement of said flexible hose means for controlling the pressure in said chamber means so that it substantially balances the internal pressure in said hose means.

4,442,955
CHILD-RESISTANT AND TAMPER INDICATING OVERCAP

Randall G. Bush, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.

Continuation-in-part of Ser. No. 163,939, Jun. 30, 1980, Pat. No. 4,333,589. This application Jun. 7, 1982, Ser. No. 385,829
Int. Cl.^{3} B65D *83/14;* B67D *5/32*
U.S. Cl. 222—153 **6 Claims**

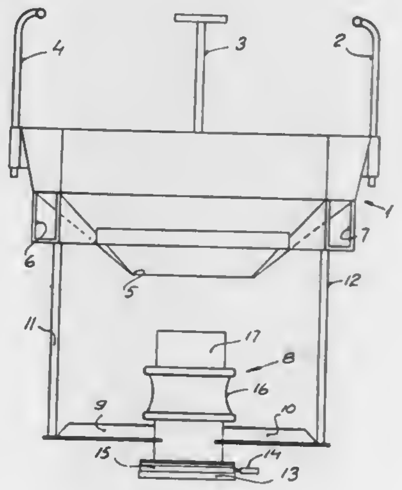


1. A child-resistant and tamper indicating overcap for a pressurized container of the type having an axially movable dispensing valve at the center top of the container, said overcap comprising: a generally cup-shaped body having a depending skirt with an annular lip adapted to be fastened to a container, a valve receiving cavity formed in said body, a finger depression extending diametrically across the top of said body and intersecting said valve receiving cavity, a valve guard unitary with said body and slidably mounted in said finger depression for movement radially of said valve receiving cavity between a valve-guarding position and a valve-actuating position, an indicator tab, hinge means connecting said indicator tab to said valve guard for relative hinging movement, lock means on said tab engageable with said body to prevent radial movement of said valve guard to said valve actuating position, said hinge means connecting said tab to said guard being frangible to permit detachment of said tab from said guard to permit movement of said guard to said valve-actuating position and give visible evidence of tampering.

4,442,956
APPARATUS FOR EMPTYING SINGLE OR MULTI-WALLED PACKAGES

Sune J. R. Carlsson, Tallåsvägen 8, Falkenberg, Sweden

PCT No. PCT/SE80/00275, 371 Date Jul. 6, 1981, 102(e) Date Jul. 6, 1981, PCT Pub. No. WO81/01278, PCT Pub. Date May 14, 1981
PCT Filed Nov. 5, 1980, Ser. No. 285,188
Claims priority, application Sweden, Nov. 5, 1979, 7909146
Int. Cl.^{3} B65D *33/36;* B65B *69/00*
U.S. Cl. 222—185 **5 Claims**



1. An apparatus for emptying packages which have discharge mouth portions, comprising support means for support-

ing the package which is to be emptied, said support means having an opening which permits the discharge mouth portion of the package to extend downwardly below the support means, an outlet member located below the support means and having a ring for engaging the discharge mouth portion of the package, said ring being shiftable from an upper position to a lower position, said ring when in its upper position being engageable with the discharge mouth position of a package which is supported on the support means, said ring being shiftable downwardly from its upper position to a lower position to stretch the package and avoid the formation of folds which render the emptying operation more difficult, and a frame means located in said ring for entering the discharge mouth portion to prevent the discharge mouth portion from folding inwardly.

4,442,957

FLUID INJECTOR DEVICES

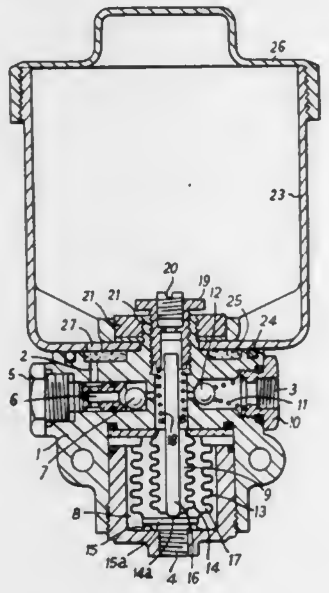
Brian P. Neal, Bristol, and Alan R. Turner, Bath, both of England, assignors to Bendix Westinghouse Limited, Bristol, England

Filed Apr. 15, 1981, Ser. No. 254,370

Claims priority, application United Kingdom, May 3, 1980, 8014911

Int. Cl.³ B65D *37/00*

U.S. Cl. 222—207 **9 Claims**



9. A fluid injector device having a housing defining a chamber therewithin, said housing having an input port, a one-way output port, and a control signal port communicating with the chamber, said control signal port being connected to a positive source of signal pressure, said positive source of signal pressure being located outside of said housing, dividing wall means dividing said chamber into a first region communicating with the input and output ports and a second region communicating with the control signal port, said dividing wall means having a first fluid pressure responsive surface exposed to the fluid pressure level in said first region and a second fluid pressure responsive surface exposed to the fluid pressure level in said second region, the effective area of said second surface being greater than the effective area of said first surface whereby said dividing wall means responds to the force differential created by said signal pressure to move from a rest position to eject fluid from the first region via the output port, and resilient means yieldably urging said dividing wall means toward said rest position.

4,442,958

CONTAINER FOR DISPENSING A VISCOUS LIQUID MEDIUM

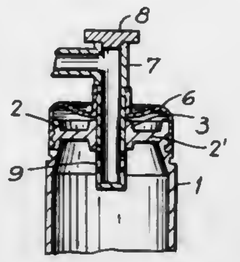
Walter Amos, Wiesbaden, Fed. Rep. of Germany, assignor to Blendax-Werke R. Schneider GmbH & Co., Mainz, Fed. Rep. of Germany

Filed Mar. 9, 1981, Ser. No. 242,072

Claims priority, application Austria, Mar. 10, 1980, 1328/80

Int. Cl.³ B65D *37/00, 5/40*

U.S. Cl. 222—213 **2 Claims**



1. A container from which a viscous liquid contained therein is selectively dispensible, said container comprising:

- a tubular body for containing a supply of liquid, said body having a hollow interior open at one end of the body;
- a valve body disposed on said container body proximate the open end thereof;
- a piston proximate an end of said body opposite its open end and arranged for displacement along said hollow interior toward said open end;
- a resiliently deformable container top on said tubular body at said open end and substantially closing the same, said top including an aperture defined therethrough communicating with said hollow interior, said top being selectively deformable from a normal position to a dispensing position substantially in the direction of said hollow interior of the container body and thence resiliently returnable to said normal position; and
- an elongated dispensing mouthpiece fixedly secured to said top and extending through said aperture thereof, said mouthpiece including an open mouth disposed exteriorly of said container body and at least a valve opening disposed within the hollow interior of said body, and said mouthpiece further including a passage for liquid communication extending between said open mouth and said valve opening of the mouthpiece;
- said valve opening being so defined in the mouthpiece that in said normal position of the container top the valve opening is closed by said valve body whereas deformation of the top to its dispensing position correspondingly carries the mouthpiece to move the valve opening therein to a position remote from said valve body to enable liquid contained in the tubular body to dispensingly flow through said valve opening and out of said container through the open mouth under the increased interior container pressure created by the inwardly directed deformation of said container top from its normal to its dispensing condition;
- said tubular body having a substantially continuous sidewall bounding the hollow interior of said body, and said valve body comprising an annular ring supported in radially inwardly spaced relation from said sidewall proximate said container open end and through which said mouthpiece relatively movably extends such that said valve opening of the mouthpiece is disposed within said annular ring in said normal position of the container top to close the valve opening and prevent the flow of liquid contained in the tubular body dispensingly through the mouthpiece, while in said dispensing position of the container top the mouthpiece is relatively moved with respect to said annular ring so that the valve opening is correspondingly carried to a position remote from the annular ring to permit the flow of liquid through the opening and out of said container.

4,442,959

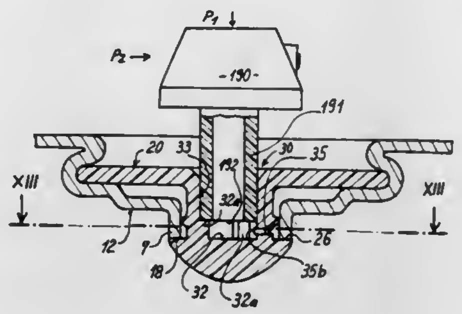
SELF-CLOSING VALVE-AND-LID ASSEMBLY

Luigi Del Bon, Feldstrasse 141, and Franco Del Bon, Feldstrasse 139, both of 4663 Aarburg, Switzerland

Filed Apr. 30, 1981, Ser. No. 259,158

Int. Cl.³ B65D *83/14*

U.S. Cl. 222—402.24 **25 Claims**



1. Self-closing two-piece valve-and-lid assembly adapted for closing the open top end of a container fillable with pressurized product, and having a central assembly axis, comprising

- (I) a lid the periphery of which is adapted for being sealingly connected with a top rim of a container sidewall surrounding the said container top opening, and extending generally transverse to said central assembly axis,
  - (i) said lid having a central dome and a central opening in the middle of said lid dome, and being rigid under conditions of filling product into, and discharging product from said container,
  - (ii) said lid extending generally in a main lid plane transverse to said central assembly axis,
  - (iii) said lid dome having a top wall having an outer face and an opposite inner surface facing inward toward the interior of said dome, and a circumferential sidewall which latter extends generally at an angle out of said main lid plane,
  - (iv) said lid dome comprising a collar portion extending axially relative to said central assembly axis and ending in an annular shoulder means about said central dome opening;
- (II) a valve body of elasticaly resilient material, comprising
  - (a) a valve disc part having an outer face adapted for facing away from a container and an opposite underside face resting, in a peripheral disc zone, on an annular zone of said inner surface of said dome top wall,
  - (b) a reduced radial diameter valve stem depending from said underside face of said valve disc part and extending axially relative to said central assembly axis, said valve stem having an outer surface;
  - (c) a valve head at the lower end of, and being of larger radial diameter than, said valve stem, and having an annular face extending in a plane transverse to said central assembly axis, said annular valve head face facing toward said annular shoulder of said collar portion and bearing a first contact zone on said valve head,
  - (d) a cavity being open in said outer face of said disc part forming a rim therein, and extending from said opening axially downward at least into said valve stem and having a bottom end located near the radial plane in which said first contact zone of said valve head extends,
  - (e) additional annular sealing means about said valve stem spaced from said valve head and adapted for making sealing contact at all times with said lid dome collar portion in a second contact zone axially spaced from said first contact zone,
  - (f) duct means in said valve stem, having at least one exit opening for product flow in said cavity and at least one entry opening in a region of the outer surface of said valve stem and head extending from said first to short of said second contact zone thereon,
  - (g) said valve body having a deformable portion thereof located in a region comprising a part of said valve stem above said duct therein and an annular part of said valve disc vicinal to said valve stem,
- which deformable portion is stretched in axial downward direction toward the interior of a container when said valve-and-lid assembly is opened, '(h) the distance of said annular upward face of said valve head from the underside face of said valve disc part, prior to said valve body being mounted in said lid dome, being shorter than the distance between these same two valve body elements when said valve body is mounted in said lid dome, thereby imparting a bias to said annular upward face of said valve head against said annular shoulder means of said collar portion, thereby biassing said first contact zone of said valve head, when in closed state, into sealing contact with said annular shoulder of said collar portion.

4,442,960

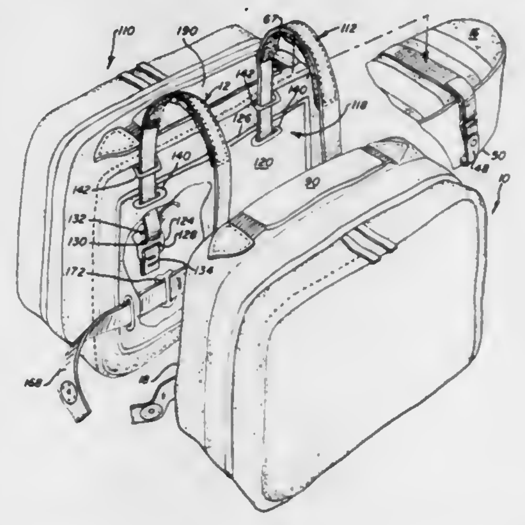
SADDLEBAGS

Bruce W. Vetter, Homer, Ill., assignor to BagMan, Inc., Homer, Ill.

Filed Oct. 22, 1981, Ser. No. 313,637

Int. Cl.³ B62J *9/00*

U.S. Cl. 224—32 A **17 Claims**



1. A pair of saddlebags for a motorcycle or like vehicle comprising:

- first and second separable housings;
- a flexible strap associated with each of said housings for suspending the housings from the vehicle; and
- a first mounting means spanning the width of and being removably secured to a seat on said vehicle for mating with at least one flexible strap extending between said housings for positively locating the housings on the vehicle;
- said strap and mounting means having securing means comprising a Velcro type strip on the first mounting means removably engaging with mating means on said strap, said securing means being readily engageable and separable for detachably suspending said housings from said vehicle.

4,442,961

LOAD CARRIER

John A. Bott, 931 Lakeshore Dr., Grosse Pointe, Mich. 48236

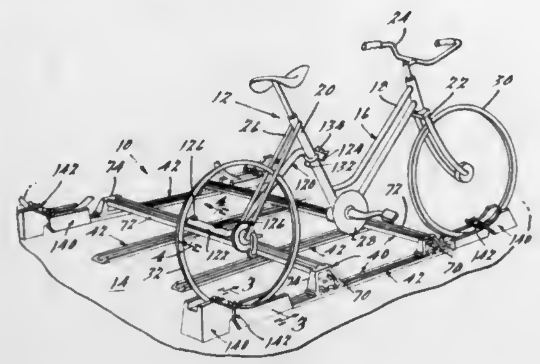
Continuation-in-part of Ser. No. 213,675, Dec. 5, 1980, abandoned. This application Apr. 5, 1982, Ser. No. 365,448

Int. Cl.³ B60P *3/06*

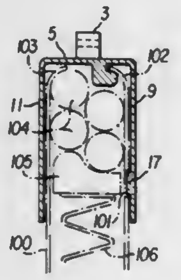
U.S. Cl. 224—42.03 B **50 Claims**

1. A device for supporting and securing a bicycle having a frame and front and rear wheels in an upright position extending longitudinally above a substantially horizontal surface of a vehicle for transport by said vehicle, said device extending

longitudinally in a direction substantially parallel to said bicycle when mounted on said device and extending laterally in a direction substantially perpendicular to said bicycle when mounted on said device and said device comprising a base support secured to said vehicle, first retaining means for engaging said frame to retain said bicycle against lateral movement relative to said vehicle, and second retaining means for engaging said front and rear wheels to retain said bicycle against longitudinal movement relative to said vehicle, said first retaining means being laterally positionable in various operable positions relative to said base support.



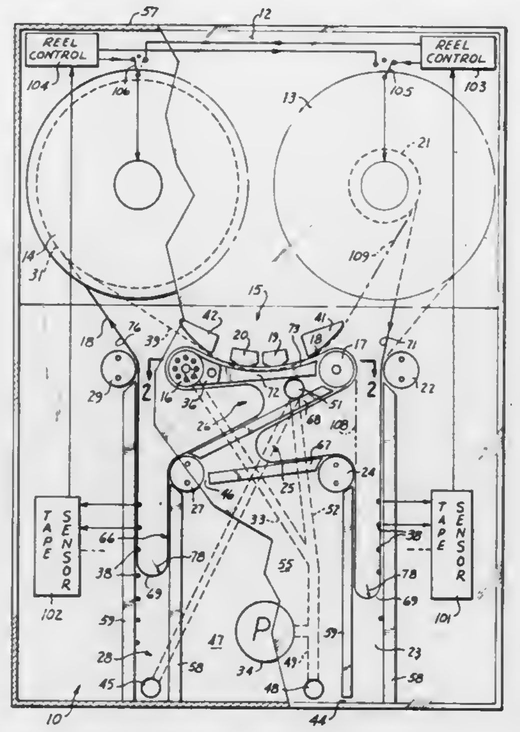
4,442,962
MAGAZINE HANGER
Daniel D. Musgrave, 8201 Caraway St., Cabin John, Md. 20818
Filed Feb. 18, 1981, Ser. No. 235,545
Int. Cl.^{3} F41C *27/00*
U.S. Cl. 224—255 **7 Claims**



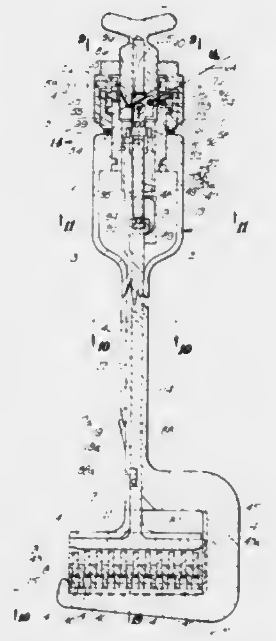
1. A cartridge magazine hanger comprising a casing to fit over the feed end of the magazine, said casing having a top wall and at least two sidewalls, said top wall having releasable means located on the inner surface thereof to engage at least one lip of the magazine.

4,442,963
TAPE ADVANCING METHOD AND APPARATUS WITH FAST TAPE ADVANCE MODE
Frederic F. Grant, Bellflower, Calif., assignor to Datatape Incorporated, Pasadena, Calif.
Continuation-in-part of Ser. No. 171,851, Jul. 24, 1980, abandoned. This application Apr. 19, 1982, Ser. No. 369,853
Int. Cl.^{3} B65H *17/32*
U.S. Cl. 226—97 **38 Claims**

24. In apparatus for advancing tape having an information recording surface in engagement with an information transducing head in an information transducing mode, and for advancing tape past said head out of engagement with said head in a fast tape advance mode, the improvement comprising in combination:
- a tape drive capstan;
- means for applying said tape to said capstan and for advancing with said capstan said information recording surface of said applied tape in engagement with said information transducing head in said information transducing mode;
- means for generating a pressure gradient on a surface of said tape opposite said recording surface in a direction away from said head;
- means for disengaging said tape from said capstan for said fast tape advance mode;
- means connected to said generating means for maintaining with said pressure gradient said tape out of engagement with said head while said tape is advanced in said fast tape advance mode;
- means connected to said tape for advancing said tape past said head in said fast tape advance mode while said pressure gradient maintains said tape out of engagement with said head; and
- means for terminating generation of said pressure gradient and for reapplying said tape to said head and to said capstan, including means for moving said tape through a distance to said head.



4,442,964
PRESSURE SENSITIVE AND WORKING-GAP CONTROLLED SURGICAL STAPLING INSTRUMENT
Carl T. Becht, Cincinnati, Ohio, assignor to Senco Products, Inc., Cincinnati, Ohio
Filed Dec. 7, 1981, Ser. No. 327,932
Int. Cl.^{3} A61B *17/04*
U.S. Cl. 227—8 **25 Claims**



1. In a surgical stapling instrument of the type having a fixed jaw with an anvil surface thereon with staple clinching grooves therein, a movable jaw shiftable toward and away from said fixed jaw and carrying a plurality of staples and a driver therefor, means to shift said movable jaw, a staple driver actuator shiftable between a retracted position and an advanced position wherein it actuates said staple driver to cause said staples to pass through tissue located between said fixed jaw and said movable jaw and to be clinched by said anvil surface, and means to shift said staple driver actuator, said surgical stapling instrument having a working gap comprising a range of distances between said fixed jaw and said movable jaw throughout which said staples can be properly implanted and clinched, the improvement comprising latch means permitting shifting of said staple driver

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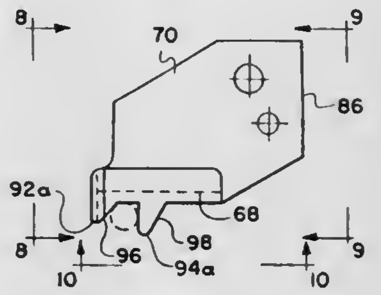
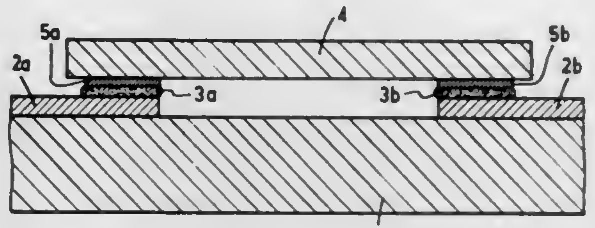
4,442,965
NAIL FEED MECHANISM
Herbert E. Leistner, 167 Sweeney Dr., Toronto, Ontario, Canada
Filed Apr. 20, 1981, Ser. No. 255,837
Int. Cl.^{3} B25C *1/04*
U.S. Cl. 227—136 **9 Claims**



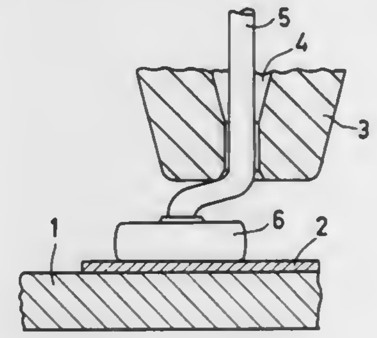
1. A nail feed mechanism for use in power operated nailing guns of the type having a nail guiding barrel, a nail magazine, for carrying a strip of nails, wherein such nails are joined together in such strip by at least two lengths of wire, said nails being fastened to said wires at spaced intervals, said nail feed mechanism being located to one side of said barrel, for feeding said strip of nails from said magazine to said barrel, a driving member reciprocable within said barrel for driving nails, and power operated means for operating such driving member, thereby separating an endmost nail of said strip from said wires and driving same out of said barrel, and comprising;
- means defining a nail feed channel for receiving said strip of nails;
- nail feed pawl means reciprocable adjacent to such channel relative to such a strip of nails; pairs of forward and rear tooth members on such pawl means, and defining groove means between such pairs for reception of said wires interengageable with nails in such strip, whereby to advance the endmost nail in such strip into said barrel;
- power operated means for operating said pawl means in timed relation to the operation of said driving member;
- contoured surfaces on two of said forward teeth of said pairs around which said wires are bent over when said endmost nail is driven along said barrel by said driving member, and,
- spacer means on some of said forward teeth adjacent to said contoured surfaces, such spacer means maintaining such endmost nail out of contact with such bent over portions of such wires diring driving of such endmost nail.

4,442,966
METHOD OF SIMULTANEOUSLY MANUFACTURING MULTIPLE ELECTRICAL CONNECTIONS BETWEEN TWO ELECTRICAL ELEMENTS
Philippe Jourdain, Evreux, France; Georges E. Florens, deceased, late of Cierrey, France, and Georges A. L. Souquet, representative, Paris, France, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 14, 1981, Ser. No. 311,211
Claims priority, application France, Oct. 15, 1980, 80 22083
Int. Cl.^{3} B23K *31/00*
U.S. Cl. 228—123 **4 Claims**



1. A method for simultaneously electrically connecting two semiconductor elements each having a plurality of mutually-opposing contact pad metallizations, which comprises:
- applying an electrically-conductive paste to each of said contact pad metallizations on at least one of said two elements; then
- polymerizing said electrically-conductive paste; then
- compressing said polymerized electrically-conductive paste between the mutually-opposing contact pad metallizations of said two elements; and
- heating at least one of said two elements being connected during compression.

4,442,967
METHOD OF PROVIDING RAISED ELECTRICAL CONTACTS ON ELECTRONIC MICROCIRCUITS
Hermanus A. van de Pas, and Huibert A. Knobbout, both of Nijmegen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 1, 1982, Ser. No. 353,724
Claims priority, application Netherlands, Mar. 20, 1981, 8101371
Int. Cl.^{3} H01L *21/441*
U.S. Cl. 228—159 **2 Claims**



1. A method of providing a raised contact portion on a contact area of an electronic microcircuit, which comprises:
- passing a metal wire through a capillary wire guide;
- forming a ball at one end of said metal wire by heating said wire;
- attaching said ball to said contact area by pressing said ball against said contact area with an end of said capillary wire guide;
- moving said capillary wire guide upwards and laterally with respect to said contact area;
- lowering said capillary wire guide to form a notch in said

metal wire adjacent said ball with the end of said capillary wire guide; and

severing said metal wire at the area of said notch.

4,442,968

BRAZING FILLER METAL COMPOSITION AND PROCESS

John H. McMurray, Stratford, and Jule Miller, Derby, both of Conn., assignors to Avco Corporation, Stratford, Conn.

Division of Ser. No. 281,793, Jul. 9, 1981, Pat. No. 4,394,347. This application Oct. 21, 1982, Ser. No. 435,668

Int. Cl.^{3} B23K *1/04*

U.S. Cl. 228—231 **9 Claims**

1. A vacuum brazing process comprising (a) applying a brazing filler metal composition to a hole in a subject base metal, said filler metal composition comprising, by weight, from about 8.0% to about 11.0% chromium, from about 2.0% to about 3.0% boron, from about 3.0% to about 4.5% silicon, from about 2.5% to about 4.0% iron, from about 7.0% to about 9.0% tungsten, a maximum of about 0.06% carbon, and the remainder nickel, and said subject base metal having a higher melting point than said filler metal composition; (b) heating to the brazing temperature of the filler metal composition; and (c) cooling.

4,442,969

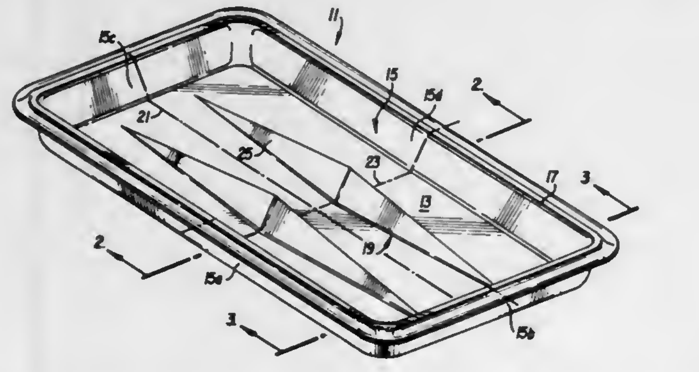
REINFORCED PACKAGING TRAY

M. James Holden, Canandaigua, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 28, 1983, Ser. No. 489,636

Int. Cl.^{3} B65D *1/34, 1/44*

U.S. Cl. 229—2.5 R **20 Claims**



1. An integral packaging tray comprising a generally rectangular bottom and sidewalls extending upwardly from edges of said bottom, said sidewalls being of substantially the same height and being integrally connected around the periphery of said bottom, said bottom containing at least one integrally formed reinforcing rib projecting upwardly therefrom and extending along said bottom from a substantially centerline portion of said bottom defined between two opposing sidewalls toward said two opposing sidewalls, said rib having a maximum cross-sectional dimension at said substantially centerline portion and tapering to a minimum cross-sectional dimension at its termination with a uniformly reducing cross-sectional dimension as it approaches said two opposing sidewalls.

4,442,970

PACKAGE FOR LIQUIDS

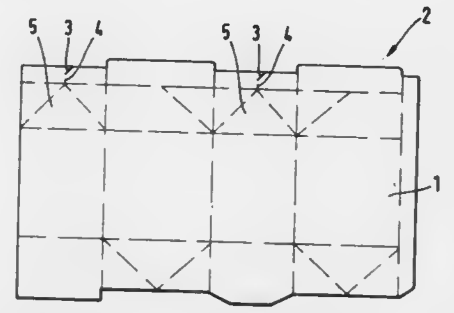
Jürgen Färber, Kaarst, Fed. Rep. of Germany, assignor to PKL Papier-und Kunstoff Werke Linnich GmbH, Dusseldorf, Fed. Rep. of Germany

Filed May 6, 1982, Ser. No. 375,776

Claims priority, application Fed. Rep. of Germany, May 29, 1981, 312141

Int. Cl.^{3} B65D *5/74*

U.S. Cl. 229—17 G **4 Claims**



1. In a plastic-coated cardboard blank for folding into a parallelepipedal package that is intended for liquids, the blank having opposite triangular areas that are to be folded inwardly into a double-M closure for a gable-shaped top and such areas each has an upper edge and a middle fold line extending to the apex of said triangular area, the improvement which comprises providing each of said opposite triangular areas with a slit that slants from the upper edge down to at least to the middle fold line to form a non-folding flap, whereby the folded package has an improved seal.

4,442,971

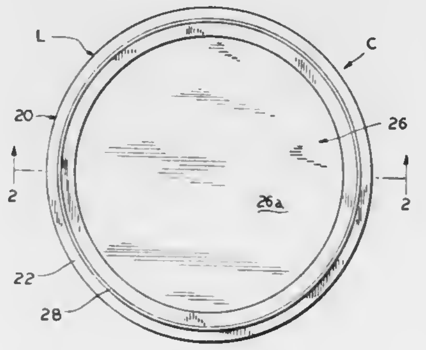
PEELABLE, SEALABLE CLOSURE ARRANGEMENT

Charles R. Helms, Malvern, Pa., assignor to Container Corporation of America, Chicago, Ill.

Filed Sep. 13, 1982, Ser. No. 416,949

Int. Cl.^{3} B65D *5/64*

U.S. Cl. 229—43 **5 Claims**



1. A peelable, sealable closure arrangement for a container body and lid adapted to insure integrity of seal when internal pressure increases within the container, said arrangement comprising:

(a) a tubular container body, open at the upper end, including:
  (i) a body wall;
  (ii) a peripheral rim extending radially outward from an upper marginal portion of said body wall;
(b) a lid adapted for interlocking and hermetic sealing engagement with said container body;
(c) said lid including a generally flat central panel having:
  (i) a layer of paperboard;
  (ii) a coating on the underside of said paperboard layer, which coating is formed of plastic material which is compatible for heat sealing to an inner surface of said container body rim;

(d) said lid also including a molded plastic rim having:
  (i) a horizontal flange, the underside of which is secured to a marginal area of the upper side of said central paperboard panel;
  (ii) a skirt depending from the outer periphery of said rim;
  (iii) a lip projecting radially inward from a lower extremity of said skirt and defining with portions of said skirt and said central panel an annular channel for receiving the rim of said container body;
  (iv) said lid rim having a downwardly tapered inner portion whose underside is secured to said lid central paperboard panel to maintain an inward deflection of said panel;
(e) said lid rim lip having a sharp pointed inner peripheral edge adapted to bite into said container rim to maintain said lid and container body rims in sealing engagement with each other even when the said lid central paperboard panel is deflected out of its normal horizontal plane by internal gas pressures generated within said container.

4,442,972

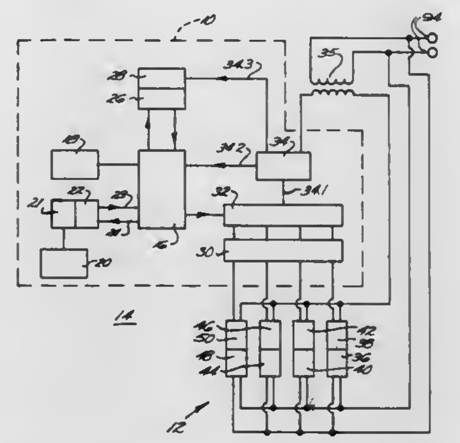
ELECTRICALLY CONTROLLED PROGRAMMABLE DIGITAL THERMOSTAT AND METHOD FOR REGULATING THE OPERATION OF MULTISTAGE HEATING AND COOLING SYSTEMS

Bharat B. Sahay, Johnson City, and James J. Jones, Elizabethton, both of Tenn., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 14, 1981, Ser. No. 301,783

Int. Cl.^{3} F23N *5/20*

U.S. Cl. 236—1 EA **8 Claims**



1. Thermostat means for regulating a temperature conditioning system having independently operable main and auxiliary temperature conditioning means comprising means for sensing the temperature in a zone whose temperature is to be conditioned, means for scheduling temperatures to be provided in the zone during respective periods of time in a selected time sequence, and control means responsive both to the temperature sensing and scheduling means for operating the main temperature conditioning means when required in any of said time periods either to maintain a scheduled temperature in a period or to initiate conditioning of the zone temperature to provide the zone temperature scheduled to be provided in a next scheduled time period, said control means being responsive to the temperature sensing and scheduling means for comparing the zone temperature being provided in a time period with a temperature scheduled to be provided in that period, for comparing the zone temperature in any of said time periods with the temperature scheduled to be provided in the zone in the next scheduled time period in said time sequence to determine a time period when any operation of the main temperature conditioning means is required to be initiated for conditioning the zone temperature at a predetermined and desired rate of change of zone temperature to provide said next scheduled zone temperature at the start of said next time period, and to operate the main temperature conditioning means when required to maintain said scheduled zone temperature or at said determined time to initiate conditioning of the zone temperature to provide said next scheduled temperature, said control means being further responsive to the temperature sensing means for determining the actual rate of change of temperature then effected in the zone by the temperature conditioning means of the system during any operating thereof and for operating the auxiliary temperature conditioning means to aid the main temperature conditioning means in conditioning zone temperature only when said actual rate of change of zone temperature is less than said predetermined and desired rate of change of zone temperature.

4,442,973

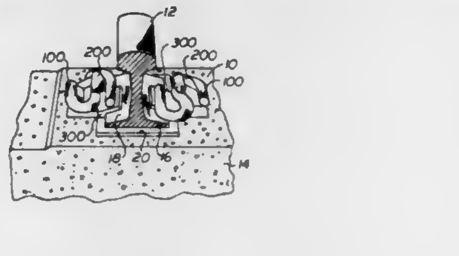
RAIL FASTENING ASSEMBLIES

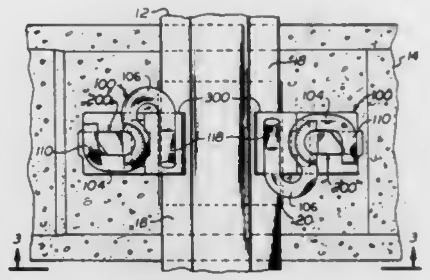
Graham M. Fee, Geneva, Ohio, assignor to True Temper Railway Appliances, Inc., Chicago, Ill.

Continuation of Ser. No. 933,630, Aug. 14, 1978, abandoned. This application Jan. 27, 1981, Ser. No. 228,804

Int. Cl.^{3} E01B *9/30*

U.S. Cl. 238—349 **5 Claims**





1. An S-shaped torsional spring railway rail clip, adapted to be rotated onto the upwardly projecting head of a cooperating chair, for securing a railway rail to an anchoring support therefor, said rail clip comprising:

(a) a sigmoidal central leg;
(b) a tie anchor portion comprising a first loop defined by a tie anchor arcuate leg and a tie anchor terminal leg having an upwardly divergent free distal end, said tie anchor portion extending from a first end of said central leg and lying on one side thereof; and,
(c) a rail bearing portion comprising a second loop defined by a rail bearing arcuate leg and a rail bearing terminal leg having an upwardly divergent free distal end, said rail bearing portion extending from the second end of said central leg and lying on the opposite side from said tie anchor portion to yield a generally S-shaped geometry;

wherein holding power of the clip is achieved predominantly by torsional force.

3. A rotatable rail fastening assembly for securing a railway rail, having laterally projecting base flanges, to an anchoring support therefor, said assembly comprising:

(a) a generally S-shaped torsional spring rail clip including a generally sigmoidal central leg, a tie loop having an arcuate portion extending from a first end of said central leg and a distal portion, and a rail loop having an arcuate portion extending from the second end of said central leg and a distal portion; and,

a chair positioned adjacent a railway rail having anchoring means for securing said chair to a support for said rail and head means for engagement with said rail clip, wherein said head means includes jaw means for receiving at least a portion of said central leg, for providing a downward restraining force thereon when said clip is rotated into engagement with said chair and for positioning the distal portion of said rail loop on the base flange of said rail, and ramp ledge means for establishing an upwardly directed force on the distal portion of said tie loop when said clip is rotated into engagement with said chair;

wherein rotating said clip into engagement with said chair causes the establishment of a rail-holding effective torsional force on said central leg.

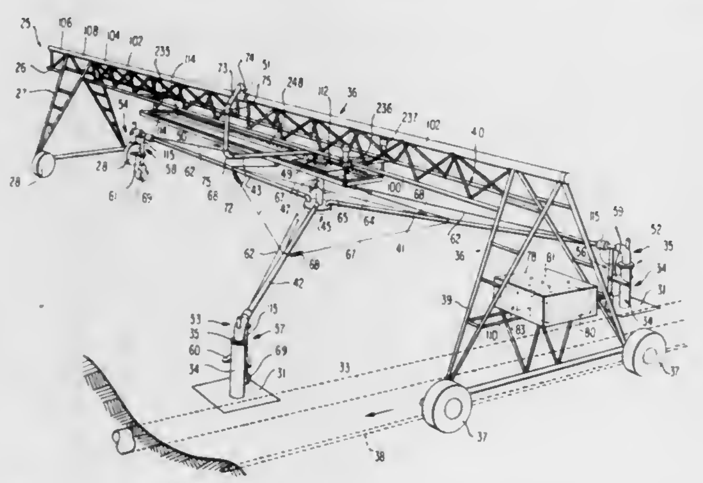
4,442,974
LAND IRRIGATION SYSTEM AND METHOD

Allen T. Noble, Boise, Id., assignor to Noble Linear Irrigation, Inc., Boise, Id.

Continuation-in-part of Ser. No. 18,013, Mar. 6, 1979, abandoned, which is a continuation-in-part of Ser. No. 923,291, Jul. 10, 1978, abandoned, which is a continuation-in-part of Ser. No. 887,792, Mar. 17, 1978, abandoned. This application Jan. 30, 1980, Ser. No. 116,874

Int. Cl.^{3} B05B *3/18*

U.S. Cl. 239—1 **30 Claims**



18. For use in connection with a land irrigating system in which a moving water sprinkler means having water inlet means at one point extends laterally to and moves along the length dimension of a stationary water supply means having a plurality of water outlet valve means at equally spaced points along the length thereof, an apparatus for successively connecting water outlet valve means of the stationary water supply means with water inlet means of the sprinkler means comprising

conveyance means for moving along the length dimension of the stationary water supply means at the same overall rate of movement as the moving sprinkler means,

three elongated water conduit means radially disposed at 120° to each other, each elongated water conduit means being rigid from one end portion to the other end portion,

pivotal support means carried by the conveyance for pivotally supporting the elongated water conduit means by the conveyance means for rotation of each elongated water conduit means around one end portion of the elongated water conduit means,

water flow conduit means connecting the one end portion of each elongated water conduit means for uninterrupted water flow to the inlet of the sprinkler line as the elongated water conduit means rotates,

connecting means at the other end portion of each elongated water conduit means for rotational water flow connection with successive water outlet valve means,

water flow control means for closing each elongated water conduit means, and

movable support means for mounting the pivotal support means for movement toward and away from the stationary water supply means during movement of the conveyance means along the length dimension of the stationary water supply means to accommodate the length of an elongated water conduit means while an elongated water conduit means is connected to one of said water outlet valve means.

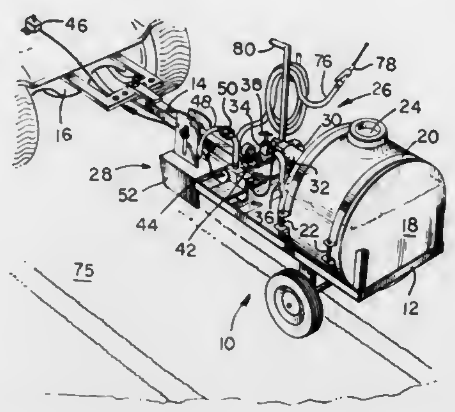
4,442,975
STRIPING APPARATUS FOR MARKING SURFACES

Ralph W. Long, 53 Elm St.; Charles B. Smith, Rte. 2, Box 390, and Don E. Baer, 1520 Peterson Dr., all of Wabash, Ind. 46992

Filed Mar. 11, 1982, Ser. No. 356,956

Int. Cl.^{3} B05B *1/28*

U.S. Cl. 239—150 **12 Claims**



1. In combination with a wheeled platform having a container mounted thereon for containing a marking fluid and adapted to be propelled by a prime mover over a surface, and means on said platform for delivering under pressure the fluid in said container, a marking apparatus for marking surfaces with the fluid, comprising:

two generally vertically disposed parallel support members embracing a portion of said platform and having aligned elongated slots generally vertically disposed therein,

a generally horizontally disposed plate member having a hole therein and secured to said support members with said hole between said support members,

a continuous wall extending downwardly from the periphery of said plate member, said continuous wall having opposite side walls substantially parallel to said support members and extending downwardly a first length from said plate member, and front and back walls joining said side walls and extending downwardly from said plate member a second length less than said first length,

a bolt received through a hole in said platform portion and through said slots, and a fastener threadedly received on one end of said bolt for adjustably securing said support members to said platform portion, and

a nozzle means connected to said delivering means and received through and secured in said hole in said plate member, said nozzle means being adjustably positioned angularly and in elevation relative to the surface to be sprayed by adjustment of said support members.

4,442,976
SUPPORT STRUCTURE FOR LAND IRRIGATION SYSTEM

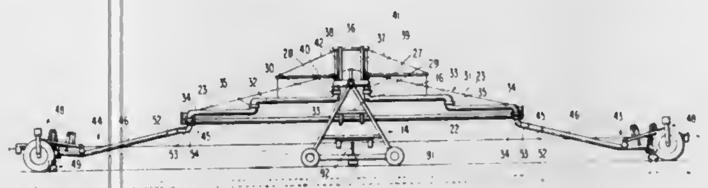
Allen T. Noble, Boise, Id., assignor to Noble Linear Irrigation, Inc., Boise, Id.

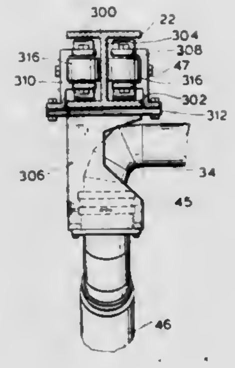
Continuation-in-part of Ser. No. 146,122, May 2, 1980, abandoned, which is a continuation-in-part of Ser. No. 80,060, Sep. 28, 1979, Pat. No. 4,274,584, which is a continuation-in-part of Ser. No. 887,792, Mar. 17, 1978, abandoned. This application Aug. 31, 1981, Ser. No. 297,557

Int. Cl.^{3} B05B *3/18*

U.S. Cl. 239—183 **7 Claims**

1. In a land irrigation system including a water main having a plurality of water hydrants projecting upwardly from the water main at spaced points along its length, an elongated sprinkler line extending transversely to the length dimension of the water main, tractor means movable along said water main and coupled to said sprinkler line, means responsive to said tractor means for moving the sprinkler line along the water main, an elongated conduit having an elongated inner end portion and an outer end portion, providing means for providing the inner end portion to be in fluid communication with the sprinkler line, a swivel coupling connecting the providing means and the inner end portion of said elongated conduit, wheeled carriage means for providing the outer end portion to be in fluid communication with a water hydrant for supplying water to the sprinkler line, and drive means for moving the carriage means from hydrant to hydrant, the improved providing means comprising:





an elongated track extending generally in the direction of the axis of the water main;

means for supporting the elongated track for movement with the sprinkler line at a height above the water hydrants; and

support means moveably suspended from the track and connected to said elongated conduit at said swivel coupling for supporting said inner end portion and said swivel coupling for movement directly beneath the track during all movement of the support means along the track, thereby minimizing twisting moments on the track.

4,442,977
AIRLESS ELECTRIC SPRAYER

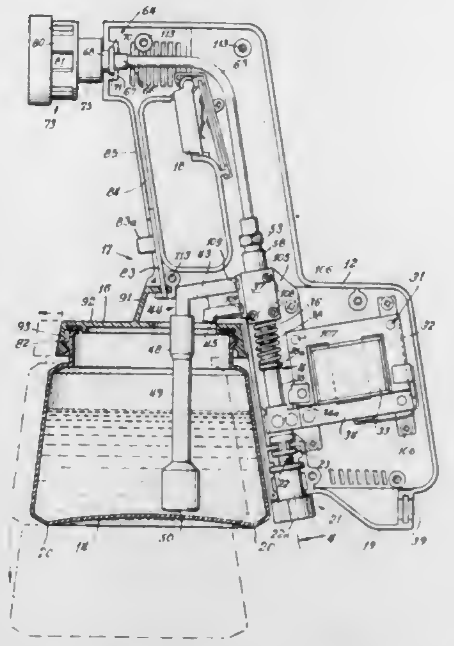
John L. Beiswenger, Grayslake; Frank A. Smiesko, McHenry, and Dhananjay V. Chaphalkar, Lindenhurst, all of Ill., assignors to Acme Burgess, Inc., Grayslake, Ill.

Filed Jan. 25, 1982, Ser. No. 342,262

Int. Cl.^{3} B05B *9/04*

U.S. Cl. 239—332 **11 Claims**

1. In an airless electric sprayer having a housing; a liquid flow assembly mounted within and fastened to said housing and including a pump, liquid siphon means connected to the inlet of said pump and spray nozzle means connected to the outlet of said pump; an electric motor mounted within said housing and operatively connected with said pump to drive the same; and receptacle means supported by said housing and into which said siphon means extends; the improvement wherein said receptacle means comprises a receptacle having an open top and a closure therefor, said closure being a part separate from and including no part of said housing or other sprayer structure, said closure comprising means for closing attachment to said top of said receptacle, said closure and said housing having respectively interacting means for supporting said receptacle means from said housing in detachably locked engagement therewith, said interacting means comprising a lid portion on said closure, said lid portion having a hole therein, and said closure having a superstructure integral with said closure and above said hole, said superstructure having sidewalls and an open top, and a horizontal canopy and horizontal side shelves coplanar with said canopy extending inwardly from the top edges of said sidewalls, said interacting means further comprising, as a part of said housing, bracket and shoulder structures defining spaces into which said canopy and side shelves can horizontally slide to support said closure in said housing, said receptacle means being separately removable from said housing.



4,442,978
FUEL INJECTION NOZZLE FOR INTERNAL COMBUSTION ENGINES

Kurt Seifert, Esslingen-Zollberg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

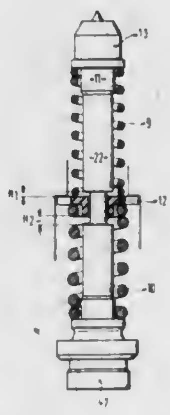
Division of Ser. No. 210,638, Nov. 26, 1980, Pat. No. 4,344,575, which is a continuation of Ser. No. 24,818, Mar. 28, 1979, abandoned. This application Jul. 21, 1982, Ser. No. 400,205

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1978, 2825982

The portion of the term of this patent subsequent to Aug. 17, 1999, has been disclaimed.

Int. Cl.^{3} B05B *1/32*

U.S. Cl. 239—453 3 Claims



1. A fuel injection nozzle for internal combustion engines comprising a nozzle body, a bore in said nozzle body, an insert including a valve seat disposed in said nozzle body on an outer end of said bore, said insert including a tubular body extension, a valve needle guided by said tubular body extension, said valve needle having a terminal head portion which cooperates with said valve seat for fuel passage, said valve needle adapted

to open in the fuel flow direction against the force of at least one closing spring means, said valve needle further including an annual cylindrical shoulder positioned upstream of said terminal head portion in cooperation with said tubular body extension to form a throttle point for controlling fuel flow in accordance with the stroke of said valve needle, said throttle point being effective in an initial opening stroke and subsequently made ineffective, said valve needle further being arranged to be loaded by said at least one closing spring means, said at least one closing spring means including first and second mutually associated pre-stressed closing springs for causing a sudden increase in closing force of said valve needle subsequent to an initial opening stroke, said first and second closing springs being disposed coaxially relative to each other and to said valve needle, said first spring being supported on said insert and said second spring being supported on means associated with an opposite end of said valve needle, and said valve needle head portion cooperates with said valve seat for predetermining the initial position of said closing springs.

4,442,979
SPREADER VEHICLE FOR SOLID AND LIQUID THAWING MATERIALS

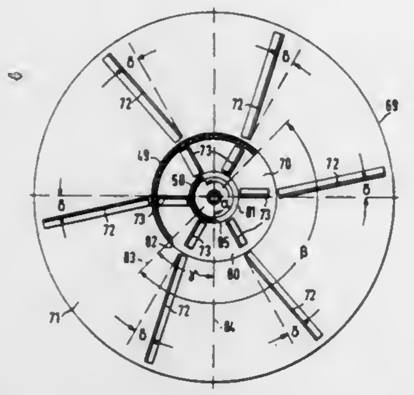
Willy Küpper, Eichhölzleweg 11, D-7715 Bräunlingen, Fed. Rep. of Germany

Filed Sep. 21, 1981, Ser. No. 304,166

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1980, 3035360

Int. Cl.³ E01C *19/20*

U.S. Cl. 239—656 **27 Claims**



1. A spreader device comprising a frame a distributor plate mounted for rotation about a vertical axis on said frame, drive means connected to said distributor plate for rotating said distributor plate, said distributor plate including on a top surface thereof, a plurality of impellers, an inner downpipe concentrically positioned about said vertical axis and defining a liquid supply conduit for supplying a liquid thawing material to said distributor plate, an outer downpipe positioned concentrically around said inner downpipe positioned concentrically around said inner downpipe defining an annular space therewith acting as a granulated material supply conduit for supplying granulated thawing material to said distributor plate.

4,442,980
PROCEDURE AND MECHANISM FOR THE AUTOMATIC CONTROL OF A GRINDING MILL ROLLER CARRIAGE EQUIPPED WITH A REGULATED PRODUCT FEED

Hans Oetiker, St. Gallen; Robert Linzberger, Abtwil; Leendert Ketting, Oberuzwil, and Werner Winteler, Oberhelfenschwil, all of Switzerland, assignors to Bebruder Buhler AG., Unzwil, Switzerland

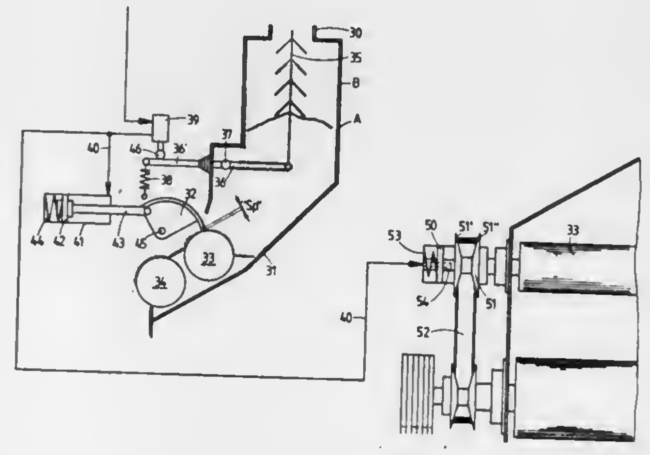
PCT No. PCT/CH80/00151, 371 Date Nov. 9, 1981, 102(e) Date Nov. 9, 1981

PCT Filed Dec. 5, 1980, Ser. No. 321,165

Claims priority, application Switzerland, Apr. 11, 1980, 2796/80

Int. Cl.³ B02C *25/00*

U.S. Cl. 241—34 **7 Claims**



1. In an improved system for use in a grinding mill for automatically controlling an operating condition controllable between first and second states, said system including position adjustable regulating means for regulating the operating condition; a fluid operated servomechanism operatively connected to said regulating means for adjusting its position and having an inlet and outlet; sensing means responsive to the operating condition for positioning an indicating portion of said sensing means in dependence upon said operating condition; valve means interposed between said servomechanism and a source of compressed fluid for controlling the supply of fluid thereto, said valve means including actuator means operatively connected to said indicating portion and responsive to the position thereof for moving between a first position and a second position as said operating condition varies between said first and second states; valve inlet means for connection to said source, and a valve outlet connected to said servomechanism inlet; the improvement comprising:

said valve means having means responsive to the first position of said actuator means for producing a first operational mode wherein said valve inlet is blocked and said valve outlet is vented, means responsive to a position of said actuator intermediate said first and second positions for producing a second operational mode wherein both said valve inlet and outlet are blocked, and means responsive to the second position of said actuator for producing a third mode of operation wherein said valve inlet and outlet are connected with each other; and

means for mechanically coupling said valve means to the regulating means so that a change of the regulating means position causes a corresponding movement of the valve relative to said indicating portion in a direction tending to urge said actuator to said intermediate position.

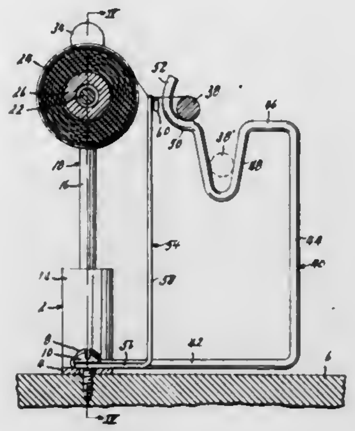
4,442,981
FISHING ROD WRAPPING DEVICE

James R. Cope, 10500 Cherokee La., Leawood, Kans. 66206

Filed May 28, 1982, Ser. No. 383,018

Int. Cl.³ B65H *81/06*

U.S. Cl. 242—7.19 **2 Claims**



1. A fishing rod wrapping device comprising:

a. a frame,

b. spool support means carried by said frame and operable to support a spool of wrapping thread for rotation on its axis, and

c. fishing rod support means carried by said frame and operable to support a fishing rod in parallel relation to but laterally spaced apart from the axis of said spool, for free manual rotation about its axis and longitudinal movement parallel to its axis, said fishing rod support means comprising a pair of support members carried by said frame and spaced apart axially of a thread spool carried by said spool support means, said support members each having a generally horizontal rest portion on which said fishing rod may rest freely for manual rotation and longitudinal movement, each of said rod supporting members being provided additionally with locking means operable by manual movement of said rod relative to said support members to lock said rod against free rotation and longitudinal movement, whereby to preserve the existing thread tension and rod position in the event it may be desired to interrupt the wrapping process.

4,442,982
VENEER REELING UNIT

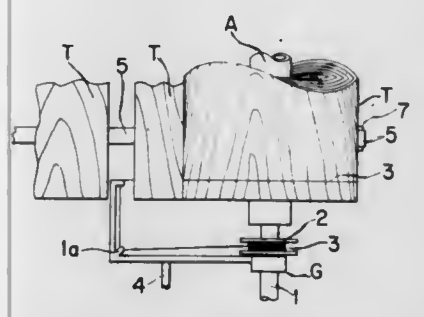
Yasuhiko Iwamoto, Ohbu, Japan, assignor to Meinan Machinery Works, Inc., Japan

Filed Dec. 4, 1981, Ser. No. 327,488

Claims priority, application Japan, Dec. 9, 1980, 55-174117

Int. Cl.³ B65H *17/08, 75/02*

U.S. Cl. 242—55 **4 Claims**



1. A veneer reeling unit for reeling veneer sheets successively together with at least one strand of thread for guiding and supporting said veneer sheets round a rotated reeling roll disposed with its axis extending substantially in parallel to the grain of said veneer sheets, comprising:

a thread storage member for containing therein said thread in the form of a winding and allowing said thread to be paid out therefrom, and

a thread guiding member for guiding said thread in such a way that the thread may be wound up with said veneer sheets around said reeling roll,

said thread storage member and thread guiding member being so arranged that they are moveable integrally with said reeling roll as a unit.

4,442,983
FISHING REEL WITH ADJUSTABLE DRUM BRAKE

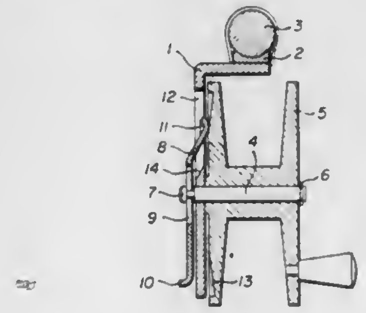
Robert Moll, Chéserex, Switzerland, assignor to Etablissement Liotte Rep. Etrangenes, Vaduz, Liechtenstein

Filed Apr. 9, 1982, Ser. No. 367,062

Claims priority, application Switzerland, Apr. 13, 1981, 2435/81

Int. Cl.³ A01K *89/02*

U.S. Cl. 242—84.51 R **3 Claims**



1. A fishing reel comprising a support designed to be affixed to a fishing rod, a drum having two side cheeks and on to which a fishing line is wound, means for rotatably mounting said drum on said support, and an adjustable brake device for said drum, said brake device comprising a slider lodged in a radial slot for radial adjustment with respect to said drum, said slider having a resilient end portion arranged to bear against a substantially flat outer surface of one of the cheeks of said drum, said cheek surface which interacts with the slider having a number of notches evenly distributed over an annular zone of the said outer surface of the cheek, each of these notches, oriented radially, having an elongated shape and a depth which increases continuously in the radial direction, towards the periphery of the said cheek so that a braking effect is exerted which varies in accordance with the distance of the resilient end portion of the slider from the axis of the drum.

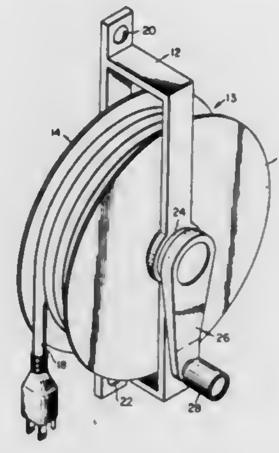
4,442,984
ELECTRIC CORD REEL

Bijan Bayat, 1717 Jasmine Cir., Plano, Tex. 75074

Filed Mar. 19, 1982, Ser. No. 359,805

Int. Cl.³ B65H *17/52*

U.S. Cl. 242—106 **3 Claims**



1. An electric cord reel for temporary storage of an electric extension cord, said cord reel comprising:

a rectangular frame structure;

a spool pivotally mounted to said rectangular frame structure including a central hub section and opposing end plates disposed at opposite ends of said central hub;

a crank fixedly mounted to said central hub for rotating said spool upon operation thereof; and

a pair of flexible protuberances readily disposed outward from said central hub for receiving and releasably retaining at least one end of an electric extension cord.

4,442,985

APPARATUS FOR CONTROLLING A WEB TRANSPORT SYSTEM

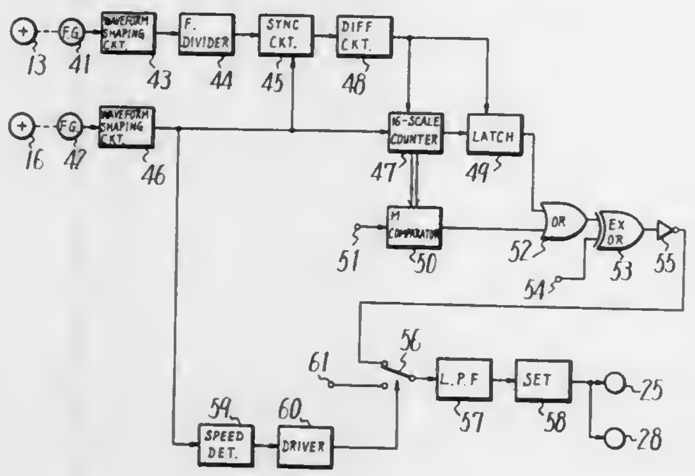
Yoshio Kishi, Yokohama, and Norichika Mine, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 5, 1982, Ser. No. 355,158

Claims priority, application Japan, Apr. 6, 1981, 56-51331

Int. Cl.^{3} B65H *77/00;* G11B *15/28, 15/32, 15/43*

U.S. Cl. 242—186 **25 Claims**



1. Apparatus for controlling a web transport system of the type having supply and take-up reels for supplying and taking up said web, respectively, tension control means for controlling the supply and take-up tension of said web, web drive means operatively driven for moving said web, and sense means for sensing the movement of said web, said apparatus comprising web drive detecting means for detecting the operation of said web drive means; comparator means coupled to said sense means and said web drive detecting means for comparing the movement of said web and the operation of said web drive means to indicate when said web moves at a rate different from the rate at which said web drive means is driven; and adjusting means coupled to said comparator means for adjusting said tension control means when said web moves at a rate different from the operating rate of said web drive means.

4,442,986

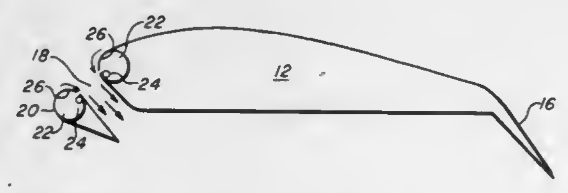
LEADING EDGE AUGMENTOR WING-IN-GROUND EFFECT VEHICLE

David G. Rousseau, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 30, 1982, Ser. No. 413,182

Int. Cl.^{3} B64C *21/04*

U.S. Cl. 244—12.1 **2 Claims**



1. A ground effect vehicle comprising:

an aerodynamic body including two wings extending in opposite directions from the sides of said body;

each of said wings being formed of a main part and a stationary leading edge part separated by a wing opening;

said main part and said leading edge part each enclosing a conduit extending the spanwise length of said part adjacent said wing opening;

each of said conduits having a conduit opening in the form of a slot extending spanwise along said conduit and into said wing opening;

at least one engine being connected at the exhaust end to said conduits so that efflux from said engine is ducted through said conduits and into said wing opening through said conduit opening;

said wing opening varying in width along its spanwise length to compensate for varying sizes of wing surface and pressure differentials along said conduit opening;

said conduits containing deflector means mounted within said conduits to direct the flow out of said conduit opening along the walls of the wing opening so that said flow forms a boundary layer along said walls creating a Coanda effect and entraining ambient air to flow with said boundary layer through said wing opening and under said wing; and

each of said wings further containing an end plate extending downwardly from the ends of said wings and a trailing edge portion extending downwardly from the rear edge of said wings, wherein said end plate and trailing edge part contain most of the flow from said wing opening to form a cushion which supports said wing in ground effect, but where some of the flow escapes beneath the trailing edge part to provide forward thrust.

4,442,987

GUIDANCE DEVICE FOR THE MOVING FAIRING OF A THRUST REVERSER SYSTEM

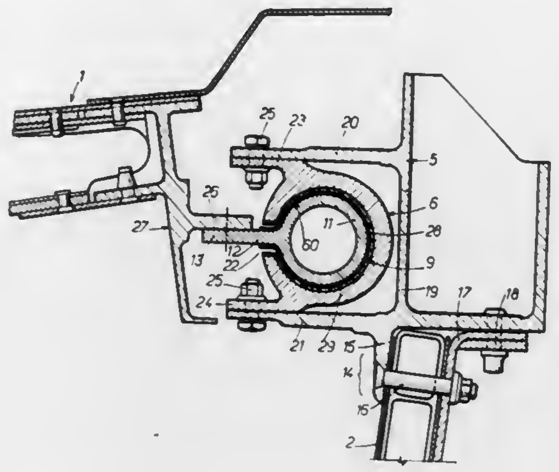
Paul J. Legrand, Vaux le Penil, and René M. J. Hersen, Combs la Ville, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs D'Aviation "S.N.E.C.-M.A.", France

Filed Dec. 16, 1981, Ser. No. 331,230

Claims priority, application France, Dec. 23, 1980, 80 27281

Int. Cl.^{3} B64D *33/04;* F02K *1/54*

U.S. Cl. 244—110 B **8 Claims**



1. In a thrust reverser system of a jet engine having a stationary casing attached to a mast and a section of a nacelle fairing movable between a deployed position, wherein the thrust of the jet engine is reversed, and a stowed position, the improved means for slidably mounting the movable section of the nacelle fairing comprising:

(a) a pair of upper guide pieces, each guide piece defining a longitudinal groove having a generally circular cross-section and a slot extending through a wall along the length of the upper guide piece, the plane of the slot being approximately perpendicular to a median vertical plane of the nacelle;

(b) first means to attach the upper guide pieces to an upper

portion of the stationary casing such that the slots open in opposite directions;

(c) a pair of lower guide pieces, each guide piece defining a longitudinal groove having a generally circular cross-section and a slot extending through a wall along the length of the lower guide pieces, the plane of the slot being approximately pependicular to a median vertical plane of the nacelle;

(d) second means to attach the lower guide pieces to a lower portion of the stationary casing such that the slots open in opposite directions;

(e) a pair of upper guided elements having generally circular cross-sections, one of the upper guided elements slidably disposed in each of the grooves in the upper guide pieces, each of the upper guided elements having a radial flange extending from its periphery through the slot in the upper guide piece;

(f) means to attach the flanges of the upper guided elements to an upper portion of the movable nacelle portion;

(g) a pair of lower guided elements having generally circular cross-sections, one of the lower guided elements slidably disposed in each of the grooves in the lower guide pieces, each of the lower guided elements having a radial flange extending from its periphery through the slot in the lower guide piece;

(h) means to attach the flanges of the lower guided elements to a lower portion of the movable nacelle portion; and,

(i) friction reducing means interposed between the upper and lower guided elements and the surfaces of the grooves in the upper and lower guide pieces to reduce the sliding friction therebetween.

4,442,988

INFORMATION TRANSMISSION DEVICE THROUGH THE RAILS BETWEEN A RAILWAY TRACK AND A VEHICLE ASSEMBLY CIRCULATING ON THIS TRACK

Daniel M. Laurent, Paris, and Claude Thézé, Montigny les Cormeilles, both of France, assignors to Jeumont-Schneider Corporation, Puteaux, France

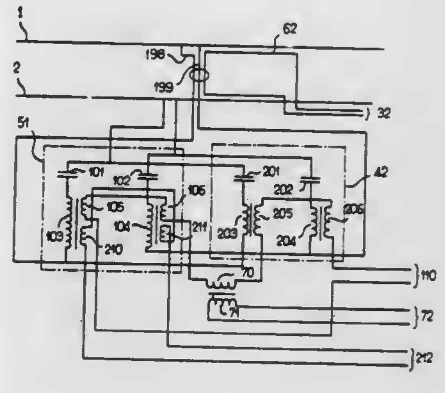
PCT No. PCT/FR81/00042, 371 Date Nov. 16, 1981, 102(e) Date Nov. 16, 1981, PCT Pub. No. WO81/02714, PCT Pub. Date Oct. 1, 1981

PCT Filed Mar. 24, 1981, Ser. No. 322,016

Claims priority, application France, Mar. 25, 1980, 80 06570

Int. Cl.^{3} B61L *21/00, 3/00*

U.S. Cl. 246—34 CT **7 Claims**



7. For use in apparatus for transmission of information through the rails between a railway track and a set of vehicles circulating in the same direction on that track, and along which track there are, in succession, a number of information transmission zones, resonant circuit means tuned to a carrier frequency and connected between the rails of the track at each end of each information transmission zone, the successive information transmission zones having different carrier frequencies, and the resonant circuit means connected respectively downstream of one information transmission zone and upstream of the immediately adjacent zone each comprising a series resonant circuit, said series resonant circuits being tuned to said different carrier frequencies, respectively, and each having capacitance connected in series with the primary winding of a transformer, the secondary windings of the two transformers being connected in series between output terminals through the intermediary of the secondary winding of a further transformer having a primary winding to which is applied an alternating signal such that an alternating signal representative of the failure of one of said resonant circuits appears at said output terminals and enables determination of said one circuit.

4,442,989

CABLE BEARER SYSTEM

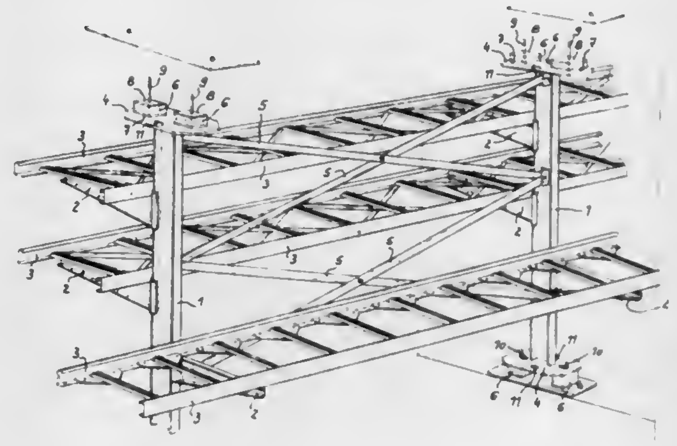
Bernd Hartmann, Hülsbergstr. 51a, 4630 Bochum, Fed. Rep. of Germany

PCT No. PCT/DE79/00042, 371 Date Dec. 18, 1979, 102(e) Date Dec. 10, 1979

PCT Filed Apr. 18, 1979, Ser. No. 196,486

Int. Cl.^{3} F16L *3/00*

U.S. Cl. 248—49 **16 Claims**



1. Cable bearer system for rendering earthquake-proof nuclear power stations and, the like consisting of I-shaped bearers arranged vertically at intervals rearwardly of one another in the linear direction of the cable system and a plurality of brackets fixed to the bearers of the bearer system and which extend horizontally from the bearer sides, the bearers having holding plates at their ends which can be fastened to an adjacent building construction and at least two adjacent bearers being hung and braced together to form a rigid unit so that the holding plates are fastened to the building construction by intermediate spring elements which are omnidirectionally effective and absorber elements which are unidirectionally effective.

4,442,990

PIPE SUPPORT DEVICE FOR PLASTIC PIPE

Guenther Krueger, 16 Bristol Ct., Berkeley Heights, N.J. 07422

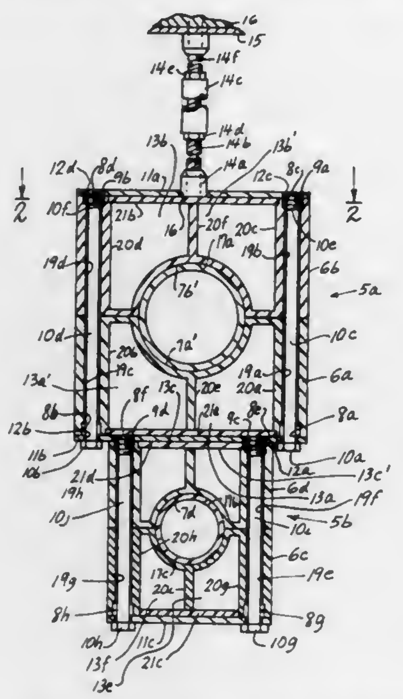
Filed Jun. 30, 1982, Ser. No. 393,666

Int. Cl.^{3} F16L *3/22*

U.S. Cl. 248—62 **14 Claims**

1. A support device for supporting a plastic pipe in a substantially horizontal position, comprising in combination: a pipe-support element having a pipe-supporting smooth surface extending substantially linearly in direction transverse to the pipe-support element substantially parallel with a longitudinal axis of pipe to be supported thereon, and extending arcuately and concavely forming a concave seat for a pipe to be supported thereon, and body material having said pipe-supporting surface being formed as a wall having an opposite surface and extending into surrounding walls substantially outwardly-extending from edges of said opposite surface forming at least one spacious cavity having at least one outer-spaced opening thereto formed by said surrounding walls, and said surround-

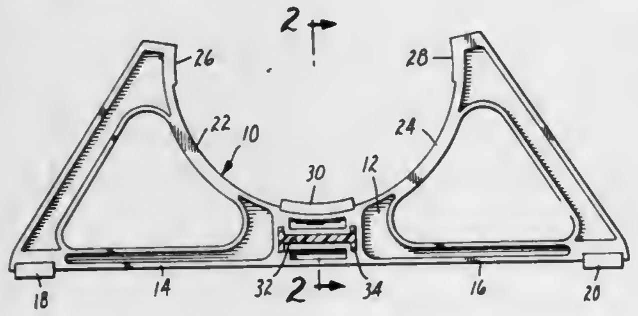
ing walls having at least two spaced-apart through-apertures one on each of opposite-locations relative to said concave seat,



receivable of a bolt element for locking the pipe-support element into a predetermined position on a support structure.

4,442,991
CRADLE FOR STOWING CYLINDRICAL TANK

Dennis L. Levens, Rte. 2, Hudson, Wis. 54016
Filed Feb. 8, 1982, Ser. No. 346,398
Int. Cl.³ A47G *23/02*
U.S. Cl. 248—146 **7 Claims**

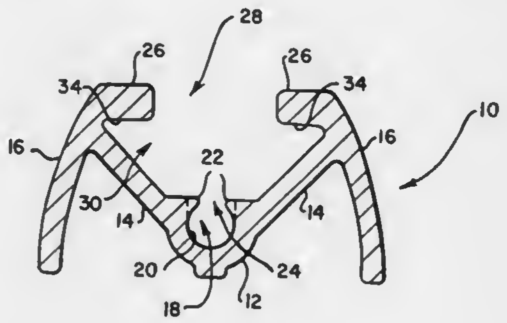


1. A cradle for stowing a cylindrical tank, which cradle comprises

a pair of yokes, of elastic material each having
  a nonarticulated framework of two coplanar triangles joined at apexes, one pair of legs forming a generally straight line at the base of the yoke and another pair curving inwardly to form a generally semi-cylindrical fork,
  a foot near each end of the base,
  facing protuberances at the ends of the fork that are spaced apart approximately the diameter of the tank,
  a cushion projecting inwardly from the center of the fork,
a beam rigidly connecting the bases of the yokes to be upstanding when the feet rest on a flat surface, which feet project below the yokes and the beam in the direction of the flat surface to hold said framework and beam above that surface so that the forks provide a cradle for the tank which rests on the cushions, and the tank tends to bow the base and to pinch the tank between the protuberances.

4,442,992
MODULAR SHELF SUPPORT

Anthony C. Worrallo, 15, Spott Rd., Kohrimarama, Auckland 5, New Zealand
Filed Dec. 11, 1981, Ser. No. 329,890
Claims priority, application New Zealand, Dec. 11, 1980, 195809
Int. Cl.³ A47G *29/02*
U.S. Cl. 248—243 **6 Claims**



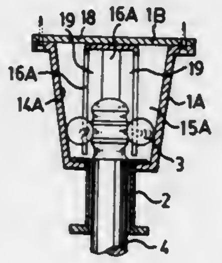
1. A support system, comprising

a one-piece, unitary, elongated structural element having
  a core structure,
  two webs extending outwardly from said core structure,
  a first pair of lips on outer ends of said webs directed toward but spaced from one another, and defining a first slot therebetween,
  a first elongated cavity defined by and between said first lips, said webs and said core structure,
  a second elongated cavity in said core structure defined by a second pair of opposed and spaced lips extending into said first cavity adjacent junctures of said core structure and said webs, and
  at least one widening in said second pair of lips forming a transverse surface; and
a bracket having
  a head receivable in said first cavity,
  a protruding boss extending from said head and receivable in said widening in engagement with said transverse surface, and
  a neck receivable in said first slot and connecting said head to support structure extending exteriorly of said structural element;

whereby said boss engages said transverse surface preventing movement of said bracket along said element once said boss is inserted in said widening.

4,442,993
CEILING SUSPENSION DEVICE

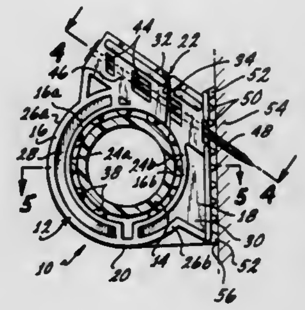
C. C. Tseng, 167 Ning Hsia Rd., Taipei, Taiwan
Filed Jan. 28, 1982, Ser. No. 343,600
Int. Cl.³ A47H *1/10*
U.S. Cl. 248—327 **2 Claims**



1. A ceiling suspension device comprising a hollow inverted frustoconical housing having an externally flanged open-ended top and a base with a circular center opening for insertion therein of a suspension pole, a centrally defined passage of decreasing cross section from the top opening of the housing to the circular center opening in the base thereof, a releasing means including a disc having a concentric circular opening and a plurality of evenly spaced, integral elastic arms clustering about the circular opening in the disc and projecting upwardly and outwardly therefrom with the free end of each arm being bent outwardly to form a tab parallel to the disc, said elastic arms being adapted to be inserted through the opening in the base of the housing to be suspended from the housing by means of the tabs resting on the base thereof and being capable of axial movement relative to the housing; a plurality of balls adapted to be received within the housing; and a suspension pole adapted to be inserted through the circular opening in the disc of the releasing means into the passage in the housing, said suspension pole having means for causing converging or diverging movement of the balls for causing multilateral clamping or loosening action of the balls, and a ball restricting means including a circular cover plate having a diameter exactly the same as the outer diameter of the flange of the housing, a plurality of evenly spaced, elongate divider plates positioned centrally of the cover plate and extending from the undersurface thereof toward the base of the housing to define a generally cylindrical passage for receiving the suspension pole, a plurality of slits each being defined between adjacent divider plates, and a ball receiving chamber which is defined between the cylindrical passage and the inner periphery of the housing when the ball restricting means is laid over the housing, said chamber and cylindrical passage communicating through the slits such that the balls received in the chamber are evenly spaced apart by the divider plates and extend partially through tne respective slits.

4,442,994
PIPE HANGER CAPABLE OF TOTALLY ENCIRCLING A PIPE

Duane D. Logsdon, P.O. Box 186, Stanton, Calif. 90680
Filed Feb. 2, 1982, Ser. No. 345,198
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—547 **7 Claims**

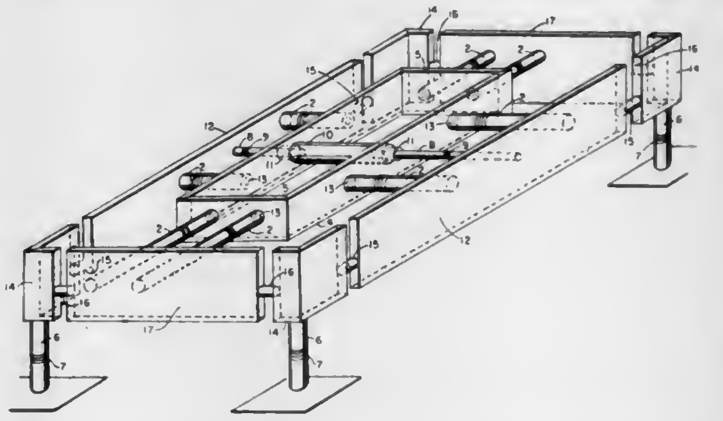


1. A pipe hanger capable of being attached to a support surface which comprises:

a body, said body having a wall, said wall formed as a loop surrounding an aperture, said wall including an interstice opening into said aperture, the portions of said wall located adjacent to said interstice forming a first wall end and a second wall end;
said body including a foot joined to said wall, said first wall end located in association with said foot;
said body including a passageway having a first portion passing through said second wall end and a second portion passing through said first wall end and said foot, said passageway capable of receiving an elongated essentially cylindrical fastening means of a greater length than the length of said passageway and when said fastening means is located in said passageway a portion of said fastening means holding said first and said second wall ends in fixed association with one another and a further portion of said fastening means extending from said passageway beyond said foot and into said support surface to hold said body fixedly fastened to said support surface when said body is located with said foot abutting against said support surface;
said passageway being oriented acutely with respect to at least a portion of said foot such that when said fastening means is located in said passageway said portion of said fastening means extending beyond said foot is located at an acute angle with respect to at least said portion of said foot.

4,442,995
MACHINE FOR CONCRETE MOLDING

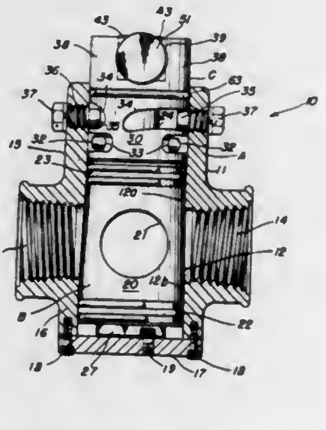
Clyde C. Grady, II, 4914 Deerwood Cir., Baytown, Tex. 77521
Continuation-in-part of Ser. No. 3,723, Jan. 15, 1979, Pat. No. 4,253,636. This application Apr. 25, 1980, Ser. No. 143,775
Int. Cl.³ B28B *7/06, 1/08*
U.S. Cl. 249—139 **4 Claims**



1. An apparatus for molding concrete comprising a substantially rectangular frame comprised of four corner members and four side members, said apparatus having a side member disposed between each two of said corner members, each of said side members being rotatable about supporting shafts between each said side member and each said corner member, said frame having an open bottom, each of said side members being substantially perpendicular to and attached to expandable members, where each said expandable member is disposed between and attached at either end of its extremity to a said side member and a mold side, respectively, where expansion and contraction of each said expandable member moves the mold side to which it is attached in a direction substantially perpendicular to the axis of rotation of the side member to which it is also attached.

4,442,996
TAPERED ROTARY PLUG VALVE

Robert L. Erwin, deceased, Farmington, N. Mex. (by Josiephine Reed Erwin, Personal Representative), assignor to Josiephine R. Erwin, Farmington, N. Mex., Personal Representative of Estate of Robert L. Erwin
Filed Mar. 8, 1982, Ser. No. 356,034
Int. Cl.³ F16K *31/44*
U.S. Cl. 251—77 **15 Claims**



1. A rotary plug valve comprising a tapered valve plug, valve plug actuating means including a rotary and axially movable plug operating head distinct from said valve plug, a valve casing including a tapered valve chamber for receiving

said tapered valve plug, said valve chamber having inlet and outlet ports communicating therewith and a first cylindrical extension for mounting said rotary and axially movable plug operating head for rotation and axial movement therein, cam means responsive to rotation of the operating head for imparting axial movement to the head when the head is rotated, said valve plug rotatably fitting within said tapered valve chamber and being provided with a transverse passage for communicating with the inlet and outlet ports when the valve is in open position, first means interconnecting the operating head and valve plug to provide axial movement to the plug when the head is axially moved by coaction of said cam means and said head when said head is rotated and second means interconnecting the operating head and valve plug to provide in a disconnected position of said operating head and said valve plug rotational movement of the operating head independent of the valve plug or in a connected position rotational movement of the operating head and valve plug as a unit.

4,442,997
FLOW CONTROL VALVE APPARATUS

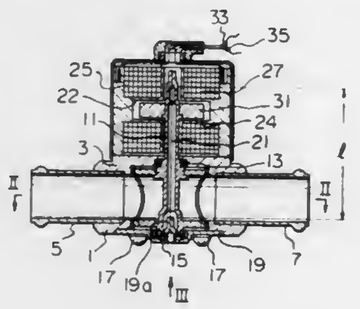
Takaharu Idogaki, Okazaki; Hisasi Kawai, Toyohashi; Kyo Hattori, Susono, and Kazuhiro Sakurai, Gotenba, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

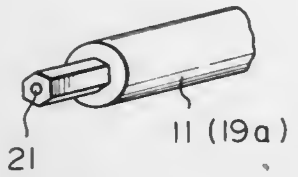
Filed Nov. 23, 1981, Ser. No. 324,087

Claims priority, application Japan, Dec. 26, 1980, 55-183704

Int. Cl.³ F16K *31/08*

U.S. Cl. 251—129 **6 Claims**





6. A valve apparatus comprising:
a housing;
inlet means for introduction of fluid into said housing;
outlet means for discharging said fluid from said housing;
valve means arranged in said housing for controlling the amount of fluid flowing from said inlet means to said outlet means;
shaft means for rotatably coupling said valve means to said housing whereby said valve means is rotatably movable between a first position and a second position;
a torsion bar for generating a torsional force in a direction which urges said shaft means rotatably toward said first position; and
means for generating an electro-magnetic force in a direction opposing a force which urges said valve means to be moved rotatably toward said second position;
said shaft means and said housing having spaced apart crimped portions for coupling said shaft means and said housing to respective ends of said torsion bar, each of said crimped portions having a predetermined cross-sectional polygonal configuration, said torsion bar having a round cross-sectional configuration, and a predetermined polygonal cross-sectional configuration in the vicinity of said crimped portions of said shaft means and said housing.

4,442,998
ELECTROMAGNETIC VALVE UNIT

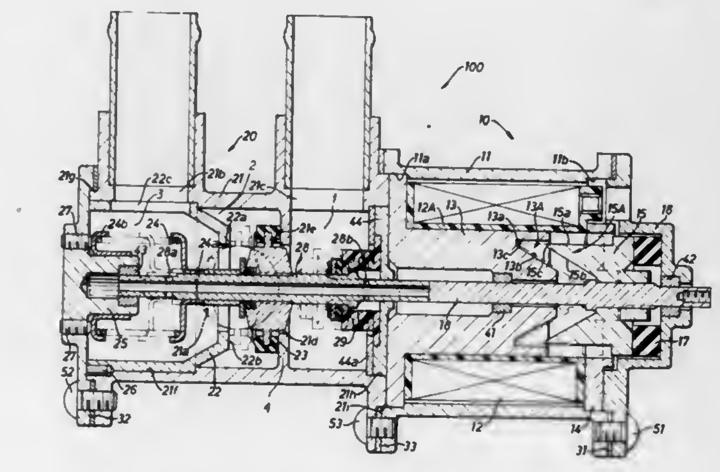
Tadashi Ohyama, and Shoji Kawata, both of Okazaki, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Continuation of Ser. No. 169,458, Jul. 16, 1980, abandoned. This application Sep. 27, 1982, Ser. No. 424,612

Claims priority, application Japan, Jul. 24, 1979, 54-94588; Jul. 24, 1979, 54-102926[U]

Int. Cl.³ F16K *31/02*

U.S. Cl. 251—129 **1 Claim**



1. An electromagnetic valve unit including a flow control valve assembly or controlling the flow of fluid passing therethrough and operatively associated with an electromagnetic motor assembly for actuating said valve assembly in response to an electric current applied thereto from an electric power source, said motor assembly comprising:
a cylindrical housing of magnetic material provided at opposite ends thereof with first and second fitting faces;
a solenoid coil concentrically assembled within said housing and connected to said electric power source;
a stationary core of magnetic material fixed to said first fitting face of said housing and surrounded by said solenoid coil;
an annular yoke member of magnetic material fixed to said second fitting face of said housing;
a movable core of magnetic material arranged to be axially moved between said stationary core and said yoke member and being operatively connected to said flow control valve assembly, said stationary core and said movable core have confronting ends;
resilient means for biasing said movable core toward said yoke member;
one of said confronting ends being formed therein with an annular recess of a V-shaped cross-section forming a cylindrical inner surface and a conical outer surface convergent toward the other end, and the other end further comprising an annular projection corresponding in cross-section with the cross-section of said annular recess and forming a cylindrical outer surface and a conical inner surface respectively disposed in a parallel relationship with said cylindrical inner surface and with said conical outer surface of said one end;
wherein said cylindrical inner surface is arranged to increase an annular area of said cylindrical outer surface overlapped therewith in accordance with axial displacement of said movable core toward said stationary core, and wherein the inner periphery of said yoke member is further arranged to increase an annular area of the outer periphery of the other end of said movable core overlapped therewith in accordance with the axial displacement of said movable core toward said stationary core.

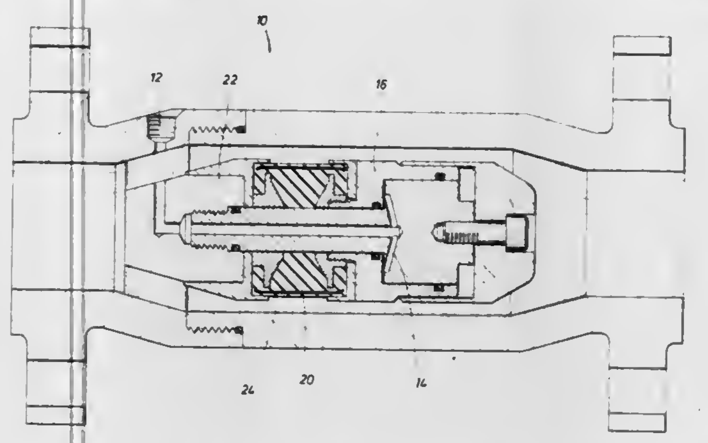
4,442,999
REINFORCED PLUG FOR FLOW REGULATORS

Robert H. Welker, Sugar Land, Tex., assignor to Welker Engineering Company, Sugar Land, Tex.

Filed Jul. 22, 1982, Ser. No. 400,986

Int. Cl.³ F16K *31/12*

U.S. Cl. 251—358 **7 Claims**



1. For use in a flow regulator having a resilient plug, a resilient plug construction which comprises a generally cylindrical, elongate body of resilient material adapted to be compressed between the ends thereof to expand radially outwardly to accomplish regulation in a flow regulator, and at least one ply of reinforcing material in said plug having a plurality of lengthwise fibers extending along the length of the plug wherein the fibers are anchored at opposite ends of the fibers by folding the fibers under into the body of the resilient plug, and further including means securing said fibers into a ply which is relatively nonyielding in a lengthwise dimension and which is yieldable to enable radial outward expansion of the plug during regulating.

4,443,000
FLEXIBLE COUPLINGS FOR MECHANICAL JACKING DEVICES USED IN THE INSTALLATION OF MARINE PLATFORMS

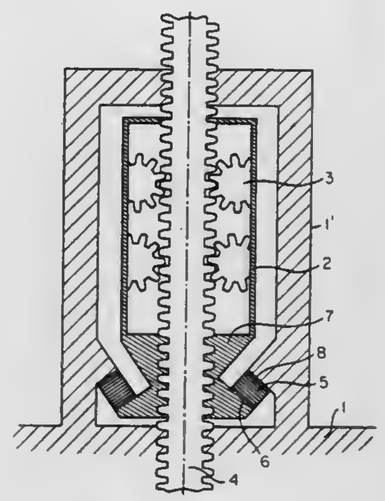
Jean F. Harvard, Carquefou, France, assignor to Brissonneau et Lotz Marine, France

Filed Dec. 28, 1981, Ser. No. 334,724

Claims priority, application France, Dec. 31, 1980, 80 27914

Int. Cl.³ E02B *17/04*

U.S. Cl. 254—89 R **4 Claims**



1. In a jacking mechanism of the rack and pinion gear type for the control and maintenance of the vertical positioning of a platform and the like on resting legs to which twin racks, with their teeth in opposition, are rigidly connected and form part of a jacking mechanism associated with at least one pair of pinions carried by means of a support-framework, and wherein each tooth of the pinions meshes respectively with one of the two sets of teeth of its corresponding rack in such a way as to be always in contact with one side or the other, with the pinions motor-rotatable to control the desired up or down movement of the racks, and wherein said legs have an upper part with an instantaneous center of rotation, the improvement of means at the bottom of the support-framework providing a first oblique-angle supporting surface; means connected with the main structure of the platform and providing a second supporting surface spaced from but substantially parallel to said oblique-angle surface; and flexible coupling means interposed in the space between and contacting said supporting surfaces for permitting relative freedom of movement between the support-framework and the platform structure, the coupling means having an axis of compression and being disposed so that the axis of compression is oriented to pass through the instantaneous center of rotation of the upper part of the said legs.

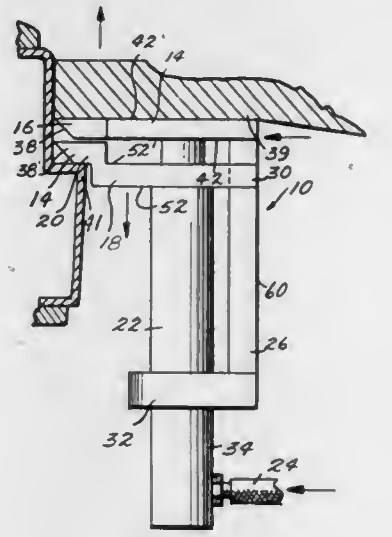
4,443,001
HYDRAULICALLY OPERATED HAND TOOL FOR FORCING OPEN DOORS

James P. Haerer, P.O. Box 134, Dunkirk, Md. 20754

Filed May 19, 1982, Ser. No. 379,918

Int. Cl.³ B66F *3/24*

U.S. Cl. 254—93 R **12 Claims**



1. A tool, for use with a hydraulic pump, for forcing or prying open doors and other objects, said tool comprising:
a first jaw member defining at least two spaced apart fingers;
a second jaw member defining at least three spaced apart fingers positioned and shaped to selectively mesh with said fingers of said first jaw member when said jaw members are positioned together;
a hydraulic piston-cylinder assembly for hydraulic connection to said pump and connected to said first and second jaw members;
a plate member defining opposed sides, said plate member connected to said first jaw member;
said second jaw member further defining first and second guide members, each of said guide members projecting adjacent respective sides of said plate member and in a slidable relationship with said plate member; and
a third guide member extending from said plate member and encircling a portion of said piston-cylinder assembly in slidable relationship with said assembly.

4,443,002
RACETRACK GUARD

Richard Fontana, 8525 Bella Vista, Alta Loma, Calif. 91701

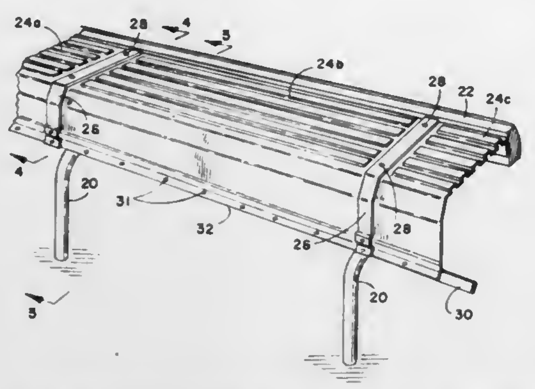
Filed Mar. 22, 1982, Ser. No. 360,231

Int. Cl.³ E04H *17/14*

U.S. Cl. 256—59 **18 Claims**

1. A racetrack guard comprising:
a plurality of spaced-apart fixed curved posts;

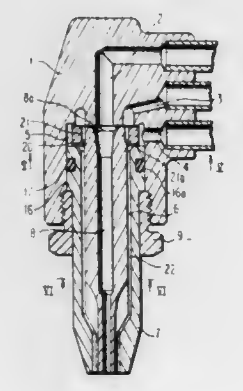
a rail attached to each post at its end;
a plurality of elongated panels arranged substantially from end to end and overlying said posts at said posts' upper curved portion; and,
means to attach said panels to said posts and to said rail.



4,443,003

BLOWTORCH CUTTING HEAD, PARTICULARLY FOR OXYGEN CUTTING

Christian Bleys, Livry, France, assignor to L. Sauvageau & Cie, Ozoir la Ferriere, France
Filed Sep. 17, 1982, Ser. No. 419,339
Claims priority, application France, Sep. 18, 1981, 81 17641
Int. Cl.³ B23K *7/00*
U.S. Cl. 266—48 **4 Claims**

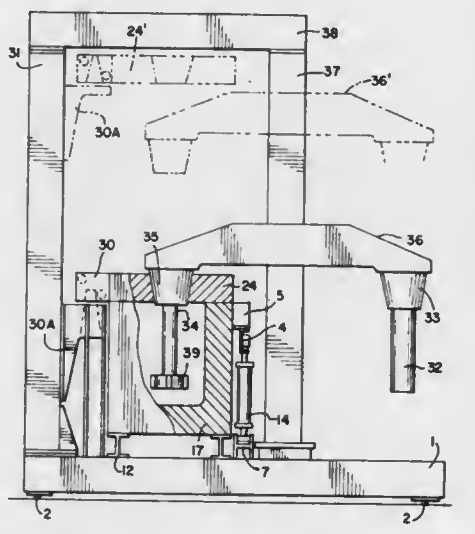


1. Blowtorch cutting head, particularly for oxygen cutting, usable equally well with "head mixed" torches (**1**) and "premixing" torches (**10**), comprising a male part (**6** or **6A**) and a female part (**7** or **7A**), and characterized in that:
   (a) the end of the male part in contact with the torch (**1** or **10**) has a flange (**20** or **20A**) the diameter of which is less than that of the chamber (**5** or **14**) into which open either the conduits (**3** and **4**) for the heating oxygen and gas for a "head mixed" torch, or the conduit (**12**) for oxygen/gas mixture of a "premixed" torch, and which is traversed by at least two diametrically opposed holes (**21** or **21A**);
   (b) between the male part (**6** or **6A**) and the female part (**7** or **7A**) is provided an annular passage (**22** or **22A**) for the heating oxygen/gas mixture; and
   (c) in communication with the holes (**21** or **21A**) are either hollows (**21*a***) provided in the lower protruding portion of the flange (**20**) or assemblies (**24, 25**) provided in the female part (**7A**), with said hollows (**21*a***) or assemblies (**24, 25**) communicating with the annular passage (**22** or **22A**).

4,443,004

DEVICE FOR THE TREATMENT OF A STREAM OF ALUMINUM OR MAGNESIUM-BASED LIQUID METAL OR ALLOY DURING ITS PASSAGE

Jean-Marie Hicter, Voiron; Thierry Le Scoul, Voreppe, and Serge Mairet, Monestier de Clermont, all of France, assignors to Societe de Vente de l'Aluminium Pechiney, France
Filed Sep. 28, 1982, Ser. No. 425,448
Claims priority, application France, Oct. 14, 1981, 81 19710
Int. Cl.³ F27B *14/02*
U.S. Cl. 266—226 **12 Claims**



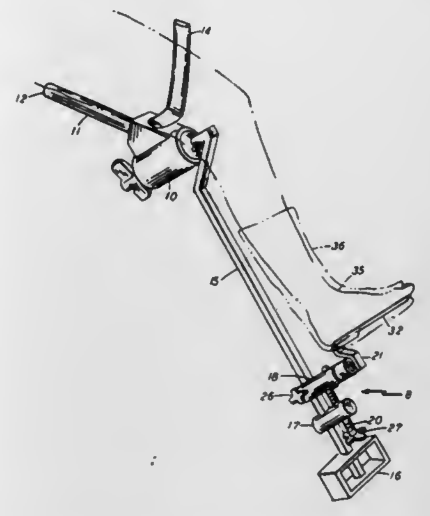
1. A device for the treatment of a stream of aluminum or magnesium-based liquid metal or alloy during its passage, comprising a ladle comprising an external metal casing, an internal refractory lining, a channel for the admission of the crude liquid metal at the rear, a nozzle for casting the treated liquid metal at the front and at least one internal partition leaving, with the bottom of the ladle, a space for the circulation of the liquid metal and subdividing the ladle into a first rear compartment and at least one front compartment opening at the casting nozzle; a cradle on which the ladle is fixed; an articulated frame relative to which the said cradle can rock forwards about a first horizontal axis passing through the casting nozzle; and a a platform, the articulated frame being connected to the platform relative to which the articulated frame can rock about a second horizontal axis.

4,443,005

FOOT SUPPORT DEVICE

Edward D. Sugarman, 6726 Gleason Pl., Fayetteville, N.Y. 13066, and Alan W. Brownlie, Skaneateles, N.Y., assignors to Edward D. Sugarman, Fayetteville, N.Y.
Filed Sep. 9, 1982, Ser. No. 416,098
Int. Cl.³ A61G *13/00*
U.S. Cl. 269—328 **9 Claims**

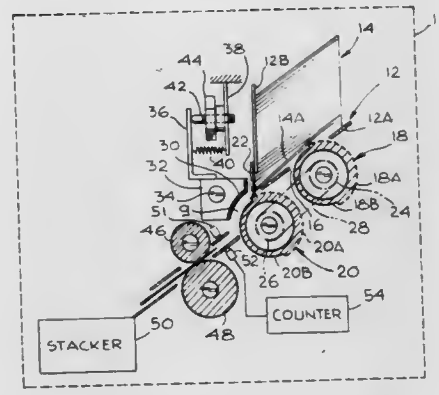
1. In a limb positioning device adapted for use with an operating table, the device including a central support member, means for detachably securing the support member to the operating table, and an extension member movably connected to the support member, the improvement comprising a foot holding unit having coacting first and second post members slidably mounted on the extension member, means interconnecting the post members whereby they can be moved in unison along the extension member, locking means on the first post member for securing it in a desired position of longitudinal adjustment on the extension member, a foot engaging plate mounted on the second post member so as to be angularly adjustable with respect thereto, and locking means on the second post member for securing the foot engaging plate in a desired position of angular adjustment, the post interconnecting means permitting fine adjustment of the longitudinal position of the second post member on the extension member relative to the position of the first post member.



4,443,006

DOCUMENT AND CURRENCY COUNTER

Kaiichi Hasegawa, Kawasaki, Japan, assignor to Billcon Corporation of America, Compton, Calif.
Continuation-in-part of Ser. No. 170,646, Jul. 21, 1980, abandoned. This application Sep. 11, 1981, Ser. No. 301,188
Int. Cl.³ B65H *3/06*
U.S. Cl. 271—10 **8 Claims**

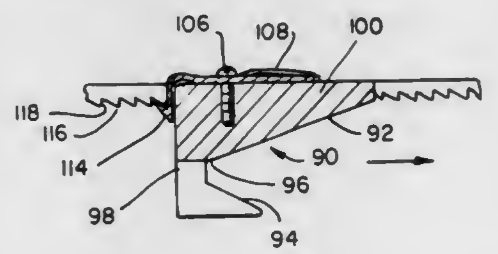


1. A sheet counter or the like including:
means for holding a stack of sheets of dimension "1" in the direction of feeding thereof through said counter;
a feed-in roller rotatably supported for contacting the bottom sheet in said stack of sheets to feed such sheet from said stack;
a delivery roller rotatably supported in spaced relationship with respect to said feed-in roller for receiving each sheet fed from said stack;
a guide member supported in juxtaposed but spaced alignment with said delivery roller for guiding each sheet around the cylindrical surface of said delivery roller, said guide member having an output edge;
tension rollers having a contact line therebetween and being positioned by a dimension less than "1" from said guide member with their axes parallel to the axis of said delivery roller for receiving and feeding forward at relatively high speed each sheet emerging from the space between said guide member and said delivery roller;
said delivery roller having a surface with a first portion having a high coefficient of friction and a second portion of a low coefficient of friction;
said feed-in roller also including a first portion having a high coefficient of friction and a second portion having a low coefficient of friction;
said delivery roller having a flange movable in concert therewith, said flange having a radius substantially equal to the radius of said first portion and having a length equal to that of said second portion of said delivery roller and being positioned contiguous therewith.

4,443,007

INSERTER WITH IMPROVED RAM MECHANISM

William Adamoski, Stamford, and Alan B. Hotchkiss, Westport, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.
Division of Ser. No. 185,856, Sep. 11, 1980, Pat. No. 4,379,383. This application Jan. 7, 1983, Ser. No. 456,469
Int. Cl.³ B65H *5/16;* B65B *5/04*
U.S. Cl. 271—269 **5 Claims**



1. A ram mechanism for an envelope inserter adapted to transport enclosures from an enclosure pick-up station to an envelope positioned at an envelope station, the ram mechanism comprising a ram block, a ram blade, means securing the ram blade to the ram block, pusher means for engaging the trailing edge of an enclosure seated at the pick-up station and advancing the enclosure into the envelope, the pusher means extending downwardly from the underside of the ram blade and means adjustably securing the pusher means to the ram blade, the securing means comprising spring biasing means positioned on the upper surface of the ram blade, means securing the pusher means to the spring biasing means, the spring biasing means including means extending to the underside of the ram blade, the extending means being upwardly spring biased, means for forming a transverse grating on the underside of the ram blade, the extending means being in interlocking engagement against the grating, the extending means being operator engageable on the upper surface of the ram blade to release the spring biased engagement between the extending means and the grating whereby the position of the pusher means relative to the ram blade may be adjusted to compensate for varying width of enclosures.

4,443,008

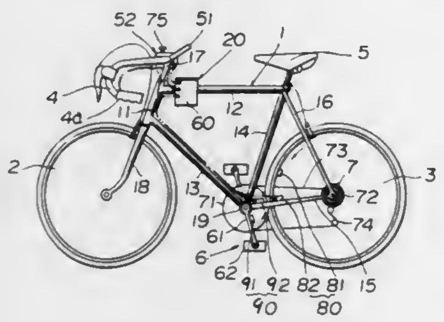
RUNNING TYPE HEALTH PROMOTING DEVICE

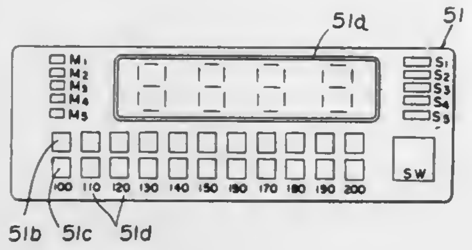
Keizo Shimano, Osaka, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan
Filed Nov. 7, 1980, Ser. No. 204,912
Claims priority, application Japan, Nov. 22, 1979, 54-151639
Int. Cl.³ A63B *21/00, 23/04*
U.S. Cl. 272—73 **9 Claims**

1. A running type health promoting device comprising:
   (a) a running vehicle comprising a frame, at least one front wheel and at least one rear wheel which are supported to said frame, a handle bar, a saddle, a pedalling device, and a transmitting device for transmitting the pedalling operation of said pedalling device to said rear wheel,
   (b) a microprocessing unit supported to said frame of the vehicle and having a processing circuit which sets a period of time for training and a proper number of pulses of a driver during the period of time for training corresponding to a proper quantity of bodily exercise, said microprocessing unit setting said period of time and proper number of pulses in response to an input means which provides personal information concerning said driver, and target information concerning a desired type of training which are input thereto,
   (c) a pulse detector which is electrically connected with an

input of said microprocessing unit, for detecting the pulse of a driver who drives said vehicle, and feeds a detection signal of the detected driver pulse into said microprocessing unit, said microprocessing unit comparing a detected driver pulse with said proper number of pulses and setting a proper number of revolutions of the pedals required to achieve said proper quantity of bodily exercise during said time period,

(d) a measuring instrument electrically connected with the input of said microprocessing unit so as to measure the training time period and feed a timing signal therefor into said microprocessing unit, said microprocessing providing an output when said set training period of time has elapsed,





(e) an indicator electrically connected with the output of said microprocessing unit so as to indicate said proper number of revolutions of said pedals for matching the proper number of pulses set by said microprocessing unit and also indicating completion of said training when the driver completes training under the set number of pulses during the set time period, and

(f) a source of electric energy electrically connected to operate said microprocessing unit, pulse detector, measuring instrument and indicator at least while said vehicle is being driven.

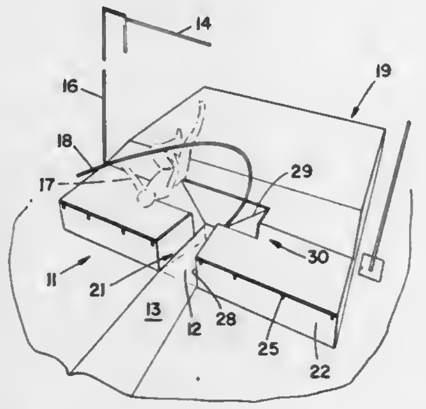
4,443,009
POLE VAULTER'S LANDING CUSHION

Stephen N. Smith, Leucadia, Calif., assignor to Ampro Corporation, Anaheim, Calif.

Filed Oct. 5, 1981, Ser. No. 308,594

Int. Cl.^{3} A63B *5/00*

U.S. Cl. 272—104 **12 Claims**



1. In a pole vaulter's landing cushion having a front end with a rearwardly extending notch therein for receiving the base of a vaulting pole, the notch having spaced apart sidewalls defining a pole planting region at the back end of the notch and defining a more forward region between the pole planting region and the front end of the cushion, the improvement comprising:

a notch configuration wherein the top of said notch is sufficiently broad at said pole planting region to accommodate a predetermined amount of bending of said pole towards the sides of said notch while being sufficiently narrower at said forward region to inhibit said predetermined amount of bending of said pole towards said sides of said notch, said sidewalls being stepped at the location where said pole planting region connects with said forward region to provide an abrupt change in the width of the top of said notch at said location.

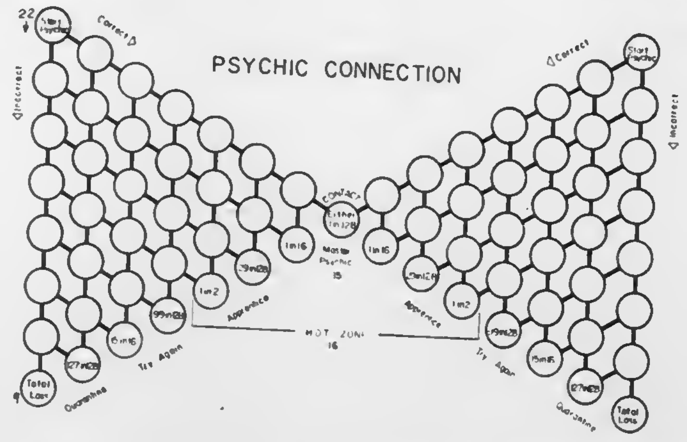
4,443,010
PSYCHIC CONNECTION GAME

Laurie G. Larwood, 9812 Lindero Ave., Montclair, Calif. 91763

Filed Jan. 18, 1982, Ser. No. 340,063

Int. Cl.^{3} A63F *3/00*

U.S. Cl. 273—242 **6 Claims**



1. A game apparatus for evaluation and development of psychic abilities, comprising:

a set of objects having at least one pair of multi-valued dimensions, each dimension of which can separately be the object of mental concentration in an attempt to formulate mental images necessary for telepathy, clairvoyance, precognition or psychokinetic phenomena;

a gameboard containing at least two sets of player positions, each set arranged such that net movement is in a particular direction if said mental images are correctly perceived by one or more players and having some positions contain a probability marking denoting the odds of arriving at a given position after a given number of rounds when influenced by random chance alone; and

a set of player game pieces to be assigned to individual players to note their relative progress on said gameboard, said game pieces being moved in said particular direction whenever an image transmitted by another is correctly perceived, or whenever a pre-existing value is correctly perceived, or whenever a future value is correctly foreseen, or whenever a future value is correctly influenced by said thought concentration.

4,443,011
METHOD OF PLAYING CHESS FOOTBALL

Raymond J. Sheridan, 119 St. Marks Pl., Roslyn Heights, N.Y. 11577

Division of Ser. No. 290,060, Aug. 4, 1981, abandoned. This application Aug. 4, 1983, Ser. No. 519,899

Int. Cl.^{3} A63F *3/00*

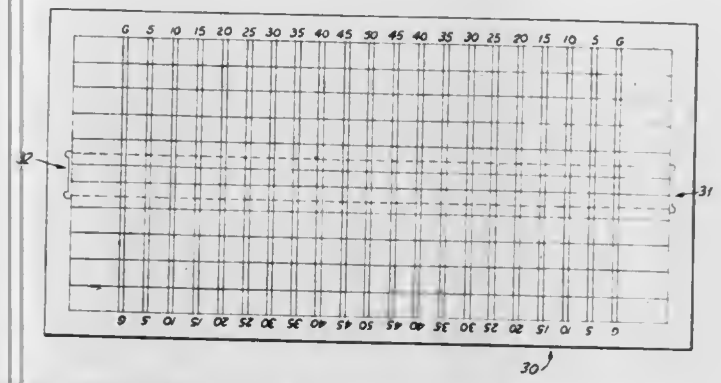
U.S. Cl. 273—247 **1 Claim**

1. The process of playing a game device capable of simulating in all of its aspects in game form upon a game board marked off to simulate a football field and divided into squares so as to designate numerous specific locations on said game board, the game of football, wherein a first player and a second player, each with their own player pieces which are positioned upon said game board in opposing alignments comparable to the various alignments that occur during an actual football game, seek to score points against each other as done in the game of football by the rolling of dice, said process comprising:

(a) the rolling by said first player of a first die so as to determine in a random fashion the movement of said first player's individual player pieces upon said game board any number of squares upon said game board up to the number appearing on the roll of said first die, said movement of said player pieces being compatible with said first player offensively moving his player pieces in accordance with the game of football,

(b) the then rolling by said second player of one die so as to determine in a random fashion the movement of said second player's individual player pieces upon said game board any number of squares upon said game board up to the number appearing on the roll of said first die said movement of said player pieces being compatible with said second player defensively moving his player pieces in response to the movement of the player pieces of said first player and in accordance with the game of football;

(c) the then rolling by said first player of two dice so as to determine in a random fashion the movement of said first player's individual player pieces upon said game board any number of squares upon said game board up to the number appearing on the roll of said two dice, said movement of said player pieces being compatible with said first player offensively moving his player pieces in accordance with the game of football;



(d) the then rolling by said second player of two dice so as to determine in a random fashion the movement of said second player's individual player pieces upon said game board any number of squares upon said game board up to the number appearing on the roll of said two dice said movement of said player pieces being compatible with said second player defensively moving his player pieces in response to the movement of the player pieces of said first player and in accordance with the game of football;

(e) the then rolling by said first player of three dice so as to determine in a random fashion the movement of said first player's individual player pieces upon said game board any number of squares upon said game board up to the number appearing on the roll of said three dice, said movement of said player pieces being compatible with said first player offensively moving his player pieces in accordance with the game of football;

(f) the then rolling by said second player three dice so as to determine in a random fashion the movement of said second player's individual player pieces upon said game board any number of squares upon said game board up to the number appearing on the roll of said three dice said movement of said player pieces being compatible with said second player defensively moving his player pieces in response to the movement of the player pieces of said first player and in accordance with the game of football;

(g) the then rolling by said first player of four dice so as to determine in a random fashion the movement of said first player's individual player pieces upon said game board any number of squares upon said game board up to the number appearing on the roll of said four dice, said movement of said player pieces being compatible with said first player offensively moving his player pieces in accordance with the game of football;

(h) the then rolling by said second player of four dice so as to determine in a random fashion the movement of said second player's individual player pieces upon said game board any number of squares upon said game board up to the number appearing on the roll of said four dice said movement of said player pieces being compatible with said second player defensively moving his player pieces in response to the movement of the player pieces of said first player and in accordance with the game of football;

(i) continuing said rolls until a defensive player piece either crosses a square on said game board simultaneously with the offensive player piece designated to be carrying the ball or the player designated to be carrying the ball has crossed his opponent's goal line.

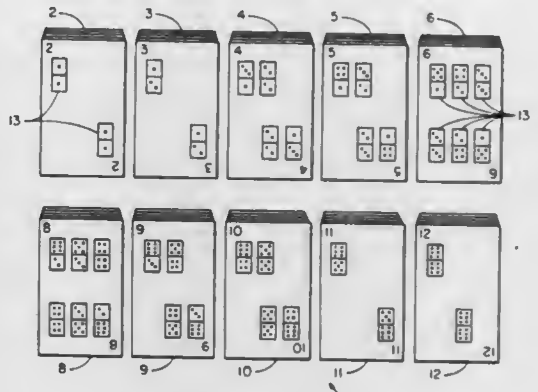
4,443,012
COMBINATION CARD AND DICE GAME

Edward M. Makovic, and Dorothy I. Makovic, both of 510 N. Lincoln, Coal City, Ill. 60416

Filed Mar. 2, 1981, Ser. No. 239,842

Int. Cl.^{3} A63F *1/04*

U.S. Cl. 273—292 **4 Claims**

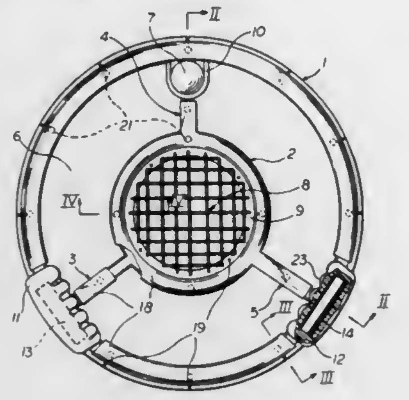


1. A method of utilizing a game apparatus, including selection of a deck of cards having a plurality of cards of different suits, selection of a random selection means having identifying means corresponding to said different suits of said deck of playing cards, dealing said cards to a plurality of players, a first one of said players operating said random selection means to randomly identify one of said suits, removing a card in such identified suit in such first player's hand from further play, repeating operation of said random selection means by said first player and removing from his hand cards in suits identified by each such operation of said random selection means until said random selection means identifies a suit for which said first player does not have a card, passing the play to the nearest adjacent player who has a card in the suit identified by said random selection means as a result of its last operation, said nearest adjacent player removing such card from further play, said nearest adjacent player then operating said random selection means repeatedly and removing cards from his hand in suits identified by each such operation of said random selection means, wherein the step of selecting a deck of cards having a plurality of cards of different suits includes the step of selecting a deck wherein the plurality of different suits correspond respectively to the numbers two, three, four, five, six, eight, nine, ten, eleven and twelve, wherein the step of selecting a random selection means includes the step of selecting a pair of game dice operable to roll the number combinations two, three, four, five, six, seven, eight, nine, ten, eleven and twelve, and including the additional step of passing the play to the next

adjacent player when said nearest adjacent player rolls said pair of dice and produces the number combination of seven.

4,443,013
HAND RACKET FOR BALL GAME WITH SIGNAL-GENERATING MEANS

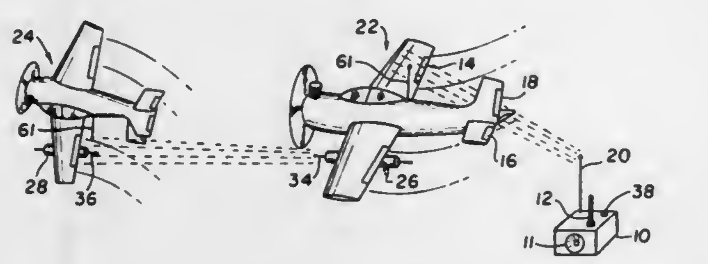
Johanna Burt, 2 Hillside Crescent, New Rochelle, N.Y. 10804
Filed Jul. 23, 1982, Ser. No. 401,260
Int. Cl.³ A63F *9/00*
U.S. Cl. 273—318 **6 Claims**



1. In a game of skill, the combination of a ball with a hand racket for bouncing said ball, said racket comprising:
- a circular pad having a diameter exceeding that of said ball;
- a frame concentrically surrounding said pad, said frame including an inner ring encircling said pad, an outer ring separated from said inner ring by an annular clearance whose width exceeds the diameter of said ball, and a plurality of radial spokes in said clearance interconnecting said rings;
- signal-generating means on said frame; and
- pressure-responsive means extending over at least a major part of said frame for triggering said signal-generating means upon said frame being struck by the ball.

4,443,014
COMBAT SIMULATOR MEANS

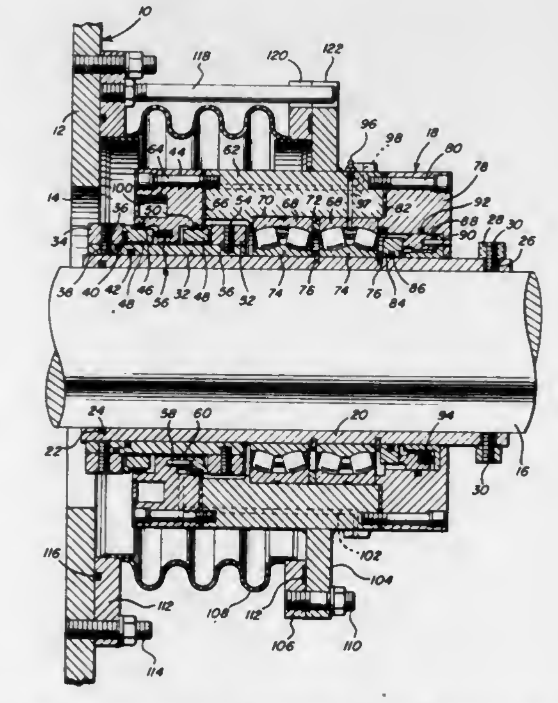
Bernard Kovit, 41 Wood La., Woodsburgh, N.Y. 11598; Richard G. Koenig, 258 Shore Rd., Mount Sinai, N.Y. 11766, and Robert W. Kress, 27 Mill Rd., Lloyd Harbor, N.Y. 11743
Filed Jul. 27, 1981, Ser. No. 287,365
Int. Cl.³ F41J *9/08;* A63H *27/02, 30/04*
U.S. Cl. 273—363 **9 Claims**



1. A simulator of combat engagement of a first means, said simulator including:
- a remote control means;
- a first receiver within the first means for the receiving signals of the remote control means for control of the first means, said first receiver also having a "fire" controlling and "kill" indicating output signals;
- a connector having one portion thereof on said first means;
- a detachable means for the first means having the other portion of the connector, a second receiver, a pulse width modulator, a transmitter and a hit counter in a circuit connected with the one portion upon assembly of detachable means to the first means to permit signals from the output signals of said first receiver to place said detachable means under command of said remote control means, said detachable means having mode control means to control operation of said first means either as a commanded passive target means to indicate combat effectiveness or as a firing means.

4,443,015
CARTRIDGE TYPE ROTARY SHAFT SEAL WITH BEARINGS AND BELLOWS

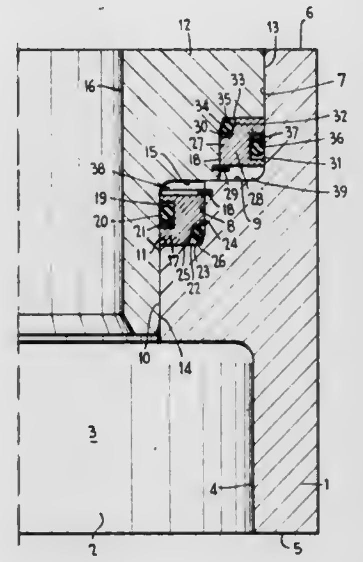
Henry S. Duffee, and Meigs C. Golden, Jr., both of Florence, S.C., assignors to Five Star Seal Corporation, Florence, S.C.
Filed Jul. 14, 1982, Ser. No. 398,182
Int. Cl.³ F16J *15/34, 15/54*
U.S. Cl. 277—30 **9 Claims**



1. In combination with a housing wall having an opening therein through which a rotary shaft projects, a cartridge-type seal assembly, said seal assembly including one-piece inner bearing race supporting sleeve means axially removably sldable on, sealed relative to and releasably anchored in axial position on said shaft, a floating annular outer bearing race supporting housing disposed about said sleeve means, bearing means including inner and outer races removably stationarily supported from said sleeve means and housing, respectively, against axial and angular displacement relative thereto, said sleeve means including first rotary aixal face seal ring means removably stationarily supported therefrom in sealed engagement therewith and said housing including second stationary axial face seal ring means removably stationarily supported therefrom and with which said first rotary axial face seal ring means is rotatably slidably engaged, a cylindrical fluid impervious bellows assembly including opposite axial end annular end portions, first means removably securing one of said end portions to said wall in sealed engagement therewith about said opening and second means removably securing the other end portion to said annular housing in sealed engagement therewith.

4,443,016
CLAMP RING DEVICE FOR THE SECURING AND REMOVAL OF A COVER OVER A PRESSURE VESSEL

Peter Schüngel, Bork, Fed. Rep. of Germany, assignor to Klöckner-Becorit GmbH, Castrop-Rauxel, Fed. Rep. of Germany
Filed Jul. 21, 1983, Ser. No. 515,597
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1982, 8230533[U]
Int. Cl.³ F61J *15/06;* B65D *53/00*
U.S. Cl. 277—73 **3 Claims**

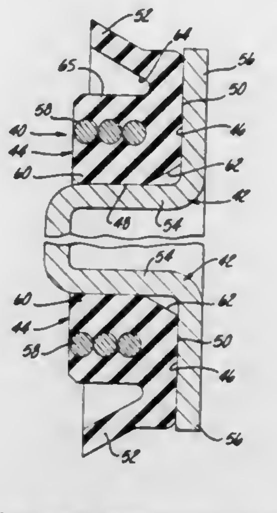


1. A clamp ring device for a plurality of bolt-clamp members to facilitate the securing and removal of a cover over a pressure vessel, comprising an annular clamp ring consisting essentially of aluminum and having a plurality of evenly spaced coaxial through bores for the reception of cover bolts and associated cover nuts, each said bore being defined by a cylindrical surface of a predetermined first diameter for the reception of one of the cover nuts, said surface extending from one side of said ring partially toward the opposite side thereof, and the remainder of said each bore being defined by a stepped cylindrical surface of a second diameter at said opposite end followed by a third diameter less than said second diameter and followed by a fourth diameter less than said third and first diameters, a circular ring piston received within said each bore at said stepped surface thereof for axial movement, said piston having outer cylindrical surfaces respectively in engagement with said second and fourth diameter surfaces, high-pressure annular seal means disposed between said third cylindrical surface and said piston, said second and fourth diameter surfaces and the inner periphery of said seal means defining a stepped cylindrical bore for said piston, and said seal means comprising an annular support ring, an elastomeric static seal ring, and an elastomeric dynamic seal ring.

4,443,017
ANNULAR SEAL

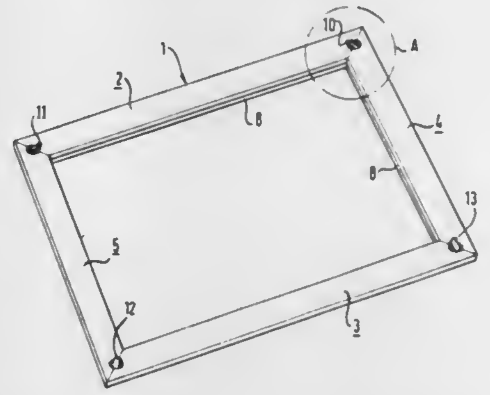
Henry J. Knott, Detroit, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.
Filed Sep. 29, 1982, Ser. No. 426,394
Int. Cl.³ F16J *15/32*
U.S. Cl. 277—152 **5 Claims**

1. An annular seal for a piston comprising an annular elastomeric seal body and a sealing lip extending radially from said body, said seal body including an axially extending mounting surface which is adapted to engage a support surface on said piston in interfering relationship and characterized by an annular retaining member located within said seal body and completely radially enclosed therewithin comprising a continuous, spirally wound, elastic, steel spring wire including multiple adjacent loops wherein said loops are generally aligned with said mounting surface and spaced apart therefrom to force said mounting surface against said support surface, said springwire being round in cross-section and said coil being normally closed whereby adjacent loops of said coil are in substantially point to point contact, said wire loops being mechanically bonded together by said elastomeric material being molded substantially entirely about said wire loops and into spaces formed between adjacent wire loops.



4,443,018
GASKET FRAME MADE OF ELASTOMER MATERIAL

Gerd W. Samol, Heimenkirch, and Horst Pittel, Burgwedel, both of Fed. Rep. of Germany, assignors to Metzeler Kautschuk GmbH, Munich, Fed. Rep. of Germany
Filed Jun. 4, 1982, Ser. No. 385,004
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1982, 3200652
Int. Cl.³ F16J *15/02;* B29H *7/00*
U.S. Cl. 277—189 **6 Claims**



1. Gasket frame made of elastomeric material with straight gasket profile portions and closed angular corners, wherein at each corner of the gasket frame a first leg of a metallic angle extends through a miter-cut end into the end region of a first straight gasket profile portion forming a corner, said first gasket profile portion having a hollow space extending in the longitudinal direction of the gasket portion to accommodate the first leg of the metallic angle, and a second leg of said metallic angle similarly extends through a miter-cut end of a second profile portion forming said corner, and wherein said legs are adhesively connected with the corresponding end regions of the gasket profile portions.

4,443,019
AQUEOUSLY-SWELLING WATER STOPPER AND A PROCESS OF STOPPING WATER THEREBY

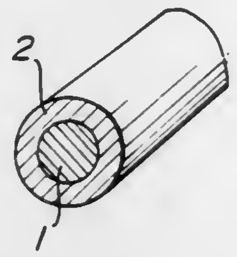
Yoshinobu Ishido, and Hideo Tanaka, both of Fukuyama, Japan, assignors to Hayakawa Rubber Company Limited, Fukuyama, Japan

Division of Ser. No. 226,896, Jan. 21, 1981, Pat. No. 4,366,284. This application Apr. 19, 1982, Ser. No. 369,625

Claims priority, application Japan, Oct. 17, 1980, 55-145358; Oct. 17, 1980, 55-145359

Int. Cl.^{3} E02D *29/16*

U.S. Cl. 277—227 **10 Claims**



1. A water stopper comprising an elongated core member having a high tensile strength, and at least one layer of an aqueously-swelling water-stopping composition secured to the outer surface of said elongated core member; wherein said aqueously-swelling water-stopping composition consists of 10 to 40 weight % of rubber whose main ingredient is reclaimed rubber blended with less than 30 weight % of virgin rubber, 10 to 20 weight % of a silicic compound selected from the group consisting of silicic acid anhydride, hydrous silicic acid and calcium silicate, 10 to 60 weight % of bentonite, and 10 to 40 weight % of plasticizer.

4,443,020
MECHANICAL GRIPPING DEVICE FOR ROTATING JAW CHUCKS OR COLLET CHUCKS

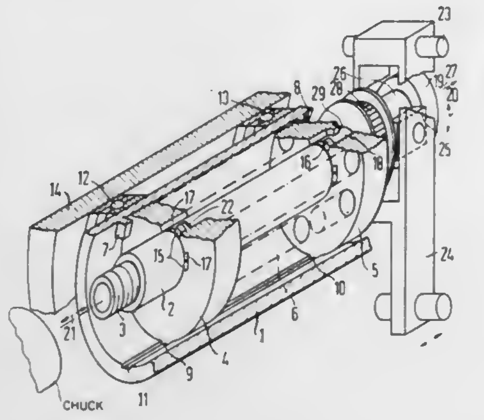
Dieter Krause, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 23, 1981, Ser. No. 304,798

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1980, 3038208

Int. Cl.^{3} B23B *31/24, 31/26*

U.S. Cl. 279—1 DA **5 Claims**



1. A mechanical chuck activating system for rotating chucks, comprising: a chuck; means for activating the chuck for gripping of a part to be rotated from the outside or from the inside by either pulling or pressing a member to which the chuck is coupled, said means including pressure springs and two spring plates arranged in a bore hole of a spindle, the springs being arranged such that they are prestressable by means of axial displacement of a pulling or pressing slide means coupled to the chuck to operate it; axially spaced stop means in said spindle bore defining spaced end stop positions, each of said spring plates being axially displaceable up to a respective one of said end stop positions, each of the plates being pressed to the respective one of said end stop positions by said pressure springs arranged between the plates; said pulling or pressing slide means being positioned through the spring plates for activating the chuck; and coupling means selectively coupling said slide means with one of the two spring plates while the other spring plate is uncoupled and vice-versa so as to selectively provide either a pulling or pressing force via the slide means to the chuck.

4,443,021
APPARATUS FOR ADJUSTING TWO END POSITIONS LIMITING A CLAMPING STROKE

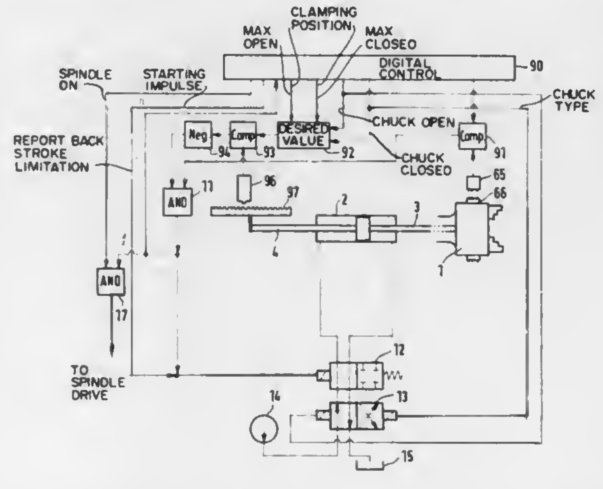
Albert Buchholz, Langenhagen; Werner Hesse, Wedemark, and Günther Möller, Langenhagen, all of Fed. Rep. of Germany, assignors to Gildemeister AG, Bielefeld, Fed. Rep. of Germany

Filed Feb. 6, 1981, Ser. No. 232,305

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1980, 3004988

Int. Cl.^{3} B23B *31/16, 31/30*

U.S. Cl. 279—4 **3 Claims**



1. Apparatus for adjusting two end positions limiting a clamping stroke of the power-actuated chuck jaws of an exchangeable workpiece-clamping unit of a mcahine tool and for determining the attainment of the end positions, comprising:

position-indicating means for indicating the actual position of the clamping position of said jaws and adjusted along with each adjustment of the clamping jaws,

desired-value transmitting means for transmitting signals corresponding to said two end positions,

comparator means for receiving signals corresponding to the position indicated by said position indicating means and the signals from said transmitting means and for generating a locking signal for said machine tool when conformity between one of the end positions and said actual position has been established,

a code transmitter on said workpiece-clamping unit,

a code reader for reading signals from the code transmitter,

programming control means for emitting a set-point signal for the machine tool, and

second comparator means for comparing the code read by the reader with the set-point signal and for generating a locking signal for the machine tool if there is a discrepancy between the two.

4,443,022
ROLLER SKATE

Gordon K. Ware, Chicago, Ill., assignor to The Chicago Roller Skate Company, Chicago, Ill.

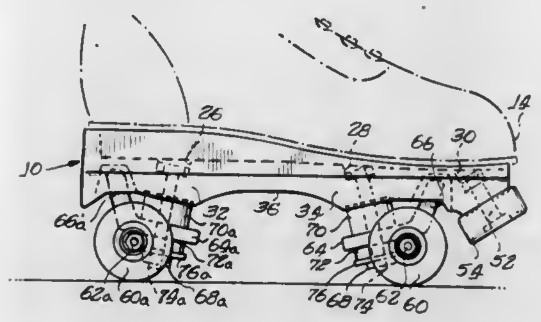
Filed Sep. 21, 1981, Ser. No. 303,902

Int. Cl.^{3} A63C *17/02*

U.S. Cl. 280—11.28 **8 Claims**

1. A roller skate comprising a unitary sole plate having toe and heel portions joined by an instep portion, a top surface for receiving a shoe and a bottom surface for receiving truck

assemblies; a front wheel truck assembly at the toe portion of the sole plate bottom surface and a rear wheel truck assembly at the heel portion of the sole plate bottom surface, each truck assembly including a cushioned action screw connected to the sole plate and extending through a platform from which a strut arm inclines upwardly toward the adjacent end of the sole plate; said sole plate bottom surface having a pair of downwardly open recesses, one adjacent the front of the toe portion and the other adjacent the rear of the heel portion, with each recess having an upper closed end and a lower end opening defined by downwardly relatively diverging internal wall surfaces of the recess which are substantially free of any undercutting relative to the upper closed end and with a portion of the internal wall surface of each recess toward the adjacent end of the sole plate extending downwardly below the remaining diverging internal wall surface and in continued divergence relative thereto and more remotely spaced from the associated strut arm; and a cushion element mounted in each recess and conforming to the shaping of the internal wall surfaces thereof and having a socket therein similarly inclined with respect to the associated strut arm and of complementary shape for receiving the free end of the associated strut arm; and with the socket opening disposed vertically above the terminal end of the downwardly extending internal wall surface of the recess leaving therebetween additional thickness of the cushion material which is inclined downwardly from the socket opening and away from confining engagement with the associated strut for permissive expansion and recovery of the inclined and unconfined cushion material under active movements of the strut arm.



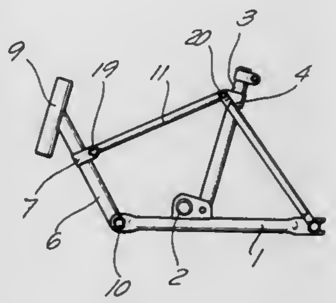
4,443,023
METHOD AND DEVICE FOR DISPLACING THE HEAD TUBE OF A BICYCLE

Hideyuki Ishibashi, Ageo, Japan, assignor to Bridgestone Cycle Co., Ltd., Tokyo, Japan

Filed May 14, 1982, Ser. No. 378,042

Int. Cl.^{3} B62K *19/32*

U.S. Cl. 280—278 **6 Claims**



1. In a bicycle frame comprising a chain stay means, a seat tube extending from said chain stay means, an inclined down tube pivotally connected to said chain stay means and forward of said seat tube, a top longitudinally extending element connected between said seat tube and said down tube, head pipe means mounted on said down tube, a first eccentric means connecting said top element to said seat tube and a second eccentric means connecting said top element to said down tube to thereby provide for adjusting the pivotal position of said down tube and thereby the relative position of said head pipe means relative to said seat tube.

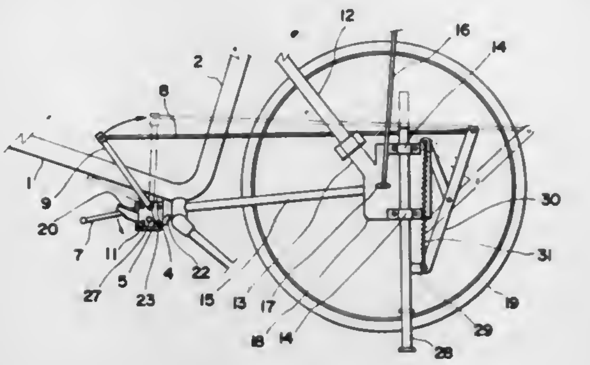
4,443,024
BICYCLE STAND UNIT

Tamao Okai, 143, Nabura, Ka'aicho, Kitakatsuragigun, Nara, Japan

Filed Jan. 25, 1982, Ser. No. 342,199

Int. Cl.^{3} B62H *1/06*

U.S. Cl. 280—304 **1 Claim**



1. A bicycle stand unit for a bicycle having a rear tire with a hub comprising a pair of attachments made of a metal plate provided at the hub of the rear tire, a leg mounted on each said attachment, each of said legs being slidable up and down along said attachment, a pair of toggle joints each of which is pivotally connected at its lower end to one said leg, a pair of heavy duty-springs each of which is provided between a lower end of said toggle joint and an upper section of said attachment, said heavy-duty spring being adapted to urge said leg upwards, a pair of swingable arms each of which is connected to an opposite end of one said toggle joint by means of a rod whereby the movement of said arm is transmitted to said toggle joint, said pair of swingable arms being carried on a rotary shaft, a foot lever rigidly connected to said rotary shaft, said foot lever being operable by foot, said rotary shaft being rotatively supported on a pair of brackets affixed to the down tube of the bicycle, said foot lever having a stop pin adapted to engage in a notch produced in a rocker pivotally affixed to one of said brackets, a lockpin inserted through said bracket, said lockpin being adapted to lock said rocker to prevent its rocking movement.

4,443,025
FIFTH WHEEL ASSEMBLY

Samuel A. Martin, Holland; Fredrick J. Bakker, West Olive; Gerald W. Hungerink; Jack L. Gisinger, both of Holland, and James H. Bush, Zeeland, all of Mich., assignors to Holland Hitch Company, Holland, Mich.

Filed Mar. 3, 1982, Ser. No. 354,240

Int. Cl.^{3} B62D *53/08*

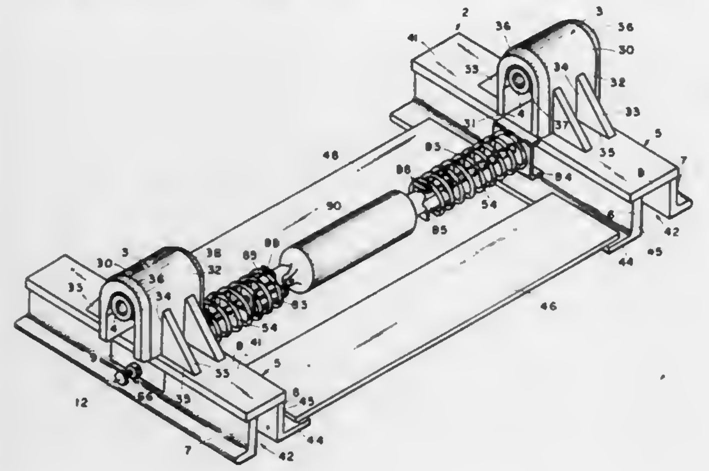
U.S. Cl. 280—407 **26 Claims**

1. In a fifth wheel coupling for selectively interconnecting tractor and trailer units, including a base plate adapted for connection with a tractor unit, and having a pair of slotted, parallel racks mounted thereon in a laterally spaced apart relationship, and a trunnioned fifth wheel assembly adapted for selective connection with a trailer unit, an improved trunnion bracket to pivotally mount said fifth wheel assembly on said base plate, comprising:

a pair of channels having a generally rectangular side elevational shape, and an uncomplicated construction with substantially flat upper surfaces, and open bottoms which form guides that are received over and mate with said racks for sliding movement along said racks;

a pair of forged, high-strength bearing caps, having a generally inverted U-shape, and being fixedly anchored to the flat upper surfaces of said rectangular channels in a substantially perpendicular relationship with said rectangular channels;

a pair of separate bearing sleeves positioned within said bearing caps, and being fixedly anchored therein; and



means for selectively connecting said rectangular channels with said racks, whereby said improved trunnion bracket is strong, and can be readily manufactured.

4,443,026

GAS SUSPENSION SYSTEMS FOR VEHICLES

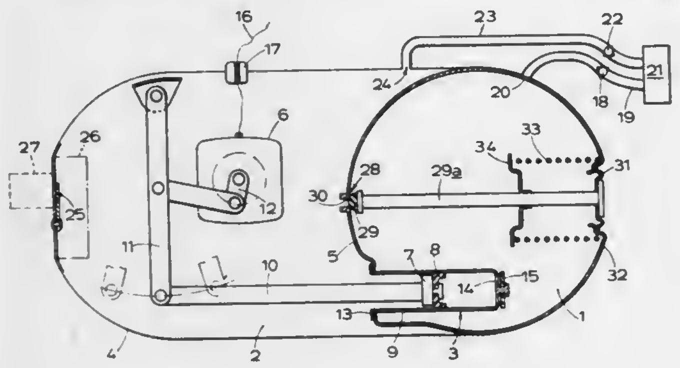
Anthony W. Harrison, Birmingham, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Dec. 29, 1981, Ser. No. 335,445

Claims priority, application United Kingdom, Jan. 10, 1981, 8100737

Int. Cl.³ B60G *11/28*

U.S. Cl. 280—714 **19 Claims**



1. a suspension system for levelling a vehicle comprising a suspension unit in which is contained a volume of air under pressure to define a gas spring for supporting the load on a wheel or axle, a high pressure reservoir having an outlet, a low pressure reservoir having an inlet, first connection means for connecting said outlet of said high pressure reservoir to said suspension unit, second connection means for connecting said suspension unit to said inlet of said low pressure reservoir, a first control valve disposed in said first connection means for controlling the flow of air from said high pressure reservoir to said suspension unit, a second control valve disposed in said second connection means for controlling the flow of air from said suspension unit to said low pressure reservoir, a pump for maintaining a pressure difference between said high pressure reservoir and said low pressure reservoir, a vacuum relief valve provided in said low pressure reservoir to allow communication between the atmosphere and said low pressure reservoir, and a spring-loaded dump valve which is provided to allow communication between said high pressure reservoir and said low pressure reservoir.

4,443,027

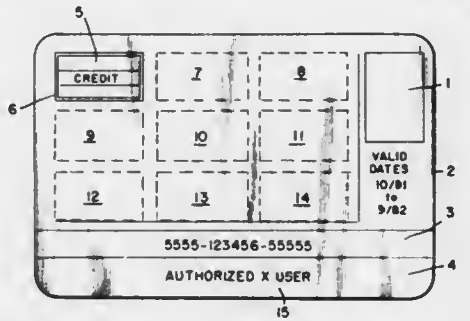
MULTIPLE COMPANY CREDIT CARD SYSTEM

Maurice G. McNeely, 250 Ohua Ave., Apt. 8C, Honolulu, Hi. 96815, and Rodney A. Gomes, 1760 Hookupa St., Pearl City, Hi. 96782

Filed Jul. 29, 1981, Ser. No. 287,980

Int. Cl.³ B42D *15/00*

U.S. Cl. 283—83 **5 Claims**



1. A multiple-company credit card system comprising

(a) a primary identification plate containing legible means for identifying an authorized user, and coded means for identifying said user, plural solid, slightly recessed spaces on a front of the primary plate for affixation of a plurality of miniature credit indicators, and plural primary plate microcircuit chip coding means embedded in the primary plate adjacent the recessed spaces, the primary plate chip coding means having interconnection means extending into the recessed spaces for connecting with credit indicators mounted in the recessed spaces, and

(b) at least one miniature credit indicator having an upper side comprising a miniature reproduction of a credit card issued to an authorized user by a credit-granting establishment, each indicator having an underside with an adhesive means for attaching the indicator to one of the slightly recessed spaces in the primary plate, and a microcircuit chip embedded in each miniature credit indicator, the credit indicator microcircuit chips being adapted to interconnect with microcircuit chips embedded in the primary plate, each of the miniature indicators being provided with a microcircuit chip which is different from a microcircuit chip in any other miniature indicator.

4,443,028

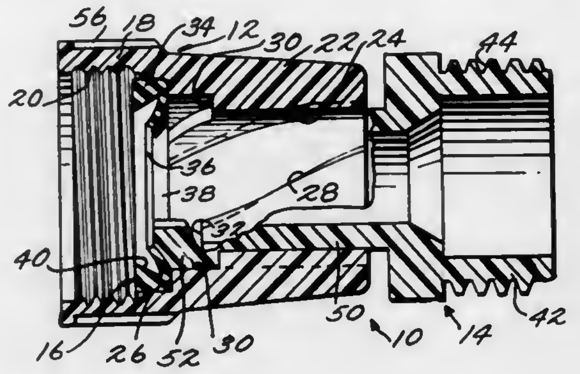
QUICK COUPLING ASSEMBLY

Jerry R. Hayes, Peoria, Ill., assignor to L. R. Nelson Corporation, Inc., Peoria, Ill.

Filed Aug. 14, 1981, Ser. No. 292,430

Int. Cl.³ F16L *37/24*

U.S. Cl. 285—38 **13 Claims**



1. A quick coupling assembly for connecting and disconnecting a threaded male hose fitting with a cooperating threaded female fitting with a quick turning action rather than the greater turning action required to connect and disconnect the threaded male and female fittings directly comprising:

a tubular female coupling member having a male fitting engaging end portion formed with interior threads on the interior periphery thereof for cooperatively threadedly engaging a threaded male hose fitting,

the axial extent of said male fitting engaging end portion being approximately 50% of the pitch diameter of said interior threads,

the remaining portion of said female coupling member constituting a female coupling portion having an axial extent within the range of 75% to 125% of said pitch diameter,

said female coupling portion having a generally cylindrical interior periphery of a diameter size less than said pitch diameter defining at a position adjacent the inner end of said interior threads an annular shoulder facing in a direction toward said interior threads,

the interior periphery of said female coupling portion having formed therein a plurality of annularly spaced grooves extending from the outer end thereof through said annular shoulder and a corresponding plurality of correspondingly annularly spaced notches extending from said annular shoulder toward said outer end,

the radial extent of said grooves and notches being less than the radial extent of said shoulder so that the latter includes an uninterrupted outer annular sealing surface,

an annular resilient seal having an outer annular portion sealingly engaging the uninterrupted outer sealing surface of said shoulder and an inner annular portion extending over the notches and grooves formed in said shoulder, and

a tubular male coupling member having a female fitting engaging end portion formed with exterior threads on the exterior periphery thereof and exterior gripping surfaces on the exterior periphery thereof adjacent the inner end of said exterior threads,

said exterior threads having a pitch diameter generally the same as the aforesaid pitch diameter;

the axial extent of said female fitting engaging end portion being within the range of from 65% to 85% of said pitch diameter,

the remaining portion of said male coupling member constituting a male coupling portion having an axial extent slightly larger than the axial extent of said corresponding female coupling portion,

said male coupling portion having a plurality of annular spaced lugs on the exterior periphery thereof adjacent the outer end thereof of a size to engage within said grooves and said notches and an outwardly facing annular sealing surface on the outer extremity thereof operable when said lugs are engaged inwardly beyond said grooves and engaged within said notches to sealingly engage the inner annular portion of said resilient seal and to resiliently deflect the same in a direction away from said shoulder whereby said resilient seal serves to resiliently bias said lugs into engagement within said notches and hence said coupling members in interlocked relation and to provide an interior seal for both of said coupling members when in said interlocked relation.

4,443,029

TUBULAR CLAMP ASSEMBLY

Darryl E. Laxo, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Feb. 8, 1982, Ser. No. 347,114

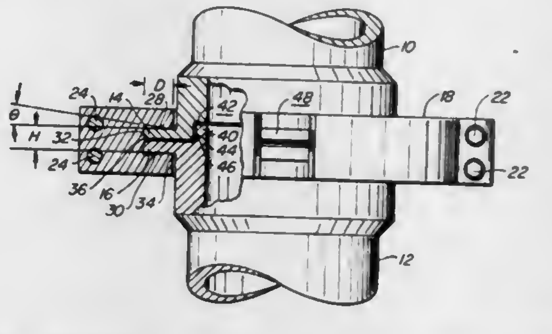
Int. Cl.³ F16L *35/00*

U.S. Cl. 285—93 **5 Claims**

1. A coupling unit for joining two pipe ends, which comprises: flanges extending radially outward from each end, the outer flange surfaces inclining towards the flange faces in the direction of the pipe axis;

at least a pair of semicircular clamp members, each member having a recess therein defined by a base portion and radially extending surfaces for receiving the pipe flanges, the radially extending surfaces of said clamp members forming said recesses being inclined to converge inwardly toward the pipe axis, and said surfaces having a minimum separation approximately equal to the maximum combined thickness of the abutting flanges;

said clamp members having wedge element means associated with the clamp members at the base of the recess inclining coacting with said outer flange surfaces for



separating the flanges into direct complementary contact with the inclined radially extending surfaces of the clamp members forming the recess when in clamped position and means for holding said clamp members in clamped position.

4,443,030

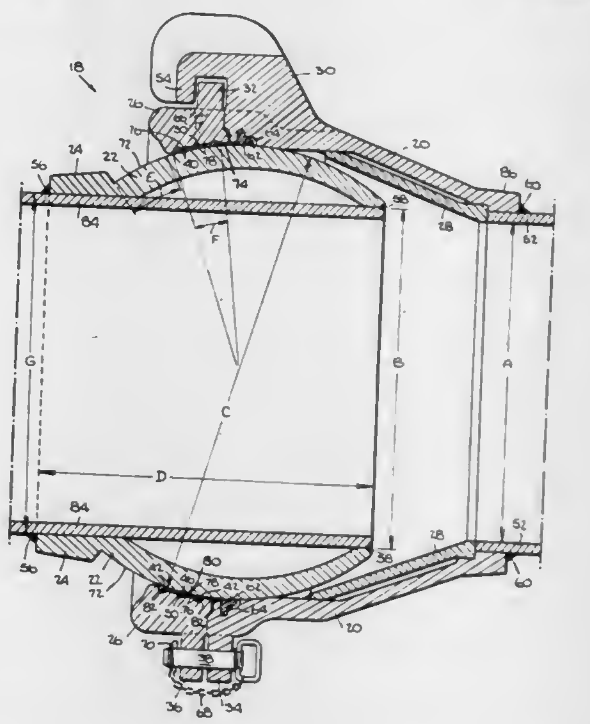
BALL JOINT

Hannon S. Hairston, Daphne, and M. E. Hanrath, Mobile, both of Ala., assignors to Mobile Pulley & Machine Works (A division of Lehigh Valley Industries, Inc.), Mobile, Ala.

Filed Nov. 4, 1981, Ser. No. 318,145

Int. Cl.³ F16L *27/04, 55/00*

U.S. Cl. 285—263 **6 Claims**



1. A ball joint particularly useful in dredging operations and attached to pipe floating at or near the surface of water, said ball joint comprising:

(a) a case attached to the end of a first pipe;

(b) a ball attached to the end of a second pipe;

(c) a gland rotatably securing at least part of the ball within the case, said gland having a first wider circumferential groove on its inner surface with at least one narrower circumferential groove in the first wider groove; and

(d) an elastic, resilient gland liner having a first surface that circumferentially slidably engages the first groove of the gland and a second surface that slidably engages the outer surface of the ball, said first surface having at least one stiffening circumferential convex rib that slidably and matingly engages the at least one narrower circumferential groove in the gland;

wherein (e) the gland liner is free to travel circumferentially within the grooves with respect to both the gland and the ball; (f) the ball joint floats above or near the surface of the water and the ball and case are free to swivel and to rotate axially with respect to one another in response to wave action; and (g) the liner is able to be quickly removed from the gland and replaced without detaching the case or ball from the first or second pipe, respectively.

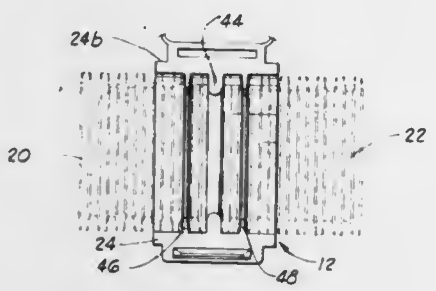
4,443,031
CONNECTOR FITTING FOR CONNECTING CORRUGATED CONDUIT SECTIONS

Richard J. Borsh, Chagrin Falls, Ohio; Steven W. Neff, Clinton, Iowa, and Harold T. Pate, Solon, Ohio, assignors to Thyssen-Bornemisza Inc., New York, N.Y.

Filed Nov. 4, 1982, Ser. No. 439,045

Int. Cl.^{3} F16L *21/06*

U.S. Cl. 285—419 **3 Claims**



1. A connector fitting for interconnecting a pair of flexible corrugated conduit sections comprising:

a pair of complementary arcuate sections each including:

a semi-cylindrical body portion having arcuate, semi-cylindrical corrugation-engaging ribs carried on the concave inner surface thereof and spaced axially from each other along the body portion, said body portion further having axially opposite ends and opposed side edges lying in, and defined by, a diametric plane of said semi-cylindrical body portion;

a female receptor lug carried on one side edge of the semi-cylindrical body portion, extending axially across a major portion of the axial dimension of the semi-cylindrical body portion, and projecting radially outwardly from the convex outer surface of the body portion at a location immediately adjacent said diametric plane, said female receptor lug having an elongated receptor slot therein extending substantially parallel to the axis of the semi-cylindrical body portion, said receptor slot defining an undercut, radially extending shoulder spaced inwardly in the lug from the face of the lug nearest said diametric plane;

a male engagement tongue carried on the opposite side edge of the semi-cylindrical body portion from the female receptor lug and mounted on the convex outer surface of the body portion, said male engagement tongue projecting substantially tangentially to the convex outer surface and in a direction which is substantially normal to said diametric plane, and on the opposite side of said diametric plane from said body portion, said engagement tongue including an enlarged head; and

a web portion connected to the head and extending axially with respect to, and spaced radially outwardly from, the body portion,

said head being tapered over its radial thickness to facilitate entry into the slot in the female receptor lug when the pair of complementary arcuate sections are snapped together to form a cylindrical connector fitting, and

said male engagement tongue further including a radially extending shoulder at the intersection of the web portion with the enlarged head, said radially extending shoulder disposed on the radially inner side of said web portion; and

a male engaging lug secured to said opposite side edge of the semi-cylindrical body portion and projecting radially outwardly from the convex outer surface thereof at a location to substantially abut said female receptor lug when said pair of complementary arcuate sections are snapped together by interengaging the shoulders carried on said male engagement tongues with the undercut shoulders defined within said female receptor lugs, said male engaging lug connected to said web portion of the male engaging tongue and spacing the web portion and the enlarged head carried thereby radially outwardly from the respective one of said semi-cylindrical body portions upon which said male engaging lug and the male engaging tongue carried thereby are mounted; and

a pair of spaced, flexible, generally semi-cylindrical bands interconnecting the opposite side edges of said body portions, with each one of said bands extending between and interconnecting the male engaging lug on one of said semi-cylindrical body portions with the female receptor lug on the other of said semi-cylindrical body portions, and said semi-circular bands being spaced axially from each other by a distance which is a major portion of the total axial dimension of each of the two semi-cylindrical body portions, said bands yieldingly holding said body portions in variably spaced relation to each other so that said male engaging tongues can enter, and move into, said female receptor slots, and said semi-cylindrical body portions can pivot from an open, spaced apart status, in which said diametric planes of each of said body portions are in coplanar alignment, to a snap-engaged status in which the semi-cylindrical body portions are snap-engaged and about each other to form a generally cylindrical tubular connector fitting.

4,443,032
LOCK FOR BOAT HATCHES OPERABLE BOTH FROM INSIDE AND OUTSIDE

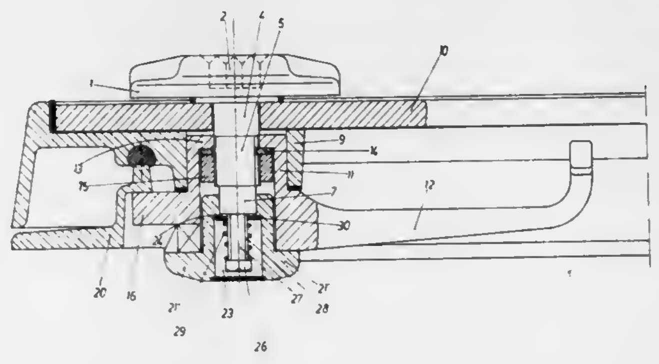
Luciano Bonassi, Saronno, Italy, assignor to C.M.L. Construzioni Meccaniche Lamazzo S.p.A., Lomazzo, Italy

Filed Mar. 1, 1982, Ser. No. 353,590

Claims priority, application Italy, Jul. 7, 1981, 22292/81[U]

Int. Cl.^{3} E05C *3/04*

U.S. Cl. 292—202 **5 Claims**



1. A lock for boat shutters and the like operable both from outside and inside of the shutter to open and close a movable shutter with respect to a fixed frame of a hatch, comprising an outer circular plate having a seat for insertion thereinto a square pin of a winch handle, said plate being formed with a shaft extended axially outwardly therefrom and insertable into the shutter from outside, said shaft including a hexagonal head formed at its extremity opposite to said plate; a rotatable handle provided with an opening to receive said shaft therethrough; said handle being formed with a cam engageable with said fixed frame to lock the shutter and being provided with two diametrally opposing recesses; a knob inserted into said handle and provided with a hexagonal cavity in which the hexagonal head of said shaft is engageable, said knob being formed with two diametrally opposing projections engageable in said opposing recesses of said handle; and a spring biasing said knob in the axial direction thereof, said knob being axially shiftable between one position, in which said projections are engaged in said recesses of the handle and the hexagonal cavity engages said head of said shaft whereby a rotary movement given to said plate by the square pin of the winch handle from outside of the shutter is transmitted to said handle permitting a locking operation from outside, and another position, in which said projections are disengaged from said recesses and said cavity is disengaged from said hexagonal head of the shaft whereby the rotary movement of said plate can not be transmitted to said handle and the operation from outside of the shutter is prevented whereas a locking operation from inside of the shutter by rotation of said handle is permitted.

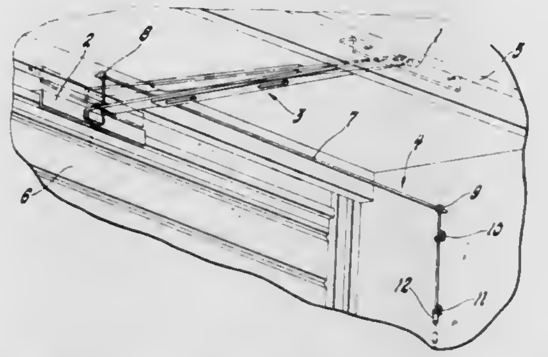
4,443,033
DOOR SECURING APPARATUS AND METHODS OF CONSTRUCTING AND UTILIZING SAME

Michael A. D'Anna, 25255 Castlewood Dr., Woodhaven, Mich. 48183

Filed Apr. 27, 1981, Ser. No. 257,527

Int. Cl.^{3} E05C *3/06*

U.S. Cl. 292—235 **9 Claims**



1. A door securing apparatus for an overhead swinging door, comprising:

first means for securing said apparatus to a structural member which is spaced apart a substantial distance in a horizontal direction from a door to be secured, said first means being mounted on said structural member so as to be spaced inwardly from an inner surface of said door at said substantial distance from said door;

second means for selectively engaging an upper portion of said door to be secured, said second means comprising a substantially elongated rigid member having a substantially L-shaped cross section which defines two inner surface portions extending at substantially right angles to each other;

a first one of said inner surface portions of said second means being selectively engageable with a top edge surface of said upper door portion while the second one of said inner surface portions is engageable with an inner-side edge surface of said upper door portion;

third means connected between said first means and said second means for bracing said second means against said upper portion of said door;

said third means comprising a substantially rigid elongated bar member having a length dimension sufficient to span said substantial distance between said structural member and said door, said bar member being rigidly secured adjacent one end thereof to said second means and being hingedly secured adjacent the opposite end thereof to said first means; and

fourth means for selectively moving said second means between a locked position of said apparatus wherein said second means is engaged with and braced against said upper portion of said door to be secured, and an unlocked position of said apparatus wherein said second means is substantially spaced from said upper portion of said door to be secured.

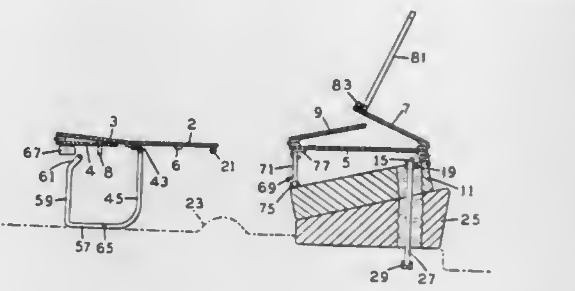
4,443,034
FOLDING PLATFORM AND SHELVES FOR USE IN VEHICLES

George Beggs, Colorado Springs, Colo., assignor to Mechanical Plastics Corp., Pleasantville, N.Y.

Filed Aug. 17, 1981, Ser. No. 293,144

Int. Cl.^{3} B60N *1/10*

U.S. Cl. 296—65 R **28 Claims**



1. A folding platform for a vehicle having a seat with a folding seat back supported for movement between an upright position and a forward position, the folding platform comprising:

a first series of panels, the edge of a first panel of said first series being affixed to a shaft rotatively fixed in a horizontal direction behind and in parallel proximity to the seat back, the opposite edge of said first panel being hinged to a second panel of said first series of panels, said series of panels being hinged to one another to unfold in the longitudinal direction of the vehicle to rest on vertical support members and fold substantially congruently over said first panel to be rotated as a unit with said shaft;

a second series of panels, a first panel of said second series of panels being horizontally hinged to the seat back and connected to a top vertical extreme of said seat back, said second series of panels being hinged to one another to fold substantially congruently with said first panel of said second series of panels against said seat back, and when said seat back is in the forward position, to unfold in the longitudinal direction of the vehicle to rest on vertical support members whereby a substantially continuous platform with said first series of folding panels is formed, when said first series is unfolded; and

means for horizontally levelling said panel to said seat back when said seat back is folded; wherein

the means for horizontally levelling said panel hinged to said seat back comprises a bar held horizontally and transversely in said vehicle by means of a pair of members attached to said bar, said members having ends pivotally attached to said seat back, and said bar moving from a position against said seat back to a substantially vertical position to engage brackets attached to said panel.

4,443,035
WINDOW ASSEMBLY

Karl L. Saemann, Speyer, Fed. Rep. of Germany, assignor to Deere & Company, Moline, Ill.

Filed Nov. 20, 1981, Ser. No. 323,327

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1981, 3107208

Int. Cl.^{3} B62D *33/06*

U.S. Cl. 296—190 **14 Claims**

1. A window assembly for a vehicle cab, said cab having a first frame which establishes a window area, said first frame having upper and lower surfaces, said window assembly comprising:

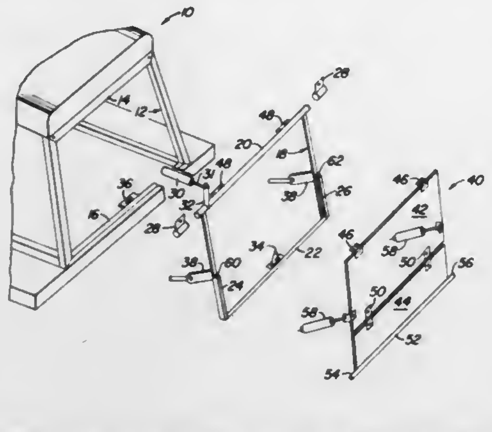
(a) a second frame including a top rail, a bottom rail and a pair of oppositely aligned side guide rails;

(b) first means for pivotably attaching said top rail of said second frame to said upper surface of said first frame;

(c) second means for locking said bottom rail of said second frame to said lower surface of said first frame;

(d) a hydraulic cylinder connected between said cab and said top rail of said second frame, movement of said hydraulic cylinder causing said second frame to pivot relative to said first frame and to retain a given position relative to said first frame; and

(e) upper and lower window sections joined together by a flexible connection which permits said window sections to tilt relative to each other, said upper window section being pivotably connected to said second frame and said lower window section having an elongated guide member secured to a bottom edge thereof, said guide member having oppositely aligned ends extending longitudinally outward from said lower window section which are slidably received in said pair of guide rails of said second frame for permitting said lower window section to pivot relative to said upper window section as said upper window section pivots outwardly about said top rail of said second frame.



4,443,036

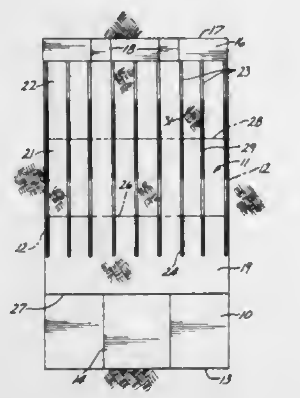
EXPLOSIVE EXPANSION OF FORMATION IN LIFTS FOR FORMING AN IN SITU OIL SHALE RETORT

Thomas E. Ricketts, Grand Junction, Colo., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Jul. 9, 1981, Ser. No. 281,566

Int. Cl.³ E21B *43/24*

U.S. Cl. 299—2 **25 Claims**



1. A method for forming an in situ oil shale retort at a retort site in a subterranean formation containing oil shale, the retort having top, bottom, and side boundaries of unfragmented formation and containing a fragmented permeable mass of formation particles, comprising the steps of:

excavating a void adjacent the bottom boundary of the retort site leaving an overlying zone of unfragmented formation within the side boundaries of the retort site;

placing a first plurality of generally vertical columnar explosive charges in a first horizontally extending array in a first lift of the zone of unfragmented formation above the void;

placing a second plurality of generally vertical columnar explosive charges in a second horizontally extending array in a second lift of the zone of unfragmented formation above the first lift;

detonating the first plurality of explosive charges for explosively expanding the first lift toward the void and forming a first portion of a fragmented permeable mass of formation particles in the retort; and

after a time delay of at least about five milliseconds per foot of burden distance of the second plurality of explosive charges, detonating the second plurality of explosive charges in a single round with the first plurality of explosive charges for explosively expanding the second lift toward the void for forming a second portion of the fragmented mass in the retort, the delay interval between explosive charges within the second array being up to about two milliseconds per foot of spacing distance between such explosive charges.

4,443,037

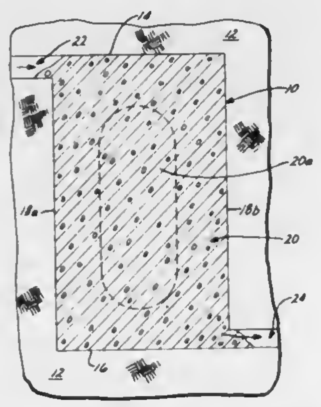
METHOD FOR CONTROLLING VOID FRACTION DISTRIBUTION IN AN IN SITU OIL SHALE RETORT

Thomas E. Ricketts, Grand Junction, Colo., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Oct. 28, 1981, Ser. No. 316,103

Int. Cl.³ E21B *43/247;* E21C *41/10*

U.S. Cl. 299—2 **13 Claims**



1. A method for forming an in situ oil shale retort in a retort site in a subterranean formation containing oil shale, the in situ oil shale retort site having top, bottom, and side boundaries of unfragmented formation, the method comprising the steps of:

excavating at least one void in the subterranean formation within the boundaries of the retort site while leaving a zone of unfragmented formation within the boundaries of the retort site having a horizontal free face adjacent such a void;

loading explosive into such a zone of unfragmented formation;

detonating the explosive in the zone of unfragmented formation in a time delay sequence in a single round for expanding the zone of unfragmented formation toward such a void for forming a fragmented permeable mass of formation particles within the boundaries of the retort site, comprising the steps of:

detonating explosive near the center of the zone of unfragmented formation; and thereafter

detonating explosive in the zone of unfragmented formation progressing radially outwardly from the center of such a zone to thereby explosively expand the zone of unfragmented formation toward the void for forming the fragmented permeable mass of formation particles in the retort, such a fragmented permeable mass having a lower permeability in a center region of the retort and a higher permeability in outer regions of the retort adjacent the side boundaries;

forming at least one retort inlet adjacent the intersection of a first side boundary of the retort site and the top boundary of the retort site for introduction of a retort inlet mixture; and

forming at least one retort outlet adjacent the intersection of a second side boundary of the retort site and the bottom boundary of the retort site for withdrawal of off-gas, the second side boundary being on the opposite side of the fragmented mass from the first side boundary.

4,443,038

MINERAL CUTTER TOOL HAVING WATER EMISSION DEFLECTION SURFACE

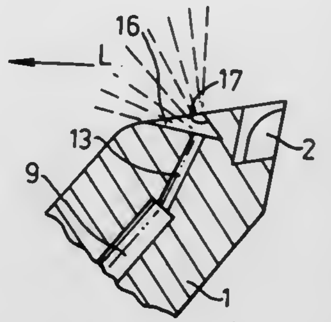
Henry M. Brown, Wendover, England, assignor to Anderson Strathclyde Limited, Buckinghamshire, England

Filed Apr. 6, 1982, Ser. No. 366,064

Claims priority, application United Kingdom, Sep. 19, 1981, 8128387

Int. Cl.³ E21C *35/22*

U.S. Cl. 299—81 **9 Claims**



1. A mineral cutter pick adapted to be mounted on a mineral mining machine and to cut during translational movement in an endless path thereon, which pick comprises a body having a shank of circular cross section for accommodation in a correspondingly shaped recess on a support on a mineral cutting machine to mount the pick on the machine, said shank being adjacent its inner end not substantially less in diameter than at its outer end, the body having a forward end carrying a cutting tip and said body having a passage therethrough for liquid which passage leads from an inlet in the shank to a liquid outlet adjacent to the cutting tip, said pick body having a deflection surface adjacent to said liquid outlet, the arrangement being such that water issuing from said outlet impinges on the deflection surface so that the stream of water is deflected and the formation of a spray enhanced.

4,443,039

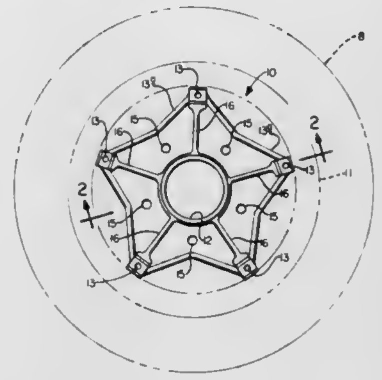
TRAILER WHEEL ADAPTABLE TO AUTOMOBILE HUBS

David L. Loubiere, P.O. Box 363, Addis, La. 70710

Continuation of Ser. No. 371,452, Apr. 23, 1982, abandoned, which is a continuation of Ser. No. 153,460, May 27, 1980, abandoned. This application Oct. 21, 1983, Ser. No. 543,234

Int. Cl.³ B60B *1/06*

U.S. Cl. 301—64 SD **1 Claim**



1. A wheel structure for attaching a mobile home tire and rim to the existing lug bolts on an automobile hub comprising a wheel member consisting of:

a. five spokes, each of which is adapted to contact a mobile home wheel rim on which a rubber tire may be mounted, said five spokes being integrally formed with said wheel and having an integrally formed web therebetween, the outer edge of the web being formed in the shape of a "V", the bottom of the "V" being pointed toward the center of the wheel said outer edge having a riased rib on the outside thereof,

b. a series of five outer bolt holes, each one of said outer bolt holes being located on the end of one spoke, for receipt of means for holding said rim to said wheel structure;

c. a series of five inner lug bolt holes for receipt of lug bolts attached to an automobile hub,

d. a round hole centered in the wheel structure for receipt of an axle or other protuberance, said round hole having a raised rib therearound on the outside thereof, and

e. five raised ribs on the outside of said five spokes, each of said ribs extending from the edge of said raised rib around said round hole to the edge of each of said outer holes, said five raised ribs having a width smaller than the diameter of said five inner lug holes.

4,443,040

HYDRAULIC BOOSTERS FOR VEHICLE BRAKING SYSTEMS

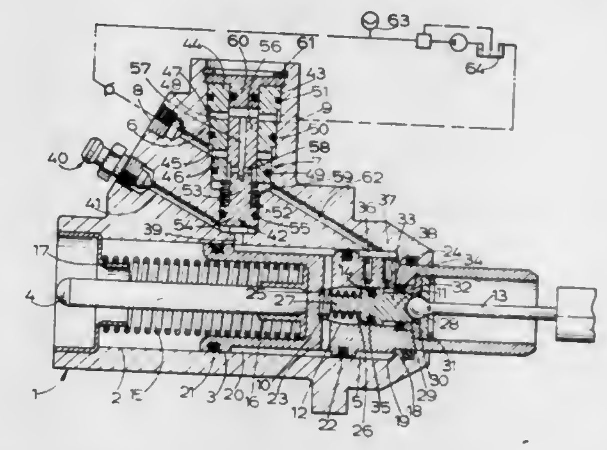
Glyn P. R. Farr, Leek Wootton, England, assignor to Lucas Industries, Birmingham, England

Filed Apr. 12, 1982, Ser. No. 367,336

Claims priority, application United Kingdom, Apr. 23, 1981, 8112631

Int. Cl.³ B60T *13/14*

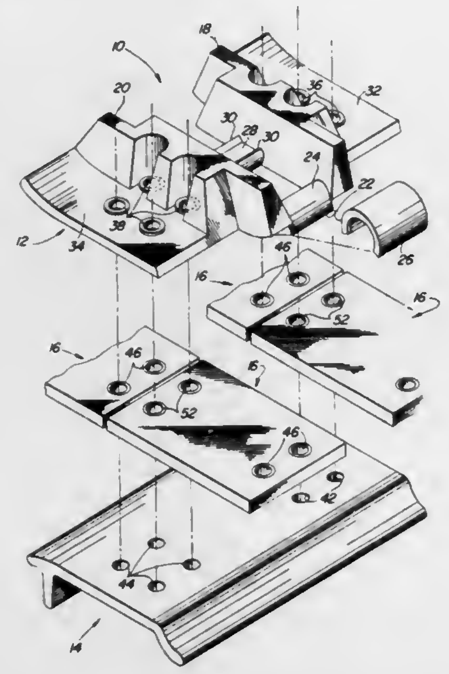
U.S. Cl. 303—50 **9 Claims**



1. An hydraulic booster for a vehicle braking system comprising a housing provided with a bore, an inlet for connection to a fluid pressure source, and an outlet for connection to a reservoir for fluid, a pedal-operated input piston, a boost piston working in said bore, a boost chamber, pressurisation of which operates said boost piston to provide an output force, boost valve means for controlling pressurisation of said boost chamber by controlling communication between said inlet and said boost chamber and between said outlet and said boost chamber, a control chamber, fluid in said control chamber being pressurised in response to operation of said pedal-operated input piston, said boost valve means being operable in response to pressure in said control chamber, and a recuperation valve for controlling communication between said control chamber and said boost chamber, said input piston including a valve-operating means for closing said recuperation valve to cut off communication between said control chamber and said boost chamber on initial movement of said input piston, said input piston also including means for pressurising fluid trapped in said control chamber following further movement of said input piston, said boost valve means being operative, in response to pressure in the control chamber, to pressurise said boost chamber, and said input piston has a pressure-responsive means on which said pressure in said boost chamber acts such that said valve-operating means is operative to close said recuperation valve.

4,443,041
TRACK LINK INCLUDING REMOVABLE SPROCKET-ENGAGING WEAR CAP

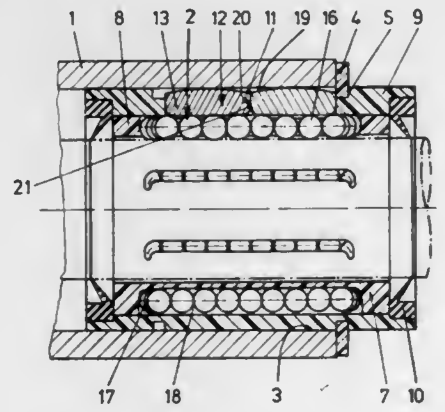
William P. Wohlford, Bettendorf, Iowa, assignor to Deere & Company, Moline, Ill.
Filed Feb. 1, 1982, Ser. No. 344,669
Int. Cl.^{3} B62D *55/28*
U.S. Cl. 305—43 **2 Claims**



2. In a track link including a pair of transversely-spaced upright rail portions joined together by first and second transverse bars, the improvement comprising: said first transverse bar having an arcuate profile of at least 180 degrees and a height less than the diameter of the profile; an arcuate C-shaped wear cap of more than 180 degrees having opposite ends extending lengthwise thereof and defining an opening dimensioned greater than the height of the first transverse bar; and said wear cap being received on the bar.

4,443,042
ROLLING BEARING FOR LENGTHWISE MOVEMENT

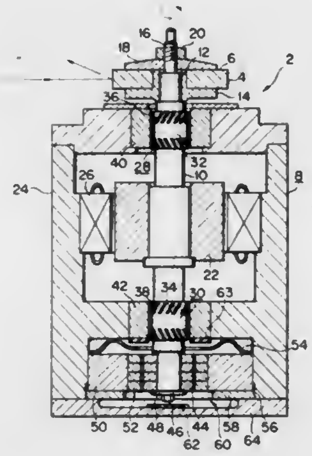
Lothar Walter, Schweinfurt, and Walter Reith, Bad Bocklet, both of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany
Filed Sep. 30, 1982, Ser. No. 429,294
Claims priority, application Fed. Rep. of Germany, Nov. 21, 1981, 3146252
Int. Cl.^{3} F16C *31/06*
U.S. Cl. 308—6 C **9 Claims**



1. In a rolling bearing for lengthwise movement on a shaft consisting of a cage assembled in the bore of a housing surrounding the shaft, and having at least one longitudinally extending guide slot extending radially therethrough, a rail supported in the bore of the housing outwardly covering the guide slot and load carrying rolling bodies running between longitudinally directed races of the rail and shaft, in which the load carrying rolling bodies are assembled in sequential rows in the guide slots; the improvement wherein the rails are comprised of at least two partial rails individually tiltably supported in the bore of the housing and arranged adjacent to one another in the longitudinal direction.

4,443,043
ELECTRIC MOTOR UNIT

Ryoji Yamaguchi, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Aug. 26, 1982, Ser. No. 411,959
Claims priority, application Japan, Sep. 9, 1981, 56-142107
Int. Cl.^{3} F16C *39/06*
U.S. Cl. 308—10 **6 Claims**

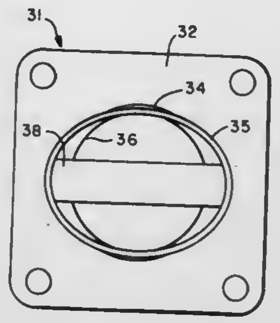


1. An electric motor unit comprising:
a motor shaft;
a rotor fixed to the motor shaft;
a stator for rotating the rotor;
a pair of bearings for rotatably supporting both end portions of the motor shaft;
a housing to which the stator and the bearings are fixed;
a ring-shaped first permanent magnet with its inner peripheral surface coaxially fixed to the motor shaft and having one pole on its outer peripheral surface;
a second permanent magnet disposed coaxially with the first permanent magnet in the housing and disposed within the housing so as to be slidable along the axis of the motor shaft, having its inner peripheral surface opposed to the outer peripheral surface of the first permanent magnet, and having on its inner peripheral surface a pole different from the pole on the outer peripheral surface of the first permanent magnet so that the first permanent magnet is attracted by the second permanent magnet in the radial direction of the motor shaft; and
means for adjusting the axial position of the second permanent magnet including a ring holder fixedly mounted with the second permanent magnet and slidably fitted in the motor housing, a screw member screwed in the motor housing to move the ring holder along the axis of the motor shaft, and an elastic member to press the ring holder against the screw member.

4,443,044
BEARING MOUNT AND METHOD OF MOUNTING A BEARING THEREIN

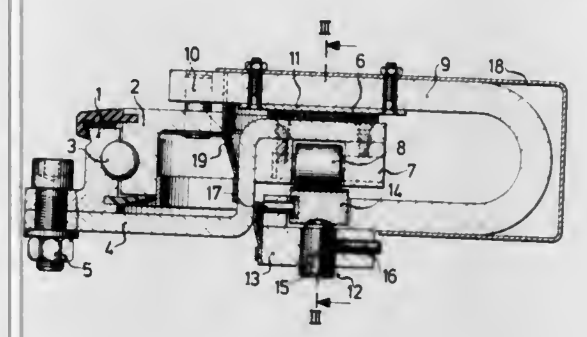
Earl S. Cain, Portola Valley; Jerome A. Carlson, Woodside, and William L. Barger, Redwood City, all of Calif., assignors to Tribotech, Redwood City, Calif.
Filed Apr. 11, 1980, Ser. No. 139,251
Int. Cl.^{3} F16C *13/00, 43/00*
U.S. Cl. 384—428 **6 Claims**

1. A bearing mount and bearing, said bearing mount comprising a flange portion, a bearing receiving seat of elastic ductile material extending outwardly from said flange portion with one end of said seat being supported by said flange portion and the opposite end of said seat being unsupported, a bearing positioned in said seat, said opposite end of said seat being generally uniform and uninterrupted by insertion slots and having an opening which is smaller than the outer diameter of a bearing to be mounted, said opposite end being permanently deformed by the insertion of said bearing into said opening thereby exerting uneven pressure on the periphery of said mounted bearing after being deformed beyond its elastic limit upon insertion of a bearing therein.



4,443,045
STABILIZED BEARING FOR BOGIES

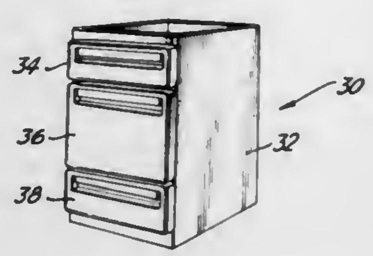
Walter Ketschker; Reinhard Marquart, and Alois Stenert, all of Lippstadt, Fed. Rep. of Germany, assignors to Hoesch Werke AG, Dortmund, Fed. Rep. of Germany
Filed Dec. 17, 1981, Ser. No. 331,668
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1980, 3047464
Int. Cl.^{3} F16C *19/00;* **B61F** *5/16;* **F16D** *65/38*
U.S. Cl. 308—223 **12 Claims**



1. A swivel bearing for a bogie comprising
a first race ring;
a spring support mounted on the first race ring;
a friction lining attached to the spring;
a first position adjusting element attached to the spring for providing a braking position to the friction lining;
a second race ring engaging the first race ring through rolling elements;
a counter friction lining for engaging the friction lining and wherein the friction lining is freely movable in an axial direction relative to the supporting race ring;
a counter friction lining support element solidly mounted on the second race ring and supporting the counter friction lining and wherein the counter friction lining support element is a clamp spring;
a second position adjusting element attached to the second race ring suitable for engaging the first position adjusting element to provide for a positioning of the friction lining versus the counter friction lining over a desired angle.

4,443,046
DESK ASSEMBLY

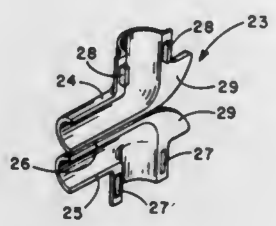
Bruce H. Hannah, Cold Spring, N.Y., assignor to Knoll International, Inc., New York, N.Y.
Division of Ser. No. 153,867, May 28, 1980. This application Sep. 17, 1982, Ser. No. 419,189
Int. Cl.^{3} A47B *63/00;* **B65D** *57/00*
U.S. Cl. 312—183 **2 Claims**



1. A file drawer compressor or follower comprising a sheet of deformable materials having side pieces and a bridging piece joining said side pieces, said side pieces being biased outwardly and each including a recess in the outside surface thereof having a retaining wall about the periphery thereof for holding a compressible material, so that when said sheet is positioned within a file drawer the compressible material within the recesses of the side pieces bears against the sides of said file drawer.

4,443,047
SPARK PLUG WIRING ASSEMBLY

Gloris R. Hofmann, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.
Filed Dec. 28, 1981, Ser. No. 334,949
Int. Cl.^{3} H01R *13/516*
U.S. Cl. 339—26 **8 Claims**



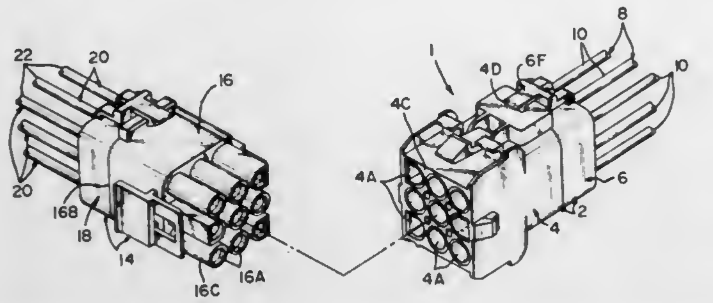
1. An ignition connection means for connecting a spark plug to a high voltage source comprising:
(A) an ignition lead having an outer insulating cover;
(B) a connecting clip means attached to said ignition lead for connection to a spark plug terminal extending generally perpendicular to said ignition lead;
(C) a flexible, L-shaped insulating boot covering said connecting clip means and for covering said spark plug terminal; and
(D) a shell means covering only said insulation boot for limiting bending of said boot while said clip means is being attached or removed from said spark plug terminal to prevent damage to said clip means.

4,443,048
ASSEMBLY WITH VERIFICATION FEATURE

Stanford C. Moist, Jr., Hummelstown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Oct. 2, 1981, Ser. No. 307,997
Int. Cl.^{3} H01R *11/00*
U.S. Cl. 339—63 M **9 Claims**

1. An electrical connector assembly, comprising a housing having a rearward end and a forward end constructed for

mated connection with a complemenetary housing of another connector assembly, a plurality of cavities extending between the rearward and forward ends, a subassembly in each cavity comprising an elongate electrical conductor connected with an electrical contact, means being provided on the housing and contact to secure each subassembly in a respective cavity, the conductor of each subassembly projecting outwardly of the rearward end of the housing, a retainer adapted to be mounted in the rearward end of the housing, a plurality of passageways extending through the retainer, the conductors passing through respective passageways, engaging means on the retainer frictionally engaging respective conductors, said engaging means projecting from the retainer and into respective cavities of the housing while the retainer is mounted on the rearward end of the housing, and the retainer being removable from the housing in a rearward direction to withdraw from the housing any subassembly frictionally engaged by the means and that is unsecured for retention in a respective cavity of the housing.



4,443,049
CONNECTOR FOR PORTABLE OBJECTS SUCH AS CREDIT CARDS

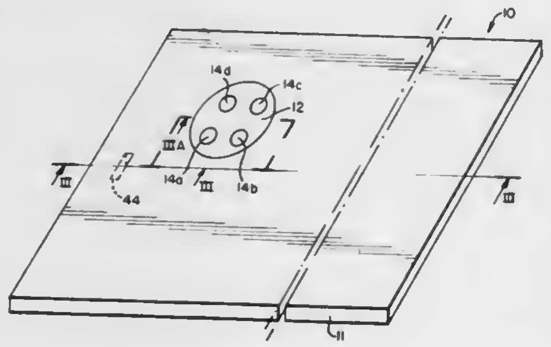
Bertrand J. C. H. De Pommery, St-Nom-La-Breteche, and Jean-Paul C. Goupil, Sevres, both of France, assignors to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

Filed Dec. 20, 1979, Ser. No. 105,654

Claims priority, application France, Dec. 27, 1978, 78 36544; Mar. 6, 1979, 79 05761; Aug. 14, 1979, 79 20644

Int. Cl.^{3} H01R *13/635*

U.S. Cl. 339—75 MP **20 Claims**



1. A connector adapted to have a portable object having contact terminals on one surface engaged with contact elements within the connector upon insertion of the object therein comprises a case, a chamber within said case, an opening leading to said chamber and adapted to receive said portable object along a predetermined direction, connecting means in said chamber for connecting said contact terminals of said portable object to the contact elements within the connector upon insertion into said chamber, said means adapted to be actuated from a first stable idle position chamber to said opening to a second operating position away from said opening to electrically connect said object to said connector upon displacement of the portable object within the chamber, said connecting means comprising a first jaw, and a second jaw hinged with said first jaw, said contact elements being resilient and having one extremity fixed to said second jaw and its other extremity free, said connecting means further including an abutment on said seond jaw disposed to engage an extreme section of the portable object on insertion thereof into the connector, means for guiding and tipping said second jaw with respect to the portable object as said jaw is caused to be displaced between the said idle and operating positions by insertion of said portable object so as to cause the contact elements of the connector to land onto respective contact terminals of the portable object.

4,443,050
ELECTRICAL INTERCONNECTORS

John C. Taylor, Ballasalla, Isle of Man, assignor to Strix Limited, Port Erin, Isle of Man

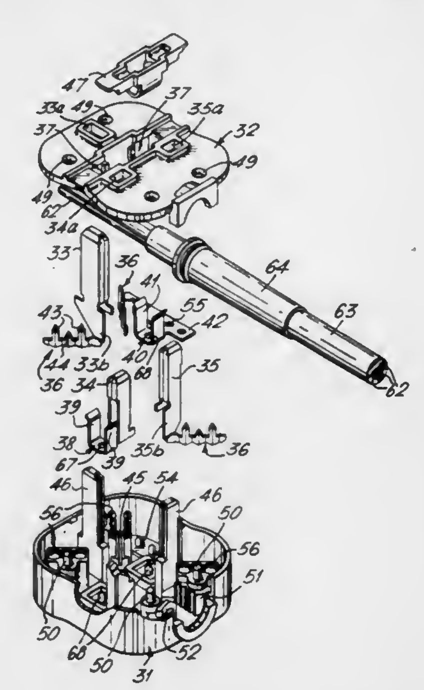
Continuation of Ser. No. 237,137, filed as PCT GB 80/00103, Jun. 13, 1980, published as WO 80/02892, Dec. 24, 1980, § 102(e) date Feb. 10, 1981, abandoned.

This application Apr. 8, 1982, Ser. No. 484,917

Claims priority, application United Kingdom, Jun. 13, 1979, 7920525; Aug. 21, 1979, 7929125

Int. Cl.^{3} H01R *13/39*

U.S. Cl. 339—99 R **16 Claims**



1. In apparatus for selectively establishing an electrical circuit, the apparatus including at lesat one electrical connector member for engagement with and disengagement from a complementary electrical connector member, the circuit establishing apparatus having a nonconductive housing, a terminal disposed in the housing and being associated with and electrically connected to each electrical connector member whereby each connector member of the circuit establishing apparatus may be electrically connected to an insulated multi-strand conductor by means of said terminal, the improvement comprising said terminal being formed from sheet material and including at least one tooth having a sharp leading end adapted to enter the insulation of an insulated multi-strand conductor from one side, pass through the strand bundle of the electrical conductor and then pass through the insulation at the opposite side to that at which the tooth entered the insulation to make electrical connection with the conductor, said at least one tooth being located in a groove, said groove having at least a first irregularly shaped side wall and a minimum width which is less than the diameter of the insulated electrical conductor whereby said groove defines a trap to receive as a press-fit the insulated electrical conductor, the sharp leading end of the tooth of said terminal being located below the top of said groove whereby the insulated conductor is guided by the groove as it is forced onto said at least one tooth.

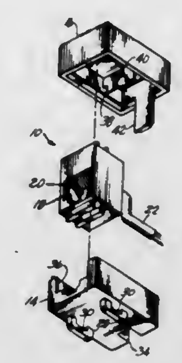
4,443,051
TELEPHONE JACK

Hector V. Aguilar, Monterey Park, Calif., assignor to American Telecommunications Corp., El Monte, Calif.

Filed Aug. 1, 1980, Ser. No. 174,541

Int. Cl.^{3} H01R *13/58*

U.S. Cl. 339—107 **12 Claims**



1. A telephone jack comprising:
a jack frame and socket having a plug-receiving cavity in which a plurality of contacts lie;
a cable comprising a plurality of wires connected at one end to the respective contacts, the cable extending externally from the frame and socket;
a housing partially enclosing the frame and socket, the housing having a first opening that exposes the cavity and a second opening through which the cable passes;
a pair of spaced apart tabs formed on the exterior of the housing, each tab having an opening; and
means for securing the tabs to a telephone set to mount the jack thereon.

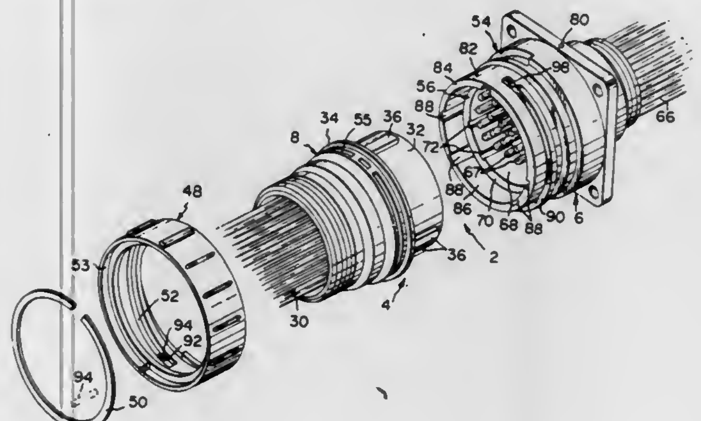
4,443,052
MEANS TO INDICATE FULLY-MATED CONDITION OF ELECTRICAL CONNECTOR

Daniel G. Eaby, Mt. Joy, and John R. Shuey, Carlisle, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 5, 1982, Ser. No. 345,962

Int. Cl.^{3} H01R *13/627, 13/639*

U.S. Cl. 339—113 R **15 Claims**



1. An electrical connector of the type comprising:
a first shell;
a first insulating insert secured in said first shell, said first insert having a plurality of passageways extending therethrough;
a second shell having a forward and rearward section, thread means on an outside surface of said forward section;
a second insulating insert secured in said second shell, said second insert having a plurality of passageways extending therethrough;
a plurality of first electrical terminals, each being secured in a respective passageway of said first insert;
a plurality of second electrical terminals, each being secured in a respective passageway of said second insert and being matable with said first electrical terminal; and
coupling means for connecting said first and second shells together so that electrical connection is made between respective ones of said first and second electrical terminals characterized in that:
said coupling means comprises a ring rotatably mounted on said first shell and having thread means threadably engagable with said thread means on said second shell to maintain said shells coupled together, a groove disposed in one of the thread means of said ring or said second shell;
a rod secured in an axial direction in and by the thread means in the other of said ring or said second shell and being tactilely and audibly positioned in said groove to indicate the fully-mated condition of said shells, inserts and electrical terminals.

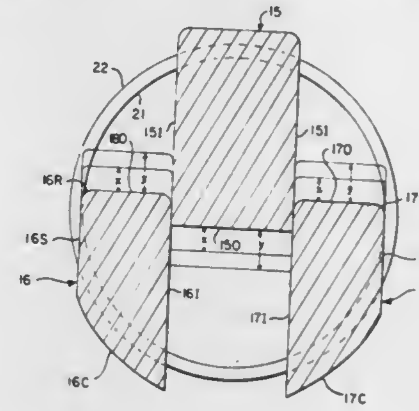
4,443,053
ELECTRICAL CONTACT

Arthur A. Astbury, Andover, Mass., assignor to Altron Incorporated, Wilmington, Mass.

Filed Aug. 5, 1982, Ser. No. 405,550

Int. Cl.^{3} H01R *13/42*

U.S. Cl. 339—221 R **6 Claims**



1. In a compliant contact pin for engagement with the inside of a hollow cylindrical surface and having an intermediate portion with first and second end sections relatively slidable along inside edges with the inside edges of a central section the improvement comprising,
said end sections being formed with curved outside edges along a length at least of the order of half the outside edge length of each section that is to be adjacent the inside surface of the hollow cylinder to be contacted when inserted,
said inside edges of said central and edge sections always being in overlapping relationship over a length less than the length of each inside edge,
whereby each of said end sections may rotate about adjacent corners of said central section when seated in said hollow cylindrical surface to enable the end section outside edges to snugly engage the inside surface of said hollow cylindrical surface.

4,443,054
EARTH TERMINAL FOR ELECTRICAL EQUIPMENT

Masashi Ezawa; Hiroshi Makino, both of Kanagawa, and Tadao Futami, Tokyo, all of Japan, assignors to Kanagawa Prefectual Government, Yokohama and Futami Plastic Industrial Co., Ltd., Musashimurayama, both of, Japan

Filed May 20, 1982, Ser. No. 380,437

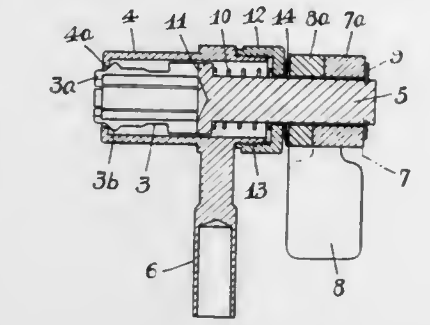
Claims priority, application Japan, Jun. 1, 1981, 56-079112

Int. Cl.^{3} H01R *4/52, 4/66, 13/629*

U.S. Cl. 339—273 R **3 Claims**

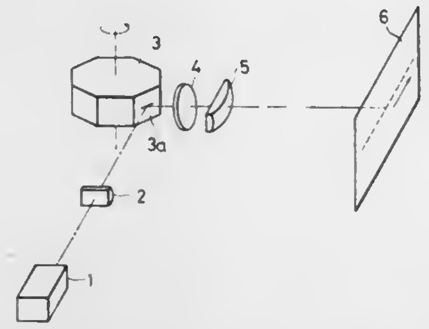
1. An earth terminal for electrical equipment which is adapted to be attached to and detached from a ground pin, comprising a collet having locking hooks capable of clamping

a ground pin and engageable with a neck portion thereof; a main tubular body into which said collet is inserted in such a manner that said locking hooks project from a mouth thereof; a connector for an earth conductor, which is formed integrally with said tubular body; a shaft formed integrally with said collet and partially projecting from the rear end of said tubular body; a pair of operating levers through which a rear end portion of said shaft is inserted; a holding member consisting of a stop ring mounted fixedly on a rear tip portion of said shaft so as to receive one of said operating levers; a coil spring provided around a front end portion of said shaft so as to urge said collet in the forward direction; a pair of annular face cams which are engaged with each other and which are formed integrally with said operating levers, respectively, so as to surround said shaft; and projections having inclined surfaces, formed on the outer surfaces of said locking hooks of said collet, and adapted to come into engagement with said mouth of said tubular body.



4,443,055
SCANNING OPTICAL SYSTEM HAVING A TILTING CORRECTING FUNCTION

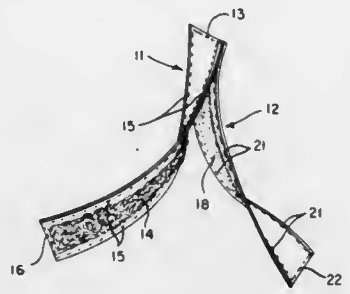
Kazuhiko Matsuoka, and Kazuo Minoura, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 23, 1982, Ser. No. 351,458
Claims priority, application Japan, Mar. 3, 1981, 56-30351
Int. Cl.^{3} G02B *27/17, 3/06*
U.S. Cl. 350—6.5 **6 Claims**



1. A scanning optical system for scanning a medium and having a tilting correcting function, comprising:
means for supplying a light beam;
means having a defleting and reflecting surface for deflecting the light beam from said light beam supplying means in a predetermined direction;
first optical means disposed between said light beam supplying means and said deflecting means for linearly forming the light beam from said light beam supplying means near said deflecting and reflecting surface of said deflecting means; and
second optical means disposed between said deflecting means and a medium to be scanned for imaging on said medium the light beam deflected by said deflecting means, said second optical means comprising, in succession from the deflector side, a single spherical lens and a single lens having a toric surface, the position of the center of curvature of the surface of said single spherical lens which is adjacent to said deflecting means lying on the side of said medium.

4,443,056
RETROREFLECTIVE DANGLES

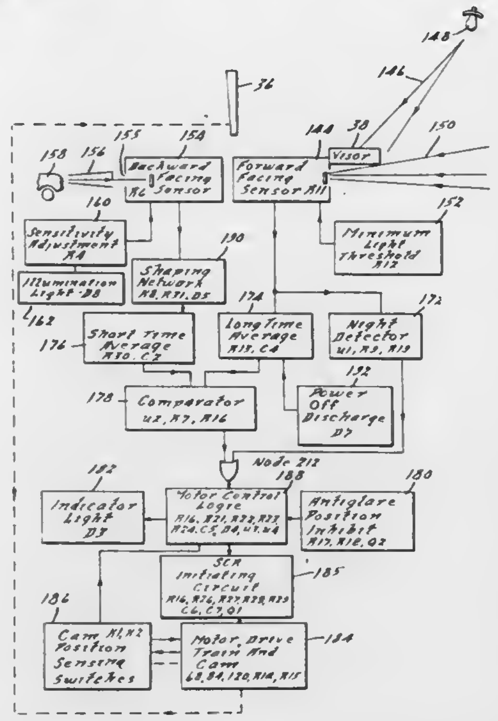
Edith Sullivan, 51 Osgood St., Methuen, Mass. 01844
Filed Sep. 30, 1982, Ser. No. 429,548
Int. Cl.^{3} G02B *5/12*
U.S. Cl. 350—98 **6 Claims**



1. Apparatus for enhancing visibility comprising,
first and second flexible strips each having an outside retroreflective and inside nonretroreflective surface,
means for permanently fastening said first and second retroreflective strips together at one end with the inside nonretroreflective surfaces facing each other,
and means for detachably securing at least the free ends of said first and second retroreflective strips together.

4,443,057
AUTOMATIC REARVIEW MIRROR FOR AUTOMOTIVE VEHICLES

Frederick T. Bauer, Holland, and Jon H. Bechtel, Zeeland, both of Mich., assignors to Gentex Corporation, Zeeland, Mich.
Filed Jun. 1, 1981, Ser. No. 268,660
Int. Cl.^{3} G02B *17/00*
U.S. Cl. 350—281 **44 Claims**


148
146
36
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144
Visor
155
154
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156
Backward Facing R6 Sensor
Forward Facing Sensor R11
160
152
Sensitivity Adjustment R4
Minimum Light Threshold R12
190
Shaping Network R8, R31, D5
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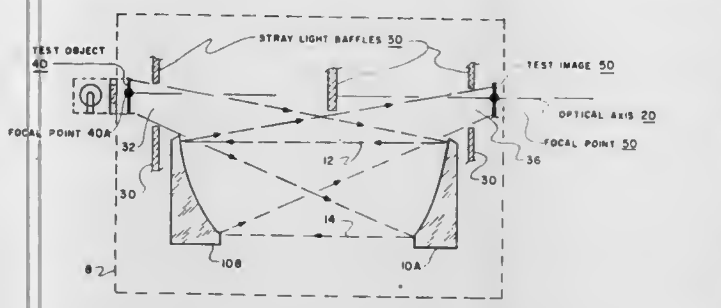
162
174
172
176
Short Time Average R30, C2
Long Time Average R13, C4
Night Detector U1, R9, R19
192
178
Comparator U2, R7, R16
Power Off Discharge D7
Node 212
182
188
180
Indicator Light D3
Motor Control Logic R16, R21, R22, R23, R24, C5, D4, U3, U4
Antiglare Position Inhibit R17, R18, Q2
SCR Initiating Circuit R16, R26, R27, R28, R29, C6, C7, Q1
185
186
184
Cam K1, K2 Position Sensing Switches
Motor, Drive Train And Cam 68, 84, 120, R14, R15

31. In a rearview mirrór for an automotive vehicle, the combination including a reflective element having a full reflectance mode and a partial reflectance mode, a housing defining a chamber open in the direction facing the rear of the vehicle, a base disposed at least partially within the chamber defined by said housing, means fixing said reflective element to said housing, means pivotally connecting said housing to said base whereby said reflective element and said housing may be moved as a unit between the full reflectance mode and the partial reflectance mode of said reflective element, and means including rotatable DC motor means operable upon multiple revolutions thereof to pivot said housing and reflective element as a unit between said modes relative to said base.

4,443,058
TEST IMAGE PROJECTOR FOR TESTING IMAGING DEVICES

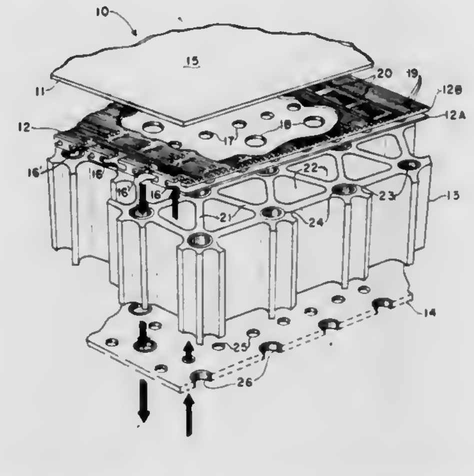
David A. Bosserman, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Sep. 22, 1981, Ser. No. 304,505
Int. Cl.^{3} G02B *5/10*
U.S. Cl. 350—294 **9 Claims**



1. A test image projector for testing the resolution of imaging devices, said projector comprising:
means for providing test object points;
optical means comprised of two identical mirrors which are off-axis sections about a common optical axis of said test image projector and are of an astronomical quality parabola which are purely reflective off the front surface thereof for projecting said test object points into a diffraction limited test image; and
housing means comprised of entrance and exit apertures and stray light baffles wherein said optical means is mounted and optically aligned in cooperative alignment with said entrance and exit apertures, said stray light baffles blocking stray light from said test image whereby the optical axis of said test image projector is aligned with the optical axis of said imaging devices.

4,443,059
HIGH ENERGY LASER MIRROR

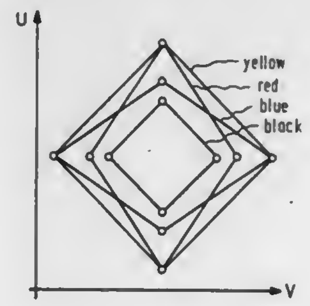
Jimmie D. Wells, Northridge, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Jan. 13, 1982, Ser. No. 339,257
Int. Cl.^{3} G02B *5/08*
U.S. Cl. 350—310 **2 Claims**



1. A high energy laser mirror structure comprising:
a. a faceplate supporting a mirrored surface;
b. manifold means, adjacent said faceplate, for distributing fluid coolant to said faceplate;
c. a heat exchanger, adjacent said manifold means, comprising a plurality of interconnected wall members configured in a generally isogrid shaped structure defining therebetween a plurality of generally triangular shaped first passageways for conducting fluid coolant to said manifold means, and defining a plurality of second passageways at the intersections of said wall members for conducting coolant fluid from said manifold means; and
d. a backing plate, attached to said heat exchanger, and including inlet means communicating with said first passageways for conducting fluid coolant into said mirror structure, and outlet means communicating with said second passageways for conducting fluid coolant out of said mirror structure.

4,443,060
RUN-FREE COLOR RASTER FOR MULTI-COLOR PRINTING

Eggert Jung, Schoenberg, and Heinrich Wadle, Neumuenster, both of Fed. Rep. of Germany, assignors to Dr. -Ing. Rudolf Hell GmbH, Fed. Rep. of Germany
Filed Jan. 21, 1982, Ser. No. 341,486
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1981, 8110052
Int. Cl.^{3} G02B *5/20*
U.S. Cl. 350—317 **3 Claims**

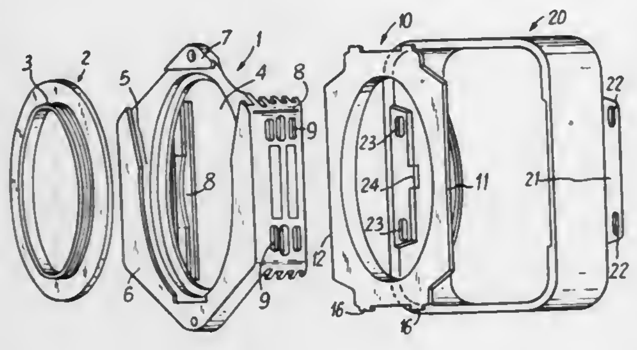


1. A plurality of color screens for multi-color reproduction with a printing machine wherein the raster positions of a first one of said color screens for a first color are spaced a distance M apart in an axial first direction and are spaced a distance M apart in a second direction transverse to the axial direction, the raster positions of a second one of said color screens for a second color are spaced a distance two-third M apart in said first direction and are spaced a distance M apart in said second direction, the raster positions of a third one of said color screens for a third color are spaced a distance M apart in said first direction and are spaced a distance two-thirds M apart in said second direction, and wherein the raster positions of a fourth one of said color screens for a fourth color are spaced a distance one-half M apart in said second direction.

4,443,061
DEVICE FOR HOLDING ACCESSORIES FOR THE LENSES OF APPARATUSES FOR TAKING PHOTOGRAPHS

Jean-Claude Coquin, 15, rue Jean Bologne, 75016 Paris, France
Filed Mar. 18, 1981, Ser. No. 244,951
Claims priority, application France, Mar. 20, 1980, 80 06225
Int. Cl.^{3} G02B *7/00*
U.S. Cl. 350—318 **7 Claims**

1. An accessory-holding device for a still camera having a lens assembly, including a body, an intermediate assembly component from the body onto the lens assembly of the still camera, said assembly component made of a removable annular adaptor ring, equipped with an outer thread for screwing onto the lens assembly, said adaptor ring adapted to being placed inside a corresponding area of said body so as to allow for a relative rotation movement of said body in relation to said lens assembly, said body also displaying, on its side opposite the adaptor ring, said plates having therein at least one pair of grooves making it possible to accommodate a photographic accessory, characterized by the fact that said device includes at least one adapting component including on the one hand first means for its placement in said corresponding area inside said body to accommodate the adaptor ring, said first means enabling a relative rotation of the adapting component in relation to said body while ensuring its lateral immobilization inside said body, and on the other hand second means for placing the adapting component between the grooves facing the opposing side plates of the body, said second means enabling sliding displacement in translation motion of the adapting component in relation to said body.



4,443,062

MULTI-LAYER DISPLAY DEVICE WITH NONACTIVE DISPLAY ELEMENT GROUPS

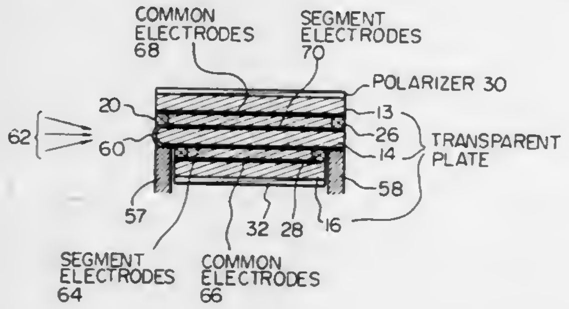
Seigo Togashi; Akira Tsuzuki, and Hiro Fujita, all of Tokorozawa, Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed Sep. 16, 1980, Ser. No. 187,671

Claims priority, application Japan, Sep. 18, 1979, 54-118719; Sep. 18, 1979, 55-118720

Int. Cl.^{3} G02F *1/133*

U.S. Cl. 350—332 **13 Claims**



1. In a multi-layer liquid crystal display device for displaying a plurality of display patterns each comprising a group of display segments, each of said display segment groups consisting of a common electrode and a plurality of segment electrodes provided in a single layer of said multi-layer display device, the improvement comprising:

electrically connecting the segment electrodes of a first group of display patterns to the segment electrodes of a second group of display patterns, said first group of display patterns being actuated when said second group of display patterns is deactivated, and said first group of display patterns being deactivated when said second group of display patterns is activated.

4,443,063

LIQUID-INJECTION PASSAGE STRUCTURE CONTAINED WITHIN A DISPLAY CELL

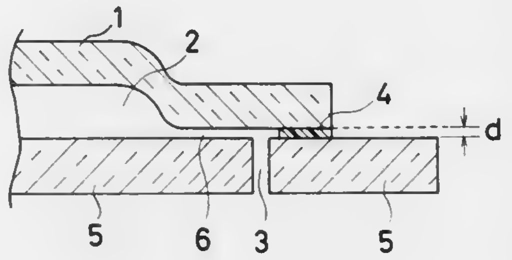
Mitsuru Nishiyama, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 23, 1980, Ser. No. 171,294

Claims priority, application Japan, Jul. 31, 1979, 54-106400[U]

Int. Cl.^{3} G02F *1/13*

U.S. Cl. 350—334 **4 Claims**



1. A display cell comprising:

first and second substrate means in an opposing spacial relationship one to the other forming in combination a compartment for containing a liquid, said first and second substrate means having an electrode means thereon for providing a visual display, said compartment being reduced in depth at the periphery of said spacial relationship to form a pathway for said liquid, said pathway comprising a concavity formed in at least one of said first and second substrate means at said periphery, said concavity comprising an integral part of said pathway;

an injection hole formed in the periphery of at least one of said first and second substrate means opposite said concavity for introducing said liquid into said pathway; and

a sealing space provided at said periphery of said first and second substrate means lateral to said pathway for receiving a sealing material, said space having a depth less than that of said pathway such that said pathway has an established depth greater than the depth of said sealing space by the amount of said concavity such that said pathway freely conducts said liquid to said compartment.

4,443,064

HIGH RESOLUTION AC SILICON MOS-LIGHT-VALVE SUBSTRATE

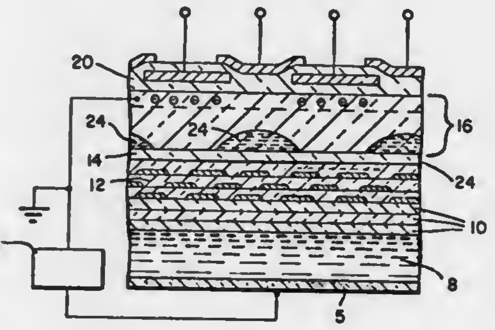
Jan Grinberg, Los Angeles; Michael Waldner, Woodland Hills; Paul O. Braatz, Los Angeles, and Alexander D. Jacobson, Topanga, all of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Continuation of Ser. No. 99,381, Nov. 30, 1979, Pat. No. 4,239,348, which is a continuation of Ser. No. 967,444, Dec. 7, 1978, abandoned, which is a continuation of Ser. No. 834,856, Sep. 19, 1977, abandoned. This application Dec. 10, 1980, Ser. No. 214,930

The portion of the term of this patent subsequent to Dec. 16, 1997, has been disclaimed.

Int. Cl.^{3} G02F *1/13*

U.S. Cl. 350—334 **8 Claims**



1. A liquid crystal light valve adapted to be driven by a bias voltage alternating between two preselected levels for responding to applied information signals, said light valve including in combination:

(a) a liquid crystal layer;
(b) interface means adjacent said liquid crystal layer for reflecting light and inhibiting its passage therethrough;
(c) a light valve substrate structure including a dielectric layer adjacent said interface means and a semiconductor body of predetermined thickness and a first conductivity type and first impurity level adjacent said dielectric layer;
(d) means for applying across said light valve substrate a bias voltage alternating between two preselected levels which depletes said semiconductor body of mobile charge carriers during a portion of the bias cycle whereby a charge depleted region and an electric field are established in said region through which signal representing charge carriers of a second conductivity type in said semiconductor body transfer while said body is depleted of mobile charge carriers under the influence of said electric field; and
(e) a microgrid structure in said semiconductor body comprised of a mesh of intersecting doped regions of said first conductivity type, each of said regions being of a second impurity level, said second level being greater than said first level so that, when said semiconductor body and microgrid are depleted of mobile charge carriers of the first conductivity type, said intersection regions of said microgrid provide a configuration of immobile charge of said second conductivity type to repel said signal-representing charge carriers toward the centers of said intersection regions for improved spatial resolution of said signal.

5. A photoactivated liquid crystal light valve adapted to be driven by a bias voltage alternating between two preselected leads for responding to applied information signals, said light valve comprising:

(a) a semiconductor substrate of predetermined thickness a first conductivity type and a first impurity level having a first surface on which there is a microgrid of said first conductivity type and a second impurity level, said second level being greater than said first level, and a second surface which is exposed to incoming radiation;
(b) a dielectric layer adjacent said first substrate surface;
(c) means for applying across said light valve a bias voltage alternating between two preselected levels whereby said substrate is depleted of mobile charge carriers forming a charge depletion region and an electric field is established throughout said thickness of said substrate during a portion of the bias cycle so that signal representing charge carriers of a second conductivity type generated in said substrate in response to received radiation are transferred through said charge depletion region towards said dielectric layer;
(d) a liquid crystal layer to receive the photoactivated signals; and
(e) interface means between said liquid crystal layer and said dielectric layer to reflect and inhibit the passage of light therebetween.

8. A CCD driven liquid crystal light valve adapted to be driven by a bias voltage alternating between two preselected levels with means for reading out the CCD signal and converting it to a voltage signal alternating between two preselected levels comprising:

(a) a silicon substrate of a first conductivity type and first impurity level on a surface of which there is an epitaxial layer and on an opposed surface of which there is a silicon dioxide layer and in a portion of said substrate adjacent said silicon dioxide layer there is a microgrid of said first conductivity type and a second impurity level, said second level being greater than said first level;
(b) a CCD structure on the top surface of said epitaxial layer;
(c) liquid crystal interface layers adjacent said silicon dioxide layer;
(d) a liquid crystal layer adjacent said interface layers;
(e) a transparent electrode adjacent said liquid crystal layer; and
(f) means for applying a bias voltage alternating between two preselected levels across said transparent electrode and said epitaxial layer whereby said silicon substrate and microgrid are fully depleted of charge carriers during a portion of the bias cycle creating a depletion region and an electric field that extends into a portion of said epitaxial layer so that signal representing charge carriers of a second conductivity type are transferred through said substrate under the influence of said electric field and the regions of immobile charge of said second conductivity type of said microgrid act as a focusing grid for the signal charge carriers.

4,443,065

INTERFERENCE COLOR COMPENSATION DOUBLE LAYERED TWISTED NEMATIC DISPLAY

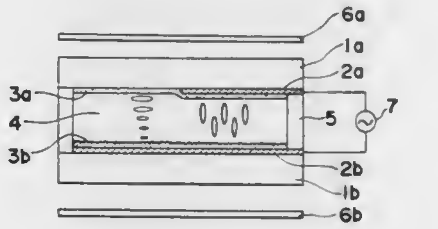
Fumiaki Funada, Yamatokoriyama; Masataka Matsuura, Tenri, and Tomio Wada, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 3, 1981, Ser. No. 327,229

Claims priority, application Japan, Dec. 9, 1980, 55-174406; Jan. 30, 1981, 56-13234

Int. Cl.^{3} G02F *1/133, 1/137*

U.S. Cl. 350—335 **4 Claims**



1. A double-layered twisted nematic liquid crystal display device which comprises a double layered structure including first and second layers of liquid crystal, the molecules of said liquid crystal having their longitudinal axes which are twisted, the direction of twist in the first layer being different from that in the second layer and wherein the longitudinal axes of the liquid crystal molecules in the first layer are perpendicular to the liquid crystal molecules of the second layer an electrical power supply means for applying a voltage to one of the first and second layers for controlling the orientation of the molecules of the liquid crystal in the first layer, the other of said first and second layers serving as a compensator which compensates for interference coloring, and a polarizing means for visibly enhancing the orientation of the molecules of the liquid crystal in the first layer when the voltage is applied thereto.

4,443,066

ACOUSTO-OPTICAL APPARATUS FOR SHIFTING A BEAM OF LIGHT

Frederick W. Freyre, West Wantagh, N.Y., assignor to Hazeltine Corporation, Commack, N.Y.

Filed Jun. 17, 1981, Ser. No. 274,576

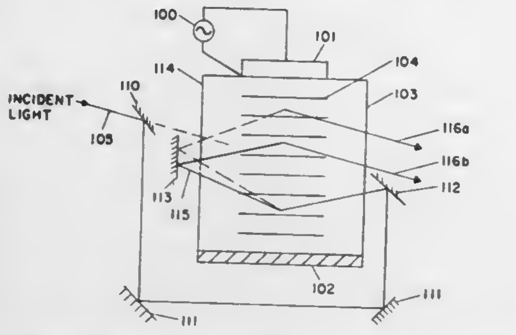
Int. Cl.^{3} G02F *1/11*

U.S. Cl. 350—358 **8 Claims**

1. Apparatus for shifting a path of a beam of coherent light, comprising:

(a) a first acousto-optical cell including a first transducer connected to a first signal source for launching acoustic waves in said cell, the period between said waves corresponding to the frequency of first signals from said first source, and a first absorber for absorbing acoustic waves which have traversed said cell, the beam of coherent light being incident on said cell at a first selected angle, said first cell diffracting by a first selectively variable angle corresponding to the first signal frequency and frequency shifting by a first selectively variable differential corresponding to the first signal frequency the supplied beam of coherent light to provide a once-diffracted, frequency shifted beam of light; and

(b) a second acousto-optical cell including a second transducer connected to a second signal source for launching acoustic waves in said second cell, the period between said waves corresponding to the frequency of the second signals from said second source, and a second absorber for absorbing acoustic waves which have traversed said second cell, the once-diffracted, frequency-shifted beam of coherent light from said first cell being incident on said second cell at a second selected angle, said second cell diffracting by a second selectively variable angle corresponding to the second signal frequency and frequency shifting by a second selectively variable differential corresponding to the second signal frequency the once-diffracted, frequency-shifted beam of light, wherein said second selectively variable angle is in a direction opposite to said first selectively variable angle and said second selectively variable differential is in a direction opposite to said first selectively variable differential.



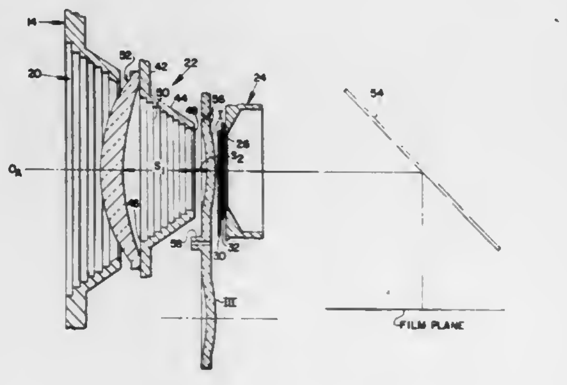
4,443,067
ZONE FOCUSING OPTICAL SYSTEM

R. Calvin Owen, Jr., Lincoln, and William T. Plummer, Concord, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 80,432, Oct. 1, 1979, abandoned. This application Mar. 23, 1981, Ser. No. 246,224

Int. Cl.³ G02B *9/04, 9/06, 13/18, 15/02*

U.S. Cl. 350—422 **8 Claims**



1. An optical system for a photographic camera, said optical system consisting essentially of:

an aperture stop having a predetermined diameter;

a first positive meniscus lens element having an aspheric rear surface, said first meniscus lens element having a larger diameter than that of said aperture stop and spaced forwardly thereof;

a second meniscus lens element having an aspheric front surface, said second meniscus lens element having a diameter substantially equal to that of said aperture stop and being located proximate said aperture stop whereby said optical system is nonsymmetric about said aperture stop, said aspheric surface of said first meniscus lens element being structured to favorably correct said optical system for off-axis aberrations and said aspheric surface of said second meniscus lens element being structured to favorably correct said optical system for residual spherical aberrations.

4,443,068
REFLECTING TELEPHOTO ZOOM LENS SYSTEM

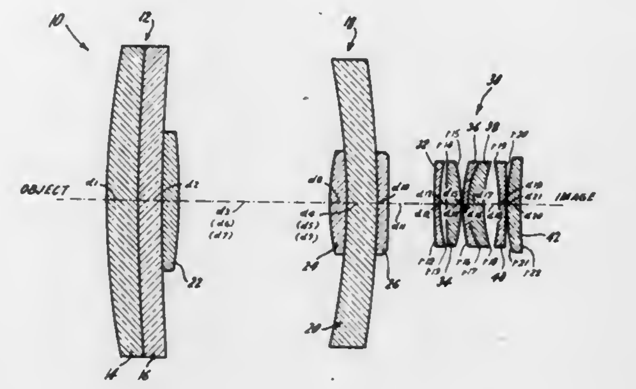
Takayuki Itoh, Saitama, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 21, 1981, Ser. No. 295,236

Claims priority, application Japan, Aug. 30, 1980, 55-119922

Int. Cl.³ G02B *15/14, 17/08*

U.S. Cl. 350—423 **6 Claims**



1. A reflecting telephoto zoom lens system comprising a first lens group having a positive focal length and a second lens group having a negative focal length, said first lens group being located closer to the object than said second lens group, said first lens group being a reflecting lens system with main and auxiliary mirrors, said second lens group being a transmission lens system, said first and said second lens groups being translatable along an optical axis for varying the focal length of the entire optical system while maintaining a fixed image field position.

4,443,069
COMPACT CAMERA LENS SYSTEM WITH A SHORT OVERALL LENGTH

Shin-ichi Mihara, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

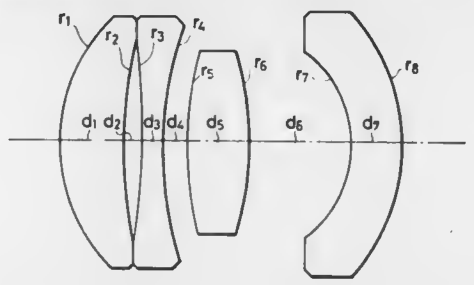
Filed Apr. 13, 1982, Ser. No. 368,092

Claims priority, application Japan, Apr. 15, 1981, 56-56795

The portion of the term of this patent subsequent to Nov. 16, 1999, has been disclaimed.

Int. Cl.³ G02B *9/16, 9/34*

U.S. Cl. 350—469 **7 Claims**



1. A compact camera lens system with a short overall length comprising a first positive meniscus lens component having the convex surface on the object side, a second biconcave lens component, a third biconvex lens component and a fourth negative meniscus lens component, said lens system satisfying the following conditions (1) through (9) when the focal length of the entire system is represented by f, the composite focal length from said first lens component to said third lens component is represented by f_{123}, the focal length of said fourth lens component is represented by f_4, the radius of curvature of the

surface on the object side of said second lens component is represented by r_3, the axial thicknesses of said third and fourth lens component are respectively represented by d_5 and d_7, the airspaces between said first and second lens component is represented by d_2, the airspace between said third and fourth lens components is represented by d_6, the refractive index of said first lens component is represented by n_1 and the Abbe's number of said third lens component is represented by ν_3, and further both surfaces of said fourth lens component being formed as an aspherical surface expressed by the following formula (10) when the direction of the optical axis is represented by x axis, the direction perpendicular to the optical axis is represented by y axis and the para-axial radii of curvature of both surfaces of said fourth lens component are respectively represented by r_7 and r_8:

$$0.55f < f_{123} < 0.70f \tag{1}$$

$$0.7f\ 48\ f_4 < 1.2f \tag{2}$$

$$1.0f < -r_3\ 3.0f \tag{3}$$

$$0.018f > d_2 < 0.035f \tag{4}$$

$$0.06f < d_5 < 0.15f \tag{5}$$

$$0.1f < d_6 < 0.2f \tag{6}$$

$$0.03f < d_7 < 0.1f \tag{7}$$

$$1.63 < n_1 < 1.76 \tag{8}$$

$$\nu_3 < 58 \tag{9}$$

$$x_i = \frac{y_i^2}{r_i + r_i\sqrt{1 - (y_i/r_i)^2}} + A_i y_i^4 + B_i y_i^6 + C_i y_i^8 + D_i y_i^{10} \tag{10}$$

wherein reference symbols A_i, B_i, C_i and D_i ($i=7, 8$) respectively represent coefficients in the above formula and are of the following values respectively:

$A_7 > -10^2 f^{-3}$, $B_7 > -10^3 f^{-5}$, $C_7 > -10^4 f^{-7}$, $D_7 > -10^7 f^{-9}$

$A_8 < -10^{-1} f^{-3}$, $B_8 < 10^2 f^{-5}$, $C_8 < -10^2 f^{-7}$, $D_8 > 10^6 f^9$.

4,443,070
CAMERA LENS SYSTEM WITH LONG BACK FOCAL DISTANCE AND LARGE APERTURE RATIO

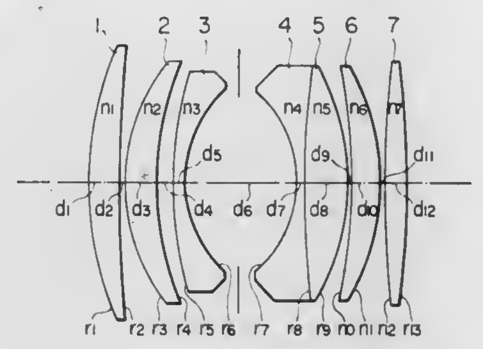
Yoshisato Fujioka, Tokyo, Japan, assignor to Ricoh Col, Ltd., Japan

Continuation-in-part of Ser. No. 41,624, May 23, 1979, abandoned. This application Dec. 8, 1981, Ser. No. 328,505

Claims priority, application Japan, Jun. 5, 1978, 53-66753

Int. Cl.³ G02B *9/62*

U.S. Cl. 350—464 **2 Claims**



1. A lens system with a long back focal distance and a great aperture ratio, comprising first through seventh single lens elements and having twelve air instant surfaces, of which the first and second lens elements are positive meniscus lenses whose convex surfaces are directed towards an object, the third lens element is a negative meniscus lens whose convex surface is directed towards the object, the fourth lens element is a negative lens, the fifth lens element is a positive lens, said fourth lens element and said fifth lens element being connected with each other and constituting a negative meniscus lens whose convex surface is directed towards an image, the sixth lens element is a positive meniscus lens whose convex surface is directed towards said image, and the seventh lens element is a positive biconvex lens, where the radius of curvature of each of the two surfaces of each lens element i, where $1<i<7$, starting at the object side of the lens system is r_{2i-1} and r_{2i}, respectively, and the thickness of each said lens element on the optical axis thereof and the air gap between each pair of said lens element is d_i, in order, and the refractive index of each of said lens elements is n_i and Abbe number of each of said lens elements is ν_1, where $i=1,2, 3 \ldots m$; n is an integer, and wherein, with $f=100$ and an aperture ratio of 1:1.14, a field angle of 46° and a back focal distance of 73.79, the following conditions are met:

$r_1 = 96.872$			
	$d_1 = 8.42$	$n_1 = 1.77250$	$\nu_1 = 49.62$
$r_2 = 628.489$			
	$d_2 = 0.23$		
$r_3 = 48.086$			
	$d_3 = 8.65$	$n_2 = 1.74400$	$\nu_2 = 44.87$
$r_4 = 81.938$			
	$d_4 = 4.95$		
$r_5 = 114.699$			
	$d_5 = 3.88$	$n_3 = 1.68893$	$\nu_3 = 31.16$
$r_6 = 32.911$			
	$d_6 = 29.54$		
$r_7 = -33.157$			
	$d_7 = 2.33$	$n_4 = 1.74007$	$\nu_4 = 27.76$
$r_8 = 277.242$			
	$d_8 = 12.47$	$n_5 = 1.80610$	$\nu_5 = 40.74$
$r_9 = -56.432$			
	$d_9 = 0.23$		
$r_{10} = -137.843$			
	$d_{10} = 7.62$	$n_6 = 1.80420$	$\nu_6 = 46.50$
$r_{11} = -58.269$			
	$d_{11} = 0.19$		
$r_{12} = 269.964$			
	$d_{12} = 6.05$	$n_7 = 1.72000$	$\nu_7 = 50.34$
$r_{13} = -221.116$			

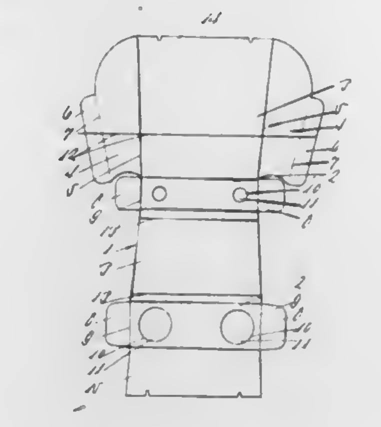
4,443,071
COLLAPSIBLE TELESCOPE

Kosaku Ueda, 8 Hachioji 1-chome, Ikeda-city, Osaka 563, Japan

Filed Dec. 7, 1981, Ser. No. 328,266

Int. Cl.³ G02B *23/18, 7/02*

U.S. Cl. 350—546 **7 Claims**



1. A collapsible telescope comprising:

a cylindrically-shaped main body of a quadrangular cross section defined by two long side walls and two short side walls and having folding lines at its angled portions,

- at least a lid provided via at least one of said folding lines at one of opposite open-mouthed edges of one of said long side walls of said main body,
- an auxiliary folding line formed to extend the full length of said one of said long side walls in a direction parallel with the length of said short side walls of said main body, said auxiliary folding line being positioned in alignment with a folding line which is developed when said two short side walls are stacked on said remaining one of said long side walls and said one of said long side walls is folded, and
- lenses fixedly secured around apertures formed in said two short side walls.

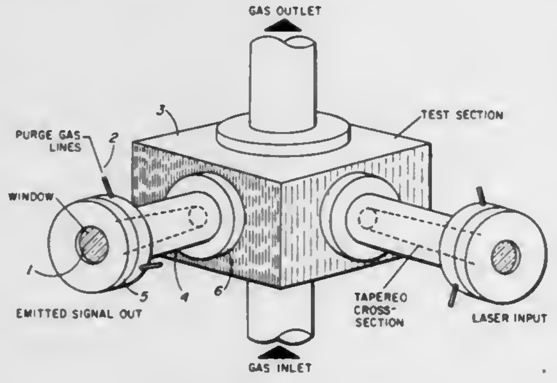
4,443,072
PURGED WINDOW APPARATUS UTILIZING HEATED PURGE GAS

Evan O. Ballard, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 5, 1982, Ser. No. 365,133

Int. Cl.^{3} G02B *7/00*

U.S. Cl. 350—584 **5 Claims**



1. A purged window apparatus for introducing probing electromagnetic radiation into and retrieving an emitted electromagnetic signal from out of a chamber of flowing gas upon which measurements are being made which enables long-term operation by reducing the necessity of interrupting the flow for the purpose of cleaning or replacing the radiation transmitting window material, said apparatus comprising:

- (a) a plurality of tubes with cylindrical inner bore longitudinally tapered for accelerating purging gases with the smaller inner cross-section end directed toward the chamber and that of the larger inner cross-section directed away from the chamber whereon said tubes are externally disposed;
- (b) means for rigidly and removably mounting said smaller inner cross-section end of said tubes to the chamber, for providing a vacuum-tight seal, and for exposing said inner bore to the gas flow;
- (c) electromagnetic radiation transmitting material which passes with low absorption losses the probing and emitted electromagnetic radiation;
- (d) means for rigidly and removably mounting said radiation transmitting material onto said larger inner cross-section end and for providing a vacuum-tight seal;
- (e) injection means for introducing said purging gas tangentially to the inner surface of said cylindrical inner bore in the vicinity of said transmitting material and providing a vortex flow thereon and at such pressure that said purging gases flow and accelerate toward the chamber and into the chamber gas flow; and
- (f) means for heating said purging gas before it enters said injection means.

4,443,073
DEVICE FOR LENS BOWS OF EYEGLASSES

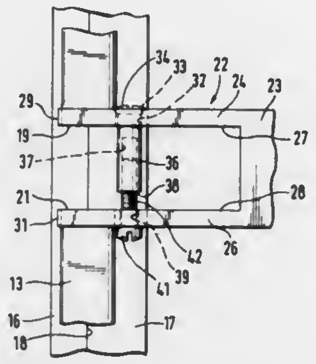
Walter H. Bononi, Zeppelinstrasse 9, Fellbach-Schmiden, Fed. Rep. of Germany

Filed Nov. 10, 1980, Ser. No. 205,568

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1979, 2945905

Int. Cl.^{3} G02C *1/08*

U.S. Cl. 351—98 **8 Claims**



3. Device to reduce the inner circumference of metal lens bows, comprising

- a lens bow having a first area with a through hole oriented approximately in the direction of the mechanical tension in said lens bow, and a second area having an inside threaded portion aligned with said through hole,
- said first and second areas having opposed faces thereon,
- a sleeve on said second area provided with said inside threaded portion and having a face which forms one of said opposed faces,
- a screw having a head resting on the outside of said first area, which is tightened into said inside threaded portion to bring said first and second areas towards each other, up to a point at which said lens bow holds a lens set in said lens bow, at the outer circumference of the lens, with said opposed faces on said first and second areas being spaced from each other,
- the shortest effective distance between said opposed faces on said first and second areas being larger in the untightened state and smaller when said screw is tightened to bring said bow into a holding condition about the lens circumference,
- said first and second areas comprising legs of a U-shaped profile that provide a bending characteristic, to hold said bow about said lens circumference in accordance with the flexion principle, and
- said first and second areas comprising angled, seamless continuations of said lens bow.

4,443,074
METHOD FOR MAKING REINFORCED PLASTICS MATERIAL EYEGLASS FRAMES

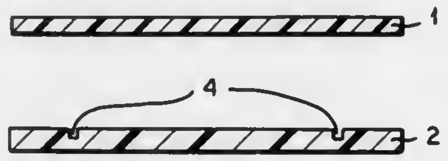
Renato Giacomelli, Piano di Follo, Italy, assignor to MORWEN S.r.l., Piano di Follo, Italy

Filed Feb. 14, 1980, Ser. No. 121,443

Claims priority, application Italy, May 3, 1979, 21494/79[U]; Jun. 20, 1979, 23751 A/79

Int. Cl.^{3} B32B *31/00;* G02C *13/00*

U.S. Cl. 351—178 **5 Claims**



1. A method of making a reinforced eyeglass frame which comprises the steps of:

- (a) forming an outwardly open groove in an unperforated plate of celluloid or cellulose acetate to a depth less than the thickness of said plate and in a pattern such that said groove surrounds regions having the configuration of eyeglass lens and between said regions corresponding to a nose bridge;
- (b) inserting a metal reinforcing blade into said groove so that said blade surrounds said regions and extends between said regions;
- (c) sealing said groove outwardly of said blade around and between said regions whereby said blade is fully encapsulated in said plate;
- (d) thereafter cutting out said regions to define lens-receiving openings surrounded by the fully encapsulated blade; and
- (e) cutting away said plate around and adjacent to said fully encapsulated blade to produce an eyeglass frame configuration having a nose bridge containing a length of the fully encapsulated blade.

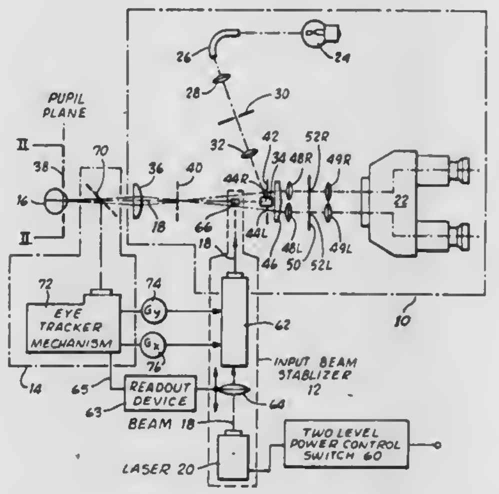
4,443,075
STABILIZED VISUAL SYSTEM

Hewitt D. Crane, Portola Valley, Calif., assignor to SRI International, Menlo Park, Calif.

Filed Jun. 26, 1981, Ser. No. 277,626

Int. Cl.^{3} A61B *3/14*

U.S. Cl. 351—209 **2 Claims**



1. A stabilized visual system including fundus illumination and monitoring means simultaneously to illuminate and observe the fundus of an eye, eyetracker means capable of distinguishing between eye translation and rotational movements regardless of the refractive condition of the said eye and continuously measuring changes in position of the said eye, said eye tracker means generating output signals in response to the said changes which signals are a function of the said changes, coherent light beam generating means for generating a coherent input beam, input beam stabilization means positioned to receive the said input beam and to direct the said beam to a selected fixed location in the said eye, said input beam stabilization means including beam directing means and servo means connected to receive the said signals generated by said eyetracker means and move said beam directing means as a function of said changes in position of the said eye, thereby constantly directing the said beam to the said selected fixed locatin in the said eye regardless of eye movements.

4,443,076
PROJECTING APPARATUS

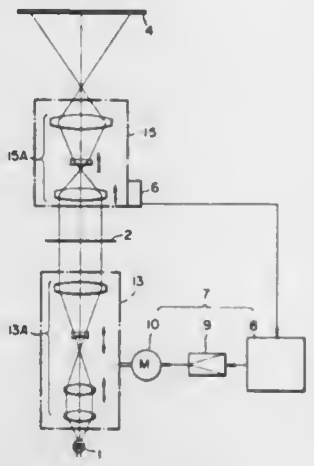
Tatsuo Itabashi, Kanagawa, Japan, assignor to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed Oct. 14, 1982, Ser. No. 434,242

Claims priority, application Japan, Oct. 20, 1981, 56-167524; Oct. 20, 1981, 56-167525

Int. Cl.^{3} G03B *3/10*

U.S. Cl. 353—101 **9 Claims**



1. A projecting apparatus wherein a work on a mount is illuminated by an illuminating device and an image of the shape obtained through a light transmitted therethrough or a light reflected therefrom is formed on a screen by means of a magnifying-projection device, characterized in that a condensing lenses in the illuminating device and a projecting lenses in the magnifying-projection device are formed into zoom type lenses and a tuning device is provided for causing the illuminating scope of the condensing lenses in the illuminating device to correspond to the projecting magnification of the projecting lenses in the magnifying-projecting device, the tuning device comprising:

- a magnification setter for generating a magnification signal:
- an actuator to actuate the projecting lenses in response to said magnification signal from the magnification setter;
- a detecting device secured to the projecting lenses actuated by the actuator, for detecting a magnification thereof and for generating a detection signal; and
- actuator to actuate the condensing lenses in response to said detection signal from the detecting device, and to set a magnification corresponding to the magnification thus detected.

4,443,077
FILM CASSETTE AND A PHOTOGRAPHING DEVICE USING THE SAME

Kowji Tanikawa, Tokyo, Japan, assignor to Olympus Optical Co., Ltd, Tokyo, Japan

Filed Apr. 30, 1981, Ser. No. 258,946

Claims priority, application Japan, May 2, 1980, 55-58988

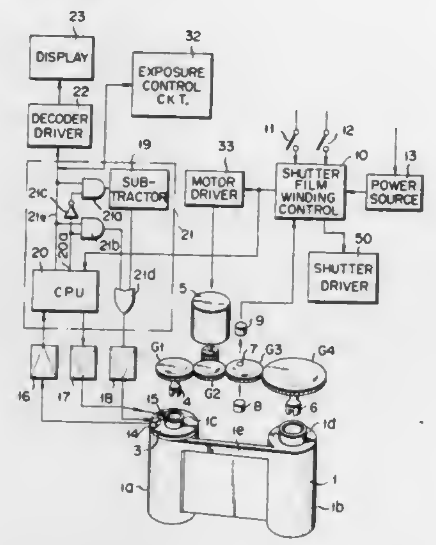
Int. Cl.^{3} G03B *17/26*

U.S. Cl. 354—21 **4 Claims**

1. A film cassette comprising:

- an unexposed film chamber section containing unexposed frames of a film;
- a film take-up chamber section having a film take-up spool for winding up the film in said unexposed film chamber section;
- a bridge section connecting said unexposed film chamber section and said film take-up chamber section; and
- a recording medium attached to at least one of said unexposed film chamber section, said film take-up chamber section and said bridge section, and on and from which film data relative to each one-frame of photographing are

recorded and reproduced thereby to update the film data for each recording;



said recording medium comprising a magnetic disc rotatably mounted on said unexposed film chamber section and rotating in concert with a film winding action.

4,443,078
DISTANCE DETECTING DEVICE IN A CAMERA

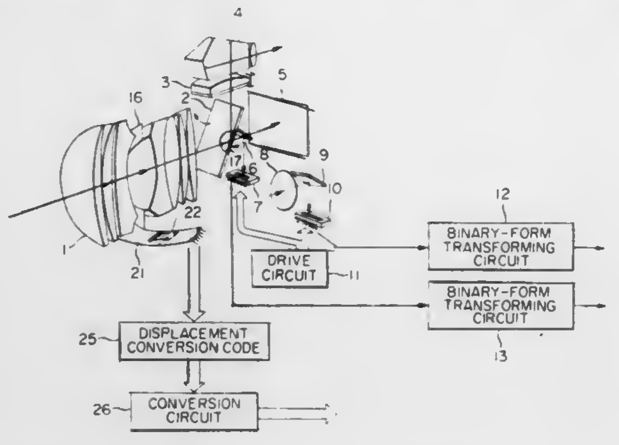
Yukichi Niwa; Yasuo Ogino; Mitsutoshi Ohwada, all of Yokohama; Kazuo Tanaka, Tokyo, and Noboru Koumura, Narashino, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 26, 1982, Ser. No. 362,253

Claims priority, application Japan, Mar. 31, 1981, 56-47614

Int. Cl.^{3} G03B *3/00;* **H04N** *5/26;* **G01C** *3/08*

U.S. Cl. 354—403 **25 Claims**


BINARY-FORM TRANSFORMING CIRCUIT
BINARY-FORM TRANSFORMING CIRCUIT
DRIVE CIRCUIT
DISPLACEMENT CONVERSION CODE
CONVERSION CIRCUIT

1. In a camera having a picture-taking lens means, a system for detecting the distance between the camera and an object, comprising:

(A) a first image signal forming means for forming an electrical signal relating to a first detection image obtained by an image of said object formed by said picture-taking lens means;

(B) a range-finding optical means disposed to form an image of said object in accordance with a path different from the object image formed by said picture-taking lens means;

(C) a second image signal forming means for forming an electrical signal relating to a second detection image obtained by the object image formed by said range-finding optical means;

the relative positional relation between said first and second detection images varying in accordance with the change in the distance between the camera and the object; and

(D) circuit means for receiving said electrical signals formed by said first and second image signal forming means and for producing an output indicative of the relative positional relation between said first and second detection images.

4,443,079
METHOD AND APPARATUS FOR DETECTING FOCUS CONDITION OF OBJECTIVE LENS

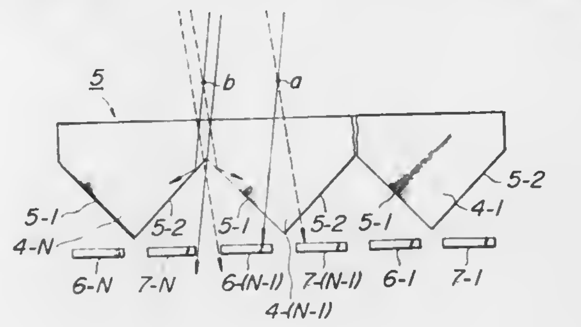
Kenichi Oinoue, Tokyo; Asao Hayashi; Masatoshi Ida, both of Hachioji; Masahiro Aoki, Fussa; Junichi Nakamura, Hachioji, and Kenji Fukuoka, Fussa, all of Japan, assignors to Olympus Optical Co. Ltd., Tokyo, Japan

Filed Sep. 29, 1982, Ser. No. 426,898

Claims priority, application Japan, Oct. 6, 1981, 56-159218

Int. Cl.^{3} G03B *3/00*

U.S. Cl. 354—407 **12 Claims**



1. In a method of detecting a focusing condition of an objective lens for forming an image of an object on a predetermined focal plane by selectively introducing first and second light fluxes each emanating from at least a part of respective one of first and second halves of objective lens divided along a plane including the optical axis of objective lens, onto first and second light receiving means, respectively, and by processing photoelectrically converted outputs supplied from the first and second light receiving means, the improvement comprising

introducing the first and second light fluxes into first and second light splitting means arranged between the objective lens and the first and second light receiving means, respectively, said first and second light splitting means including first and second optical surfaces, respectively, each of which is formed by an interface between higher refractive index material and lower refractive index material viewed in a light propagating direction and said first and second optical surfaces being inclined symmetrically with respect to the optical axis by such angles that the first light flux is transmitted through the first optical surface, but is totally reflected by the second optical surface and that the second light flux is transmitted through the second optical surface, but is totally reflected by the first optical surface.

4,443,080
EXPOSURE CONTROL APPARATUS BASED ON MULTIMETERING SYSTEM

Takashi Saegusa, Sagamihara, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Nov. 6, 1981, Ser. No. 319,085

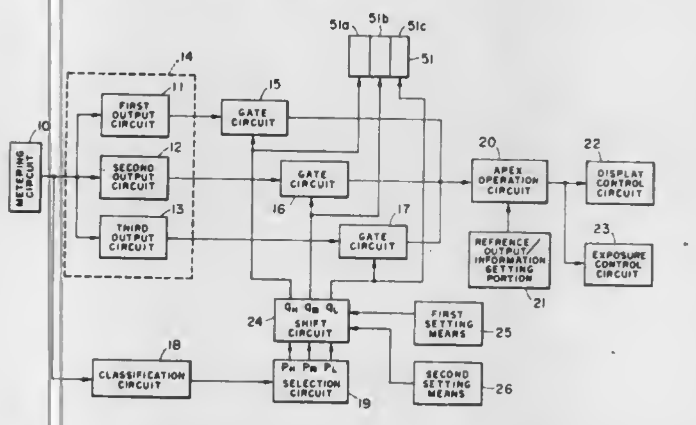
Claims priority, application Japan, Nov. 12, 1980, 55-159166; Nov. 12, 1980, 55-159167

Int. Cl.^{3} G03B *7/28, 7/08*

U.S. Cl. 354—432 **7 Claims**

1. In an exposure control apparatus including means for producing a plural number of reference outputs having different output levels each depending on a plural number of measured photometric outputs obtained by photometrically and individually measuring lights from a plural number of divided areas of an object field, each photometric output corresponding to each of said divided areas, and selection means for selecting one of said reference outputs so as to control the exposure value for taking a picture of said object field in accordance with said selected reference output, the inprovement comprising:

means for changing the exposure value controlled by said exposure control apparatus, said changing means including means for issuing a signal indicating the direction in which the control should be made selectively to increase or decrease the exposure value and reselection means operable in response to said indicating signal for reselecting a reference output suitable for carrying out the control in the indicated direction among said plural number of reference outputs, whereby said exposure control apparatus controls the exposure value in accordance with said reselected reference output instead of said selected reference output.



4,443,081
METERING DEVICE OF A SINGLE LENS REFLEX CAMERA

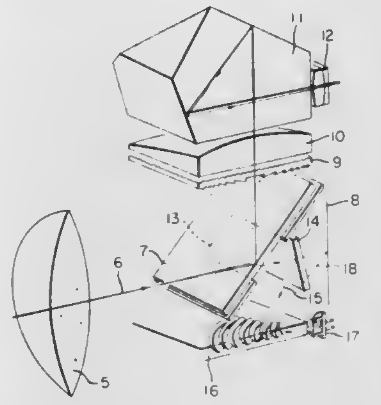
Takashi Suzuki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 22, 1982, Ser. No. 371,017

Claims priority, application Japan, May 9, 1981, 56-69769

Int. Cl.^{3} G03B *7/099*

U.S. Cl. 354—479 **2 Claims**



1. A metering device of a single lens reflex camera comprising:

a picture-taking optical system for forming an image of an object on a picture-taking plane;

a focusing screen disposed at one side of the optical axis of said picture-taking optical system;

a deflector disposed between said picture-taking optical system and said picture-taking plane, at least part of the light from said picture-taking optical system being directed to said focusing screen by said deflector, whereby an object image for observation is formed on said focusing screen; and

a plate-like condensing optical system located outside the light path of said picture-taking optical system between said picture-taking optical system and said picture-taking plane and disposed substantially in parallel to said optical axis, said plate-like condensing optical system having a diffraction grating of arcuate shape, the light from said picture-taking optical system being reflectively directed to said plate-like condensing optical system and refracted to a light receiving element through said plate.

4,443,082
CURRENT SIGNAL CONTROLLED CAMERA SYSTEM

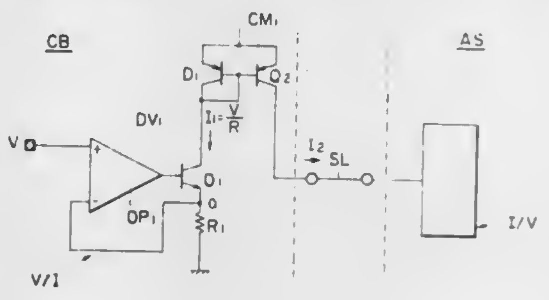
Tamio Murano, Itami; Satoshi Yamane, Kobe; Toshitatsu Suzuki, Takarazuka, and Yoshio Fukushima, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Jul. 22, 1982, Ser. No. 400,623

Claims priority, application Japan, Jul. 23, 1981, 56-109659[U]

Int. Cl.^{3} G03B *1/00, 15/05, 17/00*

U.S. Cl. 354—145.1 **10 Claims**



1. A camera system in which information is transmitted in the form of current comprising:

a camera body including a first voltage source;

an accessory to be used in association with said camera body, said accessory including a second voltage source;

a voltage-to-current converter incorporated in at least either one of said camera body and accessory for converting a voltage into a current signal;

means for transmitting said current signal to the other of said camera body and accessory; and

a current-to-voltage converter incorporated in at least the other of said camera body and accessory for converting said current signal thus transmitted back into a voltage signal whereby information is transmitted from either one of said camera body and accessory to the other in the form of current.

4,443,083
DRIVING APPARATUS IN A CAMERA

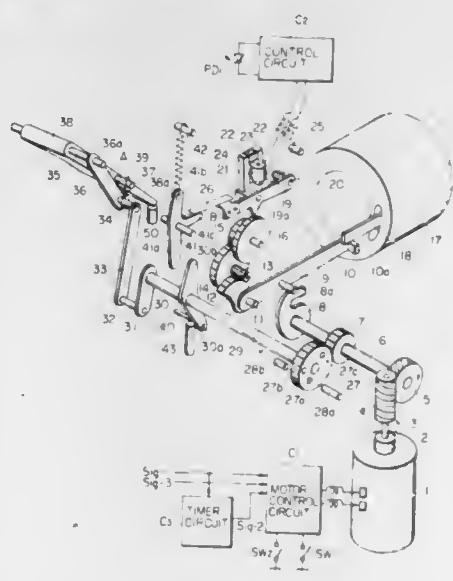
Yoshiyuki Nakano, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Mar. 15, 1982, Ser. No. 357,813

Claims priority, application Japan, Mar. 19, 1981, 56-40190; Mar. 19, 1981, 56-40191

Int. Cl.^{3} G03B *19/12*

U.S. Cl. 354—152 **12 Claims**



1. A single lens reflex camera having a reflecting mirror

which moves during operation from a position across the light path of a light beam travelling toward a film surface past the stop of a phototaking lens to a position retracted from said light path, an apparatus for driving the stop of said phototaking lens for the control of said stop to a predetermined aperture value and for the control of the movement of said reflecting mirror and means for causing exposure of the film surface to the light beam passing the stop, said apparatus comprising:

(a) stop-down operating means capable of being coupled to said stop and displaceable between a first position for providing a maximum aperture opening to said stop and a second position for providing a minimum aperture opening to said stop;

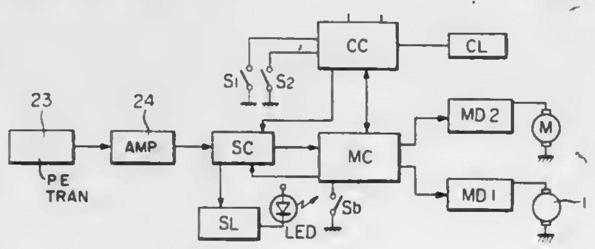
(b) moving means having a first moving area capable of moving forward while imparting displacement from said first position to said second position to said stop-down operating means and moving backward while imparting displacement from said second position to said first position to said stop-down operating means, having a second moving area continuous with said first moving area and being capable of moving while maintaining said stop-down operating means in said second position; and

(c) drive means for driving said moving means forward in said first moving area before the exposure of light to said film surface and subsequently driving said moving means into said second moving area, said drive means including means for retracting said reflecting mirror into said retracted position while said moving means is in said second moving area.

4,443,084
FILM WINDING DEVICE

Toshimitsu Harada, and Koji Watanabe, both of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Oct. 15, 1981, Ser. No. 311,659
Claims priority, application Japan, Oct. 31, 1980, 55-152155
Int. Cl.³ G03B *1/12*
U.S. Cl. 354—173.11 4 Claims



1. In a device for winding film in response to a winding signal and including means operable for causing winding movement of the film upon receipt of the winding signal,

means for detecting movement of the film and for generating an output of pulses quantitatively in accordance with the amount of film movement, a predetermined number of said pulses corresponding to one frame of film movement,

control circuit means for receiving the winding signal and said pulse output and for operating the winding means to cause film movement until said predetermined number of pulses has been received, and

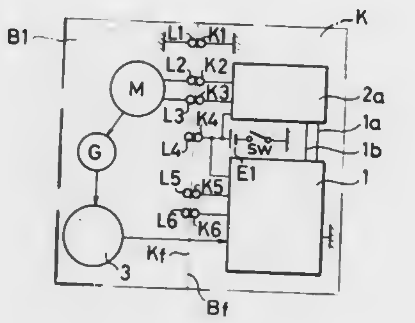
timer means connected to the control circuit means and actuated upon receipt of the winding signal for a time interval longer than that normally required to wind the film an amount corresponding to one frame,

said control circuit means further monitoring said timer means and discontinuing operation of the winding means upon expiration of said timer means interval when said predetermined number of pulses have not yet been received.

4,443,085
CAMERA WITH AN INTERCHANGEABLE LENS

Yasumasa Tomori, Sakado; Mituhiko Shimoda, Asaka, and Keisuke Haraguchi, Ranzan, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 267,697, May 27, 1981, abandoned. This application Sep. 15, 1982, Ser. No. 418,568
Claims priority, application Japan, Jun. 11, 1980, 55-78856; Jun. 11, 1980, 55-78857
Int. Cl.³ G03B *3/10*
U.S. Cl. 354—402 6 Claims



1. In a camera system with a camera body and a plurality of interchangeable lens barrels, the camera body having a lens mount and a focus detecting device for detecting when the sharpest image is formed on a film plane therein, each lens having focusing means for imaging an object on the film plane, a focusing motor connected to movable elements in each lens barrel, the improvement comprising:

a control circuit inside said camera body connected to the output of said focus detecting device and having an output for directly driving and controlling said focusing motor;

electrical terminals on said camera body mount, a first set of terminals connected to the output of said focus detecting device and a second set of terminals connected to the output of said control circuit within said camera body;

electrical contacts on each lens barrel, at least one lens barrel of a first type having contacts located to mate with said first set of terminals on said body mount, said first type of lens barrel including a control circuit inside the lens barrel for interpreting the output of said focus detecting means and producing an output which drives and controls the focusing motor of the lens barrel so that the focusing of the lens barrel is controlled by circuitry in the lens in response to said focus detecting means;

at least one lens barrel of a second type having contacts located to mate with said second set of terminals on said body and connected to the focusing motor, so that only the control circuit within the camera body focuses the lens barrel directly.

4,443,086
FOCUS ADJUSTING DEVICE

Kazuya Hosoe; Takao Kinoshita; Nobuhiko Shinoda; Shinji Sakai, all of Tokyo; Takashi Kawabata, and Tadashi Ito, both of Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 150,958, May 19, 1980, abandoned. This application Dec. 14, 1981, Ser. No. 330,438
Claims priority, application Japan, May 23, 1979, 54-63373
Int. Cl.³ G03B *3/00, 13/18*
U.S. Cl. 354—409 7 Claims

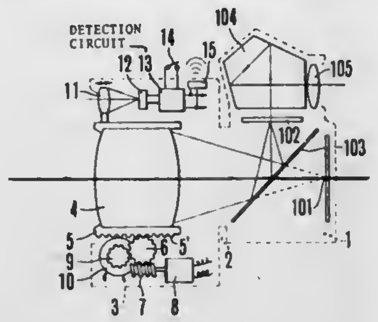
1. An automatic focusing lens assembly for use with a camera body, comprising:

(a) a focus adjustable lens system;

(b) an automatic focusing device for automatically focusing said lens system onto an object to be photographed;

(c) aural indication means coupled to said automatic focusing device to aurally indicate the focusing condition of the lens system with respect to the object, said aural indication means being arranged to produce respectively different indications indicative of in-focus and out-of-focus conditions of the lens system;

visual indication means coupled to said automatic focusing



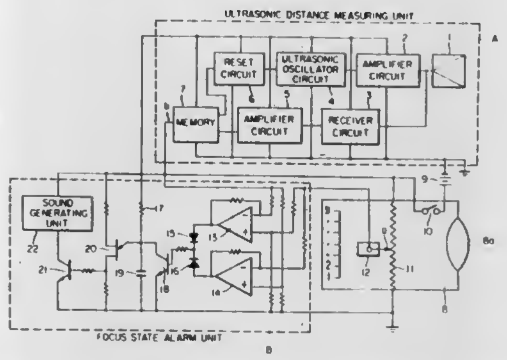
device to visually indicate the focusing condition of the lens system with respect to the object; and

guide means for guiding the visual information generated by said visual indication means into said camera body.

4,443,087
FOCUS STATE INDICATOR

Toshitsugu Kashihara; Tsunemi Yoshino, both of Nara; Akitoshi Morioka, Osaka, and Hiroshi Iwata, Nara, all of Japan, assignors to West Electric Co., Ltd., Oyodo, Japan

Filed Sep. 21, 1982, Ser. No. 420,859
Claims priority, application Japan, Sep. 21, 1981, 56-150338
Int. Cl.³ G03B *3/00*
U.S. Cl. 354—401 3 Claims



1. A focus state indicator comprising: distance measuring means for converting distance data from a camera to a subject to be photographed to a first electrical signal; lens position detecting means for producing a second electrical signal corresponding to a position of a photographic lens; first and second differential amplifier circuits which respectively receive the first and second electrical signals in an inverted relation; switching means comprising a transistor which simultaneously receives outputs from said first and second differential amplifier circuits through first and second rectifying means respectively and a switch circuit which is controlled by said transistor; and an alarm element such as a sound generating unit which is controlled by said switching means, an alarm mode of said alarm element being successively changed in accordance with the degree of focus detected by first and second electrical signals.

4,443,088
FOCUSING SCREEN

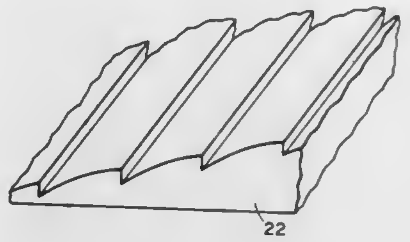
Keiji Ohtaka, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 12, 1981, Ser. No. 320,704
Claims priority, application Japan, Nov. 25, 1980, 55-165557
Int. Cl.³ G02B *5/04;* G03B *13/28*
U.S. Cl. 354—200 4 Claims

1. In a split image type range finder system having an objective lens for forming an image plane, a focusing screen comprising:

a plurality of light deflecting portions each of which includes:

(a) a prism component having a light deflecting function for providing part of an out-of-focus image with displacement in one direction; and

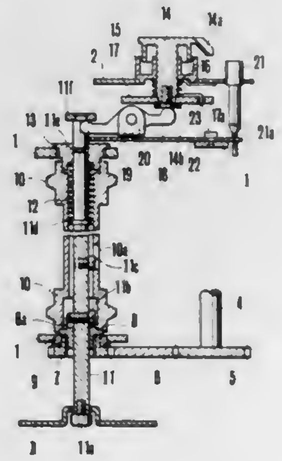


(b) a diffraction grating component formed on said prism component and having a plurality of unit structures, at least a portion of each of said plurality of structures being formed by a curved surface.

4,443,089
FILM WINDING AND REWINDING DEVICE FOR CAMERA

Akio Sunouchi, Tokyo; Tatsuo Konno, Kanagawa; Masahisa Fujino, Tokyo, and Ryuji Suzuki, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Japan

Filed May 28, 1982, Ser. No. 383,249
Claims priority, application Japan, Jun. 11, 1981, 56-90130
Int. Cl.³ G03B *1/00*
U.S. Cl. 354—214 9 Claims



1. A film winding and rewinding device for a camera comprising:

changeover means for changing over the camera from the winding mode to the rewinding mode;

operating means movable in a first direction and in a second direction, said operating means when manually moved in said first direction making said changeover means ready to be actuated, and when said movement in said first direction is followed by a movement in said second direction, actuating said changeover means;

cover means for having a guide hole for said operating means, said changeover means being covered by said cover means; and

locking means for preventing said operating means from moving in said second direction, and when said operating means is moved in said first direction, for allowing said operating means to move in said second direction, said locking means being covered by said cover means.

4,443,090
ELECTROMAGNETIC TRANSMITTING APPARATUS FOR A CAMERA

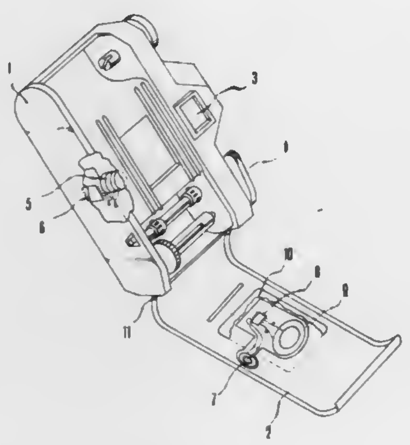
Hideaki Miyakawa; Yasuki Takahashi, both of Kanagawa, and Fumio Hata, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 18, 1981, Ser. No. 293,945

Claims priority, application Japan, Aug. 26, 1980, 55-117367

Int. Cl.^{3} G03B *17/00*

U.S. Cl. 354—289.12 **6 Claims**



1. An apparatus to transmit electric power between a photo-taking device and an accessory associated with the device, comprising:

(a) a main body forming a part of the photo-taking device;

(b) electric power supplying means provided within said main body, said electric power supplying means including first conversion means to convert electric power from a power source associated with said electric power supplying means into a magnetic signal by electromagnetic induction; and

(c) electric power receiving means provided within the accessory, said electric power receiving means including second conversion means to convert the magnetic signal from said electric power supplying means to an electric signal when said first and said second conversion means are in magnetic coupling relation with one another.

4. An apparatus according to claim **1**, **2** or **3**, which further comprises a first magnetic circuit forming a part of said first conversion means to convert electric signals produced at the photo-taking device or camera side into magnetic signals, and a second magnetic circuit forming a part of said second conversion means to receive the magnetic signals from said first magnetic circuit and to generate corresponding electric signals.

5. An apparatus according to claim **4**, in which said first and second magnetic circuits include cores made of magnetic material and coils wound around said cores, so that said cores can be operatively placed in closely opposing relation to form a closed loop magnetic circuit.

6. An apparatus according to claim **5**, in which the accessory or the back lid includes a sound emitting body for emitting sound in response to the signals from said second magnetic circuit.

4,443,091
YOKE MECHANISM OF ELECTROPHOTOGRAPHIC PRINTING APPARATUS

Masayuki Ainoya; Hiroomi Kozawa, and Takao Chikuzenya, all of Ibaraki, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan

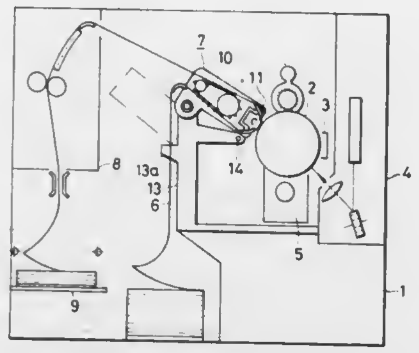
Filed Jun. 21, 1982, Ser. No. 390,431

Int. Cl.^{3} G03G *15/16*

U.S. Cl. 355—3 TR **6 Claims**

1. A yoke mechanism for an electrophotographic printing apparatus, comprising:

yoke means including a tractor, said yoke means being pivotably mounted on a frame for movement between a retracted position and a transfer position, and engagement means for stopping said yoke means at an intermediate position between said retracted and transfer positions to facilitate the loading of printing paper onto said yoke means.



4,443,092
COMPACT PHOTOCOPYING MACHINE

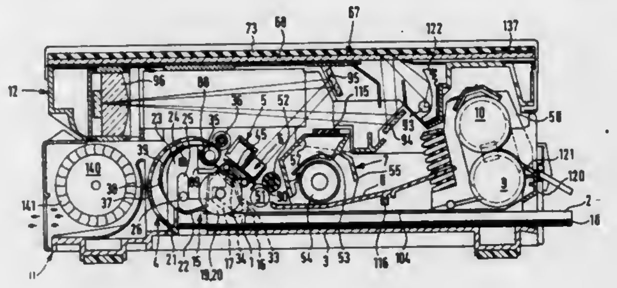
Jüergen Eisbein, Gerlingen; Heinrich Kaufmann, Stuttgart; Kurt Moser, Gerlingen, and Friedhelm Brenner, Reichartshausen, all of Fed. Rep. of Germany, assignors to Develop Dr. Eisbein GmbH & Co., Gerlingen, Fed. Rep. of Germany

Filed Sep. 2, 1982, Ser. No. 414,269

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1981, 3136206

Int. Cl.^{3} G03G *15/20*

U.S. Cl. 355—3 R **38 Claims**



37. Photocopying machine comprising:
a machine housing,
a receiver in said machine housing for receiving copying paper,
a separating station for separating individual sheets of paper from said copying paper,
a charging station for charging said sheets of paper,
an exposing station including an exposing window,
a movable slide block with a holder for an original to be copied,
an optical system for transmitting images from the original to the exposing window,
a developing station including a magnet roller,
a fixing station including a pair of pressing rollers, wherein two elastically deformable bearing blocks are provided at the lower machine housing part for the pressing rollers, said bearing blocks each being constructed as one part units with shell formed bearing seats for the bearings of the upper and lower pressing rollers.

4,443,093
ELECTROSTATIC PRINTING METHOD

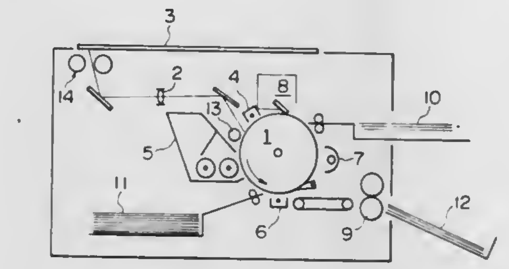
Masaki Yoshino; Kozo Oka, and Huminori Koide, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Sep. 7, 1982, Ser. No. 415,622

Claims priority, application Japan, Sep. 7, 1981, 56-139816

Int. Cl.^{3} G03G *15/00*

U.S. Cl. 355—3 CH **8 Claims**



1. An electrostatic printing method, comprising; forming a printing master having a fixed toner image on a photo-conductive plate;

repeatedly charging said printing master with a light source maintained off until a potential from 0.7 to 1.3 times a practical potential is given thereto, and then charging said printing master with said light source turned on, to thereby recover an image region potential of said printing master; and

printing using said printing master.

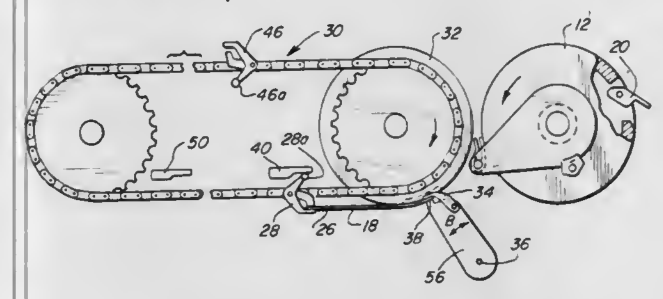
4,443,094
DUPLICATING MACHINE WITH DUPLEXING CAPABILITY

Mario Ricciardi, Glenview, Ill., assignor to AM International, Inc., Chicago, Ill.

Filed Nov. 22, 1982, Ser. No. 443,814

Int. Cl.^{3} G03G *15/00*

U.S. Cl. 355—3 SH **23 Claims**



1. In a duplicating machine for duplicating images on both sides of copy sheets including a blanket cylinder having first and second images transferable to the copy sheets, an impression cylinder forming a nip with the blanket cylinder and for supporting and transferring the copy sheets through the nip, and means for feeding copy sheets to the impression cylinder, means for handling said sheets for duplexing said images thereon comprising:

first gripper means on said impression cylinder for releasably engaging a lead end of a copy sheet and moving the sheet through said nip to transfer the first image to a first side of the sheet;

transport gripper means for releasably engaging the lead end of the sheet transferred thereto by said first gripper means and transporting the sheet in a direction away from the impression cylinder;

swing gripper means for releasably engaging a trail end of the sheet in timed relation with release of the sheet by said transport gripper means and re-feeding the sheet back to the impression cylinder; and

second gripper means on the impression cylinder for releasably engaging said trail end of the sheet and moving the sheet through the nip to transfer the second image to a second side of the sheet.

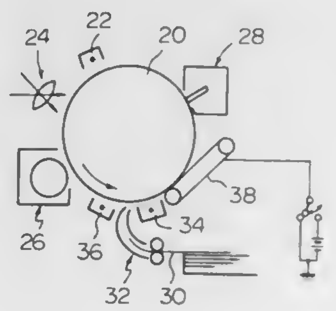
4,443,095
IMAGE TRANSFER AND SHEET SEPARATION APPARATUS FOR ELECTROPHOTOGRAPHIC SYSTEM

Shuichi Tsushima, and Fuyuhiko Matsumoto, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 3, 1982, Ser. No. 374,653

Int. Cl.^{3} G03G *15/01, 15/14*

U.S. Cl. 355—14 R **26 Claims**



1. An image transfer and sheet separation apparatus for an electrophotographic system, comprising:

(a) a photoconductive member on which a latent image is to be formed electrostatically;

(b) developing menas for developing the latent image with a toner into a toner image;

(c) a transfer charging means for transferring the toner image onto a transfer medium;

(d) a precharging means located between the developing means and the transfer charging means; and

(e) a conductive member so positioned downstream of the transfer charging means as to be intimately engaged by the transfer medium, the conductive member being moved in a same direction and at a same speed as the transfer medium at a point of engagement therewith.

4,443,096
ON MACHINE RETICLE INSPECTION DEVICE

Karl-Heinz Johannsmeier, Los Altos, and Edward H. Phillips, Middletown, both of Calif., assignors to Optimetrix Corporation, Mountain View, Calif.

Filed May 18, 1981, Ser. No. 264,410

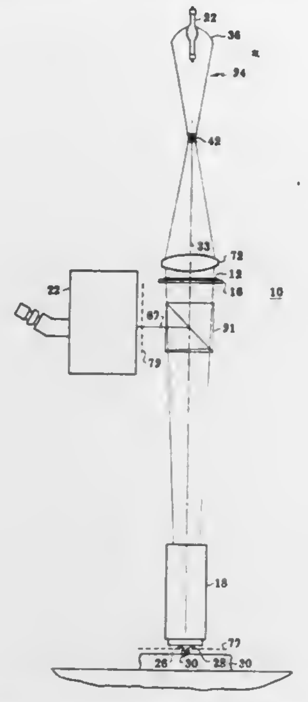
Int. Cl.^{3} G03B *27/42*

U.S. Cl. 355—53 **19 Claims**

1. A projection alignment and exposure apparatus comprising:

means for holding a pattern bearing element;
a source of light for illuminating the pattern bearing element;
a moveable stage for holding a workpiece to be aligned with respect to the pattern bearing element;
optical means for projecting an image of a pattern on the pattern bearing element onto the stage;
a first apertured optical detector supported on the stage to detect a portion of the projected image of the pattern on the pattern bearing element;
a second apertured optical detector supported on the stage in spaced relationship with the first apertured optical detector to detect another portion of the projected image of the pattern on the pattern bearing element; and

means for indicating differences in the detected portions of the projected image of the pattern on the pattern bearing



element as the stage is moved to scan the first and second apertured optical detectors across that projected image.

4,443,097

EXPOSURE VALUE CONTROL SYSTEM FOR COPYING MACHINES

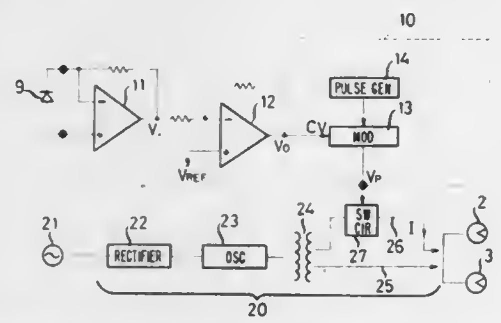
Kiyoto Nagasawa, Yokohama, and Hiroshi Yamada, Ichikawa, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 19, 1981, Ser. No. 294,140

Claims priority, application Japan, Aug. 23, 1980, 55-115350

Int. Cl.³ G03B *27/72*

U.S. Cl. 355—68 **6 Claims**



1. An exposure device for an electrophotographic apparatus, comprising a fluorescent lamp, a fiber array for focusing light from said lamp onto a photosensitive member, means for generating a DC voltage, and means receiving said DC voltage for adjusting the level of current supplied to said lamp according to the level of said DC voltage, including means for supplying power to said fluorescent lamp, said powersupply means including a high-frequency oscillator generating alternating current of a high-frequency for driving said lamp, and said adjusting means including gate means interposed in the current supply line to said lamp for periodically preventing current flow to said lamp when said gate means is disabled.

4,443,098

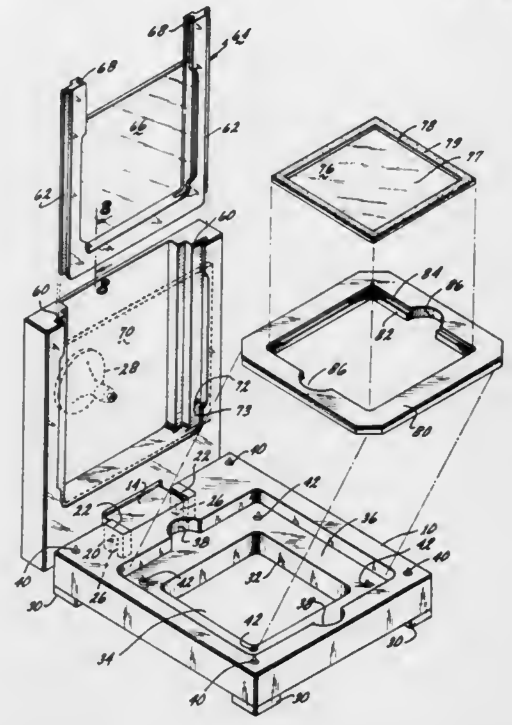
PELLICLE MOUNTING FIXTURE

Craig M. Walwyn, and Donald E. Bohonos, both of San Jose, Calif., assignors to General Signal Corporation, Stamford, Conn.

Filed Dec. 21, 1982, Ser. No. 451,780

Int. Cl.³ G03B *27/58*

U.S. Cl. 355—74 **26 Claims**



1. A pellicle mounting fixture for affixing a pellicle to a mask, including

a base member and a cover member and with the base member including means for receiving a pellicle and with the cover member including means for supporting a mask,

a guide means connected to the base member and the cover member for providing rotational movement between the cover member and the base member between an upstanding position for the cover member relative to the base member and a spaced parallel position between the cover member and the base member and for providing transverse movement between the cover member and the base member between the spaced parallel position and a touching parallel position between the cover member and the base member, and

resilient means connected to the base member and projecting upwardly to engage the cover member during transverse movement between the cover member and the base member.

4,443,099

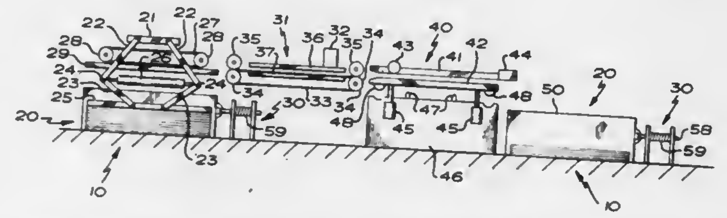
PHOTOGRAPHIC PRINTING SYSTEM

Dale L. Linman, Minneapolis, and Stephen A. Bartz, Jordan, both of Minn., assignors to Lucht Engineering Corporation, Minneapolis, Minn.

Filed Feb. 17, 1982, Ser. No. 349,650

Int. Cl.³ G03B *27/62*

U.S. Cl. 355—75 **19 Claims**



1. In a photographic printer of the type wherein a transparency bearing an image to be printed is positioned within the optical path of the printer, the transparency being carried by a masking card with the image to be printed at an aperture thereof and the card contributing to registration of the image within the printer optical path, an improved card handling system which comprises:

first card receptacle means for retaining a plurality of said masking cards each in stacking relation to others of said masking cards;

printing station means generally at the optical path of said printer;

card transport means including means for individually lifting a top masking card from said first card receptacle means, means pivotable between a first position for accepting a lifted card and a second position for providing a track for an accepted card and means for conveying cards within said track to said printing station means; and

second card receptacle means for receiving said masking cards from said printing station means, said printing station means including means for ejecting masking cards therefrom.

4,443,100

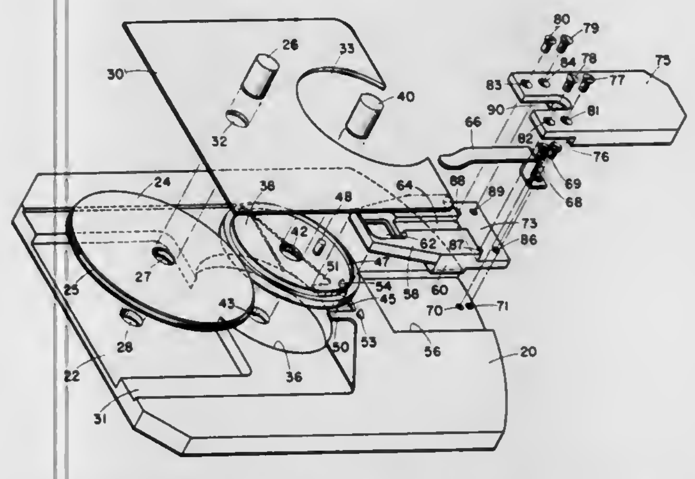
INDEXING APPARATUS FOR POSITIONING AND RETAINING A DISK FILM

Paul Zamek, Washington Township., Berden County, N.J., assignor to Design Controls Corporation, Little Falls, N.J.

Filed May 14, 1982, Ser. No. 378,243

Int. Cl.³ G03B *27/62, 27/64*

U.S. Cl. 355—76 **26 Claims**



1. Apparatus for positioning and releasably holding a disk film characterized as having a multiplicity of developed negatives arranged in a radial array, this apparatus adapted to receive one negative portion at a time and to releasably grip said film negative above and below so as to provide in a gripped condition a determined flat plane in which the negative is held, this apparatus disposed to accept one film disk at a time and to fixedly position said disk on a rotatable support member, said apparatus including:

(a) a support base;

(b) a drive disk-like member rotatably carried by said support base;

(c) a support disk member rotatably carried by said support base, said member having an outwardly projecting circular and radially positioned portion adapted to engage and support an underside portion of the disk film;

(d) drive means for moving the support disk member by and in relation to the movement of the drive disk member;

(e) means provided on the support base for engaging the underside of the disk film along the lateral extents thereof and an aperture formed in this support means of the base, and adjacent this aperture and outward of the aperture providing a support of the outer portion of the disk film so as to support the developed negative when moved thereagainst, this underside support establishing a determined support plane;

(f) means provided on the drive disk member to positively rotate said support disk member as the drive disk member is rotated;

(g) a lift member pivotally retained by and carried by the support base, said lift member having an aperture therethrough and with the aperture formed in the support base and providing means for an illuminating path through the positioned and held negative portion of the disk film, said lift member urged towards the support base and into a gripping condition by bias means, said bias means a leaf spring secured at one end to said support base, the lift member also including a support portion extending toward the support base and carried in and by guide means provided with and by said support base and with the leaf spring providing guide means and limits of motion for the lift member which is selectively movable from said gripping condition, said lift member having its underside adapted to provide a gripping surface for the outer surface of the disk film as and when said disk film is gripped, and

(h) means carried by the support base and disposed to engage the film as it is rotated so as to precisely position said film when in an engaged condition and to release said film from said precise and gripped condition during rotation.

4,443,101

RECORDING PAPER SEPARATION FAILURE RELEASE FOR COPYING MACHINE

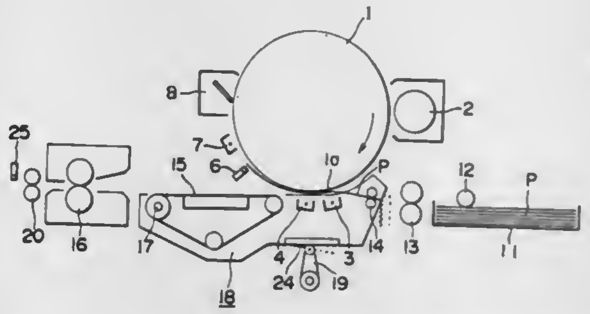
Isao Sakurai, Hamura, and Teruo Minejima, Higashi Murayama, both of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Oct. 23, 1981, Ser. No. 314,207

Claims priority, application Japan, Oct. 30, 1980, 55-153335; Nov. 20, 1980, 55-164267

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 SH **8 Claims**



1. In a copying machine in which a toner image is transferred from an image retaining member to a recording paper and, after the transfer of said toner image, said recording paper is separated from said image retaining member by the operation of a first separation means and ejected to the outside of said machine, the improvement comprising: a detection means for detecting a separation failure of said recording paper, a recording paper conveying means displaceable to open the passage of said recording paper, and a second separation means for separating, from said image retaining member, said recording paper which is attaching to said image retaining member due to said separation failure, said detection means being adapted to produce a detection signal for displacing said recording paper conveying means to open said passage of said recording paper and to actuate said second separation means so as to separate said recording paper onto said conveying means, said conveying means being adapted to be reset thereafter to the ordinary position thereby to release the separation failure.

4,443,102

COMPACT DEVELOPMENT SYSTEM

Richard A. Lux, Webster, N.Y.. assignor to Xerox Corporation, Stamford, Conn.

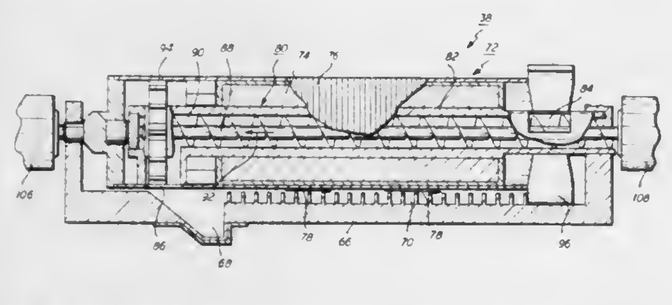
Filed Apr. 28, 1982, Ser. No. 372,503

Int. Cl.³ G03G *15/08*

U.S. Cl. 355—3 DD **22 Claims**

1. An apparatus for developing a latent image recorded on a surface, including:

means for transporting marking particles through a path in which the marking particles rotate and translate in the portion of the path remote from the surface and rotate in the portion of the path adjacent the surface so that the latent image attracts at least a portion of the marking particles thereto forming a particle image on the surface as marking particles translate from a receiving region to a discharge region said transporting means includes a rotatably mounted elongated sleeve and a housing having a portion of the interior surface thereof adjacent to a portion of said sleeve with said housing having a plurality of grooves in the portion of the interior surface thereof adjacent said sleve with each groove being transverse to the longitudinal axis of said sleeve; and



means for attracting the marking particles to said sleeve.

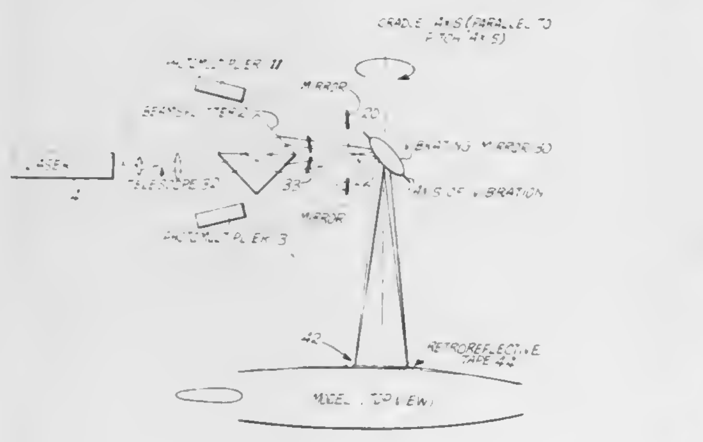
4,443,103
RETRO-REFLECTIVE ELECTRO-OPTICAL ANGLE MEASURING SYSTEM

Joachim C. Erdmann, Seattle, Wash., and Robert I. Gellert, Quesnel, Canada, assignors to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 217,733, Dec. 18, 1980. This application May 31, 1983, Ser. No. 481,041

Int. Cl.^{3} G01B *11/26;* G01C *21/06;* G05B *1/00*

U.S. Cl. 356—152 5 Claims



1. A retro-reflective electro-optical angle measuring system comprising in combination:

transmitting means for generating a first laser beam;

a beamsplitter for developing two angularly divergent sub-beams from said first laser beam;

a mirror system;

individual sub-beam associated photomultipliers;

a vibrating mirror disposed in the path of said sub-beams for sweeping said sub-beams across a retro-reflective tape and for re-directing the retro-reflected sub-beams back through said mirror system and upon said respective individual sub-beam associated photomultipliers, said photomultipliers responsive to said sub-beams for providing photomultiplier pulses when said sub-beams cross said retro-reflective tape; and,

receiving means responsive to the time interval between said photomultiplier pulses for angle measurement between said retro-reflective tape and a reference plane formed by said sweeping sub-beams, the sign of the angle dependent upon the sequence of said sub-beams crossing said retro-reflective tape.

4,443,104
FLUORIMETER SAMPLING APPARATUS

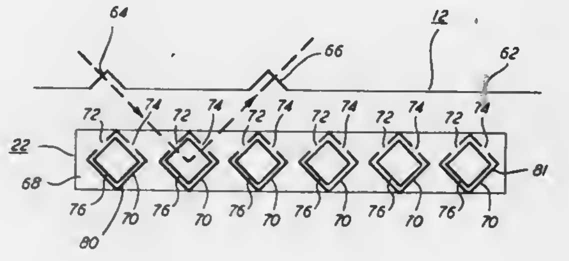
Ingo Ringhardtz, Uberlingen, Fed. Rep. of Germany, assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jan. 21, 1982, Ser. No. 341,386

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1981, 3108474

Int. Cl.^{3} G01N *1/10*

U.S. Cl. 356—246 4 Claims



1. A fluorimeter sampling apparatus comprising:

a sample housing;

a movable carrier positioned within said sample housing, said carrier being adapted to move linearly along guiding means therein;

a support plate having means for retaining a cuvette holder, said support plate being releasably attached to said carrier, said cuvette holder having a plurality of generally rectangularly-shaped cuvette receptacles extending therefrom, said receptacles being arranged diagonally with respect to the direction of linear movement of said carrier, each said receptacle having an entrance aperture adapted to accept and pass therethrough excitation radiation and an exit aperture adapted to pass fluorescence radiation therethrough, said entrance and exit apertures being positioned on adjacent sides of each said receptacle.

4,443,105
DEVICE USEFUL FOR FLAMELESS ATOMIC ABSORPTION SPECTROSCOPY

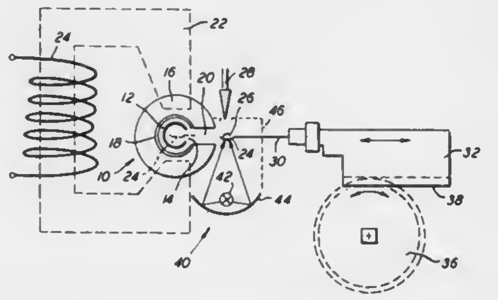
Bernhard Huber, Uberlingen; Rolf Tamm, Salem, and Toma Tomoff, Uberlingen, all of Fed. Rep. of Germany, assignors to Bodenseewerk Perkin-Elmer & Co., GmbH, Uberlingen, Fed. Rep. of Germany

Filed Oct. 9, 1981, Ser. No. 310,190

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1980, 3044627

Int. Cl.^{3} G01N *21/74*

U.S. Cl. 356—312 11 Claims



1. Apparatus useful for flameless atomic absorption spectroscopy; said apparatus comprising:

a sample carrier adapted to be inserted into a graphite tube and being configured to accept non-gaseous sample material;

means, external to said graphite tube, for radiantly heating said sample carrier;

an elongated sample carrier holder, said sample carrier being supported by one end of said sample carrier holder, said holder being a temperature sensor;

a carriage, said carriage having the other end of said holder secured thereto, said carriage being guided along a straight path longitudinally of said holder and being moveable between a first position, whereat said sample carrier is in the area of said heating means, and a second position, whereat said holder with said sample carrier extends into the interior of said graphite tube through said aperture; and

a drive motor coupled to said carriage, said carriage, with said holder and said sample carrier, being arranged to be controllably moved by said motor toward an introduction aperture of said graphite tube.

4,443,106
MEASURING DEVICE FOR MEASURING THE AMOUNT OF CHANGE IN THICKNESS OF THE PAINT LAYER

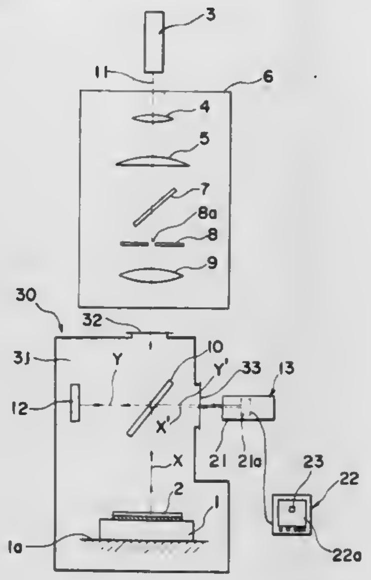
Zenichi Yasuda, Nishinomiya; Misao Morita, Kobe, and Takashi Nakajima, Nishinomiya, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Dec. 1, 1981, Ser. No. 326,675

Claims priority, application Japan, Aug. 22, 1981, 56-131921

Int. Cl.^{3} G01B *9/02*

U.S. Cl. 356—357 11 Claims



1. A measuring device for measuring a change in time-dependent thickness of a paint layer, comprising:

a light source for emitting a coherent light;

a means for collimating the light emitted from said light source along an optical axis and removing noise components thereof;

a first chamber having a support means therein for the support of a test piece painted on one surface thereof with a paint layer to be tested;

a control means for controlling the atmosphere in said first chamber to cause the paint layer to dry under a predetermined condition;

a reflective mirror supported in said first chamber; a semitransparent mirror disposed in said first chamber and inclined to the optical axis of said collimating means for splitting the collimated light into first and second light beams, the first light beam being directed perpendicularly to the paint layer and the second light beam being directed perpendicularly to said reflective mirror;

a receiver for receiving the first and second light beams after having been reflected from the paint layer and said reflective mirror, respectively, and then having been joined together by said semitransparent mirror, said receiver upon receipt of the first and second light beams forming thereon interference fringes resulting from the interference between the first and second light beams; and

a means for measuring the amount of movement of the interference fringes;

whereby change in thickness of the paint layer with time is indicated by the amount of movement of the interference fringes measured.

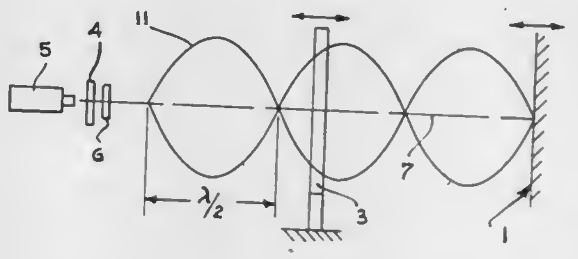
4,443,107
OPTICAL DISPLACEMENT SENSOR

David H. Alexander, 19406 Hinsdale Ave., Torrance, Calif. 90503; Kachu Ishizuka, 29237 Whitley Collins Dr., Rancho Palos Verdes, Calif. 90274, and Robert N. Sato, 50 Montemalaga Plz., Palos Verdes Estates, Calif. 90274

Filed Aug. 3, 1981, Ser. No. 289,255

Int. Cl.^{3} G01B *11/14;* G01C *3/08*

U.S. Cl. 356—373 6 Claims



1. A device for accurately measuring relative linear displacement between two elements comprising:

a standing wave light pattern produced by the impingement of a single monochromatic light beam on a reflector,

a transparent photosensitive detector provided in the standing wave pattern movable relative to said reflector and capable of detecting the crests and nodes of said standing wave intercepted by said detector, said transparent photosensitive detector comprising two parallel photosensitive detectors each normal to the longitudinal axis of said standing wave and separated from each other by a finite distance along said light beam,

counting means capable of determining the number of crests and/or nodes of said standing wave pattern passing through said photosensitive detector, and

direction sensing means determining the direction and relative movement between said photosensitive detector and said reflector, said direction sensing means comprising circuit means for comparing the electrical current output of each of said parallel photosensitive detectors.

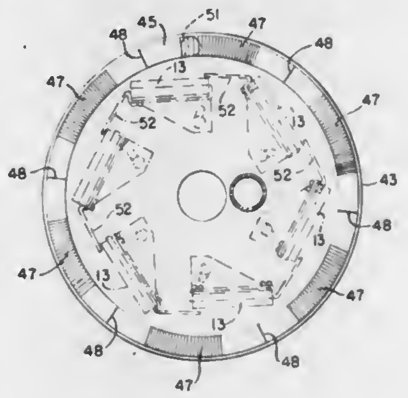
4,443,108
OPTICAL ANALYZING INSTRUMENT WITH EQUAL WAVELENGTH INCREMENT INDEXING

Donald R. Webster, Laurel, Md., assignor to Pacific Scientific Instruments Company, Anaheim, Calif.

Filed Mar. 30, 1981, Ser. No. 248,729

Int. Cl.^{3} G01J *3/50*

U.S. Cl. 356—418 8 Claims



1. An optical analyzing instrument comprising means to

generate a wide wavelength band beam of light, rotatable means including a filter and operating to rotate said filter through said beam of light continuously changing the angle of incidence of said filter to said beam of light as it rotates through said beam, said filter transmitting a narrow wavelength band of light and scanning the center frequency of the transmitted narrow wavelength band of light as the filter changes the angle of incidence with respect to said beam of light, means defining an annular track having linearly distributed marks in said track, transducer means having a sensing position to sense said marks passing through said sensing position and produce a pulse as each mark passes through said sensing position, means to impart relative rotation between said track and said transducer means in synchronism with the rotation of said filter to cause said marks to pass through said sensing position, said marks being unequally spaced in said track with the unequal spacing selected so that said transducer means generates one pulse for each equal increment of change of the center wavelength of the narrow wavelength band transmitted through said filter as said filter rotates through said beam of light.

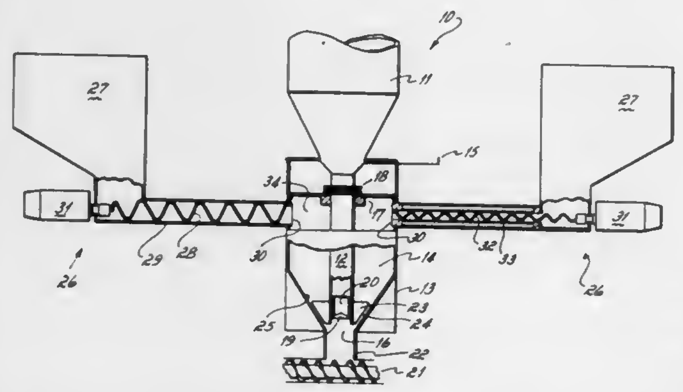
4,443,109
METHOD AND APPARATUS FOR CONTINUOUS FEEDING, MIXING AND BLENDING

Robert H. Watts, North Bend, Ohio, assignor to Vol-Pro Systems, Inc., Centerville, Ohio

Filed Sep. 21, 1981, Ser. No. 303,874

Int. Cl.^{3} B01F *15/04*

U.S. Cl. 366—134 **45 Claims**



1. An apparatus for mixing and blending solid particulate materials, comprising:

a mixing and blending chamber, said chamber having a downwardly sloping bottom wall,
a port at the lower end of said bottom wall,
a vertical flow tube having an upper and lower end, said tube having a vertical axis,
support means for rotatably supporting said tube for rotation about said axis within said chamber,
agitating means mounted on said tube for agitating materials in said chamber,
drive means to rotate said tube about said vertical axis,
an opening in said tube at its lower end,
deflecting means adjacent the lower end of said tube for radially deflecting material toward said agitating means,
a first source of primary feed material communicating with said tube to admit primary material to said chamber for mixing,
a second source of secondary feed material communicating with said chamber at a point above said opening in said tube,
means for metering said secondary material into said chamber,
discharge means for receiving and feeding said first and secondary feed materials away from said chamber, said discharge means being below said port,
whereby said primary material flowing through said rotating tube and said secondary material being metered into said chamber are mixed together within said chamber prior to flowing through said port to said discharge means.

4,443,110
METHOD FOR MIXING AND MASTICATING HIGHLY VISCOUS MATERIALS

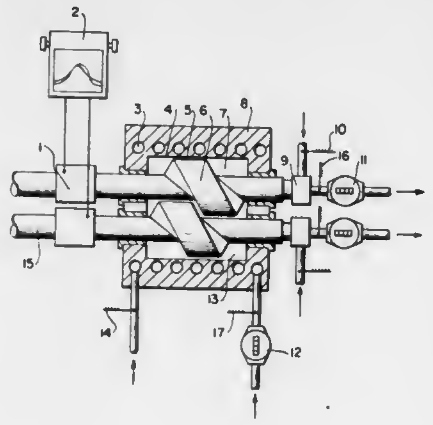
Johan L. den Otter, Leidschendam, Netherlands, assignor to Nederlandse Centrale Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek, The Hague, Netherlands

Filed Jan. 18, 1982, Ser. No. 340,326

Claims priority, application Netherlands, Jan. 20, 1981, 8100247

Int. Cl.^{3} B01F *15/06;* **B29B** *1/06;* **B28C** *1/16*

U.S. Cl. 366—97 **3 Claims**



1. A method of mixing highly viscous materials in a mixer consisting of a mixing chamber with at least one rotor rotably mounted within the chamber and driven by a drive, the container wall being provided with cooling means through which a coolant flows, comprising measuring the torque of the rotor, counting the number of revolutions of the rotor, measuring the temperature of the materials being mixed, measuring the temperature of the wall of the chamber, measuring the amount of coolant flow through the cooling means, measuring the temperature rise of the coolant, determining during a period of time with a constant velocity of rotation of the at least one rotor, at least two of the three quantities: supplied energy (SE), utilized energy (UE), and slip energy (SlE), the SE being calculated from the product of the measured torque exercised on the at least one rotor and the counted number of revolutions of the rotor, the UE being the sum of the energy accumulated in the viscous material calculated from the product of the measured temperature rise, the weight and specific heat of this material, the energy removed from the viscous material through the wall calculated from the product of the coefficient of heat transfer from the material to the wall, the measured temperature differences between the material and the wall, and the wall area in contact with the material, and the SlE being the difference between the energy removed from the wall calculated from the product of the amount of coolant used for cooling the wall and the average rise of the temperature of this coolant during cooling, and the energy removed from the viscous material through the wall, calculating the value of the ratio of UE/SE possibly by using the formula SE=UE+SlE, repeating the above procedure for different values of the velocity of rotation, determining the value of the velocity of rotation for which the ratio E/SE has a maximum value and maintaining that velocity at that value.

4,443,111
INSTALLATION FOR WASHING VEGETABLES, FRUITS OR SIMILAR PRODUCTS

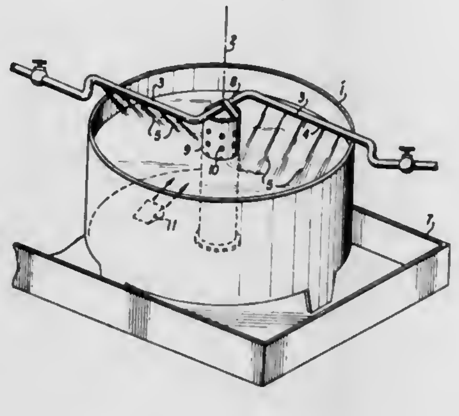
André Minaire, 44, rue de Margnolles, 69300 Caluire, France

Filed Jun. 14, 1982, Ser. No. 388,268

Claims priority, application France, Jun. 23, 1981, 81 12567

Int. Cl.^{3} B01F *15/02*

U.S. Cl. 366—165 **9 Claims**



1. Apparatus for washing vegetables, fruits or similar products, comprising:

a cylindrical tank,
a source of supply for filling the tank with wash water and driving the resultant mass of water in rotation around the vertical axis of the tank,
discharge orifices in the tank for maintaining the amount of water constant and driving impurities towards the outside,
wherein the source of supply comprises at least one ramp arranged above the level of the water contained in the tank and provided with holes along the ramp from the periphery to the center of said tank, with said holes being oppositely directed on each side of the center of said tank, said holes being oriented diagonally downward so that jets emerging therefrom strike the surface of water in the tank and drive substantially all of the water in a movement of rotation which assures washing of the products contained within the tank, thus driving impurities towards the outside by the discharge of water through orifices provided for this purpose.

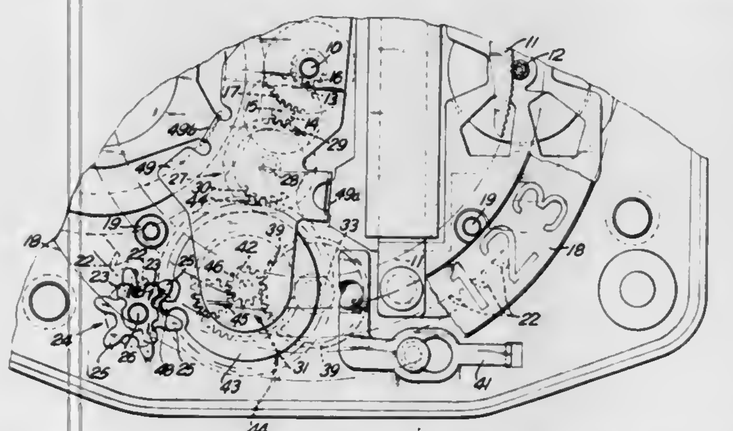
4,443,112
PLANETARY GEAR FOR DATE MECHANISM IN A WRISTWATCH

Gerhard Stotz, Pforzheim; Adolf Sedlak, Wurmberg, both of Fed. Rep. of Germany, and Jean-Pierre Skwarek, Besancon, France, assignors to Timex Corporation, Waterbury, Conn.

Filed Sep. 29, 1982, Ser. No. 427,055

Int. Cl.^{3} G04B *19/24*

U.S. Cl. 368—37 **10 Claims**



1. An improved date setting mechanism in a watch of the type having a normal timekeeping gear train for driving watch hands from a motor, and also having a supplementary gear train for periodically advancing a date ring, wherein said improvement comprises:

a planetary gear assembly making up a portion of the supplementary gear train, having a first gear, a coaxial second gear, a planet carrier coaxial with said first and second gears, said carrier having teeth driven as part of said supplementary gear train, and at least one planet gear rotatably mounted in the carrier member and meshing with the first and second gears, the second gear adapted to periodically advance means driving the date ring, and
a manually rotatable date button accessible from the outside of the watch and coupled to drive the first gear, whereby the first gear may drive the second gear through the planet gear to advance or retard the date ring without disturbing the normal date advancing function.

4,443,113
ELECTROMECHANICAL TRIGGER FOR ALARM CLOCKS AND OTHER TIMER-OPERATED SIGNAL EMITTERS

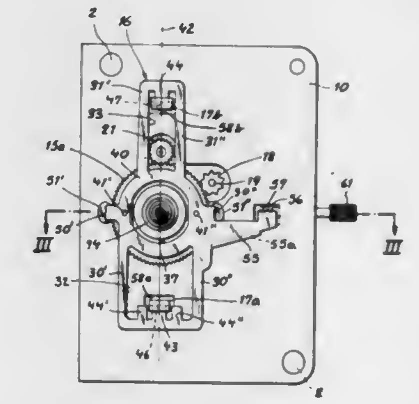
Wolfgang Fehrenbacher, St. Georgen; Hans Heinzelmann, Schramberg, and Erich Scheer, St. Georgen, all of Fed. Rep. of Germany, assignors to Kieninger & Obergfell, St. Georgen, Fed. Rep. of Germany

Filed Apr. 27, 1981, Ser. No. 257,854

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1980, 3015982

Int. Cl.^{3} G04B *23/02*

U.S. Cl. 368—72 **16 Claims**



5. In a timer-operated signal emitter comprising a clockwork, a presettable control member coaxially juxtaposed with a coacting member of said clockwork, said members being provided with mating formations alignable with each other for interengagement in a predetermined relative angular position thereof, normally inactive signal-generating means, a trigger mechanism for activating said signal-generating means, said trigger mechanism including biasing means on a mounting plate perpendicular to the axis of said members bearing upon said control member for axially shifting same toward said coacting member in said predetermined position and switch means responsive to such an axial shift for closing an operating circuit of said signal-generating means, and blocking means for terminating or inhibiting closure of said operating circuit,

the improvement wherein said biasing means comprises a leaf spring having an intermediate part between two extremities that are pivoted on said mounting plate with limited swingability about a centerline parallel to said mounting plate and perpendicular to said axis, said leaf spring having a first and a second tongue symmetrically disposed on opposite sides of said centerline, said switch means including a first contact element on said first tongue and a second contact element on said second tongue respectively confronting a third and a fourth contact element on said mounting plate for simultaneous engagement therewith upon a substantially axial motion of the intermediate part of said leaf spring toward said mounting plate, said blocking means comprising an interrupter interposable in the path of a lateral extension of said leaf spring adjacent said first tongue for causing said leaf spring to rock about said centerline upon mutual alignment of said formations and keeping said first and third contact elements apart.

4,443,114
ELECTRONIC TIMEPIECE WITH MELODY ALARM FACULTIES

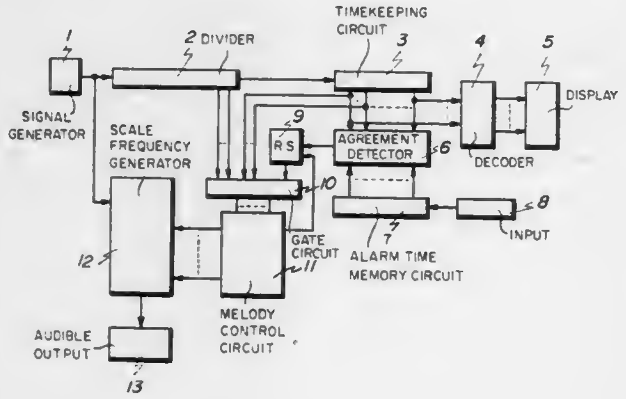
Kiyoshi Kumata, Tsuzuki, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 174,511, Aug. 1, 1980, abandoned, which is a continuation of Ser. No. 2,218, Jan. 9, 1979, abandoned. This application Aug. 9, 1982, Ser. No. 406,577

Claims priority, application Japan, Jan. 17, 1978, 53-4076; Mar. 2, 1978, 53-24267

Int. Cl.³ G04B *23/02, 21/00*

U.S. Cl. 368—73 **11 Claims**



1. An electronic timepiece comprising:
alarm time sensing means for generating an alarm signal at a preselected time of day;
tune storage means for storing information indicative of a desired series of musical notes, said tune storage means providing a series of musical note signals in response to the generation of an alarm signal by said alarm time sensing means;
a frequency generator for generating a high frequency time standard signal;
a frequency divider connected to said frequency generator, said frequency divider including a fixed division rate divider including N stages, each of said stages having an output, said divider having a reset terminal;
means for combining the outputs of said divider in a selected manner to produce a signal having a desired frequency representative of a desired musical note;
means for selecting the manner in which the outputs of said divider are to be combined in order to select one of a plurality of desired frequencies, each corresponding to each desired musical note and its associated musical note signal produced by said tune storage means, said means for selecting including,
an M row×N column switch array, the N columns of said array being driven by said divider stage outputs, the M rows of said array being connected through a note enabling circuit to the reset terminal of said divider, the switches of said array being selectively enabled to produce a count at said reset terminal corresponding to the division ratio necessary to produce said desired frequency corresponding to that row, and
note selection means responsive to said musical note signals and controlling said note enabling circuit for enabling at least one row of said array to thereby select said desired frequency; and
an audio generator for generating an audible musical note upon application of each desired frequency from said divider, said audio generator producing a musical tune by the successive generation of said desired series of musical notes.

4,443,115
ELECTRONIC TIMEPIECE WITH ELECTROCHROMIC DISPLAY

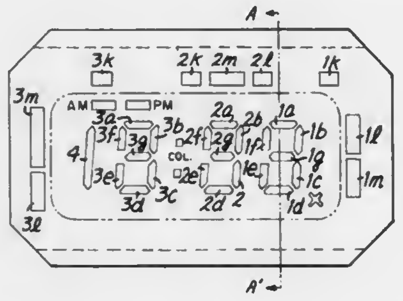
Noboru Kaneko, and Junichi Tabata, both of Tokyo, Japan, assignors to Seiko Instruments & Electronics Ltd., Tokyo, Japan

Filed Jan. 2, 1981, Ser. No. 221,979

Claims priority, application Japan, Jan. 14, 1980, 55-2721

Int. Cl.³ G04C *19/00;* **G09F** *9/00;* **G02F** *1/17*

U.S. Cl. 368—82 **16 Claims**



1. In an electronic timepiece operable in at least a normal display mode for keeping and displaying time information: an electrochromic display device comprising display segments having colored and bleached states for displaying time information, and dummy segments having colored and bleached states and which are not used for the display of time information but to which, when the device is driven, electric charges are transferred, the areas of the dummy segments being so chosen in relation to those of the display elements that, when the total colored area of the display segments is changed to change the time information displayed, the total area of segments including both the dummy segments and the display segments remains substantially constant and the coloration density of the display remains substantially unchanged; circuit means for periodically setting an electric charge transfer time during which electric charge transfer occurs between selected segments and a memory time during which the segments retain their colored or bleached states; means for selectively applying negative voltage to segments which are selected to change from the bleached state at a time t_{n-1} to the colored state at another time t_n; and means for selectively applying a positive voltage to segments which are selected to change from the colored state at a time t_{n-1} to the bleached state at a time t_n, no voltage being applied to segments which are not required to change from the colored state to the bleached state during the electric charge transfer time.

4,443,116
ELECTRONIC TIMEPIECE

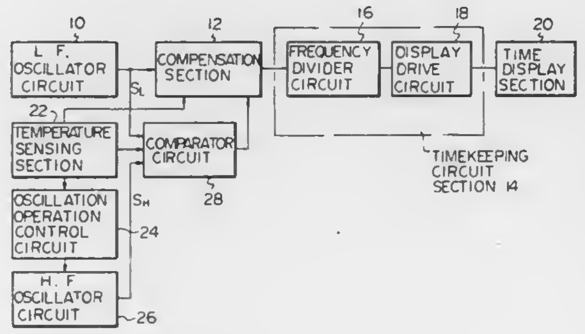
Makoto Yoshida; Shinichi Watanabe, and Fuminori Suzuki, all of Tanashi, Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed Jan. 6, 1982, Ser. No. 337,222

Claims priority, application Japan, Jan. 9, 1981, 56-1859; Jan. 23, 1981, 56-9179; Nov. 13, 1981, 56-181866

Int. Cl.³ G04B *17/20*

U.S. Cl. 368—202 **20 Claims**



1. An electronic timepiece comprising:
a low frequency oscillator circuit controlled by a first quartz crystal vibrator, for producing a time base signal;
frequency divider circuit means for performing frequency division of said timebase signal to produce a unit time signal;
time display means responsive to said unit time signal for displaying time information;
a high frequency oscillator circuit controlled by a second quartz crystal vibrator for producing a high frequency signal;
temperature sensing means for producing a temperature data signal indicative of a current operating temperature of said electronic timepiece, said temperature sensing means including means for producing a specific temperature condition signal for indicating that said operating temperature is within a predetermined specific temperature range;
comparator means for comparing the frequencies of said high frequency signal and said timebase signal, to detect an error in the frequency of said unit time signal by measuring deviations of said timebase signal from a predetermined standard value thereof, said standard value having a predetermined relationship to the frequency of said high frequency signal, and for producing output signals indicative of said timebase signal frequency deviation, said comparator means being controlled by said specific temperature condition signal from said temperature sensing means for performing said frequency comparison only when said operating temperature is within said specific temperature range;
temperature compensation means responsive to said temperature data signals from said temperature sensing means for compensating said unit time signal frequency for a deviation therein resulting from the effects of temperature variation upon said first quartz crystal vibrator; and
aging compensation means responsive to said output signals from said comparator means for compensating said unit time signal frequency for variations therein resulting from aging of said first quartz crystal vibrator.

4,443,117
MEASURING APPARATUS, METHOD OF MANUFACTURE THEREOF, AND METHOD OF WRITING DATA INTO SAME

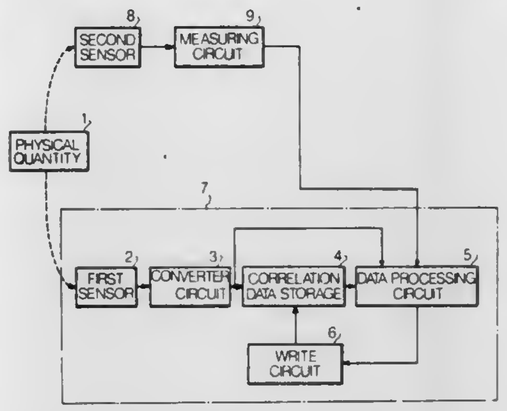
Yutaka Muramoto; Susumu Kobayashi, and Hideo Ishizaka, all of Fujinomiya, Japan, assignors to Terumo Corporation, Tokyo, Japan

Filed Jun. 16, 1981, Ser. No. 302,824

Claims priority, application Japan, Sep. 26, 1980, 55-134103; Jan. 12, 1981, 56-2784

Int. Cl.³ G01K *7/16*

U.S. Cl. 374—1 **23 Claims**



1. A measuring apparatus which comprises:
data output means for delivering, to the outside of the apparatus, an output of a sensing system in order to generate correlation data between the output of the sensing system and a sensor output representative of a standard physical quantity;
substantially non-volatile storage means;
data input means for retaining the generated correlation data, wherein address-and-data sets generated on the basis of two different outputs of the sensing system are stored in said substantially non-volatile storage means; and
a supporting base for unitarily supporting the sensing system, said data output means, said storage means and said data input means;
the correlation data retained in said substantially non-volatile storage means being read out of said storage means at the time of measurement, wherein the output of the sensing system serves to address said storage means to obtain an output which corresponds to a physical quantity sensed by the sensing system.

4,443,118
METHOD OF DETERMINING THE CARBON CONTENT OF STEEL MELTS BY THERMAL ANALYSIS

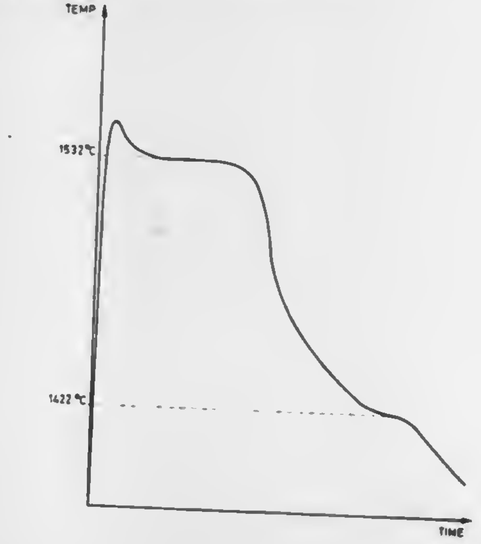
Omer P. I. Cure, Diepenbeek, Belgium, assignor to Electro-Nite Co., Philadelphia, Pa.

Filed Apr. 9, 1981, Ser. No. 252,694

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1980, 3013621

Int. Cl.³ G01N *25/02*

U.S. Cl. 374—26 **4 Claims**



1. A method of determining the percentage of carbon in a sample of molten steel by thermal analysis comprising the steps of:
(a) allowing a sample of molten steel to cool from the liquid phase to the austenite phase,
(b) determining the temperature of the sample at the liquidus phase change,
(c) determining the temperature of the sample at the austenite phase transformation,
(d) comparing said temperatures and ascertaining ΔT,
(e) using ΔT to ascertain the percent carbon in said sample.

4,443,119
ROLLER BEARING HOT BOX SENSOR

Hugh H. Snider, Jr., Silver Spring, and Richard A. Marion, Laurel, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

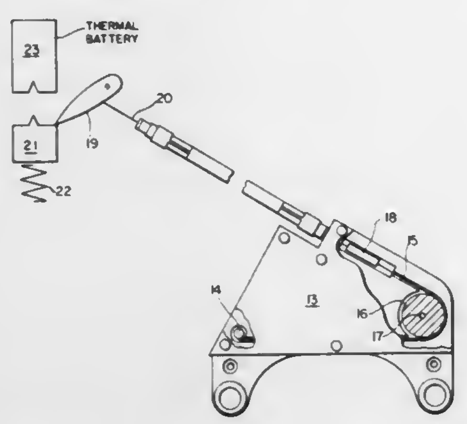
Filed May 5, 1982, Ser. No. 375,141

Int. Cl.³ G01K *13/08*

U.S. Cl. 374—153 **10 Claims**

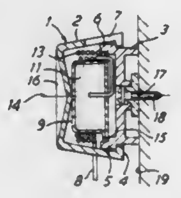
1. A roller bearing, hot box temperature sensor designed to be mounted in a train with wheels, where the sensor functions to control and stop the train in response to temperature changes sensed in the wheel bearing assembly comprising a housing for mounting a temperature sensor in close proximity to a train wheel bearing assembly with an opening within said housing combined with metallic means capable of contracting in response to rapid increases in temperature and where one end of the metallic sensing means is permanently fixed on one

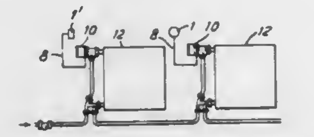
end to the wheel bearing assembly and the opposite end of the metallic means is attached to a mechanical control means that is actuated by contraction of the said metallic means and where the contraction of the metallic means functions, through the mechanical control means to stop the train wheels when a certain temperature is reached.



4,443,120
REMOTE CONTROL TEMPERATURE SENSOR WITH EXPANSIBLE MATERIAL

Niels P. G. Graversen, Augustenborg, and Svend P. Pedersen, Nordborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark
Filed Jan. 4, 1982, Ser. No. 336,963
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1981, 3102311
Int. Cl.^{3} G01K *5/10*
U.S. Cl. 374—201 **1 Claim**

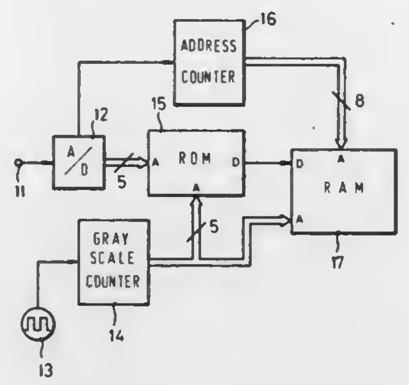




1. A remote control temperature sensor for operating a temperature regulating valve, comprising, a housing having an outlet aperture, a cylindrically shaped capsule mounted in said housing containing a temperature responsive expansible material, a flexible capillary tubing, of length frequently in excess of the distance between said valve and said capsule, communicating with said capsule; said capsule having therearound at least some of the excess length of said tubing wound into a coil about said capsule when it is used to sense temperature in the vicinity of said capsule at said distance remote from said valve, said tubing being let out of said sensor housing through said outlet aperture, said capsule being mounted in the sensor housing about an axis coincident with the axis of said coil, said housing including a detachable cap having an outlet slot for said tubing.

4,443,121
THERMAL PRINTING APPARATUS WITH REFERENCE GRAY SCALE COMPARATOR

Kiyoshi Arai, Higashikurume, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Mar. 1, 1983, Ser. No. 470,964
Claims priority, application Japan, Mar. 2, 1982, 57-31709
Int. Cl.^{3} B41J *3/02;* **G01D** *15/10;* **H04N** *7/12*
U.S. Cl. 400—120 **16 Claims**

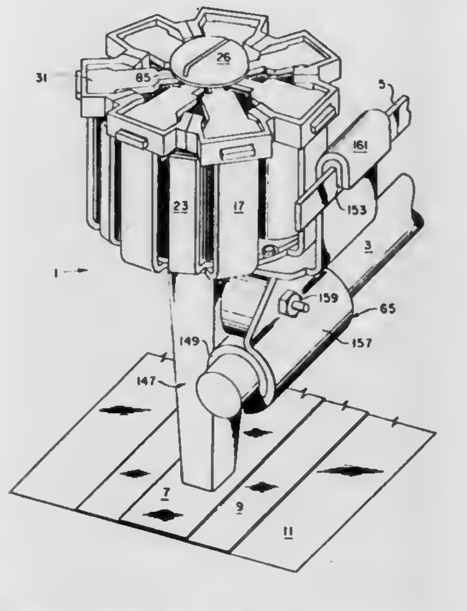


1. An apparatus for printing a gray scale image using a thermal printing head driven by digital data representing a plurality of image elements of the image to be printed, the apparatus comprising:
- reference generator means for generating digital reference gray scale level signals;
- first memory means containing known data stored therein for producing a corresponding output when addressed by said reference gray scale level signals and said digital data;
- second memory means for storing said output from said first memory means at addresses determined by signals produced by an address counter and by said reference gray scale level signals, said stored output representing pulse width modulated digital data; and
- output means connected to an output of said second memory means for supplying drive pulses to heat elements of said thermal printing head corresponding to said pulse width modulated digital data stored in said second memory means.

4,443,122
DOT MATRIX PRINT HEAD

James E. Blomquist, and Robert H. Wilczewski, both of 203 E. Main, Riverton, Wyo. 82501
Continuation-in-part of Ser. No. 256,032, Apr. 21, 1981, which is a division of Ser. No. 38,724, May 14, 1979, Pat. No. 4,279,518. This application Sep. 14, 1981, Ser. No. 301,641
Int. Cl.^{3} B41J *3/12*
U.S. Cl. 400—124 **20 Claims**

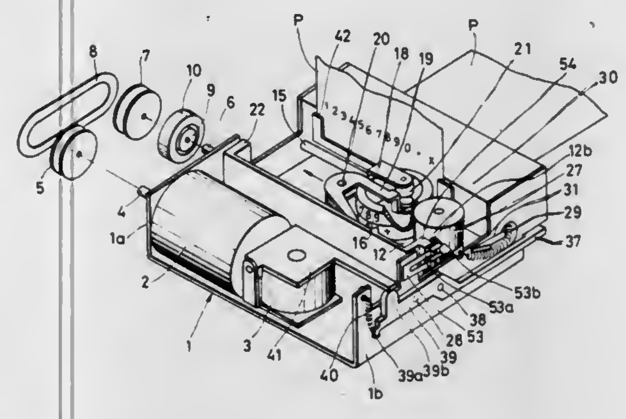
1. In a dot matrix print head having an axis, the improvement comprising:
- a plurality of individual coil assemblies, each coil assembly including a bobbin member, coil member, and clapper member, said bobbin member having first, second, and third portions, said coil member being positioned about said first portion and said bobbin member having means for retaining said coil member about said first portion, said second and third bobbin member portions being attached to and extending outwardly of said first portion, said clapper member having a central axis and first and second end portions, said second and third bobbin member portions having means for mounting said clapper member therebetween for movement relative to said bobbin member between at least first and second positions with said first end portion mounted adjacent said second bobbin member portion and said second end portion mounted adjacent said third bobbin member portion, said clapper member mounting means of said second and third bobbin member portions including means for maintaining the central axis of said clapper member in a predetermined plane relative to said bobbin member as said clapper member moves between said first and second positions,
- said clapper member mounting means of each bobbin member including at least one generally L-shaped member attached to and integral with said bobbin member and having a first leg thereof extending from said bobbin member generally parallel to the axis of said print head and a second leg thereof extending generally perpendicular to said axis and radially outwardly thereof from said first leg, said first and second legs forming an included angle therebetween, and,



- said dot matrix print head further including at least a first, endless O-ring selectively positionable at the same time within the included angle of each of said L-shaped member wherein said first O-ring in the assembled dot matrix print head forms a common member to each of said coil assemblies, said common, first O-ring being positioned within the included angle of each of said L-shaped members and said first O-ring further extending between adjacent coil assemblies of the dot matrix print head and about the axis thereof.

4,443,123
SMALL SERIAL PRINTER

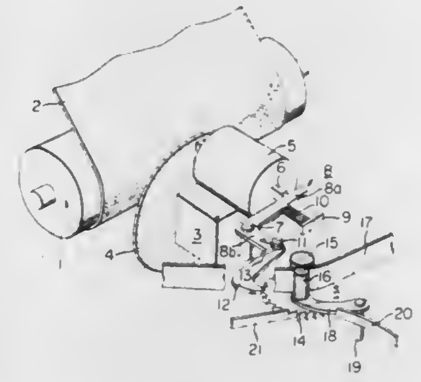
Keikichi Ono, Chichibu, and Hirofumi Hirano, Saitama, both of Japan, assignors to Canon Denshi Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 24, 1982, Ser. No. 391,863
Claims priority, application Japan, Jul. 7, 1981, 56-104966
Int. Cl.^{3} B41J *1/20, 1/34*
U.S. Cl. 400—145.2 **3 Claims**



1. A small serial printer comprising:
- a type drum adapted to rotate about an axis perpendicular to the direction of a line of print on a printing paper, said type drum including a hollow cylindrical base member and at least two elastic type belts disposed around said base member at different levels on the circumference of said base member, each type belt having a plurality of types arranged on the surface of the type belt;
- a carriage for carrying said type drum in the direction of the line of print; and
- a hammer rotatably supported about an axis having a first end which leads into the interior of said type drum and is disposed opposite to the backside of the types of said type belts, and having a second end outside of said type drum and disposed to contact a cam member to rotate said hammer during movement of said carriage, wherein the first end of the hammer strikes the backside of one type of one type belt so that the type is pushed out against the printing paper to effect printing,
- wherein said carriage has a driving gear which engages a drum gear and said printer has a clutch gear provided on a frame side of said printer to mesh with said driving gear when said carriage comes to a determined position, said clutch gear being interlocked with a paper feed worm gear through a spring clutch, so that the printing paper is fed by rotating a paper feed roller through a paper feed gear in mesh with said worm gear and said spring clutch is controlled through a lever which engages said carriage.

4,443,124
PRINTER WITH ELECTROMAGNETICALLY DRIVEN HAMMER

Toshiaki Ozawa, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 330,721, Dec. 14, 1981, abandoned, which is a continuation of Ser. No. 104,844, Dec. 28, 1979, abandoned. This application Jul. 15, 1983, Ser. No. 513,784
Claims priority, application Japan, Dec. 23, 1978, 53-161467
Int. Cl.^{3} B41J *9/38, 33/26, 33/32*
U.S. Cl. 400—185 **8 Claims**



1. A printer, comprising:
- a lever arrangement for feeding an ink ribbon;
- means connected to said lever arrangement for driving said lever arrangement to feed the ink ribbon, said means including a magnet, a coil associated with said magnet and adapted to receive electric voltage from a voltage source, and a reciprocating member operable by said magnet and said coil when said coil receives voltage, wherein one end of said member operates as a hammer to hit a type to effect a print on a recording medium with the ink ribbon when said member is moved in a print direction, and the other end thereof effects a driving operation of the ink ribbon by said lever arrangement when said member is moved in the opposite direction; and
- a spring connected to said lever arrangement for retaining said member in a predetermined position when electric voltage is not applied to said coil.

4,443,125

PRINTER

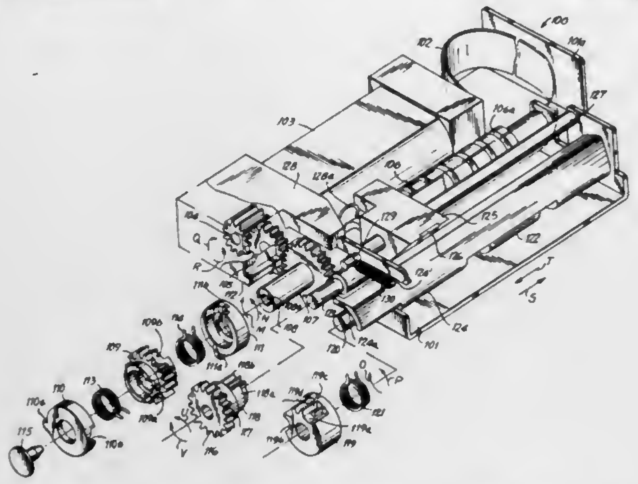
Seiichi Hirano, Shiojiri, Japan, assignor to Epson Corporation, Nagano and Kabushiki Kaisha Suwa Seikosha, Tokyo, both of, Japan

Filed Dec. 24, 1981, Ser. No. 334,398

Claims priority, application Japan, Dec. 27, 1980, 55-188441; Dec. 30, 1980, 55-188170; Sep. 30, 1981, 56-155206

Int. Cl.³ B41J *3/20, 19/14, 9/20*

U.S. Cl. 400—328 **6 Claims**



1. A thermal printer having a printing head which serially prints characters across lines on a thermosensitive recording medium comprising a frame, a driving shaft rotatably supported on said frame and drive means for selectively rotating said driving shaft by any amount in first and second directions, said driving shaft being operatively coupled to said printing head to laterally reciprocate said printing head across said thermosensitive medium as said drive means rotates said driving shaft, paper feeding means supported on said frame for selectively advancing said thermosensitive medium past said printing head, a platen supported on said frame and platen release means for selectively pressing said platen to said printing head, said thermosensitive medium extending intermediate said platen and said printing head, clutch means driven by said driving shaft and operatively coupled to said paper feeding means and said platen releasing means for selectively operating said paper feeding means and said platen releasing means, said clutch means being selectively rotated in said first and second directions by a predetermined amount by said driving shaft to selectively operate said paper feeding means and said platen release means, said clutch means including a toothed wheel rotatably disposed on said driving shaft for rotation through a predetermined angle in either said first and second directions as said driving shaft rotates in one of said first and second directions, respectively, coupling means for selectively coupling said toothed wheel to said driving shaft for rotation through said predetermined angle in either said first and second directions as said driving shaft is rotated in said first and second directions, respectively, and a first ratchet rotatably disposed on said driving shaft, said coupling means including a first spring clutch having two ends disposed on said driving shaft, a first end of said spring clutch being coupled to said toothed wheel and the second end of said spring clutch being coupled to said first ratchet, said first spring clutch rotating said toothed wheel and said first ratchet through said predetermined angle in said first direction when said driving shaft is rotated in said first direction, said toothed wheel and said first ratchet not being substantially rotated in said second direction by said first spring clutch as said driving shaft is rotated in said direction, said first ratchet including a first pawl, said frame having a stopping portion which said first pawl contacts after said first ratchet moves through said predetermined angle in said first direction to stop the rotation of said first ratchet, the stopping of rotation of said first ratchet acting through said spring clutch to stop the rotation of said toothed wheel, said clutch means further including a second ratchet rotatably disposed on said driving shaft, said coupling means further including a second spring clutch having two ends disposed on said driving shaft, a first end of said second spring clutch being coupled to said toothed wheel and the second end of said second spring clutch being coupled to said second ratchet, said second spring clutch rotating said toothed wheel and said second ratchet through said predetermined angle in said second direction when said driving shaft is rotated in said second direction, said toothed wheel and said second ratchet not being substantially rotated in said first direction by said second spring clutch as said driving shaft is rotated in said first direction, said second ratchet including a second pawl, said second pawl contacting said stopping portion on said frame after said second ratchet moves through said predetermined angle in said second direction to stop the rotation of said second ratchet, the stopping of rotation of said second ratchet acting through said second spring clutch to stop the rotation of said toothed wheel, said paper feeding means including a shaft rotatably supported on said frame, a first gear rotatably disposed on said shaft, said first gear being rotated by said toothed wheel in said first and second directions, and a third spring clutch having two ends disposed on said shaft, a first end of said third spring clutch being coupled to said first gear, said third spring clutch causing said shaft to rotate when said first gear is rotated in one of said first and second directions, said paper feeding means further including an operation gear rotatably disposed on said frame in meshing engagement with said toothed wheel and an intermittent gear secured to said operation gear engaged with said first gear, said intermittent gear including a first locking portion, said first gear having a second locking portion which selectively engages with said first locking portion of said intermittent gear to stop the rotation of said shaft.

4,443,126

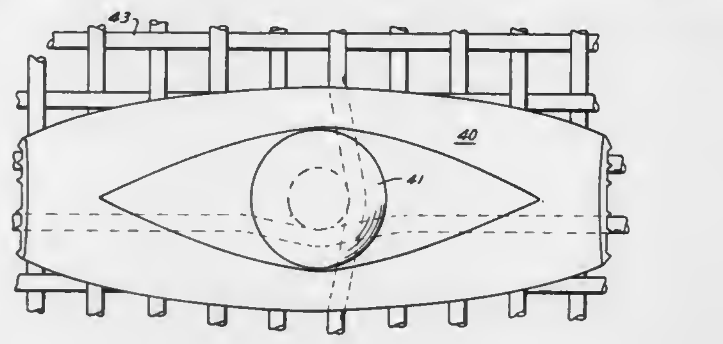
WATER SCREENING CLAMP STRIP

Donald A. Strow, Hales Corners, and Harold I. G. Henning, New Berlin, both of Wis., assignors to Envirex Inc., Waukesha, Wis.

Continuation of Ser. No. 95,850, Nov. 19, 1979, abandoned. This application Jun. 25, 1981, Ser. No. 277,304

Int. Cl.³ F16D *1/00*

U.S. Cl. 403—24 **4 Claims**



1. A clamping strip for bolting to a straight frame member of a traveling water screen and securing therebetween a margin of a heavy gauge woven wire screening to be carried by the frame, comprising an elongated element of a durable, non-corrosive relatively less rigid thermoplastic material than the screen, the strip element being generally rectangular in cross-section and having a bolt, the strip element having a screen engaging face that is arcuately formed to present longitudinal outer edges to the screen proportioned such that the strip is strained by bolt tension and deforms the outer edges of said element into the intersticies between the wires of the screening to interlock the screening with the strip and to firmly secure the screening to the frame.

4,443,127

COUPLING

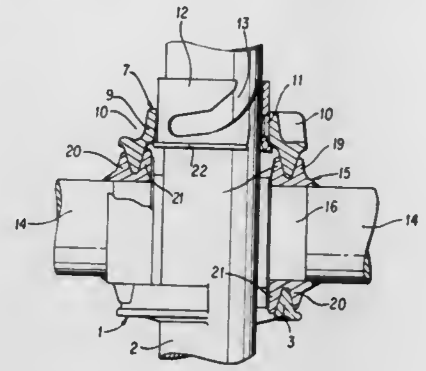
Petrus J. L. de Leeuw, B.V. Heesselstraat 5, Aarle-Rixtel, Netherlands

Filed Oct. 29, 1981, Ser. No. 316,275

Claims priority, application Netherlands, Oct. 30, 1980, 8005954

Int. Cl.³ F16D *1/00, 3/00;* **F16L** *41/00*

U.S. Cl. 403—175 **15 Claims**



1. A coupling for intercoupling at least two substantially orthogonal bars or tubes comprising:

an annular member surrounding one said bar or tube and rigidly fastened thereto, a loose, annular member positioned on said one bar or tube, and a link fastened to one end of each said other said bar or tube and positionable between said annular members, wherein the end of each said link has recesses and protruding noses and wherein the annular members are provided with protruding noses fitting in the recesses of said links and wherein the loose, annular member is provided on the radially inner side thereof with a plurality of lugs evenly distributed along the radially inner periphery of said loose annular member, and wherein said one bar or tube has guide surfaces cooperating with said lugs which clamp said loose annular member, said guide surfaces having a portion at an acute angle to a plane at right angles to said tube.

4,443,128

FIXING DEVICE HAVING TWO PIVOTALLY INTERCONNECTED CLAMPS

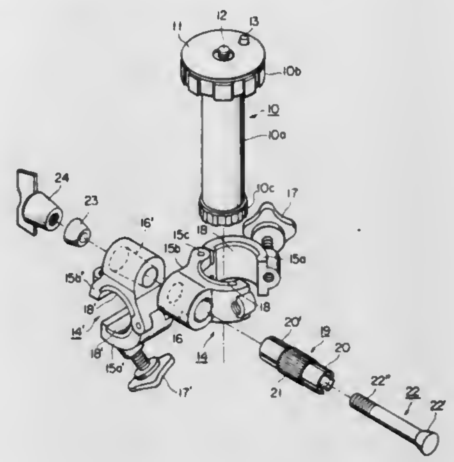
Toshiharu Yamamoto, Yokohama, and Koichiro Nakatani, Tokyo, both of Japan, assignors to Victor Company of Japan, Limited, Yokohama and Nihon Velbon Seiki Kogyo Kabushiki Kaisha, Tokyo, both of, Japan

Filed Jul. 10, 1981, Ser. No. 282,171

Claims priority, application Japan, Jul. 11, 1980, 55-96981[U]

Int. Cl.³ B25G *3/36;* **E04G** *7/00*

U.S. Cl. 403—385 **5 Claims**



1. The device of claim **5**, wherein said coupling means includes a tubular member received in said aligned throughbores and having a circumferentially segmented portion at opposite ends thereof, said tightening means including a bolt-and-nut arrangement extending through said tubular member and said tapered surface of each said pair of members engaging and spreading the segments of said segmented portions apart and pressing the segments against the inner walls of said throughbores when said bolt-and-nut arrangement is tightened.

4,443,129

METHOD AND APPARATUS FOR TAPPING A SUBMERGED PIPE

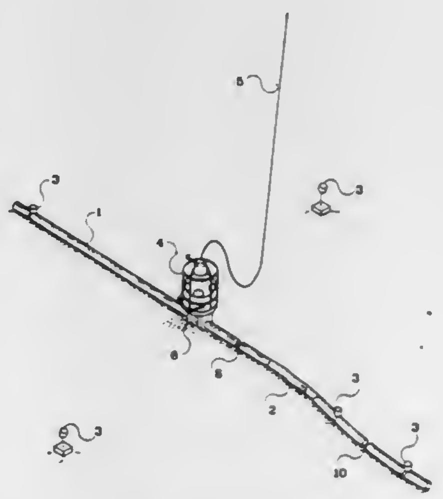
Bruno de Sivry; Jean-Louis Migliarese-Caputi, both of Paris; Guy Hervé, and Claude Colas, both of Nantes, all of France, assignors to Compagnie Francaise des Petroles, Paris, France

Filed Aug. 20, 1981, Ser. No. 294,641

Claims priority, application France, Aug. 22, 1980, 80 18328

Int. Cl.³ F16L *1/00*

U.S. Cl. 405—170 **25 Claims**



1. A process for tapping a region of a submerged pipe, comprising the steps of:

engaging a portion of a submerged pipe by at least one lifting device;

displacing said pipe portion in vertical and horizontal directions using said lifting device;

installing a working platform above a tapping region of said pipe;

attaching a modular tool-carrier to a support girder;

lowering said support girder having said modular tool-carrier attached thereto onto said working platform;

conducting an operation on said pipe portion using said modular tool-carrier, said operation being one of a plurality of operations consisting of stripping concrete from said pipe portion, stripping an anti-corrosion covering from said pipe portion, making a final cut in said pipe portion, fettling said final cut, internally brushing said pipe portion over a predetermined length, and making a longitudinal weld of said pipe portion flush;

raising said support girder to a water surface;

removing said modular tool-carrier from said support girder;

placing an additional modular tool-carrier on said support girder and again lowering said support girder having said additional modular tool-carrier onto said working platform if an additional operation is to be conducted;

repeating said raising, removing, placing, and again lowering steps until all desired operations have been completed.

4,443,130

REMOTELY OPERATED TOOL FOR PERFORMING FUNCTIONS UNDER WATER

Douglas D. Hall, Houston, Tex., assignor to Armco Inc., Middletown, Ohio

Filed Dec. 14, 1981, Ser. No. 330,671

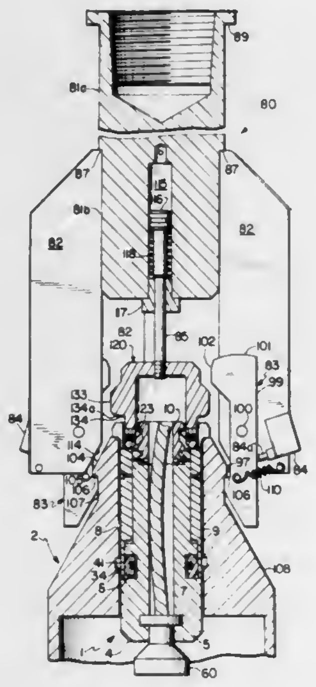
Int. Cl.³ B63C *11/52;* **E21B** *23/04*

U.S. Cl. 405—190 **18 Claims**

1. In a remotely operated handling tool for retrieving and

installing an underwater device which is releasably latched in a hollow member when installed under water, the combination of

- a tool body attachable to a handling string and having a central axis aligned with the handling string when so attached; a plurality of jaw members each carried by the body for movement between an inactive position and an active position,
  - the jaw members depending from the body and being circumferentially spaced about said central axis, the jaw members having portions constructed and arranged to operatively engage the hollow member when the jaw members are actuated to their active positions while the body is in a predetermined position relative to the hollow member;



- downwardly directed locator means carried by the body and constructed and arranged for engagement with the hollow member to position the body in said predetermined position as the tool is landed;
- remotely operable actuating means for moving the jaw members simultaneously from their inactive positions to their active positions to secure the tool body to the hollow member when the tool body is in said predetermined position; and additional means depending from the body in alignment with said central axis and by which the underwater device to be retrieved or installed can be connected to the body.

4,443,131
METHOD FOR CONSTRUCTING AN OFFSHORE PLATFORM STRUCTURE HAVING A PLURALITY OF SUPPORTING LEGS INCLINED INWARDLY TOWARDS EACH OTHER

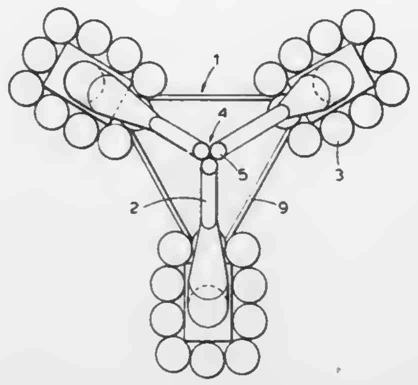
Olav Olsen, Oslo, Norway, assignor to Ingenior Thor Furuholmen A/S; A/S Hoyer-Ellefsen and Ingenior F. Selmer A/S, all of Oslo, Norway

Filed Mar. 4, 1982, Ser. No. 354,533

Int. Cl.^{3} E02B ***17/00***

U.S. Cl. 405—203 **10 Claims**

1. A method for constructing an offshore platform structure, the platform structure including a foundation on which are supporting platform legs for supporting a platform deck, the method comprising: constructing a foundation body on the bottom of a dry dock; casting supporting legs by slipforming in a vertical direction starting with their lower ends said legs being evenly spaced within the foundation body; tilting the top end portions of the supporting legs towards one another upon completion of casting; connecting the upper end portions of the supporting legs rigidly with one another; rigidly securing the lower ends of the supporting legs to the foundation body; and slipforming a vertical deck support structure on the top of the connected supporting legs, so that the dry dock can be flooded and the structure towed to an offshore location.



4,443,132
ANCHORING OF TENSION MEMBERS

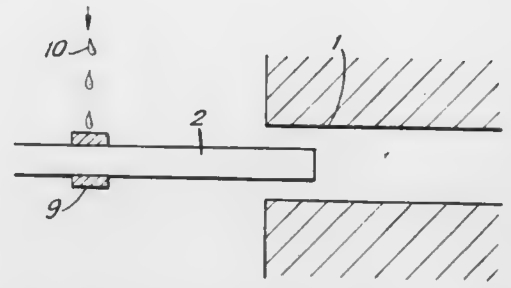
Bernhard Kotulla; Martin Weiser, both of Cologne; Jürgen Faltin, Roesrath; Lothar Preis, Cologne; Rudolf Schmidt, Burscheid, and Eberhard Born, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen and Strabag Bau-AG, Cologne, both of, Fed. Rep. of Germany

Continuation of Ser. No. 48,298, Jun. 13, 1979, abandoned. This application Jan. 18, 1982, Ser. No. 340,417

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1978, 2827327

Int. Cl.^{3} E21D ***20/02***

U.S. Cl. 405—260 **2 Claims**



1. In a process for securing an anchor which can be prestressed and retightened in a borehole in rock, wherein a tension member is glued in the borehole by a reaction resin, the improvement wherein: the tension member is pushed with a packer comprising a foamable sleeve fixed thereon into the borehole which is spaced from the end of the tension member in the borehole by a length corresponding to the length of the portion of the tension member to be glued; the sleeve is wet prior to the pushing step to foam up the packer; and a reactive resin is injected into the borehole behind the packer.

4,443,133
METHOD FOR ACHIEVING ACCEPTABLE U_3O_8 LEVELS IN A RESTORED FORMATION

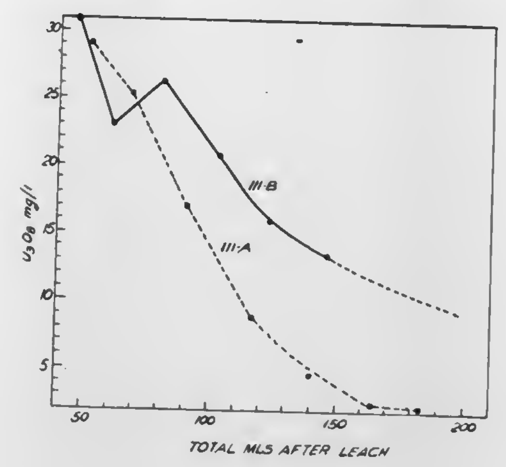
Richard B. Barrett, Chatham, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 27, 1981, Ser. No. 325,280

Int. Cl.^{3} C09K ***17/00;*** **E21B** ***43/28;*** **E21C** ***41/08***

U.S. Cl. 405—263 **9 Claims**

1. A method of restoring a formation which had uranium and other mineral values therein extracted by an aqueous alkaline lixiviant, whereby an aqueous solution remains in said formation said restoration method comprising adjusting the pH of the aqueous solution in said formation to a range of from about 5 to about 12 and introducing into said formation a source of phosphate in an amount sufficient to lower the level of soluble uranium compounds below that previously existing in the formation by the formation of insoluble hexavalent uranium phosphate compounds.



4,443,134
YIELDABLE ROOF SUPPORT FOR MINE PASSAGES AND THE LIKE

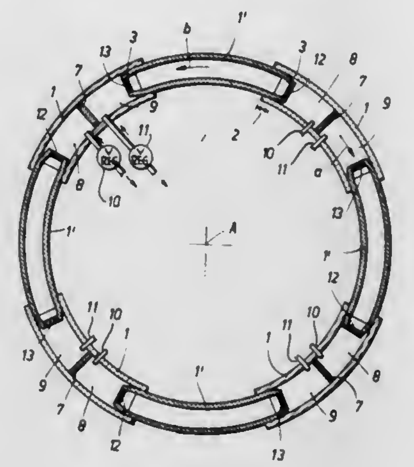
Reinhold Gross, Heiligenhaus; Dietrich Willuhn, Troisdorf, and Horst Witte, Mülheim, all of Fed. Rep. of Germany, assignors to Klöckner-Werke Aktiengesellschaft, Duisburg, Fed. Rep. of Germany

Filed Jun. 17, 1981, Ser. No. 274,714

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1980, 3026837

Int. Cl.^{3} E21D ***15/44***

U.S. Cl. 405—288 **13 Claims**



1. A yieldable roof support structure for mine passages, tunnel extensions, and the like, comprising an arch structure formed of at least one longitudinally extending outer segment and at least one longitudinally extending inner segment each of hollow construction having enclosed sides and being frictionally joined together in a fluid tight manner in telescoping end-to-end relationship to form an arched support frame, an end of said inner segment being oversized relative to an end of said outer segment and extending into same, said outer segment being of elastic material permitting distortion thereof at said joined ends without permanent deformation to thereby define a yieldable roof support, means for solely facilitating disassembly of said segments during non-use, said means comprising transversely extending separating walls in said segments defining at least one pressure chamber in which said outer segment forms a pressure cylinder and said inner segment forms a piston at said joined ends, means for applying fluid pressure to said chamber for moving said segments apart during the disassembly thereof, and said outer segment comprising a pair of longitudinally extending mating sections releasably secured together to further facilitate disassembly of said segments during non-use.

4,443,135
CONTROL APPARATUS

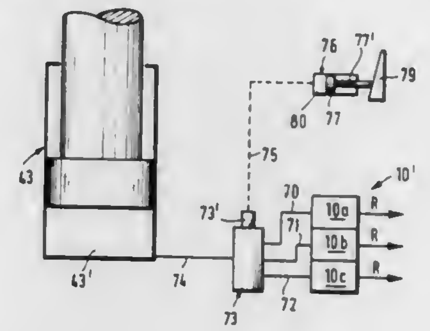
Klaus Beckmann, Lunen; Hans-Theodor Grisebach, Unna, and Walter Weirich, Dortmund, all of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Fed. Rep. of Germany

Filed Dec. 30, 1981, Ser. No. 335,827

Claims priority, application Fed. Rep. of Germany, Jan. 3, 1981, 3100093

Int. Cl.^{3} E21D ***15/46***

U.S. Cl. 405—302 **28 Claims**



1. In a mine roof support unit comprising a floor-engageable structure, and a roof engageable structure supported above the floor-engageable structure by inclined hydraulic prop means, the inclination of the hydraulic prop means relative to the vertical increasing as the hydraulic prop means is retracted, the improvement comprising providing control apparatus for controlling the load-bearing capacity of the hydraulic prop means, the control apparatus comprising pressure-relief valve means for limiting the pressure of the hydraulic fluid supplied to the hydraulic prop means, and a setting device for adjusting the operating pressure of the pressure-relief valve means thereby controlling the load-bearing capacity of the hydraulic prop means, wherein the setting device is operatively associated with a movable part of the roof support unit in such a manner that the operating pressure of the pressure-relief valve means is reduced in response to movement of said movable part of the roof support unit which results from extension of the hydraulic prop means.

4,443,136
MACHINE CUTTING TOOL

Klaus Kemmer, Wilberg, Fed. Rep. of Germany, assignor to ISCAR Hartmetall Gesellschaft mit beschrankter Haftung, Fed. Rep. of Germany

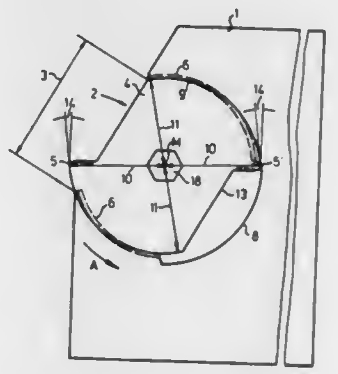
PCT No. PCT/DE82/00033, 371 Date Oct. 19, 1982, 102(e) Date Oct. 19, 1982, PCT Pub. No. WO82/02845, PCT Pub. Date Sep. 2, 1982

PCT Filed Feb. 19, 1982, Ser. No. 438,885

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1982, 3106120

Int. Cl.^{3} B26D ***1/00***

U.S. Cl. 407—72 **11 Claims**

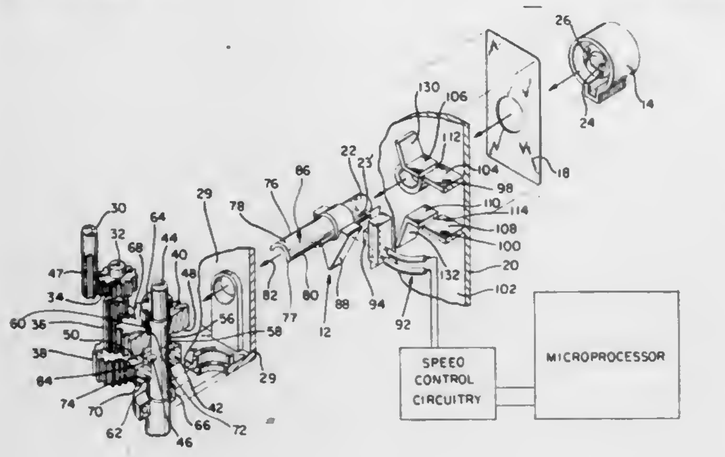


1. A machine cutting tool comprising replaceable cutting inserts (4) and a holder (2) for a self-gripping attachment of said cutting insert (4), two seat jaws opposite each other, contact surfaces (6) which are formed complementary to oppo-

site when in working position, contact surfaces **(9)** of said cutting insert **(4)**, and convex or concave guide means **(7)**, **(12)** in the contact surfaces, characterized in that said cutting insert is insertable into said holder **(2)** by being turned about an axis M parallel to a cutting edge **(5)** in the direction of the forces acting on said cutting edge **(5)**, the contact surfaces **(6)** have the shape of an approximate circular arc about the center of rotation M of said cutting insert **(4)** whose distance **(10,11)** from the center of rotation decreases in the direction of turning, and there is provided an insert groove **(8)** in the depth of said holder **(2)** between said contact surfaces **(6)** and a flat segment **(13)** at the cutting insert **(4)** which is adjacent to said contact surfaces **(9)**.

4,443,137
INDICATOR SYSTEM FOR A POWER TOOL COMPRISING DUAL PURPOSE CAM SHAFT

Gary W. Albrent, Baltimore, and Robert Bradus, Randallstown, both of Md., assignors to Black & Decker Inc., Newark, Del.
Filed Aug. 7, 1981, Ser. No. 290,939
Int. Cl.^{3} B23B *39/04*
U.S. Cl. 408—9 **10 Claims**

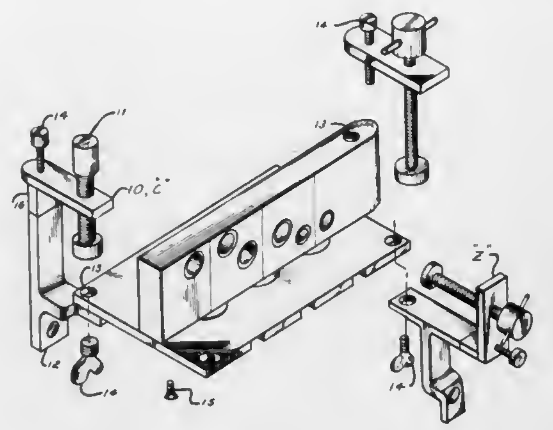


1. A cam shaft for use in power tools having microprocessor-operated speed control circuitry, multiple gear ratios and a multiple gear ratio drive mechanism, said cam shaft comprising:
   - a shaft;
   - a first cam member associated with said shaft and with said drive mechanism and adapted to cooperate with said shaft to effect shifting of said drive mechanism between said gear ratios;
   - and a second cam member, associated with said shaft and said first cam member and adapted to communicate to said microprocessor, through said circuitry, the gear ratio through which said drive mechanism operates, selected by means of said shaft and first cam member.

4,443,138
DOWELING JIG

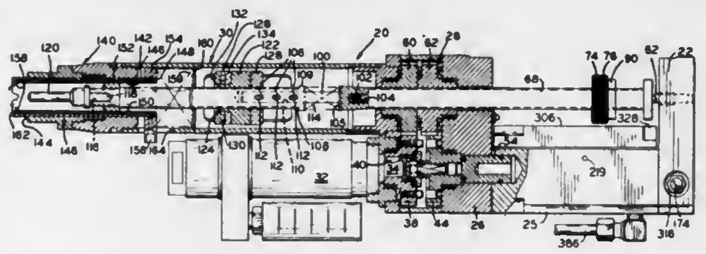
Anthony W. Butera, 112 Tuthill St., Port Jefferson, N.Y. 11777
Continuation-in-part of Ser. No. 96,753, Nov. 23, 1979, abandoned. This application Dec. 28, 1981, Ser. No. 334,555
The portion of the term of this patent subsequent to Mar. 22, 2000, has been disclaimed.
Int. Cl.^{3} B23B *47/28*
U.S. Cl. 408—115 R **20 Claims**

1. A "T" shaped doweling jig comprising a substantially rectangular base plate having a top face with two parallel side edges, at least one alignment port hole formed through said top face, said alignment port hole having sides which taper in ramp-like configuration from a predetermined larger opening to a predetermined smaller opening, at least one ramp-like tapered cut-out formed in each of said side edges, at least one defined straight port hole girth line extending across said top face from one of said cut-outs to another of said cut-outs, said girth line bisecting said alignment port hole, a substantially rectangular drill bit guide hole member having a top surface with two parallel side edges with a thickness less than said predetermined smaller opening, at least one defined drill bit guide hole extending transversely through said guide hole member, at least one defined straight guide girth line extending transversely across said top surface from edge to edge, said guide hole girth line bisecting said guide hole, means for attaching said guide hole member to said base plate, said guide hole member being centrally and perpendicularly attached to said base plate to form said "T" shaped doweling jig and intersect said alignment port hole, wherein said means for attaching includes a parallel piped shaped shim having a predetermined thickness inserted between said base plate and said guide hole member, spacing said base plate from said guide hole member by a distance equal to the thickness of the shim, whereby said doweling jig is adapted to drill holes having an offset which is determined by the thickness of the shim, clamp means for attaching said doweling jig to a workpiece, and means for removably attaching said clamp means to said doweling jig.



4,443,139
POSITIVE FEED DRILL

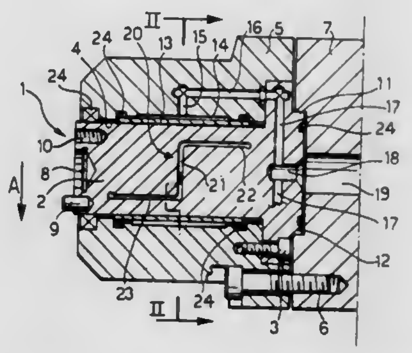
Joseph D. Eash, Euless, Tex., assignor to In-Tex Tool Corporation, Arlington, Tex.
Filed Mar. 18, 1982, Ser. No. 359,247
Int. Cl.^{3} B23B *39/10, 47/22*
U.S. Cl. 408—14 **19 Claims**



1. Positive feed drill apparatus comprising a supporting frame which carries an elongated spindle for rotary and reversible longitudinal movement, drive means on said supporting frame for selectively imparting said movement to said spindle, said supporting frame including a U-shaped frame assembly of rigid blocks removably fixedly secured together, said drive means including a fluid powered motor on said supporting frame and fluid-operating means integrated with said frame assembly, one of the arms of said U-shaped frame assembly having an opening therein which receives said spindle for rotary and longitudinal movement, said spindle having opposite ends and being further mounted to traverse the distance between said arms and within the spaced defined by the exterior thereof such that said longitudinal movement results in one spindle end being movable toward and away from the other of said arms; said fluid-operating means including valves and passages with said passages being disposed internally of said frame assembly and said valve also being disposed internally with portions of certain valve being accessible externally thereof, said fluid-operating means controlling the starting and stopping of the motor, the advancement of said spindle and the depth of drilling, the retraction of said spindle and the limiting of the retractable movement thereof; said frame assembly including a central manifold body having opposite front and rear ends, a manifold plate fixedly superposed on said body, a front manifold block secured to the front end of said body which serves as one arm of said U-shape, and a rear manifold block secured to the rear end of said body which serves as the other arm of said U-shape, said body, plate, front and rear blocks each containing certain of said passages and being arranged to provide selectively fluid communication therebetween, said fluid-operating means being further characterized by having none of the passages thereof external of said frame assembly, and an air supply line extending between said frame assembly and said motor for controlling the operation of the latter.

4,443,140
TOOL HOLDER WITH MEANS FOR RADIAL ADJUSTMENT

Lorenzo Boetto, Via Chivasso 8, San Mauro Torinese (Turin), Italy
Filed Feb. 10, 1982, Ser. No. 347,544
Claims priority, application Italy, Feb. 12, 1981, 67196 A/81
Int. Cl.^{3} B23B *29/18*
U.S. Cl. 408—147 **4 Claims**

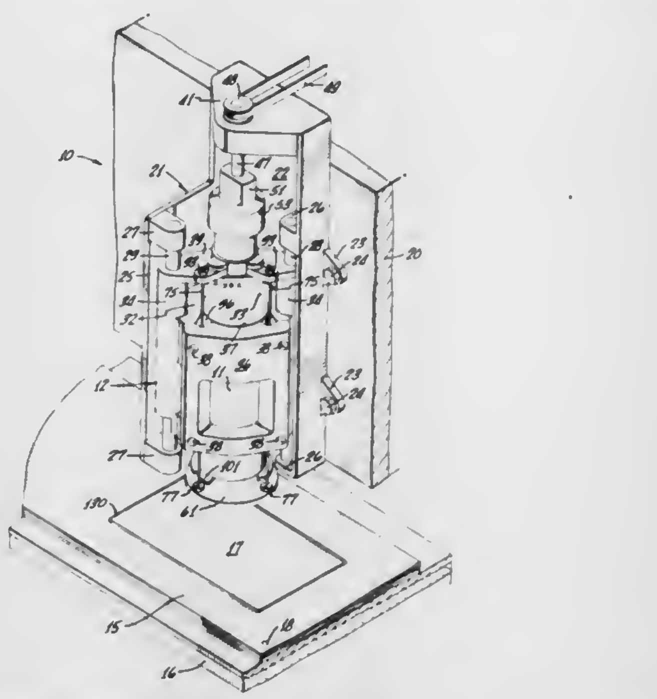


1. A tool-holder for machine tools, particularly boring machines, of the type having: a cylindrical body with a part which supports a tool; at least one slot defined by said body and shaped so that said part of the body which supports the tool is displaceable resiliently relative to the remaining part of the body in a direction perpendicular to the axis of the body, and hydraulic means for effecting the transverse displacement of said tool support part to adjust the radial position of the tool,
   the improvement comprising; said hydraulic means includes passage means arranged so as to provide a supply of fluid under pressure into an annular chamber and distributing the pressure in order to exert a substantially uniform pressure over the outer surface of said body.

4,443,141
PINLESS PRESSURE FOOT FOR MACHINE TOOL

Wojciech B. Kosmowski, San Juan Capistrano, Calif., assignor to Cooper Industries, Houston, Tex.
Filed Feb. 22, 1982, Ser. No. 351,213
Int. Cl.^{3} B23C *3/00, 9/00;* B27C *5/06*
U.S. Cl. 409—163 **14 Claims**

1. In combination with a machine tool having a spindle means, a cutting tool connected to one end of said spindle means, and worktable means for supporting a workpiece for being cut by said cutting tool, said worktable means and said spindle means being relatively laterally movable for producing a cut in said workpiece along a predetermined line, which cut, upon completion thereof, will produce a cutout part from the portion of said workpiece within said line, said cutting tool exerting a relative lateral force on said workpiece such that when said cutting tool has reached a predetermined point on said line and prior to completion of said cut, said cutting tool will cause lateral motion of said portion of said workpiece relative to said worktable means unless said portion is restrained, a device for selectively restraining said portion of said workpiece comprising:
   - workpiece engagable means circumscribing said cutting tool and being movable axially relative to said one end of said spindle means for selectively engaging the surface of said portion of said workpiece;
   - a plurality of elongate flexure members extending around said spindle means, first ends of said flexure members being connected to said workpiece engagable means;
   - drive means positioned adjacent the other end of said spindle means and being movable axially relative thereto, said drive means being connected to the other ends of said flexure members for moving said workpiece engagable means into contact with said portion of said workpiece, said flexure members transmitting the axial force of said drive means to said workpiece engagable means to force said workpiece against said worktable means for preventing movement thereof relative to said worktable means during completion of said cut, said flexure members being unsupported between said ends thereof and being laterally flexible to support said workpiece engagable means for lateral movement relative to said cutting tool during completion of said cut; and
   - locking means for selectively preventing lateral movement of said workpiece engagable means relative to said cutting tool.



4,443,142
DEVICE FOR MILLING LONG WORKPIECES

Gottfried Blaimschein, Steyr, Austria, assignor to GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Gesellschaft m.b.H., Steyr, Austria
Division of Ser. No. 186,112, Sep. 11, 1980, Pat. No. 4,388,027. This application Apr. 30, 1982, Ser. No. 373,345
Claims priority, application Austria, Oct. 16, 1979, 6722/79
Int. Cl.^{3} B23C *3/06;* B23B *1/24*
U.S. Cl. 409—199 **6 Claims**

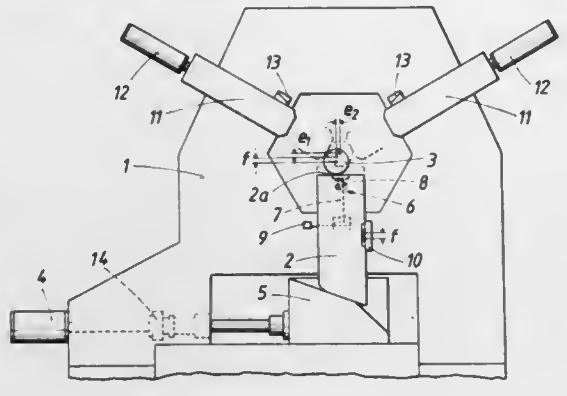
1. In a backrest for supporting a workpiece near the center of its length in a milling machine, which backrest comprises
   - a supporting jaw adapted to be disposed under the workpiece near the center of the length of the workpiece and to be vertically raised to engage the workpiece from below in a position of initial contact when said workpiece is held in a position in which it has a free sag near the center of its length,
   - a retaining jaw, which is adapted to be disposed above the workpiece near the center of the length of the workpiece

and to be moved downwardly toward the workpiece to clamp the latter against the supporting jaw,

first drive means for vertically moving said supporting jaw independently of said retaining jaw, and

second drive means for moving said retaining jaw toward and away from the workpiece independently of said supporting jaw

the improvement comprising



a detector arranged to indicate said position of initial contact of said supporting jaw, and

said first drive means being operable to raise said supporting jaw and the workpiece to a preselected extent above said position of initial contact so as to eliminate only the elastic deformation which is due to said free sag, and said retaining jaw into engagement with the workpiece which has thus been raised.

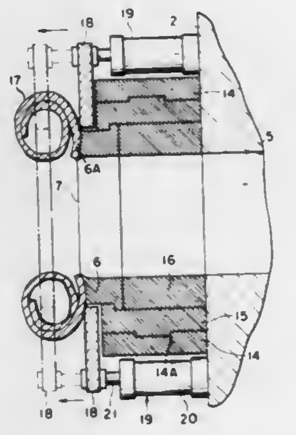
4,443,143
BILLET SCALPER AND DRIVE MECHANISM THEREFOR

Akira Asari, Osaka; Tatsuhiko Noyori, Kobe; Hidehiro Tsuzuki, Kobe; Takahisa Tabuchi, Kobe; Tsuneharu Masuda, Kobe, all of Japan, and Tetsuro Takehata, deceased, late of Osaka, Japan (by Akemi Takehata, legal representative), assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Mar. 8, 1982, Ser. No. 355,341

Int. Cl.³ B21C *43/02;* B23D *79/12;* B23P *25/00*

U.S. Cl. 409—295 6 Claims



1. A billet scalper, comprising:

a die assembly mounted on a first frame and including a scalping die;

a pressing mechanism supported on a second frame opposing said first frame and having a pressing stem movable toward and away from and in axial alignment with said scalping die for pressing a billet against said scalping die;

a chip ejector movably mounted around the circumference of said scalping die; and

drive means mounted on said first frame for axially moving said chip ejector toward said pressing mechanism beyond one end face of said scalping die to remove chips therefrom.

4,443,144
LOCKING PIN FOR A SPINDLE OR SIMILAR ELEMENT, MORE ESPECIALLY FOR AGRICULTURAL EQUIPMENT

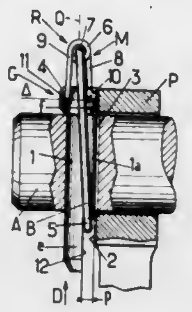
Hubert Defrancq, 7, rue Guillaume Apollinaire, 51100 Reims, France

Filed Dec. 15, 1981, Ser. No. 330,804

Claims priority, application France, Dec. 17, 1980, 80 26810; Mar. 6, 1981, 81 04555

Int. Cl.³ F16B *21/00*

U.S. Cl. 411—351 14 Claims



1. A locking pin for a spindle, or similar element, equipped with a loop and means for pivoting the loop on the locking pin so that said loop may be brought back to surround the spindle, or similar element, in which the locking pin is engaged, so as to oppose removal of said locking pin, the means for pivoting the loop being arranged so as to be able to assume at least two positions namely a first position or "low" position in which the locking pin may pass through said loop and a second position or "high" position in which the locking pin may not pass through the loop, the end of the locking pin opposite the pivoting means then coming into abutment against a portion of the loop, said pivoting means comprising a mobile bearing capable of being placed at least in said two positions, in which bearing is engaged a pivot pin integral with the loop, characterized by the fact that the bearing is supported by two substantially parallel arms, the assembly being such that in the second position or "high" position the arms extend on one side which moves the bearing to a maximum away from the opposite end of the locking pin, whereas in the first "low" position, said arms have rotated with respect to the "high" position.

4,443,145
SELF-SEALING WASHER

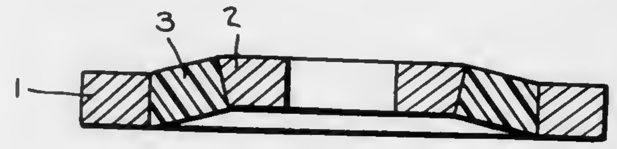
Klaus-Jurgen Peschges, Laudenbach, Fed. Rep. of Germany, assignor to Firma Carl Freudenberg, Weinheim an der Bergstrasse, Fed. Rep. of Germany

Filed Jan. 27, 1982, Ser. No. 343,281

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1981, 8103909[U]

Int. Cl.³ F16B *43/00*

U.S. Cl. 411—542 10 Claims



1. A self-sealing washer, comprising an inner spacer ring, a concentric middle sealing ring and a concentric outer spacer ring, wherein the spacer rings are made of non-resilient material, the sealing ring is made of resilient, constant volume material, a circular gap separates the inner ring and the outer ring which are axially offset relative to each other, the sealing ring bridges the gap and at least one conically circular clamping surface of the inner and/or outer ring projects into the gap which is inclined so that a reduction of the volume of the sealing ring results when the mutual axial distance of the spacer rings is reduced.

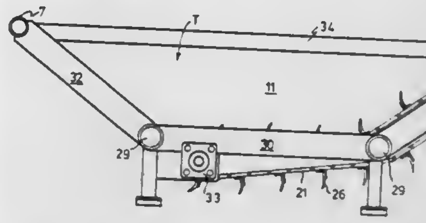
4,443,146
BALE FEEDING APPARATUS

Andrew R. Duncan, 66 Kurapae Rd., Taupo, New Zealand

Continuation of Ser. No. 174,660, Aug. 1, 1980, abandoned. This application Dec. 30, 1982, Ser. No. 454,882

Int. Cl.³ A01D *90/10*

U.S. Cl. 414—24.6 8 Claims



1. A hay bale feeder comprising a front framework portion adapted for connection with a feeder transporting means, spaced apart first and second side framework portions each having upper and lower ends defining a trough therebetween, said trough being adapted to receive a round bale of hay, a single endless feed-out conveyor having hay removing means thereon and having an upper conveying run extending across said trough in a direction substantially transverse to said side framework portions with an inclined portion of said upper conveying run extending over the upper end of said first side framework portion, said upper conveying run being suspended across said trough so as to engageably support and rotate the round bale while conforming to the shape thereof when the bale is positioned within said trough and so that operation of said hay removing means with said feed-out conveyor feeds out hay from said bale over said first side framework portion.

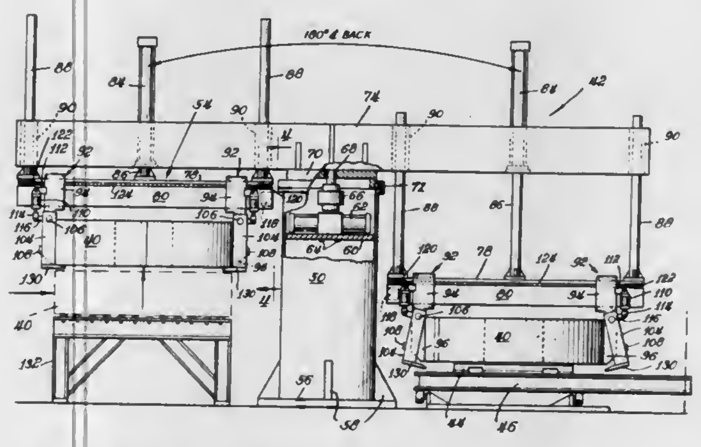
4,443,147
TURRET STACKER

Lawrence J. Richards, Elk Grove Village, Ill., assignor to Braner Enterprises, Inc., Schiller Park, Ill.

Division of Ser. No. 422,721, Sep. 24, 1982, which is a continuation-in-part of Ser. No. 288,479, Jul. 30, 1981, abandoned. This application Jul. 13, 1983, Ser. No. 513,358

Int. Cl.³ B65G *57/03*

U.S. Cl. 414—71 7 Claims



1. A transporting device for relocating material from one position to a second position, said transporting device comprising:

a. a stationary central support pedestal,

b. a rotatable turret situated at the top of said pedestal, said turret including
   - i. at least two arms each of which extends radially outwardly from said pedestal
   - ii. a lifting and stacking mechanism associated with each arm, said mechanism including a material support, means to raise and lower said material support, and means to enlarge and contract said material support to accommodate material of varying horizontal dimensions,
   - iii. said material support comprising a beam beneath said arm and a pair of carriages each carriage being moveable along said beam in a direction opposite to the other carriage, said carriages including rests for holding material to be relocated, each said rest comprising a leg pivotally attached to said carriage, and further including means connected between said carriage and said leg for pivoting said leg toward and away from the material to be transported,

c. bearing means between said pedestal and said turret to facilitate rotation of said turret, and

d. driving means situated in said pedestal and attached to said turret to rotate said turret.

4,443,148
APPARATUS FOR UNLOADING BULK MATERIAL FROM SHIPS

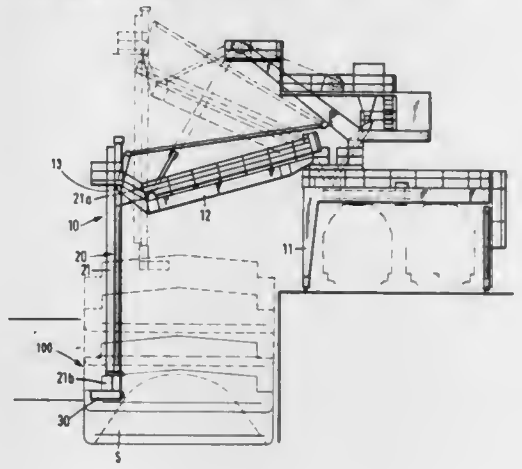
Gerhard Arnemann, Am Kroenrey 11, D-2083 Halstenbek, Fed. Rep. of Germany

Filed May 17, 1982, Ser. No. 379,142

Claims priority, application Fed. Rep. of Germany, May 14, 1981, 3119292

Int. Cl.³ B65G *63/00*

U.S. Cl. 414—139 10 Claims



1. An apparatus for unloading bulk material from ships comprising an elongated vertical conveyor, means for dependently pivotally supporting the upper end of said vertical conveyor, said vertical conveyor comprises an elongated vertical conveyor screw having a vertical axis and an elongated vertical bracing tube laterally enclosing said vertical conveyor screw so that said vertical conveyor screw can convey loose material from the lower end to the upper end of said vertical bracing tube, only a single elongated horizontal conveyor having a first end and a second end with the first end thereof located adjacent the lower end of said vertical screw conveyor, said horizontal conveyor comprising only a single elongated horizontal conveyor screw having a first end and a second end and a horizontal axis, and a casing extending along said horizontal conveyor screw having a first end and a second end, wherein the improvement comprises that said vertical screw conveyor has a lower end and an upper end with the lower end thereof extending downwardly out of the lower end of said bracing tube, said horizontal conveyor has a top side, a bottom side, and first and second sides extending between the top and bottom sides and located on opposite sides of said horizontal screw conveyor, said casing for said horizontal conveyor extends along the second side of and over the top side of said horizontal screw conveyor and said casing is open along the first side and the bottom side of said horizontal screw conveyor, said casing is closed at the first and second ends of said horizontal screw conveyor, and the first end of said casing is located adjacent the lower end of said vertical screw conveyor and the first end of said casing comprises a guide plate

extending transversely across and obliquely of the axis of said horizontal screw conveyor from the first side to the second side of said horizontal screw conveyor for guiding the material conveyed by said horizontal screw conveyor to the lower end of said vertical screw conveyor, wherein the axis of said horizontal screw conveyor is offset laterally from the axis of said vertical screw conveyor so that the first side of said horizontal screw conveyor is closer to the axis of said vertical screw conveyor than the second side of said horizontal screw conveyor.

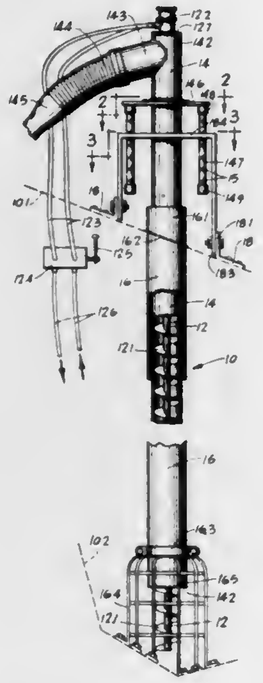
4,443,149
AXIALLY MOVEABLE AUGER

Douglas T. Isaacson, West Fargo, N. Dak., assignor to Bruce Halland, Fargo, N. Dak.

Filed Sep. 28, 1981, Ser. No. 305,948

Int. Cl.^{3} B65G ***33/14, 3/00***

U.S. Cl. 414—326 **6 Claims**



1. An auger assembly for transporting particulate material from a bin or the like and comprising an auger rotatable about its axis, a stationary tube having a particle-receiving end and within which the auger is rotatably moveable and freely axially moveable between a first position in which an end of the auger protrudes from the particle-receiving end of the tube and a second position in which an end of the auger is within the particle-receiving end of the tube, means for rotating the auger to draw particulate material within the particle-receiving end of the tube, means for reversing the direction of rotation of the auger to unthread the auger from particulate material adjacent the particle-receiving end of the tube and causing the auger to move axially toward the second position, and limit means limiting the free axial movement of the auger with respect to the tube between said first and second positions.

4,443,150
RELEASABLE LOCKING DEVICE

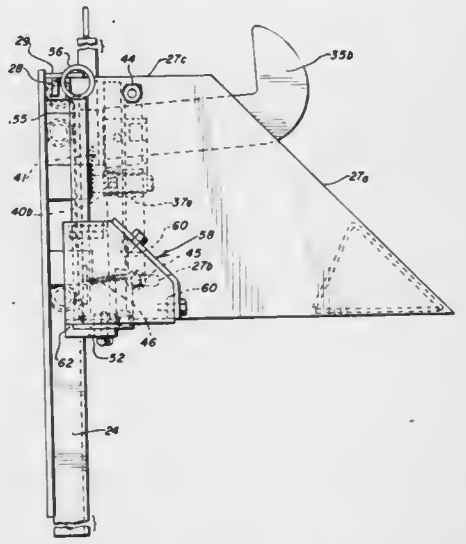
Norbert Hahn, Cudahy; Steven J. Hipp, Milwaukee, and Michael A. Swessel, Cudahy, all of Wis., assignors to Rite-Hite Corporation, Milwaukee, Wis.

Filed Nov. 13, 1981, Ser. No. 321,044

Int. Cl.^{3} B65G ***69/00***

U.S. Cl. 414—401 **9 Claims**

1. A releasable locking device for securing a parked vehicle to an adjacent structure, said device comprising a carriage having a first section adapted to be affixed to the adjacent structure, and a second section mounted on said first section and biased to assume a predetermined elevated position, said second section being movable downwardly from said elevated position upon an external force of a predetermined magnitude being exerted on said second section; a first means mounted on said carriage second section for relative rectilinear movement with respect thereto between an operative vehicle-locking mode and an inoperative vehicle-release mode; releasable second means mounted on and substantially concealed by the carriage second section and coacting therewith and said first means for retaining the latter in said operative mode; manually actuated third means carried on said carriage second section and movable independently thereof between extended and retracted positions, when moving from a retracted position to an extended position said third means effecting relative movement of said first means from said inoperative mode to said operative mode, said third means normally assuming a retracted position and being substantially concealed within said carriage second section; and manually actuated fourth means adjustably mounted on said carriage second section and engageable with said second means to effect movement of the latter to a non-retaining position with respect to said first means, when said fourth means is manually actuated in one relative direction.



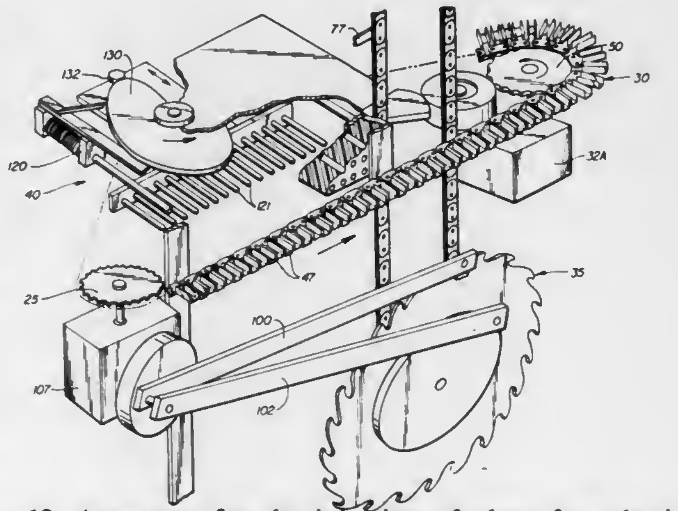
4,443,151
AUTOMATIC SOIL PLUG LOADER AND FEEDER

Errol C. Armstrong; William A. Hanacek, both of Salinas, and Thomas A. Spinetti, Watsonville, all of Calif., assignors to Bud Antle, Inc., Salinas, Calif.

Filed Jul. 9, 1980, Ser. No. 167,289

Int. Cl.^{3} A01C ***11/00***

U.S. Cl. 414—404 **16 Claims**



13. Apparatus for the injection of plugs from horizontal disposition in a tray to a horizontal disposition in a passing conveyor, said plugs have a tapered configuration defined by correspondingly tapered cavities in said tray so that upon ejection from said tray, a given plug becomes progressively less tightly held by its respective cavity so that the foliage end of a plug being ejected has a tendency to angulate downwardly, said apparatus comprising:

means for ejecting plugs from said trays including an ejection for urging said plugs from said trays;

a lip extending horizontally along a front surface of said tray in the direction of a row of plugs being ejected, said lip including an upper portion that is at an elevation above the lowermost point of the row of cavities so as to slightly intrude into the path of the corresponding plugs being ejected and deflect said plugs upwardly to counteract said tendency to angulate downwardly.

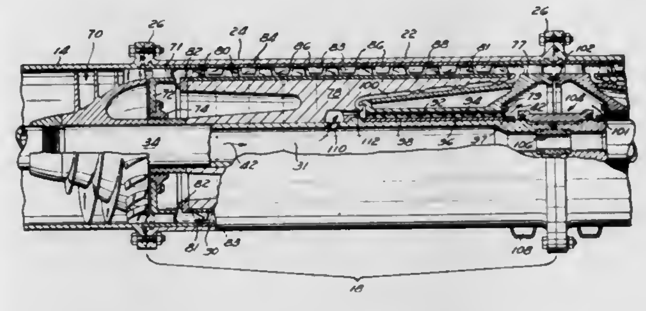
4,443,152
AXIAL SLURRY PUMP

George S. Wong, Agoura; Fritz C. Catterfeld, Canoga Park, and Clifford A. Hauenstein, Woodland Hills, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 838,609, Oct. 3, 1977, abandoned. This application Mar. 26, 1979, Ser. No. 23,801

Int. Cl.^{3} F04D ***29/18***

U.S. Cl. 415—143 **4 Claims**



1. An axial flow pump for the transportation of liquids containing solids wherein said axial flow pump comprises a cylindrical conduit housing a concentrically positioned drive shaft and at least one pressure stage having a rotor and a stator coaxially positioned along said drive shaft and wherein the improvement comprises an inducer stage comprising:

a tandem-blade row inducer coaxially mounted on said drive shaft, and wherein said tandem-blade row inducer comprises a first blade row having blades of low hub ratio and high solidity, a first blade row discharge zone, and a second blade row having blades of high hub ratio and low solidity; and

an inducer stage stator, hydraulically matched to accept the output of said tandem-blade row inducer, to diffuse and turn the flow discharge in the direction of rotation of the succeeding rotor rotation thereby reducing relative inlet velocity, and to establish the same inlet flow conditions for each succeeding pump stage.

4,443,153
CONTROLLED EXHAUST-TYPE SUPERCHARGER TURBINE

Günther Dibelius, Fichthang 11, D-5100 Aachen, Fed. Rep. of Germany

Filed Aug. 21, 1980, Ser. No. 180,067

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1979, 2934041

Int. Cl.^{3} F01D ***17/14, 17/18;*** **F02B** ***37/12***

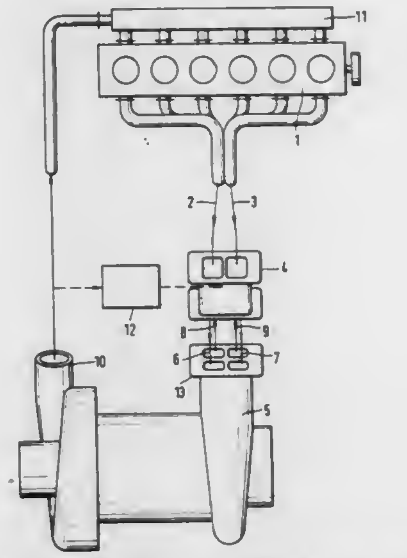
U.S. Cl. 415—151 **3 Claims**

1. A controlled exhaust driven turbo-supercharger for an engine having exhaust flow conduits for discharging exhaust flow streams from the engine and designed for an engine speed below the rated speed of the engine to be supercharged, comprising:

a turbine having a rotor;

a vaneless, exhaust stream guidance device having at least two separate, continuously open inlet flow conduits, each of which has an inlet and an outlet, the inlets of which are each connectable to a certain exhaust stream of the exhaust flow conduits of the engine, and at least one additional flow conduit having an inlet and an outlet disposed in parallel to said inlet flow conduits, the center of the cross-sectional area of which is at a shorter radial distance from the turbine axis than the centers of the cross-section areas of said inlet flow conduits, said outlets of said inlet flow conduits as well as of said additional flow conduit surrounding the whole circumference of said turbine rotor; and

control means mounted on said vaneless guidance device positioned in front of said inlet of said additional flow conduits, said control means including valve means movable between a fully opened and closed position for connecting said additional flow conduit to at least certain of said exhaust flow streams, and means for moving said valve means into its fully opened position the more the turbine speed increases, thereby connecting said additional conduit with the exhaust streams supplying said continuously open inlet flow conduits so as to increase the flow cross section.



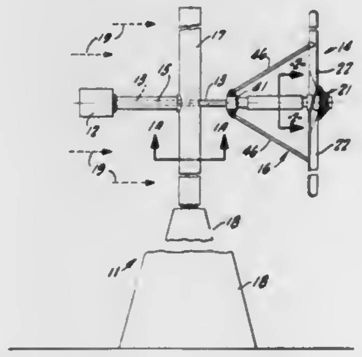
4,443,154
WINDMILL TOWER SHADOW ELIMINATOR

Arthur J. Randolph, P.O. Box 1541, Santa Rosa, Calif. 95405

Division of Ser. No. 69,800, Aug. 27, 1979, Pat. No. 4,310,284. This application Aug. 24, 1981, Ser. No. 295,735

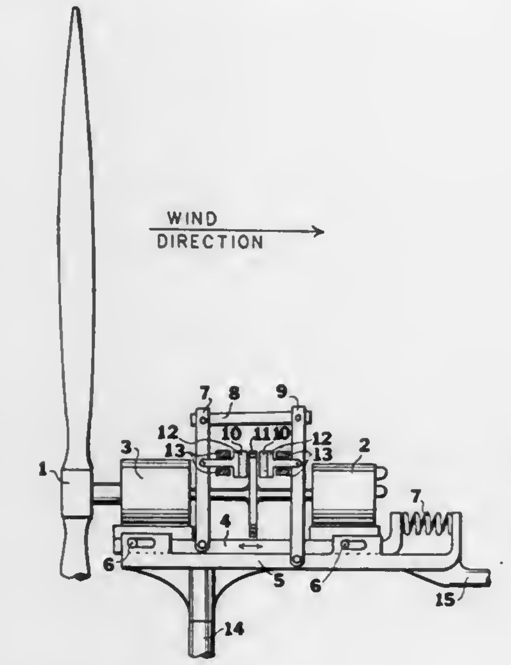
Int. Cl.^{3} F03D ***11/04***

U.S. Cl. 416—11 **3 Claims**



1. A windmill propeller system having a propeller with a pair of diametrically opposed blades mounted on a drive shaft and comprising an elongated drive shaft support mounting said shaft in rotatable relation thereto and having a surrounding airfoil surface pivotally mounted to move with said propeller for direction into a wind and extending above and below said shaft a distance at least equal to the length of said propeller blades for alignment with said blades every half revolution of said propeller to minimize unequal wind forces applied to said propeller blades.

4,443,155
WIND ROTOR THRUST-ACTUATED BRAKE
Donald R. Smith, 559 63rd St., Oakland, Calif. 94609
Filed Oct. 6, 1980, Ser. No. 193,953
Int. Cl.³ F03D *7/02*
U.S. Cl. 416—32 **1 Claim**

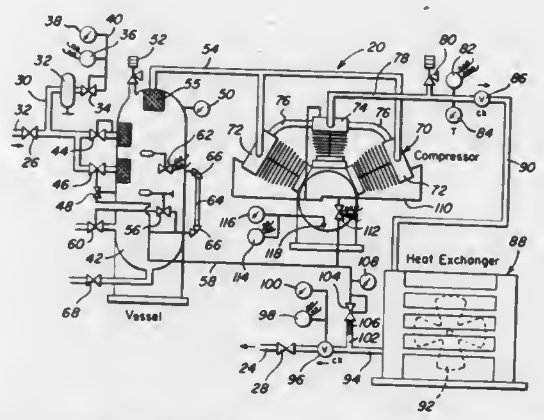


1. A fluid driven turbine system which is self-governing above a predetermined fluid velocity, comprising:

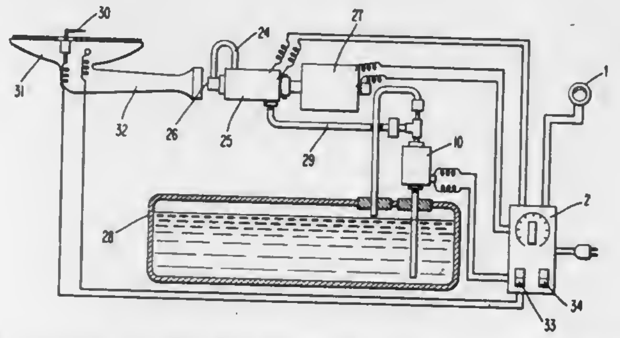
(a) a turbine rotated by a fluid moving relative to it, said turbine comprising any desired number of blades operatively connected to a hub and said fluid being wind,
(b) support means for said turbine comprising a carrier on which is mounted both said turbine and an energy conversion device driven by it,
(c) support means for said carrier allowing a small amount of backward movement for said turbine and carrier, said movement being along the direction of flow of said wind and in response to the thrust forces on said blades produced by operation in said wind, during said movement said support means for said carrier constraining the rotational axis of said turbine to remain substantially parallel to its original position,
(d) friction brake means operatively connected to and interposed between said carrier and a shaft rotationally connected to said turbine,
(e) resisting means incorporated in said carrier support means to supply a force opposing said backward movement so that the distance of said movement is dependent on the magnitude of said thrust forces and thus on the velocity of said wind, said resisting means comprising a mechanical spring interposed between said carrier and the base of said support means for said carrier, and
(f) engagement means effecting application of said brake means when said backward movement exceeds a predetermined value, said brake engagement means comprising a system of links operatively connected to and interposed between said carrier and said carrier support means, said links also being connected to said brake means to actuate said brake means through said backward movement.

4,443,156
AUTOMATIC NATURAL GAS COMPRESSOR CONTROL SYSTEM
James A. Dunnam, Jr., 1781 Spy Glass Dr., No. 249, Austin, Tex. 78746
Filed Feb. 10, 1981, Ser. No. 233,126
Int. Cl.³ F04B *49/00*
U.S. Cl. 417—12 **9 Claims**

1. A control system for a compressor utilized for transferring natural gas from a producing well or other source at a relatively low pressure to a discharge pipe for transmission to users at a relatively high pressure, said system comprising a compressor having drive means connected thereto, inlet means connected with the compressor for suppling low pressure natural gas thereto, discharge means connected with the compressor for discharge of high pressure gas therefrom, sensing means in the inlet means to maintain a substantially constant gas flow to the compressor regardless of gas pressure fluctuations from the gas source and to shut down the compressor in response to abnormal inlet conditions and automatically re-start the compressor when such abnormal conditions correct themselves, said discharge means including sensing means to control the rate of supply of gas to the compressor and shut down the compressor in response to abnormal conditions in the discharge means and automatically re-start the compressor when the abnormal conditions correct themselves thereby minimizing down time of the compressor by automatically re-starting the compressor when abnormal conditions which shut down the compressor correct themselves without manual re-starting of the compressor.



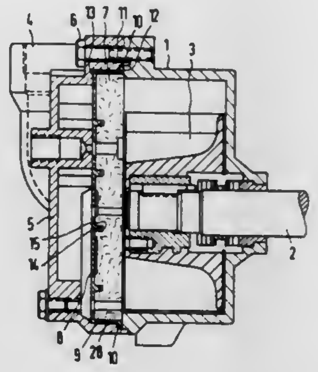
4,443,157
CONTROL CIRCUIT FOR A LIQUID FUEL COMBUSTION APPARATUS
Hisao Yoshii, Sanjo, Japan, assignor to Dainichi Kogyo Co., Ltd., Shirone, Japan
Filed Apr. 23, 1981, Ser. No. 256,912
Claims priority, application Japan, Apr. 28, 1980, 55-58979[U]
Int. Cl.³ F04B *49/06;* **G05B** *11/18*
U.S. Cl. 417—45 **9 Claims**



1. A control circuit for a liquid fuel combustion apparatus which utilizes a fuel pump for feeding a liquid fuel, comprising:

(a) circuit means including a thermo-sensitive element and a variable resistor for providing a first signal which represents the difference between the temperature sensed by said thermo-sensitive element and a temperature represented by the setting of said variable resistor;
(b) means for converting said first signal to a second signal, said second signal having a first constant level when said temperatures sensed is a predetermined amount less than said temperature represented by the setting of said variable resistor, a second different constant level when said temperature sensed is a predetermined amount greater than said temperature represented by the setting of said variable resistor, and said second signal being proportional to said first signal therebetween;
(c) a signal generator;
(d) means for rendering the operation of said signal generator responsive to the output of said means for converting; and
(e) means for controlling said fuel pump in response to said signal generator, said controlling means being operable to cause said fuel pump to deliver fuel for supporting strong combustion in said combustion apparatus in response to levels of said second signal below said first constant level, and operable to cause said fuel pump to gradually reduce the fuel delivery rate in response to levels of said second signal between said first and second constant levels, the fuel delivered by said fuel pump at said second signal second constant level being sufficient to maintain complete combustion in said combustion apparatus.

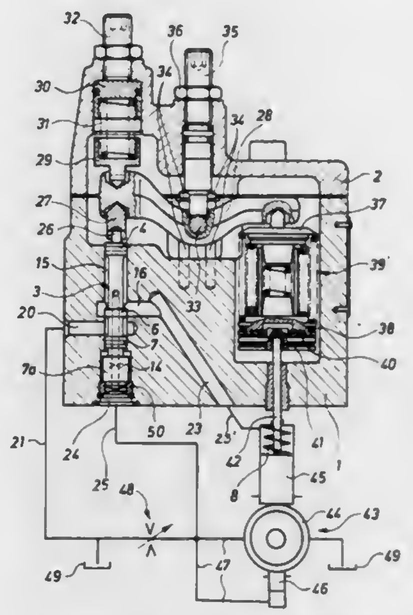
4,443,158
LIQUID RING PUMP WITH A CONTROL DISK ARRANGED BETWEEN THE IMPELLER HOUSING AND THE COVER
Benedikt Bentele, Hohenroth; Norbert Schmid, and Siegfried Schönwald, both of Bad Neustadt, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Mar. 10, 1982, Ser. No. 356,294
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1981, 3111538
Int. Cl.³ F04C *19/00*
U.S. Cl. 417—68 **5 Claims**



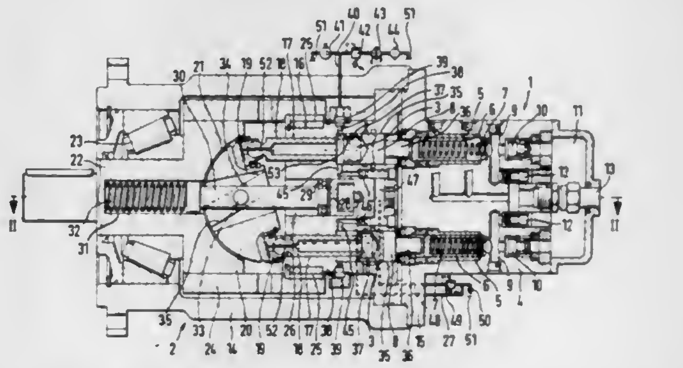
1. In a liquid ring pump comprising an impeller housing, a cover, a control disk interposed between the cover and the housing, and sealing means interposed between the cover and the control disk for sealing the cover and the disk and for sealing the interior of the impeller housing from the exterior thereof at the edge of the cover adjacent to the control disk, the improvement comprising a single cup-shaped seal interposed between the cover and the control disk for sealing the cover and the control disk and having at the free end of its circumferential wall a bead which extends radially outwardly, and the cover having a rim which extends beyond the circumferential wall, the seal being disposed to be pressed against the edge of the impeller housing by the rim of the cover.

4,443,159
POWER CONTROL DEVICE FOR PUMPS
Jörg Dantlgraber, Lohr-Sackenbach, Fed. Rep. of Germany, assignor to Mannesmann-Rexroth GmbH, Lohr, Fed. Rep. of Germany
Filed Mar. 26, 1981, Ser. No. 249,665
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1980, 3034115
Int. Cl.³ F04B *49/00*
U.S. Cl. 417—220 **5 Claims**

1. A power output control device for a pump of the type having a delivery adjuster including an adjustment member, a setting spring acting on the adjustment member, a control piston acted upon by the output flow from the pump and having means for controlling the delivery adjuster, governor spring means coupled to said piston for biasing the same against the output flow with a progressive force, additional biasing means acting on said control piston against said output delivery with a substantially constant force, means for adjusting said additional constant force including a rocking lever engaging said additional biasing means and said governor spring means, a first setting screw thrusting against said additional biasing means to adjust the biasing force thereof and a second setting screw thrusting againt said rocking lever to adjust the biasing force of said governor spring means.



4,443,160
HIGH-PRESSURE PISTON PUMP FOR LIQUIDS, PREFERABLY FOR WATER
Heinz Berthold, Bildechingen, Fed. Rep. of Germany, assignor to Brueninghaus Hydraulik GmbH, Horb, Fed. Rep. of Germany
Filed Nov. 4, 1981, Ser. No. 318,065
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1980, 3042835
Int. Cl.³ F04B *1/18, 35/02*
U.S. Cl. 417—270 **9 Claims**

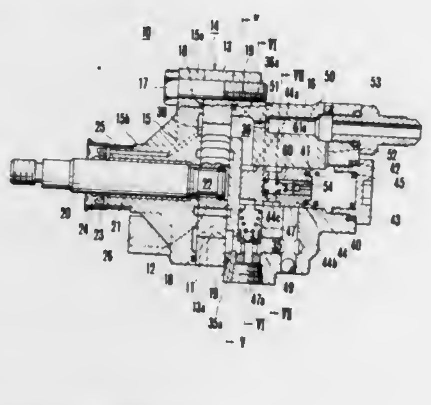


1. In a high-pressure piston pump for liquids, particularly for water, including a valve control through a suction and pressure valve; a hydraulic drive for moving the pump piston at least in the pressure direction; the improvement comprising: said hydraulic drive including an axial piston machine of the oblique disk construction type, having an adjustable, rotationally driven oblique disk for stroke adjustment; drive pistons each coupled through a hydraulic column with one of the pump pistons; said hydraulic columns being connected with a pressure-limiting valve through a discharge valve opening only to the pressure-limiting valve, wherein an adjusting pressure is branched off dependent upon the pressure level in the hydraulic column, said pressure acting on the adjusting ar-

rangement of the adjustable oblique disk of said axial piston machine.

4,443,161
BALANCED DUAL CHAMBER OIL PUMP

Naosuke Masuda, and Takeshi Ohe, both of Higashimatsuyama, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan
Filed May 17, 1982, Ser. No. 378,746
Claims priority, application Japan, May 25, 1981, 56-79083
Int. Cl.^{3} F04B *47/08*
U.S. Cl. 417—310 **7 Claims**



1. An oil pump comprising:

a pump body including a rotor, a cam ring surrounding said rotor and formed with a pair of pump chambers at positions symmetrical with respect to an axis of said rotor;

suction passages and first and second pair of discharge passages opening in said pump chambers at positions a predetermined distance apart in the direction of rotation of said rotor;

a flow control valve formed in the axial direction of said pump body and including a valve opening and a spool slidable therein;

one pair of said discharge passages opening at one end of said valve opening while the other pair opening at an axial center of said valve opening at diametrically opposed positions;

said passages opening at the axial center of said valve opening being normally closed by said spool biased to an inoperative position;

check valves located between two pair of discharge passages;

said suction passages opening in said valve opening at diametrically opposed positions between openings of the two pairs of the discharge passages;

whereby when said spool is operated, said suction passages are first communicated with said other pair of discharge passages opening at the axial center of said valve opening and then communicated with said one pair of discharge passages.

4,443,162
FLUID PUMP

Terence A. O'Connor, Elyria, Ohio, assignor to Teledyne Republic Manufacturing, Cleveland, Ohio
Filed Mar. 13, 1981, Ser. No. 243,491
Int. Cl.^{3} F04B *25/00*
U.S. Cl. 417—425 **7 Claims**

1. A pump assembly, comprising:

(a) an integral pump body defining at least one suction and one discharge port;

(b) a manually operable pump section including a pump body section defining a longitudinal bore;

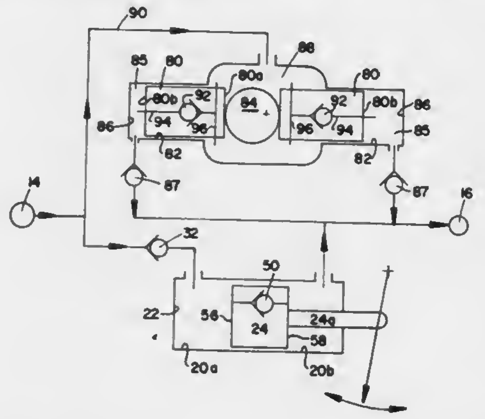
(c) a piston member slidably supported for reciprocating motion by said bore, said member including a piston rod extending outside of said bore and operatively connected to a manually actuatable arm pivotally attached to said pump body section;

(d) a first flow path including a check valve communicating one portion of said bore with said suction port;

(e) a second flow path communicating another portion of said bore with said discharge port;

(f) check valve means carried by said piston, operative to allow fluid flow from said one portion to said other portion of said bore;

(g) a power operable pump forming part of said fluid pump assembly, including another pump body section, said other body section defining a pair of axially aligned bores, the inner ends of said bores communicating with a fluid inlet chamber defined in said other body section;



(h) a piston supported for sliding, reciprocating movement in each bore, each piston carrying a check valve operative to allow fluid flow through each piston from said inlet chamber to the outer ends of each bore;

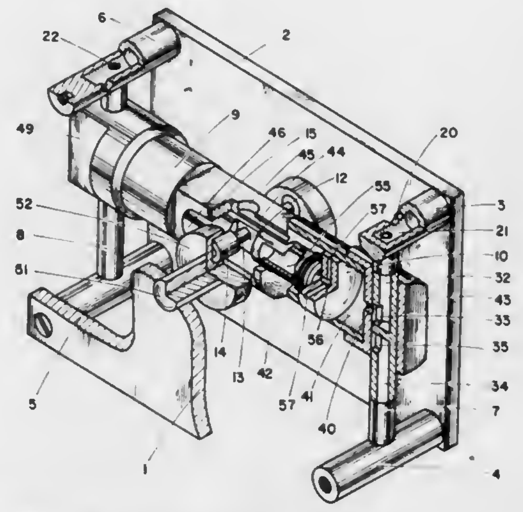
(i) passage means including check valve means communicating said outer ends of each bore with said discharge port;

(j) piston drive means including an eccentric cam located within said inlet chamber and disposed intermediate said pistons;

(k) said piston drive means including a rotatable drive shaft extending outside of said other pump body section and engageable with a source of powered rotation, the axes of said bores being contained in a plane, said rotatable drive shaft extending substantially perpendicular to said plane.

4,443,163
FLUID MOTOR OR PUMP

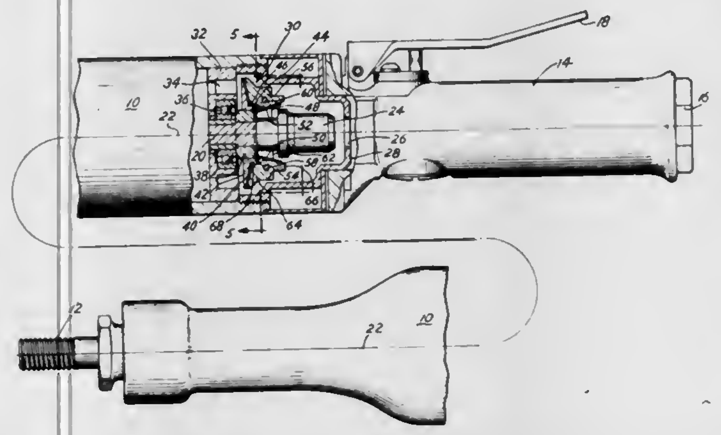
Luis A. Gaither, 100 Summerstone, Irvine, Calif. 92714
Filed Jul. 15, 1982, Ser. No. 398,547
Int. Cl.^{3} F04B *19/02;* **F01B** *9/00, 15/00*
U.S. Cl. 417—466 **4 Claims**



1. A fluid motor or pump which comprises a front crank, a piston rod, a right piston, a left piston, a chamber, a right lateral conduit, a left lateral conduit, an upper left corner conduit, an upper right corner conduit, a lower right corner conduit, a lower left corner conduit and a front wall which holds said four corner conduits, said front wall supports said front crank and allows the crankshaft to rotate, said corner conduits communicate with said lateral conduits and the exterior, said upper right corner conduit and said lower right corner conduit hold and communicate with said right lateral conduit, said right lateral conduit internal upper area communicates with said upper right corner conduit and said right lateral conduit internal lower area communicates with said lower right corner conduit, said upper left corner conduit and said lower left corner conduit hold and communicate with said left lateral conduit, said left lateral conduit internal upper area communicates with said upper left corner conduit and said left lateral conduit internal lower area communicates with said lower left corner conduit, said lateral conduits support and allow said chamber to slide, said chamber has a main frame and two end walls, said chamber main frame has two internal end areas and a centered area, said chamber main frame has an upper conduit that allows said chamber right end internal area to communicate to the exterior, said chamber main frame has a lower conduit that allows said chamber left end internal area to communicate to the exterior, said chamber right end wall centered port allows said right lateral conduit internal areas to communicate with said chamber right end internal area, said chamber left end wall centered port allows said left lateral conduit internal areas to communicate with said chamber left end internal area, said chamber right end internal area allows said right piston to slide, said chamber left end internal area allows said left piston to slide, said chamber centered area allows said piston rod to slide and join said pistons, said piston rod center holds and allows the crankrod of said front crank to spin, said piston rod via said crankrod and the crankroller of said front crank communicates its sliding motion to said front crank causing a rotary motion of the crankwheel and crankshaft of said front crank or vice versa, said front crank via said crankroller causes said chamber to slide, said chamber sliding motion and position controls the fluid flow from said chamber internal areas to said lateral conduits or vice versa, said fluid flow is caused by the sliding motion of said pistons or vice versa, said fluid flow forced into and out of said fluid motor or pump will cause said fluid motor or pump to act as a motor, said crankshaft rotary motion will force fluid to flow into and out of said fluid motor or pump and cause said fluid motor or pump to act as a pump.

4,443,164
SECONDARY SPEED SENSOR FOR GOVERNED AIR GRINDERS

Lowell R. Bavin, West Unity, Ohio, assignor to The Aro Corporation, Bryan, Ohio
Filed Mar. 15, 1982, Ser. No. 358,305
Int. Cl.^{3} F01C *21/12;* **F04C** *15/02*
U.S. Cl. 418—41 **4 Claims**



1. A combined speed sensor and control valve for a rotary fluid motor of the type including a rotary shaft having a center line rotation axis, a fluid inlet for supplying fluid to the motor radially spaced from the shaft and shaft axis, said sensor and valve comprising, in combination:

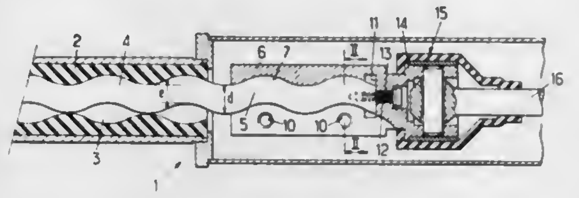
a fluid inlet passage extending in the direction of the shaft for fluid flow into the inlet;

an annular valve member slidably mounted on the shaft for movement along the axis, said valve member including a disc portion extending radially from the shaft for a distance at least equal to the maximum radial extent of the fluid inlet from the center line axis of the shaft, said valve member being positioned upstream from the fluid inlet; said valve member also including a circumferential latching flange upstream from the disc portion;

at least one pivotally mounted speed sensor weight attached to the shaft, said weight being pivotal about a weight axis transverse to the shaft axis, said weight including a flange engaging latch cooperative with the valve member flange, biasing means engaging and biasing the weight about the weight axis into engagement with the valve member flange to maintain the valve member in the open position; said weight also including a mass distributed radially from the shaft axis and radially movable in response to shaft rotation beyond a threshold value in opposition to the force of the biasing means thereby releasing the valve member by simultaneous disengagement of the latch from the flange and fluid flow force on the disc causing axial movement of the valve member to cover the fluid inlet, said weight having a first wing extending in one direction from the weight pivot axis and a second wing extending in the generally opposite direction from the weight pivot axis, the first wing including the latch and mass, the second wing being cooperative with the biasing means.

4,443,165
MOINEAU PUMP WITH HELICOIDAL COUPLING SLEEVE

Edmond Chanton, Clamart, France, assignor to Societe Generale de Mecanique et de Metallurgie, France
Filed Jan. 12, 1982, Ser. No. 338,833
Claims priority, application France, Jan. 19, 1981, 81 00904
Int. Cl.^{3} F04C *2/00, 15/00;* **F16B** *2/10, 7/04*
U.S. Cl. 418—48 **8 Claims**



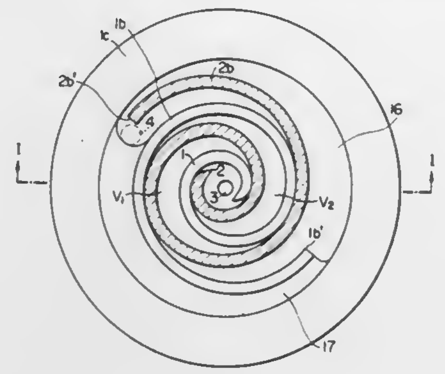
1. In a Moineau gear pump comprising a stator having an axial cavity, a helicoidal rotor axially extending inside said cavity of the stator, and coupling means to couple the rotor to another driving or driven rotary member, the improvement wherein the helicoidal rotor projects axially out of said cavity of the stator and wherein the coupling means comprises a rigid and elongated coupling sleeve provided with an axial hollow whose shape is complementary to that of the helix of the rotor, said sleeve being engaged on and gripping the end of the rotor projecting from said cavity of the stator.

4,443,166
SCROLL FLUID APPARATUS WITH AN ARCUATE RECESS ADJACENT THE STATIONARY WRAP

Masato Ikegawa, Ibaraki; Kenji Tojo, and Masao Shiibayashi, both of Shimizu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 23, 1981, Ser. No. 314,459
Claims priority, application Japan, Oct. 27, 1980, 55-149402
Int. Cl.^{3} F01C *1/02, 21/00*
U.S. Cl. 418—55 **14 Claims**

1. A scroll fluid apparatus comprising: a first scroll member including an end plate and an upstanding wrap of vortical form located on a surface of said end plate, said wrap having a predetermined thickness and height, a second scroll member including an end plate and an upstanding wrap of vortical form located on a surface of said last-mentioned end plate, said wrap

of said second scroll member having a predetermined thickness and height, said second scroll member having an annular portion one with the end plate thereof and surrounding the wrap of said second scroll member, the first and second scroll members being disposed such that said annular portion contacts the end plate of said first scroll member and said first scroll member moves in orbiting motion with respect to said second scroll member, the annular portion of said second scroll member has a height corresponding to the height of the wrap thereof and is continguious at a surface thereof formed as a land with a surface of the wrap of the second scroll member for a circumferential extent of 180° from a terminating end of the wrap of the second member, said land having a strip-shaped recess defined on a radially outer side thereof by a section of the annular portion and on a radially inner side thereof by a portion of the wrap of the second scroll member, a depth of said recess is less than a height of the wrap of the second scroll member and said radially outer side of the recess is located at a predetermined distance from an outer wall surface of the wrap of the second scroll member, said recess communicating with a low pressure zone through an end portion thereof.



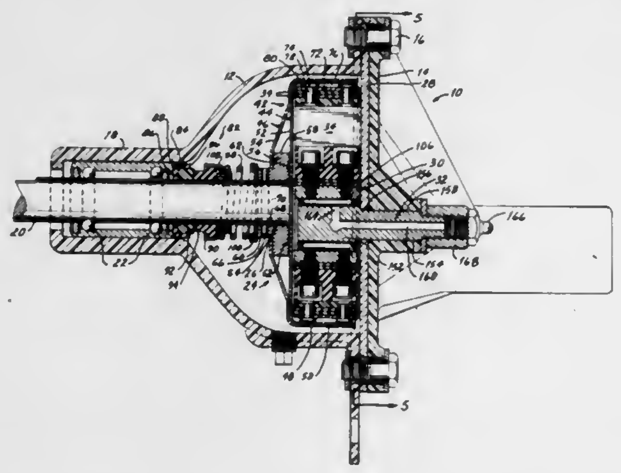
4,443,167
ROTARY FLUID PUMP MECHANISM

Sterling O. Stageberg, deceased, late of St. Petersburg, Fla., and Edward A. Linney, legal representative, 1513 4th Street North, St. Petersburg, Fla. 33704

Filed Aug. 20, 1981, Ser. No. 294,753

Int. Cl.³ F04C *5/00, 15/00*

U.S. Cl. 418—91 **25 Claims**



1. A fluid pump for pumping a fluid from an input conduit to an output conduit, comprising in combination:
a housing;
a cup-shaped rotor assembly rotatably disposed within said housing;
a rotatable vane ring assembly slidably disposed within said rotor assembly;
means for engaging said vane ring assembly within said rotor assembly to prevent said vane ring assembly from rotating within said rotor assembly;
a hub assembly disposed within said vane ring assembly;
means for positioning the axis of said hub assembly in a position parallel and eccentric to the axis of rotation of said vane ring assembly;
a wear plate in juxtaposition with the open end of said rotor assembly;
a plurality of band-shaped vanes interconnecting said vane ring assembly and said hub assembly;
said vanes being disposed in a spaced-apart relationship parallel to the axis of rotation of said vane ring assembly to form a plurality of pump chambers;
each of said pump chambers being defined by two said vanes, the bottom of said rotor assembly, and the inner surface of said wear plate whereby the volume of said pump chambers sequentially increase and decrease as said vane ring assembly is rotated;
an input port connected in fluid communication with said pump chambers when said pump chambers are increasing in volume as said vane ring assembly is rotated;
an output port connected in fluid communication with said pump chambers when said pump chambers are decreasing in volume as said vane ring assembly is rotated;
means for connecting said input port to the input conduit; and
means for connecting said output port to the output conduit.

4,443,168
GEAR MACHINE CENTERING ARRANGEMENT

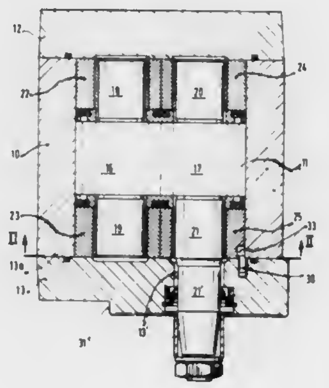
Wilhelm Dworak, Stuttgart; Martin Fader, Schoemberg; Claus Jöns, Sachsenheim; Siegfried Mayer; Karl-Heinz Müller, both of Vaihingen; Manfred Rasper, Leonberg; Dietrich Schuldt, Stuttgart; Wolfgang Talmon, Oetisheim, and Güenter Wolff, Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

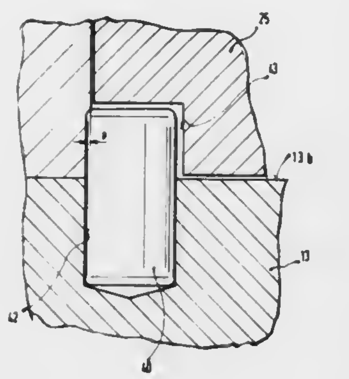
Filed Aug. 25, 1981, Ser. No. 296,183

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1980, 3035663

Int. Cl.³ F01C *1/18, 21/10;* **F16B** *19/02*

U.S. Cl. 418—131 **7 Claims**





1. In a hydraulic gear machine, a combination comprising a hollow housing including a housing body having an inner surface bounding an internal chamber having at least one open end, and at least one end wall mounted on said housing body and having an end face which faces and closes said open end of said chamber in a mounting position of said end wall; meshing gear means in said chamber; and means for centering said end wall in said mounting position thereof relative to said housing body, including at least four pins extending from said end face of said end wall into said open end of said chamber and engaging said inner surface at said open end in said mounting position, said four pins being so distributed that their outer surfaces define an imaginary figure of slightly larger dimensions than those of said inner surface of said housing body at said open end of said chamber so that said pins are fitted into said open end on assembly of said end wall with said housing body with attendant material displacement.

4,443,169
GEAR PUMP

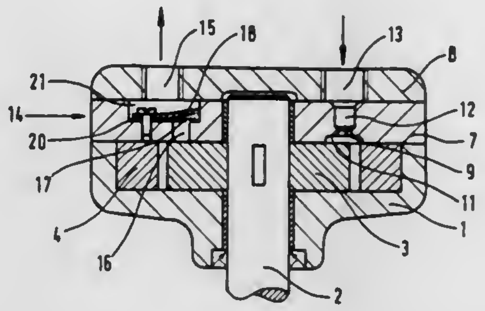
Johann Merz, Bopfingen, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG, Friedrichshafen, Fed. Rep. of Germany

Filed Jan. 28, 1981, Ser. No. 229,067

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1980, 3005657

Int. Cl.³ F04C *2/10, 15/04*

U.S. Cl. 418—171 **5 Claims**



1. A gear pump of the kind comprising a ring gear having therein an eccentrically mounted meshing driving gear wherein pressure pockets are cylically effected between meshing teeth varying in volume so as to progressively increase in volume at an inlet pressure zone and progressively decrease at an outlet pressure zone;
choke means at the inlet pressure zone through which fluid passes to said pressure pockets during increase of volume of said pressure pockets;
means effecting a plurality of outlet pressure passages communicatable with said pressure pockets at said outlet pressure zone and having check valves openable in response to pressure increase in said pressure pockets for flow through said outlet pressure passages during decrease in volume at said outlet pressure zone;
including a housing for said gears and means closing said housing comprising a member having said outlet pressure passages therethrough;
means providing a respective check valve for each said outlet pressure passage,
wherein said member is a cheek plate contiguous with the faces of said gears and said outlet passages comprise outlet pressure bores arcuately arrayed about the axis of rotation of said driving gear;
said cheek plate having a recess in said outlet pressure zone to effect a common outlet chamber communicating with said outlet pressure bores.

4,443,170
ARRANGEMENT AT OIL-INJECTED HIGH-PRESSURE SCREW COMPRESSOR

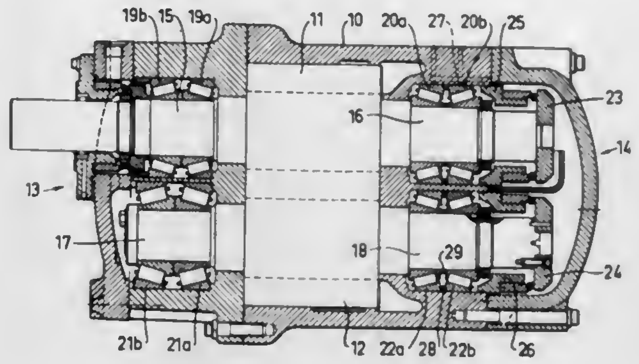
Lars L. B. Schibbye, Älgvägen, and Rolf A. Englund, Sandkullsvägen, both of Sweden, assignors to Sullair Technology AB, Stockholm, Sweden

Filed Nov. 24, 1982, Ser. No. 444,240

Claims priority, application Sweden, Nov. 25, 1981, 8107014

Int. Cl.³ F01C *1/16;* **F03C** *2/00;* **F04C** *29/02*

U.S. Cl. 418—203 **7 Claims**



1. An arrangement at oil-injected screw compressors for high pressures, characterized in that the length/diameter ratio of the rotors is lower than 1.3:1 in claim 1, that taper roller bearings in pairs are used at both shaft ends of the rotors, that the bearings at the high-pressure end of the rotors are arranged so that the wider edges of the inner rings of the bearings are facing toward each other and are capable to take up both radial and axial forces, that the bearings at the low-pressure end of the rotors are arranged so that the narrower edges of the inner rings of the bearings are facing toward each other and are capable to take up only radial forces, and that oil-pressure actuated balancing pistons are provided at the shaft ends on the low-pressure end of the rotors for taking up the major part of the axial forces initiated by the compressor.

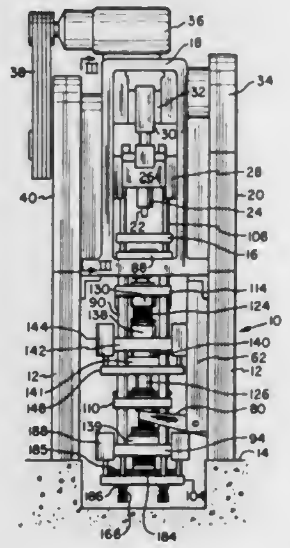
4,443,171
MULTI-MOTION MECHANICAL PRESS

James N. Dixon, DuBois, Pa., assignor to Wesjay, Inc., Greenville, Pa.

Filed Apr. 14, 1982, Ser. No. 368,110

Int. Cl.³ B29C *3/00;* **B30B** *11/02*

U.S. Cl. 425—78 **22 Claims**



1. In a press for consolidating powder into a useful article, said press having a support frame mounting an upper assembly including an upper ram slide having an upper punch mounted on a pitman connected to a crankshaft and driven by a bull gear, a die table having a fill cavity and a press bed, the improvement comprising:
a lower compaction and ejection assembly suspended from

the press bed by four hollow support posts, said assembly including:
an ejection plate;
at least one pressure plate below the press bed for supporting a lower ram connected to the depending ends of said support posts;
die plate support posts extending from said die plate through said hollow support posts and connected to a core rod plate at the lower ends thereof;
a lower ram having a punch and supported on said pressure plate;
a pair of push rods extending from upper ram slide and extending through the ejection plate; and
means for raising said ejection plate upon compaction of the powder to lift said lower ram and punch to eject said compacted article from the cavity of the die table.

4,443,172
METHODS OF AND APPARATUS FOR MAKING CATHODE ELECTRODES FOR SODIUM SULPHUR CELLS

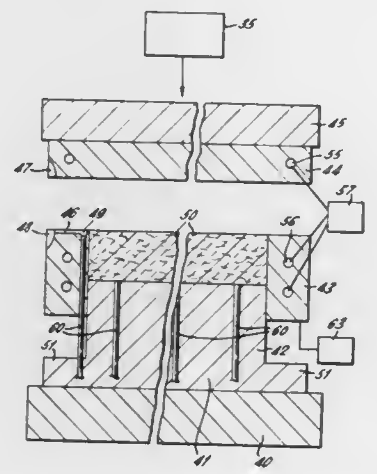
David J. Riley, Chester, and Gerald McGreavy, Bolton, both of England, assignors to Chloride Silent Power Limited, London, England

Filed Nov. 25, 1981, Ser. No. 324,922

Claims priority, application United Kingdom, Dec. 2, 1980, 8038627

Int. Cl.^{3} H01M *4/04*

U.S. Cl. 425—112 **15 Claims**



1. An apparatus for the manufacture of cathode structures for sodium sulphur cells comprising a closable mould for compressing a fibre matrix to the required shape of the structure, means for heating sulphur to a temperature above its melting point, temperature controlled injection means for injecting liquid sulphur into the mould containing the compressed matrix material and cooling means for maintaining the mould at a temperature of 12° C. or beow, said injection means having a temperature controller operative to maintain the sulphur temperature above the melting point but below 158° C. and furthermore including a temperature-controlled nozzle with heating means arranged to maintain the temperature of sulphur leaving the nozzle between 148° C. and 158° C., said nozzle having a shut-off valve.

4,443,173
MOLDING APPARATUS INCLUDING INSERT FEEDING MEANS

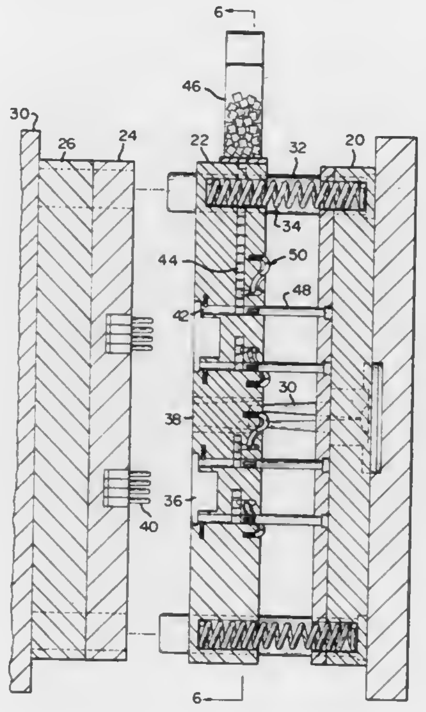
Robert L. Mansberger, II, Middletown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 21, 1983, Ser. No. 477,055

Int. Cl.^{3} B29C *1/00;* **B29D** *3/00;* **B29F** *1/022*

U.S. Cl. 425—126 R **8 Claims**

1. In combination with a molding apparatus having first and second cavity mold plates, a back-up plate to support said first cavity mold plate, a top clamp plate adapted to drive the second cavity mold plate with respect to said first cavity mold plate, the mold plates together defining therebetween a plurality of mold cavities and including channels for flow of molding material from a central discharge point to each mold cavity, means to feed individual inserts into the mold cavities to be molded therein, said means comprising a plurality of feed tubes in said second cavity mold plate each opening into a respective one of said cavities at a position for an insert, a feed hopper at one end of said second cavity mold plate, a like plurality of feed tracks extending normal to the axis of a respective one of said feed tubes providing gravity feed communication between said feed hopper said feed tube, means in each said feed track allowing a single insert to be dispensed from the feed track into the feed tube with each closure of said mold apparatus, and a like plurality of transfer pins secured to said top clamp plate each aligned to extend into a respective feed tube whereby relative closure motion of said top clamp plate and said second mold plate causes said transfer pins to move through said feed tubes driving said inserts into the correct location in the respective mold cavities.



4,443,174
PRESSING DEVICE FOR PRODUCING COMPACTS FROM SOURCE MATERIAL IN POWDER FORM, IN PARTICULAR PULVERIZED NUCLEAR REACTOR FUEL

Gerhard Heller, Hanau; Manfred Adelmann, Bruchköbel; Wilfried Wendorf, Hammersbach, and Wilhelm Königs, Rodenbach, all of Fed. Rep. of Germany, assignors to Alkem GmbH, Hanau, Fed. Rep. of Germany

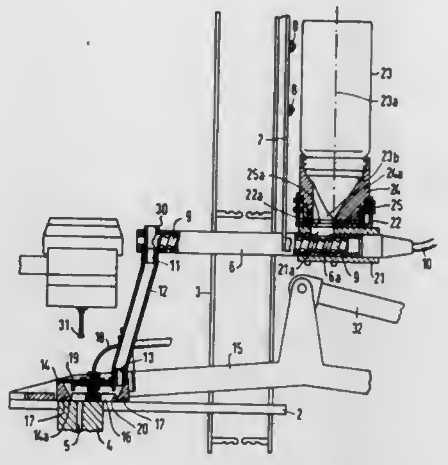
Filed Sep. 23, 1982, Ser. No. 422,180

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1981, 3139150

Int. Cl.^{3} B30B *15/30;* **B29C** *3/04, 3/06*

U.S. Cl. 425—147 **7 Claims**

1. Pressing device for producing compacts from source material in powder form, in particular pulverized nuclear reactor fuel, comprising a die-plate contained in a platen and having a bore associated with a ram, for receiving source material powder, a filling shoe which is disposed at a movable arm, can be displaced over the platen, and applies against the platen, for filling source material powder into the die-plate bore, an outflow opening in the filling shoe directed toward the platen with a filling aid means, a hose connecting the filling shoe to a reservoir for source material powder provided with a metering means, the combination therewith of a passing wheel disposed in the outflow opening of the filling shoe as filling aid means, a tube in which is contained a feedscrew coaxial with the tube inserted between the hose and the reservoir as metering means, said reservoir comprising a bottom part with a can type place-on part and with an outflow bore of the can type place-on part leading to the tube with the feedscrew, a coupling part mounted at the opening of the can type place-on part, said coupling part having a passage bore leading to an opening in the can place-on part and disposed eccentric to the longitudinal axis of the can type place-on part, a cover part associated with the coupling part and located between the bottom part and the coupling part, said cover part having a passage opening eccentric to the longitudinal axis of the can type place-on part, and said coupling part and said cover part rotatable relative to each other about the longitudinal axis of the can type place-on part into a position in which the passage bore in the coupling part, the passage opening in the cover part and the outflow bore in the bottom part are aligned.



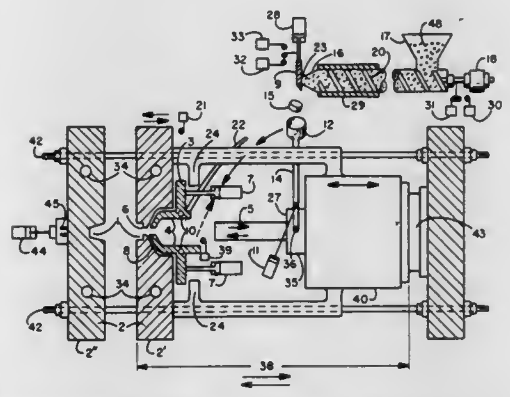
4,443,175
APPARATUS AND METHOD FOR RUNNERLESS TRANSFER MOLDING OF THERMOSET COMPOUNDS

Robert H. Rose, 13850 Forest Grove Rd., Brookfield, Wis. 53005, and Allen J. Rose, W209 S6876 Stonecrest, Muskego, Wis. 53150

Filed Nov. 5, 1982, Ser. No. 439,420

Int. Cl.^{3} B29F *1/04, 1/08*

U.S. Cl. 425—208 **5 Claims**



1. A runnerless transfer molding apparatus for thermoset molding comprising a reciprocating screw plasticizer and means to cut off a segment of plasticized compound extruded from said plasticizer, dropping said segment of plasticized compound in a transfer cup in an upright position, and means to tilt said cup to a horizontal position to deposit said plasticized compound in a horizontal cylinder, said cylinder being the feed chamber to the nozzle and gate of the die, said plasticized compound being forced through said nozzle and gate to the die by action of injection ram plunger.

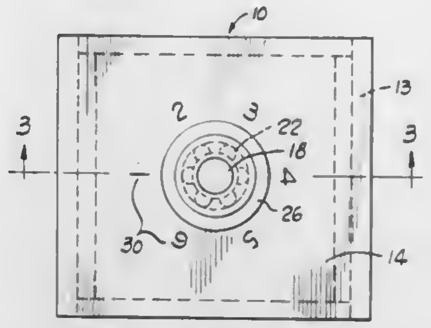
4,443,176
FOOD MOLD

Nick Battistone, 25271 Chardon Rd., Richmond Heights, Ohlo 44143

Filed Sep. 16, 1981, Ser. No. 302,795

Int. Cl.^{3} B29C *7/00;* **A23G** *9/04*

U.S. Cl. 425—276 **8 Claims**



1. A food molding and dislodging device comprising:
(a) an outer body structure, having sides and an upper mounting plate;
(b) a dislodging plate disposed within said outer body member in a plane parallel with the top of said mounting plate and movable upward and downward relative to the outer body member;
(c) a depth controller extending upward and above said mounting plate said depth controller having a plurality of grooves, each of said grooves being of differing length; and,
(d) a depth control selector in communication with the dislodging plate and wherein said depth control selector is rotatable around a central axis to selectively position said dislodging plate in communication with one of said grooves, the dislodging plate being positioned at a depth within the outer body member defined by the length of the groove in selected communication.

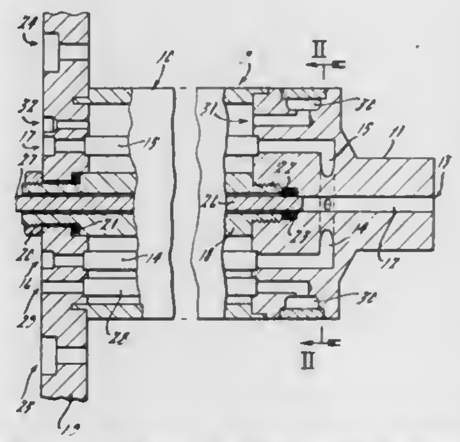
4,443,177
BACK FLUSH INJECTION NOZZLE

Bhaskar S. Modur, Canton; Uwe W. Perl, Union Lake, and Donald E. Smick, Berkley, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 6, 1983, Ser. No. 456,066

Int. Cl.^{3} B29F *1/03;* **B29G** *3/00*

U.S. Cl. 425—543 **12 Claims**

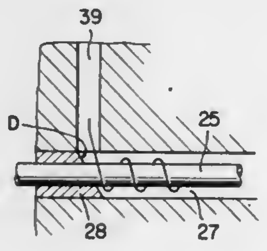


1. Injection apparatus adapted to supply thermosetting in-mold coating material into a molding cavity, which injection apparatus comprises:
a housing, the forward end of which comprises an outlet nozzle, an outlet channel extending through the outlet nozzle and the forward terminus of said outlet channel forming an outlet port;
first and second material supply channels, each extending within said housing from first and second supply inlet

ports in said housing, respectively, to a single common junction with said outlet channel; and
a shut-off rod slideably disposed within said outlet channel, being adapted to provide a sealing closure of said outlet port in a first, forward position and being retractable from the forward position to a second position in the outlet channel rearward of said junction of said material supply channels with said outlet channel and, in both the forward and retracted position, forming a sealing engagement with the outlet channel rearward of said junction of said material supply channels with said outlet channel; said first and second material supply channels being in communication with each other via a single flow-path when said shut-off rod is in said forward position.

4,443,178
VALVE NOZZLE DEVICES

Shigeru Fujita, Numazu, Japan, assignor to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 29, 1982, Ser. No. 402,853
Claims priority, application Japan, Jul. 30, 1981, 56-119685; Oct. 15, 1981, 56-164664; Oct. 15, 1981, 56-164665
Int. Cl.³ B29F *1/03*
U.S. Cl. 425—564 **8 Claims**

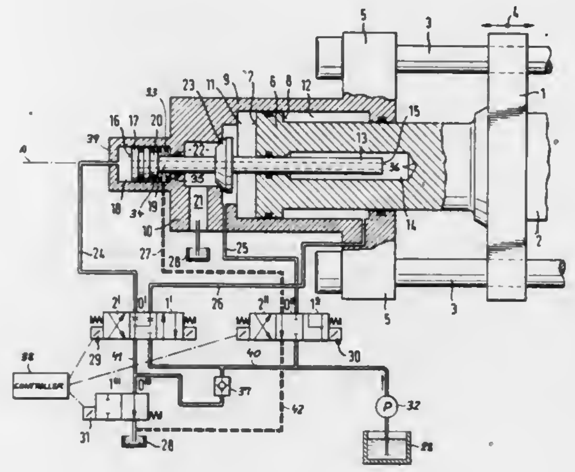


1. A valve nozzle device provided between a heating cylinder of an injection molding machine and at least one metal mold, and including at least one nozzle each controlled by a needle valve so as to inject a plastic resin melted in said heating cylinder into said metal mold, said device comprising first passage means connected to said heating cylinder for supplying said plastic resin melted in said heating cylinder therethrough, third passage means each provided in the form of a smooth cylinderical passage extending to envelope said needle valve so as to be merged into said nozzle, and second passage means interconnecting said first and third passage means, said second passage means having a central axis extending in a plane other than a plane including a central axis of said needle valve, said second passage means being connected with said third passage means in such a positional relation that said plastic resin in said second passage means flows into said third passage means from one side thereof following a helical path extending around said needle valve.

4,443,179
RAPID-ACTION MOLD CLOSER

Walter Wohlrab, Weissenburg, Fed. Rep. of Germany, assignor to Krauss-Maffei AG, Munich, Fed. Rep. of Germany
Filed Feb. 12, 1982, Ser. No. 348,235
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1981, 3107004
Int. Cl.³ B29F *1/06*
U.S. Cl. 425—590 **10 Claims**

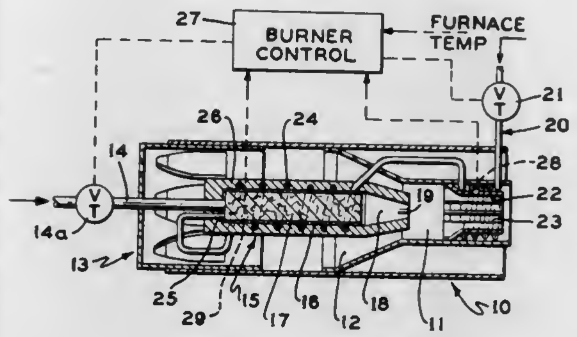
1. A mold-closing apparatus for an injection-molding machine having a movable mold-carrying plate, said apparatus comprising:
a fixed main cylinder;
a main piston connected to said plate and displaceable in said cylinder along a predetermined axis, said main piston forming in said cylinder a rear chamber and spaced axially toward said plate therefrom a front chamber, whereby pressurizing of said rear chamber with simultaneous depressurizing of said front chamber displaces said piston and plate forward to close a mold;
a rapid-action cylinder formed and extending axially in said main piston;
a rapid-action piston in said rapid-action cylinder and having an axially forwardly directed face forming therein a rapid-action chamber;
a positioning cylinder fixed on said main cylinder;
a positioning piston in said positioning cylinder and having therein a rearwardly directed face larger than said face of said rapid-action piston and forming with said positioning cylinder a pressurizable positioning chamber, said positioning piston being axially fixed on and integral with said rapid-action piston, said rapid-action piston being formed with a piston passage extending between and opening at its said face and at said face of said positioning piston, said main cylinder being formed with a large-diameter fill passage opening axially forward into its said rear chamber;
a valve element integral with and fixed axially to said rapid-action and positioning pistons and displaceable between a rear closed position engaged with and blocking off said fill passage and an open position forward therefrom and exposing said fill passage;



a fluid reservoir connected to said fill passage;
drive means for supplying fluid under pressure; and
control means including valves connected between said reservoir, drive means, and chambers for,
in a rapid-action closing position, supplying fluid under pressure to said positioning chamber while venting said front chamber to said reservoir and thereby moving said positioning piston, rapid-action piston, and valve element forward with displacement of the latter into said open position, whereby said rapid-action chamber is pressurized through said piston passage to move said main piston rapidly forward and said rear chamber is connected to said large fill passage to fill rapidly,
in a mold-closing position, supplying fluid under pressure to said rear chamber while venting said front and positioning chambers for moving said valve element back into said closed position, whereby said main piston is urged forward by pressure in said rear chamber, and
in a rapid-action opening position, supplying fluid under pressure to said front chamber while blocking flow out of said positioning chamber to move said element into said open position and vent said rear chamber through said fill passage into said reservoir.

4,443,180
VARIABLE FIRING RATE OIL BURNER USING AERATION THROTTLING

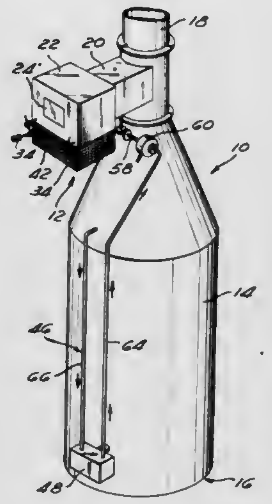
Richard T. LeFrois, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed May 11, 1981, Ser. No. 262,150
Int. Cl.³ F23N *1/00*
U.S. Cl. 431—4 **7 Claims**



1. A method for increasing the turndown ratio in a pressure atomizing liquid fuel burner comprising the steps of:
combining an amount of auxiliary gas with the liquid fuel prior to the atomization thereof in a generator/preheater in a manner which produces a substantially homogeneous foam;
atomizing said foam into a combustion chamber through a pressure-atomizing means; and
modulating the fuel consumption of the burner in response to temperature and pressure in said generator/preheater by controlling the auxiliary gas weight fraction in said foam such that the atomization pressure to said pressure-atomizing means remains substantially constant throughout the full turndown range of said burner.

4,443,181
DRAFT CONTROL SYSTEM

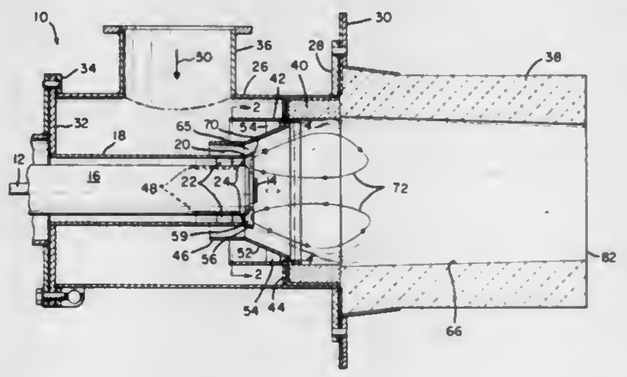
Robert J. Russell, 1332 Lymric Way, Bakersfield, Calif. 93309
Continuation-in-part of Ser. No. 124,089, Feb. 25, 1980, Pat. No. 4,341,344. This application Apr. 27, 1982, Ser. No. 372,326
Int. Cl.³ F23N *3/00, 5/00*
U.S. Cl. 431—6 **4 Claims**



4. A method for controlling uniform draft in a furnace having main and auxiliary draft control means mounted in an auxiliary channel in communication with the flue of said furnace, said furnace having burners with air regulators thereon, said method comprising the steps of:
setting the air regulators on the burners of said furnace in a 50% open position;
adjusting said auxiliary draft control means to an approximately half open position;
initially setting the main draft control means in an open position;
firing the furnace to begin combustion;
monitoring the amount of excess oxygen in the by-products of said combustion;
opening the air regulators on the burners of said furnace to provide the desired level of efficient excess oxygen; and
adjusting the position of said auxiliary draft control means in response to changes in operating conditions to assist said main draft control means in maintaining uniform draft conditions.

4,443,182
BURNER AND METHOD

Raymond J. Wojcieson, Annville, and Leonard G. Nowak, Palmyra, both of Pa., assignors to Hauck Manufacturing Company, Lebanon, Pa.
Filed Nov. 10, 1981, Ser. No. 320,007
Int. Cl.³ F23M *9/00*
U.S. Cl. 431—183 **19 Claims**



1. In an industrial burner having means for delivering fuel into a combustion chamber having a wall, a system for intermixing air, fuel and recirculating gases within the combustion chamber to provide a flame having substantially uniform combustion gas profiles of velocity and temperature at the combustion chamber exit, the system comprising:
a secondary air passage for the flow of secondary air surrounding the fuel delivering means and having an inner wall, an outer wall and means for dividing said secondary air passage into a plurality of separate flow passages to provide zones of relatively higher pressure secondary air flow forming along said dividing means adjacent relatively lower pressure secondary air flow within at least one of said flow passages;
a flow attachment wall connected to the outer wall of said secondary air passage and extending divergingly into the combustion chamber away from the axial centerline of said combustion chamber;
a secondary air chamber surrounding said secondary air passage at the entrance to said passage for providing secondary air to said secondary air passage in a direction non-parallel to the longitudinal axis of said secondary air passage and each said secondary air passage dividing means;
a secondary air inlet means for supplying secondary air to said secondary air chamber;
said secondary air chamber being connected between said inlet means and said secondary air passage;
deflector means connected to the end of said secondary air passage inner wall downstream of said dividing means for promoting attachment of said secondary air flow along said flow attachment wall and for providing a boundary between regions of different pressures adjacent said deflector means in the combustion chamber to promote generation of vortexes by the interaction of the zones of high-pressure secondary air flow with the fuel and recirculating gases.

4,443,183

COMBUSTION APPARATUS

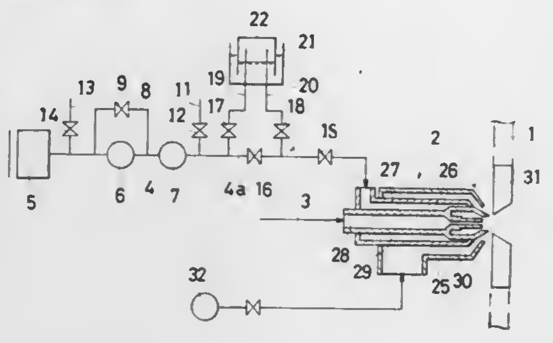
Shoji Shimizu, and Hiroyuki Mitsudomi, both of Osaka, Japan, assignors to Osaka Gas Company Limited, Osaka, Japan

Filed Jul. 21, 1982, Ser. No. 400,289

Claims priority, application Japan, Jul. 21, 1981, 56-108997[U]; Sep. 14, 1981, 56-145340; Sep. 14, 1981, 56-145342

Int. Cl.^{3} F23D *13/40*

U.S. Cl. 431—354 **3 Claims**



1. A combustion apparatus for combusting fuel in a combustion furnace by utilizing air which is enriched with oxygen, said apparatus comprising:

an oxygen permselective membrane for enriching air with oxygen;

a first piping line having a vacuum pump for feeding said air enriched with oxygen to the combustion furnace;

a bypass piping line connected to said first piping line at the upstream side and the downstream side of said vacuum pump, said bypass piping line being equipped with a control valve;

a second piping line having a first end connected with said first piping line between said vacuum pump and said oxygen permselective membrane and a second end open to the atmosphere, said second piping line being equipped with a control valve; and

a third piping line having a first end connected with said first piping line between said vacuum pump and the combustion furnace and a second end open to the atmosphere, said third piping line being equipped with a control valve.

4,443,184

PROCESS AND APPARATUS FOR IGNITING A SINTER MIX

Horst Bonnekamp, Düsseldorf; Baldur Sauer, Krefeld; Heinrich Wolkewitz, Duisburg; Günter Hepp, Oberhausen, and Walter Kraemer, Nuess, all of Fed. Rep. of Germany, assignors to Wistra GmbH Thermoprozesstechnik, Düsseldorf-Heerdt, Fed. Rep. of Germany

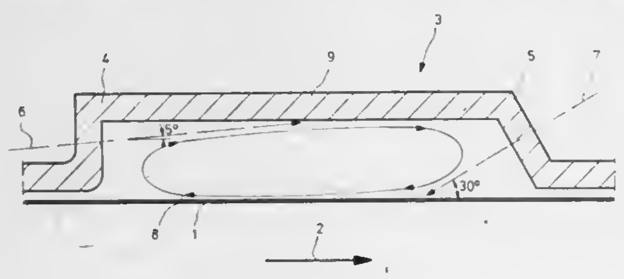
PCT No. PCT/DE81/00047, 371 Date Nov. 23, 1981, 102(e) Date Nov. 23, 1981, PCT Pub. No. WO81/02747, PCT Pub. Date Oct. 1, 1981

PCT Filed Mar. 20, 1981, Ser. No. 328,596

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1980, 3010844; Mar. 21, 1980, 3010845

Int. Cl.^{3} F27B *14/00, 9/26;* **C22B** *1/16;* **C21B** *7/16*

U.S. Cl. 432—13 **20 Claims**



1. Process for igniting a sintering mix consisted of a solid fuel and a sinter material, especially a sinter smelting mixture, in a sintering machine having an igniting kiln having two closed end walls, side walls and a closed roof, comprising the steps of providing in the kiln a first group of burners which operate approximately stoichiometrically and providing in the kiln a second group of burners, passing a sintering mix underneath the igniting kiln substantially horizontally from an inlet end wall to an outlet end wall; and introducing into an upper region of the kiln flue gases from said first group of burners and introducing from said second group of burners flue gases with an increased oxygen content into a lower region of the kiln in such a manner that a kiln atmosphere results which, in the upper region of the igniting kiln, is hotter and of diminished oxygen content, whilst in the lower region it is cooler and more oxygen-enriched, whereby hot flue gases are generated above the sintering mix and are heated up and ignite the surface of the sintering mix by radiation and convection.

4,443,185

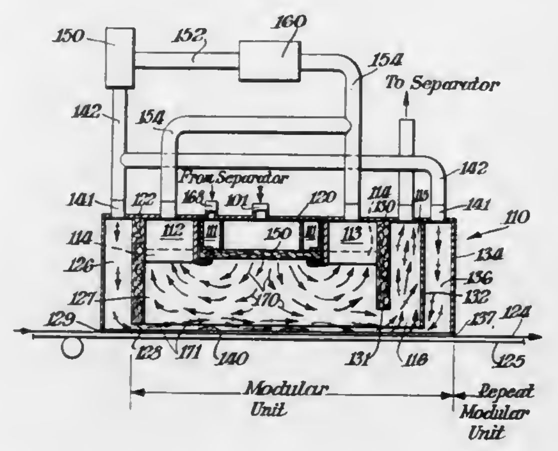
HEATING OF WEBS

Thomas M. Smith, 1415 Golf Rd., Cinnaminson, N.J. 08077

Continuation-in-part of Ser. No. 292,167, Aug. 11, 1981, and a continuation-in-part of Ser. No. 279,081, Jun. 30, 1981, and a continuation-in-part of Ser. No. 238,418, Feb. 26, 1981, and a continuation-in-part of Ser. No. 186,491, Sep. 12, 1980, Pat. No. 4,378,207, and a continuation-in-part of Ser. No. 178,121, Aug. 14, 1980, Pat. No. 4,373,904, and a continuation-in-part of Ser. No. 952,332, Oct. 18, 1978, Pat. No. 4,326,843, said Ser. No. 238,418, Ser. No. 186,491, and Ser. No. 178,121, each is a continuation-in-part of Ser. No. 94,901, Nov. 16, 1979, Pat. No. 4,272,238, and Ser. No. 20,079, Mar. 13, 1979, Pat. No. 4,290,746. This application Oct. 19, 1981, Ser. No. 312,730

Int. Cl.^{3} F27B *9/28*

U.S. Cl. 432—59 **14 Claims**



1. A heating apparatus for heat-treating an elongated porous web of material as it is carried in a continuous manner through a heat-treating station, said apparatus including an endless porous conveyor belt threaded through that station and having an upper run to carry the web through the station, at least one gas-fired burner facing downwardly over said upper run, having the lower ends of its gas flames spaced not more than about five inches from the upper run, and extending approximately over the entire width of that run as well as over much of its length to heat the porous web, and at least one suction box under the upper run and having a suction mouth positioned to suck through the porous web and porous belt the hot combusted gases discharging from the burners, the mouth being located essentially entirely beyond but adjacent the flames so that the hot sucked-in gases are diluted with ambient cooler gas.

4,443,186

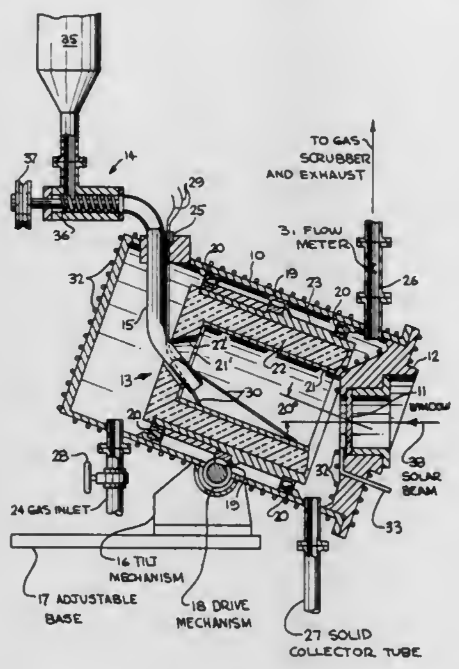
SOLAR HEATED ROTARY KILN

Pamela K. Shell, Tracy, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 14, 1982, Ser. No. 368,198

Int. Cl.^{3} F27B *7/00, 6/08;* **F26B** *19/00*

U.S. Cl. 432—103 **19 Claims**



1. A solar heated rotary kiln for decomposing material comprising:

a sealed container having a window therein for admitting solar energy therethrough,

a kiln rotatably mounted entirely within said sealed container,

said kiln being of a substantially cylindrical configuration and having one end fully open and aligned with said window such that solar energy passing through said window is directed only into said fully open one end of said kiln,

said kiln including an inner layer, a layer of insulation, and an outer wall,

means for directing material to be decomposed into said kiln through a partially closed end thereof located opposite said open end,

means for rotating said kiln,

means for exhausting gas from said sealed container, and

means located adjacent said fully open end of said kiln for collecting solids passing through said kiln.

4,443,187

PORTABLE HEATER WITH INTEGRATED CONTROL SYSTEM

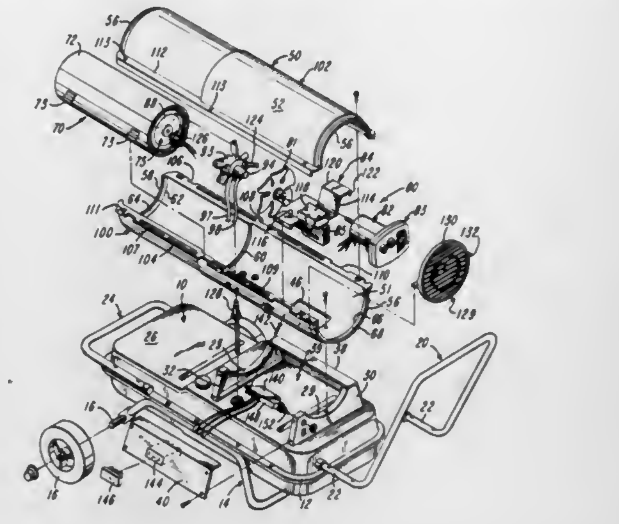
Robert S. Shaftner; Norman D. Chambers; Michael A. Kagan, and Eugene C. Briggs, all of Bowling Green, Ky., assignors to Koehring Company, Brookfield, Wis.

Filed Jun. 4, 1982, Ser. No. 384,868

Int. Cl.^{3} F24H *1/00;* **H01B** *7/34*

U.S. Cl. 432—222 **13 Claims**

5. A portable space heater comprising a housing constructed for a flow of air therethrough from an entry end to a discharge end, means defining a combustion chamber in said housing, heater operating elements including energizable means for compelling a flow of air through said housing and electrical controls for said operating means, means defining a protected compartment external to said housing and said housing having an opening in an area adjacent to said entry end thereof communicating the interiors of said housing and said compartment and said electrical controls including circuit board means in said compartment embodying in connection therewith the essential wiring and connections for directing power to and controlling the operation of said operating elements, the construction and arrangement utilizing the relatively remote location of the circuit board means and the cooling effect of incoming air at the entry end of said housing to insulate said circuit board means from the heat of combustion generated in said combustion chamber.



4,443,188

LIQUID COOLING ARRANGEMENT FOR INDUSTRIAL FURNACES

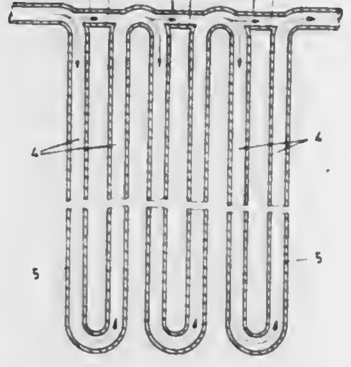
Karl Bühler, Nussbaumen, Switzerland, assignor to BBC Brown, Boveri & Company, Ltd., Baden, Switzerland

Filed Apr. 6, 1982, Ser. No. 366,089

Claims priority, application Switzerland, May 20, 1981, 32808/81

Int. Cl.^{3} F27D *1/12;* **C21C** *1/00;* **F28F** *21/02*

U.S. Cl. 432—233 **14 Claims**



4. In an industrial furnace having thermally highly stressed parts including furnace walls, cover frames; door frames and gas removal nozzles, a liquid cooling system for said thermally highly stress parts, said system comprising:

first flow means defining at least two pairs of first and second substantially vertical cooling channels having top and bottom ends;

first conduit means connecting the bottom ends of said first and second channels for providing flow communication therebetween;

second by-pass conduit means connecting the top ends of said first and second cooling channels of each said channel pair;

inlet means providing cooling fluid flow to the top of said first channel of one said channel pair;

third conduit means providing fluid flow between the tops of first and second channels of adjacent channel pairs; and

outlet means providing fluid outflow from the top of said second channel of a channel pair,

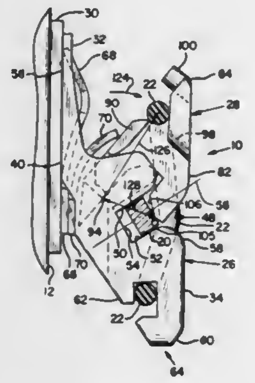
whereby cooling fluid from said inlet means and said third conduit means divides so as to flow into said first channel of one said channel pair, and to flow into said second conduit means thereby by-passing said channels, and whereby said fluid from said channels and said by-passed fluid mix in a succeeding said third conduit means and in said outlet means,

wherein said system further comprises a cooling liquid distribution chamber into which the tops of said channels extend, said distribution chamber including a fluid inlet at a first end, a fluid outlet at a second end and baffles defining by-pass openings at the top thereof, each said baffle being positioned between the tops of said first and second channels of each said pair of channels, whereby the portions of said distribution chamber between said baffles comprise said third conduit means and said by-pass openings comprise said second by-pass conduit means, and wherein said by-pass openings define, singly or in groups, stepwise larger passages in the direction of flow of said cooling liquid.

4,443,189
MULTI-PURPOSE ORTHODONTIC BRACKET

Alexander J. Wildman, 2440 Willamette St., Eugene, Oreg. 97405

Filed Oct. 15, 1982, Ser. No. 434,494
Int. Cl.^{3} A01C *7/00*
U.S. Cl. 433—10 **23 Claims**



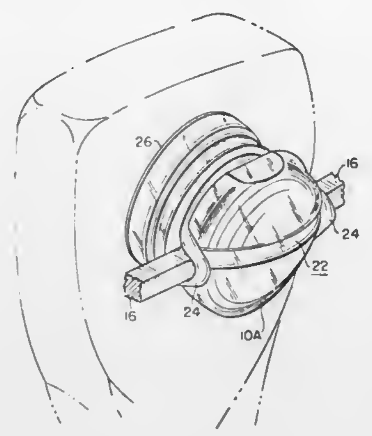
1. An orthodontic bracket comprising:
a body including a base, a first wing, and an arch wire slot in a side of the body remote from the base and extending generally normally to the wing;
slot closure means including a second wing directed oppositely of the first wing and a rigid closure member integrally connected to the second wing and directed toward the first wing and adapted to be moved into and out of a slot-closing position;
articulation means interconnecting the closure means and the body for relative movement of said closure member between a slot-open and a slot-closing position; and
means on said wings for receiving an elastic element to apply a bias to said closure means to urge the rigid closure member to the slot-closing position to rigidly secure an arch wire in the bracket.

4,443,190
THERMOPLASTIC ORTHODONTIC ARCH WIRE RETAINING ANNULAR LIGATURE AND PROCESS

Craven H. Kurz, No. 6 North Star, Apt. 106, Marina del Rey, Calif. 90291

Continuation-in-part of Ser. No. 316,880, Oct. 30, 1981, abandoned. This application Jan. 21, 1982, Ser. No. 341,515
Int. Cl.^{3} A61C *7/00*
U.S. Cl. 433—15 **1 Claim**

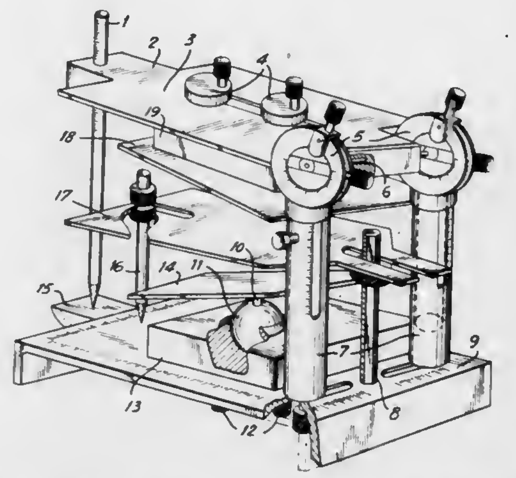
1. A process for applying an annular thermoplastic ligature to an orthodontic appliance to hold an orthodontic arch wire firmly on the appliance and which comprises the steps of: heating the thermoplastic material to a softened state, stretching the material and allowing the material to cool while maintaining it in its stretched state; forming a ligature out of the thermoplastic material; applying the ligature to the appliance and around the arch wire; heating the ligature to a temperature at which the ligature assumes a shrunken state; and allowing the ligature to cool in its shrunken state firmly to hold the arch wire on the appliance.



4,443,191
APPARATUS FOR THE CONFECTION OF MAXILLAR MODELS THROUGH CEPHALOMETRIC ANALYSIS

Antonio M. Gutierrez, Havana, Cuba, assignor to Empresa Cubana Exportadora E Importadora de Productos Medicos, Havana, Cuba

Continuation of Ser. No. 184,071, Sep. 4, 1980, abandoned. This application Sep. 30, 1982, Ser. No. 429,033
Int. Cl.^{3} A61C *11/00*
U.S. Cl. 433—56 **8 Claims**

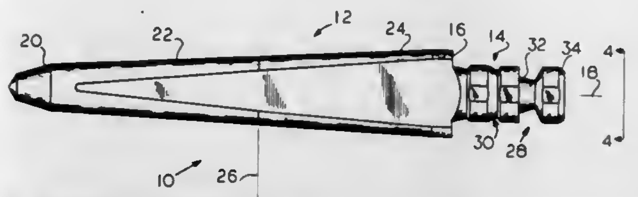


1. An apparatus for the production of maxillary and jawbone models from teleradiographics with all of their corresponding osseous and anatomical form and structure including their dimensional relationships through cephalometric analysis comprising: a single base; a pair of towers extending from said single base, said towers being set with condylar means for supporting an upper section; said upper section being provided with condylar movements; said base and said upper section being adapted to support mandibular and palatal plates and their respectively connected sliding ball joint platforms, said platforms which support said models; an occlusal plate is disposed between said mandibular and palatal plates and is positioned over first and second rods; said first rod supporting one end of said occlusal plate and being disposed between said pair of towers, and said second rod supporting the other end of said occlusal plate being disposed at said other end of said occlusal plate opposite said first rod; where cephalometric angles, planes and points may by transferred to said apparatus by means of an articulated cephalometric ruler.

4,443,192
DOWEL PINS

Herman Blitz, P.O. 925 Harbor Lake Ct., Safety Harbor, Fla. 33572

Filed May 24, 1982, Ser. No. 381,542
Int. Cl.^{3} A61C *19/00*
U.S. Cl. 433—74 **4 Claims**

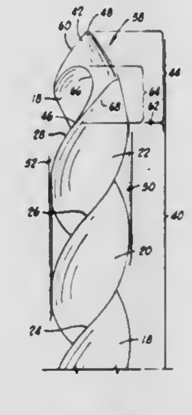


1. A dental tool used in making a crown on a plaster model, wherein said tool comprises, in combination,
an elongate, tapered shank portion,
a barbed portion integrally formed with said shank portion and disposed in axial alignment therewith,
a plaster base member,
said shank portion of said tool embedded in said base member, and releasably engaged therewith,
a crown model means of the type used in preparing a crown that will be fitted into a patient's mouth,
said barbed portion of said tool fixedly secured interiorly of said crown model means,
said barbed portion including a plurality of axially spaced barb members of generally disc-like configuration,
said barb members interconnected by link members,
said link members having a diameter less than the respective diameters of said barb members,
a flat means formed on each of said plurality of barbed members and on said shank portion to provide rotational stability between said barbed members and said crown model means and between said shank portion and said base portion,
said flat means including a plurality of flat surfaces formed on said barb members and said shank portion,
and said flat surfaces disposed in a common plane parallel to but offset from the longitudinal axis of symmetry of said tool.

4,443,193
ENDODONTIC INSTRUMENT

James B. Roane, 707 SW. 24th St., Norman, Okla. 73069

Filed Feb. 8, 1983, Ser. No. 464,972
Int. Cl.^{3} A61C *5/04*
U.S. Cl. 433—102 **28 Claims**

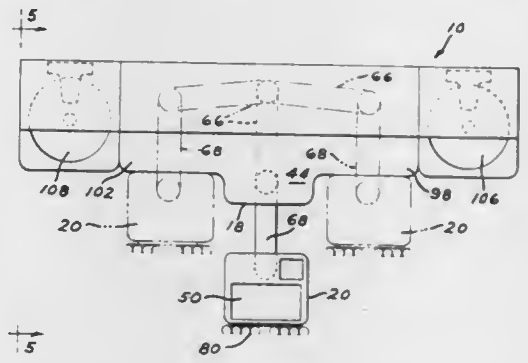


1. An endodontic instrument, comprising:
a tapered working portion defined on a flexible shaft, said working portion including a plurality of spiral rotationally bi-directional cutting edges thereon; and
a tapered tip defined on said flexible shaft and intersecting an end of each of said cutting edges of said working portion, said tapered tip having a greater angle of taper than said tapered working portion, said tapered tip being shaped such that sharp cutting points which are normally present at an intersection between said ends of each of said cutting edges and a standard 75° included angle conically tapered tip are substantially eliminated so that lateral transportation of said instrument when cutting a curved root canal is reduced as compared to an otherwise similar instrument having a standard 75° included angle conically tapered tip intersecting said ends of said cutting edges.

4,443,194
DENTAL OPERATING UNIT WITH REVERSIBLE DENTAL ASSISTANT'S UNIT

John R. Fuchs, Louisville, Ky., assignor to Robert J. Fuchs, Louisville, Ky.

Filed Jun. 28, 1982, Ser. No. 392,853
Int. Cl.^{3} A61G *1/14, 15/00*
U.S. Cl. 433—79 **6 Claims**



1. A dental operating unit adapted for rear delivery use adjacent the head of a reclining patient's chair, said unit comprising:
a. a dentist's dynamic instrument service cabinet located at the rear of the patient's head and is accessible to the dentist as he operates from either side of the chair, said cabinet being provided with an elevated elongated counter top that extends for at least the width of the service cabinet on each side thereof thereby leaving a gap between the top of the cabinet and the underside of the counter top;
b. a reversible dental assistant's unit comprising an instrument tray and a plurality of dynamic instruments arranged on the side of the tray, said unit being supplied with one or more of the following utilities: electrical cable means, vacuum conduit means, water conduit means, and a compressed air conduit means for supplying the instruments of the assistant's unit, said unit being adapted for positioning either to the left front or the right front of the said dentist's dynamic instrument service cabinet;
c. and a pivoted bracket arm means located in the said gap between the counter top and the dynamic instrument service cabinet for swinging movement in a horizontal plane and supporting the said dental assistant's unit;
d. whereby the dental assistant's unit may be shifted anywhere between its left side and right side positions so that the dental assistant may function successfully from either side of the patient's chair, while the pivoted bracket arm means is hidden under the counter top.

4,443,195
DRIVING AND WATER POURING CONTROL DEVICE FOR DENTAL AIR-TURBINE HANDPIECE

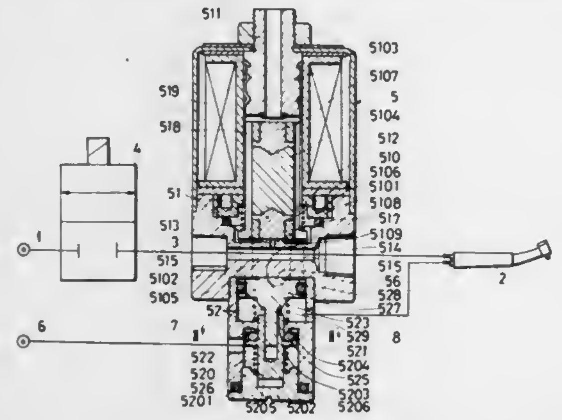
Takahiro Matsui, Uji, Japan, assignor to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed May 20, 1981, Ser. No. 265,379
Claims priority, application Japan, May 22, 1980, 55-71100[U]; May 29, 1980, 55-74923[U]
Int. Cl.^{3} A61C *1/08*
U.S. Cl. 433—84 **4 Claims**

1. A device for controlling driving and water pouring of a dental air-turbine handpiece, said device comprising an air supply on-and-off valve means and a water pouring on-and-off

valve means disposed in an air supply passageway connecting a compressed air source to said handpiece, a first water pouring passageway connecting said water pouring valve means to a water source, and a second water pouring passageway connecting said handpiece to said water pouring valve means, said water pouring valve means including a valve control unit and a valve operating unit, said valve control unit, when in its inoperative state, communicating with the atmosphere through a first exhaust port to thereby close said valve operating unit, but said valve control unit, when in its operative state, closing said first air exhaust port and introducing part of said compressed air from said air supply passageway to the inside thereof to thereby open said valve operating unit so as to establish communication between said first and second water pouring passageways and wherein said water pouring on-and-off valve means comprises:

a four-way solenoid valve and a housing connected to said four-way solenoid valve, said four-way solenoid valve including a first air inlet port connected to said air supply passageway and a second air exhaust port communicating with said first inlet port, first air supply port and said first air exhaust port, said air exhaust port, when said first air inlet port is closed, communicating with said air supply port, said first air inlet port, when said first air exhaust port is closed, communicating with said air supply port, said housing including a water inlet chamber connected to said first water pouring passageway and a water outlet chamber connected to said second water pouring passageway, said water inlet and outlet chambers both communicating with each other through a valve port, said port having a valve rod passing therethrough, said valve rod having a valve body fixed thereto and adapted to close said valve port, said water outlet chamber incorporating thereinto a piston, said piston being normally pressed against the abutment surface of said solenoid valve and being moved toward said valve rod by compressed air supplied from said air supply port of said solenoid valve and thereafter being driven to further press against said valve rod so as to open the valve port closed by said valve body; and



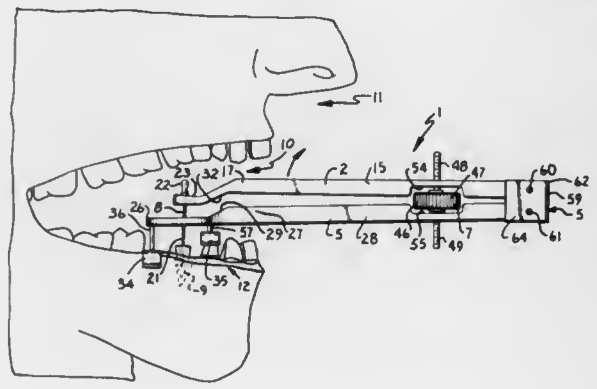
wherein said air supply on-and-off valve means further comprises:

an air inlet port at the lower end thereof, said housing of said water pouring on-and-off valve means projecting downwardly of a valve controlling unit, the air exhaust side of said air supply on-and-off valve means being connected by a connecting pipe to the air inlet port of said water pouring on-and-off valve means, a support member including a first hole for watertightly receiving said housing thereinto and a second hole for airtightly receiving said air inlet port thereinto, a water introduction pipe and a water discharge pipe communicating with said first hole, and an air supply pipe communicating with said second hole which is disposed on a lower side of said water pouring and air supply on-and-off valve means, said housing and said air inlet port resting in said first and second holes respectively and said pouring passageway and said air supply passageway being respectively connected to said water introduction pipe and to said air supply pipe.

4,443,196

TOOTH ROOT EXTRACTOR

Miguel Rico, 3406 W. 43th St., Shawnee Mission, Kans. 66205
Filed Sep. 20, 1982, Ser. No. 420,308
Int. Cl.^{3} A61C *3/00*
U.S. Cl. 433—158 **11 Claims**



1. A dental device having an operational position for extracting a tooth root from surrounding oral cavity structure; said device comprising:

(a) first and second elongate arms connected together;
(b) holding means positioned along said first arm near a free end thereof and adapted to operably retain a tooth root screw device secured in a tooth root;
(c) engaging means on said second arm for bearing on the oral cavity structure surrounding the tooth rooth in such a manner as not to bear on the tooth root to be extracted; and
(d) spreader means spaced from said holding means; said spreader means being connected to and selectively urging said first and second arms into a spaced vertical relationship at said holding means under controlled manipulation; said spreader means positioned exteriorly of the oral cavity when said dental device is in the operational position thereof.

4,443,197

VARNISH FOR PROTECTING A TOOTH SURFACE

Takeo Fusayama, Tokyo, and Junichi Yamauchi, Kurashiki, both of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan
Filed Mar. 3, 1983, Ser. No. 471,849
Claims priority, application Japan, Mar. 12, 1982, 57-39694
Int. Cl.^{3} A61K *6/08*
U.S. Cl. 433—217 **11 Claims**

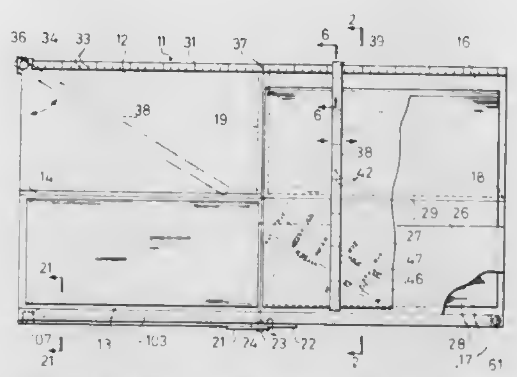
1. A method for restoring a carious tooth and protecting healthy tooth surfaces against erosion by an acid etching solution, which comprises:

(i) applying a polymer solution to the tooth surface, and evaporating the solvent from said solution to form a polymer coating on the surface;
(ii) removing the carious portion of the tooth by drilling;
(iii) applying an acid etching agent to the walls of the tooth cavity from which the carious material has been removed;
(iv) thereafter, filling the tooth cavity with a dental filling material; and
(v) removing the polymer coating from the healthy tooth surfaces.

4,443,198

FOLDING BOARD FOR PAMPHLETS, MAPS AND THE LIKE

Kamran Ehsanipour, 212 Stanley Rd., Burlingame, Calif. 94010
Continuation-in-part of Ser. No. 170,136, Jul. 18, 1980, Pat. No. 4,360,346. This application Apr. 2, 1982, Ser. No. 364,769
Int. Cl.^{3} G09B *29/10*
U.S. Cl. 434—153 **16 Claims**

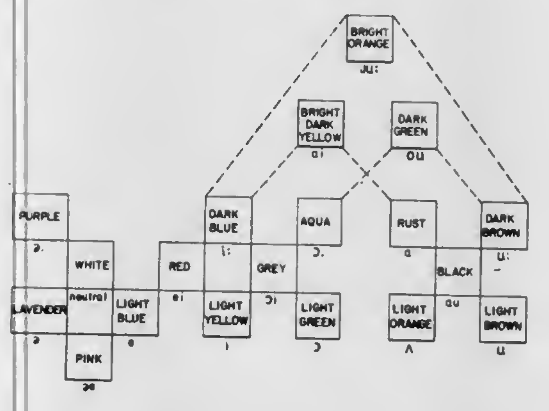


1. A folding board comprising at least four rectangular sections, first hinge means connecting a first and second said section along a first line, said first hinge means being of a type to permit front faces of said first and second sections to fit flat against each other in folded position, second hinge means connecting a third and a fourth said section along a second line which is an extension of said first line, said second hinge means being of a type to permit front faces of said third and fourth sections to fit flat against each other in folded position, third hinge means connecting said first and third sections together along a third line transverse a said first and second lines and intersecting the junction of said first and second lines, said third hinge means being of a type to permit the back faces of said first and third sections to fit against each other, and fourth hinge means connecting said second and fourth sections along a fourth line which is an extension of said third line, said fourth hinge means having a hinge axis spaced above the plane of said second and fourth sections a distance at least twice the thickness of said board.

4,443,199

METHOD OF TEACHING THE PRONOUNCIATION AND SPELLING AND DISTINGUISHING BETWEEN THE WRITTEN AND SPOKEN FORM OF ANY LANGUAGE

Margaret Sakai, 8 Loddon Ct., Clayton South, Victoria 3169, Australia
Filed May 18, 1982, Ser. No. 379,473
Int. Cl.^{3} G09B *1/32*
U.S. Cl. 434—170 **24 Claims**

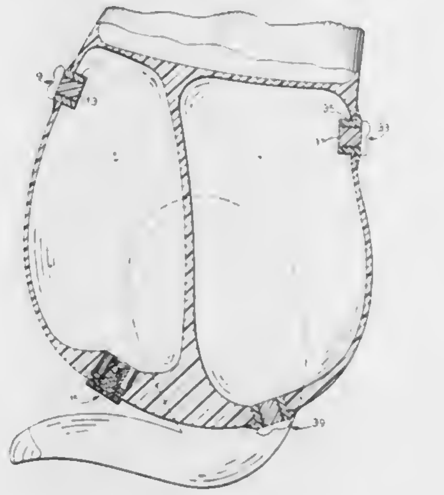


1. A method of teaching the pronounciation and spelling and distinguishing between the written and spoken form of any language, the method comprising: A. utilizing three sets of tiles which consist essentially of: (1) a first set denoting alphabet letters, (2) a second set denoting phonetic vowels, (3) a third set denoting phonetic consonants, said first set comprising all geometrically uniform tiles, each said geometrically uniform tile having an alphabet letter on one surface thereof in black or white and a background of opposite white or black colour to the letter colours, there being a separate tile for each upper case alphabet letter and a separate tile for each lower case alphabet letter, said second set of tiles comprising geometrically uniform tiles wherein one surface of each tile is blank and is individually and distinctively coloured to represent a phonetic vowel spelling where there are differences in spelling the same vowel sound, while the other surface of each tile contains a phonetic symbol to represent the vowel sound of said one surface, the said third set of tiles comprising single letter consonants and two-letter digraph combinations of consonants having a single phonetic sound: B. selecting the first, second and third sets to be distinct, and C. teaching the pronounciation and spelling of words of said any language by interposing said alphabet tiles and said phonetic tiles.

4,443,200

TOILET TRAINING DEVICE

Judith K. Murphy, 58 Norwood Ave., Albany, N.Y. 12208
Filed Aug. 8, 1983, Ser. No. 521,093
Int. Cl.^{3} G09B *19/00*
U.S. Cl. 434—247 **3 Claims**



1. A toilet training device for toilet training of children, said toilet training device having an anterior chamber and a posterior chamber, said anterior chamber holding water and said posterior chamber hold soft material, said anterior chamber having an upper access port for filling said anterior chamber with water, said posterior chamber having an access port for filling said posterior chamber with such soft material, each of said upper access ports comprising a tapped port body and a threaded plug with said threaded plug being removably engaged with said tapped port body, said chamber having means to allow such water representing urine to pass from said anterior chamber upon sufficient pressure being applied to said anterior chamber holding such water, said posterior chamber having means to allow such soft material representing stools to pass from said posterior chamber upon sufficient pressure being applied to said posterior chamber, said means to allow such water representing urine to pass from said anterior chamber upon sufficient pressure being applied to said anterior chamber holding such water comprising a lower valve, said lower valve comprising a valve port, ball and compression spring, said spring biasing said ball into seating relationship with said valve port to close said valve, and said valve opening to allow water to pass therethrough by said ball moving away from said valve port against the biasing force of said spring upon sufficient pressure being applied to said anterior chamber.

4,443,201

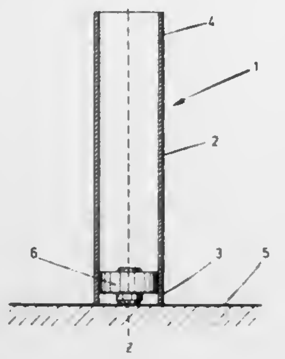
SHAPE ASSOCIATION SOUND-EMITTING TOY

Berndt Diefenbach, Würmstrasse 8, Percha D-8136, Fed. Rep. of Germany

Filed Apr. 14, 1982, Ser. No. 368,474

Int. Cl.^{3} G09B *1/06;* A63H *5/00*

U.S. Cl. 434—259 **4 Claims**



1. A sound-emitting toy, comprising in combination:
- a support base;
- first and second vertically elongated pipes positioned on and projecting vertically upwardly from said base in sidewardly spaced relationship, said pipes being of substantial vertical height, and said vertical height being several times greater than the horizontal cross-sectional dimension of the pipes;
- each of said first and second pipes respectively having first and second internal guide channels extending vertically thereof and each having a substantially constant cross-sectional shape throughout its respective length, each said guide channel when mounted on said base having the lower end thereof closed;
- said first and second channels having cross-sectional shapes which are dissimilar and noncompatible with one another;
- a first piston having a cross-sectional shape which conforms solely to the shape of said first channel so as to be slidably but snugly positionable within said first channel so as to slidably move axially downwardly therealong due to the urging of gravity;
- a second piston having a cross-sectional shape which conforms solely to the shape of said second channel so as to be slidably but snugly positionable with said second channel so as to slidably move axially downwardly therealong due to the urging of gravity;
- each of said first and second pistons having a height which is only a small fraction of the vertical height of its respective pipe; and
- each of said first and second pistons having an opening extending axially therethrough and a sound-emitting means positioned within said opening for generating a sound in response to flow of air therethrough as said piston slidably moves downwardly within its respective channel due to the force of gravity.

4,443,202

SURFACE PROPELLER MOUNTING ASSEMBLY FOR BOATS

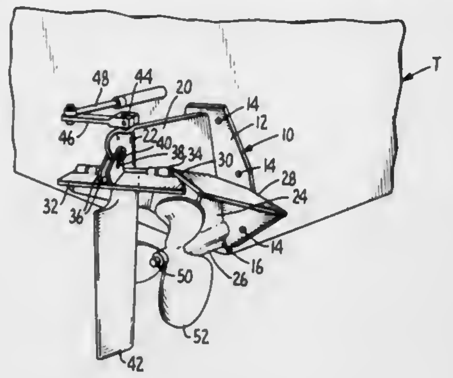
Daniel J. Arena, 3334 St. Marys Rd., Lafayette, Calif. 94549

Filed May 29, 1981, Ser. No. 268,493

Int. Cl.^{3} B63H *5/14*

U.S. Cl. 440—51 **14 Claims**

1. A unitary assembly for mounting a surface prop on the transom of a boat hull in a position wherein, when the hull is planing on the surface of a body of water, the prop intersects the surface to the rear of the hull, said assembly comprising: a mounting plate adapted to be fixedly secured to the transom; a vertically extending prop shaft support fixed to the plate for juxtaposition against the transom upon securing the plate to the transom, said support carrying prop shaft bearing means to rotatably support a prop shaft extending through the transom, said vertically extending prop shaft support including a web-like portion extending below said prop shaft; a rudder support arm fixed to the plate and extending rearwardly therefrom above the prop shaft support, said arm carrying a rudder bearing; and, a hood carried by said plate and extending rearwardly therefrom so as to extend over and partially around the top of a prop carried by said prop shaft supported by said bearing means, said hood having a forward end intersecting the plate at a juncture above the shaft support, wherein the hood extends from the plate and has an undersurface of a generally concave configuration transverse to the longitudinal axis of said prop shaft so as to define a water channel above said prop when the hull upon which the assembly is mounted is supported in a non-planing start-up condition on the surface of a body of water.



4,443,203

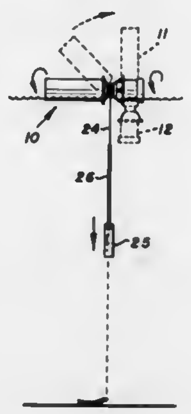
FLOATING MARKER

Gregory E. Maertens, 8356-79th St., Cottage Grove, Minn. 55016

Filed Feb. 1, 1982, Ser. No. 344,392

Int. Cl.^{3} B63B *21/52*

U.S. Cl. 441—22 **6 Claims**



1. A marker bouy for marking underwater locations, said bouy including:
- a. a hollow, generally cylindrical body member;
- b. a length of line having one end thereof attached to said body member and being normally wrapped about said body member;
- c. a weight attached to the other end of said line, said weight causing said body member to rotate upon the surface of the water when dropping downwardly from the surface;
- d. a water admitting aperture on one end of said body member to admit water interiorally thereof to increase the weight of such end to shift said body from a first position of lying on the water surface to a second position of being vertical in the water;
- e. a radially extending flange arranged on the end of said body having said aperture;
- f. a line trapping member defined within said flange; and,
- g. at least one vane member extending radially outwardly from said body and arranged longitudinally thereof adjacent said flange to normally slow the rotation of the marker.

4,443,204

HYDRO-THERAPY APPARATUS

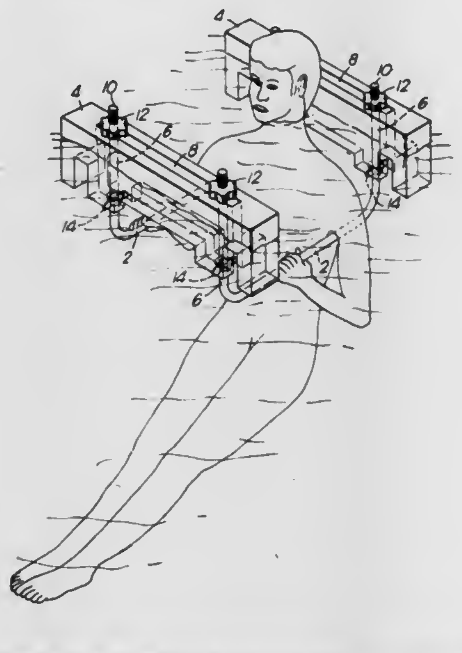
Arden Perrin, 15 Boulevard Louis II, Monte Carlo, Monaco

Filed Jan. 6, 1982, Ser. No. 337,390

Claims priority, application United Kingdom, Jul. 24, 1981, 8122905

Int. Cl.^{3} B63B *35/00*

U.S. Cl. 441—129 **7 Claims**



1. Hydrotherapy apparatus for supporting a patient in a body of water comprising a pair of flotation bodies, a pair of parallel bars extending substantially horizontally between the flotation bodies and having vertically oriented end portions extending upwardly through the flotation bodies such that a patient may be supported in a generally vertical position in the body of water by the parallel bars disposed under the armpits of the patient and with the flotation bodies being disposed in front of and behind the patient and adjustable means for securing said bars to said flotation bodies whereby the spacing between said bars is adjustable to position the bars under the armpits so that the patient may be supported in the body of water between the flotation bodies.

4,443,205

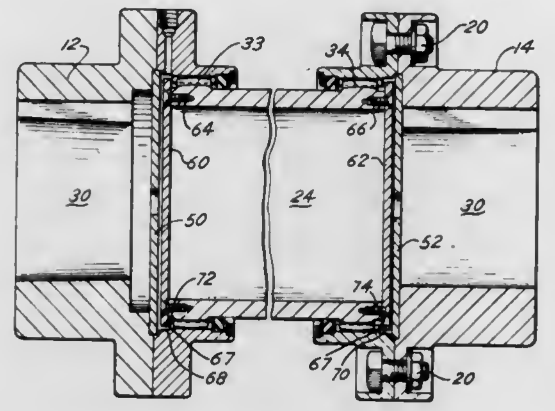
GEAR TYPE SHAFT COUPLING

George G. Grant, Mishawaka, Ind., assignor to Reliance Electric Co., Mishawaka, Ind.

Filed Jul. 6, 1981, Ser. No. 280,462

Int. Cl.^{3} F16D *3/18*

U.S. Cl. 464—16 **9 Claims**



1. A gear coupling for connecting two shafts in end-to-end relation, comprising hubs for mounting on each of the shafts, sleeves secured to said hubs in axial alignment therewith and extending from the hubs towards one another, said sleeves having internal gear teeth, a tubular shaped spacer extending between said sleeves and having external gear teeth near the ends thereof for meshing with the gear teeth in said sleeves, means for minimizing end play between said spacer and said hubs, including a separate plate on the inner end of each of said hubs, an annular shoulder on each of said sleeves on the outboard side of the teeth of said sleeves and in close proximity to the respective hub, and a radially outwardly extending flange on each end of said spacer between the respective end plate and said annular shoulder for engaging the respective shoulder on the outboard side thereof.

4,443,206

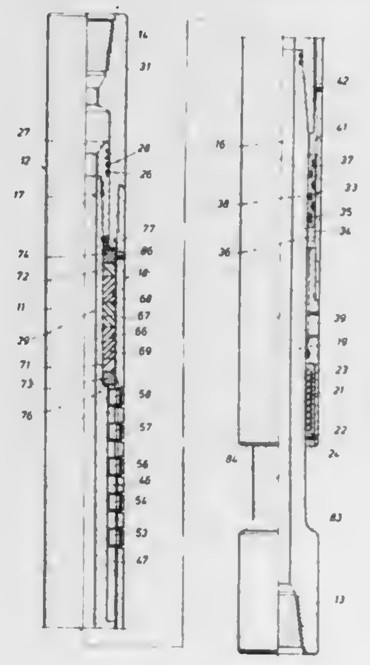
WELL TOOL

Chuan C. Teng, Houston, Tex., assignor to Dailey, Inc., Houston, Tex.

Filed Feb. 5, 1982, Ser. No. 346,169

Int. Cl.^{3} E21B *17/07;* F16D *3/06*

U.S. Cl. 464—20 **10 Claims**



1. A well tool for maintaining bottom hole contact while absorbing angularly and axially directed shock forces of a rotating drill bit carried on a drill string comprising;
- (a) an elongated body having threaded connections at its ends for assembly into a string of well pipe carrying a drill bit, said body having an axial flow passageway;
- (b) said body formed of a tubular mandrel slideably mounted within a tubular barrel with an annulus exposed to well fluid between said mandrel and said barrel;
- (c) fluid seals positioned in the annulus between said mandrel and said barrel forming an annular region isolated from well fluid;
- (d) said mandrel and said barrel having shoulders at the ends of recessed opposite facing sidewalls defining a cylindrical chamber in the fluid isolated annular region;
- (e) bearing means for providing telescoping and rotational movements of said mandrel in said barrel;
- (f) a plurality of grooves extending longitudinally on said mandrel;
- (g) rollers carried by said barrel and driveably engaged within said grooves to enable said mandrel to rotate relative to said barrel upon telescoping movements therein;
- (h) a plurality of rings stacked in said cylindrical chamber between said shoulders;
- (i) wherein cylindrical metal guide rings are included at each end of the stack of rings, said metal guide rings having a specified hardness;
- (j) captured resilient shock absorbing ring means comprising said stack of rings between said metal guide rings, said ring means being formed of a resilient material to absorb shock and being less hard than said metal rings;
- (k) cylindrical crossover rings interposed between and adja-

cent said guide ring and said rings means, and said crossover rings providing a fluid seal between said mandrel and said barrel, said crossover rings being formed of a material less hard than said guide rings and harder than said ring means to provide transitional yielding cushion and rotary bearing between said metal guide rings and said ring means when axially loaded within said chamber; and

stop means for limiting by said members the inward and outward telescoping movement of said mandrel in said barrel during right hand rotation of the drill string which promotes outward movement of said mandrel in said barrel whereby shock forces across said body are initially absorbed by the inward and outward telescoping movement of said mandrel in said barrel along said grooves and the excess shock forces are absorbed by the stack of said members within said cylindrical chamber on further inward/outward movement of said mandrel within said barrel.

4,443,207

PROTECTIVE DEVICE FOR DRIVE SHAFT UNIVERSAL JOINT ASSEMBLY

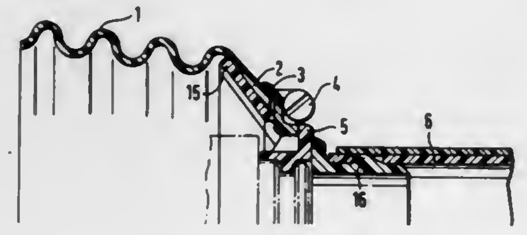
Theo Buthe, Lohmar, and Felix Mikeska, Siegburg, both of Fed. Rep. of Germany, assignors to Jean Walterscheid GmbH, Fed. Rep. of Germany

Filed Jul. 9, 1981, Ser. No. 281,665

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1980, 3026062

Int. Cl.³ F16D *3/84;* **F16P** *1/00*

U.S. Cl. 464—172 **1 Claim**



1. In a protective device for a universal joint assembly arranged as part of a drive shaft assembly connecting a tractor to an agricultural implement,

said drive shaft assembly including

a drive shaft connected to at least one side of a universal joint, and

a shank member of said universal joint extending from said one side of said universal joint, said shank member having an annular groove formed therein;

said protective device including

a protective boot extending to cover said universal joint assembly including a conical connecting portion extending toward said drive shaft, and

a pair of telescopic protective tubes surrounding said drive shaft, one of said protective tubes having an inner annular groove therein,

the improvement of a connecting assembly between said protective boot and said pair of telescopic protective tubes, said connecting assembly comprising:

a connecting piece having

a funnel-like extension which partially projects into said conical connecting portion of said protective boot to support said conical connecting portion, said conical connection portion of said protective boot terminating on said funnel-like extension,

through-holes,

a continuous outer groove and

locking means engaging in said inner annular groove of said one protective tube to hold said connecting piece against axial displacement relative to said one protective tube;

an annular bearing body having

a protuberance engaging into said annular groove formed in said shank member, and

locking tongues received in said through-holes of said connecting piece; and

a securing ring extending about and engaged within said continuous outer groove in said connecting piece, said securing ring having

a stop face axially fixing said locking tongues in said through-holes and

a conical collar having a conical configuration which corresponds to the configuration of said funnel-like extension holding said conical connecting portion of said protective boot against said funnel-like extension;

said through-holes opening toward an end of said connecting piece which is on a side thereof toward said protective boot and having a length which exceeds the width of said continuous outer groove by the thickness of said locking tongues;

said securing ring being arranged with said conical collar over said conical connecting portion of said protective boot to hold said conical connecting portion pressed between said conical collar and said funnel-like extension of said connecting piece.

4,443,208

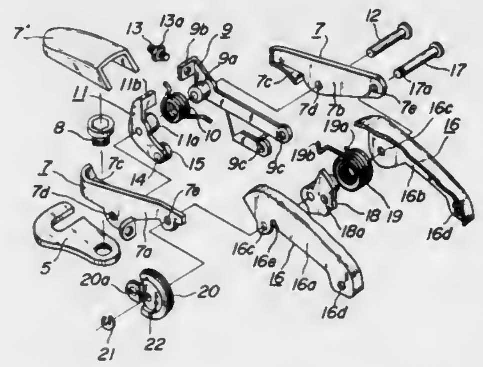
SPEED-CHANGE GEAR MOUNTED OUTSIDE A BICYCLE

Kunitoshi Kozakae, Ageo, Japan, assignor to Bridgestone Cycle Co. Ltd., Japan

Filed Dec. 16, 1980, Ser. No. 217,107

Int. Cl.³ F16H *11/08*

U.S. Cl. 474—82 **4 Claims**



1. A speed-change gear mounted outside a bicycle having a multi-step sprocket assembly engaging a chain, said speed-change gear comprising a fitting member secured to a frame of the bicycle; a parallel link means including an inside link with one end thereof rotatably connected to the fitting member by an inside link connecting shaft and an outside link with one end thereof rotatably connected to the fitting member by an outside link connecting shaft; a movable member connected to opposite ends of said inside link and said outside link; a changeover frame carrying a guide wheel and a tension wheel of the chain, said changeover frame being rotatably mounted on said movable member; a speed-change actuating cam and a spring biasing said cam rotationally in one direction, said cam and said biasing spring being carried directly by said outside link connecting shaft and capable of rotating with respect to said outside link about said outside link connecting shaft, said outside link having a portion thereof to cover said speed-change actuating cam, said biasing spring, and outside of said movable member; an L-shaped transmission lever pivotally carried by said inside link connecting shaft, and a lever-actuating spring, said lever having one end thereof urged against said speed-change actuating cam by said lever-actuating spring and the opposite end thereof selectively engageable with said inside link, said inside link having a portion thereof enclosing said L-shaped lever and said lever-actuating spring therein; a cover to enclose outer surfaces of said inside link and said outside link, said cover being connectable to said fitting member; and

a circular shaped reel integrally secured to that portion of said outside link connecting shaft which extends outside said fitting member, said reel having an inner wire of an operating wire means connected thereto, and being connected to said speed-change actuating cam so as to rotate therewith, whereby said cam rotates in response to a pulling of said inner wire of an operating wire means.

4,443,209

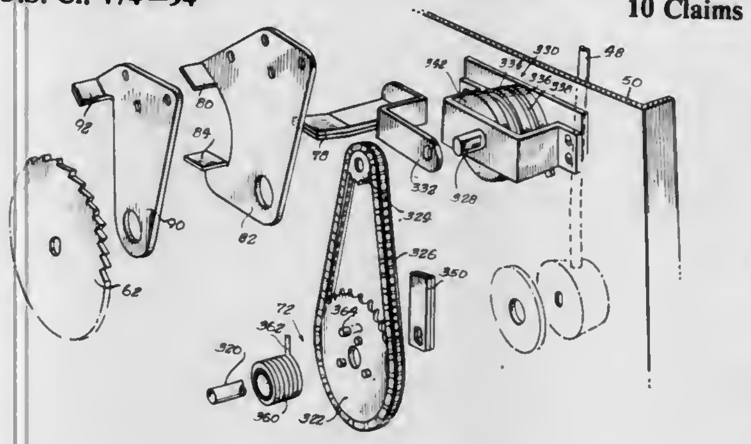
GAMING APPARATUS HAVING MANUALLY CONTROLLABLE-OPERATING SPEED

Donald E. Hooker, Wilmette, and Roman A. Tojza, Chicago, both of Ill., assignors to Bally Manufacturing Corporation, Chicago, Ill.

Division of Ser. No. 119,217, Feb. 7, 1980. This application Sep. 25, 1981, Ser. No. 305,399

Int. Cl.³ F16H *55/42, 57/00, 57/10;* **G05G** *1/00*

U.S. Cl. 474—94 **10 Claims**



1. Apparatus for use in an amusement or game device of the type which has an operating handle that is pulled through a stroke upon initiation of operation by an operator, said apparatus absorbing excessive force that can be applied by an operator pulling the operating handle at a high speed through its stroke and comprising:

an operating shaft journaled for rotation in said game device and having said operating handle attached to one portion thereof;

a drive sprocket means carried by said shaft and being free to rotate relative thereto, said sprocket means having transverse extensions on opposite sides of said sprocket means;

first and second arm means, each being operably attached to said shaft to rotate with said shaft, said arm means being spaced from one another along said shaft;

a torsion spring means positioned around said shaft and located between said first and second arm means, said spring means having one end bearing on said first arm means and an opposite end bearing on one of said sprocket means extensions, the other of said sprocket means extensions bearing on one side of said second arm means;

the pulling of said handle tending to separate said other sprocket means extension from said second arm means, said spring means being biased in a direction to provide a force tending to maintain contact between said other sprocket means extension and said second arm means.

4,443,210

TENSION ROLLER FOR BELT DRIVES

Armin Olschewski, Schweinfurt; Manfred Brandenstein, Eussenheim, and Lothar Walter, Schweinfurt, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

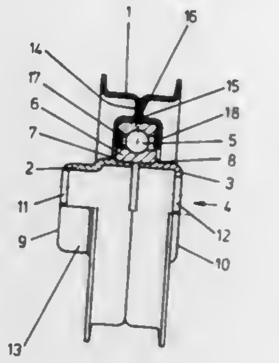
Filed Jun. 1, 1981, Ser. No. 268,886

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1980, 8017101[U]

Int. Cl.³ F16H *55/42, 7/18, 7/12*

U.S. Cl. 474—199 **13 Claims**

1. A tension roller for belt drives, comprising a hollow pin and a roller member supported on said pin by way of a rolling bearing, said rolling bearing having an inner ring, rolling means, and an outer ring, said roller member being supported on said outer ring, said pin being comprised of two thinwalled sleeves inserted in opposite ends of the bore of said inner ring of said rolling bearing, at least one of said sleeves being provided on the surface thereof with a radial shoulder for emplacement by contact with said inner ring.



4,443,211

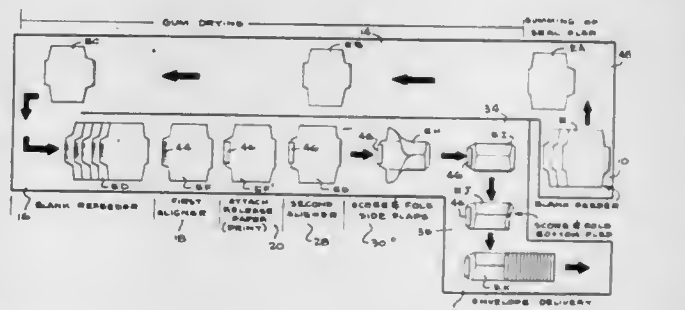
ENVELOPE ASSEMBLY APPARATUS

Robert E. Wooley, Charlotte, N.C., assignor to National Service Industries, Inc., Atlanta, Ga.

Filed Nov. 19, 1981, Ser. No. 323,961

Int. Cl.³ B31B *1/16, 1/74*

U.S. Cl. 493—188 **7 Claims**



1. In an envelope forming machine of the type including frame means supporting envelope blank feed means for feeding envelope blanks along a feed path from an upstream end serially past aligner means, a printer transfer roller adjacently above selectively operable printer means, scoring means and folding means to an envelope delivery station, the improvement comprising release paper patch applying means positioned adjacent said transfer roller and being operable to apply a patch of release paper to adhesive on a flap of each envelope as each of said envelope flaps passes over said printer transfer roller which serves as a backup roller against the flap during the application of the patch of release paper to the opposite side thereof.

4,443,212

APPARATUS FOR MANUFACTURE OF PAPER TUBE

Tomiyuki Mochizuki, 2474-5 Ichijyukubo, Ohbuchi, Fuji-shi, Shizuoka-ken, Japan

Filed Oct. 29, 1981, Ser. No. 316,226

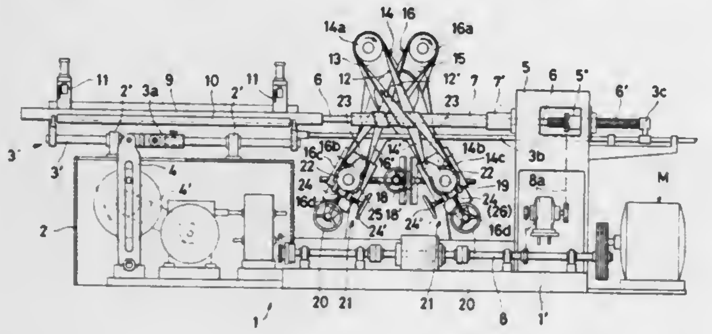
Claims priority, application Japan, Mar. 27, 1981, 56-44163

Int. Cl.³ B31C *3/00*

U.S. Cl. 493—289 **4 Claims**

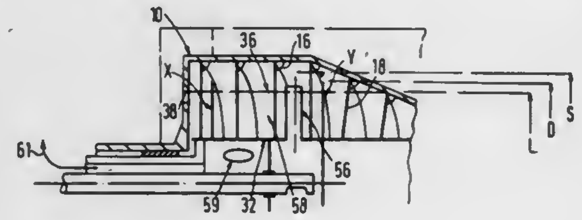
1. A paper tube making machine, comprising in combination a machine frame; at least two hollow fixed shafts disposed parallel to each other and attached at the base ends thereof to said machine frame; at least one arm plate pivotally mounted on said machine frame at an angle relative to said fixed shaft; at least two sets of opposite pulleys, one of each set of pulleys being mounted on one end portion of said arm plate, the other

of each set of pulleys being mounted on a pulley base attached slidably to said arm plate, at least two endless rolling belts each stretched between each set of opposite pulleys and wound diagonally around one of said fixed shafts so as to roll one or more paper tapes being supplied between itself and the corresponding fixed shaft; a pulley adjusting means adapted to slide said pulley base in the longitudinal direction of said arm plate so as to simultaneously stretch or loosen said at least two endless rolling belts; belt-tension adjusting devices provided on said arm plate for the individual endless rolling belts so as to adjust the tension of the individual endless rolling belts; spindles pierced through the interiors of the fixed shafts; core cutting shafts connected coaxially to the front ends of the spindles protruding from the free ends of the fixed shafts by means of a connector; a sliding table disposed on the machine frame so as to be slid axially on the core cutting shafts and adapted to support the core cutting shafts in a horizontal direction; means for integrally reciprocating said spindles, said connectors for said core cutting shafts and said sliding table; and means for rotating said connectors.



4,443,213
DECANTING TYPE CENTRIFUGE

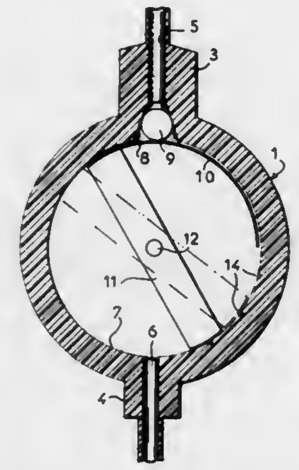
Geoffrey L. Grimwood, Holmfirth, Nr. Huddersfield, and John Wright, Huddersfield, both of England, assignors to Thomas Broadbent & Sons Limited, Huddersfield, England
Filed Jul. 12, 1983, Ser. No. 513,044
Claims priority, application United Kingdom, Jul. 13, 1982, 8220297
Int. Cl.³ B04B *1/20*
U.S. Cl. 494—38 **13 Claims**



1. In a decanting type centrifuge having a main bowl which is adapted to be rotated about its longitudinal axis and which contains a helical scroll conveyor which is arranged to rotate about said main bowl axis at a slightly different speed to the main bowl for scrolling separated solids to a solids discharge end of the bowl, the improvement comprising means which act to isolate a gas volume radially inwardly of the inner liquid surface within said main bowl and passage means enabling gas to be extracted continuously from said gas volume to a location external to said main bowl.

4,443,214
VALVE FOR THE TREATMENT OF HYDROCEPHALUS

Bernard Marion, Montreuil sur Ille, France, assignor to Society dite: sophysa, Montreuil sur Ille, France
Filed Feb. 5, 1982, Ser. No. 346,193
Claims priority, application France, Mar. 18, 1981, 81 05389
Int. Cl.³ A61B *5/00*
U.S. Cl. 604—9 **5 Claims**

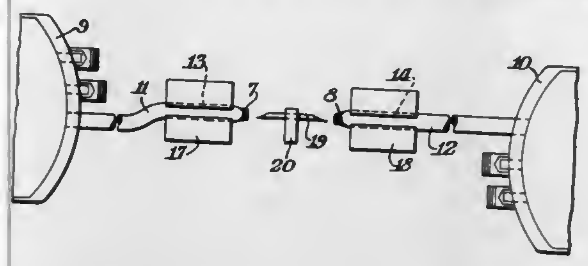


1. A subcutaeneous valve for the treatment of hydrocephalus adapted to be inserted between a ventricular catheter and a draining catheter, said valves comprising:
a valve body formed with a cylindrical chamber having a cylindrical wall;
an inlet formed in said wall and connectable to said ventricular catheter, an outlet formed in said wall opening into said chamber and connectable to said draining catheter;
means forming a valve seat at said inlet;
a valve member juxtaposed with said valve seat and engageable therewith to block flow from said chamber to said ventricular catheter but displaceable away from said valve seat to permit flow from said ventricular catheter into said chamber;
a rotor journaled in said chamber for rotation about the axis of said chamber and having a portion reaching toward said wall of said chamber, said rotor being provided with means magnetically couplable with an actuator externally of said valve body for magnetic rotation of said rotor in said chamber;
a spring blade fixed to said portion of said rotor, extending arcuately along said wall, bearing deflectably outwardly against said member and sliding thereon to bias said member against said seat with a force which is a function of the angular position of said rotor in said chamber; and
indexing means between said rotor and said wall for indexing said rotor in a selected one of a plurality of angular positions upon rotation of said rotor by magnetic coupling thereto.

4,443,215
STERILE DOCKING PROCESS, APPARATUS AND SYSTEM

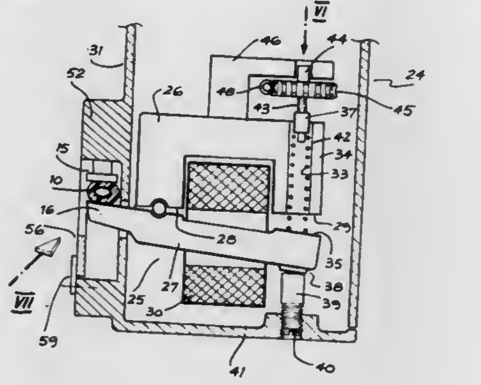
James G. Smith, Newark, Del., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.
Filed Jul. 6, 1982, Ser. No. 395,598
Int. Cl.³ A61M *5/00*
U.S. Cl. 604—29 **23 Claims**

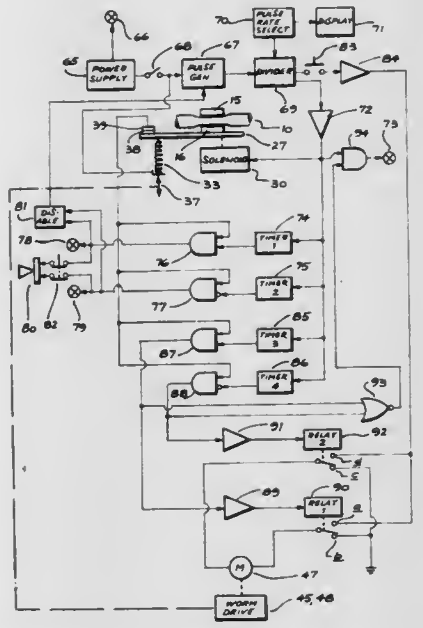
1. A process of joining at least a first and a second closed thermoplastic tube together comprising forming a continuous molten seal simultaneously between an end of a hot, multi-ended, hollow needle and a wall of each of said tubes, thereby providing fluid communication, and cooling said seals and needle.



4,443,216
FLUID PUMP

Anthony G. Chappell, Mosman, Australia, assignor to Wellcome Australia Limited, New South Wales, Australia
Filed Apr. 9, 1982, Ser. No. 366,923
Claims priority, application Australia, Apr. 15, 1981, PE8460
Int. Cl.³ A61M *5/00*
U.S. Cl. 604—67 **11 Claims**

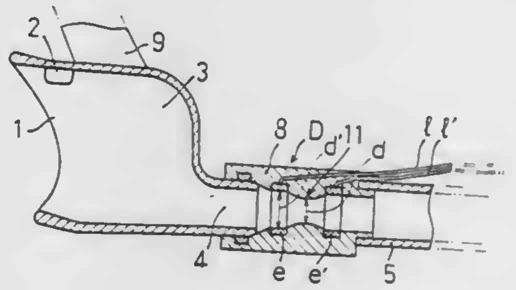




1. A fluid pump device for use in conjunction with a chamber having a contained volume which can be reduced elastically and which incorporates or is locatable in circuit with spaced-apart unidirectional valves through which fluid can be passed with cyclic compression and expansion of the chamber; said pump device comprising:
a pair of spaced-apart clamp elements between which the pumping chamber is located in use of the device,
electrically energisable means operable when energized to move one of the clamp elements relative to the other in an opening direction to permit expansion of the chamber,
biasing means for exerting a closing force on the clamp elements whereby the chamber is biased to a compressed condition following de-energisation of the electrically energisable means,
timing means for detecting the time duration T incurred in compressing the chamber to a predetermined extent against back pressure exerted by fluid within the chamber,
fault indicating means for providing a fault condition indication if during operation of the device the time duration T incurred in compressing the chamber is less than a first predetermined time period T_1 as a result of an excessively low back pressure being present in the chamber or is greater than second predetermined time period T_2 as a result of an excessively high back pressure existing in the chamber, and
electrically actuatable adjusting means for adjusting the force exerted by the biasing means so that, when the device is subjected to normal no-fault operating conditions, the terminal end of the time duration T is located within a time slot bounded by the predetermined time periods $T_1 > T$ and $T_2 < T$.

4,443,217
SUCTION TYPE URINATING AID

Yoshitaka Izumi, Tokyo, Japan, assignor to Kimura Bed Mfg. Company Limited, Tokyo, Japan
Division of Ser. No. 179,885, Aug. 20, 1980, Pat. No. 4,366,818. This application Jul. 14, 1982, Ser. No. 398,872
Claims priority, application Japan, Oct. 12, 1979, 54-140958; Oct. 12, 1979, 54-140959; Oct. 12, 1979, 54-140961; Oct. 12, 1979, 54-140962; Oct. 12, 1979, 54-140963
Int. Cl.³ A61F *5/44*
U.S. Cl. 604—73 **3 Claims**



1. A suction type urinating aid comprising:
a urine receiver having a urine suction opening to be applied to the urinating region of a subject to receive therefrom urine, an air suction hole, and a urine outlet;
an electrically insulating hollow cylinder connected to said urine outlet;
a urine tank;
a urine transport tube connected between said cylinder and said urine tank;
vacuum device means connected to said urine tank for drawing air into said urine receiver through said air suction hole therein and for drawing said air and any urine in said urine receiver through said urine outlet, said cylinder and said urine transport tube into said urine tank;
control means connected to said vacuum device means for controlling the operation thereof;
detector means located in said cylinder, electrically connected to said control means, for detecting the presence of any urine in said cylinder and for causing said control means to operate said vacuum device means for drawing said air and urine from said urine receiver, said detector means comprising first and second ring-shaped electrodes positioned interiorly of said cylinder, said first and second electrodes being spaced from each other axially of said cylinder and electrically insulated from each other by said cylinder, said electrodes being positioned such that when urine exists in said cylinder, an electric current will flow through such urine between said electrodes and will be detected by said control means to start operation of said vacuum device means; and

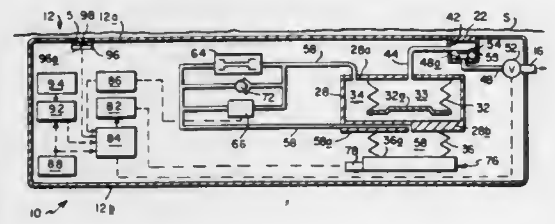
an inner diameter of a cylindrical portion of said cylinder between said electrodes being smaller than the inner diameter of said electrodes thereby forming means to minimize urine drainage accumulation.

4,443,218

PROGRAMMABLE IMPLANTABLE INFUSATE PUMP

Leonard J. DeCant, Jr., Allston, and Samir F. Idriss, Arlington, both of Mass., assignors to Infusaid Corporation, Norwood, Mass.

Filed Sep. 9, 1982, Ser. No. 416,282
Int. Cl.³ A61M *5/14*
U.S. Cl. 604—67 **28 Claims**



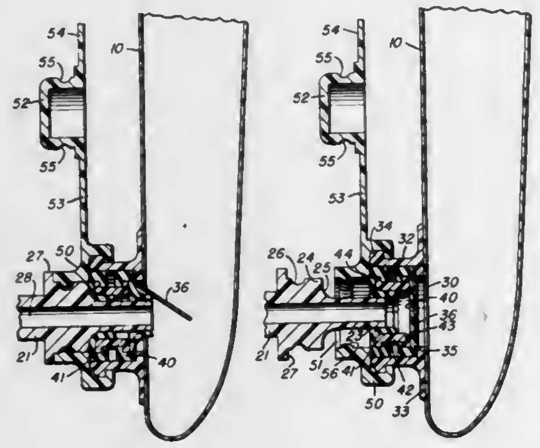
1. A programmable implantable infusate pump comprising
A. a housing;
B. a variable volume infusate chamber in the housing;
C. means for conducting infusate from said chamber to an infusion site outside the housing;
D. a variable volume fluid pressure reservoir in the housing;
E. a variable volume fluid displacement reservoir in the housing;
F. a fluid path extending between the pressure reservoir and the displacement reservoir, said path defining a flow restriction, said reservoirs and said path arranged to be filled with a substantially incompressible control fluid;
G. means for monitoring the fluid pressure differential across said restriction and producing indications in response thereto;
H. means acting between a reference position and the pressure reservoir for applying a substantially constant force to the pressure reservoir tending to reduce its volume; and
I. means responsive to said indications for intermittently shifting the reference position so as to maintain a selected infusate flow rate from said chamber.

4,443,219

SYSTEM FOR ASEPTICALLY DRAINING A URINE BAG

Charles E. Meisch, Hasbrouck Heights, and David M. Keating, Landing, both of N.J., assignors to C. R. Bard, Inc., Murray Hill, N.J.

Filed Mar. 10, 1981, Ser. No. 242,272
Int. Cl.³ A61M *1/00*
U.S. Cl. 604—317 **5 Claims**



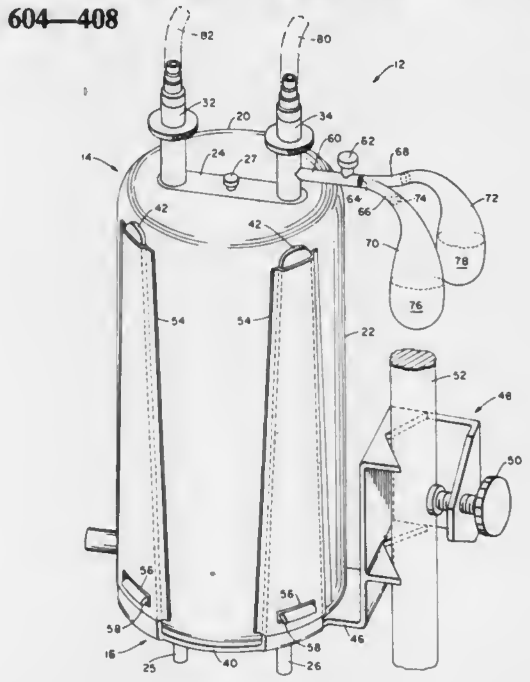
1. A system for aseptically removing urine from a drainage bag connected to a catheterized patient, said system comprising an outlet on said drainage bag adjacent the bottom thereof, normally closed valve means operatively connected to said outlet preventing flow therethrough, a housing means having an end face secured thereto and around said outlet, said valve means including a thin resilient wall having inner and outer faces and extending across the interior of the housing means and being centrally slit to form a self-closing slit valve, a second slit valve within the housing means spaced outwardly of said first slit valve, a flap closure within the housing means and being normally closed and resting against the inner face of said first mentioned slit valve, and a transfer bag for receiving urine removed from said drainage bag, spout means on said transfer bag, means on said transfer bag adapted to mate with said housing means of the drainage bag, said spout means adapted when inserted in said outlet to open both of said slit valves and flap closure to initiate removal of urine from said drainage bag.

4,443,220

BLOOD COLLECTION AND TRANSFER APPARATUS

Jerome M. Hauer, 307 Auburndale Ave., Auburndale, Mass. 02166, and Robert L. Thurer, 129 Pinckney St., Boston, Mass. 02114

Filed Mar. 16, 1982, Ser. No. 358,622
Int. Cl.³ A61M *5/14*
U.S. Cl. 604—408 **14 Claims**



1. Blood collection and transfer apparatus comprising, in combination,

a collection bag comprising a foldable fabric forming a collapsible, sterilizable enclosure and having an annular side wall portion, said bag having a pair of openings each fitted with port means extending externally of the enclosure for a tubal connection, the side wall portion having collapsible stent engaging means forming an annular configuration thereabout and located externally of the enclosure, said bag being adapted for tubal connection separate from said pair of openings for transfer of blood therefrom, and

a stent having noncollapsible bag engaging means formed in an annular configuration to surround the distended bag, said stent engaging means and bag engaging means being mutually engageable to hold the bag in distended form with a negative gage pressure on the enclosure, and mutually releaseable with the bag in distended form to permit the bag to collapse upon the subsequent transfer of blood therefrom.

CHEMICAL

4,443,221

TANNING METHOD

Max May, Bottmingen, Switzerland; Rolf Monsheimer, Darmstadt, and Ernst Pfleiderer, Darmstadt-Arheilgen, both of Fed. Rep. of Germany, assignors to Rohm GmbH, Darmstadt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 354,202, Mar. 3, 1982, Pat. No. 4,398,911, which is a continuation of Ser. No. 169,847, Jul. 17, 1980, abandoned. This application May 21, 1982, Ser. No. 380,617

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1979, 2930342

Int. Cl.³ C14C *11/00, 1/04, 1/08, 1/06*
U.S. Cl. 8—94.16 **16 Claims**

1. A process for the preparation of leather from skins and hides, which process includes the steps of deliming and bating for the preparation of unhaired skins and hides ready for tanning as well as the subsequent steps of tanning and dressing said unhaired skins and hides, wherein at least one float used in said process comprises from 0.01 to 0.2 percent, by weight of said float, of a lubricating material not binding to said skins and hides and selected from the group consisting of water soluble acrylate and methacrylate polymers, said float being used in an amount which is at most 100 percent of the weight of the skins and hides being treated therein.

4,443,222

ZINC PYRITHIONE PROCESS TO IMPART ANTIMICROBIAL PROPERTIES TO TEXTILES

Cletus E. Morris, and Clark M. Welch, both of Metairie, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Aug. 30, 1983, Ser. No. 527,894
Int. Cl.³ D06M *13/28, 13/38*
U.S. Cl. 8—189 **5 Claims**

1. A process for imparting to cellulosic textiles antimicrobial properties that are durable to laundering comprising:
(a) impregnating the cellulosic textile material with a solution of zinc pyrithione, sufficient amounts of polyamine capable of solubilizing the pyrithione complex per part of zinc pyrithione, and sufficient amounts of urea to provide one urea molecule for each primary and secondary amino group in the polyamine;
(b) heating the textile at sufficient temperature to drive off the moisture and complete the reaction.

4,443,223

COMPOSITION AND METHOD FOR IMPROVING THE FASTNESS OF DIRECT AND REACTIVE DYEINGS ON CELLULOSE-CONTAINING SUBSTRATES

Bruno Kissling, Hagendorf; Walter Knobel, Pratteln, and Tibor Robinson, Birsfelden, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 305,424, Sep. 24, 1981, abandoned. This application Aug. 30, 1982, Ser. No. 413,015

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1980, 3035916; Jun. 15, 1981, 3123662

Int. Cl.³ C08G *12/40;* D06M *15/54;* D06P *5/08*
U.S. Cl. 8—496 **16 Claims**

1. A process for improving the fastness properties of a direct or reactive dyestuff on a substrate comprising cellulose fibers, which process comprises applying to a substrate dyed or printed with such a dyestuff
(1) a water-soluble product of reacting in aqueous solution either
(A) a quaternary polyalkylene polyamine having at least one —NH—, $-NH_2$ or —OH group in each recurring unit and
(B) an N-methylol derivative of a urea, melamine, guanamine, triazine, urone, carbamate or acid amide,
or (A) and (B), as defined above, and
(A′) the product of reacting a mono- or polyfunctional primary or secondary amine with cyanamide, dicyanodiamide, guanidine or biguanidine, said component (A′) containing reactive hydrogen atoms bound to nitrogen,
and (2) a catalyst (C) for crosslinking component (B), and subjecting the thus-treated substrate to a heat-curing step.

4,443,224

LIQUID REACTIVE DYESTUFF PREPARATIONS AND THEIR USE

Konrad Opitz, Liederbach, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 30, 1982, Ser. No. 393,717

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1981, 3126081

Int. Cl.³ C09B *62/02;* D06P *1/38*
U.S. Cl. 8—527 **8 Claims**

1. A liquid water-containing dyeing preparation which comprises from 10 to 25 weight percent of one or more reactive dyestuffs, said one or more dyestuffs when in the free acid form being of the formula

$$(HO_3S)_m{-}F{-}Z_n$$

wherein
F is the radical of a chromophore of an anthraquinone dyestuff, mono-, dis- or trisazo dyestuff or of a phthalocyanine dyestuff,
m is an integer of from 1 to 8,
n is an integer of from 1 to 3 and
z is one or more fiber reactive radicals of monohalogen-symmetric-triazine; of mono- di- or trihalogen pyrimidine; of mono- or dichloroquinoxaline or dichlorophthalazine or dichloroquinazoline or dichloropyridazone, or bromine or fluorine derivatives thereof; or of sulfonyl-containing triazine, sulfonyl-containing pyrimidine or ammonium-containing triazine; or of pyrimidine-containing triazine; or of the aliphatic series;
from 5 to 25 weight percent of one or more solubilizers selected from the group consisting of tetramethyl urea, dimethyl formamide, N-methylacetamide, dimethyl sulfoxide, tetramethylene sulfone, N-methyl pyrrolidone, phosphoric acid tris-(dimethyl)amide, diethylene glycol dimethyl ether and ϵ-caprolactam;
from 1 to 20 weight percent of a sulfosuccinic acid derivative which is a semi-ester or a sulfosuccinic acid amide; and
from 1 to 6 weight percent buffer which does not react with Z so as to reduce the tinctorial strength in any substantial degree;
said dyeing preparation exhibiting a pH of from 3 to 7.

4,443,225

LIQUID-CRYSTALLINE PHASE OF AN AZO REACTIVE DYESTUFF, AND ITS USE FOR THE DYEING AND PRINTING OF NATURAL AND SYNTHETIC SUBSTRATES

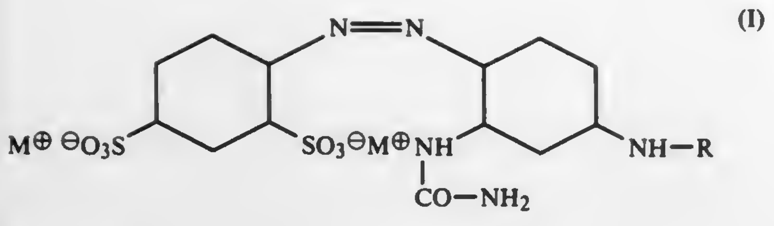
Joachim Wolff, Cologne; Karlheinz Wolf, Leverkusen; Jochen Koll, Odenthal; Reinhold Hörnle, Cologne; Hans-Heinz Mölls, Leverkusen, and Volker Paulat, Monheim, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 23, 1982, Ser. No. 444,024

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1981, 3149129

Int. Cl.³ C09B *62/00;* D06P *1/38*
U.S. Cl. 8—549 **5 Claims**

1. Lyotropic liquid-crystalline aqueous phase of a reactive dyestuff of the formula


(I)

wherein
$M^{\oplus}=H^{\oplus}$ or an alkali metal cation and
R=a fibre-reactive grouping
present in water at room temperature in a concentration of 10–25%, optionally in the presence of concentration-increasing additives and/or optionally in the presence of buffer substances.

4,443,226
PROCESS FOR DYEING TEXTILE SHEET-LIKE STRUCTURES MADE OF POLYESTER FIBERS FOR USE AS WARNING PROTECTIVE CLOTHING

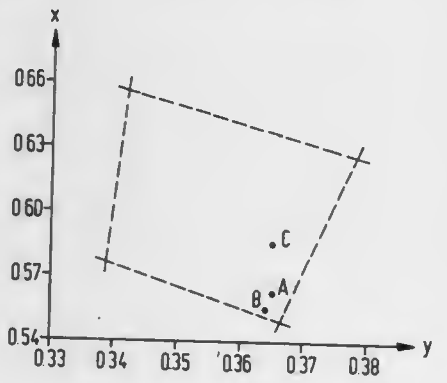
Helmut Röhser, Hofheim am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 337,963, Jan. 8, 1982, abandoned, which is a continuation of Ser. No. 192,308, Sep. 30, 1980, abandoned. This application Feb. 7, 1983, Ser. No. 464,527

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1979, 2939918

Int. Cl.^{3} C09B *57/08;* D06P *1/16*

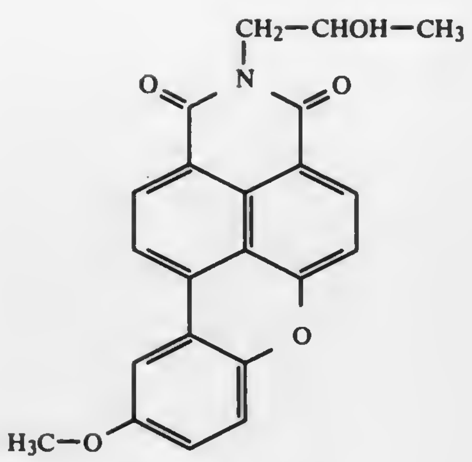
U.S. Cl. 8—532 **10 Claims**



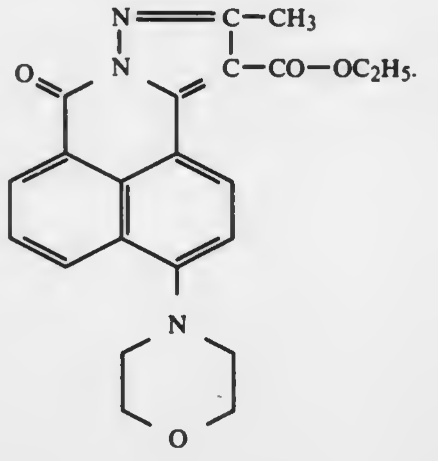
1. A process for dyeing, by an exhaustion or a thermosol method, a textile sheet-like structure made from polyester fibers or from a mixture of polyester fibers and cotton, to produce a dyed structure suitable for use as protective clothing exhibiting an optical warning effect, without applying a coating or colored top layer, said dyed structure otherwise satisfying the requirements of DIN No. 16,954 as to

(a) color point, in that the shade of the dyeing yields a fluorescent orange-red;
(b) reflecting power, in that the luminance factor beta of the dyeing is not less than 0.35;
(c) color retention, in that no substantial fading of the orange-red shade to the yellow side of the spectrum, on exposure to daylight, occurs; and
(d) fastness properties, in that the fastness to light of the coloration is rated at least 5 according to DIN No. 54,004 when exposed to xenon light, while retaining the color properties set forth in (a), (b) and (c),

which comprises dyeing said structure with a base dyestuff which is 2,2'-bis-thionaphthene-indigo or a derivative of the red and pink series of aforesaid thioindigo, in combination with the dyestuff of the formula



and/or the dyestuff of the formula



4,443,227
INSTANT STARTING BRIQUETTES

Souren Z. Avedikian, 1012 N. Ocean Blvd. #909, Pompano Beach, Fla. 33062

Filed Jun. 28, 1982, Ser. No. 392,570

Int. Cl.^{3} C10L *5/32*

U.S. Cl. 44—6 **3 Claims**

1. An improved instant igniting charcoal briquette impregnated with a combustion supporting material selected from the group consisting of straight chain aliphatic alcohols, acids, or mixtures thereof which have minimal vapor pressure at room temperatures and mixture of which have a melting point above ambient temperatures and containing hexamine as a combustion initiating agent, said combustion supporting medium constituting from 10% to 20% by weight and said hexamine constituting from 0.75% to 3.0% weight percent of said briquette, said hexamine being admixed with said combustion supporting medium when said combustion supporting medium is above 92° C.

4,443,228
PARTIAL OXIDATION BURNER

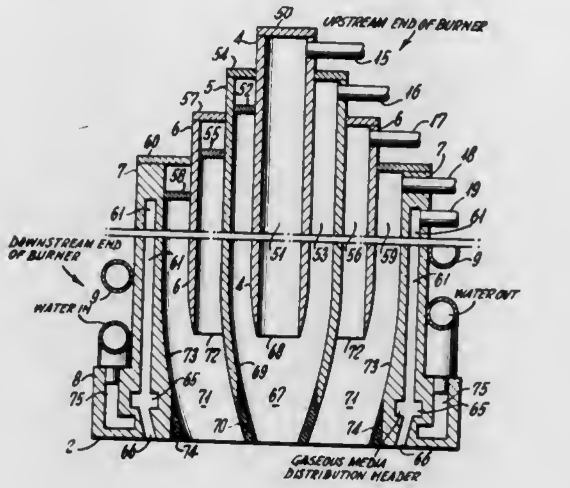
Warren G. Schlinger, Pasadena, Calif., assignor to Texaco Inc., White Plains, N.Y.

Filed Jun. 29, 1982, Ser. No. 393,264

Int. Cl.^{3} C10J *3/48*

U.S. Cl. 48—86 R **16 Claims**

1. A burner for introducing first and second reactant feedstreams into a partial oxidation gas generator comprising: a central conduit having a central longitudinal axis that is coaxial with the central longitudinal axis of the burner, closing means attached to the upstream end of said central conduit for closing off same; an unobstructed exit nozzle at the downstream end of the central conduit which discharges through a circular exit orifice located upstream from the face of the burner to provide a central pre-mix chamber that discharges through an unobstructed circular exit orifice at the face of the burner, inlet means connected to the upstream end of the central conduit for introducing a first reactant feedstream; a second conduit coaxial and concentric with said central conduit along its length, an unobstructed exit nozzle at the downstream end of the second conduit which discharges through the circular orifice of said central pre-mix chamber at the face of the burner, spacing means between said central and second conduits for maintaining a spaced relationship and forming therebetween an unobstructed first annular passage with an unobstructed downstream annular exit orifice that discharges into the central pre-mix chamber, closing means attached to said second conduit and first annular passage at their upstream ends for closing off same, said central conduit passing through the upstream closed end of said second conduit and making a gastight seal therewith, and inlet means connected to the upstream end of the second conduit for introducing a second reactant feedstream; a third conduit coaxial and concentric with said second conduit along its length, spacing means for between said second and third conduits for maintaining a spaced relationship and forming therebetween an unobstructed second annular passage with an unobstructed downstream annular exit orifice located upstream from the face of the burner to provide a portion of an annular pre-mix chamber that discharges through an unobstructed annular exit orifice at the face of the burner closing means attached to the second annular passage and third conduit at their upstream ends for closing off same, said second conduit passing through the upstream closed end of the third conduit and making a gastight seal therewith, and inlet means connected to the upstream end of the third conduit for introducing a third reactant feedstream; an outer conduit coaxial and concentric with said third conduit along its length, an unobstructed exit nozzle at the downstream end of the outer conduit which discharges through said annular exit orifice at the face of the burner, spacing means between said third and outer conduits for maintaining a spaced relationship and forming therebetween an unobstructed third annular passage with an unobstructed downstream annular exit orifice located upstream from the face of the burner that discharges into the remaining portion of said annular pre-mix chamber, closing means attached to the third annular passage and outer conduit at their upstream ends for closing off same, said third conduit passing through the upstream closed end of the outer conduit and making a gastight seal therewith, and inlet means connected to the upstream end of the outer conduit for introducing a fourth reactant feedstream; an outer annular water-cooled flat face-plate encircling the downstream end of the burner, said face-plate being cored to provide an annular passage for circulating water and an annular header for distributing a gaseous material, passage means extending longitudinally in the wall of said outer conduit and in communication with said distribution header, inlet means in communication with the upstream end of said longitudinal passage means for introducing said gaseous material, and downstream passage means in communication with said distribution header for discharging said gaseous material at the face of the burner.



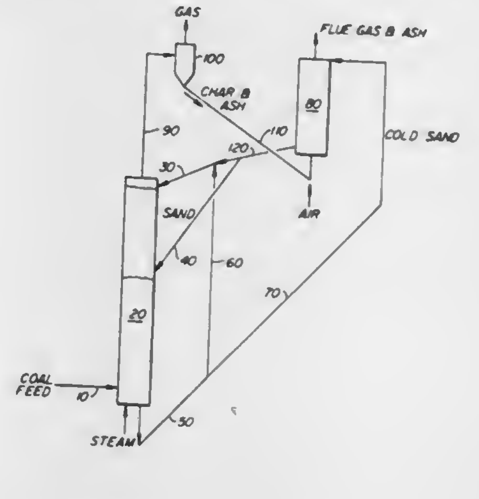
4,443,229
GASIFICATION PROCESS FOR CARBONACEOUS MATERIALS

David Sageman, and David S. Mitchell, both of San Rafael, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jan. 31, 1983, Ser. No. 462,161

Int. Cl.^{3} C10J *3/46, 3/54*

U.S. Cl. 48—197 R **7 Claims**



1. A method for gasification of a carboanceous material comprising:

(a) introducing a carbonaceous material into a lower portion of a reaction vessel;
(b) introducing a first portion of solid heat transfer material into an upper portion of said vessel and introducing a second portion of said heat transfer material into a middle portion of said vessel, wherein the second portion of heat transfer material is introduced into said vessel at a higher temperature than the first portion of heat transfer material;
(c) passing steam upwardly through said vessel to react with the carbonaceous material in said lower portion of said reaction vessel to form a hot char and a gaseous product, wherein the heat necessary for said reaction is supplied by both the first portion of heat transfer material and the second portion of heat transfer material;
(d) cooling the hot char and gaseous product in the upper portion by contact with the first portion of heat transfer material;
(e) removing the hot char and the gaseous product from an upper end of said reaction vessel; and
(f) removing the heat transfer material from a lower end of said vessel.

4,443,230
PARTIAL OXIDATION PROCESS FOR SLURRIES OF SOLID FUEL

Robert J. Stellaccio, Spring, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed May 31, 1983, Ser. No. 499,620

Int. Cl.^{3} C10J *3/46*

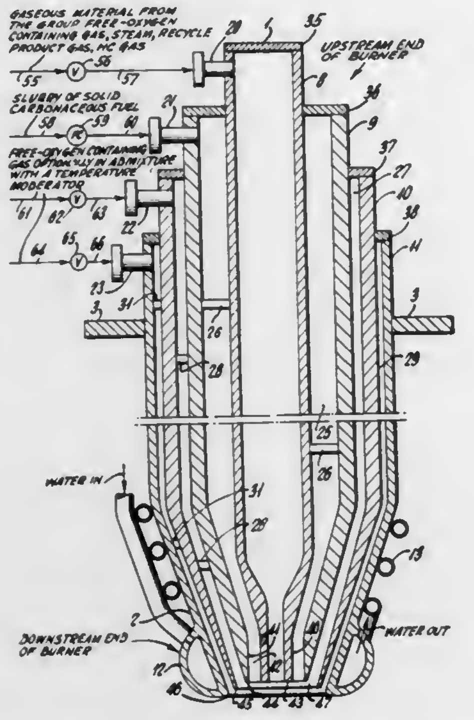
U.S. Cl. 48—197 R **14 Claims**

1. In a continuous process for the manufacture of gas mixtures comprising H_2 and CO and containing at least one material from the group CO_2, H_2O, N_2, CH_4, H_2S and COS, and entrained matter by the partial oxidation of a feedstream comprising a pumpable slurry of solid carbonaceous fuel in a liquid carrier and a feedstream of free-oxygen containing gas optionally in admixture with a temperature moderator, said partial oxidation occuring in the reaction zone of a free-flow gas generator at an autogenous temperature in the range of about

1700° to 3500° F., and a pressure in the range of about 5 to 250 atmospheres, the improvement which comprises:

(1) passing a stream of gaseous material from the group consisting of free-oxygen containing gas, steam, recycle product gas, and hydrocarbon gas through the central conduit of a burner mounted in the upper portion of said gas generator at a velocity in the range of about 76 feet per second to sonic velocity, said burner comprising radially spaced concentric central, second, third, and outer cylindrical conduits providing therebetween first, second, and outer concentric annular passages, said conduits and passages being closed at their upstream ends where feedstream inlets are provided and open at their downstream exit orifices for discharge;

(2) simultaneously passing a pumpable slurry stream of solid carbonaceous fuel in a liquid carrier through said first annular passage at a velocity in the range of about 1 to 50 feet per second;


GASEOUS MATERIAL FROM THE GROUP FREE-OXYGEN CONTAINING GAS, STEAM, RECYCLE PRODUCT GAS, HC GAS
SLURRY OF SOLID CARBONACEOUS FUEL
FREE-OXYGEN CONTAINING GAS OPTIONALLY IN ADMIXTURE WITH A TEMPERATURE MODERATOR
UPSTREAM END OF BURNER
WATER IN
WATER OUT
DOWNSTREAM END OF BURNER

(3) simultaneously passing a stream of free-oxygen containing gas through said second and outer annular passages at a velocity in the range of about 76 feet per second to sonic velocity;

(4) mixing said feedstreams together prior to, at, or downstream from the outer conduit exit orifice to produce a mixture whose atoms of free-oxygen plus atoms of organically combined oxygen in the solid carbonaceous fuel per atoms of carbon in the solid carbonaceous fuel is in the range of about 0.5 to 1.95, and the weight ratio of H_2O/fuel is in the range of about 0.1 to 3; and

(5) reacting by partial oxidation the mixture from (4) in said reaction zone to produce said gas mixture.

4,443,231

CONTINUOUS CHROMATOGRAPHIC SEPARATIONS IN A MAGNETICALLY STABILIZED FLUIDIZED BED

Jeffrey H. Siegell, Westfield, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Feb. 2, 1982, Ser. No. 345,095

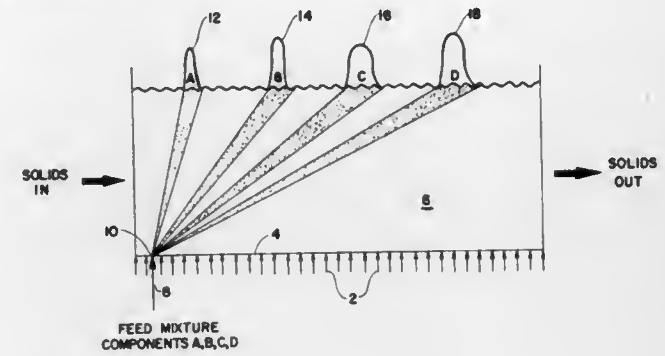
Int. Cl.³ B01D *15/08*

U.S. Cl. 55—3 **35 Claims**

1. A chromatographic process for continuously separating a feed mixture containing at least two components which comprises:

(a) introducing said mixture into a moving bed containing magnetizable particles, said bed being fluidized by a carrier fluid distributed along said bed and passing through said bed in an ascending manner transverse to the flow of said bed and being stabilized by a magnetic means having sufficient strength to suppress solids backmixing therein,

(b) contacting said mixture with an adsorbent in said bed for a period of time necessary to chromatographically separate at least a portion of one of said components from said mixture,



(c) recovering at least two streams, at least one of which is a product stream from said moving bed along the path of said bed, said product stream comprising a portion of the carrier fluid and a portion of the feed mixture containing at least a portion of one of said components.

4,443,232

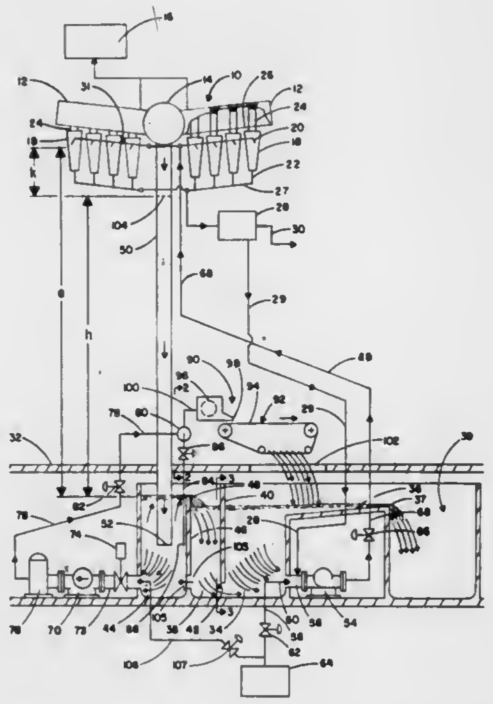
DEAERATED LIQUID STOCK SUPPLY

Robert G. Kaiser, Seminole, Fla., assignor to Clark & Vicario Corporation, Pinellas Park, Fla.

Filed Sep. 29, 1982, Ser. No. 427,914

Int. Cl.³ B01D *19/00*

U.S. Cl. 55—41 **43 Claims**



1. Apparatus for providing deaerated stock to a processing machine, said apparatus comprising:

(a) an enclosed first receiver;

(b) means for maintaining said first receiver under a vacuum;

(c) means for introducing stock into said first receiver to thereby produce deaerated stock in said first receiver at a predetermined average production rate;

(d) stock supply means for supplying stock to be deaerated to said introducing means;

(e) a second receiver open to the atmosphere;

(f) means for conducting deaerated stock from said first receiver to said second receiver;

(g) means for withdrawing stock from said second receiver at a net rate of withdrawal lower than said average production rate, so that stock accumulates as a pond in said second receiver, said withdrawing means being operative to transfer the withdrawn stock to the processing machine;

(h) level control means for discharging a recycle portion of deaerated stock from said second receiver and varying the rate of such discharge to maintain the pond of stock in said second receiver at a predetermined pond level, said conducting means being operative to discharge deaerated stock into said second receiver at an elevation below said predetermined pond level;

(i) recycle means for passing said recycle stock discharged by said level control means to said introducing means.

29. A method of installing deaerated stock supply apparatus in a mill having a preexisting processing machine and an associated preexisting return fluid collection vessel, comprising the steps of:

(a) installing an enclosed first receiver and installing means for maintaining a vacuum in said first receiver;

(b) installing means for introducing stock into said first receiver;

(c) installing a first wall within said vessel so that said wall subdivides said vessel into a tank and a second receiver;

(d) connecting said first receiver to said second receiver and connecting said second receiver to said processing machine;

(e) installing means for controlling the level of stock in said second receiver by discharging recycle stock from such receiver; and

(f) installing recycle means for passing recycle stock to said stock-introducing means.

4,443,233

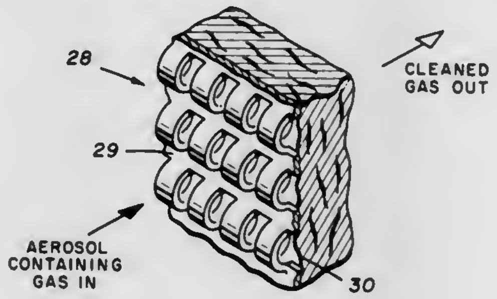
MIST SEPARATOR

Thomas M. Moran, Maryland Heights, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 27, 1982, Ser. No. 412,328

Int. Cl.³ B01D *46/00*

U.S. Cl. 55—97 **9 Claims**



7. A process for removing particles from a particle-containing flowing gas stream comprising:

providing a perforated screen separator in said flowing gas stream, said perforated screen separator being a plate having parallel rows of perforations, said perforations being formed by making cuts in said plate to define parallel rows of strips and pushing alternate strips forward and backward from the plane of the plate to produce said parallel rows of perforations with said strips remaining alternately in front of and behind said perforations to form a tortuous path for said flowing gas stream;

causing said particle-containing gas to flow through said perforated screen separator; and

removing said particles having a diameter of at least approximately 10 microns from said flowing gas stream by impingement of said particles upon the surface of said perforated screen separator.

4,443,234

DEVICE AT A DUST FILTER

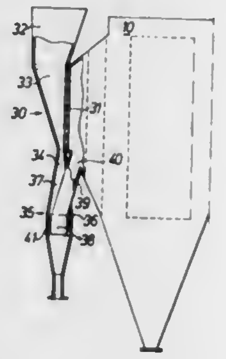
Kurt B. I. Carlsson, Växjö, Sweden, assignor to Flakt Aktiebolag, Nacka, Sweden

Filed Mar. 30, 1982, Ser. No. 363,419

Claims priority, application Sweden, Mar. 4, 1982, 8102154

Int. Cl.³ B03C *3/01, 3/14;* **B01D** *50/00*

U.S. Cl. 55—126 **7 Claims**



1. A device at a dust filter for cleaning a gas flow from dust, which dust filter comprises a filter chamber **(10)** with a gas inlet **(12)** and a gas outlet **(13)** and a filter unit **(16)** located in the filter chamber, which gas inlet **(12)** is provided with a precollector **(30)** for separating coarse dust from the gas flow prior to the passing of the gas flow through the filter unit, which precollector **(30)** is designed as a louvre collector **(31)** having at least one dust hopper **(34)** and dust discharge unit **(35)** located to collect and remove dust separated by the louvre collector by means of a partial gas flow, characterized in that the dust discharge unit **(35)** comprises a cyclone collector **(36)**, the inlet portion **(37)** of which is integrated with the dust hopper **(34)**, and the gas outlet portion of which for the partial gas flow flowing through the cyclone is designed as a passageway **(39)** having a mouth **(40)** which is located in the filter chamber **(10)** downstream from the louvre collector **(31)**, and that the cyclone collector **(36)** is dimensioned so as to impart to the partial gas flow a pressure drop, which corresponds to the pressure drop of the gas flow through the louvre collector.

4,443,235

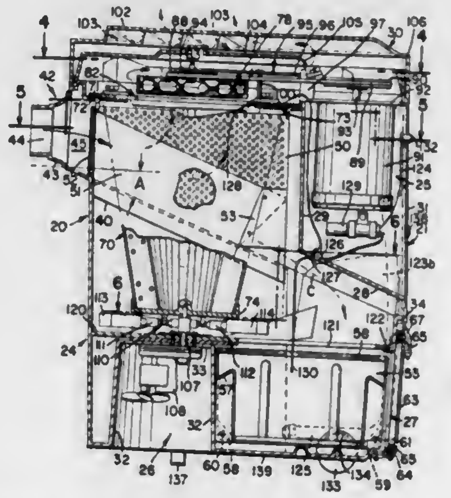
SELF-CLEANING CABINET DUST COLLECTOR

David L. Brenholt, Menomonie, Wis., and Daniel T. Risch, Minneapolis, Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Filed Oct. 1, 1982, Ser. No. 432,351

Int. Cl.³ B01D *46/04, 50/00*

U.S. Cl. 55—218 **22 Claims**



1. An apparatus for filtering air laden with dust and other particulate matter and for collecting the filtered dust and particulate matter, said apparatus comprising:

a housing having a closed bottom portion, an open top portion, a generally hollow interior, a substantially hollow wall extending between said top and bottom portions, said wall having an exterior member and an interior member defining an air flow passageway therebetween, with said passageway being in fluid flow communication with said housing interior, inlet means in said exterior member for introducing dust-laden air into said passageway, said interior member including means therein for precleaning said entering air flow, means in said bottom portion for collecting dust and particulate matter separated from said air flow, and ramp means for directing dust and particulate matter, separated in said passageway, into said collecting means;

means in said housing interior for filtering the precleaned air, said filtering means including a flexible filter element suspended from said housing upper portion, said filter element having an uppermost open end and a closed bottommost end;

means for flexing said filter element to remove dust and particulate matter therefrom, said flexing means being located in said housing bottom portion exterior to said filter element;

said element flexing means further including means for propelling dust and particulate matter removed from said element into said collecting means;

a cover removably secured on said housing top portion, said cover including means for allowing egress of filtered air from said housing; and

fan means in fluid flow communication with said housing interior for drawing air flow therethrough from said inlet means, said fan means being positioned proximate said filtering means.

4,443,236

SELF-CLEANING SCREEN FOR THE COOLING AIR INLET OF AN ENGINE ENCLOSURE

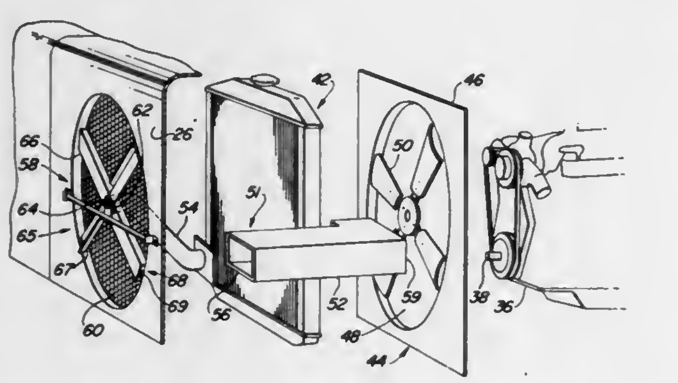
Rolf Peiler, Zweibrucken, Fed. Rep. of Germany, assignor to Deere & Company, Moline, Ill.

Filed Oct. 28, 1982, Ser. No. 437,427

Claims priority, application European Pat. Off., Nov. 14, 1981, 81 109690.8

Int. Cl.³ B01D *35/02, 35/18, 46/04*

U.S. Cl. 55—269 **11 Claims**



1. In an agricultural machine having a mobile body and a power unit carried by the body, the power unit including a wall having an air inlet, an internal combustion engine, a heat exchanger for cooling the engine and a blower operable to draw cooling air through the inlet and over the heat exchanger, an improved air cleaning apparatus for the cooling air comprising:

an air filter supported adjacent the wall and including a filter element having a foraminous portion and exterior and interior sides covering the inlet for filtering and holding on its exterior side, foreign material from the cooling air moving through the inlet;

an exhaust passage having an outlet communicating with the upstream side of the blower and an inlet adjacent the interior side of the filter element so that the blower may draw air through the passage from the inlet to the outlet;

an exhaust sweep assembly including an elongated sweep defining a collecting duct adjacent the exterior side of the filter element, said duct having an air inlet portion including a first inlet adjacent and open to and spanning a portion of the exterior side of the filter element and an outlet portion axially adjacent the inlet portion and including an outlet, said sweep assembly being mounted for sweeping motion relative to the filter element so that the first air inlet sweeps at least a portion of the exterior side of the filter element, and said duct outlet communicating with the exhaust passage inlet so that the blower draws air into and through the duct via the duct inlet, some air being drawn directly from the atmosphere externally adjacent the filter element and some of the drawn air being diverted from the interior side of the filter element and drawn outwards through the filter element, and being drawn through the duct inlet entraining foreign material held on the exterior side of the filter element and carrying it through the duct to the duct outlet and into the exhaust passage;

means for mounting the sweep assembly adjacent said filter element; and

means for imparting a sweeping motion to the sweep assembly.

4,443,237

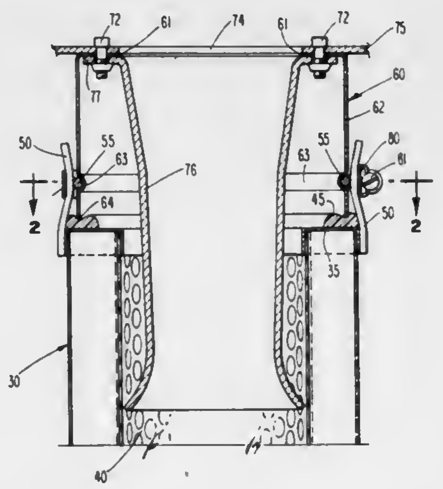
DUST COLLECTING FILTER CARTRIDGE AND ATTACHMENT STRUCTURE FOR SUSPENDING SAME FROM BAGHOUSE TUBE SHEET

Edward A. Ulvestad, Naperville, Ill., assignor to Flex-Kleen Corporation, Chicago, Ill.

Filed Nov. 22, 1982, Ser. No. 443,389

Int. Cl.³ B01D *46/52*

U.S. Cl. 55—379 **9 Claims**



1. A dust filter baghouse comprising;

A. a baghouse tube sheet having a plurality of holes therein;

B. a small-diameter filter cartridge, said filter cartridge comprising a cylindrical perforated sleeve, an annular pleated filter media which encircles said sleeve, a collar secured to the upper end of said filter media, and an annular resilient cuff secured to the upper surface of said collar;

C. attachment structure suspending said filter cartridge from said baghouse tube sheet, said attachment structure comprising:
  - a. a cylindrical bag cup having a vertical sidewall;
  - b. means suspending said bag cup from said tube sheet in registry with one of the holes therein;
  - c. said bag cup having an annular groove in the sidewall thereof;
  - d. a circular series of spaced apart generally vertical resilient fingers projecting upwardly from, and secured to, said cartridge collar, each of said fingers having an inward projection positioned and arranged such that the sidewall of said cup engages each of said inward projections on said fingers and cams said fingers radially outwardly, said projections subsequently coming into registry with said annular groove in the sidewall of said bag cup, whereupon said projections snap into said groove, thereby latching said filter cartridge to said bag cup, and
  - e. clamp means for securing said finger projections in said bag cup groove in latching position.

4,443,238

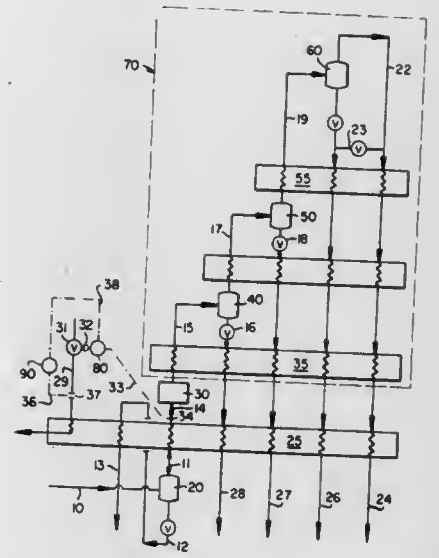
RECOVERY OF HYDROGEN AND OTHER COMPONENTS FROM REFINERY GAS STREAMS BY PARTIAL CONDENSATION USING PRELIMINARY REFLUX CONDENSATION

Robert A. Beddome, Kenmore; John B. Saunders, Tonawanda, and Gary W. Fenner, Grand Island, all of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jul. 19, 1982, Ser. No. 399,294

Int. Cl.³ F25J *3/02*

U.S. Cl. 62—17 **5 Claims**



1. A method for removing a major portion of C_5+ hydrocarbon content from a water-laden hydrogen and hydrocarbon-containing gas stream comprising the steps of:

(a) pressurizing a water-laden, gas consisting essentially of hydrogen, methane, C_2, C_3, C_4, and C_5+ hydrocarbons at a pressure above about 400 psia, to provide a pressurized gas stream,

(b) passing the pressurized gas stream through separator means, adapted to permit the upward flow of gas simultaneously with the downward flow of liquid, to a reflux condensation zone having a plurality of indirect heat exchange passages,

(c) flowing the pressurized gas stream upwardly through some but not all of the plurality of passages of the reflux condensation zone in indirect heat exchange with a refrigerant stream flowing through other passages of the reflux condensation zone so as to partially condense the pressurized gas stream within the reflux condensation zone, to generate a reflux liquid which flows downwardly in the plurality of the gas stream carrying passages to rectify the upwardly flowing pressurized gas, the reflux liquid gradually becoming enriched with C_5+ hydrocarbon constituents of the pressurized gas stream and being passed from said reflux condensation zone to said separator means and being collected from said separator means,

(d) controlling step (c) so that the partial condensation of the pressurized gas stream within the reflux condensation zone occurs at a temperature above about 240° K. (−30° F.) with suppression of any hydrate formation,

(e) separately recovering from the reflux condensation zone condensate liquid which contains a major portion of the C_5+ hydrocarbon content of the pressurized gas stream and uncondensed pressurized gas stream,

(f) drying the water-laden pressurized gas stream prior to step (g) to provide an essentially water-free gas suitable for cryogenic processing,

(g) further cooling the essentially water-free gas stream recovered in step (e) in a partial condensation zone to condense a major portion of the residual hydrocarbon constituents thereof and separating the unliquified gas and further cooling said unliquified gas to obtain a predominantly hydrocarbon residual condensate and a predominantly hydrogen unliquified gas product.

4,443,239

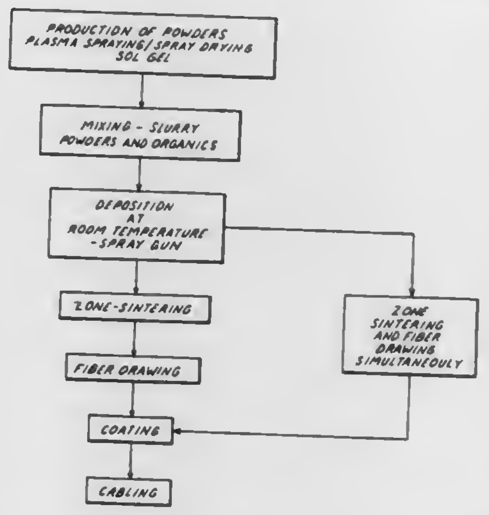
FABRICATION OF OPTICAL WAVEGUIDES USING SLURRY DEPOSITION

Dipak R. Biswas, and Dilip K. Nath, both of Roanoke, Va., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed May 20, 1982, Ser. No. 379,835

Int. Cl.³ C03B *19/06*

U.S. Cl. 65—3.11 **14 Claims**


PRODUCTION OF POWDERS PLASMA SPRAYING/SPRAY DRYING SOL GEL
MIXING - SLURRY POWDERS AND ORGANICS
DEPOSITION AT ROOM TEMPERATURE -SPRAY GUN
ZONE-SINTERING
FIBER DRAWING
ZONE SINTERING AND FIBER DRAWING SIMULTANEOULY
COATING
CABLING

1. A process for manufacturing an optical preform, comprising the steps of

providing a bait;

forming at least one slurry containing particles of an optical material with a predetermined index of refraction suspended in a liquid vehicle, including coating the particles with a binder;

depositing at least one cohesive layer of the particles on the bait, including covering at least a portion of the bait with the slurry and evaporating the liquid vehicle while keeping the binder for the latter to hold the particles together in the cohesive layer subsequent to the evaporation of the liquid vehicle;

dissociating the cohesive layer from the bait;

removing the binder from the cohesive layer; and sintering the cohesive layer into the preform.

4,443,240

METHOD FOR PRODUCING GLASS PARTICLES IN MOISTURE PROTECTED CONDITION

Thomas C. Shutt, and L. Wayne Snider, Denver, Colo.

Continuation of Ser. No. 943,035, Sep. 18, 1978, abandoned, which is a continuation of Ser. No. 759,698, Jan. 17, 1977, abandoned, which is a division of Ser. No. 565,238, Apr. 4, 1975, Pat. No. 4,016,131. This application Mar. 3, 1980, Ser. No. 126,916

Int. Cl.³ C03C *19/00, 23/00*

U.S. Cl. 65—21.1 **6 Claims**

1. Method of preparing an unsaturated polyester-reactive material for actively enhancing the physical and chemical properties of a cured polyester resin thereafter cured in intimate admixture therewith comprising substantially precleaned, dry and moisture-protected, homogeneous, in situ originally dry nascently fractured and freshly exposed surface created, active soda-containing silicate glass particles continu-

ously maintained in original nascently fractured and freshly exposed surface created condition and in original dry condition and having a high and irregular original nascently fractured and freshly exposed condition surface area, an average particle size below about 40 mesh and an active cured polyester structurally reinforcing property, and being maintained in moisture-protected condition in an environment preventing moisture contamination, which comprises washing soda-containing silicate glass of above about 40 mesh to clean such glass, drying the washed and clean glass, and crushing the resultant dried glass in situ in the absence of moisture whereby to obtain substantially pre-cleaned, dry and moisture-protected, homogeneous, in situ originally dry nascently fractured and freshly exposed surface created, active soda-containing silicate glass particles continuously maintained in original nascently fractured and freshly exposed surface created condition and in original dry condition and having a high and irregular original nascently fractured and freshly exposed condition surface area, an average particle size below about 40 mesh and an active cured polyester structurally reinforcing property, and maintaining said particles in moisture-protected condition in an environment preventing moisture contamination.

4,443,241
METHOD OF AND APPARATUS FOR MONITORING THE CLOSING ACTION OF A MOULD

Stanley P. Jones, Tickhill, England, assignor to Emhart Industries, Inc., Farmington, Conn.

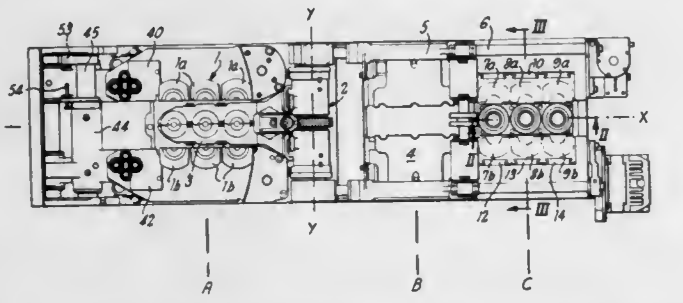
PCT No. PCT/GB82/00051, 371 Date Sep. 30, 1982, 102(e) Date Sep. 30, 1982, PCT Pub. No. WO82/02878, PCT Pub. Date Sep. 2, 1982

PCT Filed Feb. 22, 1982, Ser. No. 432,926

Claims priority, application United Kingdom, Feb. 27, 1981, 8106178

Int. Cl.³ C03B *11/16, 9/40*

U.S. Cl. 65—29 **9 Claims**



1. A method of monitoring the closing action of a mould (**1**, **7**, **8**, **9**) of a glassware forming machine in a cyclic process of forming glassware, the method comprising producing a signal representative of the position of a part of the mould (**1***a*, **7***b*, **8***b*, **9***b*) at a time in the cyclic process when the mould (**1**, **7**, **8**, **9**) should be closed and comparing the signal with a signal representative of the position of the mould part (**1***b*, **7***b*, **8***b*, **9***b*) when the mould is correctly closed, characterised in that the signal representative of the position of the mould part (**1***b*, **7***b*, **8***b*, **9***b*) when the mould (**1**, **7**, **8**, **9**) is closed is produced by averaging a selected number of the immediately preceding signals representative of the position of the part of the mould at the time when the mould should be closed.

2. Apparatus for use in monitoring the closing action of a mould (**1**, **7**, **8**, **9**) of a cyclicly-operating glassware forming machine, the apparatus comprising a position sensitive device (**30**, **52**) operable to produce a signal representative of the position of a part of the mould (**1***b*, **7***b*, **8***b*, **9***b*), producing means (**63**, **64**, **65**) operable to produce a signal representative of the position of the mould part when the mould is correctly closed, and comparing means (**62**) operable to compare the signals produced by the position sensitive device (**30**, **52**) and the producing means (**63**, **64**, **65**) at a time in the cyclic operation of the machine when the mould (**1**, **7**, **8**, **9**) should be closed, characterised in that the producing means (**63**, **64**, **65**) produces its signal by averaging a selected number of immediately preceding signals of the position sensitive device (**30**, **52**).

4,443,242
FOLIAR FEED

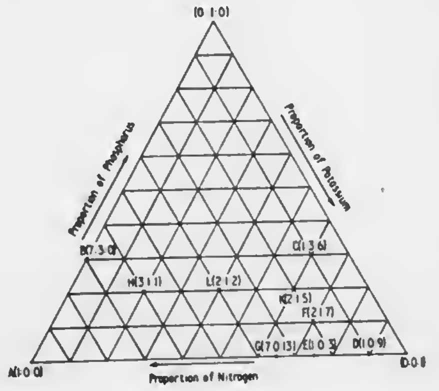
Rodney Fox, Cottingham, England, assignor to Reckitt & Colman Products Limited, United Kingdom

Filed Jan. 18, 1982, Ser. No. 340,462

Claims priority, application United Kingdom, Jan. 21, 1981, 8101804

Int. Cl.³ C05G *3/00*

U.S. Cl. 71—11 **25 Claims**



1. A method for the preparation of a foliar feed comprising the steps of:

(a) dissolving plant nutrient in water to form a foliarly effective aqueous solution thereof;

(b) forming a water-in-oil emulsion by mixing the said foliarly effective aqueous solution and an aerosol propellant in the presence of a surfactant providing an HLB in the range of from 3 to 6;

(c) containing the said water-in-oil emulsion in an aerosol container; and,

(d) purging oxygen from the container.

15. A ready to use foliar composition comprising a water-in-oil emulsion, the aqueous phase containing dissolved plant nutrient and the oil phase including an aerosol propellant and a surfactant providing an HLB in the range of from 3 to 6 the emulsion being contained in a hand-operable pressure dispensing container.

4,443,243
N-PHENYLSULFONYL-N-TRIAZINYLUREAS

Werner Fory, Basel; Karl Gass, Magden; Willy Meyer, Riehen, and Rolf Schurter, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

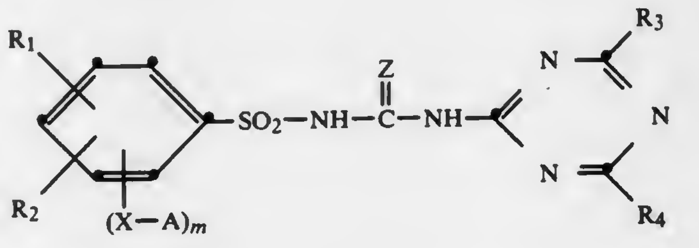
Filed Jul. 9, 1982, Ser. No. 396,959

Claims priority, application Switzerland, Jul. 16, 1981, 4667/81

Int. Cl.³ C07D *251/44, 251/46, 251/42;* **A01N** *43/66*

U.S. Cl. 71—93 **21 Claims**

1. An N-phenylsulfonyl-N'-pyrimidinyl- or -triazinylurea of the general formula I



(I)

wherein

A is a C_3–C_6-alkynyl group,

X is oxygen, sulfur or a sulfinyl or sulfonyl bridge,

Z is oxygen or sulfur,

m is the number one or two,

R_1 is hydrogen, halogen, C_1–C_5-alkyl or C_2–C_5-alkenyl or a group —Y—R_5,

R_2 is hydrogen, halogen, C_1–C_5-alkyl, C_2–C_5-alkenyl or C_1–C_4-haloalkyl, or a group —Y—R_5, —$COOR_6$, —NO_2 or —CO—NR_7—R_8,

R_3 and R_4 independently of one another are hydrogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy, halogen or alkoxyalkyl having at most 4 carbon atoms,

R_5 and R_6 are each C_1–C_5-alkyl, C_2–C_5-alkenyl or C_2–C_6-alkynyl,

R_7 and R_8 independently of one another are each hydrogen, C_1–C_5-alkyl, C_2–C_5-alkenyl or C_2–C_6-alkynyl, and

Y is oxygen, sulfur or a sulfinyl or sulfonyl bridge;

and the salts of these compounds.

15. A method of controlling undesired plant growth, which method comprises applying thereto or to the locus thereof a herbicidally effective amount of a compound according to claim **1**.

4,443,244
HERBICIDAL SULFONAMIDES

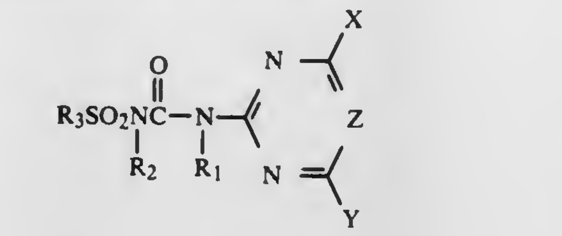
George Levitt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 151,245, Jul. 13, 1982, Pat. No. 4,339,266, which is a division of Ser. No. 840,167, Oct. 6, 1977, Pat. No. 4,257,802. This application Apr. 21, 1982, Ser. No. 370,395

Int. Cl.³ A01N *43/66;* **C07D** *409/12*

U.S. Cl. 71—93 **12 Claims**

1. A compound having the formula:



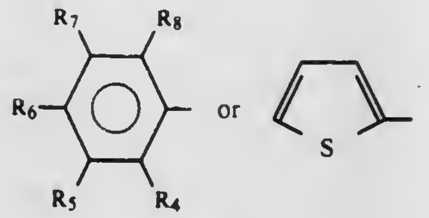
(I)

wherein

R_1 is H, alkyl of one to three carbon atoms or —OCH_3;

R_2 is H or alkyl of one to three carbon atoms;

R_3 is



R_4 and R_7 are independently hydrogen, fluorine, chlorine, bromine, alkyl of 1-4 carbon atoms, alkoxy of 1-4 carbon atoms, nitro, CF_3, CH_3S- or CH_3CH_2S-;

R_5, R_6 and R_8 are independently hydrogen, fluorine, chlorine, bromine or methyl;

X is Cl, CH_3, —CH_2CH_3, alkoxy of one to three carbons, CF_3, CH_3S—, CH_3OCH_2— or $CH_3OCH_2CH_2O$—;

Y is CH_3 or OCH_3; and

Z is N;

and their agriculturally suitable salts; provided that:

a. R_1 and R_2 may not simultaneously be hydrogen.

b. when R_4 and R_8 are both hydrogen, at least one of R_5, R_6 or R_7 must be hydrogen;

c. when R_6 is H and all or R_4, R_5, R_7, and R_8 are other than H, then all of R_4, R_5, R_7 and R_8 must be either Cl or CH_3; and

d. when R_6 is other than H, at least one of R_4, R_5, R_7 and R_8 is other than H and at least two of R_4, R_5. R_7 and R_8 must be hydrogen.

9. A method for controlling the growth of undesired vegetation which comprises applying to the locus to be protected an effective amount of a compound of claim **1**.

4,443,245
N-PHENYLSULFONYL-N'-TRIAZINYLUREAS

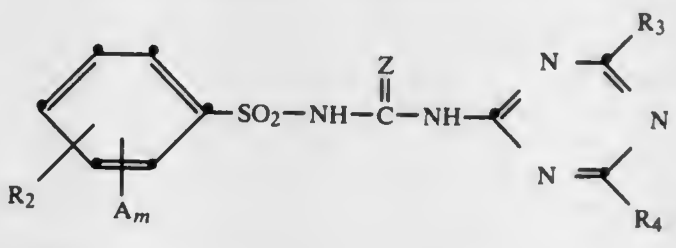
Willy Meyer, Riehen, and Werner Föry, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 282,847, Jul. 13, 1981, abandoned. This application Jan. 17, 1983, Ser. No. 458,587

Int. Cl.³ C07D *251/42;* **A01N** *43/66;* **C07D** *251/44, 251/46*

U.S. Cl. 71—93 **37 Claims**

1. A N-phenylsulfonyl-N'- or -triazinylurea of the formula I



(I)

wherein

A is a C_2–C_6alkenyloxy, a C_2–C_6haloalkenyloxy a C_2–C_6-haloalkenylthio, a C_2–C_6haloalkenylsulfinyl or a C_2–C_6-haloalkenylsulfonyl radical

Z is oxygen or sulfur,

m is 1 or 2,

R_2 is hydrogen, halogen, C_1–C_5alkyl, C_2–C_5alkenyl, C_1–C_4-haloalkyl, or a radical —Y—R_5, —$COOR_6$, —NO_2 or —CO—NR_7—R_8, R_3 and R_4, each independently of the other, are hydrogen, C_1–C_4alkyl, C_1–C_4alkoxy, C_1–C_4alkylthio, C_1–C_4haloalkyl, halogen or alkoxyalkyl of at most 4 carbon atoms,

R_5 and R_6, each independently of the other, are C_1–C_5alkyl, C_2–C_5alkenyl or C_2–C_6alkynyl,

R_7 and R_8, each independently of the other, are hydrogen, C_1–C_5alkyl, C_2–C_5alkenyl or C_2–C_6alkynyl, and

Y is oxygen, sulfur, a sulfinyl or sulfonyl bridge, or a salt thereof.

34. A method of controlling undesired plant growth, which method comprises applying thereto or to the locus thereof a herbicidally effective amount of a compound according to claim **1**.

4,443,246
HERBICIDAL PYRIDYL-ETHOXY-PHENYL UREA DERIVATIVES

Yutaka Kawamatsu, Kyoto; Takahiro Saraie, Toyono, and Harutoshi Yoshikawa, Yawata, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

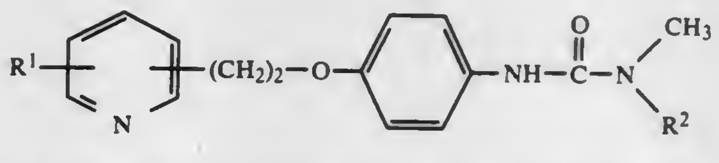
Filed Jun. 7, 1982, Ser. No. 385,857

Claims priority, application Japan, Jun. 16, 1981, 56-93549

Int. Cl.³ A01N *43/40;* **C07D** *213/86*

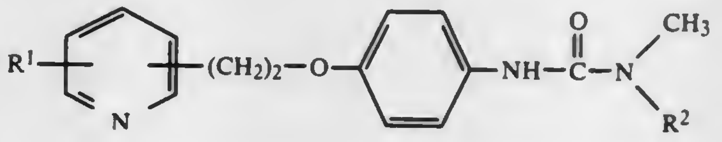
U.S. Cl. 71—94 **5 Claims**

1. A compound of the general formula:



wherein R^1 stands for a lower alkyl group; and R^2 stands for a lower alkyl group or a lower alkoxy group, or a salt thereof.

5. A herbicide containing an effective amount of a compound of the general formula:



wherein R^1 stands for a lower alkyl group; and R^2 stands for a lower alkyl group or a lower alkoxy group, or a salt thereof, and an inert carrier therefor.

4,443,247

PYRIDYLOXY-PHENOXYALKANECARBONYL OXIME DERIVATIVES

Hermann Rempfler, Ettingen, and Werner Föry, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

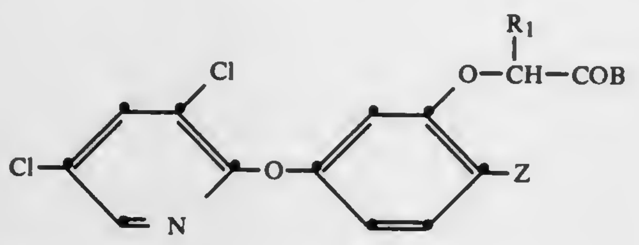
Division of Ser. No. 140,402, Apr. 14, 1980, Pat. No. 4,329,167, which is a continuation-in-part of Ser. No. 80,965, Oct. 1, 1979, abandoned, which is a continuation of Ser. No. 919,119, Jun. 26, 1978, abandoned. This application Mar. 5, 1982, Ser. No. 355,062

Claims priority, application Switzerland, Jun. 29, 1977, 8023/77

Int. Cl.^{3} C07D *213/64;* **A01N** *43/40*

U.S. Cl. 71—94 **7 Claims**

1. A compound of the formula



wherein

Z is chlorine or nitro, R_1 is methyl or ethyl, and B is —O—N=C(C_1-C_4 alkyl)$_2$, cyclohexanonoxime or 2,6-dichlorobenzaldehyde-oxime.

6. A method for controlling weeds at a locus, which comprises applying to said locus a herbicidally effective amount of a compound according to claim 1.

4,443,248

PHENOXYPHENOXYPROPIONIC ACIDS AND DERIVATIVES, AND THEIR USE AS HERBICIDES

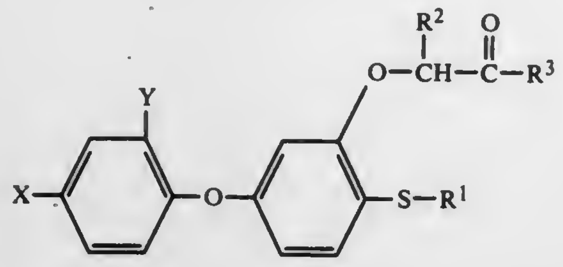
Takeo Hokama, Chicago, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed Apr. 12, 1982, Ser. No. 367,642

Int. Cl.^{3} C07C *149/40;* **A01N** *37/00, 31/00;* **C07C** *149/40*

U.S. Cl. 71—98 **12 Claims**

1. A compound of the formula:



wherein X is selected from the group consisting of halogen, nitro, cyano and trifluoromethyl; Y is selected from the group consisting of hydrogen, halogen, nitro and cyano; R^1 is lower alkyl; R^2 is selected from the group consisting of hydrogen and lower alkyl; and R^3 is selected from the group consisting of hydroxy, lower alkoxy, lower alkylthio, amino, lower alkylamino and di(loweralkyl)amino.

11. A method of controlling weeds which consists essentially of contacting the weeds or the locus of the weeds with a herbicidally effective amount of a composition of claim 9.

4,443,249

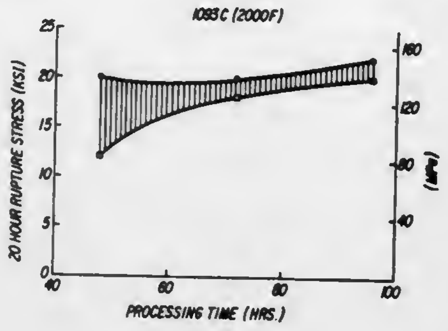
PRODUCTION OF MECHANICALLY ALLOYED POWDER

John H. Weber, Sloatsburg, and Paul S. Gilman, Pomona, both of N.Y., assignors to Huntington Alloys Inc., Huntington, W. Va.

Filed Mar. 4, 1982, Ser. No. 354,884

Int. Cl.^{3} B22F *9/04*

U.S. Cl. 75—0.5 R **29 Claims**



1. A system for controlling the mechanical alloying of at least two solid particulate components, said mechanical alloying being carried out by dry high energy milling of the particles in a gravity-dependent type ball mill to maximize mill throughput and minimize time to processing of the particles to an acceptable processing level, said processing level being suitable for producing a consolidated product with a substantially clean microstructure and having grains which are substantially uniform in size and of a desired shape, comprising milling the particles to produce a powder product characterized in that an optical view at 100× of a representative sample of differentially etched particles milled in said gravity-dependent type ball mill shows the presence of particles having a uniform laminate-type structure, the remaining particles being substantially featureless, the particles with the laminate-type structure having a maximum interlaminar distance no greater than about 50 micrometers.

4,443,250

PROCESS OF PRODUCING SPONGE IRON BY A DIRECT REDUCTION OF IRON OXIDE-CONTAINING MATERIALS

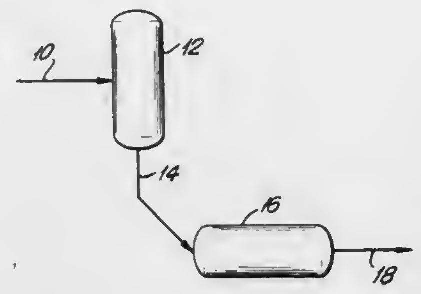
Kurt Meyer; Lothar Reh, both of Frankfurt am Main; Martin Hirsch, Friedrichsdorf; Wolfram Schnabel, Idstein, and Harry Serbent, Hanau, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 14, 1982, Ser. No. 417,958

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1982, 3210232

Int. Cl.^{3} C21B *13/08*

U.S. Cl. 75—26 **11 Claims**



1. In a process of producing sponge iron by a direct reduction of iron oxide-containing materials including prereducing a charge in a fluidized bed and final reducing the charge below the melting point of the charge in a rotary kiln, the improvement which comprises prereducing fine-grained materials which contain iron oxide and have an iron content in a fluidized bed to achieve a metallization of 50 to 80% of the iron content of the iron oxide of the fine grained materials and, thereafter, completely reducing the prereduced fine-grained materials in a rotary kiln.

4,443,251

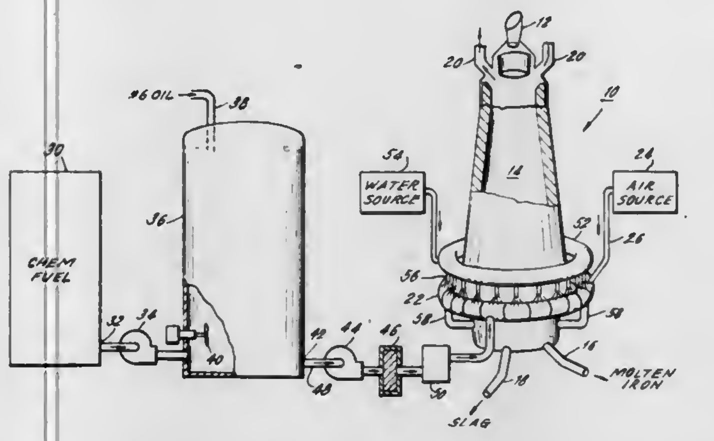
METHOD OF OPERATING A BLAST FURNACE

Theodore J. Reese, P.O. Box 770, Michigan City, Ind. 46360

Continuation-in-part of Ser. No. 313,733, Oct. 22, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 430,984

Int. Cl.^{3} C21B *5/00*

U.S. Cl. 75—42 **12 Claims**



1. In a method of operating a blast furnace to melt therein iron ore mixed with coke and limestone to produce and discharge molten iron and slag at the bottom of the furnace, and to discharge carbon dioxide at the top of the furnace, the improvement which comprises the step of introducing into the lower portion of the furnace under pressure a fluid combustible waste material and oxygen wherein said waste material comprises a pumpable low viscosity suspension of solids in liquid hydrocarbons having a heat of combustion of 10,500 to about 19,500 BTU per pound, a chlorine content of about 0.1–5% and substantially no free water.

4,443,252

PROCESS FOR PRODUCING STEEL IN A CONVERTER FROM PIG IRON AND FERROUS SCRAP

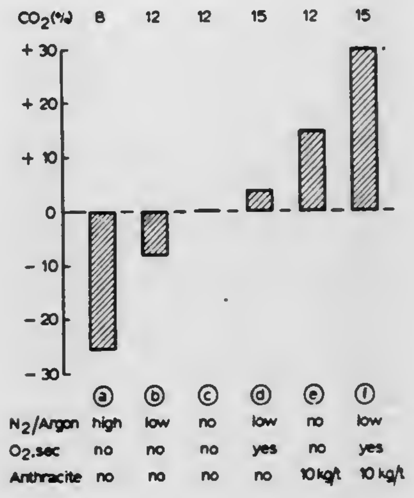
Pieter J. Kreijger, Castricum, and Gerardus P. Bührmann, Velsen-Zuid, both of Netherlands, assignors to Hoogovens Groep B.V., Netherlands

Filed Mar. 16, 1983, Ser. No. 475,973

Claims priority, application Netherlands, Mar. 26, 1982, 8201269

Int. Cl.^{3} C21C *7/00*

U.S. Cl. 75—48 **9 Claims**



1. In a process of producing steel in a converter, wherein the starting materials comprise pig iron and ferrous scrap and wherein oxygen is blown from above upon the molten metal bath in the converter, the improvement of the combination of the following process steps:

(a) of blowing oxygen into the bath through a first orifice, and of passing inert gas through the bottom of the converter into the bath during at least part of the time of blowing oxygen,

(b) during at least part of the time of blowing oxygen into the bath through a first orifice, blowing oxygen through a second orifice into the atmosphere above the bath,

(c) at least once during the time of blowing oxygen into the bath, adding carbon to the reaction from above.

4,443,253

RECOVERY OF ZINC FROM ZINC CONTAINING SULPHIDIC MATERIALS

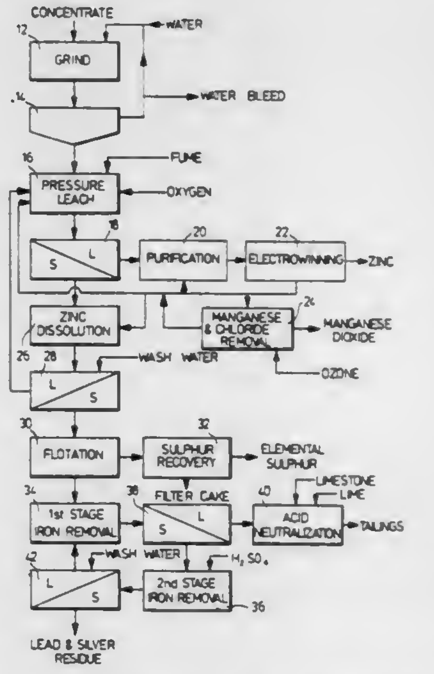
Donald R. Weir, and Ian M. Masters, both of Fort Saskatchewan, Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Canada

Filed Sep. 14, 1982, Ser. No. 417,829

Claims priority, application Canada, Jun. 3, 1982, 404390

Int. Cl.^{3} C22B *19/00;* **C01G** *5/00, 21/00;* **C01B** *17/027*

U.S. Cl. 75—120 **12 Claims**



1. A process for recovering zinc from zinc-containing sulphidic material also containing iron and from zinc oxide containing material, at least one of the zinc containing materials also containing at least one of the metals selected from the group consisting of lead and silver, the process comprising leaching zinc-containing sulphidic material under pressurized oxidizing conditions at a temperature in the range of from about 130° to about 170° C. in aqueous sulphuric acid solution with an initial stoichiometric excess of sulphuric acid relative to the zinc content of the sulphidic material to form a leach slurry containing dissolved zinc and iron, continuing the leach step until a substantial amount of zinc has been dissolved from the sulphidic material, injecting zinc oxide containing material into the leach slurry while maintaining said said pressurized oxidizing conditions and temperature to raise the pH of the slurry to a value in the range of from about 4.5 to about 5.5 to precipitate dissolved iron and form an iron-containing residue and a relatively iron-free leach solution, said residue also containing sulphur and said at least one metal, separating the residue from the leach solution, treating the leach solution to recover zinc, separating elemental sulphur and unreacted zinc containing material from the residue, and leaching the remaining residue in aqueous sulphuric acid solution in an iron removal step to dissolve iron and form a residue enriched in said at least one metal.

4,443,254

COBALT FREE MARAGING STEEL

Stephen Floreen, Suffern, N.Y., assignor to Inco Research & Development Center, Inc., Suffern, N.Y.

Filed Oct. 31, 1980, Ser. No. 202,674

Int. Cl.^{3} C22C *38/06, 38/08, 38/12, 38/14*

U.S. Cl. 75—123 B **4 Claims**

1. A maraging steel characterized by a combination of strength, ductility and toughness as determined by the charpy-V-notch impact test, the CVN impact energy level being at least 10–15+ ft/lbs, said steel consisting of about 17 to 19% nickel, about 1 to 4% molybdenum, about 1.25 to 2.1% titanium, the constituents molybdenum and titanium being correlated such that when the molybdenum content is below about 1.5% the titanium content is at least 1.8% and when the titanium content is below about 1.4% the molybdenum content is at least 2.25%, up to 0.3% aluminum, carbon present up to 0.03%, and the balance essentially iron.

4. A maraging steel characterized, in the absence of cobalt, by a high yield strength on the order of 240,000–250,000+ psi together with, at such strength levels, good toughness as determined by the charpy-V-notch impact test, the CVN impact energy level being at least about 10–15+ ft/lbs at the strength level of 240,000 psi, said steel consisting of about 17% to 19% nickel, about 2% to 3.5% molybdenum, about 1.25% to about 1.7% titanium, a deoxidizing amount of aluminum up to about 0.15%, up to about 0.03% carbon, and the balance essentially iron.

4,443,255

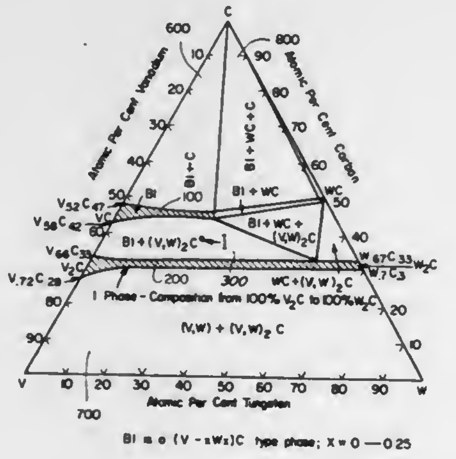
HARD FACING OF METAL SUBSTRATES

Harry J. Brown, Lewiston, N.Y.; William D. Forgeng, Las Vegas, Nev., and Charles W. Brown, Lewiston, N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 159,447, Jun. 13, 1980, Pat. No. 4,312,894, which is a division of Ser. No. 885,943, Mar. 13, 1978, abandoned, which is a continuation of Ser. No. 698,848, Jun. 23, 1976, abandoned, which is a continuation of Ser. No. 472,048, May 21, 1974, abandoned. This application Nov. 9, 1981, Ser. No. 319,324

Int. Cl.^{3} C22C *29/00*

U.S. Cl. 75—251 **2 Claims**



1. A hard facing material for deposition onto the surface of an iron or steel substrate at molten temperatures which comprises a finely divided particulate composition of chemically combined vanadium and carbon having tungsten in solid solution, said composition consisting essentially of (i) at least one vanadium carbide, (ii) tungsten in solid solution with each vanadium carbide in said composition in an amount from about 10% by weight up to about 67% by weight, and (iii) at least one material selected from the group of nickel, cobalt and iron in an amount up to about 50% by weight of said composition, the aggregate amount of all vanadium carbides in said composition being at least about 10% by weight of said composition, said composition containing not more than about 5% by weight of a material selected from the group of uncombined carbon, tungsten, tungsten carbide, vanadium and mixtures thereof.

4,443,256

ALUMINUM FLAKE DISPERSIONS

Jozef T. Huybrechts, Oud Turnhout, Belgium, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 364,926, Apr. 2, 1982, abandoned, which is a continuation-in-part of Ser. No. 254,458, Apr. 15, 1981, abandoned. This application Aug. 31, 1982, Ser. No. 413,299

Int. Cl.^{3} C09D *5/08*

U.S. Cl. 106—1.05 **2 Claims**

1. A dispersion consisting of aluminum flakes in a mixture of ethylene glycol and ethylene glycol monobutyl ether wherein each of the ethylene glycol and ethylene glycol monobutyl ether is present in amounts of about 40–60% by weight of the two combined.

4,443,257

STABILIZING MIXTURE FOR A CHEMICAL COPPER PLATING BATH

Francesco Tomaiuolo, and Mauro Bocchino, both of Turin, Italy, assignors to Alfachimici S.p.A., Turin, Italy

Filed Feb. 15, 1983, Ser. No. 466,658

Claims priority, application Italy, Mar. 9, 1982, 67272 A/82

Int. Cl.^{3} C23C *3/02*

U.S. Cl. 106—1.23 **19 Claims**

1. In an aqueous solution for electroless autocatalytic copper plating, containing a source of cupric ions, a source of hydroxylic ions, a reducing agent, and a complexing agent in such a quantity as to render soluble the cupric ions in an alkaline medium, the improvement comprising a stabilizing mixture of allylthiourea, at least a ferrocyanide of an alkali metal or of ammonium ion, and at least an octylphenylether of ethylene polyoxide with 9–10 moles of ethylene oxide for each mole of octylphenol, the said three stabilizing components mutually exerting a synergical action.

4,443,258

FIRE RETARDANT MATERIALS

William J. Kirkhuff, Irvine, Calif., assignor to Kirkhuff, Shield & Fink, Santa Ana, Calif.

Continuation-in-part of Ser. No. 214,220, Dec. 8, 1980, abandoned. This application Jan. 29, 1982, Ser. No. 343,880

Int. Cl.^{3} C09D *5/18, 1/00*

U.S. Cl. 106—18.12 **21 Claims**

1. A fire retardant material which comprises:

a quantity of a permeable mass of silica glass;

a quantity at least equal to the weight of said permeable mass of glass of the unexpanded form of heat expandable perlite, said quantity of said unexpanded perlite present as a multiplicity of particles of a particle size less that 100 mesh, said particles permeated among and associated with said permeable mass of glass, said particles being of a size sufficiently small to be retained in said association with said permeable mass of glass upon conversion of said composition from said unexpanded form when subjected to heat.

4,443,259

COATING FOR FOUNDRY CORES AND MOLDS

Robert A. Nooden, Terre Haute, Ind., assignor to International Minerals & Chemical Corp., Terre Haute, Ind.

Filed Dec. 10, 1982, Ser. No. 449,098

Int. Cl.^{3} B28B *7/36*

U.S. Cl. 106—38.27 **6 Claims**

1. A coating for foundry cores and molds comprising an aqueous suspension of clay, olivine, and sodium tripolyphosphate.

4,443,260

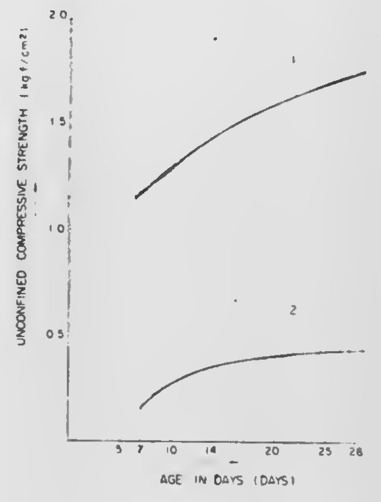
METHOD FOR STRENGTHENING SOFT SOIL

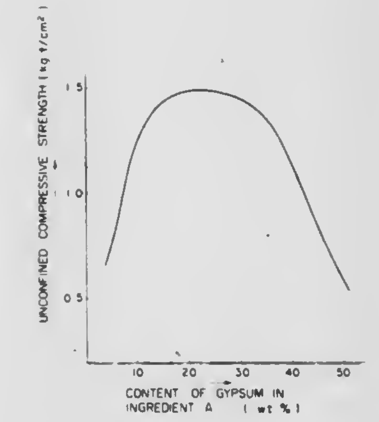
Hajime Miyoshi, Koganei; Etsuo Asanagi, Kashiwa; Junsuke Iguchi, and Ikuo Okabayashi, both of Yamato, all of Japan, assignors to Chiyoda Chemical Engineering & Constr., Co., Ltd., Kanagawa, Japan

Filed Jun. 14, 1982, Ser. No. 388,146

Int. Cl.^{3} C04B *7/02, 7/35;* **E01C** *7/36;* **C04B** *11/00*

U.S. Cl. 106—109 **4 Claims**





1. A method for improving the strength of a water-saturated soft soil:

premixing 5–45% by weight particulate gypsum and 55–95% by weight of a water-granulated iron blast furnace slag having a particle size of 1–100 μm to obtain a first homogeneous admixture (A) of slag particles and gypsum particles;

then admixing said first admixture (A) with the soft soil to obtain a second homogeneous admixture; and then

admixing (B) a Portland cement with said second admixture in an amount to provide a weight ratio of said first admixture (A) to said Portland cement (B) within the range of 75/25 to 55/45, whereby the period of time required to obtain a homogeneous mix with the soil is less than when the slag is premixed with the cement.

4,443,261

METHOD OF PREPARING GYPSUM ARTICLES

Sune Nordqvist, Handen, Sweden, assignor to Tenax Maskin AB, Handen, Sweden

Continuation of Ser. No. 190,867, Feb. 22, 1980, abandoned. This application Sep. 8, 1982, Ser. No. 416,024

Int. Cl.^{3} C04B *11/00*

U.S. Cl. 106—109 **4 Claims**

1. A method of preparing solidified calcium sulfate dihydrate comprising:

adding potassium sulfate to a water slurry of calcium sulfate dihydrate in an amount of at least 5% by weight of the calcium sulfate dihydrate; and

solidifying the said solution while maintaining the solution at a temperature below 70° C.

4,443,262

LOW DENSITY FIBROUS SHEET MATERIAL

Jay L. Piersol, and Frank J. Koller, Jr., both of Lancaster, Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Sep. 30, 1982, Ser. No. 429,332

Int. Cl.^{3} C08L *5/00;* **D02G** *3/00*

U.S. Cl. 106—209 **7 Claims**

1. A method of forming a low density fibrous composition, which method comprises (1) forming an aqueous mixture comprising fibers, an anionic detergent and a cationic guar gum derivative, (2) adding borax to the mixture to thereby form a precipitate in which the guar gum derivative is deposited on the fibers, and (3) drying the precipitate to thereby form the low density fibrous composition.

4,443,263

SOLIDS DISPERSIONS WHICH CAN BE EASILY DISTRIBUTED IN HYDROPHOBIC AND HYDROPHILIC MEDIA AND ARE STABLE TO FLOCCULATION, AND THEIR USE

Erwin Dietz; Michael Maikowski, both of Kelkheim, and Robert Gutbrod, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 98,755, Nov. 30, 1979, abandoned, which is a continuation of Ser. No. 856,188, Nov. 30, 1977, abandoned. This application May 10, 1982, Ser. No. 376,556

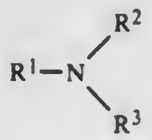
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1976, 2654598

Int. Cl.^{3} C09K *3/00;* **C08K** *3/04*

U.S. Cl. 106—287.24 **17 Claims**

1. A dispersion of a solid having acidic groups on its surface in a liquid medium, said solid constituting 5 to 80% by weight of said dispersion, and said medium consisting essentially of

(a) a fatty amine constituting 0.2 to 8% by weight of said dispersion and having the formula



$$R^1-N\begin{matrix} R^2 \\ R^3 \end{matrix}$$

wherein R^1 is an aliphatic, araliphatic or cycloaliphatic radical, having a chain of from ten to twenty-five carbon atoms containing up to three carbon-carbon double bonds or said chain substituted by hydroxy, and wherein R^2 and R^3, which are the same or different, is each hydrogen or an aliphatic, araliphatic or cycloaliphatic radical of from one to thirty carbon atoms or is a group of the formula

$—(CH_2)_n—OH$ or

$—(CH_2)_n—NH_2$

in which n is from one to six with the proviso that at least one or two of R^1, R^2 and R^3 is an alkyl or alkenyl residue of from ten to twenty-five carbon atoms;

(b) a nonionic surfactant selected from the group consisting of an adduct of 5 to 20 moles of ethylene oxide onto an alkylphenol and of an adduct of 5 to 20 moles of ethylene oxide onto a fatty alcohol, or a mixture thereof, or an anionic surfactant selected from the group consisting of an alkylsulfate, alkylsulfonate and alkylbenzene sulfonate, or a mixture thereof, or a combination of said nonionic and anionic surfactants, these surfactants constituting 3 to 25% by weight of said dispersion and having one or more aliphatic chains with a total of more than 5 carbon atoms and

(c) a water miscible organic solvent constituting 10 to 85% by weight of said dispersion.

4,443,264

HALOGEN-FREE ZINC FERRITE YELLOW PIGMENTS CONTAINING ALUMINA AND PHOSPHORUS OXIDE AND PRODUCTION

Franz Hund; Willi Hennings; Horst Brunn; Peter Kresse, and Wolfgang Rambold, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 30, 1982, Ser. No. 413,002

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1981, 3136276

Int. Cl.^{3} C04B *31/02*

U.S. Cl. 106—292 **8 Claims**

1. A halogen-free zinc ferrite pigment consisting essentially of, by weight, about 99.8 to 90% of $ZnFe_2O_4$ and about 0.2 to 10% of the component system $(1-x)Al_2O_3$ and xP_2O_5 wherein $0.25<x<0.95$.

4,443,265

CERAMIC COLOR BODY

Robert Fischer, Obertshausen, and Heinz D. de Ahna, Egelsbach, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 16, 1982, Ser. No. 418,844

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1981, 3140914

Int. Cl.^{3} C09C *1/00*

U.S. Cl. 106—306 **6 Claims**

1. In a ceramic pigment consisting essentially of a colorless matrix and at least one color furnishing compound which is embedded as discrete particles in the matrix material or are bound in the matrix lattice as color furnishing ions the improvement that the matrix consists essentially of mixed alkaline earth metal phosphates, there being present at least 10 mole % of each alkaline earth metal based on 100 mole % of all the alkaline earth metals present in the phosphates wherein the matrix consists essentially of calcium-magnesium phosphates or barium-magnesium phosphates.

4,443,266

CONTINUOUSLY OPERATING SUGAR CENTRIFUGE

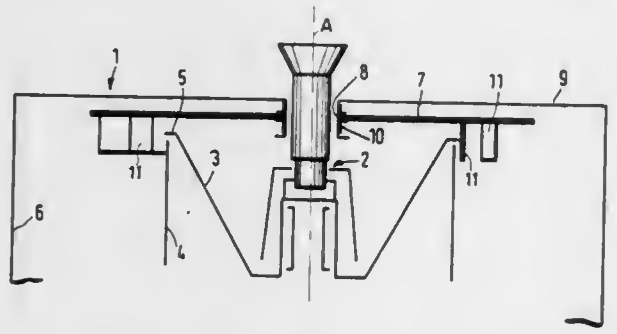
Helmut Schaper, Braunschweig, and Heinrich Kurland, Lucklum, both of Fed. Rep. of Germany, assignors to Braunschweigische Maschinenbauanstalt AG, Braunschweig, Fed. Rep. of Germany

Filed Jul. 15, 1982, Ser. No. 398,615

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1981, 3129392

Int. Cl.^{3} C13F *1/06*

U.S. Cl. 127—19 **14 Claims**



1. In a continuously operating sugar centrifuge having a conical centrifugal drum with a wide upper end and a liquid collecting housing and a sugar crystal collecting housing in which housings said drum is mounted for rotation, said upper end of the drum forming a sugar discharge flange surrounded by sugar baffle means secured to a rotatable means (7), the improvement comprising a plurality of planar, thin, elastic, springy sheet metal members **(11)** forming said baffle means, axis means **(14)** for rotatably securing said sheet metal members **(11)** to said rotatable means (7), and means for adjusting the angular position of said sheet metal members **(11)** relative to the direction of a flight path **(12)** of a sugar crystal flying off said sugar discharge flange **(5)** for reducing mechanical damage to the sugar crystals.

4,443,267

METHOD AND APPARATUS FOR THE CONTINUOUS SEPARATION OF FRUCTOSE FROM GLUCOSE STARTING FROM INVERT SUGAR OR FROM ISOMERIZED GLUCOSE SYRUPS

Paolo Pansolli; Aurelio Barbaro, both of Rome; Adriano Maimone, Guidonia, and Mario Valdiserri, Monterotondo, all of Italy, assignors to E.N.I. Ente Nazionale Indrocarburi, Rome, Italy

Continuation of Ser. No. 213,654, Dec. 5, 1980, abandoned. This application Feb. 16, 1983, Ser. No. 466,846

Claims priority, application Italy, Feb. 22, 1980, 20105 A/80

Int. Cl.^{3} C13D *3/14*

U.S. Cl. 127—46.2 **3 Claims**

1. A method of continuously separating fructose from glucose in a system comprising a plurality of serially interconnected columns each containing an anion-exchange resin in bisulfite form, said method, in steady state conditions, comprising:

(a) introducing a feed mixture containing fructose and glucose into the bottom end of a first one of said columns;
(b) occluding a fraction of glucose from said feed mixture on said resin contained in said first column;
(c) withdrawing from the upper-end of said first column an effluent comprising a fructose-enriched mixture;
(d) introducing said fructose-enriched effluent mixture withdrawn from the upper end of the first and each successive column to the bottom end of the next successive column;
(e) occluding on the resin contained in each successive column a fraction of glucose from the fructose-enriched mixture introduced thereinto;
(f) recycling the fructose-enriched effluent mixture withdrawn from the upper end of the last of said columns to the first of said columns as a feed mixture for step (a);
(g) repeating steps (a) through (f) until the effluent mixture of one of said columns comprises essentially a solution of fructose;
(h) collecting said fructose solution;
(i) repeating steps (a)–(g) until one of said columns is saturated with glucose;
(j) bypassing said glucose saturated column from said system until said glucose is eluted therefrom thereby regenerating said resin in said column for further use in said system; and
(k) eluting glucose solution from said glucose-saturated column.

4,443,268

PROCESS FOR REMOVING COPPER AND COPPER OXIDE ENCRUSTATIONS FROM FERROUS SURFACES

Thomas G. Cook, Burlington County, N.J., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 12, 1981, Ser. No. 320,815

Int. Cl.^{3} C23G *1/08, 1/20*

U.S. Cl. 134—2 **12 Claims**

1. In the process for removing copper and copper oxide-containing encrustations from ferrous metal surfaces by contacting the surfaces with an aqueous alkaline cleaning solution containing a ferric chelate(s) of an alkylenepolyamine polyacetic acid and/or soluble chelating aminated or ammoniated salt(s) thereof in amounts and under conditions sufficient to dissolve said copper and copper oxide-containing encrustations, the improvement comprising adding aqueous hydrogen peroxide to said cleaning solution at a rate such that the solution electromotive force, as measured at about 80° F. (platinum vs. a saturated calomel electrode), becomes more positive than about −250 millivolts in less than about one hour.

4,443,269

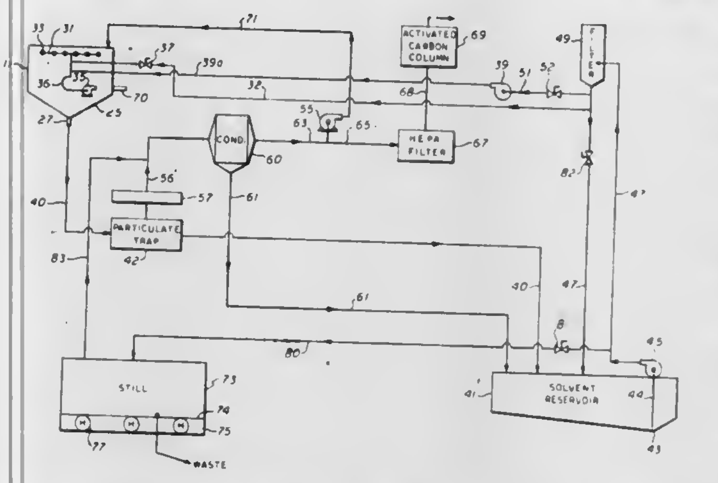
TOOL DECONTAMINATION METHOD

Joseph A. Capella, Crystal River, and David E. Fowler, Gainesville, both of Fla., assignors to Health Physics Systems, Inc., Gainesville, Fla.

Continuation-in-part of Ser. No. 80,474, Oct. 1, 1979, abandoned. This application Jan. 22, 1981, Ser. No. 228,971

Int. Cl.^{3} B08B *3/02, 15/00*

U.S. Cl. 134—12 **8 Claims**



7. The method for cleansing radioactively contaminated articles in a chamber in which the articles are manipulated therethrough during the cleaning steps so as to facilitate the dislodging and dissolving of the contaminants while simultaneously exhausting air from the chamber, the chamber being coupled to a solvent recirculation circuit, all defining a system wherein solvent is sprayed onto the articles in the chamber at a first elevated pressure at low volume, and recirculated and cleansed of contamination at a second substantially lower pressure in order to reduce the high pressure forces otherwise contained within the chamber and recirculation circuit of the system and thus enhance safety during cleansing by subjecting the parts thereof to less stress, comprising the steps of:

spraying a radioactively contaminated article in a closed chamber with a liquid solvent under a first elevated pressure and during which a portion of the pressurized solvent becomes vaporized upon entry into the expanded volume of the chamber;

withdrawing the contaminated liquid-vapor solvent under a second, substantially lower pressure than said first elevated pressure and conducting the solvent under said lower pressure to a particulate trap where macroscopic particles are removed from the solvent while simultaneously reducing pressure surge in the chamber;

chilling the vaoor component of the solvent to liquify it and conducting the liquified solvent to a reservoir while conducting residual vapor back to the chamber;

conducting solvent at such second and lower pressure from said reservoir through a filter system to cleanse said solvent, thus insuring both integrity of the filter and the liquid character of the solvent so as to thereby reduce the possibility of escape of radioactive contaminant from the chamber and circuit; and

conducting a part of the solvent stream emanating from said filter into a high pressure pump to supply solvent thereafter to said first elevated pressure low volume spray in said chamber while the balance of the solvent emanating the filter is returned at said second lower pressure to the solvent reservoir.

4,443,270

RINSE AID COMPOSITION

Daniel Biard, Böhl-Iggelheim, Fed. Rep. of Germany, and Rainer Lodewick, Meise, Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jul. 12, 1982, Ser. No. 397,329

Claims priority, application United Kingdom, Jul. 17, 1981, 8122039

Int. Cl.^{3} A47L *15/44;* B67C *1/04;* C11D *1/66, 3/04*

U.S. Cl. 134—25.2 **2 Claims**

1. In a process for rinsing tableware in an automatic dishwashing machine wherein the rinse solution contains a low foaming ethoxylated nonionic surfactant to reduce spotting on washed and dried tableware and said rinse solution contains 50 ppm or less of water hardness measured as $CaCO_3$ and has a pH close to neutral, wherein the improvement comprises the addition of a source of water-soluble Mg^{++} or Zn^{++} ions to said rinse solution with said low foaming ethoxylated nonionic surfactant whereby corrosion of glass arising from the presence of chelating agents in automatic dishwashing detergent compositions or in automatic dishwashing rinse aid compositions is substantially eliminated.

4,443,271

METHOD FOR CLEANING FLOOR GRATES IN PLACE WITH HIGH PRESSURE WATER JETS

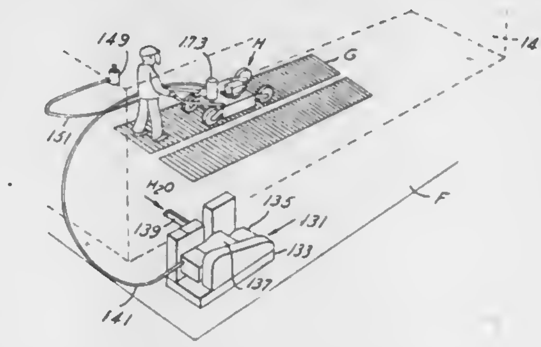
William G. Goerss, Fenton, Mich., assignor to NLB Corp., Wixom, Mich.

Continuation of Ser. No. 145,392, May 1, 1980, Pat. No. 4,337,784, which is a division of Ser. No. 934,756, Aug. 21, 1978, Pat. No. 4,219,155. This application Apr. 28, 1982, Ser. No. 372,514

The portion of the term of this patent subsequent to Jul. 6, 1999, has been disclaimed.

Int. Cl.^{3} B08B *3/02*

U.S. Cl. 134—34 **1 Claim**



1. In a method for removing overspray paint from floors, floor grates or other surfaces by supporting high pressure water nozzles mounted within a hollow spray enclosure and discharging a stream of water under high pressure up to 10,000 psi through said water nozzles towards a selected surface, the steps comprising:

directing said stream of high pressure water downwardly through a vertical bore within a fixed spindle mounted to said hollow spray enclosure and into a plurality of radial discharge ports at the lower end of said vertical bore;

surrounding said fixed spindle with a rotatable tubular body having an annular water chamber in close proximity to said radial discharge ports and means for rotatably driving said tubular body, said annular water chamber receiving said downwardly directed stream of high pressure water and directing said stream of high pressure water radially outward through a plurality of angularly disposed water nozzles mounted to and rotatable with said tubular body whereby high pressure water jets impinge onto the surface;

permitting movement of high pressure water between said rotatable tubular body and said fixed spindle to thereby lubricate the rotative movement of said tubular body on said spindle;

directing said stream of high pressure water through a valve means which is connected to said vertical bore and to an opening in said hollow spray enclosure, and passing water at reduced pressure through said valve means and said opening down into said hollow spray enclosure only when said tubular body is not rotated and when said valve means is in a first position, and directing a small amount of water to said vertical bore at very low pressure only when said tubular body is not rotated and said valve means is in its first position;

selectively driving said tubular body on said fixed spindle thereby rotating said water nozzles, said driving means operably connected to said valve means for shifting said valve means to a second position to close said opening when said driving means is rotatably driving said tubular body, and supplying said entire stream of high pressure water to said vertical bore and to said nozzles when said driving means is rotatably driving said tubular body and said valve means is in its second position; and

movably transporting said rotating nozzles and water jets over and along the selected surface for forcefully and operatively impinging upon the surface.

4,443,272

PROCESS FOR PRODUCING COLD ROLLED STEEL SHEETS HAVING EXCELLENT PRESS FORMABILITY AND AGEING PROPERTY

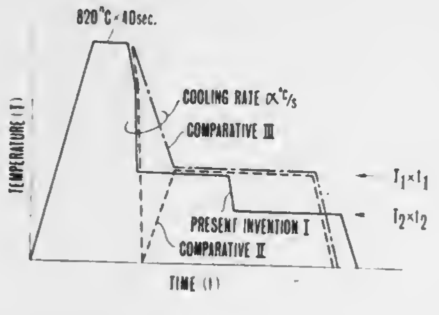
Hiroshi Katoh; Hiromi Toyota; Kazuo Koyama, and Kunihiko Komiya, all of Chiba, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Sep. 9, 1982, Ser. No. 416,372

Claims priority, application Japan, Sep. 19, 1981, 56-148323

Int. Cl.^{3} C21D *8/04*

U.S. Cl. 148—12 C **9 Claims**



1. A process for producing cold rolled steel strips having excellent press formability and ageing property, comprising:

continuously casting molten steel containing carbon, manganese, phosphorus, aluminum, nitrogen and boron;
the carbon being not more than 0.1%,
the manganese being not more than 0.5%,
the phosphorus being not more than 0.01%,
the aluminum being not more than 0.08%,
the nitrogen being not more than 0.005%,
the boron being present in an amount not over 0.005%,
with the balance being iron and unavoidable impurities, into steel slabs;

continuously hot rolling the slabs with a finishing temperature not lower than A_3 point, and a coiling temperature from 600° to 750° C.;

cold rolling the hot rolled strips thus obtained;

then subjecting the cold rolled strips thus obtained to continuous annealing which comprises heating the strips to a temperature ranging of from 680° to 850° C., cooling the strips with a cooling rate not less than 30° C./sec. through a temperature range of from A_1 point to a temperature ranging of from 450° to 350° C., holding the strips at the temperature thus cooled for one to 3 minutes, further cooling the strips to a temperature ranging of from 300° to 200° C., holding the strips at a temperature for at least one minute, and cooling the strips to room temperature.

4,443,273

METHOD FOR REPLENISHING CHEMICAL IN ZINC PHOSPHATE TREATMENT

Koichi Saito, Teramachi Oike Agaru Nakagyo-ku Kyoto-Shi 604; Yasutake Mino, 1-17, Fukaeminamimachi Higashinada-ku Kobe-Shi 658; Nobuo Nakatani, 1-4-31-201, Motoyamanakamachi Higashinada-ku Kobe-Shi 658, and Ryoichi Murakami, 82-1 Hokkeji-cho, Nara-Shi 630, all of Japan

Filed Dec. 21, 1981, Ser. No. 332,700

Claims priority, application Japan, Dec. 26, 1980, 55-186023

Int. Cl.^{3} C23F *7/10*

U.S. Cl. 148—6.15 Z **6 Claims**

1. In a method for forming a conversion coating on a metal surface by immersing said metal surface in an acidic zinc phosphate treating liquid comprising zinc ion (0.5 to 1.5 g/l), phosphate ion (5 to 30 g/l), nickel ion (0.5 to 2 g/l), chlorate ion (0.05 to 2 g/l), nitrate ion (1 to 10 g/l) and nitrite ion (0.01 to 0.2 g/l) and having a total acid titration of 14 to 25 points and a free acid titration of 0.2 to 1.5 points, the improvement which comprises treating the metal surface at a rate of 3 to 15 m^2 per hour per cubic meter of treating liquid and replenishing said acidic zinc phosphate treating liquid, without testing the bath concentrations thereof, by adding a first replenishing composition comprising about 0.10–0.31 moles of phosphoric acid, 0.1 to 0.2 moles of zinc ion and 0.05 to 0.20 moles of chlorate ion for each 10 square meters of treated metal surface area, and a second replenishing composition comprising 0.2 to 0.8 moles of nitrite ion for each 10 square meters of treated metal surface area.

4,443,274

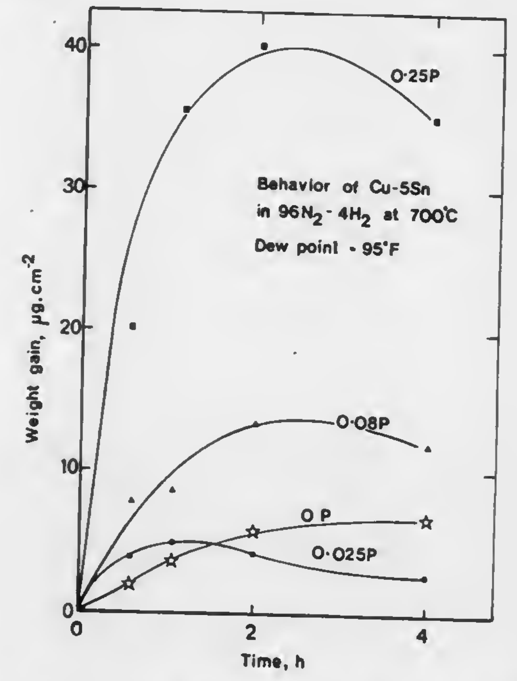
PROCESS FOR FORMING A PROTECTIVE FILM ON CU-SN ALLOYS

Andrew J. Brock, Cheshire, and Frank N. Mandigo, Northford, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Dec. 3, 1982, Ser. No. 446,758

Int. Cl.^{3} C23F *7/12*

U.S. Cl. 148—6.31 **5 Claims**



1. Process for forming a protective layer on a surface of a copper-tin alloy containing phosphorous comprising: providing an alloy comprising about 2.5% to about 15% tin, about 0.05% to about 1.5% phosphorous and the balance consisting essentially of copper, forming tin oxide on the surface of said alloy and reducing said tin oxide by heating said alloy at a temperature in the range of about 700° C. to about 900° C. in a reducing atmosphere having a dew point of at least about 65° F. for a time sufficient to transform said tin oxide initially into globules of tin containing phosphorous and then into a substantially continuous protective layer of tin-phosphorous oxide.

4,443,275

METHOD OF PRODUCING A MAGNETIC GATE

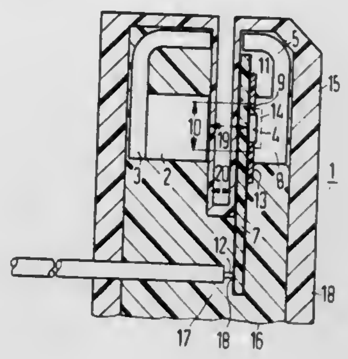
Wilhelm Ertl, Ottobrunn; Ulrich Lachmann, and Heinrich Pertsch, both of Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Division of Ser. No. 225,686, Jan. 15, 1981, Pat. No. 4,394,190. This application Sep. 30, 1982, Ser. No. 431,874

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1980, 3001771

Int. Cl.^{3} H01L *43/06;* G01R *33/12*

U.S. Cl. 148—31.55 **1 Claim**



1. Method of producing a magnetic gate having a semiconductor chip, a thin intermediate carrier having contact points, finger-like structures, a magnetically permeable metal piece having a first part with a pole shoe having cutout formed therein and a second part, a synthetic material plate having contact structures and external connecting wires connected at outer ends of the contact structures, and a pre-fabricated housing having an interior space formed therein, which comprises soldering the semiconductor chip as a miniaturized package to the intermediate carrier with the finger-like contact structures, attaching the intermediate carrier to the pole shoe, soldering the synthetic material plate to the corresponding contact points of the intermediate carrier, fastening the magnet to the first part of the magnetically permeable metal piece, separately inserting the magnet with the first part of the magnetically permeable metal piece, and the intermediate carrier connected to the second part of the magnetically permeable metal piece, the semiconductor chip and the synthetic plate into the prefabricated housing, and filling the interior space of the housing with a poured insulator covering the connection between the external connecting wires and the synthetic plate.

4,443,276

MN—AL—C ALLOYS FOR ANISOTROPIC PERMANENT MAGNETS

Susumu Sanai, Hirakata, and Kiyoshi Kojima, Katano, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

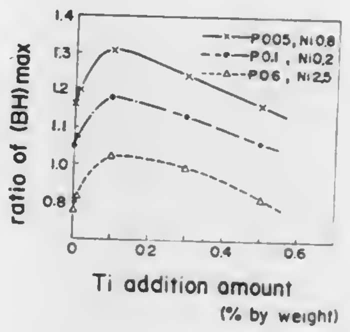
Filed Dec. 28, 1982, Ser. No. 453,955

Claims priority, application Japan, Jan. 12, 1982, 57-3918

Int. Cl.^{3} H01F *1/04*

U.S. Cl. 148—31.57 **4 Claims**

1. In an anisotropic permanent magnet comprising an Mn—Al—C alloy comprising manganese of 68.0 to 73.0% by weight, carbon of (1/10Mn—6.6) to ($\frac{1}{3}$Mn—22.2)% by weight and the remainder aluminum, said alloy having been subjected to warm plastic deformation, said alloy being characterized in that said alloy contains phosphorus in an amount of X% by weight wherein the value of X is $0.005 \leqq X \leqq 0.6$, all percentages being based on 100% of the total weight of manganese, aluminum and carbon.



4,443,277

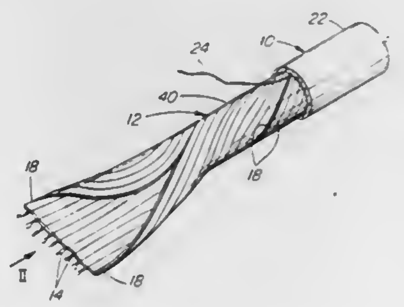
METHOD OF MAKING A TELECOMMUNICATIONS CABLE FROM A SHAPED PLANAR ARRAY OF CONDUCTORS

Bernard E. Rokas, Ormeaux, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Sep. 23, 1982, Ser. No. 422,021

Int. Cl.^{3} H01B *13/10*

U.S. Cl. 156—50 **13 Claims**



1. A method of making a telecommunications cable comprising:

disposing a plurality of insulated conductors together into a conductor group in which the conductors are in open planar array in a direction normal to a longitudinal direction of the group and retaining the conductors in their relative positions in the group;

shaping the group into an arcuate configuration around a longitudinal axis with the conductors extending in the general direction of the axis; and

providing a layer of insulation extending around the axis and surrounding the group in its arcuate configuration.

4,443,278

INSPECTION OF MULTILAYER CERAMIC CIRCUIT MODULES BY ELECTRICAL INSPECTION OF GREEN SPECIMENS

Arthur R. Zingher, Elmsford, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 26, 1981, Ser. No. 267,272

Int. Cl.^{3} B32B *31/12, 31/16, 31/28*

U.S. Cl. 156—64 **32 Claims**

13. In a method of manufacture of ceramic laminated electron substrates comprising,

applying a past to a number of unfired ceramic sheets, said paste including conductive particles and an insulating material,

and then assembling sheets into complete assemblies,

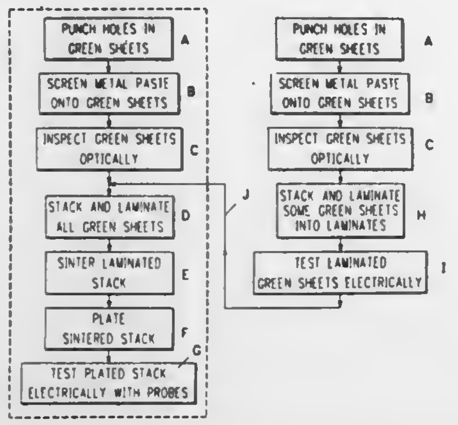
then laminating by compression,

then sintering and

then planting to form the finished substrate,

the improvement comprising the steps performed prior to

the step of assembling of said unfired ceramic sheets into complete assemblies, said steps including
placing at least one of said unfired sheets in a device for electrically inspecting the parameters of the pattern formed by said paste upon said sheets,
comparing thus measured parameters of said pattern with a predetermined set of parameters,


PUNCH HOLES IN GREEN SHEETS
A
SCREEN METAL PASTE ONTO GREEN SHEETS
B
INSPECT GREEN SHEETS OPTICALLY
C
STACK AND LAMINATE ALL GREEN SHEETS
D
SINTER LAMINATED STACK
E
PLATE SINTERED STACK
F
G
TEST PLATED STACK ELECTRICALLY WITH PROBES
J
PUNCH HOLES IN GREEN SHEETS
A
SCREEN METAL PASTE ONTO GREEN SHEETS
B
INSPECT GREEN SHEETS OPTICALLY
C
STACK AND LAMINATE SOME GREEN SHEETS INTO LAMINATES
H
TEST LAMINATED GREEN SHEETS ELECTRICALLY
I

rejecting sheets having improper electrical parameters,
retaining sheets having a proper set of parameters,
thereby avoiding the waste attendant with employing sheets with improper electrical parameters,
wherein said inspecting step is performed by a mechanical contact method wherein contacts are applied to said sheet prior to assembly.

4,443,279

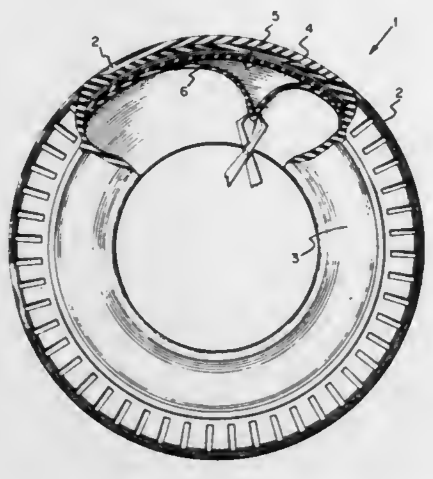
PNEUMATIC RUBBER TIRE HAVING CO-CURED, REMOVABLE OR REMOVED INNER LINER

Paul H. Sandstrom, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 184,856, Sep. 8, 1980, abandoned. This application Aug. 14, 1981, Ser. No. 293,051

Int. Cl.^{3} B29H *17/14;* B60C *19/12;* B32B *31/00*

U.S. Cl. 156—123 **1 Claim**



1. A method of preparing a pneumatic rubber tire which comprises applying a sulfur-containing uncured butyl rubber strip to a building form over which the remainder of the elements of the rubber pneumatic tire are built thereby providing a sulfur curable rubber interface of the uncured tire with the said strip in the crown region of the tire, following which the resulting assembly is coated on its inside surface with a release agent, the assembly placed in a tire mold and shaped and the tire and said strip covulcanized together to provide cured adhesion between said strip and tire inner surface with the aid of heat and pressure and expanded inner bladder, deflating the bladder and removing the tire from the mold following which the sulfur covulcanized, initially applied, butyl rubber strip is removed from the inside of the tire to provide a resultant pneumatic tire having a fresh, clean, exposed inner surface; where said first applied butyl rubber strip is removed as a covulcanized, sulfur cured rubber admixture comprised of (A) about 60 to about 90 parts by weight butyl rubber and correspondingly, (b) about 40 to about 10 parts by weight of an ethylene/propylene/nonconjugated diene terpolymer and contains about 2 to about 10 parts by weight tackifier resin for said EPDM and butyl rubbers with a softening point in the range of about 50° C. to about 110° C. prepared by polymerizing a mixture of piperylene and at least one methyl branched α-olefin containing 5-6 carbon atoms; where said butyl rubber has a molecular weight in the range of about 200,000 to about 400,000; where said cured rubber strip has a thickness in the range of about 0.025 to about 0.25 cm, and has a covulcanized adhesion to the tire's inner cured rubber surface of less than about 1.8 kg per linear cm and a tack value in the range of about 10 to about 30 Newtons.

4,443,280

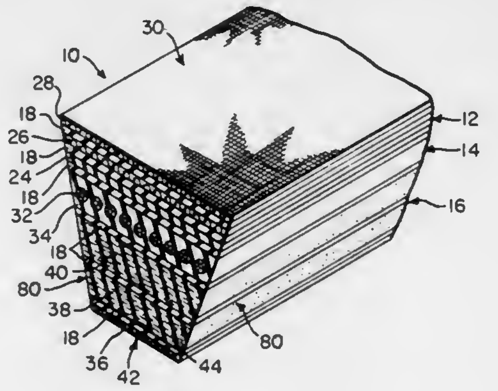
METHOD OF MAKING AN ENDLESS POWER TRANSMISSION BELT

Paul M. Standley, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Division of Ser. No. 104,616, Dec. 17, 1979, Pat. No. 4,299,588. This application Sep. 30, 1981, Ser. No. 307,056

Int. Cl.^{3} B29H *7/22*

U.S. Cl. 156—137 **4 Claims**



1. In a method for constructing a raw edge, endless power transmission belt which comprises the steps of sequentially winding a plurality of layers around a rotatable mandrel assembly to form a belt sleeve, wherein at least one of said layers is a fabric layer and at least one other of said layers is composed primarily of elastomeric material, vulcanizing the resulting belt sleeve and cutting a plurality of belts from the vulcanized sleeve, the improvement comprising the steps of forming a further layer of elastomeric material having pyrolytic graphite particles dispersed substantially uniformly therethrough and being oriented therein so that the long axes of said graphite particles substantially extend in the same direction, and winding at least one said further layer around said mandrel assembly so as to be disposed between two layers in said sleeve and so that the long axes of the pyrolytic graphite particles are oriented in the direction of the rotational axis of said building mandrel whereby said particles will be adapted to conduct heat to the raw side edges of the belts subsequently cut from said belt sleeve.

4,443,281

METHOD OF MAKING AN ARCHED ENDLESS BELT

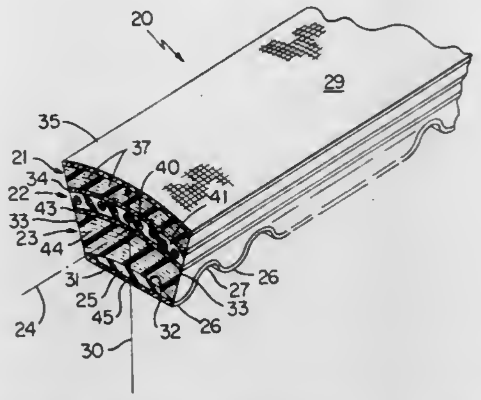
Joseph P. Miranti, Jr., Nixa, Mo., assignor to Dayco Corporation, Dayton, Ohio

Filed Feb. 6, 1981, Ser. No. 232,326

Int. Cl.^{3} B29H *7/22*

U.S. Cl. 156—140 **22 Claims**

1. In a method of making a plurality of polymeric raw-edged endless power transmission belts, said method comprising the steps of, disposing in tubular form a plurality of uncured belt defining layers around a belt building drum, said layers defining corresponding sections of said belts, curing said layers in a controlled environment to define a belt sleeve, cooling said sleeve, and cutting said sleeve to define said raw-edged belts, the improvement in said method enabling the making of said belts as arched belts and comprising the steps of providing a plurality of shaping means each having a precontoured outer surface and each being made of uncured gum material, wrapping a plurality of said shaping means around said belt building drum prior to said disposing step so that said outer surfaces thereof are disposed in axial spaced apart relation and face outwardly from said drum, causing said plurality of shaping means to cooperate with said controlled environment during



said curing step to define a corresponding plurality of integral axially spaced arched belt defining portions in said layers and sleeve without substantially changing the transverse cross-sectional profiles of said precontoured outer surfaces of said shaping means, and causing each associated shaping means to be cured and bonded to said layers during said curing step so as to define the inner portion of an associated arched belt defining portion, said cutting step comprising the step of cutting said sleeve on opposite sides of associated shaping means to define an associated arched belt with said cured gum shaping means thereof serving as a crack barrier for the inner portion of its associated arched belt.

4,443,282

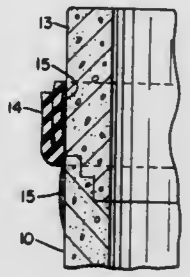
METHOD OF EXTERNALLY SEALING SEWAGE SYSTEM JOINTS AGAINST ENTRY OF GROUND WATER TO THE SYSTEM

Bruce L. Stachitas, 4500 Dustin Rd., Burtonsville, Md. 20730

Filed Apr. 30, 1982, Ser. No. 373,526

Int. Cl.^{3} B32B *31/00;* B28C *19/00*

U.S. Cl. 156—152 **3 Claims**



1. The method of preventing entry of ground water into a sewage system through joints between adjacently interconnected large diameter tubular elements thereof comprising:
(a) placing an elastomeric band about a first one of the elements prior to its interconnection with the adjacent element,
(b) interconnecting the adjacent element to said first element,
(c) positioning the elastomeric band so that it substantially equally overlies the joint between said first and second elements with one-half of the band width overlying each element,
(d) folding the elastomeric band back upon itself from one of said elements and applying a mastic coating to the surface of the element thereby exposed and folding the band back over the element and mastic coating,
(e) thereafter folding the elastomeric band back upon itself from the other adjacent element and applying a mastic coating to the surface of the adjacent element thereby exposed and folding the band back over the element and mastic coating to form an externally sealed joint between two adjacent interconnected sewage system elements having an elastomeric band about the joint adhered to the adjacent members of the joint by a mastic to repel ground water from entering the sewage system externally.

4,443,283

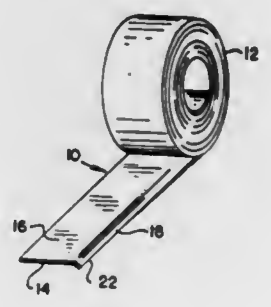
PAINT SHIELD ROLL

Ira Sarkisian, 14180 Pennsylvania, Southgate, Mich. 48195

Division of Ser. No. 76,367, Sep. 17, 1979, Pat. No. 4,263,355. This application Dec. 16, 1980, Ser. No. 217,106

Int. Cl.^{3} B32B *3/04;* B05C *21/00*

U.S. Cl. 156—211 **2 Claims**



1. A method of making a paint strip shield, said method comprising providing a roll of a relatively thin resilient strip of non-brittle highly pliable plastic material, said strip having a uniform thickness comprised between about 0.010 in. and 0.060 in. and being laterally flat when rolled in said roll, forming a longitudinal score line proximate and parallel to a longitudinal edge of said strip prior to rolling said strip in said roll, said score line being formed by a shallow groove defining a guide line of reduced strength, said strip having a width of at least three inches, said shallow groove being formed on one surface of said strip at a distance of about one-half inch to about one inch from said longitudinal edge, unrolling a length of said strip from said roll, cutting off said length of said strip, and manually bending over an edge flange along said shallow groove for providing said length of said strip substantially with an L-shape in cross-section, said edge flange being disposed at an angle comprised between 90 degrees and 145 degrees to the flat wide portion of said strip, and placing said length of said strip along a junction of a wall and a floor with said longitudinal edge at the junction of said wall and floor for protecting said floor during painting of said wall.

4,443,284

LEAD SADDLE ASSEMBLY AND APPARATUS FOR FORMING

Paul S. Bandurski, Palatine, Ill., assignor to Cam Fran Tool Co., Inc., Bensonville, Ill.

Filed Nov. 2, 1981, Ser. No. 317,246

Int. Cl.^{3} B29C *27/04;* B30B *15/34*

U.S. Cl. 156—212 **19 Claims**

1. A method of forming a lead saddle assembly having a plurality of insulated wire leads disposed in a side-by-side array, comprising the steps of:
providing a welding assembly comprising welder means defining gripper means for holding said wire leads in said array,
dispensing a first tape strip onto said welder means,
placing said wire leads in said gripper means in said array over said first tape strip,

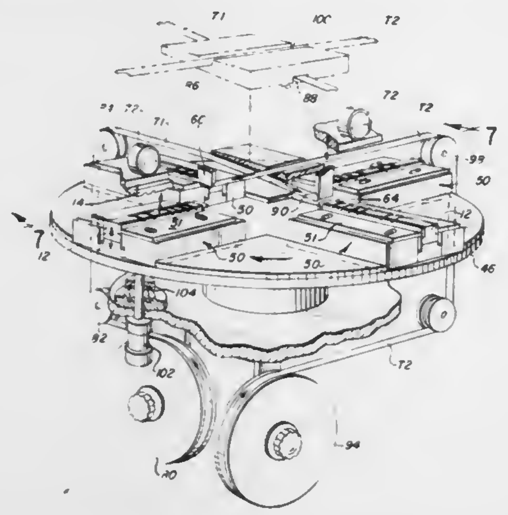
dispensing a second tape strip onto said welder means after said first tape strip and after said wire leads have been placed in said welder means in said array, and

energizing said welding assembly for joining said first and second tape strips so that said wire leads are maintained in said array.

16. An apparatus for forming a lead saddle assembly having a plurality of insulated wire leads having non-fusible insulation, said leads being disposed in a side-by-side array, comprising:

a plurality of first welding elements having wire gripping means each being adapted to hold a set of said plurality of wire leads in said array,

indexing means comprising a rotatable turntable supporting each of said welding elements for movement of each first welding element between a first loading and a second welding station,



first tape feed means for dispensing a first tape strip onto that one of said elements which is at said loading station before said wire leads are disposed on said gripping means,

second tape feed means for dispensing a second tape strip onto a welder element while that welder element is at said welding station and after said wire leads are disposed on said gripping means, and

means for joining said first and second tape strips at said welding station comprising a second welding element, means for moving said welding elements toward each other for urging said first and second tape strips into contact with each other, and means for heating said tape strips for joining them to maintain said wire leads in said array.

4,443,285

TAPERED ARTICLE LABELLING MACHINE AND METHOD

William F. Roth, and Nevin Snyder, both of Hanover, Pa., assignors to New Way Packaging Machinery, Inc., Hanover, Pa.

Filed Jun. 8, 1982, Ser. No. 386,253

Int. Cl.^{3} B65C *3/12, 9/04*

U.S. Cl. 156—215 **10 Claims**

1. A tapered article labelling machine operable to receive, reposition, space, accelerate, and thereafter compressively engage and forward at a high-speed circumferentially rotated displacement for automatic label application processing a successive stream of curved and tapered frusto-conical articles respectively having a peripheral sidewall surface in turn respectively enclosably supporting a top rim and a bottom rim structurally disposed in a plannar parallel spaced relationship one to the other, said machine comprising in combination:

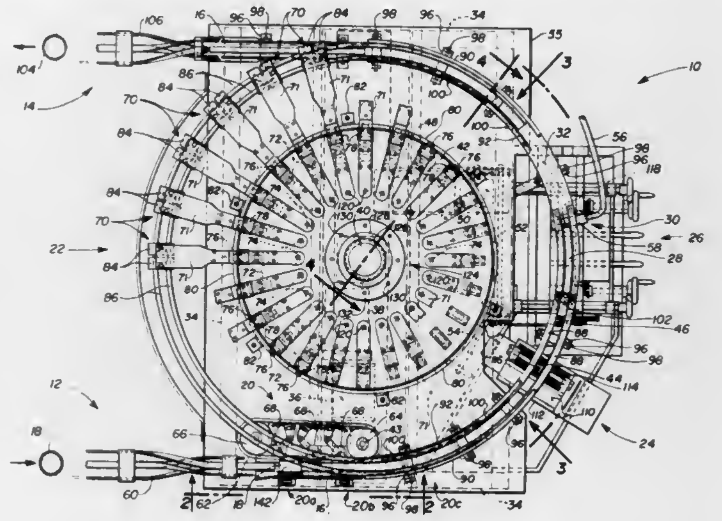
a. a support frame having interconnected horizontal and vertical members adapted to mount a horizontally disposed turntable rotationally driven by a motor through an interconnecting vertically disposed turntable drive shaft assembled the radial center axis of said turntable,

b. an infeed end provided with an infeed delivery twist chute adapted to up-end turn each respective curved and tapered frusto-conical article of said successive stream from a top rim upward facing horizontal disposition to a top rim turntable radial center axis outward facing vertical disposition for arcuate peripheral sidewall surface circumferential rotary motion transport upon a tapered article arcuate guide track provided with a tapered article registration means therealong in effecting label application processing displacement therefrom to a delivery end,

c. a tapered article pick-up and spacing station adapted to receivably engage said up-end turned tapered articles successively from said infeed delivery twist chute and acceleratedly space the same in an extendible relationship one to the other in continued forward feeding peripheral sidewall surface circumferential rotary motion transport upon said arcuate guide track,

d. a rotationally operational radial arm conveyor assembly mounted upon said turntable and adapted by a camming means and a cooperative inverted V-belt compression means to progressively engage concurrently said tapered articles respectively along the up-end turned top rim and bottom rim peripheral surfaces thereof and circumferentially rotate said acceleratedly spaced articles along said tapered article guide track at a constant high-speed displacement forwarding to the delivery end of said machine within the confines of said registration means therealong,

e. an adhesive application station positioned along said tapered article arcuate guide track intermediate said infeed end and said delivery end and adapted to apply between said top rim and said bottom rim to the external circumferential sidewall surface respectively of each of a curved and tapered frusto-conical article in the succession comprising said stream an adhesive, and



f. a label application station positioned along said tapered article arcuate guide track intermediate said adhesive application station and said delivery end and adapted to automatically present and apply between the top rim and the bottom rim a label to the external circumferential adhesived sidewall surface respectively of each of said curved and tapered frusto-conical articles during continued constant high-speed radial arm conveyor assembly circumferential rotary motion and transport thereof.

10. A method of labelling curved and tapered frusto-conical articles, said method comprising first conveyably repositioning said articles from a top rim and a bottom rim horizontal plane disposition to a top rim and a bottom rim vertical plane disposition for access presentment of the tapered sidewall surface thereof for label application processing and thereafter engaging and sequentially spacing apart respectively in an extended rotation displacement circumferentially about the curved and tapered sidewall surface thereof along an arcuately configured guide track with an individual curved and tapered article from a like successive contiguously abutted stream thereof sequentially delivered thereto, second accelerating each of said sequentially spaced apart individual curved and tapered articles to a constant high-speed circumferentially rotated displacement forwarding along said arcuately configured guide track, next applying an adhesive material to the external circumferential sidewall surface between the top rim and the bottom rim of each of said constantly high-speed circumferentially rotated curved and tapered articles during continued forwarding displacement respectively thereof along said arcuately configured guide track, and thereafter followed by circumferentially rotational engagement and adhered external circumferential sidewall surface wrapping of a label upon said curved and tapered article between the top rim and the bottom rim thereof by means of said adhesive material previously applied thereto.

4,443,286

METHOD OF MAKING CUSHION MATERIAL FROM FOAM SLABS AND COMMINUTED SOFT FOAM SCRAP

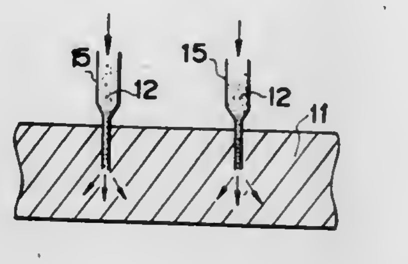
Hisashi Ikeda, Yokohama, and Yuuichi Hosoda, Hamakita, both of Japan, assignors to Ikeda Bussan Co., Ltd., Yokohama, Japan

Division of Ser. No. 226,315, Jan. 19, 1981. This application Nov. 19, 1981, Ser. No. 322,798

Claims priority, application Japan, Jan. 23, 1980, 55-7248; Feb. 23, 1980, 55-22619; Oct. 1, 1980, 55-137443; Dec. 12, 1980, 55-175497

Int. Cl.^{3} B32B *5/18;* **B29D** *27/00*

U.S. Cl. 156—245 **17 Claims**



1. A method of making a cushion material, which comprises:

forming a plurality of cushion layers made of a plurality of polyurethane foam slabs in piles cut in a predetermined form;

applying between said polyurethane foam slabs at selected portions thereof varying amounts of a solidifiable bonding agent, greater amounts being applied at portions which are to be relatively harder or retained in a deformed configuration and lesser amounts being applied at portions which are to be relatively softer; and

inserting said cushion layers in a pair of forming dies and compressing said layers therein to solidify said bonding agent, and to shape said cushion layers into a form along an inner shape of said forming dies.

4,443,287

METHOD OF MANIPULATING PRINTED PRODUCTS AND MEANS AND APPARATUS FOR PERFORMANCE THEREOF

Guido Worni, Hinwil, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Mar. 27, 1981, Ser. No. 248,238

Claims priority, application Switzerland, Apr. 10, 1980, 2743/80

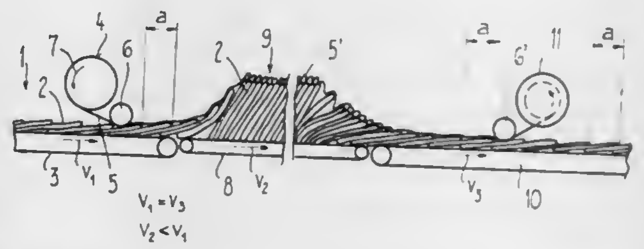
Int. Cl.^{3} B32B *31/00, 31/12, 31/26*

U.S. Cl. 156—247 **4 Claims**

1. A method of manipulating sheet-like products, especially printed products, specially newspapers and periodicals; comprising the steps of:

fixing the products in a single operating step in a defined formation at a flexible traction element provided with a heat sealable material having a latent adhesion property by activating said adhesion property by applying heat;

altering the defined formation of the products during manipulation thereof while maintaining a given order of the products; and



then detaching the traction element from the products by neutralizing its adhesion property by the application of heat.

4,443,288

METHOD AND APPARATUS FOR FUSING TOGETHER THERMOPLASTIC SYNTHETIC RESIN MOLDED ARTICLES

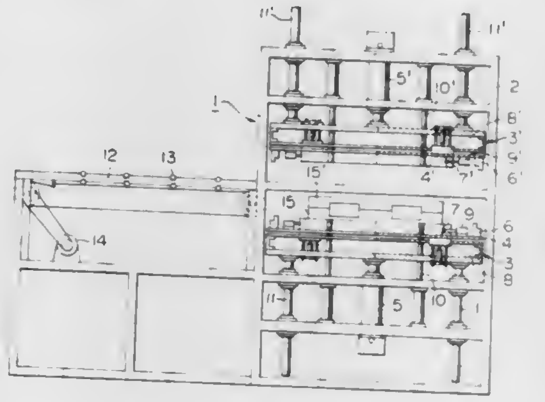
Susumu Sawada, Machida; Yoshikazu Yoshida, Koganei, and Minoru Tanaka, Kawasaki, all of Japan, assignors to Mitsubishi Kasei Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 23, 1982, Ser. No. 410,582

Claims priority, application Japan, Aug. 26, 1981, 56-133842

Int. Cl.^{3} B29C *19/00*

U.S. Cl. 156—304.6 **14 Claims**



1. In a method of fusing together thermoplastic synthetic resin molded articles wherein said molded articles to be fused together are held in spaced opposed relation by holding means, a heating plate normally held at a position on one side of a space between said opposed molded articles is inserted into said space, said molded articles are moved toward said heating plate to be urged thereto by a moving means to melt confronting surfaces of said molded articles, moving said molded articles away from said heating plate with said moving means, retracting, said heating plate out of said space via a drive means, and then said molded articles are abutted and fused together at molten confronting surfaces, the improvement which comprises the steps of supporting said holding means in a manner such that gaps are formed between said holding means and said moving means before separating said molded articles from said heating plate, limiting said gap such that a percussive force is applied to said holding means by movements of said moving means so as to quickly separate said molded articles from said heating plate.

4. In apparatus for fusing together thermoplastic synthetic resin molded articles of the type comprising a pair of opposing press boards, a pair of holding means provided on opposing sides of said press boards for respectively holding said molded articles, a heating plate, drive means for advancing and retracting said heating plate into and out of a space between said holding means, and moving means for urging against and separating said molded articles away from said heating plate, the improvement wherein each of said holding means comprises a floating plate mounted on each said press board to be movable in the direction of movement thereof, and a holding member for securing said molded article to said floating plate and there is provided spacer means mounted between said floating plate and said heating plate for maintaining a predetermined distance between said floating plates and said heating plate when opposing surfaces of said molded articles are urged against said heating plate to melt said opposing surfaces, said improvement further comprising means for supporting each said floating plate on each said press board such that each said floating plate can separate from each said press board so as to form a gap, said means for supporting including means for limiting said gap such that a percussive force is supplied to said holding means by movements of said moving means so as to quickly separate said molded articles from said heating plate.

4,443,289
LABELING MACHINE FOR OBJECTS SUCH AS BOTTLES

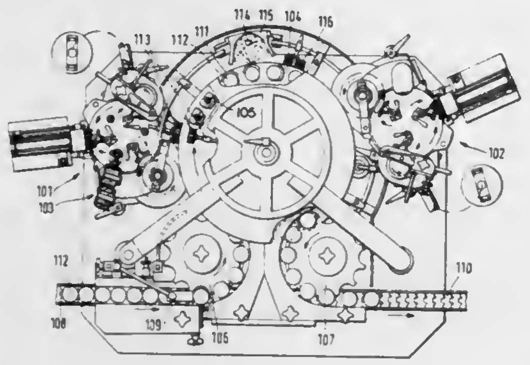
Wilhelm Kölges, Meerbusch, and Rudolph Zodrow, Düsseldorf, both of Fed. Rep. of Germany, assignors to Jagenberg Werke AG, Düsseldorf, Fed. Rep. of Germany

Filed Sep. 29, 1982, Ser. No. 427,245

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1981, 3149886

Int. Cl.^{3} B65C *9/16, 9/46*

U.S. Cl. 156—384 7 Claims



1. In a machine for labeling objects such as bottles, comprising a gluing station, a label supply station, a label transfer station and a label marking station, a turntable which moves the objects on controlled revolving platforms past the stations, the label transfer station having at least one label pickup element provided with a convexly curved pickup surface and mounted and driven on a revolving carrier in a rotating or rocking movement by means of a shaft disposed at a fixed distance from the carrier axis between the pickup surface and the center of its curvature so that upon each rotation of the carrier the pickup surface of the pickup element rolls against the uppermost label of the label supply station and against the other stations, the label marking station having an inking station and at least one marking type disposed in a convexly curved field, which type is inked at the inking station upon rotation of the carrier, the label-bearing pickup surface of each pickup element rolling on the inked type, the improvement which comprises providing applicator means within or directly behind the transfer area of the label transfer station, the applicator means applying the transferred label, without contacting the printed portion, to the object in such manner that the label adheres to the object as transport continues, a radiation source directly following the section of the transport path with the applicator means and positioned adjacent the path of movement of the objects with its radiation aimed at the objects, and control means for the rotating platforms so as to hold the objects in a position in which their imprinted area faces the radiation from the radiation source.

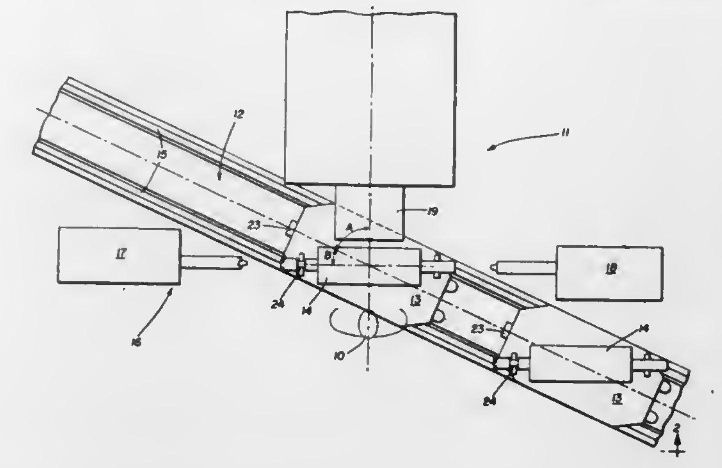
4,443,290
WORK STATION

Earl F. Loeffler, Uniontown; Stephen R. Barrickman, Tallmadge, and John A. Johnsen, Wadsworth, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Jun. 8, 1982, Ser. No. 386,373

Int. Cl.^{3} B29H *17/00*

U.S. Cl. 156—396 **14 Claims**



1. In an automated tire assembly apparatus having a plurality of tire building drums which are transported by a conveying means and which tire building drums are adapted to be engaged by a drive unit in order that tire components may be applied to said tire building drum by a component applicator, the improvement comprising:

an angular relationship between the axis of the tire building drum and the direction of movement of said conveying means of 20 to 40 degrees.

4. An apparatus for applying components to a tire building drum comprising:

(a) a drive unit having a drive headstock and a support tailstock adapted to grasp and rotate said tire building drum about a first axis between said headstock and said tailstock;

(b) component applicator means disposed proximate to said tire building drum which tire building drum is supported between said headstock and said tailstock wherein the axis of application of said applicator means is perpendicular to said first axis;

(c) tire building drum conveying means having its axis of travel between 20 and 40 degrees from said first axis.

4,443,291
FLYING SPLICE APPARATUS

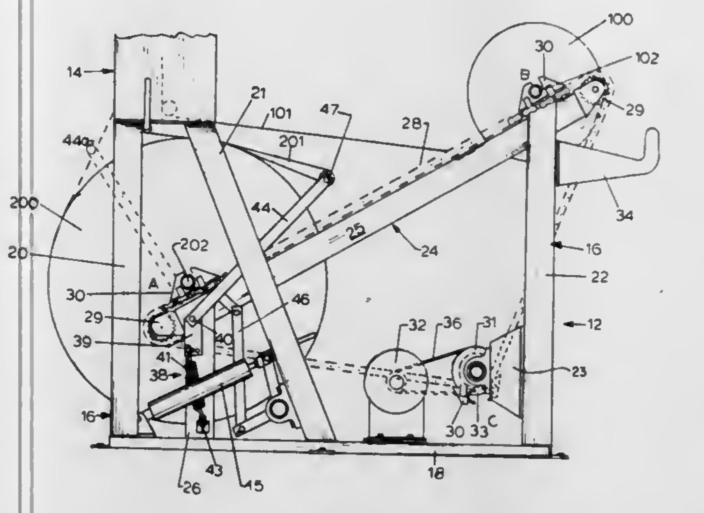
Barrie T. Reed, 4200 NW. 35th Ct., Miami, Fla. 33142

Filed Apr. 15, 1981, Ser. No. 254,280

Int. Cl.^{3} B65H *19/12, 21/00*

U.S. Cl. 156—504 **12 Claims**

9. A splicing apparatus for making uniform splices comprising a roll stand frame and a splicer assembly mounted on said roll stand frame, said roll stand frame comprising a base, a plurality of upright members extending from said base, a material roll conveyor assembly means mounted to said upright members, said conveyor assembly means comprising a plurality of inclined support members secured to said upright members, a plurality of sprockets mounted on each of said inclined support members, said sprockets together with at least one sprocket mounted on said roll stand frame being provided with an endless chain mounted thereon, said endless chain being driven by motor means which drives one of said sprockets and said chain, a plurality of shaft gripping members mounted on said endless chain, said shaft gripping members being provided with two separate sections which are separated to provide a widened saddle area adapted to grasp the shaft of a roll of material, and a moveable tensioned arm member adapted to engage the leading edge of a web of a replacement roll to form a web loop, said arm member being tensioned by spring means connected thereto to bias said arm member in one direction and cylinder means connected to said arm member by linkage means adapted to drive said arm member in the opposite direction from the spring bias, said splicer assembly comprising a plurality of upstanding side members secured to said roll stand frame, a plurality of idle rollers mounted to said side members, a rotatable vacuum member mounted to said side members, a knife back up bar slidably mounted within at least one of said side members and adapted to engage another side member, and a clamping and cutting means rotatably mounted to said side members, said cutting and clamping means having frame means comprising a plurality of moveable support members, each of said support members being moveably mounted to said side members, a connecting member secured to and connecting said moveable support members, and means to transport said support members to move said clamping and cutting means.



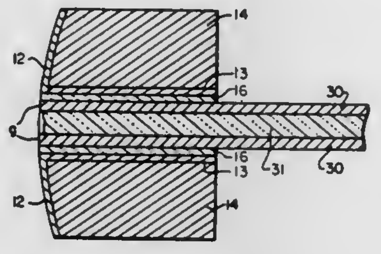
4,443,292
WEAR RESISTANT ELECTRODE HEAD FOR ELECTROGRAPHIC PRINTERS

Kishor M. Lakhani, and Jerry L. Ligon, both of Oklahoma, Okla., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Division of Ser. No. 259,889, May 4, 1981, Pat. No. 4,399,447. This application Mar. 14, 1983, Ser. No. 474,923

Int. Cl.^{3} C23F *1/02;* **B05D** *1/02;* **G01D** *15/06*

U.S. Cl. 156—634 7 Claims



1. A method of making an electrode head assembly for use in electrographic printing comprising the steps of:

(a) etching a plurality of longitudinal copper styli on a substrate of polyimide glass with only the ends exposed thus forming a first assembly;

(b) assembling first and second solid metal head bars, each head bar having six congruent rectangular surfaces so that a first face surface of the first head bar is parallel to a second face surface of the second head bar and separated by a thin shim, said first and second face surfaces being longitudinal to said electrode head assembly and comprise the interface surfaces of said electrode head assembly, said interface surfaces also being at right angles to third and fourth face surfaces of said first and second solid metal bars;

(c) spray coating said third and fourth face surfaces with a thin coating of molybdenum making an intimate bond therewith;

(d) removing said thin shim and separating said first and second face surfaces;

(e) spray coating said first and second face surfaces with a thin coating of alumina making an intimate bond therewith;

(f) grinding said molybdenum and alumina faces;

(g) assembling said electrode head assembly by sandwiching said first assembly between said first and second face surfaces; and

(h) intimately bonding said first and second face surfaces to said first assembly.

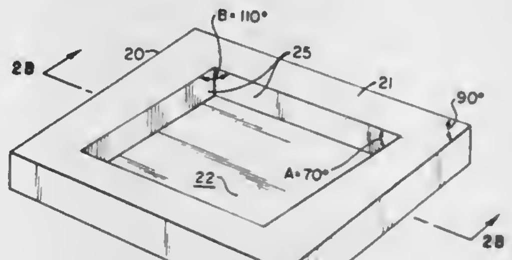
4,443,293
METHOD OF FABRICATING TRANSDUCER STRUCTURE EMPLOYING VERTICALLY WALLED DIAPHRAGMS WITH QUASI RECTANGULAR ACTIVE AREAS

Joseph R. Mallon, Franklin Lakes, and Anthony D. Kurtz, Englewood, both of N.J., assignors to Kulite Semiconductor Products, Inc., Ridgefield, N.J.

Division of Ser. No. 255,468, Apr. 20, 1981, Pat. No. 4,359,498. This application Jul. 19, 1982, Ser. No. 399,422

Int. Cl.^{3} H01L *21/306;* **B44C** *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—647 4 Claims



1. A method of fabricating a diaphragm having a rectangular recess defining an active area comprising the steps of:

(a) masking a major surface of a rectangular wafer of single crystal semiconductor of a given crystallographic orientation with a rectangular pattern;

(b) anisotropically etching said pattern according to said orientation to provide a rectangular recess having steep sidewalls manifesting an active diaphragm area.

4,443,294
PROCESS FOR FORMING MAGNETIC FILM PATTERN

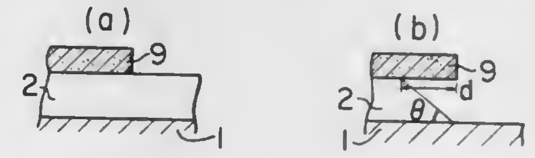
Masahide Suenaga; Yukihisa Tsukada, both of Odawara, and Hiroshi Yamamoto, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 9, 1982, Ser. No. 386,578

Claims priority, application Japan, Jun. 10, 1981, 56-88168

Int. Cl.^{3} C23F *17/00;* **H05K** *3/06*

U.S. Cl. 156—656 14 Claims



1. A process for forming a magnetic film pattern, which comprises:

forming a permalloy film on a substrate,

forming a mask on the permalloy film with a photoresist, etching the side edges of the permalloy film into a gradually reduced state of film thickness with an etching solution containing $FeCl_3$, HCl and H_3PO_4.

4,443,295

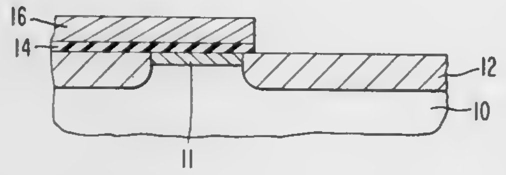
METHOD OF ETCHING REFRACTORY METAL FILM ON SEMICONDUCTOR STRUCTURES UTILIZING TRIETHYLAMINE AND H_2O_2

Kenneth J. Radigan, Mountain View, and James M. Cleeves, Redwood City, both of Calif., assignors to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Filed Jun. 13, 1983, Ser. No. 503,976

Int. Cl.³ H01L *21/308*

U.S. Cl. 156—657 **8 Claims**



8. A method of etching a tungsten-titanium layer on semiconductor structure comprising subjecting it to a mixture of triethylamine and hydrogen peroxide.

4,443,296

PROCESSES AND DEVICES FOR THE DISINTEGRATION OF CELLULOSE MATERIALS

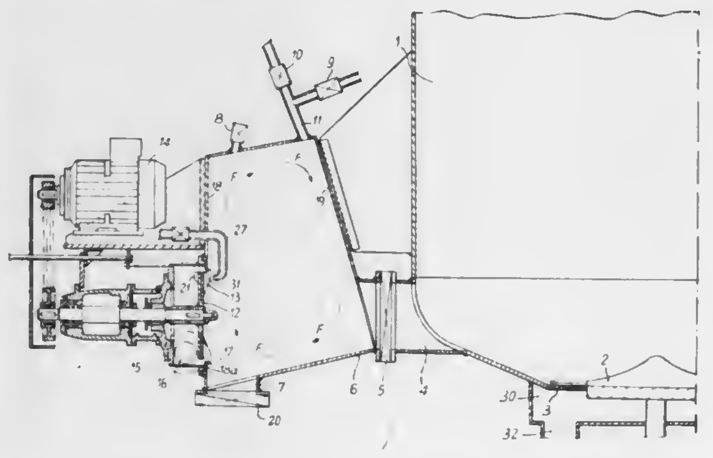
Jean P. Lamort, Vitry, France, assignor to E et M Lamort (Societe Anonyme), Vitry le Francois, France

Division of Ser. No. 90,985, Nov. 5, 1979, Pat. No. 4,369,093. This application Aug. 25, 1980, Ser. No. 180,673

Claims priority, application France, Nov. 17, 1978, 78 32549

Int. Cl.³ D21C *5/00, 5/02*

U.S. Cl. 162—52 **5 Claims**



1. A method of intermittently processing refusals rejected by a pulp discharge sieve of a pulping machine, comprising the steps of:

periodically extracting a predetermined volume of a mixture of pulp and refusals from the machine upstream of and in the vicinity of the discharge sieve;

transferring the extracted volume of mixture to an enclosed chamber via a first conduit;

closing the first conduit by means of a valve located in the first conduit;

separating the extracted volume of mixture in the chamber into a cleansed pulp suspension and refusals by agitation of the extracted volume within the chamber with a means for stirring the volume;

recharging the pulping machine with said suspension via a second conduit;

introducing water into the enclosed chamber via a third conduit to dilute the suspension until the pulp content falls below a predetermined value;

pressurizing said enclosed chamber with gas via means for releasably pressurizing said chamber;

emptying the dilute suspension from the enclosed chamber under gas pressure through said second conduit while continuing the agitation so that the dilute suspension washes the chamber walls; and

discarding the refusals from the bottom of the enclosed chamber through an outlet means for opening the bottom of the chamber.

4,443,297

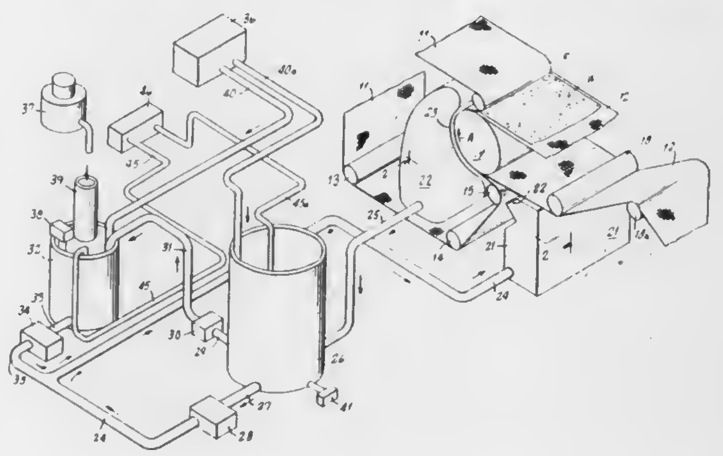
APPARATUS AND METHOD FOR THE MANUFACTURE OF A NON-WOVEN FIBROUS WEB

James O. Cheshire, Neenah; Douglas L. Lindgren, Appleton; Robert J. Marinack, Oshkosh; Bruce W. Janda, Neenah; Robert S. Thut, Green Bay; John T. Larkey, Green Bay, and Ray E. Jostad, Green Bay, all of Wis., assignors to James River-Dixie/Northern, Inc., Norwalk, Conn.

Division of Ser. No. 179,229, Aug. 18, 1980, abandoned. This application Sep. 25, 1981, Ser. No. 305,738

Int. Cl.³ D21D *3/00;* **D21F** *1/66*

U.S. Cl. 162—101 **9 Claims**



1. A method for making up a foamed fiber furnish for the production of non-woven fibrous web on a moving foraminous support which comprises:

a. preparing a foamable liquid comprising water and a surface active agent;

b. passing said foamable liquid in the substantial absence of fibers to and through said moving foraminous support web forming means whereby foam is formed in said liquid by entrainment of air therein producing a foamed liquid;

c. collecting foamed liquid passing through said foraminous support;

d. storing said collected foamed liquid for a period of time sufficient to permit said foamed liquid to stratify into an upper frothy layer and a lower more dense layer of foamed liquid;

e. recirculating said more dense layer of said foamed liquid to and through said foraminous support until said more dense layer of said stored foamed liquid contains from about 55 to about 75 percent air by volume and is capable of supporting and transporting fibers as a dispersion therein;

f. forming a foamed fiber furnish by dispersing fibers in said foamed liquid from step (e); and

g. supplying said foamed fiber furnish to said foraminous support for the production of said non-woven fibrous web.

4,443,298

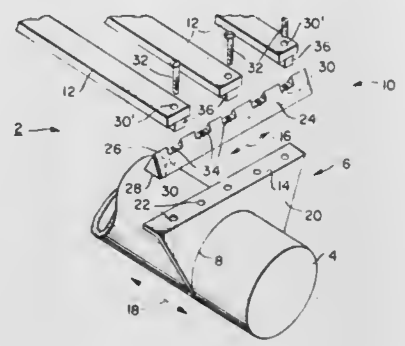
CONTROLLED TURBULENCE HYDROFOIL BLADE SUPPORT MEMBER

Benjamin A. Thorp, 7 Ball Ct., Albany, N.Y. 12204

Filed Mar. 8, 1982, Ser. No. 355,315

Int. Cl.³ D21F *1/54*

U.S. Cl. 162—252 **13 Claims**



1. A blade support member for use in a papermaking machine, and blades supported by said support member, wherein said member is positionable upon existing support structure in a forming section of said machine beneath a moveable forming medium, comprising:

a body extendable beneath said forming medium in a longitudinal direction from one side of said papermaking machine to the other for attachment of said support member to existing papermaking machine support structure;

at least two mounting elements attached to said body and extending in a direction transverse to said longitudinal direction and for a short length relative to the overall length of said papermaking machine forming section, one of said mounting elements being attached to said body at said one side and the other of said mounting elements being attached to said body at said other side; and,

means attached to said mounting elements and supporting a plurality of blades, each of said blades extending in said longitudinal direction such that at least one of said blades is moveable in said transverse direction relative to at least one other of said blades and relative to said mounting elements.

2. The blade support member of claim 1 wherein said supporting means comprises a plurality of mounting devices attached to said mounting elements and extending in said longitudinal direction, each of said mounting devices supporting one of said blades, at least one of said mounting devices being moveable in said transverse direction relative to at least one other of said mounting devices and relative to said mounting elements.

13. The blade support member of claim 2 further including means for selectively automatically causing movement of said moveable mounting devices in response to the detection of predetermined conditions.

4,443,299

APPARATUS AND METHOD FOR THE MANUFACTURE OF A NON-WOVEN FIBROUS WEB

James O. Cheshire, Neenah; Douglas L. Lindgren, Appleton; Robert J. Marinack, Oshkosh; Bruce W. Janda, Neenah; Robert S. Thut, Green Bay; John T. Larkey, Green Bay, and Ray E. Jostad, Green Bay, all of Wis., assignors to James River-Dixie/Northern, Inc., Norwalk, Conn.

Continuation of Ser. No. 179,229, Aug. 18, 1980, abandoned. This application May 19, 1982, Ser. No. 380,026

Int. Cl.³ D21F *1/66*

U.S. Cl. 162—264 **4 Claims**

1. Apparatus for making a non-woven fibrous web which comprises:

(a) a fiber stock supply means,

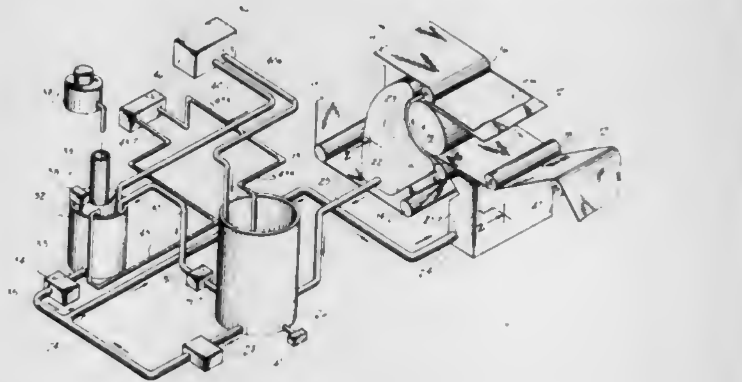
(b) web-forming means comprising a moving foraminous support onto which an aqueous fiber furnish is deposited from a headbox with formation of fibrous web and drainage of aqueous liquid therefrom,

(c) means for forming a foamable aqueous solution of surface active agent,

(d) means for directing said foamable solution directly to said headbox,

(e) means for collecting aqueous liquid passing through said foraminous support comprising foam formed by entrainment of atmospheric air in said liquid passing through said moving foraminous support,

(f) a storage silo for storing said collected foamed aqueous liquid and separation of the foamed liquid into a lower layer of more dense foam containing 55 to 75 percent air by volume in the lower portion of the silo and an upper less dense frothy layer of foam in the upper portion of the silo accompanied by the release of excess air therefrom,



(g) a first means for withdrawing more dense foam from said lower portion of said storage silo and directing said withdrawn foam directly into contact with said foraminous support means,

(h) means for forming a dispersion of fibers in foam comprising a mixing tank,

(i) means for delivering fibers from said fiber stock supply means to said mixing tank,

(j) a second means for withdrawing said more dense foam from said lower portion of said storage silo and directing said withdrawn foam into said mixing tank forming a dispersion of fibers in foam,

(k) means for directing said dispersion of fibers in foam from said mixing tank to said headbox, and

(l) means for blending said dispersion of fiber in foam with said stream of foam passing directly from said storage silo to said headbox.

4,443,300

PAPER MAKING MACHINE WITH A FILTER CYLINDER

Alfred Bubik, Ravensburg, and Siegfried Reutter, Gerbertshaus, both of Fed. Rep. of Germany, assignors to Escher Wyss GmbH, Ravensburg/Württ, Fed. Rep. of Germany

Continuation of Ser. No. 226,228, Jan. 19, 1981, abandoned. This application Nov. 8, 1982, Ser. No. 440,083

Claims priority, application Switzerland, Mar. 18, 1980, 2118/80

Int. Cl.³ D21F *1/48, 1/76*

U.S. Cl. 162—306 **10 Claims**

1. A paper making machine comprising:

a filter cylinder having a pervious surface;

a headbox cooperating with said filter cylinder at a headbox region and serving for forming a fiber web upon said filter cylinder;

a withdrawal web for the direct removal of the fiber web from the filter cylinder;

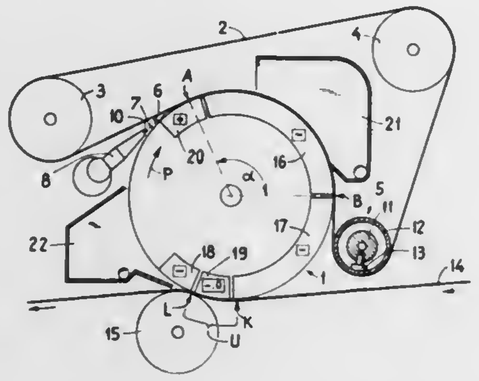
a plurality of guide rolls;

an endless filter band guided over said plurality of guide rolls;

said endless filter band being guided along said filter cylinder and being trained about said filter cylinder at its circumference over a predetermined wrap angle which extends between a run-on location and a lift-off location for said endless filter band;

said endless filter band being guided from the region of said headbox towards a run-on location for said withdrawal web;

a first suction box extending approximately up to said lift-off location for said filter band for forming a negative pressure and provided for said filter cylinder;



said fiber web departing from the filter cylinder and being deposited at the withdrawal web at a predetermined transfer region located after said run-on location for the withdrawal web;

said filter band defining said lift-off location at a location where it runs-off the filter cylinder; and

a second suction box extending from the region of the lift-off location of the filter band approximately up to a location defining said run-on location of the withdrawal web.

4,443,301

CONTROLLING METAL ELECTRO-DEPOSITION USING ELECTROLYTE CONTAINING TWO POLARIZING AGENTS

Robert C. Kerby, Rossland, Canada, assignor to Cominco Ltd., Canada

Filed Sep. 23, 1982, Ser. No. 422,438

Claims priority, application Canada, Jan. 7, 1982, 393685

Int. Cl.³ C25D *21/12, 21/14*

U.S. Cl. 204—1 T **17 Claims**

1. A method for controlling the electro-deposition of metal using an electrically conductive aqueous electrolyte containing concentrations of two organic polarizing agents including one agent which affects primarily grain refining, and one agent which affects the smoothness and levelness of the metal deposit, which method comprises:

(a) establishing a test cell circuit including at least one test cell; a sample of electrolyte; at least one anode; at least one cathode having a constant area in contact with the electrolyte; at least one reference electrode, a current supply means which is electrically connected to the anode(s) and the cathode(s); and an overpotential measuring means connected between the cathode and the reference electrode;

(b) applying a current in the test cell sufficient to cause electro-deposition of metal;

(c) measuring between a cathode and a reference electrode in a test cell the overpotential associated with the initial deposition or the nucleation of metal deposition onto a clean cathode surface, and termed the nucleation overpotential;

(d) measuring between a cathode and a reference electrode in a test cell the overpotential associated with metal deposition onto previously deposited metal, and termed the plating overpotential;

(e) relating the measured values of the nucleation overpotential, the plating overpotential, and the difference between values of the nucleation and plating overpotentials to previously determined optimum values; and

(f) adjusting the process by changing the concentration of at least one of the organic polarizing agents in the electrolyte to obtain optimum metal deposition conditions when deviations from optimum values occur.

4,443,302

PRINTING MEDIUM AND USE THEREOF

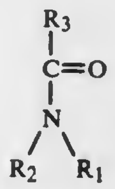
Paul L. Gendler, and Robert Twieg, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1982, Ser. No. 454,764

Int. Cl.³ B41M *5/20;* **G01D** *15/34*

U.S. Cl. 204—2 **20 Claims**

1. A printing medium which comprises a substrated coated on at least one surface thereof with a compound of the following formula:



wherein R_3 is a ring group having at least one substituent selected from the group of SO_2F, salt thereof, SO_3H, salt thereof, halo, NO_2, aryl, thioalkyl, aralkyl, alkyl, alkaryl, or alkoxy in the ortho position with respect to the atom connected to C=O with the proviso that when R_3 is phenyl, and R_1 and R_2 are interconnected to form together with the nitrogen atom 3,7-bis(dimethylamino)-phenothiazine moiety, then at least one of the substituents on said phenyl is selected from the group SO_2F, thioalkyl, halo, NO_2, aryl, aralkyl, alkyl, alkaryl, or alkoxy; R_1 is aryl group, alkaryl group, or interconnected with R_2 to form together with the nitrogen atom to which it is connected a heterocyclic ring selected from the group of phenothiazine, phenoxazine, or phenazine; and substituted derivatives thereof; and R_2 is aryl group, alkaryl, or interconnected with R_1 to form together with the nitrogen atom to which it is connected a heterocyclic ring selected from the group of phenothiazine, phenoxazine, or phenazine; and substituted derivatives thereof; or mixtures thereof; and coated with an oxidizing agent or the reduced form thereof to catalyze an oxidation of said compound.

4,443,303

METHOD OF MAKNG COLD SHIELD AND ANTIREFLECTOR FOR INFRARED DETECTOR ARRAY AND PRODUCT THEREOF

W. Larry Freeman, Woodbridge, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 426,429, Sep. 29, 1982, abandoned. This application Apr. 28, 1983, Ser. No. 489,631

The portion of the term of this patent subsequent to Jul. 5, 2000, has been disclaimed.

Int. Cl.³ C25D *5/02, 7/12;* **G01J** *1/44*

U.S. Cl. 204—15 **4 Claims**

1. A method of applying a cold shield to an array of photodetectors and their associated conductors on one side of a substrate, including the steps of:

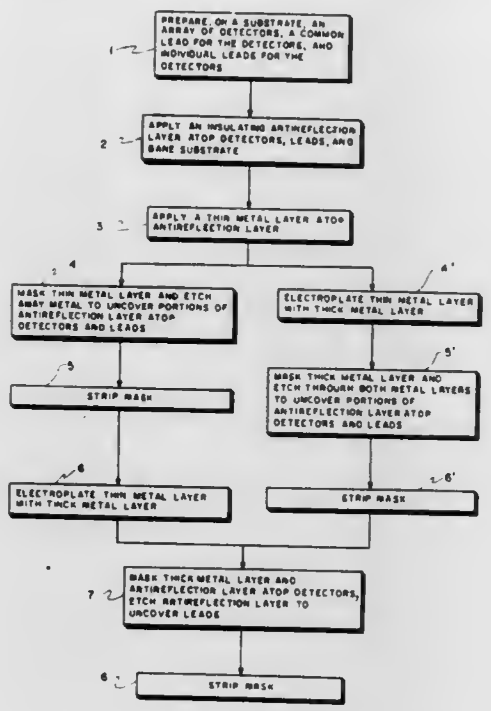
(a) coating said photodetectors, said conductors, and said one side of said substrate with an electrically insulating antireflection layer;

(b) applying a thin metal layer atop said layer;

(c) masking said metal layer and etching the metal layer to uncover portions of the antireflection layer atop the photodetectors and atop portions of the conductors;

(d) stripping the mask;

(e) electroplating a thick metal layer atop said thin metal layers;


1
PREPARE, ON A SUBSTRATE, AN ARRAY OF DETECTORS, A COMMON LEAD FOR THE DETECTORS, AND INDIVIDUAL LEADS FOR THE DETECTORS
2
APPLY AN INSULATING ANTIREFLECTION LAYER ATOP DETECTORS, LEADS, AND BARE SUBSTRATE
3
APPLY A THIN METAL LAYER ATOP ANTIREFLECTION LAYER
4
MASK THIN METAL LAYER AND ETCH AWAY METAL TO UNCOVER PORTIONS OF ANTIREFLECTION LAYER ATOP DETECTORS AND LEADS
4'
ELECTROPLATE THIN METAL LAYER WITH THICK METAL LAYER
5
STRIP MASK
5'
MASK THICK METAL LAYER AND ETCH THROUGH BOTH METAL LAYERS TO UNCOVER PORTIONS OF ANTIREFLECTION LAYER ATOP DETECTORS AND LEADS
6
ELECTROPLATE THIN METAL LAYER WITH THICK METAL LAYER
6'
STRIP MASK
7
MASK THICK METAL LAYER AND ANTIREFLECTION LAYER ATOP DETECTORS, ETCH ANTIREFLECTION LAYER TO UNCOVER LEADS
6
STRIP MASK

(f) masking said thick metal layer and etching to remove the antireflection layer from atop said portions of said conductors and;

(g) stripping the mask.

4,443,304

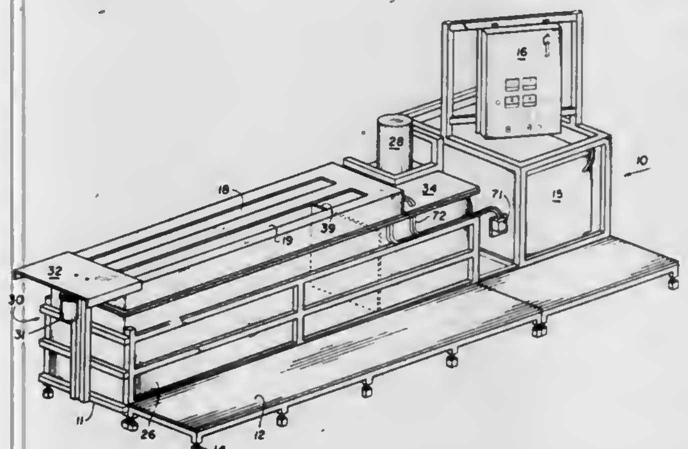
PLATING SYSTEM AND METHOD

Charles D. Eidschun, Clearwater, Fla., assignor to Micro-Plate, Inc., Clearwater, Fla.

Filed Oct. 1, 1982, Ser. No. 432,186

Int. Cl.³ C25D *5/08, 21/20*

U.S. Cl. 204—27 **7 Claims**



1. An electrodeposition system including a cell comprising, in combination,

a plurality of uniformly longitudinally spaced vertical sparger tubes within the plating cell,

a plurality of anode bars positioned adjacent the spargers and a wall of the cell and remote from the central area,

a conductive cathode bar mounted for reciprocation above cell,

means for energizing said cathode bar,

clamp means for securing a printed circuit board in electrical communication and physical communication with and beneath said cathode bar,

means for reciprocating said cathode bar while a printed circuit board is in a plating solution interiorly of each of said plating cell,

and said means for reciprocating being restricted so that movement in substantially one-half the distance between the vertical spargers.

4,443,305

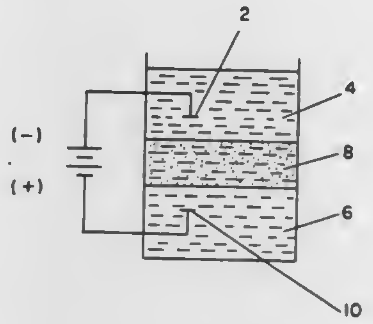
EMULSION ELECTROWINNING

Richard Haynes, East Windsor Township, Mercer County, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed May 2, 1983, Ser. No. 490,602

Int. Cl.³ C25C *1/00*

U.S. Cl. 204—59 M **14 Claims**



1. A process for electrowinning a metal from an organic phase including the steps of creating a dispersed phase comprising a dispersion of the organic phase with an immiscible conducting aqueous phase and electrowinning the metal from the dispersed phase.

4,443,306

PROCESS AND CELL FOR THE PREPARATION OF POLYVALENT METALS SUCH AS ZR OR HF BY ELECTROLYSIS OF MOLTEN HALIDES

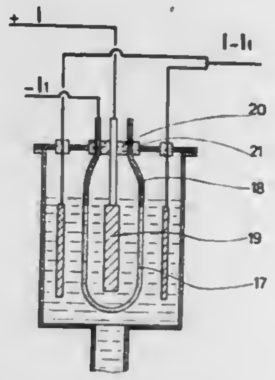
Marcel Armand, Meylan, and Philippe Moinard, Saint Martin d'Heres, both of France, assignors to Pechiney Ugine Kuhlmann, Paris, France

Filed Nov. 16, 1981, Ser. No. 321,624

Claims priority, application France, Nov. 27, 1980, 80 25507

Int. Cl.³ C25C *3/26*

U.S. Cl. 204—64 T **8 Claims**



1. A process to electrolytically produce zirconium or hafnium from chlorides thereof in a bath of molten alkali metal or alkaline earth halides in an electrolytic cell consisting of:

(a) providing above the electrolyte an anodic space defined by a graphite collector;

(b) extending the lower end of the collector below the surface of the electrolyte to form a seal wherein the lower end of the collector is extended by an annular porous wall or diaphragm of polyvalent metal;

(c) directing a negative current to said collector such that the electrical resistance of the electrolyte impregnating the collector is maintained at a constant value; and

(d) maintaining the value of the electrical resistance of the electrolyte by adjusting the strength of the current directed to the collector as a function of the difference between the potential difference through the electrolyte and a reference potential.

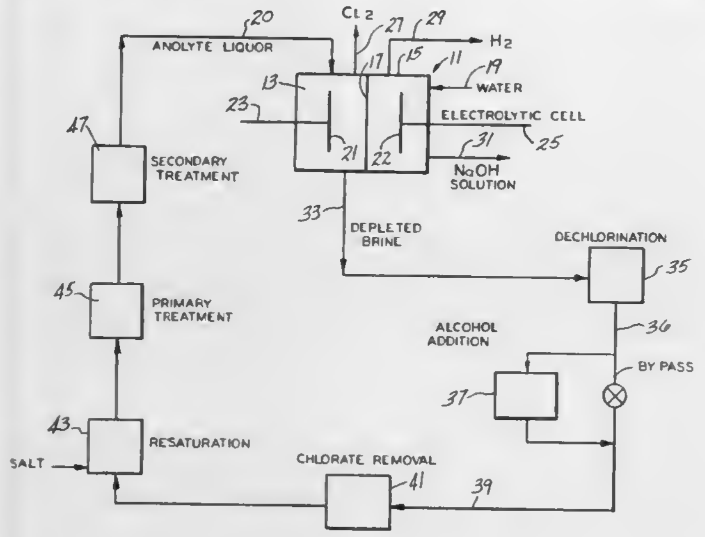
4,443,307
REDUCTION OF AVAILABLE CHLORINE IN ALKALI BRINES

Sanders H. Moore, and Maurice R. Smith, both of Cleveland, Tenn., assignors to Olin Corporation, New Haven, Conn.

Filed Mar. 21, 1983, Ser. No. 477,091

Int. Cl.³ C25B *1/34*

U.S. Cl. 204—98 **23 Claims**



1. In a process for purifying a depleted alkali metal halide brine recovered for reuse in the production of an alkali metal hydroxide and a halogen by electrolysis in a cell wherein a portion of said halogen dissolves in and reacts with said brine to produce an alkali metal hypohalite, said brine being treated to remove said hypohalite ion prior to being resaturated and returned to said cell, the improvement comprising:

(a) collecting at least a portion of said depleted brine after said brine has been dehalogenated; and

(b) contacting said collected portion with an amount of an organic hydroxyl moiety-containing compound soluble in said brine, the proportion of said compound being equal to at least about 1 mole of said hydroxyl moiety in said compound per mole of alkali metal hypohalite contained in said brine for a residence time sufficient to substantially reduce said alkali metal hypohalite in said brine, said hydroxyl moiety-containing compound being selected from the group consisting of alcohols and saccharides.

4,443,308
METHOD AND APPARATUS FOR SYNTHESIZING ANHYDROUS HNO_3

Clifford L. Coon, Fremont; Jackson E. Harrar, Castro Valley; Richard K. Pearson, Pleasanton, and Raymond R. McGuire, Brentwood, all of Calif., assignors to The United States of America as represented by United States Department of Energy, Washington, D.C.

Filed Jul. 20, 1982, Ser. No. 399,946

Int. Cl.³ C25B *1/00, 9/04*

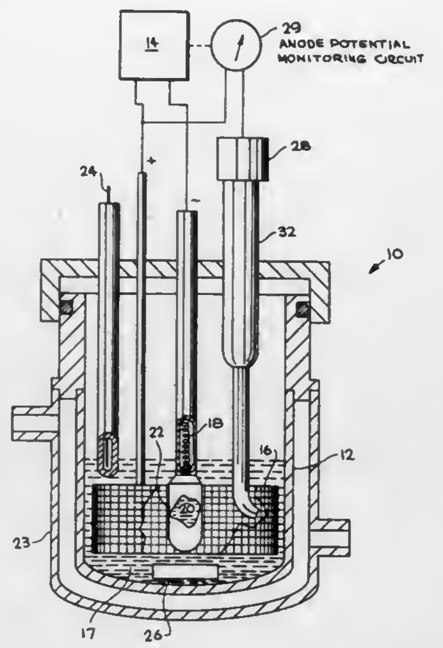
U.S. Cl. 204—103 **15 Claims**

1. A method of dehydrating aqueous HNO_3, comprising:

providing an electrochemical cell including an anode disposed in an anode compartment of said cell, and a cathode disposed in a cathode compartment, said anode and cathode being operatively connected to a power source;

disposing a solution of N_2O_4 and aqueous HNO_3 in said anode compartment;

applying and maintaining a controlled potential of about 1.35 to 2.00 V vs SCE between said N_2O_4/aqueous HNO_3 solution and said anode; and



forming N_2O_5 in anhydrous HNO_3 within said anode compartment.

4,443,309
PROCESS FOR THE DETOXIFICATION OF CHEMICAL WASTE MATERIALS

Pieter J. Van Duin, Noordwijk, and Joost Van Erkel, Rozenburg, both of Netherlands, assignors to Nederlandse Centrale Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek, The Hague, Netherlands

Filed Nov. 5, 1981, Ser. No. 318,571

Claims priority, application Netherlands, Nov. 25, 1980, 8006412

Int. Cl.³ C02F *1/46*

U.S. Cl. 204—149 **13 Claims**

1. A process for the detoxification of chemical waste materials containing toxic organic compounds, in which substantially all the waste materials are subjected to electrolysis by contacting them with one or more electrodes, which are part of an electric circuit, in the presence of a micelle-forming material.

3. A process according to claim **1**, wherein the micelle-forming material is a member of the group consisting of methyldodecylbenzyltrimethylammoniumchloride, methyldodecylxylylene-bistrimethylammoniumchloride, octadecyltrimethylammoniumchloride, sodium dodecylbenzenesulfonate, sodium dioctyl sulfosuccinate, sodium perfluoroalkylbenzenesulfonate, octylphenoldecaethyleneglycol ether and mixtures of at least two of these compounds.

4,443,310
PHOTOINITIATED SYNTHESIS OF MERCAPTANS

Emmanuel Arretz; Claude Landoussy, both of Pau; Alfred Mirassou, Poey-de-Lescar, and Jean Ollivier, Arudy, all of France, assignors to Societe Nationale Elf Aquitaine (Production), Courbevoie, France

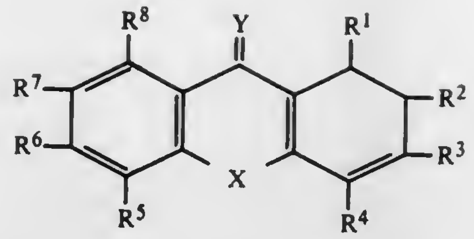
Filed Mar. 10, 1982, Ser. No. 357,068

Claims priority, application France, Mar. 12, 1981, 81 04956; Feb. 22, 1982, 82 02849

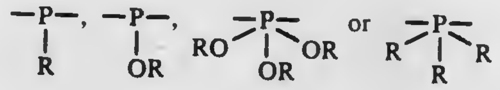
Int. Cl.³ B01J *19/12*

U.S. Cl. 204—158 R **19 Claims**

1. In the process of synthesis of mercaptans by the photochemical reaction of an olefinic compound with hydrogen sulphide in the presence of an initiator, the improvement which comprises employing as the initiator an xanthenic type compound of the formula



where Y is O or S, X is O, S, Se, $-CH_2-$, $-CH_2CH_2-$, SO_2, CO, CS or NR′, R′ being a hydrocarbon radical,



$$-\underset{R}{\underset{|}{P}}-,\quad -\underset{OR}{\underset{|}{P}}-,\quad RO\diagup\!\!\overset{-P-}{\underset{OR}{|}}\!\!\diagdown OR \quad \text{or} \quad R\diagup\!\!\overset{-P-}{\underset{R}{|}}\!\!\diagdown R$$

where R designates an alkyl, an aryl, an H or a halogen, the symbols R^1 to R^8 individually designating H, halogen, alkoxy, alkyl or aryl.

4,443,311
METHOD FOR MAKING AMINO ACIDS

Norman N. Lichtin, Newton Center, Mass., and Elliot Berman, Los Angeles, Calif., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jul. 22, 1983, Ser. No. 516,066

Int. Cl.³ B01J *19/12*

U.S. Cl. 204—158 R **13 Claims**

1. A method for making amino acids comprising providing a mixture of nitrogen, carbon dioxide and a source of hydrogen, and exposing said mixture to light in the presence of at least one Group VIII metal oxide, said exposure time, and exposure conditions, and the amount of said metal oxide present all being effective to form said amino acids.

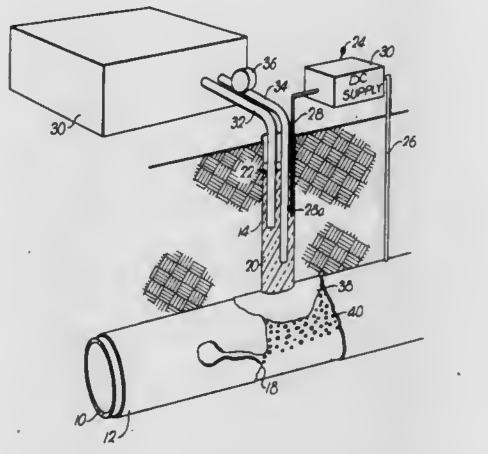
4,443,312
SITU METHOD OF COATING BURIED CONDUCTIVE STRUCTURES

Gary J. Hennon, Kansas City, Mo., assignor to Midwest Research Institute, Kansas City, Mo.

Filed Sep. 14, 1982, Ser. No. 418,062

Int. Cl.³ C25D *13/14*

U.S. Cl. 204—181 R **10 Claims**



1. A method of coating electrically conductive structures buried in the ground comprising the steps of:

providing a passageway extending from the surface of the ground to a level where a portion only of the conductive structure is brought into direct communication with the passageway while the remainder of the structure adjacent the passageway remains buried in the ground and in intimate contact with the surrounding soil;

introducing a quantity of a water dispersion of an ionic organic resin composition into the passageway to form a reservoir thereof in direct contact with said portion of the structure which communicates with the passageway;

establishing a path for flow of electrical current to the reservoir of said resin composition and to said conductive structure respectively; and

impressing direct current on said structure and the resin composition in said reservoir along the electrical paths therefor of a polarity to cause the resin ions in the compositions to migrate electrophoretically to the conductive structure and to react with ions generated from the water at the surface of the structure to insolubilize the resin and effect a coating thereof on the conductive portion of such structure contacted by the resin composition,

said direct current being impressed on the structure and said reservoir of a voltage and amperage level and for a time period to cause sufficient gas to be evolved from the water dispersion of said resin composition at the conductive surface of the structure as the resin is deposited on and coats said portion of the conductive structure, such that the gas assists in displacement of enough soil surrounding the structure to allow the resin composition to contact and coat conductive portions of the structure remote from the passageway and not originally contacted thereby thus increasing the area of the structure coated with said resin.

4,443,313
ELECTROLYTIC REDUCTION CELLS

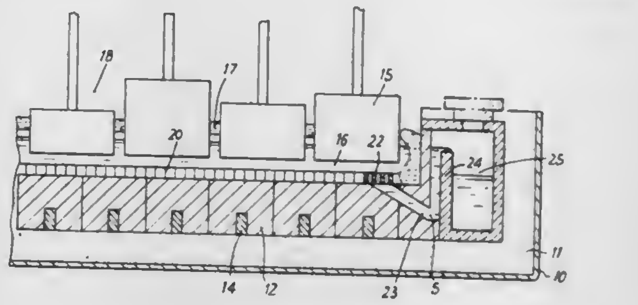
Adam J. Gesing, Kingston, Canada; John McIntyre, Tucson, Ariz.; Meine Vandermeulen, Kingston, Canada; Edward L. Cambridge, Tucson, Ariz., and Thomas P. DeAngelis, Horsehead, N.Y., assignors to Alcan International Limited, Montreal, Canada

Filed Jun. 23, 1982, Ser. No. 391,404

Claims priority, application United Kingdom, Jun. 25, 1981, 8119587

Int. Cl.³ C25C *3/08, 7/02, 7/06*

U.S. Cl. 204—240 **5 Claims**



1. An electrolytic reduction cell for the production of a molten metal by electrolysis of a fused electrolyte, which is less dense than the molten product metal, said cell having one or more overhead anodes and a cathodic floor and having a layer of ceramic shapes arranged on said cathodic floor, said shapes being formed of a material which is resistant to attack by said molten metal and said fused electrolyte, is more dense than said product metal and is wettable by said product metal, but is non-wettable by said electrolyte characterised in that said shapes constitute a monolayer of tiles in the form of honeycomb having apertures formed therein, of such dimensions as to restrain electrolyte-coated sludge particles from entry into such apertures.

5. An electrolytic reduction cell according to claim **1**, further characterised in that a selective filter is arranged in said cell to permit outflow of molten metal but to restrain flow of molten electrolyte, said filter being arranged to permit passage of molten metal at a rate in excess of its production and being arranged to co-operate with metal level control means located externally of said cell.

4,443,314

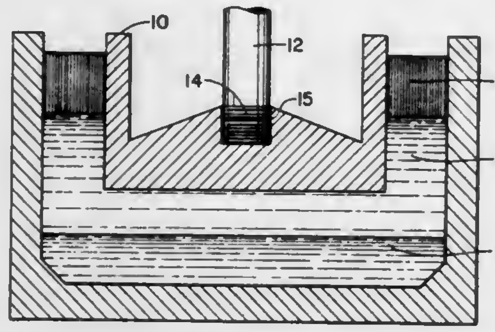
ANODE ASSEMBLY FOR MOLTEN SALT ELECTROLYSIS

Duane R. Secrist, Elizabethton; James M. Clark, Johnson City, and Henry E. Grindstaff, Elizabethton, all of Tenn., assignors to Great Lakes Carbon Corporation, New York, N.Y.

Filed Mar. 16, 1983, Ser. No. 475,951

Int. Cl.^{3} C25C *3/06, 3/12, 3/16*

U.S. Cl. 204—243 R **10 Claims**



1. A cermet anode connector for use in an electrolytic cell for molten salt electrolysis wherein the anode is selected from the group consisting of cermets and ceramics, said connector having a lower electrical resistivity than said anode at the operating temperature of said cell and no higher than 1×10^{-3} Ω-cm, said connector comprising at least 31% by volume of metal and no more than 69% by vol. of ceramic.

4,443,315

FINGER TYPE ELECTROLYTIC CELL FOR THE ELECTROLYSIS OF AN AQUEOUS ALKALI METAL CHLORIDE SOLUTION

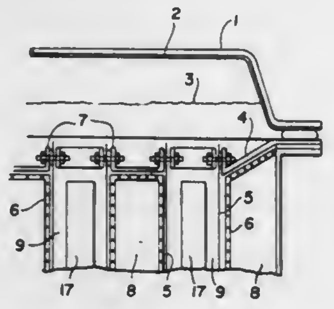
Tokuzo Iijima, Kobe; Yasushi Samejima, Kakogawa, and Toshiji Kano, Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 22, 1981, Ser. No. 256,576

Claims priority, application Japan, Jul. 3, 1980, 55-94269[U]; Jul. 3, 1980, 55-94268[U]

Int. Cl.^{3} C25B *9/00*

U.S. Cl. 204—253 **4 Claims**



1. A finger type electrolytic cell for the electrolysis of an aqueous alkali metal chloride solution which cell comprises a plurality of anodes mounted at the bottom plate of the cell, a cathode box providing a cathode between adjacent anodes, cation exchange membranes positioned between adjacent anodes and cathodes by which the cell is partitioned into anode compartments and cathode compartments, and a cell top cover whose inside surface portion is laminated by thin multilayer sheets of a fibre reinforced plastic and is made of a chlorine-resistant material containing no polymetallic ions.

4,443,316

ELECTROLYSIS CELL WITH INTERMEDIATE CHAMBER FOR ELECTROLYTE FLOW

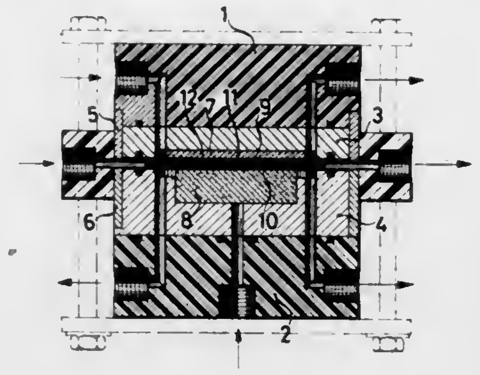
Bernd D. Struck, Langerwehe, Fed. Rep. of Germany, assignor to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Filed Nov. 5, 1981, Ser. No. 318,457

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1980, 3041799; Nov. 6, 1980, 3041823

Int. Cl.^{3} C25B *9/00, 13/02, 13/08*

U.S. Cl. 204—263 **7 Claims**



1. An electrolysis cell for the production of hydrogen and sulfuric acid from water and sulfur dioxide having an anode chamber, an intermediate chamber and a cathode chamber and means for causing an electrolyte to flow through said intermediate chamber as well as means for supplying electrolytes respectively to said anode and cathode chambers, said intermediate chamber being bounded on opposite sides by separators constituted of cation-exchanger membranes separating said intermediate chamber respectively from said anode and cathode chambers, said cell further comprising a permeably porous and stiff structure or body **(12)** of graphite extending across said intermediate chamber for supporting said separators against pressure tending to push them towards each other.

4,443,317

ELECTRODE FOR ELECTROLYSIS AND PROCESS FOR ITS PRODUCTION

Yukio Kawashima; Makoto Kobayashi, and Mayu Murakami, all of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Oct. 8, 1982, Ser. No. 433,390

Claims priority, application Japan, Oct. 8, 1981, 56-160453

Int. Cl.^{3} C25B *11/00;* **C25C** *7/02*

U.S. Cl. 204—290 F **12 Claims**

1. An electrode for electrolysis having a coating which consists essentially of 40 to 90 mole % of palladium oxide, 0.1 to 20 mole % of platinum, and 5 to 50 mole % of $(\mathrm{Ru}_x\mathrm{Ti}_{1-x})\mathrm{O}_2$, wherein x ranges from 0.05 to 0.5, based on the total molar composition.

4,443,318

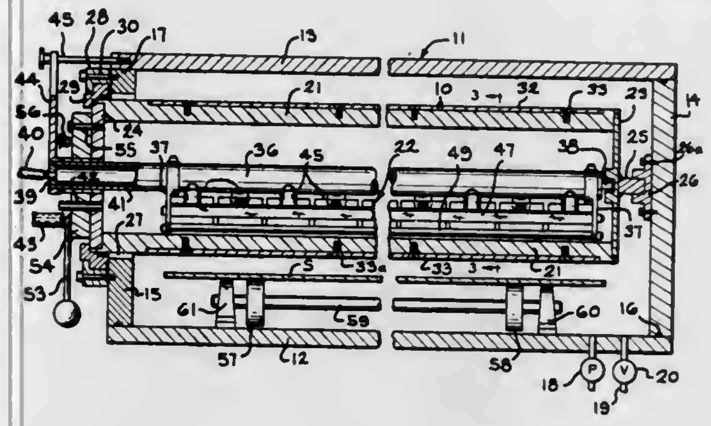
CATHODIC SPUTTERING APPARATUS

Harold E. McKelvey, Plymouth, Mich., assignor to Shatterproof Glass Corporation, Detroit, Mich.

Filed Aug. 17, 1983, Ser. No. 523,928

Int. Cl.^{3} C23C *15/00*

U.S. Cl. 204—298 **15 Claims**



1. A rotatable sputtering cathode, comprising an elongated cylindrical tubular member, means for rotating said tubular member, and target means provided with coating material to be sputtered removably secured to said tubular member.

4,443,319

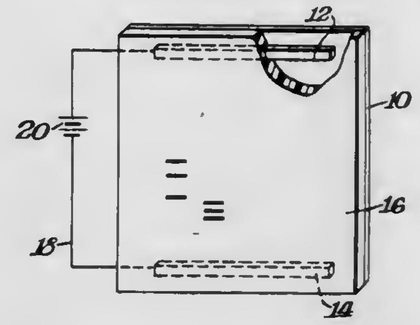
DEVICE FOR ELECTROPHORESIS

Edward M. Chait; Mary L. Gianelli, and Donald R. Johnson, all of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 30, 1982, Ser. No. 430,836

Int. Cl.^{3} G01N *27/26, 27/28*

U.S. Cl. 204—299 R **7 Claims**



1. An improved electrophoresis device having a thin film support substrate, a separating gel formed on one face of the substrate, and means for applying an electric potential across at least a portion of the gel characterized by the applying means including spaced electrodes on the substrate integrated into and in electrically conductive contact with the gel, thereby to reduce the bulk of the device.

4,443,320

LIQUID TREATER HAVING ELECTRICAL CHARGE INJECTION MEANS

Arthur S. King, 8021 Cherokee La., Leawood, Kans. 66206

Continuation of Ser. No. 229,960, Jan. 30, 1981, Pat. No. 4,341,617. This application Jul. 27, 1982, Ser. No. 402,269

Int. Cl.^{3} B03C *5/02*

U.S. Cl. 204—302 **3 Claims**

1. An electrical treater for use in causing the flocculation of impurity particles in a liquid comprising:

an outer cylindrical electrode for defining a treating chamber;

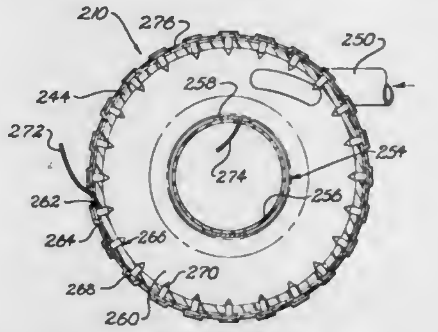
means for introducing liquid to be treated into said chamber and for directing liquid out of said chamber after treatment;

an inner cylindrical electrode coaxially housed within said outer electrode in radially spaced relation thereto; and

means for connecting said electrodes across a source of electrical potential for oppositely charging the same and for exposing the liquid in said chamber to an electric field established between said electrodes,

at least one of said electrodes including a multiplicity of projections each directed toward the other electrode and terminating in an outermost, generally conical tip, said one electrode being provided with an electrical insulator substantially covering all but said conical tips of the projections whereby substantially only said conical tips are exposed to said liquid in the chamber,

said uninsulated conical tips having axes which extend radially from the one electrode toward the other whereby to render said electric field non-uniform and having lines of force converging to said tips.



4,443,321

SUPERCRITICAL SOLVENT COAL EXTRACTION

Leslie E. Compton, Claremont, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 17, 1981, Ser. No. 322,312

Int. Cl.^{3} C10G *1/00, 1/06*

U.S. Cl. 208—8 LE **13 Claims**

1. A method of separating an organic extract from an inorganics-containing coal comprising the steps of:

adding to a closed reactor particulate coal and a mixture of solvents consisting of a first and second solvent absent straight chain polynuclear compounds and hydrogen donor solvents; said first solvent being present in the mixture in an amount above 1% and below 50% by weight and consisting of at least one low volatility, bent ring, polycyclic, aromatic organic compound containing at least three rings, having a high critical temperature above 450° C. and being capable of at least 20% by weight catalytic dissolution of the coal into the soluble extract fragments and the second solvent consisting of a higher volatility organic or inorganic compound which is stable at the operating temperature and having a critical temperature below 300° C.;

heating the reactor to a temperature above 250° C. and below 450° C. and within 200° C. above or below the critical temperature of the solvent mixture at a pressure from 500 to 5,000 psig to form a dense gas phase;

extracting organic coal components into the dense gas phase; and

removing said phase from the reactor.

4,443,322

CONTINUOUS PROCESS AND APPARATUS FOR SEPARATING HYDROCARBONS FROM EARTH PARTICLES AND SAND

Duncan B. Jubenville, Windsor, Canada, assignor to TekSonix, Inc., Commerce City, Colo.

Division of Ser. No. 213,956, Dec. 8, 1980, Pat. No. 4,358,373. This application Aug. 18, 1982, Ser. No. 409,168

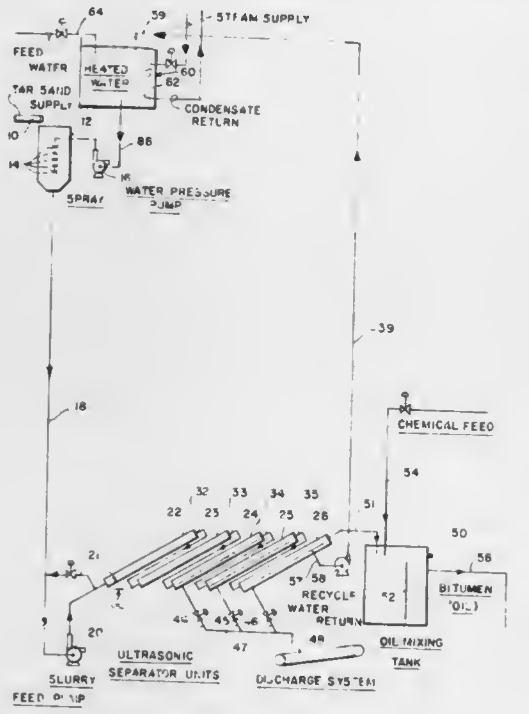
Int. Cl.^{3} C10G *1/04*

U.S. Cl. 208—11 LE **11 Claims**

1. A continuous process for the separation of hydrocarbons

from earth and sand particles containing said hydrocarbons comprising:

(A) breaking said particles into a size less than about two centimeters in diameter,
(B) suspending said broken particles in water,
(C) pumping the suspension of broken particles upwardly through an inclined duct from its lower end,
(D) subjecting the suspension of particles in and along said duct to horizontal ultrasonic vibrations ranging in frequency between about 18 and 27 kiloHertz so that each particle is exposed to said vibrations for at least about five minutes to separate substantially all of said hydrocarbons from said earth and sand particles and to entrain the densest of said hydrocarbons with gases from cavitation sufficient to cause said densest hydrocarbons to float on said water to the upper end of said duct,



(E) removing said separated earth and sand particles continuously along the lower side of said inclined duct,
(F) removing said separated hydrocarbons from the floating layer formed thereof at the upper end of said duct, and
(G) recycling said water from below said layer at the upper end of said duct to the broken particles pumped into the bottom of said duct.

4,443,323

PROCESS FOR THE OIL EXTRACTION FROM OIL SAND BY USING CYCLODEXTRIN AND HYDROCARBON SOLVENTS

Koki Horikoshi, Tokyo, Japan; Ichiro Shibanai, No. 6-10-6-312, Akasaka, Minato-ku, Tokyo, Japan, and Takashi Kato, Higashiyamato, Japan, assignors to Rikagaku Kenkyusho and Ichiro Shibanai, both of Wako, Japan

Filed Aug. 16, 1983, Ser. No. 523,688

Claims priority, application Japan, Aug. 20, 1982, 57-144385

Int. Cl.^{3} C10G *1/00*

U.S. Cl. 208—11 LE 24 Claims

1. A process for the oil extraction from oil sand, which comprises mixing oil sand, cyclodextrin, a hydrocarbon solvent, a flocculating agent and water with one another to prepare a suspension, leaving the suspension to stand or centrifuging it to separate into an oil, a water and a sand layer, and then collecting the oil layer.

4,443,324

LOW MELTING MESOPHASE PITCHES

Russell J. Diefendorf, Clifton Park, and Shih-Heui Chen, Troy, both of N.Y., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jun. 14, 1982, Ser. No. 388,479

Int. Cl.^{3} C10C *1/18, 3/08, 3/00*

U.S. Cl. 208—22 7 Claims

1. A low melting, low molecular weight, heptane insoluble, 1,2,4-trichlorobenzene soluble mesophase pitch having a melting point of less than about 250° C. and a molecular weight of less than about 1000 prepared by the method which comprises heating a feed material selected from the group consisting of chrysene, triphenylene, and para-terphenyl, dissolving the heated material with 1,2,4-trichlorobenzene and recovering the soluble portion therefrom contacting the resulting 1,2,4-trichlorobenzene solution with heptane to precipitate said heptane insoluble, 1,2,4-trichlorobenzene soluble mesophase pitch.

4,443,325

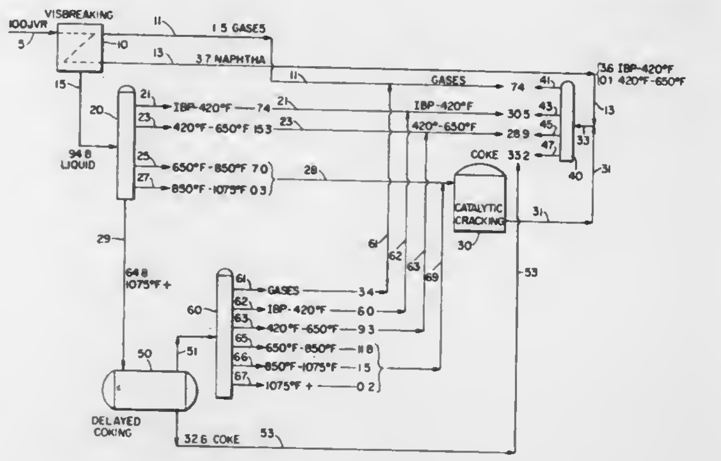
CONVERSION OF RESIDUA TO PREMIUM PRODUCTS VIA THERMAL TREATMENT AND COKING

Nai Y. Chen, Titusville, and Lillian A. Rankel, Princeton, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 23, 1982, Ser. No. 452,482

Int. Cl.^{3} C10B *55/10;* C10G *65/18*

U.S. Cl. 208—55 10 Claims



1. A process for treating a heavy hydrocarbon feedstock, comprising asphaltenes, metals, and sulfur, said process consisting essentially of the following steps

A. thermally treating said feedstock in the absence of an added catalyst at a temperature below thermal cracking temperatures and above about 750° F., a space velocity of no more than about 1.5, and at a pressure greater than about 400 psig to produce gas, naphtha, and a liquid without formation of a sludge, a coke, or a coke deposit;
B. fractionating said liquid to produce fractions boiling below about 650° F., between about 650° and about 1075° F., and above about 1075° F.;
C. delay coking said fraction boiling above 1075° F. to produce liquid products and coke;
D. fractionating the liquid products of said coking to produce fractions boiling below about 650° F. and above about 650° F.;
E. combining said fraction boiling between about 650° and about 1075° F. from said fractionating of Step B with said fraction boiling above about 650° F. from said fractionating of Step D and catalytically cracking said combined fractions in a fluid catalytic cracking process to produce gases and a liquid product; and Z
F. fractionating said naphtha of Step A and said gases and said liquid product of Step E to produce gases and products boiling between the initial boiling point and about 650° F.

4,443,326

TWO-STEP REFORMING PROCESS

Leslie A. Field, Oakland, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 311,834, Oct. 16, 1981, abandoned. This application Feb. 10, 1983, Ser. No. 465,406

Int. Cl.^{3} C10G *35/04*

U.S. Cl. 208—64 24 Claims

1. A hydrocarbon conversion process comprising:

(a) contacting a hydrocarbon feed with a dehydrocyclization catalyst at dehydrocyclization conditions to form a reformate, wherein at least part of said dehydrocyclization catalyst comprises a large-pore zeolite containing at least one Group VIII metal; and
(b) contacting said reformate with an intermediate pore size zeolite at a temperature of from 800° F. to 1100° F., an LHSV of from 0.1 to 10, and an H_2/HC of from 0 to 6.

4,443,327

METHOD FOR REDUCING CATALYST AGING IN THE PRODUCTION OF CATALYTICALLY HYDRODEWAXED PRODUCTS

David S. Shihabi, Pennington, and John D. Lutner, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 24, 1983, Ser. No. 460,218

Int. Cl.^{3} C10G *47/20, 65/12*

U.S. Cl. 208—97 17 Claims

1. A method for reducing the aging rate of a highly siliceous zeolite catalyst used in the catalytic hydrodewaxing of 399° C.+ (750° F.+) hydrocarbon feedstock, which method comprises the addition of from about 0.1 to 10 weight percent olefins to said feedstock prior to its exposure to said catalyst under hydrocarbon hydrodewaxing conditions which include a hydrogen pressure of between about 50 to 400 psig.

4,443,328

METHOD FOR CONTINUOUS THERMAL CRACKING OF HEAVY PETROLEUM OIL

Masao Sakurai, Mitaka, and Tetsuo Wada, Ohmuta, both of Japan, assignors to Toyo Engineering Corporation and Mitsui Coke Co., Ltd., both of, Japan

Filed Jun. 1, 1982, Ser. No. 384,000

Int. Cl.^{3} C10G *9/16, 9/00*

U.S. Cl. 208—106 7 Claims

1. In a method for the continuous thermal cracking of heavy petroleum oil, the iprovement which comprises the steps of:

(a) continuously charging a pre-heated petroleum oil feed into the upper reaction zone of an upright cylindrical reactor, said reactor having upper and lower reaction zones separated from each other by foraminous partition plate, said lower zone having at least one section;
(b) subjecting said feed to a thermal cracking reaction at cracking temperatures and pressures:
(c) removing cracked gas and oil vapors from said upper reaction zone;
(d) simultaneously passing the resultant reaction liquid from said upper reaction zone to and through said lower reaction zone without back-mixing;
(e) passing any additional cracked gas and oil vapor formed in said lower reaction zone upwardly through the reactor and removing them from said upper reaction zone; and
(f) discharging residual pitch formed in said lower reaction zone from the bottom of said lower reaction zone.

4,443,329

CRYSTALLINE SILICA ZEOLITE-CONTAINING CATALYST AND HYDROCARBON HYDROPROCESSES UTILIZING THE SAME

Paul E. Eberly, Jr., and William E. Winter, Jr., both of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Division of Ser. No. 281,860, Jul. 9, 1981. This application Nov. 12, 1982, Ser. No. 440,868

Int. Cl.^{3} C10G *47/12*

U.S. Cl. 208—111 18 Claims

1. A hydroprocessing process which comprise contacting a hydrocarbonaceous feed at hydrocarbon hydroprocessing conditions with a catalyst comprising an effective amount of a crystalline silica zeolite having uniform pore diameters, a hydrogenation component and a non-zeolitic inorganic oxide support, said hydrogenation component being associated with said support.

4,443,330

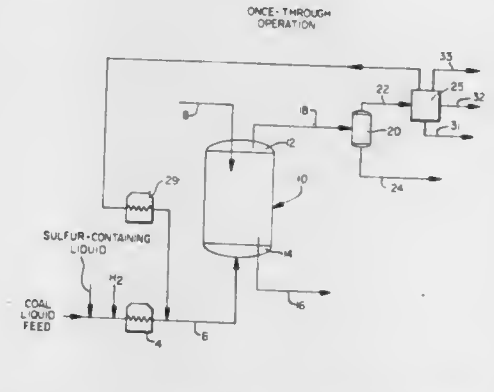
CATALYST ACTIVITY IN COAL LIQUID UPGRADING

Govanon Nongbri, Newton, Pa., assignor to HRI, Inc., Lawrenceville, N.J.

Filed Jun. 1, 1981, Ser. No. 269,113

Int. Cl.^{3} C10G *47/12*

U.S. Cl. 208—112 12 Claims



1. In a process of upgrading of coal liquid where the coal liquid is fed with hydrogen into a catalytic reactor wherein the catalyst is an alumina based catalyst of a Group VI, VII or VIII metal oxide, the improvement comprises feeding a sulfur-containing liquid having a boiling point range from about 250° F. to about 700° F. with the coal liquid being fed at a space velocity ranging from about 0.2 to about 1.5 cuft/hr/cuft of reactor volume and under a pressure ranging from about 1500 to about 3000 psig hydrogen partial pressure, said sulfur-containing liquid being fed in an amount of between about 0.2 and about 2.0 weight percent of said coal liquid feed.

4,443,331

PROCESS AND DEVICE FOR SEPARATING PARTICLES IN A FLUID ESPECIALLY FOR THE CLEANING OF THE SUSPENSIONS HANDLED IN THE PAPER INDUSTRY

Francois Julien Saint Amand, Grenoble, France, assignor to Centre Technique de l'Industries des Papiers Carton et Celluloses, Grenoble, France

Filed Mar. 20, 1981, Ser. No. 245,938

Claims priority, application France, Mar. 21, 1980, 80 07244

Int. Cl.^{3} B04B *1/08*

U.S. Cl. 209—211 13 Claims

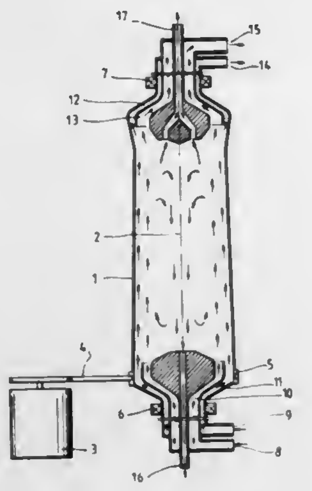
1. A process for selectively separating particles from a suspension which comprises:

rotating a separation chamber about a longitudinal axis such that when a fluid is inside the separation chamber it forms a free vortex in said chamber;
introducing a suspension into the separation chamber in a slightly oblique direction with respect to the longitudinal axis of the chamber and causing the suspension to flow

with an angular velocity slightly larger than the angular velocity of the wall;

controlling the flow of the suspension in the chamber, in order to maintain this excess of angular velocity so that the free vortex is comprised of multiple concentric layers having convergent conical shapes;

collecting the major part of the treated suspension from a zone near the periphery of the vortex and deviating the suspension towards the longitudinal axis; and



separately removing:

the heavy components from a zone near the sidewalls of the separation chamber;

the light components from a zone near the longitudinal axis of the chamber; and

an intermediate fraction from at least one intermediate zone between the removal zones for the heavy components and for the light components.

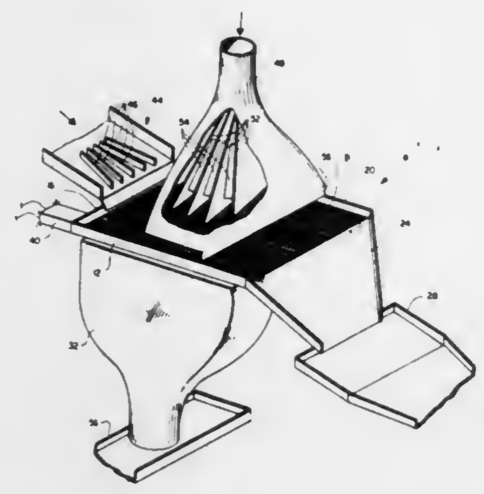
4,443,332
CROSS FLOW SOLID-TO-SOLID HEAT TRANSFER APPARATUS

Noel H. de Nevers, Salt Lake City, Utah, assignor to Oros Company, Salt Lake City, Utah

Division of Ser. No. 167,794, Jul. 14, 1980. This application Jul. 22, 1982, Ser. No. 400,913

Int. Cl.³ B07B *1/36*

U.S. Cl. 209—331 **4 Claims**



1. Crossflow heat exchange apparatus comprising:

a generally planar separator means formed with a plurality of apertures therein and oriented generally at an acute angle with the horizontal;

first means for introducing onto said separator means a first granular material whose particles being of a certain temperature are generally of a size too large to pass through said apertures, said first means including means for spreading said first material uniformly over the upper side of the separator means;

second means for introducing onto and distributing and spreading over the first material on the separator means a second granular material whose particles being of a temperature different from said certain temperature are generally of a size small enough to enable passage thereof through said apertures, wherein said second introducing means comprises a chute, a lower end of which is positioned over the separator means, and a rear side of which forms a barrier means which extends generally crosswise of the slope of the separator means to inhibit movement of the second material along the downward slope of the separator means; and

vibrator means coupled to said separator means for agitating the separator means so that the first material is caused to move toward the lower side of the separator means and the second material is caused to sift through the first material and through the apertures, the first and second granular materials thereby contacting one another to allow transfer of heat therebetween.

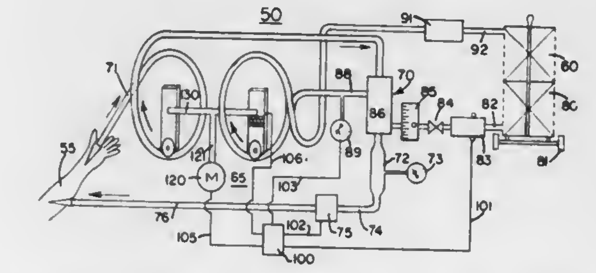
4,443,333
PORTABLE DIALYSIS SYSTEM AND PUMP THEREFOR

Sakharam D. Mahurkar, 1926 W. Harrison St., Chicago, Ill. 60612

Filed Sep. 24, 1981, Ser. No. 305,202

Int. Cl.³ B01D *31/00*

U.S. Cl. 210—87 **10 Claims**



6. A lightweight and portable system for dialysing blood wherein blood passes through an exchange station with the blood contacting one side of a semipermeable membrane and dialysate contacting the other side of the semipermeable membrane, said system comprising elastic tube means adapted to be connected to a blood source and to return blood thereto for conducting blood past a plurality of stations, a blood clot detector and an air bubble detector in communication with said blood tube means, elastic tube means adapted to be connected to a source of dialysate for conducting dialysate past a plurality of stations, means for measuring and regulating dialysate flow, pressure, temperature and conductivity, means for maintaining the dialysate at a lower pressure than the blood during passage through the exchange station, a single motor means having the output shaft thereof connected to at least two peristaltic pumps one for transporting blood in said elastic blood tube means and the other for transporting dialysate in said elastic dialysate tube means, mechanism associated with said motor means and said peristaltic pumps for maintaining the dialysate flow at about three times the blood flow, each of said peristaltic pumps having an inner arcuate bearing surface, said blood pump having at least two rollers associated with said inner arcuate bearing surface to trap said blood tube means therebetween, said dialysate pump having a single roller associated with said inner arcuate bearing surface to trap said dialysate tube means therebetween, actuation of said peristaltic blood pump causing smooth laminar flow of blood in said blood tube means due to said rollers, actuation of said peristaltic dialysate pump causing dialysate flow due to a vacuum generated by said single roller resulting in the deformation and return of said elastic dialysate tube means, and control mechanism operatively connected to the blood clot detector and the air bubble detector and to said motor means and to the dialysate flow, pressure, temperature and conductivity measuring means for selectively stopping the dialysate roller thereby halting movement of dialysate through the dialysate tube means and through the exchange station in response to pressure or temperature or conductivity measurements outside of a preselected range while maintaining blood flow and for simultaneously stopping all the rollers in response to a signal from either the blood leak detector or the air bubble detector to shut down the entire system and halt pumping.

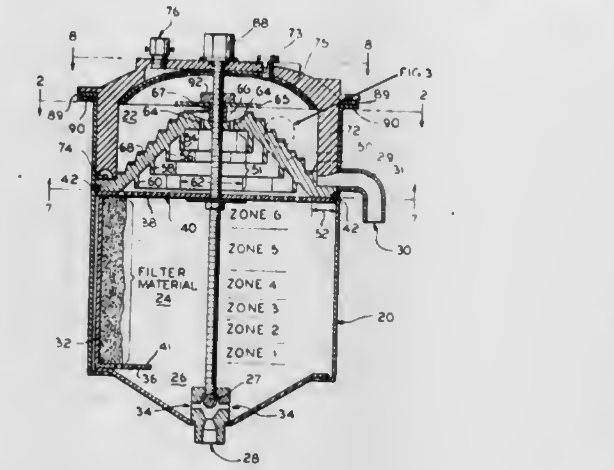
4,443,334
OIL RECLAMATION DEVICE

Lynn E. Shugarman, Costa Mesa; Alvin E. Shugarman, Santa Ana, both of Calif., and Michael G. Rothman, Chicago, Ill., assignors to Recon Ltd., Northbrook, Ill.

Filed Sep. 15, 1980, Ser. No. 186,838

Int. Cl.³ B01D *35/18, 3/28*

U.S. Cl. 210—168 **43 Claims**



1. A contaminated fluid-reclaiming device comprising a filter housing having an inlet distributed uniformly over the bottom of the housing for intake of contaminated fluid and an upper vaporization chamber having a clean fluid outlet at a location which is displaced downwardly from the top of the chamber and near the bottom of said vaporization chamber, an output of said filter housing communicating with and becoming an input of the vaporization chamber, filter material means positioned in said filter housing and spread uniformly over said distributed inlet for removing solid contaminants from fluid passing between the inlet and outlet, vaporization plate means enclosed within said chamber wherein the bottom of said vaporization plate has at least one dependent heat exchange and turbulence-causing means for increasing the temperature and uniformity of heat dispersion within said fluid when applied to said input, and means on the upper surface of said vaporization plate for providing at least one thin film ribbon of fluid flowing down said vaporization plate to said outlet, said thin film ribbon of fluid being conveyed by a channel means for continuously guiding and directing said ribbon downwardly along the upper surface of said vaporization plate for vaporization of fluid contaminants.

4,443,335
AERATION DEVICE

Michael Gullace, 3805 Dogwood St., NW., Uniontown, Ohio 44685

Filed Jun. 18, 1982, Ser. No. 389,769

Int. Cl.³ C02F *7/00*

U.S. Cl. 210—220 **1 Claim**

1. An aeration device for use in introducing air into a pool of water, said device comprising:

means for securing said device to a conventional water introduction threaded spout, protruding through a wall of an enclosure containing said pool of water;

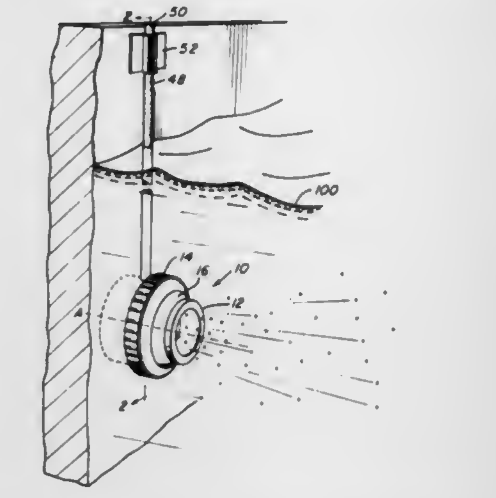
said means for securing said device including a threaded retaining ring;

said threaded retaining ring secures a spherical portion of said aeration device and said threaded spout;

water-directing means including a conduit for directing water from said spout through said spherical portion into said pool;

means within said conduit for creating a suction within said conduit as water passes as a flow stream into the pool;

means for responding to said suction by permitting the introduction of ambient air into said flow stream, thus, aerating the water entering the pool;



said means for responding comprises a channel creating fluid communication between said flow stream and the exterior of the device, and air means for connecting said channel to a source of ambient air; and

said air means is a tube having one end connected to said channel and the other end positioned above the water level of said pool, said tube secured to said wall of said enclosure on the same side of said wall through which said spout protrudes and connects with said aeration device.

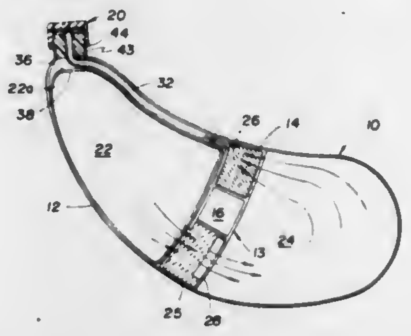
4,443,336
SURVIVAL AND WATER PURIFICATION SYSTEM

Mary L. Bennethum, 6790 Castle Dr., Birmingham, Mich. 48010

Filed Oct. 4, 1982, Ser. No. 432,682

Int. Cl.³ B01D *27/02*

U.S. Cl. 210—238 **10 Claims**



1. A portable filter unit, comprising;

an outer flexible container including a top;

an upper compartment of flexible material enclosed in said container;

a lower compartment of flexible material enclosed in said container;

a tube communicating between said lower compartment and the upper end of said container and including an upper end and a lower end;

a rigid filter means mounted in said container intermediate said compartment; and

a filter means including a pair of separate filter units, one communicating between said upper and lower compartments and the other between the lower compartment and the lower end of said tube, respectively.

4,443,337

BIOLOGICAL TREATMENT OF WASTE WATER

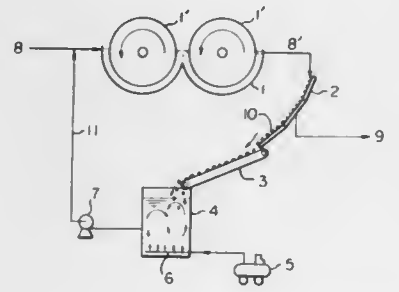
Mitsunobu Otani; Teruo Senda, and Michio Hirose, all of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation of Ser. No. 114,410, Jan. 22, 1980, abandoned, and a continuation of Ser. No. 943,769, Sep. 20, 1978. This application Feb. 25, 1982, Ser. No. 352,203

Claims priority, application Japan, Mar. 31, 1978, 53-36719

Int. Cl.^{3} C02F *3/05*

U.S. Cl. 210—602 **22 Claims**



1. A method for biologically purifying waste water containing biodegradable substances comprising the steps of:

a. contacting the waste water with microorganisms in a biological fixed film type reactor under conditions sufficient to degrade the biodegradable substances and to produce a sludge which contains a mixture of bacteria, protozoa, and large organisms;

b. separating and concentrating the sludge from the biologically treated waste water discharged from the reactor of step (a) in the presence of sufficient oxygen to maintain life in the protozoa and large organisms of the sludge by using a static inclined screen separator;

c. aerobically digesting the sludge discharged from the separator of step (b) in the presence of sufficient oxygen to maintain life in the protozoa and large organisms of the sludge by using a digester; and

d. returning substantially all of the digested sludge containing live protozoa and live organisms to the reactor of step (a) or to a line upstream thereof, whereby substantially all of the sludge is recycled.

4,443,338

CONVERSION OF PLUG FLOW AND COMPLETE MIX AERATION BASINS TO BARRIER OXIDATION DITCHES

John H. Reid, 7 Stansbury Ct., Fredericksburg, Va. 22401

Division of Ser. No. 75,412, Sep. 14, 1979, Pat. No. 4,394,268, which is a continuation-in-part of Ser. No. 28,383, Apr. 9, 1979, Pat. No. 4,278,547, which is a continuation-in-part of Ser. No. 848,705, Nov. 4, 1977, abandoned, which is a continuation-in-part of Ser. No. 649,995, Jan. 19, 1976, abandoned. This application Sep. 30, 1982, Ser. No. 429,165

Int. Cl.^{3} C02F *3/20*

U.S. Cl. 210—629 **8 Claims**

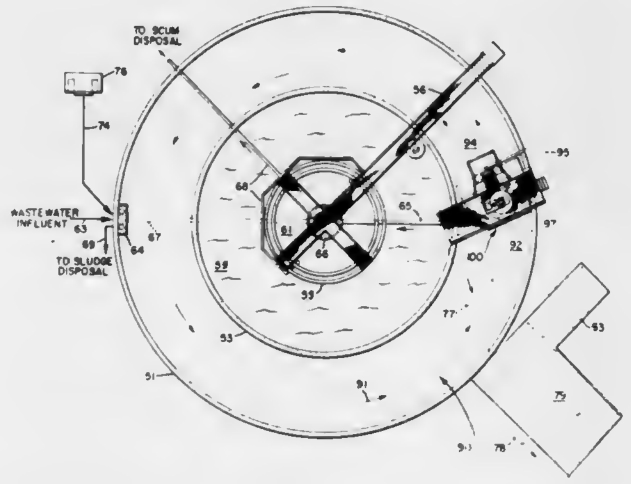
1. A method for converting a reactor basin on an activated sludge process from a plug-flow or complete mix configuration to an oxidation-ditch configuration, said method comprising:

A. forming an endless channel within said basin, said endless channel having parallel sides and a floor and being annular in shape;

B. placing a barriered circulator/aerator within said endless channel, said circulator/aerator comprising:

1. a barrier means for: (a) separating mixed liquor, within said channel and in the vicinity of said circulator/aerator, into upstream liquor within an intake channel and downstream liquor within a discharge channel, and (b) providing hydraulic support to said downstream liquor,
2. a flow passage which connects said upstream liquor to said downstream liquor,
3. a pump means for propelling up to all of said upstream liquor through said flow passage from said intake channel to said discharge channel, and
4. an aeration means for dispersing an oxygen-containing gas into said upstream liquor to form freshly aerated mixed liquor, said aeration means being disposed to contact said upstream liquor after the upstream liquor has entered said flow passage and before the upstream liquor has become said downstream liquor, and

C. selectively and independently operating said pump means and said aeration means in order to:



1. prevent backmixing of said freshly aerated mixed liquor to said aeration means;
2. homogeneously aerate said upstream liquor being pumped through said flow passage;
3. selectively adjust the lengths of an aerobic zone and an anoxic zone which are formed in said endless channel, downstream of said barrier means; and
4. translationally propel said freshly aerated mixed liquor through said aerobic zone and through said anoxic zone for a selected distance, wherein said endless channel is annular in shape.

4,443,339

COMPOSITE MATERIALS

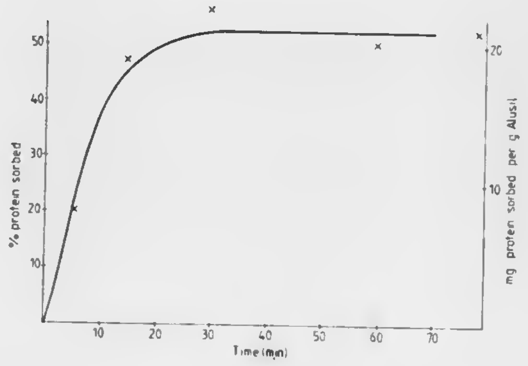
Alan Rosevear, Uffington, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Sep. 3, 1981, Ser. No. 299,294

Claims priority, application United Kingdom, Sep. 11, 1980, 8029342

Int. Cl.^{3} B01D *15/08*

U.S. Cl. 210—635 **13 Claims**



1. A method for the selective retention of chemical species from a fluid substance containing said chemical species which comprises contacting a fluid containing chemical species to be selectively retained with an unscored composite material for the selective retention of chemical species from a fluid under conditions whereby the chemical species is selectively removed and retained by the composite material, said unscored composite material being prepared by a method comprising applying a gel precursor to a porous support material in sheet form, said gel precursor containing insoluble particles of active material capable of selectively retaining the chemical species, and gelling the gel precursor to form an unscored composite material comprising the support material, a permeable gel retained on both sides of the support material so that the latter is encased by and enmeshed by, permeable gel having said active material retained and distributed therein.

4,443,340

CONTROL OF IRON INDUCED FOULING IN WATER SYSTEMS

Roger C. May, Glenside, and Frank C. Sessa, Wyncote, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Continuation-in-part of Ser. No. 310,163, Oct. 9, 1981, Pat. No. 4,387,027. This application May 24, 1983, Ser. No. 497,612

The portion of the term of this patent subsequent to Jun. 7, 2000, has been disclaimed.

Int. Cl.^{3} C02F *5/12*

U.S. Cl. 210—697 **25 Claims**

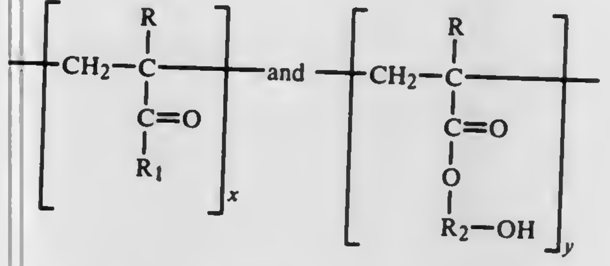
1. A method of inhibiting corrosion and controlling deposition in an aqueous medium contained in a cooling water system of the type comprising iron species present in said medium in a deposit forming amount and under deposit forming conditions, said method being capable of providing for the formation of a protective passive oxide film on metallic surfaces in contact with said aqueous medium, said medium being further characterized by the absence of an organo-phosphonic acid compound therein, wherein said method consists essentially of:

(i) assuring that the pH of said aqueous medium is 5.5 or above;

(ii) assuring that the aqueous medium contains a calcium or other appropriate ion concentration selected from the group consisting of zinc, nickel and chromium and mixtures thereof; and

(iii) adding to said aqueous medium

(a) a water-soluble polymer comprising moieties derived from an acrylic acid or water-soluble salt thereof and moieties of an hydroxylated lower alkyl acrylate, wherein the moieties of the polymer have the following formulas:



$$\left[\begin{array}{c} R \\ | \\ -CH_2-C- \\ | \\ C=O \\ | \\ R_1 \end{array}\right]_x \text{and} \left[\begin{array}{c} R \\ | \\ -CH_2-C- \\ | \\ C=O \\ | \\ O \\ | \\ R_2-OH \end{array}\right]_y$$

wherein R is hydrogen or a lower alkyl of from 1 to 3 carbon atoms; R_1 is OH, OM or NH_2 where M is a water-soluble cation; R_2 is a lower alkyl of from about 2 to 6 carbon atoms and the mole ratio of x:y is 34:1 to 1:4;

(b) a water-soluble orthophosphate compound; said polymer, together with the orthophosphate compound, being effective to promote the formation of said metal oxide film with no attendant deposition of said iron, and the amount of (a) and (b) being added being sufficient to provide a substantially scale-free protective passive oxide film on the metallic surface, and

(c) from about 0.4 to 450 parts per million parts of said aqueous medium of a topping agent selected from the group consisting of effective water soluble aminocarboxylic acids, lignosulfonates, citric acid, and tannic acid, and water soluble salt forms and mixtures thereof.

4,443,341

PROCESS AND APPARATUS FOR REMOVAL OF SOLIDS FROM LIQUIDS

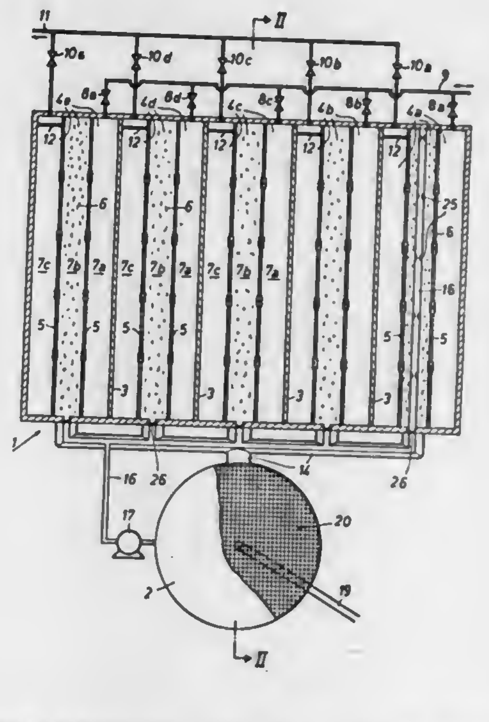
Michael A. Miller, New Fairfield, Conn., and Richard P. Johansen, Chappaqua, N.Y., assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Feb. 26, 1982, Ser. No. 352,976

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1981, 3107639

Int. Cl.^{3} B01D *23/10*

U.S. Cl. 210—702 **29 Claims**



1. In a process for the removal of solids from liquids comprising passing a solids-containing liquid horizontally through a filter bed vertically disposed in a chamber, and wherein the filter bed is regenerated after absorption of the solids, the improvement comprising the sequential steps of dividing the liquid stream into at least two partial streams, conducting each partial stream through a respective filter bed arranged in a chamber, with each filter bed comprising discontinuous flexible polyurethane particles, interrupting the liquid feed to and the liquid discharge from the respective chamber after the polyurethane particles have been substantially completely loaded with the solids, regenerating the polyurethane particles by at least one of agitating and gas treating said polyurethane particles to cause the solids adhering thereto to be transferred into the remaining liquid volume of the chamber, and discharging the remaining liquid volume together with the solids, whereby said polyurethane particles are regenerated.

4,443,342

TREATMENT OF WASTE WATER CONTAINING ORGANIC SULPHUR COMPOUNDS

Georges Stas, Ottignies, Belgium, and Christian Biver, L-Hagen, Luxembourg, assignors to INTEROX (Societe Anonyme), Brussels, Belgium

Filed Mar. 31, 1982, Ser. No. 363,950

Claims priority, application France, Mar. 31, 1981, 81 06589

Int. Cl.^{3} C02F *1/72*

U.S. Cl. 210—759 **6 Claims**

1. Process for the treatment of waste water containing dialkyl disulphides, by catalytic oxidation of these compounds by means of a peroxide compound, in an aqueous medium, wherein divalent copper ions are used as the catalyst, the medium is kept at a pH of 2.5 to below 6.5, from 0.001 to 1 gram of copper ions is used per liter of medium, and the peroxide compound is used in an amount such that the ratio of the amount of peroxide compound, expressed in mol equivalents of 100% strength H_2O_2, to the amount dialkyl disulphides, expressed in mol equivalents of H_2S, is 0.5 to 10.

4,443,343

METHOD AND APPARATUS FOR MANUFACTURING PLANAR FIBER WEBS FROM SHORT, ORIENTED REINFORCEMENT FIBERS OR FIBER BLENDS

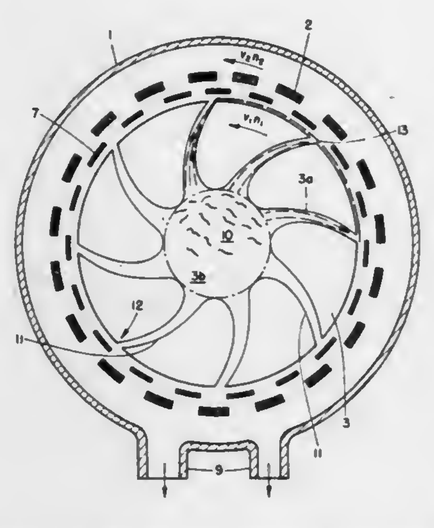
Herbert Merz, Munich, Fed. Rep. of Germany, assignor to Motoren- und Turbinen-Union Munich GmbH, Munich, Fed. Rep. of Germany

Filed Jul. 29, 1982, Ser. No. 402,905

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1981, 3131643

Int. Cl.^{3} B01D *33/02*

U.S. Cl. 210—768 **15 Claims**



1. In a method for the manufacture of planar fiber webs of short, oriented reinforcing fibers or fiber blends, including converting the reinforcing fibers or fiber blends into a slurry through the addition of a slurry liquid,; passing the slurry through an orientation section, filtering off the liquid; deposting the fibers in an oriented condition on a filter surface; the improvement comprising conveying the slurry fibers or fiber blends at a central location to the inlets of essentially laminar-flow, hydrodynamic orientation sections arranged in a star-shaped configuration and rotating about a central axis, said orientation sections each comprising a substantially radially oriented inlet and a substantially tangentially oriented outlet, and wherein said filter surface which at least partially encompasses the orientation section rotates concentrically with the orientation section at a slightly different rotational speed.

4,443,344

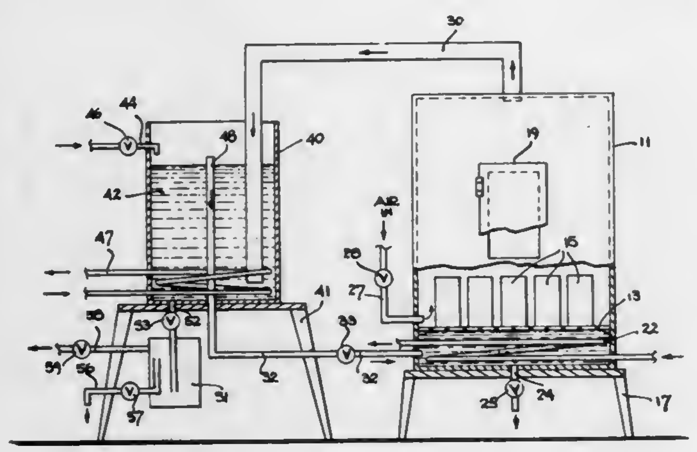
METHOD FOR RECOVERING SOLVENT

John O. Lewis, 732 The Strand, Hermosa Beach, Calif. 90254

Continuation-in-part of Ser. No. 276,950, Jun. 24, 1981, abandoned. This application Apr. 19, 1983, Ser. No. 486,348

Int. Cl.^{3} B01D *27/12*

U.S. Cl. 210—774 **12 Claims**



1. A method for recovering a solvent which has a weight different from that of water from a filter cartridge containing said solvent laden with foreign matter comprising the steps of

placing said cartridge in a first tank having a heating device therein,

at least partially filling a second tank with water,

feeding water from said second tank to said first tank to the area of said heating device but so as not to immerse said cartridge,

raising the temperature of said heating device sufficiently to cause at least a portion of the water in the first tank to be converted to vapor, the cartridge being saturated with vapor such that the vapor mixes with the solvent to form a water-solvent vapor mixture,

feeding the water-solvent vapor mixture from said first tank to said second tank,

condensing the water-solvent vapor mixture in said second tank to water and solvent in liquid form, the heavier of the liquids gravitating to the bottom of the second tank and thus being separated from the lighter liquid, and

removing the solvent from the second tank.

4,443,345

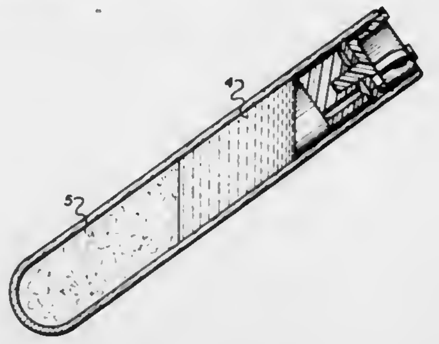
SERUM PREPARATOR

John R. Wells, 4372 Keystone Ave., Culver City, Calif. 90230

Filed Jun. 28, 1982, Ser. No. 393,037

Int. Cl.^{3} B01D *21/26*

U.S. Cl. 210—782 **16 Claims**



15. A method for separating serum from blood, for filtering the separated serum, and for partitioning the serum filtrate from unfiltered blood, the method using a tube for containing the blood and a serum preparator for filtering and partitioning the blood, the serum preparator having a density approximately isopycnic with blood and having,

a piston adapted to insert into the tube and to sediment within the tube and defining an aperture for the passage of serum,

an annular seal betweem the piston and the tube for preventing blow-by of serum around the piston during sedimentation and for forcing displaced serum to pass through the aperture,

a filter covering the aperture for filtering particulates from serum passing through the aperture, the filter sealed to the piston for preventing serum blow-by around the filter, and

a means for restraining the sedimentation of the piston, the restraining means attached to the piston, and including a detent attached to the piston and contacting the tube for positioning and holding the piston above the serum in the tube above the blood and for releasing the piston for travel down the bore of the tube,

the piston, annular seal, and filter acting in combination to obstruct the passage of particulates across the serum preparator,

the method comprising steps for,

inserting the serum preparator into the tube containing the blood, for

loading the assembled tube and serum preparator into a centrifuge rotor, for

first spinning the loaded assembly in the rotor at a first speed sufficient to separate the serum and cellular components of blood and less than sufficient to overpower the restraining means so as to restrain the sedimentation of the serum preparator and to enable the cellular components of blood to sediment sooner to the cellular pellet than the serum preparator, and for

second spinning the loaded assembly in the rotor at a second speed sufficient to overcome the restraining means so as to enable the serum preparator to sediment within the tube and to cause displaced serum to pass through the aperture and across the filter, thereby filtering the separated serum,

said second spinning continued until the serum preparator has reached a stop position and established a partition thereat,

said inserting of the serum preparator into the tube establishing a contact between the restraining means and the tube, thereby causing the serum preparator to be held at a catch position within the tube,

said second spinning continuing until the sedimentation of the serum preparator effectively reaches the stop position at isopycnic equilibrium near the interface between the separated serum and the cellular pellet and establishes a partition thereat for preventing contamination of the serum filtrate by the cellular pellet during storage and decanting.

4,443,346

METHOD OF CLEANING FILTER ELEMENTS

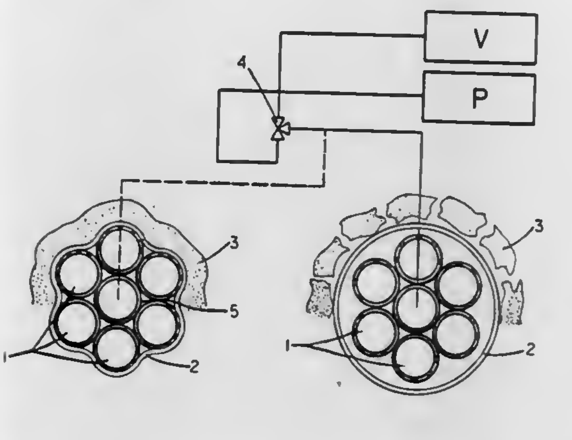
Hans Müller, Erlenbac, Switzerland, assignor to DrM, Dr. Mueller, AG, Maennedorf, Switzerland

Filed Aug. 30, 1982, Ser. No. 412,857

Claims priority, application Switzerland, Sep.. 2, 1981, 5637/81

Int. Cl.^{3} B01D *29/38*

U.S. Cl. 210—785 **2 Claims**



1. A method of cleaning alluvial filters of the type including candle-like filter elements having a filter cloth on which a filter cake is formed during filtration and a filtration conduit through which a cleaning fluid is supplied to said filter elements, the method comprising applying pressure and vacuum in the alternating fashion to said filtration conduit after a filtration process has been completed whereby pressure fluctuations are generated under frequencies increasing up to vibrations which cause an alternating expansion of the filter cloth of the filter elements and the filter cake is separated from the filter cloth.

4,443,347

PROPPANT CHARGE AND METHOD

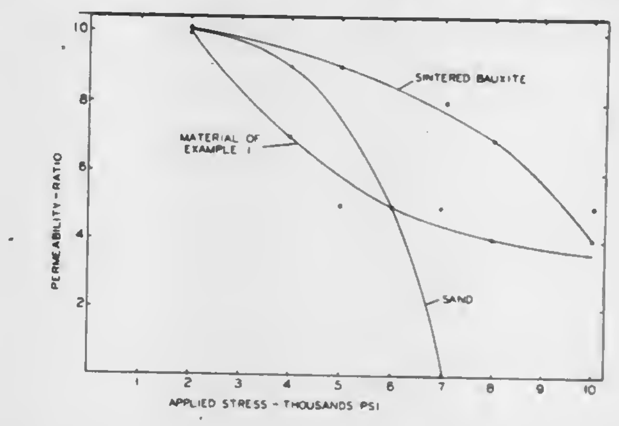
David R. Underdown, Alvin, and O. Howard Glaze, Kingwood, both of Tex., assignors to Baker Oil Tools, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 327,002, Dec. 3, 1981. This application May 13, 1983, Ser. No. 494,548

Int. Cl.^{3} C09K *3/00;* **E21B** *43/267*

U.S. Cl. 252—8.55 R **1 Claim**

1. A method for propping a fracture in a subterranean formation which comprises injecting into a subterranean well a suspension in a carrier fluid of a pre-cured proppant charge, said pre-cured proppant charge being pre-cured prior to injection into the subterranean well, said pre-cured proppant charge comprising, prior to injection of the pre-cured proppant charge into said well, resin coated sand particles most of which are composed of a single substrate particle with a thermoset resite coating thereon, the resite coating being one which, when it is the resin coating on sand particles of a proppant charge, produces a charge wherein at least one of: (a) the Conductivity Ratio thereof, throughout a given closure stress range, is greater than that of a charge of the uncoated sand particles having substantially the same particle size distribution; or (b) the Permeability Ratio thereof, throughout the stress range of about 2,000 to 10,000 p.s.i. is at least about 30 percent that of a sintered bauxite charge of substantially the same particle size, the resin for said coating being at least one of: (1) a resole; or (2) a novolac.



4,443,348

PROTECTIVE LUBRICANT COMPOSITION

John H. Wright, Troy, and Alfred H. Smith, Jr., Boston Lake, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Jul. 13, 1982, Ser. No. 397,811

Int. Cl.^{3} C10M *1/20, 1/54*

U.S. Cl. 252—37.2 **16 Claims**

1. A protective lubricating composition comprising mineral seal oil, an amount of a fatty acid soap of a metal selected from the group consisting of lithium, sodium, barium, aluminum and calcium sufficient to gel said mineral seal oil, an amount of mineral spirits effective to disperse said fatty acid soap, and an amount of a metal naphthenate selected from the group consisting of naphthenates of magnesium, calcium, cobalt, cadmium, barium, lead and zinc sufficient to maintain the composition in fluid form in the presence of said fatty acid soap.

4,443,349

FLUORINATED ALIPHATIC POLYALKYLETHER LUBRICANT WITH AN ADDITIVE COMPOSED OF AN AROMATIC PHOSPHINE SUBSTITUTED WITH PERFLUOROALKYLETHER GROUPS

Carl E. Snyder, Jr., Trotwood, and Christ Tamborski, Dayton, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 14, 1982, Ser. No. 417,931

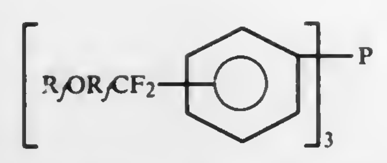
Int. Cl.^{3} C10M *1/30, 1/44*

U.S. Cl. 252—49.9 **10 Claims**

1. A lubricant composition comprising (1) a base fluid consisting essentially of a fluorinated polymer having the formula

$$F[CF(CF_3)CF_2O]_nCHFCF_3$$

wherein n is an integer indicating the degree of polymerization and (2) a corrosion inhibiting amount of an aromatic phosphine with perfluorinated polyalkyether substituents having the formula



wherein R_fOR_f— is a perfluoroalkylether group containing at least one ether linkage.

4,443,350

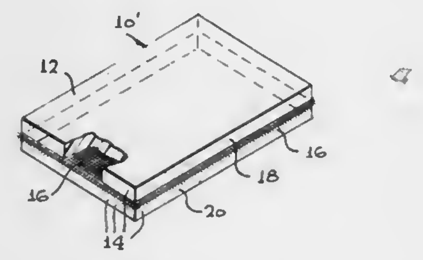
METHOD FOR NONDESTRUCTIVE MAGNETIC INSPECTION AND RUBBER-LIKE MAGNETIC RECORDING MEDIUM EMPLOYED THEREIN

Orlando G. Molina, Westminster, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 932,893, Aug. 11, 1978, abandoned. This application Feb. 1, 1979, Ser. No. 8,316

Int. Cl.^{3} H01F *1/117*

U.S. Cl. 252—62.54 **16 Claims**



1. A magnetizable recording medium for magnetic inspection of an object comprising a pad of a rubber-like resilient matrix formed of a polymer having dispersed therein Fe_2O_3 magnetic oxide particles having a high magnetic remanent flux density of at least about 1,850 gauss and a high magnetic coercive force of at least about 280 oersteds, and wherein said Fe_2O_3 particles are non-migrating in said rubber-like resilient material, employing about 4 to about 50% of said magnetic oxide particles by weight of said matrix, said Fe_2O_3 magnetic oxide particles permitting obtaining multiple magnetic recordings of cracks at an angle to each other or essentially parallel to each other in the recording medium without erasing the initial crack recording.

4,443,351

SILICONE HYDRAULIC FLUIDS AND ADDITIVE CONCENTRATES THEREFOR

Joseph W. Keil, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Nov. 1, 1982, Ser. No. 437,986

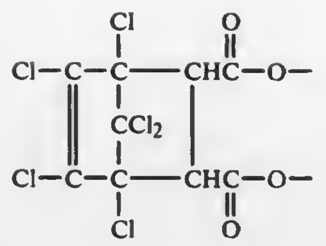
Int. Cl.^{3} C10M *3/44, 1/50*

U.S. Cl. 252—75 **22 Claims**

1. A composition consisting essentially of

(A) 50 to 96 parts by weight of a polydiorganosiloxane having a viscosity of from about 1.00×10^{-5} m^2/second to about 1.00×10^{-4} m^2/second at 25° C., said polydiorganosiloxane having the formula $R'R_2SiO(Me_2SiO)_x(MeRSiO)_ySiR_2R'$, wherein Me represents the methyl radical, each R represents a monovalent radical selected from the group consisting of hydrocarbon radicals containing from 1 to 6 carbon atoms, and halogenated hydrocarbon radicals containing from 1 to 6 carbon atoms, each R' represents a radical selected from the group consisting of R radicals, the hydride radical, and the hydroxy radical, x has an average value of 8 or more and y has an average value of from 0 to about 2,

(B) 2.5 to 40 parts by weight of a chlorendate diester having the formula $R''O_2CQCO_2R''$, wherein —O_2CQCO_2— represents the chlorendate residue,



and each R" represents a radical selected from the group consisting of alkyl radicals containing from 4 to 10 carbon atoms and the tetrahydrofurfuryl radical,

(C) 0.5 to 20 parts by weight of a lubricant compound selected from the group consisting of N,N-dialkyldithiocarbamates of lead and antimony, and dialkylphosphorodithioates of lead and antimony, and

(D) 1 to 10 parts by weight of a block copolymer comprising from about 65% by weight to about 90% by weight polydimethylsiloxane blocks, and from about 10% by weight to about 35% by weight polybutadiene or hydrogenated polybutadiene blocks, the total parts of (A) plus (B) plus (C) plus (D) being 100 parts by weight.

4,443,352

SILICATE-FREE BLEACHING AND LAUNDERING COMPOSITION

Guy Broze, Grace-Hollogne, and Leopold Laitem, Orp-le-Grand, both of Belgium, assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Mar. 4, 1982, Ser. No. 354,860

Int. Cl.^{3} C11D *3/395*

U.S. Cl. 252—94 **9 Claims**

1. A process for bleaching which comprises contacting the stained and/or soiled material to be bleached with an aqueous solution of a granular bleaching detergent composition comprising:

(a) a bleaching agent comprising a peroxyacid compound and/or a water-soluble salt thereof; and

(b) at least one surface active agent selected from the group consisting of anionic, cationic, nonionic, ampholytic and zwitterionic detergents; said bleaching detergent composition being substantially free of silicate compounds.

4,443,353

AQUEOUS BLEACHING AGENT WITH CLEANING ACTION

Nicolaas A. I. Van Paassen, Bodegraven, Netherlands, assignor to Chem-Y Fabriek Van Chemische Producten B.V., Bodegraven, Netherlands

Filed Aug. 3, 1982, Ser. No. 404,652

Claims priority, application Netherlands, Aug. 15, 1981, 8103829

Int. Cl.^{3} C11D *1/06, 3/395, 17/08*

U.S. Cl. 252—103 **9 Claims**

1. An aqueous bleaching agent having increased viscosity and having cleaning action composed of an alkali metal hypochlorite, at least one surfactant and an alkali metal hydroxide wherein 0.1 to 30 grams of said surfactant are present per 100 grams of said alkali metal hypochlorite and said surfactant is selected from compounds having the general formula R—-$(OCH_2CH_2)_xOCH_2COOM$, wherein said formula R represents an alkyl group having from 8 to 18 carbon atoms, x is a number representing a narrow distribution of the average number of oxyethylene units and having an average value of 0.5 to 8 and M represents an alkali metal atom, wherein said compounds having an narrow distribution of the average number of oxyethylene units are derived from an ethoxylated alcohol obtained by reacting an alcohol with ethylene oxide under the influence of a Friedel-Crafts type acid catalyst, said alcohol having the formula ROH wherein R represents an alkyl group having from 8 to 18 carbon atoms.

4,443,354

SORBENT MATERIAL FOR REDUCING FORMALDEHYDE EMISSION

Gilbert L. Eian, White Bear Lake, Minn., assignor to Minnesota Minning and Manufacturing Company, St. Paul, Minn.

Filed Mar. 26, 1982, Ser. No. 362,309

Int. Cl.^{3} B01J *20/32, 19/04;* B01D *53/14*

U.S. Cl. 252—190 **10 Claims**

1. Granular sorbent material for removal of formaldehyde from ambient air comprising a high surface area solid support impregnated with a water soluble, substantially non-volatile impregnating agent containing a sufficiently reactive primary or secondary substituted trivalent nitrogen site bearing zero or two carbonyl substituents attached directly to the nitrogen site and having equivalent weight of said reactive nitrogen site of less than about 400.

4,443,355

DETERGENT COMPOSITION

Moriyasu Murata, Chiba; Akira Suzuki, Funabashi; Atsuo Nakae, Saitama, and Susumu Ito, Tochigi, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Jun. 23, 1983, Ser. No. 507,426

Claims priority, application Japan, Jun. 25, 1982, 57-109473

Int. Cl.^{3} C11D *3/386;* C12N *9/42*

U.S. Cl. 252—174.12 **2 Claims**

1. A detergent composition which comprises 0.01 to 70 percent by weight of a cellulase produced by alkalophilic bacteria of the genus of Cellulosmonas and the balance of cleaning agents.

4,443,356

LIQUID SCINTILLATION COMPOSITION FOR LOW VOLUME BIOLOGICAL SPECIMENS

Arjun Mallik, Pequannock, and Harold Edelstein, Fair Lawn, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Sep. 16, 1982, Ser. No. 418,756

Int. Cl.^{3} C09K *11/06;* G01T *1/204*

U.S. Cl. 252—301.17 **9 Claims**

1. A liquid scintillation composition comprising:

a. an aromatic liquid capable of capturing energy from radiation;

b. at least one fluor compound;

c. a mixture of anionic and nonionic surfactants,

said nonionic surfactants comprising octylphenoxy polyethoxy ethanol and nonylphenoxy polyethoxy ethanol and the anionic surfactants comprise dioctyl sulfosuccinate and monosodium ethoxylated alcohol half ester of sulfosuccinic acid.

4,443,357

HYDROPHOBIC SILICA OR SILICATE, COMPOSITIONS CONTAINING THE SAME AND METHODS FOR MAKING AND USING THE SAME

James E. Maloney, Eagan, and Thomas R. Oakes, Stillwater, both of Minn., assignors to Economics Laboratory, Inc., St. Paul, Minn.

Filed Jan. 12, 1981, Ser. No. 224,149

Int. Cl.^{3} B01D *19/04;* C09C *3/08*

U.S. Cl. 252—321 **16 Claims**

1. A substantially hydrophobic, particulate, porous or agglomerated silica or silicate containing at least about 40 mole-% SiO_2 as silica or silicate, the hydrophobic particulate silica or silicate being the reaction product of the components consisting essentially of:

(a) a hydrophilic, particulate, porous or agglomerated silica or silicate containing at least about 40 mole-% SiO_2 as silica or silicate, the porous or agglomerated particles of which have an average particle size larger than 0.1 micrometers but small enough to be generally nonsettling, and

(b) a hydrophobic aliphatic primary or secondary alcohol substantially free of hydrophilic groups, said reactants (a) and (b) having been heated together in admixture to a temperature above 100° C. until the reactants interact to form said reaction product wherein the ratio of silica or silicate to alcohol comprises 0.25:1 to 20:1.

4,443,358

NONCRYSTALLIZING AQUEOUS SOLUTIONS OF METAL SALTS OF NAPHTHALENE SULFONIC ACID-FORMALDEHYDE CONDENSATION PRODUCTS

Robert M. Fry, Raynham, Mass., assignor to ICI Americas Inc., Wilmington, Del.

Filed Nov. 15, 1982, Ser. No. 441,780

Int. Cl.^{3} B01F *17/12;* C04B *7/35*

U.S. Cl. 252—353 **12 Claims**

1. An aqueous solution of a dispersing composition substantially free of precipitate at temperatures of 0°-5° C. which comprises 30-60% of a mixed salt blend of a high molecular weight condensation product of naphthalene sulfonic acid and formaldehyde having a general formula selected from at least two of the following:

M
SO_3—(NAPHTH)—[CH_2(NAPHTH)—SO_3M-
]$_n$—H I

X
SO_3—(NAPHTH)—[CH_2—(NAPHTH)—SO_3S]-
$_n$—H II

M
SO_3—(NAPHTH)—[CH_2—(NAPHTH)—SO_3X-
]$_n$—H III

wherein M and X are different and interchangeably selected from at least two ions selected from the group consisting of Na, Li, K and NH_4; (NAPHTH) is a naphthalene radical; and n has a value of 5-20, and a minor amount of sulfate salts of said ions wherein the mol ratio of M/X ranges from 1/3 to 3/1.

5. An aqueous solution of a dispersing composition substantially free of precipitate at temperatures of 0°-5° C. which compises 30-60% of a mixed salt blend of a high molecular weight condensation product of naphthalene sulfonic acid and formaldehyde having a general formula selected from at least two of the following:

MSO_3—(NAPHTH)—[CH_2—(NAPHTH)—SO_3M-
]$_n$—H I

XSO_3—(NAPHTH)—[CH_2—(NAPHTH)—SO_3X-
]$_n$—H II

MSO_3—(NAPHTH)—[CH_2—(NAPHTH)—SO_3X-
]$_n$—H III

wherein M and X are different and interchangeably selected from at least two ions selected from the group consisting of Na, K and NH_4; (NAPHTH) is a naphthalene radical; and n has a value of 5-20, and a minor amount of sulfate salts of said ions wherein the mol ratio of M/X ranges from 1/3 to 3/1.

4,443,359

FOAM CONTROL COMPOSITIONS

Hiroshi Shimizu; Yoshisama Fukano, and Minoru Yoshizawa, all of Chiba, Japan, assignors to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Apr. 9, 1982, Ser. No. 367,185

Int. Cl.^{3} B01D *19/04*

U.S. Cl. 252—358 **3 Claims**

1. A composition to control foaming consisting essentially of

(A) 100 parts by weight of an organopolysiloxane having

1. at least one terminal group selected from the group consisting of alkoxy and hydroxyl groups, and

2. a viscosity range of 10 to 100,000 centistokes at 25° C.,

(B) 0.1 to 50 parts by weight per 100 parts by weight of Component (A) of an organic silicon compound, having the general formula R_2SiZ_2, wherein R is an unsubstituted or substituted monovalent hydrocarbon group, and Z is a hydrolyzable group containing nitrogen, and

(C) 1 to 50 parts by weight per 100 parts by weight Component (A) of a silica.

4,443,360

OIL-SOLUBLE ZINC CYCLIC HYDROCARBYL DITHIOPHOSPHATE-SUCCINIMIDE COMPLEX AND LUBRICATING OIL COMPOSITIONS CONTAINING SAME

Elaine S. Yamaguchi, El Cerrito, and Thomas V. Liston, San Rafael, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

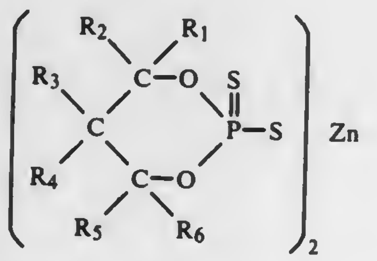
Filed Apr. 19, 1982, Ser. No. 369,706

Int. Cl.^{3} C10M *1/48*

U.S. Cl. 252—46.7 **12 Claims**

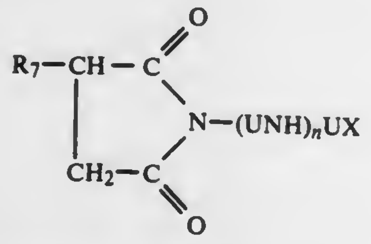
1. A lubricating oil composition comprising a major amount of an oil of lubricating viscosity and a minor proportion sufficient to inhibit oxidation and corrosion of a complex prepared by reacting:

(a) a zinc salt of a cyclic hydrocarbyl dithiophosphoric acid of the formula:

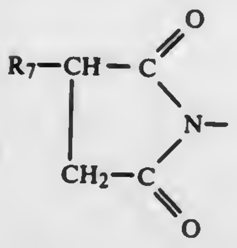


wherein R_1, R_2, R_3, R_4, R_5 and R_6 are the same or different and each is hydrogen or alkyl of 1 to 3 carbon atoms with the proviso that at least one of R_1 through R_6 is alkyl of from 1 to 3 carbon atoms; with

(b) an oil-soluble alkenyl or alkyl mono- or bis-succinimide of the formula:



wherein X is amino or a group of the formula:

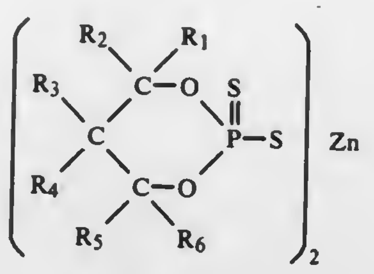


R_7 is an alkenyl or alkyl group containing from about 20 to 300 carbon atoms; U is alkylene containing 2 to 6 carbon atoms; and n is an integer of from 0 to 6;

wherein the weight ratio of (b) to (a) is in the range of from 3:1 to 25:1.

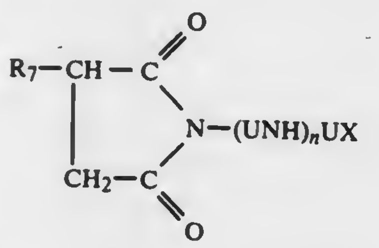
6. A lubricating oil concentrate comprising 10 percent to 90 percent by weight of an oil of lubricating viscosity and from about 10 percent to about 90 percent by weight of an oxidation and corrosion inhibiting complex prepared by reacting:

(a) a zinc salt of a cyclic dithiophosphoric acid of the formula:

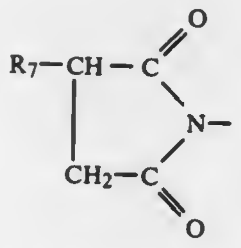


wherein R_1, R_2, R_3, R_4, R_5 and R_6 are the same or different and each is hydrogen or alkyl of 1 to 3 carbon atoms with the proviso that at least one of R_1 through R_6 is alkyl of from 1 to 3 carbon atoms; with

(b) an oil-soluble alkenyl or alkyl mono- or bis-succinimide of the formula:



wherein X is amino or a group of the formula:

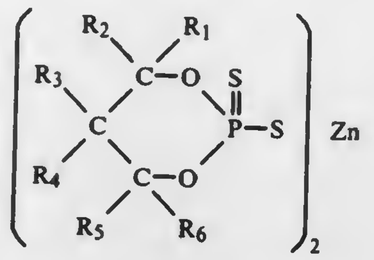


R_7 is an alkenyl or alkyl group containing from about 20 to 300 carbon atoms; U is alkylene containing 2 to 6 carbon atoms; and n is an integer of from 0 to 6;

wherein the weight ratio of (b) to (a) is in the range of from 3:1 to 25:1.

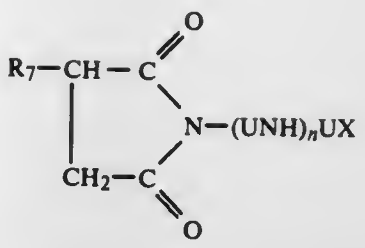
9. A composition comprising a complex prepared by reacting:

(a) a zinc salt of a cyclic dithiophosphoric acid of the formula:

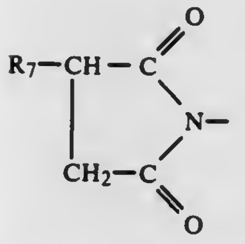


wherein R_1, R_2, R_3, R_4, R_5 and R_6 are the same or different and each is hydrogen or alkyl of 1 to 3 carbon atoms with the proviso that at least one of R_1 through R_6 is alkyl of from 1 to 3 carbon atoms; with

(b) an oil-soluble alkenyl or alkyl mono- or bis-succinimide of the formula:



wherein X is amino or a group of the formula:



R_7 is an alkenyl or alkyl group containing from about 20 to 300 carbon atoms; U is alkylene containing 2 to 6 carbon atoms; and n is an integer of from 0 to 6;

wherein the weight ratio of (b) to (a) is in the range of from 3:1 to 25:1.

4,443,361

SILICON CARBIDE RESISTANCE ELEMENT

Frank J. Hierholzer, Jr., Florissant, and Gerald L. Shelton, St. Louis, both of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Division of Ser. No. 236,377, Feb. 20, 1981. This application Apr. 1, 1983, Ser. No. 481,448

Int. Cl.^{3} H01B *1/04*

U.S. Cl. 252—516 **1 Claim**

1. A silicon carbide resistance element comprising an elongated silicon carbide shape having a coating of silicon carbide on it denser than its substrate, and a coating of silicon nitride on said coating of silicon carbide, said silcon carbide shape without the silicon nitride coating having at least one hot spot along its length when current is sent through it, said shape is doped with nitrogen, and doping of the shape at said hot spot is deeper than doping at areas of said shape outside said hot spot, whereby variations in the heating of parts of the doped shape with the passage of current therethrough are minimized.

4,443,362

DETERGENT COMPOUNDS AND COMPOSITIONS

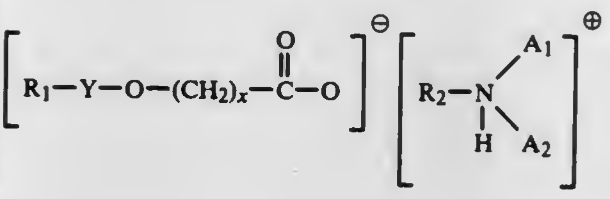
Jacob J. Guth, Upper Black Eddy, Pa., and Robert J. Verdicchio, Succasunna, N.J., assignors to Johnson & Johnson Baby Products Company, New Brunswick, N.J.

Filed Jun. 29, 1981, Ser. No. 278,284

Int. Cl.^{3} C11D *1/88;* C07C *101/04, 101/20*

U.S. Cl. 252—545 **10 Claims**

1. A complex of the formula

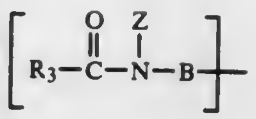


$$\left[R_1{-}Y{-}O{-}(CH_2)_x{-}\overset{\overset{\displaystyle O}{\|}}{C}{-}O\right]^{\ominus}\left[R_2{-}\underset{\underset{\displaystyle H}{|}}{N}\begin{matrix}{}^{\diagup A_1}\\{}_{\diagdown A_2}\end{matrix}\right]^{\oplus}$$

wherein

R_1 is alkyl or substituted alkyl containing from about 6 to 18 carbon atoms and mixtures thereof;

R_2 is alkyl containing from about 8 to 18 carbon atoms and mixtures thereof or alkyl amido of the formula



$$\left[R_3{-}\overset{\overset{\displaystyle O}{\|}}{C}{-}\overset{\overset{\displaystyle Z}{|}}{N}{-}B\right]{-}$$

wherein

R_3 is alkyl containing from about 7 to 17 carbon atoms;

Z is H or lower alkyl containing from 1 to 4 carbon atoms; and

B is lower alkyl containing from 1 to 4 carbon atoms;

x is an integer from 1 to 3;

A_1 and A_2 are the same or different and are selected from the group of anionic salt moieties consisting of the following:

$—CH_2CH_2—COOX]_n$

$—CH_2—COOX]_n$

$—CH_2CHOH—CH_2—SO_3X]_n$

$—CH_2—CHOH—CH_2—OPO_3X]_n$

wherein X is a water soluble cation and n is an integer of 1 or 2 with the proviso that if only one of A_1 and A_2 are selected from the anionic salt moieties above, the other can be lower alkyl or lower hydroxyalkyl containing from 1 to 4 carbon atoms;

and wherein the pH of the complex is in the range from about 6.5 to 8.5 and wherein the ratio of alkoxylated carboxylate to amphoteric is within the range of from 0.5:1 to 1.5:1.

10. A detergent composition wherein the active ingredients comprise from about 1 to 50% by weight of the total composition of at least one complex of the formula of claim 1.

4,443,363

DETERGENT COMPOSITION FOR CLEANING HARD SURFACES AND METHOD OF USING THE SAME

Wolfgang Klinger, Altötting, and Eckhard Milewski, Kriftel, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 14, 1981, Ser. No. 330,767

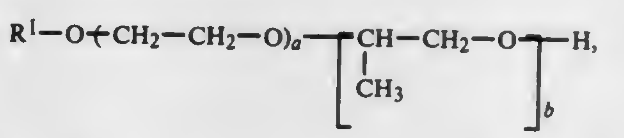
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1980, 3048642

Int. Cl.^{3} C11D *1/38*

U.S. Cl. 252—547 **9 Claims**

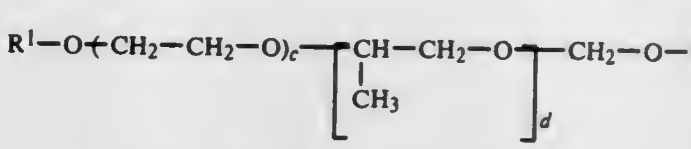
1. A detergent composition for the mechanical cleaning of hard surfaces in aqueous alkaline liquors, which comprises

(A) 20 to 95% by weight of a nonionic surfactant of the formula



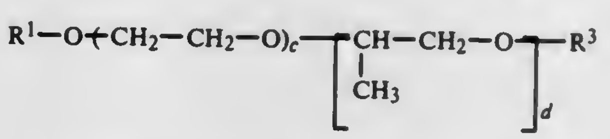
$$R^1{-}O{-}(CH_2{-}CH_2{-}O)_a{-}\left[\begin{matrix}CH{-}CH_2{-}O\\ |\qquad\qquad\\ CH_3\qquad\quad\end{matrix}\right]_b{-}H,$$

(A^1)



$$R^1{-}O{-}(CH_2{-}CH_2{-}O)_c{-}\left[\begin{matrix}CH{-}CH_2{-}O\\ |\qquad\qquad\\ CH_3\qquad\quad\end{matrix}\right]_d{-}CH_2{-}O{-}R^2$$

(A^2)

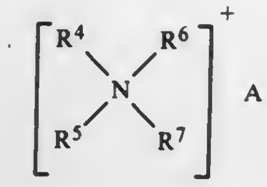


$$R^1{-}O{-}(CH_2{-}CH_2{-}O)_c{-}\left[\begin{matrix}CH{-}CH_2{-}O\\ |\qquad\qquad\\ CH_3\qquad\quad\end{matrix}\right]_d{-}R^3$$

(A^3)

or of a mixture of the formulae (A^1), (A^2) and/or (A^3), in which R^1 is an alkyl radical having 6 to 18 C atoms, R^2 is an alkyl radical having 1 to 4 C atoms, R^3 is an alkyl radical having 1 to 4 C atoms, a is a statistical average value within the range from 3 to 6, b is a statistical average value within the range from 3 to 5, c is a statistical average value within the range from 6 to 12 and d is a statistical average value within the range from 0 to 3, and

(B) 5 to 80% by weight of a cationic surfactant of the formula



in which R^4, R^5 and R^6 are identical or different and are alkyl radicals having 1 to 8 C-atoms and R^7 is an alkyl radical having 1 to 4 C-atoms or a benzyl radical, and A denotes an anion.

4,443,364

DETERGENT COMPOSITION CONTAINING AN ANTIFOAMING AGENT FOR CLEANING HARD SURFACES AND METHOD OF USING THE SAME

Wolfgang Klinger, Altötting, and Eckhard Milewski, Kriftel, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 14, 1981, Ser. No. 330,768

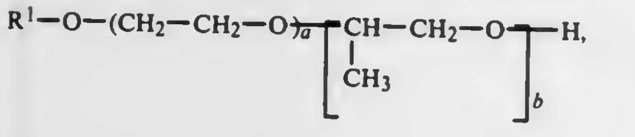
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1980, 3048641

Int. Cl.³ C11D *1/38*

U.S. Cl. 252—547 **10 Claims**

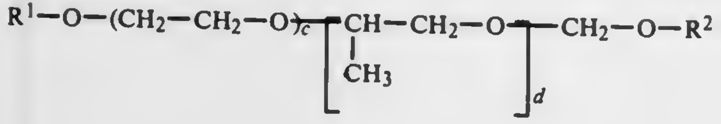
1. A detergent composition for the mechanical cleaning of hard surfaces in aqueous alkaline cleaning liquors, which comprises

(A) 20 to 95% by weight, of the total weight of the mixture A+B, of a nonionic surfactant of the formula



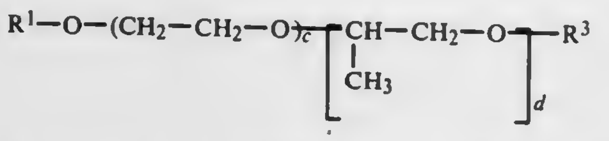
$$R^1-O-(CH_2-CH_2-O)_a-\left[\underset{CH_3}{\underset{|}{CH}}-CH_2-O\right]_b-H, \qquad (A^1)$$

(A²)



$$R^1-O-(CH_2-CH_2-O)_c-\left[\underset{CH_3}{\underset{|}{CH}}-CH_2-O\right]_d-CH_2-O-R^2$$

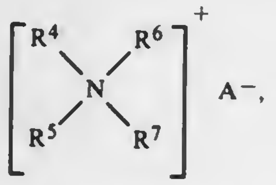
or



$$R^1-O-(CH_2-CH_2-O)_c-\left[\underset{CH_3}{\underset{|}{CH}}-CH_2-O\right]_d-R^3 \qquad (A^3)$$

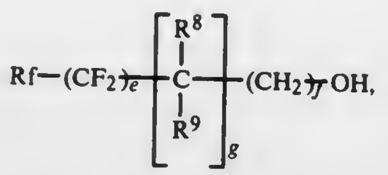
or a mixture of the formulae (A^1), (A^2) and/or (A^3), in which R^1 is an alkyl radical having 6 to 22 C atoms, R^2 is an alkyl radical having 1 to 6 C atoms, R^3 is an alkyl radical having 1 to 4 C atoms, a is a statistical average value within the range from 2 to 10, b is a statistical average value within the range from 1 to 8, c is a statistical average value within the range from 5 to 20 and d is a statistical average value within the range from 0 to 3, and

(B) 5 to 80% by weight, of the total weight of the mixture A+B, of a cationic surfactant of the formula



in which R^4 and R^5 are identical or different alkyl radicals having 1 to 12 C atoms, R^6 is an alkyl radical having 1 to 8 C atoms and R^7 is an alkyl radical having 1 to 4 C atoms or a benzyl radical, and A denotes an anion, and, additionally,

(C) 0.001 to 20% by weight, relative to the total weight A+B=100, of a fluorinated alcohol of the formula



$$Rf-(CF_2)_e-\left[\underset{R^9}{\overset{R^8}{\underset{|}{\overset{|}{C}}}}\right]_g-(CH_2)_f-OH,$$

in which Rf is a perfluoromethyl or perfluoroisopropyl radical, R^8 is an alkyl radical having 1 to 3 C atoms, R^9 is hydrogen or an alkyl radical having 1 to 3 C atoms, e denotes an integer from 5 to 15, f denotes an integer from 0 to 4 and g assumes the value 0 in the case of f=1 to 4, and assumes the value 1 in the case of f=0.

4,443,365

METHOD FOR DETERMINATION OF THE VALPROIC ACID AND REAGENTS THEREIN

Noriyuki Sunahara, Kyoto; Shunsuke Naruto, Ikoma; Akira Kagemoto, Osaka; Shigeru Kurooka, Fujiidera, and Kanae Yokogawa, Nara, all of Japan, assignors to Dainippon Pharmaceutical Company Limited, Osaka, Japan

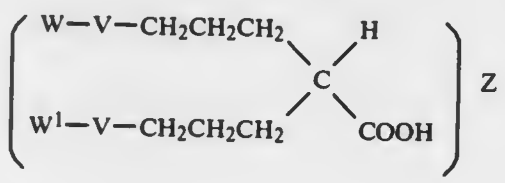
Filed Jun. 24, 1981, Ser. No. 276,794

Claims priority, application Japan, Jul. 1, 1980, 55-90403

Int. Cl.³ C07G *7/00, 7/02*

U.S. Cl. 260—112 R **7 Claims**

1. Compound of the formula:



wherein
V is a bond or lower alkylene,
W is a bond to Z, or a group of the formula:

$—CO—((U)_p(U^1)_q(U^2)_r)$,

$—NH—((U)_p(U^1)_q(U^2)_r)$,

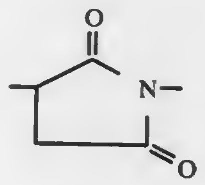
$—S—((U)_p(U^1)_q(U^2)_r)$,

$=CH—((U)_p(U^1)_q)$,

$=C_t=N—((U)_p(U^1)_q(U^2)_r)$ or

—N=N—

wherein
U is —NH—, —N=N—, —N=CH— or



U^1 is lower alkylene, —O— lower alkylene— or lower arylene,
U^2 is —O—, —CO—, —COO— or —O— lower arylene—,
p,q and r are each 0, 1 or 2, and t is 0 or 1,
W^1 is hydrogen atom, a bond to Z, or a group of the formula:

$—CO—((U)_p(U^1)_q(U^2)_r)$,

$—NH—((U)_p(U^1)_q(U^2)_r)$,

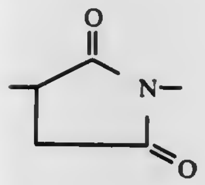
$—S—((U)_p(U^1)_q(U^2)_r)$,

$=CH—((U)_p(U^1)_q)$,

$=C_t=N—((U)_p(U^1)_q(U^2)_r)$ or

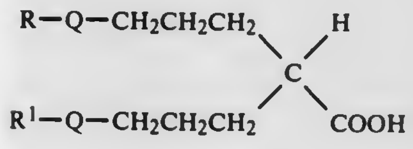
—N=N—

wherein
U is —NH—, —N=N—, —N=CH— or



U^1 is lower alkylene, —O— lower alkylene or lower arylene,
U^2 is —O—, —CO—, —COO— or —O— lower arylene,
p, g and r are each 0, 1 or 2, t is 0 or 1, and
Z is a protein, or salts thereof.

5. A conjugate of a compound of the formula:



wherein
Q is a bond or lower alkylene,
R is $—NH_2$, —SH, —CHO, —COOH or $—COCH_2—$halogen,
R^1 is hydrogen atom, $—NH_2$, —SH, —CHO, —COOH or $—COCH_2—$halogen,
or salts thereof with an enzyme,
wherein the enzyme is bonded to at least one of R and R^1 of the compound directly; or by one of the glutaraldehyde method, periodate method, dimaleimide method, N-(m-maleimidobenzoyloxy)succinimide method, mixed anhydride method, carbodiimide method, toluene diisocyanate method and diazo-method.

4,443,366

GEL CHROMATOGRAPHY MATERIAL

Teruo Sakagami; Noriyuki Arakawa, and Naohiro Murayama, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 169,462, Jul. 16, 1980, abandoned. This application Mar. 29, 1982, Ser. No. 363,401

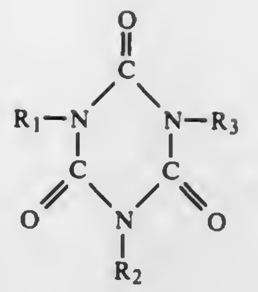
Claims priority, application Japan, Jul. 20, 1979, 54-92337

Int. Cl.³ C08F *226/10;* **C07G** *7/00*

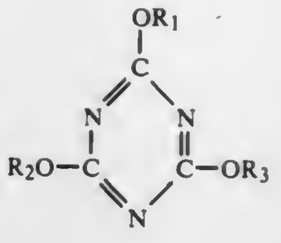
U.S. Cl. 260—112 R **2 Claims**

1. A method for fractionation of a mixture of substances, comprising:

subjecting said mixture of substances selected from the group consisting of a mixture of vitamins, a mixture of proteins, a mixture of enzymes and mixtures thereof to gel chromatography through a filter bed of a cross-linked copolymer of vinylpyrrolidone and a cross-linking agent obtained by copolymerization of 100 parts by weight of vinylpyrrolidone and 0.5 to 100 parts by weight of said cross-linking agent having a triazine ring system of the formula (I) or (II):



(I)



(II)

wherein R^1, R^2 and R^3 each are the same or different and are selected from the group consisting of $—CH_2—CH=CH_2$, $—CH_2—C\equiv CH$ and $—CH_2—C(CH_3)=CH_2$ in a diluent.

4,443,367

PEPTIDE AND PEPTOLIDE SUBSTRATES FOR MAMMALIAN COLLAGENASE

Harold I. Weingarten, University City, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Apr. 8, 1982, Ser. No. 366,520

Int. Cl.³ C07C *103/52;* **C12Q** *1/38*

U.S. Cl. 260—112.5 R **3 Claims**

1. A peptide material having activity as a substrate for collagenase selected from the group consisting of

R_1—Pro—Leu—Gly—Ile—Leu—Gly—Leu—R_2,

R_1—Gly—Pro—Leu—Gly—Ile—Leu—Gly—Ala—R_2,

R_1—Pro—Leu—Gly(O—Ile)—Leu—R_2,

R_1—Pro—Leu—Gly(O—Leu)—Leu—R_2, and

R_1—Pro—Leu—Gly(O—Leu)—Ala—R_2,

wherein
R_1=H or N-protecting group, and
R_2=terminal amide, carboxyl or ester group.

4,443,368

PEPTIDES AFFECTING GONADAL FUNCTION

Nancy M. Sherwood, Victoria, Canada; Lee E. Eiden; Michael J. Brownstein, both of Bethesda, Md.; Joachim Spiess, Encinitas, Calif.; Jean E. F. Rivier, and Wylie W. Vale, Jr., both of La Jolla, Calif., assignors to The Salk Institute for Biological Studies, San Diego, Calif.

Filed Nov. 1, 1982, Ser. No. 437,949

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 LH **7 Claims**

1. A peptide composition consisting essentially of a peptide having the formula:

$pGlu\text{-}His\text{-}Trp\text{-}Ser\text{-}Tyr\text{-}Gly\text{-}Trp\text{-}Leu\text{-}Pro\text{-}Gly\text{-}NH_2$.

4,443,369

SULPHUR DYESTUFFS

Helmut Seidler, Bonn; Manfred Söll, and Klaus Wunderlich, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 43,058, May 29, 1979, abandoned. This application Jul. 20, 1981, Ser. No. 284,918

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1978, 2832215

Int. Cl.³ C07G *17/00*

U.S. Cl. 260—131 **1 Claim**

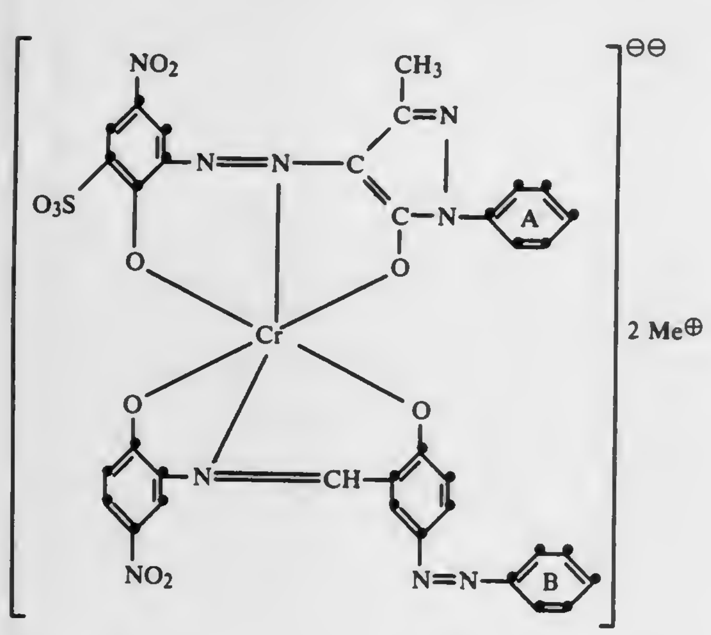
1. A sulphur dyestuff obtained by:
a. dinitrating anthraquinone;

b. partially removing 1,5- and 1,8- and 1,6- and 1,7-dinitroanthraquinones; and
c. sulphurizing the residual mixture which contains 25 to 60% by weight of 1,6-/1,7-dinitroanthraquinones, 60 to 25% by weight of 1,5-/1,8-dinitroanthraquinones, the total content of 1,X-(X=5,6,7,8) dinitroanthraquinones being 50 to 85% by weight, and 2 to 6% by weight of 2,6-/2,7-dinitroanthraquinones.

4,443,370
CHROME-COMPLEX DYES
Alois Püntener, Rheinfelden, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed May 28, 1981, Ser. No. 267,311
Claims priority, application Switzerland, Jun. 5, 1980, 4345/80
Int. Cl.³ C09B *45/00*
U.S. Cl. 260—145 B **4 Claims**

1. A chrome-complex dye of the formula (I)

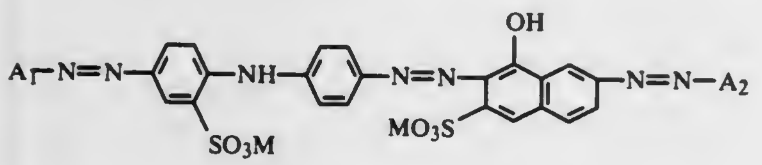
(I)



wherein the phenyl groups A and B independently of one another are each unsubstituted or are mono- or disubstituted by chlorine, methyl, ethyl, methoxy or ethoxy, and wherein Me⊕ is a cation.

4,443,371
TRISAZO BLACK DYES
Andre T. Brulard, Villerot, and Andre A. Gerbaux, Baudour, both of Belgium, assignors to Althouse Tertre, S.A., Brussels, Belgium
Filed Sep. 9, 1981, Ser. No. 300,564
Claims priority, application Belgium, Sep. 16, 1980, 202118
Int. Cl.³ C09B *35/37;* D06P *1/39, 3/32*
U.S. Cl. 260—169 **12 Claims**

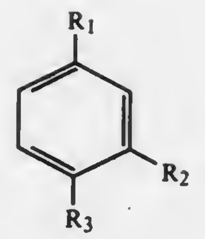
1. A trisazo dye of the structure:



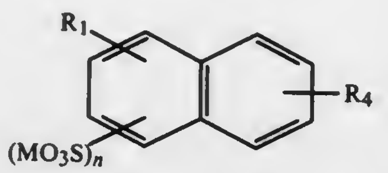
in which

M represents H, Na, K, Li, or $N(R)_3H$ wherein R represents H, CH_3, C_2H_5, C_3N_7, $—CH_2CH_3OH$, $—CH_2CH(OH)CH_3$ or $—CH_2CH_2OCH_2CH_2OH$;

A_1 and A_2, which may be identical or different, represent a coupling component which contains at least one amino group of a hydroxy group and has the structure:



(where the azo linkage is other than meta to the R_1 and R_2 substituents) or



(where the azo linkage is ortho or para to the R_1 and R_4 substituents), and in which

M has the above meaning;

R_1 represents $—NH_2$ or $—OH$;

R_2 represents $—NH_2$, $—OH$, —O—alkyl, —NHCO lower alkyl, —NH aryl, —NH lower alkyl, —N(lower alkyl)$_2$ and $—NHCH_2COOM$;

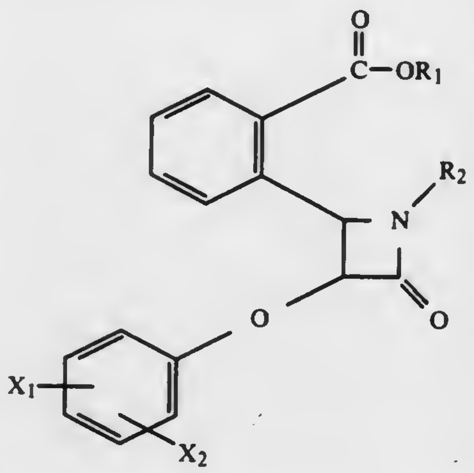
R_3 represents hydrogen, a lower alkyl or SO_3M;

R_4 represents —H, $—NH_2$, —OH, —O—alkyl, —NHCO lower alkyl, —NHCO lower alkyl, —NH aryl, —NH lower alkyl and $—NHCH_2COOM$; and

n=0, 1 or 2.

4,443,372
1-ALKYL DERIVATIVES OF 3-ARYLOXY-4-(2-CARBALKOXY)-PHENYL-AZET-2-ONES AS PLANT GROWTH REGULATORS
Tatao Luo, El Sobrante; Louis Russo, Walnut Creek, and Francis J. Freenor, III, Richmond, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.
Filed Jun. 23, 1982, Ser. No. 391,798
Int. Cl.³ C07D *205/08;* A01N *43/44*
U.S. Cl. 260—239 A **10 Claims**

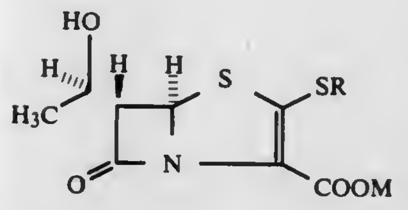
1. A compound of the formula:



wherein R_1 is methyl or ethyl; R_2 is lower alkyl; and X_1 and X_2 are independently hydrogen or halogen.

4,443,373
PROCESS FOR THE PRODUCTION OF ANTIBIOTIC PENEMS
Viyyoor M. Girijavallabhan, Parsippany; Ashit K. Ganguly, Upper Montclair; Patrick A. Pinto, Mine Hill, and Richard W. Versace, Ringwood, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.
Filed Mar. 30, 1982, Ser. No. 363,710
Int. Cl.³ C07D *499/04, 499/00*
U.S. Cl. 260—245.2 R **16 Claims**

1. A process for the production of penems of the formula I:

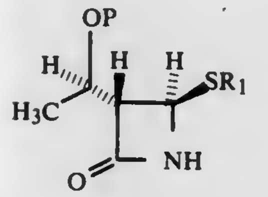


(I)

wherein R is methyl, ethyl, propyl, or isopropyl; and M is an alkali metal cation;

which comprises:

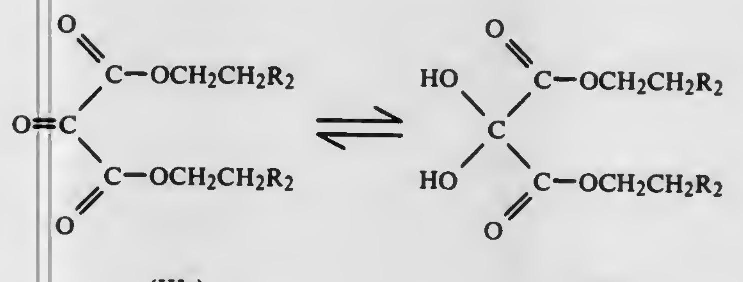
(a) reaction of an azetidinone of the formula II



(II)

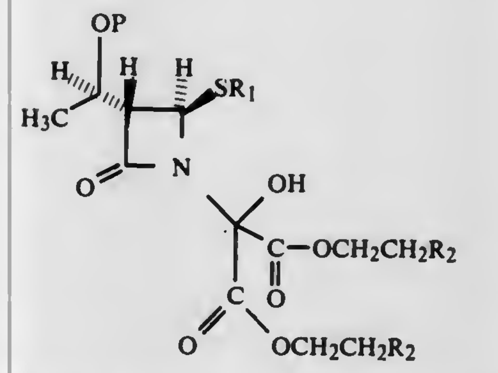
wherein P is a removable hydroxy protecting group; and R_1 is a sulfur protecting group selected from triphenylmethyl, 2-pyranyl, or lower alkyl carbonyl;

with a compound of the formulae IIIa and IIIb



(IIIa) (IIIb)

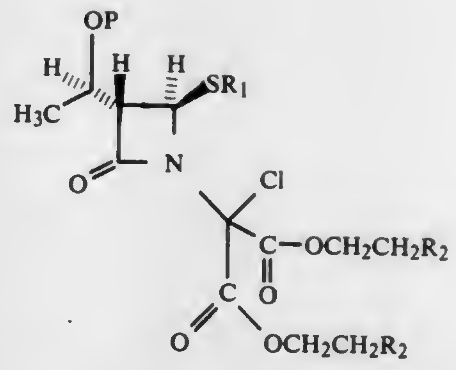
wherein R_2 is a trimethylsilyl, cyano, t-butyl diphenylsilyl or a sulfone ester of the formula $—SO_2R^1$ wherein R^1 is an aryl; to form the intermediate of the formula IV



(IV)

wherein R, R_1 and R_2 are as hereinabove defined;

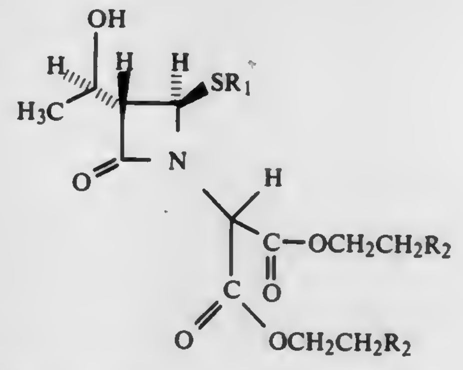
(b) treatment of the compound of formula IV with a chlorinating agent to form a compound of the formula V



(V)

wherein P, R_1 and R_2 are as hereinabove defined;

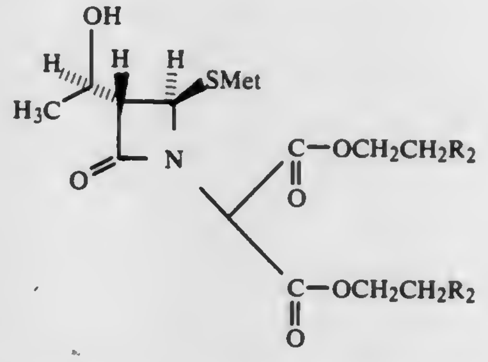
(c) treatment of the compound of formula V with elemental zinc to effect removal of the chlorine and the removable hydroxy protecting group, and, if a removable hydroxy protecting group is utilized which is not removable with zinc, subsequent removal of said hydroxy protecting group, producing a compound of the formula VI



(VI)

where R_1 and R_2 are as hereinabove defined;

(d) treatment of the compound of formula VI with a reactive silver, copper or mercury salt to form a compound of the formula VII



(VII)

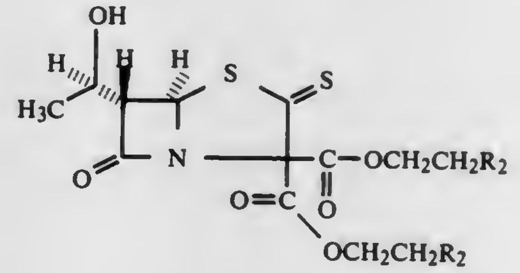
wherein R_2 is hereinabove defined and Met is silver, copper or mercury;

(e) reaction of the intermediate of formula VII with a thiocarbonyl compound of the formula VIII

$S{=}C(—Y)_2$ (VIII)

wherein Y is a leaving group;

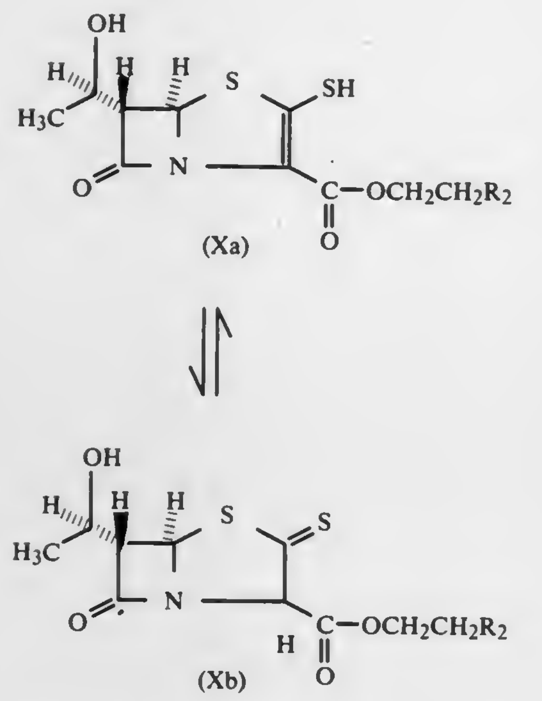
to form a compound of the formula IX



(IX)

wherein R_2 is as hereinabove defined;

(f) treatment of the compound of formula IX with one equivalent of fluoride ion to form the compound of the formulae Xa and Xb



(Xa)

(Xb)

wherein R_2 is as hereinabove defined;

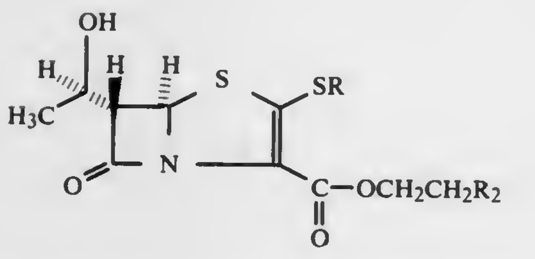
(g) reaction of the compound of formulas Xa and Xb with either a compound of formula XI

$$R—Z \qquad (XI)$$

wherein R is as hereinabove defined and Z is a leaving group, to make compounds of formula I wherein R is methyl, ethyl, propyl or isopropyl; or a compound of the formula XII

$$R_3—CH{=}CH_2 \qquad (XII)$$

wherein R_3 is hydrogen or methyl, to make compounds of formula I wherein R is ethyl, propyl or isopropyl; forming a compound of the formula XIII



(XIII)

wherein R is methyl, ethyl, propyl or isopropyl and R_2 are as hereinabove defined; and

(h) treatment of a compound of formula XIII with another equivalent of fluoride ion to form a compound of formula I.

4,443,374

PROCESS FOR PREPARING (3S)-3-[[(2-AMINO-4-THIAZOLYL)[(1-CARBOXY-1-METHYLETHOXY)IMINO]-ACETYL]AMINO]-2-OXO-1-AZETIDINESULFONIC ACID, AND 4-SUBSTITUTED DERIVATIVES

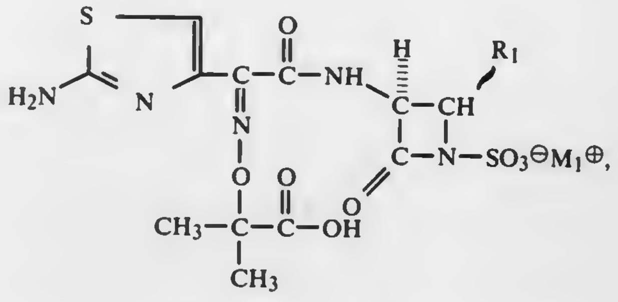
Christopher M. Cimarusti, Pennington; Rita T. Fox, Princeton; Alan W. Fritz, Kendall Park; William H. Koster, East Amwell Township, Hunterdon County, and Jerome L. Moniot, Chester, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Feb. 1, 1982, Ser. No. 344,895

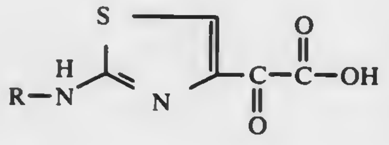
Int. Cl.^{3} C07D *417/12, 205/08;* **A61K** *31/425*

U.S. Cl. 260—245.4 **4 Claims**

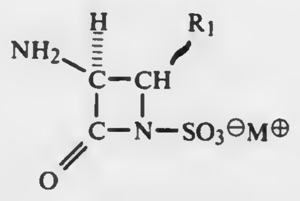
1. A process for preparing a compound having the formula



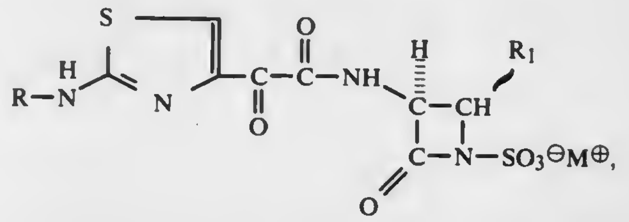
which comprises coupling a compound having the formula



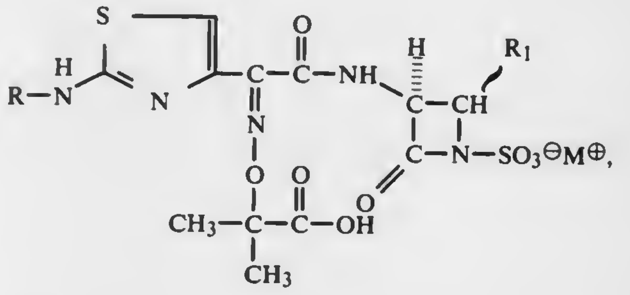
or a salt thereof, with a compound having the formula



to obtain a compound having the formula



reacting that compound with 2-aminooxy-2-methylpropanoic acid, or a salt thereof, to obtain a compound having the formula



and, if R is an amino protecting group, deprotecting that compound to yield the desired product; wherein

R is hydrogen or an amino protecting group

R_1 is hydrogen, methyl or ethyl;

M⊕ is an inorganic cation or a pyridinium, triethylammonium, or tetrabutylammonium ion; and

M_1⊕ is the same as M⊕ or hydrogen.

4,443,375

TETRAHYDROIMIDAZO(3,4-C)-1,3-DIAZOCINE INTERMEDIATES FOR PRODUCTION OF GUANIDINES

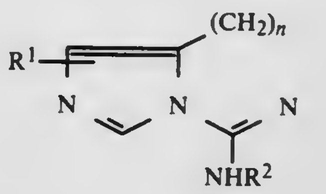
Derek W. Hills, Welwyn Garden City, and George R. White, Harpenden, both of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Division of Ser. No. 270,072, Jun. 3, 1981, Pat. No. 4,375,435. This application Oct. 26, 1982, Ser. No. 436,894

Int. Cl.^{3} C07D *487/04*

U.S. Cl. 260—245.6 **2 Claims**

1. A compound of formula (X)



(X)

where n is 4;

R^1 is attached to a carbon atom in the imidazole moiety and is hydrogen, halogen or alkyl; and R^2 is cyano or benzoyl.

4,443,376

GEM-DIPEROXYESTERS

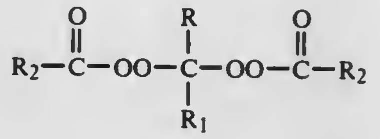
Ronald L. Pastorino, Larkspur; Lawrence A. Bock, Walnut Creek, and Reidar Halle, Novato, all of Calif., assignors to Argus Chemical Corporation, Brooklyn, N.Y.

Division of Ser. No. 166,210, Jul. 7, 1980, Pat. No. 4,370,459. This application Sep. 27, 1982, Ser. No. 424,820

Int. Cl.^{3} C07C *179/14*

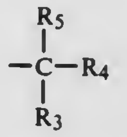
U.S. Cl. 260—453 RZ **8 Claims**

1. An organic peroxide of the formula:



$$R_2-\overset{\overset{O}{\|}}{C}-OO-\underset{\underset{R_1}{|}}{\overset{\overset{R}{|}}{C}}-OO-\overset{\overset{O}{\|}}{C}-R_2$$

where R is selected from methyl and ethyl; R_1 is ethyl when R is ethyl; R_1 is hydroxyalkyl of 1 to 7 carbon atoms when R is methyl; and each R_2 is



$$-\underset{\underset{R_3}{|}}{\overset{\overset{R_5}{|}}{C}}-R_4$$

where each of R_3, R_4, and R_5 is selected from hydrogen and alkyl, provided not more than one of R_3, R_4, and R_5 is hydrogen, and R_3, R_4, and R_5 collectively containing from 2 to 12 carbon atoms.

4,443,377

ISOMERIZATION-ACYLATION PROCESS

Verlan H. Van Rheenen, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Sep. 20, 1982, Ser. No. 419,843

Int. Cl.^{3} C07J *5/06*

U.S. Cl. 260—397.4 **5 Claims**

1. A process for the preparation of 17α-hydroxy-6-methyl-16-methylenepregna-4,6-diene-3,20-dione 17-acetate which comprises

(1) contacting 17α-hydroxy-6,16-dimethylenepregn-4-ene-3,20-dione with an acetylating agent in the presence of a strong acid and

(2) recovering the 17α-hydroxy-6-methyl-16-methylenepregna-4,6-diene-3,20-dione 17-acetate.

4,443,378

PROCESS FOR THE SEPARATION OF ACYLATED PHOSPHOLIPIDS FROM PHOSPHATIDYLCHOLINE PRODUCTS CONTAINING THE SAME

Bernd-Rainer Günther, Bergheim, Fed. Rep. of Germany, assignor to A. Nattermann & Cie GmbH, Cologne, Fed. Rep. of Germany

Filed Dec. 1, 1981, Ser. No. 326,326

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1980, 3047012

Int. Cl.^{3} A23J *7/00;* **C07F** *9/02;* **C11C** *3/00*

U.S. Cl. 260—403 **5 Claims**

1. Process for the separation of acylated phospholipids from phosphatidylcholine products containing the same characterized in that the phosphatidyl starting material is dissolved in a lower alkanol having from 1 to 4 carbon atoms or a mixture of several such alkanols, said alkanol or mixture of alkanols possibly containing up to 20% by volume, possibly present insolubles are separated from said solution, said clear solution is put on to a chromatographic column of silicic acid gel at a temperature ranging from 60° to 90° C., said column is eluated at an elevated temperature within this range with a lower alkanol having from 1 to 4 carbon atoms or a mixture of several such lower alkanols, said alkanol or said mixture possibly containing up to 20% by volume of water, a preeluate containing the by-products to be separated is collected, thereafter, separate therefrom, the main eluate containing the pure phosphatidylcholine is collected and the solvent is separated from said main eluate.

4,443,379

SOLID BLEACHING COMPOSITION FOR EDIBLE OILS

Dennis R. Taylor, Covina, and Zenon Demidowicz, Los Angeles, both of Calif., assignors to Harshaw/Filtrol Partnership, Oakland, Calif.

Filed Mar. 17, 1982, Ser. No. 358,995

Int. Cl.^{3} C11B *3/06, 3/00;* **C09F** *5/10*

U.S. Cl. 260—427 **9 Claims**

1. In the process of reducing the free fatty acis content of vegetable oils using a molecular sieve as treating agent, the improvement which comprises treating the vegetable oils, subsequent to the refining of the oils with an alkali metal hydroxide, with a free fatty acid removal and decolorizing composition consisting essentially of a major portion of an acid-activated subbentonite clay and a minor portion of a Y-zeolite, wherein the acid-activated clay component of the composition is in the range from about 75 to about 95% by weight and the Y-zeolite content is in the range from about 5 to about 25% by weight, the zeolite being characterized by a residual sodium ion content of less than about 5% by weight which residual sodium ion content is obtained by exchange of the balance of the sodium ions with cations of alkaline earth metals, lanthanides, transition metals other than Group VIII metals, or mixtures of these; separating the treated oils from the composition.

4,443,380

ORGANIC EUROPLUM SALT PHOSPHOR

Katsuhiko Yamazoe, Yokohama; Akira Yoshino, Fujisawa; Yoshiharu Kitahama, Kawasaki, and Isamu Iwami, Zushi, all of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Filed Aug. 22, 1980, Ser. No. 180,324

Claims priority, application Japan, Aug. 31, 1979, 54-110357; Jul. 8, 1980, 54-92214

Int. Cl.^{3} C09K *11/46*

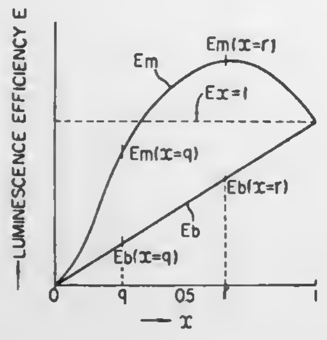
U.S. Cl. 260—429.2 **4 Claims**

1. An organic rare-earth salt phosphor comprising a crystal-

line rare-earth metal salt of an organic acid represented by the general formula:

$[A(COO)_l]_mZ$

wherein:



$[A(COO)_l]$ denotes a carboxylic acid radical derived from an organic carboxylic acid $[A(COOH)_l]$ selected from the group consisting of cinnamic acid, 3-5-dimethoxycinnamic acid and beta-(pyridyl) acrylic acid,
Z is europium,
l denotes 1 or 2, and
$m=3/l$.

4,443,381

DIRECT EXCHANGE PROCESS

Milton Braid, 11 MacArthur Blvd., Westmont, N.J. 08108

Filed Jul. 7, 1980, Ser. No. 166,662

Int. Cl.^{3} C10M *1/54;* **C07F** *15/02, 15/04;* **C10M** *3/48*

U.S. Cl. 260—439 R **17 Claims**

1. A process of preparing transition metal-containing derivative reaction products of calcium phenol sulfides which comprises reaction of said sulfides with a transition metal salt in a multi-phase solvent system in the presence of an alcoholic reaction accelerator or promoter, said solvent system being characterized by having a minimal degree of solubility for said reactants and wherein said reaction products are soluble in at least one phase of said solvent system and the displaced calcium salt produced by said reaction is insoluble in said solvent system.

4,443,382

ALUMINUM SALTS OF AROMATIC SULFONIC ACIDS FORMALDEHYDE CONDENSATES

Stanley A. Lipowski, Livingston, N.J., assignor to Diamond Shamrock Chemicals Company, Dallas, Tex.

Filed Feb. 3, 1982, Ser. No. 345,238

Int. Cl.^{3} C07F *5/06*

U.S. Cl. 260—448 R **7 Claims**

1. An aluminum salt of an aromatic sulfonic acid formaldehyde condensate wherein the salt is a reaction product of an aromatic sulfonic acid formaldehyde condensate with freshly prepared aluminum hydroxide.

4,443,383

PREPARATION OF METHACROLEIN AND METHACRYLONITRILE FROM TERT-BUTYL ALKANOATES

Joseph W. Nemec, Rydal, and Michael S. Cholod, Cornwells Heights, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 245,296, Mar. 19, 1981, Pat. No. 4,358,622, which is a continuation-in-part of Ser. No. 84,255, Oct. 12, 1979, abandoned. This application Jul. 21, 1982, Ser. No. 400,491

Int. Cl.^{3} C07C *120/00, 121/32*

U.S. Cl. 260—465.2 **1 Claim**

1. A process for preparing methacrylonitrile by the vapor phase catalytic ammoxidation of tert-butyl alkanoate wherein the alkyl moiety of the alkanoate radical has from one to four carbon atoms in the presence of oxygen and ammonia at a temperature in the range of from about 200° to 600° C. wherein the catalyst is based on oxide combinations selected from Mo-Co, Mo-Bi, Mo-Fe, Mo-P or Mo-Bi-Fe-Co which may also contain Ni, Sb, Te, W, Cs, K, Cu or combination thereof.

4,443,384

PROCESS FOR THE MANUFACTURE OF MIXED PHOSPHORIC ACID ESTER COMPOSITIONS

Joseph H. Finley, Metuchen, and Hsiang P. Liao, Princeton, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Oct. 4, 1982, Ser. No. 432,471

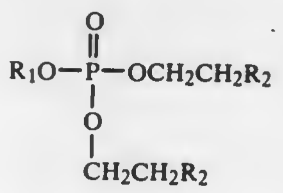
Int. Cl.^{3} C07F *9/09*

U.S. Cl. 260—982 **4 Claims**

1. A process for the manufacture of a mixed phosphoric acid ester composition comprising less than about 4 weight percent of triphenyl phosphate having the formula:

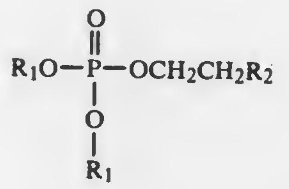
$(R_1O)_3P{=}O$

from about 10 to about 20 weight percent of a phenyl dialkyl phosphate having the formula:



$$R_1O-\overset{\overset{\displaystyle O}{\|}}{\underset{\underset{\displaystyle CH_2CH_2R_2}{|}}{\underset{\displaystyle O}{\underset{|}{P}}}}-OCH_2CH_2R_2$$

and from about 65 to 80 weight percent of an alkyl diphenyl phosphate having the formula:



$$R_1O-\overset{\overset{\displaystyle O}{\|}}{\underset{\underset{\displaystyle R_1}{|}}{\underset{\displaystyle O}{\underset{|}{P}}}}-OCH_2CH_2R_2$$

wherein R_1 is a phenyl radical and R_2 is an alkyl radical, which comprises:

(a) heating about 2 moles of an alcohol characterized by a boiling point above about 170° C. and having the formula:

$R_2CH_2CH_2OH$

with a catalytic amount of from greater than about 1.5 mole percent to about 2.0 mole percent based on the alcohol of an aqueous sodium hydroxide solution under vacuum to distill off the water present in the mixture and form a sodium alkoxide;

(b) adding about 1.0 mole of triphenyl phosphate of the formula:

$(R_1O)_3P{=}O$

to the reaction mixture under a nitrogen atmosphere and maintaining the temperature at about 100° C. with agitation for about an hour;

(c) heating the reaction mixture at 100° C. to 140° C. under vacuum to remove aromatic and aliphatic alcohols from the reaction mixture; and

(d) distilling the filtrate in a wiped film still under vacuum and at a temperature below the decomposition temperature of said mixed phosphoric acid ester composition to obtain the desired product.

4,443,385

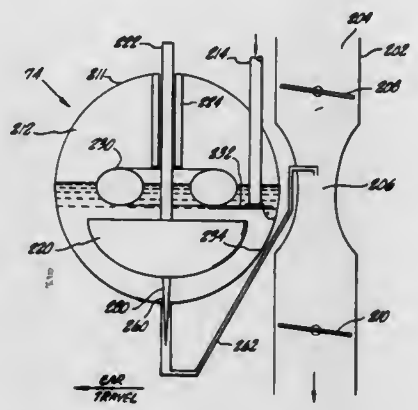
FUEL SYSTEM FOR VEHICLES

Herman Laub, 244 N. San Marino Ave., San Gabriel, Calif. 91775

Division of Ser. No. 230,038, Jan. 30, 1981, Pat. No. 4,366,781. This application Sep. 22, 1982, Ser. No. 421,370

Int. Cl.^{3} F02M *5/06*

U.S. Cl. 261—18 A **13 Claims**



1. A carburetor for a fuel comprising a first liquid and a second liquid mixable with the first liquid, the first liquid having a lower density and a higher fuel content than the second liquid, the carburetor comprising:

(a) a housing having a fuel inlet and a fuel outlet, the fuel outlet being at the bottom of the housing;

(b) a first float in the housing above the outlet, the first float having a selected density such that the vertical distance between the first float and the outlet is directly proportional to the second liquid content of the fuel in the housing and is independent of the amount of the fuel in the housing; and

(c) means coupled to the first float for varying the cross-sectional area of the outlet in response to the distance between the first float and the outlet.

4,443,386

EVAPORATIVE COOLER PAD FRAME SUPPORT

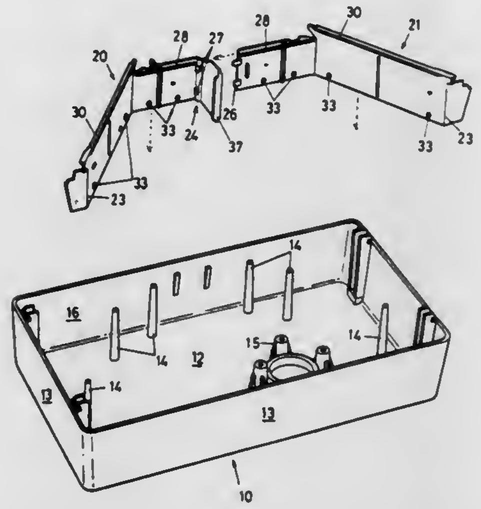
Robert W. Wrightson, St. Marys, Australia, assignor to F.F. Seeley Nominees Pty. Ltd., St. Marys, Australia

Filed Jun. 14, 1982, Ser. No. 387,925

Claims priority, application Australia, Jun. 19, 1981, PE9366

Int. Cl.^{3} B01F *3/04*

U.S. Cl. 261—29 **10 Claims**



1. Support means for supporting evaporative pad frames and their pads in an evaporative cooler of the type having a water tank, a water spreader located above the tank, a motor driven blower between the spreader and the tank, and a pump arranged to pump water from the tank to the spreader, the pad frames being at a distance from the blower and extending downwardly from the spreader towards the tank to intercept water when discharged from the spreader, said support means comprising:

a baffle and means locating the baffle to be upstanding from the base of the tank, the locating means comprising a plurality of baffle locating spigots upstanding from the base and a corresponding plurality of tabs outstanding from the baffle, each said tab having an aperture the walls of which slidably engage a respective said spigot when the baffle is within the tank,

support surfaces on the upper edge of the baffle supporting and locating the lower ends of the respective said pad frames, and

a flange depending from the periphery of the spreader engaging and locating the upper ends of said frames.

4,443,387

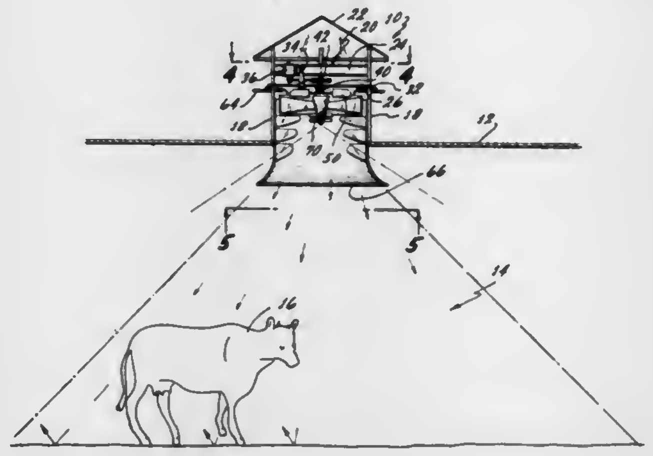
EVAPORATIVE COOLING DEVICE AND PROCESS FOR COOLING LARGE AREAS

R. Robert Gordon, 11300 Chimineas Ave., Northridge, Calif. 91326

Filed Jan. 5, 1982, Ser. No. 337,165

Int. Cl.^{3} B01F *3/04*

U.S. Cl. 261—30 **26 Claims**



1. A process for cooling a mass of air which comprises:

locating a housing in conjunction with said mass of air, said housing of the type having an air inlet and an air outlet;

extracting an air stream from said mass of air and moving said air stream through said air inlet of said housing into said housing and discharging said air stream out of said air outlet of said housing;

increasing the residence time of said air stream in said housing by introducing a torsional motion into said air stream within said housing to cause said air stream to move in a spiral pathway within said housing;

injecting a spray of water into said air stream as it moves in said spiral pathway within said housing, at least a portion of said water spray evaporating into said air stream while said air stream resides in said housing;

said spray of water being ejected under a pressure and through a nozzle orifice of a size to create a droplet size less than 0.004 inches and greater than 0.002 inches, and directing said moist air stream downwardly from said air outlet in an expanding pattern and into contact with animals therebelow in order to cool said animals.

4,443,388
DEVICE FOR ADJUSTING THE DEGREE OF OPENING OF THE THROTTLE VALVE OF A CARBURETOR

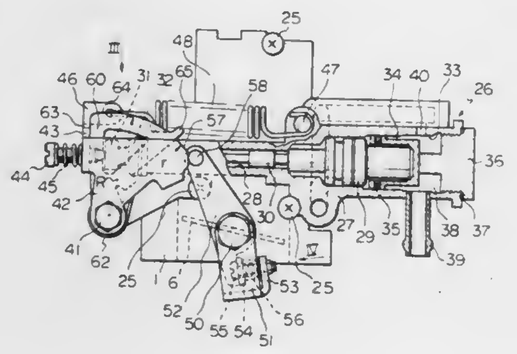
Mitsuyoshi Teramura; Masatami Takimoto, both of Toyota; Norihiko Nakamura, Mishima; Takaaki Itoh, Mishima; Takashi Katou, Mishima; Toshiharu Morino, Mie, and Youzou Sakakibara, Kariya, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota and Aisan Industry Co., Ltd., Obu, both of, Japan

Filed Sep. 14, 1982, Ser. No. 417,868

Claims priority, application Japan, Dec. 22, 1981, 56-206056

Int. Cl.³ F02M *3/06*

U.S. Cl. 261—39 A **10 Claims**



1. A device for adjusting the degree of opening of the throttle valve of a carburetor having a valve shaft which supports the throttle valve, said device comprising:

a housing;

a pivot mounted on said housing;

a throttle lever mounted on the valve shaft and being rotatable with the throttle valve;

a cam pivotally mounted on said pivot and having a cam face which is engageable with said throttle lever during engine warm-up for retaining the degree of opening of the throttle valve at a predetermined fast idling degree;

actuating means for rotating said cam in response to a change in the engine temperature and disengaging said throttle lever from said cam when the engine temperature is higher than a predetermined temperature for closing the throttle valve to an idling position; and

an auxiliary lever pivotally mounted on said pivot and having an outer peripheral face which is engageable with said throttle lever for retaining the degree of opening of the throttle valve at the predetermined fast idling degree.

4,443,389
HEAT EXCHANGE APPARATUS

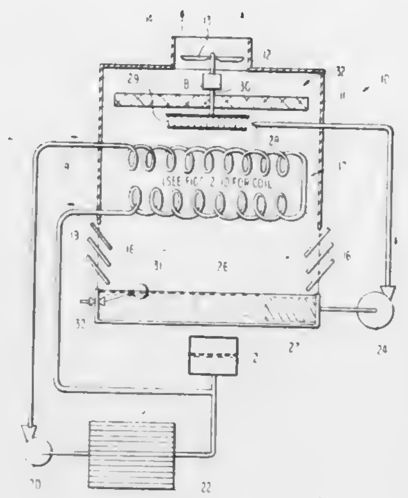
Diego E. F. Dodds, Buenos Aires, Argentina, assignor to Leonard Oboler, Key Biscayne, Fla., a part interest

Continuation-in-part of Ser. No. 258,136, Apr. 27, 1981. This application Jul. 7, 1981, Ser. No. 281,151

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—153 **24 Claims**

1. In a light weight cooling tower having helical coils having smooth external surfaces and carrying heated water from a facility in a closed circuit system, said coils being mounted such that surface movements as by multidirectional thermal expansion and contraction of said coils crack scale and other film from said smooth external surfaces thereof, the improvement wherein the internal flow path of heated fluid in said closed circuit system includes turbulator means to enhance agitation and vibration of said coils thereby increasing the efficiency and avoiding the build up of scale on said smooth external surfaces of said cooling coils due to the flow of the cooling water thereover, said helical coils being formed of lightweight aluminum metal having a high temperature expansion coefficient.



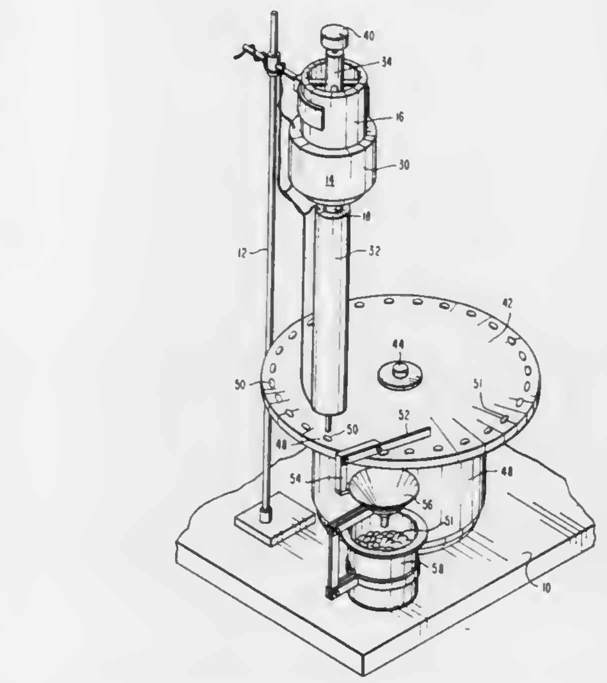
4,443,390
METHOD FOR MAKING AMALGAM PELLETS

William L. Brundige, West Caldwell, N.J., assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 24, 1982, Ser. No. 361,213

Int. Cl.³ B01D *2/02*

U.S. Cl. 264—13 **5 Claims**



1. The method of making sodium-mercury amalgam pellets comprising the steps, in an inert atmosphere, of:

heating predetermined amounts of sodium and mercury to a predetermined temperature to form a liquid amalgam;

releasing droplets of said liquid of predetermined volume from an orifice situated above a rotating disc;

receiving said droplets on said rotating disc at predetermined intervals;

solidifying said droplets into pellet form on said disc during rotation thereof; and

dislodging said formed pellets from said disc and delivering said pellets into a container.

4,443,391
PROCESS OF MAKING ARTICLES OF FOAMED POLYMETHYL METHACRYLATE

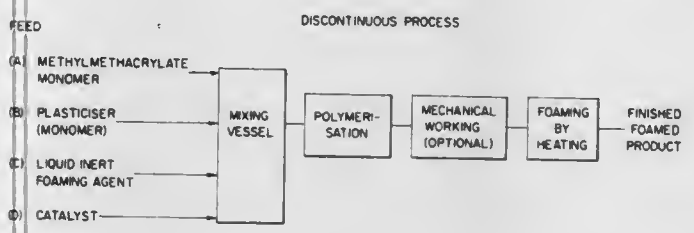
Bernd Melchior, Burger Strasse 255, D 5630 Remscheid, Fed. Rep. of Germany, assignor to August Hohnholz KG, Hamburg; Imchemie Kunststoff GmbH, Wermelskirchen and Bernd Melchior, Remscheid, all of, Fed. Rep. of Germany

Filed Jun. 8, 1982, Ser. No. 386,337

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1981, 3124980

Int. Cl.³ B29D *27/04*

U.S. Cl. 264—22 **16 Claims**


DISCONTINUOUS PROCESS
FEED
(A) METHYLMETHACRYLATE MONOMER
(B) PLASTICISER (MONOMER)
(C) LIQUID INERT FOAMING AGENT
(D) CATALYST
MIXING VESSEL
POLYMERI-SATION
MECHANICAL WORKING (OPTIONAL)
FOAMING BY HEATING
FINISHED FOAMED PRODUCT

1. A process of making articles of foamed polymethyl methacrylate comprising

(1) mixing

(a) 100 parts by weight of monomeric methyl methacrylate;

(b) 5 to 40 parts by weight of a plasticizer which is a monomeric alkyl methacrylate in which the alkyl group comprises at least 3 carbon atoms;

(c) 10 to 100 parts by weight of a foaming agent that will neither evaporate nor decompose at the polymerization temperature and which is a liquid inert foaming agent boiling at a temperature of less than 100° C.; and

(d) at least one polymerization catalyst;

at a temperature below the evaporation or decomposition temperature of the foaming agent to form a mixture and polymerizing said mixture at a pressure in excess of the evaporation pressure of the foaming agent at the polymerization temperature to form a solid body containing said foaming agent, and

(2) positioning said foaming agent-containing solid body on a non-adherent substrate and heating said solid body to a temperature in excess of the evaporation temperature of the foaming agent and in excess of the softening temperature of the polymer to foam said solid body and form a transparent foamed polymethyl methacrylate with closed cells having a diameter of about 5 mm. and a density of about 0.03 to 0.05 g/cm³.

4,443,392
PROCESS FOR THE PRODUCTION OF MOLDED DECORATIVE ARTICLES FROM A HARDENABLE SUBSTANCE BASED ON THERMOSETTING SYNTHETIC RESIN

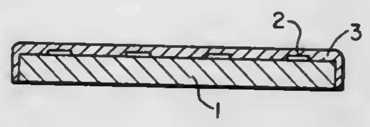
Josef Becker, Neunkirchen-Seelscheid; Manfred Simon, Niederkassel; Karl-Heinz Spiess, Much, and Richard Weiss, Troisdorf, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Nov. 3, 1981, Ser. No. 317,845

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1980, 3041794

Int. Cl.³ C04B *41/10*

U.S. Cl. 264—25 **24 Claims**



1. A process for the production of decorated molded articles wherein a base article is produced by compression molding from a hardenable substance containing a minor amount of a thermosetting synthetic resin material and a major amount of at least one inert filler and by providing the article with a surface layer of hardenable lacquer resin which comprises:

(a) producing a non-caking, pourable substance from a homogenous mixture comprising 3 to 7% by weight of a hardenable plastic material, 0 to 3% by weight of calcium stearate, zinc stearate or stearic acid, 0 to 5% by weight of water, alcohol or mixtures thereof, 97 to 85% by weight preferably 96 to 87% by weight of fillers comprising quartz, sand, chalk, heavy spar, corundum, slag, basaltic powder, or aluminum hydroxides or mixtures thereof by drying said mixture to a moisture content of 1 to 3% at temperatures between 50° and 80° C.;

(b) casting the substance into a mold and pressing with a specific pressure of about 100 to 500 kp/cm² to form a shaped base article;

(c) extracting the shaped base article from the mold;

(d) hardening the extracted base article at elevated temperatures up to 150° C.;

(e) applying a design-forming decorative layer comprised of a hardenable lacquer or paint containing colorant on at least one part of a surface of the base article;

(f) drying and hardening of the design-forming layer and any still unhardened base article at elevated temperatures up to 150° C.;

(g) eventually applying a synthetic glaze comprised of a hardenable resinous compound to the design-forming layer; and

(h) hardening the synthetic glaze.

4,443,393
METHOD OF PRESSURIZING TREATMENT OF PRE-FOAMED PARTICLES OF POLYOLEFIN RESIN

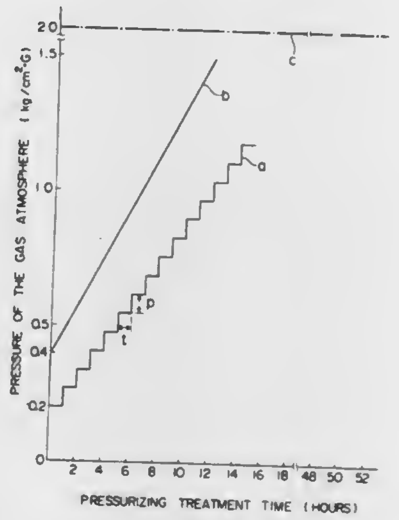
Hiroyuki Akiyama, Hiratsuka; Hideki Kuwabara, Hatano; Toru Yamaguchi, Tsukui, and Masahiko Kishida, Hiratsuka, all of Japan, assignors to Japan Styrene Paper Corporation, Tokyo, Japan

Filed Dec. 7, 1982, Ser. No. 447,670

Claims priority, application Japan, Dec. 9, 1981, 56-199115

Int. Cl.³ C08J *9/22*

U.S. Cl. 264—53 **2 Claims**



1. A method for pressurizing pre-foamed particles of a polyolefin resin by maintaining the pre-foamed particles in an atmosphere of a pressurized gas to impart thereto an internal pressure of from 0.2 to 2.5 kg/cm²(G), which comprises subjecting the particles while at room temperature or elevated temperature to an initial pressure of not more than 0.5 kg/cm²(G) by feeding an inorganic gas or a mixture of an inorganic gas and a blowing agent into a vessel, and said initial pressure not causing shrinkage to the particles, and thereafter gradually increasing the applied pressure stepwise or continuously at a rate of not more than 0.2 kg/cm²(g) per hour until the pressure reach 0.7 to 3 kg/cm²(G), said step of increasing the applied pressure not causing shrinkage to the particles.

4,443,394

METHOD OF MAKING A SILICON NITRIDE BODY FROM THE $Y_2O_3/SIO_2/SI_3N_4/AL_2O_3$

Andre Ezis, Grosse Ile, Mich., assignor to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/US83/01110, 371 Date Jul. 19, 1983, 102(e) Date Jul. 19, 1983

PCT Filed Jul. 19, 1983, Ser. No. 527,641

Int. Cl.³ C04B *35/50*

U.S. Cl. 264—65 **17 Claims**

1. A method of making a silicon nitride comprising product, by the steps of:

(a) fabricating a unitary, porous, reaction bonded object comprising silicon nitride, yttrium silicon oxynitride, and alumino-silicate, said yttrium silicon oxynitride being chemically formed from an SiO_2 component and being present in an amount of 5–17% by weight of said object, said alumino-silicate being present in an amount up to 3% by weight of the object; and

(b) heating said object in an ambient atmosphere, without the use of mechanical or gaseous over-pressure to a temperature level below the sublimation temperature of said silicon nitride and for a period of time effective to substantially full densify the object as a result of the solution of said silicon nitride into liquified yttrium silicon oxynitride.

4,443,395

METHOD FOR PREPARING THIN SECTIONS FOR THE MICROSCOPIC STUDY OF SMALL FRAGMENTS OF ROCK OR DUST, USING A PLATE CONTAINING CELLS

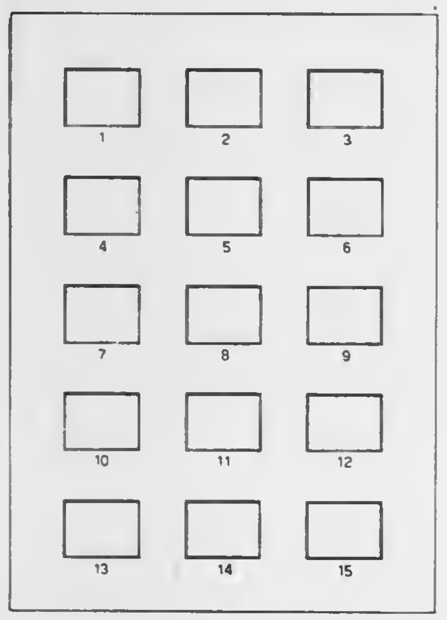
Valerio Motta, Milan, Italy, assignor to AGIP, S.p.A., Rome, Italy

Continuation-in-part of Ser. No. 377,940, May 13, 1982, abandoned, which is a continuation of Ser. No. 266,609, May 22, 1981, abandoned, which is a continuation of Ser. No. 781,066, Mar. 24, 1977, abandoned. This application Sep. 1, 1982, Ser. No. 413,765

Claims priority, application Italy, Mar. 29, 1976, 21665 A/76

Int. Cl.³ B29C *6/00, 17/12, 23/00;* **B29D** *3/00*

U.S. Cl. 264—117 **2 Claims**



1. The method of preparing thin sections for the microscopic study of small fragments of material obtained from well cuttings and the like, said fragments being selected from the group consisting of rock, dust and microfossils, comprising: mixing said fragments with a suitable epoxy resin having a refractive index at 25° C. between 1.47 and 1.596 to form an agglomerate of fragments and resin which will not stick to a plate of plastic material containing a plurality of mold cavities, then forming at least one pellet by placing the agglomerated fragments and resin in at least one of said cavities, each cavity having the shape of a truncated rectangular pyramid with a depth of about 3.5 mm, a major base of 21.0×28.0 mm and a minor base of 20.5×27.5 mm, filling said cells with said pellets, heating said pellets in said cells to a temperature not exceeding 75° C. to cure each pellet, removing the cured pellets from said cells, and thereafter mechanically grinding each of said cured pellets to a uniform thickness in the range of from 50 to 20μ to produce a specimen having optimum transparency with a fragment density in each specimen which is at least from about 1 to 25 times greater than the fragment density heretofore attained.

4,443,396

METHOD OF PRODUCING A LENGTH OF FLEXIBLE TUBING IN THE FORM OF A TOOTHED BELT AND A MOLDING TOOL THEREFOR

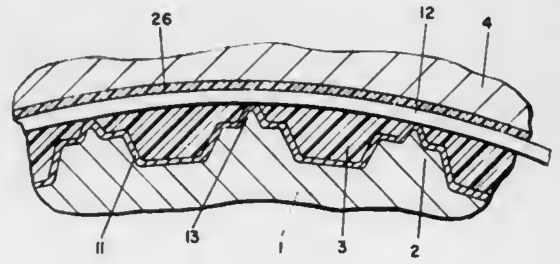
Rudolf Breher, Porta Westfalica, Fed. Rep. of Germany, assignor to Breco Kunststoffverarbeitungs GmbH & Co. KG, Porta Westfalica, Fed. Rep. of Germany

Filed Jul. 28, 1981, Ser. No. 287,596

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1980, 3031330

Int. Cl.³ B29F *1/10;* **B29H** *9/02*

U.S. Cl. 264—136 **5 Claims**



2. A method for producing a length of flexible tubing in the form of a toothed belt comprising the steps of

selecting a mould comprising a core having teeth and notches therebetween with an annular holding surface at an end of the core with a diameter substantially that of the core at the notches, and a sleeve adapted to surround the core, wherein the sleeve has a pot-shape with an open upper end, with the surface of the mould core being cold,

partially filling said pot-shaped mould sleeve with said elastomer material,

placing a peripherably stretchable fabric cover on the mould core,

winding a reinforcing insert on the fabric cover,

covering at least at said one end of the mould core the cross sections of the tooth notches between the teeth by radially contracting said edge of the fabric cover,

attaching the edge of the fabric cover sealingly to said holding surface, the latter constituting a non-toothed part of the mould core,

initially inserting the mould core with said fabric cover and said reinforcing insert starting with said mould core portion containing said edge of the fabric cover into the pot-shaped mould sleeve, the elastomer material which is contained in the mould sleeve being thereby displaced to fill the mould cavity between the mould core and the mould sleeve, finishing the insertion of said mould core into said sleeve such that thereupon with a piston-like impressing of said top cover of said mould cover into said mould sleeve the open upper end of the sleeve is closed and the elastomer material is enclosed and placed under pressure, as a result of which pressure the fabric cover which is stretchable in the peripheral direction of the mould core is pressed down in to the tooth notches of the mould core and brought against the cold surface of the mould core.

3. The method according to claim 2, further comprising the step of

impregnating the fabric cover before it is used on the mould core only on one side with a layer of the elastomer material so as to form a solidified cold impregnation layer, and wherein said placing step provides for

placing the fabric cover around the mould core such that the solidified cold impregnation layer faces away from the surface of the mould core.

4,443,397

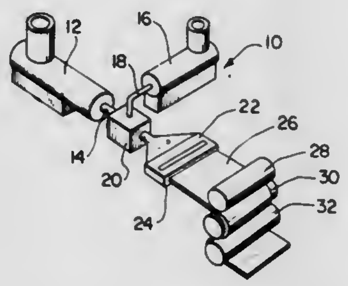
MULTIPLE-LAYERED SHEETING APPARATUS AND PROCESS THEREFOR

Granville J. Hahn, and Raleigh N. Rutledge, both of Big Spring, Tex., assignors to Cosden Technology, Inc., Dallas, Tex.

Filed Aug. 16, 1982, Ser. No. 408,105

Int. Cl.³ B29F *3/04*

U.S. Cl. 264—171 **17 Claims**



1. A co-extrusion apparatus for the production of multi-layered products of thermoplastic synthetic resins having selected numbers of layers, comprising:

a main extruder for producing a main heat-plasticized resin stream;

at least one co-extruder for producing a side heat plastified resin stream;

a co-extrusion feedblock positioned downstream of said extruder and said co-extruder for receiving said main resin stream and said side resin stream and for producing a combined resin stream, said co-extrusion block comprising at least one slotted plate having a central orifice which provides for the passage of said main resin stream and slotted portions on either side of said central orifice for laying down layers of said side resin stream upon said main resin stream, conduit means within said co-extrusion block for splitting said side resin stream and supplying sub-streams thereof to said slotted portions, and adjustment means for varying the volume of flow to any level necessary in each of said sub-streams, said adjustment means being internal to said co-extrusion block and comprising means for external adjustment thereof; and

a sheeting die downstream of said co-extrusion block for receiving said combined stream and for forming the multi-layered product into a multi-layered sheet.

11. A process for producing a multi-layered sheeting, comprising the steps of:

extruding a base layer stream of a heat-plastified material;

co-extruding at least one side stream of a heat-plastified material;

passing said base layer stream through a co-extrusion feedblock;

passing each said side stream into said feedblock;

splitting each said side stream in said feedblock into a plurality of sub-streams;

selectively controlling the flow rate of said sub-streams within said feedblock by external adjustment thereof;

selectively passing at least one of said sub-streams to a selected plate member attached to said feedblock, said plate member having a slot for each sub-stream communicating with said base layer stream passing through said plate member;

laying down at least one layer of said sub-stream upon said base layer stream at said plate member to produce a multi-layered stream; and

passing said multi-layered stream through an extrusion die to form the multilayered sheeting.

4,443,398

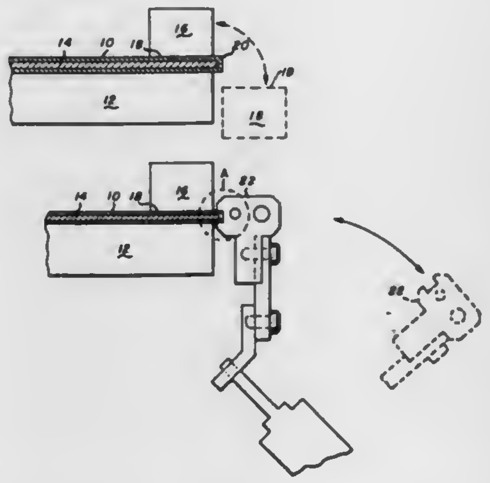
FORMING PROCESS FOR LIGHT GAUGE POLYMER SHEET MATERIAL

Lawrence G. Martinelli, San Jose, Calif., and Mark R. Garrison, Minden, Nev., assignors to Verbatim Corporation, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 102,777, Dec. 12, 1979, Pat. No. 4,294,640. This application Jul. 27, 1981, Ser. No. 287,271

Int. Cl.³ B29C *25/00, 17/02;* **B65D** *85/30;* **B31F** *1/00*

U.S. Cl. 264—235 **7 Claims**



5. A method for forming a moving web of light gauge polymeric material into a substantially warp-free folded article comprising the steps of:

folding a moving web of light gauge polymeric material of polycarbonate about moving sizing terminal ends of a continuous folding mandrel by means of a series of progressive forming rollers whereby a folded edge is formed in said web, said web of material being essentially at room temperature, and said sizing terminal ends moving in synchronism with said web;

clamping said moving web as folded about said synchronously moving sizing terminal ends between a first moving continuous belt pressure track and a second moving continuous belt pressure track, said continuous belt pressure tracks moving in synchronism with said web as folded about said synchronously moving sizing terminal ends with said moving web retained in said folded condition substantially without slippage with respect to said sizing terminal ends and said moving continuous belt pressure tracks, and with said sizing terminal ends of said folding mandrel along with said moving web which said terminal ends protruding slightly beyond the edges of said continuous belt pressure tracks;

applying heat uniformly along said folded edge of said retained moving web by contacting an outer surface of said said web with a series of heated shaping rollers formed to mate with said outer surface of said web along said folded edge, said outer surface of said web being heated thereby to a temperature sufficient to relieve internal stress present in said folded edge of said web; and

cooling said heated edge of said moving web to a temperature below said material's glass transition temperature while maintaining said moving web in a clamped position about said terminal ends by means of said continuous belt pressure tracks; wherein

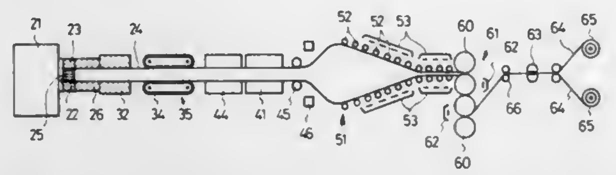
said folding forms an article having a substantially 180° flat fold; and

a surface of said heated shaping rollers shaped to mate with said outer surface of said sheet is a U-shaped trough; whereby the slight protrusion of said terminal ends of said moving web beyond said edges of said continuous belt pressure tracks allows said U-shaped trough to accept the edge of said 180° flat fold of said moving web therein.

4,443,399
METHOD OF PRODUCING BIAXIALLY ORIENTED SHEET OR FILM AND APPARATUS THEREFOR

Masao Takashige; Kazuhisa Kaneda, and Naotaka Murakami, all of Chiba, Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Filed Apr. 21, 1982, Ser. No. 370,240
Claims priority, application Japan, May 7, 1981, 56-68598
Int. Cl.^{3} B29F *3/08*
U.S. Cl. 264—519 **15 Claims**



1. A method of continuously producing a biaxially oriented thermoplastic resin sheet which comprises:

extruding a molten thermoplastic resin in a horizontal direction of travel from a die to form a tube of said resin while injecting a fluid under pressure into the hollow interior of said tube;

then passing said tube horizontally through a sizing mold immediately after said tube is extruded from said die, such that the outer periphery of said tube conforms to said mold, said sizing mold thereby maintaining said tube in the same shape;

cooling said tube to a temperature lower than the softening point of said resin, whereby said tube is not deformed by internal pressure exerted by said fluid;

then passing said tube further horizontally in the direction of travel thereof by means of a transfer speed regulating mechanism which engages the outer periphery of said tube;

then passing said tube through a heating zone wherein said tube is subjected to a temperature gradient such that the lower vertical outer surface of said tube is heated to an extent greater than the upper vertical outer surface of said tube, the upper half of said tube being additionally heated by upwardly directed convection heating, whereby the temperature of said tube is increased substantially uniformly as said tube continues to move horizontally to a temperature higher than the softening point of said resin but lower than the melting point thereof, the diameter of said tube remaining substantially constant;

then passing said tube horizontally out of said heating zone and into a necking zone defined by a plurality of necking members which guide, support and define the shape of said tube as said tube passes therebetween, said tube being at an orientation temperature;

then simultaneously biaxially orienting said tube as said tube continues to move horizontally by expanding said tube radially to form a bubble-shaped portion of said tube by means of said internal fluid pressure, and said bubble-shaped, oriented portion of said tube moves at a speed faster than the speed of transfer of said tube in the horizontal direction;

then collapsing and thereby folding said bubble-shaped portion of said tube, while heating said bubble-shaped portion, to thereby flatten said tube to form a biaxially oriented, bilayered thermoplastic resin sheet.

8. An apparatus for producing a biaxially oriented, thermoplastic resin sheet which comprises:

an extruder adapted to continuously extrude a molten resin in a horizontal direction of travel to form a tube made of said resin;

pressurized fluid feeding means for injecting a pressurized fluid into the interior of said tube as said tube is formed by said extruder;

a sizing mold provided adjacent to said extruder such that said tube passes through an interior cavity of said mold as said tube is continuously produced by said extruder, said sizing mold being effective to maintain the shape of said tube against pressure exerted by said pressurized fluid;

a cooling mechanism positioned to receive said tube which is moving horizontally from said sizing mold and cool said tube to a temperature below the softening point of said resin;

a transfer speed regulating mechanism having movable surfaces thereof positioned to receive said tube which is moving horizontally from said cooling mechanism and adapted to frictionally engage the outer periphery of said tube and thereby regulate the rate of horizontal movement thereof;

a heating mechanism positioned to receive said horizontally moving tube into an interior chamber thereof from said transfer speed regulating mechanism, said heating mechanism comprising a plurality of horizontally elongated heating elements which are disposed in parallel within said interior chamber such that the axes thereof define a cylindrical formation which surrounds said tube as said tube passes through said heating mechanism, said cylindrical formation being coaxial with the axis of said tube, said heating elements including means for heating the lower vertical outer surface of said tube to a greater extent than the upper vertical outer surface of said tube, the upper vertical half of said tube being additionally heated by convection heating, whereby the temperature of said tube is increased substantially uniformly as said tube continues to move horizontally within said interior chamber of said heating mechanism to a temperature higher than the softening point of said resin but lower than the melting point thereof;

a plurality of necking members positioned to receive therebetween said horizontally moving tube from said heating mechanism, whereby said necking members guide, support and define the shape of said tube as said tube passes therebetween, such that said tube expands to form a bubble-shaped portion thereof due to the pressure of said pressurized fluid after said tube moves horizontally beyond said necking members, whereby said tube is simultaneously biaxially oriented;

a plurality of bubble guiding members positioned to receive said bubble-shaped portion of said tube from said necking members and progressively flatten said bubble-shaped portion as said bubble-shaped portion moves horizontally and contacts said bubble guiding members;

a heating mechanism adapted to heat said bubble-shaped portion of said tube as said bubble-shaped portion is flattened by said bubble guiding members, including means for progressively increasing the degree of heating of said bubble-shaped portion as said bubble-shaped portion continues to move along said bubble guiding members;

a plurality of pinch rolls positioned to receive said flattened, bubble-shaped portion of said tube from said bubble guiding members, said pinch rolls including means for completely collapsing said tube and forming a bilayered resin sheet therefrom; and

a take-up mechanism positioned to receive said resin sheet from said pinch rolls.

4,443,400
METHOD AND APPARATUS FOR THE FORMATION OF PROFILED THERMOPLASTIC FILM

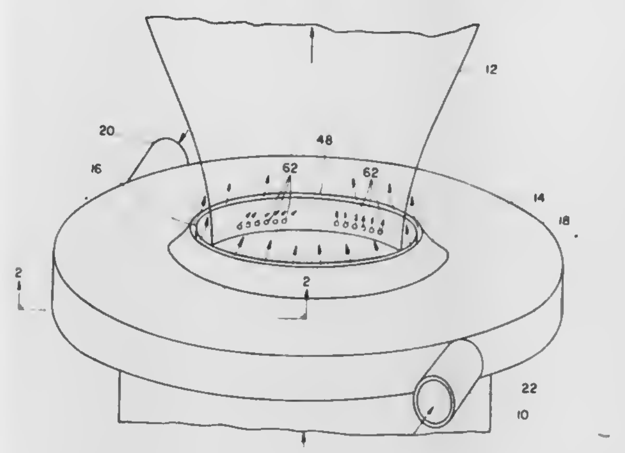
F. John Herrington, Holcomb, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 11, 1982, Ser. No. 407,206
Int. Cl.^{3} B29C *25/00*
U.S. Cl. 264—519 **17 Claims**

1. A method of forming an extruded tubular thermoplastic film having at least one region of a thickened wall profile extending in the longitudinal direction of the extruded tubular film; comprising extruding a molten thermoplastic polymeric material through an annular extrusion die; and passing said extruded tubular film through a cooling zone while said film is

in a heat-plastified condition including subjecting said film to selectively adjustable localized cooling in the region for forming a thickened profile of variable thickness, and subsequently subjecting said tubular film to a selective amount of uniform cooling about the periphery thereof so as to vary the thickness of said film and to form said longitudinally extending thickened profiled region in the wall of the tubular film.

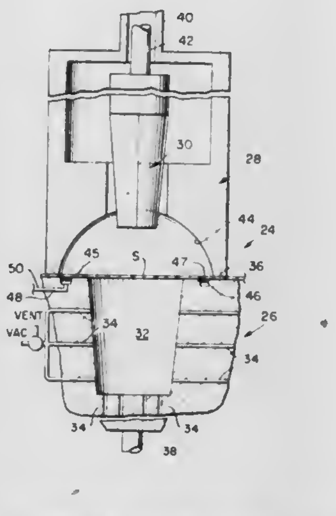
5. An apparatus for the forming of an extruded tubular thermoplastic film having at least one region of a thickened wall profile extending in the longitudinal direction of the extruded film, said apparatus comprising an annular extrusion die for extruding a molten thermoplastic polymeric material to form said film; a cooling ring having a central opening mounted in line with and downstream of said extrusion die wherein the extruded molten polymeric material passes through said central opening, said cooling ring including means for directing a bypass flow of a cooling medium against localized zones along the peripheral surface of said extruded material while said material is in a heat-plastified condition, means for metering the localized bypass flow of said cooling medium for forming said thickened wall profile of variable thickness, and adjustable means in said cooling ring for subsequently directing a uniformly distributed and variable flow quantity of said cooling medium against the peripheral surface of said extruded material so as to form said thickened wall profile region along the zones of said localized cooling while the material is conveyed through said cooling ring.



4,443,401
APPARATUS FOR AND METHOD OF THERMOFORMING PLASTIC CANS

Howard M. Turner, Mount Vernon, Ohio, assignor to The Continental Group, Inc., Stamford, Conn.

Filed Dec. 17, 1981, Ser. No. 331,738
Int. Cl.^{3} B29C *17/04*
U.S. Cl. 264—544 **11 Claims**



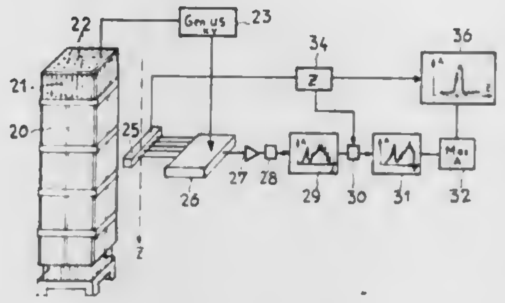
1. In an apparatus for the thermoforming of containers, said apparatus comprising a female mold member defining a mold cavity having an opening defined by a surrounding clamp surface, a clamp overlying said mold member to retain a sheet between said clamp and said mold member, means mounting said mold member and said clamp for relative movement axially of said mold cavity between a sheet clamping position and a molded article releasing position, and a sheet forming plunger carried by said clamp and movable relative to said clamp into said mold cavity for at least effecting an initial forming of a sheet within said mold cavity, the improvement comprising said clamp having a clamping surface surrounding said mold cavity opening and being radially outwardly spaced from said mold cavity opening wherein said clamp is operable to clamp within the confines of said clamp an area of sheet material greatly in excess of the area of said mold cavity opening, said clamp defining a sheet forming cavity opposing said mold cavity, a gas supply means carried by said mold member for initially billowing clamp sheet material upwardly into said sheet forming cavity to enhance biaxial orientation of clamped sheet material, said mold having an annular ledge surrounding said opening and within that portion of said mold opposed in clamping relation by said clamp, and said gas supply means being solely in said ledge closely adjacent said mold portion opposing said clamp for directly impinging gas on a clamped heated plastic sheet to effect stretching of such sheet and billowing thereof into said sheet forming cavity starting at the periphery of that portion of clamped sheet material within said clamp.

7. A method of thermoforming comprising the steps of providing a mold of the type including a mold cavity surrounded by an annular ledge, positioning a sheet of biaxially orientable plastic heated to a selected temperature in overlying relation to the mold, clamping the sheet against the mold ledge remote from the mold cavity, applying a sheet forming gas under pressure to the sheet from the mold ledge adjacent the clamped portion of the sheet to upwardly billow the sheet beginning generally at the periphery to effect biaxial orientation in said sheet including in a peripheral part of said sheet, engaging the billowed portion of the sheet with a plunger and forcing the sheet axially into the mold cavity, and then expanding the sheet to conform to the configuration of the mold cavity.

4,443,402
METHOD AND APPARATUS FOR DETECTING DEFECTIVE FUEL ELEMENTS IN A NUCLEAR REACTOR FUEL ASSEMBLY

Jean Marini, Marly le Roi, and Alain Gravelle, Le Plessis Robinson, both of France, assignors to Framatome, Courbevoie, France

Filed Oct. 9, 1981, Ser. No. 310,268
Claims priority, application France, Oct. 24, 1980, 80 22789
Int. Cl.^{3} G21C *17/00*
U.S. Cl. 376—252 **8 Claims**



1. Method of detecting defective fuel elements in a nuclear reactor fuel assembly constituted by a bundle of elongate fuel rods disposed parallel to each other in the longitudinal direction of said assembly, said method comprising the steps of:

(a) keeping said assembly entirely immersed in a protective liquid such as water;

(b) emitting ultrasonic waves at one of the ends of each of said fuel rods successively and propagating said waves over the entire length of said fuel rod;

(c) moving an ultrasonic sensor near the fuel rod in which said ultrasonic waves are propagated in its longitudinal direction, during propagation of the waves in said rod;

(d) determining the presence of a defect in said rod by picking up, by means of said sensor, the ultrasonic waves eventually scattered by the defect in said rod into said protective liquid;

(e) determining, when a defect is present, the variations of the amplitude of the signal picked up according to the position of said sensor in the longitudinal direction of said rod; and

(f) determining the position of said sensor for which the amplitude of said signal is maximum corresponding to the position of the defect along the length of said rod.

4,443,403

APPARATUS FOR LOADING AND UNLOADING FUEL ASSEMBLIES FOR A FAST NEUTRON NUCLEAR REACTOR

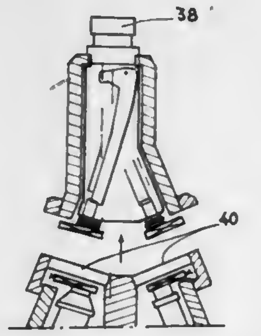
André Plagnard, Montrouge, France, assignor to Novatome, Le Plessis Robinson, France

Filed Jun. 10, 1981, Ser. No. 272,430

Claims priority, application France, Jul. 1, 1980, 80-14637

Int. Cl.³ G21C *19/20*

U.S. Cl. 376—270 **6 Claims**



1. Apparatus for loading and unloading fuel assemblies, for a fast neutron nuclear reactor, allowing assemblies to be moved between a primary loading and unloading ramp (28) communicating with the vessel of said reactor and a secondary ramp (29) communicating with a region for storing or loading assemblies, comprising a lock-chamber (25) resting on the structure of said reactor, the latter also bearing the primary and secondary ramps (28, 29), said reactor having a transfer means (35) fixed therein, said transfer device comprising at least one ramp pivotable by drive means (36) between a position in communication with said primary ramp (28) and a position in communication with said secondary ramp (29), and at least one apparatus for moving said assemblies inside said ramps (28, 29) connected to said movable ramp (35), said primary and secondary ramps bearing isolating means (32, 33) at their ends, said apparatus being removable as a whole, said lock-chamber (25) being constituted by a removable vessel transportable from one said nuclear reactor to another and including connecting and isolating means (30, 31) at apertures (26, 27) in its wall for placing in communication with said primary and secondary ramps (28, 29) of a reactor at the ends of these ramps provided with isolating means (32, 33).

4,443,404

SINTERED POROUS METAL PLATE AND ITS PRODUCTION

Masatoshi Tsuda, Kyoto; Takeshi Kobayashi, Suita, and Katsumi Kaitani, Yao, all of Japan, assignors to Katuragi Sangyo Co., Ltd., Osaka, Japan

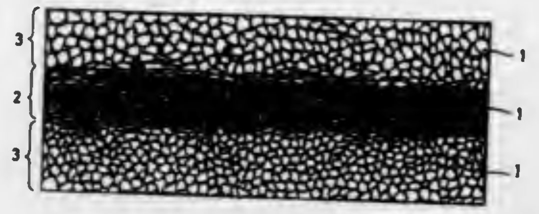
Division of Ser. No. 138,332, Apr. 8, 1980, Pat. No. 4,357,393. This application Aug. 11, 1982, Ser. No. 407,038

Claims priority, application Japan, Apr. 10, 1979, 54-43219

Int. Cl.³ B22F *3/00*

U.S. Cl. 419—2 **2 Claims**

1. A process for producing a sintered porous metal plate comprising metal particles directly and integrally bonded together due to sintering, said plate being of porous structure and having a density gradient in the direction of thickness, characterized in that metal particles are charged into a mold having a pair of refractory side walls, refractory bottom wall and electrodes, pressed by a refractory press within the mold until the metal material attains a predetermined initial electric resistance value, an electric current is passed to the electrodes while controlling the current to uniformly heat the metal material approximately up to its transformation point, then the whole material is heated up to the sintering temperature to effect the sintering, the metal particles being charged in the mold in a plurality of layers respectively different in the metal particle size or a temperature difference being created layerwise in the direction of thickness of the metal material in the mold, wherein thermocouples are embedded in the press or bottom mold to measure the temperatures at various portions of the metal material in the mold, and in accordance with the temperatures so-measured, the electrical current to be passed to the electrodes is controlled in order to heat the whole metal material or particular layer of the material in the mold substantially uniformly.



4,443,405

LEAD-ANTIMONY ALLOYS FOR ELECTRODE SUPPORTS FOR LEAD ACCUMULATORS

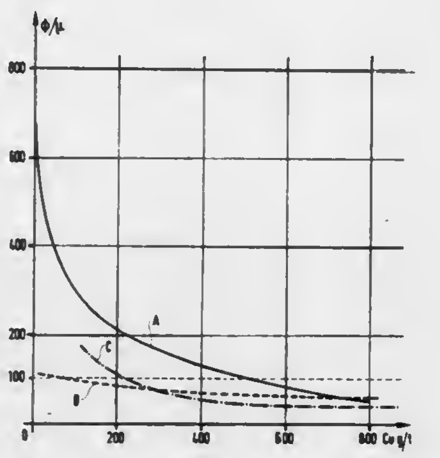
Gerard Dalibard, Sevres, and Nicole Viaud, Ville d'Avray, both of France, assignors to Societe Anonyme dite Compagnie Europeene d'Accumulateurs, Paris, France

Continuation of Ser. No. 168,343, Jul. 11, 1980, abandoned, which is a continuation-in-part of Ser. No. 56,937, Jul. 12, 1979, Pat. No. 4,253,871. This application Jun. 30, 1982, Ser. No. 393,530

Claims priority, application France, Jun. 6, 1980, 80 12603

Int. Cl.³ C21B *11/04*

U.S. Cl. 420—573 **6 Claims**



1. An alloy consisting of less than 4% of antimony, between 0.005 and 0.1% of copper, between 0.001 and 0.1% of a mixture of rare earths, between 0 and 0.5% of arsenic, and between 0 and 0.8% of tin, the balance being lead.

4,443,406

HEAT-RESISTANT AND CORROSION-RESISTANT WELD METAL ALLOY AND WELDED STRUCTURE

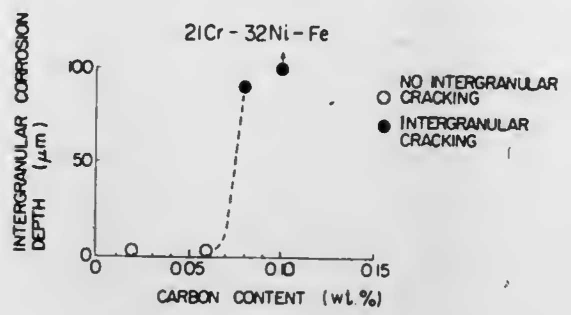
Masayuki Sukekawa, Kitaibaraki; Yoshimitsu Tobita; Seishin Kirihara, both of Hitachi; Hisashi Morimoto, Hiroshima; Kenichi Usami, and Katsumi Iijima, both of Hitachi, all of Japan, assignors to Hitachi, Ltd. and Babcock-Hitachi Kabushiki Kaisha, both of Tokyo, Japan

Filed May 24, 1982, Ser. No. 381,797

Claims priority, application Japan, Jan. 22, 1982, 57-7548

Int. Cl.³ C22C *30/00*

U.S. Cl. 420—584 **15 Claims**



1. A heat-resistant and corrosion-resistant alloy consisting of a weld metal that has a 1,000-hr creep rupture strength of at least 4 Kg/mm^2 at 800° C. and a 1,000-hr creep rupture elongation of at least 6% at 800° C. and that consists essentially of, by weight, less than 0.08% of C, 0.1 to 1.0% of Si, 2 to 3% of Mn, 32 to 42% of Ni, 21 to 25% of Cr, 0.8 to 1.7% of Mo, 0.1 to 1.0% of Nb, up to 0.5% of Ti, up to 2% of Co, up to 2% of Cu, up to 1% of W, up to 0.2% of N, up to 1.0% of V, up to 1.0% of Zr, up to 1.0% of Ta and the balance Fe, wherein the following conditions are met:

$Ti + Zr \leqq 1.0\%$; $Ni + Co \leqq 42\%$;

$W + V \leqq 1.0\%$; $Nb + Ta \leqq 1.0\%$; and

$4 \leqq Nb/C \leqq 15$.

4,443,407

ANALYSIS SYSTEM

Melvin S. Weinberg, Nashua, N.H., and Alan D. Cormier, Newburyport, Mass., assignors to Instrumentation Laboratory Inc., Lexington, Mass.

Division of Ser. No. 245,981, Apr. 2, 1981, Pat. No. 4,361,539, which is a continuation-in-part of Ser. No. 146,705, May 5, 1980, abandoned. This application Jun. 23, 1982, Ser. No. 391,102

The portion of the term of this patent subsequent to Nov. 30, 1999, has been disclaimed.

Int. Cl.³ G01N *27/30*

U.S. Cl. 422—68 **22 Claims**

6. An analysis system for measuring a parameter of a fluid sample comprising:

two metal heat sink members,

a flow-through cell that defines a flow path for a sample to be analyzed, structure in said cell defining an inlet port, an outlet port, and at least one sensor-accepting-port sensing cavity, the two ports and the cavity being in communication with said flow-path, said cell having parallel opposed faces and being disposed between said heat sink member,

each said heat sink member having a surface in mating heat exchange contact with a corresponding one of said opposed cell faces,

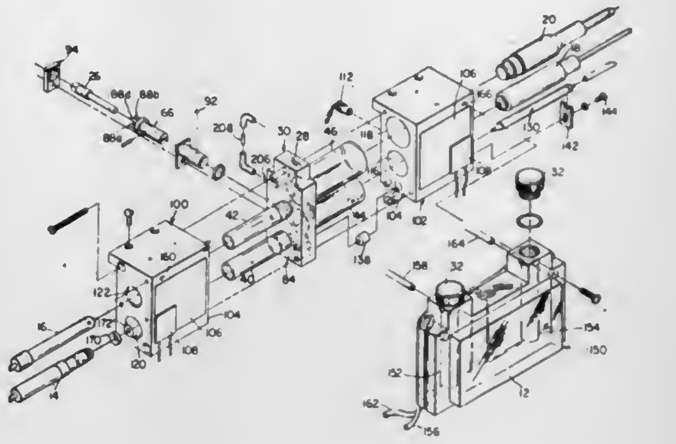
sample analysis electrode structure having a sensing tip at one end thereof and extending through a bore in one of the heat sink members with the sensing tip disposed in sealing engagement in said sensing cavity and forming a portion of the flow path so that the fluid sample in said flow path to be analyzed contacts the tip surface of the sensor,

heater structure in physical contact with each said heat sink member,

a temperature sensor in one of said heat sink members, for sensing the temperature of a heat sink member,

control circuitry responsive to said temperature sensor, for energizing said heater structure to maintain the temperature of said heat sink members and said cell at a predetermined value,

a flush solution flow-through heat exchange structure physically supported in heat exchange contact with said heat sink members and connected to the outlet port of said flow path for stabilizing the temperature of flush solution to be flowed through said sample flow path, preheater flow-through structure disposed in one of said heat sink members and connected to said inlet port for heating sample material being flowed to said flow-through cell for analysis.



4,443,408

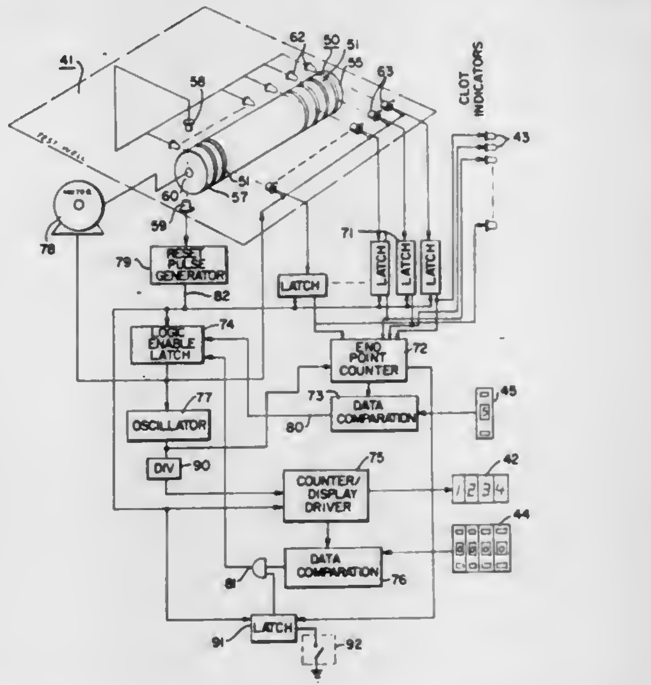
APPARATUS FOR ANALYZING THE INFLUENCE OF ADDITIVE REAGENTS UPON THE COAGULATION OF BLOOD

Michael D. Mintz, Edison, N.J., assignor to International Technidyne, Inc., Edison, N.J.

Filed Jul. 9, 1981, Ser. No. 281,661

Int. Cl.³ G01N *33/86*

U.S. Cl. 422—73 **18 Claims**



1. Analysis apparatus for providing an indication determinative of the coagulation time of a blood sample, comprising:

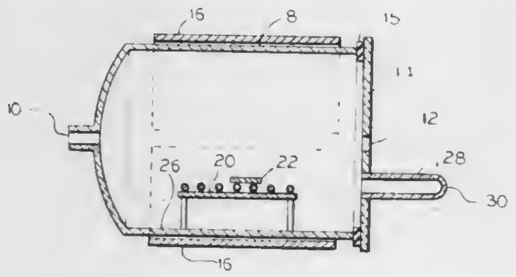
a plurality of detector means each separate one associated with a separate one of a plurality of test chambers with

each of said detectors providing a signal indicative of a clot formed in an associated chamber,
selector means for selecting a predetermined number indicative of the number of clots to be detected in said plurality of chambers, during an analysis,
comparison means responsive to said signals from said detectors and said selected predetermined number to provide an output signal when they are equal, and,
timing means operative to commence operation when said samples are distributed in said test chambers and responsive to said output signal to terminate operation upon the generation of said output signal to cause said timing means to indicate the time interval manifesting the formation of said selected number of clots.

4,443,409
APPARATUS FOR IMPROVED LOW TEMPERATURE ASHING IN A PLASMA

Edward J. Saccocio, and Mark E. Holycross, both of Columbus, Ohio, assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jun. 16, 1982, Ser. No. 388,968
Int. Cl.³ B01J *1/10, 1/12*
U.S. Cl. 422—186.04 **15 Claims**

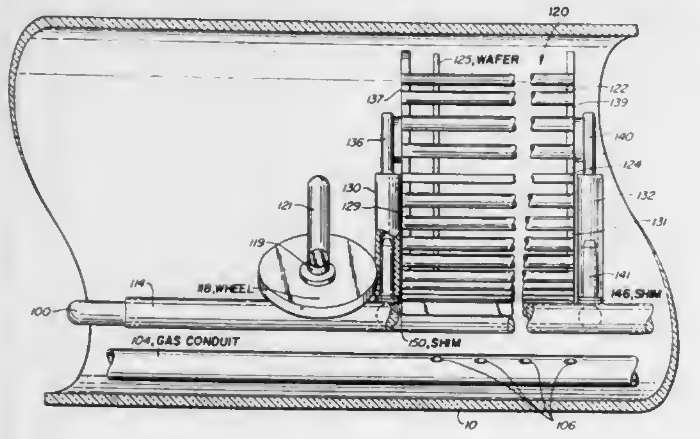


1. A gaseous plasma reaction apparatus comprising:
a nonmetallic, inorganic cylinder;
a first end wall sealing one end of said cylinder;
a second end wall sealing the other end of said cylinder;
a plurality of electrodes surrounding said cylinder and connected to a source of RF energy;
said second end wall being of metallic conductive material and being connectable to an RF ground common to said source of RF energy;
said second end wall having one or more apertures wherein plasma jets may form.

4,443,410
APPARATUS FOR CHEMICAL VAPOR DEPOSITION OF FILMS ON SILICON WAFERS

Constantine J. Zaferes, Santa Clara, Calif., assignor to Advanced Crystal Sciences, Inc., San Jose, Calif.

Division of Ser. No. 150,555, May 16, 1980, Pat. No. 4,309,240. This application Nov. 4, 1981, Ser. No. 318,089
Int. Cl.³ C30B *23/06*
U.S. Cl. 422—245 **3 Claims**

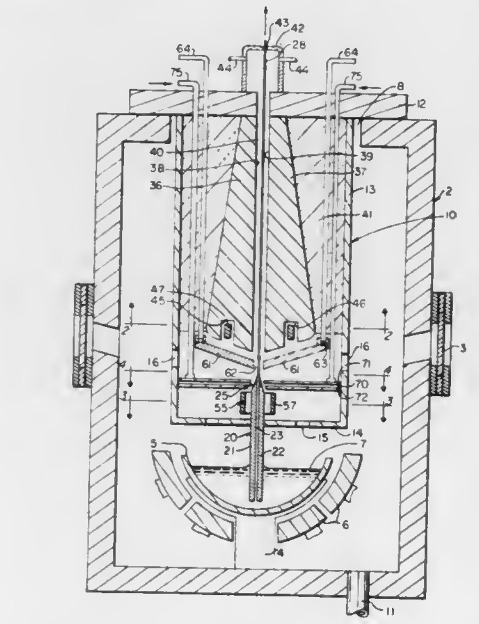


1. In an apparatus for depositing thin films on silicon wafers, the apparatus being of the type having an elongated quartz tube with an exit at one end, heating elements surrounding the exterior of the tube for heating wafers placed within the tube, and a vacuum pump connected to the exit of the tube for evacuating gas from the tube, the improvement comprising:
a. a plurality of generally cylindrically shaped cassettes for holding the wafers within the tube in a spaced-apart mutually parallel arrangement, each of said cassettes having a plurality of longitudinally extending openings spaced about a substantial portion of its cylindrical exterior surface for the passage of gas therethrough;
b. a sled for supporting said cassettes end-to-end and for moving said cassettes and the wafers therein into and out of the quartz tube, said sled having a pair of rails extending generally the length of the cassettes for contact with the quartz tube;
c. means on said rails for varying the height of each of said cassettes;
d. at least one horizontally-oriented conduit inserted through the walls of the tube and located beneath said cassettes and between the rails of said sled, said conduit having a plurality of orifices extending along its length below the wafers held within said cassettes, whereby gas introduced into said conduit exits through said orifices and is dispersed thereby generally vertically upward as a gas curtain; and
e. means operatively connected to said conduit for injecting gas into both ends of said conduit simultaneously, whereby the local volumetric gas flow rate between adjacent wafers is generally equalized, said gas injecting means including means for controlling the rate of flow into each end of said conduit.

4,443,411
APPARATUS FOR CONTROLLING THE ATMOSPHERE SURROUNDING A CRYSTAL GROWTH ZONE

Juris P. Kalejs, Wellesley, Mass., assignor to Mobil Solar Energy Corporation, Waltham, Mass.

Continuation-in-part of Ser. No. 216,370, Dec. 15, 1980. This application Aug. 20, 1981, Ser. No. 294,737
Int. Cl.³ C30B *15/34*
U.S. Cl. 422—246 **10 Claims**

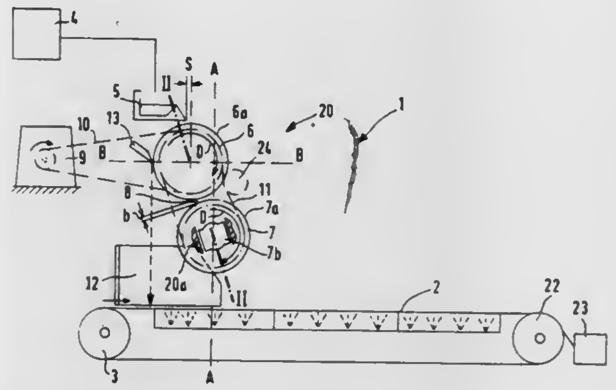


1. An apparatus for growing crystallized silicon in ribbon form comprising, in combination:
(a) crucible means to hold a silicon melt;
(b) heating means to maintain said silicon in melt form;
(c) capillary die means in the form of two elongate parallel die plates defining therebetween a capillary slot, extending from within said melt and being provided at their upper surfaces with means to form of said silicon melt a meniscus which terminates in a liquid/solid growth interface;
(d) pulling means to withdraw the crystallized silicon ribbon as it forms at said interface;
(e) means to maintain a predetermined thermal gradient in said ribbon as it is withdrawn from said growth interface;
(f) spaced die shields defining therebetween a gas passage, said die shields surrounding the upper end of said capillary die means and defining with the surface thereof a gas flow passage arranged to direct a gas upwardly and essentially uniformly over substantially the entire surface of the melt surface of said meniscus;
(g) gas supply means to supply said gas to said gas passage defined between said spaced die shields; and
(h) means to maintain a controlled atmosphere surrounding said melt surface and said silicon ribbon as it forms at said growth interface.

4,443,412
CRYSTALLIZING APPARATUS

Konrad Schermutzki, Remseck, and Wolfgang Weber, Waiblingen-Beinstein, both of Fed. Rep. of Germany, assignors to Santrade, Ltd., Lucerne, Switzerland

Filed Apr. 1, 1982, Ser. No. 364,443
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1981, 3116277
Int. Cl.³ B01D *9/00;* C30B *15/30, 35/00*
U.S. Cl. 422—247 **14 Claims**

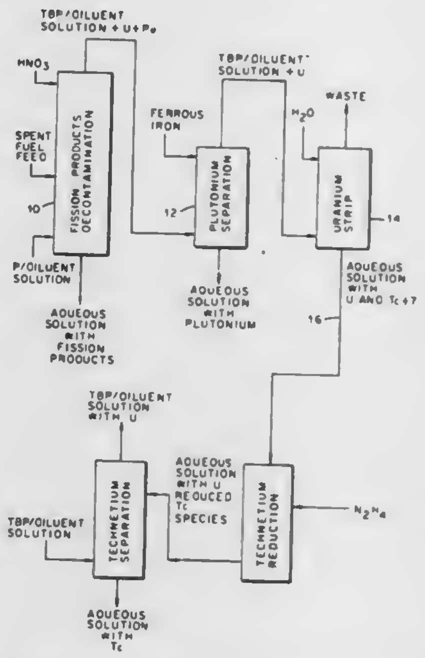


1. In a crystallizing apparatus comprising a crystallizing belt and a precrystallizer, wherein nucleation of a melt in the precrystallizer is initiated in a thin layer, followed by crystallizing on the crystallizing belt, to which the precrystallized melt is applied in a thicker layer, the improvement wherein the precrystallizer comprises at least two rolls rotating in the same direction, said at least two rolls being arranged one above the other and both over said crystallizing belt so that the axle of an uppermost one of said at least two rolls is offset in the direction of the onset of the belt relative to the axle of the lowermost one of said at least two rolls, said at least two rolls being arranged so that their peripheral surfaces form therebetween a shear gap at the point of their shortest separation, the width of which being less than the thickness of the melt applied to the uppermost roll, a scraper blade arranged to act on the peripheral surface of the uppermost roll on a side thereof facing in the direction of the onset of the conveyor belt to remove the melt therefrom.

4,443,413
SEPARATION OF URANIUM FROM TECHNETIUM IN RECOVERY OF SPENT NUCLEAR FUEL

David J. Pruett, and Donald R. McTaggart, both of Knoxville, Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 31, 1983, Ser. No. 528,279
Int. Cl.³ C01G *43/00, 57/00*
U.S. Cl. 423—10 **1 Claim**

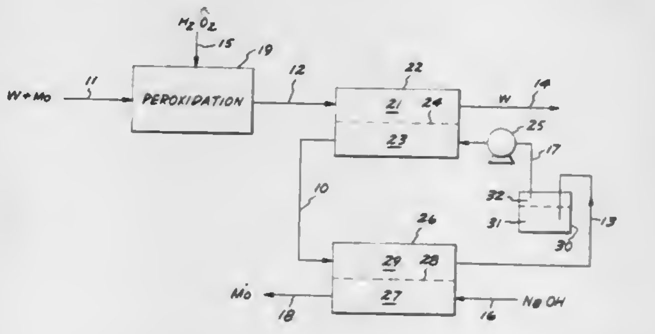

TBP/DILUENT SOLUTION + U+Pu
HNO3
SPENT FUEL FEED
10
FISSION PRODUCTS DECONTAMINATION
P/DILUENT SOLUTION
AQUEOUS SOLUTION WITH FISSION PRODUCTS
FERROUS IRON
12
PLUTONIUM SEPARATION
AQUEOUS SOLUTION WITH PLUTONIUM
TBP/DILUENT SOLUTION + U
H2O
WASTE
URANIUM STRIP
14
AQUEOUS SOLUTION WITH U AND Tc+7
16
TBP/DILUENT SOLUTION WITH U
TBP/DILUENT SOLUTION
TECHNETIUM SEPARATION
AQUEOUS SOLUTION WITH U REDUCED Tc SPECIES
TECHNETIUM REDUCTION
N2H4
AQUEOUS SOLUTION WITH Tc

1. In a spent nuclear fuel recovery process wherein a stream containing U and Tc^{+7} is contacted with an organic phase containing tributyl phosphate and an organic diluent to extract U and and Tc^{+7} from said stream into said organic phase and subsequently U and Tc^{+7} are stripped from said organic phase into an aqueous solution, the improvement comprising:
(1) contacting said aqueous solution with hydrazine to thereby convert the Tc^{+7} therein to a reduced Tc species; and
(2) contacting said aqueous solution containing U and the reduced Tc species with an organic phase containing tributyl phosphate and an organic diluent to extract U from said aqueous solution into said organic phase while leaving substantially all of the reduced Tc species in the aqueous solution.

4,443,414
PROCESS FOR SEPARATION OF MOLYBDENUM FROM TUNGSTEN LEACHATES

Bang M. Kim, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 13, 1982, Ser. No. 407,964
Int. Cl.³ C01G *39/00, 41/00*
U.S. Cl. 423—54 **6 Claims**



1. A method for the separation of molybdenum and tungsten in leachate solutions containing them, comprising the steps of:
mixing a leachate solution with a hydrogen peroxide to form an aqueous feed solution;

- contacting said feed solution with one side of a first porous membrane;
- contacting the second side of said first membrane with an organic molybdenum selective solvent operating to produce the selective passage of molybdenum through said first membrane;
- contacting the organic solvent which has been in contact with the second side of said first porous membrane with the first side of a second, porous membrane;
- contacting the second side of said second membrane with an alkaline solution for the selective passage of molybdenum through said second membrane;
- recirculating said solvent solution which has been in contact with said first side of said second membrane, through an aqueous separator, and thence to the second side of said first membrane.

4,443,415

RECOVERY OF V_2O_5 AND NICKEL VALUES FROM PETROLEUM COKE

Paul B. Queneau, Golden; Robert F. Hogsett; Leo W. Beckstead, both of Arvada, and Dale K. Huggins, Golden, all of Colo., assignors to Amax Inc., Greenwich, Conn.

Filed Jun. 22, 1982, Ser. No. 391,027

Int. Cl.^{3} C01G *31/00, 53/00*

U.S. Cl. 423—68 **8 Claims**

1. A process for recovering vanadium and nickel values from petroleum coke comprising carbonaceous matter assaying at least about 50 wt. % carbon and also containing vanadium, at least a portion of which is in an oxidation state no higher than trivalent, iron, in an amount less than about 10% by weight of the vanadium as V_2O_5, and nickel values, as well as one or more compounds of sulfur, comprising

(a) establishing a slurry of the coke in an aqueous solution of sodium carbonate in an amount to provide an excess of sodium over the stoichiometric amount for formation of $NaVO_3$ and Na_2SO_4,

(b) digesting the slurry in an autoclave at a digestion temperature of about 250° C. to about 320° C. under an oxygen overpressure comprising at least the stoichiometric amount of oxygen for oxidation of the vanadium in the trivalent or lower oxidation state to the pentavalent state, to form an aqueous sodium vanadate liquor containing at least about 75% of the vanadium values fed in the slurry and a digestion residue containing vanadium, iron, and nickel values as well as any unoxidized carbonaceous matter,

(c) separating the sodium vanadate liquor from the digestion residue,

(d) leaching the digestion residue with an aqueous solution of an alkali metal compound selected from the group consisting of carbonates and hydroxides to produce a vanadate leach liquor and a first leach residue,

(e) filtering the vanadate leach liquor from the first leach residue,

(f) leaching the first leach residue with an aqueous solution of a mineral acid having a pH value between about 3 and about 6 to produce a nickel leach liquor and a second leach residue, and

(g) filtering the nickel leach liquor from the second leach residue.

4,443,416

PURIFICATION OF BAYER PROCESS LIQUORS

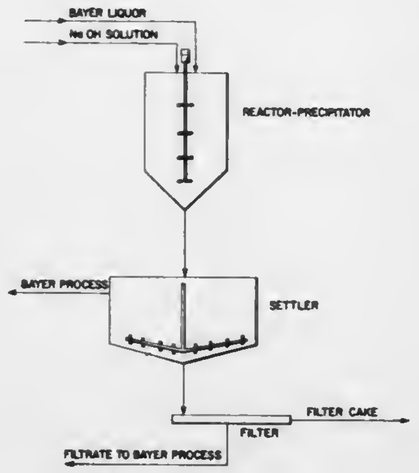
Donald J. Donaldson, Orinda; Allan C. Kelly, Pleasanton; Joseph W. Mulloy, Orinda, and Donald R. Zwakenberg, Oakland, all of Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Apr. 18, 1983, Ser. No. 485,807

Int. Cl.^{3} C01F *7/06*

U.S. Cl. 423—122 **5 Claims**

1. A process for removing dissolved sodium oxalate impurity from oxalate-contaminated Bayer process liquors which comprises contacting the contaminated liquor with a caustic solution having an NaOH concentration in the range of about 400–730 grams/liter, at a temperature within the range of about 20° to about 85° C., the quantity of caustic solution being sufficient to provide a caustic concentration for the combined liquor-solution in excess of about 250 grams/liter calculated as Na_2CO_3 grams equivalent, maintaining the contact between the liquor and the caustic solution for a time period from about 35 to about 180 minutes to precipitate sodium oxalate, separating the precipitated sodium oxalate and recovering a liquor of significantly reduced oxalate impurity content.



4,443,417

METHOD FOR SEPARATING GASEOUS, ELEMENTARY MERCURY FROM A GAS

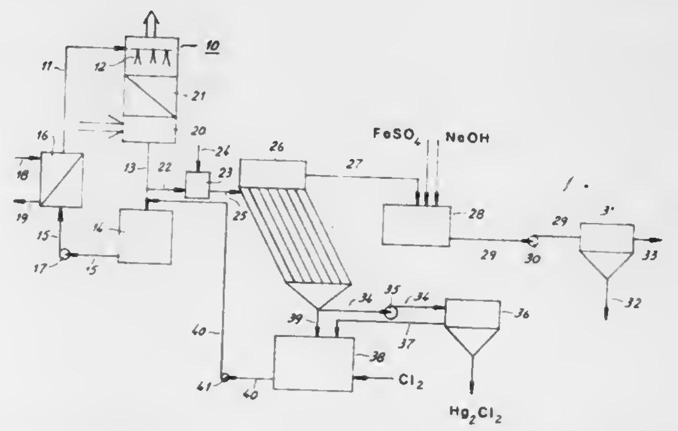
Johan E. Wiklund, Helsingborg, Sweden, assignor to Boliden Aktiebolag, Stockholm, Sweden

Filed Apr. 14, 1982, Ser. No. 368,210

Claims priority, application Sweden, May 8, 1981, 8102898

Int. Cl.^{3} B01D *53/34*

U.S. Cl. 423—210 **8 Claims**



1. In a method for separating gaseous elementary mercury and gaseous halogenides of mercury and for other heavy metals from a gas in which the mercury-containing gas is treated with an aqueous washing solution circulating in a closed circuit and containing 0.1–300 mmol/l mercury (II) ions and at least twice that amount of ions capable of forming complexes with mercury (II) ions, and in which elementary mercury present in the gas is oxidized and absorbed in the washing liquid, wherein the improvement comprises saturating the gas having a temperature of 60°–70° C. with moisture, cooling the moisture saturated gas to form a condensate for absorbing gaseous halogenides from the gas, using the washing solution as gas-cooling medium and as a means for capturing condensate droplets formed as a result of said cooling, supplying the solution to the cooling stage in such an amount relative to the amount of gas entering said stage that the temperature of the solution is raised at most by about 20° C., controlling the temperature of the solution leaving said cooling stage to be below 60° C. and maintaining the mercury (II) content of the washing solution by bringing said solution into contact with an oxidizing agent for mercury (I) ions.

4,443,418

METHOD OF REMOVING HYDROGEN SULFIDE AND CARBON DIOXIDE FROM GASES

Eugene F. Lutz, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 337,232, Jan. 6, 1982, abandoned. This application Nov. 15, 1982, Ser. No. 441,830

Int. Cl.^{3} B01D *53/34*

U.S. Cl. 423—226 **14 Claims**

5. A process for the removal of H_2S from a sour gaseous stream comprising:

(a) contacting the sour gaseous stream in a contacting zone with an aqueous reaction solution at a temperature below the melting point of sulfur, the solution comprising an effective amount of an oxidizing reactant selected from the group consisting of oxidizing polyvalent metal chelates of nitrilotriacetic acid, and mixtures thereof, to produce a sweet gas stream and an aqueous admixture containing sulfur and reduced reactant;

(b) removing aqueous admixture from the contacting zone, and removing solid sulfur from said aqueous admixture;

(c) regenerating said aqueous admixture, producing a regenerated oxidizing reactant solution, and returning regenerated oxidizing reactant solution to the contacting zone;

(d) removing a bleed stream containing a composition selected from polyvalent metal chelates of nitrilotriacetic acid, and mixtures thereof, and containing decomposition products of said composition, from one or more loci in steps a, b, or c;

(e) contacting said bleed stream with sufficient acid selected from the group consisting of HCl, H_2SO_4, H_3PO_4, and mixtures thereof, to dissociate at least the bulk of the polyvalent chelate or chelates in the bleed stream under conditions to precipitate a solid from the bleed stream containing nitrilotriacetic acid, and precipitating said solid and separating precipitated solid from the bleed stream.

4,443,419

MOVING BED GAS TREATING PROCESS

Don B. Carson, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Sep. 9, 1982, Ser. No. 429,699

Int. Cl.^{3} B01J *8/00;* **C01B** *17/00*

U.S. Cl. 423—244 **5 Claims**

1. A process for treating gas streams for the simultaneous removal of sulfur dioxide nitrogen oxides and entrained particles which comprises the steps of:

(a) passing a feed gas stream and a reductant, which comprises undesired entrained particles, nitrogen oxides, and sulfur dioxide, horizontally through a vertical first contacting bed comprising a moving bed of treating particles and therein removing entrained particles comprising copper or copper containing compounds from the feed gas stream by the collection of entrained particles within the first contacting bed and also removing sulfur dioxide and nitrogen oxides from the feed gas stream by the chemical reaction of the sulfur dioxide with a component of copper or copper containing treating particles and the reduction of the nitrogen oxides within the first contacting bed, and thereby forming a first process stream which is substantially free of entrained particles and which has a lower concentration of sulfur dioxide and nitrogen oxides than the feed gas stream;

(b) monitoring the concentration of sulfur dioxide in the first process stream;

(c) adjusting the amount of the first process stream which is passed through a second contacting bed comprising treating particles comprising copper or copper containing compounds and the amount of the first process stream which is bypassed around the second contacting bed in response to the previously monitored concentration of sulfur dioxide in the first process stream; and,

(d) transferring the treating particles comprising copper or copper containing compounds by the action of gravity from the second contacting bed to the first contacting bed.

4,443,420

PROCESS FOR PRODUCING CUBIC SYSTEM BORON NITRIDE

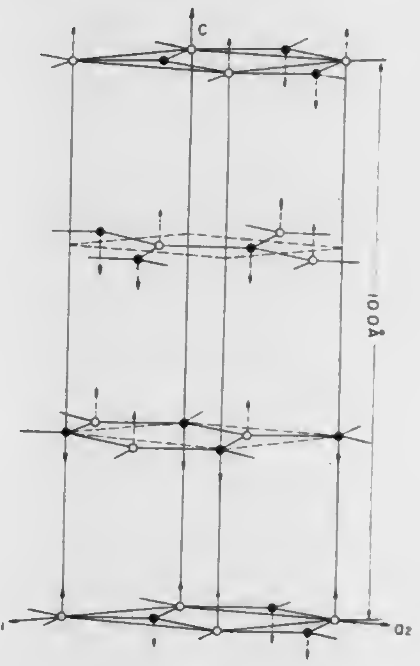
Tadao Sato; Toshihiko Ishii, both of Sakura, and Nobuo Setaka, Nagareyama, all of Japan, assignors to National Institute for Researches in Inorganic Materials, Niihari,. Japan

Filed Mar. 17, 1982, Ser. No. 359,100

Claims priority, application Japan, Oct. 26, 1981, 56-171250

Int. Cl.^{3} C01B *21/06*

U.S. Cl. 423—290 **8 Claims**



1. A process for producing cubic system boron nitride, which comprises applying a thermodynamically stable shock wave compressing pressure of from about 100 to 1500 k bar to rhombohedral system boron nitride to convert the rhombohedral system boron nitride to cubic system boron nitride

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4,443,421

PROCESS FOR REMOVING PARTICULATE IMPURITIES FROM AQUEOUS PHOSPHORIC ACID

Charles M. Hollifield, Lake City, and Teddy D. Smith, Jasper, both of Fla., assignors to Occidental Chemical Corporation, Houston, Tex.

Filed Mar. 16, 1982, Ser. No. 358,744

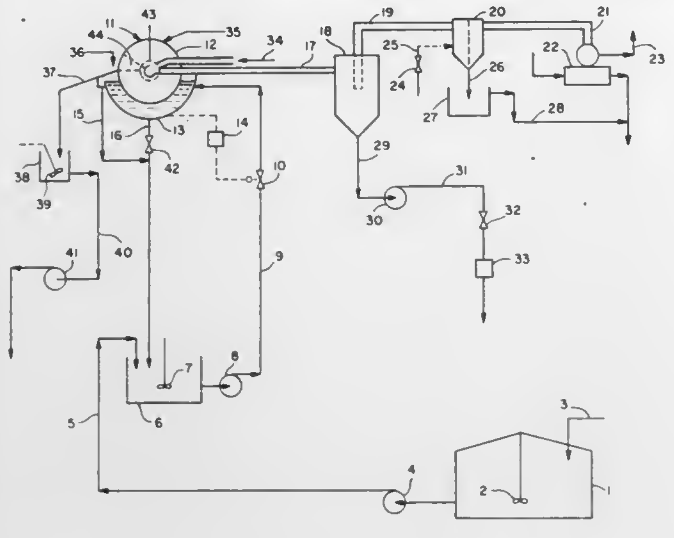
Int. Cl.^{3} C01B *25/16*

U.S. Cl. 423—321 R **23 Claims**

1. A process for removing sludge-forming particulate impurities from aqueous phosphoric acid containing sludge-forming particulate impurities, said process comprising:

(a) passing an acid containing sludge-forming particulate impurities at an elevated temperature through a phosphoric acid resistant fabric filter supported on a porous medium to cause at least a portion of said particulate impurities in said acid to be filtered therefrom and to be retained by the fabric filter, thereby forming, directly on the surface of said fabric filter, a filter cake comprising said particulate impurities and entrained phosphoric acid;

(b) removing the filter cake from the fabric filter by the introduction of a discharge fluid to the fabric filter on the side opposite said filter cake, thereby exposing a fresh surface of the fabric filter for subsequent filtration; and



(c) repeating step (a) using said fresh surface of said fabric filter as said phosphoric acid resistant fabric filter.

4,443,422

SYNTHESIS OF ZEOLITES OF SMALL AND UNIFORM SIZE HAVING A HIGH MAGNESIUM EXCHANGE CAPACITY

John A. Kostinko, Bel Air, Md., assignor to J. M. Huber Corporation, Locust, N.J.

Division of Ser. No. 88,243, Oct. 25, 1979, abandoned, which is a continuation-in-part of Ser. No. 971,584, Dec. 20, 1978, Pat. No. 4,235,852. This application Nov. 4, 1980, Ser. No. 203,925

The portion of the term of this patent subsequent to Jun. 22, 1999, has been disclaimed.

Int. Cl.³ C01B *33/28*

U.S. Cl. 423—329 **7 Claims**

1. A method of producing zeolite X of small and uniform size and having a high magnesium exchange capacity which comprises:

(a) forming a sodium silicate solution by dissolving sand in a sodium hydroxide solution at a pressure of at least 100 psig heated to a temperature of at least 130° C. to produce a sodium silicate solution having a silica to sodium oxide molar ratio of between 2.4:1 and 2.8:1;
(b) activating said sodium silicate solution by treating with from 50 to 2000 ppm alumina;
(c) heating said sodium silicate solution to between 40° and 120° C.;
(d) forming a sodium aluminate solution;
(e) mixing the sodium aluminate solution and the sodium silicate solution to produce a reaction mixture comprising a sodium silicate mother liquor and an amorphous sodium alumino silicate, in total having a water to sodium oxide molar ratio of between 25:1 and 90:1; a sodium oxide to silica molar ratio of between 1:1 and 3:1; and a silica to alumina molar ratio of between 5:1 and 10:1;
(f) heating said mixture;
(g) reacting said mixture until zeolite X is formed; and
(h) recovering said zeolite X.

4,443,423

METHOD OF REMOVING HYDROGEN SULFIDE FROM GASES UTILIZING A POLYVALENT METAL CHELATE SOLUTION AND ELECTROLYTICALLY REGENERATING THE SOLUTION

Donald C. Olson, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

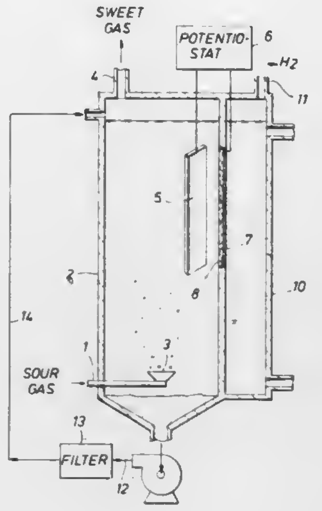
Filed Sep. 30, 1982, Ser. No. 430,465

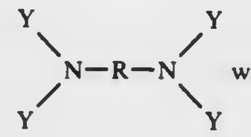
Int. Cl.³ C01B *17/04;* B01D *53/34*

U.S. Cl. 423—573 G **7 Claims**

1. A process for the removal of H_2S from a sour gaseous stream comprising

(a) contacting the sour gaseous stream in a contacting zone with an aqueous reaction solution at a temperature below the melting point of sulfur, the solution containing an effective amount of a reactant comprising an oxidizing polyvalent metal chelate of an acid having the formula



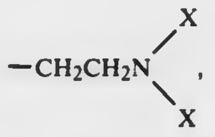


wherein

wherein

from two to four of the groups Y are selected from acetic and propionic acid groups;

from zero to two of the groups Y are selected from 2-hydroxy ethyl, 2-hydroxy propyl, and



$$-CH_2CH_2N\begin{matrix}\diagup X\\ \diagdown X\end{matrix}\ ,$$

wherein X is selected from acetic acid and propionic acid groups; and

R is ethylene, propylene or isopropylene or alternatively cyclohexane or benzene where the two hydrogen atoms replaced by nitrogen atoms are in the 1,2 position; and mixtures thereof,

and producing a sweet gas stream and an aqueous admixture containing crystalline sulfur, hydrogen ions, and the reduced polyvalent metal chelate of said acid, or mixtures thereof; said contacting zone comprising an anode section of an electrochemical cell, said cell also comprising a separate cathode section containing a cathode connected through an external electrical convention to the anode, the anode section and the cathode section being separated by a hydrogen ion permeable barrier,

(b) oxidizing the reduced polyvalent metal chelate or chelates of said acid in the aqueous reaction solution at the anode by supplying direct current to said cell, concomitantly allowing hydrogen ions to migrate to the cathode, and producing hydrogen at the cathode;
(c) removing sulfur from the aqueous reaction solution, and hydrogen from the cathode section.

4,443,424

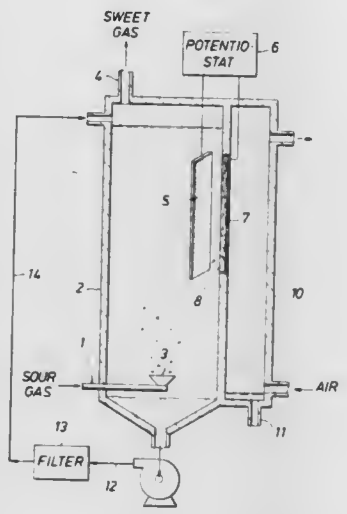
METHOD OF REMOVING HYDROGEN SULFIDE FROM GASES UTILIZING A POLYVALENT METAL CHELATE SOLUTION AND ELECTROLYTICALLY REGENERATING THE SOLUTION

Donald C. Olson, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Sep. 30, 1982, Ser. No. 430,462

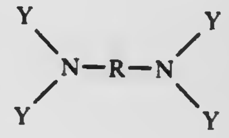
Int. Cl.³ C01B *17/04;* B01D *53/34*

U.S. Cl. 423—573 G **6 Claims**



1. A process for the removal of H_2S from a sour gaseous stream comprising

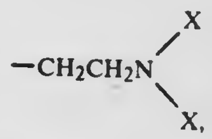
(a) contacting the sour gaseous stream in a contacting zone with an aqueous reaction solution at a temperature below the melting point of sulfur, the solution containing an effective amount of an oxidizing reactant comprising an oxidizing polyvalent metal chelate of an acid having the formula



wherein

from two to four of the groups Y are selected from acetic and propionic acid groups;

from zero to two of the groups Y are selected from 2-hydroxy ethyl, 2-hydroxy propyl, and



$$-CH_2CH_2N\begin{matrix}\diagup X\\ \diagdown X,\end{matrix}$$

wherein X is selected from acetic acid and propionic acid groups; and

R is ethylene, propylene or isopropylene or alternatively cyclohexane or benzene where the two hydrogen atoms replaced by nitrogen atoms are in the 1,2 position, and mixtures thereof;

and producing a sweet gas stream and an aqueous reaction solution containing crystalline sulfur, hydrogen ions, and reduced polyvalent metal chelate or chelates of said acid; said contacting zone comprising an anode section of an electrochemical cell, said cell also comprising a separate cathode section containing a cathode connected through an external electrical connection to the anode, the anode section and the cathode section being separated by a hydrogen ion permeable barrier;

(b) oxidizing the reduced polyvalent metal chelate or chelates of said acid in the aqueous reaction solution at the anode by supplying direct current to said cell and allowing hydrogen ions to migrate to the cathode, concomitantly supplying oxygen to the cathode and forming water at the cathode;
(c) removing sulfur from the aqueous reaction solution, and water from the cathode section.

4,443,425

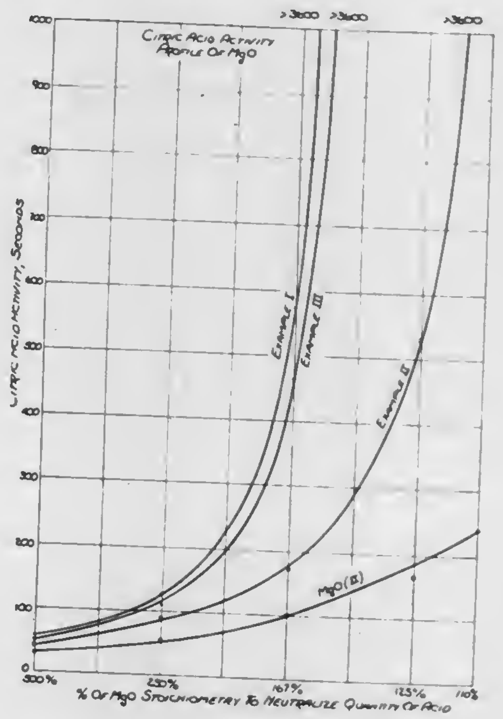
MAGNESIUM OXIDE COMPOSITION FOR COATING SILICON STEEL

Samuel W. Sopp, Foster City; Leonard S. Lee, South San Francisco, and Michael W. Howe, Albany, all of Calif., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed Dec. 9, 1981, Ser. No. 328,965

Int. Cl.³ C01F *5/06*

U.S. Cl. 423—635 **5 Claims**



1. A magnesium oxide composition, for use in coating silicon steel, having a Citric Acid Activity of 50 to 200 seconds and a particle size of 90 percent finer than 325 mesh, comprising a blend of

(a) ground magnesium oxide having a Citric Acid Activity of greater than 200 seconds and
(b) ground magnesium oxide having a Citric Acid Activity of 40 to 100 seconds.

4. A process for the production of a magnesium oxide composition, for use in coating silicon steel, having a Citric Acid Activity of 50 to 200 seconds and a particle size of 90 percent finer than 325 mesh, comprising:

(a) grinding to a 90 percent finer than 325 mesh
    (i) 20 to 60 percent by weight of a ground magnesium oxide having a Citric Acid Activity of greater than 200 seconds and
    (ii) 40 to 80 percent by weight of a ground magnesium oxide having a Citric Acid Activity of 40 to 100 seconds and
(b) blending (i) and (ii) together.

4,443,426

BLOOD AGENT

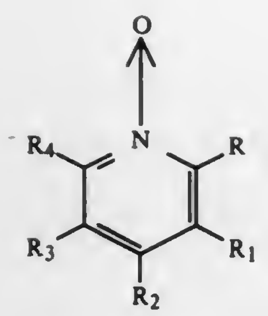
Madhukar L. Thakur, Hamden, Conn., assignor to Yale University, New Haven, Conn.

Filed Jun. 14, 1982, Ser. No. 387,731

Int. Cl.³ A61K *43/00, 49/00*

U.S. Cl. 424—1.1 **36 Claims**

1. A process for imaging blood cells comprising intravenously injecting an effective amount of a composition containing the blood cells to be imaged which have been radioactively labelled by means of a complex of a radioactive metal selected from the group consisting of technetium, indium, ruthenium or gallium, with a compound of the formula:



I

wherein R is an electron denoting or an electron withdrawing group; and R_1, R_2, R_3 and R_4 and independently halogen, methoxy, ethoxy, hydrogen—$(CH_2)_n$—COOH, methyl or ethyl; and n is 0 or 1 in a carrier suitable for intravenous injection and scanning the area to be imaged with a scintiscanning means.

4,443,427

MONOCLONAL ANTIBODY

Ellis L. Reinherz, Lincoln, and Stuart F. Schlossman, Newton Centre, both of Mass., assignors to Sidney Farber Cancer Institute, Inc., Boston, Mass.

Filed Jun. 21, 1982, Ser. No. 390,548

Int. Cl.^{3} A61K *43/00, 39/00;* **C12N** *15/00*

U.S. Cl. 424—1.1 8 Claims

1. A monoclonal antibody specific to a particular antigen on the surface of mature human T cells,

said antigen being further characterized in that
- it has a molecular weight of about 120,000 daltons, as determined by carrying out electrophoresis on the antigen and comparing its movement with that of marker proteins of known molecular weight,
- it is not modulated by monoclonal antibodies specific to it, and
- it appears only on the surfaces of mature, and not immature, T cells, and

said monoclonal antibody being further characterized in that
- it is produced by a hybrid cell comprising a murine lymphocyte,
- it is capable of selectively binding mature human T cells,
- it lyses mature human T cells in vitro in the presence of complement, and
- it fails to induce the proliferation or activation of human lymphocytes.

4,443,428

EXTENDED ACTION CONTROLLED RELEASE COMPOSITIONS

Benjamin Oshlack, New York, N.Y., and Stewart T. Leslie, Aberdeen, Scotland, assignors to Euroceltique, S.A., Luxembourg

Filed Jun. 21, 1982, Ser. No. 390,540

Int. Cl.^{3} A61K *9/22, 9/24, 9/52*

U.S. Cl. 424—22 9 Claims

1. On an extended action controlled release pharmaceutical composition for oral administration comprising a hydrated hydroxyalkylcellulose and hydrophobic 10 to 18 carbon atoms higher aliphatic alcohol or paraffin wax balanced matrix melt granulation pharmaceutically acceptable controlled release core or matrix for the oral administration of pharmaceutically active agents, said controlled release core or matrix providing upon oral ingestion thereof slow release in the body of pharmaceutically active agents distributed therein, the improvement wherein said composition comprises said controlled release core or matrix for oral administration having distributed therethrough a pharmaceutically effective amount of a pharmacologically active substance in salt form thereof and in the free base form thereof, said pharmaceutically effective amount comprising between about 75% and 25% by weight of a pharmaceutically acceptable salt form of said pharmacologically active substance and between about 25% and 75% by weight of the free base form of said pharmacologically active substance, the amounts being based on the pharmacologically active moiety of said pharmacologically active substance.

4,443,429

CONTACT LENS DISINFECTING AND PRESERVING SOLUTION (POLYMERIC)

Francis X. Smith, and Thomas M. Riedhammer, both of Rochester, N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Division of Ser. No. 210,960, Nov. 28, 1980, Pat. No. 4,361,548. This application Sep. 15, 1982, Ser. No. 418,351

Int. Cl.^{3} A61K *31/74, 31/14, 31/305, 31/19*

U.S. Cl. 424—78 4 Claims

1. An aqueous solution for preserving or disinfecting soft contact lenses having as the active antimicrobial agent dimethyldiallyl ammonium chloride homopolymer having a molecular weight from 10,000 to 1,000,000 present in the amount of from about 0.00001 to about 0.1 weight percent combined with from about 0.0001 to about 0.5 weight percent of an enhancing agent selected from the group consisting of thimerosal, sorbic acid, phenylmercuric salts, ethylenediaminetetracetic acid and its salts and mixtures thereof.

4,443,430

SYNTHETIC ABSORBABLE HEMOSTATIC AGENT

Frank V. Mattei, Piscataway, N.J., and Namassivaya Doddi, Upland, Calif., assignors to Ethicon, Inc., Somerville, N.J.

Filed Nov. 16, 1982, Ser. No. 442,218

Int. Cl.^{3} A61K *31/74;* **C08G** *63/08*

U.S. Cl. 424—78 16 Claims

1. A synthetic absorbable hemostatic agent for use in the control of osseous hemorrhage, comprising a copolymer of lactide and glycolide containing from about 30% to 70% lactide on a molar basis, having a molecular weight such that it is workable and softenable by hand to bring about a putty-like consistency at room temperature, the agent having a tackiness sufficient for it to adhere readily to a bloody bone surface and yet being able to be manipulated without crumbling or sticking to the surgeon's gloves, said copolymer having an inherent viscosity in hexafluoroisopropanol at a concentration of 0.1 g/dl and at a temperature of 25° C. of between about 0.03 and 0.1.

14. A process for the control of bleeding from cut bone surfaces, which comprises applying to the cut bone surface, a copolymer of lactide and glycolide containing from 30% to 70% lactide on a molar basis, having a molecular weight such that it is workable and softenable by hand to bring about a putty-like consistency at room temperature, the agent having a tackiness sufficient for it to adhere readily to a bloody bone surface and yet being able to be manipulated without crumbling or sticking to the surgeon's gloves, said copolymer having an inherent viscosity in hexafluoroisopropanol at a concentration of 0.1 g/dl and at a temperature of 25° C. of between about 0.03 and 0.1.

4,443,431

NEISSERIA GONORRHOEAE VACCINE

Thomas M. Buchanan, Seattle, Wash.; William Pearce, Arlington, Va., and Kirk C. S. Chen, Seattle, Wash., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed May 27, 1981, Ser. No. 267,538

Int. Cl.^{3} A61K *39/095;* **C07C** *103/52*

U.S. Cl. 424—92 14 Claims

1. A cleaved fragment of purified pili protein from *Neisseria gonorrhoeae* comprising a CNI fragment which is the largest fragment obtained by cleavage of the purified pili protein at the methionine residues thereof, said fragment being further characterized by:

(a) an amino acid sequence different from the amino acid sequences of the other fragments;
(b) containing an antigen common to most pili of *Neisseria gonorrhoeae;* and
(c) being the only fragment obtained capable of binding to cells.

3. A vaccine for protecting animals against *Neisseria gonorrhoeae* infection consisting essentially of an effective amount of the cleaved fragment of claim 1 admixed with a pharmaceutically acceptable carrier.

4,443,432

OPHTHMALIC IRRIGATING SOLUTION

Michael E. Garabedian, Arlington, and Robert E. Roehrs, Fort Worth, both of Tex., assignors to Alcon Laboratories, Inc., Forth Worth, Tex.

Filed Oct. 5, 1981, Ser. No. 308,386

Int. Cl.^{3} A61K *33/00, 33/14, 33/06, 33/10*

U.S. Cl. 424—127 17 Claims

1. A method of maintaining corneal stability during ocular surgery comprising
- preparing a stable basic solution containing bicarbonate ions,
- sterilizing said basic solution and prepackaging said basic solution,
- preparing a stable acidic solution containing calcium ions, magnesium ions, dextrose and glutathione,
- sterilizing said acidic solution and prepackaging said acidic solution,
- providing sodium ions in one of said solutions, providing potassium ions in one of said solutions and providing chloride ions in one of said solutions,
- mixing said prepackaged solutions together in a manner which maintains their sterility to form a combined solution containing between about 130 and about 180 mM/l sodium ions, between about 3 and about 10 mM/l potassium ions, between about 1 and about 5 mM/l calcium ions, between about 0.5 and about 4 mM/l magnesium ions, between about 10 and about 50 mM/l bicarbonate ions, between about 2 and about 10 mM/l dextrose and between about 0.03 and about 0.5 mM/l oxidized glutathione or the equivalent amount of reduced glutathione, said combined solution having a pH of between about 6.8 and about 8.0 and an osmolality of between 250 and about 350 mOsm/kg, and
- within about 24 hours of mixing said prepackaged solutions, irrigating an eye with said combined solution.

4,443,433

ANTACID MATERIAL BASED ON MAGNESIUM ALUMINUM HYDROXIDE AND PREPARATION THEREOF

Adolph Knecht; Michael Schneider, both of Freiburg, and Walter Ambrosch, Emmendingen, all of Fed. Rep. of Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Nov. 1, 1982, Ser. No. 438,104

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1981, 3145163

Int. Cl.^{3} A61K *33/08;* **C01D** *5/10*

U.S. Cl. 424—157 5 Claims

1. A process for the preparation of an antacid material based upon magnesium aluminium hydroxide, wherein magnesium hydroxide and/or magnesium oxide is reacted in an atomic ratio of magnesium to aluminium of 1:1 to 3:1 with an aqueous solution of aluminium sulphate until the pH of the reaction mixture is from 4.0 to 8.0 whereafter water-soluble components are removed from the mixture by centrifugation or filtration and the isolated mixture, if desired, dried.

4,443,434

ANTIULCER AGENT

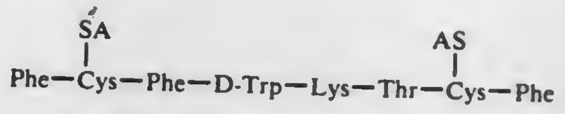
Eric L. Lien, Paoli, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Aug. 18, 1982, Ser. No. 409,255

Int. Cl.^{3} A61K *37/00*

U.S. Cl. 424—177 3 Claims

1. A method for treating peptic ulcer disease which comprises administering to a mammal in need thereof an octapeptide of the formula:



$$\text{Phe}-\overset{\overset{\displaystyle \text{SA}}{|}}{\text{Cys}}-\text{Phe}-\text{D-Trp}-\text{Lys}-\text{Thr}-\overset{\overset{\displaystyle \text{AS}}{|}}{\text{Cys}}-\text{Phe}$$

in which the A groups are hydrogen or a direct bond between the two sulfur atoms, or a pharmaceutically acceptable salt or amide thereof, in an amount sufficient to alleviate the symptoms of a peptic ulcer.

4,443,435

PRODRUGS OF 6-MERCAPTOPURINE AND 6-MERCAPTOPURINE RIBOSIDES AND THERAPEUTIC COMPOSITIONS AND METHODS EMPLOYING THEM

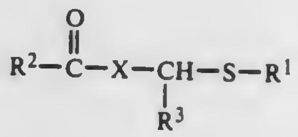
Nicholas S. Bodor; Kenneth B. Sloan, both of Gainesville, Fla., and Stefano A. Pogany, Lawrence, Kans., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 290,625, Aug. 3, 1981, abandoned, which is a continuation of Ser. No. 141,981, Apr. 21, 1980, abandoned. This application Nov. 12, 1981, Ser. No. 320,264

Int. Cl.^{3} A61K *31/52, 31/70;* **C07D** *473/24*

U.S. Cl. 424—180 12 Claims

1. A compound selected from the group consisting of those having (i) the structural formula I:



$$R^2-\overset{\overset{\displaystyle O}{\|}}{C}-X-\underset{\underset{\displaystyle R^3}{|}}{CH}-S-R^1$$

wherein

X is O, S or NR^5;

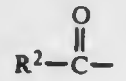
R^1S is the deprotonated residue of a biologically active agent R^1SH which is a thiopurine derivative selected from the group consisting of 6-mercaptopurine and a sugar and/or an acetate derivative thereof selected from a group consisting of 6-mercaptopurineriboside and 9-β-D-ribofuranosyl-6-thio-9H-purine-2′,3′,5′-triacetate;

R^2 is
- (a) straight or branched chain alkyl having from 1 to 20 carbon atoms;
- (b) aryl having from 6 to 10 carbon atoms;
- (c) cycloalkyl having from 3 to 8 carbon atoms,
- (d) alkenyl having from 2–6 carbon atoms;
- (e) cycloalkenyl having from 5 to 8 carbon atoms;
- (f) carboxyalkyl or alkanoyloxyalkyl having from 2–6 carbon atoms;

R^3 is
- (a) hydrogen;
- (b) R^2;
- (c) lower alkanoyl having from 2–6 carbon atoms; or
- (d) haloloweralkyl having from 1–6 carbon atoms;

R^5 is hydrogen or lower alkyl having 1–6 carbon atoms;

(ii) prodrugs having the structural formula (I) wherein



$$R^2-\overset{\overset{\displaystyle O}{\|}}{C}-$$

is the residue of a naturally occurring protein amino acid, the residue of a N-substituted naturally occurring amino acid, which N-substituent is C_{1-6} alkyl or an amino acid protective group cleavable via hydrogenolysis or hydrolysis selected from the group consisting of formyl, benzyloxy, carbonyl, and t-butyloxycarbonyl, or the residue of an N,N-lowerdialkyl or C_4–C_7 cycloalkylamino acids; and

(iii) a non-toxic, pharmaceutically acceptable salt thereof.

11. A therapeutically effective composition of matter comprising an effective amount of a compound as defined by claim **1**, and a pharmaceutically effective carrier therefor.

12. The method of eliciting the corresponding therapeutic response in a warm-blooded animal, which comprises administering to such animal an effective amount of a compound as defined by claim **1**.

4,443,436

C-20-MODIFIED MACROLIDE DERIVATIVES OF THE MACROLIDE ANTIBIOTICS TYLOSIN, DESMYCOSIN, MACROCIN, AND LACTENOCIN

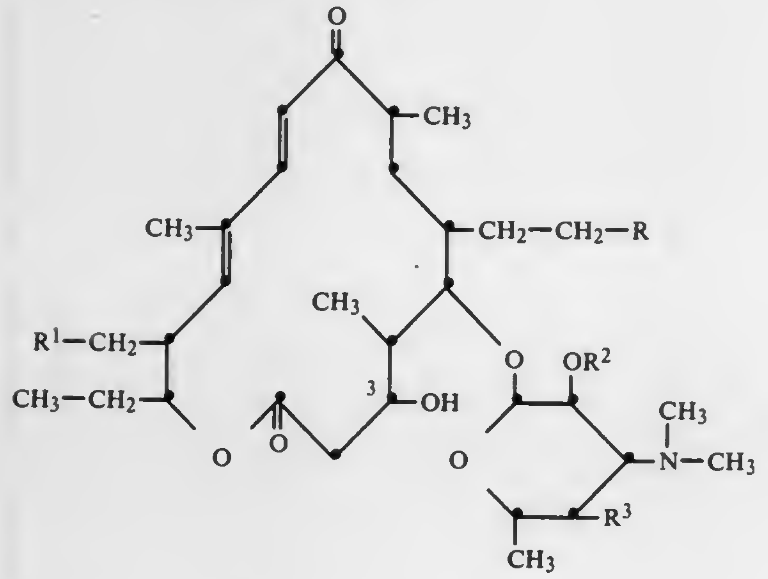
Herbert A. Kirst, and John E. Toth, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 13, 1982, Ser. No. 417,248

Int. Cl.³ A61K *31/71;* C07H *17/08*

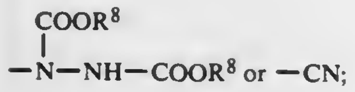
U.S. Cl. 424—180 **143 Claims**

1. A compound of the formula



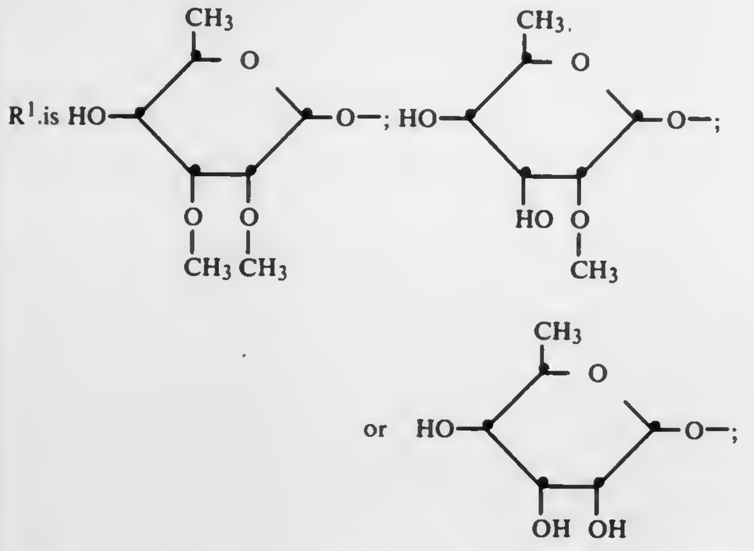
wherein

R is chloro, fluoro, —OR^4, —SR^5, —SO_2R^6, azido, —NHR^7, —N—phthalimido,



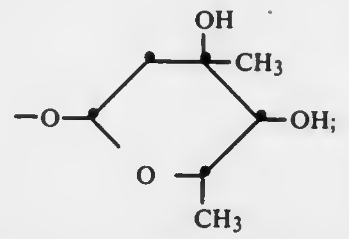
$\overset{\mathrm{COOR^8}}{\overset{|}{-N}}-NH-COOR^8$ or —CN;

R^1 is



R^2 is hydrogen; C_1–C_5-alkanoyl; C_1–C_5-alkanoyl having from one to three halo substituents; benzoyl, phenylacetyl or phenylpropionyl; or benzoyl, phenylacetyl or phenylpropionyl having on the phenyl ring from one to five halo or methyl groups or from one to two methoxyl, nitro or hydroxyl groups;

R^3 is hydroxy; C_1–C_5-alkanoyloxy; C_1–C_5-alkanoyloxy having from one to three halo substituents; benzoyloxy, phenylacetoxy or phenoxyacetoxy; benzoyloxy, phenylacetoxy or phenoxyacetoxy having on the phenyl ring from one to five halo or methyl groups or from one to two methoxyl, nitro or hydroxyl groups; or



R^4 is C_1–C_4-alkyl; C_1–C_4-alkyl having one or more fluoro or chloro substituents; cyclohexyl; benzyl, phenethyl or phenoxyethyl; benzyl, phenethyl or phenoxyethyl having on the phenyl ring from one to five halo or methyl groups or from one to two methoxyl, nitro or hydroxyl groups; phenyl; derivatized phenyl; naphthyl; a heteroaryl group selected from pyridinyl, pyrimidinyl, pyridazinyl, pyrazinyl, triazinyl, indolyl, isoquinolinyl, quinolinyl, quinazolinyl, cinnolinyl, quinoxalinyl, phthalazinyl, benzotriazolyl, benzoxazolyl, benzimidazolyl, carbazolyl, or acridinyl; a selected heteroaryl group having at least one substituent selected from C_1–C_4-alkyl, halo, methoxy, ethoxy, hydroxy, oxo or phenyl; C_1–C_5-alkanoyl; C_1–C_5-alkanoyl having from one to three halo substituents; benzoyl, phenylacetyl, phenylpropionyl, phenoxyacetyl or phenylthioacetyl; benzoyl, phenylacetyl, phenylpropionyl, phenoxyacetyl or phenylthioacetyl having on the phenyl ring from one to five halo or methyl groups or from one to two methoxyl, nitro or hydroxyl groups; methanesulfonyl; trifluoromethanesulfonyl; phenylsulfinyl or phenylsulfonyl; phenylsulfinyl or phenylsulfonyl having on the phenyl ring from one to five halo or from one to two nitro groups; cinoxacinyl or —NO_2;

R^5 is C_1–C_4-alkyl; C_1–C_4-alkyl having one or more fluoro or chloro substituents; cyclohexyl; phenyl, benzyl or phenethyl; phenyl, benzyl or phenethyl having on the phenyl ring from one to five halo or methyl groups or from one to two methoxyl, nitro or hydroxyl groups; a heteroaryl group selected from imidazolyl, pyrazolyl, pyridinyl, pyrimidinyl, pyrazinyl, pyridazinyl, triazinyl, triazolyl, tetrazolyl, oxazolyl, isoxazolyl, oxadiazolyl, thiazolyl, isothiazolyl, thiadiazolyl, thienyl and furanyl; or a selected heteroaryl group having at least one substituent selected from C_1–C_4-alkyl, halo, methoxy, ethoxy, hydroxy, oxo or phenyl;

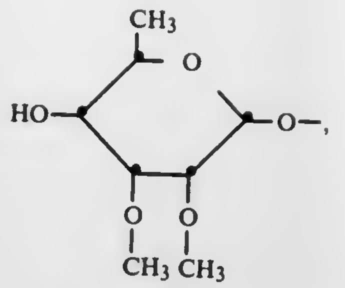
R^6 is C_1–C_4-alkyl; C_1–C_4-alkyl having one or more fluoro or chloro substituents; phenyl; or phenyl having from one to five halo or methyl or from one to two methoxyl, nitro or hydroxyl substituents;

R^7 is hydrogen; C_1–C_5-alkanoyl; C_1–C_5 alkanoyl having from one to three halo substituents; benzoyl, phenylacetyl, phenylpropionyl, phenoxyacetyl or phenylthioacetyl; benzoyl, phenylacetyl, phenylpropionyl, phenoxyacetyl, or phenylthioacetyl having on the phenyl ring from one to five halo or methyl groups or from one to two methoxyl, nitro or hydroxyl groups; or alkoxycarbonyl;

R^8 is methyl or ethyl; and

halo is chloro, bromo or fluoro;

provided that, when R^7 is hydrogen, R^2 must be hydrogen and R^3 must be hydroxy; and that, when R^1 is



R cannot be chloro or fluoro; and its acid addition salts.

128. A composition useful for the treatment of susceptible bacterial or mycoplasmal infections comprising a compound of claim **1** wherein the acid addition salt is a pharmaceutically acceptable one and a suitable vehicle.

4,443,437

VETERINARY COMPOSITION AND METHOD OF USING SAME

Walter G. Prokosch, and Robert L. Marshall, both of Rte. 2, P.O. Box 65, Honey Grove, Tex. 75446

Filed Sep. 23, 1982, Ser. No. 422,363

Int. Cl.³ A61K *35/78*

U.S. Cl. 424—195 **10 Claims**

1. A mehtod of treating wounds, lacerations or surface fistulas in animals to promote the healing thereof, which comprises topically applying an effective amount of tall oil to the affected area for promoting healing thereof.

4,443,438

INSECTICIDAL AND/OR ACARICIDAL COMPOSITION EXHIBITING LOW TOXICITY TO MAMMALS AND FISH

Kiyoshi Kasamatsu, Takarazuka; Masachika Hirano, Ibaraki, and Takeshi Okuno, Tokyo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

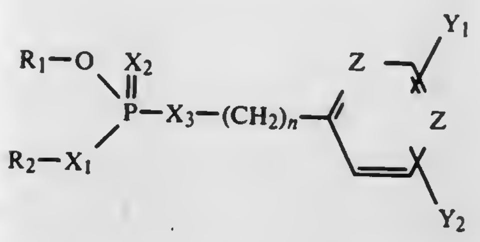
Division of Ser. No. 99,482, Dec. 3, 1979, Pat. No. 4,357,348. This application Aug. 6, 1982, Ser. No. 406,014

Claims priority, application Japan, Dec. 8, 1978, 53-152289; Dec. 8, 1978, 53-152290

Int. Cl.³ A01N *57/00, 37/34, 57/26*

U.S. Cl. 424—200 **8 Claims**

1. An insecticidal or acaricidal composition comprising an inert pesticide carrier and, as an active ingredient, an insecticidally or acaricidally effective amount of a mixture comprising (I) m-(p-bromophenoxy)-α-cyanobenzyl trans- or trans-cis-2,2-dimethyl-3-(2,2-dichlorovinyl)cyclopropanecarboxylate wherein the trans/cis ratio is not less than 25/75, and an organophosphate of the general formula (II),



(II)

wherein each of R_1 and R_2 is a C_1–C_3 alkyl group, each of X_1, X_2 and X_3 is an oxygen or sulfur atom, each of Y_1 and Y_2 is the same or different C_1–C_3 alkyl, methylmercapto, cyano or nitro group, or a halogen atom, Z is a carbon or nitrogen atom and n is 0 or 1, wherein the mixing ratio of the compound (I) to the compound (II) is within a range of from 1:1 to 1:100 by weight.

4,443,439

PESTICIDAL PHENYLTHIONOPHOSPHONIC ACID ESTERS

Hiromichi Ishikawa; Kazuhiko Kitaori, both of Atsugi; Satoru Moriyama, Hatano; Tadashi Chono, and Tsugio Uchiyama, both of Atsugi, all of Japan, assignors to Hokko Chemical Industry Co., Ltd., Tokyo, Japan

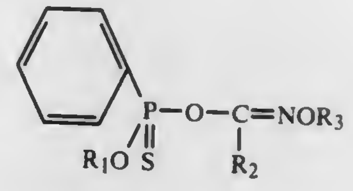
Filed Aug. 27, 1982, Ser. No. 412,004

Claims priority, application Japan, Sep. 4, 1981, 56-138322

Int. Cl.³ A01N *57/14, 57/22;* C07F *9/40*

U.S. Cl. 424—211 **8 Claims**

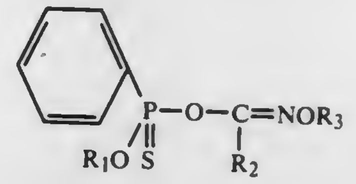
1. A method of combating insect pests, acarine pests and/or nematode pests at a locus of infestation, which comprises treating the pests or the locus of infestation with an insecticidally, miticidally and/or nematocidally effective amount of a compound of the general formula:



(I)

wherein R_1 denotes a lower alkyl group; R_2 denotes a hydrogen atom, a lower alkyl group or an unsaturated lower alkyl group; and R_3 denotes a lower alkyl group or an unsaturated lower alkyl group.

3. Compounds of the general formula:



(I)

wherein R_1 denotes a lower alkyl group; R_2 denotes a hydrogen atom, a lower alkyl group or an unsaturated lower alkyl group; and R_3 denotes a lower alkyl group or an unsaturated lower alkyl group.

4,443,440

AMINE CONTAINING ESTER PRODRUGS OF CORTICOSTEROIDS

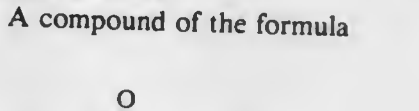
Bradley D. Anderson, Kalamazoo, and Robert A. Conradi, Portage, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Aug. 30, 1982, Ser. No. 412,426

Int. Cl.³ C07J *1/100;* A61K *31/58*

U.S. Cl. 424—243 **12 Claims**

1. A compound of the formula



$St-O-\overset{O}{\overset{\|}{C}}-Y-(CH_2)_n-NR_1R_2$

wherein

St is a corticosteroid absent the C-21 hydroxyl of said corticosteroid;

Y is a bond, —O— or —S—;

n is an integer of form 4 to 9;

each of R_1 and R_2 is a lower alkyl group of from 1 to 4 carbon atoms optionally substituted with one hydroxyl group, or R_1 and R_2 taken together with the nitrogen atom to which each is attached forms a monocyclic heterocyclic ring selected from pyrrolidino, piperidino, morpholino, thiomorpholino, piperazino, or N-(lower)alkyl piperazino; pharmaceutically acceptable addition salts and quaternary ammonium salts thereof.

9. A pharmaceutical composition comprising an effective quantity of a compound of claim **1** as a sterile aqueous solution.

4,443,441
FIXATION OF INTRAOCULAR LENSES
Miles A. Galin, 113 E. 39th St., New York, N.Y. 10016
Filed Aug. 7, 1981, Ser. No. 290,854
Int. Cl.^{3} A61K *31/33, 31/415, 31/22, 31/135*
U.S. Cl. 424—244 **5 Claims**

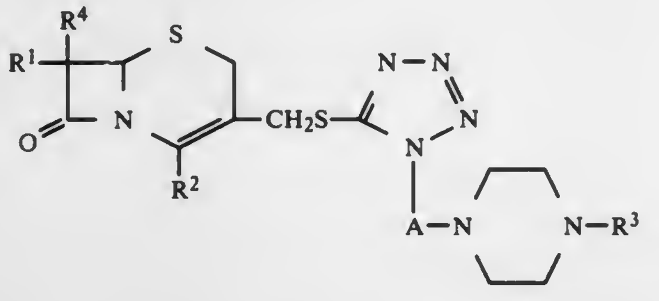
1. A process for aiding the stabilizing or repositioning of a surgically implanted intraocular lens in the correct position in an eye, characterized by instilling into the eye having the surgically implanted intraocular lens an approximately one drop dose of an ophthalmic solution containing an α-adrenergic blocking agent selected from the group consisting of thymoxamine, phentolamine, azepetine, phenoxybenzamine, clonidine and totazoline in a concentration of from about 0.1% to about 1% by weight.

4,443,442
METHOD AND COMPOSITION FOR TREATMENT OF ACNE VULGARIS
Scott D. Skillern, 722 E. Colfax St., South Bend, Ind. 46617
Filed Dec. 21, 1979, Ser. No. 106,224
Int. Cl.^{3} A61K *31/54*
U.S. Cl. 424—246 **5 Claims**

1. A method for the treatment of acne vulgaris in a human having acne vulgaris which comprises conjointly administering an acne controlling compound induced side effect reducing amount comprising at least 0.2 grams of sodium in a form of a pharmacologically acceptable sodium salt and a therapeutically effective amount of an acne controlling compound selected from the group consisting of polythiazide and trichlormethiazide.

4,443,443
CEPHEM COMPOUNDS
Ikuo Ueda; Masaaki Matsuo, both of Toyonaka; Kiyoshi Tsuji, Osaka, and Masayuki Kato, Mino, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan
Filed Dec. 5, 1980, Ser. No. 213,232
Claims priority, application Japan, Dec. 17, 1979, 54-7943363
Int. Cl.^{3} C07D *501/36;* **A61K** *31/545*
U.S. Cl. 424—246 **20 Claims**

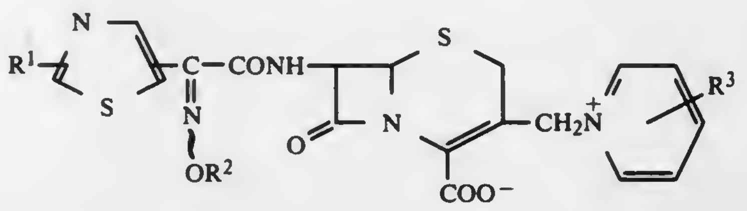
1. A cephem compound of the formula:



wherein
- R^1 is amino or a protected amino group;
- R^2 is carboxy or a protected carboxy group;
- A is lower alkylene which may have an oxo group;
- R^3 is carboxy, a protected carboxy group, lower alkyl, lower alkenyl, hydroxy(lower)alkyl, phenyl(lower)alkyl, phenyl, tolyl, xylyl, cumenyl, or naphthyl; and
- R^4 is hydrogen or lower alkoxy, and pharmaceutically acceptable salts thereof.

4,443,444
CEPHEM COMPOUNDS
Takao Takaya, Kawanishi; Hisashi Takasugi, Osaka; Masayoshi Murata, Mino, and Akiteru Yoshioka, Kyoto, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan
Filed Aug. 3, 1981, Ser. No. 289,503
Claims priority, application United Kingdom, Aug. 11, 1980, 8026112; Jan. 12, 1981, 8100848
Int. Cl.^{3} C07D *501/38;* **A61K** *31/545*
U.S. Cl. 424—246 **14 Claims**

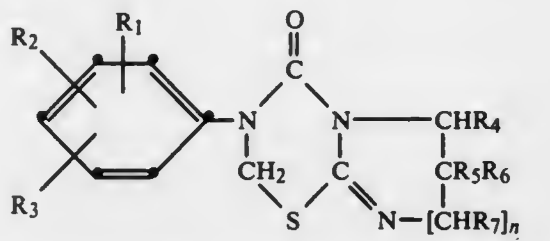
1. A cephem compound of the formula:



wherein
- R^1 is amino or a protected amino group;
- R^2 is lower alkenyl, lower alkynyl, unsubstituted cycloalkyl, phenyl(lower)alkyl, phenyl(lower)alkyl, substituted with halogen, or lower alkylthio(lower)alkyl; and
- R^3 is hydrogen, carbamoyl or hydroxy(lower)alkyl, and pharmaceutically acceptable salts thereof.

4,443,445
IMIDAZO- AND PYRIMIDO-1,3,5-THIADIAZIN-4-ONES
Saleem Farooq, Arisdorf, and Hans-Peter Streibert, Rheinfelden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardlsey, N.Y.
Filed Sep. 1, 1982, Ser. No. 413,955
Claims priority, application Switzerland, Sep. 10, 1981, 5859/81; Dec. 10, 1981, 7896/81; Aug. 9, 1982, 4771/82
Int. Cl.^{3} C07D *513/04;* **A01N** *43/50, 43/54, 43/88*
U.S. Cl. 424—246 **19 Claims**

1. A compound of the formula I



wherein each of R_1, R_2 and R_3 independently of one another is hydrogen, halogen, C_1–C_4alkyl, trifluoromethyl, C_1–C_4-alkoxy, nitro, benzyl, phenyl, phenoxy, phenylthio, or phenoxy which is substituted by one or two members selected from the group consisting of halogen C_1–C_4alkyl, trifluoromethyl, nitro, methoxy and ethoxy; each of R_4, R_5, R_6 and R_7 independently of one another is hydrogen or C_1–C_4alkyl; and n is 0 or 1, or a salt thereof.

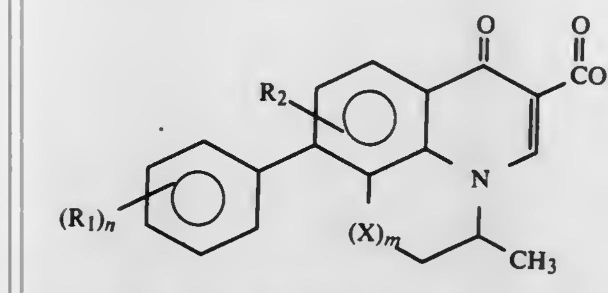
17. A method of controlling plant destructive insects and representatives of the order Acarina, which comprises applying to said insects or to the locus thereof a pesticidally effective amount of a compound as claimed in claim 1.

4,443,446
USE OF PSYCHOACTIVE DRUGS AS VAGINAL CONTRACEPTIVES
Milton J. Cormier, Bogart, Ga., assignor to University of Georgia Research Foundation, Inc., Athens, Ga.
Filed May 30, 1980, Ser. No. 155,800
Int. Cl.^{3} A61K *31/38, 31/54, 31/445*
U.S. Cl. 424—247 **10 Claims**

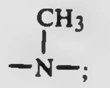
1. A method for preventing conception in a female which comprises: introducing an effective amount of a calmodulin binding psychoactive drug selected from the group consisting of penfluridol, pimozide, trifluoperazine, chlorpromazine, benperidol, haloperidol, and clozapine into the vagina of the female.

4,443,447
PHENYL-SUBSTITUTED TRICYCLIC ANTIBACTERIAL AGENTS
John F. Gerster, Woodbury, and Richard M. Stern, Cottage Grove, both of Minn., assignors to Riker Laboratories, Inc., St. Paul, Minn.
Filed Oct. 25, 1982, Ser. No. 436,376
Int. Cl.^{3} A61K *31/47;* **C07D** *455/04, 498/16*
U.S. Cl. 424—248.53 **11 Claims**

1. A compound of the formula



wherein X is selected from the group consisting of a —O—, —CH$_2$— and



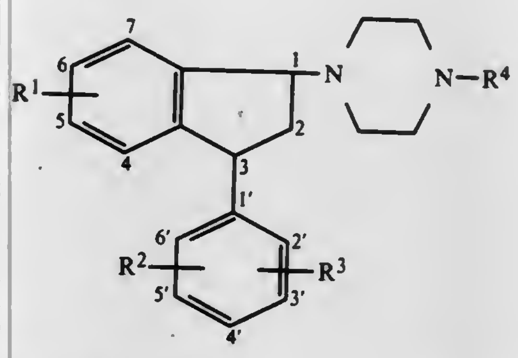
$$\overset{\displaystyle CH_3}{\underset{}{-\overset{|}{N}-}};$$

m is 0 or 1; R_1 is selected from the group consisting of hydrogen, nitro, amino, lower alkyl, lower alkanamido, lower N,N-dialkylamino, formamido, hydroxy, alkoxy, halogen, lower haloalkanamido and pyrryl; n is 1 or 2; and R_2 is selected from the group consisting of hydrogen, methyl, fluoro, chloro and nitro; or a derivative thereof selected from the group consisting of an acyl chloride, ester, alkylaminoalkyl ester salt, amido, and a pharmaceutically acceptable carboxylate salt.

10. A method of inhibiting the growth of microorganisms, comprising contacting said microorganisms with an effective amount of a compound according to claim 1.

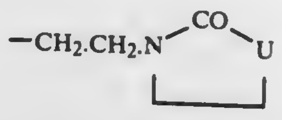
4,443,448
INDANE DERIVATIVES, PHARMACEUTICAL COMPOSITIONS THEREOF AND METHOD OF PREPARATION
Klaus P. Bogeso, Lyngby, Denmark, assignor to Kefalas A/S, Copenhagen-Valby, Denmark
Filed Feb. 26, 1981, Ser. No. 238,442
Claims priority, application United Kingdom, Feb. 29, 1980, 8006931
Int. Cl.^{3} C07D *241/04;* **A61K** *31/495*
U.S. Cl. 424—250 **32 Claims**

1. A compound selected from the group consisting of a 1-piperazino-3-phenylindane of the formula:



I

wherein R^1 is selected from the group consisting of hydrogen, halogen, an alkyl group having one to four carbon atoms inclusive, an alkyloxy group having one to four carbon atoms inclusive, an alkylmercapto group having one to four carbon atoms inclusive, an amino group, an acetamino group, a cyano group, a trifluoromethyl group and an alkylsulfonyl group having one to four carbon atoms inclusive; R^2 and R^3 are each selected from hydrogen, halogen, alkyl and trifluoromethyl; and R^4 is selected from an alkyl and alkenyl group, branched or unbranched, having one to six carbon atoms inclusive optionally substituted with one or two hydroxyl groups, a cyano group, an acetamino group, a cycloalkyl group having three to six carbon atoms in the ring, a phenyl group optionally substituted with a halogen atom, a hydroxy-substituted cyclohexyl group, a group

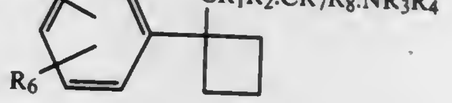


wherein U is >O or >NH, and a group —(CH$_2$)$_n$.CO.-phenyl wherein "n" is an integer of one to four inclusive, and the phenyl group may be optionally substituted with a halogen atom, any hydroxy group present in the indane of Formula I being optionally esterified with an aliphatic carboxylic acid having two to twenty-four carbon atoms inclusive, at least one of both R^1, R^2 or R^2, R^3 always being other than hydrogen, and

(2) a pharmaceutically-acceptable acid addition salt thereof.

4,443,449
ARYLCYCLOBUTYLALKYLAMINES AND ANTI-DEPRESSION COMPOSITION AND METHODS USING SAME
James E. Jeffery, and Eric C. Wilmshurst, both of Nottingham, England, assignors to The Boots Company Limited, Nottingham, England
Filed Apr. 5, 1982, Ser. No. 365,287
Claims priority, application United Kingdom, Apr. 6, 1981, 8110710
Int. Cl.^{3} A61K *31/135;* **C07C** *87/28*
U.S. Cl. 424—250 **32 Claims**

1. A compound of the formula I



I

- in which R_1 is H or an alkyl group containing 1 to 3 carbon atoms;
- in which R_2 is H or an alkyl group containing 1 to 3 carbon atoms;
- in which R_3 and R_4, which are the same or different, are selected from the group consisting of H, a straight or branched chain alkyl group containing 1 to 4 carbon atoms, and a cycloalkyl group in which the ring contains 3 to 7 carbon atoms,
- or R_3 and R_4 together with the nitrogen atom to which they are attached form a heterocyclic ring selected from the group consisting of pyrrolidinyl, piperidinyl and piperazinyl, each optionally substituted by one or more methyl groups, and 1, 2, 3, 6-tetrahydropyridyl;
- in which R_5 and R_6 which are the same or different are selected from the group consisting of H, halo, an alkyl group containing 1 to 3 carbon atoms, and trifluoromethyl (with the proviso that one of R_5 and R_6 is halo), or R_5 and R_6, together with the carbon atoms to which they are attached, form a second benzene ring;
- and in which R_7 and R_8 which are the same or different are

H or an alkyl group containing 1 to 3 carbon atoms; and pharmaceutically-acceptable salts thereof.

4,443,450

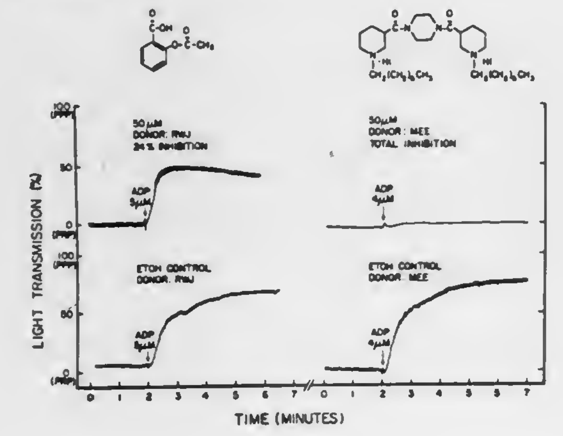
PLATELET AGGREGATION INHIBITORY AGENTS AND INTERMEDIATES THEREFOR

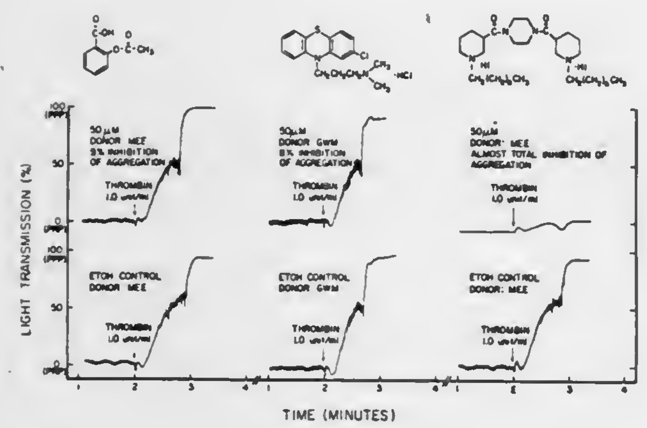
Andrew Lasslo, Memphis; Ronald P. Quintana, Germantown; Marion Dugdale, and Randy W. Johnson, both of Memphis, all of Tenn., assignors to Research Corporation, Tucson, Ariz.

Filed Apr. 15, 1982, Ser. No. 368,863

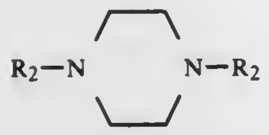
Int. Cl.³ C07D *401/00;* A61K *31/495*

U.S. Cl. 424—250 **3 Claims**

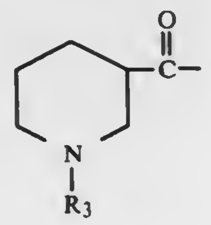




1. A compound having the structural formula:



Wherein R₂ is



and R₃ is alkyl or H.

4,443,451

BICYCLIC PYRIMIDIN-5-ONE DERIVATIVES

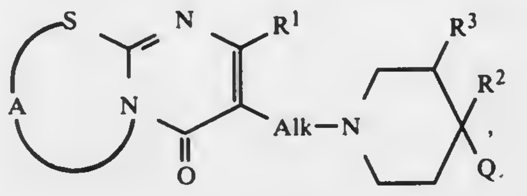
Ludo E. J. Kennis, and Josephus C. Mertens, both of Turnhout, Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Continuation-in-part of Ser. No. 283,590, Jul. 15, 1981, abandoned. This application Apr. 21, 1982, Ser. No. 370,653

Int. Cl.³ C07D *513/14, 513/22;* A61K *31/505*

U.S. Cl. 424—251 **18 Claims**

1. A chemical compound having the formula



(I)

the pharmaceutically acceptable acid-addition salts and the stereochemically isomeric forms thereof, wherein:

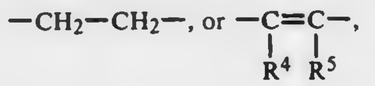
R^1 is hydrogen, lower alkyl or Ar;

R^2 is hydrogen, lower alkyl or Ar;

R^3 is hydrogen or lower alkyl;

Alk is a lower alkanediyl radical;

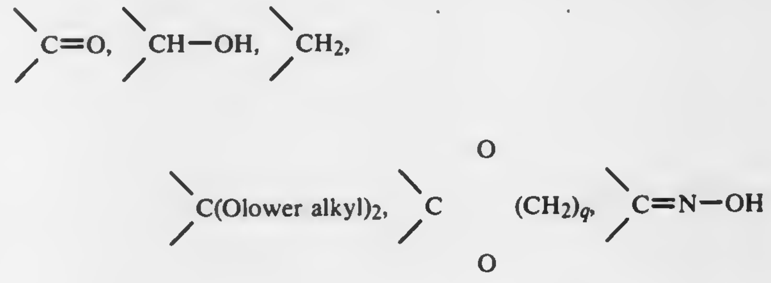
A is a bivalent radical having the formula



$$—CH_2—CH_2—,\ \text{or}\ —\underset{R^4}{\overset{|}{C}}=\underset{R^5}{\overset{|}{C}}—,$$

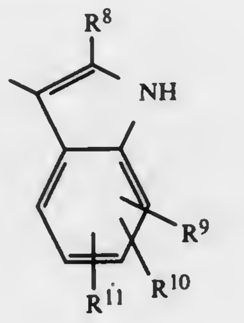
having the carbon atom attached to the S-atom, wherein R^4, R^5 and R^6 are each independently selected from the group consisting of hydrogen and lower alkyl and wherein R^4 and R^5 may also complete a saturated or unsaturated 5- or 6-membered carbocyclic ring, optionally substituted with a lower alkyl radical; and

Q is a member selected from the group consisting of a radical having the formula —X—Ar (a) wherein X is a member selected from the group consisting of



said R^7 being hydrogen or lower alkyl and said q being the integer 2 or 3; and

a radical having the formula



(b)

wherein R^8 is hydrogen or loweer alkyl and R^9, R^{10} and R^{11} are each independently selected from the group consisting of hydrogen and halo;

wherein Ar is phenyl or substituted phenyl, said substituted phenyl bearing an amino group and/or 1,2 or 3 halo atoms.

4,443,452

DIBENZODIAZEPINONES, PHARMACEUTICAL COMPOSITIONS THEREOF AND METHOD OF USE THEREOF

Wolfhard Engel, Biberach; Günter Trummlitz, Warthausen; Günther Schmidt; Wolfgang Eberlein, both of Biberach, all of Fed. Rep. of Germany; Rudolf Hammer, Milan, and Piero del Soldato, Monza, both of Italy, assignors to Dr. Karl Thomae GmbH, Biberach an der Riss, Fed. Rep. of Germany

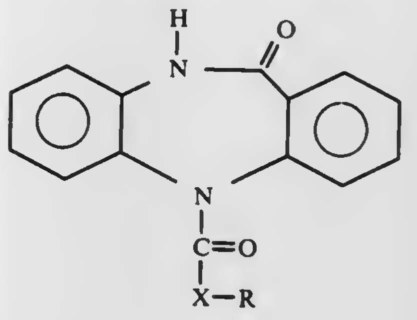
Filed Jan. 31, 1983, Ser. No. 462,378

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1982, 3204158

Int. Cl.³ A61K *31/55;* C07D *403/12, 403/14*

U.S. Cl. 424—256 **4 Claims**

1. A compound of the formula



(I)

wherein

X is oxygen, —NH—, or —NCH_3— and

R is 1-methyl-4-piperidinyl, 4-methyl-1-piperazinyl, endo-8-methyl-8-azabicyclo[3.2.1]oct-3-yl, or exo-8-methyl-8-azabicyclo[3.2.1]oct-3-yl, each of which may optionally have an additional methyl substituent;

a diastereomer or enantiomer thereof, or a non-toxic, pharmacologically acceptable acid addition salt thereof with an inorganic or organic acid.

4. The method of inhibiting the formation of gastric ulcers in a warm-blooded animal in need thereof, which comprises perorally, parenterally, or rectally administering to said animal an effective anti-ulcerogenic amount of a compound of claim 1.

4,443,453

QUINOLINE DERIVATIVES, PHARMACEUTICAL COMPOSITIONS CONTAINING SUCH COMPOUNDS, AND METHODS FOR TREATING CARDIOVASCULAR CONDITIONS WITH THEM

Hans B. Trijzelaar, Zeist; Ronus de Bode, Bilthoven, and Handricus B. A. Welle, Maarssen, all of Netherlands, assignors to ACF Chemiefarma N.V., Netherlands

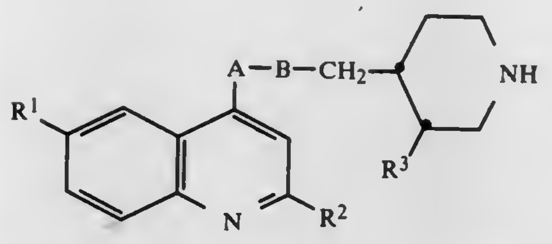
Filed Mar. 5, 1981, Ser. No. 240,817

Claims priority, application Netherlands, Mar. 6, 1980, 8001369; Jul. 11, 1980, 8004002

Int. Cl.³ A61K *31/47;* C07D *401/06*

U.S. Cl. 424—258 **4 Claims**

1. A compound of the formula



or a pharmaceutically acceptable salt thereof in which

A—B is —CHOH—CH_2—, —,

R^1 is hydrogen, hydroxy or lower alkoxy,

R^2 is lower alkyl, and

R^3 is ethyl or vinyl,

in which the configuration of the substituents in the 3- and 4-position of the depicted piperdine ring is cis.

3. A pharmaceutical composition comprising a cardiovascularly effective amount of a compound according to claim 1, or a pharmaceutically acceptable salt thereof, in combination with a pharmaceutically acceptable carrier.

4. The method of treating cardiovascular conditions in a human or other animal in need thereof which comprises administering an effective amount of a compound according to claim 1.

4,443,454

THIAZOLIDINONES

Paul A. Worthington, Maidenhead, England, assignor to Imperial Chemical Industries PLC, London, England

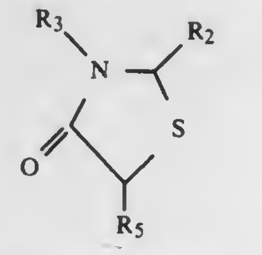
Filed Feb. 9, 1979, Ser. No. 11,051

Claims priority, application United Kingdom, Feb. 17, 1978, 6486/78

Int. Cl.³ A01N *43/40, 43/78;* C07D *401/04*

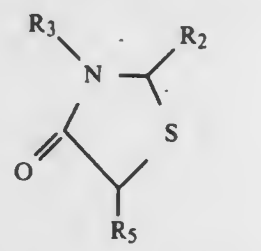
U.S. Cl. 424—263 **4 Claims**

1. A thiazolidinone compound selected from the group consisting of compounds having the formula:



and acid salts and metal complexes thereof, wherein R_2 is 3-pyridyl and R_3 is phenyl or phenyl substituted with one to two halogen atoms or alkyl or haloalkyl groups having from 1 to 4 carbon atoms and R_5 is hydrogen or alkyl having 1 to 4 carbon atoms.

4. A process for combatting plant fungi which comprises treating the fungi with an effective amount of a thiazolidinium compound of the formula:



and acid salts and metal complexes thereof, wherein R_2 is 3-pyridyl and R_3 is phenyl or phenyl substituted with one to two halogen atoms or alkyl or haloalkyl groups having from 1 to 4 carbon atoms and R_5 is hydrogen or alkyl having 1 to 4 carbon atoms.

4,443,455

FUNGIDICAL THIAZOLIDINONES

Paul A. Worthington, Maidenhead, England, assignor to Imperial Chemical Industries PLC, London, England

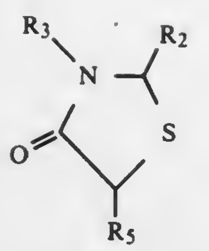
Division of Ser. No. 11,051, Feb. 9, 1979. This application Jan. 13, 1981, Ser. No. 224,669

Claims priority, application United Kingdom, Feb. 17, 1978, 6486/78

Int. Cl.³ A01N *43/78, 43/40;* C07D *401/04*

U.S. Cl. 424—263 **1 Claim**

1. A process for combating plant fungi which comprises treating the fungi with a fungicidally effective amount of a thiazolidinone compound of the formula:



or a fungicidal salt or complex thereof, wherein R_3 is 3-pyridyl and R_2 is phenyl or phenyl substituted with one or more halogen atoms, or alkyl or haloalkyl groups having from 1 to 4 carbon atoms and R_5 is hydrogen or alkyl having 1 to 4 carbon atoms and an inert carrier therefor, provided that when R_5 is hydrogen, R_2 is not phenyl or 2-chlorophenyl.

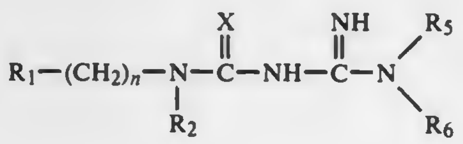
4,443,456

PYRIDYL ALKYLENE AMIDINOUREAS

George H. Douglas, Malvern; William L. Studt, Harleysville; Stuart A. Dodson, Lansdale, and Harry K. Zimmerman, Quakertown, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

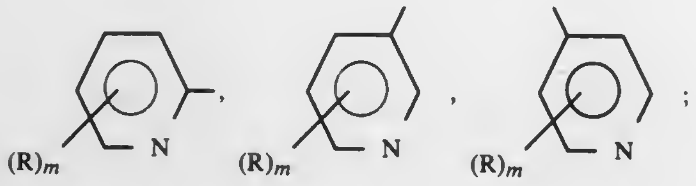
Filed May 12, 1981, Ser. No. 262,808
Int. Cl.³ A61K *31/44;* C07D *213/46*
U.S. Cl. 424—263 **14 Claims**

1. A compound of the formula



$$R_1-(CH_2)_n-\underset{\displaystyle R_2}{\underset{|}{N}}-\overset{\displaystyle X}{\overset{\|}{C}}-NH-\overset{\displaystyle NH}{\overset{\|}{C}}-N\begin{matrix}R_5\\ R_6\end{matrix}$$

wherein:
n is 1 or 2;
x is O or S;
R_1 is one of the following heterocyclic groups:



and the n-oxides thereof;
R_2 is hydrogen or lower alkyl;
R_5 and R_6 are hydrogen, lower alkyl, cycloalkyl of 3 to 6 carbon atoms, phenyl, lower alkenyl, lower alkoxy, benzyl or phenethyl;
and wherein:
m is zero to four;
R is a ring substituent selected from the group consisting of halogen, lower alkyl, lower alkenyl, phenyl, lower alkynyl, benzyl, phenethyl, nitro, cyano, sulfonyl, hydroxyl, carboxyl, lower alkanoyl, lower alkoxy, phenyl lower alkoxy, halo lower alkoxy, amido, amino, lower alkanoyloxy, lower alkylamino, lower alkoxyamino, and phenyl lower alkoxy amino;
or a pharmaceutically acceptable salt thereof.

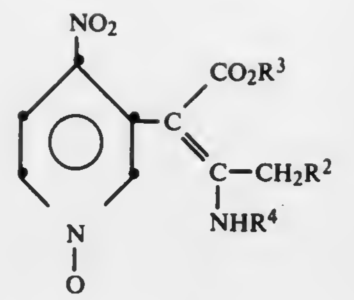
4,443,457

AMINOCROT ONYLPYRIDINE N-OXIDES USEFUL AS ADJUNCTS TO RADIATION THERAPY

George D. Hartman, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

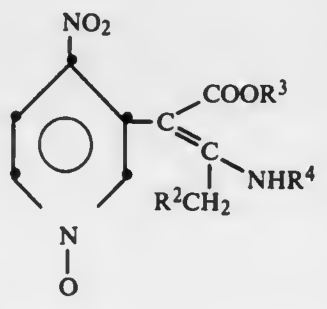
Filed Jul. 19, 1982, Ser. No. 399,612
Int. Cl.³ C07D *213/89;* A61K *31/44*
U.S. Cl. 424—263 **5 Claims**

1. A 4-nitropyridine-N-oxide of the formula



wherein R^2 and R^3 are each selected from hydrogen, loweralkyl, hydroxyloweralkyl, and loweralkoxylower alkyl;
R^4 is selected from hydrogen, lower alkyl, hydroxylloweralkyl and loweralkoxylloweralkyl.

4. A method of enhancing the therapeutic effect of radiation which comprises administering to a patient in need of such radiation treatment an effective amount of a compound of the formula



wherein R^2 and R^3 are each selected from hydrogen, loweralkyl, hydroxyloweralkyl and alkoxyloweralkyl lower
R^4 is selected from hydrogen, loweralkyl, hydroxylloweralkyl, and lower alkoxylloweralkyl.

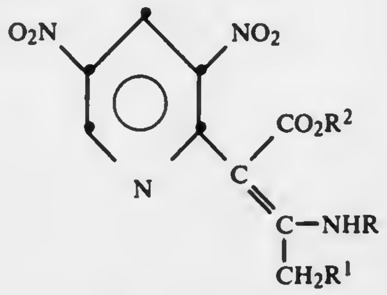
4,443,458

AMINOCROTONYL 3,5-DINITROPYRIDINE USEFUL AS ADJUNCTS TO RADIATION THERAPY

George D. Hartman, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Jul. 19, 1982, Ser. No. 399,613
Int. Cl.³ C07D *213/61;* A61K *31/44*
U.S. Cl. 424—263 **7 Claims**

1. An amino alkenoate ester derivative of 3,5-dinitropyridine having the formula:



wherein R, R^1 and R^2 are the same or different and are each selected from the group consisting of hydrogen, C_{1-6}alkyl, C_{1-6}-mono- or poly-hydroxyalkyl or C_{1-6}aminoalkyl and acid addition salts thereof.

6. A method for enhancing the therapeutic effect of radiation which comprises administering to a patient in need of such radiation treatment an effective amount of a compound of claim 1.

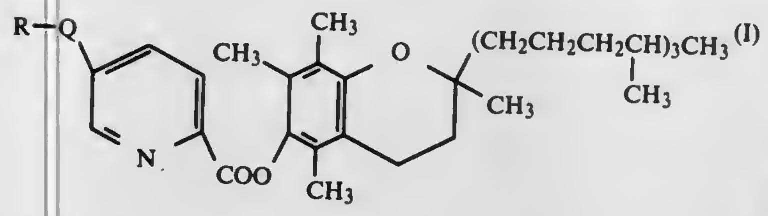
4,443,459

α-TOCOPHERYL ESTER OF 5-SUBSTITUTED PICOLINIC ACID AND HYPOTENSIVE COMPOSITION CONTAINING IT

Mitsuo Yano, Yokohama; Junji Yoshizawa, Machida; Kiyofumi Ishikawa, Chofu; Nobuo Harada, Okazaki, and Ikuo Matsumoto, Tokyo, all of Japan, assignors to Banyu Pharmaceutical Co., Ltd., Tokyo, Japan

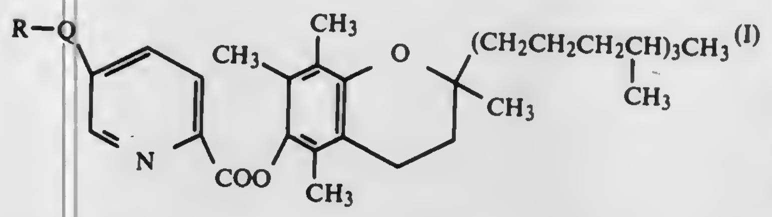
Filed May 19, 1982, Ser. No. 379,060
Claims priority, application Japan, May 26, 1981, 56-78702; Apr. 13, 1982, 57-60359
Int. Cl.³ C07D *405/12;* A61K *31/44*
U.S. Cl. 424—266 **26 Claims**

1. An α-tocopheryl 5-substituted picolinate of the formula



wherein R represents a linear or branched C_1–C_8 alkyl group which may be mono- or di-substituted by a substituent or substituents selected from the class consisting of halogen atoms, acetoxy groups, hydroxyl groups and C_1–C_4 alkyl ether groups, a C_2–C_5 alkenyl group, a phenyl (C_1–C_2) alkyl group, or a phenyl group which may be mono- or di-substituted by a substituent or substituents selected from the class consisting of halogen atoms and nitro groups, and Q represents a methylene group or an oxygen or sulfur atom, or a pharmaceutically acceptable acid addition salt thereof.

26. A pharmaceutical composition for treating hypertension, said composition being composed of a hypotensively effective amount of an α-tocopheryl 5-substituted picolinate of the formula



wherein R represents a linear or branched C_1–C_8 alkyl group which may be mono- or di-substituted by a substituent or substituents selected from the class consisting of halogen atoms, acetoxy groups, hydroxyl groups, and C_1–C_4 alkyl ether groups, a C_2–C_5 alkenyl group, a phenyl (C_1–C_2) alkyl group, or a phenyl group which may be mono- or di-substituted by a substituent or substituents selected from the class consisting of halogen atoms and nitro groups, and Q represents a methylene group or an oxygen or sulfur atom, or a pharmaceutically acceptable acid addition salt, and a pharmaceutically acceptable diluent or carrier.

4,443,460

2-[4-(DIPHENYLMETHYLENE)-1-PIPERIDINYL]-ACETIC ACIDS AND THEIR AMIDES

Ludovic Rodriguez, Brussels, and Eugene Baltes, Rhode-St. Genese, both of Belgium, assignors to UCB, Societe Anonyme, Brussels, Belgium

Filed Sep. 17, 1981, Ser. No. 303,522
Claims priority, application United Kingdom, Sep. 18, 1980, 8030194
Int. Cl.³ A61K *31/445;* C07D *211/22*
U.S. Cl. 424—267 **4 Claims**

1. 2-[2-[2-[4-(diphenylmethylene)-1-piperidinyl]ethoxy]ethoxy]-acetic acid or a non-toxic pharmaceutically acceptable salt thereof.

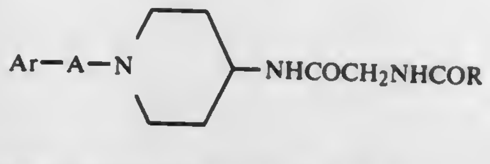
4,443,461

N-[2-[[1-[1H-INDOLYLALKYL- OR OXOALKYL]-4-PIPERIDINYL]-AMINO]-2-OXOETHYL]-ARYLCARBOXAMIDE DERIVATIVES

Terence J. Ward, Slough, England, assignor to John Wyeth & Brother Limited, Maidenhead, England

Filed Sep. 10, 1982, Ser. No. 416,773
Claims priority, application United Kingdom, Sep. 10, 1981, 8127408
Int. Cl.³ A61K *31/445;* C07D *409/14, 405/14, 403/06*
U.S. Cl. 424—267 **7 Claims**

1. A compound of formula



(I)

or a pharmaceutically acceptable salt thereof wherein Ar represents an indolyl group optionally substituted by one or more groups selected from halogen, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, nitro or hydroxy; A represents a straight or branched chain alkylene or oxoalkylene group, each having 2 to 4 carbon atoms; and R represents a phenyl, pyrid-4-yl, thien-2-yl or furan-2-yl group optionally substituted by one or more groups selected from halogen, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, nitro or hydroxy.

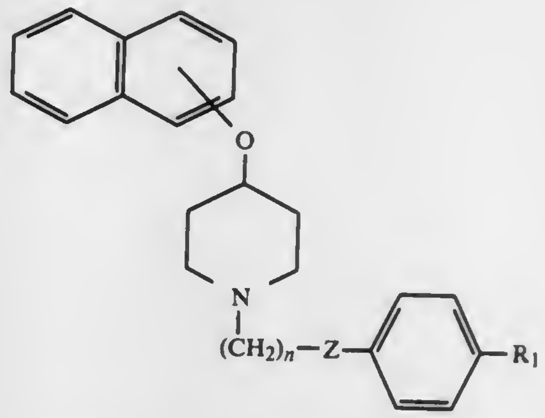
4,443,462

ANTIPSYCHOTIC 4-(NAPHTHALENYLOXY)PIPERIDINE DERIVATIVES

Albert A. Carr, and Robert A. Farr, both of Cincinnati, Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation of Ser. No. 64,305, Aug. 6, 1979, abandoned. This application Sep. 24, 1982, Ser. No. 422,819
Int. Cl.³ A61K *31/445;* C07D *211/44*
U.S. Cl. 424—267 **13 Claims**

1. A compound of the formula



wherein n is an integer of from 2 to 5; R_1 is selected from hydrogen, halogen, straight or branched alkyl of from 1 to 4 carbon atoms, and straight or branched alkoxy of from 1 to 4 carbon atoms; and Z is selected from carbonyl and hydroxymethylene; an individual optical isomer, or a pharmaceutically acceptable acid addition salt thereof.

10. A method of obtaining tranquilizing effects in a patient in need thereof comprising administering to said patient a tranquilizing amount of a compound of claim 1.

4,443,463

(5R,6S,8R)-6-(1-HYDROXYETHYL)-2-(HYDROXYALKYLTHIO)-PENEM-3-CARBOXYLATES

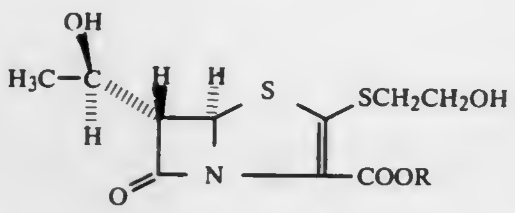
Stuart W. McCombie, West Orange, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 91,610, Nov. 5, 1979, abandoned, which is a continuation-in-part of Ser. No. 62,875, Aug. 1, 1979, abandoned, which is a continuation-in-part of Ser. No. 2,471, Jan. 10, 1979, abandoned. This application Nov. 25, 1981, Ser. No. 324,932

Int. Cl.^{3} C07D *499/00;* **A61K** *31/425*

U.S. Cl. 424—270 **10 Claims**

1. A compound of the formula



wherein R is a member of the group consisting of sodium or potassium cations, phthalidyl and pivaloyloxymethyl.

4,443,464

(+)-2-[1-(2,6-DICHLOROPHENOXY)-ETHYL]-1,3-DIAZACYCLOPENT-2-ENE AND THE METHOD FOR THE TREATMENT OF HUMAN BEINGS SUFFERING FROM NERVOUS DISARRANGEMENTS, IN PARTICULAR MIGRAINE

Jürgen Biedermann, Pulheim-Stommeln; Gerrit Prop, Pulheim, and Ille-Stephanie Doppelfeld, Bergheim-Glessen, all of Fed. Rep. of Germany, assignors to A. Nattermann & Cie GmbH, Cologne, Fed. Rep. of Germany

Filed Apr. 13, 1982, Ser. No. 367,944

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1981, 3149010

Int. Cl.^{3} A61K *31/415*

U.S. Cl. 424—273 **4 Claims**

1. Method for the treatment of human beings suffering from migraine, comprising administering to such human beings between 0.05 to 50 mg of (+)-2-[1-(2.6-dichlorophenoxy)-ethyl]-1.3-diazacyclopent-2-ene per each dose unit or the equivalent amount of a pharmaceutically acceptable acid addition salt thereof.

4,443,465

ALDOSE REDUCTASE INHIBITORY PYRROLE DERIVATIVES

David R. Brittain, Macclesfield, and Robin Wood, Hazel Grove, both of England, assignors to Imperial Chemical Industries PLC, London, England

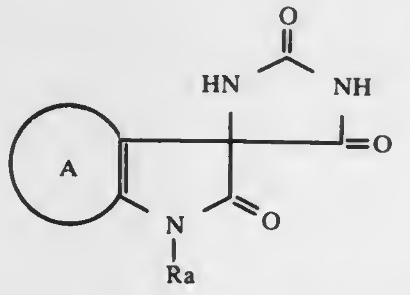
Filed May 11, 1982, Ser. No. 377,133

Claims priority, application United Kingdom, May 12, 1981, 8114402

Int. Cl.^{3} A61K *31/415;* **C07D** *493/20, 495/20*

U.S. Cl. 424—273 R **9 Claims**

1. A 1-substituted-spiro[4-pyrroline-3,4'-imidazolidine]-2,2',5'-trione of the formula:



I

wherein Ra is a benzyl radical optionally bearing up to three substituents independently selected from halogeno, trifluoromethyl, (1–4 C)alkyl, (1–4 C)alkoxy, nitro, (1–4 C)alkylthio and cyano radicals; or a halogenocinnamyl radical; and ring A stands for the benzene ring of a benzo[b]thiophene or benzo[b-]furan which may bear one or two substituents independently selected from (1–4 C)alkyl, (1–4 C)alkoxy and phenyl substituents located on the benzene or heterocyclic ring; or a pharmaceutically acceptable base-addition salt thereof; or a non-toxic, biodegradable precursor thereof.

9. A method of inhibiting the enzyme aldose reductase in a warm-blooded animal requiring such treatment which comprises administering to said animal an aldose reductase inhibitory amount of a 1-substituted-sprio[4-pyrroline-3,4'-imidazolidine]-2,2',5'-trione of the formula I, or a pharmaceutically acceptable base-addition salt thereof, or a non-toxic biodegradable precursor thereof as claimed in claim 1.

4,443,466

4-BENZYL- AND 4-BENZOYL-SUBSTITUTED IMIDAZOLE DERIVATIVES AND USE AS MEDICAMENTS

Arto J. Karjalainen, and Kauko O. A. Kurkela, both of Oulu, Finland, assignors to Farmos-Yhtyma OY (Farmos Group Ltd.), Turku, Finland

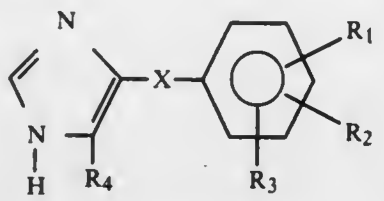
Continuation-in-part of Ser. No. 64,575, Aug. 7, 1979, abandoned. This application Mar. 10, 1981, Ser. No. 242,234

Claims priority, application European Pat. Off., Jan. 8, 1980, 80 302 637.6; Finland, Jan. 8, 1980, 802404; Israel, Jan. 8, 1980, 60723; New Zealand, Jan. 8, 1980, 194536; Australia, May 8, 1980, 61071/80; Ireland, May 8, 1980, 1626/80; Canada, Jun. 8, 1980, 357663; Denmark, Jun. 8, 1980, 3385/80; German Democratic Rep., Jun. 8, 1980, 223182; Hungary, Jun. 8, 1980, 1955/80; Japan, Jun. 8, 1980, 55-108786; Norway, Jun. 8, 1980, 802352; South Africa, Jun. 8, 1980, 80/4787; U.S.S.R., Jun. 8, 1980, 2959548

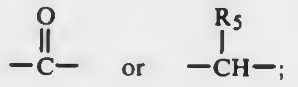
Int. Cl.^{3} C07D *233/66, 233/54;* **A61K** *31/40*

U.S. Cl. 424—274 **141 Claims**

1. A compound of the formula:



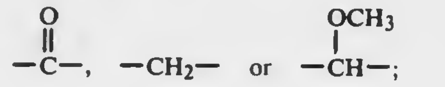
wherein R_1, R_2 and R_3, which can be the same or different, are each hydrogen, chloro, bromo, fluoro, methyl, ethyl, methoxy, amino, hydroxy or nitro; R_4 is hydrogen or alkyl of 1 to 7 carbon atoms; —X— is



$$-\overset{\overset{O}{\|}}{C}- \quad \text{or} \quad -\overset{\overset{R_5}{|}}{C}H-;$$

R_5 is hydrogen, hydroxy or $—OR_6$; and R_6 is alkyl of 1 to 7 carbon atoms or aryl of 6 to 10 carbon atoms; or a non-toxic pharmaceutically acceptable acid addition salt thereof; with the provisos that:

(a) when R_1, R_2 and R_3 are simultaneously hydrogen, then —X— is other than

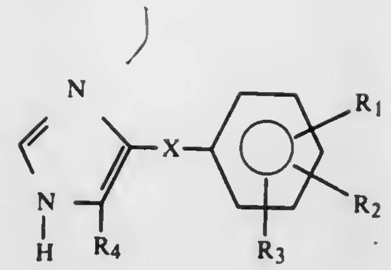


$$-\overset{\overset{O}{\|}}{C}-, \quad -CH_2- \quad \text{or} \quad -\overset{\overset{OCH_3}{|}}{C}H-;$$

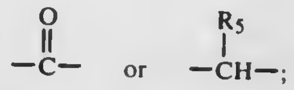
and

(b) when R_1 is 2-methyl, R_2 is 5-methyl, R_3 is hydrogen and R_4 is methyl, then —X— is other than $—CH_2—$.

122. A method for treating a mammal exhibiting an ulcerous condition, which comprises administering to said mammal an anti-ulcer effective amount of a compound of the formula:



wherein R_1, R_2 and R_3, which can be the same or different, are each hydrogen, chloro, bromo, fluoro, methyl, ethyl, methoxy, amino, hydroxy or nitro; R_4 is hydrogen or alkyl of 1 to 7 carbon atoms; —X— is



$$-\overset{\overset{O}{\|}}{C}- \quad \text{or} \quad -\overset{\overset{R_5}{|}}{C}H-;$$

R_5 is hydrogen, hydroxy or $—OR_6$; and R_6 is alkyl of 1 to 7 carbon atoms or aryl of 6 to 10 carbon atoms; or a non-toxic pharmaceutically acceptable acid addition salt thereof.

4,443,467

ANTIDIARRHOEAL AGENTS

Terence J. Ward, Slough, United Kingdom, assignor to John Wyeth & Brother, Limited, Maidenhead, England

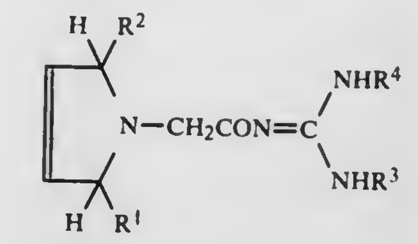
Filed May 11, 1981, Ser. No. 262,148

Claims priority, application United Kingdom, May 27, 1980, 8017377; Feb. 12, 1981, 8104410

Int. Cl.^{3} A61K *31/40, 31/505, 31/415*

U.S. Cl. 424—274 **3 Claims**

1. A method of treating or preventing diarrhoea in mammals or poultry which comprises administering to an animal in need thereof an amount effective for treating or preventing diarrhoea of a guanidine of formula (I)



(I)

or a pharmaceutically acceptable acid addition salt thereof, wherein R^1 and R^2 each represents lower alkyl or trifluoromethyl and R^3 and R^4 each represents hydrogen or lower alkyl or R^3 and R^4 together represent dimethylene or trimethylene.

4,443,468

BENZOFURAN DERIVATIVES, PROCESS FOR THEIR PREPARATION AND THEIR THERAPEUTIC APPLICATIONS

J. Georges Maillard, Versailles, and Jacky Legeai, Palaiseau, both of France, assignors to Laboratoires Jacques Logeais, Issy-les Moulineaux, France

Division of Ser. No. 54,626, Jul. 3, 1979, Pat. No. 4,339,384. This application Mar. 5, 1982, Ser. No. 355,331

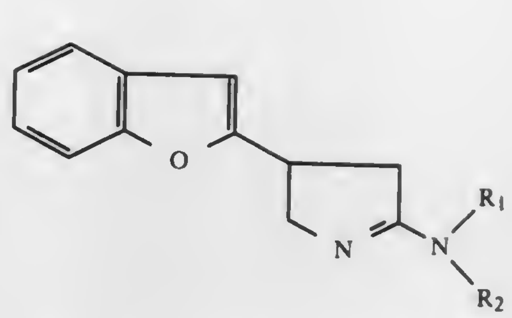
Claims priority, application France, Jul. 17, 1978, 78 21188

Int. Cl.^{3} A61K *31/40*

U.S. Cl. 424—274 **3 Claims**

1. A therapeutic composition having an antidysrhythmic activity containing an anti-dysrhythmic effective amount of a compound selected from the group consisting of compounds having the formula:

(I)



wherein R_1 and R_2 are $C_{1\text{-}6}$ alkyl groups, and a pharmacologically acceptable acid addition salt thereof, and a therapeutically acceptable excipient.

4,443,469

URIC ACID-LOWERING COMPOSITION, METHOD AND USE

Masahisa Nishizono, Fukuoka, Japan, assignor to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Sep. 22, 1982, Ser. No. 421,096

Claims priority, application Japan, Sep. 24, 1981, 56-151062

Int. Cl.^{3} A61K *31/38*

U.S. Cl. 424—275 **3 Claims**

1. A method for treating gout which comprises administering a uric acid-lowering amount of 2-chloro-11-(2-dimethylaminoethyl) dibenzo [b,f]-thiepin or its pharmaceutically acceptable salt to a human being having uric acid abnormality.

4,443,470

METHOD OF PROMOTING GROWTH AND ENHANCING FEED EFFICIENCY IN MEAT PRODUCING ANIMALS

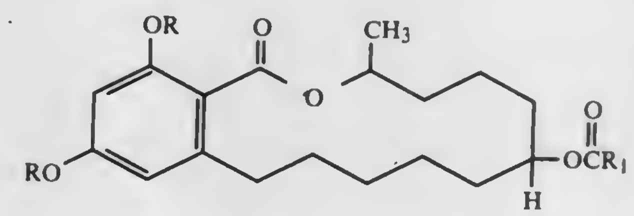
Edward B. Hodge, and Glen W. Wolfrom, both of Terre Haute, Ind., assignors to International Minerals & Chemical Corp., Terre Haute, Ind.

Filed Sep. 3, 1981, Ser. No. 299,270

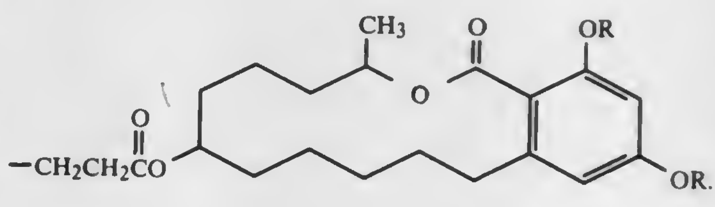
Int. Cl.^{3} A61K *31/335*

U.S. Cl. 424—279 **17 Claims**

1. A method of promoting growth in a food-producing animal, the steps comprising administering to said animal a growth promoting amount of a compound represented by the following structural formula



in which R is hydrogen; and wherein R_1 is $—C_5H_{11}$, $—C_9H_{19}$, $—C_3H_7$, and $C_{11}H_{23}$, trifluoromethyl, trichloromethyl, tribromomethyl, nitrophenyl, aminophenyl or a group of the formula



4,443,471

DERIVATIVES OF M.139,603 USEFUL AS GROWTH PROMOTERS

David H. Davies, and Michael J. Smithers, both of Macclesfield, England, assignors to Imperial Chemical Industries PLC, London, England

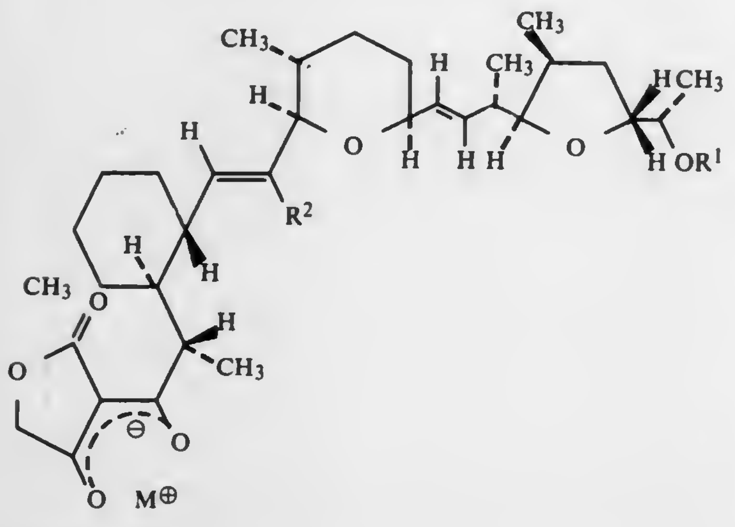
Filed Jun. 21, 1982, Ser. No. 390,773

Claims priority, application United Kingdom, Jul. 16, 1981, 8122027; Jul. 20, 1981, 8122307

Int. Cl.^{3} C07D *407/14;* **A61K** *31/365, 31/71*

U.S. Cl. 424—279 **6 Claims**

1. A derivative of M.139,603 of the formula:



I

wherein:

M^+ is an alkali metal, alkaline earth metal, ammonium, alkylammonium or hydroxyalkylammonium cation;

R^1 is a hydrogen atom, an alkyl radical or an optionally substituted phenylalkyl radical; and

R^2 is a formyl, iminomethyl, hydroxyiminomethyl or aminomethyl radical, or a radical of the formula $—CH{:}NR^3$, $—CH{:}NOR^4$ or $—CH_2NR^5R^6$ wherein R^3, R^4, R^5 and R^6 may each be an alkyl or an optionally substituted phenyl or phenylalkyl radical; or

a radical of the formula $—CH_2OR^7$ wherein R^7 is an alkyl, alkenyl, alkynyl, alkoxycarbonyl or alkylaminoalkyl radical or an optionally substituted phenylalkyl radical; or

a radical of the formula $—CH_2O.COR^8$ wherein R^8 is an alkyl, cycloalkyl, (cycloalkyl)alkyl, halogenoalkyl, hydroxyalkyl, alkoxyalkyl, aminoalkyl, mono- or dialkylaminoalkyl, alkoxycarbonylalkyl, carboxyalkyl, carbamoylalkyl, N-alkylcarbamoylalkyl, N,N-dialkylcarbamoylalkyl or optionally substituted phenyl, naphthyl or phenylalkyl radical; or

a radical of the formula $—CH_2O.CO.COR^9$ wherein R^9 is an amino, mono- or di-alkylamino, alkoxy or optionally substituted phenyl, naphthyl or phenylalkyl radical; or

a radical of the formula $—CH_2O.CX.NR^{10}R^{11}$ wherein X is an oxygen or sulphur atom and R^{10} and R^{11}, which may be the same or different, are each a hydrogen atom, an alkyl radical or an optionally substituted phenyl, naphthyl or phenylalkyl radical; or,

when R^1 is a hydrogen atom or an alkyl radical of 2 or more carbon atoms or an optionally substituted phenylalkyl radical, R^2 is a hydroxymethyl radical,

and wherein each alkyl, alkenyl or alkynyl radical contains up to 6 carbon atoms, and wherein, in each complex radical containing an alkyl part, the said alkyl part contains 1 to 6 carbon atoms, and wherein each cycloalkyl radical or cycloalkyl part of a (cycloalkyl)alkyl radical contains 3 to 7 carbon atoms and wherein the optional substituent in the optionally substituted phenyl, naphthyl or phenylalkyl radical is a halogen atom, a nitro, cyano or hydroxy radical, or an alkyl, alkoxy, halogenoalkyl, halogenoalkoxy, alkylamino, dialkylamino or alkanoylamino radical of up to 8 carbon atoms.

4,443,472

METHOD OF TREATING MAMMALS FOR EFFECTS OF NEURO- AND CARDIOVASCULAR TOXINS

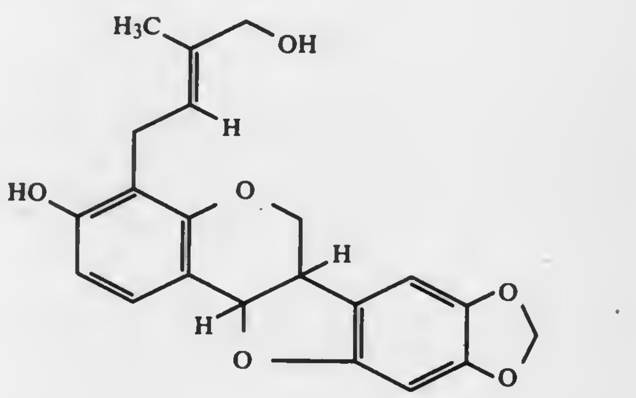
Laszlo L. Darko, Redding, Conn., assignor to Richter Gedeon Vegyeszeti Gyar R.T., Budapest, Hungary

Filed Mar. 15, 1982, Ser. No. 358,191

Int. Cl.^{3} A61K *31/36, 35/78*

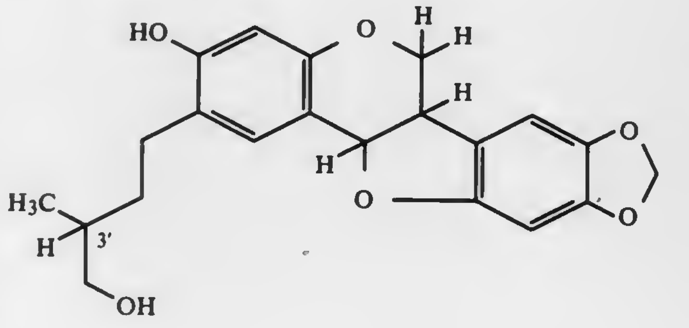
U.S. Cl. 424—282 **4 Claims**

1. A therapeutic composition in dosage form for oral administration comprising a pharmaceutically acceptable solid or liquid carrier and a compound selected from the group consisting of (I) and (II).



(I)

and



(II)

4,443,473

CARBAMATE DERIVATIVES

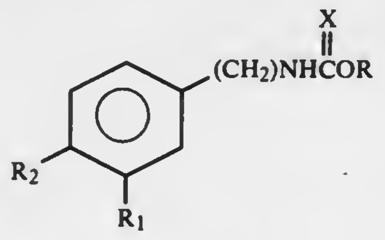
Brian L. Buckwalter, Yardley, Pa., and Thomas R. LaHann, Cleves, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 279,091, Jun. 30, 1981, abandoned. This application Jun. 3, 1982, Ser. No. 384,685

Int. Cl.^{3} C07C *125/06;* **A61K** *31/27*

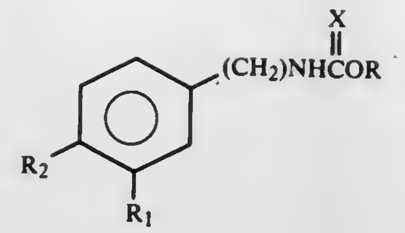
U.S. Cl. 424—300 **25 Claims**

1. Compounds of formula:



wherein X is O or S, wherein R is C_3–C_{12} alkyl or aralkyl, branched or unbranched, aryl or haloaryl, C_3–C_{22} alkenyl, branched or unbranched, or benzyl, wherein R_1 is H, OH or OCH_3 and R_2 is H or OH, at least one of R_1 and R_2 being OH or OCH_3; and pharmaceutically acceptable salts thereof.

15. A method for providing analgesia in humans and lower animals in need thereof, which comprises the step of administering to the human or lower animal a safe and effective amount of a compound of formula:



wherein X is O or S, wherein R is C_3–C_{12} alkyl or aralkyl, branched or unbranched, aryl or haloaryl, C_3–C_{22} alkenyl, branched or unbranched, or benzyl, wherein R_1 is H, OH or OCH_3 and R_2 is H or OH, at least one of R_1 and R_2 being OH, or a pharmaceutically acceptable salt thereof.

4,443,474

PHARMACEUTICAL N-PHENYL CARBAMOYL GLYCINATE COMPOSITIONS

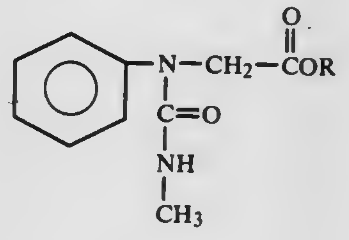
Krishen L. Nagpal, Williamsville, N.Y., assignor to Buffalo Color Corporation, West Paterson, N.J.

Filed Aug. 6, 1982, Ser. No. 406,009

Int. Cl.^{3} C07C *101/24;* **A61K** *31/24*

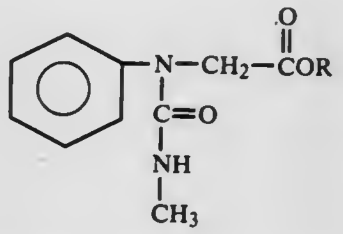
U.S. Cl. 424—309 **13 Claims**

1. An anti-convulsant compound of the formula:



wherein R is lower alkyl.

8. A method of producing anti-convulsant activity which comprising administering internally, to an animal organism in need of such activity, an amount of a compound of the formula:



wherein R is lower alkyl; sufficient to produce said activity.

4,443,475

AMIDES OF ACYL-CARNITINES, PROCESS FOR PREPARING SAME AND PHARMACEUTICAL COMPOSITIONS CONTAINING SUCH AMIDES

Claudio Cavazza, 35, Via Marocco, 00144 Rome, Italy

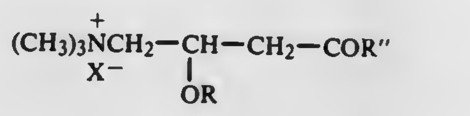
Continuation of Ser. No. 142,504, Apr. 21, 1980, abandoned. This application May 26, 1982, Ser. No. 382,275

Claims priority, application Italy, Apr. 23, 1979, 48816 A/79

Int. Cl.^{3} A61K *31/23;* **C07C** *103/54*

U.S. Cl. 424—311 **7 Claims**

1. An amide of an acyl-carnitine represented by the formula (I)



$$\underset{X^-}{(CH_3)_3\overset{+}{N}}CH_2-\underset{\underset{OR}{|}}{CH}-CH_2-COR''$$

wherein X^- is a halogen anion; R is acetyl; halogen-substituted acetyl; propionyl; halogen-substituted propionyl; butyryl; halogen-substituted butyryl; isobutyryl; β-hydroxy butyryl; acetoacetyl, linoleyl or pantothenyl; and R″ is amino provided that R is not acetyl, propionyl or butyryl, or R″ is 2-sulfonylethylamino, (2-hydroxy-3-carbethoxy-propyl) amino, (1-carbomethoxy-2-methyl-propyl) amino, (1-carbomethoxy-3-methyl-n-butyl) amino, (1-carbomethoxy-2-methyl-n-butyl) amino, (1,2-dicarbomethoxy-ethyl) amino, (1,3-dicarbomethoxy-propyl) amino, (2-carbethoxy-benzyl) amino, (4-carbethoxy-phenyl) amino, 2-mercapto-1-carbomethoxy-ethyl) amino, 2-mercaptoethyl amino, (5-trimethyl ammomonium chloride-1-carbethoxy pentyl) amino, (carbethoxy methyl) amino or (carbethoxy ethyl) amino radical.

5. A composition for the treatment of functional arrhythmias, arrythmias secondary to myocardial-sclerotic diseases and barbiturate-induced depressions and for use as psychostimulant which comprises an amide of formula (I) as defined in claim **1** in a pharmaceutically effective amount and a pharmacologically acceptable excipient.

4,443,476

TREATMENT OF ADULT RESPIRATORY DISTRESS SYNDROME

Pavel L. Lomen, Plainwell, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 284,414, Jul. 26, 1981, abandoned. This application Dec. 6, 1982, Ser. No. 447,050

Int. Cl.^{3} A61K *31/19*

U.S. Cl. 424—317 **2 Claims**

1. A process for treating adult respiratory distress syndrome comprising the systemic administration to a human or animal having adult respiratory distress syndrome of an effective amount of 3-fluoro-4-phenylhydratropic acid or an alkyl ester of from 1 to 8 carbon atoms, inclusive, including isomeric forms thereof, or a pharmacologically acceptable salt thereof.

4,443,477

SULPHONAMIDOPHENYLCARBOXYLIC ACID COMPOUNDS AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Ernst-Christian Witte, Mannheim; Hans P. Wolfe, Hirschberg-Grossachsen; Karlheinz Stegmeier, Heppenheim, and Egon Roesch, Mannheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

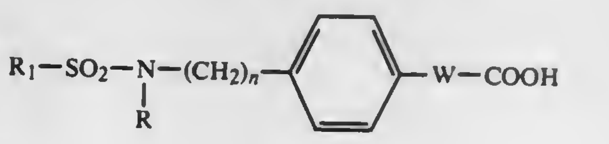
Continuation of Ser. No. 215,469, Dec. 11, 1980, abandoned. This application Jul. 7, 1982, Ser. No. 395,882

Claims priority, application Fed. Rep. of Germany, Jan. 7, 1980, 3000377

Int. Cl.^{3} C07C *143/78;* **A61K** *31/18*

U.S. Cl. 424—319 **33 Claims**

1. Sulphonamide compound of the formula



(I)

wherein

R is hydrogen or lower alkyl;

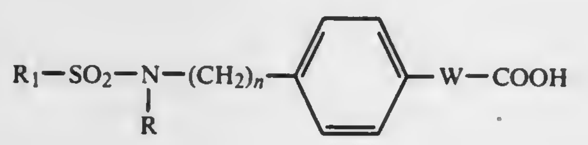
R_1 is alkyl of up to 16 carbon atoms except when R is H, aryl having 6 to 14 carbon atoms, aralkyl with an alkyl moiety of up to 5 carbon atoms or aralkenyl with an alkenyl moiety of 2 or 3 carbon atoms, the aryl moiety of which in either case having 6 to 14 carbon atoms and being optionally substituted with one or more hydroxyl, fluorine, chlorine, bromine, trifluoromethyl, lower alkyl or alkoxy or by acetyl, carboxy or alkoxycarbonyl with 1–5 carbon atoms in the alkoxy moiety, radical;

n is 1, 2 or 3; and

W is a valence bond or a divalent aliphatic hydrocarbon linkage having up to 6 carbon atoms; and

the physiologically acceptable salt, lower alkyl ester or amide of the WCOOH group of such compound wherein the amide component is selected from the group consisting of ammonia, p-aminobenzoic acid, beta-alanine; ethanolamine, 2-aminopropanol, alkylamine, dialkylamine, 4-alkylpiperazine, 4-aralkylpiperazine and 4-arylpiperazine.

31. Composition for depressing lipids, and inhibiting thrombocyte aggregation, which composition comprises a pharmacologically acceptable carrier and, in effective amounts, a sulphonamide compound of the formula



(I)

wherein

R is hydrogen or lower alkyl;

R_1 is alkyl of up to 16 carbon atoms, aryl of 6 to 14 carbon atoms or aralkenyl with an alkenyl moiety of 2 to 3 carbon atoms the aryl moiety of which in either case having 6 to 14 carbon atoms and being optionally substituted with one or more hydroxyl, fluorine, chlorine, bromine, trifluoromethyl, lower alkyl or alkoxy or by acetyl lower alkanyl, carboxy or alkoxycarbonyl with 1 to 5 carbon atoms in the alkoxy moiety, radical;

n is 1, 2 or 3; and

W is a valence bond or a divalent aliphatic hydrocarbon linkage, and

the physiologically acceptable salt, lower alkyl ester or amide of the WCOOH group of such compound wherein the amide component is selected from the group consisting of ammonia, p-aminobenzoic acid, beta-alanine; ethanolamine, 2-aminopropanol, alkylamine, dialkylamine, 4-alkylpiperazine, 4-aralkylpiperazine and 4-arylpiperazine.

4,443,478
PROSTAGLANDIN ANALOGUES

Takashi Muryobayashi; Hajimu Miyake, and Takashi Yamato, all of Takatsuki, Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, Japan

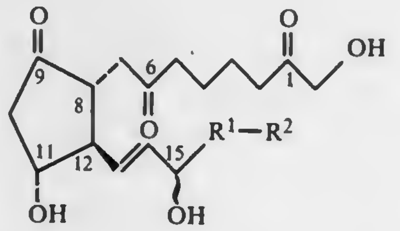
Filed Jun. 28, 1982, Ser. No. 392,676

Claims priority, application Japan, Jun. 29, 1981, 56-99724; May 25, 1982, 57-87229

Int. Cl.^{3} C07C *177/00;* **A61K** *31/215*

U.S. Cl. 424—331 **10 Claims**

1. A prostaglandin E_1 analogue of the formula:



(IV)

[wherein R^1 represents a direct bond or a straight- or branched-chain alkylene group containing from 1 to 5 carbon atoms(s), and R^2 represents a hydrogen atom, a straight- or branched-chain alkyl group containing from 1 to 8 carbon atom(s), a cycloalkyl group containing from 4 to 7 carbon atoms in the ring and unsubstituted or substituted by at least one straight- or branched-chain alkyl group containing from 1 to 8 carbon atom(s) or a phenyl or phenoxy group unsubstituted or substituted by at least one halogen atom, trifluoromethyl group or straight- or branched-chain alkyl group containing from 1 to 4 carbon atom(s), with the proviso that, when R^1 represents a direct bond, R^2 does not represent a phenoxy group] or a cyclodextrin clathrate thereof.

4,443,479
PHARMACEUTICAL METHODS AND COMPOSITIONS USING PARABENZOQUINONE

Channing B. Ewing, P.O. Box 47, East Lake Weir, Fla. 32632

Division of Ser. No. 370,066, Apr. 20, 1982, Pat. No. 4,382,095. This application Feb. 14, 1983, Ser. No. 466,141

Int. Cl.^{3} A61K *31/12*

U.S. Cl. 424—331 **2 Claims**

1. A method for treating the symptoms of:
migrane headaches,
peptic ulcer,
sinus headaches,
senile dementia,
comprising administering to a person suffering therefrom an effective amount of parabenzoquinone and continuing said administration, as required, until the symptoms have been alleviated.

4,443,480
ARTIFICIAL BLOOD AND OTHER GAS TRANSPORT AGENTS

Leland C. Clark, Jr., Cincinnati, Ohio, assignor to Children's Hospital Medical Center, Cincinnati, Ohio

Filed Apr. 12, 1982, Ser. No. 367,457

Int. Cl.^{3} A61K *31/025, 31/02*

U.S. Cl. 424—352 **30 Claims**

1. A gas transport agent liquid composition containing a perfluorocyclocarbon and an organoamine oxide.

5. The composition of claim **1** wherein the perfluorocyclocarbon is a perfluorinated compound selected from the group consisting of an adamantane, substituted adamantane, decalin, substituted decalin, bicyclononane, substituted bicyclononane, and mixtures thereof.

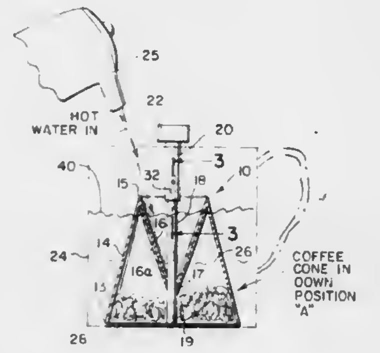
4,443,481
COFFEE INFUSION CONTAINER

Angelo Donarumma, and Thomas Callahan, both of 9 Longworth Ave., Dix Hills, N.Y. 11746

Filed Feb. 14, 1983, Ser. No. 432,787

Int. Cl.^{3} B65B *29/04*

U.S. Cl. 426—82 **3 Claims**



1. An infusion container of the type wherein a porous enclosure contains a substance to be dissolved in a liquid, wherein the improvement comprises:

(a) an enclosure having an exterior shape in the form of a truncated cone the upper most section being removed and, connected to the uppermost section of said truncated cone, a center section which extends down toward a base connected to the lowermost portion of said truncated cone, said center section being shaped relative to said truncated cone in the form of an inverted cone; the enclosure containing and retaining said substance being defined by said truncated cone, said inverted cone, and said base, all of which are porous

(b) a rod shaped handle with one end of said handle rigidly fixed to said base of said enclosure and with the lowermost and most tapered portion of the center section inverted cone affixed to the rod handle along the length of said rod shaped handle spaced from said one end, and with the end of said handle opposite said one end projecting outside the enclosure so that the user may hold the enclosure while a hot liquid is poured into the middle section of said inverted cone said rod shaped handle giving rigidity to the enclosure so that the enclosure retains its shape when dunked into the liquid; said base comprising a rigid porous member, said truncated cone comprising filter paper, and said inverted cone comprising a dual layer of filter paper and a rigid porous member.

4,443,482
BUTTERED TABLE SYRUP IN POLYOLEFIN BOTTLE

Larry D. Schopf, Saginaw; Jerome K. Sakowicz, Springfield, and Hugh L. Trenk, Augusta, all of Mich., assignors to General Foods Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 197,837, Oct. 17, 1980, Pat. No. 4,321,279. This application Mar. 23, 1982, Ser. No. 360,969

The portion of the term of this patent subsequent to Mar. 23, 1999, has been disclaimed.

Int. Cl.^{3} A23L *1/09, 3/34;* **B65B** *29/00*

U.S. Cl. 426—106 **11 Claims**

1. A bottled buttered table syrup comprising a polyolefin container containing a table syrup, said table syrup containing at least about 65% by weight sugar solids, butter in an amount of 1–5% by weight based on the weight of the syrup, and from 0.05 to 0.52% by weight of an emulsifier, said emulsifier containing from 0.01 to 0.2% by weight, based on the weight of the syrup, of carrageenin, and from 0.01 to 0.2% by weight, based on the weight of the syrup, of pectin.

4,443,483
METHOD FOR INHIBITING NITROSAMINE FORMATION DURING COOKING OF MEAT

Kunito Sato, Scottsdale, Ariz., and Richard F. Theiler, Harrington Park, N.J., assignors to Armour Food Company, Phoenix, Ariz.

Filed Jun. 28, 1982, Ser. No. 392,848

Int. Cl.^{3} A23B *4/02, 4/14*

U.S. Cl. 426—266 **15 Claims**

1. In a nitrite-curing process for meat, the improvement comprising the step of introducing into said meat a gamma pyrone in combination with a reducing sugar in amounts sufficient to inhibit production of nitrosamines during subsequent cooking of said meat.

4,443,484
METHOD FOR PRESERVATION OF MEAT PRODUCTS

Robert V. Dahlstrom, Novato, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Apr. 11, 1983, Ser. No. 483,801

Int. Cl.^{3} A23B *4/14*

U.S. Cl. 426—266 **4 Claims**

1. A method of inhibiting the growth of *Clostridium botulinum* in meat products comprising incorporating into a meat product an effective amount of the compound 3-(4-tolylsulfonyl) acrylonitrile and an alkali metal nitrite salt in an amount less than 120 ppm.

4,443,485
UTILIZATION OF AN AROMATIC ALDEHYDE 4-METHYL-2-HYDROXY-BENZALDEHYDE AS FLAVORING INGREDIENT

Sina D. Escher, le Lignon, and Paul Dietrich, Troinex, both of Switzerland, assignors to Firmenich SA, Geneva, Switzerland

Filed Apr. 15, 1982, Ser. No. 368,508

Claims priority, application Switzerland, May 21, 1981, 3314/81

Int. Cl.^{3} A23L *1/226*

U.S. Cl. 426—538 **2 Claims**

1. A method to enhance, modify or improve the sweet gustative note of caramel and burnt type reminiscent of coumarin of foodstuffs and beverages which comprises the step of adding thereto from about 0.1 to 10 parts per million by weight of 4-methyl-2-hydroxy-benzaldehyde based on the total weight of the resulting flavored foodstuffs and beverages.

4,443,486
MODIFIED EXTRACTIVE OF *EUCHEUMA COTTONII* SEAWEED AND COMPOSITION CONTAINING SAME

Kenneth B. Guiseley, Hope, Me., assignor to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 138,947, Apr. 9, 1980, abandoned. This application Mar. 11, 1981, Ser. No. 242,799

Int. Cl.^{3} C08B *37/00;* **A23G** *1/00;* **A23C** *9/154*

U.S. Cl. 426—584 **6 Claims**

1. A modified sulfated hydrocolloid extractive of *Eucheuma cottonii* for use in stabilizing milk-based products, said hydrocolloid in the form of a salt of calcium, magnesium, potassium or sodium or a mixture thereof, being characterized in that the viscosity in a 1.5% water solution is between 5 and 20 mPa.s at 75° C.

5. A chocolate milk stabilized with the hydrocolloid as defined in claim **1**, **2** or **3**.

4,443,487
PROCESS FOR PRODUCING A SPREADABLE EMULSION

Donald F. Darling, Denton, England, assignor to Lever Brothers Company, New York, N.Y.

Filed Feb. 24, 1982, Ser. No. 351,729

Claims priority, application United Kingdom, Feb. 27, 1981, 8106209

Int. Cl.^{3} A23D *3/02*

U.S. Cl. 426—603 **15 Claims**

1. A process for producing an edible spreadable margarine-like emulsion, which comprises:

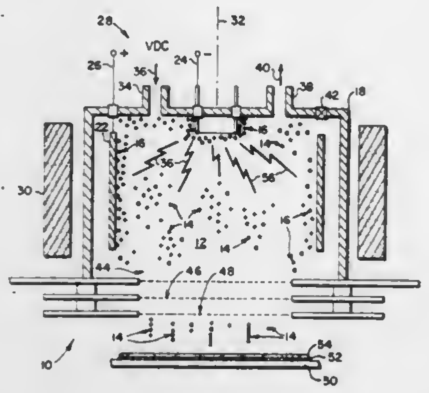
(a) producing an oil-in/water emulsion which comprises
  (i) 20–80 wt.% of a dispersed fat having at 10° C. a solid fat content exceeding 40%, of which the average major dimension does not exceed 6 microns;
  (ii) 80–20 wt.% of an aqueous phase; and
  (iii) an effective amount of an emulsifier conducive to surface nucleation of fat crystals, deformation of the dispersed fat and/or growth of fat crystals through the oil/-water interface into the aqueous phase;

(b) simultaneously subjecting said emulsion to a mild shearing regime resulting from turbulent or non-turbulent flow conditions together with a cooling regime wherein said emulsion is cooled to a temperature ranging from 0° to 15° C. to allow fat crystallization to take place and at least partly achieve phase inversion;

(c) applying a temperature cycling involving warming up the cooled emulsion to a temperature ranging from 25° to 45° C. at which partial melting occurs; and

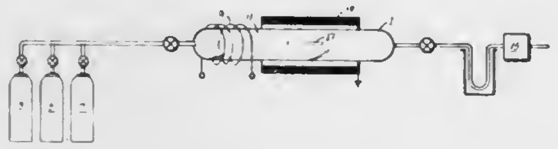
(d) cooling to a temperature at which the fat at least partly recrystallizes.

4,443,488
PLASMA ION DEPOSITION PROCESS
Roger G. Little, Bedford; Robert G. Wolfson, Concord, and Stanley J. Solomon, Lexington, all of Mass., assignors to Spire Corporation, Bedford, Mass.
Filed Oct. 19, 1981, Ser. No. 312,712
Int. Cl.^{3} B05D *3/06*
U.S. Cl. 427—38 **6 Claims**



1. A process of plasma ion deposition of large grain, thin semiconductor films comprising:
(a) ionizing a semiconductor-based gaseous compound;
(b) extracting the semiconductor ions from said compound;
(c) depositing said extracted ions on a substrate in two stages: at an initial slow deposition rate not exceeding 25 microns per hour, followed by a higher deposition rate greater than 50 microns per hour; and
(d) permitting said deposited ions to coalesce and to grow into a large-grain, thin semiconductor film on said substrate.

4,443,489
METHOD FOR THE FORMATION OF PHOSPHOROUS-NITROGEN BASED GLASSES USEFUL FOR THE PASSIVATION OF III-V SEMICONDUCTOR MATERIALS
Melvyn E. Cowher, East Brookfield, Mass., and Alexander J. Shuskus, West Hartford, Conn., assignors to United Technologies Corporation, Hartford, Conn.
Filed May 10, 1983, Ser. No. 493,181
Int. Cl.^{3} B05D *5/12*
U.S. Cl. 427—38 **5 Claims**

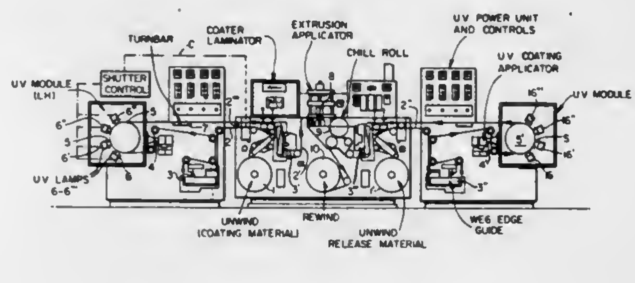


1. A method for depositing a thin, amorphous, glass-like corrosion resistant film of phospham on a III–V semiconductor material including the following steps:
placing the III–V semiconductor material in a reaction chamber;
raising the temperature of the material to about 260° C. to about 270° C. by contacting the material with an RF induced hydrogen plasma; and
then spontaneously depositing the phospham on the material by contacting the material with an RF induced plasma of phosphorous, nitrogen and hydrogen.

4,443,490
MAGNETIC RECORDING MEDIUM
Kaoru Nakajima; Kunio Kobayashi, and Yoshiaki Hisagen, all of Miyagi, Japan, assignors to Sony Corporation, Tokyo, Japan
Division of Ser. No. 174,871, Aug. 4, 1980, abandoned. This application Nov. 18, 1982, Ser. No. 442,845
Claims priority, application Japan, Aug. 6, 1979, 54-100145; Aug. 8, 1979, 54-101133
Int. Cl.^{3} B05D *3/06*
U.S. Cl. 427—44 **6 Claims**

1. A method of manufacturing a magnetic recording medium which comprises:
coating a magnetic paint composed of magnetic powder and a binder on a non-magnetic substrate to form a coating layer, said binder containing an acrylic compound having at least two unsaturated bonds per molecule and a thermoplastic resin in a weight ratio of 80:20 to 20:80,
preliminarily irradiating the coating layer with an ionizing radiation at a dose amount of 0.1 to 3 Mrad;
subjecting the coating layer to a calender treatment; and
irradiating the calendered coating layer with an ionizing radiation at a dose amount of from 1 to 10 Mrad to fully cure the coating layer.

4,443,491
METHOD OF AND APPARATUS FOR PRODUCING ADHESIVE-COATED SHEET MATERIALS USABLE WITH RADIATION-CURED SILICONE RELEASE COATINGS AND THE LIKE
Frederic S. McIntyre, Wellesley, Mass., assignor to Acumeter Laboratories, Inc., Marlborough, Mass.
Filed Jun. 10, 1982, Ser. No. 386,922
Int. Cl.^{3} B05D *3/06*
U.S. Cl. 427—44 **18 Claims**

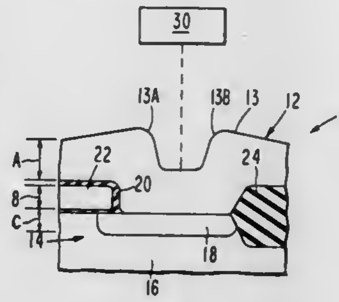


1. A method of producing sheet material carrying an adhesive coating on one surface and adapted for use with radiation-curved silicone for enabling release of the sheet material in stacking, that comprises, applying uncured silicone coating material to one surface of a sheet as the sheet travels continuously in web form; radiation-curing said silicone coating during travel of the web to provide a cross-linked release coating; controlling the degree of radiation-curing in accordance with the travel speed of the web to provide sufficient curing without overcuring; applying adhesive to one of (1) the other surface of said sheet and (2) a second sheet during travel of the web, and hardening the adhesive during travel of the web; and stacking, as by rolling at the travel speed of the web, by one of (1) winding the cured silicone coated and adhesive coated sheet and (2) winding the cured silicone-coated sheet with the adhesive-coated sheet and with the coatings in the contact.

4,443,492
RATE OF ABSORBENCY OF SUBSTRATES CONTAINING IN-SITU POLYMERIZED MONOMERS
Judy Roller, North Brunswick, N.J., assignor to Personal Products Company, Milltown, N.J.
Filed Apr. 18, 1983, Ser. No. 485,783
Int. Cl.^{3} B05D *3/06*
U.S. Cl. 427—44 **6 Claims**

1. In a process for producing an absorbent composite wherein a formed fibrous substrate has applied thereto an aqueous solution comprising an ammonium or alkali metal salt of acrylic or methacrylic acid and is then irradiated with sufficient electromagnetic or corpuscular ionizing radiation to convert said salt of acrylic or methacrylic acid to a water swellable polymer, the improvement wherein:
said irradiated substrate is saturated with an aqueous liquid and then dried to a moisture content of less than 20 percent, by weight whereby said dried substrate exhibits rapid absorption properties.

4,443,493
LASER INDUCED FLOW GLASS MATERIALS
Michelangelo Delfino, Los Altos, Calif., assignor to Fairchild Camera and Instrument Corp., Mountain View, Calif.
Continuation-in-part of Ser. No. 300,706, Jun. 30, 1981, which is a continuation of Ser. No. 143,983, Apr. 28, 1980, abandoned. This application Jan. 15, 1982, Ser. No. 339,600
Claims priority, application United Kingdom, Feb. 6, 1981, 8103773; Italy, Feb. 23, 1981, 67249 A/81
Int. Cl.^{3} B05D *3/06*
U.S. Cl. 427—53.1 **3 Claims**

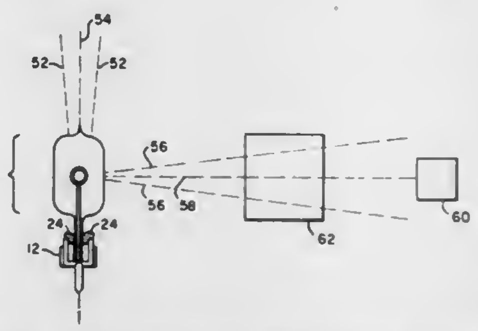


1. A method of inducing flow or densification of a first glass portion of an integrated circuit structure in close proximity to a second portion of the structure containing different material, the first portion being of the type wherein flow or densification is induced therein upon application of heat thereto, comprising:
heating the first portion, by a laser beam having an emission coupled to the absorption band of said glass, to an extent substantially greater than the second portion, said structure being subjected to successive overlapping laser scans by said laser beam, each scan having a dwell time sufficiently low to prevent formation of bubbles in the flowed glass.

4,443,494
METHOD FOR JOINING OBJECTS
Donald I. Gonser, York, Pa., assignor to Dentsply Research and Development Corporation, Milford, Del.
Continuation-in-part of Ser. No. 234,473, Feb. 17, 1981, abandoned, and a continuation-in-part of Ser. No. 276,656, Jun. 23, 1981, abandoned. This application Feb. 1, 1983, Ser. No. 462,818
Int. Cl.^{3} B05D *3/06*
U.S. Cl. 156—64 **24 Claims**

1. A process for accurately joining together a first object and a second object into a preselected spatial orientation comprising:
contacting said first object and said second object with at least one portion of a polymerizable composition hardenable through irradiation with actinic light,
causing light to be emitted from at least one of said objects,
evaluating said light,
positioning said objects relative to each other in response to said evaluation to attain said preselected spatial orientation; and
irradiating said portion with actinic light for a time sufficient to cause said composition to polymerize substantially to hardness, fixedly to maintain said preselected spatial orientation to a high degree of accuracy.

9. A process for accurately joining together a first object and a second object into a preselected spatial orientation comprising:
contacting said first object and said second object with at least one portion of a polymerizable composition hardenable through irradiation with visible light comprising:
a binder resing,
a diluent monomer, and
a photosensitizing system comprising:
an alpha diketone, and
an amine reducing agent,
causing light to be emitted from at least one of said objects,
evaluating said light,



positioning said objects relative to each other in response to said evaluation to attain said preselected spatial orientation; and
irradiating said portion with visible light for a time sufficient to cause said composition to polymerize substantially to hardness fixedly to maintain said preselected spatial orientation to a high degree of accuracy.

19. A process for accurately joining a lamp bulb portion to a lamp base portion into a preselected spatial orientation comprising:
contacting said bulb and said base portions with at least one portion of a polymerizable composition hardenable through irradiation with visible light,
causing said bulb portion to emit light, said light transiting said bulb portion and impinging upon light evaluation means,
evaluating said light,
positioning said bulb and base portions in response to said evaluation to attain said preselected spatial orientation; and
irradiating said portion of polymerizable composition with visible light for a time sufficient to cause said polymerizable portion to polymerize substantially to hardness, fixedly to maintain said preselected spatial orientation to a high degree of accuracy.

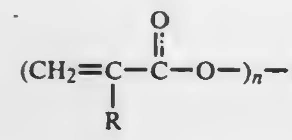
4,443,495
HEAT CURABLE CONDUCTIVE INK
Charles R. Morgan, Brookeville, and Arthur D. Ketley, Chevy Chase, both of Md., assignors to W. R. Grace & Co., New York, N.Y.
Division of Ser. No. 241,144, Mar. 5, 1981, Pat. No. 4,406,826. This application May 5, 1983, Ser. No. 491,899
Int. Cl.^{3} B05D *3/06;* **H01B** *1/02*
U.S. Cl. 427—96 **6 Claims**

1. A process for forming a conductive coating on a substrate which comprises applying in a circuit pattern on a substrate a

solventless screen printable, heat curable conductive ink composition comprising

(1) a member of the group consisting of

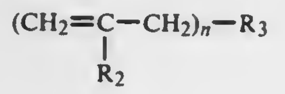
- (a) a polythiol in combination with a liquid, ethylenically, unsaturated monomer, oligomer or prepolymer of the formula:



$$(CH_2{=}\underset{\displaystyle R}{\underset{|}{C}}{-}\overset{\displaystyle O}{\overset{\|}{C}}{-}O{-})_n{-}R_1$$

wherein R is H or CH_3, R_1 is an organic moiety and n is at least 2,

- (b) a polythiol in combination with a liquid ethylenically unsaturated monomer, oligomer or prepolymer of the formula:



$$(CH_2{=}\underset{\displaystyle R_2}{\underset{|}{C}}{-}CH_2)_n{-}R_3$$

wherein R_2 is H or CH_3, R_3 is an organic moiety and n is at least 2, and

- (c) mixtures of (a) and (b)

(2) a thermal initiator, and (3) A metal as an electrically conductive material in the range of 65-85 weight percent of the conductive ink, and thereafter heating said thus coated substrate at a temperature in the range 80°-200° C.

4,443,496

AGENT AND METHOD FOR MODIFYING SURFACE LAYER OF CEMENT STRUCTURES

Masamichi Obitsu, Chiba; Takahiro Hori, Funabashi; Toyoji Koinuma, Tokyo, and Yuriko Sakaguchi, Funabashi, all of Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Filed Jul. 22, 1982, Ser. No. 400,820
Claims priority, application Japan, Jul. 30, 1981, 56-119751
Int. Cl.^{3} C04B ***31/00;*** **B05C** ***1/16;*** **B32B** ***35/00***
U.S. Cl. 427—140 **13 Claims**

1. A method for modifying a surface layer of cement structures, which comprises steps of applying on surface of the structure an agent comprising 100 parts by weight of an alkali silicate solution and 0.01 to 5 parts by weight of a condensate of sodium naphthalenesulfonate and formaldehyde, in which said alkali silicate solution has a SiO_2/M_2O mole ratio of 1 to 50, wherein M represents an alkali metal atom, or a substituted or unsubstituted ammonium cationic radical, and has a SiO_2 content of 1 to 50 weight %, impregnating the surface layer of said structure with said agent, and then leaving to stand or positively drying the treated structure.

4,443,497

METHOD OF PREPARING MICROCAPSULES

Masayoshi Samejima, Minoh, and Goichi Hirata, Yawata, both of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Dec. 21, 1981, Ser. No. 333,026
Claims priority, application Japan, Jan. 19, 1981, 56-6859
Int. Cl.^{3} B01J ***13/02***
U.S. Cl. 427—213.36 **10 Claims**

1. A method of preparing microcapsules which comprises:

(i) dissolving a coating polymer material which is selected from the group consisting of (a) water-insoluble, acid-soluble coating polymer material, (b) enteric coating polymer material and (c) amphoteric coating polymer material; and 0.05 to 5 grams of ethylcellulose having an ethoxy content of 44-55 w/w % per gram of said coating polymer material; in a solvent selected from the class consisting of a chlorinated hydrocarbon having one to three carbon atoms, an alkanol having one to four carbon atoms, an alkanone having three to five carbon atoms, a mixture of said alkanol and said alkanone, 2-methoxyethanol, 2-ethoxyethanol, 2-butoxyethanol, dioxane, epihalohydrin, trimethyl phosphate, triethyl phosphate, tetrahydrofuran and diacetone alcohol to form a solution;

(ii) dispersing particles of a pharmaceutically active compound as a core material in said solution to form a dispersion;

(iii) adding an organic liquid which is miscible with said solvent and which is a nonsolvent for said coating polymer material and the pharmaceutically active compound to said dispersion thereby forming coating walls of said coating polymer material on and around said particles of said core material, whereby the ethyl cellulose present minimizes the coagulation of the coating polymer material and/or the adhesion or agglomeration of the thus-formed microcapsules, and then

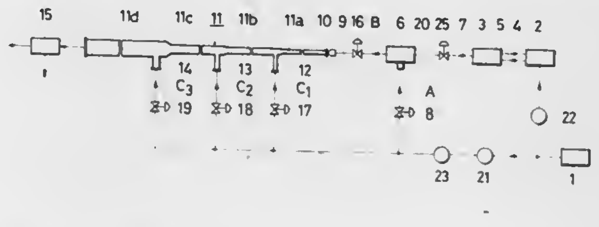
(iv) recovering the thus-formed microcapsules therefrom.

4,443,498

METHOD FOR LINING THE INNER SURFACE OF A REDUCED PIPE LINE

Kiyonori Shinno, Habikino, Japan, assignor to Kabushiki Kaisha Nihon Plant Service Center, Osaka, Japan

Filed Jan. 25, 1983, Ser. No. 460,964
Int. Cl.^{3} B05D ***1/02, 7/22***
U.S. Cl. 427—235 **6 Claims**



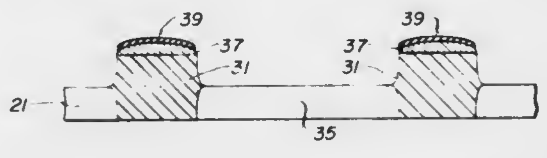
1. A method for lining the inner surface of a pipe line with a lining material comprising the steps of: forming a mixture of lining material and compressed air; directing said mixture at a predetermined flow volume rate into a first open end of said pipe line so that said mixture comes in contact with said inner surface of said pipe line and depositing particles of said lining material thereon; adding additional compressed air at predetermined locations along said pipe line to keep the flow volume of said mixture at predetermined values along the length of said pipe line; and removing said mixture from a second open end of said pipe line.

4,443,499

METHOD OF MAKING A FOCUSING COLOR-SELECTION STRUCTURE FOR A CRT

Steven A. Lipp, Hopewell, N.J., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 228,588, Jan. 26, 1981, Pat. No. 4,427,918. This application Aug. 4, 1983, Ser. No. 520,213
Int. Cl.^{3} B05D ***1/36, 5/00;*** **B44C** ***1/22;*** **C23F** ***1/02***
U.S. Cl. 427—258 **7 Claims**



1. A method for making a quadrupolar focusing color-selection structure for a cathode-ray tube comprising

A. providing a metal plate having two opposed major surfaces,

B. producing in one of said surfaces an array of substantially-parallel ridges of plate metal spaced by valleys therebetween, said ridges having substantially flat tops,

C. removing metal from the other of said surfaces from areas opposite said valleys and extending completely through said plate, thereby producing an array of shaped apertures through said plate,

D. covering by roller coating selected surface portions of the tops of said ridges only with a first coating of electrically-insulating material,

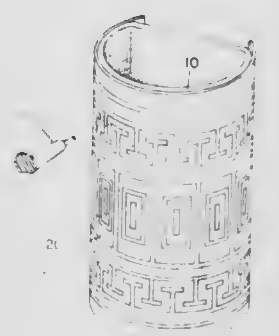
E. and covering selected surface portions of said first coating only with a second coating of electrically-conducting material, said second coating being spaced from said plate.

4,443,500

METHOD FOR FORMING SGRAFFITO PATTERNS ON CERAMIC SURFACES

Charlene K. deJori, 605 Evans, San Antonio, Tex. 78209

Filed Mar. 30, 1982, Ser. No. 363,610
Int. Cl.^{3} B05D ***3/12***
U.S. Cl. 427—264 **6 Claims**



1. A method for forming a design or pattern in a leather hard clay form, comprising the steps of:

applying a binder to the surface of the leather hard clay form, said binder functioning to strengthen said surface and the bond between said surface and a subsequently applied decorative coating, so that upon subsequently removing moisture from the decoratively coated, binder treated clay form, the binder treated form and decorative coating can withstand application and removal of an adhesively backed stencil without damaging the clay form and the decorative coating;

applying said decorative coating to the binder treated surface of the leather hard clay form;

removing the moisture from the clay form by heating the form with artificial heat to a degree sufficient to remove most of the free water;

contacting the decorated clay form with a flexible stencil resistant to erosion by sand blasting with a predetermined design and having an adhesive backing on the stencil to releasably adhere the stencil to the decorated clay form;

sand blasting the decorated clay form through the openings in the stencil to provide the predetermined design on the clay form by removing a predetermined amount of the clay body beneath; and

removing the stencil and firing the clay form to provide a three dimensionally decorated ceramic form.

4,443,501

METHOD FOR FORMING MINIMIZED SPANGLE COATED STRIP

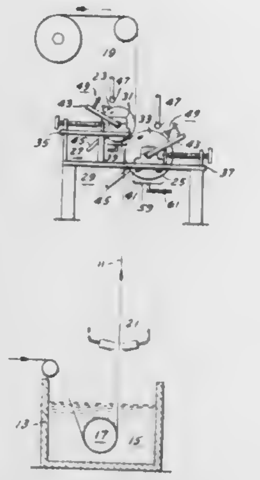
George M. Mino, Hamburg; Donald L. Dustin, Elma, and John H. Williams, Eden, all of N.Y., assignors to Bethlehem Steel Corp., Bethlehem, Pa.

Filed Mar. 1, 1982, Ser. No. 353,716
Int. Cl.^{3} B05D ***3/12***
U.S. Cl. 427—360 **5 Claims**

1. A method of producing galvanized ferrous strip having a minimized spangled coating on the surface thereof, comprising the steps of

(a) passing said strip through a molten galvanizing bath to develop a molten coating layer on the surface of said strip,

(b) contacting at least one coated surface of the strip with a cooled roll to nucleate said layer of the coating and cause rapid crystallization, and



(c) providing a heat transfer liquid between the surface of said roll and the surface of the molten coating layer to provide even contact and heat transfer between the surface of the cooled roll and said coated surface.

4,443,502

LIQUID ORGANOSILOXANE RESIN COMPOSITIONS

Beth I. Gutek, Freeland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Apr. 12, 1983, Ser. No. 484,333
Int. Cl.^{3} A23P ***1/00***
U.S. Cl. 427—387 **25 Claims**

1. A liquid composition comprising

(A) from 5 to 60%, based on the weight of said composition, of at least one solubilized, room temperature curable block copolymer comprising

- (1) at least one diorganosiloxane block containing an average of from 15 to 350 repeating units per block, where at least 80 mol % of the units are dimethylsiloxane units, any remaining units being selected from methylphenylsiloxane and methylsiloxane;
- (2) at least one block containing at least three repeating units of the formula

$$R_y{}^1SiO_{\frac{4-y}{2}}$$

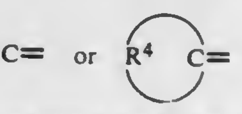
where y has a value of from 1 to 1.3 and R^1 represents a monovalent hydrocarbon radical wherein at least 50% of the radicals are phenyl with any remainder being selected from the group consisting of vinyl, methyl, ethyl, and propyl; and

- (3) from 3 to 25%, based on the total number of units present in said block copolymer, of terminal units represented by the formula

$$R^2SiY_zO_{\frac{3-z}{2}}$$

where z has an average value of from 1.8 to 2, inclusive, R^2 is alkyl containing from 1 to 6 carbon atoms, phenyl, or vinyl, Y is selected from the group consisting of alkoxy containing from 1 to 5 carbon atoms, acetoxy, and radicals of the formula —ON=Z where Z is

$R_2{}^3C{=}$ or



where each R^3 contains from 1 to 4 carbon atoms and is individually selected from monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals and R^4 contains from 2 to 5 carbon atoms and is selected from the group consisting of divalent hydrocarbon radicals and halogenated divalent hydrocarbon radicals;

wherein the molar ratio of units in the diorganosiloxane block to $R_y{}^1SiO_{(4-y/2)}$ units is from 0.7 to 3.5, and units wherein R^1 is phenyl constitute more than about 20 mol % of the total units present in said block copolymer; and

(B) a solvent for said block copolymer, said solvent comprising at least 45% by weight of at least one cyclic polydimethylsiloxane of the formula $[(CH_3)_2SiO]_x$ where x has an average value of from 3 to 8 inclusive.

4,443,503
ANTI-CORROSIVE COATING COMPOSITION AND PROCESS FOR FORMATION OF ANTI-CORROSIVE COATINGS

Minoru Hoshino, Yokohama; Tosio Shinohara, Fujisawa; Hiroyuki Tanabe, Yokohama; Tooru Taki, Yamato, and Shunsuke Nakayama, Yokohama, all of Japan, assignors to Dai Nippon Toryo Co., Ltd., Osaka, Japan

Division of Ser. No. 201,606, Oct. 28, 1980, Pat. No. 4,363,889. This application Sep. 2, 1982, Ser. No. 414,458

Claims priority, application Japan, Dec. 19, 1979, 54-165087; Dec. 20, 1979, 54-166205

Int. Cl.³ B05D *1/02, 7/14*

U.S. Cl. 427—421 **8 Claims**

1. A process for forming an anti-corrosive coating on an iron or a steel substrate, which comprises mixing

(i) 100 parts by weight of an unsaturated polyester resin containing an α,β-ethylenically unsaturated monomer,

(ii) 10 to 70 parts by weight of glass flake having an average particle size of 100 to 400 microns and an average thickness of 0.5 to 5 microns,

(iii) 10 to 150 parts by weight of a scaly metal pigment having particle size between 30–300 microns;

(iv) 0.3 to 1.5 parts by weight of curing promoter,

then adding a member selected from the group consisting of (a) a mixture of 0.1 to 1.0 part by weight of a ketone peroxide and 0.5 to 2.0 parts by weight of a hydroperoxide, (b) a mixture of 0.1 to 1 part by weight of a ketone peroxide and 0.5 to 2 parts by weight of a peroxy ester and (c) a mixture of 0.1 to 1.0 parts by weight of a ketone peroxide, 0.5 to 2 parts by weight of said hydroperoxide and said peroxy ester, and spray coating to a coating thickness of 300 to 1500 microns, by using a spray gun having a spray tip diameter of 0.5 to 3 mm.

4,443,504
COATING METHOD

Richard S. Burket, Brevard; Brian F. Conaghan, and Robert I. Hirshburg, both of Hendersonville, all of N.C., assignors to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Jun. 9, 1982, Ser. No. 386,679

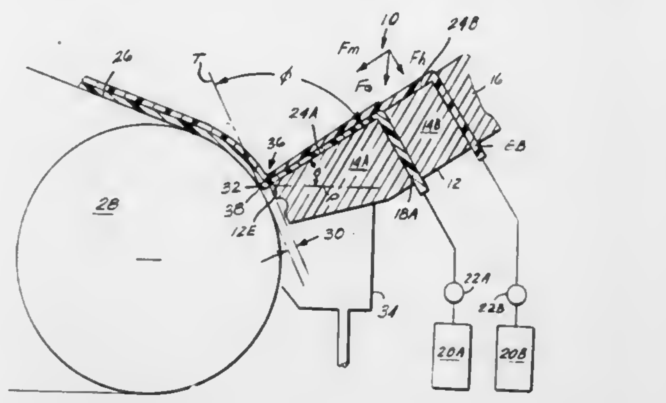
Int. Cl.³ B05C *5/02*

U.S. Cl. 427—445 **4 Claims**

1. A method of coating a moving web carried by a coating roll using a slide surface along which a coating fluid flows by gravity toward an impingement point on the web, the slide surface defining an angle with respect to a horizontal datum plane, comprising the steps of:

(a) adjusting the angle between the slide and the datum plane to a predetermined angle in a range from 35° to 50°;

(b) locating the coating fluid impingement point above the center line of the coating roll such that a tangent to the coating roll at the impingement point defines a takeoff angle with respect to the slide surface at a predetermined angle in the range from 85° to 100°; and



(c) introducing a coating fluid onto the slide.

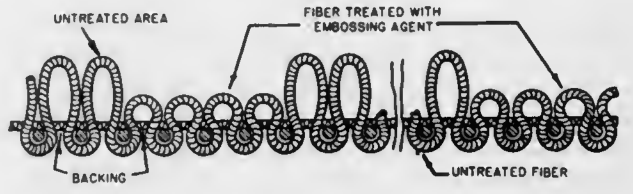
4,443,505
EMBOSSING PILE FABRICS AND EMBOSSED LOOP PILE FABRIC

Frank E. Ehrenfeld, Jr., Morrisville, Pa., assignor to Congoleum Corporation, Kearny, N.J.

Continuation-in-part of Ser. No. 367,211, Apr. 9, 1982, and a continuation of Ser. No. 150,575, May 16, 1980, which is a continuation of Ser. No. 806,787, Jun. 15, 1977, abandoned, which is a continuation of Ser. No. 632,446, Nov. 17, 1975, abandoned, which is a continuation of Ser. No. 437,782, Jan. 30, 1974, abandoned, which is a continuation-in-part of Ser. No. 267,227, Jun. 28, 1972, abandoned, which is a continuation of Ser. No. 64,475, Aug. 17, 1970, abandoned, said Ser. No. 367,211, is a continuation of Ser. No. 15,297, Feb. 26, 1979, Pat. No. 4,340,381, which is a continuation-in-part of Ser. No. 616,307, Sep. 24, 1975, abandoned, which is a continuation of Ser. No. 492,011, Jul. 26, 1974, abandoned, which is a continuation of Ser. No. 267,227,. This application Sep. 29, 1982, Ser. No. 428,375

Int. Cl.³ B32B *3/02*

U.S. Cl. 428—89 **10 Claims**



1. A process for providing an embossed effect on nylon pile fabric having a surface of upstanding nylon fibers that comprises

applying to defined areas of the pile fabric an embossing composition

applying over said embossing composition a composition to displace said embossing composition toward the base of said fibers

allowing said embossing composition to remain in contact with said fibers for a period of time and at a temperature sufficient to reduce the height of the pile only in the areas contacted by the embossing composition, without deterioration of the fibers,

said reduction being sufficient to display a significant embossed effect in the overall fabric.

4,443,506
BULLETPROOF ARRANGEMENT OF WOVEN, KNITTED OR THE LIKE FABRICS

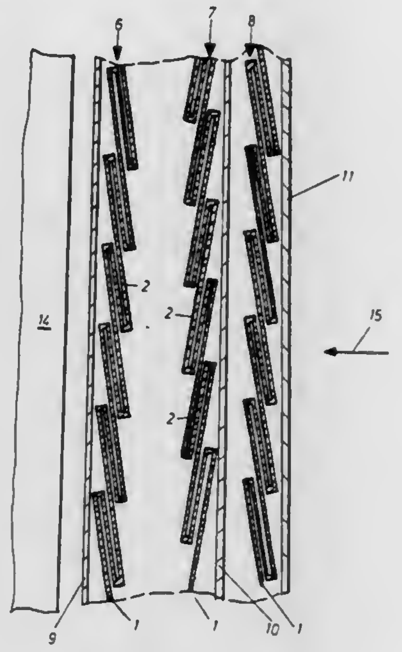
Horst Schmolmann, and Renate Schmolmann nee Holstein, both of Friedrichsholm, Fed. Rep. of Germany, assignors to Interglas-Textil GmbH., Ulm, Fed. Rep. of Germany

Filed Dec. 17, 1982, Ser. No. 450,578

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1981, 3150725

Int. Cl.³ B32B *3/04, 3/26*

U.S. Cl. 428—102 **14 Claims**



1. A bulletproof arrangement of woven or knitted fabric material comprised of aromatic polyamide fibers, comprising:

(a) at least one continuous web of said fabric material;

(b) said web being folded at spaced intervals in a zigzag configuration forming a succession of panels, each panel comprising three layers of said web and having a first fold line between the first and second layers of said web and a second fold line between the second and third layers of said web;

(c) said third layer of said web in one panel extending to form the first layer of said web of the next succeeding panel;

(d) the distance between the second fold line of one panel and the first fold line of the next succeeding panel being greater than, but less than twice, the distance between the first and second fold lines of said panels such that said panels partially overlap; and

(e) the distance between the first fold line of one panel and the second fold line of the panel next succeeding the next succeeding panel being less than the caliber of a projectile impacting upon the bulletproof arrangement.

4,443,507
HEAT-MOLDABLE LAMINATE AND PROCESS FOR MOLDING SAID LAMINATED STRUCTURES

Kozo Yamada, and Takayuki Tanaka, both of Shizuoka, Japan, assignors to Toho Beslon Co., Ltd., Tokyo, Japan

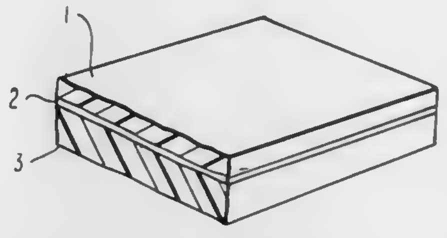
Continuation-in-part of Ser. No. 115,851, Jan. 28, 1980, abandoned. This application Aug. 30, 1982, Ser. No. 413,117

Claims priority, application Japan, Jan. 26, 1979, 54-7228; Jul. 30, 1980, 55-100155

Int. Cl.³ B32B *7/00, 27/00*

U.S. Cl. 428—114 **26 Claims**

1. A heat-moldable laminate comprising at least one thermoplastic resin layer, at least one fiber reinforced cured thermosetting resin layer about 0.02 to 5 mm thick, and at least one slippage layer about 0.02 to 1 mm thick interposed between the resin layers, wherein the slippage layer comprises a thermoplastic resin and is capable of being in the molten state at lower temperatures than the moldable temperature of the thermoplastic resin, said slippage layer permitting slippage between said resin layers, said thermoplastic resin layer having a thickness that provides sufficient ridigity capable of preventing the fiber reinforced cured thermosetting resin layer from resuming its original form through internal stress of the reinforced cured thermosetting resin layer when it is deformed by exterior applied forces upon molding the laminate.



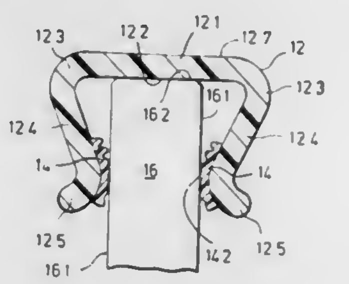
4,443,508
EDGE PROTECTOR

Donald N. Mehl, Minnetonka, Minn., assignor to Norfab, Inc., Minneapolis, Minn.

Filed Sep. 30, 1982, Ser. No. 431,617

Int. Cl.³ B60R *13/04;* **B32B** *3/04*

U.S. Cl. 428—122 **5 Claims**



1. An edge protector for a sheet of glass or the like comprising an integral, dual-durometer, co-extruded channel having rigid and soft portions, the rigid portion comprising a channel having an internally generally flat central portion and legs extending convergently from edges of the central portion and terminating in reversely curved, divergent edge portions providing confronting oppositely curved surfaces spaced from the central portion, the soft portion comprising deformable gripping pads formed integrally by co-extrusion on said confronting surfaces and providing confronting, deformable gripping surfaces for conformably gripping therebetween, with surface-to-surface contact, exterior parallel surfaces of a glass sheet or the like adjacent the edge of the sheet with the latter receivable in confronting relationship to the internally generally flat central portion of the protector.

4,443,509
INSULATION AND THE PROVISION THEREOF

Robert A. Sauder, Emporia, Kans., assignor to Sauder Industries, Inc., Emporia, Kans.

Filed Jan. 21, 1982, Ser. No. 341,255

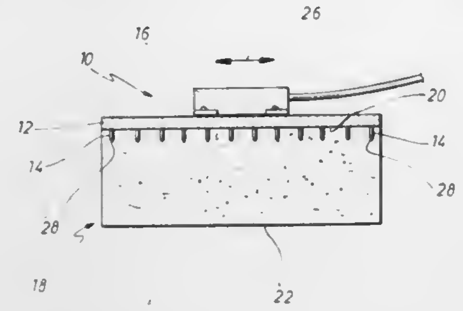
Int. Cl.³ B32B *3/10*

U.S. Cl. 428—137 **52 Claims**

1. A method of forming an insulation member for insulating the walls of a furnace, the method comprising:

(a) providing holes at spaced intervals in a cold face of a mat of fibrous insulation material, which cold face is to be directed towards a furnace wall during use;

(b) applying a liquid adhesive to the cold face; and

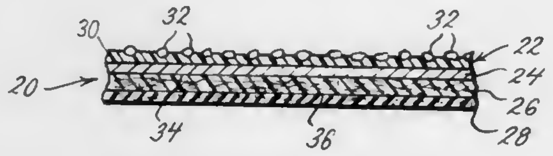


(c) vibrating the adhesive to cause adhesive penetration into the holes of the mat.

4,443,510
CONFORMABLE REMOVABLE REFLECTIVE MARKING TAPE

Charles W. Watt, Webster Groves, Mo., assignor to Lukens General Industries, Inc., St. Louis, Mo.

Filed Sep. 23, 1982, Ser. No. 421,871
Int. Cl.³ B32B *5/02;* G02B *5/136*
U.S. Cl. 428—149 **2 Claims**



1. A thin conformable, removable, reflective marking tape comprising:

a base layer of zero temper aluminum foil approximately 0.0025 to 0.0035 inches thick;

a layer of vinyl pigmented binder on the top surface of said foil;

glass beads, 30–80 U.S. standard mesh, (0.0234 to 0.0070 inches in diameter), having an index of refraction ranging approximately from 1.90 to 1.94, embedded in said binder;

a scrim layer of resilient nylon felt on the bottom surface of said foil;

a pressure sensitive adhesive layer on the bottom surface of said scrim;

said scrim being bonded to said foil by the application of the adhesive to the bottom of the said foil, and said scrim being saturated by said adhesive;

said nylon scrim having a memory tending to return the scrim to its original dimensions when stretched to conform to a surface;

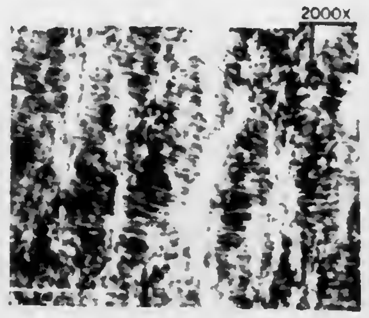
said nylon scrim further being sufficiently thin such that flexing of the aluminum base layer is minimized to prolong the life of the vinyl pigmented binder and glass beads on the top surface thereof;

said aluminum layer being sufficiently thin to conform to the roadway surface, but thick enough to override the memory of the nylon scrim, the marking tape, thereby, having substantially no memory and forming a tight, removable, surface conforming structure when applied to a roadway or the like.

4,443,511
ELASTOMERIC WATERPROOF LAMINATE

Dexter Worden; Frederic T. Wilson, both of Newark, Del., and Linda J. Grubb, Elkton, Md., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Filed Nov. 19, 1982, Ser. No. 443,137
Int. Cl.³ B32B *7/14*
U.S. Cl. 428—198 **18 Claims**



1. A process for forming a stretchable composite article having at least two layers comprising the steps of:

(i) mechanically stretching the composite to impart stretch and recovery properties thereto, said layers comprising:

(a) a first layer of hydrophobic material having a moisture vapor transmission rate exceeding 1000 gma/m^2 day and an advancing water contact angle exceeding 90 degrees; and

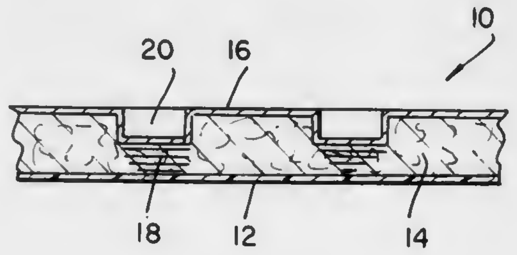
(b) an elastomeric hydrophilic layer having a major portion of one surface in interlocking relationship with the inner face of said first layer, said hydrophilic layer having moisture vapor transmission rate exceeding 1000 gms/m^2 day, the stretching step extending the first layer in one direction at least 5% beyond its yield point; and

(ii) relaxing the stretched composite.

4,443,512
ABSORBENT ARTICLE WITH DENSIFIED AREAS

Myriam Delvaux, Hannut, Belgium, assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Sep. 22, 1981, Ser. No. 304,489
Int. Cl.³ A61F *13/16;* B32B *5/12*
U.S. Cl. 428—162 **1 Claim**

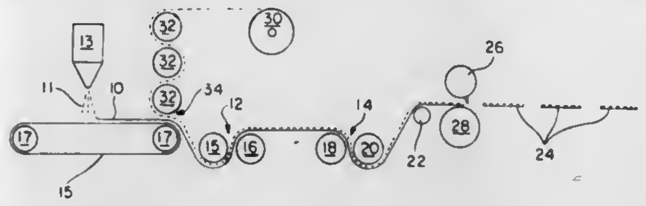


1. An absorbent article comprising a backing sheet, an absorbent pad on said backing sheet, and a top sheet overlying said pad, said pad being of an absorbent material, said absorbent article being embossed compressing said pad so that separate discrete compressed areas are formed with the balance of the pad being substantially non-compressed, said pad when embossed including discrete areas of highly compressed absorbent material and other areas of substantially non-compressed absorbent material, said discrete areas and said other areas having the same amount of absorbent material per unit of size, said discrete areas being of 0.13 square centimeters in size, said discrete areas being spaced apart 0.32 centimeters and the density of said absorbent material in said densified areas being 0.22 grams per centimeter.

4,443,513
SOFT THERMOPLASTIC FIBER WEBS AND METHOD OF MAKING

Gary H. Meitner, Winnebago County, Wis., and Patrick J. Notheis, Cobb County, Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Feb. 24, 1982, Ser. No. 351,829
Int. Cl.³ B32B *3/00*
U.S. Cl. 422—195 **20 Claims**



1. Nonwoven web comprising thermoplastic staple length or longer fibers or filaments containing a pattern of fused bond areas over about 9 to 35% of the web surface separated by areas of substantially unbonded fibers or filaments extending out of the plane of the fused bonds wherein said web is extended to up to about 140% of its original dimension in at least one direction resulting in increased bulk and improved softness and an improvement in effective capacity of at least 35% with an increase in pores in excess of 40 microns of at least about 10% when compared with the unextended web.

4,443,514
MAGNETIC RECORDING MEDIUM

Nobuyuki Yamamoto, Shizuoka; Yasuo Nishikawa; Yuji Andou, both of Kanagawa; Kyoichi Naruo, and Tsutomu Okita, both of Shizuoka, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 10, 1982, Ser. No. 347,618
Claims priority, application Japan, Feb. 10, 1981, 56-18508
Int. Cl.³ G11B *5/72*
U.S. Cl. 428—216 **14 Claims**

1. A magnetic recording medium, comprising:

a non-magnetic support base;

a thin magnetic metal film formed on a surface of said non-magnetic support base; and

a thin film containing in at least 70 weight percent a copolymer material formed on said thin magnetic metal film, said copolymer material containing 50% or more vinylidene chloride and 10% or more acrylonitrile as repeating units.

4,443,515
ANTISTATIC FABRICS INCORPORATING SPECIALTY TEXTILE FIBERS HAVING HIGH MOISTURE REGAIN AND ARTICLES PRODUCED THEREFROM

Sheldon M. Atlas, New York, N.Y., assignor to Peter Rosenwald, New York, N.Y.

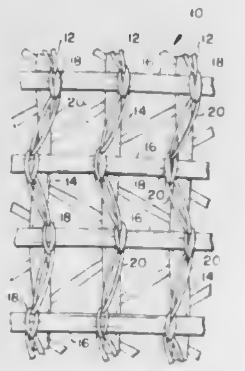
Filed Jan. 27, 1983, Ser. No. 461,514
Claims priority, application France, Feb. 5, 1982, 82 01861; Aug. 20, 1982, 82 14409
Int. Cl.³ D03D *25/00*
U.S. Cl. 428—224 **17 Claims**

1. A textile fabric which is resistant to accumulation of static charge, said fabric comprising at least one percent by weight of interlocked hydrophilic fibers which are capable of absorbing up to about 50% by weight of the fiber of moisture without lose of mechanical strength and other textile properties, said hydrophilic fibers having a Rockwell hardness in the range of from about 40 to about 60 and consisting of a linear hygroscopic homopolymer of a monomer selected from the group consisting of alpha, beta-ethylenically unsaturated carboxylic acids, alpha, beta-ethylenically unsaturated sulfonic acids, hydroxyalkyl esters of these acids and hydroxyglycidyl esters of these acids, said polymers having a molecular weight in the range of from about 100,000 to about 500,000, a softening point in the range of from about 210° C. to about 245° C. and a glass transition temperature Tg above about 115° C., and said polymer being cross-linked at a cross-linking density in the range of one chemical cross-link bond per from about 40 to about 100 repeating monomeric units of said polymer.

4,443,516
WARP KNIT SIGN FABRIC

Jack S. Rogers, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Jun. 27, 1983, Ser. No. 508,020
Int. Cl.³ B32B *7/00*
U.S. Cl. 428—253 **6 Claims**



1. A fabric for use as the structural material for outdoor signs comprising: a warp knit, weft inserted substrate material and a sheet of PVC film material laminated to both sides of said substrate, said substrate being a two-bar fabric with a fill yarn inserted in every other course of said fabric, said two-bar fabric having a design represented by a front bar movement of 1-0/0-1/1-2/2-1 and a back bar movement of 1-1/1-1/0-0/0-0.

4,443,517
GASKETING MATERIAL

Kanu G. Shah, Arlington Heights, Ill., assignor to Dana Corporation, Toledo, Ohio

Filed May 5, 1982, Ser. No. 374,995
Int. Cl.³ D04H *1/08*
U.S. Cl. 428—281 **22 Claims**

1. A fibrous material comprising:

(a) a sheet of paper-like material ranging in thickness from 0.020 to 0.070 inch, and composed of a felted mass of intermeshed fibers bonded to one-another at points of contact by a binder; and

(b) flake graphite distributed throughout the intermeshed fibers, wherein the fibers and the graphite are uniformly distributed through the sheet and the graphite constitutes from about 45% to 95% of the material based upon the weight of the fibers, the binder and the graphite.

4,443,518
BONDED REINFORCED PLASTIC STRUCTURES

Joseph G. Martins, Ludlow; Donald D. Donermeyer, and David A. Fabel, both of Springfield, all of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Feb. 4, 1983, Ser. No. 464,080
Int. Cl.³ B32B *27/08;* C09J *5/02*
U.S. Cl. 428—336 **16 Claims**

1. A bonded reinforced plastic structure which comprises reinforced plastic parts coated with a primer coat and bonded together by a thermoplastic block copolymer wherein the reinforced plastic is formed from sheet molding compound or bulk molding compound, wherein the primer coat comprises a moisture-curable polyisocyanate, wherein the block copolymer comprises from 40 to 80% by weight of crystalline polyester or polyamide segments and from 20 to 60% by weight of amorphous polyamide or polyether segments, and wherein the block copolymer has a crystalline melting point above about

155° C. and a number average molecular weight in the range of about 8000 to about 30000.

2. The bonded structure of claim 1 wherein the primer coating thickness is in the range of 5 to about 25 microns.

4,443,519

BONDED PLASTIC STRUCTURES

Donald D. Donermeyer, Springfield; Joseph G. Martins, Ludlow, and David A. Fabel, Springfield, all of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Feb. 4, 1983, Ser. No. 464,082

Int. Cl.^{3} B32B *27/08, 27/34, 27/40;* **C09J** *5/02*

U.S. Cl. 428—336 **15 Claims**

1. A bonded plastic structure which comprises plastic parts coated with a primer coat and bonded together by a thermoplastic block copolymer wherein the plastic is a reinforced reaction injection molded polyurethane or a reaction injection molded nylon, wherein the primer coat comprises a moisture-curable polyisocyanate, wherein the block copolymer comprises from 40 to 80% by weight of crystalline polyester or polyamide segments and from 20 to 60% by weight of amorphous polyamide or polyether segments, and wherein the block copolymer has a crystalline melting point above about 155° C. and a number average molecular weight in the range of about 8000 to about 30,000.

2. The bonded structure of claim 1 wherein the primer coating thickness is in the range of about 5 to about 25 microns.

4,443,520

FIREPROOF COATING FOR WOOD OF THERMOPLASTIC RESIN, ALUMINA TRIHYDRATE AND GLASS FIBERS

Charles H. Braithwaite, Jr., 11232 Tigrina, Whittier, Calif. 90603

Filed Sep. 29, 1982, Ser. No. 426,629

Int. Cl.^{3} B32B *3/26*

U.S. Cl. 428—438 **14 Claims**

1. The method of treating a wood product which comprises:

(a) coating at least one surface of said wood product with a suspension of:

(i) ambient temperature film former ingredients selected from the class of latexes of polyvinyl acetate, polyacrylates, styrene-butadiene polymers and halogenated derivatives thereof, and copolymers thereof, and

(ii) high temperature barrier forming ingredients including from 26 to 30 weight percent of alumina trihydrate, and from 2 to 10 weight percent of glass fibers;

(b) drying said coating at a temperature from ambient to about 275 degrees F. for a time sufficient to remove water therefrom and form a dry coating without dehydration of said alumina trihydrate.

4,443,521

COATING ALLOY

Burton A. Kushner, Old Bethpage, and Michael J. Jirinec, New Hyde Park, both of N.Y., assignors to Eutectic Corporation, Flushing, N.Y.

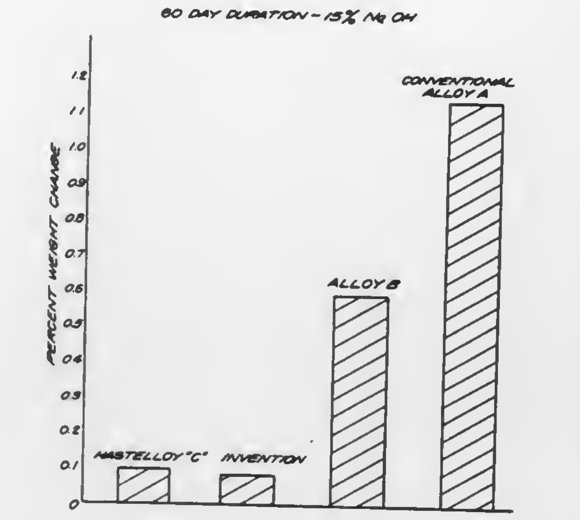
Division of Ser. No. 323,390, Nov. 20, 1981. This application Sep. 8, 1982, Ser. No. 416,009

The portion of the term of this patent subsequent to Nov. 30, 1999, has been disclaimed.

Int. Cl.^{3} C22C *19/03*

U.S. Cl. 428—679 **4 Claims**

1. A metal substrate having bonded thereto a flame-sprayed coating formed of an alloy consisting essentially by weight of up to about 0.1% C, about 3% to 30% Mo, up to about 3% Si, up to about 6% W, about 2.5% to 12% Ti, about 10% to 22% Fe, up to about 0.4% V, and the balance essentially nickel.



4,443,522

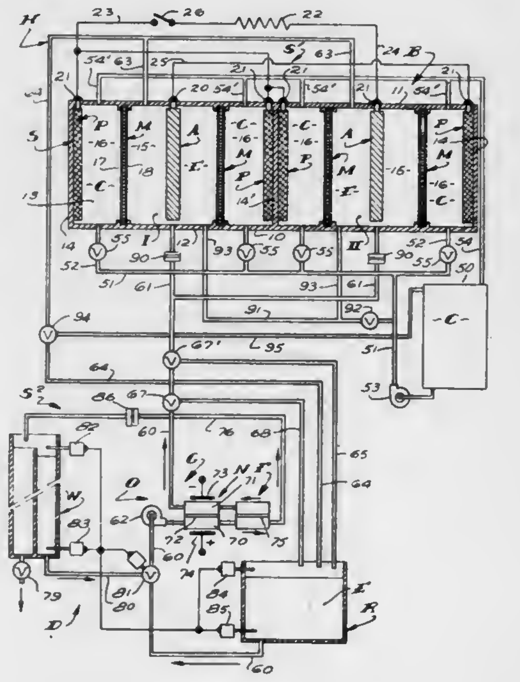
METAL/ACID ION PERMEABLE MEMBRANE FUEL CELL

Ralph C. Struthers, 39503 Calle El Fuente, Saugus, Calif. 91350

Division of Ser. No. 251,488, Apr. 6, 1981, Pat. No. 4,352,864. This application May 17, 1982, Ser. No. 378,857

Int. Cl.^{3} H01M *8/24*

U.S. Cl. 429—18 **9 Claims**



1. A battery comprising a plurality of related fuel cells including an elongate fluid receiving chamber in a case, spaced apart ion permeable membranes in and dividing the chamber to define adjacent cathode and anode compartments and establishing acid-base interfaces between the compartments, anode plates in the anode compartments, with terminals projecting from the case, electron distributor plates in the cathode compartments with terminals projecting from the case, an electric circuit with lines connected with said terminals and connecting the plurality of cells in series, a supply of acid cathode solution, cathode solution delivery means conducting cathode solution from the supply of cathode solution into the cathode compartments, a supply of base electrolyte solution and electrolyte solution delivery means conducting electrolyte solution into and out of the anode compartments and including electrolyte conducting lines communicating with the anode compartments and ion filter means in those lines stopping the movement of

ions through the electrolyte in the lines from one anode compartment to another.

4,443,523

HIGH-TEMPERATURE BATTERY

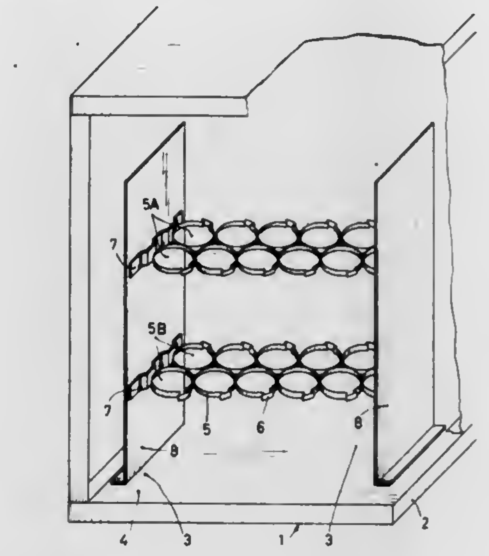
Dieter Hasennauer, Weinheim, Fed. Rep. of Germany, assignor to Brown, Boveri & Cie AG, Mannheim, Fed. Rep. of Germany

Filed May 7, 1982, Ser. No. 375,969

Claims priority, application Fed. Rep. of Germany, May 12, 1981, 3118693

Int. Cl.^{3} H01M *2/10*

U.S. Cl. 429—99 **5 Claims**



1. High-temperature battery comprising

(a) a thermal insulation housing enclosing a mounting for clamping storage cells in the interior of the thermal insulation,

(b) said mounting having a plurality of clamping elements in an upper horizontal plane with each clamping element connected to the adjoining clamping element,

(c) a second plurality of clamping elements in a lower horizontal plane with each clamping element connected to the adjoining clamping element, spaced below the clamping elements in the upper horizontal plane,

(d) each horizontal plane having at least two rows of clamping elements with each row of the same length and the rows arranged by the clamping elements of the same size lined up in pairs,

(e) each pair of clamping elements in the lower plane arranged perpendicularly below one pair of clamping elements in the upper plane,

(f) each clamping element in both planes formed as a clamping ring with at least one outward pointed clamping eye to permit insertion and removal of individual storage cells and a self-supported clamping of each individual storage cell by an upper clamping element and an aligned lower clamping element,

(g) said mounting also having supports for the two planes of clamping elements with at least one support arranged at each lateral end of the mounting, and

(h) wherein the last pair of clamping elements at the first and the second lateral end of each plane is connected with the said support.

4,443,524

HIGH-TEMPERATURE BATTERY

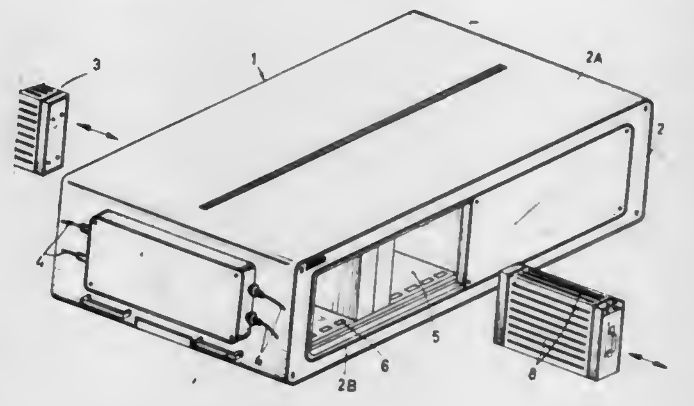
Henner Meinhold, Sandhausen, and Dieter Hasenauer, Weinheim, both of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie AG, Mannheim, Fed. Rep. of Germany

Filed May 7, 1982, Ser. No. 375,967

Claims priority, application Fed. Rep. of Germany, May 15, 1981, 3119409

Int. Cl.^{3} H01M *2/10*

U.S. Cl. 429—99 **9 Claims**



1. High-temperature battery comprising a thermal insulation housing for enclosing electrochemical storage cells, at least one housing air inlet for feeding cooling air into the interior of the housing, and at least one housing air outlet for the discharge of said air from the housing, at least one module containing electrochemical storage cells for insertion into the interior of said housing, said module having at least one feedline for the flow of cooling air in the housing into said module against the force of gravity and at least one discharge passage, through which the air leaves said module with the force of gravity, said feedline arranged at a first lateral end and the discharge passage arranged at a second other lateral end of the module, said feedline and said discharge passage have an inlet opening and an outlet opening respectively, in the lower region of the lateral ends of the module, said feedline and said discharge passage are in connection with the interior of the module containing the storage cells only via a respective connecting opening in the upper region of the module, said storage cells in the module arranged to provide empty spaces between them for the cooling air conducted in the interior of the module to flow through these spaces along the length of each storage cell, and empty spaces as passageways between the storage cells and the inner boundary surface of the module are provided for passage of cooling air in the module.

4,443,525

HIGH-TEMPERATURE BATTERY

Dieter Hasenauer, Weinheim, Fed. Rep. of Germany, assignor to Brown, Boveri & CIE AG, Mannheim, Fed. Rep. of Germany

Filed May 7, 1982, Ser. No. 375,968

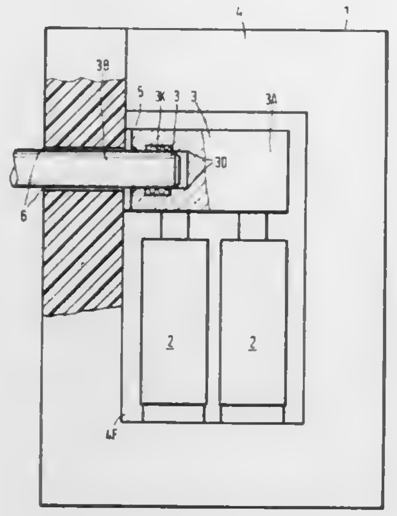
Claims priority, application Fed. Rep. of Germany, May 12, 1981, 3118692

Int. Cl.^{3} H01M *4/36*

U.S. Cl. 429—102 **6 Claims**

1. High-temperature battery comprising a housing of thermal insulation enclosing a cavity in the thermal insulation housing, at least one electrochemical storage cell of alkali metal and chalcogen electrodes disposed in said cavity, with at least one electric conductor passing through a feedthrough in the thermal insulation with one first end of the electric conductor connected to the electrochemical storage cell in the cavity, and with the other second end of said electric conductor extending outside the high-temperature battery, said electric conductor composed of at least two subconductors detachably connected to each other, said first subconductor with said first end of the conductor connected to the storage cell in an electrically conducting manner disposed in the high temperature battery, said feedthrough formed as a canal in the thermal

insulation and said second subconductor pushed through the canal and snapped into a contact element sitting in a hole of the first subconductor, wherein the second subconductor is removable from the contact element of the first subconductor to



an extent of at least to the outer boundary surface of the thermal insulation permitting the canal in the insulation vacated by removal of the second subconductor to be filled with air, which air is a poor conductor of heat and retards heat loss during pauses in the operation of the high-temperature battery.

4,443,526

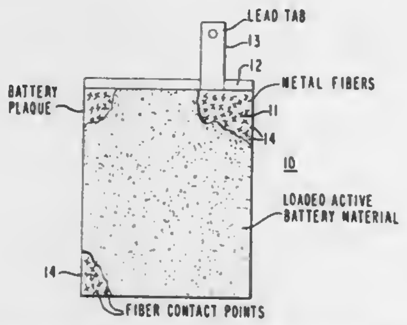
NICO$_3$ ELECTRODE MATERIAL AND ELECTRODE

John F. Jackovitz, Monroeville; Joseph Seidel, and Earl A. Pantier, both of Penn Hills, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 3, 1982, Ser. No. 354,489

Int. Cl.^{3} H01M *4/32*

U.S. Cl. 429—223 **8 Claims**



1. An electrode paste consisting essentially of the admixture of:

(A) anhydrous nickel carbonate,

(B) up to about 50 wt.% of nickel hydroxide, based on anhydrous nickel carbonate weight,

(C) a cobalt additive compound, and

(D) sufficient water to form a paste.

4,443,527

COLORED MAGNETICALLY ATTRACTABLE TONER POWDER, ITS PREPARATION, AND DEVELOPING IMAGES WITH SUCH POWDER

Harm H. Heikens, Reuver, and Gerardus J. Crommentuyn, Lottum, both of Netherlands, assignors to Océ-Nederland B.V., Venlo, Netherlands

Filed Sep. 2, 1982, Ser. No. 414,501

Claims priority, application Netherlands, Sep. 18, 1981, 8104307

Int. Cl.^{3} G03G *9/08, 9/14*

U.S. Cl. 430—39 **25 Claims**

1. A colored magnetically attractable toner powder the particles of which individually comprise a magnetically attractable core of between about 8 and about 35 μm in size consisting essentially of particulate magnetically attractable material substantially completely enveloped in binder, a masking layer enveloping said core, said layer consisting essentially of reflecting pigment of sub-micron particle size distributed substantially homogeneously in binder and applied in an amount sufficient to mask off substantially completely the color of said magnetically attractable material, and coloring material in and/or on the masking layer.

20. A process for developing into a colored powder image a latent electrostatic or magnetic information pattern, which comprises depositing onto said pattern particles of a toner powder according to claim **1**, **12**, or **19**.

4,443,528

PHOTOCONDUCTIVE MATERIALS COMPRISING NITRO OR CYANO SUBSTITUTED PHTHALOCYANINE COMPOUNDS FOR ELECTROPHOTOGRAPHY

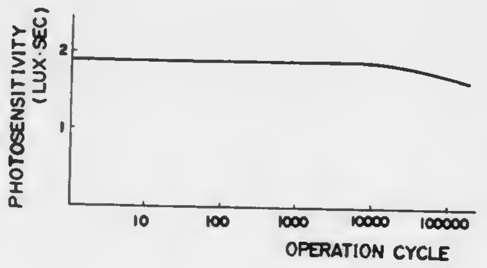
Shinichi Tamura; Toshio Seta; Tsuneo Tanaka, and Mititika Hikosaka, all of Kyobashi, Japan, assignors to Toyo Ink Manufacturing Co., Ltd., Kyobashi, Japan

Filed Mar. 21, 1983, Ser. No. 476,979

Claims priority, application Japan, Mar. 29, 1982, 57-49025

Int. Cl.^{3} G03G *5/06*

U.S. Cl. 430—56 **21 Claims**



1. A photoconductive material comprising a phthalocyanine and a phthalocyanine derivative in which the phthalocyanine molecule has benzene nuclei substituted with at least one member selected from nitro groups and cyano groups.

4,443,529

PHOTOCONDUCTIVE MEMBER HAVING AN AMORPHOUS SILICON PHOTOCONDUCTOR AND A DOUBLE-LAYER BARRIER LAYER

Junichiro Kanbe, Yokohama; Shigeru Shirai, Yamato, and Tadaji Fukuda, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 14, 1982, Ser. No. 368,368

Claims priority, application Japan, Apr. 24, 1981, 56-62182

Int. Cl.^{3} G03G *5/04, 5/082*

U.S. Cl. 430—65 **24 Claims**

1. A photoconductive member comprising a support for photoconductive member, a photoconductive layer constituted of an amorphous material comprising silicon atom as a matrix and a barrier layer between said support and said photoconductive layer, said barrier layer having a double-layer structure layered from the side of said support of a first barrier layer comprising an amorphous silicon material containing (i) hydrogen or halogen and (ii) impurities wherein (i) and (ii) are in amounts sufficient to impede the injection of free carriers from the support and a second barrier layer constituted of an electrically insulating material different from said amorphous material constituting said first barrier layer.

4,443,530

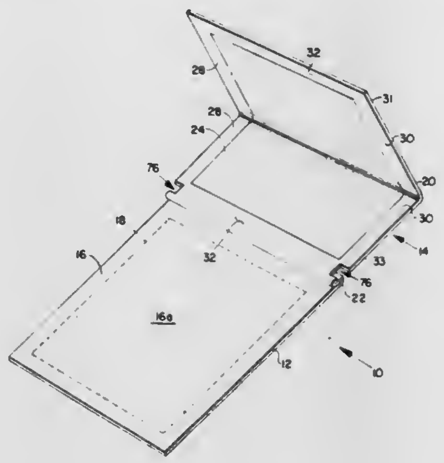
SELF-PROCESSING FILM UNIT WITH LIQUID APPLICATOR

David V. Cronin, Peabody, and Vincent L. Cocco, Wakefield, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 22, 1982, Ser. No. 436,189

Int. Cl.^{3} G03C *5/54, 1/48;* **G03D** *9/00, 5/00*

U.S. Cl. 430—138 **39 Claims**



31. A self-processing film unit comprising:

a sheet-like film component including one or more photosensitive layers and having an outer surface with a given area thereof that is configured to be wetted with a low viscosity processing liquid to initiate processing of said film component; and

a liquid applicator secured to said film component outside of said given area and including a liquid and air impervious sheet dimensioned for extension over said outer surface in covering relation to said given area, and means on one surface of said impervious sheet yieldably holding a substantially uniformly distributed supply of a low viscosity processing liquid sufficient to wet said given area, said applicator being initially provided on said film component in a folded and releasably sealed configuration, wherein said impervious sheet is folded over on itself and is releasably sealed along facing marginal portions thereof to form a liquid and air impervious enclosure about said liquid holding means, and being configured for movement to an unsealed extended configuration overlying said outer surface with said liquid holding means in liquid yielding contact with said given area to effect wetting thereof.

39. The film unit of claim **31** wherein said liquid holding means includes a plurality of microcapsules, each enclosing a quantity of said liquid processing composition and being rupturable to release said liquid to effect wetting of said given area.

4,443,531

DELETING AGENTS FOR PRINTING PLATES AND METHOD FOR DELETION

Shoji Yamada; Eiji Kanada, and Eiji Mathubara, all of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

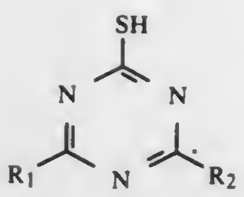
Filed Sep. 27, 1982, Ser. No. 424,300

Claims priority, application Japan, Dec. 18, 1981, 56-203595; Jul. 8, 1982, 57-119026

Int. Cl.^{3} G03F *7/00*

U.S. Cl. 430—204 **7 Claims**

1. A method for deleting images formed on offset printing plates which comprises treating the surface of undesired portion of the images formed by exposure and development with a deletion fluid which contains an S-triazine compound represented by the following general formula:



wherein R_1 and R_2 represent —SH or —OH and when either one of R_1 or R_2 is —SH, the other may be NHR wherein R is H or —R′—COOH wherein R′ is an alkylene group or arylene group.

4,443,532

INDUCED CRYSTALLOGRAPHIC MODIFICATION OF AROMATIC COMPOUNDS

David C. Joy, Warren; Martin L. Kaplan, Morris Plains, and Paul H. Schmidt, Chatham, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 29, 1981, Ser. No. 288,002

Int. Cl.^{3} H01L *29/28*

U.S. Cl. 430—270 **13 Claims**

1. An exposed energy-sensitive body comprising an energy-sensitive material that has been exposed and that contacts a substrate characterized in that said energy-sensitive material comprises a composition chosen from the group consisting of 1,4,5,8-naphthalene tetracarboxylic dianhydride, 3,4,9,10-perylene tetracarboxylic dianhydride, 3,4,9,10-perylene tetracarboxylic diimide and combinations thereof, wherein at least a portion of said composition has undergone a crystal structure change upon treatment with said energy.

9. The process comprising the steps of exposing an energy-sensitive body to energy wherein said energy-sensitive body comprises an energy-sensitive material contacting a substrate characterized in that said energy-sensitive material comprises a composition chosen from the group consisting of 1,4,5,8-naphthalene tetracarboxylic dianhydride, 3,4,9,10-perylene tetracarboxylic dianhydride, 3,4,9,10-perylene tetracarboxylic diimide, and combinations thereof, whereby said composition undergoes a crystal structure change upon treatment with said energy.

4,443,533

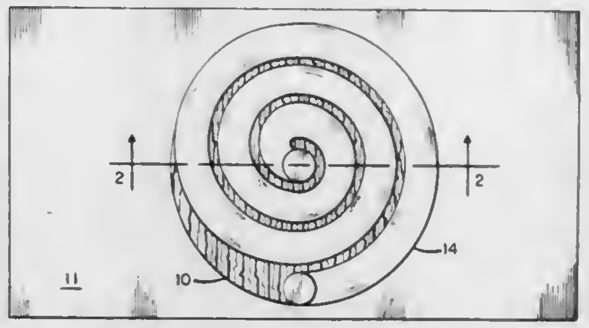
PHOTORESIST CURING METHOD

C. Richard Panico, 21 Leighton St., Medford, Mass. 02155

Filed Jul. 23, 1982, Ser. No. 401,318

Int. Cl.^{3} G03C *5/16*

U.S. Cl. 430—311 **6 Claims**



1. In a method of forming optically delineated circuits comprising applying a photoresist to a substrate; exposing said photoresist to a photoexposure of a circuit pattern; developing said photoresist by washing away the unexposed portions; curing the remaining photoresist; and treating the exposed substrate surface to provide electrical circuits, the combination of step to produce said curing comprising:

(a) positioning said substrate so that the surface of the remaining photoresist is spaced in the range of 6.0 mm to 6.0 cm from the envelope of a flash arc lamp; and,

(b) discharging at least one electrical pulse through said lamp with a current density in said lamp in the range of 400 to 2000 amperes per square centimeter.

4,443,534
SILVER HALIDE PHOTOGRAPHIC ELEMENTS CONTAINING POLYMERS WHICH FILTER UV LIGHT

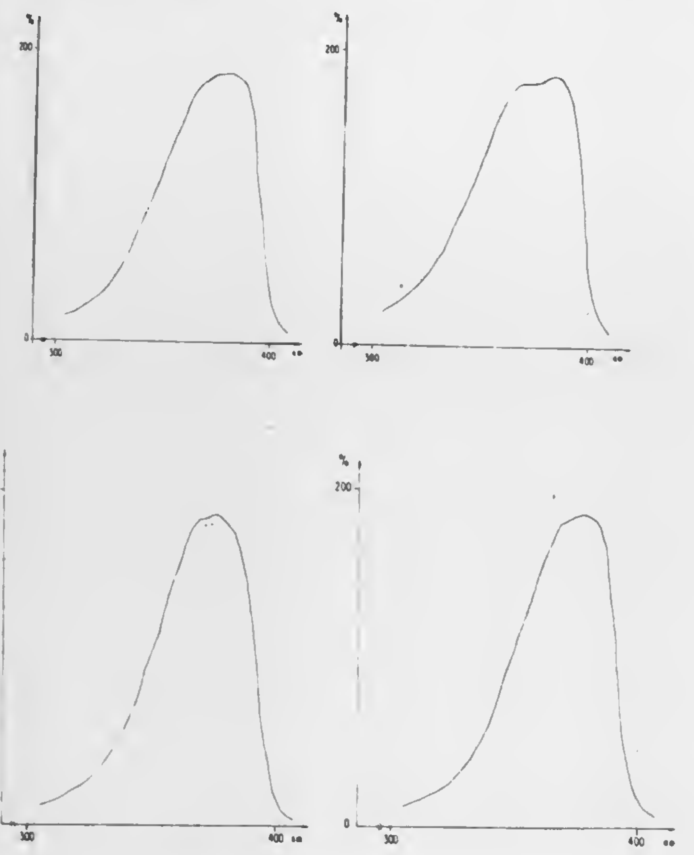
Tetsuro Kojima; Shingo Ishimaru; Naohiko Sugimoto, and Tadashi Ikeda, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 12, 1983, Ser. No. 484,331

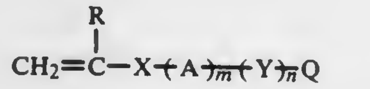
Claims priority, application Japan, Apr. 14, 1982, 57-61937

Int. Cl.^{3} G03C *1/84*

U.S. Cl. 430—512 **23 Claims**

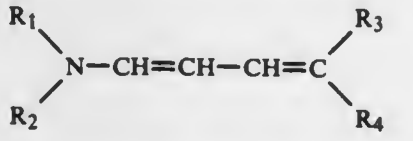


1. A silver halide photographic light-sensitive material comprising a support having thereon at least one light-sensitive silver halide emulsion layer and at least one light-insensitive layer, the photographic light-sensitive material containing an ultraviolet ray absorbing polymer latex which comprises a homopolymer or a copolymer having a repeating unit derived from a monomer represented by the following general formula (I):



$$CH_2{=}\overset{R}{\overset{|}{C}}-X-(A)_m-(Y)_n-Q \qquad (I)$$

wherein R represents a hydrogen atom, a lower alkyl group having from 1 to 4 carbon atoms or a chlorine atom; X represents —CONH—, —COO— or a phenylene group; A represents a linking group selected from an alkylene group having from 1 to 20 carbon atoms or an arylene group having from 6 to 20 carbon atoms; Y represents —COO—, —OCO—, —CONH—, —NHCO—, —SO_2NH—, —NHSO_2—, —SO_2— or —O—; m represents 0 or an integer of 1; n represents 0 or an integer of 1; and Q represents an ultraviolet ray absorbing group represented by the following general formula (II):



(II)

wherein R_1 and R_2, which may be the same or different, each represents a hydrogen atom, an alkyl group having from 1 to 20 carbon atoms or an aryl group having from 6 to 20 carbon atoms, provided that the both of R_1 and R_2 do not simultaneously represent hydrogen atoms, and further R_1 and R_2 may combine to form an atomic group necessary to form a cyclic amino group; R_3 represents a cyano group, —$COOR_5$, —$CONHR_5$, —COR_5 or —SO_2R_5; and R_4 represents a cyano group, —$COOR_6$, —$CONHR_6$, —COR_6 or —SO_2R_6; wherein R_5 and R_6 each represents an alkyl group having from 1 to 20 carbon atoms or an aryl group having from 6 to 20 carbon atoms, and further R_5 and R_6 may combine to form an atomic group necessary to form a 1,3-dioxocyclohexane nucleus, a barbituric acid nucleus, a 1,2-diaza-3,5-dioxocyclopentane nucleus or a 2,4-diaza-1-alkoxy-3,5-dioxocyclohexene nucleus; and at least one of R_1, R_2, R_3 and R_4 bonds to the vinyl group through the linking group.

4,443,535
PHOTOGRAPHIC RESIN-COATED PAPER

Masataka Kiritani, Shizuoka, and Yasuzi Asao, Fujinomiya, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 16, 1982, Ser. No. 398,826

Claims priority, application Japan, Jul. 21, 1981, 56-114181

Int. Cl.^{3} G03C *1/76, 1/86, 3/00*

U.S. Cl. 430—538 **10 Claims**

1. In a photographic resin-coated paper comprising a polyolefin resin layer containing titanium dioxide powder therein and having embossed pattern on the surface, the improvement comprises employment of titanium dioxide powder coated with an alcohol having 2–18 carbon atoms and 3 methylol groups as the titanium dioxide powder.

4,443,536
NONDIFFUSIBLE PHOTOGRAPHIC COUPLERS AND PHOTOGRAPHIC ELEMENTS AND PROCESSES EMPLOYING SAME

Gregory J. Lestina, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 296,086, Aug. 26, 1981, abandoned. This application Apr. 8, 1982, Ser. No. 366,885

Int. Cl.^{3} G03C *7/26*

U.S. Cl. 430—552 **13 Claims**

1. A photographic element comprising a support, a photographic silver halide emulsion and a photographic coupler comprising a coupler moiety and a ballast moiety, the ballast moiety being terminated with a hydroxyphenylsulfonyl group or a hydroxyphenylsulfinyl group.

4,443,537
HYDROQUINONE DERIVATIVES AND THEIR USE IN PHOTOGRAPHIC MATERIALS

Stephen R. Postle; Patrick D. P. Thomas, and Brian R. D. Whitear, all of Brentwood, England, assignors to Ciba-Geigy AG, Basel, Switzerland

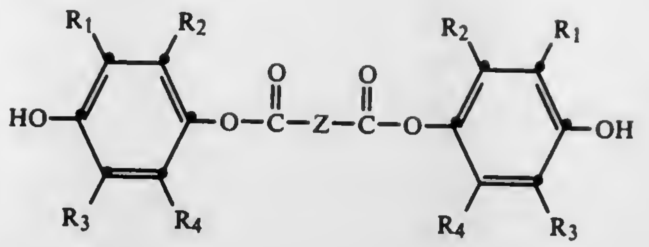
Division of Ser. No. 306,846, Sep. 29, 1981, Pat. No. 4,417,072. This application Sep. 24, 1982, Ser. No. 422,926

Claims priority, application United Kingdom, Oct. 2, 1980, 8031742

Int. Cl.^{3} G03C *1/06*

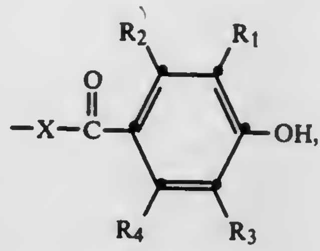
U.S. Cl. 430—566 **8 Claims**

1. A photographic silver halide material which comprises on a support at least one colloid silver halide layer and at least one colloid layer which comprises at least one substituted hydroquinone developing compound of the formula



(1)

wherein R_1 to R_4 are each hydrogen or alkyl having from 1 to 4 carbon atoms, Z is an aromatic ring selected from the group consisting of furylene, thienylene, pyrrolylene, pyridinylene or 1,2- or 1,4-phenylene or is a group —X—Y—X— wherein X has the meaning assigned to Z and Y is —SO_2—, —SO—, —CO— or =PO—A, wherein A is alkyl or alkoxy having from 1 to 4 carbon atoms, phenyl, phenoxy or a group of the formula



wherein R_1 to R_4 and X are as defined.

4,443,538
STABILIZATION OF IMMOBILIZED ENZYMES WITH GLYCEROL

Peter S. J. Cheetham, Reading, England, assignor to Tate & Lyle Public Limited Company, London, England

Filed May 5, 1982, Ser. No. 375,179

Claims priority, application United Kingdom, May 11, 1981, 8114295

Int. Cl.^{3} C12P *1/04, 19/18;* **C12N** *11/10, 1/04*

U.S. Cl. 435—41 **14 Claims**

9. A method for extending the storage stability of alginate gel-immobilized cells containing an enzyme system, wherein said gel-immobilized cells are contacted with glycerol in a ratio of from 2:1 to 1:5, expressed as kilograms of cells per liter of glycerol.

4,443,539
PROCESS FOR PREPARING BOVINE GROWTH HORMONE

Thomas H. Fraser, Kalamazoo, and Barbara J. Bruce, Portage, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 119,037, Feb. 5, 1980, abandoned. This application Jun. 8, 1981, Ser. No. 271,449

Int. Cl.^{3} C12N *15/00, 1/18, 1/20;* **C12P** *21/00;* **C12R** *1/19, 1/865*

U.S. Cl. 435—68 **4 Claims**

1. A process for preparing bovine growth hormone which comprises culturing *S. cerevisiae LL*20 (pBGH1), having the deposit accession number NRRL Y-12485, in an aqueous nutrient medium under controlled conditions.

4,443,540
PROTEIN HYDROLYSIS

Munir Chervan, and William D. Deeslie, both of Urbana, Ill., assignors to University of Illinois Foundation, Urbana, Ill.

Continuation of Ser. No. 154,388, May 9, 1980, abandoned. This application Sep. 20, 1982, Ser. No. 420,196

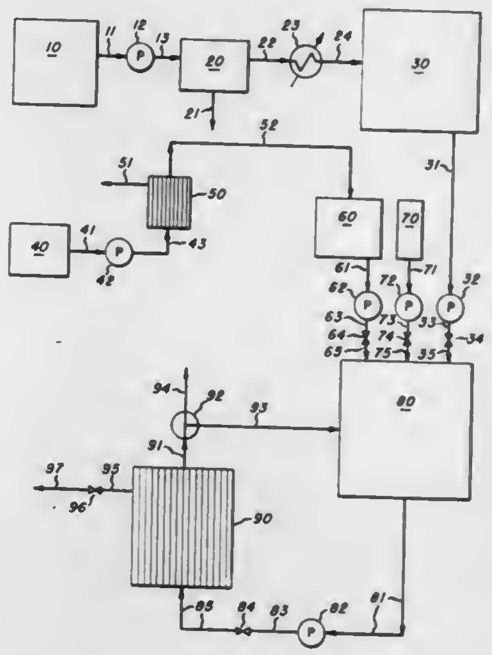
Int. Cl.^{3} C12P *21/06;* **A23L** *1/20;* **A23J** *1/20, 1/14*

U.S. Cl. 435—69 **25 Claims**

1. A process for the hydrolysis of protein comprising the steps of:

(a) hydrolyzing a selected protein material, dispersed in an aqueous medium together with at least one active proteolytic enzyme component, at a controlled temperature and alkaline pH;

(b) separating the hydrolyzed protein material, by filtration employing a molecular weight-selective filter medium, into a lower molecular weight first protein filtrate fraction and a higher molecular weight second protein reject fraction, said second protein reject fraction including substantially all of the active proteolytic enzyme component;



(c) recycling at least a portion of the second protein reject fraction to the hydrolysis step; and

(d) recovering low molecular weight protein hydrolyzate from the first protein fraction.

4,443,541
PROCESS FOR PREPARING AN INDENEDIONE AND A MYCOBACTERIUM CULTURE THEREFOR

John C. Knight, and Merle G. Wovcha, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 375,914, May 7, 1982, abandoned. This application Jun. 4, 1982, Ser. No. 384,831

Int. Cl.^{3} C12P *7/38, 33/16;* **C12N** *1/20;* **C12R** *1/33*

U.S. Cl. 435—149 **5 Claims**

1. A process for preparing (2+)-(7aS)-2,3,7,7a-tetrahydro-7a-methyl-(1H)-indene-1,5(6H)-dione which comprises cultivating *Mycobacterium fortuitum* NRRL B-15026 in a fermentation beer, in an aqueous, nutrient medium under aerobic conditions in the presence of a steroid with or without 17-hydrocarbon side chains to produce (2+)-(7aS)-2,3,7,7a-tetrahydro-7a-methyl-(1H)-indene-1,5(6H)-dione in the fermentation beer and isolating (2+)-(7aS)-2,3,7,7a-tetrahydro-7a-methyl-(1H)-indene-1,5(6H)-dione from the fermentation beer.

5. A biologically pure culture of mutant of *Mycobacterium fortuitum,* having the deposit accession number NRRL B-15026, which is characterized by its ability to selectively degrade steroids with or without 17-hydrocarbon side chains, in the presence of an aqueous nutrient medium and aerobic conditions, and to accumulate (2+)-(7aS)-2,3,7,7a-tetrahydro-7a-methyl-(1H)-indene-1,5(6H)-dione in the fermentation beer.

4,443,542

PROCESS FOR THE PRODUCTION OF BUTANOL AND NOVEL MICROORGANISM COMPOSITION USED THEREIN

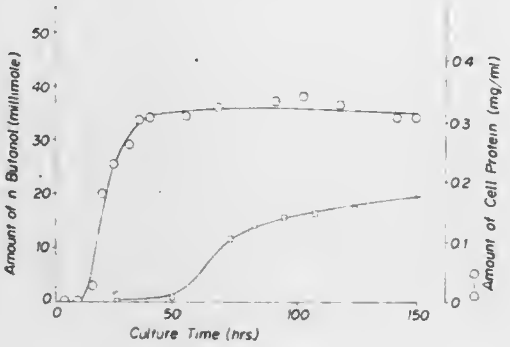
Shinsaku Hayashida; Seiya Ogata, and Sadazo Yoshino, all of Fukuoka, Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

Filed Mar. 4, 1982, Ser. No. 354,730

Claims priority, application Japan, Aug. 20, 1981, 56-129452

Int. Cl.³ C12P *7/16*

U.S. Cl. 435—160 **9 Claims**



1. A process for producing butanol which comprises cultivating the butanol-producing microorganism Clostridium sp. AH-1 (FERM-P 6093 ATCC 39045), in a nutrient medium containing a cellulose material as the carbon source to assimilate said cellulose directly to produce butanol in a culture medium and recovering the butanol from the culture medium.

8. A biologically pure culture of Clostridium sp. AH-1 (FERM-P 6093, ATCC39045), said culture being capable of producing butanol from cellulosic materials.

4,443,543

SEMIBATCH ETHANOL PRODUCTION

Peter L. Rogers, Northwood, and David E. Tribe, Maroubra, both of Australia, assignors to Unisearch Limited, Kensington, Australia

Filed Dec. 2, 1981, Ser. No. 327,161

Claims priority, application Australia, Dec. 8, 1980, PE6812

Int. Cl.³ C12P *7/06*

U.S. Cl. 435—161 **6 Claims**

1. A process for the production of ethanol from a medium containing glucose or another carbohydrate fermentable by *Zymomonas mobilis,* comprising fermenting in the medium in a continuous, semibatch or batch manner flocculent *Zymomonas mobilis,* ATCC 31822 which forms aggregates of 100 cells or more under the fermenting conditions, periodically allowing the flocculent cells to settle, removing the ethanol containing supernatant and introducing fresh fermentation medium into the fermenter.

4,443,544

ETHANOL PRODUCTION IN A CONTINUOUS PROCESS WITH CELL RECYCLE

Peter L. Rogers, Northwood, and David E. Tribe, Maroubra, both of Australia, assignors to Unisearch Limited, Kensington, Australia

Filed Mar. 3, 1981, Ser. No. 240,140

Claims priority, application Australia, Mar. 5, 1980, PE2655; May 15, 1980, PE3561

Int. Cl.³ C12P *7/14*

U.S. Cl. 435—162 **7 Claims**

1. A process for the production of ethanol from a culture medium containing a fermentable carbohydrate, said process consisting essentially of continuously anaerobically culturing *Zymomonas mobilis* in the culture medium, continuously or periodically drawing off a portion of the culture medium to give a withdrawn portion and replacing that portion with fresh culture medium, separating from the withdrawn portion of the culture medium cells of *Zymomonas mobilis* contained therein, returning said cells to the culture medium, and recovering the ethanol contained in the portion of the culture medium from which said cells have been removed.

4,443,545

PROCESS FOR PRODUCING HEPARINASE

Robert S. Langer, Jr., Cambridge; Robert Linhardt, Somerville; Charles L. Cooney, Brookline, and Parrish M. Galliher, West Newton, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 180,780, Aug. 25, 1980, Pat. No. 4,341,869. This application Jan. 8, 1982, Ser. No. 337,910

Int. Cl.³ C12N *9/88*

U.S. Cl. 435—232 **5 Claims**

1. A process for producing heparinase comprising:

(a) growing *Flavobacterium heparinum* in a medium, which medium comprises a carbon source having a concentration of between about 15 grams per liter and about 1 gram per liter, the medium being further defined as comprising less than about 10^{-2} grams per liter of sulfur, other than sulfur contained in amino acids;

(b) harvesting at least a portion of the *Flavobacterium heparinum;* and

(c) separating the heparinase from other proteins in the harvested bacteria.

4,443,546

PROCESS AND COMPOSITION FOR PROPAGATING MAMMALIAN CELLS

Michael B. Stemerman, Waban; Robert Weinstein, Brighton, and Thomas Maciag, Wayland, all of Mass., assignors to The Beth Israel Hospital Association, Boston, Mass.

Continuation of Ser. No. 166,179, Jul. 7, 1980, abandoned. This application Feb. 1, 1982, Ser. No. 344,508

Int. Cl.³ C12N *5/00, 5/02*

U.S. Cl. 435—240 **2 Claims**

1. A serum-free cell growth medium comprising:
EGF: 1.0 ng/ml–10 μg/ml,
Cohn fraction IV (modified): 1.0 μg/ml–100 μg/ml,
Thrombin: 100 ng/ml–10 μg/ml,
Insulin: 10 ng/ml–10 μg/ml,
Transferrin: 10 ng/ml–10 μg/ml,
ECGF: 500 ng/ml–150 μg/ml,
Hydrocortisone: 5×10^{-7} M–5×10^{-4} M,
Nutrient source: Medium 199 (balance).

4,443,547

ANIMAL VACCINE AGAINST COLIBACILLOSIS, PREPARATION AND USE

Philippe Gouet, Beaumont; Michel G. Contrepois; Henri-Charles Dubourguier, both of Clermont-Ferrand; Jean-Pierre Girardeau, Romagnat; Hubert L. J. Goby; Therese M. Goby, both of Nevers; Anne M. Goby, Varennes Vauzelles, and Genevieve Goby, La Chapelle St Ursin, all of France, assignors to Institut National de la Recherche Agronomique, Paris, France

Division of Ser. No. 193,449, Oct. 3, 1980, Pat. No. 4,343,792. This application May 6, 1982, Ser. No. 375,541

Claims priority, application France, Oct. 3, 1979, 79 24665

Int. Cl.³ C12N *1/20, 15/00;* **A61K** *39/108*

U.S. Cl. 435—253 **3 Claims**

1. A biologically pure culture of a strain of *E. coli* having the F(31A) surface antigen recognizable by seroagglutination with a specific antiserum of said antigen, prepared from the standard strain (collection n°I-105 at the Institute Pasteur), said antiserum not recognizing the K99 antigen (reference strain B41), or the Y antigen (collection n°I-104), or the 47A antigen (collection n°I-106), said culture when inactivated yielding a vaccine effective in treating diarrhea in newborn animals.

4,443,548

PROCESS FOR PREPARING L-α-METHYLPHENYL ALANINES

Tokio Oshima; Tomio Kimura; Tetsuo Omata, and Noritada Iwamoto, all of Ube, Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

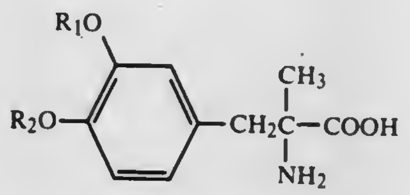
Filed May 7, 1982, Ser. No. 376,236

Claims priority, application Japan, May 14, 1981, 56-71397

Int. Cl.³ C07B *19/02;* **C12P** *13/22*

U.S. Cl. 435—280 **5 Claims**

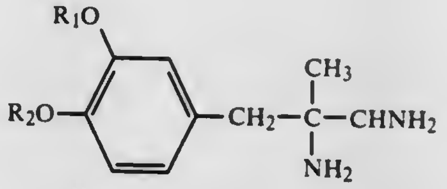
1. A process for preparing an L-α-methylphenyl alanine having the general formula: [I]



[I]

wherein R_1 and R_2 may be independently a hydrogen atom or lower alkyl groups, or R_1 and R_2 may be alkylene groups combined together to form 5 through 8-membered rings comprising the steps of:

(a) interacting a DL-α-methylphenyl alanine amide having the general formula: [II]



[II]

wherein R_1 and R_2 are the same as defined above, with (i) a cultivation mixture of a microorganism capable of producing an enzyme catalyzing the hydrolysis of L-isomer of DL-α-methylphenyl alanine amides (ii) a culture broth or cells separated from the cultivation mixture, (iii) the enzyme isolated from the culture broth or cells, or (iv) immobilized preparation of the cultivation mixture, whereby assymmetric hydrolysis of an L-α-methylphenyl alanine amide is effected; and

(b) separating the resultant L-α-methylphenyl alanines from the hydrolysis mixture.

4,443,549

PRODUCTION OF MONOCLONAL ANTIBODIES AGAINST BACTERIAL ADHESINS

Peter L. Sadowski, Eden Prairie, Minn., assignor to Molecular Genetics, Inc., Minnetonka, Minn.

Continuation-in-part of Ser. No. 312,993, Oct. 19, 1981. This application Oct. 7, 1982, Ser. No. 428,622

Int. Cl.³ A61K *39/40;* **C12N** *15/00*

U.S. Cl. 436—548 **43 Claims**

15. A process for producing monoclonal antibodies against an adhesin of a pathogenic bacterium, which adhesin mediates attachment of said bacterium to mucocutaneous tissue, comprising: (a) propagating a hybridoma (i) formed by fusing a P3/NSI/1-Ag4-1 myeloma cell with a murine cell capable of producing antibodies against an adhesin of a pathogenic bacterium, which adhesin mediates attachment of said bacterium to mucocutaneous tissue; said murine cell having been obtained from a BALB/c mouse immunized with a bacterial adhesion and (ii) isolated after in vitro culturing in selective HAT medium; and (b) harvesting the antibodies produced by said hybridoma.

22. Hybridoma cell line 2BD4E4, ATCC Number HB8178, formed by fusing a P3/NSI/1-Ag 4-1 murine myeloma cell with a murine spleen cell obtained from a BALB/c mouse immunized with K-99 pili, which hybridoma cell line produces monoclonal antibodies against a K-99 pilus.

4,443,550

GLASS COMPOSITION SUITABLE FOR PRODUCTION OF FIBROUS WOLLASTONITE, METHOD FOR PRODUCING SAID WOLLASTONITE, AND WOLLASTONITE OBTAINED THEREBY

Makoto Kume, and Toshiaki Mizuno, both of Hyogo, Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Sep. 1, 1981, Ser. No. 298,395

Claims priority, application Japan, Sep. 1, 1980, 55/120830

Int. Cl.³ C03C *3/08, 3/22, 15/00*

U.S. Cl. 501—65 **14 Claims**

1. A glass composition suitable for production of a fibrous wollastonite consisting essentially of, in % by weight:

SiO_2	35 to 60
CaO	30 to 55
B_2O_3	1 to 30
Li_2O	0 to 4
Al_2O_3	0 to 8
and $Na_2O + K_2O$	0 to 8,

wherein at least one of Li_2O, Al_2O_3, and Na_2O is present.

3. A method for producing a fibrous wollastonite which comprises uniformly and simultaneously heat treating all portions of a glass consisting essentially of, in % by weight:

SiO_2	35 to 60
CaO	30 to 55
B_2O_3	1 to 30
Li_2O	0 to 4
Al_2O_3	0 to 8
and $Na_2O + K_2O$	0 to 8

to form a crystallized glass containing therein bundles of needle wollastonite crystals, and thereafter treating the crystallized glass to disintegrate the bundles of the wollastonite crystals by one or more treatment methods including pulverization, rapid cooling of crystallized glass heated to high temperatures, and immersion of the crystallized glass in an aqueous alkaline eluting solution to selectively elute only the glass phase present in the crystallized glass.

4,443,551

METHOD AND NEW DISTRIBUTOR FOR DELIVERING HIGH VELOCITY GAS FROM A GAS DISTRIBUTOR THROUGH A NOZZLE WITH DECREASED EROSION IN THE NOZZLE

Thomas A. Lionetti, Houston, and John P. MacLean, Stafford, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jan. 11, 1982, Ser. No. 338,763

Int. Cl.³ B01J *29/38;* **C10G** *11/18;* **F27B** *15/10;* **F23L** *5/00*

U.S. Cl. 502—41 **9 Claims**

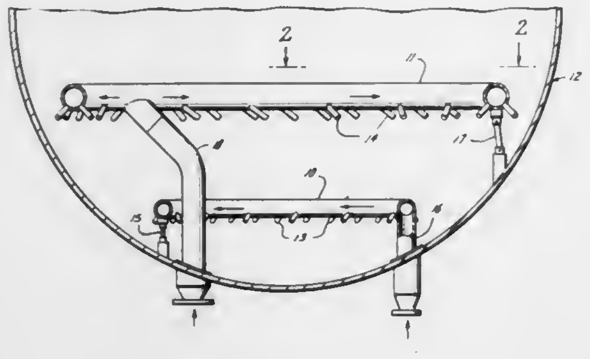
1. A method for delivering a high velocity oxygen-carrying

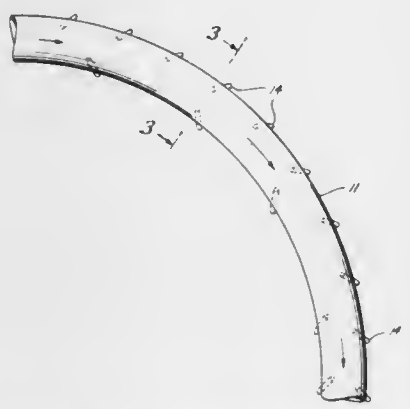
gas from a gas distributor to a zone of spent catalyst in a regenerator in a fluid catalytic cracking process comprising,

(a) flowing the high velocity oxygen-carrying gas through a gas distributor downward to nozzles therein, and

(b) deflecting the oxygen-carrying gas from the distributor to the nozzles downward and through an angle in the range of 30° to 75° to the flow of gas in the gas distributor for decreased erosion in the nozzles by catalyst drawn up from the regenerator and for reduced required power consumption.

2. A method for delivering high velocity air from an air distributor to a nozzle therein in a regenerator in a fluid catalytic cracking process comprising,





(a) diverting the air from the air distributor to the nozzle downward and through an angle in the range of 30° to 75° to the flow of air in the air distributor for decreased erosion in the nozzle by catalyst drawn up from the regenerator and for reduced required power consumption.

7. A method for delivering high velocity air from an air distributor to a nozzle therein in a regenerator in a fluid catalytic cracking process comprising,

(a) diverting the air from the air distributor to the nozzle through an angle in the range of 30° to 75° to the flow of air in the distributor and 30° to 75° downward from the horizontal.

4,443,552

CATALYSTS FOR THE CATALYTIC CRACKING OF HEAVY OIL

Hiroshi Iida; Akira Iino, both of Sodegaura, and Kosaku Honna, Ichihara, all of Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Filed Aug. 16, 1982, Ser. No. 408,441

Claims priority, application Japan, Aug. 24, 1981, 56-131622; Sep. 14, 1981, 56-145015

Int. Cl.^{3} B01J *29/14*

U.S. Cl. 502—66 **12 Claims**

1. An improved catalyst for the catalytic cracking of heavy oil comprising a crystalline aluminosilicate zeolite prepared by treating a starting aluminosilicate zeolite having a SiO_2/Al_2O_3 molar ratio of at least 4.6 and a Na_2O content of not more than 2.4% by weight with an acidic aqueous solution containing iron ions having a pH of 2 or less, whereby a part of the original aluminum content of said starting aluminosilicate zeolite is replaced by iron.

7. An improved catalyst for the catalytic cracking of heavy oil comprising a crystalline aluminosilicate zeolite prepared by treating a starting aluminosilicate zeolite having a SiO_2/Al_2O_3 molar ratio of at least 4.6 and a Na_2O content of not more than 2.4% by weight with steam and then treating said steam-treated zeolite with an acidic aqueous solution containing iron ions having a pH of 2 or less, whereby a part of the original aluminum content of said starting aluminosilicate zeolite is replaced by iron.

4,443,553

PRODUCTION OF FLUID CATALYTIC CRACKING CATALYSTS

Robert L. Chiang, and Julius Scherzer, both of Anaheim, Calif., assignors to Harshaw/Filtrol Partnership, Oakland, Calif.

Filed Sep. 20, 1982, Ser. No. 420,439

Int. Cl.^{3} B01J *29/06*

U.S. Cl. 502—68 **7 Claims**

1. In the process of producing fluid catalytic cracking catalysts by spray drying, an aqueous slurry containing a mixture of a Y-type zeolite, an alumina-containing binder, and a silica source selected from naturally occurring and synthetic silica-containing materials and mixtures thereof, the improvement which comprises incorporating in the slurry a slurry viscosity-reducing additive of the general formula $[Al_2(OH)_{6-y}Cl_y]_x$, where x is within the range of 1 and 6, and y is in the range of 1 to 2, the additive being added to the slurry in an amount equivalent to from about 0.5% to about 2.5% by weight, calculated as Al_2O_3, based on the solids content of the slurry, spray drying the slurry, and recovering essentially water-free catalyst particles.

3. The process of claim 1, wherein the synthetic silica source is ammonium polysilicate.

4,443,554

ACTIVATION OF ALKALI METAL ZEOLITE CATALYSTS BY STEAMING

Ralph M. Dessau, Edison, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed May 28, 1982, Ser. No. 382,863

Int. Cl.^{3} B01J *29/28, 29/06*

U.S. Cl. 502—71 **7 Claims**

1. A method for increasing acid cracking activity of alkali metal zeolites having a silica to alumina greater than about 12, a constraint index of about 1 to 12, and an initial α-value less than about 2 which comprises forming a mixture of the alkali metal zeolite with alumina and steaming the mixture at a temperature of at least about 300° C. for at least two hours to increase α-value.

4,443,555

METHOD FOR THE PREPARATION OF HIGH ACTIVITY PHOSPHOMOLYBDIC ACID BASED CATALYSTS

James L. Callahan, Wooster; Wilfrid G. Shaw, and Arthur F. Miller, both of Lyndhurst, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 271,487, Jun. 8, 1981, abandoned. This application Nov. 8, 1982, Ser. No. 439,704

Int. Cl.^{3} B01J *27/14*

U.S. Cl. 502—211 **21 Claims**

1. A method for the preparation of second stage phosphomolybdic acid based catalysts comprising the steps of:

forming a solution of hydrated phosphomolybdic acid in a substantially anhydrous alkyl alcohol;

heating said solution to form a concentrate; and

drying and calcining said concentrate so as to form the catalyst.

4,443,556

CATALYST COMPOSITION

Kunitoshi Aoki, Kawasaki; Makoto Honda, Tokyo; Tetsuro Dozono, Yokosuka, and Tsutomu Katsumata, Yokohama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1982, Ser. No. 429,054

Claims priority, application Japan, Oct. 20, 1981, 56-166423

Int. Cl.^{3} B01J *27/14;* **C07C** *51/16, 120/02*

U.S. Cl. 502—212 **5 Claims**

1. A catalyst composition having a composition represented by the formula:

$$A_aB_bMo_{12}Bi_cFe_dNa_eP_fO_g$$

wherein

A is at least one element selected from the group consisting of cerium, lanthanum, neodymium, praseodymium, samarium, europium and gadolinium,

B is at least one element selected from the group consisting of potassium, rubidium and cesium,

a, b, c, d, e, f and g are the atomic ratios of A, B, molybdenum, bismuth, iron, sodium, phosphorus and oxygen, respectively, relative to twelve atoms of molybdenum, wherein:

a is between 0.1 and 4,
b is between 0.02 and 1,
c is between 0.5 and 10,
d is between 0.5 and 10,
e is between 0 and 3,
f is between 0 and 2, and
g is the number of oxygen atoms required to satisfy the valence requirements of the other elements present,

and supported on silica.

4,443,557

TREATMENT OF CATALYTIC RANEY NICKEL

Alfonso L. Baldi, Wynnewood, Pa., assignor to Alloy Surfaces Company, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 25,456, Mar. 30, 1979, Pat. No. 4,349,612, and a continuation-in-part of Ser. No. 172,671, Jul. 28, 1980, and a continuation-in-part of Ser. No. 281,405, Jul. 8, 1981, and a continuation-in-part of Ser. No. 302,979, Sep. 17, 1981, said Ser. No. 25,456, is a continuation-in-part of Ser. No. 963,313, Nov. 27, 1978, abandoned. This application Mar. 18, 1982, Ser. No. 359,212

Int. Cl.^{3} B01J *25/02*

U.S. Cl. 502—301 **9 Claims**

1. In the treatment of pyrophorically activated catalytic Raney type nickel with hydrogen peroxide to eliminate its pyrophoricity and still leave it catalytically active, the improvement according to which the nickel is separately contacted with essentially water at a temperature at least as high as 160° F. to cause the extraction of residual activating metal and the elimination of the tendency of the nickel to recover its pyrophoricity.

4,443,558

HIGHLY STABLE HYDROPROCESSING CATALYST

Kirk R. Gibson, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Apr. 8, 1982, Ser. No. 366,740

Int. Cl.^{3} B01J *23/84*

U.S. Cl. 502—314 **12 Claims**

1. The method of making a catalyst for hydroprocessing hydrocarbonaceous feedstocks comprising:

peptizing an alumina powder with an acid aqueous solution of a Group VIII metal salt;

neutralizing said peptized alumina with an aqueous solution of a nitrogen containing base having a soluble Group VI metal salt dissolved therein;

extruding particles of said neutralized alumina;

drying said extruded particles; and

calcining the dried particles.

4,443,559

CATALYTIC DISTILLATION STRUCTURE

Lawrence A. Smith, Jr., Bellaire, Tex., assignor to Chemical Research & Licensing Company, Houston, Tex.

Filed Sep. 30, 1981, Ser. No. 307,120

The portion of the term of this patent subsequent to Nov. 24, 1998, has been disclaimed.

Int. Cl.^{3} B01J *35/04*

U.S. Cl. 502—527 **12 Claims**

1. A catalytic distillation structure comprising a catalyst component intimately associated with or surrounded by a resilient component, which is comprised of at least 70 volume % open space for providing a matrix of substantially open space.

4,443,560

ADIABATICALLY REFORMING A REFORMED GAS FOR PRODUCING METHANOL

Joseph R. Le Blanc, Jr.; Dewey O. Moore, both of Houston, and Robert V. Schneider, III, Missouri City, all of Tex., assignors to The M. W. Kellogg Company, Houston, Tex.

Filed Jul. 28, 1982, Ser. No. 402,468

Int..Cl.^{3} C07C *27/06, 31/04*

U.S. Cl. 518—703 **1 Claim**

1. In a process for producing methanol and purge gas in a first methanol plant and a second methanol plant wherein methanol from the first methanol plant is synthesized from a reformed gas mixture comprising hydrogen, methane, and carbon oxides produced by steam reforming C_1 to C_4 hydrocarbons and wherein methanol from the second methanol plant is synthesized from a clean synthesis gas comprising hydrogen and carbon monoxide produced by partial oxidation with substantially pure oxygen of a heavy carbonaceous material, the improvement which comprises:

(a) recovering purge gas containing hydrogen, methane, and carbon monoxide from the first methanol plant;

(b) adiabatically reforming the recovered purge gas to produce adiabatically reformed purge gas; and

(c) mixing adiabatically reformed purge gas with clean synthesis gas from the heavy carbonaceous material partial oxidation step and introducing the resulting mixed gas to the second methanol plant.

4,443,561

PROCESS FOR THE PREPARATION OF ORGANIC COMPOUNDS

Sikko J. A. Boelema, The Hague; Martin F. M. Post, and Swan T. Sie, both of Amsterdam, all of Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed May 24, 1982, Ser. No. 381,619

Claims priority, application Netherlands, Jul. 17, 1981, 8103397

Int. Cl.^{3} C07C *1/04, 27/06*

U.S. Cl. 518—704 **7 Claims**

1. A two-step process for the preparation of organic compounds from a mixture of hydrogen and carbon monoxide, wherein a H_2/CO mixture having a H_2/CO molar ratio below 2.0 is divided into two portions, a larger portion A and a smaller portion B, of the same composition; in the first step portion A, through contact with a catalyst comprising one or more metal components having catalytic activity for the conversion of a H_2/CO mixture into hydrocarbons and/or oxygen-containing organic compounds, is converted into a reaction mixture in which the H_2/CO molar ratio (R_1) is lower than 2.25; and portion B, through contact, together with water, at a temperature above 325° C., with a catalyst having CO-shift activity, is converted into a reaction mixture in which the H_2/CO molar ratio is higher than R_1 and also higher than 1.75; hydrogen and carbon monoxide present in the reaction prod-

uct from portion A, optionally together with other components from this reaction product, are mixed with the reaction product from portion B to form a mixture having a H_2/CO molar ratio of from 1.75–2.25; and in the second step the mixture thus obtained is contacted with a catalyst comprising one or more metal components having activity for the conversion of a H_2/CO mixture into paraffinic hydrocarbons, which metal components have been chosen from the group formed by cobalt, nickel and ruthenium.

4,443,562

METHOD AND APPARATUS FOR PRODUCING LIGHTWEIGHT CELLULAR MATERIALS AND STRUCTURAL ARTICLES

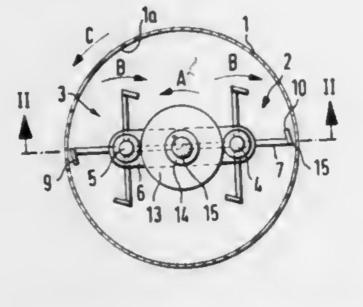
Karl M. Mayer, Immenhofen 55, 8951 Ruderatshofen, Fed. Rep. of Germany

Filed Jul. 19, 1982, Ser. No. 399,692

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1981, 3128283

Int. Cl.³ C08J *9/30*

U.S. Cl. 521—83 **13 Claims**



1. In a process for making a ceramic material for the production of lightweight structural members and coatings having high heat and noise insulating values, the steps comprising:

A. introducing into a mixing chamber (i) hydrated lime in an effective amount up to 80 volume percent; (ii) an additive in an effective amount up to 15 volume percent, said additive being selected from the group consisting of interpolymers of vinyl acetate, vinyl chloride and vinyl laurate; copolymers of vinyl acetate and vinyl chloride; interpolymers of vinyl acetate, vinyl chloride and ethylene; and mixtures thereof; (iii) rock wool in an effective amount up to 50 volume percent; and (iv) up to 50 volume percent aggregate;

B. introducing into the initial mixture in the chamber water in an effective amount up to 50 volume percent; and

C. mixing at high speed the water/solids mixture to produce within 30–90 seconds a foamed mixture having air bubbles comprising 60–80 volume percent thereof.

4,443,563

POLYURETHANES BASED ON 1;4-3:6 DIANHYDROHEXITOLS

Stoil K. Dirlikov, and Connie J. Schneider, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 8, 1983, Ser. No. 502,400

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—174 **11 Claims**

1. A polyurethane comprising the reaction product of a polyisocyanate and a dianhydrohexitol.

4,443,564

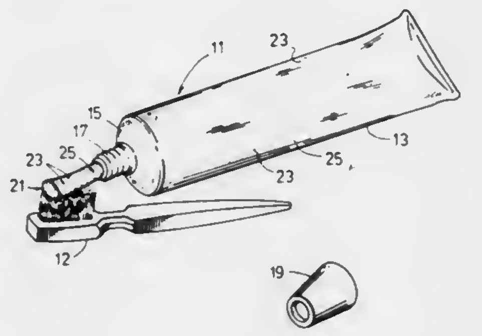
PACKAGED SPECKLED DENTIFRICE

John P. Hauschild, Bridgewater, and Joseph R. Principe, East Brunswick, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 307,272, Sep. 30, 1981, Pat. No. 4,376,762. This application Aug. 30, 1982, Ser. No. 413,195

Int. Cl.³ A61K *7/16*

U.S. Cl. 523—105 **18 Claims**



1. A packaged dentifrice comprising a dispensing container containing a dentifrice comprising water, humectant, gelling agent, detergent and flavor, all of which are constituents of a gelled vehicle of the dentifrice, and a dental polishing agent, uniformly distributed throughout the vehicle, and visible functional speckles distributed through the dentifrice, which are agglomerates of water insoluble powdered functional material and a combination of a water insoluble, ethanol soluble ethyl cellulose binder and a water soluble binder.

4,443,565

THERMOPLASTIC RESIN COMPOSITION CONTAINING METAL FOIL FRAGMENTS AND PROCESS FOR ITS PRODUCTION

Kanji Kasahara, and Akira Sakamoto, both of Yokkaichi, Japan, assignors to Mitsubishi Monsanto Chemical Company, Tokyo, Japan

Filed Feb. 1, 1983, Ser. No. 463,017

Claims priority, application Japan, Feb. 26, 1982, 57-30051; Aug. 20, 1982, 57-144332

Int. Cl.³ G21K *1/10;* **G21F** *1/10*

U.S. Cl. 523—137 **20 Claims**

1. A composition comprising (a) 100 parts by weight of metal foil fragments, (b) from 1 to 10 parts by weight of a first polymer covering the surfaces of the metal foil fragments and obtained by first homopolymerizing or copolymerizing with each other at least one of monomers selected from the group consisting of acrylic acid, methacrylic acid, and alkylacrylate, an aminoalkylacrylate, an alkylmethacrylate and an aminoalkylmethacrylate in the presence of the metal foil fragments, and (c) from 5 to 33 parts by weight of a second polymer obtained by subsequently polymerizing a mixture of an aromatic vinyl monomer and a monomer copolymerizable with the aromatic vinyl monomer selected from the group consisting of acrylonitrile, methacrylonitrile, acrylic acid esters and methacrylic acid esters.

13. A process for preparing a thermoplastic resin composition containing metal foil fragments, which comprises first suspension-homopolymerizing or copolymerizing with each other from 1 to 10 parts by weight of at least one of monomers selected from the group consisting of acrylic acid, methacrylic acid, an alkylacrylate, an alkylmethacrylate, an aminoalkylacrylate and an aminoalkylmethacrylate in the presence of 100 parts by weight of metal foil fragments and then adding and suspension-polymerizing from 5 to 33 parts by weight, based on 100 parts by weight of the metal foil fragments, of a mixture of an aromatic vinyl monomer and a monomer copolymerizable with the aromatic vinyl monomer selected from the group consisting of acrylonitrile, methacrylonitrile, acrylic acid esters and methacrylic acid esters.

4,443,566

SIZED REINFORCING FIBERS SUITABLE FOR USE IN COMPOSITES OF IMPROVED IMPACT RESISTANCE

Lincoln Ying, Bridgewater, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Apr. 25, 1983, Ser. No. 488,248

Int. Cl.³ B32B *9/00, 27/00;* **D02G** *3/00*

U.S. Cl. 523—205 **16 Claims**

1. A reinforcing fiber having a coating on the surface thereof in a concentration of approximately 0.5 to 3.0 percent by weight based on the weight of the reinforcing fiber of a sizing composition which comprises as a first component an epoxy resin and a second component consisting of an organophosphazene elastomer.

8. A composite structure comprising a rigid polymeric matrix having reinforcing fibers incorporated therein which are coated on the surface thereof with approximately 0.5 to 3.0 percent by weight based on the weight of the reinforcing fibers of a sizing composition which comprises as a first component an epoxy resin and a second component consisting of an organophosphazene elastomer.

4,443,567

SINGLE-COMPONENT HARDENABLE SYNTHETIC RESIN COMPOSITION AND METHOD OF USING SAME

Danilo Sternisa, Emmendingen, and Herbert Kistner, Freiburg-Betzenhausen, both of Fed. Rep. of Germany, assignors to Upat GmbH & Co., Emmendingen, Fed. Rep. of Germany

Filed Sep. 24, 1982, Ser. No. 423,081

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1981, 3139627

Int. Cl.³ C08L *89/00;* **E21D** *20/02*

U.S. Cl. 523—211 **7 Claims**

1. A reactive synthetic resin mortar composition comprising a mortar mass having a predetermined color and comprising:

a resin phase in which microcapsules of a hardener reactive with said resin phase are dispersed for rupture of said capsules upon agitation of said mass to disperse said hardener in said resin phase; and

microcapsules of a coloring agent dispersed in said mass and having opaque shells of said color, said shells being rupturable upon rupture of said microcapsules to release coloring agent into said mass upon the dispersal of said hardener therein.

4,443,568

POLYMERIZATION PROCESS AND PRODUCT

James T. K. Woo, Medina, Ohio, assignor to SCM Corporation, New York, N.Y.

Filed Oct. 26, 1981, Ser. No. 314,520

Int. Cl.³ C08L *63/00*

U.S. Cl. 523—406 **10 Claims**

1. In a process for polymerizing ethylenically unsaturated monomers in the presence of an aqueous dispersed resinous reaction product produced in a first stage addition polymerization of ethylenically unsaturated monomer in the presence of an epoxy resin and in the presence of at least 3% by weight benzoyl peroxide based on monomer, wherein the resinous reaction product comprises epoxy resin, addition polymer of polymerized monomers, and grafted polymer of addition polymer grafted to the epoxy resin wherein the resinous reaction product contains between 30% to 90% by weight of said epoxy resin and is dispersed in water, the improvement comprising:

polymerizing second stage ethylenically unsaturated monomers in the presence of said resinous reaction product on a weight basis of between 1 to 5 weight parts of second stage monomer per 20 weight parts of first stage resinous reaction product, wherein said second stage monomers are polymerized in the presence of peroxide catalyst in combination with about 0.1% and 10% of a benzoin derivative reducing agent based on the weight of second stage monomer polymerized to produce a resulting product containing between about 1 to 5 weight parts of second stage polymerized monomer per about 20 weight parts of first stage resinous reaction product.

4,443,569

PROCESS FOR THE PRODUCTION OF THERMOSETTING AQUEOUS ELECTROCOATING COMPOSITIONS SUSCEPTIBLE OF BEING CATHODICALLY DEPOSITED AND THE USE THEREOF

Manfred Schröder, Herdecke, and Arty R. T. Subramanyam, Wuppertal, both of Fed. Rep. of Germany, assignors to Lackwerke Wülfing GmbH & Co., Wuppertal, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 250,639, Apr. 3, 1981, Pat. No. 4,376,848. This application Apr. 8, 1982, Ser. No. 366,522

Claims priority, application European Pat. Off., Dec. 22, 1981, 81110669.9

The portion of the term of this patent subsequent to Mar. 15, 2000, has been disclaimed.

Int. Cl.³ C08G *71/04;* **C08L** *74/04;* **C09D** *5/40*

U.S. Cl. 523—414 **15 Claims**

1. A process for the production of a thermosetting cathodically depositable aqueous composition for electrocoating comprising

(A) reacting under an inert gas a nitrogen base-containing binder having tertiary amino groups and primary, secondary or mixed primary and secondary OH groups with one or more sparingly water soluble to water insoluble cobalt, copper, lead, nickel, or manganese compounds at an elevated temperature to form a reaction product;

(B) protonating the reaction product with an acid; and

(C) diluting the product with water after said acid protonating step.

4,443,570

ASPHALT COMPOSITIONS

Homer L. Draper; Floyd H. Holland, and Robert L. Brost, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 16, 1982, Ser. No. 399,108

Int. Cl.³ C08K *5/01;* **C08L** *91/08, 95/00*

U.S. Cl. 524—62 **11 Claims**

1. An asphaltic composition having a softening point of at least about 140° F. and which is pliable at low temperatures (below freezing) consisting essentially of

(a) about 55–65 weight percent of an asphalt,
(b) about 17–21 weight percent of a hydrogenated rubber,
(c) about 16–20 weight percent of a petroleum solvent, and
(d) about 2–4 weight percent of essentially amorphous silica.

4,443,571

LASER PRINTABLE POLYARYLENE SULFIDE COMPOSITIONS

Donald G. Needham, and John E. Leland, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 30, 1982, Ser. No. 429,738

Int. Cl.³ C08L *81/00*

U.S. Cl. 524—90 **8 Claims**

1. A composition comprising
(a) polyarylene sulfide and
(b) at least one print compound selected from the group consisting of
monoazo-nickel complex
lead chromate-lead molybdate
quinacridone
nickel-antimony-titanium
cobalt-zinc-silica
lead chromate.

4,443,572

POLYOLEFIN STABILIZERS

Lyle D. Burns, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

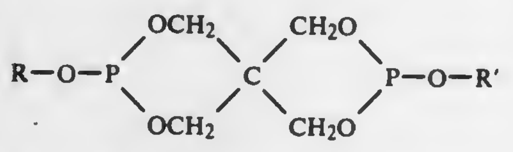
Filed Sep. 22, 1982, Ser. No. 421,224

Int. Cl.³ C08K *5/36*

U.S. Cl. 524—120 **20 Claims**

1. A polymeric composition of at least one polymer of an olefin having 2 to 8 carbon atoms per molecule, having therein a stabilizer system, comprising:

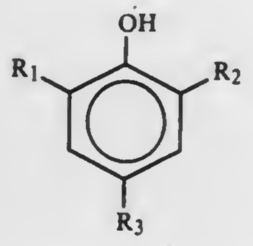
(a) from 0.1 to 5.0 weight percent of at least one pentaerythritol phosphite compound of the formula:



wherein R and R′ are the same or different selected from the group consisting of alkyl, cycloalkyl, aryl, alkoxyalkyl, the halo-substituted derivatives thereof containing from one to 20 carbon atoms;

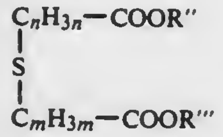
(b) from 0.1 to 10.0 weight percent of at least one Group IIA alkaline earth metal oxide;

(c) a hindered phenol of the formula



wherein R_1, and R_3 are alkyl, cycloalkyl, aryl, or arylalkyl groups having up to 10 carbon atoms per group such that said hindered phenol is present in an amount by weight relative to said phosphite compound in the range of from about 0.01:10 to about 0.5:1.0; and

(d) at least one thioester represented by the general formula



$$\begin{array}{l} C_nH_{3n}\text{—}COOR'' \\ | \\ S \\ | \\ C_mH_{3m}\text{—}COOR''' \end{array}$$

wherein R″ and R‴ are alkyl groups containing 6 to 24 carbon atoms and n and m are integers from 1 to 6 such that said thioester is present in an amount by weight relative to said phosphite compound in the range of from about 0.01:10 to about 0.5:10.

4,443,573

ADDITIVE DISPERSIONS AND PROCESS FOR THEIR INCORPORATION WITH FIBER-FORMING POLYMERS

Rodney L. Wells, Chester, and Monty L. Rowe, Midlothian, both of Va., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 254,349, Apr. 15, 1981, abandoned. This application May 6, 1982, Ser. No. 375,520

Int. Cl.³ C08K *5/10*

U.S. Cl. 524—308 **15 Claims**

1. In a process for melt-spinning yarn from a synthetic fiber-forming polymer, the improvement comprising:

adding to the polymer prior to spinning of filaments of said polymer, a dispersion comprising:

20 to 80 weight percent of at least one polymer additive having an average diameter of up to 0.5 micron at spinning temperature; and 20 to 80 weight percent of a C_5–C_{26} fatty acid ester of pentaerythritol.

4,443,574

COATING COMPOSITION OF POLY(ARYLENE SULFIDE), POLYTETRAFLUOROETHYLENE AND BARIUM OR CALCIUM SULFATE

Jean-Louis G. Coq, Court-St-Etienne, and Herman E. Seymus, Lint, both of Belgium, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 19, 1982, Ser. No. 443,059

Int. Cl.³ C08K *3/30, 3/24*

U.S. Cl. 524—423 **11 Claims**

1. A coating composition comprising poly(arylene sulfide), polytetrafluoroethylene, at least one of barium and calcium sulfates and a liquid carrier, wherein

the weight ratio of poly(arylene sulfide) to polytetrafluoroethylene is from 50:50 to 85:15, and

the weight ratio of the sulfates to poly(arylene sulfide) plus polytetrafluoroethylene is from 10:100 to 60:100.

4,443,575

COMPOSITION FOR BACKING CARPETS

Sakuya Iwai, Tokyo, and Teruo Kajikawa, Yokosuka, both of Japan, assignors to Nippon Oil Co., Ltd., Nishishimbashi, Japan

Filed Oct. 26, 1982, Ser. No. 436,826

Claims priority, application Japan, Oct. 26, 1981, 56-171211

Int. Cl.³ C08K *5/01*

U.S. Cl. 524—486 **15 Claims**

1. A composition for backing a carpet, comprising:

(a) 5 to 65% by weight of an olefin-polar monomer copolymer having a polar monomer content of 5 to 40% by weight therein;

(b) 1 to 50% by weight of a synthetic oil comprising one or more non-condensed tricyclic aromatic hydrocarbon compounds having a boiling point of 250° C. or higher and a molecular weight of 258 to 482, and being liquid at room temperature;

(c) 30 to 90% by weight of an inorganic filler; and

(d) 0 to 5% by weight of a solid low-molecular compound component, said composition having been mixed at 100°-200° C.

4,443,576

TERPOLYMER COMPOSITION

Bhupati R. Bhattacharyya, Downers Grove; Manual Slovinsky, Woodridge; Raymond J. Wachala, Chicago; Lawrence E. Beske, Palos Hills, and Michael L. McCullar, Warrenville, all of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Mar. 29, 1982, Ser. No. 362,686

Int. Cl.³ C08L *33/00*

U.S. Cl. 524—522 **15 Claims**

1. A water soluble or swellable composition comprising the product formed by polymerizing together under free radical forming conditions:

(a) 10–70 weight percent of a water soluble monomer selected from the group consisting of acrylamide and methacrylamide;

(b) 15–70 weight percent of a monomer selected from the group consisting of acrylic acid, methacrylic acid and water-soluble salts of acrylic acid and methacrylic acid;

(c) 5–50 weight percent of a lower hydroxy alkyl acrylate;

(d) 0.5–10% of a water soluble polyfunctional monomeric branching agent having at least two $CH_2{=}C$ groups; and

(e) 0.1–15% of a water soluble copolymer having a molecular weight of from 2,000 to 50,000 of:

(1) a water-soluble monomer selected from the group consisting of acrylamide, acrylic acid, methacrylamide, methacrylic acid and water-soluble salts of acrylic and methacrylic acids; with,

(2) a C_1–C_8 alkyl acrylate, the ratio of water-soluble monomer to alkyl acrylate being 50:50 to 95:5.

4,443,577

ONE-COMPONENT MOISTURE CURABLE URETHANE COATING SYSTEM

William A. Higgins, Gates Mills, and John S. Perz, Mentor, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed May 12, 1982, Ser. No. 376,822

Int. Cl.³ C08K *3/10*

U.S. Cl. 524—590 **24 Claims**

1. A one-component, moisture-curable coating composition comprising

(A) a non-Newtonian colloidal disperse system comprising (1) solid metal-containing colloidal particles predispersed in (2) a disperse medium of at least one inert organic liquid and (3) as an essential third component at least one member selected from the class consisting of organic compounds which are substantially soluble in said disperse medium, the molecules of said organic compound being characterized by polar substituents and hydrophobic portions; and

(B) an isocyanate-terminated prepolymer;

the neutralization base number of component (A) being adjusted to a level of about 3.0 or less by the addition of an acidic material to component (A) prior to combining components (A) and (B) to form said composition.

4,443,578

COLD APPLIED JOINT SEALANT

Richard A. Frier, Arlington Heights, Ill., assignor to W. R. Meadows, Inc., Elgin, Ill.

Filed Feb. 8, 1983, Ser. No. 464,852

Int. Cl.³ C08L *95/00*

U.S. Cl. 524—705 **3 Claims**

1. A cold applied joint sealant having a pre-mixed formulation comprising:

asphalt;
plasticizing oil;
inorganic filler;
anti-settling agent;
a hydroxyl terminated liquid polybutadiene resin;
aromatic solvent;
a urethane catalyst; and,
a urethane reactant comprising a polymeric isocyanate;

wherein upon mixing the foregoing said hydroxyl terminated liquid polybutadiene resin reacts with said urethane reactant to form a polyurethane present in an amount by weight of from about 8% to 11% and having elastomeric properties, and wherein said sealant is capable of reaching an initial set in less than about 120 minutes and provides 300% extension at minus 20° F. and a penetration value of 125 to 145 @ 77° F. and 35–55 @ 0° F.

4,443,579

SILICONE RESIN COATING COMPOSITION ADAPTED FOR PRIMERLESS ADHESION TO PLASTIC AND PROCESS FOR MAKING SAME

James E. Doin, Hoosick Falls, and Susan E. Hayes, Schenectady, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Dec. 8, 1981, Ser. No. 328,500

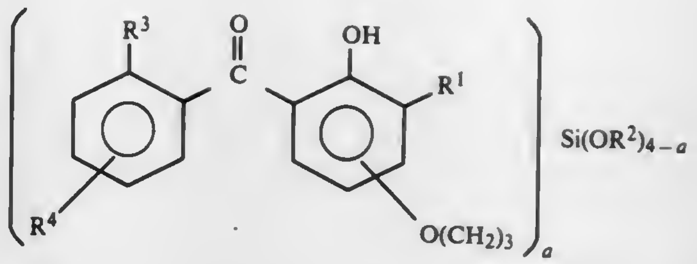
Int. Cl.³ C08L *83/00*

U.S. Cl. 524—837 **28 Claims**

1. A coating composition adapted for adhesion to a plastic substrate without a primer, said composition being prepared by:

(A) prehydrolyzing

(i) a silylated ultraviolet light screening compound having the formula



wherein R^1 is hydrogen, C_1–C_8 alkyl or halogen; R^3 and R^4 are hydrogen, C_1–C_8 alkoxy, carboxy, halogen, hydroxy, amino, carbethoxy or $\text{—Q—}(CH_2)_3Si(OR^2)_3$; Q is —NH— or —O—; R^2 is C_1–C_8 alkyl; and a is an integer equal to 1-3 inclusive, in the presence of

(ii) an agent to catalyze conversion of the silane function of said silylated ultraviolet light screening compounds to a silanol; and thereafter

(B) adding a minor proportion of the hydrolysis product of step (A) to a major proportion of an aqueous partially condensed silicone resin composition including colloidal silica.

4,443,580

DCPD MODIFIED POLYESTER PHYSICAL PROPERTY IMPROVEMENT

Robert E. Hefner, Jr., Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 25, 1982, Ser. No. 411,169

Int. Cl.³ C08L *67/06*

U.S. Cl. 525—44 **15 Claims**

1. A resin formulation having improved properties comprised essentially of:

(a) a dicyclopentadiene modified unsaturated polyester, polyesteramide, or a mixture thereof,

(b) a monovinyl aromatic monomer or mixture of monovinyl aromatic monomers, and

(c) a polyvinyl aromatic monomer or mixture of polyvinyl aromatic monomers wherein components (b) and (c) are present in amounts of 20 to 60 percent by weight of component (a), and component (c) comprises 1 to 33 percent by weight of the total weight of (b) and (c).

4,443,581

IMPACT MODIFIED POLYARYLATE BLENDS

Lloyd M. Robeson, Whitehouse Station, and Markus Matzner, Edison, both of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Aug. 27, 1981, Ser. No. 296,870

Int. Cl.³ C08L *67/02, 83/06, 69/00*

U.S. Cl. 525—92 **19 Claims**

1. A thermoplastic molding composition having improved notched izod impact values after molding, said composition comprising in admixture:

(a) a polyarylate derived from a dihydric phenol and an aromatic dicarboxylic acid; and

(b) a siloxane-polyarylene polyether block copolymer and/or a siloxane polycarbonate block copolymer.

4,443,582
MIXTURES OF CHLOROPRENE POLYMERS AND THE PRODUCTION THEREOF

Rüdiger Musch, Bergisch-Gladbach; Gottfried Pampus, Cologne; Peter Müller, Kerpen; Ulrich Eisele, Leverkusen; Wolfgang Konter, Neuss, and Wilhelm Göbel, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

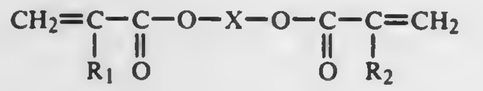
Filed May 19, 1982, Ser. No. 379,919

Claims priority, application Fed. Rep. of Germany, May 26, 1981, 3120992

Int. Cl.^{3} C08L *27/04*

U.S. Cl. 525—215 **4 Claims**

1. A polychloroprene mixture containing a sol polymer and a gel polymer in a ratio, by weight, of from 1:4 to 9:1, wherein both polymers have been produced in the presence of from 2.5 to 4.0 parts, by weight, of the potassium salt of a disproportionated abietic acid expressed as acid, from 0.3 to 1.0 part, by weight, of a condensation product of naphthalene sulphonic acid and formaldehyde and from 0.2 to 1.5 parts, by weight, of potassium hydroxide, based in each case on 100 parts, by weight, of monomer, and wherein the gel polymer is a copolymer of chloroprene and from 1.5 to 2.5 mole percent, based on total monomer, of a diester corresponding to the following general formula:



$$CH_2=\underset{R_1}{\underset{|}{C}}-\underset{O}{\underset{\|}{C}}-O-X-O-\underset{O}{\underset{\|}{C}}-\underset{R_2}{\underset{|}{C}}=CH_2$$

wherein

R_1 and R_2 represent hydrogen, chlorine or C_1–C_4 alkyl; and X represents C_2–C_{10} alkylene and wherein the sol polymer is a homopolymer of chloroprene.

4,443,583
PROCESS FOR THE PRODUCTION OF CHLOROPRENE POLYMER MIXTURES

Rüdiger Musch, Bergisch-Gladbach; Gottfried Pampus, Cologne; Rudolf Casper, Leverkusen; Peter Müller, Kerpen, and Wilhelm Göbel, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 10, 1982, Ser. No. 386,883

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1981, 3123905

Int. Cl.^{3} C08L *11/00*

U.S. Cl. 525—215 **5 Claims**

1. A process for the production of polychloroprene mixtures of sol and gel polymers in a ratio, by weight, of from 1:4 to 9:1,

the gel polymer being produced by radical emulsion polymerization from chloroprene and from 1 to 4 mole percent, based on the molar quantity of chloroprene, of a diester of a dihydric alcohol and an acrylic acid in the presence of a potassium salt of, disproportionated abietic acid, in the presence of a condensation product of naphthalene sulphonic acid and formaldehyde and in the presence of potassium hydroxide and

the sol polymer being produced by radical emulsion polymerization from chloroprene in the presence of a the, disproportionated abietic acid, in the presence of a condensation product of naphthalene sulphonic acid and formaldehyde and in the presence of potassium hydroxide,

wherein the quantity of the, disproportionated abietic acid used in the production of the gel polymer amounts of from 4 to 10%, by weight, based on the quantity of monomer, the quantity of the, disproportionated abietic acid, used in the production of the sol polymer does not exceed 3.5%, by weight, based on the quantity of monomer, and the polychloroprene mixture contains at most 3.8%, by weight, based on the monomer total, of the, disproportionated abietic acid.

4,443,584
METHOD FOR PREPARING GRAFT POLYOLEFIN

Alain Michel, Villeurbanne, France, assignor to Centre National de la Recherche Scientifique, Paris, France

Filed Dec. 2, 1982, Ser. No. 446,326

Claims priority, application France, Dec. 3, 1981, 81 22802

Int. Cl.^{3} C08L *23/30, 51/06, 33/14*

U.S. Cl. 525—286 **9 Claims**

1. A method for preparing a polyolefin modified by grafting, in which in a first phase, peroxides are grafted in known manner onto a polyolefin chain with a mixture of oxygen and ozone, wherein, in a second phase, a vinyl monomer with at least one epoxy function selected from the group consisting of glycidyl methacrylate and acrylate is added to the resulting peroxidized polyolefin according to the dry blend mixing technique, and in a third phase, the resulting mixture is polymerized during a processing operation selected from the group consisting of passage through an internal mixer, passage through an extruder, passage over a calender or an injection press, or passage through a fluid bed.

4,443,585
DIENE/ACRYLATE BASED IMPACT MODIFIER FOR PVC

Theodore D. Goldman, Washington's Crossing, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 332,431, Dec. 21, 1981, abandoned. This application Jul. 12, 1983, Ser. No. 502,904

Int. Cl.^{3} C08F *279/02*

U.S. Cl. 525—310 **10 Claims**

1. An impact modifier composition having high efficiency at low levels and at low temperatures comprising a Stage A core polymer and two outer Stage polymers, B and C, said Stage A core polymer being a non-crosslinked, non-agglomerated polymer of at least 70% butadiene and at least 10% alkyl (C_2-C_8)acrylate, said Stage B polymer being at least 80% styrene, and said Stage C polymer containing at least 50% methyl methacrylate and at least 1% alkyl (C_1-C_4)acrylate, the ratio of Stages A:B:C being about 70–85:10–15:10–20, and the ratio of Stages C:B being at least 1.

4,443,586
TECHNIQUE FOR STABILIZATION OF VINYL CHLORIDE POLYMERS

William H. Starnes, Jr., Roselle Park, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 939,248, Sep. 5, 1978, abandoned, which is a continuation of Ser. No. 809,030, Jun. 22, 1977, abandoned. This application Jan. 10, 1980, Ser. No. 111,105

The portion of the term of this patent subsequent to Jun. 7, 1994, has been disclaimed.

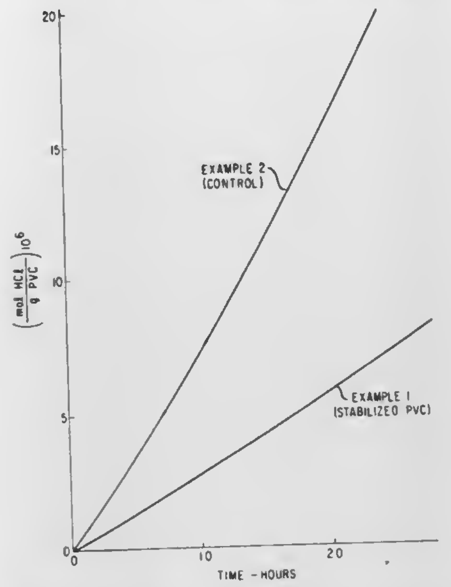
Int. Cl.^{3} C08F *8/42, 8/00*

U.S. Cl. 525—370 **4 Claims**

1. Method for preparing a polymer comprising reacting a polyvinyl chloride polymer with an organotin compound of the general formula

$R_2Sn(O_2CR')_2$

where R is a hydrocarbon radical having from 1–8 carbon atoms, and R' is an alkyl group having from 5–11 carbon atoms, and removing the residual organotin compound from the resulting mixture.



4,443,587
1,2,6-THIADIAZINE-3,5-DIONE-1,1-DIOXIDES AND THEIR USE AS POLYMERIZATION ACCELERATORS

Werner Schmitt; Robert Purrmann, both of Starnberg; Peter Jochum, Hechendorf; Heinz-Joachim Hübner, Wörthsee, and Bernd Burger, Hechendorf, all of Fed. Rep. of Germany, assignors to Abitz, Morf, Gritschneder, Fed. Rep. of Germany

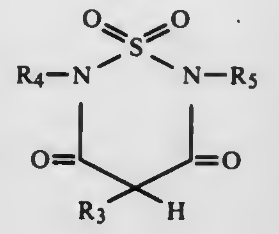
Filed Feb. 18, 1982, Ser. No. 349,769

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1981, 3107577

Int. Cl.^{3} C08F *20/12, 20/20*

U.S. Cl. 526—146 **7 Claims**

1. In a method for the peroxidic polymerization of ethylenically unsaturated compounds selected from the group consisting of acrylic and methacrylic acid compounds useful in the formation of dental type molded articles including the steps of mixing such ethylenically unsaturated compounds with a peroxidic initiator and accelerator and polymerizing the resulting mixture in a mold, the improvement comprising use of a compound of the formula



wherein

R_4 and R_5 independently are alkyl, substituted alkyl, alkenyl, cycloalkyl, substituted cycloalkyl, aryl, or substituted aryl, and

R_3 is alkyl, substituted alkyl, alkenyl, or substituted cycloalkyl, as an accelerator.

4,443,588
HIGHLY REFRACTIVE URETHANE POLYMERS FOR USE IN OPTICAL LENSES AND LENSES PREPARED THEREFROM

Tadanori Fukuda, Ohtsu, and Tadayo Matsunaga, Hirakata, both of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

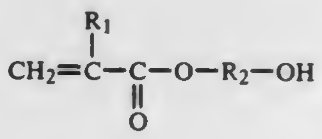
Filed Feb. 17, 1982, Ser. No. 349,647

Claims priority, application Japan, Feb. 19, 1981, 56-22194; Feb. 19, 1981, 56-22195

Int. Cl.^{3} C08F *26/02*

U.S. Cl. 526—301 **7 Claims**

1. A lens having a refractive index n_D^{20} of more than 1.55 comprising a highly refractive, highly uniformly refractive, hard, thermosetting polymerization product of at least one unsaturated urethane compound, said unsaturated urethane compound being a reaction product of at least one xylylene diisocyanate with at least one compound selected from the group consisting of:

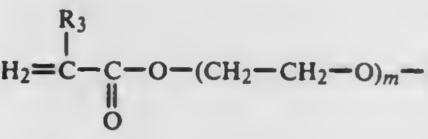
(a) 

$$CH_2=\overset{R_1}{\overset{|}{C}}-\underset{O}{\underset{\|}{C}}-O-R_2-OH$$

where:

R_1 is either H or CH_3; and

R_2 is a remnant radical of a substituent or non-substituent hydrocarbon having 2–4 carbon atoms;

(b) 

$$CH_2=\overset{R_3}{\overset{|}{C}}-\underset{O}{\underset{\|}{C}}-O-(CH_2-CH_2-O)_m-H$$

where:

R_3 is either H or CH_3; and

$m=2$–5;

$CH_2=CH-CH_2-OH$; (c)

and

$(CH_2=CH-CH_2-O-CH_2)_2-CHOH$ (d).

4,443,589
ACRYLIC MODIFIED ANIONIC WATER DISPERSIBLE CELLULOSE ESTERS

Michael A. Tobias, Bridgewater, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 28, 1981, Ser. No. 297,281

Int. Cl.^{3} C08L *1/14, 1/10*

U.S. Cl. 527—300 **6 Claims**

1. An aqueous coating composition comprising the neutralized graft copolymer composition prepared by

polymerizing an acrylic monomer component comprising acrylic acid, methacrylic acid or both, in a solution which also comprises a solvent and a cellulose ester, under polymerization conditions in the presence of a free radical initiator selected from t-butyl perbenzoate and benzoyl peroxide, wherein said acrylic monomer component and said cellulose ester are employed in amounts sufficient to provide a graft copolymer composition having at least about 8 percent of its total weight derived from acrylic acid, methacrylic acid or both and sufficient to render said neutralized graft copolymer composition water dispersible;

neutralizing the graft copolymer composition with ammonia, ammonium hydroxide or a tertiary amine; adding a cross-linking agent; and adding sufficient water to disperse the composition.

4,443,590

COMPOSITION FOR POLYURETHANE RESINS AND PRODUCTION OF THE SAME

Yoshio Kamatani, Osaka; Michio Tanaka, Shizuoka, and Kyuya Yamazaki, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 390,883, Jun. 22, 1982, abandoned. This application Dec. 29, 1982, Ser. No. 454,490

Claims priority, application Japan, Jul. 1, 1981, 56-103697; Dec. 23, 1981, 56-208433

Int. Cl.³ C08G *18/78, 18/16, 18/18, 18/22*

U.S. Cl. 528—51 **45 Claims**

1. A polyurethane composition kit, curable at ambient temperature, which comprises an isocyanate component having oxadiazinetrione ring, an active hydrogen component containing at least two active hydrogens and having a molecular weight of 400 to 100,000 and a Lewis base whose basic site has no hydrogen active to NCO group, the proportion of the isocyanate component to the active hydrogen component being such that the ratio of the total number of isocyanate group and oxadiazinetrione ring to the number of active hydrogen is in a range of 0.1 to 10, the amount of said Lewis base being in a range of about 0.001 to 10% by weight based on the weight of non-volatile matter in said isocyanate component and said active hydrogen component; said isocyanate component and said active hydrogen component being separated from each other until actual use whereupon all components are admixed to form a polyurethane resin at ambient temperature.

18. A process for producing polyurethane resin which comprises reacting an isocyanate component having oxadiazinetrione ring with an active hydrogen component containing at least two active hydrogens and having a molecular weight of 400 to 100,000 at ambient temperature in the presence of a Lewis base whose basic site has no hydrogen active to NCO group, the proportion of the isocyanate component to the active hydrogen component being such that the ratio of the total number of isocyanate group and oxadiazinetrione ring to the number of active hydrogen is in a range of 0.1 to 10, an amount of the Lewis base being in a range of about 0.001 to 10% by weight based on the weight of nonvolatile matter in said active hydrogen component and said isocyanate component.

4,443,591

METHOD FOR MAKING POLYETHERIMIDE

Lawrence R. Schmidt, Schenectady, and Eric M. Lovgren, Westerlo, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 21, 1983, Ser. No. 459,849

Int. Cl.³ C08G *73/10*

U.S. Cl. 528—128 **25 Claims**

1. A process for the continuous polymerization of polyetherimide which comprises

(1) dry-blending aromatic bis(ether anhydride) and organic diamine,

(2) feeding the resulting solids into an extruder,

(3) conveying the solids to a melting stage in the extruder, where they are kneaded and melted via viscous heating at a temperature in the range of from about 50° C. to about 300° C. resulting in the production of a liquid pool,

(4) conveying the liquid of (3) to a mass transfer stage where water of reaction is vented to the atmosphere at temperatures of from 200° C. to 350° C.,

(5) conveying the resulting melt from the mass transfer stage of (4) to an advanced polymerization stage where the melt is further subjected to higher shear and intensive mixing at a temperature in the range of from 300° C. to 400° C. while being subjected to pressures of 1 atmospheres to 25 atmospheres, and

(6) and thereafter separating from the extruder polyetherimide and additional water of reaction.

4,443,592

METHOD FOR MAKING POLYETHERIMIDE

Lawrence R. Schmidt, Schenectady; Eric M. Lovgren, Westerlo, and Peter G. Meissner, Berne, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 21, 1983, Ser. No. 459,850

Int. Cl.³ C08G *73/10*

U.S. Cl. 528—128 **27 Claims**

1. A process for making polyetherimide in a continuous manner which comprising

(1) feeding molten aromatic bis(ether anhydride) and molten organic diamine into an extruder to produce a plural phase viscous melt,

(2) conveying the plural phase liquid mixture of (1) to a mixing stage which effects a high degree of contact between the molten aromatic bis(ether anhydride) and molten organic diamine to produce a substantially uniform viscous melt as a result of intense kneading of the ingredients of the mixture,

(3) conveying the resulting viscous melt of (2) to a mass transfer stage, where water of reaction is separated from the surface of the partially polymerized polyetherimide melt,

(4) thereafter conveying the resulting melt to high shear and intensive mixing at a temperature in the range of from 250° C. to 350° C. and a pressure of from 1 to 5 atmospheres, and

(5) separating high molecular weight polyetherimide therefrom along with the removal of final water of reaction,

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4,443,593

SALVAGE OF POLYCARBONATE WASTES BY CONVERSION TO MONOMERIC HYDROXYCARBAMOYL PHENOLS

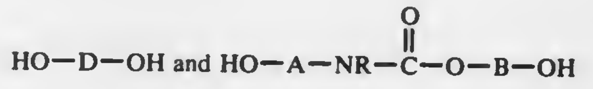
Guy R. Collins, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jun. 25, 1982, Ser. No. 392,399

Int. Cl.³ C08G *63/62*

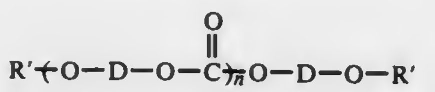
U.S. Cl. 528—210 **10 Claims**

1. The method of preparing a reaction mixture containing monomers of the formulas



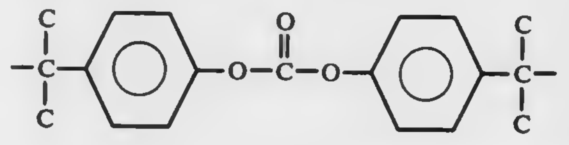
$$HO-D-OH \text{ and } HO-A-NR-\overset{O}{\overset{\|}{C}}-O-B-OH$$

which comprises reacting a polycarbonate of the formula



$$R'\!+\!\left(O-D-O-\overset{O}{\overset{\|}{C}}\right)_{n}O-D-O-R'$$

with a hydroxy amine which is at least basic enough to cleave the carbonate groups in a moiety of the formula



at a temperature of about 100° C. or less and is of the formula RNH—A—OH, the symbols D, A, R, R′ and n being defined as follows:

D and A are divalent organic radicals,

R is H or a non-interfering radical,

R′, independently in each occurrence is H or a non-interfering radical, and

n is an integer greater than 1,

the amount of said amine employed being enough to react out essentially all of the carbonate groups in said polycarbonate.

4,443,594

PROCESS FOR THE PRODUCTION OF ADENINE RING SYSTEM CONTAINING CO-ENZYMES BOUND TO MACROMOLECULES

Andreas Bückmann, Braunschweig-Stöckheim, Fed. Rep. of Germany, assignor to Gesellschaft fur biotechnologische forschung mbH (GBF), Braunschweig-Stockholm, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 73,317, Sep. 7, 1979, abandoned. This application Sep. 8, 1981, Ser. No. 300,249

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1978, 2841414

Int. Cl.³ C07H *19/20*

U.S. Cl. 536—27 **3 Claims**

1. A process for the production of an adenine ring system containing co-enzymes bound to a macro-molecular carrier consisting essentially of:

(a) reacting a co-enzyme selected from the group consisting of AMP, ADP, ATP, NAD$^+$ and NADP, said co-enzyme having an adenine ring system substituted by an alkylene chain in the 1 position, said alkylene chain containing from 1 to 3 carbon atoms and a functional group capable of reacting with a macromolecular carrier selected from the group consisting of carboxyl, hydroxyl, —NH$_2$ and vinyl, with a macro-molecular carrier selected from the group consisting of dextrans, polyetherpolyols, polyethyleneimines, polyacrylamides and poly-(methylvinylether/-maleic acid anhydride), said carrier having groups capable of reacting with said functional group,

(b) subjecting said alkylated co-enzyme bound to said macro-molecular carrier to a Dimroth rearrangement into the N^6-form of substitution, and

(c) recovering said N^6-substituted co-enzyme bound to said macro-molecular carrier.

4,443,595

CELLULOSE ESTER DERIVATIVES AND A PROCESS FOR THE PRODUCTION THEREOF

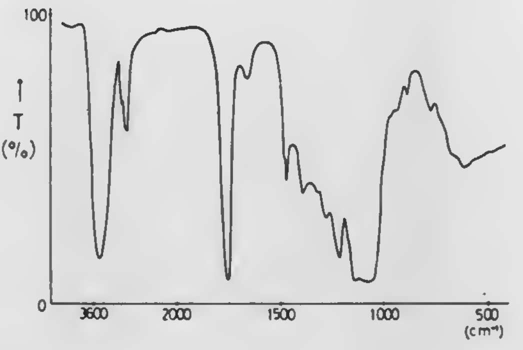
Hajime Namikoshi; Yoshiaki Okumura, and Tsuyoshi Sei, all of Himeji, Japan, assignors to Daicel Chemical Industries Ltd., Osaka, Japan

Filed Jun. 13, 1983, Ser. No. 503,677

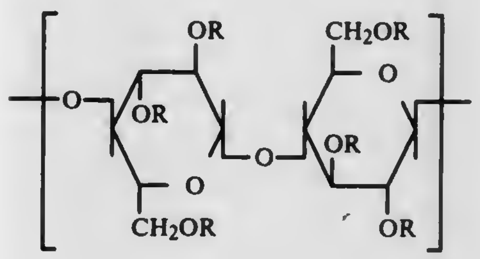
Claims priority, application Japan, Jun. 22, 1982, 57-107825

Int. Cl.³ C08B *15/00*

U.S. Cl. 536—58 **11 Claims**

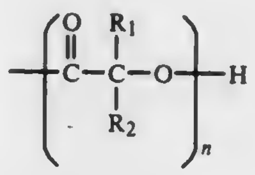


1. A cellulose ester derivative containing at least a moiety of the general formula (I):



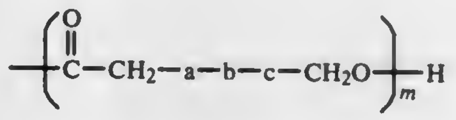
(I)

wherein at least one of the R groups is either a group of the formula (II):



$$-\!\!\left(\overset{O}{\overset{\|}{C}}-\underset{R_2}{\overset{R_1}{C}}-O\right)_{n}\!\!-H \qquad \text{(II)}$$

wherein R$_1$ and R$_2$ are independent from each other and each represents a hydrogen atom or a lower alkyl group and n represents an even number of 2–10; or a group of the formula (III):



$$-\!\!\left(\overset{O}{\overset{\|}{C}}-CH_2-a-b-c-CH_2O\right)_{m}\!\!-H \qquad \text{(III)}$$

wherein a, b and c are independent from one another and each represents an oxygen atom or a methylene group, except the case where the oxygen atoms are adjacent to each other, and m represents an integer of 1–5; these groups optionally being present as a mixed ester, and the rest of the R groups represent hydrogen atoms.

4,443,596

VISCOSE RAYON FILMENT YARN AND PROCESS FOR PRODUCING SAME

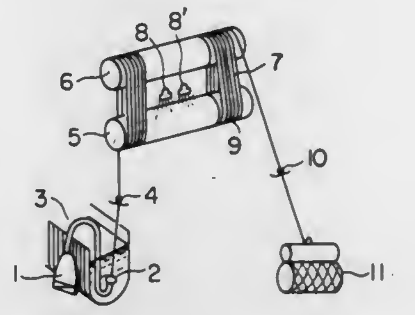
Yasuo Isome; Toshio Minami, and Tadahiko Takahashi, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan and SNIA Viscosa S.p.A., Milan, Italy

Division of Ser. No. 187,935, Sep. 17, 1980, Pat. No. 4,383,962. This application Sep. 14, 1982, Ser. No. 417,959

Claims priority, application Japan, Sep. 27, 1979, 54-123114; Oct. 8, 1979, 54-128890

Int. Cl.³ C08B *9/00*

U.S. Cl. 536—60 **1 Claim**



1. A continuous viscose rayon filament yarn package exhibiting uniform boiling water shrinkage in longitudinal direction, the yarn having a high resistance to deterioration with time, a content of free sulfur not greater than 0.04% based on the weight of yarn and not smaller than 0.02% based on the weight of yarn and a content of sodium hydroxide or sulfuric acid not greater than 0.04% based on the weight of yarn.

4,443,597

POLYISOCYANATES

Yoshio Kamatani, and Noriaki Fujita, both of Osaka, Japan, assignors to Takeda Chemical Industries, Inc., Osaka, Japan

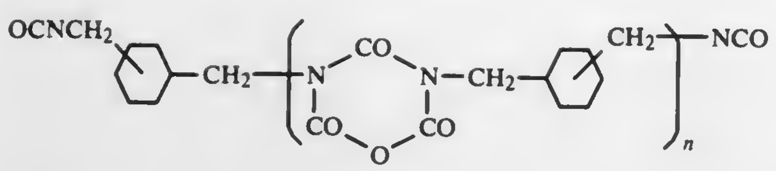
Continuation of Ser. No. 269,961, Jun. 3, 1981, abandoned. This application Nov. 30, 1982, Ser. No. 445,581

Claims priority, application Japan, Jun. 23, 1980, 55-85486

Int. Cl.³ C07D *273/04*

U.S. Cl. 544—67 **10 Claims**

2. A polyisocyanate having an oxadiazinetrione ring which is represented by the following generic formula:



wherein an average of n is 0.01 to 5 and which is obtained by reacting bis(isocyanatomethyl)cyclohexane with carbon dioxide at a temperature ranging from −40° C. to 70° C.

4,443,598
1-OXADETHIACEPHAM COMPOUNDS

Mitsuru Yoshioka; Uyeo Shoichiro, both of Toyonaka; Yoshio Hamashima, Kyoto; Ikuo Kikkawa, Takarazuka; Teruji Tsuji, Takatsuki, and Wataru Nagata, Nishinomiya, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

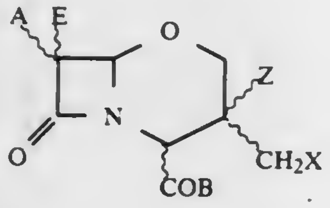
Continuation-in-part of Ser. No. 322,662, Nov. 18, 1981, Pat. No. 4,366,316, which is a continuation of Ser. No. 72,600, Sep. 5, 1979, abandoned, which is a continuation of Ser. No. 877,811, Feb. 14, 1978, abandoned. This application May 4, 1982, Ser. No. 374,862

Claims priority, application Japan, Feb. 15, 1977, 52-15813; Jun. 7, 1977, 52-67025

Int. Cl.^{3} C07D *498/04*

U.S. Cl. 544—90 **4 Claims**

1. A compound of the formula



wherein

A is amino substituted by
- (1) C_1 to C_{10} alkanoyl,
- (2) C_1 to C_7 haloalkanoyl,
- (3) azidoacetyl, cyanoacetyl, trifluoromethylthioacetyl, cyanomethylthioacetyl, or (4-pyridon-1-yl)acetyl;
- (4) acyl group of the following formula:

  Ar—CO—

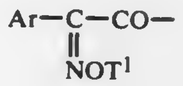
  wherein Ar is an aryl selected from furyl, thienyl, pyrrolyl, oxazolyl, isoxazolyl, oxadiazolyl, oxatriazolyl, thiazolyl, isothiazolyl, thiadiazolyl, thiatriazolyl, pyrazolyl, imidazolyl, triazolyl, tetrazolyl, phenyl, pyridyl, pyrimidyl, pyrazinyl, pyridazinyl, triazinyl, dihydrophenyl, tetrahydrophenyl, tetrahydropyrimidyl, naphthyl, benzothiazolyl, indolyl, quinolyl, isoquinolyl, benzopyrimidyl, cinnolinyl, pyridopyrimidyl, or indanyl ring group;
- (5) acyl group of the following formula:

  Ar—CQQ′—CO—

  wherein Ar is as defined above and Q and Q′ each is hydrogen or methyl;
- (6) acyl group of the following formula:

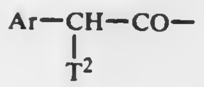
  Ar—G—CQQ′—CO—

  wherein Ar, Q, and Q′ each is as defined above and G is oxygen, sulfur, or imino;
- (7) acyl group of the following formula:

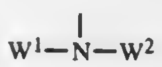
  $$\mathrm{Ar{-}\underset{\underset{\displaystyle NOT^1}{\|}}{C}{-}CO{-}}$$

  wherein Ar is as defined above and T^1 is hydrogen or C_1 to C_6 alkyl;
- (8) acyl group of the following formula:

  $$\mathrm{Ar{-}\underset{\underset{\displaystyle T^2}{|}}{CH}{-}CO{-}}$$

  wherein Ar is as defined above and T^2 is one of (i) hydroxy or C_1 to C_{10} acyloxy, (ii) carboxy or protected carboxy, (iii) sulfo or C_1 to C_5 alkoxysulfonyl, or a group of the formula:

  $$\mathrm{W^1{-}\overset{|}{N}{-}W^2}$$

  in which W^1 and W^2 each is hydrogen or a C_1 to C_{15} aminosubstituent;
- (9) 5-aminoadipoyl, 5-aminoadipoyl protected at the amino or 5-aminoadipoyl protected at the carboxy;
- (10) acyl group of the following formula:

  L—O—CO—

  wherein L is an easily removable and unsubstituted or substituted C_1 to C_{10} hydrocarbyl group; or
- (11) C_1 to C_{20} optionally substituted hydrocarbyl, C_3 to C_{10} organic silyl, or C_1 to C_{10} sulfenyl, the carboxy protecting group B in said COB is C_1 to C_{10} alkoxy, C_1 to C_6 haloalkoxy, C_3 to C_{10} acylalkoxy, C_3 to C_{10} alkoxyalkoxy, C_2 to C_{10} aminoalkoxy, aryloxy, aralkoxy, C_1 to C_{10} alkylsilyloxy, C_1 to C_{10} alkylstannyloxy, C_1 to C_{10} acyloxy, inorganic acyloxy, metal oxy of a group I, II, or III metal in the periodical table, C_1 to C_{15} hydrocarbylammoniooxy, C_1 to C_{10} hydrocarbylthio or mercapto, C_1 to C_5 alkylamino, di-C_1 to C_5 alkylamino, hydrazinyl, or azido;

E is β-hydrogen or α-methoxy;

X is hydrogen, halo, hydroxy, C_1 to C_4 alkanoyloxy, substituted C_1 to C_4 alkanoyloxy, aroyloxy, carbonic acyloxy, C_1 to C_6 alkoxy, aralkoxy of the formula Ar—CH_2O— or aryloxy of the formula Ar—O— in which Ar is as defined above, mercapto, C_1 to C_5 alkanoylthio, aroylthio, C_1 to C_6-alkylthio, aralkylthio, arylthio of the formula Ar—S— in which Ar is as defined above, amino, azido, hydrazinyl, acetylamino, methylamino, pyridinium, picolinium, 4-carboxypyridinium, carbamoylpyridinium, hydroxymethylpyridinium, carboxymethylpyridinium, or chloropyridinium, COB is carboxy or protected carboxy, and

Z is halo, hydroxy, alkanoyloxy, haloalkanoyloxy, arylsulfenyl, arylselenyl, arylsulfinyl, alkylsulfinyl, alkanesulfonyloxy, or arylsulfonyloxy.

4,443,599
8-OXO-3-OXA-1-AZABICYCLO[4.2.0]OCTANES CONTAINING A CHIRAL CENTER

Terence C. Smale, Epsom Downs, England, assignor to Beecham Group p.l.c., England

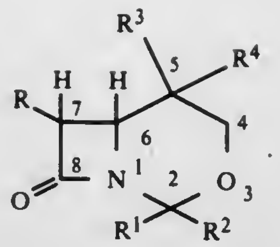
Filed May 12, 1982, Ser. No. 377,697

Claims priority, application United Kingdom, May 14, 1981, 8114848

Int. Cl.^{3} C07D *498/04*

U.S. Cl. 544—90 **3 Claims**

1. A compound of the formula (I)



(I)

wherein R is acetyl, α-hydroxyethyl or a protected derivative thereof, and R^1 and R^2 are hydrocarbon groups, or are joined so as to form a carbocyclic or heterocyclic ring, where the carbocyclic or heterocyclic ring contains from 3 to 8 ring atoms and the heterocyclic ring contains two or three heteroatoms selected from oxygen, nitrogen and sulphur any of said R^1 and/or R^2 groups being unsubstituted or substituted by hydroxy, bromine, chlorine, fluorine, carboxylic acid or salt or ester thereof, azido, tetrazolyl, alkanoyl, alkanoyloxy, aroyloxy, aroyl, aralkanoyloxy, aroxy, amino, protected amino, nitro, C_{1-6} alkoxy, C_{1-6} alkyl, aryl, C_{1-6} alkylthio and arylthio, at least one of R^1 and R^2 containing a chiral centre; and R^3 and R^4 are independently hydrogen, a hydrocarbon group, a heterocyclyl group or heterocyclyl (C_{1-6}) alkyl wherein the heterocyclic rings contain 1 to 4 heteroatoms selected from oxygen, nitrogen and sulphur atoms, said groups bonded via a carbon atom to the tetrahydro-oxazine ring, or R^3 and R^4 are joined so as to form together with the carbon atom to which they are attached an C_{3-7} cycloalkyl ring.

3. An enantiomer of a compound of the formula (I) as claimed in claim **1**.

4,443,600
SURFACTANT WASHING OF POLYCHLOROISOCYANURIC ACIDS

Wayne H. Hammond, and George V. Jones, both of Lake Charles, La., assignors to Olin Corporation, New Haven, Conn.

Filed Jul. 6, 1982, Ser. No. 395,181

Int. Cl.^{3} C07D *251/36*

U.S. Cl. 544—190 **10 Claims**

1. In a process for the production of polychloroisocyanuric acid by the reaction of chlorine gas with a cyanuric compound selected from the group consisting of cyanuric acid, alkali metal cyanurates and alkaline earth metal cyanurates in a reaction mixture, and recovering said polychloroisocyanuric acid from said reaction mixture, said recovery comprising filtration to produce a filter cake, washing said cake with water, and drying said cake, the improvement which comprises adding a foam depressant selected from the group consisting of ethoxylated alcohols, alkoxylated alcohols and alkali metal salts of esters of dicarboxylic acids to said reaction mixture in an amount of between about 5 and about 500 ppm and further adding a surfactant wetting agent to said wash water selected from the group consisting of alkali metal dialkyl sulfosuccinates, sodium alkyl naphthalene sulfonates, sodium N acyl N alkyltaurates, sodium alkyl sulfates, sulfated ester, sulfoxylated alkyl phenols, ethoxylated alkyl phenols, alkoxylated alkyl phenols, ethoxylated alkyl alcohols, alkoxylated aliphatic alcohols and alkoxylated glycols.

4,443,601
RECOVERY OF CAFFEINE FROM CAFFEINE ADSORBENTS

Mark H. Karmiol, Warwick; Gary L. Hickernell, Ossining, and Bertrand J. Hall, Pearl River, all of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Sep. 20, 1982, Ser. No. 420,158

Int. Cl.^{3} C07D *239/96*

U.S. Cl. 544—274 **11 Claims**

1. A process for recovering caffeine adsorbed on a caffeine adsorbent which comprises:
- (a) contacting a caffeine adsorbent having at least caffeine adsorbed thereon with a solvent selected from the group consisting of ethylene carbonate, propylene carbonate, aqueous solution of ethylene carbonate or propylene carbonate and any combination thereof;
- (b) maintaining the contact between the caffeine adsorbent and the solvent at a temperature between 20° C. and 200° C. until at least a portion of the coffee adsorbed on the adsorbent is removed into said solvent;
- (c) subsequently separating the caffeine adsorbent from the caffeine-containing solvent.

4,443,602
TRANS-1,4,5,8-TETRANITRO-1,4,5,8-TETRAAZADECALIN

Rodney L. Willer, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 16, 1982, Ser. No. 349,134

Int. Cl.^{3} C07D *487/22*

U.S. Cl. 544—350 **1 Claim**

1. Trans-1,4,5,8-tetranitro-1,4,5,8-tetraazadecalin.

4,443,603
PIPERAZINE DERIVATIVES, OF AROMATIC ACIDS

Setsuro Fujii, Toyonaka; Eizou Hattori, Sakado; Mitsuteru Hirata, Saitama; Koichiro Watanabe, and Hiroshi Ishihama, both of Higashi-Murayama, all of Japan, assignors to Kowa Company Limited, Nagoya, Japan

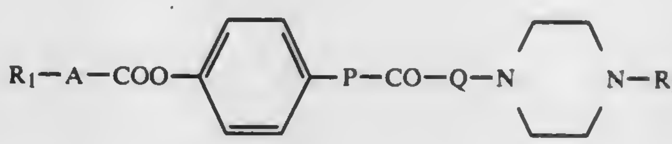
Filed May 24, 1982, Ser. No. 381,443

Claims priority, application Japan, Jun. 5, 1981, 56-86569

Int. Cl.^{3} C07D *403/12, 241/04*

U.S. Cl. 544—373 **5 Claims**

1. A piperazine derivative represented by the following formula:



wherein
- R_1: an indolyl group which may optionally be substituted by one or more lower alkyl and/or lower alkoxy groups, naphthyl group which may optionally be saturated partially with 2 or 4 hydrogen atoms, or phenyl or cyclohexyl group which may optionally be substituted by one or more lower alkyl groups;
- A: a single bond or lower alkylene group;
- P: a single bond or vinylene group;
- Q: an —O—lower alkylene group or —NH—lower alkylene group when P is a single bond, or a single bond when P is a vinylene group; and
- R_2: a lower alkyl, morpholino-lower alkyl, morpholinocarbonyl lower alkyl, piperidinocarbonyl lower alkyl, piperazinocarbonyl lower alkyl or lower alkylaminocarbonyl lower alkyl group,

or a pharmaceutically acceptable acid addition salt thereof.

4,443,604
1,4,BIS-N,N′-DIPOLYALKYLQUINONYL AMINOPROPYL PIPERAZINE

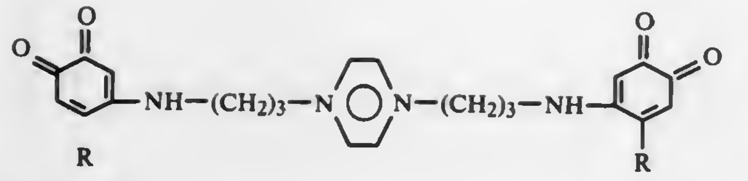
Richard J. Lee, Downers Grove, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 62,333, Jul. 31, 1979, Pat. No. 4,362,668, which is a division of Ser. No. 955,930, Oct. 30, 1978, Pat. No. 4,208,340. This application Jun. 15, 1982, Ser. No. 388,609

Int. Cl.^{3} C07D *295/10*

U.S. Cl. 544—399 **1 Claim**

1. A bis-aminopropylpiperazine derivative of alkylated ortho-quinone having the structure:



wherein R is an aliphatic hydrocarbyl chain of at least 12 carbon atoms selected from the group consisting of an alkyl of at least 12 carbon atoms and a polymer of an olefin of at least 3 carbon atoms.

4,443,605

7β-ARYLALKYL-6α, 7 α-OXYMETHYLENE-3-METHOXY OR 3-HYDROXY-4, 5α-EPOXY-17 METHYL OR 17-CYCLOALKYL-METHYL MORPHINANS

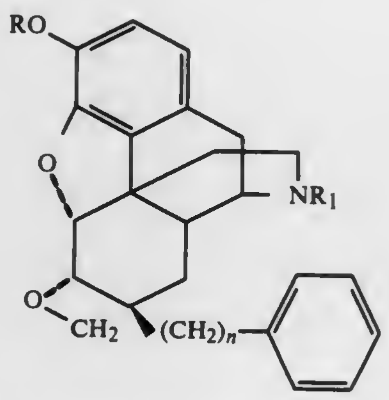
Michael P. Kotick, and David L. Leland, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Jul. 30, 1982, Ser. No. 403,464

Int. Cl.³ C07D ***489/02;*** **A61K** ***31/485***

U.S. Cl. 546—39 **20 Claims**

1. 7β-arylalkyl-6α,7α-oxymethylene-3-methoxy or 3-hydroxy-4,5α-epoxy-17-methyl or 17-cycloalkylmethyl-morphinans characterized by the formula:



wherein R is H or methyl, R_1 is methyl, cyclopropylmethyl or cyclobutylmethyl and n is 2 to 5.

4,443,606

ANTIVIRAL THIAZOLO [5,4-b] PYRIDINE COMPOUNDS

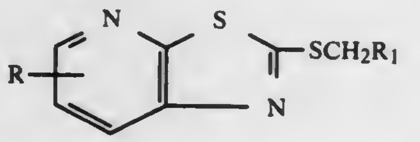
Peter H. L. Wei, Springfield, and Stanley C. Bell, Penn Valley, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Jun. 16, 1982, Ser. No. 388,856

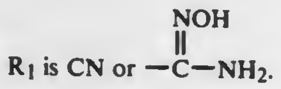
Int. Cl.³ C07D ***513/04***

U.S. Cl. 546—114 **2 Claims**

1. A compound of the formula



wherein R is hydrogen, chlorine or bromine, and



$$R_1 \text{ is CN or } -\overset{\overset{\displaystyle NOH}{\|}}{C}-NH_2.$$

4,443,607

1(2H)-ISOQUINOLONE COMPOUNDS AND ACID ADDITION SALTS THEREOF

Shigeo Senda; Osamu Ohtani, both of Gifu; Eiichi Katho; Mitsuaki Nagasaka, both of Aichi; Hidekazu Miyake, Tokushima; Khosuke Fujiwara, Tokushima, and Motoaki Tanaka, Tokushima, all of Japan, assignors to Maruko Seiyaku Co., Ltd., Aichi and Taiho Pharmaceutical Co., Ltd., Tokyo, both of, Japan

Filed Mar. 25, 1982, Ser. No. 361,935

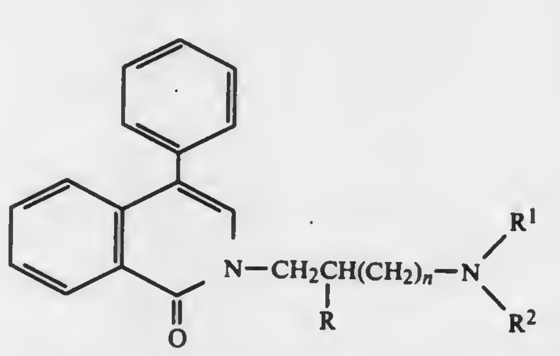
Claims priority, application Japan, Mar. 28, 1981, 56-44700; Mar. 4, 1982, 57-33015

Int. Cl.³ C07D ***217/24***

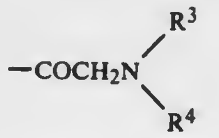
U.S. Cl. 546—141 **4 Claims**

1. A 1(2H)-isoquinolone compound represented by the formula (I)

(I)

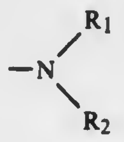


wherein n is 0 or an integer of 1, R represents a methyl group or a hydroxy group, R^1 represents a hydrogen atom, an alkyl group having 1 to 4 carbon atoms, an alkenyl group having 3 to 4 carbon atoms, or an alkynyl group having 3 to 4 carbon atoms, and R^2 represents a hydrogen atom, an alkyl group having 1 to 4 carbon atoms, an alkenyl group having 3 to 4 carbon atoms, an alkynyl group having 3 to 4 carbon atoms, a benzyl group, an ethoxycarbonyl group, a mono- or dialkylcarbamoyl having 1 to 4 carbon atoms in each alkyl group, an acetyl group, a mono- or dialkylaminoethoxyacetyl group or a group of the formula



$$-COCH_2N\begin{matrix}R^3\\ \\R^4\end{matrix}$$

wherein R^3 and R^4, which may be the same or different, each represents a hydrogen atom, an alkyl group having 1 to 4 carbon atoms, a hydroxyalkyl group having 2 to 4 carbon atoms or an allyl group, or R^3 and R^4, when taken together with nitrogen atom to which they are attached, represent a heterocyclic group selected from the group consisting of a pyrrolidino group, a piperazino group, a 4-methylpiperazino group, a piperidino group and a morpholino group, with the proviso that, when R represents a methyl group,



$$-N\begin{matrix}R_1\\ \\R_2\end{matrix}$$

cannot be a monoalkylamino group or a dialkylamino group and when R represents a hydroxy group, n represents an integer of 1; and the acid addition salt thereof.

4,443,608

(+),(−)-TROPICAMIDE O-β-B-GLUCURONIC ACID, ITS DIASTEREOMERS, AND SALTS THEREOF

Walter C. Herlihy, Cambridge, and Thomas H. Fraser, Newtonville, both of Mass., assignors to Repligen Corporation, Cambridge, Mass.

Filed May 24, 1982, Ser. No. 381,528

Int. Cl.³ C07H ***15/26***

U.S. Cl. 546—268 **6 Claims**

1. (+),(−)-Tropicamide O-β-D-glucuronic acid in its essentially pure form, and base addition salts thereof.

4,443,609

TETRAHYDROTHIAZOLE PHOSPHONIC ACIDS OR ESTERS THEREOF

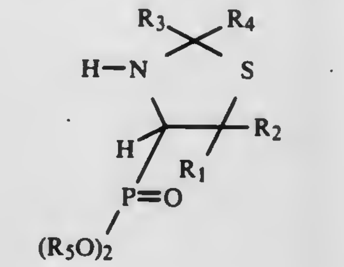
Bernardus A. Oude Alink, St. Louis, and Derek Redmore, Webster Groves, both of Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed May 19, 1980, Ser. No. 151,051

Int. Cl.³ C07F ***9/65***

U.S. Cl. 548—111 **5 Claims**

1. A tetrahydrothiazole phosphonic acid or phosphonate of the formula



where R_1, R_2, R_3 and R_4 are H, alkyl, cycloalkyl, aryl or aralkyl and R_5 is alkyl, aryl, H or a cation.

4,443,610

BICYCLOTHIAZOLES

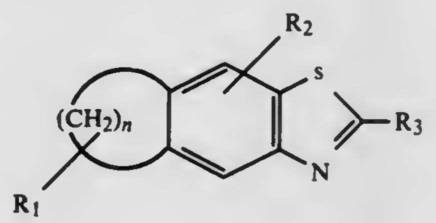
Fu-chih Huang, Boonton, N.J., assignor to USV Pharmaceutical Corporation, Tarrytown, N.Y.

Division of Ser. No. 285,216, Jul. 7, 1981, Pat. No. 4,368,201. This application Sep. 20, 1982, Ser. No. 420,157

Int. Cl.³ C07D ***277/84;*** **A61K** ***31/415***

U.S. Cl. 548—150 **2 Claims**

1. A compound of the structure



wherein

n is 3, 4, or 5

R_1 is hydrogen or C_1–C_6 alkyl,

R_2 is hydrogen, C_1–C_6 alkyl, hydroxyl, C_1–C_6 alkoxy, cyano, phenyl, carboxyl, tetrazole, or halogen,

R_3 is tetrazole, carboxamide or $-C-OR_4$ wherein Z is oxygen, sulfur, or NH and

R_4 is H, alkali metal, ammonium, C_1–C_6 alkyl, C_1–C_6 alkoxy C_1–C_6 alkyl, C_6 aryl, or C_6 aryl C_1–C_6 alkyl.

4,443,611

LIQUID PHASE PREPARATION OF 2-H-2-OXAZOLINES AND 2-SUBSTITUTED-2-OXAZOLINES

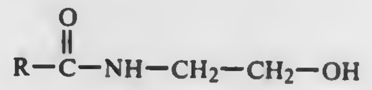
Mark E. Kaiser, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 966,698, Dec. 5, 1978, abandoned, which is a continuation-in-part of Ser. No. 758,239, Jan. 10, 1977, abandoned, and a continuation-in-part of Ser. No. 875,280, Feb. 6, 1978, abandoned, and a continuation-in-part of Ser. No. 756,155, Jan. 3, 1977, abandoned. This application Sep. 7, 1982, Ser. No. 415,077

Int. Cl.³ C07D ***207/20***

U.S. Cl. 548—239 **8 Claims**

1. A cyclodehydration process for making a 2-R-2-oxazoline wherein R is hydrogen, a hydrocarbyl or an inertly-substituted hydrocarbyl, which comprises the steps of reacting by contacting in liquid phase, an N-(2-hydroxyalkyl)carboxamide corresponding to the formula:



$$R-\overset{\overset{\displaystyle O}{\|}}{C}-NH-CH_2-CH_2-OH$$

wherein R is as defined above, or a carboxylic acid/amine salt precursor of said N-(2-hydroxyethyl)carboxamide with a small but catalytic amount of an inorganic zinc salt of sulfuric, nitric, hydrochloric, hydrobromic, hydroiodic, phosphoric or hypophosphorous acid.

4,443,612

PROCESS FOR THE STEREOSPECIFIC PREPARATION OF IMIDAZOLYL OXIMES

Georg Mixich, and Kurt Thiele, both of Zofingen, Switzerland, assignors to Siegfried Aktiengesellschaft, Zofingen, Switzerland

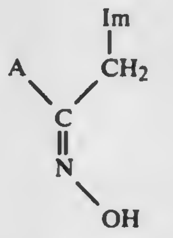
Continuation of Ser. No. 211,172, Nov. 28, 1980, abandoned, which is a continuation-in-part of Ser. No. 40,425, May 18, 1979, abandoned. This application Aug. 30, 1982, Ser. No. 412,943

Claims priority, application Switzerland, May 24, 1978, 5653/78; Jan. 9, 1979, 161/79

Int. Cl.³ C07D ***233/61***

U.S. Cl. 548—341 **1 Claim**

1. A process for the stereospecific production of a substantially pure imidazolyl oxime stereoisomer having the formula



(II_c)

wherein

A signifies a phenyl with from zero to two halogeno substituents, and

Im signifies a 1-H-imidazol-1-yl group that is substituted with zero to two substituents selected from the class consisting of halogeno and C_1–C_4 alkyl

which process comprises:

(a) first reacting a 2-halogen ethanone of the formula

$$A-CO-CH_2-Hal \qquad (IV)$$

wherein Hal is a halogen and A has the meaning given above, with imidazole or a substituted imidazole containing the substituents as given above for Im thereby forming the corresponding 2-(imidazol-1-yl) derivative of the halogen ethanone (IV),

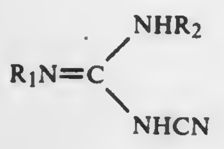
(b) then heating said imidazolyl derivative in alcoholic solution with hydroxylamine or a hydroxylamine-yielding compound in the presence of an amount of an alkali corresponding to a molar excess relative to said hydroxylamine and hydroxylamine-yielding compound, respectively, to produce a substantially pure cis-oxime stereoisomer of formula (II_c), and

(c) recovering said cis-oxime stereoisomer.

4,443,613
IMINO-ALKYL AND AMINO-NITRILE CYANO-GUANIDINE

Pierre J. Baudet, 15 ch. Passoret, Geneva 1227, Switzerland
Division of Ser. No. 197,985, Oct. 14, 1980, Pat. No. 4,383,115. This application Sep. 30, 1982, Ser. No. 428,748
Claims priority, application Switzerland, Feb. 14, 1979, 1404/79
Int. Cl.³ C07D *233/64*
U.S. Cl. 548—342 **1 Claim**

1. A cyanoguanidine having the structural formula:

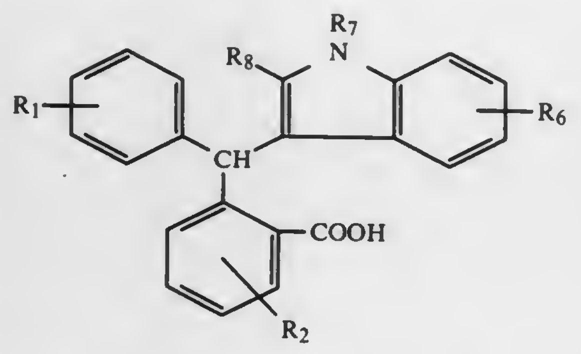


characterized by the imino-alkyl and amino-nitrile structure wherein R_1 comprises a 2-((4-methyl-5-imidazolyl)dithioformyloxy-methyl)ethyl radical and R_2 comprises a methyl radical.

4,443,614
TRIARYLMETHANE DERIVATIVES

Mitsuru Kondo, Kawanishi; Kiyoshi Yasui, Motomachi; Makoto Miyake, Hyogo; Hiroshi Iwasaki, Kawanishi, and Tetsuo Shiraishi, Hyogo, all of Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 774,613, Mar. 4, 1977, which is a division of Ser. No. 699,584, Jun. 24, 1976, Pat. No. 4,045,458. This application Jun. 24, 1980, Ser. No. 162,659
Claims priority, application Japan, Jul. 3, 1975, 50-82898
The portion of the term of this patent subsequent to Mar. 27, 2001, has been disclaimed.
Int. Cl.³ C07D *209/04*
U.S. Cl. 548—469 **8 Claims**

1. Triarylmethane derivative having the structural formula:

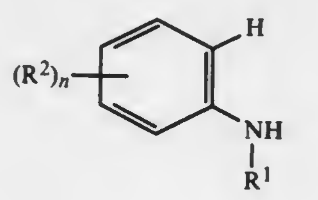


wherein each R_1 and R_2 represent at least one of hydrogen, halogen, a nitro group, an alkyl group, an amino group, an alkyl-, benzyl-, phenyl-, tolyl-, or pentylene-substituted amino group, a hydroxyl group, an alkyl-substituted hydroxyl group, a thiohydroxyl group or an alkyl-substituted thiohydroxyl group, R_6 represents at least one of hydrogen, halogen, lower alkyl group, lower alkoxyl group, amino group, lower alkylamino group, nitro group, phenyl group or phenoxy group, R_7 represents hydrogen, an alkyl group, an aralkyl group or a phenyl group, R_8 represents an alkyl group or alkyl-, halogen-, or alkoxy-substituted or unsubstituted phenyl group.

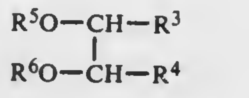
4,443,615
PROCESS FOR PREPARING INDOLES

Manabu Matsuoka, Toyonaka; Michihiro Tsuchiya, Suita, and Yoshikazu Tokuda, Toyonaka, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan
PCT No. PCT/JP80/00146, 371 Date Nov. 10, 1981, 102(e) Date Nov. 10, 1981, PCT Pub. No. WO82/00032, PCT Pub. Date Jan. 7, 1982
PCT Filed Jun. 25, 1980, Ser. No. 325,436
Int. Cl.³ C07D *209/08*
U.S. Cl. 548—489 **8 Claims**

1. A process for preparing an indole which consists essentially of reacting in the vapor phase an aniline of the formula

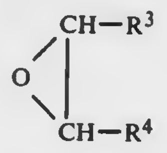

(I)

wherein R^1 is hydrogen, alkyl, aryl or aralkyl, R^2 is alkyl or alkoxy, and n is an integer of 0 to 4, with a glycol of the formula:

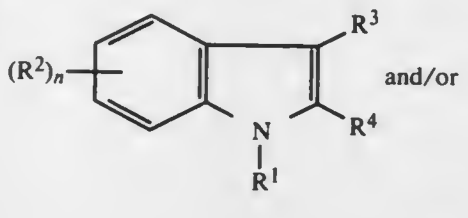


$$\begin{array}{c} R^5O-CH-R^3 \\ | \\ R^6O-CH-R^4 \end{array} \quad (II)$$

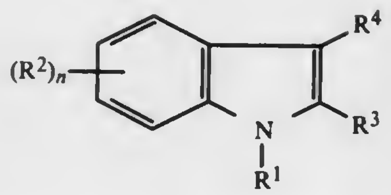
wherein R^3 and R^4 are the same or different and stand for hydrogen or alkyl, and R^5 and R^6 are the same or different and stand for hydrogen or alkyl, or an oxide of the formula:


(II')

wherein R^3 and R^4 are the same as defined above, at 250° to 400° C. in the presence of a solid acid catalyst selected from the group consisting of silica, alumina, and silica-alumina to give an indole of the formula:


(III)

and/or

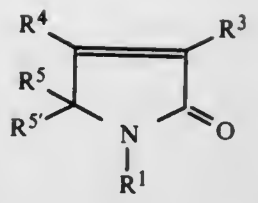

(III')

wherein R^1, R^2, R^3, R^4 and n are the same as defined above.

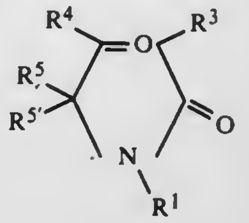
4,443,616
PRODUCTION OF 3-PYRROLIN-2-ONES

Peter Hofer, Liestal, Switzerland, assignor to The Purdue Frederick Company, Norwalk, Conn.
Continuation of Ser. No. 12,496, Feb. 15, 1979, abandoned, and a continuation-in-part of Ser. No. 914,682, Jun. 12, 1978, abandoned. This application Apr. 21, 1981, Ser. No. 256,169
Int. Cl.³ C07D *207/38*
U.S. Cl. 548—543 **3 Claims**

1. Method of producing a 3-pyrrolin-2-one of the formula:



wherein R^1 is hydrogen, lower alkyl, phenyl or phenyl substituted by lower alkyl, R^3 is hydrogen, lower alkyl, phenyl, or phenyl substituted by halogen, carboxyl, lower alkyl, halo-lower-alkyl or lower alkoxy, with R^3 being other than hydrogen or alkyl when R^1 is hydrogen, R^4 is phenyl, or phenyl substituted by halogen, carboxyl, lower alkyl, halo-lower-alkyl or lower alkoxy, R^5 is hydrogen or lower alkyl, and $R^{5'}$ is hydrogen or lower alkyl, one of the substituents R^5 and $R^{5'}$ being hydrogen, which comprises the steps of refluxing under nitrogen, in the presence of equimolar amounts of KO C $(CH3)_3$ in t-butanol a compound of the formula:

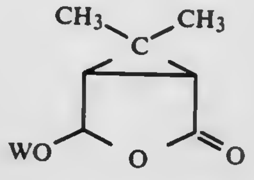


wherein R^1, R^3, R^4, R^5 and $R^{5'}$ have the same definitions as above, until the reaction is complete, acidifying the reaction mass, and separating the formed 3-pyrrolin-2-one therefrom.

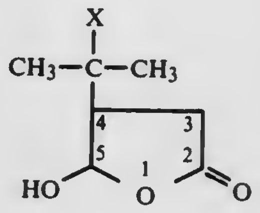
4,443,617
PROCESS FOR THE PREPARATION OF DERIVATIVES OF 6,6-DIMETHYL-4-HYDROXY-3-OXABICYCLO-[3,1,0]-HEXAN-2-ONE

Jacques Martel, Bondy; Jean Tessier, Vincennes, and Jean-Pierre Demoute, Montreuil-sous-Bois, all of France, assignors to Roussel Uclaf, Paris, France
Division of Ser. No. 153,338, May 27, 1980. This application Jul. 1, 1982, Ser. No. 394,457
Claims priority, application France, Jun. 6, 1979, 79 14425
Int. Cl.³ C07D *307/93*
U.S. Cl. 549—302 **8 Claims**

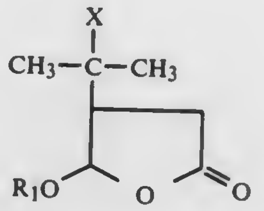
1. A process for the preparation of a compound of the formula


V

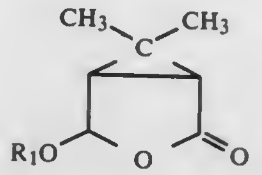
wherein W is selected from the group consisting of hydrogen and R_1 is derived from an optionally aliphatic chiral alcohol of 1 to 12 carbon atoms optionally substituted with halogen, aryl or heterocycle consisting essentially of reacting 3-formyl-4-methyl-pent-3-ene-1-oic acid under anhydrous conditions with a hydrogen halide in the presence of LiX wherein X is halogen in an organic solvent to obtain a compound of the formula


VI

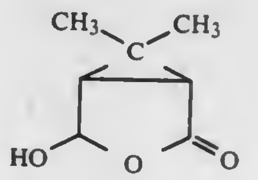
reacting the latter with an achiral alcohol R_1OH to obtain a racemic compound of the formula


VII

which, together with the compound of formula VI has a trans relationship with the 4 and 5 substituents of the tetrahydrofuranone or with a chiral alcohol R_1OH, compound VII will be a mixture of two predictable diastereoisomers which may be separated into the individual isomers by physical methods and then reacting the compound of formula VII in its racemic form when R_1 is achiral or in the form of one of its optically active isomers where R_1 is chiral with a basic agent to obtain the bicyclic compound of the formula


V'

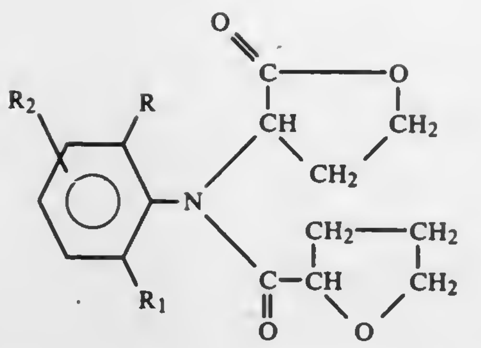
in its racemic form or one of its 2 enantiomeric forms when R_1 is an achiral or a chiral group, respectively, the absolute configuration of the 4-position as well as the following 1- and 5-positions being determined by the stereochemistry of the diasteroisomer of formula VII and optionally subjecting the compound of formula V' to hydrolysis in an acid medium with total retention of the absolute configurations to obtain a compound of the formula


V''

4,443,618
FUNGICIDAL COMPOUNDS

Walter Kunz, Oberwil, Switzerland; Wolfgang Eckhart, Lörrach, Fed. Rep. of Germany, and Adolf Hubele, Magden, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Continuation of Ser. No. 180,268, Aug. 22, 1980, abandoned, which is a continuation of Ser. No. 2,490, Jan. 11, 1979, abandoned, which is a division of Ser. No. 873,585, Jan. 30, 1978, Pat. No. 4,147,792. This application Mar. 2, 1982, Ser. No. 353,796
Claims priority, application Switzerland, Feb. 4, 1977, 1381; Mar. 28, 1977, 3884
Int. Cl.³ C07D *407/12*
U.S. Cl. 549—320 **5 Claims**

1. A compound of the formula



wherein each of R and R_1, independently of the other, is alkyl of 1 to 4 carbon atoms or halogeno, and R_2 is hydrogen, alkyl of 1 to 3 carbon atoms or halogeno.

4,443,619
CHLOROCITRIC ACIDS

Robert W. Guthrie, Saddle Brook; Richard W. Kierstead, North Caldwell; Francis A. Mennona, Nutley, and Ann C. Sullivan, Cedar Grove, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

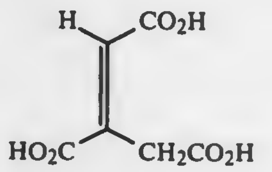
Division of Ser. No. 973,504, Dec. 26, 1978, Pat. No. 4,312,885. This application Aug. 7, 1981, Ser. No. 290,989

Int. Cl.^{3} C07D *301/02*

U.S. Cl. 549—518 **2 Claims**

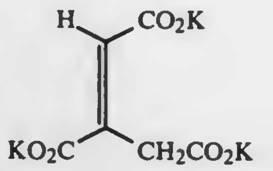
1. A process for the preparation of the mono-potassium dihydrogen salt of (±)-threo-epoxyaconitic acid which comprises the steps of

(a) contacting transaconitic acid of the formula



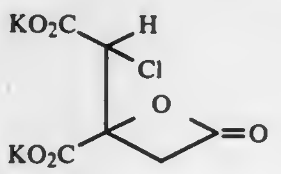
III

with a sufficient amount of potassium hydroxide in water to neutralize said acid and thus to form the tri-potassium metal salt of transaconitic acid of the formula



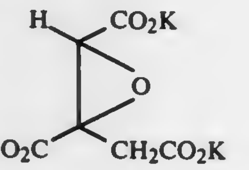
V

(b) contacting the reaction product of step (a) with an excess of chlorine gas so as to form a salt of (±)-threo-chlorocitric acid, β-lactone of the formula



VI

(c) reacting in situ the reaction product of step (b) with potassium hydroxide in an aqueous solvent at temperatures in the range of from about 0° C. to about 40° C. to form a potassium metal salt of (±)-threo-epoxyaconitic acid of the formula



XXXIII

(d) adjusting the pH to a value within the range of about 7.0 to about 7.5 and reacting the reaction product of step (c) with two molar equivalents of an acid to form the corresponding potassium metal dihydrogen salt of (±)-threo-epoxyaconitic acid.

4,443,620
PRODUCTION OF EPOXY COMPOUNDS FROM OLEFINIC COMPOUNDS

Abraham P. Gelbein, Plainfield, and Arthur S. Nislick, Wyckoff, both of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed May 3, 1979, Ser. No. 35,557

Int. Cl.^{3} C07D *301/26*

U.S. Cl. 549—521 **7 Claims**

1. A process for converting an olefinically unsaturated compound to the corresponding epoxy compound, comprising:

contacting a tertiary alkanol in an inert organic solvent, chlorine and calcium oxide in aqueous calcium chloride having a combined concentration of calcium oxide and calcium chloride equivalent to at least 25 weight percent expressed as calcium chloride to produce tertiary alkyl hypochlorite and aqueous calcium chloride; recovering tertiary alkyl hypochlorite in the inert organic solvent; contacting tertiary alkyl hypochlorite in the inert organic solvent, water and an olefinically unsaturated compound to produce the corresponding chlorohydrin and a tertiary alkanol; recovering tertiary alkanol and chlorohydrin in the inert organic solvent; contacting chlorohydrin and tertiary alkanol in the inert organic solvent and calcium oxide in an aqueous solution of calcium chloride having a combined concentration of calcium oxide and calcium chloride equivalent to at least 25 weight percent expressed as calcium chloride to convert the chlorohydrin to the corresponding epoxy compound and produce aqueous calcium chloride; recovering said epoxy compound; recovering tertiary alkanol in the inert organic solvent; passing tertiary alkanol in the inert organic solvent to the hypochlorite production; recovering from said hypochlorite production and said epoxy compound production an aqueous solution of calcium chloride having a calcium chloride concentration of at least 25 weight percent; and combining calcium oxide with a portion of said recovered aqueous solution of calcium chloride for providing said calcium oxide in aqueous calcium chloride for the producing of hypochlorite and epoxy compound.

4,443,621
P-NITROPHENYL 3-BROMO-2,2-DIETHOXY-PROPIONATE AND SYNTHETIC UTILITY THEREFOR

John L. LaMattina, Ledyard, and Paul D. Weeks, Gales Ferry, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Mar. 14, 1983, Ser. No. 474,958

Int. Cl.^{3} C07C *79/12;* **C07D** *309/40*

U.S. Cl. 560—142 **1 Claim**

1. p-Nitrophenyl 3-bromo-2,2-diethoxypropionate.

4,443,622
METHOD FOR MAKING CARBAMATES

Richard Smith, Opelika, Ala., assignor to West Point Pepperell, Inc., West Point, Ga.

Continuation of Ser. No. 263,880, May 15, 1981, abandoned, which is a continuation of Ser. No. 83,514, Oct. 10, 1979, abandoned. This application Sep. 24, 1982, Ser. No. 423,452

Int. Cl.^{3} C07C *125/04*

U.S. Cl. 560—166 **10 Claims**

1. In a method for the manufacture of carbamates in which an alcohol is reacted with urea and ammonia is liberated, the improvement wherein the reaction is carried out at a temperature of at least 130° C., under a vacuum of at least 20 inches of mercury, said alcohol having a volatility no greater than that of diethylene glycol under the reaction conditions.

7. In a method for the manufacture of carbamates in which an alcohol is reacted with urea under a vacuum, the improvement wherein the reaction is carried out in the presence of magnesium oxide as a catalyst.

4,443,623
PREPARATION OF PREDOMINATELY METHYL ACRYLAMIDOGLYCOLATE METHYL ETHER IN A NORMALLY LIQUID PRODUCT

James M. Photis, Ridgefield, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed May 12, 1982, Ser. No. 377,505

Int. Cl.^{3} C07C *102/00*

U.S. Cl. 560—170 **8 Claims**

1. A process for preparing methyl acrylamidoglycolate methyl ether in non-viscous liquid form comprising a major proportion of methyl acrylamidoglycolate methyl ether and a sufficient quantity of at least one of C_3 to C_6 alkyl acrylamido glycolate C_3 to C_6 alkyl ether, C_3 to C_6 alkyl acrylamidoglycolate methyl ether, and methyl acrylamidoglycolate C_3 to C_6 alkyl ether to provide a non-viscous liquid, which comprises reacting glyoxylic acid with a C_3 to C_6 alcohol under conditions which lead to azeotropic removal of water to provide C_3 to C_6 alkyl glyoxylate alkyl hemiacetal, reacting said C_3 to C_6 alkyl glyoxylate alkyl hemiacetal with an acrylamide while removing volatiles therefrom to provide C_3 to C_6 alkyl acrylamidoglycolate and reacting said C_3 to C_6 alkyl acrylamidoglycolate with methanol at elevated temperature in the presence of a transesterification/etherification catalyst while removing water and volatiles therefrom to provide said methyl acrylamidoglycolate methyl ether in non-viscous liquid form.

4,443,624
METHOD OF PREPARING MALONIC ACID DIALKYL ESTERS

Uwe Prange, Niederkassel-Ranzel; Moustafa El Chahawi, Troisdorf; Wilhelm Vogt, Köln-Sülz, and Hermann Richtzenbain, Much-Schwellenbach, all of Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Troisdorf, Fed. Rep. of Germany

Division of Ser. No. 260,444, May 4, 1981, Pat. No. 4,399,300, which is a continuation of Ser. No. 169,009, Jul. 15, 1980, abandoned, which is a continuation of Ser. No. 879,993, Feb. 28, 1978, abandoned, which is a continuation of Ser. No. 687,841, May 19, 1976, abandoned. This application Apr. 5, 1982, Ser. No. 365,818

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1975, 2524389; Jan. 28, 1976, 2603026

Int. Cl.^{3} C07C *67/36*

U.S. Cl. 560—204 **21 Claims**

1. Process of producing a malonic acid dialkyl ester which comprises contacting the corresponding halogen acetic acid alkyl ester with carbon monoxide, and alkali metal alcholate, alkaline earth metal alcoholate or a solution of alkali metal hydroxide in an alcohol at a pH of up to 8.5 in the presence of a catalyst system based on a cobalt salt, Mn powder, and $Na_2S_2O_4$ as catalyst for the reaction, at a temperature of 0° to 150° C. and a carbon monoxide pressure of 0.1–50 atmospheres absolute.

4,443,625
PRODUCT FOR TREATING SOIL TO SUPPRESS THE NITRIFICATION OF AMMONIUM NITROGEN THEREIN

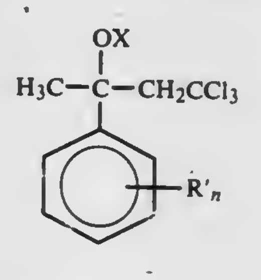
Jeffrey D. Griffith, Lafayette, Calif., and Thomas M. Ozretich, Vancouver, Wash., assignors to The Dow Chemical Co., Detroit, Mich.

Division of Ser. No. 59,086, Jul. 19, 1979, Pat. No. 4,317,672. This application May 14, 1981, Ser. No. 263,437

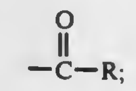
Int. Cl.^{3} C07C *33/46, 43/23, 69/07, 69/157, 69/24*

U.S. Cl. 560—254 **9 Claims**

1. A compound having the formula



wherein X is H or



$$-\overset{\overset{\displaystyle O}{\|}}{C}-R;$$

R is H or C_1–C_8 alkyl;

R′ is C_1–C_4 alkyl, C_1–C_4 alkoxy or halo and n is an integer from 0 to 2.

4,443,626
2,3-DIHYDRO-INDENE DERIVATIVES

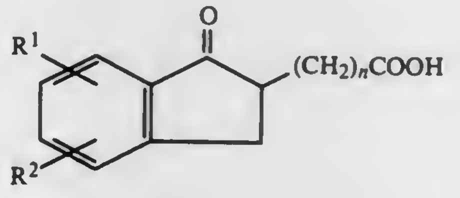
Kanji Noda, Tsukushino; Akira Nakagawa; Kenji Yamagata, both of Tosu; Yoichi Nakashima, Tacharai; Masayoshi Tsuji, Tosu; Tetsuo Aoki, Kiyama, and Hiroyuki Ide, Fukuoka, all of Japan, assignors to Hisamitsu Pharmaceutical Co., Inc., Tosu, Japan

Filed Jun. 7, 1982, Ser. No. 385,673

Int. Cl.^{3} C07C *79/46, 59/86*

U.S. Cl. 562—434 **20 Claims**

1. A 2,3-dihydro-indene derivative having anti-inflammatory effects and represented by the following general formula (I)



wherein R^1 and R^2 are each hydrogen, halogen, nitro, lower alkyl, with the proviso that at least one of R^1 and R^2 is other than hydrogen and n is an integer of 2–4.

4,443,627
PROCESS FOR THE PRODUCTION OF CARNITINE AMIDE

Leander Tenud, Visp, and René Blum, Binningen, both of, Switzerland, assignors to Lonza Ltd., Gampel, Switzerland

Filed Jan. 20, 1982, Ser. No. 341,009

Claims priority, application Switzerland, Jan. 21, 1981, 363/81

Int. Cl.^{3} C07C *102/06, 103/183*

U.S. Cl. 564—136 **8 Claims**

1. Process for the production of carnitine amide in the form of a chloride, which comprises (i) reacting 4-chloroacetoacetic acid ethyl ester with trimethyl amine, (ii) hydrogenating the reaction product of step (i) with a Pt/C catalyst, carnitine ethyl ester resulting, (iii) reacting the carnitine ethyl ester, without isolating it, with ammonia in an autoclave at −30° to +10° C.,

(iv) heating the contents of the autoclave to 40° to 80° C., (v) stirring the mixture at such temperature at an ammoniac pressure of 8 to 24 atu, (vi) cooling the carnitine amide chloride to ambient temperature and counterbalancing the excess pressure, (vii) filtering the carnitine amide chloride, (viii) washing the carnitine amide chloride with ethyl alcohol, and (ix) drying the carnitine amide chloride at 30° to 50° C. and at a pressure of 15 to 25 torr.

4,443,628
ANTIDOTAL COMPOUNDS FOR USE WITH HERBICIDES

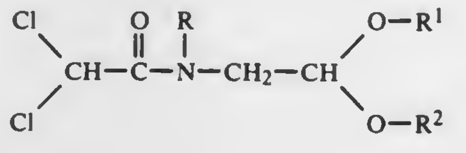
Jay K. Rinehart, Akron, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 106,433, Dec. 26, 1979, abandoned. This application Dec. 22, 1980, Ser. No. 218,874

Int. Cl.³ C07C *103/127*

U.S. Cl. 564—209 **2 Claims**

1. A compound of the formula:



$\mathrm{Cl_2CH-C(=O)-N(R)-CH_2-CH(O-R^1)(O-R^2)}$

wherein:

R is 2-propenyl, 2-butenyl or 2-methyl-2-propenyl, and R^1 and R^2 are alkyl of up to 4 carbon atoms.

4,443,629
PREPARATION OF HYDRAZIDINES

Gerhard Bonse, Cologne, and Thomas Schmidt, Haan, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

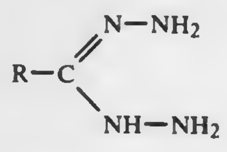
Filed Jun. 14, 1982, Ser. No. 387,907

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1981, 3126388

Int. Cl.³ C07C *123/02*

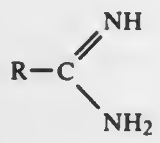
U.S. Cl. 564—226 **10 Claims**

1. In the production of a hydrazidine of the formula



$\mathrm{R-C(=N-NH_2)-NH-NH_2}$

in which R is an optionally substituted alkyl group, an optionally substituted cycloalkyl group, an optionally substituted aryl group or an optionally substituted aralkyl group, or an acid addition salt thereof, by reacting the corresponding amidine of the formula



$\mathrm{R-C(=NH)-NH_2}$

or an acid addition salt thereof with hydrazine, the improvement which comprises effecting the reaction with hydrazine hydrate in the presence of an organic solvent which may contain water under reduced pressure and at a temperature between about −80° and +100° C.

4,443,630
PROCESS FOR PREPARING 2-AMINO-5-NITROTOLUENE

Theodor Papenfuhs, Frankfurt am Main, and Rüdiger Berthold, Bad Soden am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 27, 1982, Ser. No. 453,510

Claims priority, application Fed. Rep. of Germany, Jan. 8, 1982, 3200308

Int. Cl.³ C07C *85/04*

U.S. Cl. 564—406 **10 Claims**

8. A process for preparing 2-amino-5-nitrotoluene, comprising the step of heating to at least 180° C. the reaction mixture consisting essentially of 2-chloro-5-nitrotoluene and aqueous ammonia, said aqueous ammonia having a concentration of at least 30% by weight, and recovering the 2-amino-5-nitrotoluene product essentially without purification steps.

4,443,631
SELECTIVE HALOGENATION OF 2-FLUOROANILINE

Amphlett G. Padilla, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 105,064, Dec. 19, 1979, abandoned. This application Jan. 18, 1982, Ser. No. 340,569

Int. Cl.³ C07C *85/24*

U.S. Cl. 564—412 **4 Claims**

1. In a process comprising the bromination of 2-fluoroaniline, whereby high yields of 4-bromo-2-fluoroaniline are selectively obtained an improvement which comprises bromination in a solvent consisting essentially of dimethylformamide or dimethylacetamide.

4,443,632
MACROCYCLIC CARBONYL COMPOUNDS, PROCESS FOR THEIR PREPARATION AND THEIR USE AS STARTING MATERIALS FOR THE PREPARATION OF BICYCLIC UNSATURATED HYDROCARBONS

Karl H. Schulte-Elte, Onex; Bernard L. Muller, Geneva, and Eric Maillefer, Mont-sur-Rolle, all of Switzerland, assignors to Firmenich SA, Geneva, Switzerland

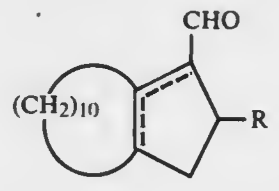
Filed Jun. 22, 1982, Ser. No. 390,808

Claims priority, application Switzerland, Jul. 17, 1981, 4708/81

Int. Cl.³ C07C *49/523, 45/61*

U.S. Cl. 568—375 **6 Claims**

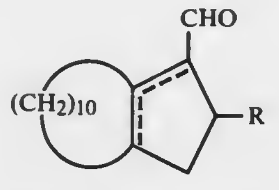
1. A compound of formula



(II)

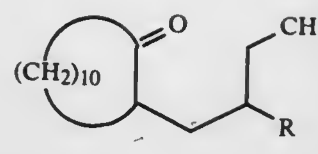
having a double bond in one of the positions indicated by the dotted lines and wherein symbol R designates a hydrogen atom or a methyl radical.

4. Process for the preparation of a compound of formula



(II)

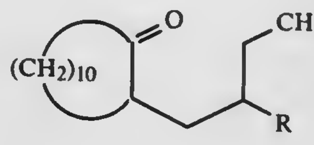
having a double bond in one of the positions indicated by the dotted lines and wherein R represents a hydrogen atom or a methyl radical, which comprises successively treating with a a secondary aliphatic or cycloaliphatic amine and a carboxylic acid a carbonyl compound of formula



(III)

wherein symbol R is defined above.

6. A compound of formula



(III)

4,443,633
NORBORNYL OXYBUTYRALDEHYDE

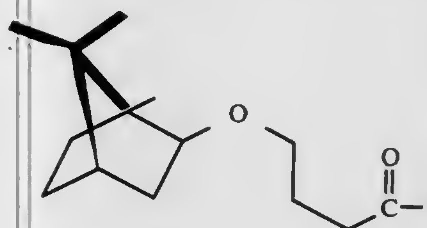
Richard M. Boden, Ocean; William L. Schreiber, Jackson; Futoshi Fujioka, Wanamassa, all of N.J.; Patrick Chant, Brooklyn, N.Y., and Lambert Dekker, Wyckoff, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Apr. 6, 1982, Ser. No. 366,079

Int. Cl.³ C07C *47/115*

U.S. Cl. 568—445 **1 Claim**

1. The norbornyl oxybutyraldehyde having the structure:



4,443,634
REMOVAL OF IMPURITIES

William C. Ziegenhain, and Gary L. Horton, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Mar. 29, 1983, Ser. No. 480,178

Int. Cl.³ C07C *41/34*

U.S. Cl. 568—621 **7 Claims**

1. A process for the purification of liquid alcohol alkoxylate polymer feed streams containing one or more impurities present in a quantity of less than 2% by weight of the stream per impurity comprises:

(a) forcing the feed stream through a spray nozzle into an inert atmosphere at a temperature of from about 68° F. to about 392° F., where the pressure is at or below one atmosphere in such a manner to atomize the feed stream into particulate drops having a size in the range of from about 1,000 microns to about 50 microns in diameter,

(b) retaining the particulate drops under the conditions of (a), and within a temperature in the range of from about 68° F. to about 392° F. for at least 0.1 second to form impurity vapors,

(c) removing the impurity vapors that form during step (b), and

(d) collecting the purified, atomized feed stream liquid wherein the purified feed stream has a vapor pressure no higher than 1×10^{-3} mm of mercury at 68° F., and no higher than 50 mm of mercury at 392° F., and the vapor pressure limits of any impurity removed in step (c) require that its said vapor pressure be no lower than 5,000 mm of mercury at 392° F., and no lower than 10 mm of mercury at 68° F.

4,443,635
REMOVAL OF COLOR BODIES IN BISPHENOL PRODUCTION

William A. McLaughlin, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 6, 1982, Ser. No. 447,056

Int. Cl.³ C07C *39/16, 37/68*

U.S. Cl. 568—728 **9 Claims**

1. In a process for preparing bisphenols by reacting at least 2 moles of a phenol with a carbonyl compound in a reaction zone in the presence of an acidic catalyst to produce a product mixture containing phenol, bisphenol, and color bodies and wherein the product mixture is separated into a bisphenol/-phenol adduct and a mother liquor stream, wherein at least a portion of said mother liquor stream is contacted with an insoluble acidic cationic exchange resin for a period of time and at a temperature sufficient to reduce the content of color bodies contained in said mother liquor stream prior to recycling said mother liquor to said reaction zone, the improvement comprising periodically removing the adsorbed color bodies from said adsorbent by washing said adsorbent with an aqueous solution having a pH of at least about 8 and containing from about 10 to about 70% by weight of at least one phenate selected from the group consisting of phenates of alkali metals and of ammonia.

4,443,636
REFINING LURGI TAR ACIDS

Nicholas P. Greco, Edgewood, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Jul. 14, 1982, Ser. No. 398,074

Int. Cl.³ C07C *37/74*

U.S. Cl. 568—761 **2 Claims**

1. A process for refining the tar acid fraction that is derived from the Lurgi gasification of coal comprising:

(a) treating the tar acid with an aqueous solution of sodium bisulfate; and

(b) distilling off the tar acids as distillate while the tar bases remain as salts in the residue and the neutral oils hydrolyze to products that also remain the residue.

4,443,637
THERMOCHEMICAL CONVERSION OF BIOMASS TO ETHANOL

Melville E. D. Hillman, Columbus, Ohio, assignor to Battelle Development Corporation, Columbus, Ohio

Filed Jun. 17, 1982, Ser. No. 389,414

Int. Cl.³ C07C *29/00*

U.S. Cl. 568—876 **20 Claims**

1. In a process for converting a feedstock selected from the group consisting of a carbohydrate, lactic acid, and mixtures thereof, into product ethanol in the presence of a metal salt at a reaction temperature ranging from about 250° to about 400° C., the improvement which comprises:

establishing a reaction mixture of said feedstock, said metal salt, water, and an organic solvent which has a boiling point of at least about 150° C., can solvate said feedstock, and is stable at said reaction temperature, said solvent selected from the group consisting of an alcohol, an ether, a tertiary amine, an amine oxide, a sulfoxide, a quaternary ammonium hydroxide, and mixtures thereof, the proportion of solvent in said reaction mixture ranging from between about 10% and about 95% by weight of said water and said organic solvent, said process being conducted at atmospheric pressure.

4,443,638

PREPARATION OF ALCOHOLS FROM INTERNAL OLEFINS

James A. Yates, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Continuation of Ser. No. 250,977, Apr. 3, 1981, abandoned. This application Apr. 19, 1982, Ser. No. 369,953

Int. Cl.³ C07C *29/14*

U.S. Cl. 568—882 **8 Claims**

1. A process for preparing alcohols from internal C_4–C_{30} olefins wherein said process comprises:

(a) contacting said olefins with hydrogen and carbon monoxide in the presence of a ligand modified recycled rhodium catalyst where the rhodium is present in quantities less than 20 parts per million based on the total charge, and is greater than 0.1 parts per million based on total charge, at a temperature in the range of about 145° C. to about 180° C. and a pressure in the range of about 750 to about 2000 psig to form a reaction product containing a substantial amount of linear and 2-methyl branched aldehydes,

(b) separating the reaction product of step (a) from the rhodium catalyst by flash vacuum distillation,

(c) hydrogenating the distilled reaction product of step (b) using an effective amount of hydrogenation catalyst at a temperature in the range of about 100° to about 170° C. and a pressure in the range of about 200 to about 2000 psig to produce a crude alcohol mixture,

(d) fractionally distilling the crude alcohol mixture of step (c) to remove small amounts of light and heavy impurities and obtain a fraction containing a major amount of alcohols and minor amounts of carbonyl compounds,

(e) hydrogenating the fraction containing alcohols and carbonyls using the conditions of step (c) to convert the carbonyl compounds to alcohols and thereby obtaining an alcohol product containing one carbon atom more than the starting olefins, and

(f) recycling the product-catalyst bottoms from step (b) to step (a).

4,443,639

HYDROGENATION OF CARBOXYLIC ACIDS

Frederick A. Pesa, Aurora; Anne M. Graham, Northfield, and Wayne R. Kliewer, North Randall, all of Ohio, assignors to The Standard Oil Company (Indiana), Cleveland, Ohio

Division of Ser. No. 264,755, May 18, 1981, Pat. No. 4,398,039. This application Sep. 13, 1982, Ser. No. 416,807

Int. Cl.³ C07C *29/136*

U.S. Cl. 568—885 **20 Claims**

1. A process for the hydrogenation of carboxylic acids having from 1–10 carbon atoms, including contacting said carboxylic acids with hydrogen in the vapor phase at a reaction temperature of from about 150° C. to about 450° C. and a reaction pressure of about 250 psig to about 5,000 psig in the presence of water, in excess of the amount of water vapor formed in situ by the hydrogenation reaction, and a catalyst represented by the formula

$$A_aRu_bD_cE_dO_x$$

wherein

A = Zn, Cd and mixtures thereof;
D = Co, Ni and mixtures thereof;
E = Fe, Cu, Rh, Pd, Os, Ir, Pt and mixtures thereof;

and wherein

a = 0 to 1.0,
b = 0.01 to 3.0,
c = 0.01 to 3.0,
d = 0 to 1.0,
x = the number of oxygens determined by the valence requirements of the other elements present and is greater than zero.

4,443,640

PROCESS FOR THE PREPARATION OF AN AROMATIC HYDROCARBON MIXTURE

Johannes van der Meijden, and Auke F. de Vries, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed May 7, 1982, Ser. No. 375,850

Claims priority, application Netherlands, May 20, 1981, 8102470

Int. Cl.³ C07C *2/52, 12/46*

U.S. Cl. 585—418 **10 Claims**

1. In a process for the preparation of an aromatic hydrocarbon mixture, which comprises contacting at a temperature in the range from about 300°–650° C., a pressure of from 1–50 bar, and a space velocity of from 0.1–10 $g.g^{-1}.h^{-1}$ a feed comprising one or more non-aromatic organic compounds with a crystalline metal silicate which, after one hour's calcination in air at 500° C., has the following properties:

(a) thermally stable up to a temperature of at least 600° C.,

(b) an X-ray powder diffraction pattern in which the strongest lines are the four lines listed in Table 1 of this specification;

the improvement comprising that said product shall have enhanced benzene content when in the formula which represents the composition of the silicate, expressed in moles of the oxides, and which, in addition to SiO_2, comprises both Fe_2O_3, and Al_2O_3, the SiO_2/Fe_2O_3 molar ratio is in the range of 100–300, and the SiO_2/Al_2O_3 molar ratio is in the range of 135–1900.

4,443,641

ATTRITION RESISTANT BISMUTH-CONTAINING METAL/OXYGEN COMPOSITIONS

Samuel J. Tremont, Manchester, Mo.; Robert A. Keppel, Seabrook, Tex.; Emerson H. Lee, and George D. Davis, both of Creve Coeur, Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 335,786, Dec. 30, 1981, Pat. No. 4,409,133. This application Apr. 25, 1983, Ser. No. 488,562

Int. Cl.³ C07C *2/72*

U.S. Cl. 585—428 **21 Claims**

1. A process for dehydrocoupling toluene which comprises:

(a) contacting the toluene in the vapor phase at a temperature from about 450° C. to about 650° C. with an attrition resistant bismuth-containing metal/oxygen composition comprising the infusion and reaction product of

(i) 35 to 80 mole percent of an alumina existing in a crystal form consisting of γ, δ, η, and χ crystal forms, and mixtures thereof, or that can be transformed by heat to such crystal forms, and characterized by

(a) a mean particle size from about 10 μm to about 200 μm, and

(b) a fractional porosity of at least 0.2,

(c) a surface area of at least 150 m^2/g, and

(d) a pore diameter such that at least 10 percent of the pores are less than 55 Å, and

(ii) 20 to 65 mole percent of at least one bismuth oxide, or compound convertible by heat to such bismuth oxide, having a maximum mean particle size of about 100 μm with the proviso that the alumina/bismuth oxide mean particle size ratio is at least 2, which metal oxide is susceptible of undergoing infusion and reaction with with the alumina upon being subjected to temperatures of at least 0.4 T_m for a time sufficient to cause infusion and reaction between the metal oxide and the alumina, wherein T_m is the melting point in °K. of the alumina which composition exhibits a surface area of less than 5 m^2/g, and

(b) recovering the toluene dehydrocoupled product.

4,443,642

ATTRITION RESISTANT METAL/OXYGEN COMPOSITIONS

Robert A. Keppel, Seabrook, Tex.; Samuel J. Tremont, Manchester, Mo.; Emerson H. Lee, and George D. Davis, both of Creve Coeur, Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 335,785, Dec. 30, 1981, Pat. No. 4,409,127. This application Apr. 23, 1983, Ser. No. 488,483

Int. Cl.³ C07C *2/72*

U.S. Cl. 585—428 **27 Claims**

1. A process for dehydrocoupling toluene which comprises:

(a) contacting the toluene in the vapor phase at a temperature from about 450° C. to about 650° C. with an attrition resistant metal/oxygen composition comprising the infusion and reaction product of

(i) 35 to 80 mole percent of an alumina existing in a crystal form selected from the group consisting of γ, δ, η, and χ crystal forms, and mixtures thereof, or that can be transformed by heat to such crystal forms, and characterized by

(a) a mean particle size from about 10 μm to about 200 μm,

(b) a fractional porosity of at least 0.2,

(c) a surface area of at least 150 m^2/g, and

(d) a pore diameter such that at least 10 percent of the pores are less than 55 Å, and

(ii) 20 to 65 mole percent of at least one metal oxide, or compound convertible by heat to such metal oxide, having a maximum mean particle size of about 100 μm with the proviso that the alumina/metal oxide mean particle size ratio is at least 2, which metal oxide is susceptible of undergoing infusion and reaction with with the alumina upon being subjected to temperatures of at least 0.4 T_m for a time sufficient to cause infusion and reaction between the metal oxide and the alumina, wherein T_m is the melting point in °K. of the alumina wherein the composition is represented by the empirical formula selected from the group consisting of $Pb_{10}Sb_3Bi_2O_x(Al_2O_3)_{7-28}$, $Bi_{15-30}K_{4-5}Zr_{1-2}O_x(Al_2O_3)_{16-29}$, $(PbO_x)_3(Al_2O_3)4$, $Pb_5BiO_x(Al_2O_3)18$, $Pb_{10}Sb_3Bi_2KO_x(Al_2O_3)19$, $Bi_{15}Ca_5ZrO_x(Al_2O_3)16$, $Bi_5Fe_5Ca_5BO_x(Al_2O_3)8$, and $Bi_2Fe_2Ca_2O_x(Al_2O_3)3$.

4,443,643

REACTION OF BENZENE WITH ETHYLENE OXIDE TO PRODUCE STYRENE

James M. Watson, and Cleve Forward, both of Big Spring, Tex., assignors to Cosden Technology, Inc., Dallas, Tex.

Filed May 23, 1983, Ser. No. 497,378

Int. Cl.³ C07C *1/20*

U.S. Cl. 585—437 **1 Claim**

1. A one step process for producing styrene comprising reacting ethylene oxide with benzene under conversion conditions in the presence of an an aluminosilicate, large pore, Type Y molecular sieve zeolite catalyst, wherein the conversion conditions comprise:

(a) a reactor inlet temperature from about 600° F. to about 825° F.;

(b) a reactor inlet pressure from about 50 psig to about 100 psig

(c) a liquid hourly space velocity from about 1 to about 15; and

(d) a molar ratio of benzene to ethylene oxide from about 1:1 to about 10:1.

4,443,644

METHANE CONVERSION

C. Andrew Jones, Newton Square; John J. Leonard, Springfield, and John A. Sofranko, West Chester, all of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 412,665, Aug. 20, 1982. This application Aug. 12, 1983, Ser. No. 522,876

Int. Cl.³ C07C *2/00*

U.S. Cl. 585—500 **22 Claims**

1. A method for converting methane to higher hydrocarbon products which comprises contacting a gas comprising methane and a reducible oxide of antimony at a temperature within the range of about 500° to 1000° C.

14. A method for synthesizing hydrocarbons from a methane source which comprises:

(a) contacting a gas comprising methane with a solid comprising a reducible oxide of antimony at a temperature within the range of about 500° to 1000° C. to form C_2+ hydrocarbons, coproduct water, and solids comprising a reduced oxide of antimony, said contacting being carried out in the substantial absence of catalytically effective Ni, Rh, Pd, Ag, Os, Ir, Pt, Au and compounds thereof

(b) recovering C_2+ hydrocarbons;

(c) at least periodically contacting the solids comprising a reduced oxide of antimony with an oxygen-containing gas to produce a solid comprising a reducible oxide of antimony; and

(d) contacting a gas comprising methane with the solids produced in step (c) as recited in step (a).

4,443,645

METHANE CONVERSION

C. Andrew Jones, Newtown Square; John J. Leonard, Springfield, and John A. Sofranko, West Chester, all of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 412,663, Aug. 30, 1982. This application Aug. 12, 1983, Ser. No. 522,905

Int. Cl.³ C07C *2/00*

U.S. Cl. 585—500 **22 Claims**

1. A method for converting methane to higher hydrocarbon products which comprises contacting a gas comprising methane and a reducible oxide of germanium at a temperature within the range of about 500° to 800° C.

14. A method for synthesizing hydrocarbons from a methane source which comprises:

(a) contacting a gas comprising methane with a solid comprising a reducible oxide of germanium at a temperature within the range of about 500° C. to 800° C. to form C_2+ hydrocarbons, coproduct water, and solids comprising a reduced oxide of germanium;

(b) recovering C_2+ hydrocarbons;

(c) at least periodically contacting the solids comprising a reduced oxide of germanium with an oxygen containing gas to produce a solid comprising a reducible oxide of germanium; and

(d) contacting a gas comprising methane with the solids product in step (c) as recited in step (a).

4,443,646

METHANE CONVERSION

C. Andrew Jones, Newtown Square; John J. Leonard, Springfield, and John A. Sofranko, West Chester, all of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 412,666, Aug. 30, 1982. This application Aug. 12, 1983, Ser. No. 522,906

Int. Cl.³ C07C *2/00*

U.S. Cl. 585—500 **22 Claims**

1. A method for converting methane to higher hydrocarbon products which comprises contacting a gas comprising methane and a reducible oxide of bismuth at a temperature within the range of about 500° to 850° C.

14. A method for synthesizing hydrocarbons from a methane source which comprises:

(a) contacting a gas comprising methane with a solid comprising a reducible oxide of bismuth at a temperature within the range of about 500° to 850° C. to form C_2+ hydrocarbons, coproduct water, and solids comprising a reduced oxide of bismuth, said contacting being carried out in the substantial absence of catalytically effective Ni, Rh, Pd, Ag, Os, Ir, Pt, Au and compounds thereof.

(b) recovering C_2+ hydrocarbons,

(c) at least periodically contacting the solids comprising a reduced oxide of bismuth with an oxygen containing gas to produce a solid comprising a reducible oxide of bismuth; and

(d) contacting a gas comprising methane with the solids produced in step (c) as recited in step (a).

4,443,647

METHANE CONVERSION

C. Andrew Jones, Newtown Square; John J. Leonard, Springfield, and John A. Sofranko, West Chester, all of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 412,664, Aug. 30, 1982. This application Aug. 12, 1983, Ser. No. 522,877

Int. Cl.^{3} C07C *2/00*

U.S. Cl. 585—500 **22 Claims**

1. A method for converting methane to higher hydrocarbon products which comprises contacting a gas comprising methane and a reducible oxide of lead at a temperature within the range of about 500° to 1000° C.

14. A method for synthesizing hydrocarbons from a methane source which comprises:

(a) contacting a gas comprising methane with a solid comprising a reducible oxide of lead at a temperature within the range of about 500° to 1000° C. to form C_2+ hydrocarbons, coproduct water, and solids comprising a reduced oxide of lead; said contacting being carried out in the substantial absence of catalytically effective Ni, Rh, Pd, Ag, Os, Ir, Pt and Au and compounds thereof.

(b) recovering C_2+ hydrocarbons;

(c) at least periodically contacting the solids comprising a reduced oxide of lead with an oxygen-containing gas to produce a solid comprising a reducible oxide of lead; and

(d) contacting a gas comprising methane with the solids produced in step (c) as recited in step (a).

4,443,648

METHANE CONVERSION

C. Andrew Jones, Newtown Square; John J. Leonard, Springfield, and John A. Sofranko, West Chester, all of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 412,662, Aug. 30, 1982. This application Aug. 12, 1983, Ser. No. 522,942

Int. Cl.^{3} C07C *2/00*

U.S. Cl. 585—500 **22 Claims**

1. A method for converting methane to higher hydrocarbon products which comprises contacting a gas comprising methane and a reducible oxide of indium at a temperature within the range of about 500° to 850° C., said contacting being carried out in the substantial absence of catalytically effective Ni, Rh, Pd, As, Os, Ir, Pt, Au and compounds thereof.

14. A method for synthesizing hydrocarbons from a methane source which comprises:

(a) contacting a gas comprising methane with a solid comprising a reducible oxide of indium at a temperature within the range of about 500° to 850° C. to form C_2+ hydrocarbons, coproduct water, and solids comprising a reduced oxide of indium;

(b) recovering C_2+ hydrocarbons;

(c) at least periodically contacting the solids comprising a reduced oxide of indium with an oxygen containing gas to produce a solid comprising a reducible oxide of indium; and

(d) contacting a gas comprising methane with the solids produced in step (c) as recited in step (a).

4,443,649

METHANE CONVERSION

C. Andrew Jones, Newtown Square; John J. Leonard, Springfield, and John A. Sofranko, West Chester, all of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 412,667, Aug. 30, 1982. This application Aug. 12, 1983, Ser. No. 522,925

Int. Cl.^{3} C07C *2/00*

U.S. Cl. 585—500 **23 Claims**

1. A method for converting methane to higher hydrocarbon products which comprises contacting a gas comprising methane and a reducible oxide of manganese at a temperature within the range of about 500° to 1000° C., said contacting being carried out in the substantial absence of catalytically effective Ni, Rh, Pd, Ag, Os, Ir, Pt, Au and compounds thereof.

14. A method for synthesizing hydrocarbons from a methane source which comprises:

(a) contacting a gas comprising methane with a solid comprising a reducible oxide of manganese at a temperature within the range of about 500° to 1000° C. to form C_2+ hydrocarbons, coproduct water, and solids comprising a reduced oxide of manganese, said contacting being carried out in the substantial absence of catalytically effective Ni, Rh, Pd, Ag, Os, Ir, Pt, Au and compounds thereof;

(b) recovering C_2+ hydrocarbons;

(c) at least periodically contacting the solids comprising the reduced oxide of manganese with oxygen containing gas to produce a solid comprising a reducible oxide of manganese; and

(d) contacting a gas comprising methane with the solids produced in step (c) as recited in step (a).

ELECTRICAL

4,443,650

THERMOELECTRIC CONVERTER ELEMENT

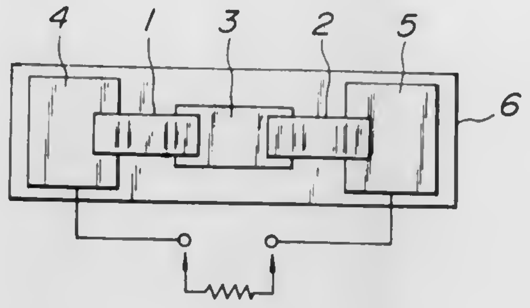
Toshinori Takagi, Nagaokakyo, and Kakuei Matsubara, Hirakata, both of Japan, assignors to Kyoto University, Kyoto, Japan

Filed Apr. 16, 1982, Ser. No. 369,116

Claims priority, application Japan, Apr. 17, 1981, 56-56993

Int. Cl.^{3} H01L *35/28*

U.S. Cl. 136—211 **20 Claims**



1. A thermoelectric converter element, comprising at least one film made of a semiconductor produced by a film forming technique based on ions and capable of thermoelectric conversion, said semiconductor having a crystal structure such that a crystallographic axis thereof is substantially aligned with a preferred orientation which is substantially perpendicular to the direction of flow of an electric current produced by the thermoelectric conversion therein.

4,443,651

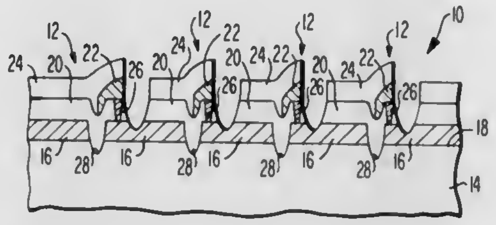
SERIES CONNECTED SOLAR CELLS ON A SINGLE SUBSTRATE

George A. Swartz, North Brunswick, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 249,729, Mar. 31, 1981, abandoned. This application Dec. 16, 1982, Ser. No. 450,223

Int. Cl.^{3} H01L *31/06, 31/18*

U.S. Cl. 136—249 **9 Claims**



1. A solar cell array comprising a plurality of adjacent, series connected solar cells on a single insulating substrate comprising

(a) a plurality of spaced lower electrodes on a surface of the substrate;

(b) a semiconductor layer comprising amorphous silicon over said lower electrodes and the surface of the substrate between the first electrodes;

(c) a plurality of spaced upper electrodes on the upper surface of said semiconductor layer with each upper electrode overlying one of the lower electrodes to form a solar cell, and

(d) interelectrode connection means electrically connecting the upper electrode of one solar cell to the lower electrode of the next adjacent solar cell comprising a metal stripe contacting the upper electrode and including a portion spiked completely through the semiconductor layer and contacting the lower electrode of the adjacent cell.

4,443,652

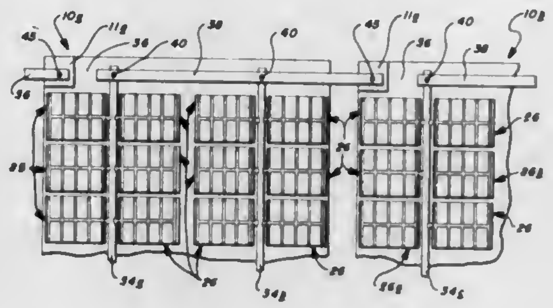
ELECTRICALLY INTERCONNECTED LARGE AREA PHOTOVOLTAIC CELLS AND METHOD OF PRODUCING SAID CELLS

Masatsugu Izu, Southfield; Prem Nath, Rochester, and Arthur Holland, Washington, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Nov. 9, 1982, Ser. No. 440,385

Int. Cl.^{3} H01L *31/04, 31/18*

U.S. Cl. 136—251 **48 Claims**



1. In a large area photovoltatic cell which comprises a plurality of electrically isolated small area segments sharing a common electrically-conductive substrate upon which a plurality of continuous semiconductor layers are deposited, each small area segment defined by a discrete portion of a transparent conductive coating atop the semiconductor layers, whereby each small area segment is electrically isolated from other small area segments; and a plurality of spaced, electrically-conductive busbars disposed atop and electrically connected to the plurality of small area segments; the improvement comprising, in combination;

each of the busbars terminating on the same portion of the surface of the large area cell;

an electrically insulating layer between the busbars and the surface therebeneath to prevent short circuiting;

an electrically-insulating layer between the busbars and the busbar terminating portion of the large area cell to prevent short circuiting;

first connecting means for electrically interconnecting each of the plurality of spaced busbars; and

at least one means for providing electrical access to the common substrate from the layered surface of the large area cell, whereby the first connecting means provides a first electrode of the large area photovoltaic cell and the access means provides a second electrode of the large area photovoltaic cell.

4,443,653

THIN FILM PHOTOVOLTAIC DEVICE WITH MULTILAYER SUBSTRATE

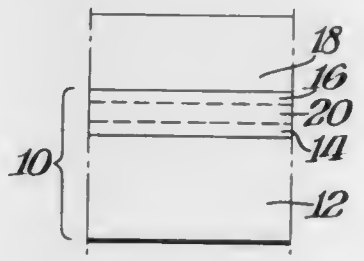
Anthony W. Catalano, Rushland, Pa., and Manjul Bhushan, Wilmington, Del., assignors to The University of Delaware, Newark, Del.

Continuation-in-part of Ser. No. 200,447, Oct. 24, 1980, Pat. No. 4,342,879. This application Feb. 23, 1982, Ser. No. 351,472

The portion of the term of this patent subsequent to Aug. 3, 1999, has been disclaimed.

Int. Cl.^{3} H01L *31/06, 31/18*

U.S. Cl. 136—265 **26 Claims**



1. In a thin film photovoltaic device having an ohmic back

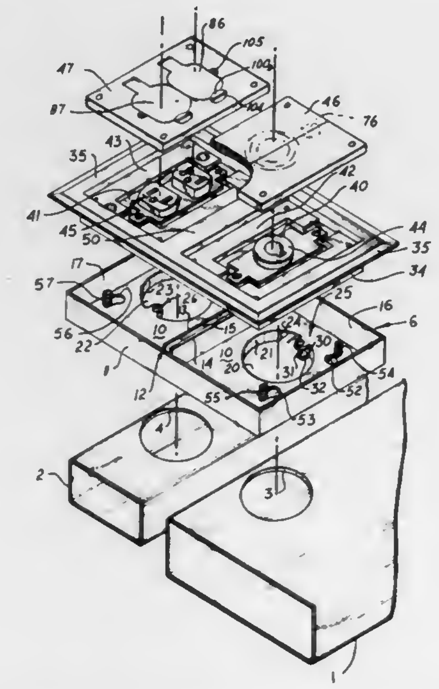
contact and a transparent electrical contact with at least one semiconductor layer therebetween of a material of the type formed by high temperature growth, the improvement being said ohmic back contact comprises a multilayer substrate capable of withstanding the high temperature for forming said semiconductor layer, said semiconductor layer which is adjacent said substrate being made of a material from the class of isostructural compounds comprised of elements selected from Groups IIB and VA of the Periodic Table, said substrate layers including (a) a lowermost support layer remote from said semiconductor layer on which all of the other layers of said device are formed, (b) an uppermost carbon diffusion barrier layer adjacent said semiconductor layer, (c) a metal layer of high conductivity below said diffusion barrier layer and having an expansion coefficient equal to or slightly greater than the expansion coefficient of said semiconductor layer, and (d) an intermediate metal carbide layer between said diffusion barrier layer and said metal layer.

4. In the device of claim **1** wherein said semiconductor is zinc phosphide.

4,443,654
FLUSH FLOOR FITTING

Charles T. Flachbarth, Parkersburg; Richard D. Benscoter, Vienna, and James E. Sheridan, Williamstown, all of W. Va., assignors to Butler Manufacturing Company, Kansas City, Mo.

Filed Oct. 19, 1981, Ser. No. 312,649
Int. Cl.^{3} H02G *3/14*
U.S. Cl. 174—48 **7 Claims**



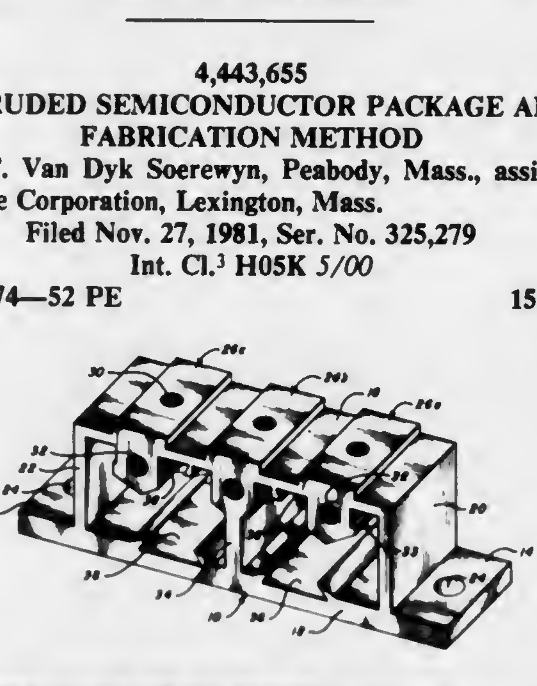
1. In a floor having an electrical distribution system underneath the surface of the floor, the system including substantially flat mechanism formed with a pair of adjacent access holes respectively providing access to the electrical distribution system, a floor service fitting comprising:

- an attaching ring including a bottom wall engaging and supported on said flat mechanism, side walls disposed on the periphery of the bottom wall and extending upwardly therefrom and an intermediate wall extending between a pair of opposite side walls, the side walls and the intermediate wall forming a pair of compartments;
- a pair of screws respectively rotatably mounted on said tabs;
- a pair of locking clamps respectively threaded on said screws and respectively extending through the open sections of said circular walls and engaging the underside of said mechanism and locking the attaching ring to the mechanism;
- in each compartment, a pair of key-hole slots formed in the bottom wall of the compartment;
- in each key-hole slot, an adjusting screw having a threaded body extending upwardly away from the slot respectively into said compartments and having a thin head disposed between the top of said mechanism and said bottom wall;
- an adjustable plate disposed over said attaching ring and having a substantially flat, peripheral flange for extending over floor covering used on said floor;
- first and second outlet openings formed in said adjustable plate respectively in communication with said compartments;
- first and second shoulders formed in said adjustable plate respectively surrounding said first and second outlet openings;
- a first pair of adjusting cavity sections formed on said first shoulder and extending downwardly therefrom into one of said compartments, the lower ends of the cavity section being threaded and respectively receiving a pair of said adjusting screws;
- a second pair of adjusting cavity sections formed on said second shoulder and extending downwardly therefrom into the other of said compartments, the lower ends of the second cavity sections being threaded and respectively receiving the other pair of said adjusting screws;
- said adjusting cavities each providing an opening for a tool to be inserted therein to engage the adjusting screw in the cavity and turn the adjusting screw, the turning of the adjusting screws raising or lowering said adjusting plate for positioning said flange with respect to the surface of the floor;
- at least one receptacle means mounted on one of said shoulders and extending through the outlet opening thereof; and
- a pair of substantially flat access plates respectively mounted on said first and second shoulders and covering the shoulders and extending over the first and second outlet openings and over said one receptacle means.

4,443,655
EXTRUDED SEMICONDUCTOR PACKAGE AND FABRICATION METHOD

Herman F. Van Dyk Soerewyn, Peabody, Mass., assignor to Unitrode Corporation, Lexington, Mass.

Filed Nov. 27, 1981, Ser. No. 325,279
Int. Cl.^{3} H05K *5/00*
U.S. Cl. 174—52 PE **15 Claims**

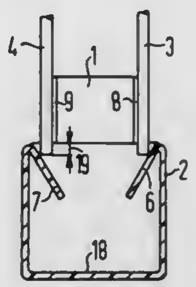


- the top wall having intermediate sections adjacent each terminal stud integrally joining the terminal studs and member;
- a plurality of retaining elements integral with the top wall, each adjacent a respective terminal stud; and
- a plurality of retaining elements integral with the bottom plate, each in alignment with a respective element in the top wall;
- the intermediate sections of the top wall being operative to retain the terminal studs in position during component assembly and encapsulation, and which are removable after encapsulation to electrically separate the terminal studs from each other.

4,443,656
ELECTRICAL COMPONENT MEMBER WHICH IS MOUNTED IN A HOUSING CENTERED AND ADJUSTED

Heinrich Linse, Lappersdorf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 12, 1982, Ser. No. 357,657
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1981, 3112906
Int. Cl.^{3} H05K *7/12*
U.S. Cl. 174—52 PE **5 Claims**



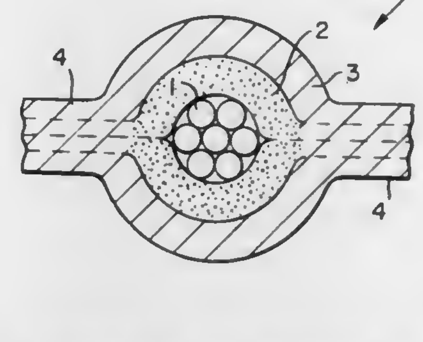
1. Electrical component comprising an electrical component member mounted centered and adjusted in a cup-shaped housing having a rectangular cross section, the housing having an opening through which lead wires from the electrical component member protrude in the same direction, and hardened sealing compound securing the electrical component member in the cup-shaped housing, the cup-shaped housing of rectangular cross section having, at least on two opposite sides thereof, integrally formed tabs consisting of the same material as that of the cup-shaped housing, said tabs being bent into the interior of the cup-shaped housing and resiliently clamping the electrical component member in said housing, said tabs being encased in the hardened sealing compound and serving as centering and adjusting means for said electrical component member.

4,443,657
RIBBON CABLE WITH A TWO-LAYER INSULATION

Ronald A. Hill, Harthausen; Ralf Tillmanns, Schoenau, and Bernd Sieberling, Gruenwold, all of Fed. Rep. of Germany, assignors to W. L. Gore & Associates, Inc., Newark, Del.

Continuation-in-part of Ser. No. 266,721, May 26, 1981, abandoned. This application Sep. 21, 1982, Ser. No. 420,876
Claims priority, application Fed. Rep. of Germany, May 30, 1980, 3020622
Int. Cl.^{3} H01B *7/08*
U.S. Cl. 174—110 FC **[illegible]**

of said inner layers, said outer layer being formed of impermeable sintered polytetrafluoroethylene; and

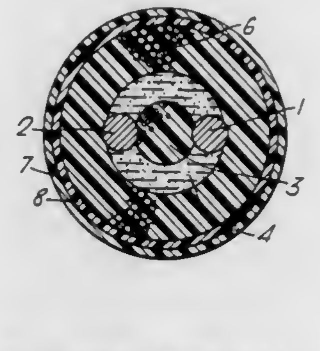


- a plurality of webs each connecting an outer layer to an adjacent outer layer, each of said webs being formed of impermeable sintered polytetrafluoroethylene.

4,443,658
REMOTE CONTROL CABLE FOR TRANSMITTING ELECTRICAL SIGNALS AND PROCESS AND APPARATUS FOR PRODUCTION THEREOF

Pierre Seguin, Chavanoz, France

Filed Jul. 12, 1982, Ser. No. 397,245
Int. Cl.^{3} H01B *7/04*
U.S. Cl. 174—113 C **14 Claims**



1. A remote control cable suitable for controlling bodies moving at high speed comprising, in combination:
- (a) a central element consisting of a textile element;
- (b) two conducting wires in contact with the central element over their entire length and separated by the central element to maintain the conductors spaced apart a predetermined distance parallel to one another, the diameter of the central element being slightly greater than the predetermined distance between the wires;
- (c) a thermofusible material coating the textile element and the two conducting wires;
- (d) a bundle of reinforcing filaments surrounding the central element and conducting wires and extending parallel thereto; and
- (e) at least one layer of braiding covering the central element, the conducting wires, the coating and the reinforcing filaments.

4,443,659
GLAZE TO PIN CONNECTION FOR AN ELECTRICAL INSULATOR WITH EMBEDDED METAL FITTING

William A. Tatem, Avon, N.Y., assignor to Interpace Corporation, Parsippany, N.J.

Continuation-in-part of Ser. No. 234,881, Feb. 17, 1981,

contact and a transparent electrical contact with at least one semiconductor layer therebetween of a material of the type formed by high temperature growth, the improvement being said ohmic back contact comprises a multilayer substrate capable of withstanding the high temperature for forming said semiconductor layer, said semiconductor layer which is adjacent said substrate being made of a material from the class of isostructural compounds comprised of elements selected from Groups IIB and VA of the Periodic Table, said substrate layers including (a) a lowermost support layer remote from said semiconductor layer on which all of the other layers of said device are formed, (b) an uppermost carbon diffusion barrier layer adjacent said semiconductor layer, (c) a metal layer of high conductivity below said diffusion barrier layer and having an expansion coefficient equal to or slightly greater than the expansion coefficient of said semiconductor layer, and (d) an intermediate metal carbide layer between said diffusion barrier layer and said metal layer.

4. In the device of claim **1** wherein said semiconductor is zinc phosphide.

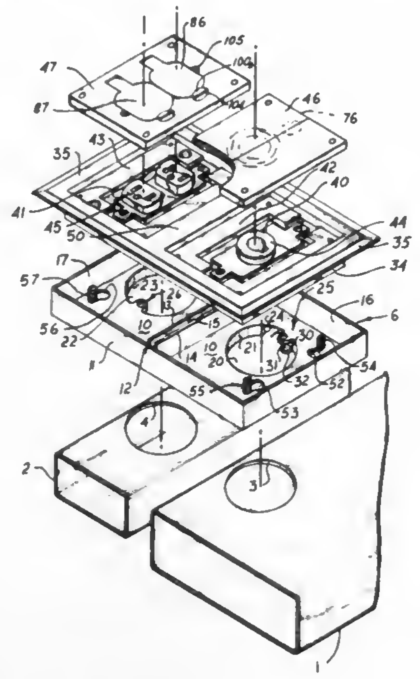
4,443,654
FLUSH FLOOR FITTING

Charles T. Flachbarth, Parkersburg; Richard D. Benscoter, Vienna, and James E. Sheridan, Williamstown, all of W. Va., assignors to Butler Manufacturing Company, Kansas City, Mo.

Filed Oct. 19, 1981, Ser. No. 312,649

Int. Cl.³ H02G *3/14*

U.S. Cl. 174—48 **7 Claims**



1. In a floor having an electrical distribution system underneath the surface of the floor, the system including substantially flat mechanism formed with a pair of adjacent access holes respectively providing access to the electrical distribution system, a floor service fitting comprising:

an attaching ring including a bottom wall engaging and supported on said flat mechanism, side walls disposed on the periphery of the bottom wall and extending upwardly therefrom and an intermediate wall extending between a pair of opposite side walls, the side walls and the intermediate wall forming a pair of compartments;

in each said compartment, an aperture formed by a circular wall on the bottom wall of the compartment and extending downwardly therefrom and through an access hole in said mechanism and the circular wall having an open section disposed below the top of said mechanism;

in each said compartment, a tab formed on the bottom wall of the compartment in a position adjacent to the open section of the circular wall, the tab extending into the aperture;

a pair of screws respectively rotatably mounted on said tabs;

a pair of locking clamps respectively threaded on said screws and respectively extending through the open sections of said circular walls and engaging the underside of said mechanism and locking the attaching ring to the mechanism;

in each compartment, a pair of key-hole slots formed in the bottom wall of the compartment;

in each key-hole slot, an adjusting screw having a threaded body extending upwardly away from the slot respectively into said compartments and having a thin head disposed between the top of said mechanism and said bottom wall;

an adjustable plate disposed over said attaching ring and having a substantially flat, peripheral flange for extending over floor covering used on said floor;

first and second outlet openings formed in said adjustable plate respectively in communication with said compartments;

first and second shoulders formed in said adjustable plate respectively surrounding said first and second outlet openings;

a first pair of adjusting cavity sections formed on said first shoulder and extending downwardly therefrom into one of said compartments, the lower ends of the cavity section being threaded and respectively receiving a pair of said adjusting screws;

a second pair of adjusting cavity sections formed on said second shoulder and extending downwardly therefrom into the other of said compartments, the lower ends of the second cavity sections being threaded and respectively receiving the other pair of said adjusting screws;

said adjusting cavities each providing an opening for a tool to be inserted therein to engage the adjusting screw in the cavity and turn the adjusting screw, the turning of the adjusting screws raising or lowering said adjusting plate for positioning said flange with respect to the surface of the floor;

at least one receptacle means mounted on one of said shoulders and extending through the outlet opening thereof; and

a pair of substantially flat access plates respectively mounted on said first and second shoulders and covering the shoulders and extending over the first and second outlet openings and over said one receptacle means.

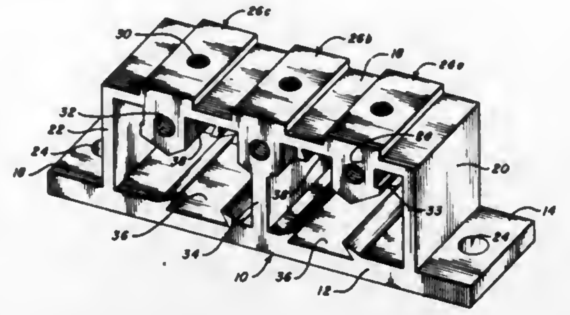
4,443,655
EXTRUDED SEMICONDUCTOR PACKAGE AND FABRICATION METHOD

Herman F. Van Dyk Soerewyn, Peabody, Mass., assignor to Unitrode Corporation, Lexington, Mass.

Filed Nov. 27, 1981, Ser. No. 325,279

Int. Cl.³ H05K *5/00*

U.S. Cl. 174—52 PE **15 Claims**



13. For use in fabricating a high power semiconductor package, a conductive housing comprising:

a unitary extruded electrically conductive member having a bottom plate, a top wall, and first and second side walls defining an interior;

at least two terminal studs each having an upper portion integral with the top wall, and a lower portion within the interior in spaced relation to the bottom plate;

the top wall having intermediate sections adjacent each terminal stud integrally joining the terminal studs and member;

a plurality of retaining elements integral with the top wall, each adjacent a respective terminal stud; and

a plurality of retaining elements integral with the bottom plate, each in alignment with a respective element in the top wall;

the intermediate sections of the top wall being operative to retain the terminal studs in position during component assembly and encapsulation, and which are removable after encapsulation to electrically separate the terminal studs from each other.

4,443,656
ELECTRICAL COMPONENT MEMBER WHICH IS MOUNTED IN A HOUSING CENTERED AND ADJUSTED

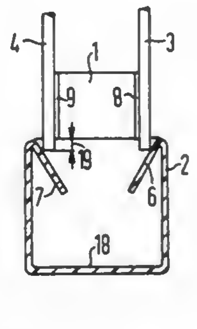
Heinrich Linse, Lappersdorf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 12, 1982, Ser. No. 357,657

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1981, 3112906

Int. Cl.³ H05K *7/12*

U.S. Cl. 174—52 PE **5 Claims**



1. Electrical component comprising an electrical component member mounted centered and adjusted in a cup-shaped housing having a rectangular cross section, the housing having an opening through which lead wires from the electrical component member protrude in the same direction, and hardened sealing compound securing the electrical component member in the cup-shaped housing, the cup-shaped housing of rectangular cross section having, at least on two opposite sides thereof, integrally formed tabs consisting of the same material as that of the cup-shaped housing, said tabs being bent into the interior of the cup-shaped housing and resiliently clamping the electrical component member in said housing, said tabs being encased in the hardened sealing compound and serving as centering and adjusting means for said electrical component member.

4,443,657
RIBBON CABLE WITH A TWO-LAYER INSULATION

Ronald A. Hill, Harthausen; Ralf Tillmanns, Schoenau, and Bernd Sieberling, Gruenwold, all of Fed. Rep. of Germany, assignors to W. L. Gore & Associates, Inc., Newark, Del.

Continuation-in-part of Ser. No. 266,721, May 26, 1981, abandoned. This application Sep. 21, 1982, Ser. No. 420,876

Claims priority, application Fed. Rep. of Germany, May 30, 1980, 3020622

Int. Cl.³ H01B *7/08*

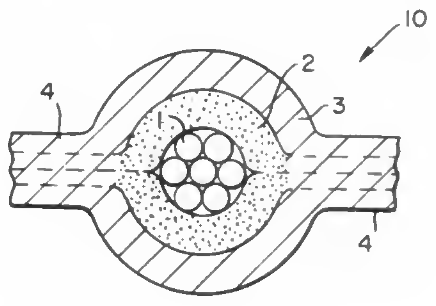
U.S. Cl. 174—110 FC **12 Claims**

1. A multiconductor ribbon cable for transmitting electromagnetic signals comprising:

a plurality of conductors spaced apart in a planar relationship;

a plurality of inner layers each surrounding one of said conductors, said inner layers being formed of porous, substantially unsintered polytetrafluoroethylene;

a plurality of outer layers each substantially surrounding one of said inner layers, said outer layer being formed of impermeable sintered polytetrafluoroethylene; and



a plurality of webs each connecting an outer layer to an adjacent outer layer, each of said webs being formed of impermeable sintered polytetrafluoroethylene.

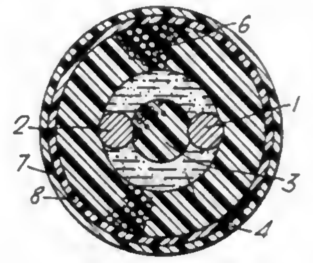
4,443,658
REMOTE CONTROL CABLE FOR TRANSMITTING ELECTRICAL SIGNALS AND PROCESS AND APPARATUS FOR PRODUCTION THEREOF

Pierre Seguin, Chavanoz, France

Filed Jul. 12, 1982, Ser. No. 397,245

Int. Cl.³ H01B *7/04*

U.S. Cl. 174—113 C **14 Claims**



1. A remote control cable suitable for controlling bodies moving at high speed comprising, in combination:

(a) a central element consisting of a textile element;

(b) two conducting wires in contact with the central element over their entire length and separated by the central element to maintain the conductors spaced apart a predetermined distance parallel to one another, the diameter of the central element being slightly greater than the predetermined distance between the wires;

(c) a thermofusible material coating the textile element and the two conducting wires;

(d) a bundle of reinforcing filaments surrounding the central element and conducting wires and extending parallel thereto; and

(e) at least one layer of braiding covering the central element, the conducting wires, the coating and the reinforcing filaments.

4,443,659
GLAZE TO PIN CONNECTION FOR AN ELECTRICAL INSULATOR WITH EMBEDDED METAL FITTING

William A. Tatem, Avon, N.Y., assignor to Interpace Corporation, Parsippany, N.J.

Continuation-in-part of Ser. No. 234,881, Feb. 17, 1981, abandoned. This application Aug. 2, 1982, Ser. No. 404,620

Int. Cl.³ H01B *17/42, 17/50, 17/08*

U.S. Cl. 174—140 C **5 Claims**

1. In an electrical insulator comprising in combination:

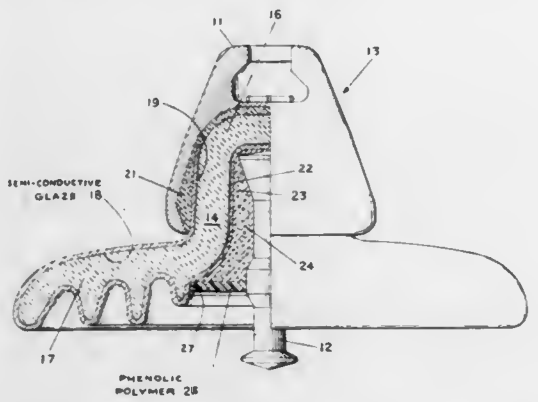
a suitably contoured porcelain shell with a semiconductive glaze;

a metal cap and a metal pin each situated at a surface of the insulator shell opposite to the other, the insulator shell forming a pin recess receiving the pin;

capping means securing mechanically the cap to the shell; and

Portland cement in the recess and about the pin securing mechanically to the shell the pin embedded in the recess;

the improvement comprising a phenolic polymer composition



having long term weather resistance and being connected between the pin and the glaze and substantially sealing the Portland cement from contact with moisture in the air, the phenolic polymer composition having a nonionic electrical conductivity substantially greater than the conductivity of the Portland cement.

4,443,660

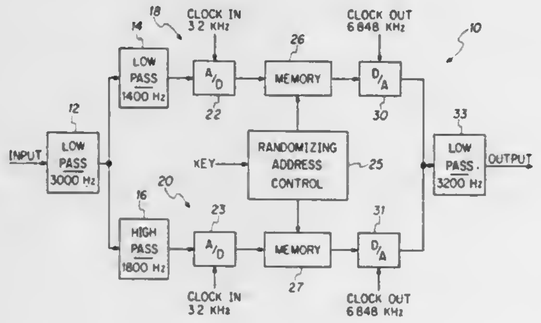
SYSTEM AND METHOD FOR ENCRYPTING A VOICE SIGNAL

Vincent R. DeLong, Marion, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 118,360, Feb. 4, 1980. This application Feb. 10, 1982, Ser. No. 347,598

Int. Cl.^{3} H04K *1/06*

U.S. Cl. 178—22.04 **18 Claims**



16. A system for encrypting an analog input signal, comprising:

means for filtering said input signal to provide a signal in a first path, having frequency components in a higher frequency band, and a signal in a second path having frequency components in a lower frequency band;

means for deriving digital samples from the signal in the first path at a first rate and from the signal in the second path at the same rate, and for inverting the frequency composition in said first path so that frequency components which were at higher frequencies before inversion are at lower frequencies after inversion and components which were at lower frequencies are at higher frequencies, and for shifting the higher band frequency components in said first path to lie in said lower band; and

means for intermixing segments of the samples from said first and second paths and converting to analog form at a rate greater than twice said first rate to provide a sequence of rearranged, randomized time segments of signals from said first and second paths, including means for interspersing said segments with gaps.

4,443,661

METHOD OF DETECTING TROUBLES IN A RECEIVER FOR A COMMON CONTROL CHANNEL OF A MOBILE RADIO TELEPHONE COMMUNICATION SYSTEM AND A SYSTEM THEREFOR

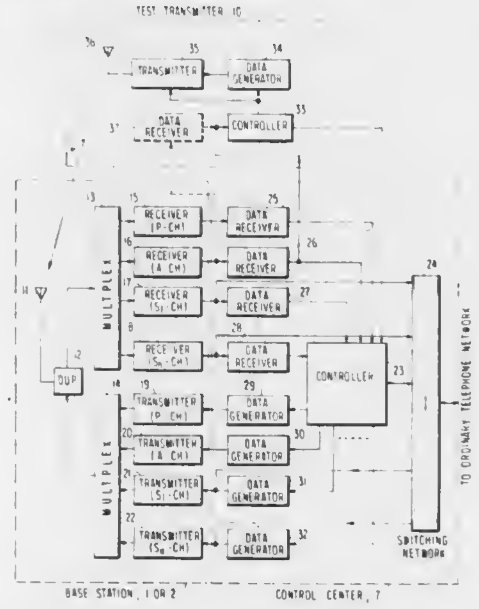
Hiroshi Kubo, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 21, 1981, Ser. No. 313,406

Claims priority, application Japan, Oct. 31, 1980, 55-153436

Int. Cl.^{3} H04Q *7/04;* H04B *17/00*

U.S. Cl. 179—2 EB **8 Claims**



1. In a mobile radio telephone system of the type having mobile stations; base stations, each base station having a plurality of speech channel transmitter/receivers to transmit and receive signals through a speech channel and an access channel transmitter/receiver to control calls from said mobile stations through an access channel; and a central station for connecting said mobile stations and a telephone exchange network or said mobile station with each other by way of said base stations, the improvement comprising:

means for detecting from the output of said access channel receiver a calling signal from said mobile station and a test calling signal and providing a detection output in response to said calling signal and said test calling signal; and

control means connected to the output of said detecting means for transmitting said test calling signal to the last-mentioned access channel receiver if the detection output of said detecting means is not received within a first predetermined interval of time and, for generating a trouble signal if said detection output is not received within a second predetermined interval of time, after the transmission of said test calling signal, said second predetermined interval of time being shorter than said first predetermined interval of time.

4,443,662

FILTERS COMPRISING REACTIVE COMPONENTS, AND A METHOD OF DETERMINING IMPEDANCES THEREOF

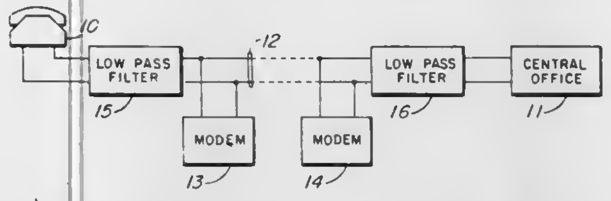
Michael S. Nakhla, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Continuation-in-part of Ser. No. 252,925, Apr. 10, 1981, abandoned. This application Dec. 23, 1981, Ser. No. 333,665

Int. Cl.^{3} H04M *11/00;* H03H *5/00*

U.S. Cl. 179—2 C **9 Claims**

7. In combination, a low pass filter having an input port and an output port, telephone equipment of nominal impedance Z1 coupled to the input port of the filter, and a telephone subscriber line of nominal impedance Z2 coupled to the output port of the filter, wherein the filter comprises reactive components which define a pass band for voice frequency signals and a stop band for higher frequencies, and wherein the impedances of said reactive components are selected to minimize the sum $|Zin\text{-}Z2| + |Zout\text{-}Z1|$ in said pass band, where Zin and Zout are respectively the input and output impedances of the filter, whereby the attenuation of the filter throughout said pass band is substantially constant regardless of the actual impedance of the telephone subscriber line.



4,443,663

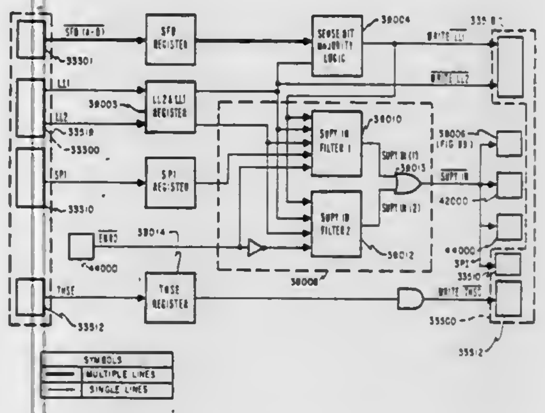
FILTERING OF PORT DATA IN A SWITCHING SYSTEM EMPLOYING INTERACTIVE PROCESSORS

Thomas E. Ellis, Altamonte Springs; Pedro A. Lenk, Fern Park, and Jayantkumar R. Shah, Longwood, all of Fla., assignors to Stromberg-Carlson Corporation, Lake Mary, Fla.

Continuation of Ser. No. 231,181, Feb. 3, 1981, abandoned, which is a continuation of Ser. No. 72,492, Sep. 4, 1979, abandoned, which is a continuation of Ser. No. 924,881, Jul. 14, 1978, abandoned, which is a continuation-in-part of Ser. No. 864,401, Dec. 27, 1977, abandoned. This application Apr. 29, 1982, Ser. No. 373,315

Int. Cl.^{3} H04Q *3/54*

U.S. Cl. 179—18 ES **14 Claims**



8. A control system for a telephone switching system that includes a plurality of ports each of which receives and transmits voice signals and supervisory signals on a telephone line, said control system comprising:

- A. storage means for storing supervisory information in the form of a plurality of signals representing successive time samples of the supervisory signals;
- B. signal transfer means for transferring supervisory signals between the ports and said storage means; and
- C. port event processing means connected to said storage means for controlling the operation of each said port in response to the information stored in said storage means, said port event processing means including:
  - i. timing means for retrieving, in a predetermined sequence, stored supervisory information for each port from said storage means;
  - ii. filter means connected to said storage means and said timing means for generating a filtered supervisory signal in response to the stored supervisory information, including logic means for receiving a group of successive time sample signals in parallel thereby to produce a filtered supervisory signal that reflects the state of the majority of the received sample signals;
  - iii. control means connected to said timing means and said filter means for using the filtered supervisory signal to control the operation of the port, and
  - iv. means connected to said filter means for transferring updated supervisory information to said storage means.

4,443,664

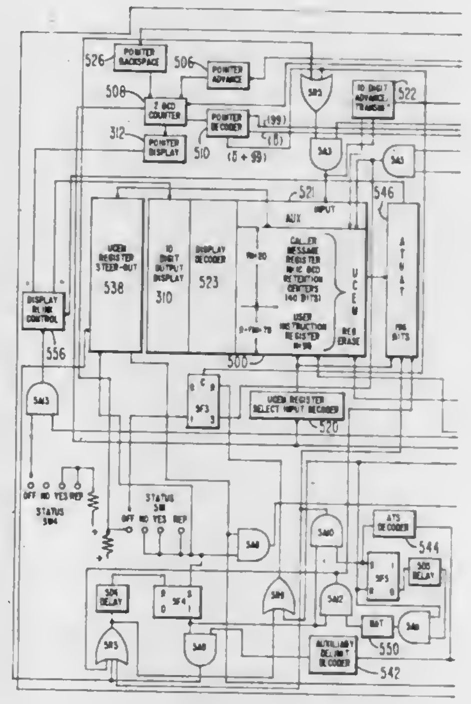
TELEPHONE STATION INCORPORATING EXCHANGE MESSAGE SYSTEM

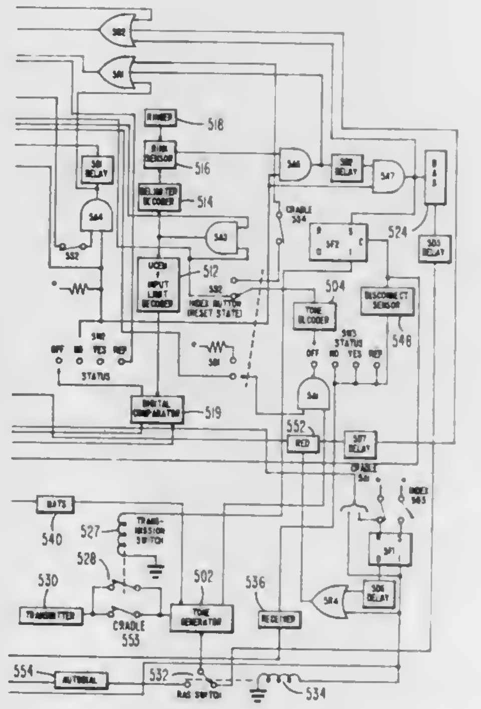
Robert A. Gange, Belle Mead, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 2, 1982, Ser. No. 394,821

Int. Cl.^{3} H04M *15/06*

U.S. Cl. 179—5.5 **11 Claims**





1. A telephone station adapted to be connected to a telephone network, said station comprising:

manually-activated switch means including a dial;

a cradle switch;

digital storage means including a plurality of registers;

means for selectively allotting an individual one of said registers;

a pointer display coupled to said selectively-allotting means for indicating said allotted one of said digital registers;

an output display coupled to said digital storage means for indicating the digital value stored in said allotted one of said digital registers; and

logic means coupled to said manually-activated switch means, said cradle switch, said digital storage means, and said selectively-allotting means for:

(1) operating said selectively-allotting means under the con-

trol of said manually-activated switch means to selectively-allot any single one of said digital registers;

(2) placing said telephone station in an unattended status mode in accordance with an operation of said manually-activated switch means so that said station can answer incoming calls received from said telephone network with said cradle switch on-hook;

(3) operating said selectively-allotting means when said station is in said unattended status mode in response to an incoming call to said station in which a digital message from a caller is received to selectively-allot a digital register to that call; and

(4) forwarding each of said received digital messsages when said station is in an unattended status mode to the digital register allotted to that call for storage therein; wherein:

said digital storage means includes an auxiliary register;

said logic means includes means responsive to the receipt of any digital message received from a caller through said telephone network for forwarding said digital message to said auxiliary register for storage therein, and means enabled thereafter only in response to said cradle switch being on-hook for transferring the content of said auxiliary register to the digital register allotted to that call for storage therein;

said manually-activated switch means includes a switch for coupling said output display to said allotted one of said digital registers in a normal switch position thereof and coupling said output display to said auxiliary register in an operated switch position thereof;

said logic means includes means responsive to the receipt of an incoming call when said station is in an unattended status mode for transmitting to said caller through said telephone network a distinctive tone indicative of the fact that said station is unattended, whereby said caller is informed that he may send a digital message through said telephone network to said unattended telephone station;

said logic means includes steer-out means responsive to the transfer of the contents of said auxiliary register to said allotted one of said digital registers for transmitting the digital message stored in said allotted one of said digital registers followed by said distinctive tone back to the caller through said telephone network for verification by the caller;

said digital storage means includes verification storage means individually associated with each of said digital registers for storing a bit indicative of whether or not the digital message stored in an individual digital register has been verified;

said logic means includes means responsive to an affirmative code received through said telephone network from the caller for storing a bit having a certain binary value indicative of verification of said digital message in the verification storage means individually associated with the allotted one of said digital registers; and

said output display includes means coupled to said verification means, and responsive to said stored bit associated with that one of said digital registers in which the digital message then being displayed is stored having said certain binary value for displaying that digital message with a particular attribute which distinguishes the output display thereof from that of a non-verified digital message.

4,443,665
PRIVACY AND HOLD CIRCUIT FOR TELEPHONE
Robert J. Alderman, 3406 G-7 Ranch Rd., Ruskin, Fla. 33570
Filed Sep. 30, 1982, Ser. No. 430,946
Int. Cl.^{3} H04M *1/70*
U.S. Cl. 179—99 H **5 Claims**

1. In a telephone hold circuit of the type including a thyristor, said thyristor including a first main terminal and a second main terminal connected to shunt a telephone subscriber line with said first main terminal connected to a negative lead of said telephone subscriber line and a gate terminal and a characteristic gate to first main terminal junction;

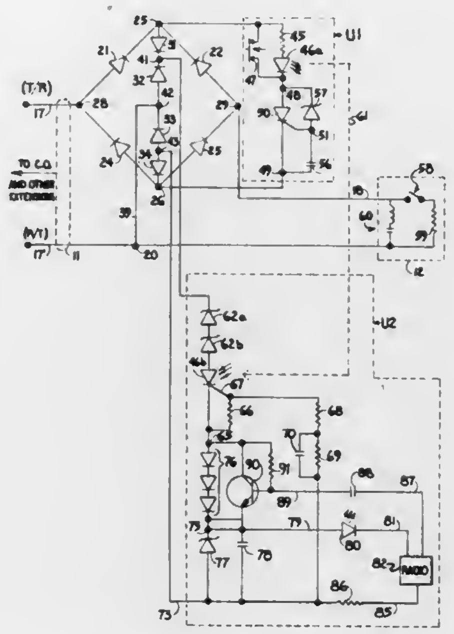
said circuit including means for selectively triggering said thyristor from an off state to a conducting state by selective application of a triggering signal to said gate terminal; and

voltage dropping means connected in series with said main terminals for maintaining a voltage drop across said telephone subscriber line when said thyristor is in said conducting state; the improvement comprising in combination;

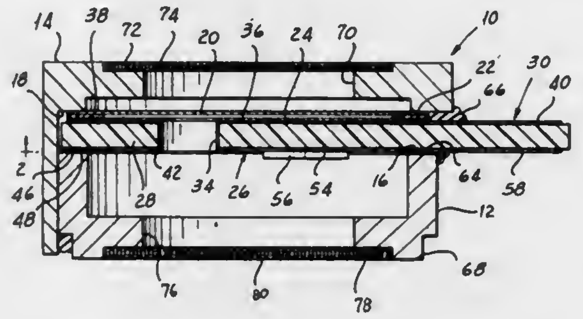
means connecting said voltage dropping means in series between said first main terminal at a first connection point and a local ground at a second connection point, said local ground being further connected to said negative conductor of said telephone line;

means connecting a capacitor in series with said local ground and said gate terminal; and

load means connected between said first connecting point and said second connecting point, thereby providing a discharge path for charge from said capacitor through said gate to first main terminal junction, said load means, back to said local ground.

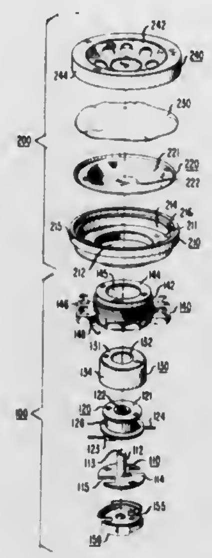


4,443,666
ELECTRET MICROPHONE ASSEMBLY
Paul L. Cote, Windham, N.H., assignor to Gentex Corporation, Carbondale, Pa.
Filed Nov. 24, 1980, Ser. No. 209,519
Int. Cl.^{3} H04R *19/01, 19/04*
U.S. Cl. 179—111 E **8 Claims**



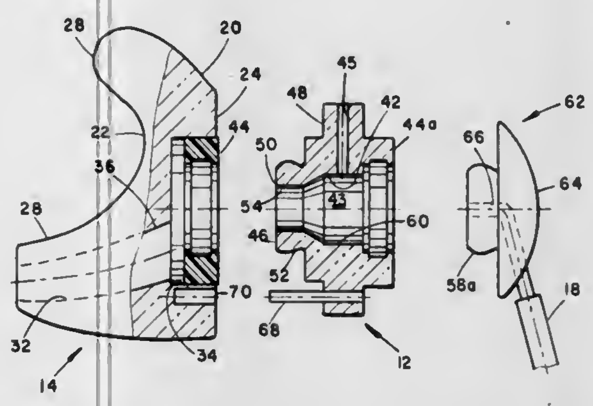
4. A microphone including in combination a housing having apertured rear and front portions and an opening formed therein intermediate said portions, an insulating support having a back and a front respectively adjacent said rear and front portions, said support having an enclosed portion contained in said housing and an exposed portion extending out of said housing through said opening, an electret transducer element carried on the front of said enclosed portion, means forming an electrical contact on the exposed portion of said support, and means coupling said transducer element to said electrical contact.

4,443,667
ELECTROMAGNETIC TRANSDUCER
Richard M. Hunt, Indianapolis, Ind., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Jan. 11, 1982, Ser. No. 338,231
Int. Cl.^{3} H04R *11/00*
U.S. Cl. 179—115 R **20 Claims**



1. An electromagnetic transducer comprising a pole piece (**112**) including a face (**113**) at one end, a coil (**126**) disposed about the pole piece, and a central armature (**222**) overlying and spaced from the face of the pole piece to provide a first air gap characterized in that a cup-shaped permanent magnet (**130**) is disposed about the pole piece, the cup-shaped magnet having a wall portion (**134**) and a base portion (**131**) and being inverted with respect to the face end of the pole piece, the base portion having a central opening (**132**) that is larger than the face of the pole piece, the rim of the opening being one pole of the permanent magnet and being spaced from the central armature to provide a second air gap, the first and second air gaps being approximately equivalent.

4,443,668
EARPLUG MOUNTING DEVICE WITH AUDIO PASSAGEWAY
James C. Warren, 3808 S. Jasmine St., Denver, Colo. 80237
Filed Mar. 23, 1981, Ser. No. 246,445
Int. Cl.^{1} H01M *1/05*
U.S. Cl. 179—156 A **12 Claims**



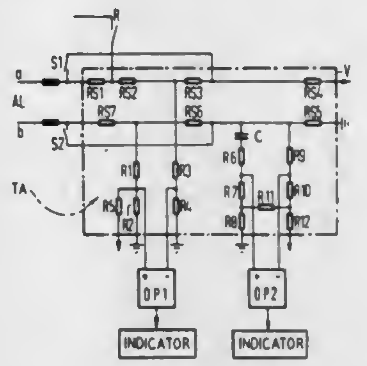
1. An earplug mounting device for insertion into the human ear, said mounting device adapted to support audio aids and provide sound communication between a radio receiver and the human ear, wherein the human ear includes an outer ear and an auditory canal leading to an inner ear, said earplug mounting device and radio receiver comprising in combination:

a resilient semi-rigid main body mountable in the outer ear, said main body having a main body passageway therethrough;

a support boom onto which an audio aid can be attached which is releasably connected to said main body so as to be fixedly positioned relative to said main body, said boom having a boom passageway therethrough in acoustic communication with said main body passageway; and

a flexible tube defining an air passageway for carrying sound waves, one end of said tube releasably connected to said boom at said boom passageway, said flexible tube being operably connected at another end to said radio receiver, said flexible tube being in acoustic communication with said boom passageway and said radio receiver whereby sound waves emanating from said radio receiver can be carried through the tube, boom and main body into the auditory canal of an individual utilizing the device.

4,443,669
SUBSCRIBER CONNECTION CIRCUIT
Horst Kopetzky, Unterhaching, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Aug. 13, 1981, Ser. No. 292,505
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1980, 3036686
Int. Cl.^{3} H04M *3/22*
U.S. Cl. 179—175.2 C **5 Claims**



1. A circuit for a subscriber connection arrangement to subscriber lines (a, b) comprising first, second, third and fourth feed resistors connected in series between subscriber line a and a bias voltage, fifth, sixth and seventh feed resistors connected in series between subscriber line b and ground potential, a first switch means connected across said first, second and third feed resistors to short them out, a second switch means connected across said sixth and seventh feed resistors to short them out, first and second voltage divider resistors connected in series between the junction point between said sixth and seventh feed resistors and ground, a first operational amplifier with its non-inverting input connected to the junction point between said first and second voltage divider resistors, third and fourth voltage divider resistors connected in series between the junction point between said second and third feed resistors and ground, and output means connected to said first operational amplifier to monitor the dialing state when said first and second switch means are open.

4,443,670
ROTARY ENCODER CONTACT DISK

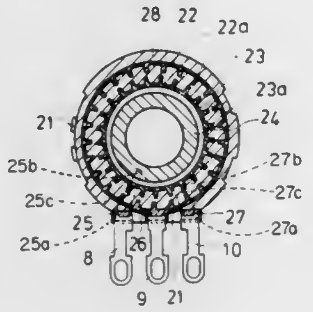
Noriaki Nakamura, Shijonawate; Tomio Kishimoto, and Yuichi Yamamoto, both of Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Nov. 3, 1981, Ser. No. 317,856

Claims priority, application Japan, Sep. 14, 1979, 54-118472

Int. Cl.³ H01H *1/58, 19/58*

U.S. Cl. 200—11 DA **3 Claims**



1. A contact disk for a rotary encoder of the type having a laminated structure and for use with a rotary brush, comprising:

a substrate of insulative material,

a first and a second terminal part of conductive material in layer form, each said terminal part having an inner and an outer end and each having a lead-out terminal at said respective outer ends, isolated from each other on the surface of said insulative substrate,

an insulative film formed partly on the surface of said insulative substrate to cover said terminal parts except for their respective ends,

a slip ring conductive layer formed on the surface of said insulative substrate in a manner to contact with the inner exposed end of said first terminal part,

a first gear-pattern conductive layer having teeth extending radially outwardly therefrom and formed on said insulative film concentrically with and outside of said slip ring conductive layer in a manner to contact with the inner exposed end of said second terminal part, and

a second gear-pattern conductive layer having internally radially extending teeth, formed on said insulative film concentrically with and outside of said first gear-pattern conductive layer, said second gear-pattern conductive layer having on its outer edge an integrally formed terminal part with a lead-out terminal, the angular positions of said radially extending teeth of said first gear-pattern being slightly shifted in a rotational direction of the rotary encoder brush with respect to corresponding radially extending teeth of said second gear-pattern.

4,443,671
FLOW SENSOR

Edward T. Hinds, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Dec. 28, 1981, Ser. No. 335,016

Int. Cl.³ H01H *35/24*

U.S. Cl. 200—81 R **5 Claims**

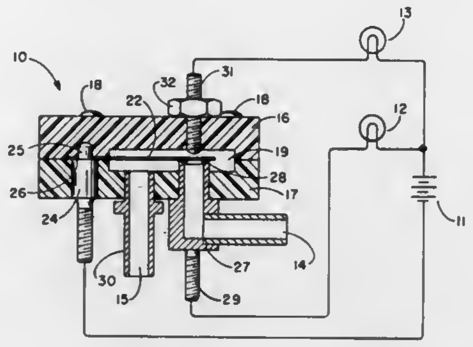
1. A flow sensor for limiting fluid flow to a single direction and providing electrical signals indicating a no flow condition, and intermediate flow condition, and a high flow condition, comprising;

(A) a body formed of an electrically insulating material;

(B) a valve seat member mounted on said body and having a flow passage therethrough, said valve seat member formed of an electrically conducting material to function as a first electrical contact;

(C) a second electrical contact attached to said body; and

(D) a reed valve member having a first end attached to said body and second free end biased to close said passage, said reed valve member formed from an electrically conducting material to function as a third electrical contract for making electrical contact with said first electrical contact when said valve member closed said flow passage and for making electrical contact with said second electrical contact when flow through said passage reaches a predetermined level.



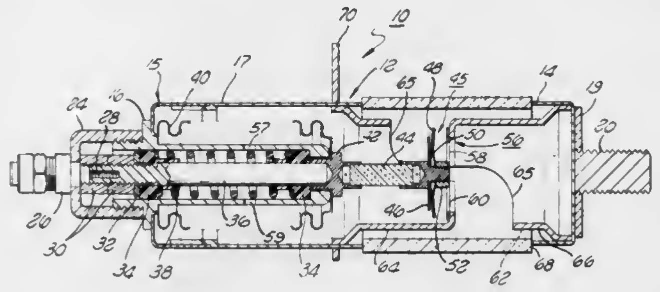
4,443,672
LOW CAPACITANCE RADIO FREQUENCY SWITCH

Joseph E. Oeschger, Palo Alto, Calif., assignor to International Telephone & Telegraph Corporation, New York, N.Y.

Filed Feb. 11, 1982, Ser. No. 347,896

Int. Cl.³ H01H *33/66*

U.S. Cl. 200—144 B **4 Claims**



1. An RF vacuum switch having open and closed positions comprising:

an envelope having a tubular ceramic portion oriented along a first axis;

a moveable contact disc hermetically sealed within said envelope and including an axially operating bellows for permitting axial motion parallel to said first axis to be imparted to said moveable contact disc by means of a control member external to said envelope;

a pair of fixed contacts within said envelope and positioned with respect to said moveable contact means to operatively engage said moveable contact means when the vacuum switch is in the closed position;

a first cylindrically shaped member within said envelope and extending in a first direction along said first axis away from said pair of fixed contacts for supporting a first one of said fixed contacts; and

a second cylindrically shaped member within said envelope and extending in a second direction along said first axis away from said pair of fixed contacts, said second direction being opposite to said first direction, for supporting a second one of said fixed contacts, said first and second cylindrically shaped members being mounted to said envelope at opposite ends of said ceramic portion, both said first and second cylindrically shaped members having respective cutaway portions respectively in the vicinity of said second and first fixed contacts to minimize capacitance effects between said first and second cylindrically shaped members.

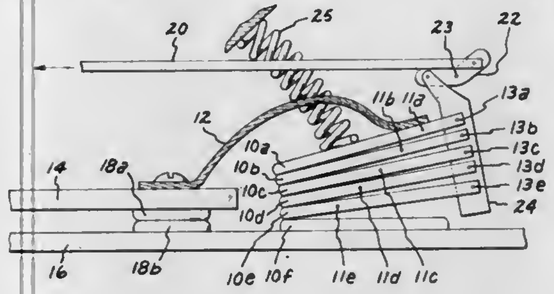
4,443,673
VARIABLE ASPECT ARC CHUTE

James W. Sember, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 14, 1981, Ser. No. 330,429

Int. Cl.³ H01H *33/04, 33/12*

U.S. Cl. 200—144 R **8 Claims**



1. An arc chute for use in electrical current interrupters comprising:

a stack of plates comprising electrically conductive material, each plate being mounted to pivot about an axis lying substantially in the plane of said plate, each of said axes being substantially parallel to one another;

bias means for holding said plates in electrical contact with each other along an edge thereof; and

means for separating said contacting plates.

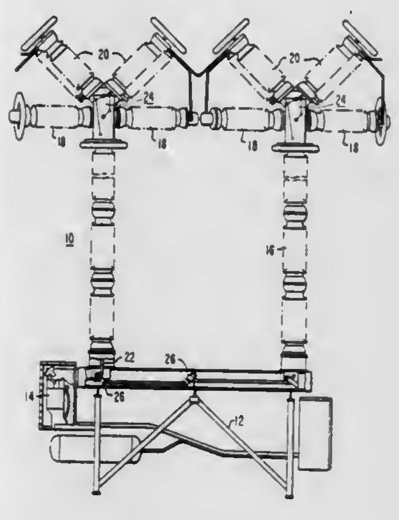
4,443,674
CIRCUIT INTERRUPTER CLOSING RESISTANCE MECHANISM

Ben J. Calvino, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 31, 1982, Ser. No. 364,038

Int. Cl.³ H01H *33/16*

U.S. Cl. 200—144 AP **10 Claims**



1. A circuit interrupter comprising:

(a) a pair of cooperable, separable interrupter contacts, at least one of which is movable;

(b) a part of cooperable, separable impedance contacts, at least one of which is movable;

(c) impedance means adapted to be placed electrically in parallel with said interrupter contacts by said impedance contacts;

(d) means for effecting movement of said movable interrupter contact and said movable impedance contact to provide for opening and closing of said interrupter and impdance contacts, said movement effecting means including a rotatable shaft;

(e) mechanical timing means having rigid mechanical operative elements that are rotatively coupled to each other and to said rotatable shaft and, in response to the actuation of said movement effecting means and the rotative interaction between said mechanical operative elements and said shaft, are adapted to control the closing of said impedance contacts at a predetermined time interval relative to the closing of said interrupter contacts;

(f) an interrupter contact operating mechanism responsive to said movement effecting means and the rotation of said shaft for opening and closing said interrupter contacts; and

(g) an impedance contact mechanism responsive to the rotative interaction between said rotatable shaft and the coupled mechanical operative elements of said mechanical timing means for closing and opening said impedance contacts in a predetermined time sequence that is controlled by said mechanical timing means and the coupled rotatable shaft of said movement effecting means.

4,443,675
MULTIPLE CONTACT ARRANGEMENT

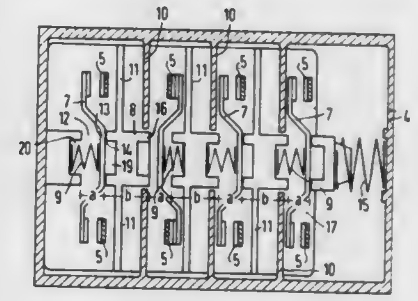
Johann Drexler, Schwandorf, and Peter Pfauntsch, Regensburg, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 28, 1982, Ser. No. 425,910

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1981, 3146780

Int. Cl.³ H01H *1/20*

U.S. Cl. 200—243 **2 Claims**



1. In a multiple contact arrangement for electromagnetic switchgear including a housing, contact bridge carrier means movably guided from a rest position to an actuated position and having a plurality of windows each having a first and second edge for the support of contact bridge means, said windows being arranged at intervals evenly distributed along the length of said contact bridge carrier means, contact bridge means supported in each of said windows having electrical contact means at each end thereof, said electrical contact means being offset from the central portion of said contact bridge means, fixed electrical contact means for engaging said electrical contact means of said contact bridge means and first partitioning means attached to said housing for separating each of said contact bridge means from each other, the improvement comprising:

second partitioning means attached to said contact bridge carrier means adjacent said first partitioning means and further separating said contact bridge means from each other;

plate means below said contact bridge carrier means from which said second partitioning means extend;

said fixed electrical contact means arranged in linear relation with said second edge of each of said windows when said contact bridge carrier is in said rest position; and

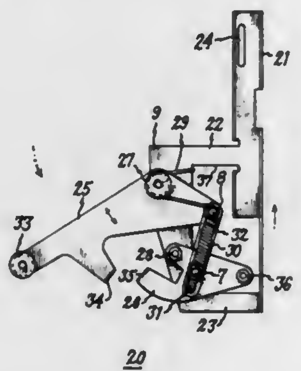
said ends of said contact bridge means each being offset from the central portion of each of said contact bridge means a distance equal to the spacing between said first and second edges;

whereby said contact bridge means can be inserted into said windows in either of two orientations, said orientations being 180° opposite each other, so that said electrical contact means of said contact bridge means contacts said fixed electrical contact means in said rest position if it is inserted into said window in one of said orientations and contacts said fixed electrical contacts in said actuated position if it is inserted into said window in the second orientation.

4,443,676

INTERCHANGEABLE SHIELD ARRANGEMENT FOR A CIRCUIT BREAKER COMPARTMENT

Roger N. Castonguay, Terryville, Conn., assignor to General Electric Company, New York, N.Y.
Filed Nov. 18, 1981, Ser. No. 322,348
Int. Cl.^{3} H02B *11/04*
U.S. Cl. 200—304 **20 Claims**



1. A shield unit for use within a circuit breaker compartment comprising:

fixed shield means for insertion within a circuit breaker compartment between electrical power contacts on said circuit breaker and power stab contacts within said compartment;

moveable shield means connected with said fixed shield means for preventing access to said power stabs when said circuit breaker is at least partially removed from said compartment and for providing access to said power stabs when said circuit breaker is completely within said compartment;

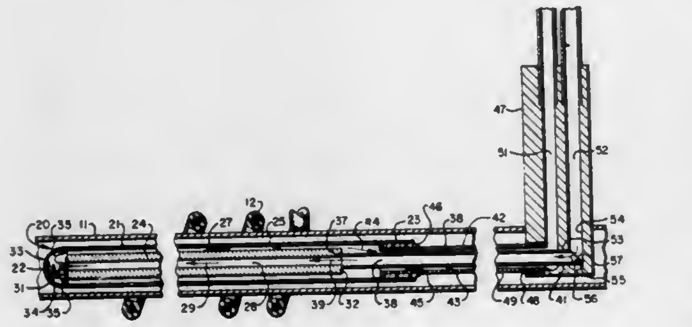
moveable shield operating means including a fixed member for attaching within said compartment and first and second actuator arms pivotally connected with said fixed member for rotation in a first direction when said circuit breaker contacts a part of said first actuator arm and for rotation in a second direction when said circuit breaker is moved out of contact with said first actuator arm; and

an actuator spring and a return spring opposedly coupled for providing a force to said second actuator arm to rotate said second actuator arm and said first actuator arm in said second direction.

4,443,677

INDUCTION WELDING IMPEDER APPARATUS WITH FLUID COOLING

Fred A. DeSaw, Columbus, Ohio, assignor to Bundy Corporation, Detroit, Mich.
Continuation of Ser. No. 237,463, Feb. 23, 1981, abandoned. This application Jun. 15, 1982, Ser. No. 388,546
Int. Cl.^{3} H05B *6/02*
U.S. Cl. 219—8.5 **24 Claims**



1. An impeder useful in induction welding of tubing of small inner diameter, comprising

an elongate circular cylindrical enclosure member having a substantially uniform outer diameter of such size as to fit closely but movably inside a tubing to be welded, a substantially uniform inside diameter, closed at one end, and open at the other end;

an elongate circular cylindrical impeder member, shorter than the enclosure member, having a substantially uniform outer diameter of such size as to fit substantially coaxially inside said enclosure member with space between said enclosure member and said impeder member to provide an outer heat exchange passage large enough for liquid to flow through, a substantially uniform inner diameter of such size as to provide a central heat exchange passage large enough for liquid to flow through, and open at both ends, positioned coaxially inside said enclosure member during operation with one end of said impeder member adjacent said closed end of the enclosure member;

spacing means inside said enclosure member between said closed end thereof and the adjacent end of said impeder member, of such size and shape as to provide an end space large enough for liquid to flow therethrough between said central heat exchange passage and said outer heat exchange passage;

inner tubular means in contact with said other end of said impeder member, having a substantially uniform outer diameter not greater than that of said impeder member and a substantially uniform inner diameter of such size as to provide a central feed passage at least equal in size to said central heat exchange passage in said impeder member and extending substantially coaxially therefrom for liquid to flow therebetween;

said inner tubular means being held in position fixedly relative to the enclosure member, and said spacing means comprising a compressed elastic member for pressing said impeder member away from said closed end of the enclosure member and into contact with said inner tubular means;

outer tubular means having a substantially uniform inner diameter of such size as to fit substantially coaxially around said inner tubular means with space between said inner and outer tubular means to form an outer feed passage large enough for liquid to flow therethrough, positioned in that manner with one end portion having a substantially uniform outer diameter slightly smaller than the inner diameter of said enclosure member located substantially coaxially within a portion of said open end of the enclosure member extending beyond the impeder member, with a liquid-tight flexible connection to said enclosure member, for liquid to flow between said outer heat exchange passage and said outer feed passage; and

means for conveying liquid in through one feed passage and out through the other feed passage.

4,443,678

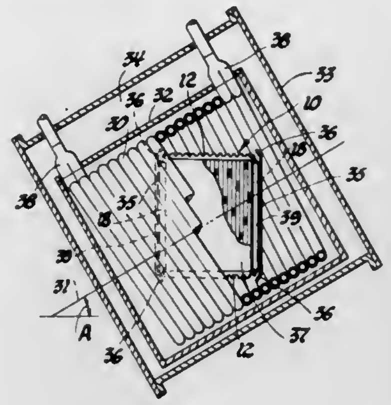
METHOD OF INDUCTION BRAZING A COMPLEX ASSEMBLY

Linos J. Jacovides, Birmingham, Mich., and Edward J. Woods, Mentor, Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Sep. 20, 1982, Ser. No. 419,941
Int. Cl.^{3} H05B *5/06*
U.S. Cl. 219—10.41 **7 Claims**

1. A method of induction brazing an assembly including a plurality of elements consisting of core metal clad with a brazing metal which has a slightly lower melting point than the core metal, the elements being generally disposed in at least two transverse planes and intersecting at a junction to be brazed comprising the steps of:

establishing an alternating magnetic field having flux lines extending in a preset direction,

orienting the assembly in the magnetic field with the said planes positioned at respective angles to the flux lines, the angles being set to cause substantially equal inductive heating of the elements, and

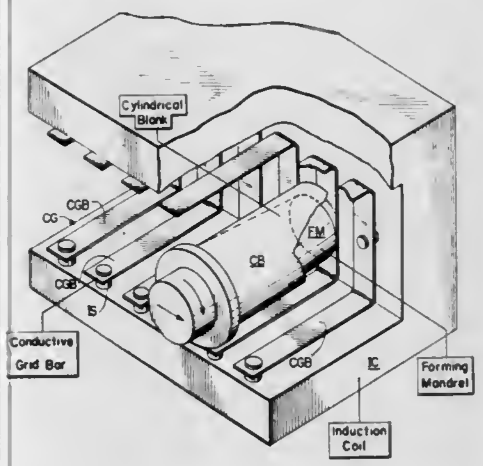


inductively heating the elements by said magnetic field to a uniform temperature sufficient to melt the cladding to form a brazed joint and insufficient to melt the core metal.

4,443,679

INDUCTION FURNACE FOR HEAT SHRINKING THERMOPLASTIC SHEET ONTO MANDRELS IN A FORMING PROCESS

Romano Balordi, Millers, Md., assignor to Maryland Cup Corporation, Owings Mills, Md.
Filed Jun. 24, 1981, Ser. No. 276,830
Int. Cl.^{3} H05B *5/04*
U.S. Cl. 219—10.49 R **41 Claims**



1. Means for heat shrinking thermoplastic preforms to a desired shape comprising:

mandrel means of conductive material and said desired shape for receiving a said preform;

induction coil means adjacent said mandrel;

conductive grid means intermediate said mandrel and said induction coil; and

means for energizing said induction coil means for simultaneously heating said mandrel and said grid means;

said grid means applying radiant heat to said preform.

4,443,680

METHODS AND APPARATUS FOR ELECTRICAL DISCHARGE MACHINING

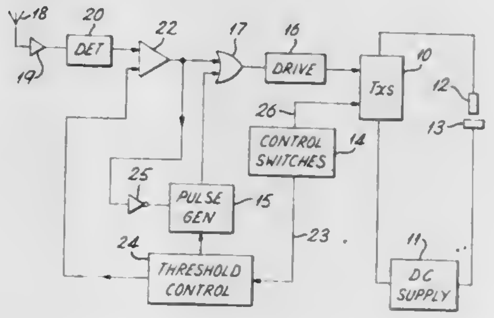
Mohamed F. El-Menshawy, 5 Guiting Rd., Selly Oak, Birmingham 29, and Sushantha K. Bhattacharyya, 35 Chelsea Ct., Abdon Ave., Birmingham 29, both of England
Filed Mar. 31, 1981, Ser. No. 249,406
Claims priority, application United Kingdom, Apr. 2, 1980, 8011003; Apr. 21, 1980, 8013002
Int. Cl.^{3} B23P *1/08*
U.S. Cl. 219—69 C **11 Claims**

1. An EDM machine comprising:

voltage application means for applying voltages between an electrode and a workpiece to cause sparking in the gap between the electrode and the workpiece,

reference means for generating a variable reference signal which depends on the current in the gap when sparking occurs and which has non-zero values which increase in value with increase in the said current and vice versa at least over part of the range of the said current,

monitoring means for generating a monitoring signal having a value representative of the amount of sparking currently occurring in the gap,



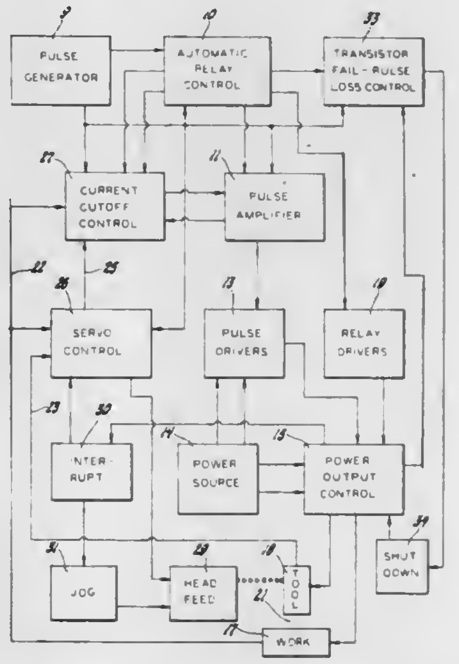
comparison means for comparing the monitoring and reference signals to provide an output signal indicating the onset of arcing when the value of the monitoring signal falls below a variable threshold level determined by the value of the reference signal, and

means for, at least partially, controlling the operation of the EDM machine in accordance with the output signal of the comparison means.

4,443,681

ELECTRIC DISCHARGE MACHINE AUTOMATIC RELAY CONTROL

Robert W. Drushel, Farmington Hills, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.
Filed Sep. 1, 1981, Ser. No. 298,450
Int. Cl.^{3} B23P *1/02*
U.S. Cl. 219—69 C **4 Claims**

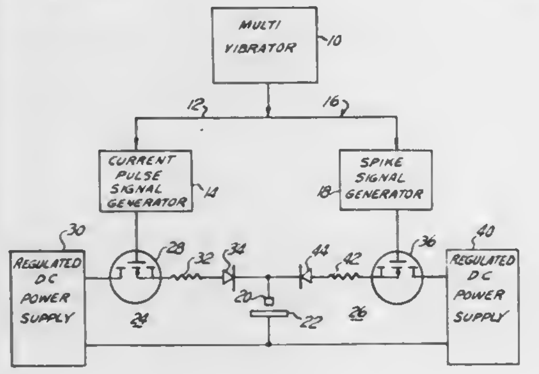


1. A power supply system for electric discharge machining comprising, in combination, power control means effective to transmit electric power in periodic pulses from a source through an electrode and a workpiece characterized by means responsive to the period of the power pulses effective to vary the energy level of the power pulses over a range of working levels as a function of the said period, and means responsive to such variation of power pulse energy level effective to interrupt the operation of the power pulse transmitting means for a predetermined time to provide time for stabilization of the

power pulse transmitting means upon a change in power pulse energy level.

4,443,682
SUPERIMPOSED HIGH STRIKING VOLTAGE POWER SUPPLY CIRCUIT FOR ELECTRICAL DISCHARGE MACHINING

Kuang-Ta Ho, Pineville, N.C., assignor to Colt Industries Operating Corp, New York, N.Y.
Filed Oct. 26, 1981, Ser. No. 315,197
Int. Cl.³ B23P *1/02*
U.S. Cl. 219—69 C **12 Claims**


MULTI VIBRATOR
10
12
16
CURRENT PULSE SIGNAL GENERATOR
14
SPIKE SIGNAL GENERATOR
18
REGULATED DC POWER SUPPLY
30
28
32
34
20
22
24
26
44
42
36
40
REGULATED DC POWER SUPPLY

1. A circuit for providing electrical discharge machining current pulses across an electrical discharge machining gap, having two terminals comprising:

a first MOSFET having its power conducting terminals connected between a gap terminal and a DC power supply terminal, said first MOSFET further having its gate connected to a source of variable amplitude pulse signals for selectively varying the slope of the rising edge of the machining current pulses;

a second MOSFET having its power conducting terminals connected with like polarity to the first MOSFET between said gap terminal and a terminal of a second DC power supply of a greater voltage magnitude than the first-mentioned power supply;

said second MOSFET having its gate connected to a source of spike signals; and

means for conjointly operating both said sources.

4,443,683
ANGULAR AND SWIVELING HEAD FOR GAS CONSUMING ELECTRIC WELDING TORCHES

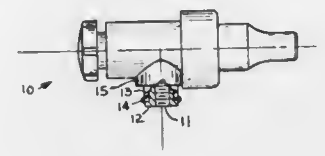
Donald R. Watts, 6004 4th St. Ct. NE., Tacoma, Wash. 98422
Continuation-in-part of Ser. No. 278,679, Jun. 29, 1981, abandoned. This application Jul. 22, 1981, Ser. No. 286,019
Int. Cl.³ B23K *9/16*
U.S. Cl. 219—74 **3 Claims**

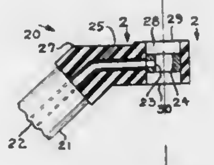
1. A gas consuming electrical welding torch having an angular bend at a swivel connection means comprising:

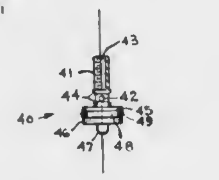
a torch head having a radially-connected receiving piece extending therefrom, said receiving piece having a surrounding resilient seal and a threaded passage therethrough;

a swivel body adapted to receive electrical current and inert gas flow through a conductive passageway and including an opening for receiving and sealing said receiving piece therein in a swiveling relationship and an electrically conductive seat means connected to said conductive passageway;

a swivel fastener for interconnecting said torch head and said fastener having a threaded stem for threading insertion into said threaded passageway in said receiving piece, an electrically conductive contact plate for engaging said conductive seat means to conduct electrical current from said seat means, through said fastener to said torch head and an annular passageway with radial ports to communicate with said conductive passageway and permit flow of gases into said torch head,



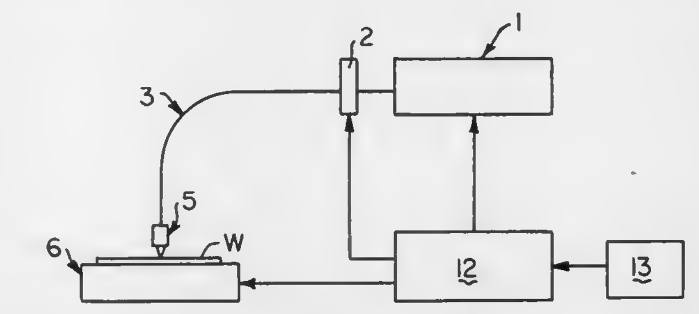




whereby said torch head may be swiveled into convenient operating positions.

4,443,684
CO₂ LASER MACHINING APPARATUS

Shiro Sakuragi; Kyoshiro Imagawa; Haruo Kotani; Mitsunori Saito, and Tomoyuki Haga, all of Kyoto, Japan, assignors to Horiba, Ltd., Kyoto, Japan
Filed Dec. 30, 1981, Ser. No. 335,661
Claims priority, application Japan, Jan. 27, 1981, 56-11069
Int. Cl.³ B23K *27/00*
U.S. Cl. 219—121 LH **11 Claims**



1. A CO_2 laser machining apparatus comprising:

a CO_2 laser oscillator for irradiating CO_2 laser beams,

a stand for placing an object to be machined thereon,

a condenser having a lens means for condensing the CO_2 laser beams onto the object to be machined,

a driving means for transferring said condenser two-dimensionally on said stand,

a control means for controlling said CO_2 laser oscillator and said driving means,

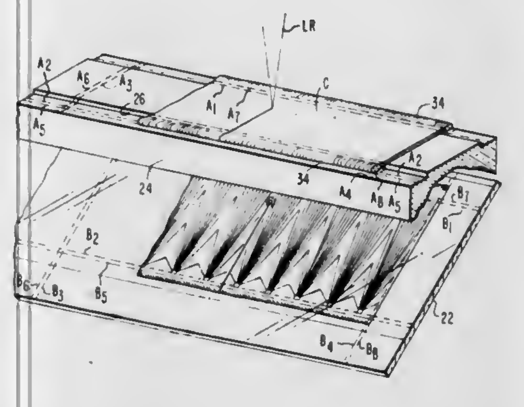
a flexible cable, connected with said CO_2 laser oscillator and said condenser, including a bundle of fibers for transmitting infrared rays perpendicularly through the lens means onto the object to be machined,

at least one further bundle of fibers, optically adjusted to a position to be machined, for transmitting infrared rays aslant through the lens means onto the object to be machined, and

a temperature sensor means for detecting the infrared rays transmitted by the one further bundle of fibers in order to measure temperatures at the position to be machined.

4,443,685
FIXTURE FOR LASER SCRIBING (OF DENDRITE SILICON CELLS)

Edward J. Seman, Elizabeth Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Feb. 17, 1982, Ser. No. 349,570
Int. Cl.³ B23K *27/00*
U.S. Cl. 219—121 LH **18 Claims**



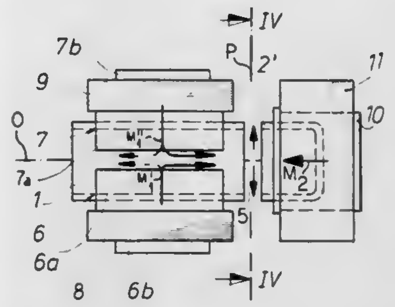
1. A fixture for holding and aligning a dendritic web silicon cell during laser scribing to delineate the cell from dendrites along the longitudinal edges thereof, comprising

means for supporting the dendritic web silicon cell for alignment with a predetermined pattern on said fixture, so that the cell can be scribed to delineate the cell from the dendrites;

optical receiver-transmitter means associated with said supporting means for visually viewing the predetermined pattern and the portion of the dendritic web silicon cell which is to be delineated from the dendrites so that a laser scribe line can be used to provide a separation mark between the cell and the dendrites.

4,443,686
DEVICE FOR ARC-WELDING FERROMAGNETIC WORKPIECES UNDER THE CONTROL OF A MAGNETIC FIELD

Norbert Pache, Augsburg, and Karel Mazac, Friedberg, both of Fed. Rep. of Germany, assignors to Kuka Schweissanlagen + Roboter GmbH, Augsburg, Fed. Rep. of Germany
Filed Apr. 14, 1982, Ser. No. 368,168
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1981, 3115338
Int. Cl.³ B23K *9/08*
U.S. Cl. 219—123 **8 Claims**



1. A device for welding two workpieces centered on a common axis and separated by a peripheral gap in a transverse plane across which a weld seam is to be formed by an arc moving along said gap, comprising:

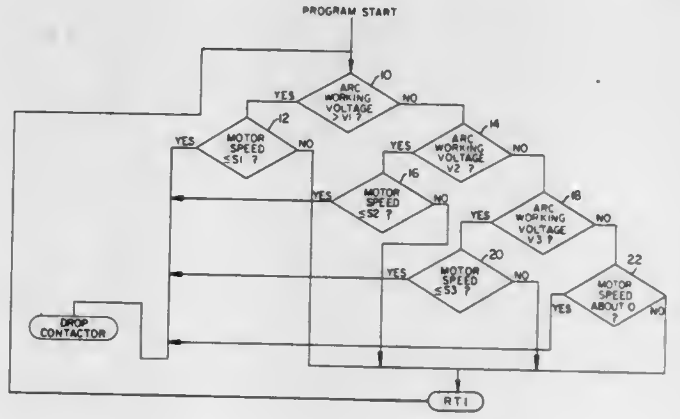
holding means for retaining said workpieces in a coaxial position, said holding means including a set of gripper jaws of ferromagnetic material centered on said axis for engaging one of said workpieces;

magnetizing means including excitation coils wound on respective extensions of said jaws perpendicular to said axis for establishing magnetic poles of like polarity at confronting faces of said jaws, thereby setting up two mutually opposite radially oriented magnetic fields contributing to a flux which permeates the engaged workpiece in an axial direction between said jaws and said gap; and

deflecting means adjacent said transverse plane for orienting said flux generally radially across said gap.

4,443,687
METHOD AND SYSTEM FOR AUTOMATICALLY TERMINATING A MIG WELDING OPERATION

Tibor E. Toth, Florence, S.C., assignor to Union Carbide Corporation, Danbury, Conn.
Filed Feb. 12, 1982, Ser. No. 348,347
Int. Cl.³ B23K *9/10*
U.S. Cl. 219—130.21 **3 Claims**



1. A method for automatically controlling the sequence of termination of a consumable electrode electric arc welding operation in which the consumable electrode is driven toward a workpiece to be welded by a wire feed drive motor under any given set of arc working conditions of wire feed rate, electrode size and arc working voltage with the arc working voltage generated from a welding power supply comprising the steps of:

establishing a finite minimum number of at least two preset combinations of arc working conditions including at least an arc working voltage and/or a motor speed with the first of said preset combination of conditions defining a relatively high arc working voltage and a relatively high wire feed speed and with the last of said preset combination of conditions defining a motor speed equal to relatively close to zero inches per minute;

deenergizing the electrode wire feed drive motor;

monitoring the arc working voltage and motor speed following said deenergization;

comparing in a predetermined sequence said monitored arc working voltage with the arc working voltage in each preset combination to determine if the monitored arc working voltage will satisfy the arc working voltage condition of any preset combination;

selecting the preset combination satisfying the arc working voltage condition;

comparing the monitored motor speed with the motor speed in said selected preset combination;

interrupting the welding power supply when the monitored motor speed equals the motor speed within the selected preset combination; and

when the monitored arc working voltage fails to satisfy the arc working voltage condition of any of the preset combinations then interrupting the welding power supply when the monitored motor speed reaches a predetermined minimum level representing the last preset condition.

4,443,688

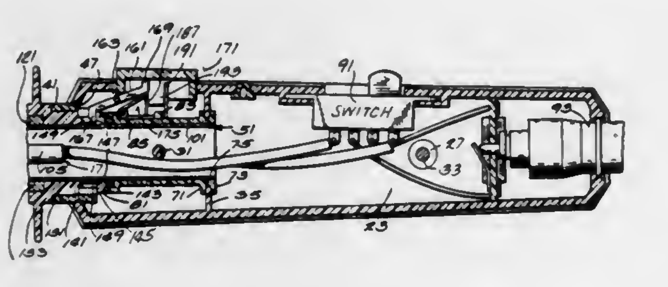
ELECTRICALLY HEATED HAIR CURLING APPLIANCE WITH REMOVABLE ROTATABLE HAIR GROOMING MEMBER

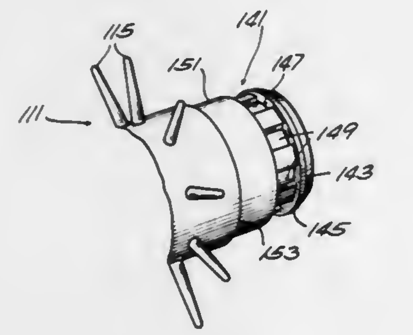
Matthew L. Andis, Racine, Wis., assignor to Andis Company, Racine, Wis.

Continuation-in-part of Ser. No. 059,676, Jul. 23, 1979, abandoned, which is a continuation-in-part of Ser. No. 120,511, Feb. 11, 1980, Pat. No. 4,358,660, which is a continuation-in-part of Ser. No. 222,590, Jan. 5, 1981, Pat. No. 4,368,376. This application Jun. 29, 1981, Ser. No. 278,192

Int. Cl.³ A45D *2/36;* A46D *7/10;* H05B *1/00*

U.S. Cl. 219—222 **17 Claims**





1. A hair curling appliance comprising a handle assembly including a handle and a heating element extending fixedly from one end of said handle, a removable tubular member forming at least a part of a hair grooming means located on said heating element for rotary movement and axial movement relative thereto, and means on said handle assembly and on said tubular member and operable selectively for preventing axial and rotary movement of said tubular member relative to said handle assembly, for preventing axial movement of said tubular member relative to said handle assembly, while permitting rotary movement of said tubular member relative to said handle assembly, and for permitting axial and rotary movement of said tubular member relative to said handle assembly to facilitate assembly and disassembly of said tubular member and said handle assembly, said selectively operable means comprising a lever pivotally mounted on said handle assembly and sequentially pivotally movable between a locked position wherein said lever engages a first portion of said tubular member so as to prevent axial and rotary movement between said tubular member and said handle assembly, a roll position wherein said lever engages a second portion of said tubular member so as to prevent axial movement between said tubular member and said handle assembly while permitting rotary movement therebetween, and a slide position wherein said lever is free of engagement with said tubular member so as to permit both axial and rotary movement between said tubular member and said handle assembly, and means for actuating said lever for movement between said positions.

4,443,689

HEATABLE GODET AND A METHOD OF HEATING A GODET

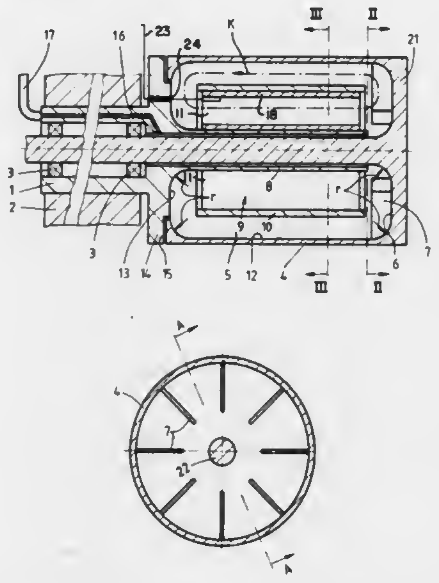
Kurt Müller, Zurich, and Armin Wirz, Ossingen, both of Switzerland, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed Jun. 14, 1982, Ser. No. 388,235

Claims priority, application Switzerland, Jun. 15, 1981, 3914/81

Int. Cl.³ H05B *3/02;* B21B *27/06*

U.S. Cl. 219—469 **17 Claims**



1. A heatable godet comprising
- a rotatable drum defining a hollow chamber therein;
- a heating means within said chamber of said drum, said heating means including a plurality of air guide ducts for passage of air therethrough, said ducts being disposed within said chamber to define a flow path of U-shaped cross-section as viewed in a circumferential direction with said drum; and
- a plurality of fan blades on said drum for circulating air through said flow path during rotation of said drum.

4,443,690

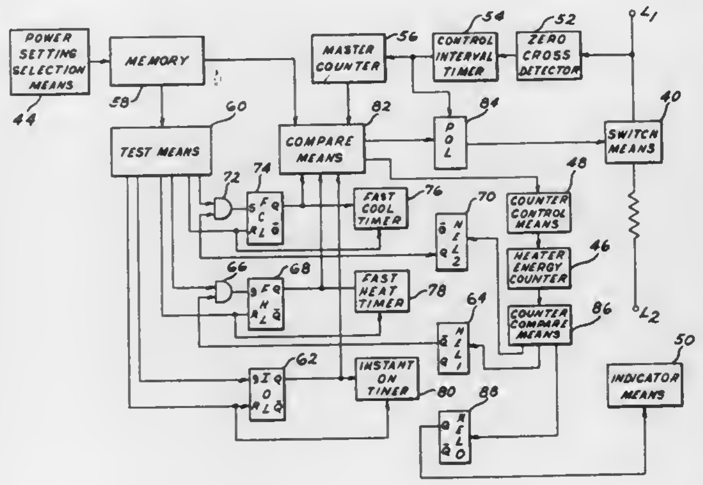
POWER CONTROL FOR COOKING APPLIANCE WITH TRANSIENT OPERATING MODES

Thomas R. Payne, Louisville, Ky., and Alfred L. Baker, Zionsville, Ind., assignors to General Electric Company, Louisville, Ky.

Filed Dec. 23, 1981, Ser. No. 334,038

Int. Cl.³ H05B *1/02*

U.S. Cl. 219—506 **13 Claims**



1. In a household cooking appliance, a power control system for controlling the power output of a heating element energized by an external power supply in response to a power setting selected by an operator from a plurality of available power settings, said control system comprising:
- power control means for operating the heating element at different selected power levels in response to the selection of different ones of the power settings;
- energy counter means;
- counter control means for selectively incrementing said energy counter means at one of a plurality of increment rates, each of which is approximately proportional to the rate of increase of the heating element temperature as the element temperature increases from ambient temperature to its steady state operating temperature when operated at corresponding power levels, said one rate being selected according to the power level at which the heating element is being operated; said counter control means being further operative to discontinue incrementing the energy counter means when the count reaches a preselected one of a plurality of maximum counts, each of said plurality of maximum counts being approximately proportional to the steady state heating element temperature for corresponding power levels, said one maximum count being selected according to the selected power setting; said counter control means being further operative to decrement said energy counter means at a predetermined rate when an OFF power setting is selected, said predetermined rate being approximately proportional to the rate of decrease of the heating element temperature when the heating element is deenergized; and
- means for detecting a change in the power setting;
- said power control means including transient means responsive to said detecting means and said energy counter means for operating said heating element at a power level higher than the operator selected power level for a first relatively short period of time in response to a change from one power level to a relatively higher power level when said count of said energy counter is less than a first predetermined reference value, said first reference value corresponding to a fast-heat threshold temperature, whereby the response time required for the heating element temperature to reach the operating temperature associated with the new power setting is reduced.

4,443,691

ELECTRICALLY HEATED WINDOW

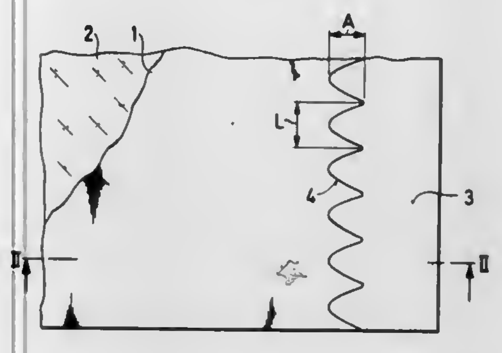
Gerd Sauer, Aachen-Laurensberg, Fed. Rep. of Germany, assignor to Saint-Gobain Vitrage, Neuilly sur Seine, France

Division of Ser. No. 343,985, Jan. 29, 1982, Pat. No. 4,385,226, which is a continuation of Ser. No. 184,272, Sep. 5, 1980, abandoned. This application Sep. 30, 1982, Ser. No. 429,056

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1979, 2936398

Int. Cl.³ H05B *3/06*

U.S. Cl. 219—522 **5 Claims**



1. An electrically heatable transparent sheet comprising:
- a transparent substrate,
- an electrically conductive thin layer with a surface resistance of 1 to 10 ohms per square which is mounted on said transparent substrate, and
- current-bearing layer electrodes mounted on and parallel to said thin layer wherein at least one of said electrodes is substantially comprised of a material having a resistivity which is higher than the resistivity of said thin layer and has a surface resistance which varies across the electrode from a region of low resistance at one end to a region of high resistance, which approximates the surface resistance of the thin layer, at the other end of said one electrode that is closer to a second electrode.

4,443,692

CASE ACCOUNTING SYSTEM

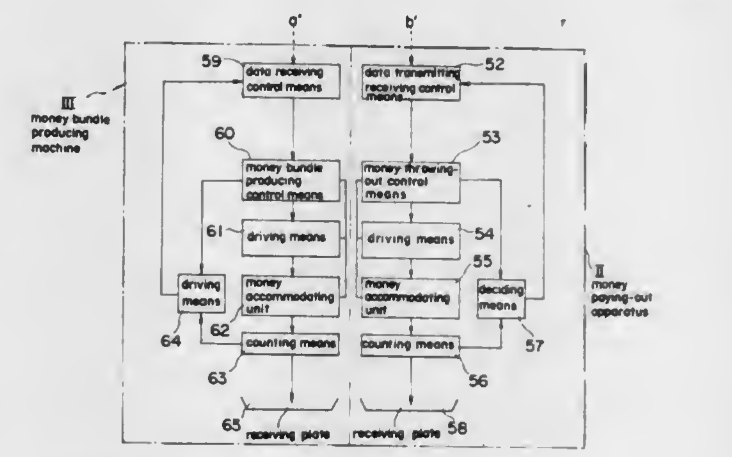
Katsuji Nishimura, Habikino, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 6, 1982, Ser. No. 433,162

Claims priority, application Japan, Oct. 9, 1981, 56-161400

Int. Cl.³ G06R *16/30*

U.S. Cl. 235—379 **1 Claim**


a'
b'
III money bundle producing machine
59
data receiving control means
data transmitting receiving control means
52
60
53
money bundle producing control means
money throwing-out control means
61
driving means
driving means
54
55
driving means
money accommodating unit
money accommodating unit
deciding means
II money paying-out apparatus
64
62
counting means
counting means
57
63
56
65
receiving plate
receiving plate
58

1. A cash accounting system wherein a cash register for registering various money transaction information is electrically connected with a money paying-out apparatus for paying-out money such as papers, coins or the like corresponding to the paying money amount caused by each transacting registration, comprising a money bundle producing machine for paying-out money for each of given amount units and electrically connected with said cash register, and a deciding means for determining whether or not the paying information for each of money denominations corresponding to said payment money amount is a predetermined given amount or more, whereby the money amount of said given amount or less is thrown out of said money paying-out apparatus in accordance with the determining output of said deciding means, and the money of the integer magnification of the given amount is adapted to be thrown out of said money bundle producing machine.

4,443,693

ELECTRO-OPTICAL BADGE READER

Jaroslaw Berezowski, Greenwich, Conn., and Harvey M. Feinman, Bronx, N.Y., assignors to Sealectro Corporation, Mamaroneck, N.Y.

Filed Mar. 8, 1982, Ser. No. 356,046

Int. Cl.³ G06K *7/10*

U.S. Cl. 235—458 **11 Claims**

1. An optical badge reading apparatus for use with a data badge having columns and rows of data apertures and an orientation aperture extending therethrough, said apparatus comprising:
- a badge receiving means having a substantially planar slot formed therein and defining an elongated rectangular recess for slidably receiving the data badge, said badge receiving means being provided with a plurality of pairs of registered data sensing apertures extending through said apparatus and across said slot perpendicular to the plane of said slot, said badge receiving means further including an elongated channel on each side of said elongated rectangular recess, each said elongated channel being parallel

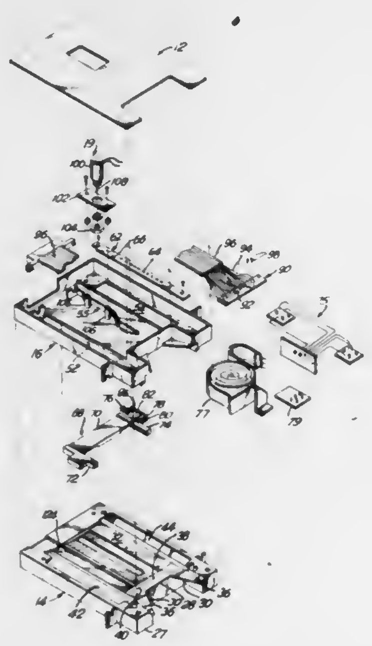
to the longitudinal axis of said elongated rectangular recess;

a light sensitive sensor mounted within one data sensing aperture of each said pair of registered data sensing apertures, and a light source mounted in the other data sensing aperture of each said pair of registered data sensing apertures;

a strobe strip means having a plurality of strobe generating apertures and an end of badge aperture disposed therein, said strobe strip means being disposed in one of said elongated channels parallel to the longitudinal axis of said badge receiving means, and being fixedly attached to said badge receiving means;

an elongated badge bar extending perpendicular to the longitudinal axis of said elongated rectangular recess, the opposite ends of said elongated badge bar being slidably mounted in said elongated channels such that insertion of the data badge into said elongated rectangular recess causes movement of said elongated badge bar;

an electro-optical strobe means comprising at least one strobe light source and at least one strobe light sensor, said electro-optical strobe means being affixed to said elongated badge bar and disposed in the elongated channel having the strobe bar, such that movement of the elongated badge bar by the data card causes simultaneous movement of said electro-optical strobe means relative to said strobe and end of badge apertures in said strobe strip to create a strobe signal which is detected by said strobe light sensor on said electro-optical strobe means and to detect complete insertion of the badge;



electrical means connecting said electro-optical strobe means, said light sources and said light sensors to a readout device and power source; and

a tubular pull solenoid having a plunger means attached thereto, said tubular pull solenoid being activated upon complete insertion of said data badge into said optical badge reading apparatus to extend said plunger means through said orientation hole retaining said data badge in said optical badge reading apparatus, said plunger means being retracted by said tubular pull solenoid upon receipt of a signal from said power source and said readout device.

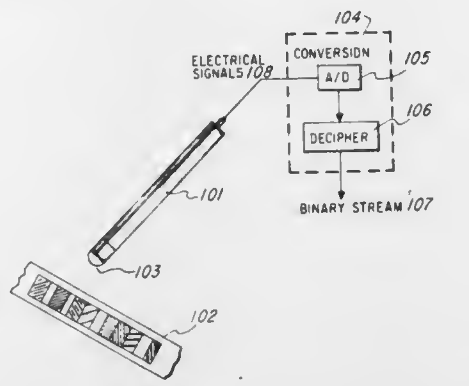
4,443,694
MULTILEVEL BAR CODE READER

Robert F. Sanford, Lubbock, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 5, 1981, Ser. No. 318,667

Int. Cl.^{3} G06K *7/12*

U.S. Cl. 235—465 **19 Claims**



1. An electronic apparatus to be used in conjunction with a bar code target, said electronic apparatus comprising:
  - a. means for generating electronic signals in response to a selected portion of said bar code target;
  - b. means for generating a selected value level from a hierarchical set of at least three value levels in response to said electronic signals; and
  - c. means for generating a binary data string corresponding to the difference in hierarchical level between said selected value level and the previous selected value level.

4,443,695
APPARATUS FOR CONTROLLING THE QUANTITY OF LIGHT

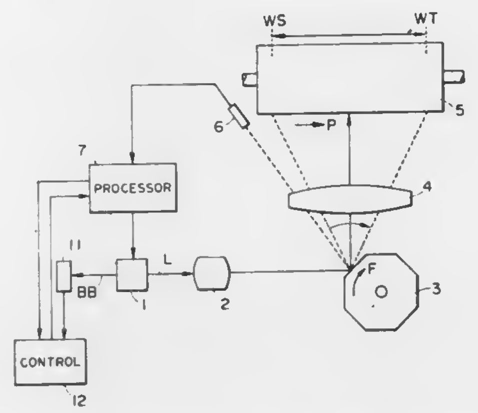
Takashi Kitamura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 15, 1981, Ser. No. 225,345

Claims priority, application Japan, Jan. 25, 1980, 55-7643; Jan. 28, 1980, 55-8621; Jan. 30, 1980, 55-9741; Jul. 17, 1980, 55-98520

Int. Cl.^{3} G01D *15/14;* G01J *1/32*

U.S. Cl. 250—205 **18 Claims**



17. Apparatus for controlling the quantity of radiation emitted by emitting means, comprising:

means for generating driving power;

means for emitting radiation in response to the driving power generated by said driving power generating means;

detector means for detecting the radiation emitted from said emitting means and producing a detection signal corresponding to the quantity of the detected radiation;

means for generating a signal for instructing the adjustment of the quantity of radiation emitted from said emitting means;

means responsive to the instruction signal for gradually varying the driving power after bringing the driving power generating means to a predetermined level; and

means for holding the driving power constant when the detection signal from said detector means reaches a predetermined value.

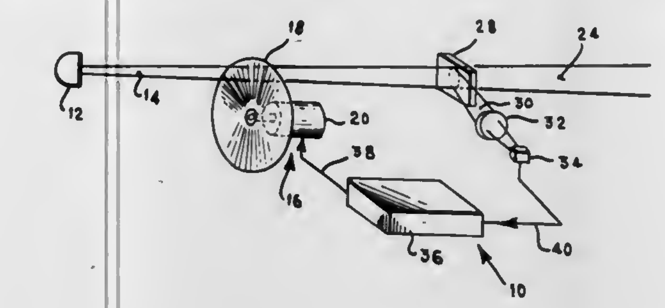
4,443,696
OPTICAL BEAM INTENSITY CONTROL SYSTEM

John Taboada, 12530 Elm Country, San Antonio, Tex. 78230

Filed Aug. 28, 1981, Ser. No. 297,526

Int. Cl.^{3} G01V *1/20*

U.S. Cl. 250—205 **6 Claims**



1. An optical beam intensity control system comprising:

means in optical alignment with and intercepting a beam of electromagnetic energy for allowing said beam to pass therethrough and for controlling the intensity of said beam passing therethrough in accordance with a predetermined signal, said predetermined signal being based upon a preselected intensity range, and said intensity controlling means including means of variable density interposed within said beam of electromagentic energy and means operably connected thereto for controlling said variable density means in accordance with said predetermined signal;

means in the form of an intensity detector in optical alignment with said beam passing through said intensity controlling means for receiving this beam and providing a signal indicative of said intensity of said beam after having passed through said intensity controlling means; and

means operably connected between said intensity detector and said intensity controlling means for analyzing said intensity signal and providing said predetermined signal to said intensity controlling means, said analyzing means including a threshold control signal generator for receiving said intensity signal and comparing said intensity signal with a set of standards representative of said preselected intensity range whereby when said intensity signal falls within said preselected intensity range said intensity controlling means remains inactive and when said signal falls outside of said preselected intensity range said intensity controlling means is activated until said intensity signal falls within said preselected intensity range.

4,443,697
SYSTEM AND METHOD FOR SELECTING AND SEGREGATING CONTAINERS

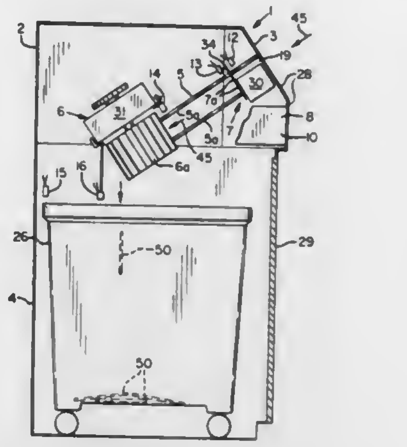
David M. Ryan, No. 25, Canter La., Sherwood, Oreg. 97140, and Paul A. Simmons, Rte. 3, Box 1458, Newberg, Oreg. 97132

Filed Feb. 11, 1982, Ser. No. 348,093

Int. Cl.^{3} G01V *9/04*

U.S. Cl. 250—223 R **10 Claims**

1. A system for selecting and segregating used, deformable, recyclable containers having a UPC designation thereon, comprising a housing means; and a direct-feed, direct-input, customer-operated, customer-controled input means, said input means comprising an unobstructed entry port for receiving a container from a customer and an input passageway means which provides a straight-line path for a container to travel from the entry port to the confines of the housing means; means for reading the UPC designation on said container; reference guide means for aligning the UPC designation on said container with the UPC designation reading means; and means for maintaining said container in a fixed, stationary position during said UPC designation reading operation and, if said container is acceptable, for discharging same into the confines of said housing means.



4,443,698
SENSING DEVICE HAVING A MULTICORE OPTICAL FIBER AS A SENSING ELEMENT

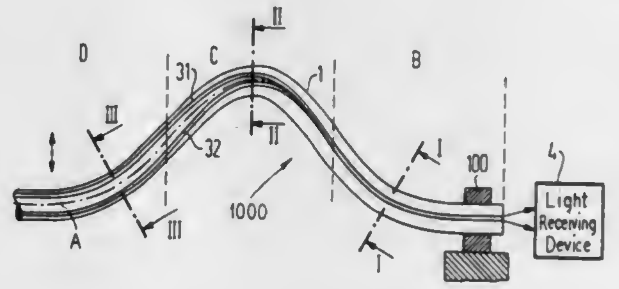
Gerhard Schiffner, Munich, Fed. Rep. of Germany, assignor to Siemens Aktigesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Apr. 8, 1981, Ser. No. 252,081

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1980, 3016104

Int. Cl.^{3} G02B *5/14*

U.S. Cl. 250—227 **17 Claims**



1. In a sensing device having a sensing element including an optical fiber, means for coupling light into the fiber and means for measuring alterations in specific physical parameters of the light passing through the fiber to determine special physical influences applied to the fiber, the improvements comprising the fiber being a multicore fiber having at least two adjacently extending cores surrounded by a common cladding and one end with an end face provided with a mirror so that light traveling in the cores is reflected at said one end to traverse the cores in the opposite direction; and said means for measuring the alterations in the parameters measuring the changes in the light passing through each of the cores in response to deformation of the fiber.

4,443,699
FLUID LEVEL MEASURING DEVICE WITH LINEAR, HIGH RESOLUTION OUTPUT

Christian A. Keller, Baltimore, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Continuation-in-part of Ser. No. 71,707, Aug. 31, 1979, Pat. No. 4,319,484. This application Jun. 8, 1981, Ser. No. 271,640

Int. Cl.^{3} G02B *5/14*

U.S. Cl. 250—227 **11 Claims**

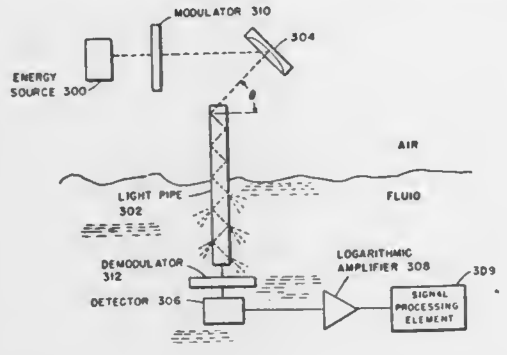
1. An apparatus for providing an instantaneous measurement of the vertical displacement of a first fluid with a first index of

refraction in reference to a second fluid with a second index of refraction, comprising:

a source of a coherent electromagnetic energy beam;

a detector for detecting said coherent electromagnetic energy beam;

an energy conveying means, with a first end in communication with said source and a second end in communication with said detector, with an index of refraction selected to be essentially similar to said first index of refraction, immersed partially in said first fluid and partially in said second fluid, for conveying said coherent electromagnetic energy beam from said first end to said second end;



means for introducing said coherent electromagnetic energy beam into said energy conveying means at an angle which produces reflection in said energy conveying means partially immersed in said second fluid and produces reflection and refraction in said energy convey means partially immersed in said first fluid wherein said refractions cause said coherent electromagnetic energy beam to be logarithmically diminished in said energy conveying means immersed in said first fluid; and

a logarithmic amplifier for converting an output of said detector into an output signal which varies linearly with said vertical displacement of said first fluid.

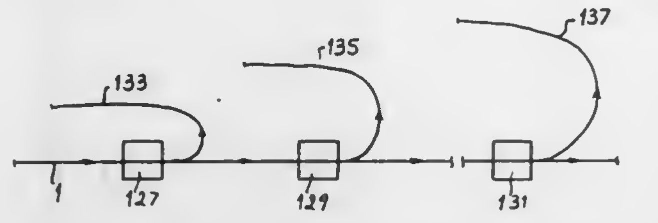
4,443,700
OPTICAL SENSING APPARATUS AND METHOD

Pedro B. Macedo, 6100 Highboro Dr., Bethesda, Md. 20034; Theodore A. Litovitz, 904 Devere Dr., Silver Spring, Md. 20903; Nicholas Lagakos, Silver Spring, Md.; Robert K. Mohr, Washington, D.C., and Robert Meister, Silver Spring, Md., assignors to Pedro B. Macedo, Bethesda and Theodore A. Litovitz, Annapolis, both of, Md.

Continuation of Ser. No. 117,637, Feb. 1, 1980, Pat. No. 4,342,907, which is a continuation of Ser. No. 859,848, Dec. 12, 1977, abandoned. This application May 13, 1982, Ser. No. 377,904

Int. Cl.^{3} G02B *5/14*

U.S. Cl. 250—227 **11 Claims**



1. A sensor comprising an optical waveguide having means for transmitting light in at least two groups of modes denoted A and B, a pulsed optical light source means for injecting light into said waveguide so that light transmitted at least initially along said waveguide will be substantially in one of said groups, deformer means responsive to an external stress for deforming more than one spaced apart region of said waveguide with such deformation being effective to change the character of the transmission of at least a portion of the light in the vicinity of the deformation from said one group to the said other group of modes, and an optical detector having means to detect a change in the light in one of said groups in more than one of said regions and thereby monitor said external stress and separate the light from different regions by a time delay introduced because of the spatial separation between regions.

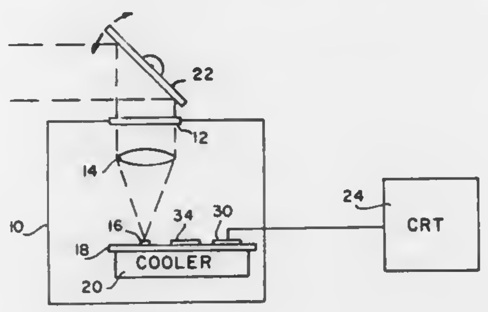
4,443,701
INTEGRATING IR DETECTOR IMAGING SYSTEMS

Gary C. Bailey, Burbank, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 25, 1981, Ser. No. 296,137

Int. Cl.^{3} G01J *1/00;* **H01J** *31/49*

U.S. Cl. 250—332 **4 Claims**



1. An integrating IR detector imaging system including a housing for said system and means for cooling said system to a very low temperature during operation, said system comprising

a plurality of InSb mesa diodes in an array fabricated from a single substrate, thereby enhancing diode junction capacitance for the purpose of providing for photocurrent charge integration on the diode junction capacitance of said mesa diodes,

means for focusing an IR image onto said diodes,

multiplexing means for reading out an integrated IR detected signal, one diode at a time, said multiplexing means being comprised of a silicon integrated circuit having much higher leakage resistance in its off state than the leakage resistance of said InSb mesa diodes, and

amplifying means connected to said multiplexing means.

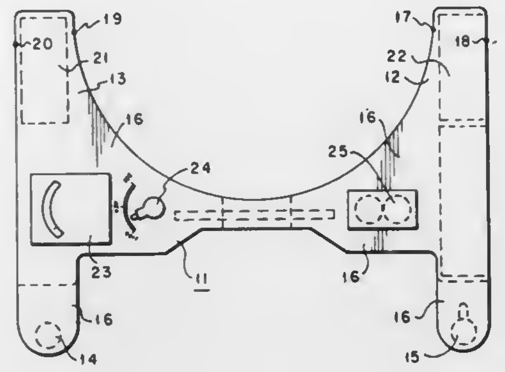
4,443,702
HAND OPERATED LEVEL DETECTOR

Daniel P. Hearn, Richardson, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Nov. 19, 1981, Ser. No. 322,781

Int. Cl.^{3} G01F *23/00*

U.S. Cl. 250—357.1 **1 Claim**



1. An apparatus for detecting the level of a nongaseous substance in a cylinder comprising a measuring means having a portion adapted to be held by hand, said means having at least first and second extensions spaced apart from each other, each of said extensions having length, width, thickness and inner and outer surfaces, said first and said second extensions extending in the same direction from said hand-held portion of said measuring means with the inner surfaces of said extensions facing each other, a gamma radioactive source means located on said first extension, a scintillator means for gamma radiation detection located on said second extension, said source means adapted to emit a signal of gamma ray energy which is attenuated by the presence of nongaseous substances and adapted to emit said gamma ray signal toward said scintillator means, and said scintillator means being adapted to receive said radiation signal emitted by said source means and adapted to produce a pulse rate signal correlating to the rate at which gamma ray particles are received by said scintillator means.

4,443,703
METHOD AND APPARATUS OF DEFLECTION CALIBRATION FOR A CHARGED PARTICLE BEAM EXPOSURE APPARATUS

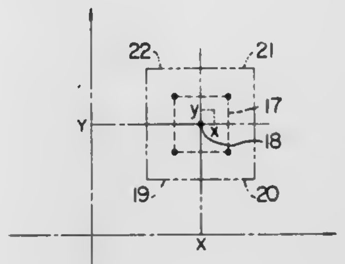
Nobuo Shimazu; Tsuneo Okubo, both of Tokyo; Norio Saitou, Iruma, and Susumu Ozasa, Kashiwa, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation and Hitachi, Ltd., both of Tokyo, Japan

Filed Feb. 10, 1982, Ser. No. 347,719

Claims priority, application Japan, Feb. 23, 1981, 56-24327

Int. Cl.^{3} H01J *37/304*

U.S. Cl. 250—491.1 **8 Claims**



1. A method of deflection calibration for a charged particle beam exposure apparatus having first deflection means for scanning a relatively large area with a charged particle beam and second deflection means for scanning a relatively small area with said beam, the method comprising:

calibrating deflection performed by said first deflection means; and

calibrating deflection performed by said second deflection means using said calibrated first deflection means.

4,443,704
METHOD OF ELECTRON BEAM EXPOSURE

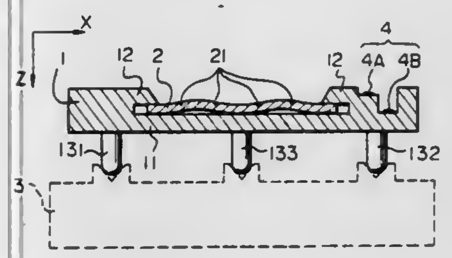
Yoshimi Yamashita, and Sumio Yamamoto, both of Yokohama, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation-in-part of Ser. No. 172,555, Jul. 28, 1980, abandoned. This application Jun. 11, 1982, Ser. No. 387,678

Claims priority, application Japan, Jul. 27, 1979, 54-95839

Int. Cl.^{3} G01N *21/00, 23/00*

U.S. Cl. 250—491.1 **5 Claims**



1. A method of electron beam exposure, which automatically effects the focusing of an electron beam by utilizing registration marks on the surface of a specimen, characterized in that plural sets of reference values for setting the conditions for electron beam exposure are obtained in relation to a plurality of sizing marks which are successively arrayed at positions in the vicinity of the pattern area of the specimen, the distance between said plurality of sizing marks in the direction in which the electron beam flows is so selected as to be greater than the magnitude of variation in position on the surface of said specimen, said plural sets of reference values for setting the exposure conditions are stored in a central processing unit, exposing said specimen to an electron beam, detecting bounced signals from the registration marks on the specimen during the actual beam exposure, and setting the exposure conditions corresponding to the registration marks on the surface of the specimen being fed from said central processing unit responsive to variation in focusing which deviates from said reference values for setting exposure conditions when said specimen is being exposed to the electron beam.

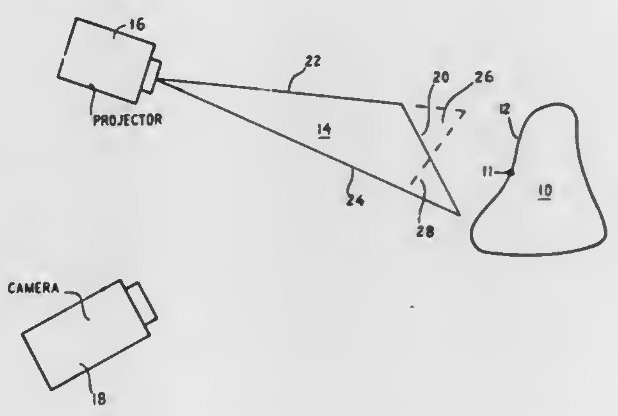
4,443,705
METHOD FOR LOCATING POINTS ON A THREE-DIMENSIONAL SURFACE USING LIGHT INTENSITY VARIATIONS

Paul DiMatteo, Huntington, and Joseph Ross, Fort Salonga, both of N.Y., assignors to Robotic Vision Systems, Inc., Hauppauge, N.Y.

Filed Oct. 1, 1982, Ser. No. 432,267

Int. Cl.^{3} G01B *11/24*

U.S. Cl. 250—558 **15 Claims**



1. A method for determining projector angles to points on a surface comprising the steps of: irradiating selectively a surface with irradiating volumes having varying intensities defining a first pattern; irradiating said surface with irradiating volumes having varying intensities defining at least a second pattern, a point to be located on the surface being irradiated by said first and second patterns; recording images of said patterns; and scanning said images to find the intensities of said point in the two patterns; determination of projector angle to said point of the surface being dependent on a predetermined algebraic function of the intensities of said point in the two patterns, said point having a possible location where the recorded images have unequal values as well as at a possible location where the recorded images have equal values.

4,443,706
METHOD FOR LOCATING POINTS ON A THREE-DIMENSIONAL SURFACE USING LIGHT INTENSITY VARIATIONS

Paul DiMatteo, Huntington, and Joseph Ross, Fort Salona, both of N.Y., assignors to Robotic Vision Systems, Inc., Hauppauge, N.Y.

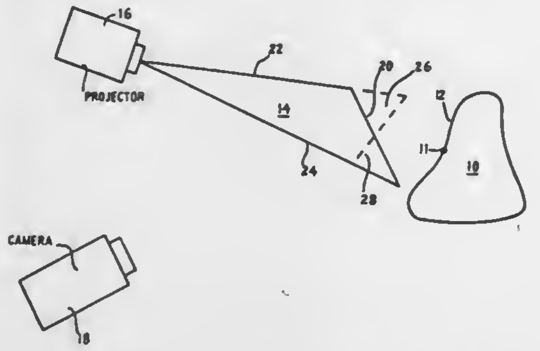
Continuation-in-part of Ser. No. 432,267, Oct. 1, 1982. This application Feb. 4, 1983, Ser. No. 463,970

Int. Cl.^{3} G01B *11/24*

U.S. Cl. 250—558 **16 Claims**

1. A method for determining projector angles to points on a surface to provide three-dimensional position information on said points, comprising the steps of: irradiating selectively a

surface with irradiating volumes having varying intensities defining a first pattern; irradiating said surface with irradiating volumes having varying intensities defining at least a second pattern; a point to be located on the surface being irradiated by said first and at least said second patterns; recording images of said patterns; and scanning said images to find the intensities of said point in the at least two patterns, said point having a possible location where the recorded images have equal values



as well as at locations between points where the recorded images have equal values, whereby three-dimensional measurements of points are obtained for an entire region between points of equal values of intensity as well as at points of equal values of intensity; the determination of projector angle to said point on the surface being dependent on a predetermined algebraic function of the intensities of said point in said at least two patterns, said intensities having calibrated singlevalued algebraic functions.

4,443,707

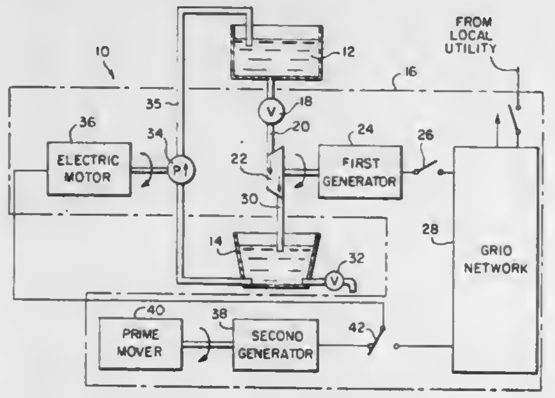
HYDRO ELECTRIC GENERATING SYSTEM

Frank Scieri, 85 W. 18th St., Deer Park, N.Y. 11729, and Richard L. Miller, Woolworth Bldg., 233 Broadway, Ste. 3612, New York, N.Y. 10007

Filed Nov. 19, 1982, Ser. No. 443,049

Int. Cl.^{3} F01K *23/10;* F03B *11/02;* H02P *13/20*

U.S. Cl. 290—4 R **7 Claims**



1. A hydro electric generating system comprising, in combination, a reservoir, an impulse turbine, said reservoir being located above said turbine, said turbine including an impeller means, a first conduit means extending downwardly from said reservoir to said turbine for conducting by gravitational fall the water from said reservoir to said turbine impeller means to cause rotation of said impeller means, said impeller means being coaxially connected to a first generator which produces electricity upon rotation of said impeller means, a sump for recovery of energy expanded water as it exits said impeller means, a second conduit means connecting said turbine with said sump for conducting water from said turbine impeller means to said sump in preparation for recovery, a third conduit means connecting said sump to said reservoir with an intermediate pump, said pump being powered by an electric motor, a second generator, a prime mover activating said second generator, an electric grid network, a first switch means for selectively applying the electricity produced by said first generator to said grid network whereby said electricity produced by said first generator can be used directly by a user or fed into the electric grid network, and a second switch means for selectively coupling said electric motor to said electric grid network or to said second generator, whereby said electric motor can be operated by said electric grid network or said prime mover.

4,443,708

APPARATUS FOR STORING THE ENERGY OF OCEAN WAVES

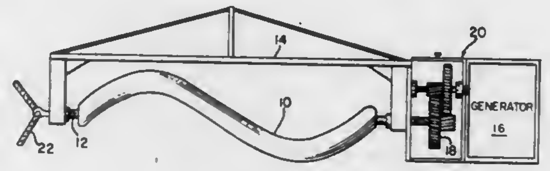
James M. Lapeyre, New Orleans, La., assignor to The Laitram Corporation, New Orleans, La.

Continuation of Ser. No. 373,442, Jun. 25, 1973, which is a continuation-in-part of Ser. No. 148,775, Jun. 1, 1971, abandoned. This application May 19, 1976, Ser. No. 687,678

The portion of the term of this patent subsequent to Jun. 25, 1991, has been disclaimed.

Int. Cl.^{3} F03C *5/02*

U.S. Cl. 290—53 **1 Claim**



1. Apparatus for manufacturing hydrogen gas from sea water, said apparatus comprising in combination:

means for converting the motion of gravity waves in sea water to electrical energy in the form of DC current and including an elongated bouyant member curved about an axis to form a helix and means for mounting said helical bouyant member for rotation about said axis, said means for mounting including means for suspending said helical bouyant member so as to enable said member to float partially submerged with respect to the crests of said gravity waves;

means for electrolyzing a quantity of sea water, using said electrical energy, to form hydrogen gas;

wherein said axis of said bouyant member is oriented substantially parallel to the approximate mean direction of propagation of said gravity waves.

4,443,709

FREQUENCY RESPONSIVE SYSTEM POWER SEQUENCER

Luther L. Genuit, Scottsdale, and John R. Nowell, Phoenix, both of Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Apr. 8, 1982, Ser. No. 366,738

Int. Cl.^{3} H02J *13/00*

U.S. Cl. 307—41 **4 Claims**

1. A power sequencer for controlling the application of a power signal, via a first plurality of actuator controlled elements to a plurality of equipment cabinets of a system, each equipment cabinet having associated therewith at least one actuator corresponding to one of said first plurality of actuator controlled elements, each actuator operatively connected to said power sequencer and responsive to a coded signal of said power sequencer, the power sequencer comprising:

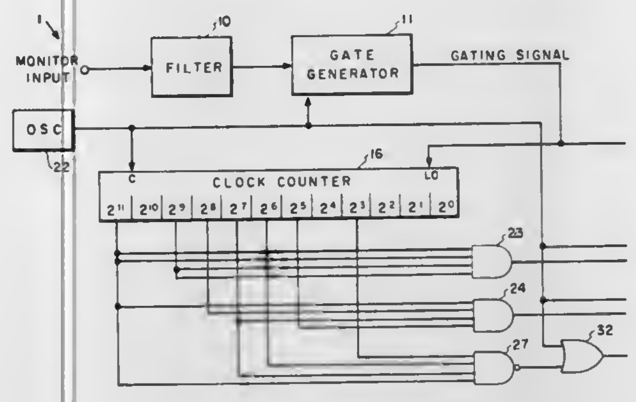
(a) means for generating a gating signal having a first and second state, the duration of the first state of said gating signal having a predetermined relationship to the frequency of said power signal;

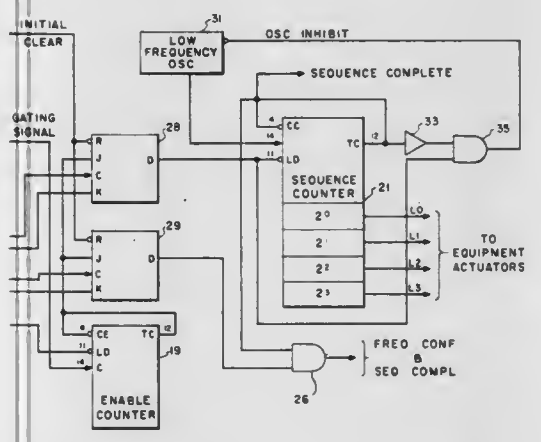
(b) means, having an input terminal adapted to receive a clock signal of a predetermined frequency, for counting said clock signal during an enable period of said means for counting determined by the first state of said gating signal;

(c) first gate means for combining a first count of said means for counting, to output a first output signal when a first predetermined frequency threshold value of said power signal is detected;

(d) second gate means for combining a second count of said means for counting, to output a second output signal when a second predetermined frequency threshold value of said power signal is detected; and

(e) means, having a first and second input terminal adapted to receive said first output signal and said second output signal, respectively, for generating an output signal, whereby said output signal is generated in response to said first output signal thereby initiating a power-on sequence and said output signal is inhibited in response to said second output signal thereby initiating a power off sequence of said equipment cabinets, the output signal having a coded sequence, each actuator being capable of recognizing one of the codes of said coded sequence causing said power signal to be applied to each of the equipment cabinets in a desired sequence.





4,443,710

CONTROL AND MONITORING DEVICE FOR INFLUENCING SAFETY-RELEVANT SYSTEM PARTS OF A POWER PLANT

Horst Hofmann, Bubenreuth, and Karl-Heinz Lochner, Röttenbach, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

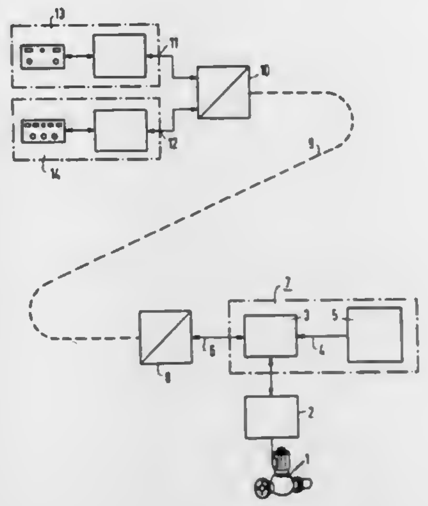
Filed Apr. 14, 1981, Ser. No. 253,905

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1980, 3014421

Int. Cl.^{3} H02J *1/00;* G02F *1/28*

U.S. Cl. 307—80 **2 Claims**

1. Control and monitoring devices for influencing safety-relevant system parts in a power station, comprising at least two rooms being separated from each othr, similar electric circuits disposed in each of said rooms for at least one of giving commands and receiving acknowledgements for influencing a system part, a similar, normally operational power supply being disposed in each of said rooms and being completely electrically separate from each other, electro-optical converters for transmitting signals being disposed in each of said rooms, and optical wave guide cables connecting said converters to each other.



4,443,711

ELECTRET DEVICE

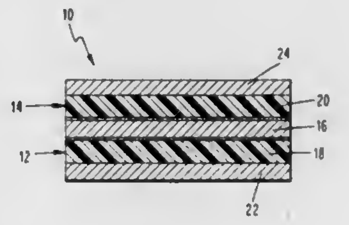
Masamichi Tanaka, Yamato, and Hiroto Wada, Yokosuka, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 280,016, Jun. 30, 1981, abandoned. This application Jun. 3, 1983, Ser. No. 500,831

Claims priority, application Japan, Jun. 30, 1980, 55-88781; Jun. 30, 1980, 55-88821; Jun. 30, 1980, 55-88822; Jun. 30, 1980, 55-88823

Int. Cl.^{3} G11C *13/02*

U.S. Cl. 307—400 **7 Claims**



1. An electret device comprising:

a first electret element having a negatively polarized dielectric layer and a conductive layer, and

a second electret element having a positively polarized dielectric layer and a conductive layer, said second electret element being stacked upon said first electret element with the respective dielectric layers facing each other,

wherein said electret elements each has a relatively uniform surface charge distribution approximately equal to the sum of the respective charge potentials of said electret elements, individually.

4,443,712

SWITCH DEVICE FOR CONNECTING AC POWER SOURCE TO LOAD

Masami Gokita, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 17, 1982, Ser. No. 378,735

Claims priority, application Japan, May 20, 1981, 56-74851

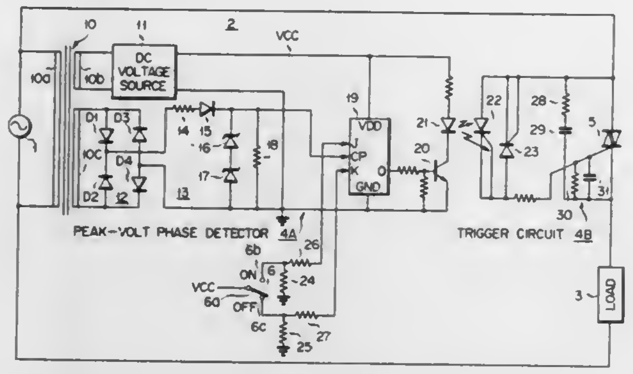
Int. Cl.^{3} H03K *17/60*

U.S. Cl. 307—140 **8 Claims**

1. A switch device for controlling a bidirectional semiconductor switching element connected between an AC power source and a load, comprising:

means for generating a stream of pulses having a pulse for each positive and negative voltage peak of said AC power source and synchronized therewith;

flip-flop circuit means, having a clock input coupled to said stream of pulses, a control input for controlling whether said flip-flop circuit means is in an "enabled" or a "disable" state, and an output providing pulses synchronized with said stream of pulses at said clock input when in said "enabled" state;



controlled switching means, having a manually operable switch, for providing a control signal to said control input causing said flip-flop circuit means to operate in said "enabled" state in response to said switch being actuated; and

trigger circuit means, responsive to said output pulses of said flip-flop circuit means, for controlling said bidirectional switching element.

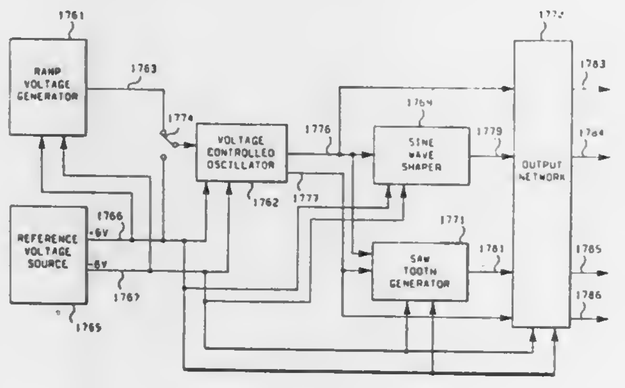
4,443,713
WAVEFORM GENERATOR

James E. Layton, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 105,041, Dec. 18, 1979, Pat. No. 4,305,274, which is a continuation of Ser. No. 955,843, Oct. 30, 1978, abandoned. This application Sep. 24, 1981, Ser. No. 305,291

Int. Cl.³ H03K *3/01, 5/01*

U.S. Cl. 307—260 **33 Claims**



1. Apparatus for generating simultaneously a plurality of output signals comprising:

means for generating a regulated voltage which has a substantially constant voltage level;

means for generating a triangular waveform in response to a voltage input;

means for supplying said regulated voltage as a voltage input to said means for generating a triangular waveform to thereby enable said means for generating a triangular waveform to output a triangular waveform;

means for generating a square waveform in response to a voltage input;

means for supplying said regulated voltage as a voltage input to said means for generating a square waveform to thereby enable said means for generating a square waveform to output a square waveform;

means for generating a sine waveform in response to a triangular waveform;

means for supplying said triangular waveform as an input to said means for generating a sine waveform to thereby enable said means for generating a sine waveform to output a sine waveform;

means for generating a sawtooth waveform in response to a triangular waveform and a square waveform;

means for supplying said triangular waveform and said square waveform as inputs to said means for generating a sawtooth waveform to thereby enable said means for generating a sawtooth waveform to output a sawtooth waveform; and

means for supplying said triangular waveform, said sawtooth waveform, said sine waveform, and said square waveform as output signals from said means for generating simultaneously a plurality of output signals, said triangular waveform, said square waveform, said sine waveform, and said sawtooth waveform having constant frequencies.

4,443,714
SEMICONDUCTOR BUFFER CIRCUIT HAVING COMPENSATION FOR POWER SOURCE FLUCTUATION

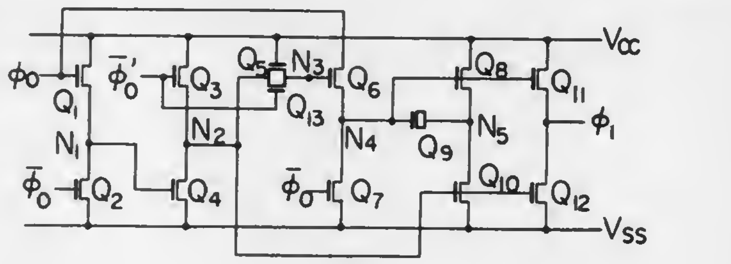
Tomio Nakano, Kawasaki, and Yoshihiro Takemae, Yokohama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 16, 1981, Ser. No. 331,476

Claims priority, application Japan, Dec. 24, 1980, 55-183075

Int. Cl.³ H03K *5/135, 19/017, 19/096*

U.S. Cl. 307—269 **6 Claims**



1. A semiconductor circuit, used as a buffer circuit and operatively connectable to a power source voltage and to receive an input clock signal, having first and second levels, and an inverted input clock signal, comprising:

an input stage circuit for receiving the input clock signal and the inverted input clock signal, and for generating an output signal at a node, said input stage circuit including a first field effect transistor, having a gate, for charging up said node via its drain-source current path and maintaining the node at a predetermined voltage during a standby period in which the input clock signal is at the first level;

a bootstrap circuit comprising a second field effect transistor operatively connected to said node, for receiving the output signal of said input stage circuit, said bootstrap circuit generating a boosted signal in response to the output signal of said input stage circuit; and

an output circuit, comprising a third field effect transistor operatively connected to said bootstrap circuit, for receiving the boosted signal and for generating an output clock signal;

means for applying a high level clock signal, having the same phase as the inverted clock signal and a level higher than the level of the sum of the power source voltage and the threshold voltage of said first field effect transistor, to the gate of said first field effect transistor, so that, during the standby period, the predetermined voltage of said node is maintained at a level corresponding to the power source voltage by leaking excessive charges at said node through said first field effect transistor to lower the voltage level of said node.

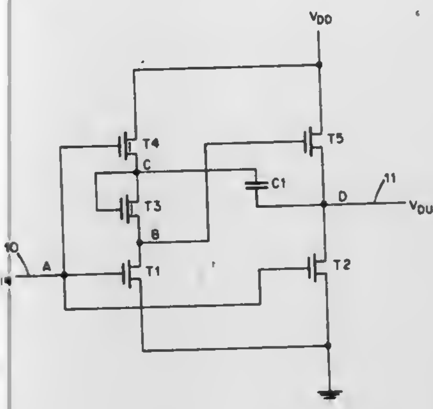
4,443,715
DRIVER CIRCUIT

Jeffrey R. Fox, Concord, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Mar. 25, 1982, Ser. No. 361,714

Int. Cl.³ H03K *3/01, 17/687*

U.S. Cl. 307—270 **6 Claims**



1. A driver circuit comprising

an input terminal for receiving input signals having a first voltage level or a second voltage level;

an output terminal;

a first field effect transistor, an impedance means, and a second field effect transistor connected in series between a source of operating potential and a point of reference potential;

said first field effect transistor being connected to said impedance means at a juncture of said first field effect transistor and said impedance means;

said impedance means being connected to said second field effect transistor at a juncture of said impedance means and said second field effect transistor;

a third field effect transistor and a fourth field effect transistor connected in series between the source of operating potential and the point of reference potential;

said third field effect transistor being connected to said fourth field effect transistor at a juncture of said third field effect transistor and said fourth field effect transistor;

said input terminal being directly connected to the gate electrodes of the first field effect transistor, the second field effect transistor, and the fourth field effect transistor;

the juncture of said impedance means and said second field effect transistor being directly connected to the gate electrode of the third field effect transistor; and

capacitance means connected between the juncture of said first field effect transistor and said impedance means and the juncture of said third field effect transistor and said fourth field effect transistor;

said output terminal being connected to the juncture of said third field effect transistor and said fourth field effect transistor.

4,443,716
SYMMETRICAL-HYSTERESIS HALL SWITCH

Grant D. Avery, Loudon, N.H., assignor to Sprague Electric Company, North Adams, Mass.

Filed Jan. 26, 1982, Ser. No. 342,686

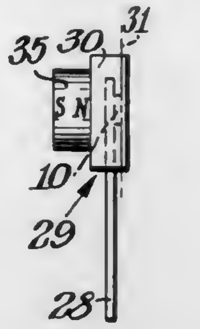
Int. Cl.³ H03K *17/90, 3/26;* **H01L** *43/06*

U.S. Cl. 307—309 **4 Claims**

1. A symmetrical-hysteresis Hall switch comprising:

(a) an integrated circuit including a Hall element and a threshold detector means with hysteresis for producing one electrical output condition when the ambient magnetic field normal to said Hall element becomes greater than one value in one magnetic field polarity and another electrical output condition when said ambient magnetic field becomes less than a second and larger value in said one polarity; and

(b) a magnet being fixedly mounted with respect to said integrated circuit and having a relative position and a strength to produce a magnetic field normal to said Hall element of a third value in said one polarity that is essentially equal to the average of said first and second values,



to provide a symmetrical-hysteresis characteristic with respect to any superimposed ambient fields in said one and the other polarity.

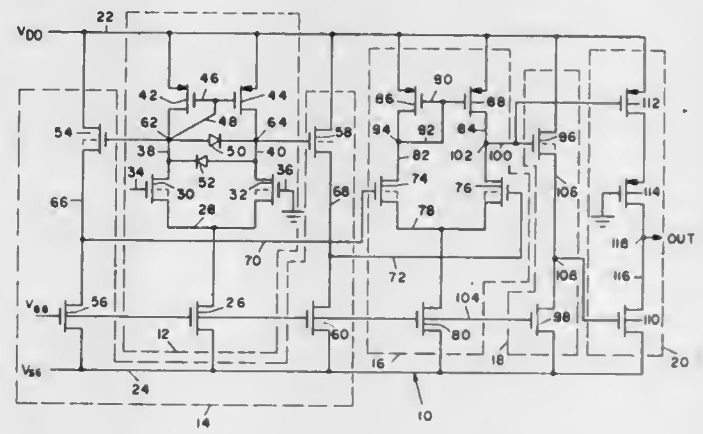
4,443,717
HIGH RESOLUTION FAST DIODE CLAMPED COMPARATOR

Yusuf A. Hague, San Jose, Calif., assignor to American Microsystems, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 111,606, Jan. 14, 1980, abandoned. This application Dec. 30, 1981, Ser. No. 335,910

Int. Cl.³ H03K *5/24*

U.S. Cl. 307—362 **6 Claims**



1. An electronic comparator circuit comprising:

a first differential amplifier stage having a relatively high output impedance including:

a first current source;

an inverting input leg containing a load device, an inverting input transistor having an inverting input lead, and a first output node; and

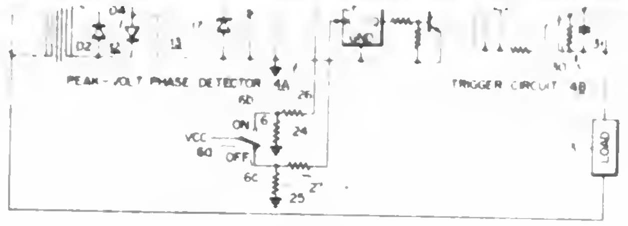
a noninverting input leg containing a load device, a noninverting input transistor having a noninverting input lead, and a second output node;

a second differential amplifier stage having a relatively high input capacitance including:

a second current source, an inverting leg containing a load device and an inverting transistor having an inverting input lead; and

a noninverting leg containing a load device, a noninverting transistor having a noninverting input lead, and a third output node;

an impedance converting stage for reducing the relatively high output impedance of said first differential amplifier stage to drive the high input capacitance of said second differential amplifier stage, said impedance converting stage containing a first and a second leg, said first leg of said impedance converting stage containing a fourth output node, a third current source and a transistor having its control electrode connected to said first output node of



controlled switching means, having a manually operable switch, for providing a control signal to said control input causing said flip-flop circuit means to operate in said "enabled" state in response to said switch being actuated; and

trigger circuit means, responsive to said output pulses of said flip-flop circuit means, for controlling said bidirectional switching element.

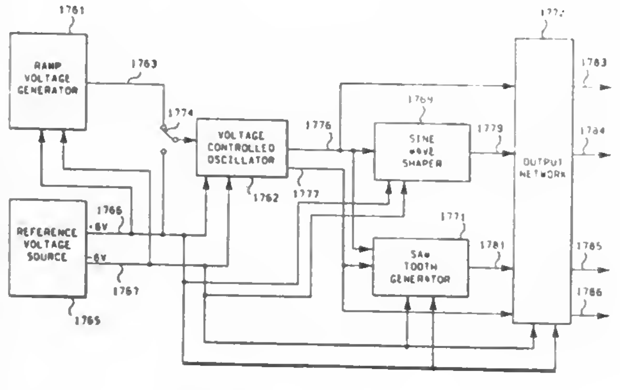
4,443,713
WAVEFORM GENERATOR

James E. Layton, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 105,041, Dec. 18, 1979, Pat. No. 4,305,274, which is a continuation of Ser. No. 955,843, Oct. 30, 1978, abandoned. This application Sep. 24, 1981, Ser. No. 305,291

Int. Cl.^{3} H03K *3/01, 5/01*

U.S. Cl. 307—260 **33 Claims**



1. Apparatus for generating simultaneously a plurality of output signals comprising:

means for generating a regulated voltage which has a substantially constant voltage level;

means for generating a triangular waveform in response to a voltage input;

means for supplying said regulated voltage as a voltage input to said means for generating a triangular waveform to thereby enable said means for generating a triangular waveform to output a triangular waveform;

means for generating a square waveform in response to a voltage input;

means for supplying said regulated voltage as a voltage input to said means for generating a square waveform to thereby enable said means for generating a square waveform to output a square waveform;

means for generating a sine waveform in response to a triangular waveform;

means for supplying said triangular waveform as an input to said means for generating a sine waveform to thereby

… as output signals from said means for generating simultaneously a plurality of output signals, said triangular waveform, said square waveform, said sine waveform, and said sawtooth waveform having constant frequencies.

4,443,714
SEMICONDUCTOR BUFFER CIRCUIT HAVING COMPENSATION FOR POWER SOURCE FLUCTUATION

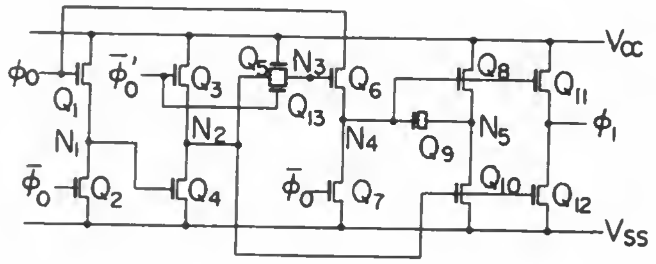
Tomio Nakano, Kawasaki, and Yoshihiro Takemae, Yokohama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 16, 1981, Ser. No. 331,476

Claims priority, application Japan, Dec. 24, 1980, 55-183075

Int. Cl.^{3} H03K *5/135, 19/017, 19/096*

U.S. Cl. 307—269 **6 Claims**



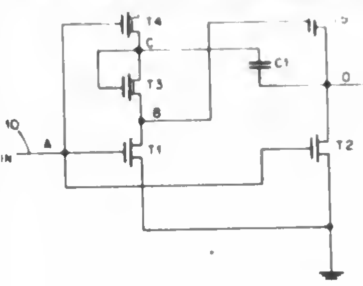
1. A semiconductor circuit, used as a buffer circuit and operatively connectable to a power source voltage and to receive an input clock signal, having first and second levels, and an inverted input clock signal, comprising:

an input stage circuit for receiving the input clock signal and the inverted input clock signal, and for generating an output signal at a node, said input stage circuit including a first field effect transistor, having a gate, for charging up said node via its drain-source current path and maintaining the node at a predetermined voltage during a standby period in which the input clock signal is at the first level;

a bootstrap circuit comprising a second field effect transistor operatively connected to said node, for receiving the output signal of said input stage circuit, said bootstrap circuit generating a boosted signal in response to the output signal of said input stage circuit; and

an output circuit, comprising a third field effect transistor operatively connected to said bootstrap circuit, for receiving the boosted signal and for generating an output clock signal;

means for applying a high level clock signal, having the same phase as the inverted clock signal and a level higher than the level of the sum of the power source voltage and the threshold voltage of said first field effect transistor, to the gate of said first field effect transistor, so that, during the standby period, the predetermined voltage of said node is maintained at a level corresponding to the power source voltage by leaking excessive charges at said node through said first field effect transistor to lower the voltage level of said node.



1. A driver circuit comprising

an input terminal for receiving input signals having a first voltage level or a second voltage level;

an output terminal;

a first field effect transistor, an impedance means, and a second field effect transistor connected in series between a source of operating potential and a point of reference potential;

said first field effect transistor being connected to said impedance means at a juncture of said first field effect transistor and said impedance means;

said impedance means being connected to said second field effect transistor at a juncture of said impedance means and said second field effect transistor;

a third field effect transistor and a fourth field effect transistor connected in series between the source of operating potential and the point of reference potential;

said third field effect transistor being connected to said fourth field effect transistor at a juncture of said third field effect transistor and said fourth field effect transistor;

said input terminal being directly connected to the gate electrodes of the first field effect transistor, the second field effect transistor, and the fourth field effect transistor;

the juncture of said impedance means and said second field effect transistor being directly connected to the gate electrode of the third field effect transistor; and

capacitance means connected between the juncture of said first field effect transistor and said impedance means and the juncture of said third field effect transistor and said fourth field effect transistor;

said output terminal being connected to the juncture of said third field effect transistor and said fourth field effect transistor.

4,443,716
SYMMETRICAL-HYSTERESIS HALL SWITCH

Grant D. Avery, Loudon, N.H., assignor to Sprague Electric Company, North Adams, Mass.

Filed Jan. 26, 1982, Ser. No. 342,686

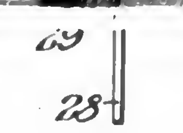
Int. Cl.^{3} H03K *17/90, 3/26;* **H01L** *43/06*

U.S. Cl. 307—309 **4 Claims**

1. A symmetrical-hysteresis Hall switch comprising:

(a) an integrated circuit including a Hall element and a threshold detector means with hysteresis for producing one electrical output condition when the ambient magnetic field normal to said Hall element becomes greater than one value in one magnetic field polarity and another electrical output condition when said ambient magnetic field becomes less than a second and larger value in said one polarity; and

(b) a magnet being fixedly mounted with respect to said integrated circuit and having a relative position and a



to provide a symmetrical-hysteresis characteristic with respect to any superimposed ambient fields in said one and the other polarity.

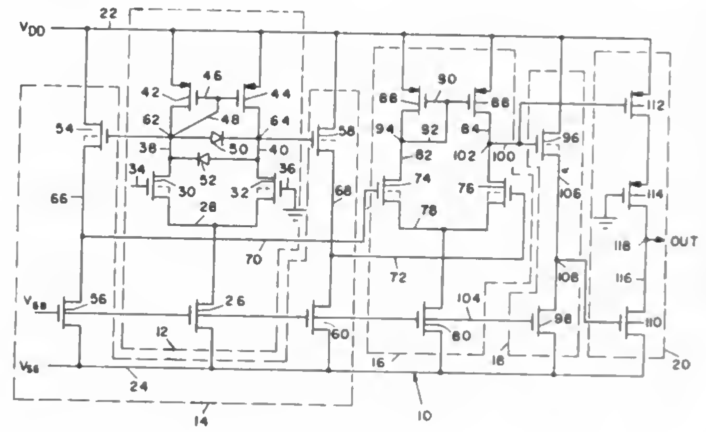
4,443,717
HIGH RESOLUTION FAST DIODE CLAMPED COMPARATOR

Yusuf A. Hague, San Jose, Calif., assignor to American Microsystems, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 111,606, Jan. 14, 1980, abandoned. This application Dec. 30, 1981, Ser. No. 335,910

Int. Cl.^{3} H03K *5/24*

U.S. Cl. 307—362 **6 Claims**



1. An electronic comparator circuit comprising:

a first differential amplifier stage having a relatively high output impedance including:

a first current source;

an inverting input leg containing a load device, an inverting input transistor having an inverting input lead, and a first output node; and

a noninverting input leg containing a load device, a noninverting input transistor having a noninverting input lead, and a second output node;

a second differential amplifier stage having a relatively high input capacitance including:

a second current source, an inverting leg containing a load device and an inverting transistor having an inverting input lead; and

a noninverting leg containing a load device, a noninverting transistor having a noninverting input lead, and a third output node;

an impedance converting stage for reducing the relatively high output impedance of said first differential amplifier stage to drive the high input capacitance of said second differential amplifier stage, said impedance converting stage containing a first and a second leg, said first leg of said impedance converting stage containing a fourth output node, a third current source and a transistor having its control electrode connected to said first output node of said inverting input leg of said first differential amplifier stage, said fourth output node of said first leg of said impedance converting stage being connected to said noninverting input lead of said second differential amplifier stage, said second leg of said impedance converting stage containing a fifth output node, a fourth current source, and a transistor having its control electrode connected to said second output node of said noninverting input leg of said first differential amplifier stage, said fifth output node of said second leg of said impedance converting stage being connected to said inverting input lead of said second differential amplifier stage;

a level shift stage having an input lead connected to said third output node of said second differential amplifier stage, and having a sixth output node; and

an output stage including a first output transistor having its control electrode connected to said third output node of said second differential amplifier stage, a second output transistor having its control electrode connected to said sixth output node of said level shift stage, a third output transistor having its control electrode connected to a voltage source, and a seventh output node.

4,443,718
NONVOLATILE SEMICONDUCTOR MEMORY WITH STABILIZED LEVEL SHIFT CIRCUIT

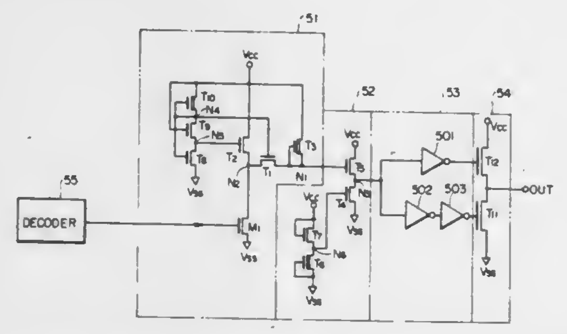
Takaaki Hagiwara, Kodaira, and Yuji Yatsuda, Hachioji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 19, 1980, Ser. No. 188,740

Claims priority, application Japan, Sep. 21, 1979, 54-120639

Int. Cl.^{3} G11C *17/00, 7/06, 11/40*

U.S. Cl. 307—530 **9 Claims**



1. A nonvolatile semiconductor memory comprising a memory matrix including a plurality of memory cells having nonvolatile memory elements and arranged in the form of a matrix, means for selecting a desired memory cell from said memory matrix, and a read-out circuit for reading out the information stored in the selected memory cell, said read-out circuit including a sense amplifier and an output buffer, said sense amplifier including an inverter having a load element to which a supply voltage is applied and a selected memory cell acting as a driver element, said output buffer including a level shift circuit for shifting the level of an output signal voltage from said sense amplifier, said level shift circuit including means for stabilizing the level of the shifted signal voltage during fluctuations in said supply voltage, and an output driver circuit for receiving the shifted signal voltage from said level shift circuit.

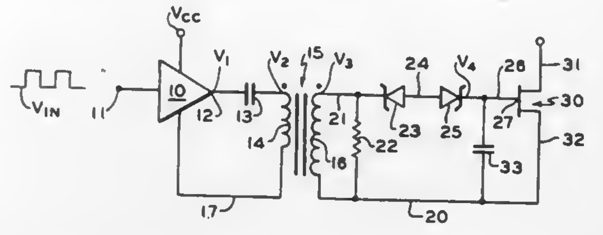
4,443,719
VOLTAGE ISOLATED GATE DRIVE CIRCUIT

Norman G. Planer, Annandale, and Zoltan Zansky, Roseville, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 11, 1982, Ser. No. 387,403

Int. Cl.^{3} H03K *17/10, 17/687*

U.S. Cl. 307—570 **9 Claims**



1. An isolated drive circuit for a high voltage semiconductor device at relatively low switching frequency, including: transformer means including a primary winding and a secondary winding with said primary winding connected to input means; said input means including differentiator means driven by a signal voltage; a field effect transistor including a gate electrode and source-drain means connected to a high voltage source; and said secondary winding connected to said gate through bidirectional voltage breakdown means, and to said source-drain means to control conduction of current through said source-drain means from said high voltage source; said signal voltage and said high voltage source being isolated from each other by said transformer means to allow said field effect transistor to be controlled by said signal voltage which is small in comparison to the magnitude of said high voltage source.

4,443,720
BOOTSTRAP CIRCUIT

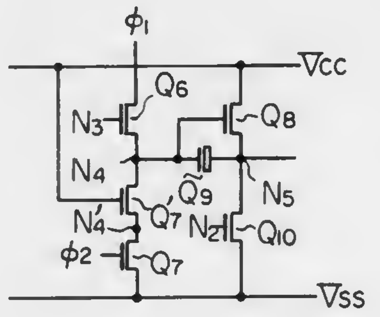
Yoshihiro Takemae, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 12, 1980, Ser. No. 215,630

Claims priority, application Japan, Dec. 19, 1979, 54-165013

Int. Cl.^{3} H03K *5/01*

U.S. Cl. 307—578 **9 Claims**



1. In a bootstrap circuit in which a load MOS transistor and a drive MOS transistor are connected in series between a first potential source and a second potential source to form an inverter, with a terminal between said load and drive transistors, a capacitor has a first of two terminals connected to said terminal of said inverter, a circuit for charging said capacitor and a circuit for discharging said capacitor are connected to the other terminal of said capacitor, said circuit for discharging said capacitor being connected between said other terminal of said capacitor and said second potential source and comprising a first MOS transistor which is connected at its source and drain to allow said capacitor to discharge therebetween when said first MOS transistor is rendered conductive by a reset signal that is applied to the gate of said first MOS transistor, the improvement comprising

second MOS transistor connected at its drain and source between said first MOS transistor of said discharge circuit and said other terminal of said capacitor, and

means for continuously supplying a constant voltage to the gate of said second MOS transistor,

wherein the value of said constant voltage is selected to reduce the voltage across said source and drain of said first MOS transistor, during the time that said reset signal is applied to discharge said capacitor, to a value sufficiently below (1) the difference between (a) the voltage of said other terminal of said capacitor and (b) the voltage of said second potential source, (2) less the threshold voltage of said second MOS transistor, so as to sufficiently avoid the risk of punch-through or breakdown of said first MOS transistor,

wherein said constant voltage is continuously supplied to the gate of said second MOS transistor including during said charging and discharging of said capacitor.

4,443,721
ELECTRODYNAMIC DEVICE FOR TRANSLATING AN OBJECTIVE

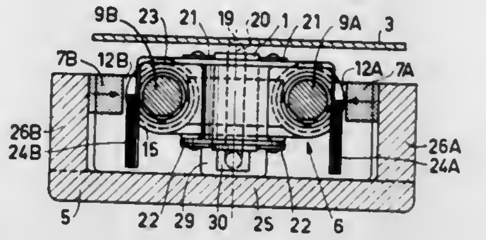
Gerardus L. M. Jansen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 4, 1983, Ser. No. 471,972

Claims priority, application Netherlands, Dec. 24, 1982, 8204981

Int. Cl.^{3} H02K *41/00*

U.S. Cl. 310—14 **7 Claims**



1. An electrodynamic device for translating an objective along a radial path to a disc which rotates about an áxis of rotation, which device comprises:

a frame,

a slide which is translatable relative to the frame along said radial path (4) and which carries the objective,

a parallel-guide arrangement for the slide, which arrangement comprises bearing means for guiding the sliding relative to the frame parallel to said path,

at least one permanent-magnetic stator magnet which is secured to the frame, which extends parallel to said path and which is magnetized transversely of said path,

a stator yoke of a magnetizable material, which yoke carries the stator magnet, and

at least one drive coil of an electrically conductive material, which coil is connected to the slide and is translatable in the magnetic field of the stator magnet,

characterized in that:

the parallel-guide arrangement comprises at least one guide rod of a magnetizable material, which rods secured to the frame and carries the slide,

the guide rod forms part of the stator yoke and an air gap is formed between the guide rod and the stator magnet, and the drive coil is arranged around the guide rod.

4,443,722
ROTOR OF A SUPERCONDUCTIVE ROTARY ELECTRIC MACHINE

Toshiki Hirao, and Kouichi Okamoto, both of Kobe, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 8, 1982, Ser. No. 386,416

Claims priority, application Japan, Jun. 15, 1981, 56-92614

Int. Cl.^{3} H02K *15/12*

U.S. Cl. 310—45 **2 Claims**

1. A rotor for a superconductive rotary electric machine comprising:

a shaft having longitudinal slots along the outer surface thereof and an end portion at each end with an annular recess therearound;

superconducting field coils in said slots and having circumferentially extending coil end portions in said recesses and spaced in the direction of the length of said shaft;

insulation filler filling the spaces in said recesses between adjacent coil end portions;

keeper sleeves shrink fitted around the end portions of said shaft; and

a laminated insulating cover between each keeper sleeve and the coil end portions and composed of a plurality of thin cylindrical layers adhered to each other, each of said layers being a thin sheet of a prefabricated single insulating material constituted by at least two insulating plates with the circumferentially facing edges abutting each other at points displaced circumferentially from joints in other layers, said keeper sleeves and cover tightly holding said coil end portions in said recess.

4,443,723
VENTILATION DEVICE FOR A ROTATING ELECTRIC MACHINE

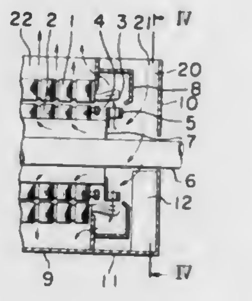
Sumiharu Ohkubo, Nagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 2, 1982, Ser. No. 394,729

Claims priority, application Japan, Jul. 16, 1981, 56-111629

Int. Cl.^{3} H02K *9/00*

U.S. Cl. 310—53 **3 Claims**



1. In a rotating electric machine having a housing including a side plate, a stator, and a rotor assembly mounted on a rotor shaft extending through said side plate and into said housing in an axial direction, a ventilation-device comprising:

a ventilation guide adjacent an end of said stator and extending axially to a portion facing said side plate, said facing portion of said ventilation guide being axially spaced from said side plate, said ventilation guide and said side plate defining a suction chamber located axially between said side walls and said ventilation guide;

an intake port in said housing at an axial position corresponding to said ventilation guide and said suction chamber;

a discharge port in said housing at an axial position spaced from said suction chamber by said ventilation guide;

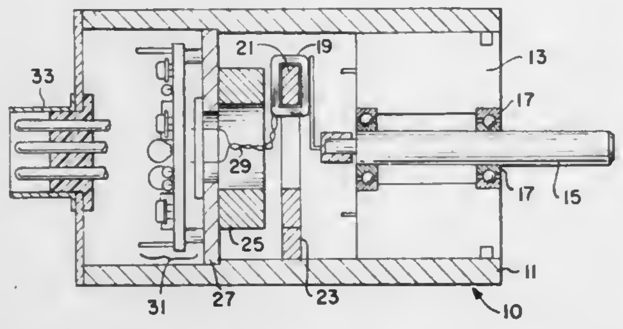
a fan fixed to said rotor assembly and positioned in said ventilation guide; and

a single radially extending whirling stream prevention plate positioned in said suction chamber only at a position spaced from said intake port by said rotor shaft, said whirling stream prevention plate axially extending for substantially the entire axial space between said side plate and said ventilation guide, whereby swirling of air in said suction chamber is prevented.

4,443,724
SHAFT TRANSDUCER HAVING DC OUTPUT PROPORTIONAL TO ANGULAR VELOCITY

Mathias B. Handlykken, Trondheim, Norway, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 19, 1982, Ser. No. 350,475
Int. Cl.^{3} H02K *17/32*
U.S. Cl. 310—171 **16 Claims**

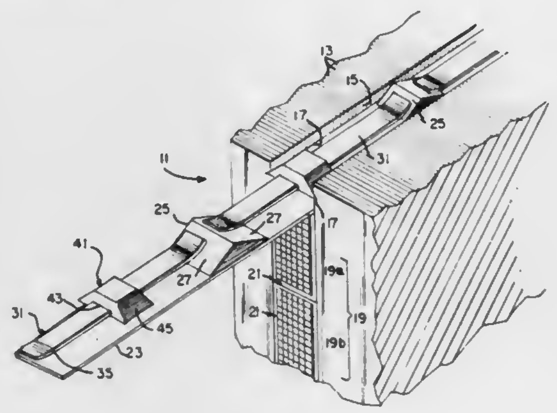


1. A transducer for measuring the angular velocity of a rotatable member such as a shaft, said transducer comprising:
at least one electrical conductor moveable through an arcuate path;
coupling means for coupling said conductor to the rotatable member and for driving said electrical conductor along said arcuate path at a velocity proportional to the angular velocity of the rotatable member;
limiting means for limiting movement of said conductor along said arcuate path to less than, but at least one-half of, a complete rotation;
magnetic circuit means for producing a substantially uniform unipolar magnetic field along said arcuate path of said electrical conductor wherein said magnetic circuit means is composed of an annular magnet and an annular pole piece separated by an annular air gap with said annular magnet, said annular pole piece and said air gap having the same axis of revolution, and with the flux in said air gap being generally parallel to said axis of revolution; and
output means for electrically coupling said at least one electrical conductor to an output.

4,443,725
DYNAMOELECTRIC MACHINE STATOR WEDGE

Scott K. Derderian, Salem, Mass., and James C. Katsekas, Windham, N.H., assignors to General Electric Company, Lynn, Mass.

Filed Jun. 14, 1982, Ser. No. 388,456
Int. Cl.^{3} H02K *3/48*
U.S. Cl. 310—214 **1 Claim**

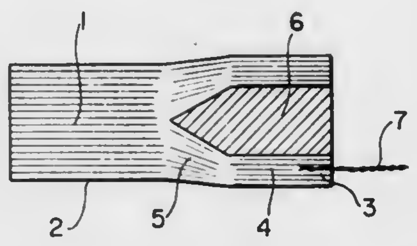


1. An improved dovetail wedge for a dynamoelectric machine wedging system wherein said wedging system includes pressure wedges bearing against stator bars, curling wedges bearing against the pressure wedges and dovetail wedges bearing against the pressure wedges and stator core slot; and, wherein the dovetail wedge improvement comprises: a three ply interlaminar rolled construction including at least two sheets of epoxy-glass plies and one sheet of woven aromatic polyamide fabric, said two glass plies abutting one another and together being wound in spiral form with the polyamide fabric so that the polyamide fabric completely surrounds the glass plies.

4,443,726
BRUSHES AND METHOD FOR THE PRODUCTION THEREOF

Shigeru Ikegami, and Takashi Ohsaki, both of Shizuoka, Japan, assignors to Toho Beslon Co., Ltd.; Japan Marine Machinery Development Assoc. and Sumitomo Heavy Industries, Ltd., all of Tokyo, Japan

Filed May 10, 1982, Ser. No. 376,864
Claims priority, application Japan, May 9, 1981, 56-68911
Int. Cl.^{3} H02K *13/00*
U.S. Cl. 310—248 **25 Claims**



1. A brush for conducting electricity, comprising: a brush portion comprising a bundle of metal-coated carbon fibers disposed substantially in parallel with one another, and a base, said base including a region where said metal-coated carbon fibers are joined together into a composite by diffusion bonding, said base having at least one electrically conductive metallic piece arranged parallel to the bundle of carbon fibers and having one end positioned at an end of said base, wherein the metallic base is a plate-like member having a sharpened end at a side thereof proximate the brush portion.

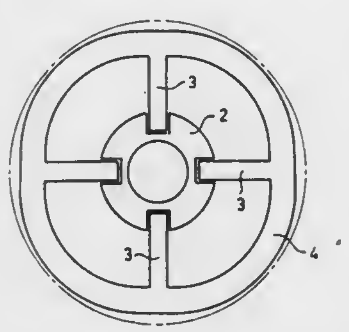
4,443,727
DEFORMABLE ROTOR FOR A HYDROELECTRIC MACHINE

Heinz Annen, Hägglingen; Friedrich Schneebeli, Oberengstringen, and Helmut Pirchl, Zurich, all of Switzerland, assignors to Escher Wyss Limited, Zurich, Switzerland

Continuation of Ser. No. 226,538, Jan. 19, 1981, abandoned. This application Jun. 2, 1982, Ser. No. 384,258

Claims priority, application Switzerland, Feb. 20, 1980, 1362/80

Int. Cl.^{3} F16F *15/12*
U.S. Cl. 310—261 **2 Claims**

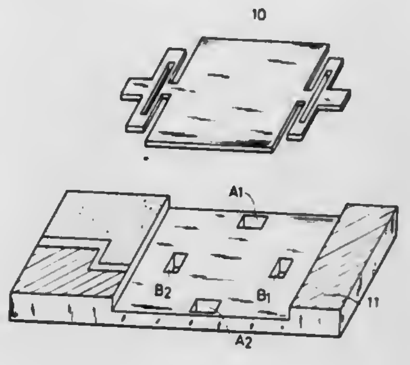


1. A rotor for a large hydroelectric machine comprising a central hub; radially extending blades; and a rim connecting the outer ends of the blades and having an outer surface portion which has a predetermined noncircular configuration when the rotor is at rest at room temperature, the deviations between said predetermined configuration and a circular configuration corresponding in magnitude and being opposite in sense to displacements of said surface portion caused by centrifugal and thermal stresses encountered during operation so that, when the rotor is in operation, said surface portion assumes a circular shape, and in which the blades are connected to the hub in radially displaceable manner, and the rim, when resting at room temperature, has a form differing from the circular in such a way that it assumes a circular form only in the rotating state under the influence of centrifugal forces exerted on it by the blades.

4,443,728
GT-CUT QUARTZ RESONATOR

Akihito Kudo, 31-1; Kameido 6-chome, Koto-ku, Tokyo, Japan

Filed Nov. 20, 1981, Ser. No. 323,491
Claims priority, application Japan, May 29, 1981, 56-82133
Int. Cl.^{3} H01L *41/08*
U.S. Cl. 310—312 **22 Claims**

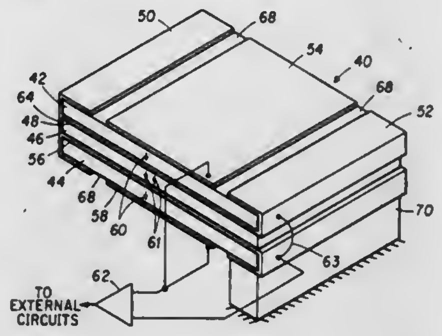


1. A GT-cut quartz resonator unit comprising: a resonator including a vibrating portion having opposed relatively short sides and opposed relatively long sides, at least one supporting portion, and at least one bridge portion connecting said vibrating and supporting portions; and a pedestal connected to the resonator supporting portion to support said resonator, the pedestal having a region spaced from and facing the resonator vibrating portion, and the pedestal region having plural through holes therein facing edge portions of said vibrating portion.

4,443,729
PIEZOCERAMIC BENDER ELEMENT HAVING AN ELECTRODE ARRANGEMENT SUPPRESSING SIGNAL DEVELOPMENT IN MOUNT REGION

Billie F. Rider, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 22, 1981, Ser. No. 276,112
Int. Cl.^{3} H01L *41/00*
U.S. Cl. 310—330 **7 Claims**

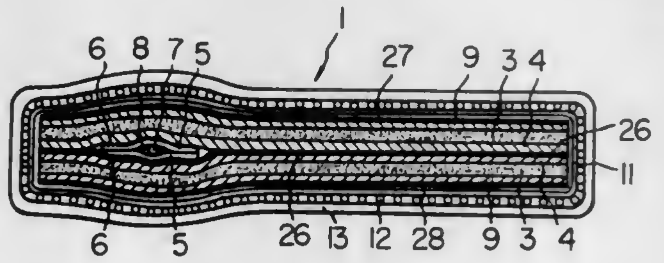


1. A sensor assembly, comprising:
a bender element having
a pair of plates of piezoceramic material, each of said plates having an internal major surface, an external major surface, and a pair of oppositely disposed end walls;
an internal electrode between said plates, said electrode having planar surfaces coextensive and in electrical contact with the internal surface of each of said plates, and end portions coextensive and in electrical contact with the end walls of said plates, the end portions extending over a minor portion of the external major surfaces of said plates adjacent each of said end walls;
a pair of planar external electrodes, each in electrical contact with a major portion of the external surface of a corresponding one of said pair of plates, said external electrodes being electrically isolated from the end portions of said internal electrode, said external electrodes being oppositely disposed from each other on the external surfaces of said plates, said plates being uniformly polarized in a direction normal to said electrodes;
a base member bonded to one of the end portions extending over one of the external major surfaces, said bender element extending in cantilevered fashion from the base member; and
means coupled to said electrodes for detecting an electric field generated between said electrodes when said bender element is subjected to bending force.

4,443,730
BIOLOGICAL PIEZOELECTRIC TRANSDUCER DEVICE FOR THE LIVING BODY

Mitsuaki Kitamura; Toshio Nakayama; Kunio Kamimura, all of Kyoto; Iwao Seo, and Tomonobu Yaguchi, both of Amimachi, all of Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 93,211, Nov. 13, 1979, abandoned. This application May 12, 1982, Ser. No. 377,388
Claims priority, application Japan, Nov. 15, 1978, 53-14659
Int. Cl.^{3} H01L *41/08*
U.S. Cl. 310—330 **23 Claims**



1. A biological transducer device comprising a flexible organic film like high molecular peizoelectric element having electrode layers secured to both surfaces of opposite sides; a lead wire connected to each of said electrode layers; thin film auxiliary electrodes connected to said lead wires extending along the electrode layers of said piezoelectric element, at least one of said auxiliary electrodes being secured to one electrode layer at one end with the other end being free to allow free to allow free displacement of said one auxiliary electrode; an insulating film formed around the piezoelectric element; shielding mens for shielding the piezoelectric element; and a protective skin covering the exterior of said shielding means whereby the assembly is flexible.

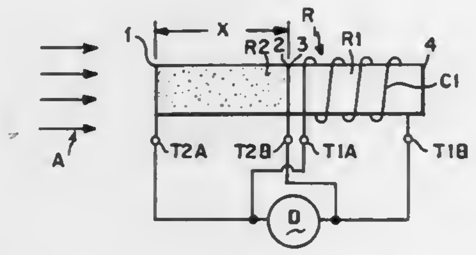
4,443,731
HYBRID PIEZOELECTRIC AND MAGNETOSTRICTIVE ACOUSTIC WAVE TRANSDUCER

John L. Butler, 205 Carolyn Cir., Marshfield, Mass. 02050, and Arthur Clark, 10421 Floral Dr., Adelphi, Md. 20783

Filed Sep. 30, 1982, Ser. No. 430,776
Int. Cl.^{3} H01L *41/08*
U.S. Cl. 310—334 **16 Claims**

1. A transducer including means for transducing between acoustical energy and electrical energy and comprising; a first element having magnetostrictive properties and associated wiring, a second element having piezoelectric properties and associated wiring mechanical means for combining both said elements into a unitary transducer device, and electrical conductive intercoupling wiring means including conductive wire means for intercoupling wiring of the two elements for receiv-

ing or transmitting acoustical energy in a unidirectional manner for simultaneous excitation or detection of an acoustic wave, said transducer unidirectionality being established by cancellation of the motion at one end or the pressure on one end of the transducer.



4,443,732
TEMPERATURE-COMPENSATED CRYSTAL RESONATOR UNIT

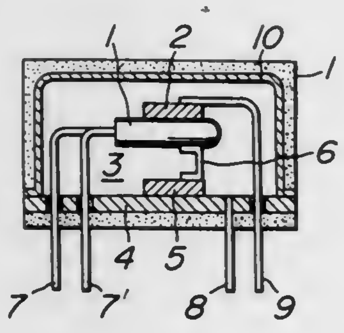
Hitoaki Hayashi, Tokyo, Japan, assignor to Asahi Dempa Co., Ltd., Tokyo, Japan

Filed Aug. 5, 1983, Ser. No. 520,598

Claims priority, application Japan, Feb. 22, 1983, 58-26921; Mar. 16, 1983, 58-42420

Int. Cl.^{3} H01L *41/08*

U.S. Cl. 310—343 **4 Claims**



1. A temperature-compensated crystal resonator unit comprising a crystal resonator element housed in a vessel, a first ceramic member attached to the crystal resonator element in a heat-conductive manner, said first ceramic member having a positive temperature coefficient of electric resistance, and a second ceramic member being mounted on said vessel in a heat-conductive manner and being electrically connected to said first ceramic member in series thereto, said second ceramic member having a positive temperature coefficient of electric resistance and being spaced from both said crystal resonator element and said first ceramic member.

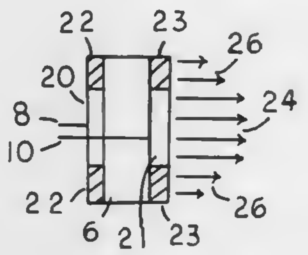
4,443,733
TAPERED WAVE TRANSDUCER

Arthur J. Samodovitz, 1860 Alder St. #30, Eugene, Oreg. 97403

Filed Dec. 24, 1981, Ser. No. 334,367

Int. Cl.^{3} H01L *41/08*

U.S. Cl. 310—369 **20 Claims**



1. A transducer comprising:

a disc-shaped, piezoelectric transducing element, and

first and second electrodes attaching to opposite sides of the transducing element, the first electrode comprising a substantially washer-shaped, resistive region, and a highly-conductive region within the axial hole of said washer-shaped region.

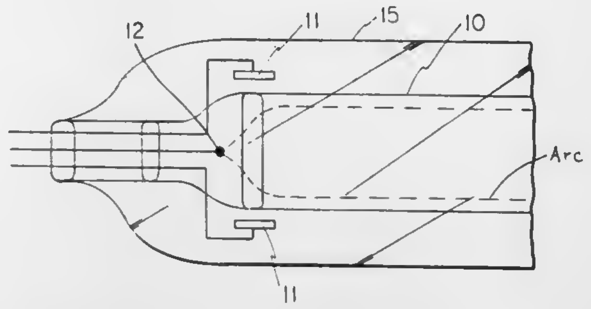
4,443,734
HIGH INTENSITY DISCHARGE LAMP WITH ARC SPREADING MEANS

Leo Gross, 3611 217 St., Bayside, N.Y. 11361, and S. Merrill Skeist, Glen Head, N.Y., assignors to Leo Gross, Bayside, N.Y.

Filed Feb. 4, 1980, Ser. No. 117,950

Int. Cl.^{3} H01J *61/34, 61/04*

U.S. Cl. 313—26 **4 Claims**



1. A high intensity discharge lamp comprising:

A. an inner envelope having flattened ends and containing a rare gas;

B. electrodes in said inner envelope for creating with said rare gas an arc discharge;

C. arc spreading means associated with the flattened ends of said inner envelope for creating a transverse electric field to spread the arc discharge; and

D. an outer envelope surrounding said inner envelope, said outer envelope having its ends flattened together with the ends of said inner envelope.

4,443,735
DIRECTLY HEATED MESHED CATHODE FOR ELECTRONIC TUBES AND METHOD OF MAKING

Vladimir N. Alexandrov, Chkalovsky prospekt, 14, kv. 25; Vladimir F. Ioffe, Kirovsky prospekt, 69/71, kv. 5, and Oleg V. Filatov, ulitsa Kuibysheva, 1/5, kv. 21, all of, Leningrad, U.S.S.R.

PCT No. PCT/SU80/00215, 371 Date Oct. 2, 1981, 102(e) Date Oct. 2, 1981, PCT Pub. No. WO81/02364, PCT Pub. Date Aug. 20, 1981

PCT Filed Dec. 24, 1980, Ser. No. 308,541

Claims priority, application U.S.S.R., Feb. 5, 1980, 2871003

Int. Cl.^{3} H01J *1/14, 19/06;* **H01K** *1/14*

U.S. Cl. 313—345 **7 Claims**

1. A directly heated meshed cathode for electronic tubes, said cathode being made of one piece of metal in the form of a hollow cylinder with integrally formed current-supplying rings provided at respective ends thereof and a perforated working surface defined between the rings by intersecting incandescent filaments spaced by rhomboidal holes, each of the filaments having the form of a spiral conductor interconnecting the respective current-supplying rings, and each of the incandescent filaments constituting a series of successive lengths, each of which being restricted by intersections of said incandescent filament and two other incandescent filaments, each of the spiral incandescent filaments having a discretely varying cross-sectional area along said successive lengths for which purpose each length of the incandescent filaments has at least one step-wise increase in width in a direction from each of the current-supplying rings toward the middle of said incandescent filament.

6. A method of making a directly heated meshed cathode for electronic tubes comprising the steps of:

making an electrode tool by performing rhomboidally-shaped projections in the working end of a rectangular metal plate having the length of the working end corresponding to the length of the working surface of the cathode being manufactured;

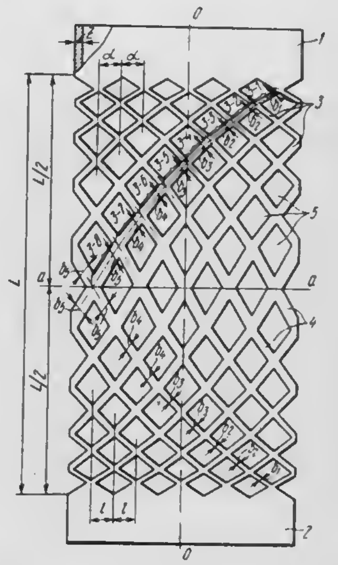
using the electrode tool thus obtained to broach longitudinal rows of holes in a hollow cylindrical blank of the cathode by electric erosion,

passing said tool parallel to the axis of said blank while also moving said tool radially in the course of the broaching operation relative to the cathode blank;

turning said blank periodically about the axis thereof following every pass of the electrode tool; said method further comprising the steps of:

selecting said rectangular metal plate so that the width of its working end is equal to the double distance between the middle lines of the adjacent longitudinal rows of holes in the cathode being manufactured; and said projections, cutting blind intersecting grooves in the working end of said plate with a width and location pattern corresponding to the width and location pattern of portions of the incandescent filaments of the cathode being manufactured; thereby to broach open holes in said cathode blank so that following each pass of said electrode tool, full holes of one longitudinal row, a half of the holes of the two longitudinal rows adjoining it on both sides thereof are formed in the cathode blank simultaneously with portions of incandescent filaments of the cathode, spaced by the formed holes and each consisting of filament lengths, each of which being restricted by the intersections of said incandescent filament with two other filaments,

said cathode blank being turned in the turning step, following each pass of said electrode tool, about its axis through an angle equal to twice the angular distance between the middle lines of the longitudinal rows of holes in the cathode being manufactured.



4,443,736
ELECTRON GUN FOR DYNAMIC BEAM SHAPE MODULATION

Hsing-Yao Chen, Landisville, Pa., assignor to RCA Corporation, New York, N.Y.

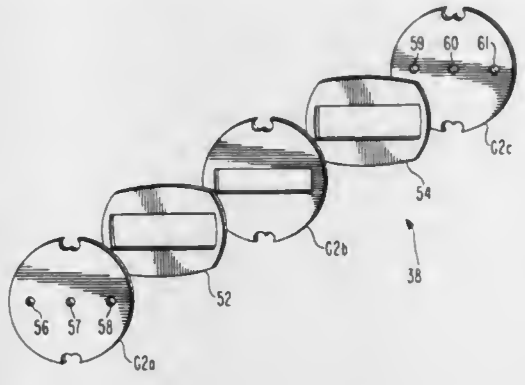
Filed Sep. 23, 1981, Ser. No. 304,784

Int. Cl.^{3} H01J *29/51, 29/52*

U.S. Cl. 313—414 **2 Claims**

1. In a three inline beam electron gun including three inline cathodes, a control grid having three inline apertures, a screen grid and at least two main focus lens electrodes, the improvement comprising

said screen grid including three stacked apertured metal plates separated from each other by two electrically insulating members, the two outside plates having three inline apertures and the center plate having at least one elongated aperture effectively extending at least to the outer edges of the two outer apertures of the outside plates.



4,443,737
DEVICE FOR DISPLAYING PICTURES BY MEANS OF A CATHODE-RAY TUBE

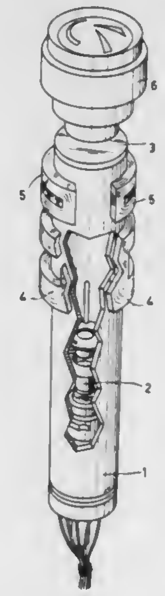
Maurits W. van Tol, Almelo, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 14, 1981, Ser. No. 330,622

Claims priority, application Netherlands, Jan. 14, 1981, 8100142

Int. Cl.^{3} H01J *29/76*

U.S. Cl. 313—431 **4 Claims**



1. A device for displaying pictures comprising a cathode-ray tube having an evaucated envelope with a display screen and an electron gun for generating an electron beam, which cathode-ray tube has a main system of deflection coils provided around the tube for deflecting the electron beam over the display screen in two mutually transverse directions, characterized in that a second system of post-deflection coils is additionally provided around the display tube located between the display screen and the main system of deflection coils which second system comprises a post-deflection of the electron beam in a direction opposite to that of the main system of deflection coils, which post-deflection is synchronous with but weaker than the deflection produced by the main system of deflection coils.

4,443,738
FLUORESCENT LAMP HAVING SUPPORT WIRES MADE WITH AUSTENITIC STEEL

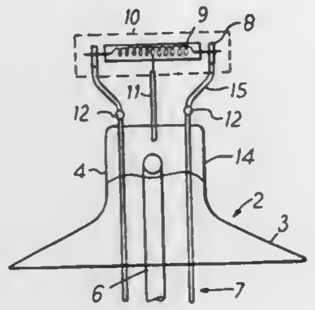
Ashutosh Roy, London, England, assignor to THORN EMI plc, London, England

Filed Jul. 8, 1982, Ser. No. 396,381

Claims priority, application United Kingdom, Jul. 10, 1981, 8121308

Int. Cl.^{3} H01J *1/62, 5/50, 5/00*

U.S. Cl. 313—491 **8 Claims**



1. A fluorescent lamp comprising a tubular light-transmitting envelope, coil electrodes at opposite ends of the envelope and resepctive electrode support assemblies at said ends of the envelope, each assembly comprising a glass flare sealed into the envelope to form an end wall thereof and electrode support wires extending through and sealed in the flare, the support wires at least in the regions thereof adjacent the electrode, being formed of an austenitic steel maintaining its austenitic microstructure at the operating temperature of said regions when the lamp is in use.

4,443,739
ELECTRIC DEVICE COMPRISING AT LEAST ONE LOW-PRESSURE MERCURY VAPOR DISCHARGE TUBE

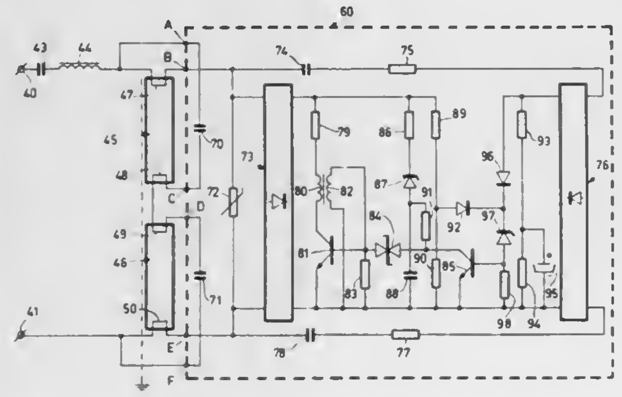
Leonard Woldring, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 25, 1982, Ser. No. 352,505

Claims priority, application Netherlands, Mar. 23, 1981, 8101408

Int. Cl.^{3} H05B *37/00*

U.S. Cl. 315—244 **7 Claims**



1. An electric device comprising, at least one low-pressure mercury vapour discharge tube, two input terminals for connection to an a.c. voltage source at a frequency of 50 to 60 Hz, means interconnecting said input terminal by means of a series arrangement of the low-pressure mercury vapour discharge tube, a capacitor and a coil wherein the capacitor impedance is greater than the coil impedance at the source frequency, and wherein in the tube operating condition the overall arc voltage of the low-pressure mercury vapour discharge tube (tubes) is between 80% and 110% of the nominal voltage between the input terminals, characterized in that each low-pressure mercury vapour discharge tube which forms part of the series arrangement is of a type which:

(a) if operated by means of a reference ballast has a lamp α in the range between 0.5 and 0.85 if the rms voltage between two ends of a series arrangement formed by the reference ballast and the low-pressure mercury vapour discharge tube is approximately twice the arc voltage of the discharge tube; and

(b) in the presence of the nominal voltage between the input terminals of the electric device has a required reignition voltage which is less than 170/n% of the effective nominal voltage between the input terminals of the electric device, wherein n represents the number of low-pressure mercury vapour discharge tubes in the series arrangement of the electric device.

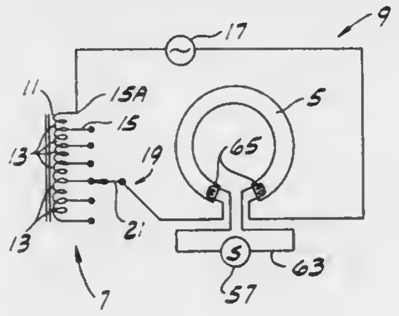
4,443,740
DIMMER SWITCH FOR A FLUORESCENT LAMP

Charles D. Goralnik, 200 Brynwyck Pl., St. Louis County, Mo. 63141

Filed Apr. 9, 1982, Ser. No. 366,872

Int. Cl.^{3} H05B *41/38*

U.S. Cl. 315—284 **3 Claims**



1. Dimmer means for a fluorescent lamp fixture, said fixture comprising a housing carrying a gaseous discharge light bulb, and having means for connection to an electrical outlet, a tapped ballast inductor in the housing, a series of fixed switch contacts in the housing, conductors in the housing interconnecting the taps of the inductor and said contacts, a movable switch contact mounted in the housing for movement into contact selectively with said fixed contacts, said movable switch contact having an operating member extending out through a slot in the housing, the inductor having an end terminal interconnected with said connection means, and the movable switch contact and bulb being interconnected with said connection means for connecting the inductor and the bulb in series via the movable switch contact with the connection means.

4,443,741
DRIVE CIRCUIT FOR ELECTROLUMINESCENT ELEMENT

Katsuyuki Tanaka, Kamakura; Shin-ichi Ohashi, Chigasaki; Masakatsu Saito, and Tohru Sampei, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 66,653, Aug. 15, 1979. This application Sep. 14, 1981, Ser. No. 301,944

Claims priority, application Japan, Aug. 21, 1978, 53-100924

Int. Cl.^{3} H05B *37/02*

U.S. Cl. 315—307 **9 Claims**

1. A circuit for driving a dispersion type electroluminescent element whose brightness of luminescence can be changed by changing a voltage applied to said electroluminescent element and can be kept constant by keeping the current flowing through said electroluminescent element constant, said circuit comprising:

a drive power source having an oscillator and a voltage-controlled ac amplifier;

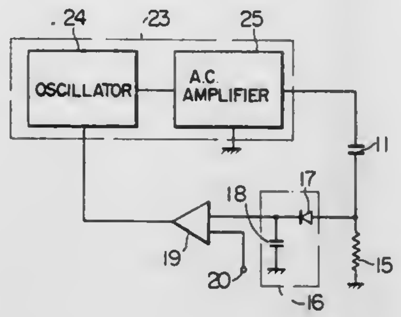
means for applying the output of said drive power source to said electroluminescent element through an electrical current path to provide an electric current flow through said electroluminescent element;

a current detecting element electrically connected with said electrical current path for detecting the current flowing through said electroluminescent element;

a rectifying circuit for rectifying a voltage induced in said current detecting element;

a comparator for comparing the output voltage of said rectifying circuit with a reference voltage to provide an output voltage corresponding to the difference therebetween; and

means for applying the output voltage of said comparator to said voltage-controlled ac amplifier to control the gain of said ac amplifier, thereby keeping the current flowing through said electroluminescent element constant.



4,443,742
PHASE LOCKED LOOP MOTOR CONTROL SYSTEM

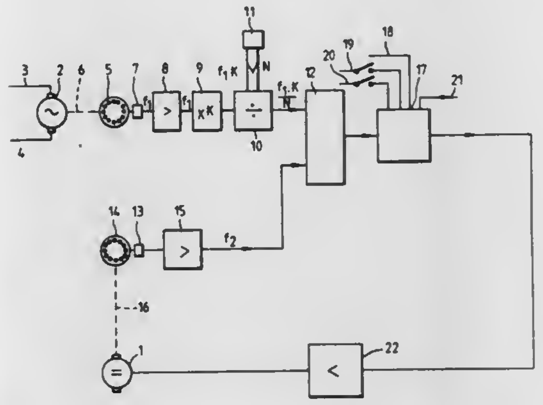
Siegfried Schneider, Biebertal, Fed. Rep. of Germany, assignor to Gestetner Manufacturing Limited, London, England

Filed Nov. 30, 1981, Ser. No. 326,070

Claims priority, application United Kingdom, Dec. 2, 1980, 8038559

Int. Cl.^{3} G05B *1/06*

U.S. Cl. 318—85 **12 Claims**



1. A phase locked loop motor control system for controlling a motor including inductive windings having a self-inductance, comprising:

pulse encoder means responsive to operation of said motor for generating an output signal indicative of operation of said motor;

generating means for generating a comparison signal with which operation of said motor is to be phase locked;

comparing means for comparing said comparison signal with the output signal of said pulse encoder means, and for generating and providing to said motor a pulsed d.c. supply in accordance with the comparison of said comparison signal with the output signal of said pulse encoder means; and

pulse-shaping means responsive to the self-inductance of said inductive windings of the motor for shaping said pulsed d.c. supply so that it comprises a succession of d.c. drive pulses having a first polarity and a first amplitude, and a succession of d.c. braking pulses having a second polarity and a second amplitude, said second polarity being opposite to said first polarity, and said second amplitude having a smaller modulus than said first amplitude and also being directly proportional to a rate of decay of current at the end of each said drive pulse, wherein the drive pulses and the braking pulses occur alternatively in sequence.

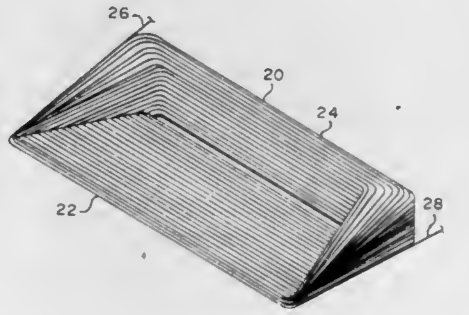
4,443,743
TWO AXIS ACTUATOR

Edward L. Forys, Covina, and Richard M. Malueg, Glendora, both of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Continuation of Ser. No. 948,795, Oct. 5, 1978, abandoned. This application Nov. 13, 1981, Ser. No. 321,257

Int. Cl.^{3} H02K *41/00*

U.S. Cl. 318—115 **12 Claims**



1. A multiaxis actuator capable of generating force along a plurality of axes for use in inertial stabilization systems comprising:

a. means for generating a magnetic field between a pair of spaced-apart, opposed magnetic poles;

b. a platen disposed between the poles and aligned generally orthogonally to said magnetic field;

c. a plurality of individual current carrying windings attached to said platen and aligned along different selected orientations relative to each other, each winding having a plurality of loops providing current paths with corresponding first sides being disposed in a generally planar configuration along said platen and positioned within a central field region between said poles and with corresponding second sides being stacked in a generally nonplanar configuration along an edge of said platen outside said central field region to develop a net reactive force between said field and a magnetic field developed by current in said each winding: and

d. at least two of said windings being oriented such that the current in either winding flows in a path having a portion thereof transverse to the path of current flow in the other winding.

4,443,744
METHOD AND APPARATUS FOR CHARGE ENHANCEMENT OF A COMMUTATING CAPACITOR

Charles E. Konrad, Roanoke, Va., assignor to General Electric Company, Salem, Va.

Filed Dec. 27, 1982, Ser. No. 453,559

Int. Cl.^{3} H02P *3/08*

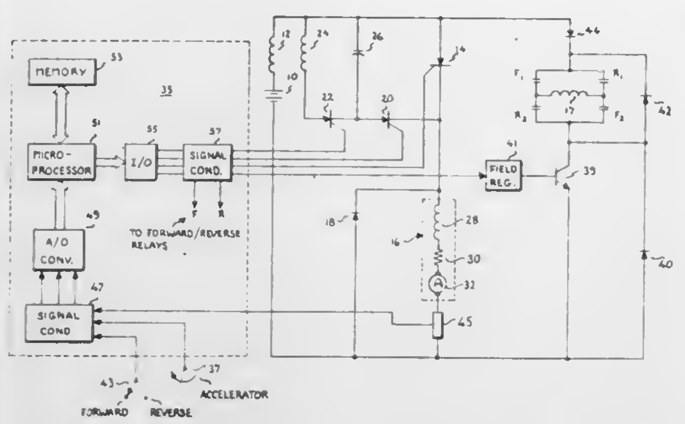
U.S. Cl. 318—269 **10 Claims**

1. For use with a control thyristor adapted to control power to a separately excited motor operable in a motoring mode and in a braking mode, a method for assuring commutation of the thyristor following return of motor operation to a motoring mode from a braking mode, said method comprising the steps of:

(a) providing a commutating network including a commutating capacitor, a commutating thyristor, and a charge reversal thyristor arranged such that an electrical charge of sufficient magnitude stored on the commutating capacitor will cause commutation of said control thyristor following a sequential gating of said charge reversal thyristor and said commutating thyristor;

(b) sensing whether the motor is operating in the braking mode;

- (c) maintaining the control thyristor in a nonconducting state during the braking mode of operation; and
- (d) alternately gating the commutating and charge reversal thyristors into a conduction state during the braking mode to cause the electrical charge acquired by the commutating capacitor to track the electrical current drawn by the motor in the braking mode, such charge being sufficient to assure commutation of the control thyristor upon the motor resuming operation in the motoring mode.



4,443,745

ROTATION SIGNAL DETECTION DEVICE OF DC MOTOR WITH BRUSHES

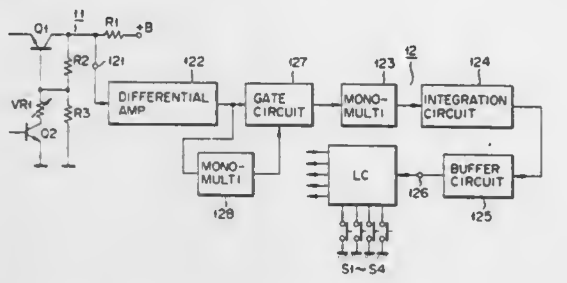
Akira Seino; Kazuo Takamori, and Kaoru Morinaga, all of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 9, 1981, Ser. No. 300,480

Claims priority, application Japan, Sep. 12, 1980, 55-126753; Nov. 20, 1980, 55-163924

Int. Cl.^{3} G05B *5/00;* H02H *7/08*

U.S. Cl. 318—461 3 Claims



1. A rotation control device for a DC motor with brushes, comprising:

- a motor driving circuit including means for receiving DC power and providing driving signals to said DC motor said driving circuit including switching means for ON/-OFF control of the driving signals to the DC motor;
- detecting means, coupled to said motor driving circuit, for providing a commutation pulse signal component of current flowing through said motor driving circuit to said motor;
- means for generating, in response to said commutation pulse signal component, a reference pulse signal having a period longer than the normal period of the commutation pulse signal component;
- a gate circuit for gating the commutation pulse signal component from said detecting means, said gate circuit being gated in response to said reference pulse signal so as to be open during the period of the reference pulse signal; and
- means, coupled to an output of said gate circuit, for generating a control signal for rendering said switching means of said motor driving circuit OFF, to stop rotation of said motor when no commutation pulse signal component passes through said gate circuit.

4,443,746

CONTROL CIRCUIT FOR STEPPING MOTOR

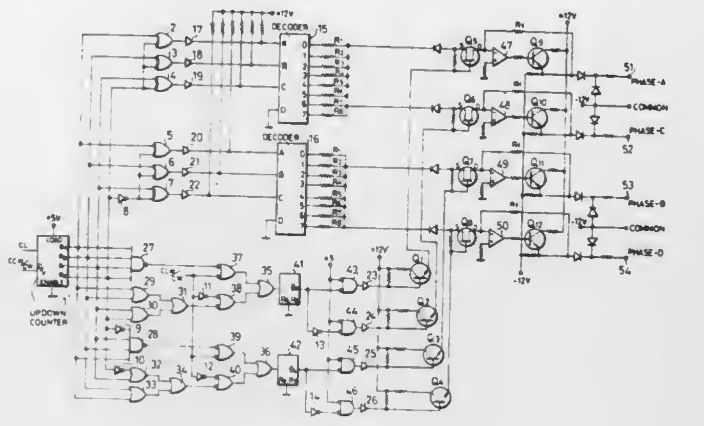
Shigeru Araki, Tamayama, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Sep. 8, 1981, Ser. No. 300,441

Claims priority, application Japan, Sep. 6, 1980, 55-122943

Int. Cl.^{3} H02K *29/02*

U.S. Cl. 318—696 3 Claims



1. A control circuit for a stepping motor, comprising an up-down counter receiving a reference clock signal and a control signal consisting of rotating-direction indicative signals and executing a count operation with said reference clock signal and having countup and countdown change by said rotating-direction indicative signals, a distributor circuit determining an excitation sequence for respective phases of the polyphase stepping motor in accordance with a count output of said counter, and a stepped wave generator circuit generating a stepped waveform exication signal in accordance with the count output of said counter, an excitation state of each phase of said stepping motor being controlled in a stepped waveform consisting of a plurality of steps, wherein said stepped wave generator circuit comprises a decoder receiving said count output of said counter, a plurality of resistors each having its one terminal connected to a corresponding one of outputs of said decoder, and operational amplifiers each having its input connected to the other terminals of said plurality of resistors and ahaving feedback resistor, and wherein levels of the respective steps of said stepped waveform excitation signal are determined by ratios between resistance values of the respective resistors connected to the outputs of said decoder and a resistance value of said feedback resistors of said operational amplifiers.

4,443,747

TRANSITIONING BETWEEN MULTIPLE MODES OF INVERTER CONTROL IN A LOAD COMMUTATED INVERTER MOTOR DRIVE

B. Paul Chausse, Roanoke; Paul M. Espelage, Salem, both of Va.; David L. Lippitt, Scotia, and Leland C. Tupper, Schenectady, both of N.Y., assignors to General Electric Company, Salem, Va.

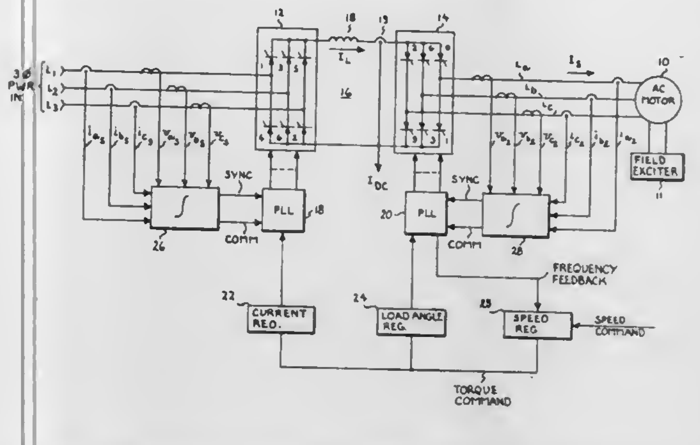
Filed Apr. 1, 1982, Ser. No. 364,453

Int. Cl.^{3} H02P *1/46*

U.S. Cl. 318—723 46 Claims

1. A method of controlling an AC motor over its operating range by means of a source side converter coupled from an AC source to a load side converter by way of a DC link circuit wherein the load side converter is operable in multiple operational modes to control the AC motor, comprising the steps of:

- (a) maintaining said load side converter in an idle mode of operation when said motor is in an at-rest state or in a coasting operating state;
- (b) sequentially transitioning said load side converter when said motor is initially in the at-rest state;
  - (1) from said idle mode to a first type forced commutation mode of operation, by causing current in the DC link circuit to be substantially zero, to initiate operation of said motor load from the at-rest state, and
  - (2) from said first type forced commutation mode to a second type forced commutation mode of operation following initiation of operation of said motor, and,
  - (3) from said second type forced commutation mode of operation to a self-commutation mode of operation when a predetermined operating state of said motor exists, and
- (c) selectively transitioning said load side converter from said idle mode when said motor is in the coasting operating state to a one of said second forced commutation mode of operation and said self-commutation mode of operation as a function of prescribed values of motor speed.



4,443,748

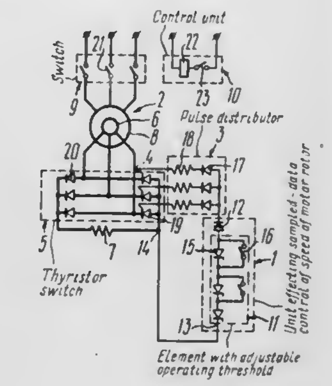
METHOD OF CONTROLLING SPEED OF AT LEAST ONE INDUCTION MOTOR AND DEVICE THEREFOR

Vladimir S. Boev, Kashirskoe shosse, 128, Kv. 131; Sergei P. Golev, ulitsa Novinki, 4, kv. 68; Viktor I. Dmitriev, ulitsa Vysokaya, 13, kv. 10; Efim M. Pevzner, ulitsa Generala Belova, 53 korpus 2, kv. 182; Andrei G. Yaure, ulitsa Kusiren, 9, kv. 114, and Lev B. Masandilov, 2 Yuzhno-portovy proezd, 13, kv. 57, all of Moscow, U.S.S.R.

Filed Mar. 16, 1981, Ser. No. 244,138

Int. Cl.^{3} H02P *7/40*

U.S. Cl. 318—732 4 Claims


Control unit
Switch
Pulse distributor
Thyristor switch
Unit effecting sampled-data control of speed of motor rotor
Element with adjustable operating threshold

1. A device for controlling the speed of at least one induction motor having a stator winding and a rotor winding and comprising:

- a power supply;
- a switch having a first input, a second input and an output and connected via its first input to said power supply and via its output to said stator winding of said motor;
- a first control unit having an input, and an output coupled to the second input of said switch;
- at least one resistor electrically coupled to said rotor winding of said rotor;
- a thyristor switch having an input, a control input, a first output coupled to said rotor winding of said motor, and a second input;
- a pulse distributor having an input and an output and connected via its output to said control input of said thyristor switch;
- a unit effecting sampled-data control of the speed of said rotor of said motor and comprising an element with an adjustable operating threshold having an input, a control input and an output and electrically coupled via its input to the output of said thyristor switch, and a pulse shaper connected to said output of said element and to the input of said pulse distributor;
- a load setter for said motor having a first output and a second output and connected via its first output to said input of the first control unit;
- an OR gate having a first input, a second input and an output and connected via its first input to the first output of said load setter for said motor, via its second output to the second output of said setter and via its output to said control input of said element having an adjustable operating threshold;
- a switch effecting dynamic braking of said motor having a first input, a second input, a third input and an output and connected via its first and second inputs to the first and second outputs of said thyristor switch, respectively, and via its output to said stator winding of said motor; and
- a second control unit having an input and an output and connected via its input to the second output of said load setter for said motor and coupled via its output to the third input of said switch effecting dynamic braking of said motor.

4,443,749

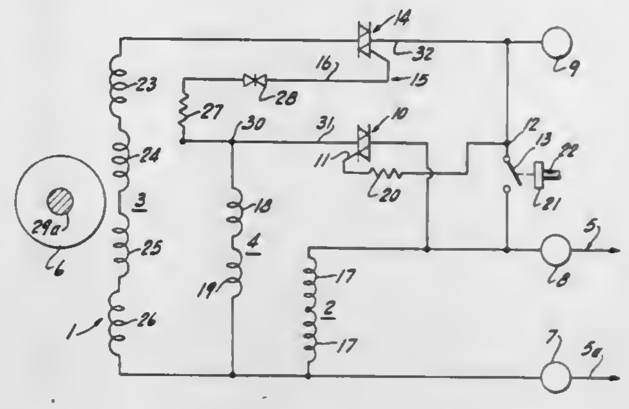
MULTIPLE SPEED SPLIT-PHASE INDUCTION MOTOR

Robert H. Douthart, Burlington, N.C., and Howard W. Smith, West Carrollton, Ohio, assignors to A. O. Smith Corporation, Milwaukee, Wis.

Filed Oct. 7, 1982, Ser. No. 433,214

Int. Cl.^{3} H02P *1/42*

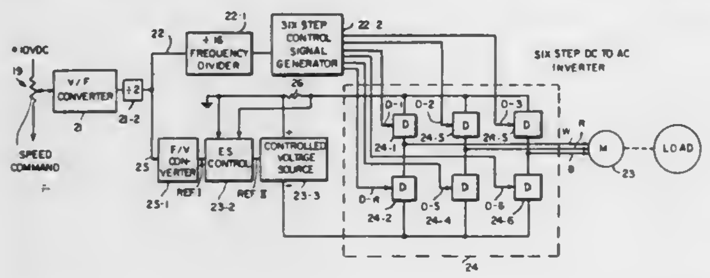
U.S. Cl. 318—774 6 Claims



1. A multiple speed split-phase induction motor comprising a first speed winding means, a second speed winding means, a start winding means, three power terminals including a first power terminal connected to the first speed winding and a second power terminal connected to the second speed winding and a common power terminal connected to said first and second speed windings and start winding means, a solid state gated start switch means connected in series with said start winding means, a solid state gated run switch means connected in series with said second speed winding means, a speed responsive switch means connecting the circuit of the start winding means to said first power terminal for de-energizing of said start winding means at a selected speed, and said solid state gated start switch means and said solid state gated run switch means each having an input gate and said input gates being connected in a control circuit to said second power terminal and said speed responsive switch means and including means to limit the firing of the solid state gated run switch means and conjointly operable to simultaneously energize said first speed winding and said start winding during an initial start period and responding to said de-energizing of said start winding to

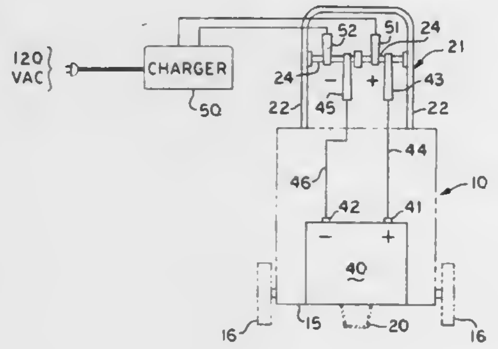
energize only one of said first speed winding and said second speed winding in accordance with the power connection to said first and second power terminals.

4,443,750
ENERGY SAVING MOTOR SPEED CONTROLLER
Edgar Altena, Trumbull, Conn., assignor to Zero-Max Industries, Incorporated, Minneapolis, Minn.
Filed Apr. 30, 1980, Ser. No. 145,244
Int. Cl.^{3} H02P *5/40*
U.S. Cl. 318—808 **11 Claims**



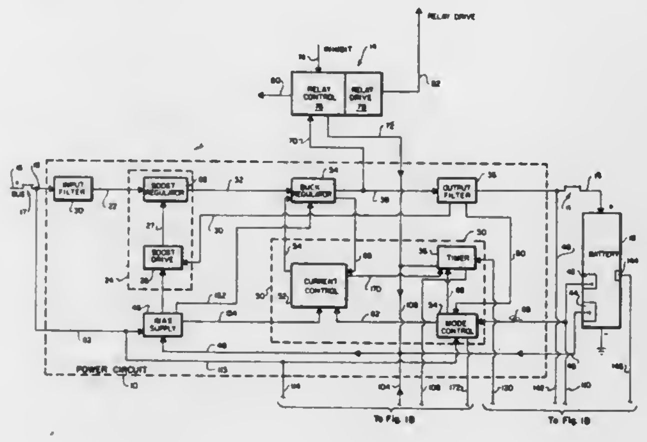
1. A controlled power supply for an AC motor comprising:
(a) means for deriving a feedback signal proportional to motor load current;
(b) means for generating a signal having a characteristic which is proportional to desired motor speed;
(c) means, connected to said deriving means, for amplifying and integrating said feedback signal;
(d) a first variable gain amplifier circuit connected to the feedback processing means to receive and amplify the processed feedback signal, and connected to said speed signal generating means in such manner as to render the gain of the amplifier circuit proportional to said characteristic of the speed signal;
(e) a second variable gain amplifier circuit connected to said speed signal generating means, in parallel to said first amplifier circuit, to receive and amplify said speed signal;
(f) means connected to said first and second amplifier circuits for summing the signals therefrom and producing a control signal derived from said summed signals;
(g) means connected to said summing means for supplying a voltage to the motor, said voltage having an amplitude dependent on the magnitude of the control signal; and
(h) wherein the voltage to the motor is controlled so as to minimize the power applied to the motor over a given range of speeds.

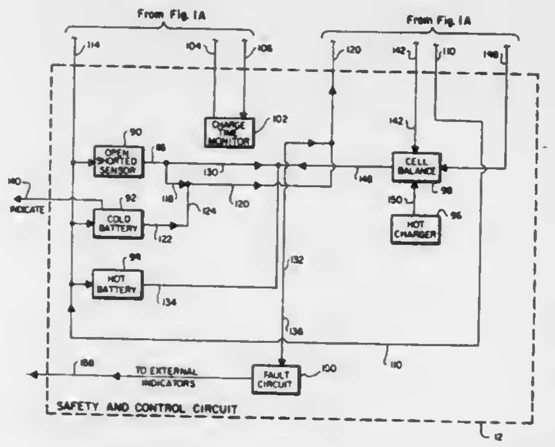
4,443,751
PORTABLE BATTERY BOOSTER ASSEMBLY
Wayne R. Humphrey, Moline Acres, Mo., assignor to Associated Equipment Corporation, St. Louis, Mo.
Filed May 28, 1982, Ser. No. 382,817
Int. Cl.^{3} H02J *7/00*
U.S. Cl. 320—2 **7 Claims**



1. A portable battery booster assembly comprising:
(a) a booster battery having positive and negative electrical connections,
(b) a portable means carrying the booster battery,
(c) a negative booster clamp electrically connected to the booster battery negative connection,
(d) a positive booster clamp electrically connected to the booster battery positive connection,
(e) a pair of electrically conductive terminals carried by the portable means, each terminal selectively receiving one of the booster clamps for providing an electrical connection between the terminal and the battery,
(f) the portable means including a handle means,
(g) the terminals being carried by the handle means,
(h) the handle means including opposed side portions, and
(i) the terminals being carried between the opposed side portions of the handle means.

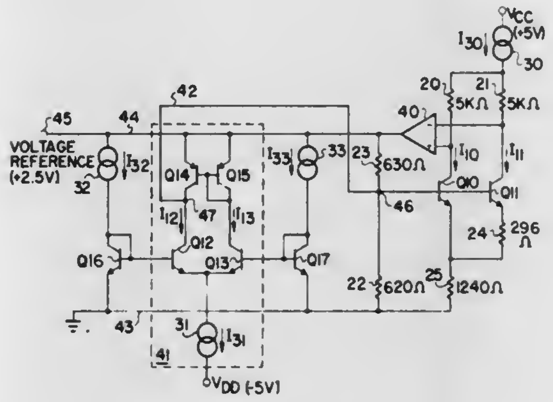
4,443,752
SOLID STATE BATTERY CHARGER
William A. Newman, Salt Lake City, Utah, assignor to Utah Research & Development Co., Inc., Salt Lake City, Utah
Filed Aug. 30, 1982, Ser. No. 412,955
Int. Cl.^{3} H02J *7/04*
U.S. Cl. 320—22 **10 Claims**





1. A battery charger comprising:
first connector means for removable conductive connection to an external source of variable voltage direct current power;
second connector means for removable conductive connection to a chargeable battery;
sensing means positioned and connected to sense selected variable parameters of said battery; and
a power circuit conductively connected to said first connector means to receive power therefrom and conductively connected to said second connector means to supply a multi-mode charging current to said battery, said power circuit including:
boost means conductively connected to said first connector means to receive said external power therefrom and to said second connector means to receive a signal reflective of battery voltage to boost the voltage of the received external power to a level no lower than a preselected level above battery voltage when received voltage is below said preselected levels,
current-mode regulating means conductively connected to said sensing means to receive signals reflective of selected variable parameters of said battery to sense the state of charge of said battery to supply current and mode regulating signals,
a buck regulator conductively connected to receive the output of the boost means and to said current-mode regulating means to receive current and mode regulating signals to supply a multi-mode charging program having a constant charging current in each mode, and
bias supply means conductively connected to said external power to receive power therefrom and to selected circuits of said power circuit to supply power thereto.

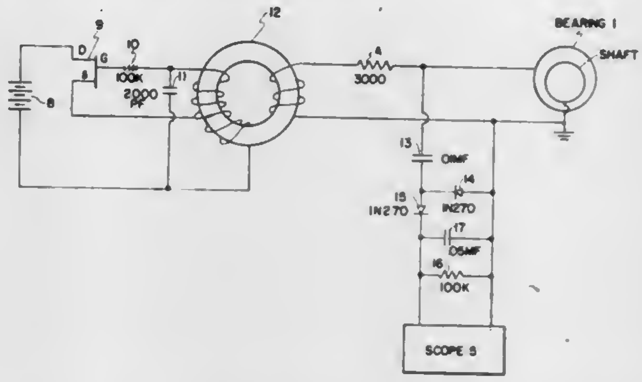
4,443,753
SECOND ORDER TEMPERATURE COMPENSATED BAND CAP VOLTAGE REFERENCE
Gerard F. McGlinchey, Cupertino, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.
Filed Aug. 24, 1981, Ser. No. 295,952
Int. Cl.^{3} G05F *3/20*
U.S. Cl. 323—313 **12 Claims**



1. A voltage reference circuit comprising
means for generating a bandgap voltage reference temperature compensated to the first order, said voltage reference having a component voltage having a second order temperature dependency,
means for generating a current having a second order temperature dependency as said component voltage,
means responsive to said current for generating a correction voltage having said second order temperature dependency,
means for combining said first order temperature compensated bandgap voltage reference and said correction voltage so as to cancel said component voltage,
whereby said combined voltage reference and said correction voltage provide a second order temperature compensated bandgap voltage reference.

4,443,754
METHOD FOR DETERMINING MINIMUM LUBRICATING OIL-FILM THICKNESS UNDER OPERATING ENGINE CONDITIONS USING ELECTRICAL CAPACITANCE
William H. King, Florham Park, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.
Filed Oct. 18, 1982, Ser. No. 434,945
Int. Cl.^{3} G01R *27/26*
U.S. Cl. 324—61 R **9 Claims**

1. A method for determining the minimum oil-film thickness of a lubricating oil composition under operating engine conditions comprising:
(a) placing the lubricating oil composition being evaluated in an operating engine wherein a selected bearing of said engine is electrically isolated;
(b) obtaining an instantaneous signal relating to capacitance between the entire bearing and shaft and measuring the capacitance using capacitance measuring means, said capacitance measuring means employing a high enough frequency to avoid the ambiguous effect of oil conductivity and a low enough potential to avoid electrical discharge between the surfaces; and

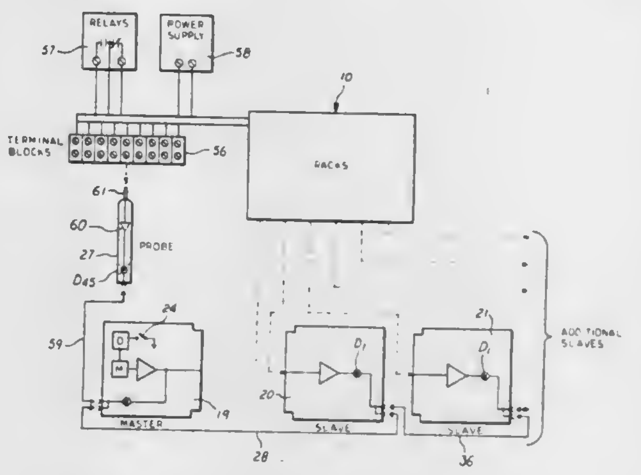


(c) converting said capacitance signal developed between said bearing and shaft to a value indicative of the minimum oil-film thickness between said bearing and shaft at the particular time said capacitance signal is obtained by using the formula:

$$MOFT = s\left(1 - \sqrt{1 - \left(\frac{KA\epsilon}{sC}\right)^2}\right)$$

where:
is the radial clearance
K is a constant (0.08854)
A is the area of the plate
Σ is the dielectric constant of the material between the plates
C is capacitance.

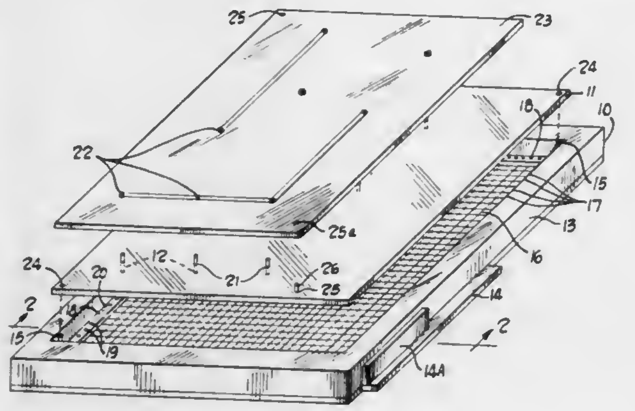
4,443,755
TEST APPARATUS FOR CIRCUIT BOARD RACKS
James F. Wooten, 3435 Walnut Bend #3116, Houston, Tex. 77042
Filed Dec. 7, 1981, Ser. No. 328,448
Int. Cl.^{3} G01R *19/00*
U.S. Cl. 324—66 **16 Claims**



1. A test apparatus for testing circuit connections in a printed circuit board rack which supports a plurality of separate circuit board modules, each of the boards having a plurality of points of connection to connectors at the rear of the supports for the respective boards, the connectors being interwired to provide connections from selected circuit components on one of the boards to selected circuit components on the same board and on other boards,

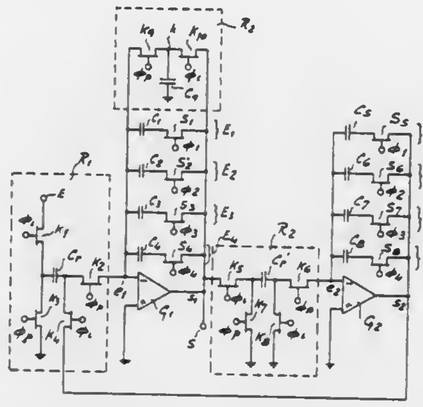
said apparatus comprising
- a first circuit having connections to each of the connectors for the support for one of the circuit boards,
- selector means for energizing said last named connectors individually,
- a plurality of signal lights in said circuit, corresponding in number to said last named connectors, and each being connected to be illuminated when said selector means energizes its associated connector,
- an additional circuit for the support for each additional circuit board to be supported in said rack,
- each additional circuit having connections to each of the connectors for the respective circuit board for such support,
- a plurality of signal lights in each of said last named circuits, corresponding in number to said last named connectors, and each being connected to be illuminated when its associated connector is energized.

4,443,756
APPARATUS AND METHOD FOR TESTING CIRCUIT BOARDS
James D. Lightbody, and William S. Lightbody, both of 32600 Fairmount, Pepper Pike, Ohio 44124
Filed Nov. 26, 1980, Ser. No. 210,539
Int. Cl.³ G01R *15/12*
U.S. Cl. 324—73 PC **21 Claims**



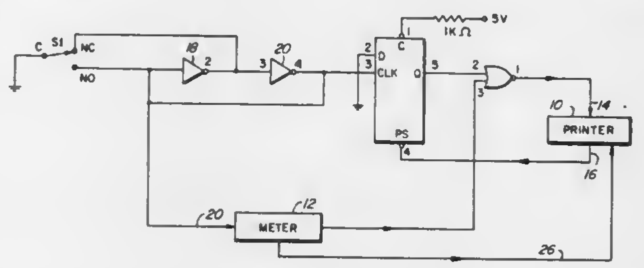
1. A testing apparatus for use with a testing machine in testing circuit boards having a certain number of contacts laid out in a pattern, the testing apparatus comprising a universal series of electrically conductive pads, said series of pads being on a substrate, said series of pads being laid out in matrix form, the density of said pads being far greater than the density of electrically interconnected contacts, there being spaces between said pads, an interchangeable pin board, means to hold said pin board in respect to said substrate and to orient said pin board in respect to said pads, said pin board having holes, said holes being laid out in the pattern of the certain number of electrically interconnected contacts, double ended electrically conductive pins, said pins being expandable and contractable in a longitudinal direction of said pins, one end of each of said pins capable of bridging said spaces between said pads, said pins being in said holes in said pin board with said one end of each of said pins contacting a pad of said series of pads, means to electrically connect the pads being contacted by said one end of said pins, the active pads, with the testing machine, and means to orient the pattern of the contacts on the circuit board having the certain number of electrically interconnected contacts in respect to the pattern of said pinned holes of said pin board such that each contact on the circuit board is able to be contacted by a pin, respectively, when the circuit board is in testing position.

4,443,757
MULTIPLEXED ELECTRICAL SIGNAL PROCESSOR
Ngoc C. Bui, Neuchatel, Switzerland, assignor to Asulab, S.A., Switzerland
Filed Sep. 24, 1981, Ser. No. 305,277
Claims priority, application Switzerland, Oct. 1, 1980, 7329/80
Int. Cl.³ G01R *23/16*
U.S. Cl. 324—77 B **10 Claims**



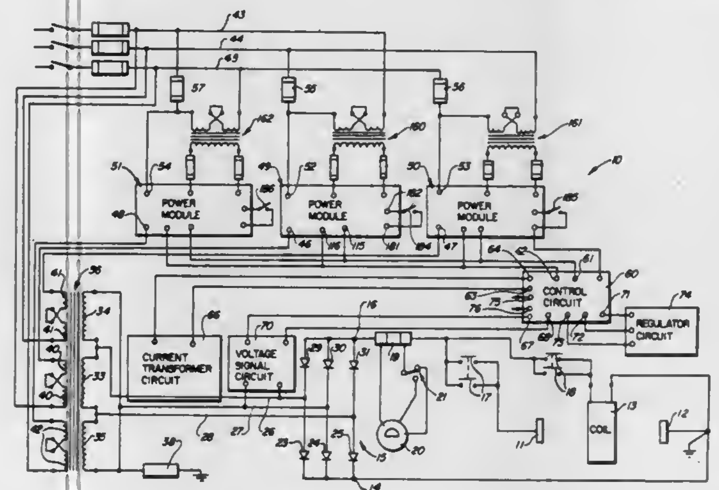
1. An apparatus for processing a variable electrical signal by multiplexing with n processing channels, having a processing unit comprising a first amplifier; a plurality of charge-storing feedback components connected in parallel, the said charge-storing components consisting of n first processing elements each including a multiplexing switch and a charge-storing capacitor connected in series; a first charge-carrying component connected between the input of the said apparatus and the input of the said first amplifier, said first charge-carrying component including a single charge-transferring capacitor and at least two contact-breaking switches; means for providing the control signals including means for providing n periodic multiplexing signals each comprising an alternating succession of active and inactive levels, one of these multiplexing signals having a period shorter than that of the other multiplexing signals, the other signals of longer period having, taken as a whole, at most one active level between two consecutive active levels of the shorter period signal, and means for producing an alternation of the active levels of a switching signal occurring during the inactive levels of the other switching signal, each switching signal having an active level during each active level of the multiplexing signals, means for applying a multiplexing signal to each multiplexing switch; and means for applying switching signals to each contact breaking switch.

4,443,758
METER TO PRINTER COUPLING CIRCUIT
Charles A. P. Kelly, Barrington, N.J., assignor to Northern Telecom Inc., Nashville, Tenn.
Filed Apr. 10, 1981, Ser. No. 253,069
Int. Cl.³ G01R *13/04*
U.S. Cl. 324—113 **6 Claims**



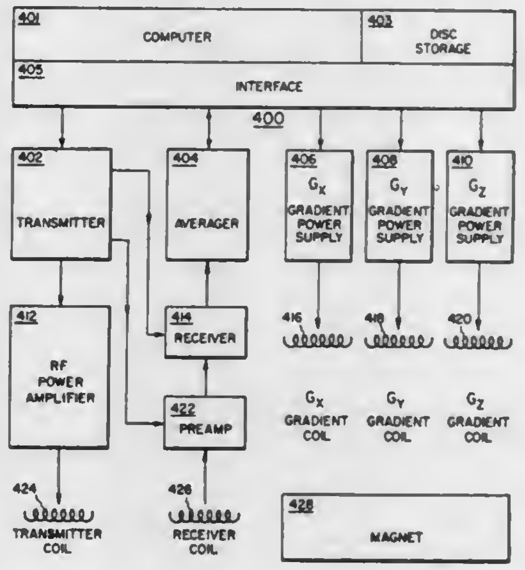
1. An electronic device, comprising:
- a printer having a data input to receive data to be printed, a print input for receiving a print command signal to initiate printing of received data, and a status output for providing a busy signal when said printer is printing;
- a meter for sensing a variable to be measured and providing a signal indicative of a value of said variable, said meter having a data output connected to said data input for supplying said data signal to said printer, said meter also having a hold input for receiving a hold signal to cause said meter to enter a stable state holding a sensed value of said variable, and a stable state output for providing a stable state signal in response to said stable state;
- switch means for providing a control signal, said meter hold input being connected to said switch means for receiving said control signal as said hold signal;
- bistable circuit means having an output and having inputs connected to said printer status output and said switch means for providing a first state output signal in response to said busy signal and providing a second state output signal in response to said control signal when said busy signal is not present; and
- gating means having inputs connected to said bistable circuit means output and said meter print command output and having an output connected to said printer circuit input for providing said print command signal to said printer in response to said second state signal and said stable state signal.

4,443,759
MAGNETIZING CURRENT SUPPLY FOR MAGNETIC PARTICLE INSPECTION WITH SCR'S CONNECTED TO THREE-PHASE SECONDARY WINDINGS FOR RECTIFICATION AND CONTROL
Bruce G. Isaacson, Park Ridge; Ralph W. Gruetzmacher, River Grove, and Kenneth W. Schroeder, Arlington Heights, all of Ill., assignors to Magnaflux Corporation, Chicago, Ill.
Filed May 7, 1981, Ser. No. 261,498
Int. Cl.³ G01N *27/82;* H02P *13/24;* H02M *7/155*
U.S. Cl. 324—216 **12 Claims**



1. In a magnetic particle inspection system, magnetizing means for operation at high current and low voltage levels and arranged for association with a part to be inspected for applying a magnetizing field thereto, and a current supply for supplying a current of accurately controlled duration and magnitude to said magnetizing means to accurately control the duration and intensity of the magnetizing field applied to said part, said current supply comprising: first, second and third input lines for connection to a three-phase AC power supply, three-phase voltage step-down transformer means including first, second and third primary winding means and first, second and third secondary winding means, connection means arranged to provide substantially direct connections between said first, second and third input lines and said first, second and third primary winding means, first, second and third power modules respectively connected between said first, second and third secondary winding means and said magnetizing means, said first, second and third power modules respectively including first, second and third silicon-controlled rectifier means, each arranged for conducting a high level of current of one phase and of one polarity from the associated one of said secondary winding means and to said magnetizing means, first, second and third firing means for respectively controlling triggering of said first, second and third silicon-controlled rectifier means, first, second and third phase angle control means for respectively controlling the time of operation of said first, second and third firing means in each cycle, and a control circuit arranged to control said first, second and third firing means and said first, second and third phase angle control means to control the time of initiation and termination of current flow to said magnetizing means and to control the phase angle of firing of said silicon-controlled rectifier means, to thereby apply a magnetizing field of accurately controlled duration and intensity to said part, said silicon-controlled rectifier means and the associated circuitry of said power modules being substantially isolated by said transformer means from any voltage transients developed by said three-phase AC power supply.

4,443,760
USE OF PHASE ALTERNATED RF PULSES TO ELIMINATE EFFECTS OF SPURIOUS FREE INDUCTION DECAY CAUSED BY IMPERFECT 180 DEGREE RF PULSES IN NMR IMAGING
William A. Edelstein, Schenectady, and Paul A. Bottomley, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Jul. 1, 1982, Ser. No. 394,073
Int. Cl.³ G01R *33/08*
U.S. Cl. 324—309 **65 Claims**



1. A method for overcoming the effects of a spurious FID NMR signal so as to avoid interference thereof with the desired NMR spin echo signal, said method comprising sequentially the steps of:
- a. maintaining a static magnetic field along a first axis of an NMR imaging sample;
- b. selectively exciting, during a first predetermined time interval, a first plurality of nuclear spins in a planer section of said imaging sample by irradiating said imaging sample with a selective RF pulse in the presence of a first magnetic field gradient pulse;
- c. applying for a second predetermined time interval at least one dephasing magnetic field gradient pulse along a second axis of said imaging sample to dephase said excited nuclear spins;
- d. irradiating said imaging sample during a third time interval with a 180° RF pulse so as to initiate the rephasing of said excited nuclear spins, whereupon inherent imperfections in said 180° RF pulse cause a second plurality of nuclear spins in said imaging sample to change orientation by an angle other than 180° relative to the direction of said static magnetic field, said last-mentioned nuclear spins producing a net nuclear magnetization component transverse to the direction of said static magnetic field, which component produces a spurious FID NMR signal upon termination of said 180° RF pulse;

e. applying during a fourth predetermined time interval at least one imaging gradient having the same direction as said dephasing gradient such that a nuclear spin echo signal is produced by said rephasing of said excited nuclear spins;

f. sampling said spin echo in the presence of said imaging gradient; and

g. repeating steps (b–f) while shifting the phase of alternate ones of the selective RF pulses by 180° so as to produce a 180° shift in the corresponding spin echo signals such that, when alternate ones of said spin echo signals are subtracted, said spin echo signals reinforce while said spurious FID signals cancel.

4,443,761

NMR SPECTROSCOPY

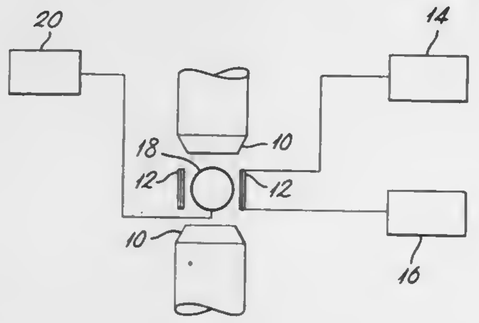
Malcolm H. Levitt, Hull, England, assignor to National Research Development Corporation, London, England

Filed May 27, 1982, Ser. No. 382,648

Claims priority, application United Kingdom, Jun. 16, 1981, 8119000

Int. Cl.^{3} G01R *33/08*

U.S. Cl. 324—311 **6 Claims**



1. A method of heteronuclear decoupling in high resolution pulsed NMR spectroscopy, in which during the acquisition from a sample of signals resulting from resonance of a nuclear species to be observed the sample is irradiated with radio frequency energy substantially at the resonant frequency of an interfering nuclear species, the irradiation being in the form of a train of composite pulses each of which is effective to cause at least approximate inversion of the longitudinal magnetisation in respect of said interfering nuclear species, said composite pulses being of two types which differ only by virtue of the r.f. phase for one type being opposite that for the other type and said train being in the form of a repeated sequence which consists of two pulses of each type and which involves less than three changes of type between successive pulses.

4,443,762

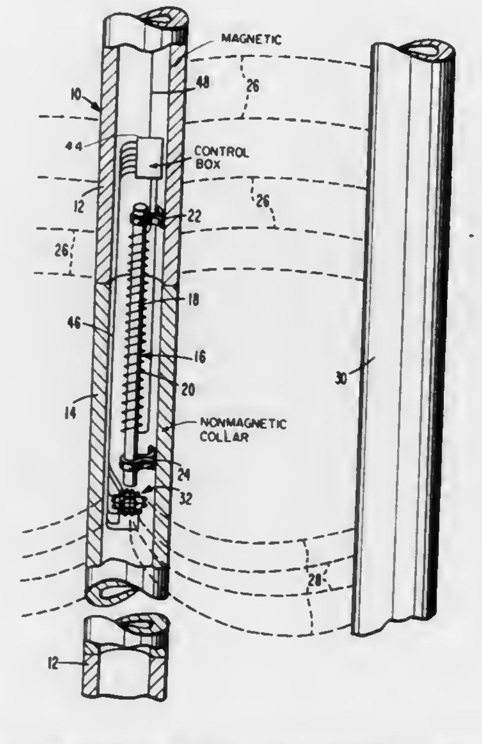
METHOD AND APPARATUS FOR DETECTING THE DIRECTION AND DISTANCE TO A TARGET WELL CASING

Arthur F. Kuckes, Ithaca, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Jun. 12, 1981, Ser. No. 273,138

Int. Cl.^{3} G01V *3/08, 3/26*

U.S. Cl. 324—346 **15 Claims**



2. A well casing detector system for detecting the direction of and distance to a target well having a casing, comprising:
- a housing having a magnetic portion and a nonmagnetic portion;
- an elongated solenoid comprising a high permeability core and coil surrounding a major part of the length thereof;
- means for energizing said solenoid coil to produce a source magnetic field axially symmetrical with respect to the axis of said solenoid;
- means for securing said solenoid within and generally parallel to the axis of said housing, a first end of said solenoid being secured within said nonmagnetic portion of said housing and a second end of said solenoid being magnetically coupled to said magnetic portion of said housing for distribution of the magnetic pole corresponding to said second end, whereby said first end of said solenoid acts as a monopole magnetic field source;
- a magnetometer mounted adjacent said first end of said solenoid; and
- means for energizing said magnetometer to detect distortions in said magnetic field due to a target well casing, said magnetometer producing an output proportional to the vector components of said distorted field whereby the direction and distance of said target well casing from said detector system is measured.

4,443,763

METHOD AND AN APPARATUS FOR CHECKING POLAROGRAPHIC MEASURING ELECTRODES

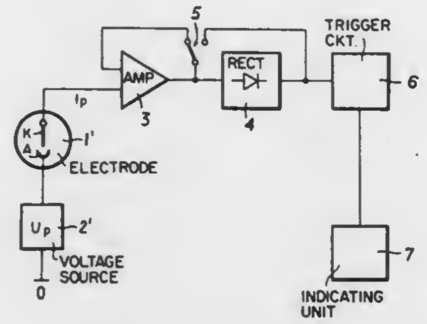
Hermann Marsoner, Graz, Austria, assignor to Hans List, Graz, Austria

Filed Sep. 16, 1981, Ser. No. 302,786

Claims priority, application Austria, Sep. 18, 1980, 4678/80

Int. Cl.^{3} G01N *27/02*

U.S. Cl. 324—439 **8 Claims**



5. Apparatus for checking the condition of polarographic measuring electrodes by means of cyclical voltammetry, comprising an alternating voltage source, a current amplifier, and a measuring circuit including a trigger circuit, the anode of the measuring electrode to be checked is connected to one pole of said alternating voltage source for polarization, and the cathode of the measuring electrode is connected to said current amplifier, and wherein the output voltage delivered proportional to the electrode current by said current amplifier is applied to an input of said trigger circuit having at least one trigger level, and an output of said trigger circuit is connected to an indicating unit for effecting an indication corresponding to the highest exceeded trigger level.

4,443,764

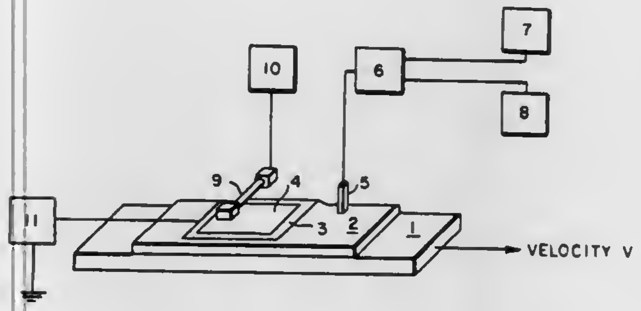
METHOD FOR NON-DESTRUCTIVE DETECTION AND CHARACTERIZATION OF FLAWS

Nam P. Suh, Sudbury, and Ming K. Tse, Cambridge, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Oct. 30, 1980, Ser. No. 202,331

Int. Cl.^{3} G01N *27/60*

U.S. Cl. 324—456 **15 Claims**



1. A method for the nondestructive testing and evaluation of an insulating material, said method comprising the steps of: applying an electrostatic charge pattern to one surface of the material; providing an electrode on a second surface opposite said one surface, said electrode being at an electrical potential lower than said one surface so that the electrostatic charge can decay through said material; allowing the charge pattern to decay for a predetermined period of time; and determining the residual charge pattern on said one surface after said period.

4,443,765

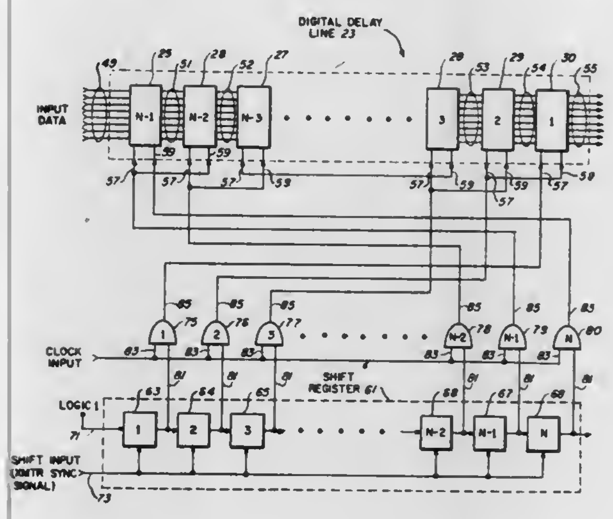
DIGITAL MULTI-TAPPED DELAY LINE WITH AUTOMATIC TIME-DOMAIN PROGRAMMING

Allen G. Findeisen, Austin; Larry L. Mellenbruch, Del Valle, and Wallace D. Lentz, Leander, all of Tex., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 18, 1981, Ser. No. 303,448

Int. Cl.^{3} H03K *5/159, 5/14*

U.S. Cl. 328—55 **15 Claims**



1. A variable delay line comprising:
- a plurality of cascaded delay sections having a data input, each delay section including a first-in first-out register having a shift-in clock input and a shift-out clock input; and
- means for programming fixed delay values simultaneously into said shift-in and shift-out clock inputs of alternate delay sections in response to irregularly spaced input signals.

4,443,766

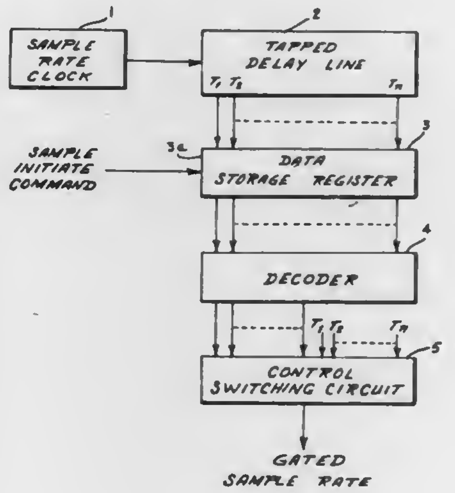
PRECISION DIGITAL SAMPLER

John P. Belton, Jr., Thousand Oaks, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 694,129, Jun. 15, 1976, abandoned. This application Nov. 8, 1978, Ser. No. 958,920

Int. Cl.^{3} H03K *5/153, 5/159*

U.S. Cl. 328—151 **4 Claims**



1. A precision digital sampler comprising
- a sample rate clock,
- a tapped delay line having multiple taps connected to receive a sample clock pulse train therefrom,
- a data storage buffer register having a separate storage means for and connected to each delay line tap,
- means for applying a sample initiate command signal to said buffer register, said buffer register storing the output state of each delay line tap in response thereto,
- a decoder circuit connected to analyze the condition of said buffer register and detect the delay line tap at which the leading edge of the sample clock pulse is positioned, and
- a control switching circuit receiving inputs from each tap of said tapped delay line and gating pulses out of said tapped delay line in response to the output of said decoder circuit.

4,443,767

VARIABLE PHASE LOCK CONTROL

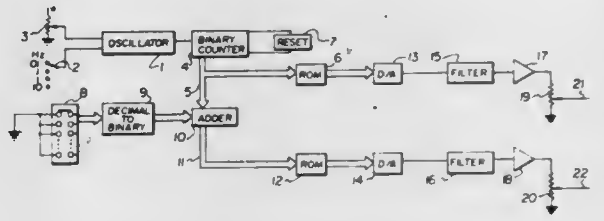
James K. Reichert, Willowdale, and Michael A. Stott, Ottawa, both of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Feb. 23, 1981, Ser. No. 237,450

Claims priority, application Canada, Mar. 21, 1980, 348080

Int. Cl.^{3} H03K *3/78, 13/02;* **H03L** *7/00, 708*

U.S. Cl. 328—155 **21 Claims**



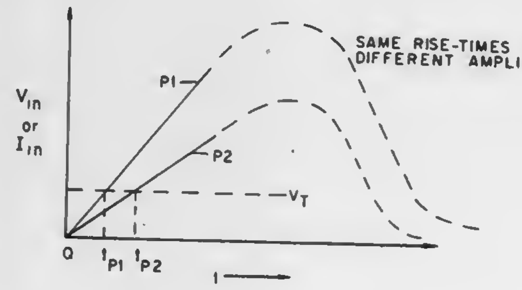
1. A variable phase lock control comprising:
- (a) first storage means for digitally storing a representation of a first signal forming a substantially full cycle of a first predetermined waveform, the adresses of sequential elements of said first signal being sequential,
- (b) means for generating a first address signal designating the addresses of said first signal elements and addressing the first storage means sequentially and cyclically to read out the stored first signal,

(c) second means for digitally storing a representation of a second signal forming a substantially full cycle of a second predetermined waveform, the addresses of sequential elements of said second signal being sequential, the number of elements of the first and second signals being similar,
(d) means for generating a digital signal having a value between zero and the number of elements of said first and second signals,
(e) means for adding said digital signal and the addresses of the first signal elements to provide a second address signal,
(f) means for addressing the second storage means sequentially and cyclically with the second address signal to read out the stored second signal,
whereby the read out first signal and the read out second signal have a phase relationship dependent on the value of the digital signal.

4,443,768
AMPLITUDE- AND RISE-TIME-COMPENSATED FILTERS

Charles H. Nowlin, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 28, 1981, Ser. No. 297,208
Int. Cl.³ H03K *6/00*
U.S. Cl. 328—167 **18 Claims**



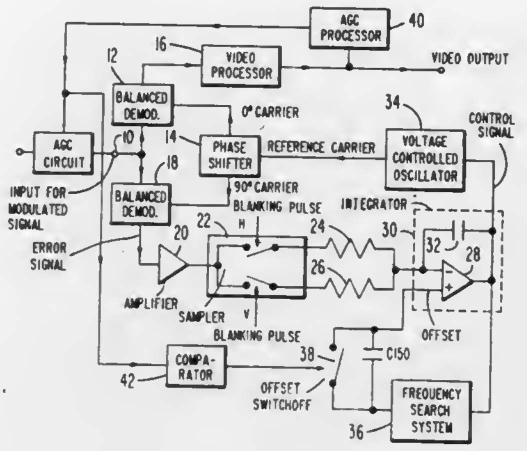
1. An amplitude-compensated, rise-time-compensated filter for converting an input pulse, having a substantially linear leading edge, to a bipolar output pulse, the filter comprising,
differentiator means for differentiating the input pulse; and
subtractor means for subtracting a pulse directly proportional to the input pulse from the differentiated input pulse, to form an output pulse having a fixed zero crossing time relative to the time of occurance of the input pulse that is invariant with the amplitude or rise time of the input pulse.

4,443,769
FREQUENCY SEARCH SYSTEM FOR A PHASE LOCKED LOOP

Felix Aschwanden, Thalwil, and Willem H. Groeneweg, Affoltern, both of Switzerland, assignors to RCA Corporation, New York, N.Y.

Filed Sep. 21, 1981, Ser. No. 304,163
Claims priority, application United Kingdom, Apr. 27, 1981, 8112914
Int. Cl.³ H03D *3/18;* H03L *7/00*
U.S. Cl. 329—50 **6 Claims**

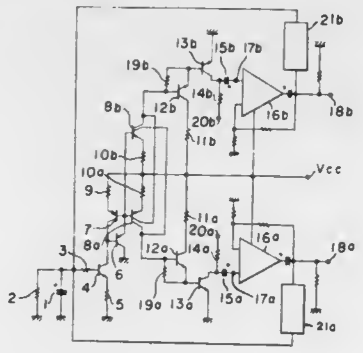
1. An apparatus for locking a phase locked loop onto a modulated reference signal, said apparatus comprising deriving means for deriving from said reference signal a demodulated signal and an error signal; sampling means for sampling said error signal, avoiding means for avoiding lock ups of said loop on other than said reference signal, integrating means for integrating the sampled signal, said avoiding means comprising applying means for applying an offset signal to said integrating means, said applying means comprising ceasing means for ceasing to apply said offset signal once locking is achieved, said ceasing means comprising an automatic gain control processor coupled to said deriving means to receive said demodulated signal, a comparator having a pair of inputs respectively coupled to said processor and to a comparator reference signal source, and a switch controlled by said comparator and coupled between said applying means and said integrating means.



4,443,770
AUTOMATIC LEVEL CONTROL CIRCUIT

Manabu Itobayashi, and Hisao Ohtawa, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 24, 1981, Ser. No. 276,873
Claims priority, application Japan, Jun. 27, 1980, 55-88319
Int. Cl.³ H03G *3/30*
U.S. Cl. 330—284 **4 Claims**

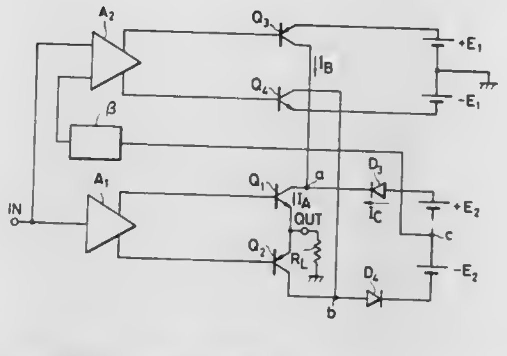


1. An automatic level control circuit which comprises:
a pair of amplifiers;
a pair of rectifying circuits each respectively connected to the outputs of said pair of amplifiers and producing a direct current output;
a first transistor whcih receives said direct current output from each of said rectifier circuits, through a first resistor to a base thereof;
a second resistor connected between an emitter of said first transistor and the ground;
a second transistor whose collector is connected to a collector of said first transistor and whose emitter is connected through a third resistor to a power source;
a third transistor whose emitter and base are respectively connected to the base and collector of said second transistor, and whose collector is grounded;
fourth and fifth transistors each having a multicollector sturcture having each base connected to the base of said second transistor and wherein said fourth transistor has one of its collectors connected to one of the collectors of said fifth transistor;
fourth and fifth resistors connected between emitters of said fourth and fifth transistors and said power source;
sixth and seventh transistors whose bases are respectively each connected to one of the collectors of said fourth and fifth transistors;
sixth and seventh resistors which are respectively connected between said power source and each of the collectors of sixth and seventh transistors;
eighth and ninth resistors which are respectively connected between each base and emitter of said sixth and seventh transistors;
eighth and ninth transistors whose bases are respectively connected to each of the emitters of said sixth and seventh transistors, and whose emitter are grounded; and
a pair of input resistors with each of said input resistors connected to each of the collectors of said eighth and ninth transistors to attain automatic leveling operation by utilizing the saturated resistances of said eighth and ninth transistors.

4,443,771
POWER AMPLIFIER

Satoshi Ishii, and Hirosi Koinuma, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 9, 1981, Ser. No. 329,100
Claims priority, application Japan, Dec. 11, 1980, 55-177954
Int. Cl.³ H03F *3/30*
U.S. Cl. 330—297 **22 Claims**



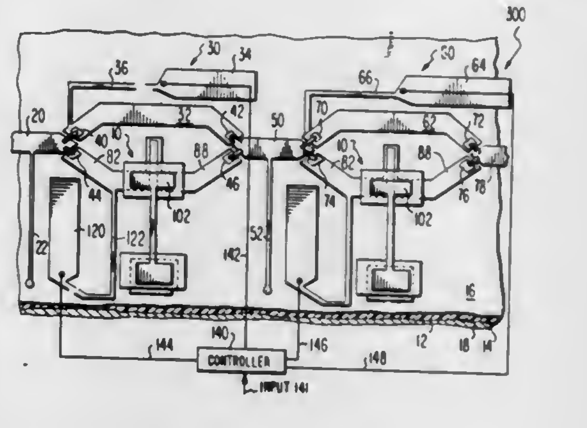
1. A power amplifier, comprising:
a class A amplifier portion having at least first and second transistors of opposite conductivity types having their emitter-collector paths connected in series, the common connection point of said first and second transistors comprising an output;
a first DC source means having first and second terminals connected across said series connection of said first and second transistors;
diodes coupled between said first DC source means and either end of said series connection of said first and second transistors;
second DC source means; and
a class B amplifier portion having at least third and fourth transistors of opposite conductivity types, said first and third transistors being connected in series between said second DC source means and said output, and said second and fourth transistors being connected in series between said second DC source means and said output, wherein said class B amplifier portion is used by said class A amplifier portion as a current source.

4,443,772
SWITCHING MICROWAVE INTEGRATED BRIDGE T GROUP DELAY EQUALIZER

Alfred Schwarzmann, Mount Laurel, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 10, 1981, Ser. No. 329,338
Int. Cl.³ H01P *1/20*
U.S. Cl. 333—28 R **7 Claims**

1. A group delay equalizer for compensating for increasing group delay for increasing frequency over a given band of microwave frequencies above one Gigahertz comprising:
first and second strip conductors spaced end to end from each other and on one surface of a dielectric substrate having a ground conductor on the opposite surface of said substrate to form two transmission lines;
a third, relatively narrow, strip conductor forming an inductor at said given band of frequencies and connecting said first and second conductors to provide a series inductive coupling between them;
a dielectric body overlying adjacent end portions of said first and said second conductors;
a fourth strip conductor overlying said dielectric material, at least a part of said first conductor and at least a part of said second conductor, and of a width to form a series of first and second capacitors between said two transmission lines;

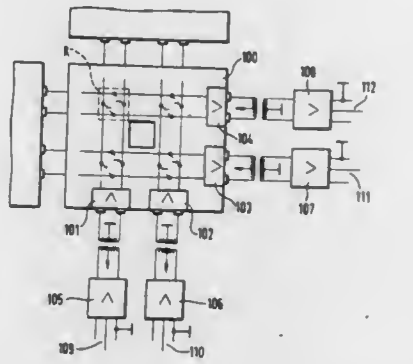


a grounded capacitor connected to said fourth conductor and therefore at the junction of said first and second capacitors by a fifth, relatively narrow, strip conductor forming an inductor at said given band of frequencies which provides inductive coupling between said fourth conductor and said grounded capacitor; and
said third and fifth conductor effective lengths and widths being selected together with the values of said first, second, and grounded capacitors to produce a compensating decrease in group delay for increasing frequency.

4,443,773
SWITCHING NETWORK FOR MEGAHERTZ FREQUENCY SIGNALS

Bernhard Rall, Ulm; Johann Burkhart, Senden, and Klaus Schlüter, Ulm-Gögglingen, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 21, 1982, Ser. No. 341,521
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1981, 3101932
Int. Cl.³ H01P *1/15;* H04Q *3/00*
U.S. Cl. 333—104 **8 Claims**



1. In a switching network in matrix form for megahertz frequency signals, including:
a multilayer printed circuit board having a plurality of row signal lines located in a first plane, a plurality of column signal lines located in a second plane and extending transverse to the row lines, the row and column signal lines intersecting one another in an intersection area, control and/or shielding conductors surrounding the lines, and metal shields enclosing the planes; at least one crosspoint array module integrated on a chip and providing circuit means defining a plurality of crosspoints for the intersec-

tion area, each crosspoint presenting two semiconductor switches arranged to couple a respective column signal line to a respective row signal line; and a shielded package enclosing the module,

the improvement wherein:

each said line is constituted by a balanced pair of stripline conductors terminated at each end of said line by the characteristic impedance of said line;

there are two of said control or shielding conductors between every two lines in each said plane;

said stripline conductors of at least one said line are twisted at at least one point along their length, with one said stripline conductor crossing the other via a portion located in a plane other than that of said one line;

said circuit board further comprises, in each said plane: two current supply conductors associated with the conductors of an intersection area and bordering their associated conductors; and blocking capacitors connected to said current supply conductors and located in regions of said board which are free of conductors;

each said crosspoint defined by said circuit means comprises: a switchable balanced amplifier; an input circuit connecting the input of said amplifier to one of said lines which is coupled by said crosspoint, and having a high input resistance relative to the characteristic impedance of that said line to which it is connected; and an output circuit connecting the output of said amplifier to the other one of said lines which is coupled by said crosspoint, and having a high output resistance relative to the characteristic impedance of that said line to which it is connected;

each said amplifier comprises: two active transistors connected to one another in a manner which is balanced to ground and each controllable between a conductive, essentially linearly amplifying state and a blocking state; and two further transistors of the same conductivity type as said active transistors and connected to one another in a manner which is balanced to ground and to be permanently in a blocking state to serve as compensation elements, each said further transistor having its emitter connected to the emitter of a respective active transistor and its collector connected to the collector of the other said active transistor, whereby said further transistors compensate the residual crosstalk of said active transistors when in their blocked state;

said circuit board further comprises socket elements for connecting said module to said lines in its associated intersection area;

said shielded package comprises plug connector pins and signal leads connected to said chip for coupling said module to said socket elements; and

said switching network further comprises means providing electric field shielding for at least one of said socket elements, said plug connector pins, and said signal leads.

4,443,774

CTD TRANSVERSAL FILTER

Rainer Lüder, Oberhaching, and Wolfgang Haussmann, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

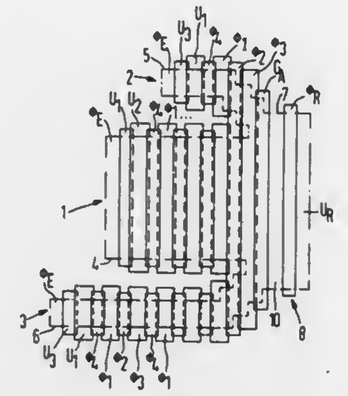
Filed Feb. 2, 1982, Ser. No. 344,925

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1981, 3104521

Int. Cl.^{3} H03H *15/02*

U.S. Cl. 333—165 **5 Claims**

1. CTD transversal filter, for time delayed forming of a given input signal being weighted and subsequently summed for producing a filter characteristic, with weighting coefficients optionally having a negative and a positive sign, comprising a separate input stage for forming each desired weighting coefficient for obtaining a desired filter characteristic, said input signal being scanned by a common scanning frequency for all input stages, being converted to a charge packet proportional to its voltage and being time delayed in said input stages, first gate electrodes connected to said input stages forming the positive weighting coefficients, second gate electrodes connected to said input stages forming the negative weighting coefficients in an inverting manner as compared to said positive weighting coefficients, said first and second gate electrodes having surface areas under which said charge packets are formed proportional to the input voltage, said surface areas corresponding in size to the ratio of the absolute values of the required weighting coefficients, and a common output stage in which said input stages are combined.



4,443,775

SOLENOID ACTUATOR

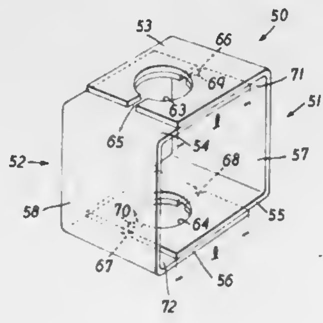
Hidetsugu Fujitani, Kasukabe; Tsuneo Ishigaki, Sugito, and Tetsuro Tokuda, Misato, all of Japan, assignors to Shoketsu Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan

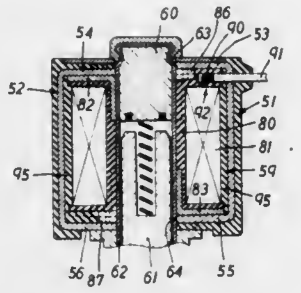
Filed Jan. 6, 1982, Ser. No. 337,501

Claims priority, application Japan, Jan. 31, 1981, 56-13009[U]; Oct. 6, 1981, 56-148431[U]

Int. Cl.^{3} H01F *3/00*

U.S. Cl. 335—281 **5 Claims**





1. A solenoid actuator comprising:

a coil formed by applying windings around a bobbin including top and bottom end plates;

a magnetic frame comprising a pair of magnetic frame parts each fabricated from a ferromagnetic sheet material by bending the both ends thereof so as to define a top plate and a bottom plate integrally connected to the both ends of a side plate respectively for covering the top, bottom and side of the coil, said top and bottom plates of said magnetic frame parts each defining a leading edge opposite the integral connection thereof to the respective side plate;

said pair of magnetic frame parts assembled with their top plates and the bottom plates being overlapped to each other, with the overlap between said top plates and between said bottom plates selected to afford a sufficient magnetic flux path and to form a gap for containing connection portions of lead wires for making electrical connection to said windings, said gap formed between the leading edge of a selected one of the top and bottom plates of one of said frame parts and the side plate of the other frame part; and

said bobbin further comprising a stepped portion on a selected of the end plates thereof to define a partition chamber, said stepped portion disposed in said gap, said partition chamber adapted to contain said connection portions between said lead wires and said windings to isolate said lead wires from said windings except for said connection portions.

4,443,776

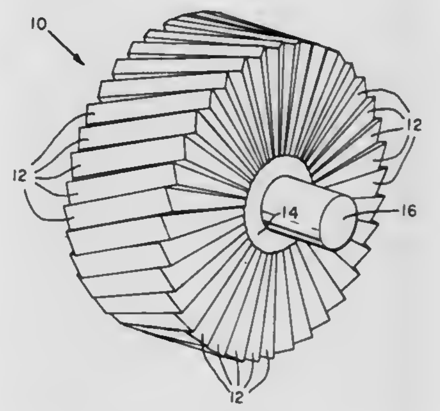
ROTARY MAGNET DEVICE

David J. Cunningham, 2508 Barnhart, Fort Wayne, Ind. 46805

Filed Aug. 10, 1983, Ser. No. 522,339

Int. Cl.^{3} H01F *7/02*

U.S. Cl. 335—302 **14 Claims**



1. A magnet device, comprising:

a first substantially circular array of magnetized elements, each said magnetized element having opposite surfaces of opposite polarity and being disposed in surface-to-surface facing relationship with adjacent ones of said magnetized elements such that each said surface of each said magnetized element is in facing relationship with a respective said surface of opposite polarity of an adjacent said magnetized element, said magnetized elements being angularly disposed about respective radial axes relative to the plane of said first array to expose first portions of said surfaces of like polarity to one side of said plane and second portions of polarity opposite to said first portions on the other side of said plane, thereby creating about said first array a magnetic field having substantially uniform polarity, substantially uniform field strength, and substantially uniformly, angularly oriented magnetic field force vectors, and

a second substantially circular array of other said magnetized elements being substantially coaxially disposed relative to said first array, each said other magnetized element having opposite surfaces of opposite polarity and being disposed in surface-to-surface facing relationship with adjacent ones of said other magnetized elements such that each said surface of each said other magnetized element is in facing relationship with a respective said surface of opposite polarity of adjacent said other magnetized element, said other magnetized elements being angularly disposed about respective radial axes relative to the plane of said second array to expose first portions of said surfaces of like polarity to one side of said plane and second portions of polarity opposite to said first portions on the other side of said plane, thereby creating about said second array a magnetic field having substantially uniform polarity, substantially uniform field strength, and substantially uniformly angularly oriented magnetic field force vectors,

one of said first array and said second array being rotatable relative to the other of said first array and said second array when portions of their respective said magnetic fields interact with each other.

4,443,777

MINIATURE TRANSFORMER

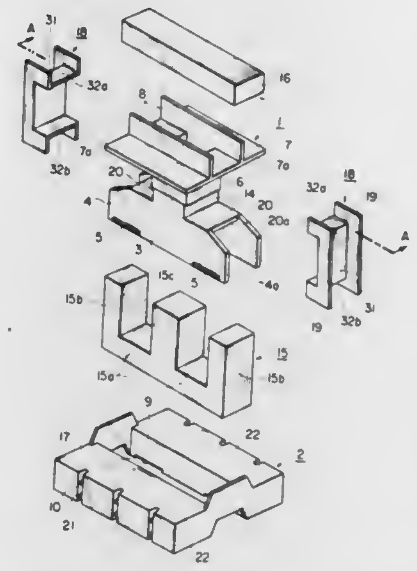
Tsutomu Koike, Higashi-Murayama, Japan, assignor to Toku Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 14, 1981, Ser. No. 311,440

Claims priority, application Japan, Oct. 15, 1980, 55-146576[U]; Oct. 15, 1980, 55-146577[U]

Int. Cl.^{3} H01F *15/02, 27/30*

U.S. Cl. 336—65 **4 Claims**



1. A miniature transformer comprising an insulative bobbin having a pair of flanges and a center portion around which an insulated tape wire is wound in layers, at least a part of said center portion being stepped in a direction parallel to the longitudinal axis of said bobbin to accommodate, in the stepped portion, a lead wire connected to the innermost layer of said tape wire.

4,443,778

ADAPTER FOR A LOW-VOLTAGE LAMP

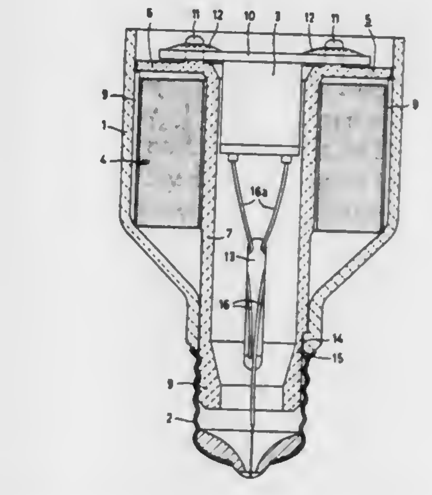
Jan A. C. Mewissen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 2, 1982, Ser. No. 394,736

Claims priority, application Netherlands, Jul. 29, 1981, 8103571

Int. Cl.^{3} H01F *27/02*

U.S. Cl. 336—90 **9 Claims**



1. An adaptor for a low-voltage lamp comprising a housing having at one end a lamp cap for connecting the adaptor to a

line voltage lamp holder, and also comprising a lamp holder for a low-voltage lamp, in which housing a transformer is incorporated, the primary of which is connected to the lamp cap by current conductors and the secondary of which is connected to the lamp holder by current conductors, characterized in that the transformer is a ring core transformer and that an assembly member is provided which has a tubular part and an integral flange at one end, which assembly member carries the lamp holder and is partly contained in the housing, the tubular part of which assembly member is surrounded by the transformer and at its end remote from the flange projects through an aperture in the housing and is there secured to the lamp cap, the flange of the assembly member bearing against the housing in the longitudinal direction of the tubular part so that the housing is retained in position by the lamp cap and the flange.

4,443,779

CURRENT TRANSFORMER

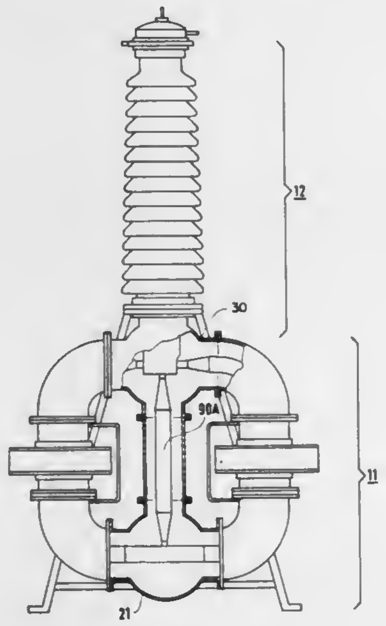
Edmond Thuries, Meyzieu, France, assignor to Alsthom-Atlantique, Paris, France

Filed Oct. 21, 1981, Ser. No. 313,401

Claims priority, application France, Oct. 22, 1980, 80 22552

Int. Cl.^{3} H01F *27/04*

U.S. Cl. 336—92 **3 Claims**



1. A current transformer with an insulating through bushing and an underlying annular metal chamber, said metal chamber having an upper portion and a lower portion, both said through bushing and said chamber being filled with compressed gas, a primary circuit with an input conductor which enters the metal chamber upper portion via the through bushing and an output conductor which leaves the metal chamber upper portion via the through bushing coaxially to the first conductor, and at least two magnetic circuits surrounding said metal chamber, each magnetic circuit having a secondary winding, and wherein the current transformer has an electric side connection emanating at said lower portion of said metal chamber, said electric side connection comprising a tube having ends connected respectively to said upper and lower metal chamber portions with its ends opening to the interior of said annular metal chamber, and a side connection conductor positioned within said tube, spaced therefrom and extending coaxially thereof to form with said tube, a gas insulated side connection cable, and wherein said magnetic circuits are disposed on either side of said side connection, such the current initially entering via said input conductor divides within said metal chamber into two circuits, one of which exits through said conductor via said through bushing and the other of which exits through said side connection conductor and wherein said side connection conductor is disposed in the insulating through bushing coaxially to the input conductor and the output conductor of the primary circuit such that the transformer functions as a double transformer, saving one insulating through bushing, and wherein the current as measured by the two secondary windings is sufficient to determine the current flowing through said input, said output and said side connection conductors.

4,443,780

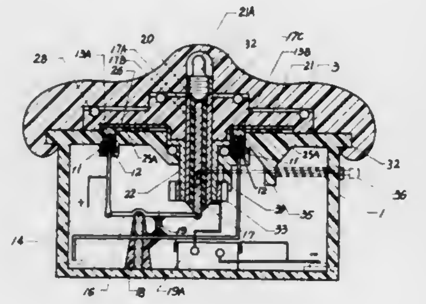
FUSE SWITCH WITH PLURAL POSITIONABLE FUSE ELEMENTS

Hsu Huai-Chieh, No. 44, La. 53, Ku Shan 1st Rd., Kaohsiung, Taiwan

Filed Apr. 8, 1980, Ser. No. 138,443

Int. Cl.^{3} H01H *85/22, 85/32*

U.S. Cl. 337—257 **5 Claims**



1. A fuse switch for an electric circuit, the fuse switch comprising:

a power source;

a load driven by said power source;

a housing including separable top and bottom sections, said top section carrying an indication lamp and said bottom section supporting thereon a rotatable platform carrying a primary circuit normally connecting said power source with said load;

a secondary circuit in said housing for connecting said power source with said lamp;

first switching means in said primary circuit comprising a fuse element having fusible portions, at least one of said portions being disposed in said primary circuit for completing said primary circuit, said first switching means defining means for connecting said power source to said secondary circuit when said at least one portion fuses thereby disconnecting said power source from said primary circuit; and

means for repositioning said first switching means while in said primary circuit, said repositioning means being cooperable with said platform to reconnect said power source with said primary circuit by disposing another of said fusible portions in said primary circuit thereby disconnecting said power source from said secondary circuit after said at least one portion has fused and said first switching means is repositioned, said repositioning means including means for mechanically driving said platform, the latter carrying said first switching means and being rotatable in response to actuation of said driving means.

4,443,781

GAS DETECTING SENSOR

Minoru Ohta; Yutaka Hattori, both of Okazaki; Tomio Kawakami, Nishio, and Michitosi Onoda, Toyohashi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Dec. 31, 1981, Ser. No. 336,401

Claims priority, application Japan, Apr. 27, 1981, 56-63626

Int. Cl.^{3} H01L *7/00*

U.S. Cl. 338—34 **10 Claims**

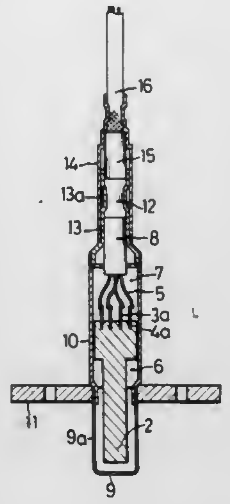
1. A gas detecting sensor for detecting the partial pressure of oxygen gas contained in exhaust gases, comprising:

a base member made of ceramic material containing alumina as a main ingredient;

a pair of electrodes held by said base member;

a sensing element held by and fixed to said base member and electrically connected to said pair of electrodes; and sensing element having an electrical characteristic responsive to the partial pressure of oxygen gas, said sensing element being made of ceramic material selected from the group consisting of cobalt monoxide, nickel monoxide and perovskite-type double oxide which contains at least one of lanthanum and cobalt; and

an intermediate layer of ceramic material which is substantially non-reactive with said sensing element, said intermediate layer being disposed between and separating said base member from said sensing element.



4,443,782

METHOD FOR REGULATING THE VALUE OF A THICK FILM RESISTOR AND A CORRESPONDING RESISTOR

Emmanuel J. Poirier d'Ange d'Orsay, Castanet, France, assignor to S.E.V. Societe pour l'Equipement de Vehicules, Issy-les-Moulineaux, France

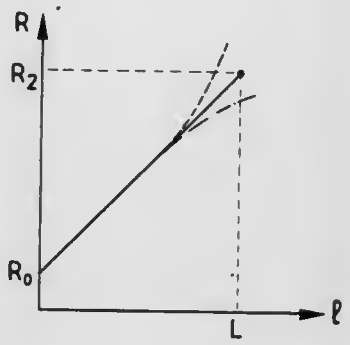
PCT No. PCT/FR81/00080, 371 Date Feb. 18, 1982, 102(e) Date Feb. 18, 1982, PCT Pub. No. WO81/03714, PCT Pub. Date Dec. 24, 1981

PCT Filed Jun. 18, 1981, Ser. No. 355,563

Claims priority, application France, Jun. 19, 1980, 80 13643

Int. Cl.^{3} H01C *10/00*

U.S. Cl. 338—195 **16 Claims**



1. A thick film resistor, comprising resistive film disposed on an insulating support, said resistive film having edge regions, a first connection terminal on an edge region of the film, a second connection terminal spaced from the first terminal and on an edge region of the film, a conductive connection bar spaced from said terminals and on another edge region of the film, and a slot (**23**,**33**) formed in said film between said connection terminals (**21**, **22**, **31**, **32**), said slot having a median line which is perpendicular to a median line of the connection bar (**24**, **34**), and said connection bar electrically connecting the portions of the edge region of the resistive film which lie on opposite sides of the median line of the slot so that said connection bar forms a part of the current path between the portions of the resistive film on opposite sides of the median line of the slot.

4,443,783

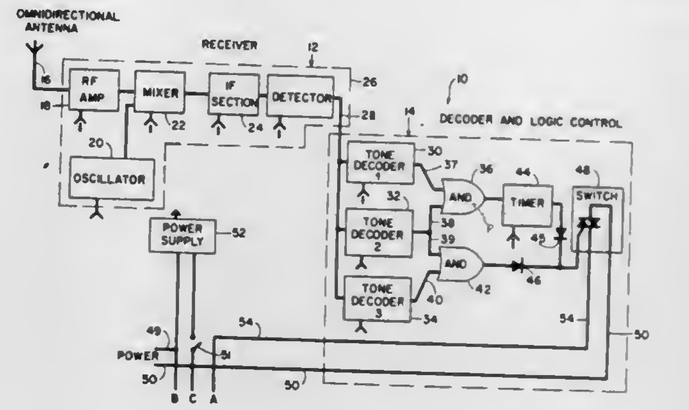
TRAFFIC LIGHT CONTROL FOR EMERGENCY VEHICLES

Wilbur L. Mitchell, 2011 E. 43rd St., Anderson, Ind. 46013

Continuation-in-part of Ser. No. 238,044, Feb. 25, 1981, which is a continuation-in-part of Ser. No. 6,351, Jan. 25, 1979, abandoned. This application Apr. 1, 1983, Ser. No. 481,454

Int. Cl.^{3} G08G *1/07*

U.S. Cl. 340—32 **7 Claims**



1. Apparatus for control of traffic lights for passage of an emergency vehicle, comprising:

(a) a conventional traffic light controller (TLC),

(b) first means for removing power from said TLC to leads leading to all of the traffic lights under control of said TLC; during at least a first selected time interval;

(c) second means for applying power to selected ones, but not all, of said leads leading to said traffic lights during at least part of said selected time interval;

(d) a directional antenna and radio transmitter connected thereto mounted in an emergency vehicle so as to transmit radiation in the direction in which said vehicle is moving;

(e) an omni-directional antenna and radio receiver means connected thereto mounted at an intersection, for receiving radiation from all directions;

(f) said first and second means responsive to a signal received by said radio receiver means; and in which

(g) said radiation transmitted to said receiver means includes at least three tons of different selected frequencies, which are operated as two groups, only one group of which operates at any selected time; one of said two groups comprising a first pair of tones being transmitted alternatey on an on/off cycling; the second group comprising a second pair of tones; of which at least one tone is different from both of said first pair of tones; said second pair being transmitted simultaneously and continuously; and in which

(h) said radio receiver means includes means responsive to both of said at least first pair of tones, and to their on/off cycling to control a timer means to close a selected electrical circuit through said timer means for a second selected time interval; and also includes means responsive to both said at least second pair of tones, and to their continuous nature, to by-pass said timer means, and to close said selected electrical circuit directly.

4,443,784

FAULT DETECTION IN ELECTRONIC VEHICLE CONTROLS

Horst Franzen, Hembofen, and Wolfgang Rothmeier, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 161,281, Jun. 19, 1980. This application May 17, 1982, Ser. No. 379,376

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1979, 2926132

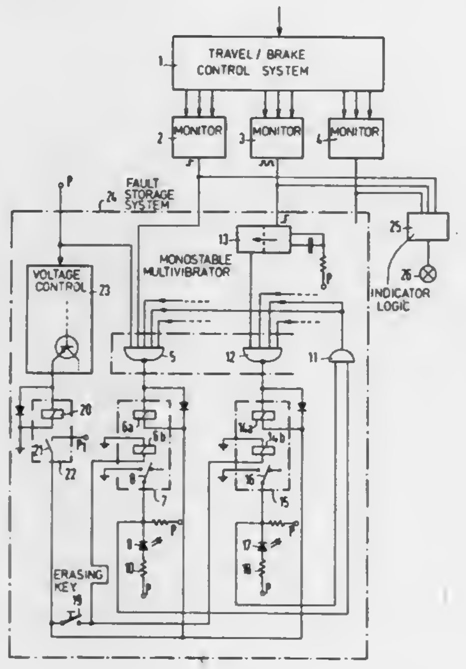
Int. Cl.^{3} B60Q *1/00*

U.S. Cl. 340—52 F **3 Claims**

1. An arrangement in a vehicle for detecting fault conditions

which occur in electronic vehicle controls, the arrangement being of the type which uses at least a first output signal from a first monitoring device and a subsequent output signal, each such output signal being responsive to a fault condition, the arrangement further comprising:

first storage means including at least one bistable relay having a plurality of stable states, and which transfer from a first to a second stable state in response to the first output signal of the first monitoring device, the first storage means further having means for preserving the state of the bistable relay after the vehicle has been shut down and an energizing potential for the arrangement has been discontinued;



blocking means responsive to the second stable state of the first storage means for preventing changes in the state of the first storage means in response to the first output signal of the first monitoring device and the subsequent output signal; and,

voltage control means for deenergizing the first storage means when a supply voltage at the first storage means falls below a predetermined voltage level.

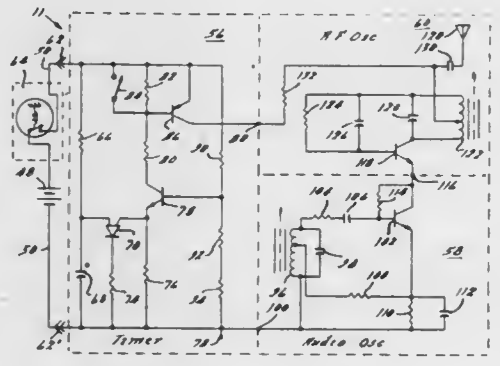
4,443,785
LOW POWER PUT TIMER CIRCUIT AND THE APPLICATION THEREOF WITHIN A TIRE PRESSURE MONITOR

Donald Speranza, Canton, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Division of Ser. No. 112,368, Jan. 15, 1980, abandoned. This application Aug. 12, 1981, Ser. No. 292,112

Int. Cl.³ B60C ***23/00***

U.S. Cl. 340—58 **9 Claims**



1. A tire pressure monitoring system comprising:

transmitter means operative to monitor fluid pressure within a pneumatic tire and generate a succession of tire inflation condition signals when said pressure falls within a predetermined operating range, said transmitter comprising an electronic timer including a programmable unijunction transistor biased to periodically shift between a conductive state and a non-conductive state to establish the period of said signals, said timer comprising,

(A) means operative to define a first current path having a characteristic impedance which establishes the peak voltage for said timer and to impress an electrical potential upon the gate input of said transistor, and

(B) means operative to define a second current path having a second characteristic impedance selectively connected to the gate input of said transistor in the conductive state to provide substantially all of the current flowing therethrough, said second impedance operative to limit the valley current of said timer; and

means operative to receive and count said tire condition signals and to generate an operator alerting signal when less than a predetermined number of said tire condition signals are received during a preestablished increment of time.

4,443,786
DATA TRANSMISSION SYSTEM EMPLOYING WIRE AND WIRELESS TRANSMISSION PATHS

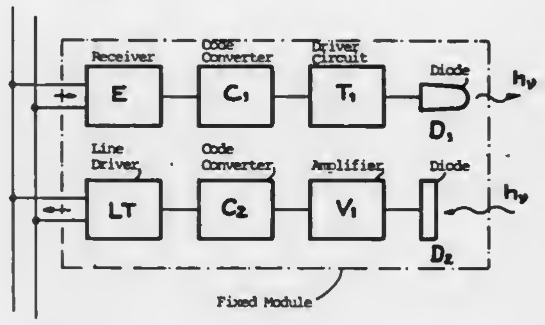
Heinz Hämmerling, Königstein, and Werner Schairer, Weinsberg, both of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 21, 1981, Ser. No. 304,335

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1980, 3035965

Int. Cl.³ H04B ***3/54***

U.S. Cl. 340—310 R **14 Claims**



14. A data transmission system using an alternating mains supply for a signal transmission path, said system comprising:

a movable module including a data input device, a first infra-red emitting component coupled to said data input device for transmitting a first wireless transmission of infra-red signals representing data fed into said data input device, a first infra-red sensitive component for receiving a second wireless transmission of infra-red signals representing data and an output device coupled to said first infra-red radiation sensitive component for putting out data corresponding to the received second wireless transmission; and

a fixed module arranged to be connected to the mains supply and including a second infra-red sensitive component for receiving the first wireless transmission, means coupled to said second infra-red sensitive component for feeding data into the mains supply corresponding to the data received by said second infra-red sensitive component, signal receiver means for receiving data from the mains supply and a second infra-red emitting component coupled to said signal receiver means for transmitting a second wireless transmission of infra-red signals representing data corresponding to the data received by a said signal receiver means.

4,443,787
APPARATUS FOR MEASURING THE ANGULAR POSITION OF A SHAFT

Heimo Denk, Feldbach, and Peter Mantsch, Graz, both of Austria, assignors to Hans List, Graz, Austria

Continuation of Ser. No. 117,002, Jan. 30, 1980, abandoned. This application Mar. 9, 1982, Ser. No. 356,478

Int. Cl.³ H03K ***13/02, 13/20***

U.S. Cl. 340—347 P **13 Claims**

1. Apparatus for measuring the angular position of a rotating machine element relative to a reference position thereof, comprising:

a recognition circuit responsive to an input signal containing a signal component responsive to an event originated by the operation of the machine and noise and providing first output signals upon the occurrence of said event;

a first threshold sensing circuit responsive to said input signal and having a first threshold level less than the level of said given event and the level of said noise and providing second output signals with said input signal exceeding said threshold level; and

an evaluation circuit for generating a signal representative of the angle of rotation of said rotating machine element between said reference position and the occurrence of said event in response to said first and second output signals, and including means for receiving counting signals representative of movement of said rotating machine element, and being triggered by said second signals, and said apparatus further comprising reset means providing a reset signal to said means for receiving counting signals with the level of said input signals less than said first threshold level, said evaluation circuit further including a bistable device set by said first signal to deliver a substantially continuous enabling signal to said counting means and being reset by a signal representative of said reference position, and storage means for storing the output of said means for receiving counting signals after said reference position is reached.

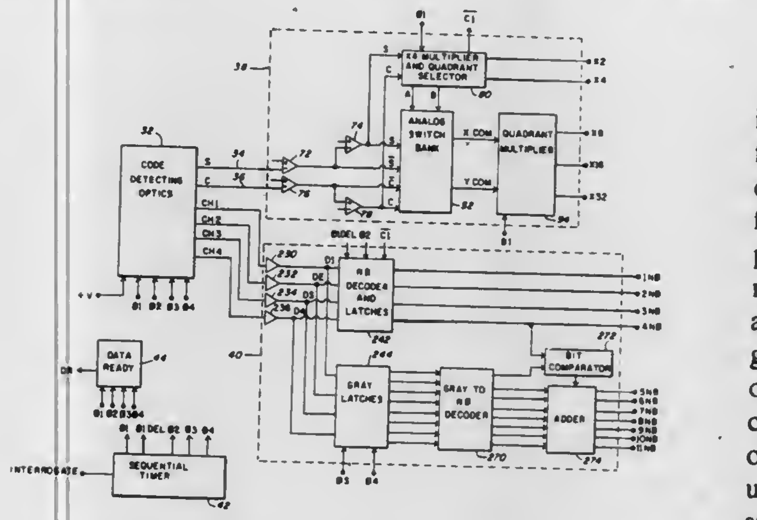
4,443,788
OPTICAL ENCODER SYSTEM

Donald H. Breslow, Framingham, Mass., assignor to Itek Corporation, Lexington, Mass.

Division of Ser. No. 173,219, Jul. 28, 1980. This application Aug. 27, 1982, Ser. No. 412,312

Int. Cl.³ G08C ***9/06***

U.S. Cl. 340—347 P **5 Claims**



1. An optical angular encoder system including a code disc having a fine code track thereon, illuminating means for illuminating the code track, detecting means for detecting the illumination which passes through the code track and for providing sinusoidal detector outputs as a function of the angular position of the code disc, and multiplier circuitry for providing a multibit digital output from the sinusoidal outputs by deriving a family of phase shifted sinusoids in parallel circuits, converting the family of sinusoids to squarewaves and logically combining the squarewaves from parallel circuits, the system characterized by:

the multiplier circuitry being designed to provide a multibit digital output directly from the sinusoidal detector outputs only through one of a plurality of segments of the fine track cycle; and

circuitry for selectively modifying the sinusoidal inputs to the multiplier circuitry such that those inputs are identical through each of said segments of the fine track cycle.

4,443,789
KEYBOARD

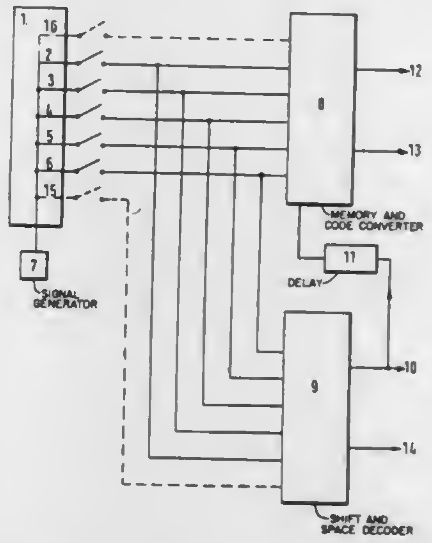
Cyril Endfield, London, and Christopher J. Rainey, Croydon, both of England, assignors to Microwriter Limited, London, England

Continuation of Ser. No. 973,628, Dec. 27, 1978, abandoned, which is a continuation of Ser. No. 743,291, Nov. 18, 1976, abandoned, which is a continuation of Ser. No. 542,055, Jan. 17, 1975, abandoned. This application Nov. 13, 1981, Ser. No. 320,925

Claims priority, application United Kingdom, Jan. 22, 1974, 2915/74

Int. Cl.³ G06F ***3/02***

U.S. Cl. 340—365 R **20 Claims**



1. A keyboard operated signal producing apparatus comprising an input keyboard having a set of five manually operable finger keys arranged for operation with only one hand, and each of said keys being arranged for operation with a different finger of said one hand, said keys being selectively operable to provide a different pre-selected combination of operated and non-operated ones of said keys for each alphabetic character in an alphabetic system having a total number of characters greatly exceeding the number of said keys, means responsive to operation of selected ones of said keys for producing a unique coded electrical output for each of the different combinations of operated and non-operated ones of said keys, whereby each unique coded output represents a different character in said system, there being a unique pre-selected combination of said keys assigned for operation to represent each character in a majority of the characters making up said system to thereby provide a group of unique key combinations in which each unique key combination of the group represents a different character in said majority of characters, the arrangement of said keys being pre-selected to provide a pictographic relationship between each key combination in a majority of said unique combinations and the alphabetic character represented thereby.

4,443,790

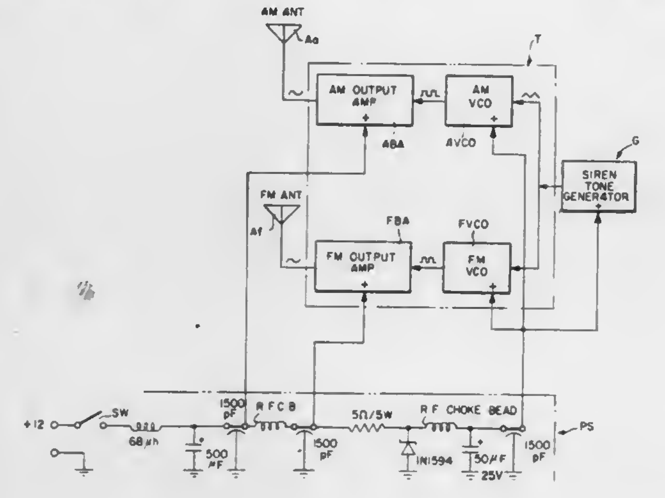
BROADCAST BAND SIREN ALARM TRANSMITTER SYSTEM FOR VEHICLES

Frank A. Bishop, 6489 Claudia Dr., Brookpark, Ohio 44142

Filed May 29, 1979, Ser. No. 43,329

Int. Cl.^{3} G08B *1/08;* G08G *1/00*

U.S. Cl. 340—539 **24 Claims**



1. A warning alarm device capable of generating an audibly detectable warning signal in radio receivers which are within a predetermined transmission range and which are tuned to any frequency within a predetermined radio broadcast band, said warning alarm device including:

(a) a transmitting means for transmitting a carrier signal to any radio receiver operating within the transmission range and tuned to any discrete frequency within said predetermined radio broadcast band;

(b) a carrier signal generating means connected to said transmitting means for generating a RF carrier signal having no audio signal superimposed thereon at a discrete frequency which may vary over the entire predetermined radio broadcast band in response to a sweep signal and for supplying said transmitting means with said RF carrier signal;

and

(c) a sweep signal generating means connected to said carrier signal generating means for supplying said carrier signal generating means with a sweep signal which causes said RF carrier signal to continuously sweep through each and every frequency within said predetermined radio broadcast band at a predetermined audio rate to generate an audible waring signal on any radio receiver which is within the transmission range and which is tuned to any distinct frequency within the broadcast band by the creation of only a single acoustical output pulse from the radio receiver each time said RF carrier signal passes through the discrete frequency to which the radio receiver is tuned, said acoustical output pulses forming the audible warning signal and occuring at a frequency proportional to said predetermined audio rate,

whereby the warning alarm device provides radio receiver listeners with an audible warning of the proximity of said warning alarm device.

4,443,791

SELF-COMPENSATING GAS DETECTION APPARATUS

Ojars Risgin, deceased, late of Grass Lake, Mich., and by Geraldine J. Risgin, administratrix, 4800 W. Ellsworth Rd., Ann Arbor, Mich. 48103

Filed Jan. 5, 1978, Ser. No. 867,071

Int. Cl.^{3} G08B *17/10*

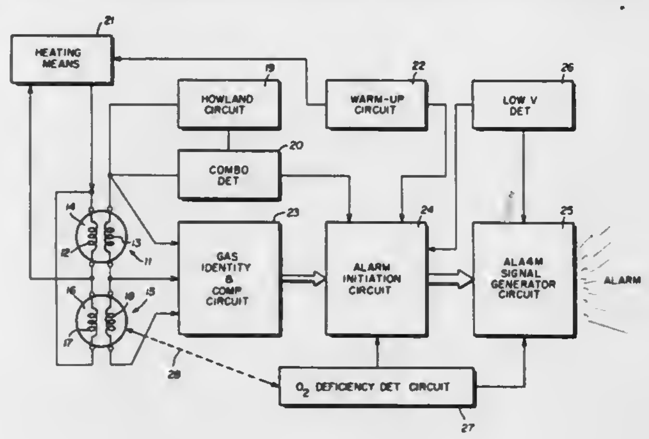
U.S. Cl. 340—634 **20 Claims**

1. Apparatus for detecting and indicating the presence of at least a predetermined minimum concentration of at least one undesirable gas within a given area comprising:

a first semiconductor gas-sensing means having at least one electrical property which changes significantly in response to the presence of said at least a predetermined minimum concentration of said at least one undesirable gas, said electrical property tending to vary with changes in at least one of conditions such as temperature, relative humidity and drift;

a second semiconductor gas-sensing means having a similar electrical property which changes significantly in response to the presence of a different gas but changes less significantly in response to the presence of said at least one undesirable gas, said similar electrical property also tending to vary with changes in at least one of said conditions such as temperature, relative humidity and drift;

electrical circuit means responsive to said electrical property of said first and second semiconductor gas-sensing means for generating at least one reliable electrical output signal compensated for variations in such changes as temperature, relative humidity and drift, said error-compensated electrical output signal being generally indicative of the relative concentration of said at least one undesirable gas, at least in the absence of significant concentrations of said different gas;



means for establishing at least one predetermined threshold range indicative of less than said predetermined minimum concentration of said at least one undesirable gas;

means responsive to said compensated electrical output signal being beyond said established threshhold range for indicating the presence of at least said predetermined minimum concentration of said at least one undesirable gas within said given area for alarm purposes, and

means responsive to said error-compensated electrical output signal being within said established threshhold range for indicating the presence of at least a predetermined minimum concentration of said different gas within said given area for alarm purposes.

4,443,792

ELECTROMAGNETIC POSITION DETECTOR EMPLOYING FAST FOURIER TRANSFORM ANALYSIS

Brian G. Pidgeon, and Clive R. Bavington, both of Burton-on-Trent, England, assignors to Coal Industry (Patents) Limited, London, England

Filed Aug. 11, 1981, Ser. No. 291,884

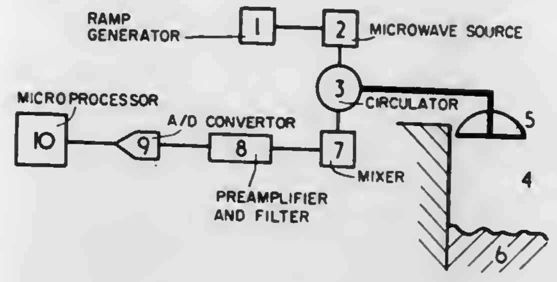
Claims priority, application United Kingdom, Aug. 29, 1980, 8027952

Int. Cl.^{3} G08B *21/00*

U.S. Cl. 340—612 **4 Claims**

1. A method of locating the position of an object in a confined space including the steps of creating a high frequency microwave signal, repeatedly varying the frequency of the signal, emitting the repeatedly varied high frequency microwave signal from a relatively stationary source into a confined space, receiving at or adjacent the point of emission of the signal a reflection of the high frequency signal, mixing the received signal with the emitted signal to obtain a beat signal, dividing in a processing circuit the beat signal into a plurality of segments, subjecting each segment to a fast Fourier transform, obtaining a computed discrete frequency spectrum of the transform of each segment, storing said spectrum and summing

a consecutive plurality of the spectra, and calculating the position of the object in the space based on said summed spectra, testing validity of the calculated position of the object by comparing the calculated position with previous calculated positions and preventing a wrong indication, and giving a correct indication of average position of the object when no negative information is received from the validity testing.



4,443,793

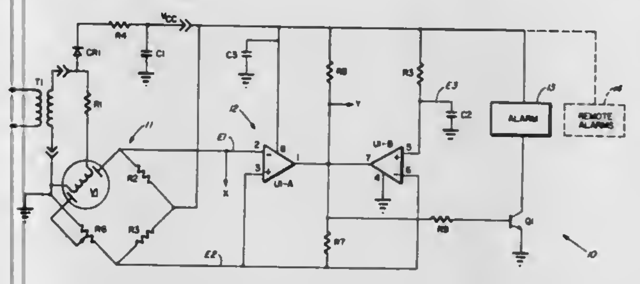
GAS DETECTION SYSTEM

Norman M. Hall, Jr., El Paso, Tex., assignor to Calnor of El Paso, El Paso, Tex.

Filed Nov. 2, 1981, Ser. No. 317,444

Int. Cl.^{3} G08B *17/10*

U.S. Cl. 340—634 **10 Claims**



1. In a gas detection system comprising a gas sensor in a bridge circuit coupled to a voltage comparator to detect an unbalance created when said sensor detects the presence of a gas and a switching circuit and sensible indicator means controlled by said voltage comparator to provide a sensible indication of the detection of a gas, the improvement comprising:

first means coupled to said voltage comparator to automatically inhibit said voltage comparator's control of said switching circuit and sensible indicator means while said gas sensor is stabilizing following initial activation of said gas detection system thereby preventing provision of a false alarm indication of gas detection while said gas sensor is so stabilizing; and

second means coupled to said voltage comparator to automatically inhibit said voltage comparator's control of said switching curcuit and sensible indicator means to prevent staccato false indications of gas detection due to later small, cyclical, inherent drifting changes in the characteristics of said gas sensor following sensor stabilization after initial activation.

4,443,794

CHARACTER PROCESSING DEVICE

Atsushi Sakurai, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 152,732, May 23, 1980. This application Apr. 28, 1982, Ser. No. 372,555

Claims priority, application Japan, Jun. 1, 1979, 54-68559

Int. Cl.^{3} G09G *1/00*

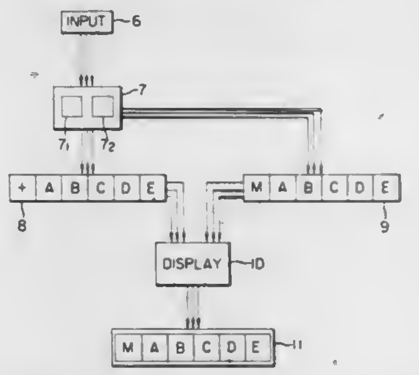
U.S. Cl. 340—748 **5 Claims**

1. A character processing device comprising:

input means for inputting to said device a plurality of established numeric codes, a first predetermined range of numerical values of said numeric codes representing function codes and a second predetermined range of numerical values of said numeric codes representing character codes;

identifying means for receiving numeric codes input to said device by said input means and identifying each numeric code as a function code or a character code by comparing the numerical value of each received numeric code with the first and second predetermined ranges;

converting means operable when said identifying means identifies a numeric code representing a function code to convert the function code into a classifying character code and a function character code, the classifying character code constituting a signal that a function code has been identified, and the function character code constituting a signal of the function represented by the function code;



memory means including a first memory unit for storing said classifying character code and a second memory unit for storing said function character code;

selecting means for selecting a first character code pattern representative of the classifying character code stored in said first memory unit and a second character code pattern representative of the function character code stored in said second memory unit; and

synthesizing means for producing a single code pattern from the first and the second character code patterns respectively selected by said selecting means.

4,443,795

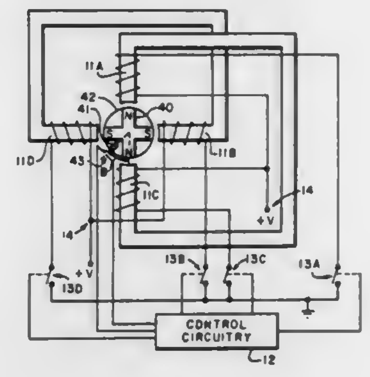
REMOTE INDICATOR FOR DISPLAYING TRANSMITTED DATA BY ANGULAR DISPLACEMENT

John T. Fowler, Salem, Mass., assignor to The Laitram Corporation, New Orleans, La.

Filed Nov. 21, 1979, Ser. No. 96,499

Int. Cl.^{3} G08C *19/06, 19/12*

U.S. Cl. 340—870.31 **7 Claims**



1. A remote indicator for displaying data contained in a transmitted signal by angular displacement of a rotor comprising:

a rotably mounted magnetic rotor;

a plurality of controllable magnetic field generating means disposed circumferentially around said rotor; and

selection circuitry responsive to said data for sequentially activating alternately each of a plurality of said magnetic field generating means for effectively displacing said rotor substantially to an angle representative of the value of said data, wherein

said selection circuitry comprises sector selection circuit means for selectively enabling at proper polarity a pair of said generating means appropriate for controlling said rotor within a sector representative of such data and angle selection circuit means for sequentially driving the selected generating means by electrical pulses modulated to drive the rotor within said sector to said angle representative of such data, wherein

said angle selection circuit means comprises memory means for storing for each of a plurality of angles within said sector timing data for the duration of electrical pulses to be applied to said selected magnetic field generating means to displace said rotor to said respective angles.

4,443,796
DOPPLER RADAR

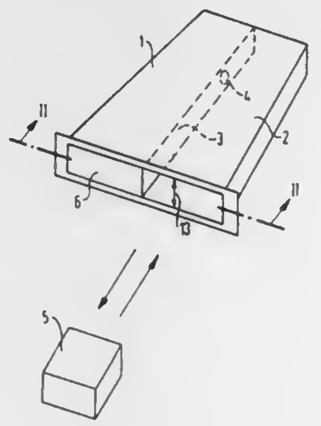
Jörg Müller, Zorneding, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 12, 1981, Ser. No. 262,800

Claims priority, application Fed. Rep. of Germany, May 23, 1980, 3019887

Int. Cl.³ G01S *9/00*

U.S. Cl. 343—5 PD **20 Claims**



1. Doppler radar for measuring objects, comprising a first and a second substantially prismatic cavity resonator each having sides, each having an end facing the object to be measured and each having substantially equal dimensions, a common wall connecting a respective side of each of said cavity resonators to each other, an oscillator diode disposed in said first cavity resonator, a receiving diode disposed in said second cavity resonator, said end of said first cavity resonator facing the object to be measured being closed and said end of said second cavity resonator facing the object to be measured being open, said common connecting wall having an opening formed therein, said first cavity resonator having another end opposite to said end facing the object, and said opening being spaced from said other end by a distance of (2n+1).λ/4, where λ is the wavelength of oscillations excited in said first cavity resonator and n is an integral number starting from 0.

4,443,797
RADAR DISPLAY APPARATUS

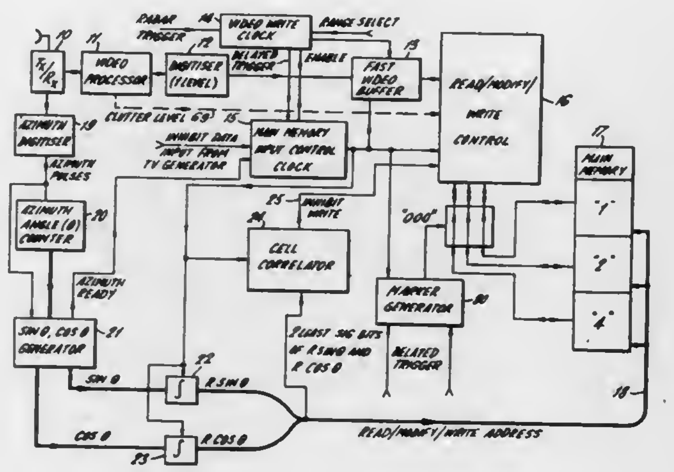
Harry D. Cramp, New Malden; Malcolm R. Blythe, Hove, and Philip D. L. Williams, Banstead, all of England, assignors to Decca Limited, London, England

Filed Jan. 16, 1981, Ser. No. 225,529

Claims priority, application United Kingdom, Jan. 22, 1980, 8002121; Oct. 17, 1980, 8033572

Int. Cl.³ G01S *7/04*

U.S. Cl. 343—5 SC **21 Claims**



5. Radar display apparatus for an azimuth scanning radar comprising a radar video digitiser;

electronic digital storage means having a storage location for each of a predetermined number of cells forming between them a T.V. type radar display picture;

storage control means for converting the range/azimuth angle coordinates of the received digitised radar video into Cartesian coordinates for identifying the store locations of the corresponding cells in the storage means and for modifying data in the identified locations of said storage means so that the digital data in each said cell location is representative of the degree of positive correlations of digital video returns occurring in the respective cell on successive radar azimuth scans;

T.V. type visual display means; and

display control means arranged to read said digital data from the storage means and to control said display means to provide a substantially real time radar display picture composed of said cells with the brightness of color of each cell being representative of said degree of positive correlation,

wherein the radar video digitiser provides a one bit digital video signal with a logic "0" indicating no video and a logic "1" indicating a positive video return.

4,443,798
Patent Not Issued For This Number

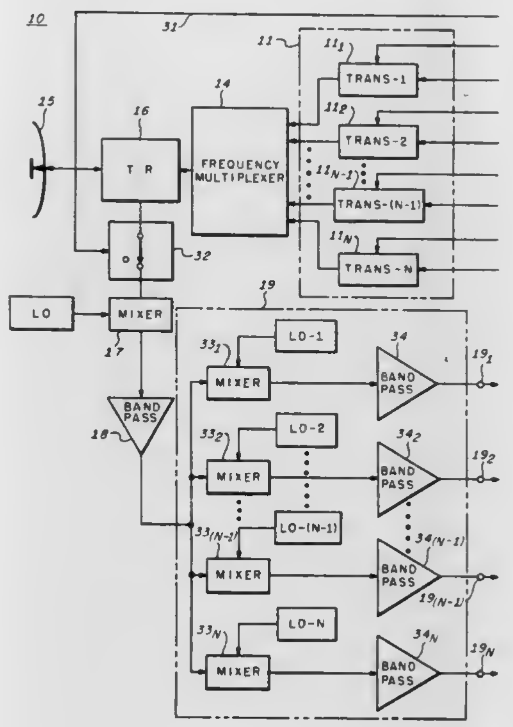
4,443,799
SPREAD SPECTRUM RADAR

William L. Rubin, Whitestone, N.Y., assignor to Sperry Corporation, New York, N.Y.

Filed Jul. 2, 1981, Ser. No. 279,922

Int. Cl.³ G01S *7/28*

U.S. Cl. 343—17.2 PC **10 Claims**



1. A spread spectrum radar apparatus comprising:

means for sequentially transmitting a plurality of carrier signals at preselected center frequencies each having a sequential position and each frequency modulated over a time interval chosen for each carrier signal to establish substantially equal bandwidths within each of said time intervals, such that sequence of frequency modulated transmissions with predetermined time bandwidth products is established said carrier signal frequencies and said bandwidth selected such that spectra of adjacent signals in said sequence of signals are substantially non-overlapping;

demultiplexing means having input means coupled to receive echo returns of said sequence of frequency modulated signals and having a plurality of output ports in correspondence with said plurality of carrier signals for providing signals representative of echo returns of each of said frequency modulated signals at said output ports corresponding to said carrier signals;

means having a plurality of input ports coupled correspondingly to said plurality of output ports of said demultiplexer means for pulse compressing each echo return in accordance with said frequency modulation and for providing time delays between said input ports and output ports corresponding therewith for each echo return in accordance with said sequential position of its carrier signal thereby providing signals at said output ports of said pulse compression means substantially in time coincidence;

detector means having a plurality of input ports coupled correspndingly to said plurality of output ports of said pulse compression-time delay means for providing signals representative of detections of signals coupled from said pulse-compression time delay means; and

sum means coupled to receive said signals representative of said detections for providing a signal representative of a sum of all time coincident signals received from said detector means.

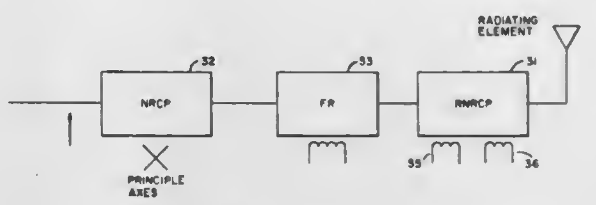
4,443,800
POLARIZATION CONTROL ELEMENT FOR PHASED ARRAY ANTENNAS

Stanley Gaglione, New Hyde Park, N.Y., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 12, 1982, Ser. No. 367,504

Int. Cl.³ H01Q *3/36*

U.S. Cl. 343—372 **1 Claim**



1. A polarization control device having an input of a lineal polarized wave and having an output which comprises said lineal polarized wave phase shifted and rotated in a predetermined manner; a non-reciprocal circular polarizer; a Faraday rotator; a rotatable non-reciprocal circular polarizer having first and second control inputs; said polarizers and said rotator being connected in series between the input and the output of said control device; said Faraday rotator having a controlled input; means supplying the inputs of said Faraday rotator and said rotatable polarizer such that the lineal polarized wave will be phase shifted and rotated in polarization to a predetermined amount; a plurality of radiating devices which form a phased array; and a plurality of polarization control devices each connected to one of the radiating devices for individually controlling the phase output of each radiating device.

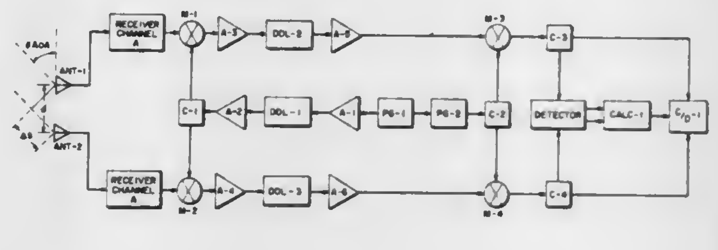
4,443,801
DIRECTION FINDING AND FREQUENCY IDENTIFICATION METHOD AND APPARATUS

Dirk R. Klose, Eatontown, and Skudera, Jr. William J., Oceanport, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 15, 1981, Ser. No. 273,806

Int. Cl.³ G01S *5/04*

U.S. Cl. 343—442 **14 Claims**



1. A method for determining the frequency and angle of a plurality of radio frequency signals of differing transmission frequency arriving essentially simultaneously at each of N spatially separated antennae of a radio frequency receiver, where N≧2, comprising:

a first processing step wherein the received radio frequency signals arriving at each antenna are processed in such a manner as to obtain N composite signals, each representative of the plurality of radio frequency signals arriving at one of the antennae, all retaining the phase relationship of those radio frequency signals resulting from the spatial separation of the antennae, each having a frequency component representative of each of those radio frequency signals arriving at the antenna with which it is associated, and each being of suitable amplitude and frequency for further processing in a dispersive delay line;

introducing all of the N composite signals into dispersive delay lines, while retaining the phase relationship among those signals, so as to separate, in the time domain, components of each composite signal differing in frequency while retaining the phase relationship of those components representative of the spatial separation of the antennae;

a second processing step wherein the components of each of the composite signals are processed so as to determine the frequency of the radio frequency signal which they represent based on the position of each of the components in the time domain after their separation in the dispersive delay line while retaining the phase relationship of those components representative of the spatial separation of the antennae;

detecting the electrical phase relationship among components of the same frequency of different of the composite signals thereby determining electrical phase information about those signals;

converting the electrical phase information to angle of arrival information;

correlating the angle of arrival information for each component of each composite signal with the frequency information relative to that component; and

outputing the correlated information.

4,443,802

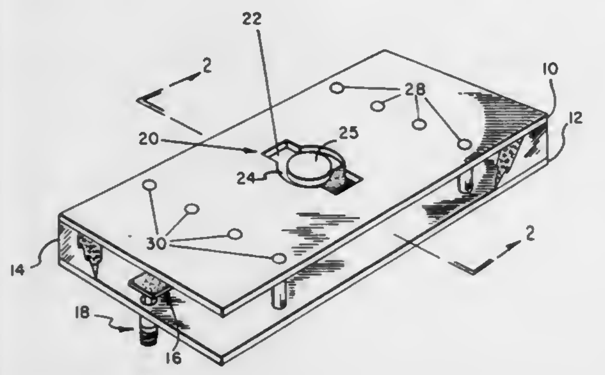
STRIPLINE FED HYBRID SLOT ANTENNA

Paul E. Mayes, Champaign, Ill., assignor to University of Illinois Foundation, Urbana, Ill.

Filed Apr. 22, 1981, Ser. No. 256,424

Int. Cl.^{3} H01Q *13/18*

U.S. Cl. 343—729 **12 Claims**



1. A substantially planar antenna structure comprising:

a pair of parallel conducting ground planes;

a hybrid aperture formed into the uppermost of said ground planes, said aperture including elongated outer sections which are sustantially rectangular in shape, and an inner substantially circular section, the interior of said circular section containing a conductive portion concentric with said circular section;

a first linear conductor disposed between and parallel to said ground planes, the length of said linear conductor spanning said entire hybrid aperture; and

means for feeding a radio frequency signal to or from said linear conductor.

4,443,803

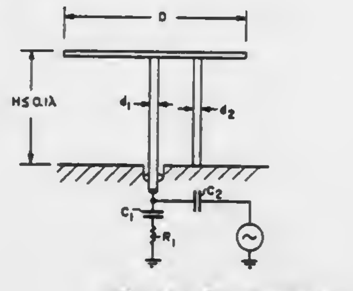
LOSSY MATCHING FOR BROAD BONDING LOW PROFILE SMALL ANTENNAS

Charles M. DeSantis, Neptune, N.J.; Albert H. Zannella, Mount Carmel, Pa.; Michael W. Begala, Fairhaven, N.J.; John R. Wills, Ocean Grove, N.J., and Watson P. Czerwinski, Forked River, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 142,917, Apr. 23, 1980, Pat. No. 4,328,501. This application Nov. 23, 1981, Ser. No. 323,835

Int. Cl.^{3} H01Q *9/36*

U.S. Cl. 343—749 **4 Claims**



TOP-LOADED, FOLDED ANTENNA WITH "L"-NETWORK AND REVERSE CHARACTERISTIC NETWORKS.

1. A VHF, 1–200 MHZ, broadband smaller than 0.1λ height, folded vertical monopole, top-loaded, base-fed antenna unit comprising a pair of supporting mast units topped by a flat capacitive disc at one point of which disc is connected the antenna feed signal through an insulated line within one mast of the antenna, the antenna further comprising a base matching circuit for further impedance matching the antenna over a broad frequency range of at least substantially three to one, the circuit comprising an L-network of one series capacitor and resistor, in parallel with a further matching capacitor, the elements of the matching circuit selected so that circuit reactance is a decreasing function of frequency, offsetting antenna reactance over at least the broad frequency range of 30–88 MHZ.

4,443,804

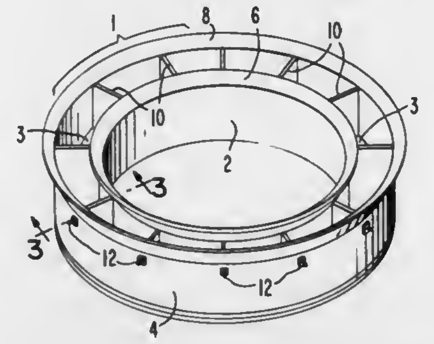
MODIFIED DIFFERENCE MODE COAXIAL ANTENNA WITH FLARED APERTURE

Terry M. Smith, La Honda, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Sep. 28, 1981, Ser. No. 306,058

Int. Cl.^{3} H01Q *13/02*

U.S. Cl. 343—786 **8 Claims**



1. A coaxial waveguide antenna for propagating electromagnetic radiation in the TE_{n1} mode, where n is a positive integer greater than or equal to 3, comprising:

an inner conductive cylindrical wall;

coaxially aligned with said inner wall, an outer conductive cylindrical wall having a diameter greater than that of said inner wall, said two walls forming therebetween a cavity of generally toroidal shape;

said cavity being closed on one end by a conductive ring, and open on a second end; and

at least 2n excitation probes equally spaced radially within said cavity;

wherein sinusoidal electromagnetic energy at a certain angular phase and the same frequency is applied to each of said probes;

wherein the phase differences between each set of adjacent probes are equal; and

said phase progresses through n 360° revolutions as said cavity is radially traversed once.

4,443,805

PLATE-TYPE ANTENNA WITH DOUBLE CIRCULAR LOOPS

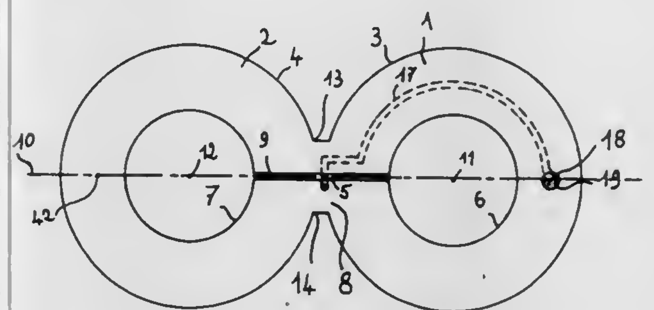
Henri A. P. Havot, 13, rue de la Prée, 35510 Cesson-Sevigne, France

Continuation of Ser. No. 96,759, Nov. 23, 1979, abandoned. This application Dec. 10, 1981, Ser. No. 329,318

Claims priority, application France, Nov. 27, 1978, 78 34424

Int. Cl.^{3} H01Q *9/26*

U.S. Cl. 343—803 **10 Claims**



1. A plate-type antenna comprising an aligned pair of symmetrical conductive circular rings contiguously lying side-by-side in a common plane with a slit joining two openings formed by the centers of the rings, said slit being oriented to lie in the direction of an axis which joins the centers of the openings, said pair of rings being positioned tangentially to each other with a tangency zone of the rings being narrow in a direction which is perpendicular to said axis, means for energizing one edge of said slit at a point which is near a center of symmetry of the antenna, and means for connecting to ground a middle point of at least one ring located on said axis and on a side of the tangency zone which is opposite said point.

4,443,806

DATA RECORDING MEDIUM

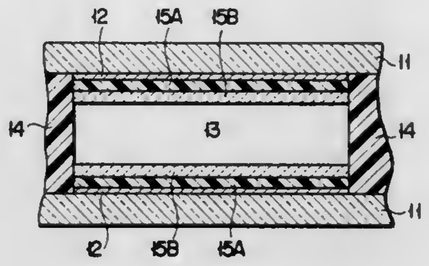
Hideo Ando, Hino, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 7, 1981, Ser. No. 309,405

Claims priority, application Japan, Oct. 9, 1980, 55-141718; Oct. 9, 1980, 55-141721; Oct. 9, 1980, 55-141723; Jan. 20, 1981, 56-5874

Int. Cl.^{3} G01D *15/34*

U.S. Cl. 346—135.1 **4 Claims**



1. A data recording medium comprising:

a pair of disc-shaped substrates;

means for mounting said substrates opposing each other at a distance including a pair of coaxial, ring-shaped spacers of different sizes sealed between the opposing surfaces of said disc shaped substrates coaxially therewith and forming an annular space therebetween;

a radiation-sensitive recording layer formed on an opposing surface of each of said substrates;

an organic protective layer formed on said recording layer;

an inorganic protective layer formed on said organic protective layer, and

a reinforcing member arranged within said annular space so as to be slidable relative to said protective layer.

4,443,807

INK JET PRINT HEAD

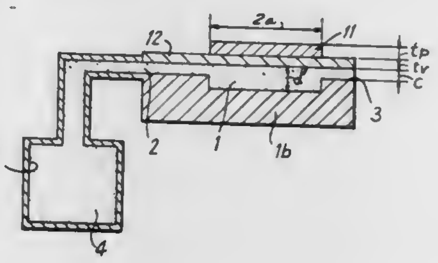
Haruhiko Koto, Shiojiri, Japan, assignor to Epson Corporation, Nagano and Kabushiki Kaisha Suwa Seikosha, Tokyo, both of, Japan

Filed Nov. 25, 1981, Ser. No. 325,153

Claims priority, application Japan, Nov. 28, 1980, 55-168719

Int. Cl.^{3} G01D *15/18*

U.S. Cl. 346—140 R **15 Claims**



1. An ink jet print head for projecting droplets of ink on demand comprising a pressurization chamber including at least one wall, said wall defining a vibratory plate, a nozzle means open to said pressurization chamber and defining a fluid passage through which said ink is ejected, a piezoelectric element means operatively coupled to said vibratory plate, said piezoelectric element means altering the volume of said pressurization chamber when selectively energized by a drive voltage to eject ink through said nozzle means, said piezoelectric element means and said vibratory plate defining a vibratory system, the acoustic capacitance of said vibratory system being less than or equal to 9×10^{-17} m^5/N and such amount that a drive voltage V expressed by the following equation:

$$V = \sqrt{\frac{2\chi^2 Co}{K^2 Cp}}$$

may be approximately minimum.

4,443,808

SEMICONDUCTOR DEVICE

Kazuo Kihara, Tokyo, and Masashi Ikeda, Urawa, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Apr. 2, 1982, Ser. No. 365,012

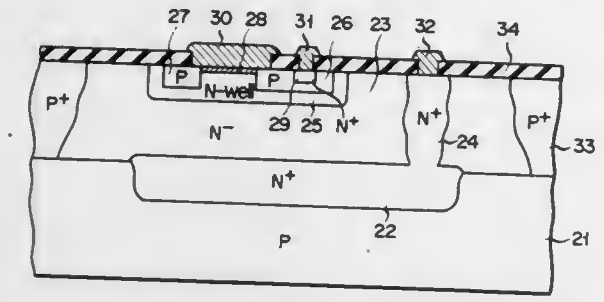
Claims priority, application Japan, Apr. 7, 1981, 56-52034

Int. Cl.^{3} H01L *29/48, 29/72, 27/02, 29/34*

U.S. Cl. 357—15 **5 Claims**

1. A semiconductor device comprising a semiconductor substrate of a first conductivity type, a buried layer of a second conductivity type selectively formed on said semiconductor substrate, a semiconductor layer of the second conductivity type formed on said semiconductor substrate and burried layer, a first diffusion layer of the first conductivity type formed in said semiconductor layer, and a second diffusion layer of the second conductivity type formed in said first diffusion layer, a Schottky barrier diode being formed in a surface region of said

semiconductor layer adjacent to said first diffusion region, a well layer of the second conductivity type of a higher impurity concentration than that of said semiconductor layer being formed at least under said Schottky barrier diode.



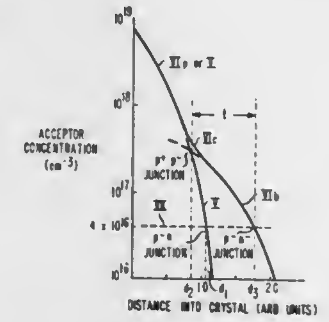
4,443,809
P-I-N PHOTODIODES

Aland K. Chin, Berkeley Heights, and Bulusu V. Dutt, Parsippany, both of N.J., assignors to AT & T Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 154,046, May 28, 1980. This application Jul. 29, 1982, Ser. No. 402,921

Int. Cl.^{3} H01L *29/161*

U.S. Cl. 357—16 **6 Claims**



1. A photodiode (**10**) comprising:
an i-type semiconductor active region (**16**) in which light (**18**) to be detected is absorbed to generate photocarriers,
a pair (**12, 14**) of opposite-conductivity type semiconductor zones on opposite sides of said active region for collecting said photocarriers, one (**14**) of said zones forming a p-i type first junction (**15**) at its interface with said active region, and the other (**12**) of said zones form an i-n second junction (**17**) at its interface with said active region (**16**), CHARACTERIZED IN THAT
said photodiode includes a relatively low-doped semiconductor body (**12**),
acceptors in said body from an anomalous diffusion profile (FIG. 3) of net impurity concentration versus depth into said body including upper and lower monotonically decreasing segments (VIa and b) connected by an upwardly concave segment (VIc),
the carrier concentration (VII) of said body is less than the net carrier concentration corresponding to said concave segment, said first junction (**15**) comprises a p-i junction at approximately the depth of said concave segment, said second junction (**17**) comprises an i-n junction at approximately a depth corresponding to the intersection of said lower segment (VIb) and the carrier concentration (VII) of said body, and said active region comprises a compensated i-region between said junctions.

4,443,810
GATE TURN-OFF AMPLIFIED THYRISTOR WITH NON-SHORTED AUXILIARY ANODE

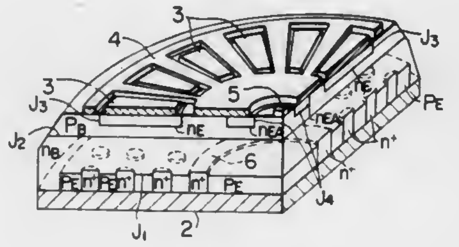
Tsutomu Yatsuo, and Takahiro Nagano, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

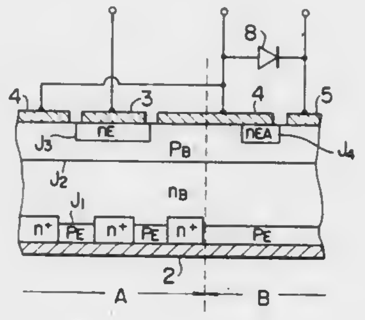
Continuation of Ser. No. 112,811, Jan. 17, 1980, abandoned. This application Nov. 12, 1981, Ser. No. 320,536

Claims priority, application Japan, Jan. 24, 1979, 54-6067

Int. Cl.^{3} H01L *29/74*

U.S. Cl. 357—38 **10 Claims**





1. A gate turn-off thyristor comprising:
a semiconductor substrate including a first semiconductor layer of a first conductivity type, a second semiconductor layer of a second conductivity type, a third semiconductor layer of said first conductivity type and a fourth semiconductor layer of said second conductivity type, said first, second, third and fourth layers being stacked in the order described to form a laminate, a fifth semiconductor layer of said second conductivity type being adjacent to said third semiconductor layer and being spaced apart from said fourth semiconductor layer, said first, second, third and fourth semiconductor layers making up a main thyristor, said first, second, third and fifth semiconductor layers making up an auxiliary thyristor;
a first main electrode disposed in low-resistance contact with said first semiconductor layer and said second semiconductor layer in the main thyristor portion of said semiconductor substrate, and disposed in low-resistance contact with only said first semiconductor layer in the auxiliary thyristor portion of said semiconductor substrate, so that said first and second semiconductor layers in said main thyristor portion are short-circuited by said first main electrode while said first and second semiconductor layers in said auxiliary thyristor portion are unshorted by said first main electrode;
a second main electrode disposed in low-resistance contact with said fourth semiconductor layer;
a control electrode disposed in low-resistance contact with said third semiconductor layer; and
an auxiliary electrode disposed in low-resistance contact with said third and fifth semiconductor layers.

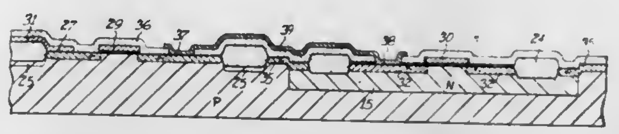
4,443,811
CMOS INTEGRATED CIRCUIT DEVICE

Graham S. Tubbs, Houston, and James E. Ponder, Cat Spring, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 81,513, Oct. 3, 1979, Pat. No. 4,295,897. This application Oct. 13, 1981, Ser. No. 310,019

Int. Cl.^{3} H01L *27/02, 29/78, 29/04*

U.S. Cl. 357—42 **5 Claims**



1. A CMOS integrated circuit device having both N-channel and P-channel insulated gate field effect transistors comprising:
(a) a P-type silicon substrate,
(b) an N-type tank region formed in a portion of a face of said substrate, the plane of the face of said substrate above said N-type tank region being slightly displaced from the plane of the remainder of said face to provide a discontinuity for mask alignment,
(c) a first surface area of said face spaced from the tank region for inclusion of the N-channel transistor,
(d) a second surface area of said face within the tank region for inclusion of the P-channel transistor;
(e) thick field oxide separately surrounding the first and second surface areas on said face, said field oxide being spaced on said face from said discontinuity,
(f) first and second conductive gates overlying thin gate insulator on said first and second surface areas, respectively,
(g) N-type source and drain regions in said face at the first surface area on opposite sides of the first gate and aligned therewith,
(h) P-type surce and drain regions in said face at the second surface area on opposite sides of the second gate and aligned therewith,
(i) and metal film overlying said face but insulated therefrom, and contacts from said metal film to selected ones of said source and drain regions.

4,443,812
HIGH-BREAKDOWN-VOLTAGE SEMICONDUCTOR DEVICE

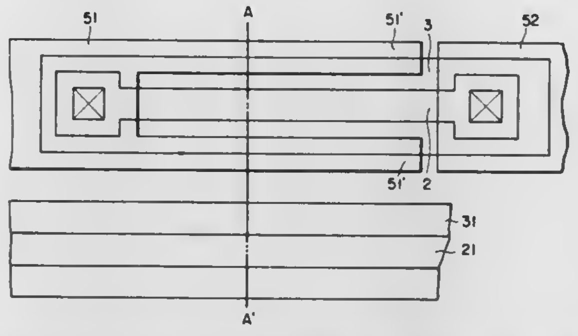
Ichiro Imaizumi, Tokyo; Masatoshi Kimura, Hachioji; Shikayuki Ochi, Akishima; Masayoshi Yoshimura, Tokyo; Takashi Yamaguchi, Tachikawa, and Toyomasa Koda, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 4, 1981, Ser. No. 231,285

Claims priority, application Japan, Feb. 4, 1980, 55-11506

Int. Cl.^{3} H01L *29/44, 27/04, 29/72*

U.S. Cl. 357—53 **4 Claims**



1. A high-breakdown-voltage semiconductor device having a semiconductor body of a first conductivity type, a first impurity region of a second conductivity type disposed in a surface region of the body, and a plate layer disposed on an insulating film provided on said surface of the body, a second impurity region of said second conductivity type which is disposed in contact with said first impurity region and is doped lower than said first impurity region, and wherein said plate layer comes into contact with a first part of said first impurity region through a hole provided in said insulating film and extends overlying said second impurity region and does not overlie said first impurity region except for a second part of said first impurity region surrounding said first part of said first impurity region.

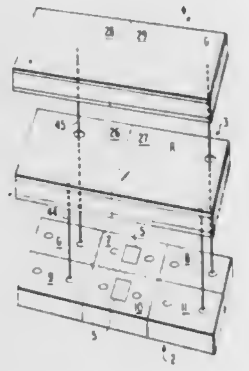
4,443,813
SOLID-STATE COLOR IMAGER WITH TWO LAYER THREE STORY STRUCTURE

Masatoshi Tabei, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 8, 1983, Ser. No. 512,051

Int. Cl.^{3} H04N *9/07*

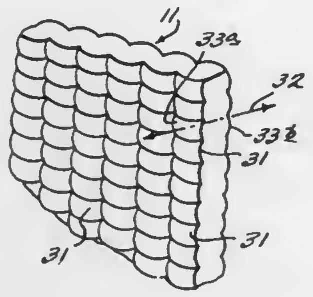
U.S. Cl. 358—44 **13 Claims**



1. A solid-state color imager, comprising:
a solid-state base comprised of an array of electrical switching elements arranged on portions of said base with a plurality of photosensitive elements associated, respectively, with a first plurality of said electrical switching elements;
a first layer of insulation material positioned over said base;
a first photosensitive layer superimposed on said first layer of insulation material, said first photosensitive layer being comprised of a top transparent electrode sublayer, a back transparent mosaic electrode sublayer, and a photoconductive sublayer positioned between said top and back sublayers, said back mosaic electrode sublayer being segmented into an array of portions corresponding to a second plurality of said electrical switching elements on said base, and said segmented portions of said back mosaic electrode sublayer being electrically connected, respectively, with said second plurality of said electrical switching elements on said base;
a second layer of insulation material positioned over said first photosensitive layer;
a second photosensitive layer superimposed over said second layer of insulation material, said second photosensitive layer being comprised of a top transparent electrode sublayer, a back transparent mosaic electrode sublayer, and a photoconductive sublayer positioned between said top and back sublayers, said back mosaic electrode being segmented into an array of portions corresponding to a third plurality of said electrical switching elements on said base, and said segmented portions of said back mosaic electrode being electrically connected, respectively, to said third plurality of said electrical switching elements on said base;
said first and second photosensitive layers being sensitive to and absorptive of different ranges of the visible wavelength spectrum, whereby electrical signals from said photosensitive layers represent light intensities of two different color ranges and wherein said photosensitive elements on said base represent light intensities of a third color range.

4,443,814
REAR PROJECTION APPARATUS

Leo Mori, Yokohama; Takashi Aoba, Ageo, and Mamoru Tominaga, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Oct. 14, 1981, Ser. No. 311,399
Claims priority, application Japan, Nov. 10, 1980, 55-157891
Int. Cl.³ H04N *9/31;* G03B *21/60*
U.S. Cl. 358—60 9 Claims



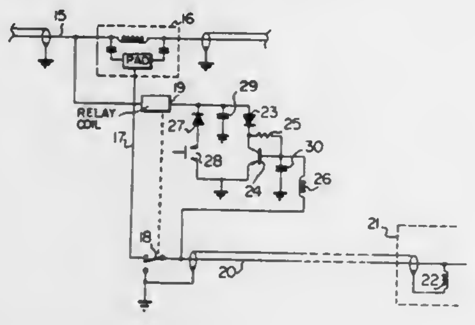
1. A rear projection apparatus comprising:

a rear transmitting screen including a convex lens array formed on both surfaces thereof, each said convex lens having spherical surface formed on one surface of said screen having a corresponding spherical convex lens formed on the other surface of said screen with a common optical axis, the focal point of said each convex lens formed on one surface of said screen being on the surface of the corresponding convex lens formed on the other surface of said screen, the surfaces of said convex lenses from which light emerges are shielded to block light except in light passing portions corresponding to said focal point of said each corresponding convex lens, and said surfaces of said convex lenses from which light emerges corresponding to said light passing portions are separated into a plurality of colored regions to pass light having specific wave length; and

a projector for projecting an optical image onto a surface of said screen.

4,443,815
WIRED PROGRAM DISTRIBUTION SYSTEM TAMPER DETECTOR

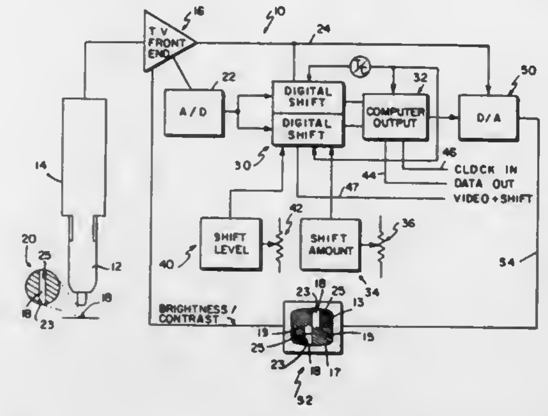
L. Bruce Hempell, Almonte, Canada, assignor to Nabu Manufacturing Corporation, Almonte, Canada
Filed Jun. 25, 1981, Ser. No. 277,187
Claims priority, application Canada, Mar. 20, 1981, 373561
Int. Cl.³ H04N *7/16;* H01H *9/00*
U.S. Cl. 358—114 11 Claims



1. A connector circuit for an R.F. line signal feed to a subscriber port, comprising a pair of conductors adapted to be connected to a pair of terminals of a security device or subscriber's set which has an input impedance between said terminals which includes a direct current path and a predetermined load impedance to signal frequencies, means for connecting one of said conductors to a source of common potential, means for applying an R.F. signal to the other of said conductors, means for applying a rectified A.C. current via said other of the conductors for passage through the direct current path, means for detecting interruption of the rectified A.C. current in the event of disconnection of at least one of said terminals from the connector, and means for switching and latching the R.F. signal, but not the rectified A.C. current, off from said other conductor upon said detection of the interruption of said rectified A.C. current.

4,443,816
DIGITAL VIDEO IMAGE SPLITTER

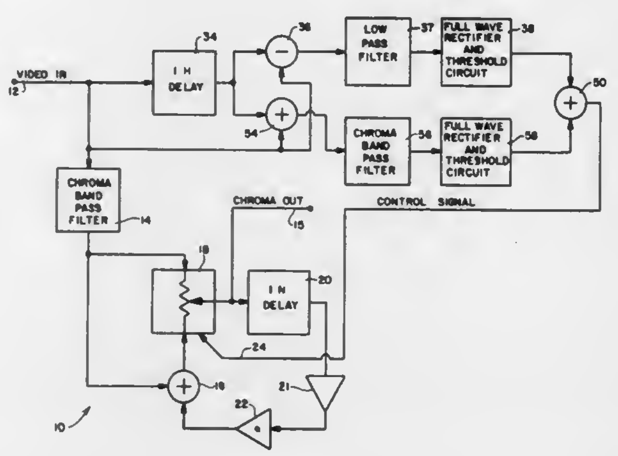
Robert D. Hogan, Jr.; Narendra T. Sanghvi, and Richard F. Morris, all of Indianapolis, Ind., assignors to Indianapolis Center for Advanced Research, Inc., Indianapolis, Ind.
Filed Apr. 28, 1982, Ser. No. 372,578
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—160 20 Claims



1. An apparatus for splitting an image comprising means for receiving a video image signal, means for digitizing the video image signal, means for coupling the receiving means to the digitizing means, means for shifting a first portion of the digitized image signal relative to a second portion of the digitized image signal to split the image, and means for coupling the digitizing means to the shift means.

4,443,817
CHROMA NOISE REDUCTION SYSTEM FOR QUADRATURE MODULATED COLOR TELEVISION PICTURE SIGNALS

Yves C. Faroudja, 26595 Anacapa Dr., Los Altos Hills, Calif. 94022
Filed Nov. 25, 1981, Ser. No. 325,039
Int. Cl.³ H04N *5/21*
U.S. Cl. 358—167 21 Claims



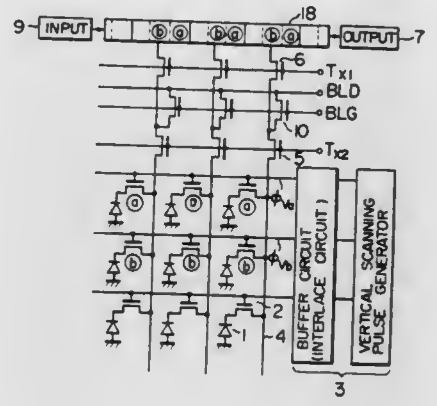
1. An improved method for reducing noise in a chrominance component of a quadrature modulated color television signal wherein said chrominance component has been separated therefrom, said method comprising the steps of:

a. delaying said chrominance component by a period equal to an integral function of the television line period to provide a delayed chrominance component;
b. phase inverting said delayed chrominance component;

c. combining a predetermined amount of said delayed and inverted chrominance component with said chrominance component to provide a chrominance composite;
d. detecting vertical level transitions in a luminance component of said color television signal and generating a control signal proportional to each said detected vertical level transition;
e. normally putting out said chrominance composite, and proportionally switching to said chrominance component in response to said control signal.

4,443,818
SOLID-STATE IMAGING DEVICE

Shinya Ohba, Kanagawa; Masaaki Nakai, Kodaira; Toshifumi Ozaki, Tokyo, and Kenji Takahashi, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Dec. 10, 1981, Ser. No. 329,609
Claims priority, application Japan, Dec. 12, 1980, 55-177605
Int. Cl.³ H04N *3/14;* G11C *7/06*
U.S. Cl. 358—213 16 Claims


9
INPUT
18
OUTPUT
7
6
Tx1
BLD
BLG
10
Tx2
5
BUFFER CIRCUIT (INTERLACE CIRCUIT)
VERTICAL SCANNING PULSE GENERATOR
2
1
4
3

1. A solid-state imaging device comprising:

a photosensing part including a matrix of photo-electric conversion elements to form a plurality of vertically arranged horizontal rows of picture elements;

a CTD serving as a read-out shift register, said CTD having therein a plurality of storage regions;

transfer means for transferring, a first set of signals from the picture elements in a first selected one of said horizontal picture element rows of said photosensing part and thereafter a second set of signals from the picture elements in a second selected horizontal picture element row of said photosensing part, into selected intermittent ones of said storage regions of said CTD during one horizontal blanking period;

means for shifting each of the signals of said first set stored in the selected intermittent storage regions into the next adjacent storage regions, said second set of signals being transferred by said transfer means from said photosensing part into the selected intermittent storage regions which have been vacated by the shifting of said first set of signals; and

means for reading both said first and second sets of signals in said CTD therefrom in one horizontal scanning period.

4,443,819
LIQUID CRYSTAL DISPLAY SCREEN FOR USE IN TV

Fumiaki Funada, Yamatokoriyama; Toshiaki Takamatsu, Tenri, and Tomio Wada, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jan. 25, 1982, Ser. No. 342,407
Claims priority, application Japan, Jan. 27, 1981, 56-10633[U]
Int. Cl.³ H04N *5/74*
U.S. Cl. 358—236 10 Claims

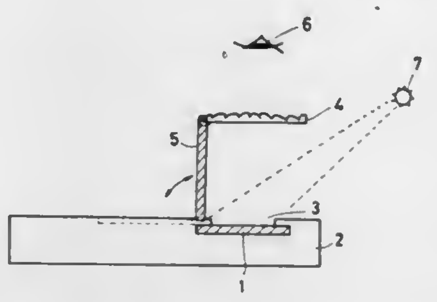
1. A liquid crystal display device comprising:

a housing;

a liquid crystal display panel mounted in said housing and producing a display image;

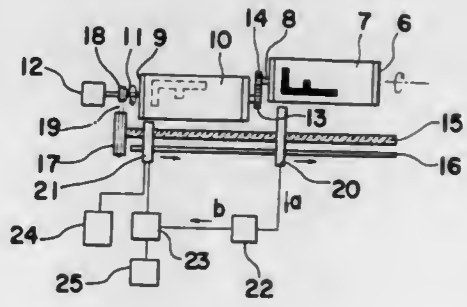
an optical lens magnifying said display image;

a support arm having said lens pivotially mounted on one end thereof and being pivitally mounted on said housing at the other end thereof, said support arm supporting said lens spaced apart from said display panel in a display mode and folding to place said lens in juxtaposition with said housing in a retracted mode.



4,443,820
PROCESS FOR PREPARING HECTOGRAPHIC PRINTING MASTERS

Masayuki Mutoh, Machida; Takanobu Ishidoh, Yokohama, and Toshihiro Hayashi, Mitaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Nov. 6, 1980, Ser. No. 206,856
Claims priority, application Japan, Nov. 6, 1979, 54-144028; Dec. 5, 1979, 54-158583; Dec. 5, 1979, 54-158584
Int. Cl.³ H04N *1/22;* G01D *15/18*
U.S. Cl. 358—296 12 Claims



1. A process for preparing a hectographic printing master suitable for use in a hectographic printing process of the type wherein the printing master is applied under slight pressure to sheets of reproduction paper previously impregnated with alcohol, and during each printing operation a small amount of ink deposited in image configuration on the printing master is transferred to the respective sheet by being dissolved in the alcohol therein, thereby forming a reproduction of the image, said process comprising:

dispensing more than 10 percent by weight of a dye stuff in a hydrocarbon of the thermally dissoluble type, thereby forming an ink which is solid at room temperature and liquid at an elevated temperature and which is capable of being dissolved bit-by-bit in the alcohol of sheets of hectographic reproduction paper, thereby being suitable for use in hectographic printing, and which is capable when in liquid form of being discharged as fine droplets by an ink jet generating unit;

heating said ink to said elevated temperature and thereby causing said ink to be in liquid form;

detecting an original image configuration;

depositing said ink on a master substrate by discharging from an ink jet generating unit said ink in liquid form as droplets in accordance with said detected original image configuration; and

cooling the thus deposited ink, and thereby forming on said master substrate an image configuration of solidified ink in a form suitable thereafter for use in the hectographic printing of a plurality of reproductions of said original image.

4,443,821

DIGITAL VELOCITY ERROR COMPENSATOR

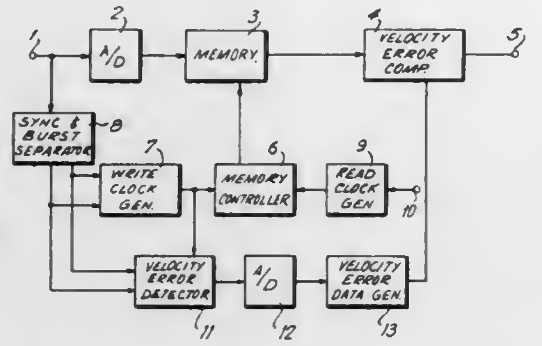
Tetsuro Kato, Atsugi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 18, 1981, Ser. No. 332,250

Claims priority, application Japan, Dec. 22, 1980, 55-182493

Int. Cl.^{3} H04N *9/491*

U.S. Cl. 358—326 **20 Claims**



1. Velocity error compensator apparatus for use in a time base corrector of the type having a main memory into which successive samples of a video signal are written at a write-in rate synchronized with time base errors in said video signal, such that plural lines of said video signal are stored in said main memory, and from which said successive samples are read at a constant read-out rate, said velocity error compensator apparatus comprising:

velocity error detecting means for detecting velocity errors in successive lines of said video signals written into said main memory; and

sample level compensating means for compensating the level of a sample read out from said main memory as a function of the detected velocity error, such that said level of said read out sample is modified to be equal to the level that said read out sample should have had at the time it was read out if there had been no velocity error.

4,443,822

REPRODUCING APPARATUS

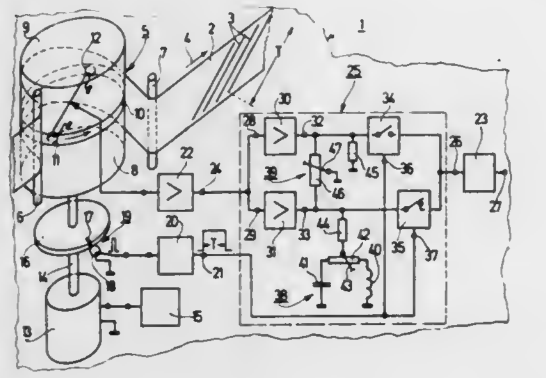
Gerhard Furtner, Judenau, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 2, 1982, Ser. No. 345,182

Claims priority, application Austria, Feb. 6, 1981, 554/81

Int. Cl.^{3} G11B *5/02, 15/44, 15/45*

U.S. Cl. 360—67 **4 Claims**



1. An apparatus for reproducing information signals recorded on a record carrier in the form of a tape, which apparatus comprises two rotatable reproducing heads each consecutively co-operating with the record carrier during a given scanning period in order to reproduce the recorded information signals, means for detecting the rotary position of the heads relative to the record carrier, said detecting means supplying a position signal indicative of which of said heads is cooperating with said record carrier, a common pre-amplifier which is connected to the reproducing heads, a pair of signal-correction compensation stages each associated with a respective one of the reproducing heads, said stages each having an input which is connected to an output of said pre-amplifier and an output for supplying an output signal for a signal-processing circuit which follows the compensation stages, and means responsive to said position signal for applying the output signal at the output of the compensation stage associated with the reproducing head which instantaneously co-operates with the record carrier to the signal-processing circuit during the scanning period of the relevant reproducing head, wherein only one of the two signal-correction compensation stages associated with said reproducing heads comprises an adjustable frequency-dependent network for frequency-response correction and at least one of said two compensation stages comprises a further adjustable frequency-independent network for amplitude correction so as to match the frequency response and the amplitude characteristics of the two reproducing heads to each other.

4,443,823

CONTROLLING THE TRACE OF A ROTARY HEAD

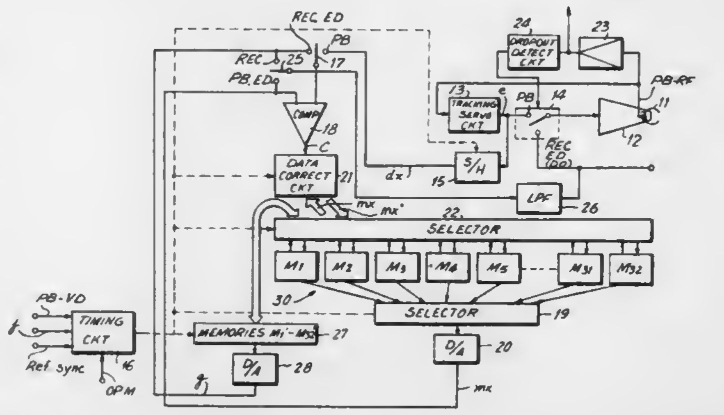
Hitoshi Sakamoto, Zama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 3, 1981, Ser. No. 317,867

Claims priority, application Japan, Nov. 12, 1980, 55-159111

Int. Cl.^{3} G11B *5/52, 21/04*

U.S. Cl. 360—77 **26 Claims**



1. Apparatus for controlling the position of a rotary head mounted on a deflection device as said head scans successive tracks on a record medium, comprising tracking drive signal generating means for generating tracking drive signals as a function of the deviation of said head relative to a track being scanned thereby: sampling means coupled to said tracking drive signal generating means for sampling said tracking drive signals at successive locations along said track to produce successive samples as said head scans said track; storage means for storing corrected samples of tracking drive signals; comparator means coupled to said sampling means and to said storage means for comparing said successively produced samples to a stored tracking drive signal sample to detect a difference therebetween; correction means coupled to said comparator means and responsive to a detected difference for selectively correcting a tracking drive signal sample stored in said storage means by a predetermined amount irrespective of the actual difference between the produced sample and the stored tracking drive signal sample to produce a corrected sample; means for returning said corrected samples of said tracking drive signal to said storage means; and supply means for selectively supplying said generated tracking drive signals or a corrected tracking drive signal derived from said storage means to said deflection device for deflecting said head.

4,443,824

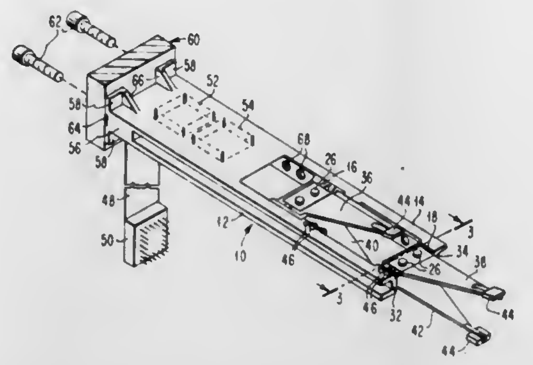
MAGNETIC HEAD ARM ASSEMBLY

Norman K. Frater; Gregory G. Gill, and Robert B. Watrous, all of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 14, 1981, Ser. No. 301,499

Int. Cl.^{3} G11B *5/48*

U.S. Cl. 360—104 **7 Claims**



1. A magnetic head-arm assembly for use in a disk file apparatus for supporting a plurality of magnetic transducers, said assembly comprising;

a unitary, substantially flat, generally rectangular arm having an opening adjacent one longitudinal end to form two spaced legs joined by a plurality of integrally formed transversely extending bridges, and channels formed in the opposite longitudinal sides of the arm to minimize mass for improving access time;

suspension members secured by screws to both the upper and lower sides of each bridge for operatively supporting a respective magnetic transducer; and

at least one electronic circuit module connected to at least one of the flat surfaces of said arm adjacent its opposite longitudinal end,

each of said channels having at least one aperture communicating with the opening in said arm to allow air to flow through the arm for cooling each circuit module.

4,443,825

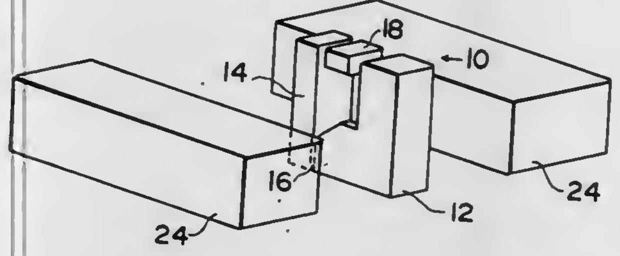
MAGNETIC HEAD POLE PIECE MOUNT OF TIO_2-CAO

Larry A. Wank, Cornwallville, and Joseph G. Braitling, Saugerties, both of N.Y., assignors to North American Philips Corporation, New York, N.Y.

Filed Dec. 30, 1981, Ser. No. 335,914

Int. Cl.^{3} G11B *5/12*

U.S. Cl. 360—104 **3 Claims**



1. A magnetic head which comprises:

first and second pole pieces having a magnetic gap disposed therebetween and means for mounting said pole pieces which includes a nonmagnetic material supporting said pole pieces, said nonmagnetic material having a composition which, by weight, is between 10 and 30% calcium oxide and between 70 and 90% titanium dioxide and up to 2% zirconium dioxide.

4,443,826

MAGNETO-RESISTIVE EFFECT TYPE MAGNETIC HEAD

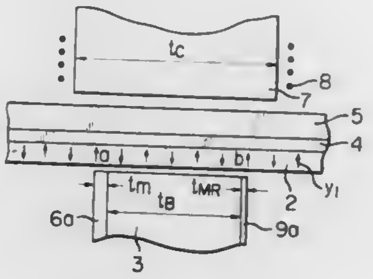
Takeshi Sawada, Yokohama; Ko Yoneda, Kawasaki; Akira Shinmi, Kawasaki; Hiroshi Takagi, Kawasaki; Shuzo Abiko, Chichibu, and Hirokazu Goto, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo and Canon Denshi Kabushiki Kaisha, Saitama, both of, Japan

Filed Oct. 23, 1981, Ser. No. 314,417

Claims priority, application Japan, Oct. 29, 1980, 55-150646; Nov. 7, 1980, 55-155843

Int. Cl.^{3} G11B *5/12, 5/30, 5/25*

U.S. Cl. 360—113 **5 Claims**



1. A magneto-resistive effect type magnetic head for recording on and reproducing from a recording medium, said magnetic head comprising:

a subsidiary magnetic pole formed of a high permeability material and having a coil turned around the magnetic pole;

a substrate disposed in opposition to said subsidiary magnetic pole;

a main magnetic pole formed of a magneto-resistive effect element arranged on a side of said substrate where a recording medium in motion enters said head; and

a recording magnetic pole formed of a high permeability material arranged on a side of said substrate where the recording medium in motion leaves the head.

4,443,827

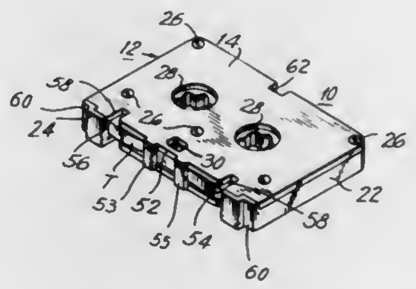
TAPE CASSETTE

John W. Hoover, Huntington; Raymond C. Chapman, Ridgefield; Dominick F. Dammassa, and Richard G. Rutkowski, both of Milford, all of Conn., assignors to Dictaphone Corporation, Rye, N.Y.

Filed Jun. 15, 1982, Ser. No. 388,540

Int. Cl.^{3} G11B *23/08*

U.S. Cl. 360—132 **13 Claims**

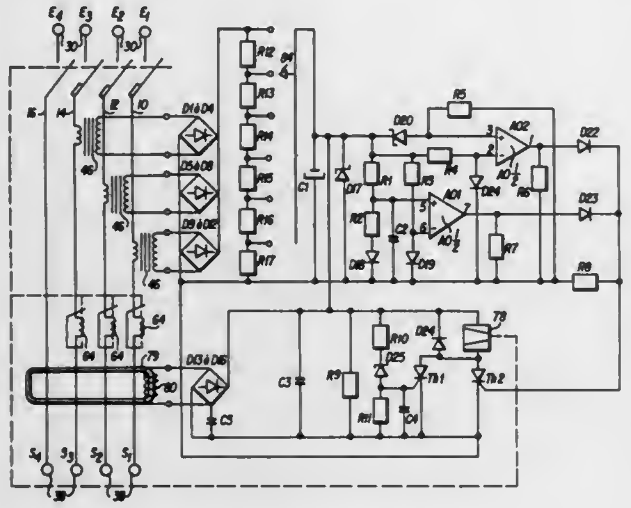


1. In a thumb-sized tape cassette having a rectangular housing formed of top and bottom walls and a peripheral wall extending between said top and bottom walls, said peripheral wall having front, back and side portions; supply and take-up reel hubs contained within said housing; a tape member wound about respective ones of said hubs to form supply and take-up reels and movable therebetween to be unwound from one and wound upon the other; a pair of tape guide rollers positioned within said housing in the vicinity of the front corners of said housing for guiding said tape member thereabout and defining a tape run parallel to and behind said front portion of said peripheral wall; said front portion of said peripheral wall hav-

ing at least a center and opposite side openings therein through which said tape run is accessed, said side openings being positioned on either side of said center opening, each side opening being operative to receive a transducer to contact said tape member and said center opening being operative to receive a pinch roller when said tape cassette is loaded into a tape record and/or playback device; a hole in each of said top and bottom walls coaxially aligned and positioned adjacent the center opening of said front position of said peripheral wall to receive a capstan when said tape cassette is loaded into said device; the improvement comprising a pair of notches disposed in said top and bottom walls on opposite sides of said side openings of said front portion of said peripheral wall and spaced remotely from said center opening, said notches extending rearwardly into said housing from said front portion in parallel planes that are substantially perpendicular to said tape run, whereby when said tape cassette is operatively loaded into said device, either notch receives a bifurcated tape guide normally mounted with said transducer; and the opposite ends of said front portion of said peripheral wall at the corners formed with the respective side portions are recessed relative to the part of said front portion adjacent thereto so as to form respective steps at said corners, whereby when said tape cassette is loaded into said device said steps cooperate with guide means in said device to position said tape cassette in predetermined alignment.

4,443,828
LOW VOLTAGE CIRCUIT BREAKER

Michel Legrand; Paul Canonne, both of Barentin, and Christian Brault, Pavilly, all of France, assignors to Merlin Gerin, Grenoble, France
Filed Mar. 2, 1982, Ser. No. 353,820
Claims priority, application France, Mar. 10, 1981, 81 05153
Int. Cl.^{3} H02H *3/08*
U.S. Cl. 361—93 **4 Claims**

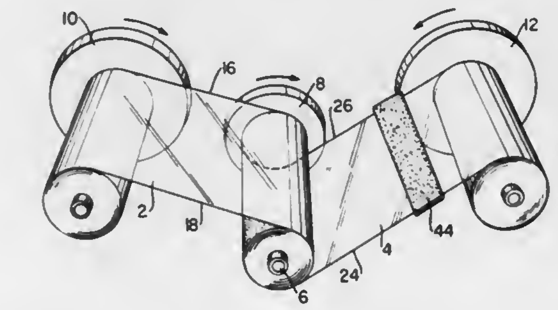


1. A low voltage circuit breaker for protecting an electrical power circuit having a plurality of power conductors against fault current conditions comprising:

a pair of contacts for each power conductor,
a tripping control mechanism effective to separate said pair of contacts,
a tripping relay to operate said tripping control mechanism,
a current sensing unit associated with each of the power conductors of the circuit protected by the circuit breaker to detect the current flowing in the respective power conductors and develop an output signal corresponding to the current in said power conductors,
and an electronic signal processing unit to process the output signal emitted by the said current sensing unit in order to deliver to the said relay a tripping signal when the said current exceeds a predetermined threshold, said current sensing unit including:
a magnetic circuit with three parallel branches, two outer and one intermediate branch,
a secondary winding mounted on the intermediate branch and providing said output signal,
two openings each provided between the winding and one of the outer branches,
and a primary winding serially connected with said power conductor and having a conductor portion selectively running through one or two of said openings to provide a primary winding with one or two current paths.

4,443,829
CAPACITOR WITH INTEGRAL DISCHARGE RESISTOR AND METHOD OF MANUFACTURE

Robert J. Delvy, Bridgeport; Harry L. Pentecost, Monroe, and Leroy R. Patterson, Guilford, all of Conn., assignors to Universal Manufacturing Corp., Paterson, N.J.
Filed Nov. 8, 1982, Ser. No. 440,096
Int. Cl.^{3} H01G *1/11, 4/38*
U.S. Cl. 361—275 **16 Claims**



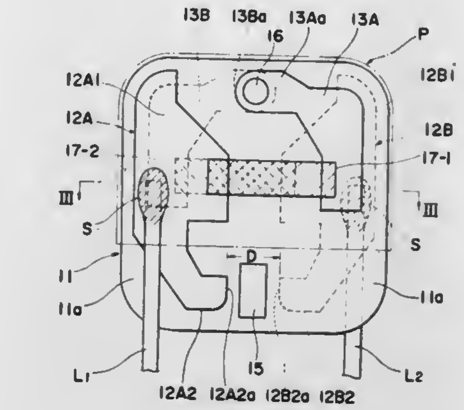
1. A capacitor with an integral discharge resistor, comprising:

a sheet of electrically insulating material having first and second outer edges;
first and second sheets of electrically conductive material in spaced, opposed relationship, said electrically insulating sheet being disposed therebetween, said first conductive sheet extending outwardly at least up to said second edge, there being provided a non-conductive margin along said first edge at which said first electrically conductive sheet cannot be contacted, said second conductive sheet extending outwardly at least to said first edge, there being provided a second non-conductive margin along said second edge at which electrical contact cannot be made with said second conductive sheet;
at least one section of electrically resistive material mounted in spaced relationship from said first and second conductive sheets and extending between and, at least, to said first and second edges;
first connecting means disposed at said second edge for providing an electrical connection between said first conductive sheet and one end of said section of resistive material;
second connecting means disposed at said first edge for providing an electrical connection between said second conductive sheet and the other end of said section of resistive material.

4,443,830
CR COMPOSITE PART PROVIDED WITH DISCHARGE GAP

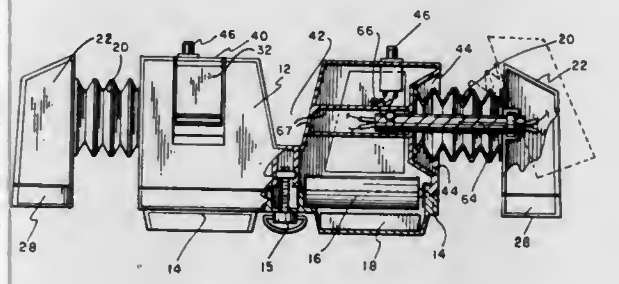
Toshimi Kaneko, Sabae, and Yukio Hata, Fukui, both of Japan, assignors to Murata Manufacturing Co., Ltd., Japan
Filed Mar. 30, 1983, Ser. No. 480,336
Claims priority, application Japan, Apr. 6, 1982, 57-50150[U]
Int. Cl.^{3} H01G *1/11;* **H01L** *27/02*
U.S. Cl. 361—275 **11 Claims**

1. A CR composite part provided with discharge gap, which comprises a substrate (**11**) of dielectric material, a plurality of capacitor-forming electrodes (**12A, 13B, 13A, 12B**) respectively provided on opposite surfaces of the substrate so as to confront each other through said substrate held therebetween, a CR composite circuit constituted by bridging, through resistance, the predetermined electrodes (**12A, 13A, 12B, 13B**) of said plurality of capacitor-forming electrodes respectively provided on the same surfaces of said substrate and also by electrically connecting the one predetermined electrode (**13A**) on one surface of said substrate to the other predetermined electrode (**13B**) on the other surface of said substrate, and two discharge electrodes (**12A2, 12B2**) which are respectively provided on the opposite surfaces of the substrate and connected to the electrode (**12A**) on the one surface of the substrate and the electrode (**12B**) on the other surface of said substrate, equivalent to input and output terminals of said CR composite circuit, and which are respectively provided with discharge end portions (**12A2***a,* **12B2***a*) arranged to confront each other through a predetermined gap (G) along the surfaces of said substrate, said substrate (**11**) being formed with an opening (**15**) at a position equivalent to the gap (G) between said two discharge electrodes.



4,443,831
LIGHT MEANS AND METHOD OF LIGHTING

Timothy D. Godfrey, and Rodger L. Smith, both of P.O. Box 605, Wichita, Kans. 67201
Filed May 9, 1983, Ser. No. 492,900
Int. Cl.^{3} B60Q *1/00*
U.S. Cl. 362—80 **9 Claims**

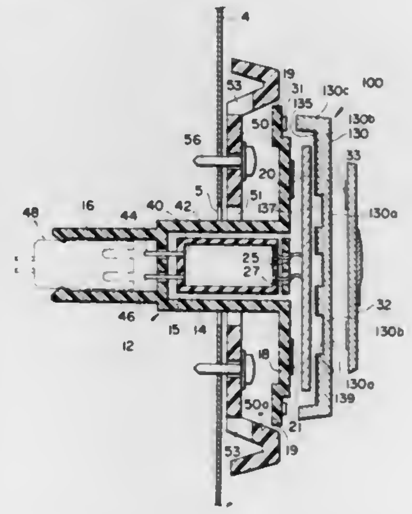


1. A portable dual auxiliary lighting means generally mounted behind the inside interior rear view mirror with a support post of an automobile, or the like, comprising a case means;

battery means situated within said case means;
a pair of light housing for securing and housing a pair of light bulb;
adjustably positionable means interattaching said light housing to said case means;
a related circuitry means engaging said battery means to said light bulb, said circuitry being substantially housed within said case means and including at least one switch for closing the related circuitry between said battery means and said light bulb;
and a fastener means positioned on said case means for securing the lighting means behind said rear view mirror, said battery means is a plurality of same, said adjustably positionable means is bellows with one of same for each of said light housings; a related circuitry means engaging the battery means to each of the light bulbs; and said fastening means comprises at least one spring biased clip means situated on said case means for clamping over the top of the rear view mirror to hold the lighting means against the back of the mirror.

4,443,832
SELF-ILLUMINATING ORNAMENT FOR VEHICLES

Hiroshi Kanamori, Yokohama; Takehiro Shigeya, Kamakura, and Nobumasa Aoki, Tokyo, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama City and Marui Industrial Co., Ltd., Tokyo, both of, Japan
Filed Sep. 15, 1982, Ser. No. 418,428
Claims priority, application Japan, Sep. 29, 1981, 56-152967; Dec. 9, 1981, 56-183171[U]
Int. Cl.^{3} F21V *9/16*
U.S. Cl. 362—84 **15 Claims**

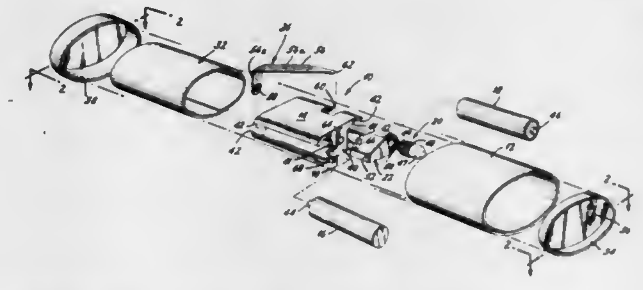


1. An ornament for a vehicle to indicate a decorative or identifying mark, the ornament comprising:

a base attachable to an outer part of the vehicle body;
an electric lamp supported by said base; and
a cover which is a one-piece member formed of a transparent material and is attached to said base so as to entirely cover said lamp with a space therebetween, the inner side of said cover facing said lamp being processed such that said cover has a first area, which is in a pattern corresponding to the shape of said mark and allows light rays emitted by said lamp to pass therethrough but in the daylight prevents recognition of said lamp therethrough from the outside, and a second area which is contiguous to said first area and does not allow said light rays to pass therethrough, said inner side of said cover being recessed only in said first area to reduce the thickness of said cover in said first area.

4,443,833
FLASHLIGHT

S. Harry Fazzina, 8411 Widener Rd., Wyndmoor, Pa. 19118
Filed Mar. 7, 1983, Ser. No. 473,080
Int. Cl.^{3} F21L *7/00*
U.S. Cl. 362—189 **3 Claims**



1. A flashlight comprising: a housing having
(a) a generally flexible side wall;
(b) a first end wall;

(c) a second end wall having an off-center opening therein;

(d) an insulating, battery retaining member including resilient arm members adapted for retaining a pair of batteries having exposed conductive surfaces;

(e) one of said batteries projects beyond the end of said battery retaining member adjacent said one end of said housing and wherein the other of said batteries projects beyond said battery retaining means adjacent said other end of said housing, and wherein said projecting portions are equal, whereby said positive post and the flat end wall of said other of said batteries path lie the same plane;

(f) a light bulb at the end of said housing adjacent said second end wall with a portion of said light bulb extending through said off-center opening, said light bulb being electrically connected to one of said batteries;

(g) a conductive member having an elbow-shaped configuration with one leg being frictionally retained between the conductive surface of said other battery and its adjacent battery retaining member and with the other leg being in fixed contact with the conductive socket of said light bulb, and is further provided with an aperture in the leg adjacent the lamp socket adapted to rotatably receive and take up said socket, which bulb itself is provided with a spiralled ridge configuration to threadedly engage said aperture; and

(h) a conductive switch member having one leg frictionally retained on said positive post of said other battery, said switch member including a second leg portion extending between said flexible side wall and said battery retaining member and terminating adjacent a cutout portion of said battery retaining member, exposing a conductive portion of the other of said batteries, whereby said switch member completes a circuit between said batteries and said light bulb when compression is applied to the flexible side wall.

4,443,834

INTERIOR LIGHTING FOR VEHICLES WITH ROTATABLE MASK

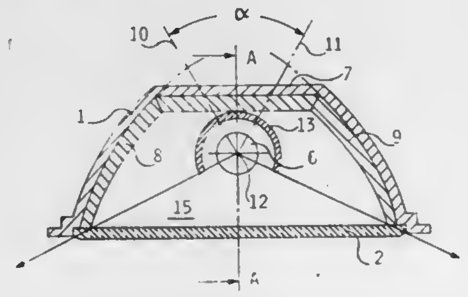
Heinz Schäfer, Geseke, and Wilhelm Schrader, Erwitte, both of Fed. Rep. of Germany, assignors to Westälische Metall Industrie KG Hueck & Co., Lippstad, Fed. Rep. of Germany

Filed Mar. 12, 1982, Ser. No. 357,703

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1981, 3113964

Int. Cl.³ F21V *7/14*

U.S. Cl. 362—280 **11 Claims**



1. Interior light for vehicles comprising: a concave reflector behind a bulb; an opaque mask with a cutout that can be variably positioned in the path of light rays from the bulb to alter their direction, said mask being positioned in the path of the rays and between the bulb and the reflector; said reflector comprising at least two paraboloid reflecting surfaces with optical axes intersecting at a predetermined angle; said cutout in the mask having a size, shape, and variable position for allowing the mask to direct light onto either reflecting surface while blocking light from impinging upon the other paraboloidal surface, the interior light being also a reading light for persons in different seated positions whereby rays reflected by said paraboloid reflecting surfaces are parallel so that illuminated areas have uniform light intensity, said reflector being entirely maskable against light emanating from said bulb.

4,443,835

APPARATUS FOR CREATING AN EVEN ILLUMINATION OF A PLURALITY OF TITLE BLOCKS

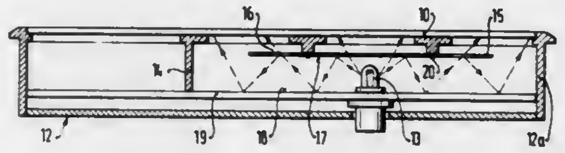
Rolf Bräutigam, Markt; Jurgen Wesemeyer, Nuremberg, and Hartmut Zöbl, Furth, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 31, 1981, Ser. No. 297,826

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1980, 3033096

Int. Cl.³ F21V *7/00*

U.S. Cl. 362—300 **16 Claims**



1. Apparatus for evenly illuminating a plurality of title blocks (**11**) on a front panel of a housing, comprising

a light source (**13**) within the housing; and

diaphragm means (**15**) positioned between said front panel and said light source, said diaphragm means having apertures (**16**) arranged in the region of said title blocks (**11**), the free area of said apertures being positioned for illumination of respectively associated title blocks and increasing in accordance with the size of the title blocks associated with any specific opening as well as with the distance from said light source (**13**) to the respective title blocks to provide for uniform illumination of said title blocks.

4,443,836

AUXILIARY HEAD LAMP DEVICE FOR CAR EQUIPPED WITH COVER

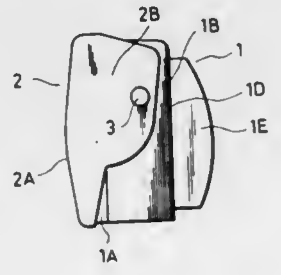
Tatsuo Horiuchi, and Kazushige Kiyota, both of Tatebayashi, Japan, assignors to Ushio Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 30, 1982, Ser. No. 363,514

Claims priority, application Japan, Feb. 8, 1982, 57-17579

Int. Cl.³ F21V *17/00*

U.S. Cl. 362—375 **8 Claims**



1. An auxiliary lamp device equipped with a cover for a vehicle, comprising: an auxiliary lamp for a vehicle, said lamp including an enclosed casing and a lens attached to said casing, said auxiliary lamp attachable to a body portion of a vehicle; a cover rotatably mounted on said casing for opening and closing the lens of said auxiliary lamp; and a cover driving mechanism for moving said cover from a closed position where said cover covers the lens of said auxiliary lamp to an open position where said cover uncovers the lens of said auxiliary lamp; said cover driving mechanism comprising: a resilient member for urging said cover for movement in the direction from said closed position to said open position; an operation member fixed integrally with said cover and moving integrally with said cover; a detent member engaging with said operation

member and restricting movement of said cover against said resilient member when said cover is at said closed position; an electrically operated operation start driving means for disengaging said detent member from said operation member when a current is applied thereto; and an automatic switch mechanism for stopping the current flow to said operation start driving means by movement of said operation member fixed integrally with said cover when said cover moves from said closed position.

4,443,837

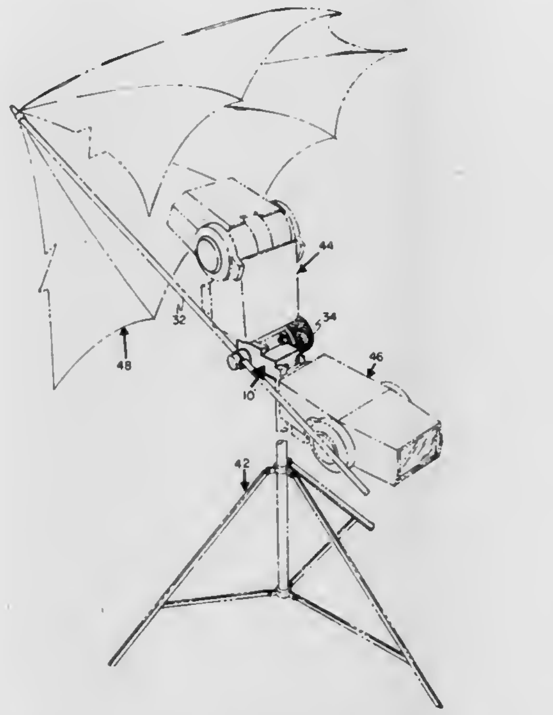
MOUNTING FIXTURE FOR A CAMERA LIGHT STAND

Albert Migliori, and Stephen D. Northup, both of Santa Fe, N. Mex., assignors to Philip M. Casady and Melvin A. Pfaelzer, both of Santa Fe, N. Mex.

Filed Sep. 29, 1982, Ser. No. 427,978

Int. Cl.³ F21V *21/00*

U.S. Cl. 362—396 **10 Claims**



1. A mounting fixture for a photographic light stand, comprising a generally rectangular solid fixture body having first and second flash lamp shoe brackets formed integrally thereon, said shoe brackets being oriented substantially orthogonal to one another, said fixture body further including an integral deflectable locking arm for clamping said fixture body to a post of a photographic light stand, said fixture body and said deflectable locking arm having coaxial bores, a locking bolt and associated nut means, said bolt extending through said bores for deflecting said arm to lock said fixture body to a post, said bolt having a threaded shaft and a cylindrical head with a transverse bore passing therethrough for receiving a shaft of a reflective light umbrella, a locking collar positioned on said bolt between said cylindrical head and said fixture body, said collar being generally tubular with a planar end surface bored to receive the shaft of said bolt, said collar having an inside diameter sized such that said collar closely receives said cylindrical head when said bolt is tightened, said collar further including a pair of semicircular recesses cut into the tubular end edge of said collar, said recesses being alignable with the bore through said head so as to permit an umbrella shaft to be inserted through said bore in said head and engaged by said collar, whereby upon tightening of said bolt said umbrella shaft is secured by said collar and said head.

4,443,838

REGULATED SINGLE-ENDED SELF OSCILLATING, DC-DC CONVERTER

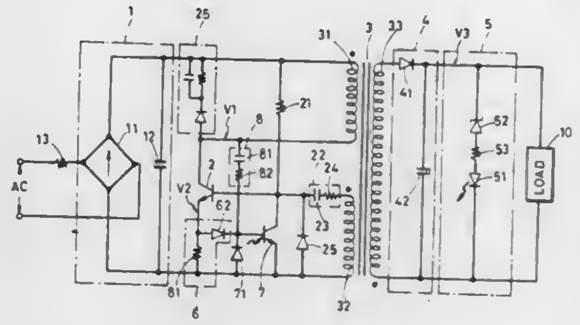
Takeshi Yamada, Nagaokakyo, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Nov. 30, 1981, Ser. No. 326,022

Claims priority, application Japan, Dec. 1, 1980, 55-169308

Int. Cl.³ H02P *13/22*

U.S. Cl. 363—19 **8 Claims**



1. A switching regulator comprising:

an oscillator including a first transistor and a transformer having a primary winding connected to said transistor, a secondary winding and a positive feedback winding connected to said transistor,

a rectifying and smoothing circuit connected to said secondary winding,

excessive voltage detecting means for detecting that the output voltage of the rectifying and smoothing circuit has exceeded a predetermined value,

a second transistor connected to said first transistor for controlling the duration of conduction of the first transistor by detecting the excessive voltage, and

a positive feedback circuit connected between the collector of the first transistor and the base of the second transistor for stabilizing the oscillation of the oscillator.

4,443,839

SINGLE ENDED, SEPARATELY DRIVEN, RESONANT DC-DC CONVERTER

Toshihiro Onodera, Tokyo, and Youichi Masuda, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 10, 1981, Ser. No. 329,438

Claims priority, application Japan, Dec. 23, 1980, 55-182341; Dec. 26, 1980, 55-185812; Dec. 26, 1980, 55-185813

Int. Cl.³ H02M *3/335*

U.S. Cl. 363—20 **2 Claims**

1. A DC-DC converter comprising:

an ideal transformer with a leakage inductance and an exciting inductance in the primary side;

a capacitor connected in parallel with said exciting inductance of said ideal transformer;

switching means of the voltage resonance type including a switching element connected between said primary side of said ideal transformer and an input DC power source, said switching means periodically interrupting a voltage of said DC power source;

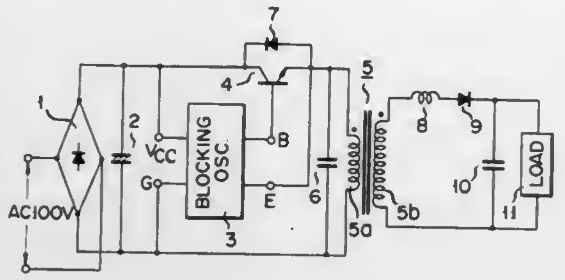
a blocking oscillating circuit with output stabilizing means which directly receives a voltage of said input DC power source and controls said switching means by the oscillating output; and

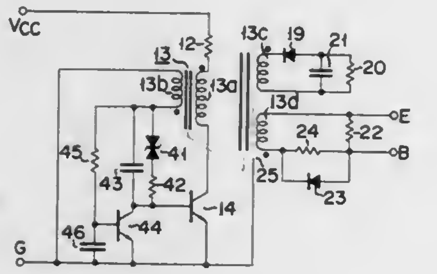
means for rectifying and smoothing the output from the secondary side of said ideal transformer and for supplying the rectified and smoothed output to a load;

wherein said blocking oscillating circuit comprises,

a switching transistor,

a transformer including a primary winding connected in series to said switching transistor and excited by the voltage of said input DC power supply source, a first secondary winding for applying a feedback signal to the base electrode of said switching transistor, a second secondary winding for applying a control signal for intermittently interrupting said switching means, and a third secondary winding for setting a pulse stop period of the pulse to be





obtained at the output end of said switching element of said switching means, and

electrostatic shielding means for electrostatically shielding said second secondary winding from the remaining winding of said transformer.

4,443,840
DC/DC CONVERTER

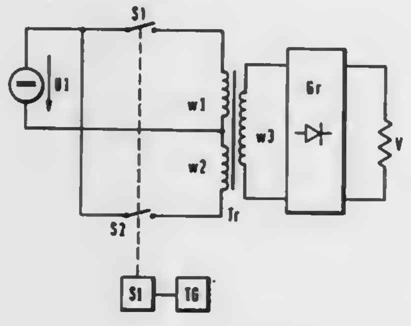
Klaus H. Geissler, Backnang, and Karl-Heinz Hübner, Leutenbach, both of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 28, 1982, Ser. No. 426,162

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1981, 3142304

Int. Cl.³ H02M *3/335*

U.S. Cl. 363—24 **3 Claims**



1. A direct voltage converter comprising: a transformer having primary and secondary winding means; first and second electronic switches connected to said primary winding means; rectifier means connecting said secondary winding means to a load; and switch control means connected to said electronic switches for closing said switches periodically and in alternation at a selected repetition rate in response to pulses produced by a clock pulse generator, for applying a direct voltage across said primary winding means and periodically reversing the polarity of that direct voltage across said primary winding means, said switch control means comprising means for producing a gap period between the turn-off of one said switch and the turn-on of the other said switch, during which both said switches are open and said primary winding means are disconnected from the direct voltage, said producing means providing a gap period duration selected to correspond to the time required for voltage in said secondary winding means to automatically reverse polarity at the inherent resonant frequency of said transformer and rectifier means.

4,443,841
NEUTRAL-POINT-CLAMPED PWM INVERTER

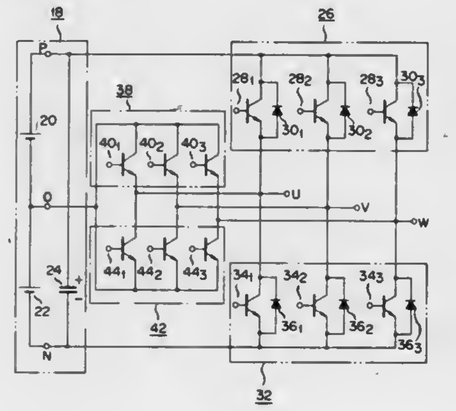
Wataru Mikami, 2-19-3, Yurigaoka, Ninomiya-cho, Naka-gun, Kanagawa-ken; Kazuo Nagatake, 43 Aza Denjiyama, Narumi-cho, Midori-ku, Nagoya-shi, and Takuo Ono, 2-8-1, Azamino, Midori-ku, Yokohama-shi, all of Japan

Filed Feb. 17, 1981, Ser. No. 234,915

Claims priority, application Japan, Feb. 15, 1980, 55-18148

Int. Cl.³ H02M *1/12, 7/537*

U.S. Cl. 363—41 **7 Claims**



1. An inverter device comprising:
- a DC power source circuit having a positive, a negative and a neutral terminal;
- first switching means connected at a first terminal thereof to the positive terminal of the power source circuit for supplying the positive terminal voltage at a second terminal of the first switching means when rendered conductive;
- second switching means having a first terminal connected to the second terminal of the first switching means and a second terminal connected to the negative terminal of the power source circuit for supplying the negative terminal voltage at the first terminal of the second switching means when rendered conductive;
- an output terminal connected to said first terminal of said second switching means and second terminal of said first switching means;
- third switching means connected between the neutral terminal of the power source circuit and the point where said first and second switching means are connected for operating in interlock with the first switching means and supplying the voltage of the neutral terminal through said output terminal when rendered conductive; and
- fourth switching means connected in parallel to the third switching means for operating in interlock with the second switching means and supplying the voltage of the neutral terminal through said output terminal when rendered conductive.

4,443,842
INVERTER FIRING CONTROL WITH COMPENSATION FOR VARIABLE SWITCHING DELAY

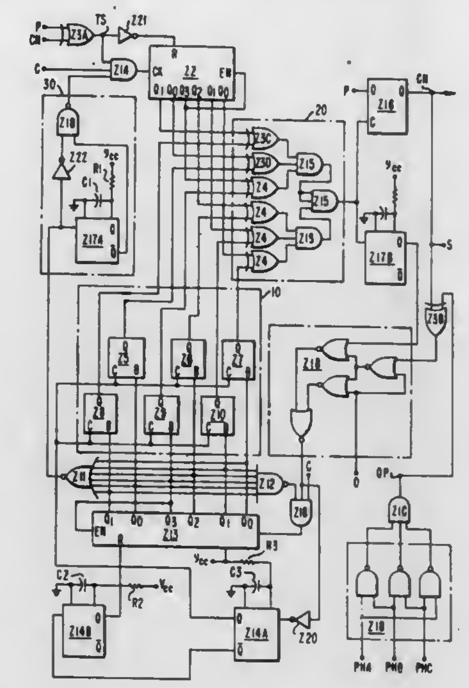
Ralph D. Jessee, Lima, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 5, 1982, Ser. No. 355,073

Int. Cl.³ H02M *7/537, 1/12*

U.S. Cl. 363—41 **14 Claims**

1. A pole switch firing control circuit for controlling a pulse width modulated inverter in accordance with a reference pulse signal, said control circuit comprising:
- means for measuring switching time of the pole switch for a given pulse in a first output cycle of the inverter;
- means for subtracting said switching time from a preselected time interval to obtain a delay time; and
- means for generating a control signal for initiating a pole switch switching sequence for a second pulse corresponding to said given pulse in a second output cycle, succeeding said first output cycle, wherein initiation of said pole switching sequence occurs after a period equal to said delay time following a transition point of a pulse in said reference signal.



4,443,843
DC HIGH VOLTAGE GENERATOR FOR A DENTAL X-RAY PHOTOGRAPHING APPARATUS

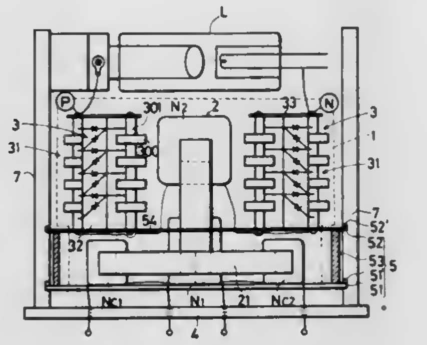
Toshiaki Ikeda, Yahata; Shuhei Furuichi, Shiga, and Masakazu Suzuki, Shin Nakamachi, all of Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed Jun. 26, 1981, Ser. No. 277,888

Claims priority, application Japan, Jun. 27, 1980, 55-88056

Int. Cl.³ H02M *3/18;* **H05K** *7/00*

U.S. Cl. 363—59 **1 Claim**



1. A DC voltage generator for a dental X-ray photographing apparatus wherein a high voltage transformer circuit comprises capacitor type multiple boosting circuits which are connected to a secondary side of a variable magnetic leak transformer with a reverse T-shaped core and in which a plurality of mutually insulated capacitors are vertically laminated via diodes, said boosting circuits being disposed vertically facing with each other on a right and left sides of said secondary winding of said variable magnetic transformer, said high voltage transformer circuit being removably mounted on a double base plate comprising a base plate on which said transformer is placed with its control winding side directed downward, and a base plate in which a window is provided at a center and the secondary winding projects through the window so that said capacitor type multiple boosting circuits can be loaded and unloaded and the high voltage transformer circuit can be loaded into and unloaded from the base plate, the X-ray tube being disposed superjacent control windings of said variable leakage transformer with the secondary windings of said variable magnetic leak transformer in between said X-ray tube and said control windings and positive high voltage obtained by upward multiple boosting of one of said capacitor type multiple boosting circuits and negative high voltage obtained by downward multiple boosting of another boosting circuit with reference to the ground potential are respectively supplied to positive and negative terminals of said X-ray tube.

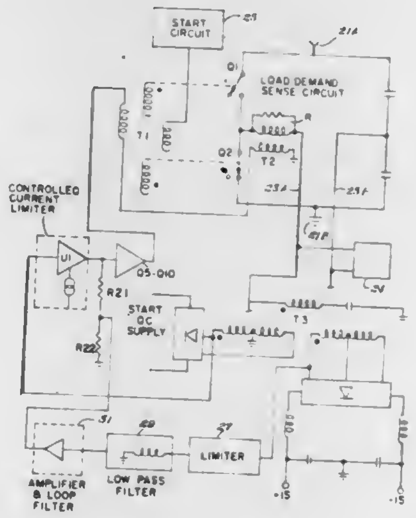
4,443,844
HIGH FREQUENCY POWER SWITCHING CIRCUIT

Alan G. Grace, San Carlos, Calif., assignor to Efflo Incorporated, Fort Worth, Tex.

Filed Aug. 19, 1981, Ser. No. 294,367

Int. Cl.³ H02M *7/537*

U.S. Cl. 363—132 **34 Claims**

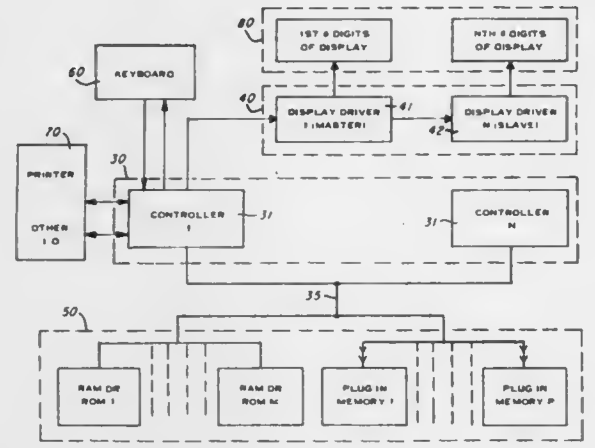


1. A high frequency power switching circuit for converting a DC voltage to a high frequency voltage, comprising:
- two power switching means coupled together,
- means for connecting a DC voltage across said two power switching means,
- a saturable timing transformer having a primary winding and two secondary windings,
- one of said secondary windings being coupled to one of said power switching means for driving said one power switching means,
- the other of said secondary windings being coupled to the other of said power switching means for driving said other power switching means,
- an output lead coupled to the junction of said two power switching means, and
- amplifier means having an input coupled to said output lead and an output coupled to said primary winding of said timing transformer,
- said amplifier means and said timing transformer being coupled in a positive feedback loop whereby said two power switching means, said amplifier means and said timing transformer form an oscillator for alternately switching said two power switching means on and off to convert said DC voltage to a high frequency voltage at said output lead,
- said amplifier means being operated as a limiter to insure that the going off power switching means is completely off before the going on transistor power switching means is on.

4,443,845
MEMORY SYSTEM HAVING A COMMON INTERFACE

Stephen P. Hamilton, Midland, and Arthur C. Hunter, Lubbock, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 26, 1980, Ser. No. 163,023
Int. Cl.³ G06F ***13/06***
U.S. Cl. 364—200 **6 Claims**



1. A multichip date processing system comprising:

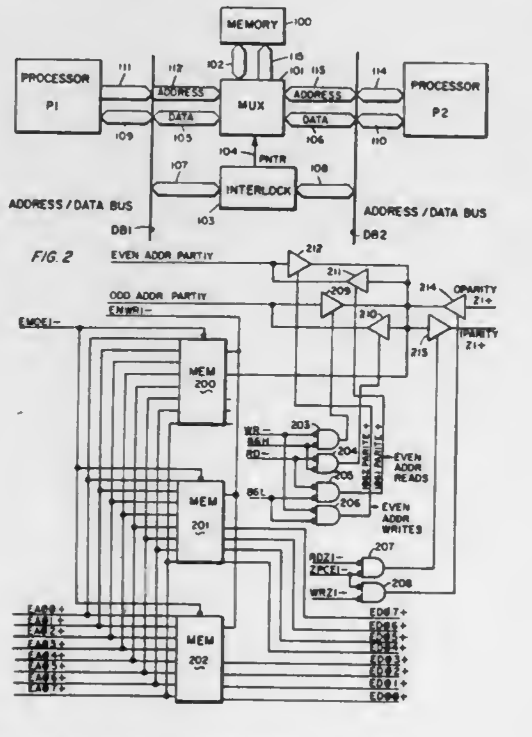
processor means on a first chip for sequentially producing or receiving address, command and data signals,

memory means on a second chip coupled to said processor means, said memory means including a program counter means coupled to a read-only or read-write memory for selectively outputting data to said processor and a plurality of conductors electrically interconnecting said processor on said first chip with said memory means on said second chip, at least some of said conductors being common for transmitting or receiving said address, command and data signals sequentially.

4,443,846
DUAL PORT EXCHANGE MEMORY BETWEEN MULTIPLE MICROPROCESSORS

Ralph L. Adcock, Irvine, Calif., assignor to Sperry Corporation, New York, N.Y.

Filed Dec. 29, 1980, Ser. No. 220,299
Int. Cl.³ G06F ***13/00***
U.S. Cl. 364—200 **3 Claims**



1. A computing system comprising,

first (P1) processor means,

second (P2) processor means,

one of said first and second processor means, operates upon words which are twice as long as the words operated upon by the other processor means,

multiplexer means (101),

first bus means (DB1) connected between said first processor means and said multiplexer means,

second bus means (DB2) connected between said second processor means and said multiplexer means,

said first and second bus means carry information in the form of data signals and address signals,

the address signal carrying portion of one of said first and second bus means comprises bidirectional signal transmission means and the other of said first and second bus means comprises unidirectional signal transmission means,

the data signal carrying portion of each of said first and second bus means comprises bidirectional signal transmission means,

dedicated memory means (100) connected to said multiplexer means, and

control means (103) connected to selectively supply a pointer signal (PNTR) to said multiplexer means to determine which of said first and second processor means is actively connected to said memory means via said multiplexer means,

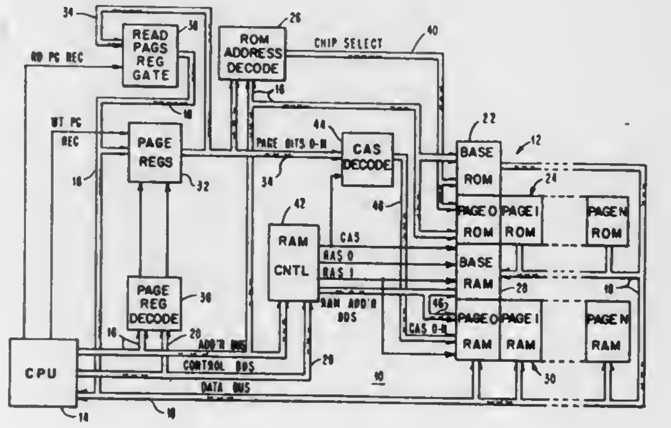
said control means supplies a read/write signal which determines that the read or the write operation is to be performed when a processor means is connected to said memory means via said multiplexer means in response to said pointer signal,

said control means further connected to selectively supply a select signal to said multiplexer such that one of said processor means is actively connected directly to the other processor means via said multiplexer means.

4,443,847
PAGE ADDRESSING MECHANISM

David J. Bradley; Lewis C. Eggebrecht, both of Boca Raton; Dennis S. Gibbs, Lighthouse Point, and Donald J. Kostuch, Boca Raton, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 5, 1981, Ser. No. 231,653
Int. Cl.³ G06F ***9/30***
U.S. Cl. 364—200 **13 Claims**



1. A data addressing system for addressing data storage means comprising:

processor means which provides control signals and address signals, said control signals manifesting a data movement operation to be performed and said address signals defining addresses within a confined address space,

addressable memory means for being addressed within said confined addressable space, said memory means including both read only memory addressable in a first portion of said confined addressable space and random access memory addressable in a second portion of said confined addressable space, said read only memory and random access memory being divided into an unpaged part and a plurality of paged parts, such that the address signals directly address said unpaged parts and page signals enable one of said paged parts to be addressed by said address signals;

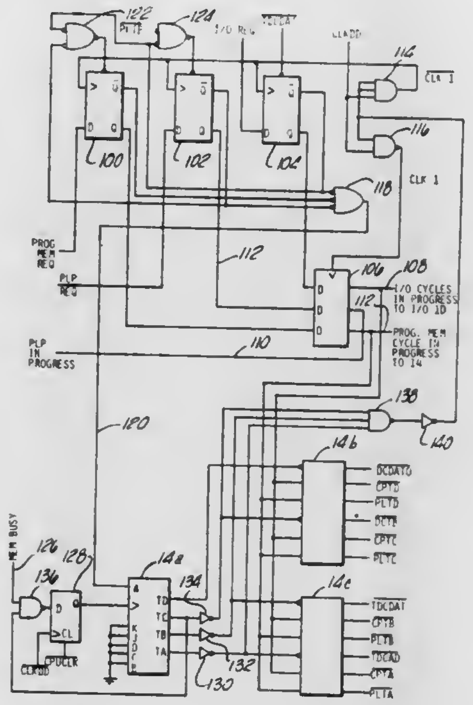
a plurality of selectable page register means, each for storing a code, one of said page register means being selected at any time to provide said page signals as manifesting said stored code; and

page register selection means responsive to said control signals and selected address signals defining said address space portions for selecting one of said page register means wherein said page register means includes first, second and third page register means, said first page register being selected to provide said page signals whenever a read data operation occurs with respect to said read only memory, said second page register being selected to provide said page signals whenever a read data operation occurs with respect to said random access memory, and said third page register being selected to provide said page signals whenever a write data operation occurs with respect to said random access memory.

4,443,848
TWO-LEVEL PRIORITY CIRCUIT

John T. Gehman, Needham, Mass., assignor to Nixdorf Computer Corporation, Burlington, Mass.

Continuation-in-part of Ser. No. 73,597, Sep. 10, 1979, Pat. No. 4,310,880. This application May 4, 1981, Ser. No. 260,141
Int. Cl.³ G06F ***9/38***
U.S. Cl. 364—200 **1 Claim**

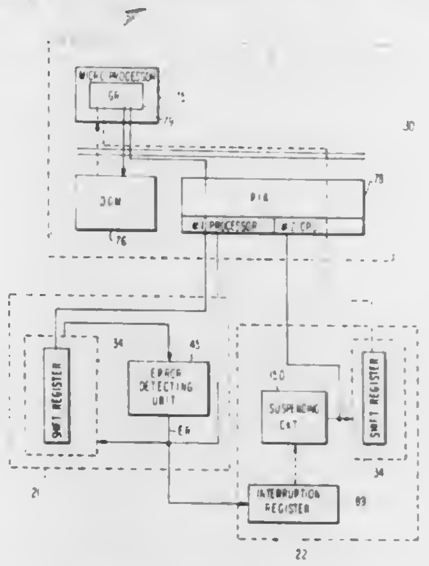


1. In a digital computer of the type having an instruction address sequencer, clock means for generating CLK 1 and $\overline{\text{CLK 1}}$ signals, and a memory which receives access requests from a plurality of requesting sources: arbitration means connected to receive CLK 1 and $\overline{\text{CLK 1}}$ and said memory access requests to arbitrate between effectively concurrent requests in synchronism with CLK 1, said arbitration means comprising a first tier connected to receive and store for processing the memory access requests and a second tier connected to the first tier to receive and store for processing the selected requests, the clock means being connected to the arbitration means are such that CLK 1 operates the first tier and $\overline{\text{CLK 1}}$ operates the second tier, the first tier comprising a plurality of bistable circuits equal in number to the number of requests to be arbitrated, each of said circuits having a data input connected to receive a request, a reset input adapted to be connected to higher priority circuits, a clock input connected to receive CLK 1, and an output connected to a data input of a device in the second tier.

4,443,849
ERROR RECOVERY SYSTEM OF A MULTI-PROCESSOR SYSTEM FOR RECOVERING AN ERROR BY TRANSFERRING STATUS SINGALS FROM ONE PROCESSOR TO ANOTHER WITHOUT USE OF A MAIN MEMORY

Hiroyuki Ohwada, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 6, 1981, Ser. No. 309,132
Claims priority, application Japan, Oct. 9, 1980, 55-141323
Int. Cl.³ G06F ***11/00***
U.S. Cl. 364—200 **6 Claims**



1. An error recovery system for use in combination with an electronic digital computer system comprising a main memory for storing a plurality of programs and a plurality of processors for processing said programs, each program comprising a succession of instructions, each processor comprising executing means for fetching selected ones of said instructions and for executing each of the selected instructions, during a first period of time during which retry of execution of the selected instruction is allowable and a second period of time during which retry of execution of said selected instruction is not allowable, to produce masses of information, monitoring means for monitoring operation of said executing means to produce an error signal when an error is detected during execution of a particular one of the selected instructions and to suspend execution of the particular instruction, and retry enable signal producing means operatively coupled to said monitoring means for producing a retry enable signal during said first period of time during which retry of execution of each of said selected instructions is allowable, said executing means including register means responsive to said error signal for keeping, as status signals, a mass of information resulting from execution of the particular instruction, said error recovery system being energized on occurrence of the error in a first of said processors to make a second of said processors take over execution of the particular instruction, wherein the improvement comprises:

storage means coupled to the retry enable signal producing means and the register means of each processor and responsive to the retry enable signal produced in the first processor for taking over for storage therein the status signals kept in the first processor directly therefrom without being sent through said main memory;

the second processor comprising:

suspending means energized upon occurrence of the error in the first processor for suspending operation of the executing means of the second processor after completion of execution of one of the instructions fetched by the second processor that is currently executed; and

ready signal producing means coupled to said suspending means for producing a ready signal after completion of execution of said one of the instructions;

said error recovery system further comprising:

delivering means responsive to the retry enable signal produced in the first processor and said ready signal for delivering the status signals directly from said storage means to the register means of the second processor without passing through said main memory, thereby, to enable the second processor to take over execution of said particular instruction.

4,443,850

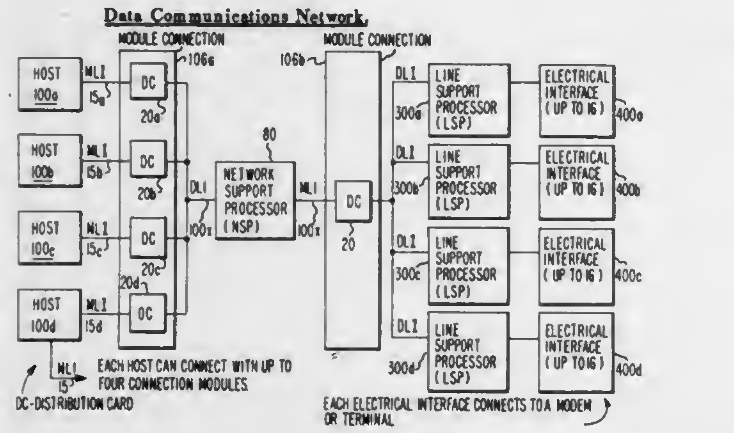
INTERFACE CIRCUIT FOR SUBSYSTEM CONTROLLER

Craig W. Harris, El Toro, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 1, 1981, Ser. No. 326,423

Int. Cl.^{3} G06F *15/16, 15/20*

U.S. Cl. 364—200 **10 Claims**


Data Communications Network.
MODULE CONNECTION
MODULE CONNECTION
106a
106b
HOST 100a
HOST 100b
HOST 100c
HOST 100d
MLI
15a
15b
15c
15d
DC
20a
20b
20c
20d
20
80
NETWORK SUPPORT PROCESSOR (NSP)
DLI
MLI
100x
DLI
LINE SUPPORT PROCESSOR (LSP)
300a
300b
300c
300d
ELECTRICAL INTERFACE (UP TO 16)
400a
400b
400c
400d
MLI 15
EACH HOST CAN CONNECT WITH UP TO FOUR CONNECTION MODULES
DC-DISTRIBUTION CARD
EACH ELECTRICAL INTERFACE CONNECTS TO A MODEM OR TERMINAL

1. In a data communications network where a peripheral-controller controls data transfer operations between main memory of a main host computer and with a plurality of line communications processors connected to remote peripheral terminals, said peripheral-controller including master and slave processor means which include individual memory-controller means and a commonly shared memory bank, and an interface circuit which provides connection channels to said main host computer and said line communications processors, and wherein said master and slave processor means uses placement (PUT) and retrieval (GET) instructions to control operation of said interface circuit and to initiate the movement of data between said main host computer and said line communications processor after initiation instructions from said main host computer, the interface circuit for said peripheral-controller comprising:

(a) a first (DLI) interface logic means for controlling synchronous data transfers between said shared memory bank and said main memory of said host computer, said first interface logic means including:
  (a1) PROM sequencing means, initiated by said master processor means, and functioning to operate a data shifting circuit for bidirectional movement of data words between said main host computer and said shared memory bank;
  (a2) a data shifting circuit having connection means to said host computer and to said shared memory bank;
(b) a second (MLI) interface logic means for controlling asynchronous data transfers between said shared memory bank and a selected line communications processor, said second interface logic means including:
  (b1) control logic means, operating under instructions from said master processor means, and functioning to transfer data between said shared memory bank and said selected line communications processor, wherein said control logic means operates to select the transfer of data in either
    (i) a direct memory access mode, or
    (ii) a non-direct memory access mode;
  (b2) first channel means for transfer of each individual data word, during said non-direct memory access mode, between said shared memory bank and said selected line communications processor, by a single individual instruction from said master processor means to said control logic
  (b3) second channel means for transfer of blocks of data words, during said direct memory access mode, between said shared memory bank and said selected line communications processor by a single individual direct memory access instruction from said master processor means to said control logic means.

4,443,851

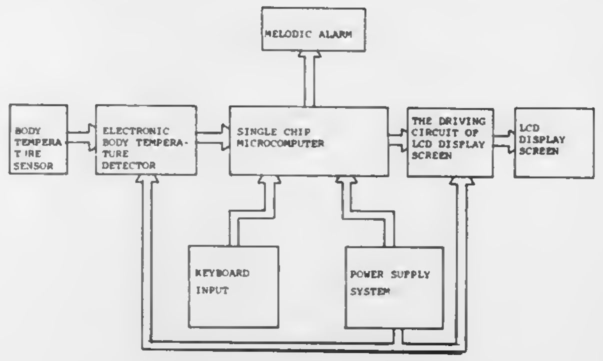
AUTOMATIC RECORDING, INDICATING AND PREDICTING DEVICE FOR GYNECOPHYSIOLOGICAL CYCLES

Kin-Yuan Lin, 14, Nung 33, Lane 269, Li Shan St., Nei Hu, Taipei, Taiwan

Continuation of Ser. No. 165,807, Jul. 3, 1980, abandoned. This application Jul. 29, 1982, Ser. No. 403,037

Int. Cl.^{3} A61B *5/04*

U.S. Cl. 364—415 **1 Claim**


MELODIC ALARM
BODY TEMPERATURE SENSOR
ELECTRONIC BODY TEMPERATURE DETECTOR
SINGLE CHIP MICROCOMPUTER
THE DRIVING CIRCUIT OF LCD DISPLAY SCREEN
LCD DISPLAY SCREEN
KEYBOARD INPUT
POWER SUPPLY SYSTEM

1. A device for analyzing menstrual cycles comprising:
(a) a sensor means for sensing body temperature;
(b) keyboard input means for providing input data representative of the date, time, start of prior menstrual cycles and abnormal body conditions;
(c) microprocessor means having data processing and storage means including memory storage means for storing data representative of body temperature, including abnormal conditions during the previous days in a current menstrual cycle, and data representative of the first day of at least one prior menstrual cycle;
said data processing and storage means also including calendar means for providing calendar data, including at least data representative of the actual date and the safe period between two successive menstruations, for providing a continuous curve of body temperature versus date to provide an indication of the anticipated start of ovulation prior to the start thereof while, in the case of any abnormal condition that may appreciably affect the body temperature, comprising fever factors that occur during the sensing of the body temperature, data representative of any said abnormal condition is fed through the keyboard to instruct the microprocessor to label the date automatically and, in so doing, to provide an indicating flag of abnormal conditions that will correspond to the date thereof;
said microprocessor means also coupled to said sensor and said keyboard means for receiving inputs therefrom and for processing said inputs to provide output data representative of body temperature as a function of date, whereby said device predicts the period of gestation and next menstrual cycle for women, including women having long menstrual cycles, as a function of said calendar data, said body temperature and said first day of at least one prior menstrual cycle;
(d) graphic display means having flag means coupled to said keyboard input means by said microprocessor means for receiving data and displaying said data in a continuous curve of body temperature versus date to provide an indication of the same, the abnormal conditions and the anticipated start of ovulation prior to the start thereof, the graphic display means becoming operative to indicate an abnormal condition on a specific date when instructed to do so by data input at the keyboard, whereby said device detects, records, analyzes and plots body temperature change and abnormal conditions in conjunction with a rhythmic method for measuring, recording and storing the data of the continuously changing body temperature for providing an automatic recording, indicating and predicting device for gynecophysiological cycles.

4,443,852

CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINE

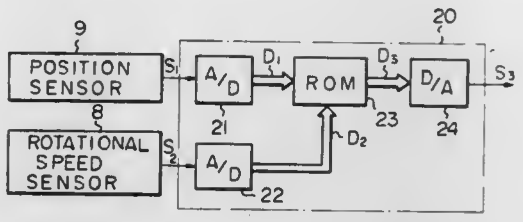
Masayoshi Kobayashi, Kawagoe; Hidekazu Oshizawa, Kumagaya; Kenji Okamoto, Higashimatsuyama, and Akira Sekiguchi, Saitama, all of Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Nov. 24, 1980, Ser. No. 209,967

Claims priority, application Japan, Nov. 29, 1979, 54-165354[U]

Int. Cl.^{3} G05D *13/62;* **F02B** *3/00;* **B60K** *41/08*

U.S. Cl. 364—431.03 **7 Claims**



7. A fuel injection apparatus for feeding fuel to a diesel engine equipped with a torque converter controllable according to the amount of accelerator operation, comprising:
means for producing a position signal indicating the position of an element for controlling the fuel injection amount provided within said fuel injecting apparatus;
means for producing a rotational speed signal indicating the rotational speed of the diesel engine;
means for determining the theoretical degree of depression of the accelerator according to the design specifications by using said position signal and said rotational speed signal on the basis of design data indicating the relationship between the position of said controlling element and the rotational speed, and;
means for applying a signal output from determining means to said torque converter.

4,443,853

OPTICAL DIGITAL SERVO CONTROL SYSTEM

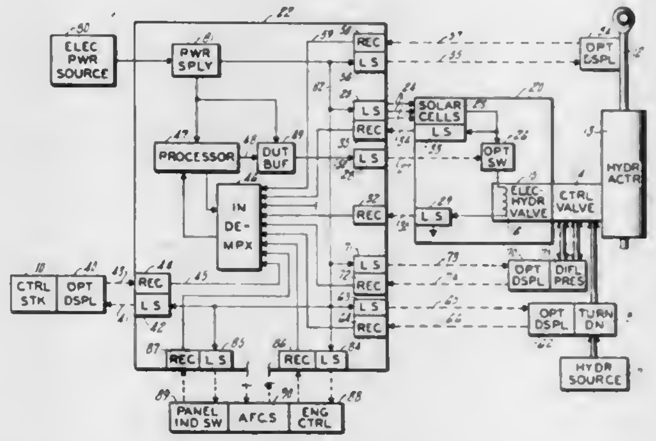
Joseph R. Maciolek, Milford, and Edmond D. Diamond, Huntington, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 247,417, Mar. 25, 1981, abandoned. This application Apr. 20, 1983, Ser. No. 485,137

Int. Cl.^{3} B64C *13/50, 19/00;* **G05D** *1/08*

U.S. Cl. 364—434 **2 Claims**

1. A closed-loop servo actuator system comprising:
a mechanical actuator;
electric signal responsive means for operating said mechanical actuator;
input means for providing a sensible manifestation of a command for said actuator; and
electric signal processing means interconnected between said input means and said electrically responsive means for operating said actuator;
wherein the improvement comprises:
a control means for said actuator;
feedback means disposed for response to said actuator to provide an optical digital signal to said electric signal processing means indicative of the movement of said actuator;
said electric signal processing means comprising means to provide optical power to said feedback means, said control means, and said input means;
said input means comprising an optical transducer responsive to said sensible manifestation for providing a digital optical signal to said electric signal processing means indicative of said sensible manifestation;



said control means comprising means to provide electric power in response to said optical power provided thereto from said electric signal processing means and optically responsive means for selectively applying said electric power to said electric signal responsive means; and
said signal processing means providing, in response to corresponding ones of said optical signals provided thereto, optical signals to said optically responsive means.

4,443,854

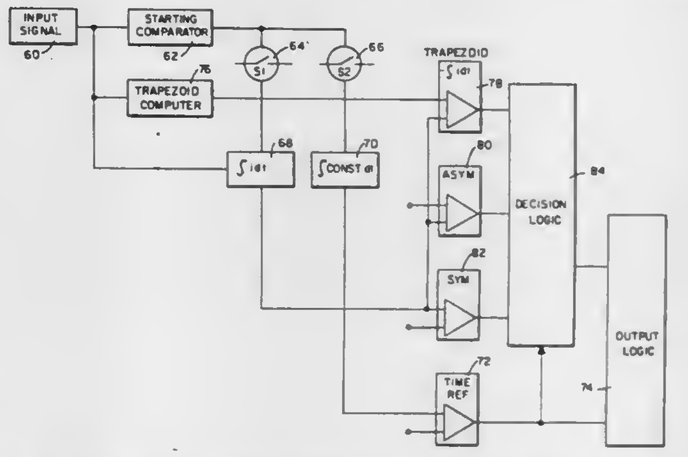
CURRENT SENSOR RESPONSIVE TO SYMMETRICAL AND ASYMMETRICAL CURRENTS AND CURRENT LIMITING PROTECTOR UTILIZING SAME

Herbert M. Pflanz, and Albert B. Lester, both of Westwood, Mass., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jun. 8, 1981, Ser. No. 271,580

Int. Cl.^{3} H02H *3/26*

U.S. Cl. 364—483 **8 Claims**



1. A fault current sensor responsive to excess current comprising
first means for determining symmetry and asymmetry of a current wave,
second means for determining a measure of the root mean square of said current wave, said first means for determining symmetry and asymmetry of a current wave comprising integration means for integrating said current wave over a period of time after current exceeds a preset level, a trapezoid computation means for computing a trapezoidal area defined by said line current at the beginning of said time period and at the end of said time period, and

means for comparing the output of said integration means and the output of said trapezoid computation means,

comparison means operably connected with said second means for comparing said measure of said current wave with first and second reference potential levels for a symmetrical line wave and an assymetrical line wave, respectively, and

logic means operably connected with said first means and said comparison means and responsive to symmetry and asymmetry of said line wave and to said comparison means for generating a signal indicating a fault.

4,443,855

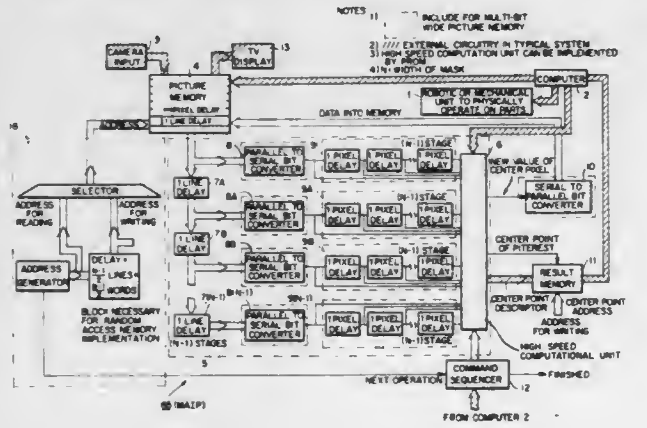
METHOD OF AND APPARATUS FOR CONTROLLING ROBOTIC EQUIPMENT WITH THE AID OF MASK ALGORITHM IMAGE PROCESSING TECHNIQUES

Robert Bishop, 77 Pond Ave., Brookline, Mass. 02146, and Richard Damon, 305 Memorial Dr., Cambridge, Mass. 02139

Filed May 6, 1981, Ser. No. 260,892

Int. Cl.³ G06F *15/46;* H04N *7/18*

U.S. Cl. 364—513 **7 Claims**


NOTES
1) INCLUDE FOR MULTI-BIT WIDE PICTURE MEMORY
2) //// EXTERNAL CIRCUITRY IN TYPICAL SYSTEM
3) HIGH SPEED COMPUTATION UNIT CAN BE IMPLEMENTED BY PROM
4) N= WIDTH OF MASK
CAMERA INPUT
TV DISPLAY
PICTURE MEMORY
1 LINE DELAY
DATA INTO MEMORY
COMPUTER
ROBOTIC OR MECHANICAL UNIT TO PHYSICALLY OPERATE ON PARTS
ADDRESS
SELECTOR
ADDRESS GENERATOR
1 LINE DELAY
SERIAL BIT CONVERTER
1 PIXEL DELAY
(N-1) STAGES
(N-1) STAGE
NEW VALUE OF CENTER PIXEL
SERIAL TO PARALLEL BIT CONVERTER
CENTER POINT OF INTEREST
RESULT MEMORY
ADDRESS FOR WRITING
HIGH SPEED COMPUTATIONAL UNIT
BLOCK NECESSARY FOR RANDOM ACCESS MEMORY IMPLEMENTATION
COMMAND SEQUENCER
NEXT OPERATION
FINISHED
FROM COMPUTER 2

1. Robotic apparatus having, in combination, a robotic mechanism to operate on points of interest in a field; computer means for controlling the robotic mechanism; an image sensor operable to scan the field and provide an analog image of objects within the field; means to convert the analog image to a binary image in the form of binary words each comprising several pixels, said pixels forming multiple adjacent rows; and a mask algorithm image processor that comprises high-speed picture memory means connected to receive the binary words and operable to store the same in a manner that maintains the spatial relationship thereof, and analyzing means for analyzing contiguous overlapping groups of binary bits in successive iterations of the stored binary image, each group comprising at least nine pixels in a three-by-three matrix, thereby to determine the new binary value to be assigned to the center pixel of the group, which new binary value is applied to said center pixel to update the same, said analyzing means including a programmable memory operable to store in real time the present binary value to the center pixel until it is no longer needed in the present iteration and also to apply the new value as memory update in real time; and result memory means that receives information from the analyzing means only as to said points of interest and that stores said information which is in the form of address information and description information with respect to said points of interest to provide an output that is connected as input to the computer in order to cause the robotic mechanism to operate upon said points of interest of objects in real time.

4,443,856

ELECTRONIC TRANSLATOR FOR MODIFYING AND SPEAKING OUT SENTENCE

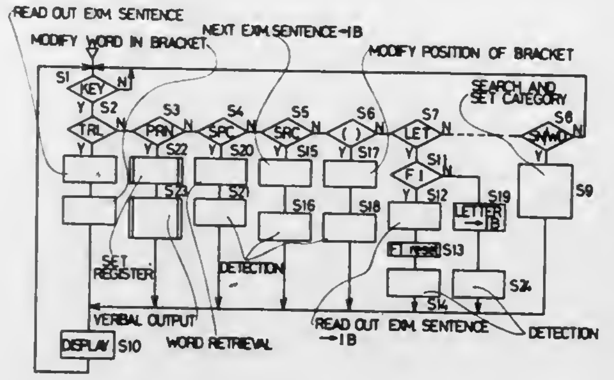
Shintaro Hashimoto, Ikoma; Masafumi Morimoto, Yamatokoriyama; Tosaku Nakanishi, Nara; Hideo Yoshida, Kashihara, and Shigenobu Yanagiuchi, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Ōsaka, Japan

Filed Jul. 10, 1981, Ser. No. 282,238

Claims priority, application Japan, Jul. 18, 1980, 55-99458

Int. Cl.³ G10L *1/00*

U.S. Cl. 364—513.5 **6 Claims**



1. An electronic translator for translation of a desired sentence in a first language to a translated desired sentence in a second language different from the first comprising:

storage means for containing exemplary sentences in said first language and their associated translated exemplary sentences in a second language therein as well as stored words in said first language and their associated translation words;

means for selecting an exemplary sentence stored in said storage means, said desired sentence different from said exemplary sentence by one or more different words;

input means for introducing said different words from said desired sentence which correspond in location in said sentence to replacable words of said exemplary sentence;

means for translating said desired sentence to generate a translated desired sentence including,

means for addressing said storage means to recall said translated exemplary sentence,

means for searching said storage means and comprising each of said different words to said stored words contained therein,

means, monitoring said means for searching, for detecting a coincidence between one of said different words and one of said stored words and recalling its associated translation word from said memory means,

means for replacing each word in said translated exemplary sentence corresponding in meaning to a said replacable word in said examplary sentence with a said translation word to form a translated desired sentence;

voice memory means having synthetic speech representations of said translated desired sentence stored therein; and

voice synthesizer means responsive to said translation means and said voice memory means for producing a synthetic human speed representation of said translated desired sentence.

4,443,857

PROCESS FOR DETECTING THE MELODY FREQUENCY IN A SPEECH SIGNAL AND A DEVICE FOR IMPLEMENTING SAME

Alain Albarello, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Nov. 4, 1981, Ser. No. 318,135

Claims priority, application France, Nov. 7, 1980, 80 23881

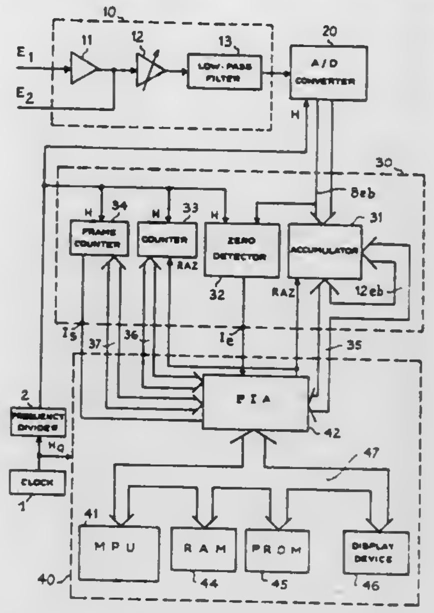
Int. Cl.³ G10L *1/00*

U.S. Cl. 364—513.5 **10 Claims**

1. A process for detecting, in real time, the pitch frequency of a speech signal, comprising the steps of:

measuring a reduced set of data of said signal with said set comprising values of the energy in successive half-waves of said signal and values of the duration of said half-wave;

performing a procedure on said set of data with said procedure including an alternate acquisition phase for performing a first series of test whereby said energy values are compared with a first at least one predetermined value in order to confer an acquired character on said speech signal whenever said first at least one predetermined value is exceeded, and which then calculates a pitch period value, and wherein said procedure further involves a holding phase for performing a second series of tests whereby said energy values which exceed said first at least one predetermined value are compared with a second at least one predetermined value in order to update said pitch period value;



repeating said second series of tests as long as said second at least one predetermined value is exceeded thereby maintaining said acquired character; and

initiating a new acquisition phase when said acquired character is lost because said second at least one predetermined value has not been exceeded.

4,443,858

APPARATUS FOR READING MICROFICHES

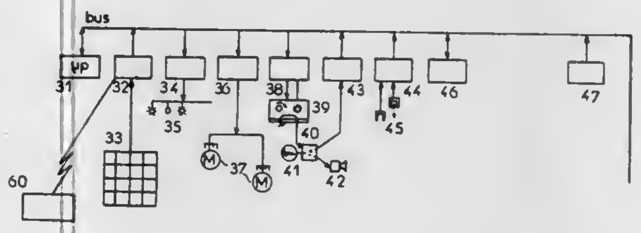
Alain N. Piaton, Puteau, France, assignor to Anfor, Paris, France

Filed May 27, 1981, Ser. No. 267,282

Claims priority, application France, Jun. 2, 1980, 80 12197

Int. Cl.³ G06F *15/40;* G03B *23/08*

U.S. Cl. 364—518 **17 Claims**



1. Apparatus for displaying microfiche data, comprising manually actuable means for actuation by a user to indicate successive desired display regions of at least one microfiche from a set, the regions bearing information which the user needs, a microfiche reader comprising mechanical means for defining the coordinates of the regions to be displayed, means for projecting and presenting the information in said regions, and control means for controlling said mechanical means and said projecting and presenting means, said control means comprising a microprocessor for processing data entered by said manually actuable means, data relating to the operation of the different components of the apparatus and data associated with the information borne by the different regions of the microfiche, characterized in that said control means comprises memory means for storing said data, said microprocessor (**31**) being responsive to said stored data for transmitting to the different elements (**35,37,39**) of the apparatus the instructions necessary for presenting the information sought and also complementary information, said projecting and presenting means having means adapted to present a decision tree within which the user can continue his search according to indications contained in said complementary information.

4,443,859

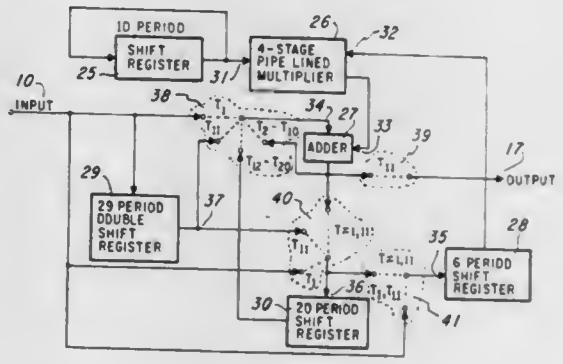
SPEECH ANALYSIS CIRCUITS USING AN INVERSE LATTICE NETWORK

Richard H. Wiggins, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 6, 1981, Ser. No. 280,742

Int. Cl.³ G06F *15/31;* G10L *1/00*

U.S. Cl. 364—724 **17 Claims**



1. A speech analysis device implementing an inverse lattice filter, said speech analysis device comprising:

input means for receiving digital signals repesentative of speech;

memory means storing a plurality of digital speech parameters representative of filter coefficients;

a single multiplier means only, said multiplier means having first and second inputs and an output;

said memory means being coupled to said first input of said multiplier means for providing digital speech parameters thereto;

a single adder means only, said adder means having first and second inputs and an output;

the output of said multiplier means being coupled to said first input of said adder means;

said input means being adapted to be coupled to said second input of said adder means;

first and second delay means respectively adapted to be coupled to the output of said adder means and to said input means;

a first feed-back loop adapted to connect the output of said first delay means to said second input of said adder means;

a second feed-back loop connecting the output of said second delay means to said second input of said multiplier means;

a third feed-back loop adapted to connect the output of said adder means to said second input of said adder means;

first sequentially operable switching means interposed between the output of said adder means and the input of said first delay means and between said input means and the input of said first delay means and sequentially positionable in at least a first switching position connecting the output of said adder means to said first delay means but disconnecting said input means from said first delay means, and a second switching position connecting said input means to said first delay means but disconnecting the output of said adder means from said first delay means;

second sequentially operable switching means interposed between the output of said adder means and the input of said second delay means and between said input means and the input of said second delay means, said second delay means being serially arranged with respect to said first switching means, said second switching means being sequentially positionable in a first switching position connecting the input of said second delay means to the output of said adder means but disconnecting said input means from said second delay means, and a second switching position connecting said input means to said second delay means but disconnecting the output of said adder means from said second delay means;

third sequentially operable switching means interposed between said input means and said second input of said adder means and sequentially positionable in a plurality of switching positions to alternatively connect said input means to said second input of said adder means, to complete said third feed-back loop connecting the output of said adder means to said second input of said adder means, and to complete said first feed-back loop connecting the output of said first delay means to said second input of said adder means; and

fourth switching means interposed in the output of said adder means at a position independent of said first and second switching means, said fourth switching means normally being open but closing at a predetermined time interval to enable the output of said adder means to provide an output signal of the speech analysis device.

4,443,860

SYSTEM FOR HI-SPEED COMPARISONS BETWEEN VARIABLE FORMAT INPUT DATA AND STORED TABULAR REFERENCE DATA

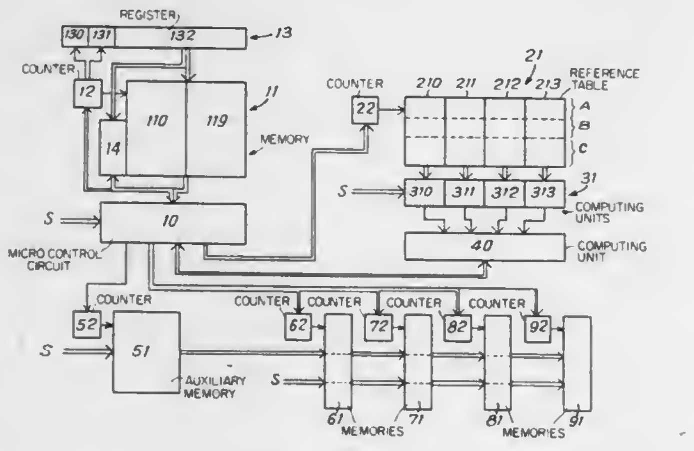
Jacques Vidalin, 12 rue du Palais des Guilhem, Montpellier, France (34000)

Filed Jun. 10, 1980, Ser. No. 158,318

Claims priority, application France, Jun. 19, 1979, 79 15701

Int. Cl.^{3} G06F *7/06, 7/22, 13/00*

U.S. Cl. 364—900 **6 Claims**



1. A method for processing information received from a file which includes data elements of different types, each data element consisting of a fixed or variable number of items of information, each item of information in a given data element having a different respective order, data elements of a first type being arranged in sequences which are identified by a data element of a second type, said method comprising the steps of:

(A) storing reference data elements in a table logically divided into horizontal zones and vertical columns, each horizontal zone storing one or more reference data elements which are of a same said type and which are to be simultaneously compared to a data element received from the file such that eah said horizontal zone is associated with reference data elements of a respective type, each reference data element consisting of a fixed or variable number of items of information, each item of information in a given reference data element having a different respective order, each reference data element being stored vertically in a respective vertical column of the horizontal zone in which it is located with each item of information of that reference data element being located in a respective line of that vertical column, and the vertical order of said horizontal zones following the order in which the data elements of types corresponding to said zones appear in said file;

(B) storing control information in a control memory which is logically divided into a plurality of lines, each line of said memory containing:

(1) first items of control information including: comparison control information identifying the type of comparison to be made between data elements of a same type received from said file and reference data elements of this type stored in a horizontal zone of said table, which zone corresponds to the line of the memory wherein said comparison control information is stored; and storage control information relating to the storage of the data elements received from said file; and

(2) second items of control informaton indentifying operations to be carried out when a comparison operation is completed between one or more data elements received from the file and one or more corresponding reference data elements in said table, said second items of control information including jump control information identifying the next line in said control memory and/or the next horizontal zone in said table which is to be jumped to;

(C) sequentially receiving items of information from said file; and

(D) executing the operations of comparison and/or storage identified by the first items of control information stored in a first line of said control memory, jumping to the next line of said control memory identified by the jump control information stored in said first line of said control memory and then executing the operations identified by the items of control information stored in said next line of said control memory, each operation of comparison being carried out by simultaneously comparing each item of information of a received data element with each item of information of the same order of each reference data element of the same type as the received data element, said step of executing operations of comparison and/or storage being carried out without interrupting the receipt of data elements from said file and without intermediate storage of the received data elements and each item of information received from the file initializing the execution of the operations controlled by the control information contained in said control memory and relating to this item of information.

4,443,861

COMBINED MODE SUPERVISORY PROGRAM-PANEL CONTROLLER METHOD AND APPARATUS FOR A PROCESS CONTROL SYSTEM

Billy R. Slater, Plano, Tex., assignor to Forney Engineering Company, Addison, Tex.

Filed Apr. 13, 1981, Ser. No. 253,964

Int. Cl.^{3} G06F *15/46*

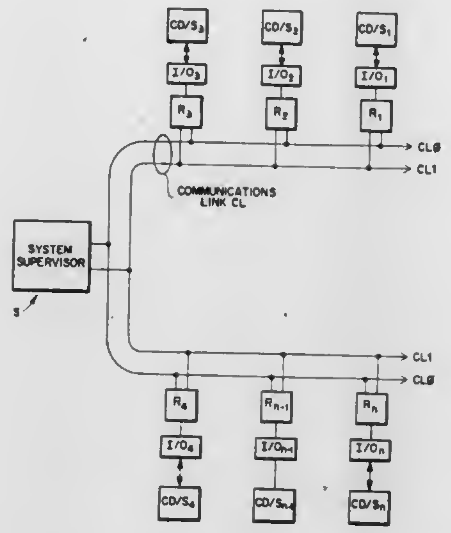
U.S. Cl. 364—900 **5 Claims**

1. A control system for effecting control over an industrial process, said control system comprising:

a plurality of remotely located process controllers interconnected to one another through a common communications link, some of said controllers each connected to at least one controlled device for effecting control thereover, some of said controllers each connected to at least one sensor for receiving sensed information therefrom;

a control system supervisory unit connected to said communications link, said system supervisory unit transmitting and receiving information in coded form to and from said remotely located controllers to effect control over the industrial process;

said system supervisory unit including means for interacting with a system operator including information entry means and information display means;



said system supervisory unit including data processing means containing instruction sets to define a plurality of functional blocks, each block capable of receiving one or more input values, operable to perform a different function on the input values, and produce an output value determined by the input values and the function performed thereon, said data processing means containing instruction sets to define a plurality of process controlling program steps of an assembly language program, said data entry means operable to apply information signals of a first set to said data processing means specifying selected ones of said functional blocks and specifying the source of the input values to the selected functional blocks to thereby determine a first control system architecture for said remotely located controllers, said data entry means being operable to apply information signals of a second set to said data processing means to select a sequence of said program steps and parameters for said program steps to define a second control system architecture for said remotely located controllers, said data processing means being operable to cause said display means to display information indicating what selections with respect to said functional blocks are to be made and have been made by the information signals of said first set and to display information indicating the selections with respect to said program steps to be made and that have been made by the information signals of said second set,

said control system including means to effect control over said industrial process in accordance with said first and second control system architecture determined by the information signals generated by said data entry means.

4,443,862

ULTRASONIC SIGNAL APPARATUS WITH MULTIPLEXER FOR SELECTIVELY LOADING VIDEO LINE SEGMENTS INTO A PARALLEL-PARTITIONED IMAGE STORE

Klaus Buchner, Kleinsendelbach, and Ulrich Saugeon, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 23, 1981, Ser. No. 256,723

Claims priority, application Fed. Rep. of Germany, May 2, 1980, 3017027

Int. Cl.^{3} G06F *15/42*

U.S. Cl. 364—900 **21 Claims**

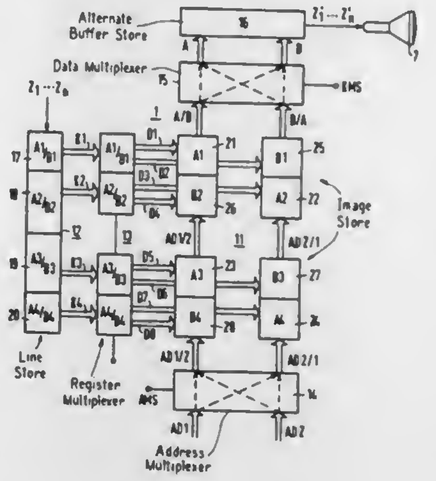
1. Apparatus for the storage of successive digital electric signals representing successive video lines, in particular corresponding to ultrasonic images,

said apparatus comprising:

a line store having a capacity for storing a sequence of digital electric signals representing a video line, said line store comprising a set of line store sections each storing a segment of said sequence of digital electric signals,

an image store having respective image store sections each with a respective individual input data channel leading to the individual image store section, and having signal output means for the supply of image signals at a video display rate, and

a register multiplexer having respective inputs connected with the respective line store sections of said line store, and having respective outputs connected with respective individual input data channels of respective individual image store sections, said register multiplexer in a multiplex cycle loading respective segments representing a video line stored by the set of line store sections in parallel into respective image store sections, and in a series of multiplex cycles loading segments into the image store representing a video image.



4,443,863

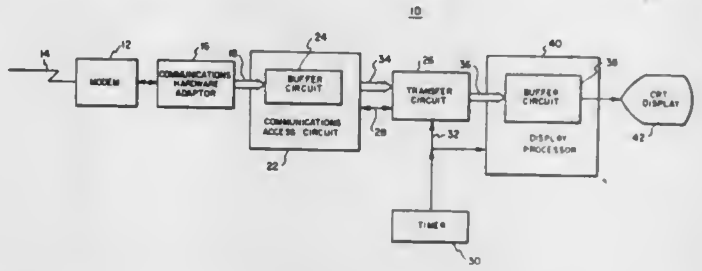
TIMER DRIVEN DISPLAY UPDATING

Dennis G. Busch; Robert J. Grafe, and Gary E. Leikam, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 16, 1981, Ser. No. 274,351

Int. Cl.^{3} G06F *3/14*

U.S. Cl. 364—900 **17 Claims**



1. In a data communications system having at least one data transmit terminal and one data receive terminal, said data receive terminal having display means for displaying received data on a character by character basis, the improvement comprising:

first storage means for storing said received data;

a timer for establishing fixed time intervals;

transfer means connected to said timer for transferring said received data from said first storage means at the end of each of said fixed time intervals; and

second storage means for receiving and storing said received data as transferred by said transfer means from said first storage means;

said display means connected to said second storage means and being activated at the end of each of said fixed time intervals for simultaneously displaying on a display terminal all data stored in said second storage means.

4,443,864
MEMORY SYSTEM FOR MICROPROCESSOR WITH MULTIPLEXED ADDRESS/DATA BUS

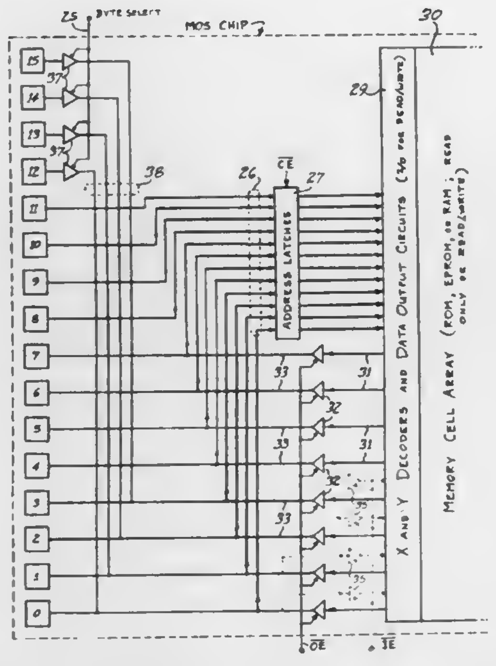
David J. McElroy, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 83,122, Oct. 9, 1979, Pat. No. 4,306,298. This application Oct. 13, 1981, Ser. No. 310,014

The portion of the term of this patent subsequent to Dec. 15, 1998, has been disclaimed.

Int. Cl.^{3} G06F *11/00*

U.S. Cl. 364—900 **16 Claims**



1. A memory device comprising memory means having an M-bit address input and an 8-bit data output, where M is an integer greater than eight, the memory means accessing eight data bits to said output in response to an M-bit address on said input, the device having sixteen address/data terminals, means connecting said 8-bit data output to a selected eight of said terminals, means connecting said M-bit address input to M of said terminals which include said selected eight of said terminals, and gate means selectively connecting certain ones of said terminals to inputs of said M-bit address input.

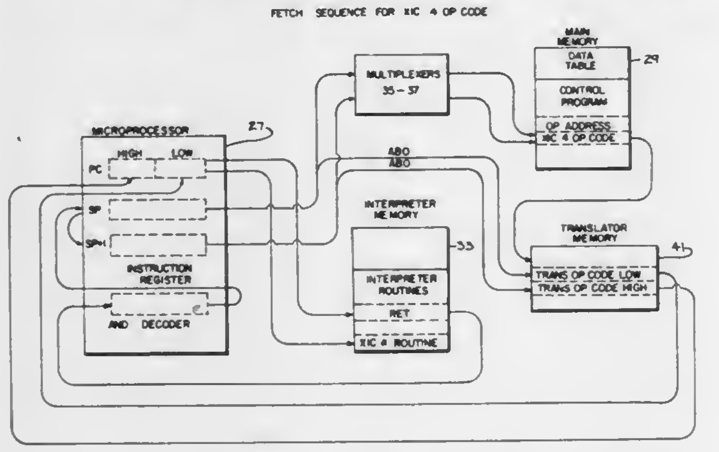
4,443,865
PROCESSOR MODULE FOR A PROGRAMMABLE CONTROLLER

Ronald E. Schultz, Willoughby, and Steven H. Rigg, Willowick, both of Ohio, assignors to Allen-Bradley Co., Milwaukee, Wis.

Filed Oct. 26, 1981, Ser. No. 314,596

Int. Cl.^{3} G06F *9/00*

U.S. Cl. 364—900 **16 Claims**



1. An improved processor for a programmable controller of the type having an I/O interface for connection to a plurality of I/O devices, wherein the processor has first memory means that stores data relating to the status of the I/O devices, wherein the processor also has means for coupling the first memory means and I/O interface enabling transfer of the status data between the first memory means and the I/O interface, and wherein the improvement in the processor comprises:

- second memory means for storing user program instructions for operating on the status data, wherein each user program instruction includes a two-segment operation code;
- third memory means for storing machine instructions organized in interpreter routines which are associated with corresponding operation codes for respective user program instructions, the third memory means also storing a machine fetch instruction for reading both segments of a selected one of the operation codes; and
- microelectronic processor means having a machine instruction pointer register coupled to the third memory means to generate address signals thereto, and having a stack pointer register that is coupled to the second memory means to generate address signals thereto, the microelectronic processor means generating address signals to the third memory means to read machine instructions, and the microelectronic processor means being responsive to reading the machine fetch instruction stored in the third memory means to generate address signals from the stack pointer register to the second memory means to read the segments of the selected one of the operation codes into its machine instruction pointer register and to thereafter execute the interpreter routine in the third memory means that is pointed to by that operation code.

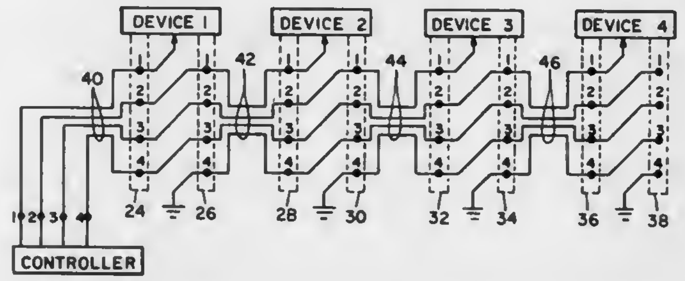
4,443,866
AUTOMATIC DEVICE SELECTION CIRCUIT

Samuel G. Burgiss, Sr., Raleigh, N.C., assignor to Corning Glass Works, Corning, N.Y.

Filed Aug. 27, 1975, Ser. No. 608,149

Int. Cl.^{3} G06F *3/00, 7/00*

U.S. Cl. 364—900 **4 Claims**



1. A device interconnecting system for automatically assigning a unit address to each device depending upon the position of the device in a chain of devices, said system comprising

- control means having N terminals, said control means being capable of energizing any one or more of said N terminals,
- N controlled devices, each having first and second sets of terminals, each of said sets of terminals having N terminals, each terminal in said first and second sets being designated by a different one of the numerals 1 through N, respectively, the first terminal of said first set of terminals being connected to the device with which said set is associated, each of the remaining of said first set of terminals of each device being connected to the next lower numbered terminal of the second set of terminals that is associated with the device,
- N cables, each having N conductive leads therein, one of said cables being connected between said N controller terminals and a first one of said N controlled devices, and each of the remaining (N−1) of said cables being connected between the second set of terminals of a respective one of said N devices and the first set of terminals of the next adjacent one of said N devices, each of said cables having polarized terminations whereby a first lead in each cable is connected between the first terminal of the two sets of terminals to which that cable is connected, the Nth lead in each cable is connected between the Nth terminal of the two sets of terminals to which that cable is connected, and each of the remaining leads in each cable is connected between corresponding terminals of the two sets of terminals to which that cable is connected,
- whereby the first terminal of said control means becomes connected to the first controlled device in the chain of devices extending from said control means, and each of the second through the Nth terminals of said control means becomes connected to the respective one of the second through the Nth controlled devices in the chain of devices extending from said control means so that the unit address of each device is automatically determined in accordance with the position of that device in the chain of devices extending from said control means.

4,443,867
MAGNETIC BUBBLE STORE

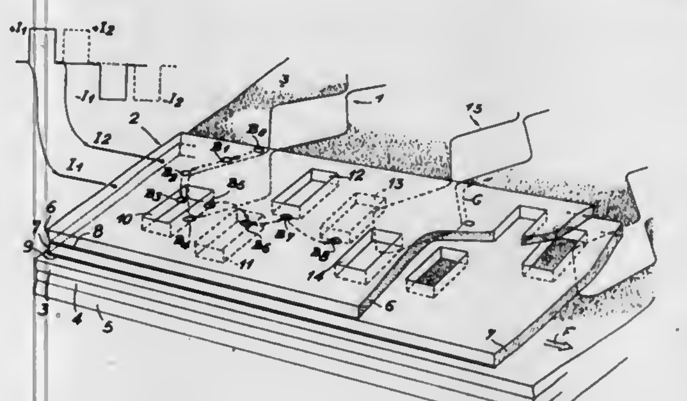
Mokhtar Boshra-Riad, Giza, Egypt; Jean-Marc Fedeli, Saint Egreve, France; Hubert Jouve, Biviers, France, and Daniel Mauduit, Rives sur Fure, France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Apr. 7, 1981, Ser. No. 251,760

Claims priority, application France, Apr. 18, 1980, 80 08765

Int. Cl.^{3} G11C *19/08*

U.S. Cl. 365—19 **6 Claims**



1. A magnetic bubble store comprising:

- a series of longitudinally oriented shift registers each having an access end,
- at least one transversely oriented access contour register having a single access point corresponding to each access end of each longitudinally oriented shift register,
- access means for applying electrical current to said access contour register to control the access to said longitudinally oriented shift registers,
- means for producing displacement of the bubbles in the longitudinally oriented shift registers by applying a rotary magnetic field,
- said longitudinally oriented shift registers comprising motifs defined by ion implantation in a magnetic garnet layer,
- said access means comprising two conductive sheets superimposed on the magnetic garnet layer in the vicinity of the access ends of the longitudinally oriented shift registers, said sheets being insulated from one another and from the magnetic garnet and provided with openings arranged such that at least one of the sheets has openings in the vicinity of the access ends of the longitudinally oriented shift registers, the other openings of said sheets being positioned so as to forward the bubbles which have in this way obtained access to the longitudinally oriented shift registers to an access station or to other longitudinally oriented shift registers in the series.

4,443,868
SEMICONDUCTOR MEMORY DEVICE

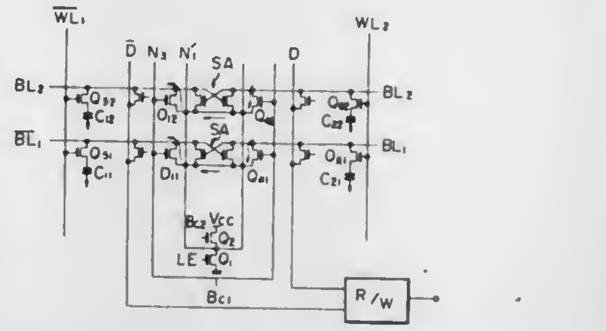
Yoshihiro Takemae, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 4, 1981, Ser. No. 318,004

Claims priority, application Japan, Nov. 4, 1980, 55-154811

Int. Cl.^{3} G11C *7/00*

U.S. Cl. 365—205 **8 Claims**



1. A semiconductor memory device, comprising:

- a plurality of pairs of bit lines, each pair of said bit lines being short circuited and precharged to a potential level before a read operation;
- a plurality of word lines intersecting said bit lines;
- a plurality of dynamic-type memory cells, each of said dynamic-type memory cells being operatively connected to one of said pairs of bit lines and one of said word lines;
- a plurality of sense amplifiers, each of said sense amplifiers operatively connected to a pair of bit lines, each of said sense amplifiers having a terminal to activate the sense amplifier, and each for detecting the potential difference between each pair of said bit lines; and
- a control line, operatively connected to said terminals and said bit lines and crossing both of the bit lines in each of said pairs of bit lines, for activating said sense amplifiers and being commonly used as a control line for short circuiting and precharging each of said pairs of bit lines.

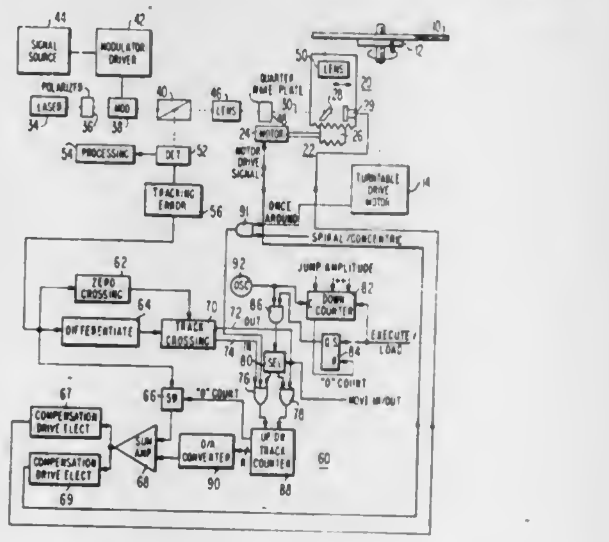
4,443,869
TRACK JUMP SERVO SYSTEM FOR DISC PLAYER

George J. Ammon, Medford, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 28, 1981, Ser. No. 306,356

Int. Cl.^{3} G11B *17/06*

U.S. Cl. 369—41 **7 Claims**



1. In an information playback system for use with a disc-shaped record medium having information stored along a plurality of successive, elongated tracks, each of said tracks being provided in a single rotation of said record medium, an apparatus comprising:

- transducer means for detecting said information stored in said information tracks;
- means for rotating said record medium;

means for providing a track jump signal representative of the number of tracks between first and second read positions wherein said first and second read positions correspond to said transducer means reading information recorded in first and second ones of said plurality of tracks respectively;

means for providing a tracking error signal having a first slope polarity when said transducer crosses over the center of one of said plurality of tracks in a first direction transverse to an elongated direction of said track and having a second slope polarity when said transducer crosses over the center of one of said plurality of tracks in a second direction, said second direction being opposite to said first direction, and said second polarity being opposite to said first polarity;

means for generating a signal pulse when said tracking error signal crosses a zero reference voltage level;

differentiator means for providing a signal output indicative of the slope polarity of said tracking error signal;

and

means responsive to said means for providing a track jump signal and responsive also to said generating means and said differentiator means for establishing radial relative motion between said transducer and said record medium such that said transducer means is relocated from said first read position to said second read position.

4,443,870

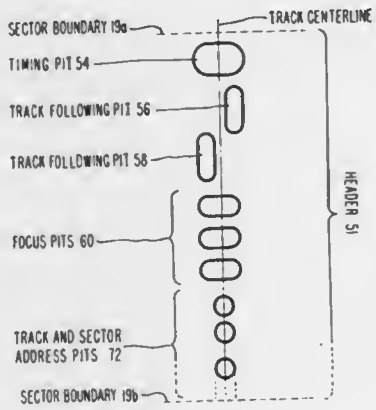
OPTICAL MEMORY SYSTEM PROVIDING TRACK FOLLOWING

Robert L. Hazel, Thousand Oaks, and Edward V. LaBudde, Newbury Park, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Oct. 15, 1981, Ser. No. 311,745

Int. Cl.³ G11B *7/00*

U.S. Cl. 369—44 **6 Claims**



1. In an optical data system, the combination comprising:

an optical recording medium having at least one track containing a plurality of spaced header recordings disposed along the track, each header recording including first and second track following optical holes elongated in a direction parallel to the track and disposed on opposite sides of the track center line in a staggered relationship along the track;

reading means including an optical reading radiation beam for reading optical holes in a track of said recording medium, said reading beam having an intensity such that the beam will not disturb the integrity of recorded optical holes;

means providing for relative movement of said beam along a track, the dimensions and locations of said track following holes being chosen in conjunction with the size of the reading beam so that traversal thereof by said beam produces a reflected beam which varies in a manner dependent upon the accuracy of positioning of said beam relative to the center of said track; and

track positioning means providing for relative movement of said beam transversely to a track;

said reading means including control means responsive to the reflected reading beam obtained when the reading beam traverses said track following optical holes for deriving a track following signal which when applied to said track positioning means acts to maintain the beam on the center line of a selected track;

said control means including integrating means for deriving said track following signal for each header recording based upon the difference between the value obtained by integrating the reflected beam variations obtained as a result of the beam traversing the first track following hole of the header recording and the value obtained by integrating the reflected beam variations obtained as a result of traversing the second track following hole of the header recording.

4,443,871

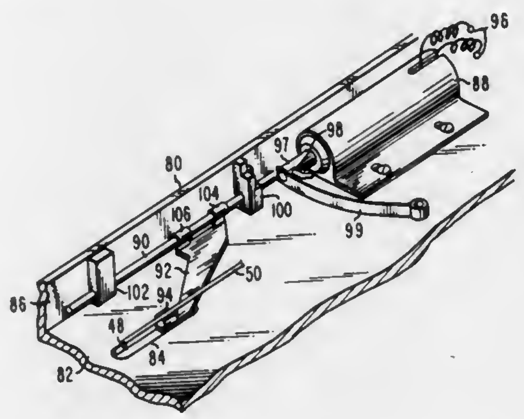
STYLUS LOWERING, LIFTING AND CLEANING APPARATUS

Anil R. Dholakia, East Windsor, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 11, 1982, Ser. No. 338,379

Int. Cl.³ G11B *3/58*

U.S. Cl. 369—71 **6 Claims**



1. In a system for recovering information from a record medium, said system including a pickup arm having a stylus mounted at a first end thereof, said pickup arm being mounted in a radially translatory carriage, said carriage having an opening to permit said stylus to pass out of the confines of said carriage to make contact with said record medium during playback, the apparatus comprising:

end support means coupled to a second end of said pickup arm remote from said stylus for restraining said remote end against vertical translatory motion while allowing said first end to move vertically;

a cleaning pad;

movable support means coupled to said cleaning pad and for supporting said cleaning pad in a position below said pickup arm whereby said cleaning pad supports said pickup arm; and

reciprocating drive means coupled to said movable support means for driving said movable support means in a generally longitudinal direction relative to said pickup arm whereby during motion of said reciprocating drive means towards said stylus said cleaning pad progressively raises said stylus and wipes said stylus in a first direction, and during motion of said reciprocating drive means away from said stylus said cleaning pad wipes said stylus in a second direction and lowers said stylus.

4,443,872

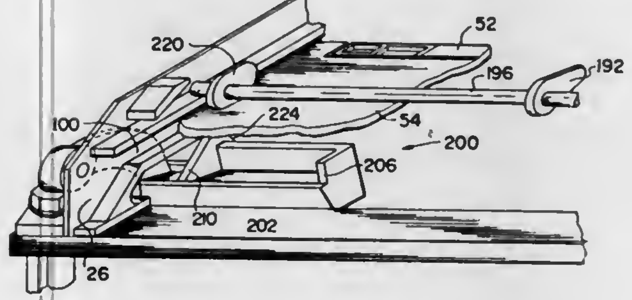
VIDEO DISC PLAYER HAVING CADDY LOCKOUT MECHANISM

Thomas F. Kirschner, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed May 3, 1982, Ser. No. 374,462

Int. Cl.³ G11B *1/00*

U.S. Cl. 369—77.2 **9 Claims**



1. In a disc record player for use with a record caddy; said caddy consisting of a record retaining spine removably located within an outer sleeve; said retaining spine and an associated record forming a record/spine assembly; said player having an input slot through which said caddy is inserted along a path to load a record therein; said player retaining said record/spine assembly when said sleeve is extracted from said player after the insertion of a full caddy therein; wherein an empty sleeve is reinserted into said player to recapture said record/spine assembly; an apparatus comprising:

a lockout member yieldably mounted near said input slot in said player occupying a first position in said caddy insertion path, and a second position outside said caddy insertion path, respectively, in response to the presence of and the absence of a record/spine assembly in said player;

said lockout member having a square edge and a sloping edge respectively disposed substantially perpendicularly and non-perpendicularly with respect to said caddy insertion path when said lockout member is occupying said first position in said caddy insertion path;

the location of said sloping edge being such that the front edge of an empty sleeve, reinserted into said player to retrieve said record/spine assembly, engages said sloping edge of said lockout member, occupying said first position thereof, to deflect said lockout member out of said caddy insertion path; and

the location of said square edge being such that said square edge of said lockout member, disposed in said caddy insertion path in response to the presence of a record/-spine assembly in said player; engages the front edge of a full caddy inserted into said player to preclude further caddy insertion.

4,443,873

OPTICAL SYSTEM FOR OPTICAL DISC READER

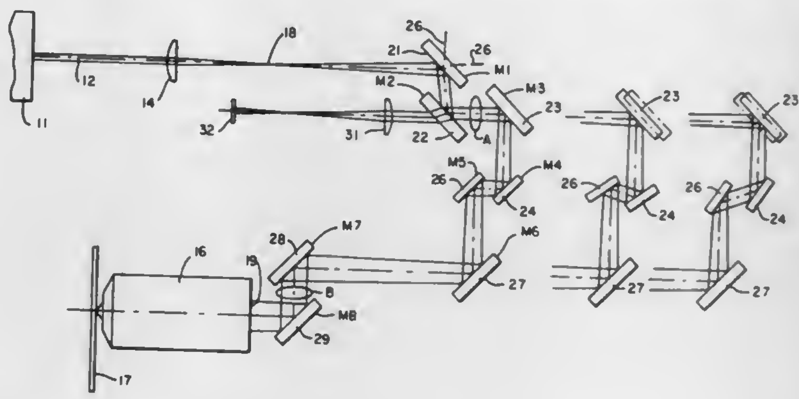
Erik W. Anthon, Santa Rosa, Calif., assignor to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Filed Oct. 20, 1980, Ser. No. 198,477

Int. Cl.³ G11B *7/00*

U.S. Cl. 369—110 **17 Claims**

1. In a reciprocal optical system for use in an optical disc reader of the type having a laser generating a laser beam and a detector for detecting the laser beam, means receiving the laser beam for forming an outgoing beam which travels to the video disc and is reflected thereby to provide a return beam to the detector, said means including at least one polarizing mirror which is impinged by both the outgoing and returning beams; said outgoing and returning beams being characterized by being orthogonally linearly polarized whereby said at least one polarizing mirror serves to separate the returning beam from the outgoing beam, said means including converting means upon which the outgoing beam and the returning beams impinge, said converting means introducing a 90° phase shift in the beams whereby the outgoing beam is converted from a linearly polarized beam to a circularly polarized beam and the returning beam is converted from a circularly polarized beam to a linearly polarized beam, said converting means including at least two mirrors in series providing a combined phase shift of 90°.



4,443,874

INFORMATION-DISC CASSETTE

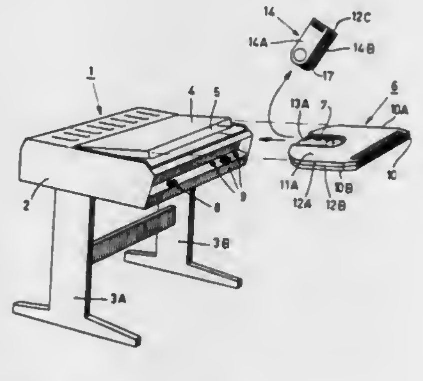
Johannes Steenberg, Apeldoorn, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 19, 1982, Ser. No. 350,449

Claims priority, application Netherlands, Nov. 11, 1981, 8105096

Int. Cl.³ B65D *85/30;* **G11B** *23/02*

U.S. Cl. 369—291 **4 Claims**



1. An information disc cartridge comprising a rotatble disc for storing information which is recorded thereon and/or reproduced therefrom by an information recording and/or reproducing apparatus and a disc enclosure having two major walls each on one side of said disc and a surrounding peripheral wall, each of said major walls having an elongated opening extending radially beyond the center of said disc so as to permit access to said disc by the apparatus for recording and/or reproducing information and to expose the central portion of said disc for engagement thereof by a disc drive member for rotating the disc, said cartridge further comprising a single, radially removable closing member for closing said openings in said major walls, said closing member having a first and second portion each configured to close a respective one of said openings and a peripheral portion disposed between and secured to said first and second portions so that when said closing member is fitted onto said enclosure, said first and second portions simultaneously close said openings in said two major walls, said closing member further having elastically compressible supporting means arranged on the sides of said closing member facing said disc so as to clamp the disc when the closing member has been fitted onto said enclosure.

4,443,875

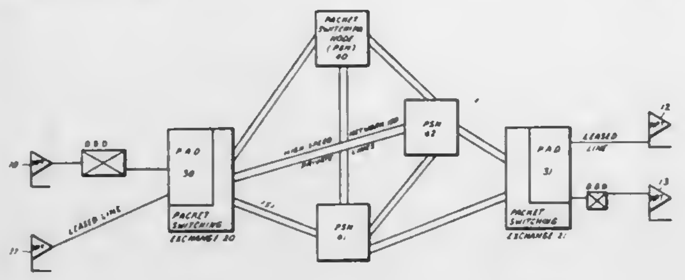
APPARATUS AND METHODS OF CALL CLEARING IN A PACKET SWITCHED DATA COMMUNICATIONS NETWORK

Edmond J. Blausten, Union City, N.J., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Feb. 19, 1982, Ser. No. 350,505

Int. Cl.^{3} H04J *15/00*

U.S. Cl. 370—60 **14 Claims**


PACKET SWITCHING NODE (PSN) 40
PAD 30
PAD 31
PSN 42
PSN 41
LEASED LINE
PACKET SWITCHING EXCHANGE 20
PACKET SWITCHING EXCHANGE 21

1. In a packet-switched data communications system for providing bidirectional communication between a plurality of originating and destination data terminals, said terminals capable of being selectively connected together through a switching network associated with said system, with said originating terminals connected to a packet assembly and disassembly apparatus(PAD) for receiving data from said plurality of terminals and arranging said data into a high speed packet data stream for transmission of said stream to a destination PAD associated with said destination terminals, with said destination PAD operative to retrieve data packets from said stream indicative of data transmitted from any one of said originating terminals and to direct said data to a selected one of said destination terminals, the combination therewith of apparatus for providing a connection release when said originating terminal terminates said connection, comprising:

means responsive to said originating terminal providing a connection release to provide a signal indicative of said release,

timing means responsive to said signal to provide a predetermined delay manifesting a time period sufficient to assure the transmission of data from said originating to said destination terminal, and

means responsive to said predetermined delay having elapsed to provide a clear request signal to said packet switched data communications system, whereby said connection will be released by said system only after the elapse of said predetermined time period.

4,443,876

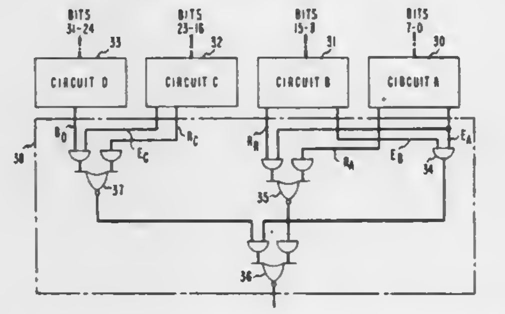
FAST PARITY GENERATION FOR FIND LOW ORDER ZERO CIRCUIT

Ying-Wah Ng, Lisle, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 31, 1981, Ser. No. 298,079

Int. Cl.^{3} G06F *11/00*

U.S. Cl. 371—49 **8 Claims**



1. Apparatus for generating an overall parity indication for a positional address of the lowest order zero appearing on a plurality of inputs, said apparatus comprising

means responsive to signal states on a first plurality of the inputs for generating

at least a first result bit having a state representing parity of the positional address of a lowest order zero appearing in said first plurality of the inputs and at least a first activity bit having a state indicating whether said first plurality of inputs has a lowest order zero appearing therein,

means responsive to a second plurality of inputs for generating

at least a second result bit having a state representing parity of the positional address with respect to all of the inputs of a lowest order zero appearing in said second plurality of the inputs, and

means responsive to at least said first activity bit for selecting the state of either said first result bit or said second result bit as the overall parity indication.

4,443,877

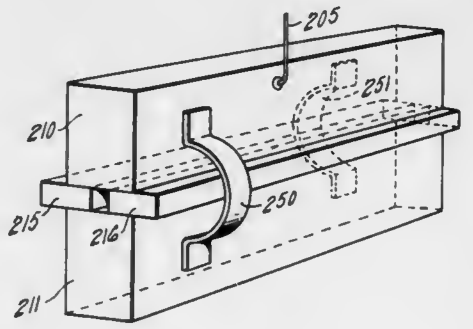
UNIFORMLY EXCITED RF WAVEGUIDE LASER

Peter P. Chenausky, Avon, and Leon A. Newman, South Windsor, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 1, 1982, Ser. No. 344,702

Int. Cl.^{3} H01S *3/09*

U.S. Cl. 372—38 **3 Claims**



1. A radio frequency-excited gas laser comprising:

an optical resonant cavity having an axis passing therethrough and first and second electrodes disposed on opposite sides thereof and a lasing gas therein, said optical cavity having a cavity capacitance;

radio frequency means having an output impedance and being connected to said electrodes at a single feed point for establishing a radio frequency electric discharge of a predetermined driving frequency through said lasing gas, whereby optical radiation is resonated in said optical cavity, said discharge having a discharge resistance in parallel with said cavity capacitance, forming a cavity impedance that is a complex number;

a plurality of inductive elements having a predetermined cavity inductance connected between said electrodes in parallel with said discharge resistance and cavity capacitance to form an electrical resonant circuit having a complex RLC impedance and a predetermined resonant frequency; and

an input impedance circuit connected to at least one of said electrodes and to said radio frequency means, said input impedance circuit having a complex impedance the imaginary part of which has a predetermined relationship to the imaginary part of said cavity impedance at said driving frequency; characterized in that:

said plurality of inductive elements includes a first set having at least one inductive element disposed between said electrodes a first predetermined distance along said axis from a first end of said waveguide and a second set having at least one inductive element disposed betwen said electrodes a second predetermined distance along said axis from a second end of said waveguide opposite said first end.

4,443,878

METHOD OF MIXING A HOT FURNACE GAS WITH ANOTHER GAS BEFORE THE REMOVAL OF THE FURNACE GAS FROM THE FURNACE AND A HOOD THEREFORE

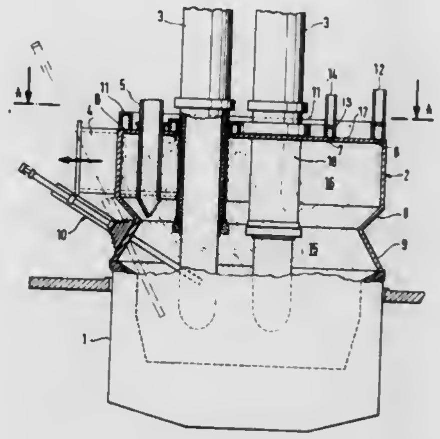
Frans H. Tuovinen, Ulvila; Bengt J. F. Norrman, Helsinki, both of Finland, and Risto M. Heikkilä, Haparanda, Sweden, assignors to Outokumpu Oy, Outokumpu, Finland

Filed Jun. 8, 1981, Ser. No. 271,648

Claims priority, application Finland, Jun. 19, 1980, 801983

Int. Cl.^{3} F27D *7/00*

U.S. Cl. 373—9 **15 Claims**



8. A cylindrical hood for mixing a hot furnace gas with a second gas before the furnace gas is discharged from a furnace which is open at that end which is intended to adjoin the gas space of the furnace, comprising an outlet pipe mounted tangentially to the side wall of the hood for hot gases treated in the hood, and inlets in the circumference of the cover at the opposite end of the hood for feeding the second gas into the hood along its walls and substantially countercurrently in relation to the hot gases coming from the opposite, open end of the hood.

4,443,879

ELECTROTHERMICAL FURNACE

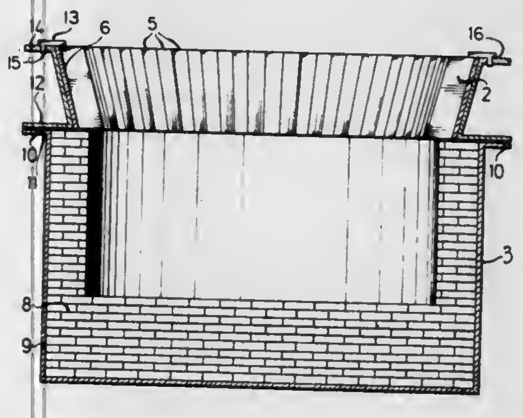
Harald Krogsrud, Gjettum, Norway, assignor to Elkem a/s, Oslo, Norway

Continuation of Ser. No. 232,427, Feb. 9, 1981, abandoned. This application May 23, 1983, Ser. No. 496,334

Claims priority, application Norway, Feb. 21, 1980, 800466

Int. Cl.^{3} F27D *1/04*

U.S. Cl. 373—71 **6 Claims**



1. In an electric smelting furnace, a furnace pot divided into upper and lower sections with the said sections being rotatable with respect to each other, the upper furnace pot comprising:

(a) a peripheral portion in the shape of a truncated cone with the wide portion of the truncated cone at the top thereof;

(b) a circumferential flange extending radially outward from the top of the peripheral portion in a substantially horizontal direction;

(c) a plurality of engaging means positioned about the top of the circumferential flange;

(d) a plurality of refractory lining plates covering the interior of said peripheral portion, each said lining plate being tapered to facilitate easy removal and having a radial dimension at its top greater than the radial dimension at its bottom, each said lining plate covering a radial portion of the interior of said peripheral portion from the top to the bottom of the peripheral portion and each said lining plate comprising a backing plate with a refractory material rigidly secured on the face thereof;

(e) at least some of said lining plates having an engaging flange extending radially outward from the top of the backing plate in substantially the same direction as the said circumferential flange; each said engaging flange having engaging means positioned on the bottom of the engaging flange; and

(f) the engaging means of the engaging flange engaging the engaging means of the circumferential flange in easily removable relationship.

4,443,880

LIQUID-COOLED COVER FOR ARC FURNACES

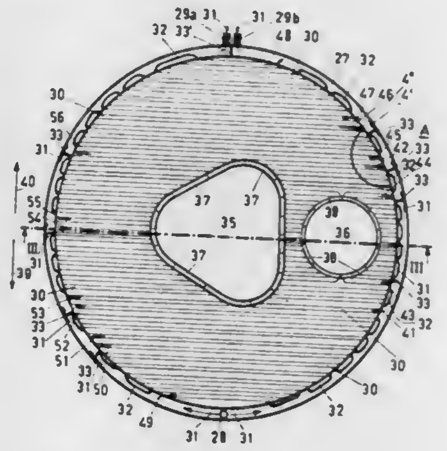
Karl Bühler, Nussbaumen, and Karl Oldani, Baden, both of Switzerland, assignors to BBC Brown, Boveri & Company, Ltd., Baden, Switzerland

Filed Jan. 24, 1983, Ser. No. 460,301

Claims priority, application Switzerland, Jan. 29, 1982, 553/82

Int. Cl.^{3} F27D *1/02, 1/12*

U.S. Cl. 373—74 **21 Claims**



1. A liquid cooled cover for an electric furnace having a tipping direction, comprising:

a cover member having a peripheral cover ring serving as a cooling liquid distributing conduit, said cover member at least partially constructed of a fireproof construction material; and

cooling means disposed in said cover member for cooling said cover member, comprising,

plural cooling pipes horizontally disposed in said cover member perpendicular to said tipping direction, said cooling pipes spaced at a predetermined distance from each other and embedded in said fireproof construction material thereby to reinforce said fire proof construction material,

said cooling pipes connected by groups in series wherein respective groups have inlets and outlets in communication with said cooling liquid distributing conduit, and

said cover member having at least one inlet and at least one outlet by which cooling liquid is exclusively supplied and removed to and from said cooling liquid distributing conduit.

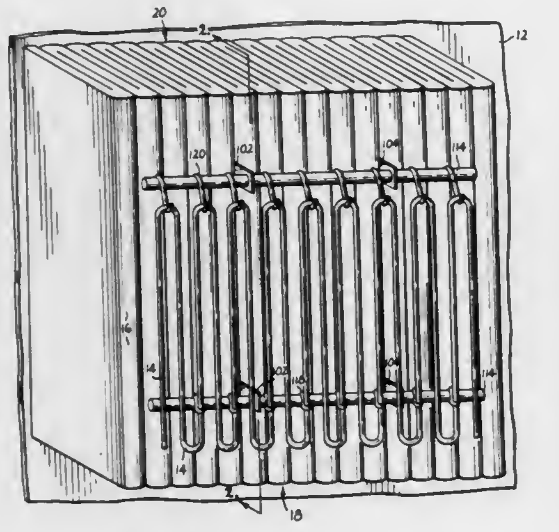
4,443,881
SUSPENSION SYSTEM FOR ELECTRIC HEATING ELEMENTS

Donald R. Northcutt, 7345 Brittany, Shawnee Mission, Kans. 66203

Filed Jun. 1, 1982, Ser. No. 383,478

Int. Cl.³ F27D *11/02;* H05B *3/06*

U.S. Cl. 373—130 **15 Claims**



1. For use with an attachment system for affixing an insulation module to a furnace wall with said attachment system having at least one module support member therein, a suspension system for supporting a furnace heating element array adjacent the hot face of said module comprising:

first and second laterally spaced-apart suspension arms each having first and second longitudinally spaced-apart ends therein;

means for pivotally mounting said suspension arm first ends to said module support member in a manner to preclude interference by said module with said pivotal movement;

a cross bar member;

means for mounting said cross bar member between said second ends of said suspension arms, said cross bar member transversing said hot face of said module upon pivotal movement of said suspension arms and concurrent movement of said second ends of said suspension arms to a position adjacent said hot face; and

at least one hanger element engageable with said cross bar member for suspending said heating elements therefrom in said position adjacent said hot face of said module.

4,443,882
SINGLE TERMINAL NEGATIVE CAPACITANCE GENERATOR FOR RESPONSE TIME ENHANCEMENT

Robert M. Rolfe, Summit, and Masakazu Shoji, Warren, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 22, 1981, Ser. No. 333,400

Int. Cl.³ H04L *25/08;* H03H *11/48*

U.S. Cl. 375—36 **2 Claims**

2. A digital system comprising:

a digital transmitter having an MOS a field effect output transistor coupled to an output terminal thereof which has a capacitance associated therewith;

a digital receiver having an input terminal which has a capacitance associated therewith;

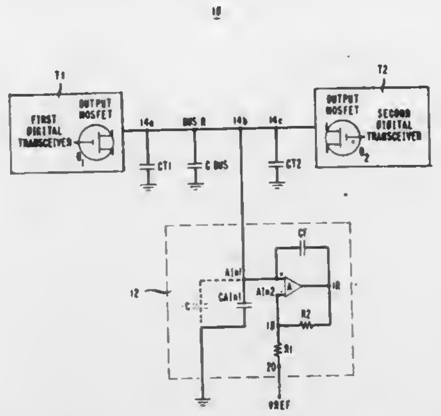
a data bus conductor having two ends and having a capacitance associated therewith and being coupled by one end to the output terminal of the transmitter and being coupled by the other end to the input terminal of the receiver;

an amplifier having a first input terminal and having an output terminal;

capacitor means having first and second terminals coupled to the input terminal and output terminal of the amplifier, respectively;

only the first input terminal of the amplifier being coupled to the data bus conductor;

the amplifier has a gain of approximately two or greater; and



the amplifier has a response time which is approximately two times or greater less than a desired response time of information transmitted from the transmitter to the receiver.

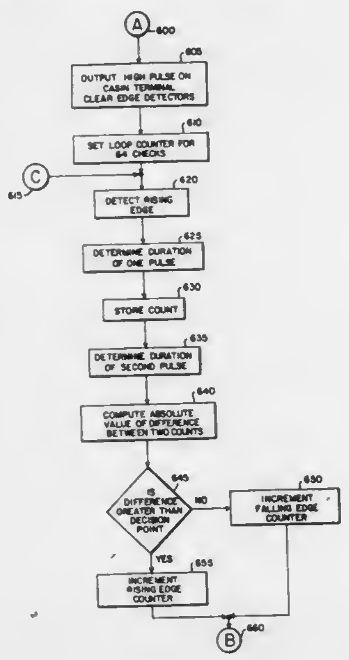
4,443,883
DATA SYNCHRONIZATION APPARATUS

Michael F. Berger, Fort Worth, Tex., assignor to Tandy Corporation, Fort Worth, Tex.

Filed Sep. 21, 1981, Ser. No. 304,265

Int. Cl.³ G08C *25/00;* G06F *3/00;* H04L *7/00;* G11B *5/06*

U.S. Cl. 375—116 **23 Claims**


A
600
605
OUTPUT HIGH PULSE ON CASIN TERMINAL CLEAR EDGE DETECTORS
610
SET LOOP COUNTER FOR 64 CHECKS
C
615
620
DETECT RISING EDGE
625
DETERMINE DURATION OF ONE PULSE
630
STORE COUNT
635
DETERMINE DURATION OF SECOND PULSE
640
COMPUTE ABSOLUTE VALUE OF DIFFERENCE BETWEEN TWO COUNTS
645
IS DIFFERENCE GREATER THAN DECISION POINT
NO
650
INCREMENT FALLING EDGE COUNTER
YES
655
INCREMENT RISING EDGE COUNTER
B
660

1. In a digital information processing system wherein digital information is encoded by an encoding waveform in a series of bit cells having one of two distinct time durations, each bit cell containing a portion of said encoding waveform and the inverse of said portion, said waveform having signal transitions of positive and negative polarity, said system having means for inserting into said bit cell series a predetermined synchronization pattern consisting of bit cells having one of said time durations, alternating with bit cells having the other of said time durations, and synchronizing apparatus for detecting cell boundaries in said bit cell series and in the inversion of said series comprising,

means responsive to said encoding waveform for timing at least two time durations occurring between successive pairs of signal transitions of the same polarity,

means responsive to timed durations of portions of said synchronization pattern for computing the difference of said time durations, and

means responsive to said difference for locating said bit cell boundaries.

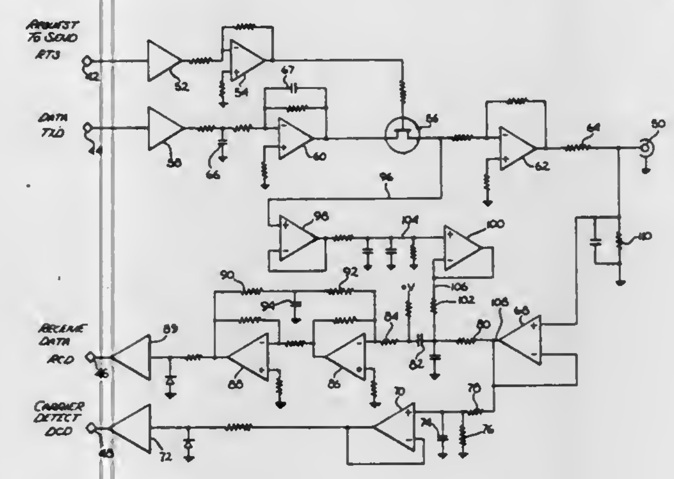
4,443,884
DATA LINE INTERFACE

Richard L. Swarz, Encino, Calif., assignor to Protocol Computers, Inc., Woodland Hills, Calif.

Filed Mar. 18, 1982, Ser. No. 359,576

Int. Cl.³ H04L *5/14*

U.S. Cl. 375—121 **7 Claims**



1. An interface comprising

first means for coupling to a coaxial cable,

second means for coupling to an RS-232 data line to receive data coupled to said second means for transmission on a coaxial cable,

third means for coupling to an RS-232 request to send line,

fourth means coupled to said first means for coupling data received from a coaxial cable to an RS-232 receive data line,

said third means being responsive to a signal on an RS-232 request to send line to couple said second means to said first means, whereby data received on an RS-232 data line will be coupled to a coaxial cable in response thereto,

said interface further having signal means coupled to said fourth means, and responsive to a data signal received by said second means and coupled to said first means, said signal means being a means for providing a signal to said fourth means to prevent the data signal coupled from said second means to said first means for transmission on a coaxial cable from being coupled to said RS-232 receive data line, whereby said fourth means will couple data received from a coaxial cable to an RS-232 data line independent of the simultaneous transmission of data to a coaxial cable by said interface.

4,443,885
CHARGE TRANSFER METHOD AND DEVICE FOR CARRYING OUT THE METHOD

Arthur H. M. van Roermund, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

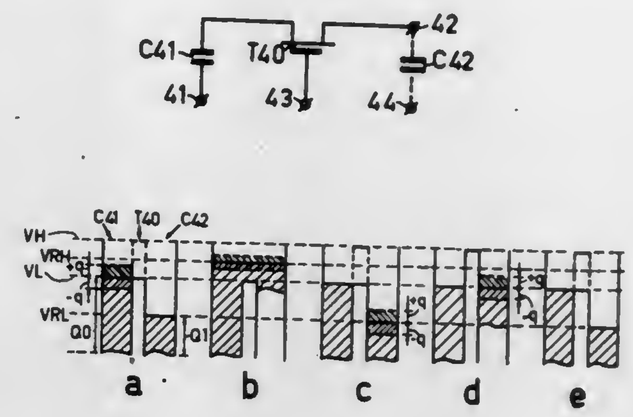
Continuation of Ser. No. 138,027, Apr. 7, 1980, abandoned. This application Sep. 28, 1982, Ser. No. 425,148

Claims priority, application Netherlands, Apr. 17, 1979, 7902968

Int. Cl.³ G11C *19/28;* H01L *29/78;* H03K *3/353*

U.S. Cl. 377—57 **53 Claims**

1. A method of transferring a signal charge from a first capacitance having an initial reference charge to a first point via a transistor circuit which exhibits a first threshold level, at least during said transfer to the first point, said signal charge being within a range of values such as to either add to or subtract from said initial reference charge on said first capacitance, and comprising a first phase in which the transistor circuit is biased such that charge transfer from the first point to the first capacitance is effected in such a way that the first capacitance is charged to at least said threshold level from said first point, and a second phase in which the transistor circuit is biased such that the first capacitance is discharged to said threshold level towards the first point.



4,443,886
CHARGE TRANSFER DEVICE IMAGER WITH BIAS CHARGE

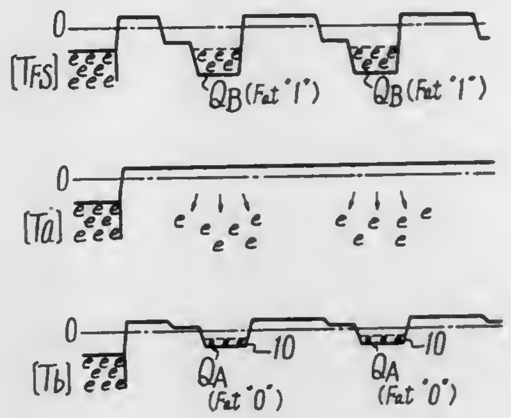
Hiroyuki Matsumoto, Atsugi; Motoaki Abe, Hiratsuka, and Tetsuo Ando, Ebina, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 5, 1981, Ser. No. 318,436

Claims priority, application Japan, Nov. 7, 1980, 55-157437

Int. Cl.³ G11C *19/28;* H01L *29/78*

U.S. Cl. 377—58 **2 Claims**



1. In a charge transfer device in which a plurality of electrodes are located on an insulating layer on a semiconductor substrate and an input portion and a transfer portion are provided, said charge transfer device, comprising:

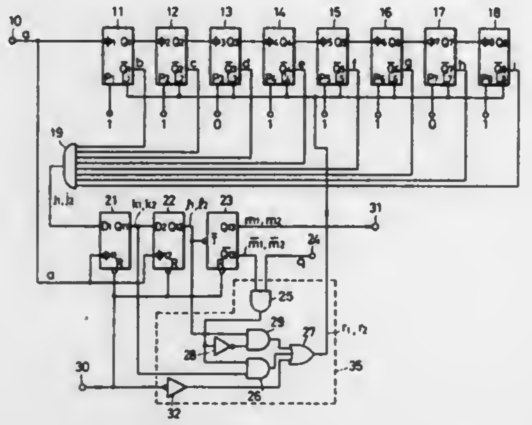
(a) means for introducing a predetermined amount of charge determined by a potential applied to the input portion into a portion beneath a predetermined electrode while driving an electrode on the transfer portion;

(b) means for applying such a potential to all of said plurality of electrodes that surface areas beneath said electrodes each become an accumulation state to thereby inject all of charge into said substrate;

(c) means for applying a potential to said electrodes after a predetermined period of time to partially catch injected charge beneath said electrodes and to use caught charge as a bias charge.

4,443,887
FREQUENCY-DIVIDING CIRCUIT

Takami Shiramizu, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan
Filed Jun. 12, 1981, Ser. No. 272,831
Claims priority, application Japan, Jun. 16, 1980, 55-81041
Int. Cl.^{3} H03K ***21/36***
U.S. Cl. 377—110 **7 Claims**

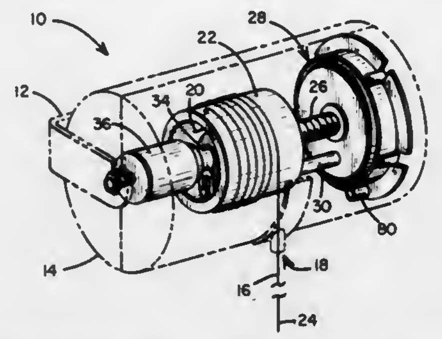


1. A frequency-dividing circuit comprising:
asynchronous counter means having a plurality of one-half frequency-dividers connected in series in a plurality of stages in which a master clock signal is applied to an input terminal of the initial stage, for asynchronously producing output signals of each one-half frequency-dividers, said asynchronous counter means being set with a preset data n (n is an integer) which is preset according to a desired frequency-dividing ratio when applied with a load pulse;
an AND-circuit for detecting the coincidence of a plurality of outputs supplied from said asynchronous counter means; and
frequency-divided output signal and load pulse generation means supplied with said master clock signal and an output signal of said AND-circuit, for generating a frequency-divided output signal and a load pulse, said frequency-divided output signal and load pulse generation means supplying a load pulse to said asynchronous counter means,
said frequency-divided output signal and load pulse generation means comprising a shifting circuit supplied with an output of said AND-circuit and the master clock signal, for shifting the signal supplied thereto by a predetermined quantity by being synchronized with the output of said AND-circuit and the master clock signal, a trigger-type flip-flop circuit for producing a frequency-divided output signal by reversing state in response to a final shifted output signal obtained from said shifting circuit, and a load pulse generation circuit supplied with the output signal of said shifting circuit and the frequency-divided output signal of said trigger-type flip-flop circuit, for producing the load pulse,
said shifting circuit having a first shift register supplied with the output of said AND-circuit and the master clock signal, and a second shift register supplied with an output of said first shift register and the master clock signal,
said trigger-type flip-flop circuit being supplied with an output of said second shift register.

4,443,888
SID MONITOR

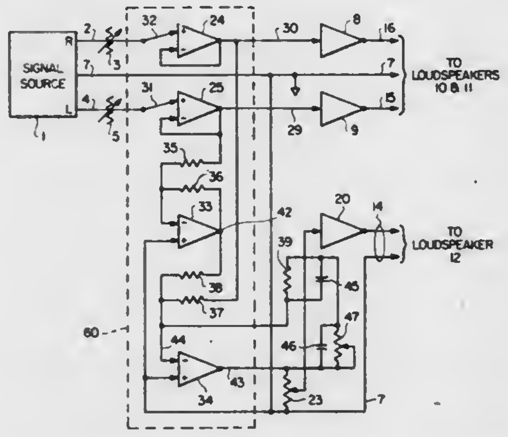
James W. Cutter, Hollister, Calif., assignor to Litton Industrial Products, Inc., Beverly Hills, Calif.
Filed Mar. 29, 1982, Ser. No. 362,808
Int. Cl.^{3} G03B ***41/16;*** **G01B** ***5/02***
U.S. Cl. 378—151 **9 Claims**

1. In a continuous source to image distance monitor for use in self-adjusting X-ray equipment utilizing a housing having an aperture fixed therein for receiving a distance measuring wire maintained in tension by a takeup spring, the improvement in combination therewith comprising:
a self traversing, smooth-surfaced constant-diameter takeup cylinder receiving a tension-maintaining torque through an eccentric link means connected to said takeup spring and constrained to move in a helical motion past said housing aperture as said wire moves through said aperture so that said wire is wound in a single layer on said cylinder.



4,443,889
ACOUSTIC APPARATUS AND METHOD

Donald E. Norgaard, Mountain View, Calif., assignor to Nortech Laboratories Ltd., San Francisco, Calif.
Filed Apr. 21, 1980, Ser. No. 142,131
Int. Cl.^{3} H04M ***1/00***
U.S. Cl. 381—24 **4 Claims**



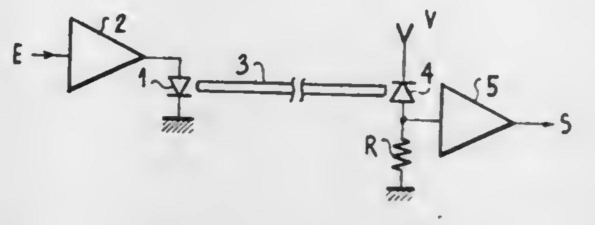
1. The method of processing two signal voltages representing respective left and right stereophonic channels to produce a third signal voltage linearly related to an instantaneous algebraic difference between said two signal voltages, comprising in sequence:
reversing polarity of one of said two signal voltages to produce a reverse-polarity replica thereof;
summing current proportional to said reverse-polarity replica with current proportional to another one of said two signal voltages; and
providing a circuit path for resulting current sum through a common impedance to produce said third signal voltage thereacross.

4,443,890
OPTICAL-CONNECTION DIRECT-LIGHT MODULATION INFORMATION TRANSMISSION SYSTEM WITH A PASSBAND EXTENDED TOWARDS THE LOW FREQUENCIES AND CONTINUOUS WAVES

Grégoire Eumurian, Paris, France, assignor to Thomson-CSF, Paris, France
Filed Dec. 1, 1981, Ser. No. 326,203
Claims priority, application France, Dec. 2, 1980, 80 25560
Int. Cl.^{3} H04B ***9/00***
U.S. Cl. 455—613 **8 Claims**

1. A direct-light modulation information transmission system comprising:

optical emission means having an output emitting diode for converting electrical signals to be transmitted into optical signals by direct modulation;
an optical connection for transmission of the said optical signals;
optical receiver means having an input photodiode for converting conversely said transmitted optical signals into electrical signals; and
means to prevent signal deformations which may result from temperature junction of said respective diodes, so as to extend the passband of the system to low frequencies and continuous waves, said means comprising:
first filtering means for avoiding non-linear thermal effects from said diodes, said first filtering means comprising high-pass filter means, coupled to said emission means, for reducing the level of said electrical signals whose frequency is lower than a predetermined low-frequency value, and first low-pass filter means, coupled to said receiver means, and having a reverse transfer function of said high-pass filter, for reestablishing the level of said low frequency electrical signals, and
second filtering means for compensating linear thermal effects from said diodes, said second filtering means comprising at least one second low-pass filter means, coupled to said receiver means, for compensating the linear thermal effects produced by said emitting diode on low-frequency electrical signals passing through said high-pass filter.



DESIGN PATENTS

GRANTED APR. 17, 1984

ERRATA

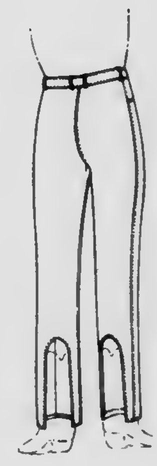
For CLASS	See PATENT NO.
D07–311	273,495

DESIGNS

APRIL 17, 1984

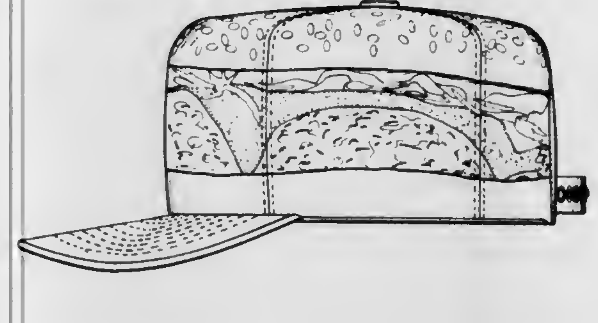
273,434
JEANS

Minnie Galbreath, 810 N. Hickory Ave., Compton, Calif. 90220
Filed Dec. 28, 1981, Ser. No. 334,702
Term of patent 14 years
U.S. Cl. D2—28



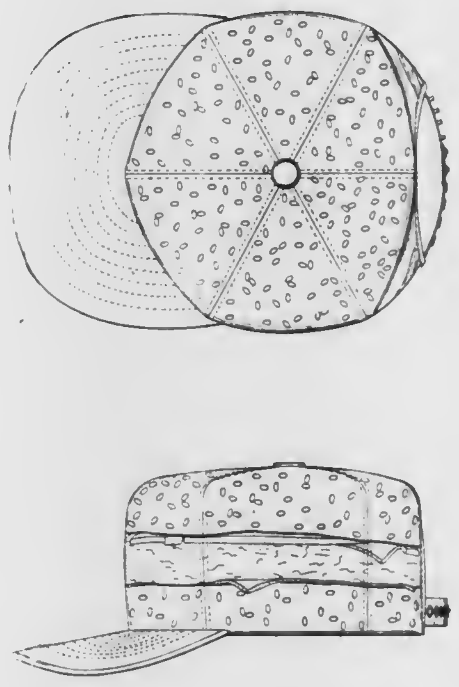
273,435
CAP

Charles J. Lipschutz, Louisville, Ky., assignor to Louisville Manufacturing Company, Inc., Louisville, Ky.
Division of Ser. No. 113,134, Jan. 17, 1980, Pat. No. Des. 267,285, which is a continuation-in-part of Ser. No. 946,955, Sep. 29, 1978, abandoned. This application Oct. 8, 1981, Ser. No. 309,832
Term of patent 14 years
U.S. Cl. D2—248



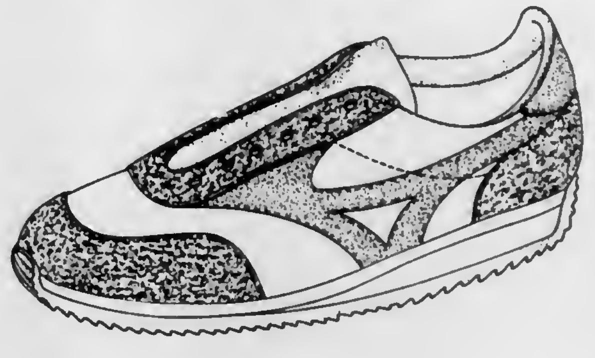
273,436
CAP

Charles J. Lipschutz, Louisville, Ky., assignor to Louisville Manufacturing Company, Inc., Louisville, Ky.
Division of Ser. No. 113,134, Jan. 17, 1980, Pat. No. Des. 267,285, which is a continuation-in-part of Ser. No. 946,955, Sep. 29, 1978, abandoned. This application Oct. 8, 1981, Ser. No. 309,833
Term of patent 14 years
U.S. Cl. D2—248



273,437
SPORT SHOE

Noboru Kohno, Nishinomiya, Japan, assignor to Mizuno Corporation, Osaka, Japan
Filed Nov. 19, 1981, Ser. No. 323,136
Claims priority, application Japan, May 20, 1981, 56-21796
Term of patent 14 years
U.S. Cl. D2—309



273,438

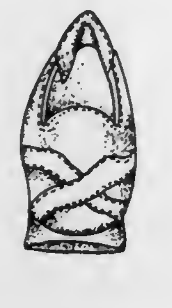
ATHLETIC SHOE

Robert J. Gamm, St. Louis County, Mo., assignor to Kangaroos U.S.A., Inc., St. Louis, Mo.

Filed Apr. 1, 1982, Ser. No. 364,489

Term of patent 14 years

U.S. Cl. D2—309



273,439

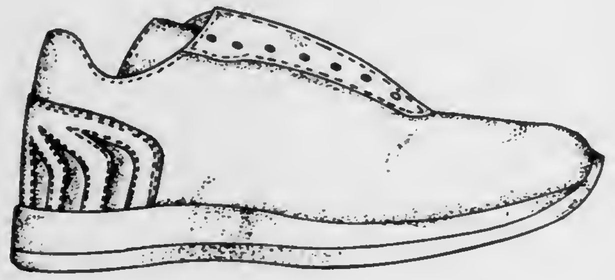
ATHLETIC SHOE

Robert J. Gamm, St. Louis County, Mo., assignor to Kangaroos U.S.A., Inc., St. Louis, Mo.

Filed Apr. 1, 1982, Ser. No. 364,490

Term of patent 14 years

U.S. Cl. D2—309



273,440

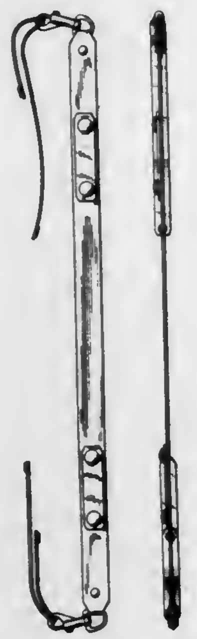
CAMERA STRAP

Richard C. Fulwiler, Box 141, Madison, Wis. 53701

Filed Dec. 26, 1978, Ser. No. 973,380

Term of patent 14 years

U.S. Cl. D2—400



273,441

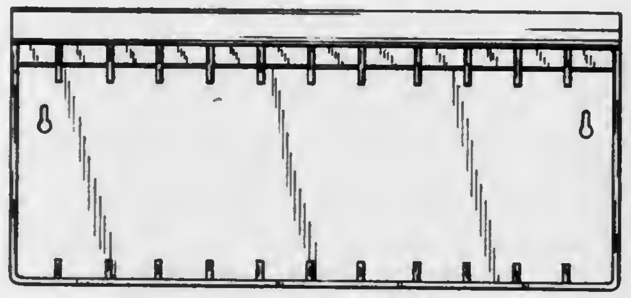
TAPE CARTRIDGE HOLDER FOR AN AUTOMOBILE

Gerald R. Anderson, 1621 Rock Hollow, Norman, Okla. 73071

Filed Jun. 12, 1981, Ser. No. 273,007

Term of patent 14 years

U.S. Cl. D3—35



273,442

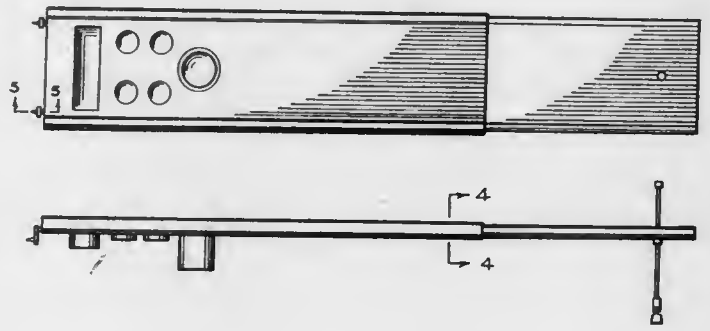
AUTOMOBILE TRAY

Warren C. Schroeder, Gellett Suite C-603, 2400 Virginia Ave. NW., Washington, D.C. 20037

Filed Apr. 14, 1981, Ser. No. 254,090

Term of patent 14 years

U.S. Cl. D3—40



273,443

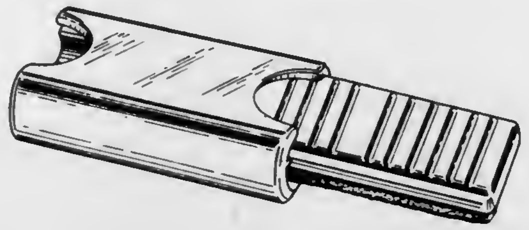
POCKET CLOTHES BRUSH

Leonhard Hagedorn, Niederneisen, and Rolf-Günter Schülein, Singhofen, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Mar. 10, 1981, Ser. No. 242,499

Term of patent 14 years

U.S. Cl. D4—23.1



273,444

CHAIR

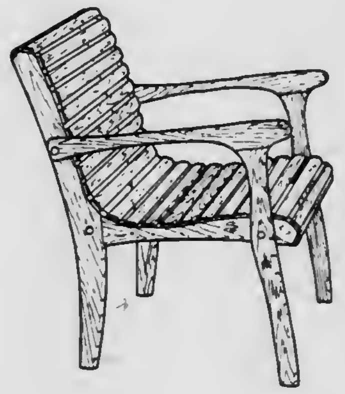
Walter F. Harper, Jr., Highway 211, Eagle Springs, N.C. 27242, and Thomas W. Winecoff, 2316 Ravenhill Dr., Raleigh, N.C. 27609

Filed Jul. 6, 1981, Ser. No. 280,465

The portion of the term of this patent subsequent to Sep. 13, 1997, has been disclaimed.

Term of patent 14 years

U.S. Cl. D6—70



273,445

COMBINED HOLDER FOR TOOTHBRUSHES AND DRINKING GLASSES

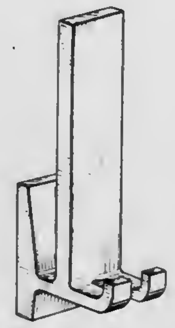
Oskar R. Lohman, Nacka, Sweden, assignor to AB Trama, Nacka, Sweden

Division of Ser. No. 130,040, Mar. 13, 1980, Pat. No. Des. 269,143. This application May 19, 1981, Ser. No. 265,082

Claims priority, application Sweden, Sep. 13, 1979, 79-2033; Nov. 16, 1979, 79-2525

Term of patent 14 years

U.S. Cl. D6—92



273,446

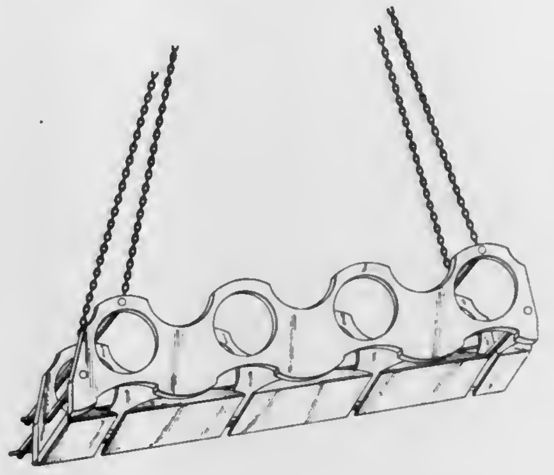
SUSPENDED WINE BOTTLE AND GLASS RACK COMBINATION

Carl A. Rankin, and Douglas B. Rankin, both of 29075 Buchanan Dr., Bay Village, Ohio 44140

Filed Dec. 21, 1981, Ser. No. 332,493

Term of patent 14 years

U.S. Cl. D6—113



273,447

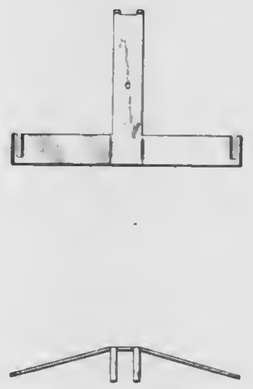
WALL MOUNTED DISPLAY HOLDER FOR VISORED CAPS

Harry P. Capers, Jr., 9615 Richmond, Houston, Tex. 77063

Filed Feb. 22, 1982, Ser. No. 351,198

Term of patent 14 years

U.S. Cl. D6—116



273,448

TABLE

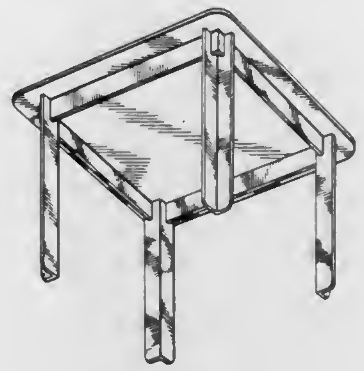
Ross M. Colquhoun, 412 Richmond St. East, Toronto M5A 1P8, Ontario, Canada

Filed Jul. 14, 1981, Ser. No. 283,252

Claims priority, application Canada, Jan. 22, 1981, 220181

Term of patent 14 years

U.S. Cl. D6—177



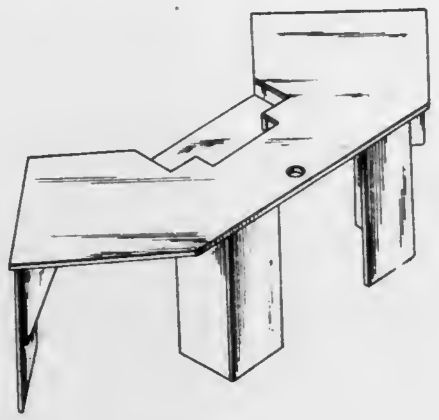
273,449
DATA TERMINAL DESK

Casey J. Wieczorek, Basking Ridge, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Sep. 22, 1980, Ser. No. 189,517

Term of patent 14 years

U.S. Cl. D6—188



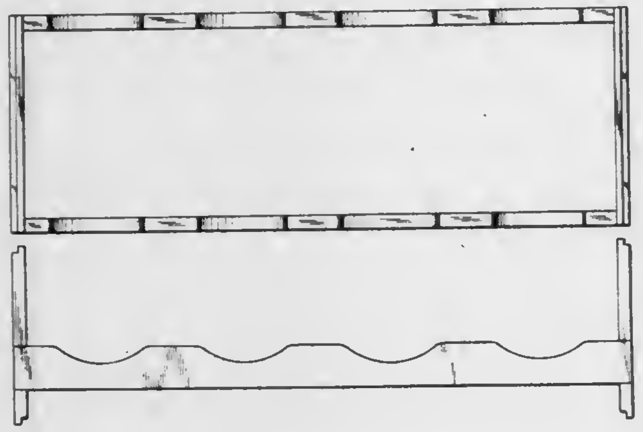
273,450
STACKABLE WINE RACK

Barry E. Williams, 8200 Boulevard East, North Bergen, N.J. 07047

Filed Oct. 26, 1981, Ser. No. 314,794

Term of patent 14 years

U.S. Cl. D6—188



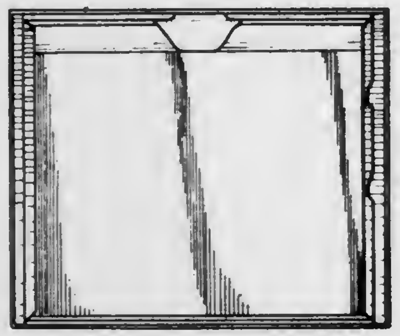
273,451
AUTOMOBILE SEAT BACK

George D. Bowman, Detroit, Mich., assignor to The Model A and Model T Motor Car Reproduction Corp., Wixom, Mich.

Filed Aug. 8, 1979, Ser. No. 64,839

Term of patent 14 years

U.S. Cl. D6—197



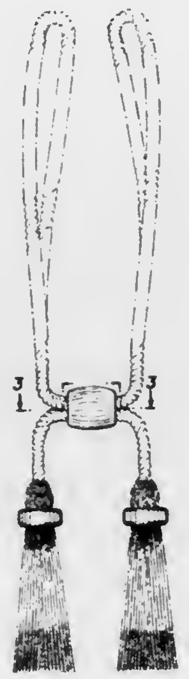
273,452
TIE BACK

Arthur M. Ackerman, Brooklyn, N.Y., assignor to Novelty Cord & Tassel Co., Inc., Brooklyn, N.Y.

Filed Apr. 14, 1981, Ser. No. 254,131

Term of patent 14 years

U.S. Cl. D6—208.2



273,453
BEER TAP

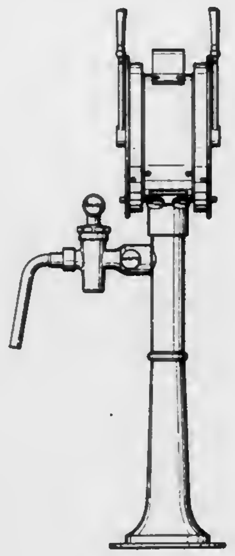
Karl H. Knopf, Kohlfurth 50, 5650 Solingen, Fed. Rep. of Germany

Filed Oct. 13, 1981, Ser. No. 310,752

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1981, 5 MR 9171

Term of patent 14 years

U.S. Cl. D7—398



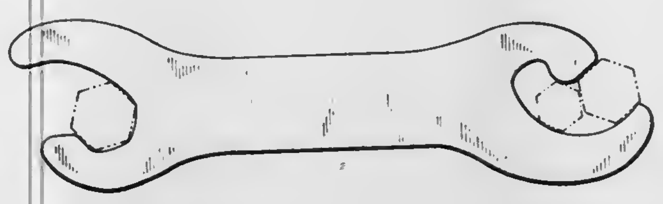
273,454
OPEN END WRENCH

Donald Pyles, Dallas, Tex., assignor to Sigalos, Levine and Hall, Dallas, Tex.

Filed Oct. 5, 1981, Ser. No. 309,989

Term of patent 14 years

U.S. Cl. D8—28



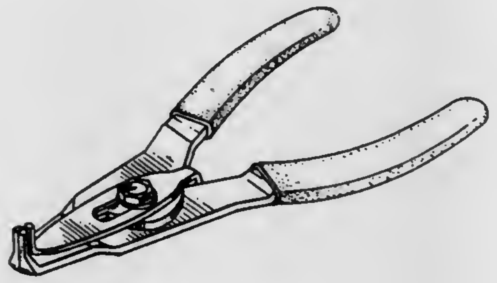
273,455
EXPANDER TOOL

Jay M. Teitelbaum, and Henry S. Teitelbaum, both of 3840 S. Jason St., Engelwood, Colo. 80110

Filed Aug. 21, 1981, Ser. No. 294,937

Term of patent 14 years

U.S. Cl. D8—52



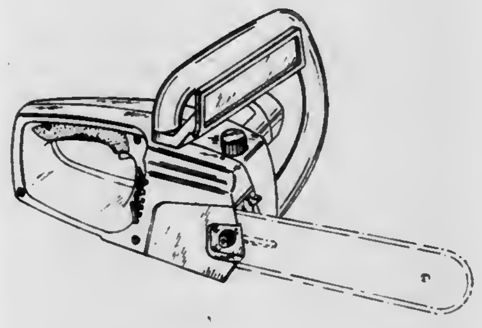
273,456
CHAIN SAW WITH HANDGUARD

Robert McDougall, Brockville; Ian F. Norton, Toronto; Douglas G. Overbury, and Colin Overy, both of Brockville, all of Canada, assignors to Black & Decker Inc., Newark, Del.

Filed Nov. 18, 1980, Ser. No. 207,929

Term of patent 14 years

U.S. Cl. D8—65



273,457
DOOR CLOSER

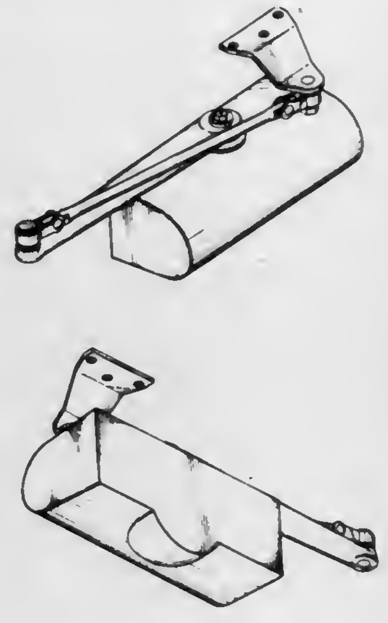
Yoshihiko Matsuo, Yokohama, and Takeshi Shohoji, Funabashi, both of Japan, assignors to Ryobi Limited, Hiroshima, Japan

Filed May 26, 1982, Ser. No. 382,206

Claims priority, application Japan, Dec. 24, 1981, 56-57785

Term of patent 14 years

U.S. Cl. D8—330



273,458
BOAT HOOK

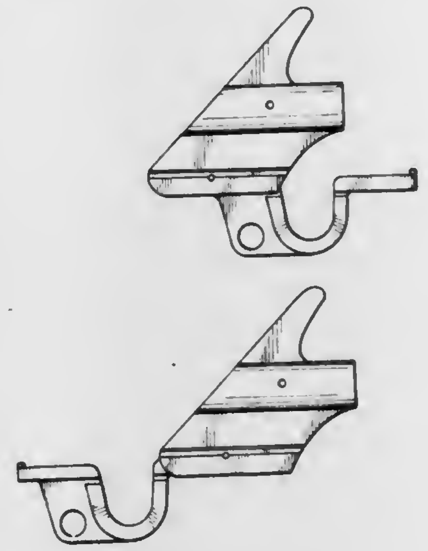
Oiva Laine, Torenintie 39, SF-01900 Nurmijärvi, Finland

Filed Mar. 24, 1981, Ser. No. 247,695

Claims priority, application Finland, Mar. 31, 1980, 252/80

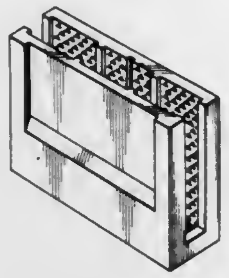
Term of patent 14 years

U.S. Cl. D8—356



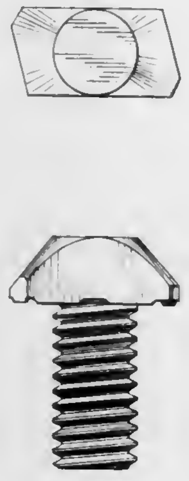
273,459
WINDOW PANE HOLDER OR SIMILAR ARTICLE

Moriji Akabane, Atsugi, Japan, assignor to Hori Glass Co., Ltd., Kanagawa, Japan
Filed Jul. 30, 1982, Ser. No. 403,548
Term of patent 14 years
U.S. Cl. D8—373



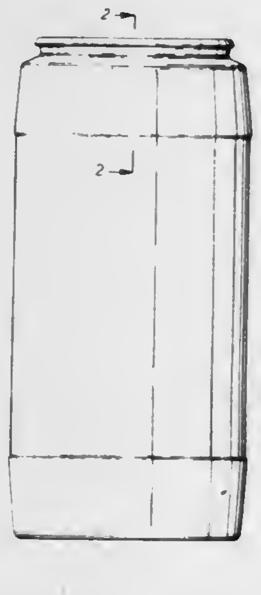
273,460
BOLT

William I. Sturm, Niles, Ill., assignor to SP Industries, Inc., Chicago, Ill.
Filed Jul. 20, 1981, Ser. No. 284,901
Term of patent 14 years
U.S. Cl. D8—387



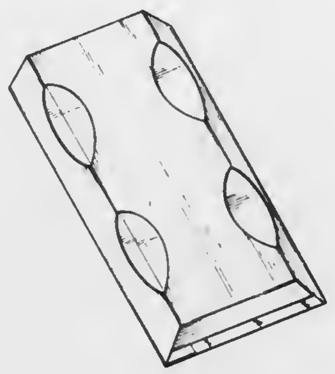
273,461
JAR

Peter W. Sevenoaks, East Twickenham, England, assignor to Metal Box Limited, Reading, England
Filed Aug. 10, 1981, Ser. No. 291,369
Term of patent 14 years
U.S. Cl. D9—355



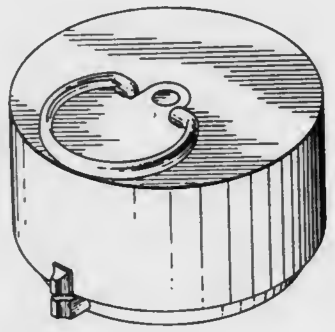
273,462
CARTON

Duane R. Mode, Edina, Minn., assignor to Champion International Corporation, Stamford, Conn.
Filed Sep. 11, 1981, Ser. No. 302,138
Term of patent 14 years
U.S. Cl. D9—431



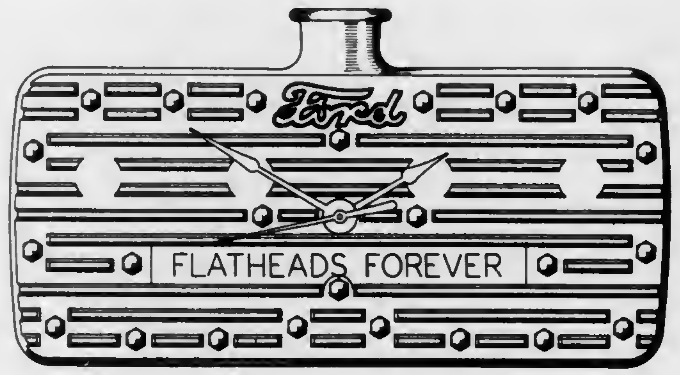
273,463
CLOSURE CAP

Glenn H. Morris, 4203 Highwood Dr., Chattanooga, Tenn. 37415
Division of Ser. No. 169,881, Jul. 17, 1980, Pat. No. Des. 268,484. This application Aug. 23, 1982, Ser. No. 410,477
Term of patent 14 years
U.S. Cl. D9—443



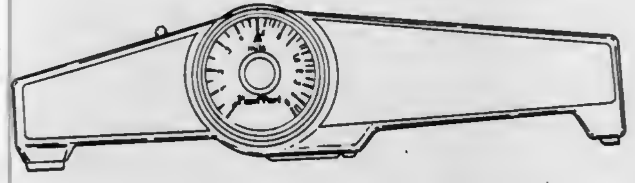
273,464
CLOCK

Richard C. Stees, 4636 Moorpark Ave., San Jose, Calif. 95129
Filed Dec. 11, 1981, Ser. No. 329,770
Term of patent 14 years
U.S. Cl. D10—6



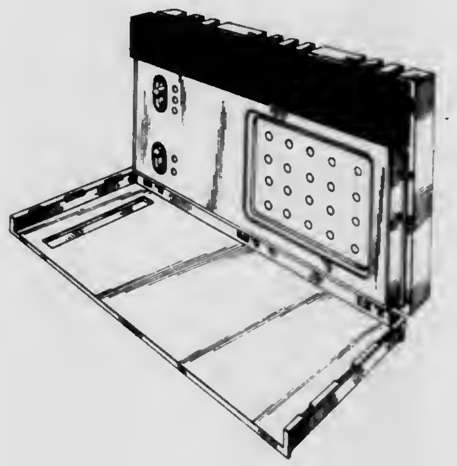
273,465
POSITEST THICKNESS GAGE

Frank Koch, Ogdensburg, N.Y., assignor to DeFelsko Corporation, Ogdensburg, N.Y.
Filed Oct. 23, 1981, Ser. No. 314,384
Term of patent 14 years
U.S. Cl. D10—46



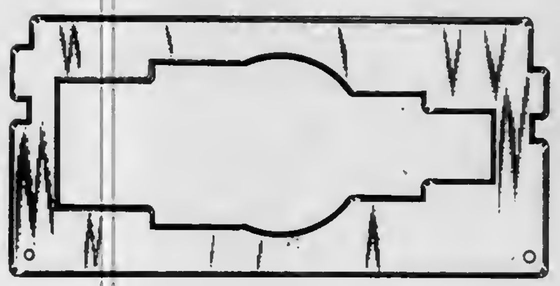
273,466
COMBINED WALL THERMOSTAT AND DIGITAL CLOCK

William J. Lawrence, Dallas; Jerry W. Harrison, Rowlet; Robert J. Wunderlich, Dallas; Clifford W. Herron, Mesquite, and Raymond W. Blasingame, Dallas, all of Tex., assignors to Autotronics, Inc., Dallas, Tex.
Filed Oct. 15, 1979, Ser. No. 84,770
Term of patent 14 years
U.S. Cl. D10—50



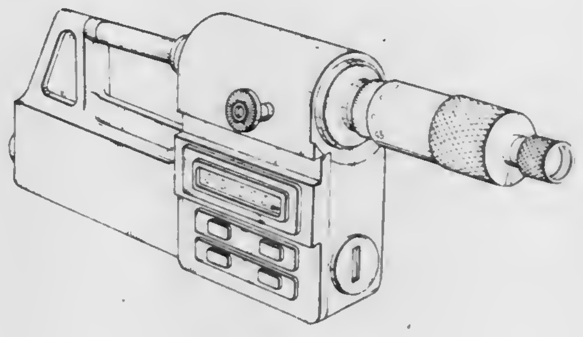
273,467
KINGPIN GAGE

Samuel A. Martin, Holland, Mich., assignor to Holland Hitch Company, Holland, Mich.
Filed Dec. 17, 1981, Ser. No. 331,541
Term of patent 14 years
U.S. Cl. D10—64



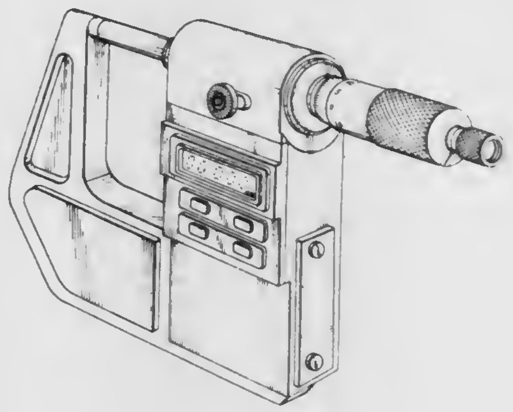
273,468
MICROMETER

Minoru Ueda, Kawasaki; Tamenori Shirai, and Takafumi Kanou, both of Kure, all of Japan, assignors to Mitutoyo MGF. Co., Ltd., Tokyo, Japan
Filed Mar. 1, 1982, Ser. No. 353,256
Claims priority, application Japan, Sep. 3, 1981, 56-39002
Term of patent 14 years
U.S. Cl. D10—73



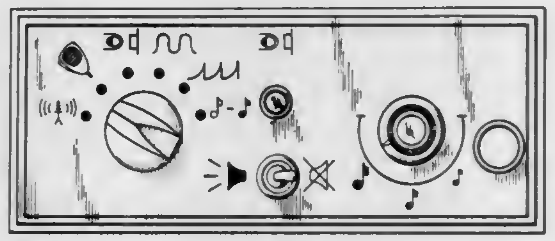
273,469
MICROMETER

Minoru Ueda, Kawasaki; Tamenori Shirai, and Takafumi Kanou, both of Kure, all of Japan, assignors to Mitutoyo MFG. Co., Ltd., Tokyo, Japan
Filed Mar. 1, 1982, Ser. No. 353,258
Claims priority, application Japan, Sep. 3, 1981, 56-39001
Term of patent 14 years
U.S. Cl. D10—73



273,470
HOUSING FOR A CONTROL FOR AN ELECTRONIC SIREN

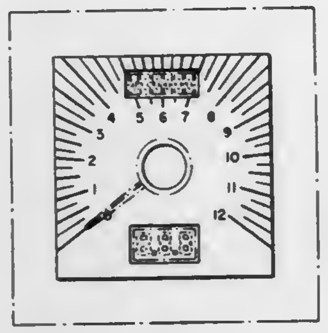
John F. Olson, Deep River, Conn., assignor to Whelen Engineering Co., Inc., Deep River, Conn.
Filed May 28, 1981, Ser. No. 268,014
Term of patent 14 years
U.S. Cl. D10—121



273,471

INDICATOR AND DIAL FACE FOR MARINE KNOTMETER, LOG AND DEPTH SOUNDER

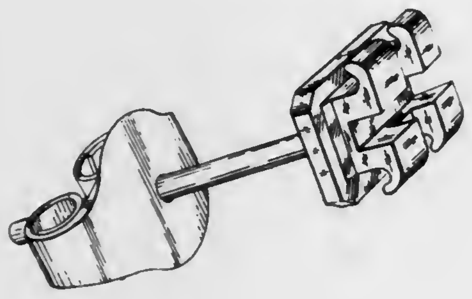
Ronald R. Overs, 96 Fox Hunt La., East Amherst, N.Y. 14051
Filed Jan. 26, 1982, Ser. No. 343,010
Term of patent 14 years
U.S. Cl. D10—125



273,472

EARRING

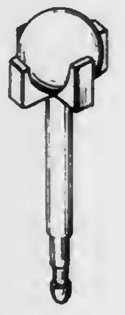
Glenn Goldstein, 5 Parkside Dr., North Brunswick, N.J. 08902
Filed Jun. 23, 1982, Ser. No. 391,137
Term of patent 14 years
U.S. Cl. D11—75



273,473

PEARL STUD FOR PIERCING EARS

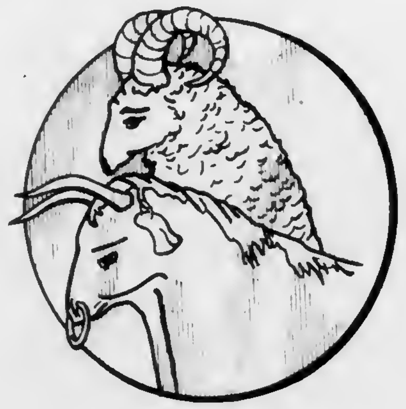
George H. Carroll, 19020 Killoch Way, Northridge, Calif. 91326
Filed Aug. 2, 1982, Ser. No. 404,058
Term of patent 14 years
U.S. Cl. D11—86



273,474

ZODIACAL CUSP MEDALLION

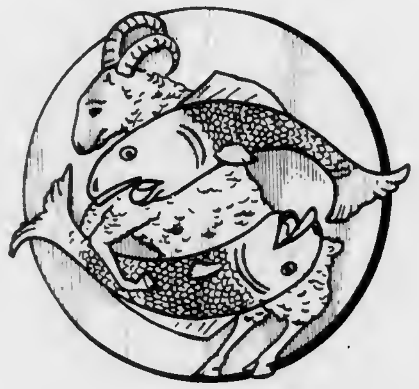
Patricia A. Martignette, 212 Cottage Blvd., Hicksville, N.Y. 11801
Division of Ser. No. 58,730, Jul. 17, 1979, Pat. No. Des. 263,384.
This application Mar. 24, 1981, Ser. No. 247,015
Term of patent 14 years
U.S. Cl. D11—100



273,475

ZODIACAL CUSP MEDALLION

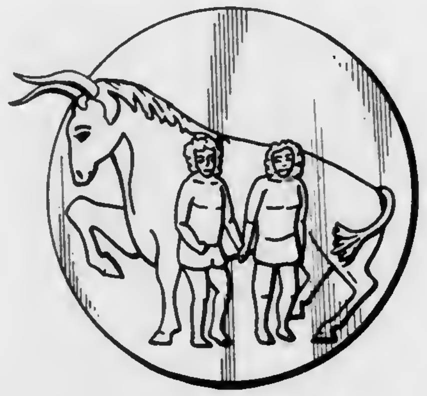
Patrica A. Martignette, 212 Cottage Blvd., Hicksville, N.Y. 11801
Division of Ser. No. 58,730, Jul. 17, 1979, Pat. No. Des. 263,384.
This application Mar. 24, 1981, Ser. No. 247,089
Term of patent 14 years
U.S. Cl. D11—100



273,476

ZODIACAL CUSP MEDALLION

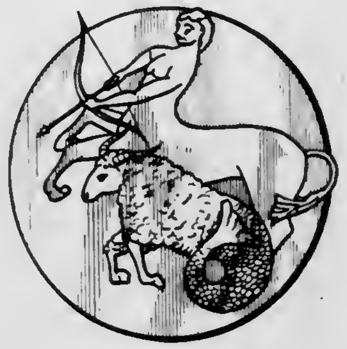
Patricia A. Martignette, 212 Cottage Blvd., Hicksville, N.Y. 11801
Division of Ser. No. 58,730, Jul., 1979, Pat. No. Des. 263,384.
This application Mar. 24, 1981, Ser. No. 247,014
Term of patent 14 years
U.S. Cl. D11—105



273,477

ZODIACAL CUSP MEDALLION

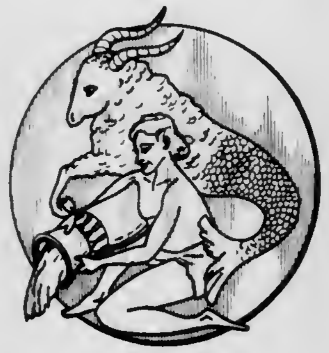
Patricia A. Martignette, 212 Cottage Blvd., Hicksville, N.Y. 11801
Division of Ser. No. 58,730, Jul. 17, 1979, Pat. No. Des. 263,384.
This application Mar. 24, 1981, Ser. No. 247,016
Term of patent 14 years
U.S. Cl. D11—105



273,478

ZODIACAL CUSP MEDALLION

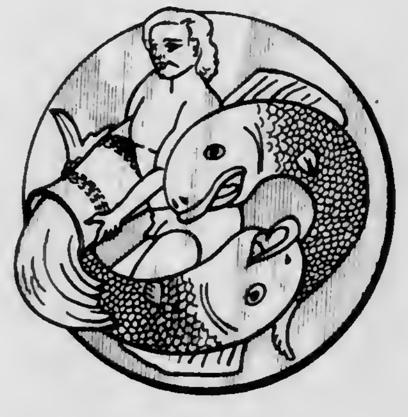
Patricia A. Martignette, 212 Cottage Blvd., Hicksville, N.Y. 11801
Division of Ser. No. 58,730, Jul. 17, 1979, Pat. No. Des. 263,384.
This application Mar. 24, 1981, Ser. No. 247,103
Term of patent 14 years
U.S. Cl. D11—105



273,479

ZODIACAL CUSP MEDALLION

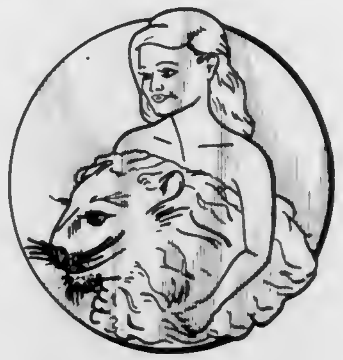
Patricia A. Martignette, 212 Cottage Blvd., Hicksville, N.Y. 11801
Division of Ser. No. 58,730, Jul. 17, 1979, Pat. No. Des. 263,384.
This application Mar. 24, 1981, Ser. No. 247,104
Term of patent 14 years
U.S. Cl. D11—105



273,480

ZODIACAL CUSP MEDALLION

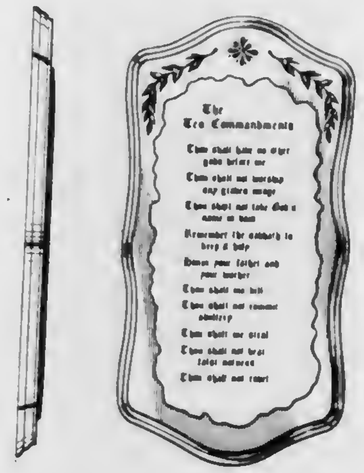
Patricia A. Martignette, 212 Cottage Blvd., Hicksville, N.Y. 11801
Division of Ser. No. 58,730, Jul. 17, 1979, Pat. No. Des. 263,384.
This application Mar. 24, 1981, Ser. No. 248,191
Term of patent 14 years
U.S. Cl. D11—105



273,481

PLAQUE

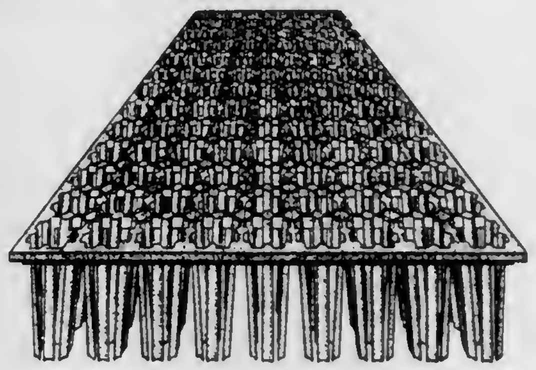
Donald R. Ditto, Rte. 2, Box 60F2, Winnsboro, Tex. 75494
Filed Dec. 21, 1981, Ser. No. 332,614
Term of patent 14 years
U.S. Cl. D11—139



273,482

SEEDLING FLAT

Gustav O. Andréason; Ulf R. Friberg, both of Falun; Heimo H. Kuvaja, Borlänge, and Bengt G. L. Qvarnström, Smygehamn, all of Sweden, assignors to Stora Kopparbergs Bergslags AB, Falun, Sweden
Filed Aug. 11, 1980, Ser. No. 170,943
Claims priority, application Sweden, Feb. 15, 1980, 8000032
Term of patent 14 years
U.S. Cl. D11—155



273,483

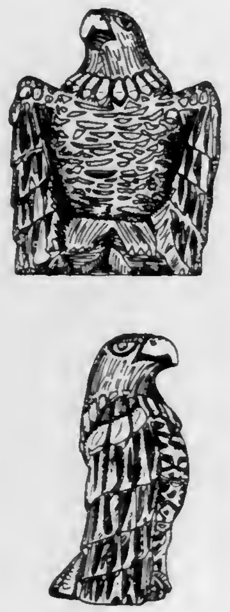
FIGURINE OF AN EAGLE

Jesus A. C. Santa-Eulalia, and Javier B. C. Santa-Eulalia, both of Montevideo, Uruguay, assignors to John J. Madison Co., Inc., Laguna Hills, Calif.

Filed Jun. 17, 1982, Ser. No. 389,546

Term of patent 14 years

U.S. Cl. D11—162



273,484

FOLDING BICYCLE

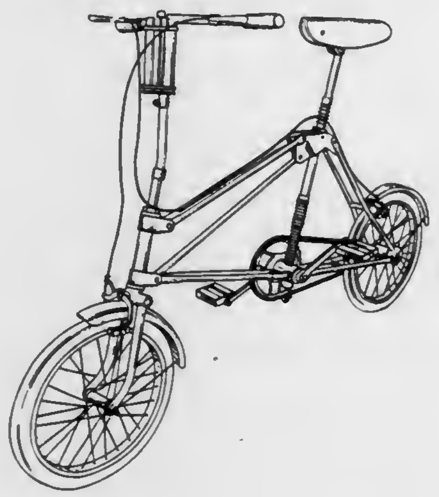
Hugh G. Herbert, 1^B Limpsfield Ave., London, SW19 6DL, England

Filed Oct. 12, 1979, Ser. No. 84,309

Claims priority, application United Kingdom, Apr. 20, 1979, 989573

Term of patent 14 years

U.S. Cl. D12—111



273,485

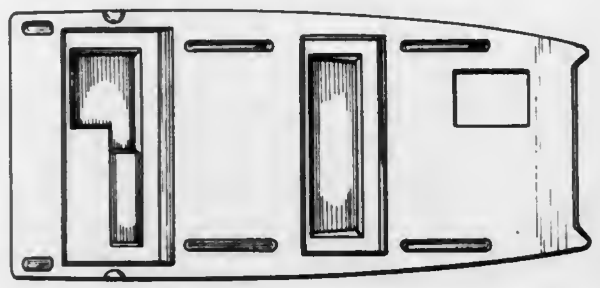
FLOOR PAN FOR AN AUTOMOBILE

George D. Bowman, Detroit, Mich., assignor to Model A & Model T Motor Car Reproduction Co., Wixom, Mich.

Filed Aug. 8, 1979, Ser. No. 64,838

Term of patent 14 years

U.S. Cl. D12—159



273,486

MOTORCYCLE HITCH

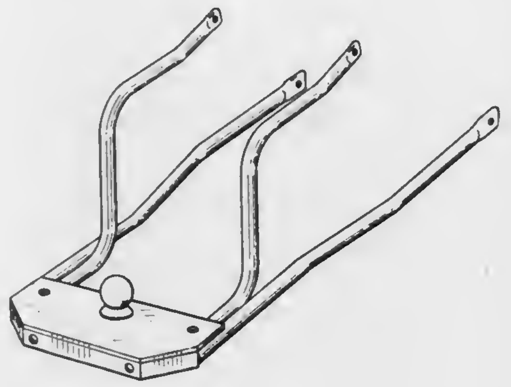
James O'Rourke, Unit 4, 8131 Keele St., Concord, Ontario, Canada (L4K 1C8)

Filed Jan. 11, 1982, Ser. No. 338,755

Claims priority, application Canada, Sep. 15, 1981, 15-09-81-10

Term of patent 14 years

U.S. Cl. D12—162



273,487

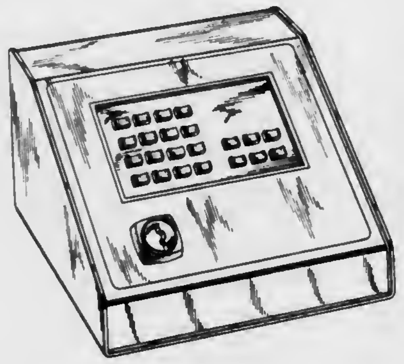
PORTABLE MANUAL CONTROL UNIT

Saul Rosenbaum, East Meadow, and Gilbert Oster, New Hyde Park, both of N.Y., assignors to Leviton Manufacturing Company, Inc., Little Neck, N.Y.

Filed Nov. 19, 1981, Ser. No. 322,812

Term of patent 14 years

U.S. Cl. D13—12



273,488

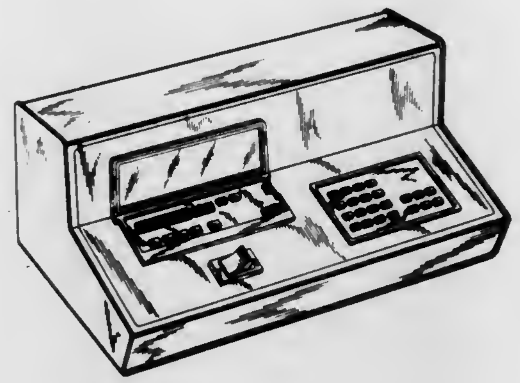
PROGRAMMABLE CONTROL UNIT

Saul Rosenbaum, East Meadow, and Gilbert Oster, New Hyde Park, both of N.Y., assignors to Leviton Manufacturing Company, Inc., Little Neck, N.Y.

Filed Nov. 19, 1981, Ser. No. 322,813

Term of patent 14 years

U.S. Cl. D13—12



273,489

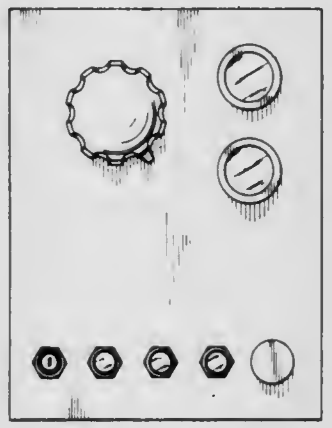
CONTROL PANEL FOR AN ELECTRICAL LIVESTOCK CARCASS STIMULATOR

Britton Rice, College Station, Tex., assignor to Koch Supplies Inc., Kansas City, Mo.

Filed Nov. 28, 1980, Ser. No. 211,356

Term of patent 14 years

U.S. Cl. D13—35



273,490

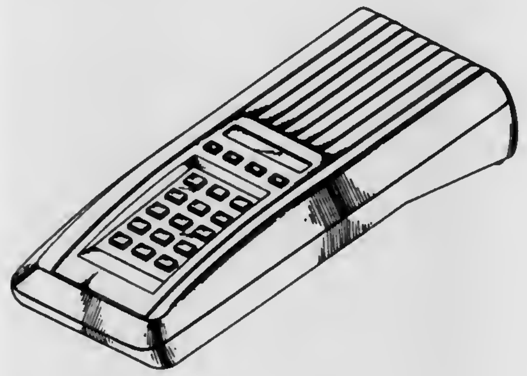
TELEPHONE SET

Tung Sing Chen, Fl. 9, No. 57, Chang Chun Rd., Taipei, Taiwan

Filed Aug. 18, 1981, Ser. No. 293,942

Term of patent 14 years

U.S. Cl. D14—53



273,491

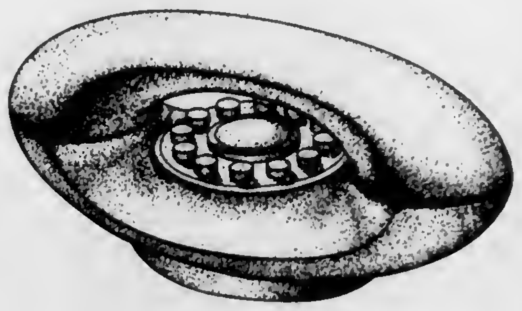
TELEPHONE

George D. Perkins, Laguna Niguel, Calif., assignor to American Telecommunications Corp., El Monte, Calif.

Filed Sep. 24, 1981, Ser. No. 305,192

Term of patent 14 years

U.S. Cl. D14—53



273,492

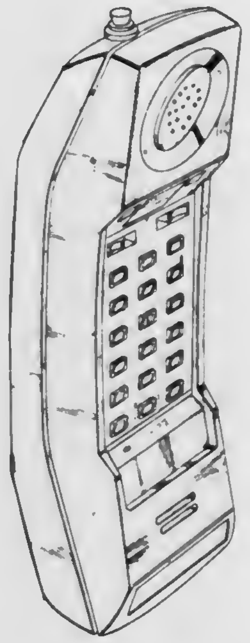
TELEPHONE HANDSET

John C. Coons, and Jean M. Beirise, both of Cincinnati, Ohio, assignors to Masco Corporation of Indiana, Taylor, Mich.

Filed May 1, 1981, Ser. No. 259,603

Term of patent 14 years

U.S. Cl. D14—64



273,493

PORTABLE AIR COMPRESSOR

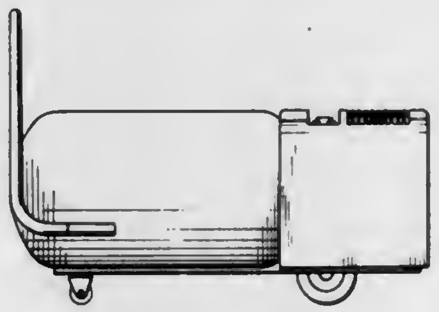
Massimo Vitaloni, Rivalta, Italy, assignor to Grenco S.p.A., Turin, Italy

Filed Sep. 28, 1981, Ser. No. 306,618

Claims priority, application Italy, Mar. 31, 1981, 53069/81[U]

Term of patent 14 years

U.S. Cl. D15—9



273,494

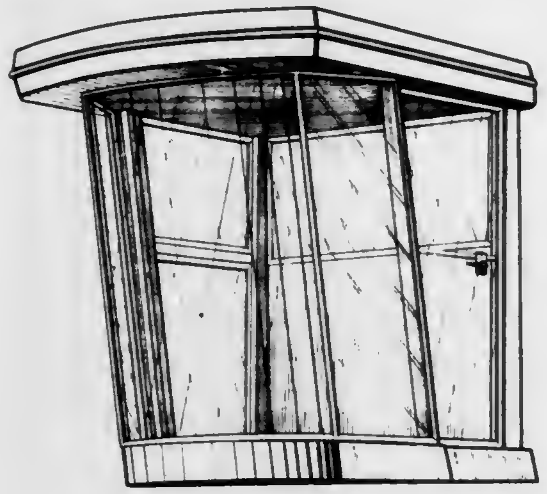
CAB FOR A HARVESTING MACHINE

Joseph C. Hurlburt; Constantine J. Kermes, both of Lancaster, Pa.; Charles P. Klasen, Canton, Conn., and Joseph A. Rinaldi, Oradell, N.J., assignors to Sperry Corporation, New Holland, Pa.

Filed Jun. 7, 1982, Ser. No. 385,732

Term of patent 14 years

U.S. Cl. D15—30



273,495

JUICE VENDING MOBILE

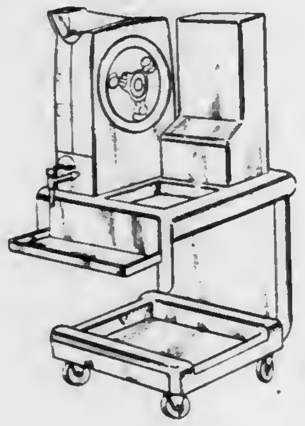
Morley L. Smith, Beaconsfield, Canada, assignor to Orangematic Canada, Inc., Canada

Filed Apr. 22, 1980, Ser. No. 142,717

Claims priority, application Canada, Oct. 24, 1979, 24-10-79-3

Term of patent 14 years

U.S. Cl. D7—311



273,496

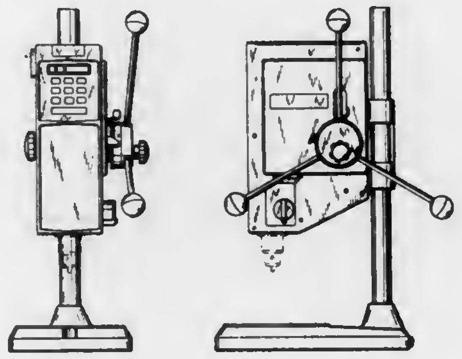
DRILL PRESS OR SIMILAR ARTICLE

Lawrence E. House, II, Baltimore, Md., assignor to Black & Decker Inc., Newark, Del.

Filed Feb. 4, 1981, Ser. No. 231,427

Term of patent 14 years

U.S. Cl. D15—132



273,497

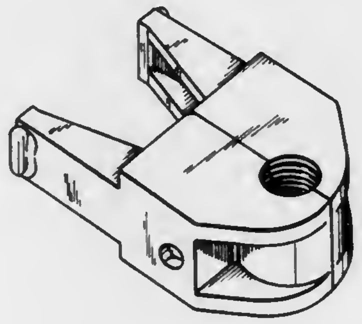
QUICK ATTACHMENT STOP MEMBER FOR A THREADED FEED ROD OF A MACHINE TOOL

Norbert F. Steineman, New Bremen, Ohio, assignor to Reliable Products Co. Inc., St. Marys, Ohio

Filed Jun. 22, 1981, Ser. No. 275,864

Term of patent 14 years

U.S. Cl. D15—138



273,498

CAMERA

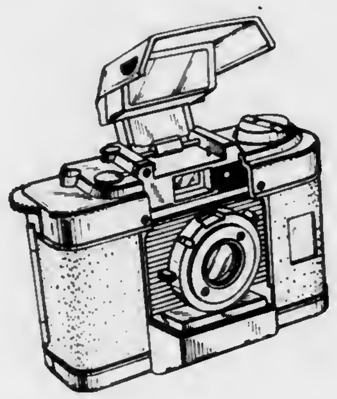
Jerry Arnott, Brookvale, Australia, assignor to Hanimex Pty. Limited, Brookvale, Australia

Filed Nov. 16, 1981, Ser. No. 321,743

Claims priority, application Australia, May 18, 1981, 84199

Term of patent 14 years

U.S. Cl. D16—6



273,499

CAMERA

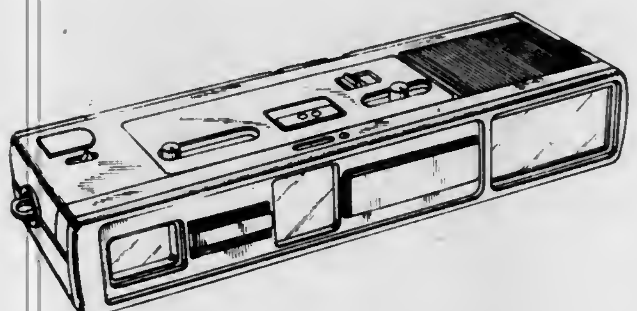
Jerry Arnott, Brookvale, Australia, assignor to Hanimex Pty. Limited, Brookvale, Australia

Filed Nov. 16, 1981, Ser. No. 321,744

Claims priority, application Australia, May 18, 1981, 84198

Term of patent 14 years

U.S. Cl. D16—6



273,500

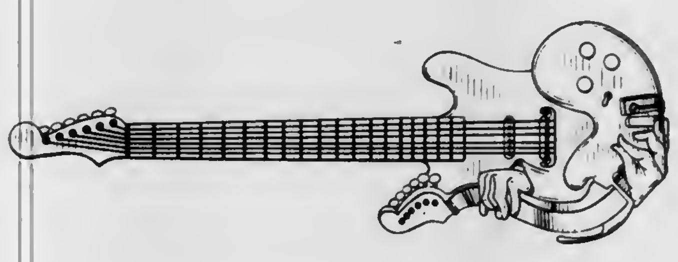
GUITAR

Mark Dornan, 1503 Beach Front, Point Pleasant, N.J. 08742

Filed Jun. 11, 1979, Ser. No. 47,128

Term of patent 14 years

U.S. Cl. D17—18



273,501

ELECTRONIC TYPEWRITER

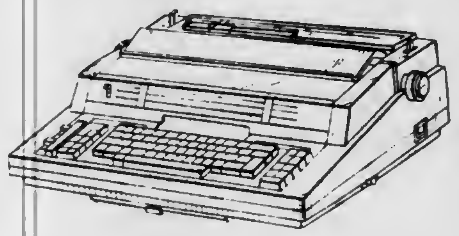
Masahiro Kando, and Noriaki Haranishi, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 16, 1981, Ser. No. 284,096

Claims priority, application Japan, Jan. 23, 1981, 56-2085

Term of patent 14 years

U.S. Cl. D18—1



273,502

ELECTRONIC CALCULATOR

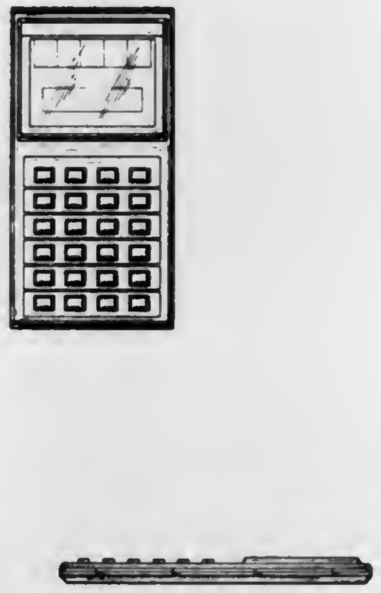
Keiji Sakata, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan

Filed Feb. 22, 1982, Ser. No. 351,229

Claims priority, application Japan, Aug. 25, 1981, 56-37884

Term of patent 14 years

U.S. Cl. D18—7



273,503

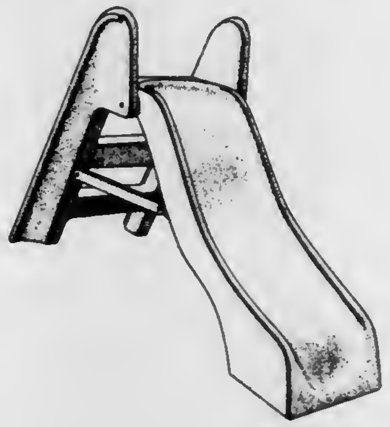
TOY SLIDE

James F. Mariol, 481 Dean View Dr., Cincinnati, Ohio 45224

Filed Sep. 21, 1981, Ser. No. 303,769

Term of patent 14 years

U.S. Cl. D21—121



273,504

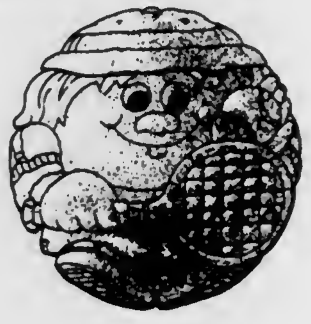
TOY BALL

James E. Routzong, Beverly; Russell Richter, Rowley, and Alfred H. Moraski, Braintree, all of Mass., assignors to CPG Products Corp., Minneapolis, Minn.

Filed Feb. 12, 1982, Ser. No. 348,434

Term of patent 14 years

U.S. Cl. D21—204



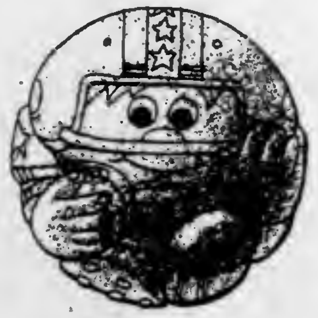
273,505
TOY BALL

James E. Routzong, Beverly; Russell Richter, Rowley, and Alfred H. Moraski, Braintree, all of Mass., assignors to CPG Products Corp., Minneapolis, Minn.

Filed Feb. 12, 1982, Ser. No. 348,440

Term of patent 14 years

U.S. Cl. D21—204



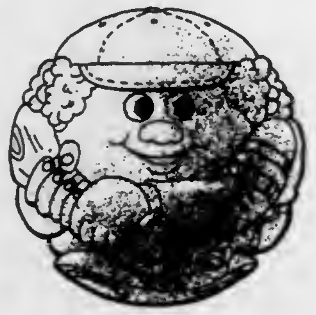
273,506
TOY BALL

James E. Routzong, Beverly; Russell Richter, Rowley, and Alfred H. Moraski, Braintree, all of Mass., assignors to CPG Products Corp., Minneapolis, Minn.

Filed Feb. 12, 1982, Ser. No. 348,441

Term of patent 14 years

U.S. Cl. D21—204



273,507
TENNIS RACKET FRAME

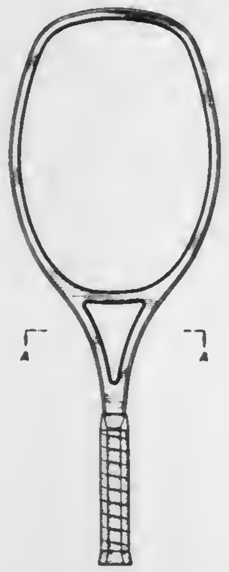
Minoru Yoneyama, Koshiji, Japan, assignor to Yonex Sports Kabushiki Kaisha, Niigata, Japan

Filed Apr. 28, 1981, Ser. No. 258,273

Claims priority, application Japan, Mar. 6, 1981, 56-8934

Term of patent 14 years

U.S. Cl. D21—212



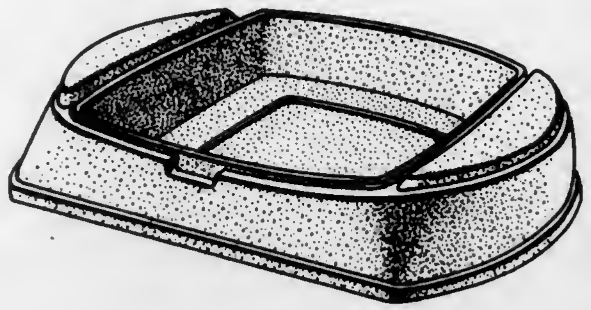
273,508
TOY SANDBOX

James F. Mariol, 481 Dean View Dr., Cincinnati, Ohio 45224

Filed Sep. 21, 1981, Ser. No. 303,765

Term of patent 14 years

U.S. Cl. D21—252



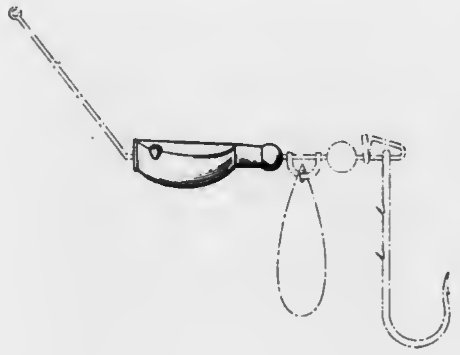
273,509
FISHING LURE BODY

Steven L. Marx, 510 N. Main St., London, Ohio 43140

Filed Mar. 1, 1982, Ser. No. 353,475

Term of patent 14 years

U.S. Cl. D22—27



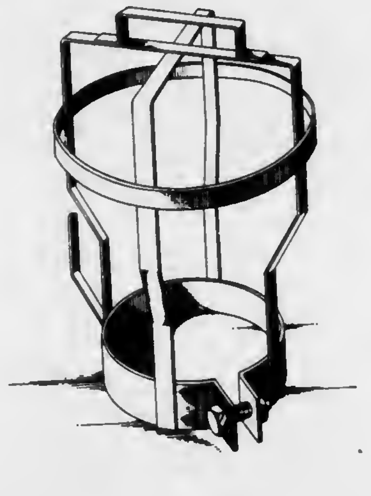
273,510
COMBINED GAUGE AND TANK GUARD

Michael J. Mayor, 3790 Astro Way, Salt Lake City, Utah 84117

Filed Jun. 22, 1981, Ser. No. 275,913

Term of patent 14 years

U.S. Cl. D23—2



273,511
TWO FLUID PRESS-FEEDING PUMP

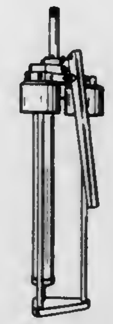
Yoji Tanaka, Kawasaki, Japan, assignor to Kabushiki Kaisha Nisshiri, Japan

Filed Aug. 10, 1981, Ser. No. 291,177

Claims priority, application Japan, Feb. 17, 1981, 56-000636

Term of patent 14 years

U.S. Cl. D23—14



273,512
FAUCET SET

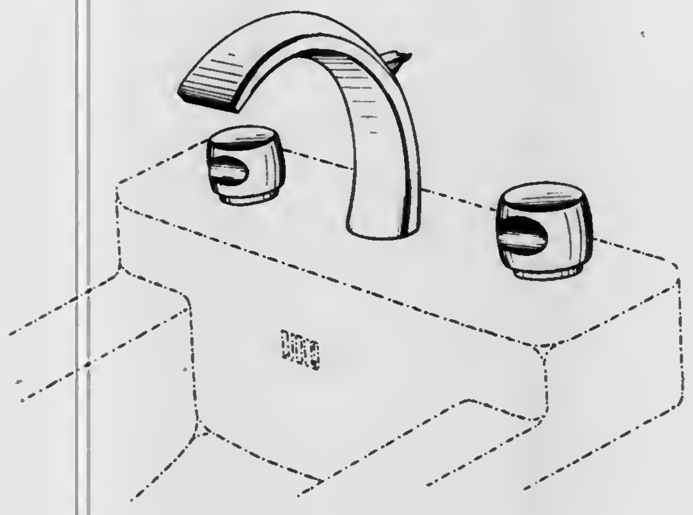
Gerd Arnolds, Hahnenfurther Str. 19, 4000 Düsseldorf, Fed. Rep. of Germany

Filed Jun. 11, 1981, Ser. No. 272,828

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1981, 89AR39/81

Term of patent 14 years

U.S. Cl. D23—25



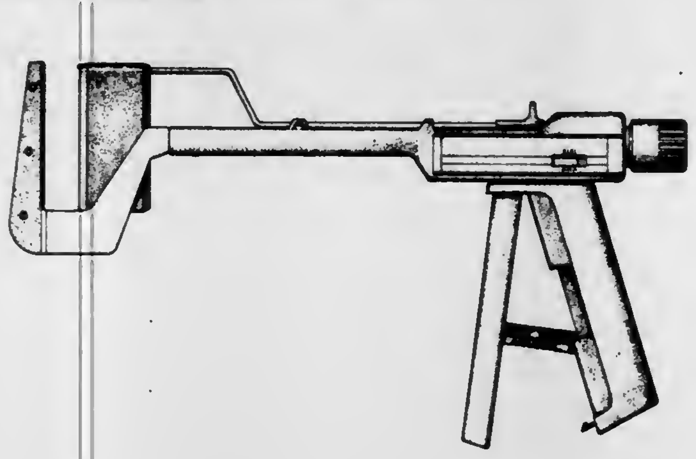
273,513
LINEAR SURGICAL STAPLING INSTRUMENT

Lawrence E. Spreckelmeier, Cincinnati, Ohio, assignor to Senco Products, Inc., Cincinnati, Ohio

Filed Jun. 10, 1983, Ser. No. 503,230

Term of patent 14 years

U.S. Cl. D24—26



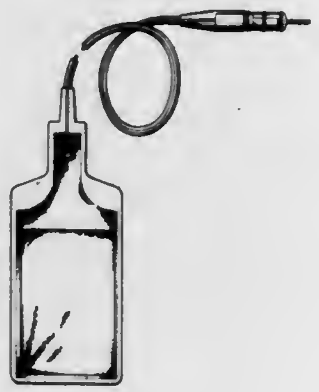
273,514
IMPLANTABLE DEFIBRILLATOR PATCH ELECTRODE OR SIMILAR ARTICLE

Marlin S. Heilman, Gibsonia, and Alois A. Langer, Pittsburgh, both of Pa., assignors to Mieczyslaw Mirowski, Owings Mills, Md.

Filed Aug. 5, 1980, Ser. No. 175,821

Term of patent 14 years

U.S. Cl. D24—29



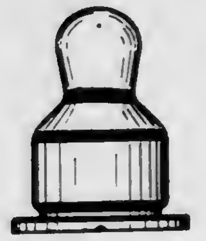
273,515
ORTHODONTIC NIPPLE

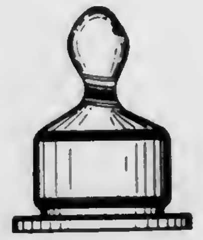
John W. Fabjancic, Mantua, Ohio, assignor to Questor Corporation, Tampa, Fla.

Filed Nov. 16, 1981, Ser. No. 321,805

Term of patent 14 years

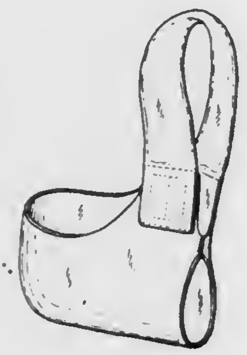
U.S. Cl. D24—46





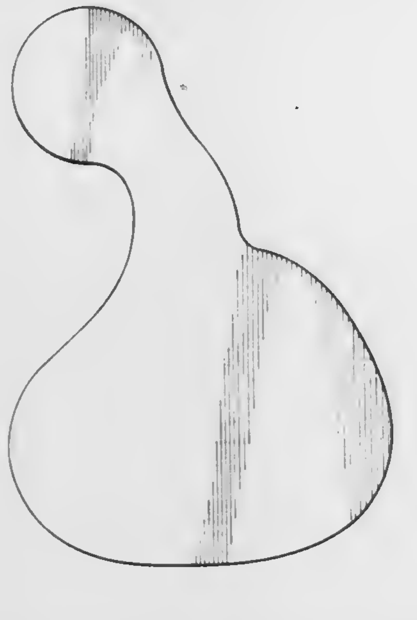
273,516
ARM SLING

Myrna A. Saal, 3254 Central Ave., Spring Valley, Calif. 92077
Filed Aug. 17, 1981, Ser. No. 293,371
Term of patent 14 years
U.S. Cl. D24—64



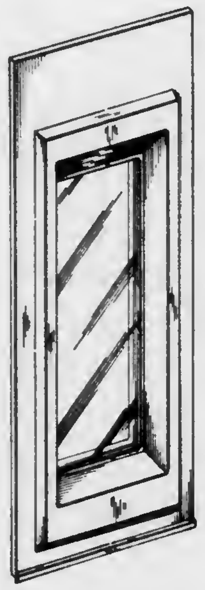
273,517
HEATING PAD

William F. Medlin, Phoenix, Ariz., and Aurora Soto, 14801 N. Flamenco Dr., Phoenix, Ariz. 85023, assignors to Aurora Soto
Filed May 7, 1979, Ser. No. 36,635
Term of patent 14 years
U.S. Cl. D24—99



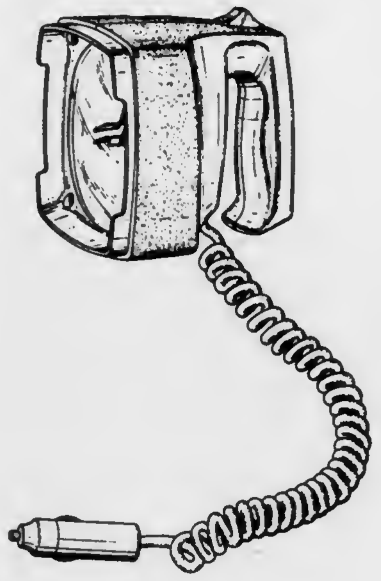
273,518
WINDOW UNIT

Franklin Moore, Jr., 902 McBurney Dr., Lebanon, Ohio 45036
Filed Jan. 11, 1982, Ser. No. 338,413
Term of patent 14 years
U.S. Cl. D25—52



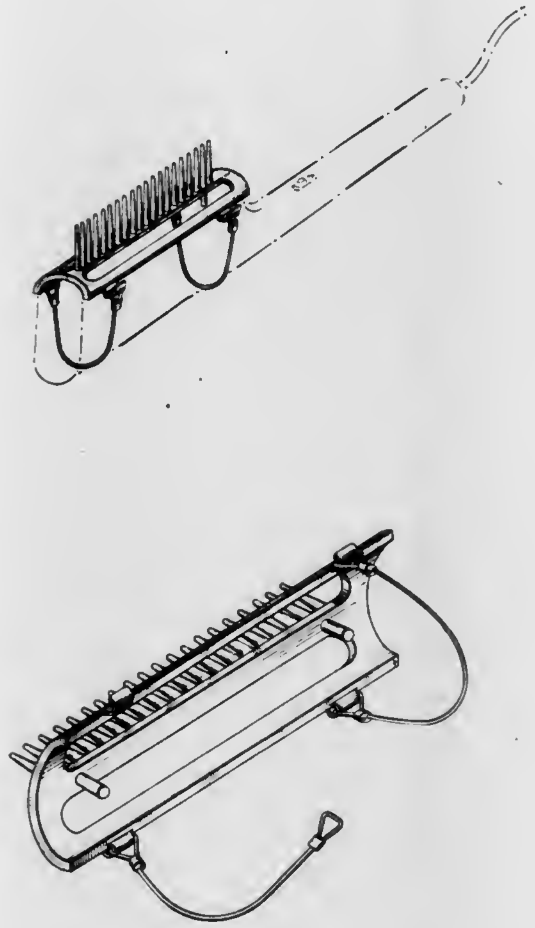
273,519
COMBINED SPOT AND FLOOD LIGHT

Chan M. Kong, 1st Floor, 58 Hung To Rd., Kwun Tong, Kowloon, Hong Kong
Filed May 26, 1981, Ser. No. 266,808
Claims priority, application United Kingdom, Feb. 20, 1981, 999010
Term of patent 14 years
U.S. Cl. D26—48



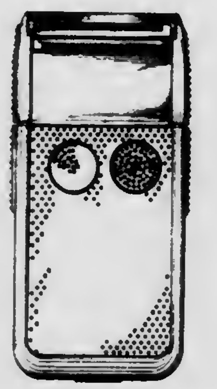
273,520
UNIVERSAL COMB ATTACHMENT

Sterling A. Frey, 4238 Bordeaux, St. Louis, Mo. 63129
Filed Feb. 12, 1981, Ser. No. 233,909
Term of patent 14 years
U.S. Cl. D28—18



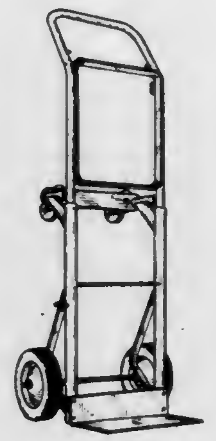
273,521
ELECTRIC DRYSHAVER

Roland Ullmann, Offenbach-Rumpenheim, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany
Filed Jul. 30, 1980, Ser. No. 173,775
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1980, 73 MR 8862
Term of patent 14 years
U.S. Cl. D28—49



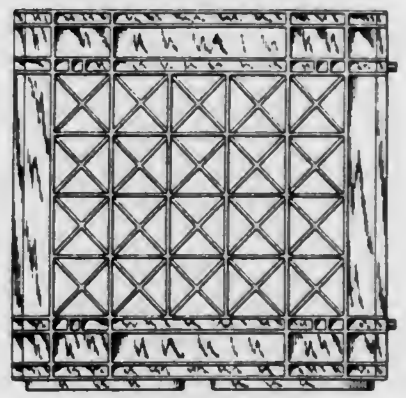
273,522
HAND CART

Stephen R. Zastera, Bloomington, Minn., assignor to D.R.I. Industries, Inc., Minneapolis, Minn.
Filed Nov. 30, 1981, Ser. No. 326,112
Term of patent 14 years
U.S. Cl. D34—17



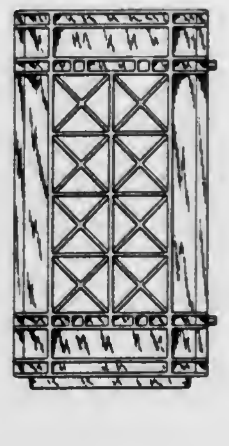
273,523
STACKABLE PLASTIC CRATE

Frank DiSesa, Lunenburg, Mass., assignor to Tucker Housewares, Inc., Leominster, Mass.
Filed Jan. 18, 1982, Ser. No. 340,304
Term of patent 14 years
U.S. Cl. D34—43



273,524
STACKABLE PLASTIC CRATE

Frank DiSesa, Lunenburg, Mass., assignor to Tucker Housewares, Inc., Leominster, Mass.
Filed Jan. 18, 1982, Ser. No. 340,305
Term of patent 14 years
U.S. Cl. D34—43



273,525

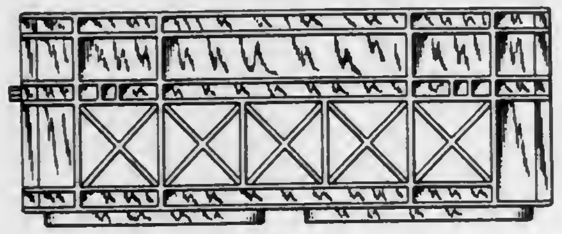
STACKABLE PLASTIC CRATE

Frank DiSesa, Lunenburg, Mass., assignor to Tucker Housewares, Inc., Leominster, Mass.

Filed Jan. 18, 1982, Ser. No. 340,306

Term of patent 14 years

U.S. Cl. D34—43



273,526

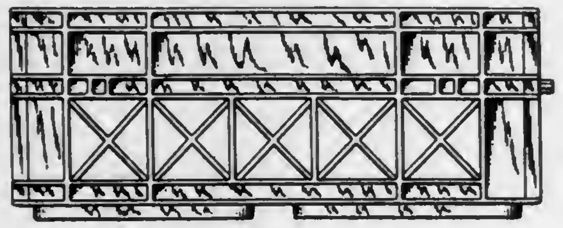
STACKABLE PLASTIC CRATE

Frank DiSesa, Lunenburg, Mass., assignor to Tucker Housewares, Inc., Leominster, Mass.

Filed Jan. 18, 1982, Ser. No. 340,311

Term of patent 14 years

U.S. Cl. D34—43



273,527

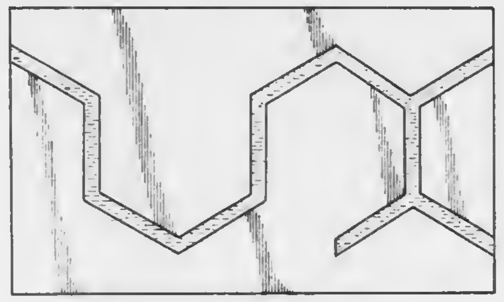
PLASTIC SHEET MATERIAL FOR SURFACING A WALL PANEL OR SIMILAR ARTICLE

Joseph Pota, 9727 Mt. Pisgah Rd, Silver Spring, Md. 20903

Continuation-in-part of Ser. No. 105,574, Dec. 20, 1979, abandoned. This application Sep. 14, 1981, Ser. No. 301,845

Term of patent 14 years

U.S. Cl. D92—1 V



273,528

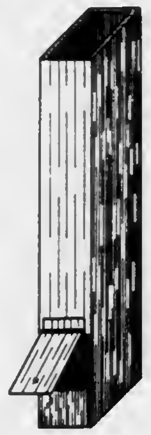
COMBINED STORAGE AND SUPPORT POST FOR MAIL BOX

Richard P. Thomas, 584 W. 22nd St., Upland, Calif. 91786

Filed Aug. 24, 1981, Ser. No. 295,630

Term of patent 14 years

U.S. Cl. D99—43



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TO WHOM

PATENTS WERE ISSUED ON THE 17TH DAY OF APRIL, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Nattermann & Cie GmbH: *See—*
  Biedermann, Jurgen; Prop, Gerrit; and Doppelfeld, Ille-Stephanie, 4,443,464, Cl. 424-273.000.
  Gunther, Bernd-Rainer, 4,443,378, Cl. 260-403.000.
A. O. Smith Corporation: *See—*
  Douthart, Robert H.; and Smith, Howard W., 4,443,749, Cl. 318-774.000.
A/S Hoyer-Ellefsen: *See—*
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  Brower, Bernard C.; and Wastell, Trevor T., 4,442,569, Cl. 17-52.000.
Aaccurate Counters Company: *See—*
  Austin, Warren; and Penny, Alex, 4,442,850, Cl. 133-3.00H.
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  Matsumoto, Hiroyuki; Abe, Motoaki; and Ando, Tetsuo, 4,443,886, Cl. 377-58.000.
Abiko, Shuzo: *See—*
  Sawada, Takeshi; Yoneda, Ko; Shinmi, Akira; Takagi, Hiroshi; Abiko, Shuzo; and Goto, Hirokazu, 4,443,826, Cl. 360-113.000.
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  Schmitt, Werner; Purrmann, Robert; Jochum, Peter; Hubner, Heinz-Joachim; and Burger, Bernd, 4,443,587, Cl. 526-146.000.
ACF Chemiefarma N.V.: *See—*
  Trijzelaar, Hans B.; de Bode, Ronus; and Welle, Handricus B. A., 4,443,453, Cl. 424-258.000.
Achinger, Michael; Streitenberger, Walter; Voigt, Otto K. H.; and Wolter, Hans, to Achinger, Michael. Machine for producing flaskless molds. 4,442,882, Cl. 164-187.000.
Acme Burgess, Inc.: *See—*
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Acumeter Laboratories, Inc.: *See—*
  McIntyre, Frederic S., 4,443,491, Cl. 427-44.000.
Adachi, Masami; Shimasaki, Hirato; Nomizu, Isao; and Matsuzaki, Taketo, to Bridgestone Tire Company Limited. Adhesive compound coating apparatus. 4,442,791, Cl. 118-669.000.
Adamoski, William; and Hotchkiss, Alan B., to Pitney Bowes Inc. Inserter with improved ram mechanism. 4,443,007, Cl. 271-269.000.
Adams, James E.; and Laurie, Alexander S., to Wilkinson Sword Limited. Seed planting device. 4,442,627, Cl. 47-56.000.
Adcock, Ralph L., to Sperry Corporation. Dual port exchange memory between multiple microprocessors. 4,443,846, Cl. 364-200.000.
Adelmann, Manfred: *See—*
  Heller, Gerhard; Adelmann, Manfred; Wendorf, Wilfried; and Konigs, Wilhelm, 4,443,174, Cl. 425-147.000.
Advanced Crystal Sciences, Inc.: *See—*
  Zaferes, Constantine J., 4,443,410, Cl. 422-245.000.
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  Murphy, James V., 4,442,938, Cl. 206-329.000.
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  McGlinchey, Gerard F., 4,443,753, Cl. 323-313.000.
Adwest Engineering Limited: *See—*
  Millard, Barry J., 4,442,579, Cl. 29-157.10R.
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  Motta, Valerio, 4,443,395, Cl. 264-117.000.
Agoston, Edward E. Jig assembly for drilling vertically upward. 4,442,905, Cl. 173-36.000.
Aguilar, Hector V., to American Telecommunications Corp. Telephone jack. 4,443,051, Cl. 339-107.000.
Ahejew, Alexander. Simultaneous double-acting split abrasive wheel for peripheral sharpening of helix tools and use thereof. 4,442,637, Cl. 51-288.000.
Ainoya, Masayuki; Kozawa, Hiroomi; and Chikuzenya, Takao, to Hitachi Koki Co., Ltd. Yoke mechanism of electrophotographic printing apparatus. 4,443,091, Cl. 355-3.0TR.
Aisan Industry Co., Ltd.: *See—*
  Teramura, Mitsuyoshi; Takimoto, Masatami; Nakamura, Norihiko; Itoh, Takaaki; Katou, Takashi; Morino, Toshiharu; and Sakakibara, Youzou, 4,443,388, Cl. 261-39.00A.
Aisin Seiki Kabushiki Kaisha: *See—*
  Ohyama, Tadashi; and Kawata, Shoji, 4,442,998, Cl. 251-129.000.
Aisin Warner Kabushiki Kaisha: *See—*
  Hayakawa, Yoichi, 4,442,729, Cl. 74-467.000.
Akiyama, Hiroyuki; Kuwabara, Hideki; Yamaguchi, Toru; and Kishida, Masahiko, to Japan Styrene Paper Corporation. Method of pressurizing treatment of pre-foamed particles of polyolefin resin. 4,443,393, Cl. 264-53.000.
Aktiebolag Somas Ventiler: *See—*
  Norder, Stig; and Nilsson, Lars-Erik, 4,442,854, Cl. 137-82.000.
Albarello, Alain, to Thomson-CSF. Process for detecting the melody frequency in a speech signal and a device for implementing same. 4,443,857, Cl. 364-513.500.
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Alcan International Limited: *See—*
  Gesing, Adam J.; McIntyre, John; Vandermeulen, Meine; Cambridge, Edward L.; and DeAngelis, Thomas P., 4,443,313, Cl. 204-240.000.
Alcon Laboratories, Inc.: *See—*
  Garabedian, Michael E.; and Roehrs, Robert E., 4,443,432, Cl. 424-127.000.
Alderman, Robert J. Privacy and hold circuit for telephone. 4,443,665, Cl. 179-99.00H.
Alexander, Carolyn. Bed covering having an overall pattern and a pocket integrated therein. 4,442,558, Cl. 5-494.000.
Alexander, David H.; Ishizuka, Kachu; and Sato, Robert N. Optical displacement sensor. 4,443,107, Cl. 356-373.000.
Alexandrov, Vladimir N.; Ioffe, Vladimir F.; and Filatov, Oleg V. Directly heated meshed cathode for electronic tubes and method of making. 4,443,735, Cl. 313-345.000.
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  Tomaiuolo, Francesco; and Bocchino, Mauro, 4,443,257, Cl. 106-1.230.
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Alkem GmbH: *See—*
  Heller, Gerhard; Adelmann, Manfred; Wendorf, Wilfried; and Konigs, Wilhelm, 4,443,174, Cl. 425-147.000.
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  Allen, Ollie J.; and Allen, Kelly M., 4,442,719, Cl. 73-861.290.
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  Mallik, Arjun; and Edelstein, Harold, 4,443,356, Cl. 252-301.170.
  Morgan, Richard L.; and Pickett, David A., 4,442,804, Cl. 123-145.00A.
  Wells, Rodney L.; and Rowe, Monty L., 4,443,573, Cl. 524-308.000.
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  Buck, Robert T., 4,442,847, Cl. 130-27.00Z.
  Tuzson, John J., 4,442,707, Cl. 73-86.000.
Allo, Vincent F.: *See—*
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  Thuries, Edmond, 4,443,779, Cl. 336-92.000.
Altena, Edgar, to Zero-Max Industries, Incorporated. Energy saving motor speed controller. 4,443,750, Cl. 318-808.000.
Althouse Tertre, S.A.: *See—*
  Brulard, Andre T.; and Gerbaux, Andre A., 4,443,371, Cl. 260-169.000.
Altman, Ronald R. Pastry forming and cutting utensil. 4,442,604, Cl. 30-302.000.
Altron Incorporated: *See—*
  Astbury, Arthur A., 4,443,053, Cl. 339-221.00R.
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  Ricciardi, Mario, 4,443,094, Cl. 355-3.0SH.
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  Queneau, Paul B.; Hogsett, Robert F.; Beckstead, Leo W.; and Huggins, Dale K., 4,443,415, Cl. 423-68.000.
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American Cyanamid Company: *See—*
  Photis, James M., 4,443,623, Cl. 560-170.000.
American Flange & Manufacturing Co. Inc.: *See—*
  Dwinell, Davis B.; and Laurizio, Jeremiah J., 4,442,949, Cl. 220-257.000.
American Home Products Corporation: *See—*
  Lien, Eric L., 4,443,434, Cl. 424-177.000.
  Wei, Peter H. L.; and Bell, Stanley C., 4,443,606, Cl. 546-114.000.
American Microsystems, Inc.: *See—*
  Hague, Yusuf A., 4,443,717, Cl. 307-362.000.

- American Screen Printing Equipment Company: *See—*
  - Bubley, Henry J., 4,442,772, Cl. 101-127.100.
- American Telecommunications Corp.: *See—*
  - Aguilar, Hector V., 4,443,051, Cl. 339-107.000.
- Amici, Carmine J., to C.G.J. Inc. Accessory grill converter. 4,442,824, Cl. 126-14.000.
- Ammon, George J., to RCA Corporation. Track jump servo system for disc player. 4,443.869, Cl. 369-41.000.
- Amos, Walter, to Blendax-Werke R. Schneider GmbH & Co. Container for dispensing a viscous liquid medium. 4,442,958, Cl. 222-213.000.
- AMP Incorporated: *See—*
  - Eaby, Daniel G.; and Shuey, John R., 4,443,052, Cl. 339-113.00R.
  - Mansberger, Robert L., II, 4,443,173, Cl. 425-126.00R.
  - Moist, Stanford C., Jr., 4,443,048, Cl. 339-63.00M.
- Ampro Corporation: *See—*
  - Smith, Stephen N., 4,443,009, Cl. 272-104.000.
- Anderson, Bradley D.; and Conradi, Robert A., to Upjohn Company, The. Amine containing ester prodrugs of corticosteroids. 4,443,440, Cl. 424-243.000.
- Anderson, Dennis C., to National Polymers Inc. Easily assembled combination flower pot and tray. 4,442,629, Cl. 47-71.000.
- Anderson, Max F. Apparatus for harnessing wave motion and solar energy and coriolis acceleration of nature for solar distillation use. 4,442,887, Cl. 165-85.000.
- Anderson Strathclyde Limited: *See—*
  - Brown, Henry M., 4,443,038, Cl. 299-81.000.
- Andis Company: *See—*
  - Andis, Matthew L., 4,443,688, Cl. 219-222.000.
- Andis, Matthew L., to Andis Company. Electrically heated hair curling appliance with removable rotatable hair grooming member. 4,443,688, Cl. 219-222.000.
- Ando, Hideo, to Tokyo Shibaura Denki Kabushiki Kaisha. Data recording medium. 4,443,806, Cl. 346-135.100.
- Ando, Tetsuo: *See—*
  - Matsumoto, Hiroyuki; Abe, Motoaki; and Ando, Tetsuo, 4,443,886, Cl. 377-58.000.
- Andou, Yuji: *See—*
  - Yamamoto, Nobuyuki; Nishikawa, Yasuo; Andou, Yuji; Naruo, Kyoichi; and Okita, Tsutomu, 4,443,514, Cl. 428-216.000.
- Andrews, Arthur R.: *See—*
  - Glynn, John D.; Glynn, Daniel R.; and Andrews, Arthur R., 4,442,801, Cl. 123-3.000.
- Anfor: *See—*
  - Piaton, Alain N., 4,443,858, Cl. 364-518.000.
- Annen, Heinz; Schneebeli, Friedrich; and Pirchl, Helmut, to Escher Wyss Limited. Deformable rotor for a hydroelectric machine. 4,443,727, Cl. 310-261.000.
- Anthon, Erik W., to Optical Coating Laboratory, Inc. Optical system for optical disc reader. 4,443,873, Cl. 369-110.000.
- Antoniadis, Dimitrios. Coil spring tool. 4,442,580, Cl. 29-227.000.
- Aoba, Takashi: *See—*
  - Mori, Leo; Aoba, Takashi; and Tominaga, Mamoru, 4,443,814, Cl. 358-60.000.
- Aoki, Kunitoshi; Honda, Makoto; Dozono, Tetsuro; and Katsumata, Tsutomu, to Asahi Kasei Kogyo Kabushiki Kaisha. Catalyst composition. 4,443,556, Cl. 502-212.000.
- Aoki, Masahiro: *See—*
  - Oinoue, Kenichi; Hayashi, Asao; Ida, Masatoshi; Aoki, Masahiro; Nakamura, Junichi; and Fukuoka, Kenji, 4,443,079, Cl. 354-407.000.
- Aoki, Nobumasa: *See—*
  - Kanamori, Hiroshi; Shigeya, Takehiro; and Aoki, Nobumasa, 4,443,832, Cl. 362-84.000.
- Aoki, Tetsuo: *See—*
  - Noda, Kanji; Nakagawa, Akira; Yamagata, Kenji; Nakashima, Yoichi; Tsuji, Masayoshi; Aoki, Tetsuo; and Ide, Hiroyuki, 4,443,626, Cl. 562-434.000.
- Aoyama, Nagara: *See—*
  - Koike, Masaru; Hasegawa, Yasumasa; Shimosaka, Satoru; Aoyama, Nagara; and Yoshizumi, Toshihiko, 4,442,876, Cl. 144-2.00R.
- Aoyama, Yoshitaka. Toilet bowl odor removal suction control. 4,442,555, Cl. 4-213.000.
- Apley, Walter J.; Cliff, William C.; and Creer, James M., to United States of America, Energy. Sampling device for withdrawing a representative sample from single and multi-phase flows. 4,442,720, Cl. 73-863.310.
- Applied Power Inc.: *See—*
  - Vette, Friedrich, 4,442,912, Cl. 180-89.150.
- Arai, Kiyoshi, to Sony Corporation. Thermal printing apparatus with reference gray scale comparator. 4,443,121, Cl. 400-120.000.
- Arakawa, Noriyuki: *See—*
  - Sakagami, Teruo; Arakawa, Noriyuki; and Murayama, Naohiro, 4,443,366, Cl. 260-112.00R.
- Araki, Shigeru, to Alps Electric Co., Ltd. Control circuit for stepping motor. 4,443,746, Cl. 318-696.000.
- Ardal og Sunndal Verk a.s.: *See—*
  - Holmberg, Paul M., 4,442,593, Cl. 29-825.000.
- Arena, Daniel J. Surface propeller mounting assembly for boats. 4,443,202, Cl. 440-51.000.
- Argus Chemical Corporation: *See—*
  - Pastorino, Ronald L.; Bock, Lawrence A.; and Halle, Reidar, 4,443,376, Cl. 260-453.0RZ.
- Armand, Marcel; and Moinard, Philippe, to Pechiney Ugine Kuhlmann. Process and cell for the preparation of polyvalent metals such as Zr or Hf by electrolysis of molten halides. 4,443,306, Cl. 204-64.00T.
- Armco Inc.: *See—*
  - Hall, Douglas D., 4,443,130, Cl. 405-190.000.
- Armour Food Company: *See—*
  - Sato, Kunito; and Theiler, Richard F., 4,443,483, Cl. 426-266.000.
- Armstrong, Errol C.; Hanacek, William A.; and Spinetti, Thomas A., to Bud Antle, Inc. Automatic soil plug loader and feeder. 4,443,151, Cl. 414-404.000.
- Armstrong World Industries, Inc.: *See—*
  - Piersol, Jay L.; and Koller, Frank J., Jr., 4,443,262, Cl. 106-209.000.
- Arnemann, Gerhard. Apparatus for unloading bulk material from ships. 4,443,148, Cl. 414-139.000.
- Aro Corporation, The: *See—*
  - Bavin, Lowell R., 4,443,164, Cl. 418-41.000.
- Arretz, Emmanuel; Landoussy, Claude; Mirassou, Alfred; and Ollivier, Jean, to Societe Nationale Elf Aquitaine (Production). Photoinitiated synthesis of mercaptans. 4,443,310, Cl. 204-158.00R.
- Asahi Dempa Co., Ltd.: *See—*
  - Hayashi, Hitoaki, 4,443,732, Cl. 310-343.000.
- Asahi-Dow Limited: *See—*
  - Yamazoe, Katsuhiko; Yoshino, Akira; Kitahama, Yoshiharu; and Iwami, Isamu, 4,443,380, Cl. 260-429.200.
- Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
  - Aoki, Kunitoshi; Honda, Makoto; Dozono, Tetsuro; and Katsumata, Tsutomu, 4,443,556, Cl. 502-212.000.
  - Isome, Yasuo; Minami, Toshio; and Takahashi, Tadahiko, 4,443,596, Cl. 536-60.000.
- Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
  - Itoh, Takayuki, 4,443,068, Cl. 350-423.000.
  - Tomori, Yasumasa; Shimoda, Mituhiko; and Haraguchi, Keisuke, 4,443,085, Cl. 354-402.000.
- Asanagi, Etsuo: *See—*
  - Miyoshi, Hajime; Asanagi, Etsuo; Iguchi, Junsuke; and Okabayashi, Ikuo, 4,443,260, Cl. 106-109.000.
- Asao, Yasuzi: *See—*
  - Kiritani, Masataka; and Asao, Yasuzi, 4,443,535, Cl. 430-538.000.
- Asari, Akira; Noyori, Tatsuhiko; Tsuzuki, Hidehiro; Tabuchi, Takahisa; Masuda, Tsuneharu; and Takehata, Tetsuro, deceased (by Takehata, Akemi, legal representative), to Kabushiki Kaisha Kobe Seiko Sho. Billet scalper and drive mechanism therefor. 4,443,143, Cl. 409-295.000.
- Aschwanden, Felix; and Groeneweg, Willem H., to RCA Corporation. Frequency search system for a phase locked loop. 4,443,769, Cl. 329-50.000.
- Associated Equipment Corporation: *See—*
  - Humphrey, Wayne R., 4,443,751, Cl. 320-2.000.
- Astbury, Arthur A., to Altron Incorporated. Electrical contact. 4,443,053, Cl. 339-221.00R.
- Asulab, S.A.: *See—*
  - Bui, Ngoc C., 4,443,757, Cl. 324-77.00B.
- AT & T Bell Telephone Laboratories, Incorporated: *See—*
  - Chin, Aland K.; and Dutt, Bulusu V., 4,443,809, Cl. 357-16.000.
- AT&T Technologies, Inc.: *See—*
  - Foo, George; Grodkiewicz, Raymond W.; Kubis, Stanley E.; and Lindsay, Gordon C., 4,442,582, Cl. 29-403.300.
- Atlantic Richfield Company: *See—*
  - Hearn, Daniel P., 4,443,702, Cl. 250-357.100.
  - Jones, C. Andrew; Leonard, John J.; and Sofranko, John A., 4,443,644, Cl. 585-500.000.
  - Jones, C. Andrew; Leonard, John J.; and Sofranko, John A., 4,443,645, Cl. 585-500.000.
  - Jones, C. Andrew; Leonard, John J.; and Sofranko, John A., 4,443,646, Cl. 585-500.000.
  - Jones, C. Andrew; Leonard, John J.; and Sofranko, John A., 4,443,647, Cl. 585-500.000.
  - Jones, C. Andrew; Leonard, John J.; and Sofranko, John A., 4,443,648, Cl. 585-500.000.
  - Jones, C. Andrew; Leonard, John J.; and Sofranko, John A., 4,443,649, Cl. 585-500.000.
  - Lichtin, Norman N.; and Berman, Elliot, 4,443,311, Cl. 204-158.00R.
- Atlas, Sheldon M., to Rosenwald, Peter. Antistatic fabrics incorporating specialty textile fibers having high moisture regain and articles produced therefrom. 4,443,515, Cl. 428-224.000.
- Auer, Werner, to Teldix GmbH. North seeking and course keeping gyro device. 4,442,723, Cl. 74-5.470.
- August Hohnholz KG: *See—*
  - Melchior, Bernd, 4,443,391, Cl. 264-22.000.
- Austin, Warren; and Penny, Alex, to Aaccurate Counters Company. Coin counter. 4,442,850, Cl. 133-3.00H.
- Auth, Werner; and Felger, Gunter, to Robert Bosch GmbH. Electronically controlled fuel metering system. 4,442,817, Cl. 123-489.000.
- Automotive Products Limited: *See—*
  - Hodkinson, Harold; and Haines, William E., 4,442,924, Cl. 188-79.5GT.
- Avco Corporation: *See—*
  - Fish, Leonard A., 4,442,781, Cl. 109-53.000.
  - McMurray, John H.; and Miller, Jule, 4,442,968, Cl. 228-231.000.
- Avedikian, Souren Z. Instant starting briquettes. 4,443,227, Cl. 44-6.000.
- Avery, Grant D., to Sprague Electric Company. Symmetrical-hysteresis Hall switch. 4,443,716, Cl. 307-309.000.
- Aviation Electric Ltd.: *See—*
  - MacIsaac, Bernard D., 4,442,667, Cl. 60-39.281.
- Baba, Kazuo. Ultrasonic scanner for examination of a coeliac cavity. 4,442,842, Cl. 128-660.000.

- Babcock-Hitachi Kabushiki Kaisha: *See—*
  - Sukekawa, Masayuki; Tobita, Yoshimitsu; Kirihara, Seishin; Morimoto, Hisashi; Usami, Kenichi; and Iijima, Katsumi, 4,443,406, Cl. 420-584.000.
- Babcock Power Limited: *See—*
  - Hodgkin, Alan F., 4,442,678, Cl. 60-676.000.
- Babcock & Wilcox Company, The: *See—*
  - Seifert, Thomas P.; and Longfield, Warren E., 4,442,800, Cl. 122-379.000.
- Bader, Ghassan: *See—*
  - Dean, Raymond H.; and Bader, Ghassan, 4,442,760, Cl. 98-40.00D.
- Baer, Don E.: *See—*
  - Long, Ralph W.; Smith, Charles B.; and Baer, Don E., 4,442,975, Cl. 239-150.000.
- BagMan, Inc.: *See—*
  - Vetter, Bruce W., 4,442,960, Cl. 224-32.00A.
- Bailey, Gary C., to United States of America, National Aeronautics and Space Administration. Integrating IR detector imaging systems. 4,443,701, Cl. 250-332.000.
- Bailey, John R. Can crushing apparatus. 4,442,768, Cl. 100-233.000.
- Baillet, Douglas G.: *See—*
  - Graham, Douglas A.; Baillet, Douglas G.; and Sankey, Mark, 4,442,606, Cl. 33-1.00N.
- Baker, Alfred L.: *See—*
  - Payne, Thomas R.; and Baker, Alfred L., 4,443,690, Cl. 219-506.000.
- Baker, CAC, Inc.: *See—*
  - Goans, Kip B., 4,442,756, Cl. 92-23.000.
  - Goans, Kip B., 4,442,757, Cl. 92-82.000.
- Baker Oil Tools, Inc.: *See—*
  - Callihan, Rudy B.; and Wainwright, Clyde, 4,442,894, Cl. 166-156.000.
  - Underdown, David R.; and Glaze, O. Howard, 4,443,347, Cl. 252-8.55R.
- Bakker, Fredrick J.: *See—*
  - Martin, Samuel A.; Bakker, Fredrick J.; Hungerink, Gerald W.; Gisinger, Jack L.; and Bush, James H., 4,443,025, Cl. 280-407.000.
- Baldi, Alfonso L., to Alloy Surfaces Company, Inc. Treatment of catalytic Raney nickel. 4,443,557, Cl. 502-301.000.
- Baldwin Piano & Organ Company: *See—*
  - Simmons, Carlton J., Jr.; and Uetrecht, Dale M., 4,442,746, Cl. 84-1.010.
- Ball Corporation: *See—*
  - Stockton, Ronald J.; and Munson, Robert E., 4,442,590, Cl. 29-571.000.
- Ballard, Evan O., to United States of America, Energy. Purged window apparatus utilizing heated purge gas. 4,443,072, Cl. 350-584.000.
- Ballard, Jack V., Jr., to Macfarlane, John L. Automatic valve bag placer. 4,442,874, Cl. 141-166.000.
- Bally Manufacturing Corporation: *See—*
  - Hooker, Donald E.; and Tojza, Roman A., 4,443,209, Cl. 474-94.000.
- Balordi, Romano, to Maryland Cup Corporation. Induction furnace for heat shrinking thermoplastic sheet onto mandrels in a forming process. 4,443,679, Cl. 219-10.49R.
- Baltes, Eugene: *See—*
  - Rodriguez, Ludovic; and Baltes, Eugene, 4,443,460, Cl. 424-267.000.
- Bandurski, Paul S., to Cam Fran Tool Co., Inc. Lead saddle assembly and apparatus for forming. 4,443,284, Cl. 156-212.000.
- Banich, John N., Sr., to Continental White Cap, Inc. Plastic closure with sealing flaps. 4,442,947, Cl. 215-344.000.
- Banyu Pharmaceutical Co., Ltd.: *See—*
  - Yano, Mitsuo; Yoshizawa, Junji; Ishikawa, Kiyofumi; Harada, Nobuo; and Matsumoto, Ikuo, 4,443,459, Cl. 424-266.000.
- Bar-Nof, Moshe: *See—*
  - Hirsch, Gustav M.; and Bar-Nof, Moshe, 4,442,601, Cl. 30-169.000.
- Barbaro, Aurelio: *See—*
  - Pansolli, Paolo; Barbaro, Aurelio; Maimone, Adriano; and Valdiserri, Mario, 4,443,267, Cl. 127-46.200.
- Barbier, William J.; and Leimbach, J. George, to Sporlan Valve Company. Pilot-operated pressure regulator valve. 4,442,680, Cl. 62-217.000.
- Barcikowski, Gerald F.: *See—*
  - Pajonas, Thomas L.; Barcikowski, Gerald F.; and Ennaco, Andrew J., 4,442,783, Cl. 110-347.000.
- Barger, William L.: *See—*
  - Cain, Earl S.; Carlson, Jerome A.; and Barger, William L., 4,443,044, Cl. 384-428.000.
- Barrett, Richard B., to Exxon Research and Engineering Co. Method for achieving acceptable U_3O_8 levels in a restored formation. 4,443,133, Cl. 405-263.000.
- Barrickman, Stephen R.: *See—*
  - Loeffler, Earl F.; Barrickman, Stephen R.; and Johnsen, John A., 4,443,290, Cl. 156-396.000.
- Bartz, Stephen A.: *See—*
  - Linman, Dale L.; and Bartz, Stephen A., 4,443,099, Cl. 355-75.000.
- Basten, Frank; and Oxley, Peter, to Black & Decker Inc. Unitary latching and release means for portable foldable workbench. 4,442,779, Cl. 108-131.000.
- Battelle Development Corporation: *See—*
  - Hillman, Melville E. D., 4,443,637, Cl. 568-876.000.
- Battistone, Nick. Food mold. 4,443,176, Cl. 425-276.000.
- Baudet, Pierre J. Imino-alkyl and amino-nitrile cyano-guanidine. 4,443,613, Cl. 548-342.000.
- Bauer, Frederick T.; and Bechtel, Jon H., to Gentex Corporation. Automatic rearview mirror for automotive vehicles. 4,443,057, Cl. 350-281.000.
- Bausch & Lomb Incorporated: *See—*
  - Smith, Francis X.; and Riedhammer, Thomas M., 4,443,429, Cl. 424-78.000.
- Bavin, Lowell R., to Aro Corporation, The. Secondary speed sensor for governed air grinders. 4,443,164, Cl. 418-41.000.
- Bavington, Clive R.: *See—*
  - Pidgeon, Brian G.; and Bavington, Clive R., 4,443,792, Cl. 340-612.000.
- Bayat, Bijan. Electric cord reel. 4,442,984, Cl. 242-106.000.
- Bayer Aktiengesellschaft: *See—*
  - Bonse, Gerhard; and Schmidt, Thomas, 4,443,629, Cl. 564-226.000.
  - Hund, Franz; Hennings, Willi; Brunn, Horst; Kresse, Peter; and Rambold, Wolfgang, 4,443,264, Cl. 106-292.000.
  - Kotulla, Bernhard; Weiser, Martin; Faltin, Jurgen; Preis, Lothar; Schmidt, Rudolf; and Born, Eberhard, 4,443,132, Cl. 405-260.000.
  - Musch, Rudiger; Pampus, Gottfried; Muller, Peter; Eisele, Ulrich; Konter, Wolfgang; and Gobel, Wilhelm, 4,443,582, Cl. 525-215.000.
  - Musch, Rudiger; Pampus, Gottfried; Casper, Rudolf; Muller, Peter; and Gobel, Wilhelm, 4,443,583, Cl. 525-215.000.
  - Seidler, Helmut; Soll, Manfred; and Wunderlich, Klaus, 4,443,369, Cl. 260-131.000.
  - Wolff, Joachim; Wolf, Karlheinz; Koll, Jochen; Hornle, Reinhold; Molls, Hans-Heinz; and Paulat, Volker, 4,443,225, Cl. 8-549.000.
- Bayerische Motoren Werke AG: *See—*
  - Fischer, Adolf, 4,442,672, Cl. 60-602.000.
- BBC Brown, Boveri & Company, Ltd.: *See—*
  - Buhler, Karl, 4,443,188, Cl. 432-233.000.
  - Buhler, Karl; and Oldani, Karl, 4,443,880, Cl. 373-74.000.
- Bebb, Hubert: *See—*
  - Lindsey, Stanley D.; Ioannides, Socrates A.; Horner, Jack R.; Denton, William S.; Shell, Donald P.; and Bebb, Hubert, 4,442,639, Cl. 52-73.000.
- Bebruder Buhler AG.: *See—*
  - Oetiker, Hans; Linzberger, Robert; Ketting, Leendert; and Winteler, Werner, 4,442,980, Cl. 241-34.000.
- Becht, Carl T., to Senco Products, Inc. Pressure sensitive and working-gap controlled surgical stapling instrument. 4,442,964, Cl. 227-8.000.
- Bechtel, Jon H.: *See—*
  - Bauer, Frederick T.; and Bechtel, Jon H., 4,443,057, Cl. 350-281.000.
- Becker, Josef; Simon, Manfred; Spiess, Karl-Heinz; and Weiss, Richard, to Dynamit Nobel Aktiengesellschaft. Process for the production of molded decorative articles from a hardenable substance based on thermosetting synthetic resin. 4,443,392, Cl. 264-25.000.
- Beckman Instruments Inc.: *See—*
  - Meyer, Richard C., 4,442,722, Cl. 73-864.180.
- Beckmann, Klaus; Grisebach, Hans-Theodor; and Weirich, Walter, to Gewerkschaft Eisenhutte Westfalia. Control apparatus. 4,443,135, Cl. 405-302.000.
- Beckstead, Leo W.: *See—*
  - Queneau, Paul B.; Hogsett, Robert F.; Beckstead, Leo W.; and Huggins, Dale K., 4,443,415, Cl. 423-68.000.
- Beddome, Robert A.; Saunders, John B.; and Fenner, Gary W., to Union Carbide Corporation. Recovery of hydrogen and other components from refinery gas streams by partial condensation using preliminary reflux condensation. 4,443,238, Cl. 62-17.000.
- Beecham Group p.l.c.: *See—*
  - Smale, Terence C., 4,443,599, Cl. 544-90.000.
- Beffart, Hans; and Ries, Hans M., to Carl Freudenberg, Firma. Support tubes for cross-wound coils and cross-windings. 4,442,686, Cl. 68-198.000.
- Begala, Michael W.: *See—*
  - DeSantis, Charles M.; Zannella, Albert H.; Begala, Michael W.; Wills, John R.; and Czerwinski, Watson P., 4,443,803, Cl. 343-749.000.
- Beggs, George, to Mechanical Plastics Corp. Folding platform and shelves for use in vehicles. 4,443,034, Cl. 296-65.00R.
- Beiswenger, John L.; Smiesko, Frank A.; and Chaphalkar, Dhananjay V., to Acme Burgess, Inc. Airless electric sprayer. 4,442,977, Cl. 239-332.000.
- Bell, Stanley C.: *See—*
  - Wei, Peter H. L.; and Bell, Stanley C., 4,443,606, Cl. 546-114.000.
- Bell Telephone Laboratories, Incorporated: *See—*
  - Hunt, Richard M., 4,443,667, Cl. 179-115.00R.
  - Joy, David C.; Kaplan, Martin L.; and Schmidt, Paul H., 4,443,532, Cl. 430-270.000.
  - Ng, Ying-Wah, 4,443,876, Cl. 371-49.000.
  - Rolfe, Robert M.; and Shoji, Masakazu, 4,443,882, Cl. 375-36.000.
  - Starnes, William H., Jr., 4,443,586, Cl. 525-370.000.
- Beller, Frank W., to Belson Manufacturing Co., Inc. Meat roaster. 4,442,762, Cl. 99-427.000.
- Beller, Frank W., to Belson Manufacturing Co., Inc. Meat roaster. 4,442,763, Cl. 99-427.000.
- Belson Manufacturing Co., Inc.: *See—*
  - Beller, Frank W., 4,442,762, Cl. 99-427.000.
  - Beller, Frank W., 4,442,763, Cl. 99-427.000.
- Belton, John P., Jr., to United States of America, Air Force. Precision digital sampler. 4,443,766, Cl. 328-151.000.
- Bendix Corporation, The: *See—*
  - Eastman, James M., 4,442,928, Cl. 192-3.00N.

- Bendix Westinghouse Limited: *See—*
  - Neal, Brian P.; and Turner, Alan R., 4,442,957, Cl. 222-207.000.
- Bennethum, Mary L. Survival and water purification system. 4,443,336, Cl. 210-238.000.
- Benscoter, Richard D.: *See—*
  - Flachbarth, Charles T.; Benscoter, Richard D.; and Sheridan, James E., 4,443,654, Cl. 174-48.000.
- Bentele, Benedikt; Schmid, Norbert; and Schonwald, Siegfried, to Siemens Aktiengesellschaft. Liquid ring pump with a control disk arranged between the impeller housing and the cover. 4,443,158, Cl. 417-68.000.
- Berezowski, Jaroslaw; and Feinman, Harvey M., to Sealectro Corporation. Electro-optical badge reader. 4,443,693, Cl. 235-458.000.
- Bergandy, Wieslaw, to National Instrument Company, Inc. Self-pressurizing pinch valve. 4,442,954, Cl. 222-55.000.
- Berger, Michael F., to Tandy Corporation. Data synchronization apparatus. 4,443,883, Cl. 375-116.000.
- Bergmann, Gerhard; and Hittel, Gerhard, to Karl Mayer Textilmaschinenfabrik GmbH. Control of weft thread insertion. 4,442,684, Cl. 66-84.00A.
- Bergsma, Wijtse; and Venema, Eelke S., to U.S. Philips Corporation. Shaving apparatus. 4,442,597, Cl. 30-43.600.
- Berman, Elliot: *See—*
  - Lichtin, Norman N.; and Berman, Elliot, 4,443,311, Cl. 204-158.00R.
- Berry, William J. Golf ball cleaner. 4,442,564, Cl. 15-21.00A.
- Berthold, Heinz, to Brueninghaus Hydraulik GmbH. High-pressure piston pump for liquids, preferably for water. 4,443,160, Cl. 417-270.000.
- Berthold, Rudiger: *See—*
  - Papenfuhs, Theodor; and Berthold, Rudiger, 4,443,630, Cl. 564-406.000.
- Beske, Lawrence E.: *See—*
  - Bhattacharyya, Bhupati I.; Slovinsky, Manuel; Wachala, Raymond J.; Beske, Lawrence E.; and McCullar, Michael L., 4,443,576, Cl. 524-522.000.
- Beth Israel Hospital Association, The: *See—*
  - Stemerman, Michael B.; Weinstein, Robert; and Maciag, Thomas, 4,443,546, Cl. 435-240.000.
- Bethlehem Steel Corp.: *See—*
  - Mino, George M.; Dustin, Donald L.; and Williams, John H., 4,443,501, Cl. 427-360.000.
- Betz, Clyde B.: *See—*
  - McGehee, Fred N., Sr.; Peck, Billy J.; Betz, Clyde B.; and Morgan, Calvin R., Jr., 4,442,585, Cl. 29-432.000.
- Betz, Karl, to Puritan-Bennett. Oxygen regulator and alarm system for an anesthesia machine. 4,442,856, Cl. 137-98.000.
- Betz Laboratories, Inc.: *See—*
  - May, Roger C.; and Sessa, Frank C., 4,443,340, Cl. 210-697.000.
- Bhattacharyya, Bhupati I.; Slovinsky, Manuel; Wachala, Raymond J.; Beske, Lawrence E.; and McCullar, Michael L., to Nalco Chemical Company. Terpolymer composition. 4,443,576, Cl. 524-522.000.
- Bhattacharyya, Sushantha K.: *See—*
  - El-Menshawy, Mohamed F.; and Bhattacharyya, Sushantha K., 4,443,680, Cl. 219-69.00C.
- Bhushan, Manjul: *See—*
  - Catalano, Anthony W.; and Bhushan, Manjul, 4,443,653, Cl. 136-265.000.
- Biard, Daniel; and Lodewick, Rainer, to Procter & Gamble Company, The. Rinse aid composition. 4,443,270, Cl. 134-25.200.
- Biedermann, Jurgen; Prop, Gerrit; and Doppelfeld, Ille-Stephanie, to A. Nattermann & Cie GmbH. (+)-2-[1-(2,6-Dichlorophenoxy)-ethyl]-1,3-diazacyclopent-2-ene and the method for the treatment of human beings suffering from nervous disarrangements, in particular migraine. 4,443,464, Cl. 424-273.000.
- Billcon Corporation of America: *See—*
  - Hasegawa, Kaiichi, 4,443,006, Cl. 271-10.000.
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  - Reichert, James K.; and Stott, Michael A., 4,443,767, Cl. 328-155.000.
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  - Collins, Guy R., 4,443,593, Cl. 528-210.000.
  - Cook, Thomas G., 4,443,268, Cl. 134-2.000.
  - Dirlikov, Stoil K.; and Schneider, Connie J., 4,443,563, Cl. 521-174.000.
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  - Hefner, Robert E., Jr., 4,443,580, Cl. 525-44.000.
  - Kaiser, Mark E., 4,443,611, Cl. 548-239.000.
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  - Gutek, Beth I., 4,443,502, Cl. 427-387.000.
  - Keil, Joseph W., 4,443,351, Cl. 252-75.000.
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  - Zublin, Casper W., 4,442,899, Cl. 166-312.000.
- Downing, Gerald T., to W. H. Brady Co. Longitudinally-seamed assembly of sleeve markers. 4,442,939, Cl. 206-345.000.
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  - Muller, Hans, 4,443,346, Cl. 210-785.000.
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  - Gouet, Philippe; Contrepois, Michel G.; Dubourguier, Henri-Charles; Girardeau, Jean-Pierre; Goby, Hubert L. J.; Goby, Therese M.; Goby, Anne M.; and Goby, Genevieve, 4,443,547, Cl. 435-253.000.
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  - Coq, Jean-Louis G.; and Seymus, Herman E., 4,443,574, Cl. 524-423.000.
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  - Levitt, George, 4,443,244, Cl. 71-93.000.
  - Smith, James G., 4,443,215, Cl. 604-29.000.
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  - Gunther, Conrad J., 4,442,561, Cl. 10-1.00R.
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- Electro-Nite Co.: *See—*
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  - Strohmeyer, Charles, Jr., 4,442,795, Cl. 122-4.00D.
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  - Strow, Donald A.; and Henning, Harold I. G., 4,443,126, Cl. 403-24.000.
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  - Siegell, Jeffrey H., 4,443,231, Cl. 55-3.000.
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  - Radigan, Kenneth J.; and Cleeves, James M., 4,443,295, Cl. 156-657.000.
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  - Worni, Guido, 4,443,287, Cl. 156-247.000.
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  - Loeffler, Earl F.; Barrickman, Stephen R.; and Johnsen, John A., 4,443,290, Cl. 156-396.000.
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- Forney Engineering Company: *See—*
  - Slater, Billy R., 4,443,861, Cl. 364-900.000.
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- Gange, Robert A., to RCA Corporation. Telephone station incorporating exchange message system. 4,443,664, Cl. 179-5.500.
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  - Sember, James W., 4,443,673, Cl. 200-144.00R.
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  - Wright, John H.; and Smith, Alfred H., Jr., 4,443,348, Cl. 252-37.200.
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  - Karmiol, Mark H.; Hickernell, Gary L.; and Hall, Bertrand J., 4,443,601, Cl. 544-274.000.
  - Schopf, Larry D.; Sakowicz, Jerome K.; and Trenk, Hugh L., 4,443,482, Cl. 426-106.000.
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  - Conn, Francis E., 4,442,668, Cl. 60-39.281.
  - Hartz, James F., 4,442,733, Cl. 74-606.00R.
  - Jacovides, Linos J.; and Woods, Edward J., 4,443,678, Cl. 219-10.410.
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  - Walwyn, Craig M.; and Bohonos, Donald E., 4,443,098, Cl. 355-74.000.
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  - Bauer, Frederick T.; and Bechtel, Jon H., 4,443,057, Cl. 350-281.000.
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  - Legrand, Michel; Canonne, Paul; and Brault, Christian, 4,443,828, Cl. 361-93.000.
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- Gesing, Adam J.; McIntyre, John; Vandermeulen, Meine; Cambridge, Edward L.; and DeAngelis, Thomas P., to Alcan International Limited. Electrolytic reduction cells. 4,443,313, Cl. 204-240.000.
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  - Schneider, Siegfried, 4,443,742, Cl. 318-85.000.
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  - Zison, Stanley W., 4,442,901, Cl. 166-369.000.
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  - Blaimschein, Gottfried, 4,443,142, Cl. 409-199.000.
- Giacomelli, Renato, to MORWEN S.r.l. Method for making reinforced plastics material eyeglass frames. 4,443,074, Cl. 351-178.000.
- Gianelli, Mary L.: *See—*
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- Gibbons, Ralph D., to Lansing Bagnall Limited. Apparatus and method for the production of wiring looms. 4,442,872, Cl. 140-92.100.
- Gibbs, Dennis S.: *See—*
  - Bradley, David J.; Eggebrecht, Lewis C.; Gibbs, Dennis S.; and Kostuch, Donald J., 4,443,847, Cl. 364-200.000.
- Gibson, Kirk R., to Chevron Research Company. Highly stable hydroprocessing catalyst. 4,443,558, Cl. 502-314.000.
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  - Shields, Charles E.; and Giese, Leonard R., 4,442,587, Cl. 29-564.400.
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  - Buchholz, Albert; Hesse, Werner; and Moller, Gunther, 4,443,021, Cl. 279-4.000.
- Gill, Gregory G.: *See—*
  - Frater, Norman K.; Gill, Gregory G.; and Watrous, Robert B., 4,443,824, Cl. 360-104.000.
- Gillette Company, The: *See—*
  - Jacobson, Chester F., 4,442,598, Cl. 30-47.000.
- Gilman, Paul S.: *See—*
  - Weber, John H.; and Gilman, Paul S., 4,443,249, Cl. 75-0.50R.
- Gimelli + Co. AG: *See—*
  - Markau. Dieter, 4,442,830, Cl. 128-66.000.
- Girardeau, Jean-Pierre: *See—*
  - Gouet, Philippe; Contrepois, Michel G.; Dubourguier, Henri-Charles; Girardeau, Jean-Pierre; Goby, Hubert L. J.; Goby, Therese M.; Goby, Anne M.; and Goby, Genevieve, 4,443,547, Cl. 435-253.000.

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Gobel, Wilhelm: *See—*
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  Gouet, Philippe; Contrepois, Michel G.; Dubourguier, Henri-Charles; Girardeau, Jean-Pierre; Goby, Hubert L. J.; Goby, Therese M.; Goby, Anne M.; and Goby, Genevieve, 4,443,547, Cl. 435-253.000.

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Godfrey, Timothy D.; and Smith, Rodger L. Light means and method of lighting. 4,443,831, Cl. 362-80.000.

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Golden, Meigs C., Jr.: *See—*
  Duffee, Henry S.; and Golden, Meigs C., Jr., 4,443,015, Cl. 277-30.000.

Goldman, Jacob. Closed-cycle heat-engine. 4,442,670, Cl. 60-517.000.

Goldman, Theodore D., to Rohm and Haas Company. Diene/acrylate based impact modifier for PVC. 4,443,585, Cl. 525-310.000.

Golev, Sergei P.: *See—*
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Gonser, Donald I., to Dentsply Research and Development Corporation. Method for joining objects. 4,443,494, Cl. 156-64.000.

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  Minter, Thomas F.; Jansen, Lawrence G.; and Springford, Richard H., 4,442,618, Cl. 40-587.000.
  Sandstrom, Paul H., 4,443,279, Cl. 156-123.000.

Goralnik, Charles D. Dimmer switch for a fluorescent lamp. 4,443,740, Cl. 315-284.000.

Gordon, R. Robert. Evaporative cooling device and process for cooling large areas. 4,443,387, Cl. 261-30.000.

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Goto, Hirokazu: *See—*
  Sawada, Takeshi; Yoneda, Ko; Shinmi, Akira; Takagi, Hiroshi; Abiko, Shuzo; and Goto, Hirokazu, 4,443,826, Cl. 360-113.000.

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  De Pommery, Bertrand J. C. H.; and Goupil, Jean-Paul C., 4,443,049, Cl. 339-75.0MP.

Grace, Alan G., to Efflo Incorporated. High frequency power switching circuit. 4,443,844, Cl. 363-132.000.

Grady, Clyde C., II. Machine for concrete molding. 4,442,995, Cl. 249-139.000.

Grafe, Robert J.: *See—*
  Busch, Dennis G.; Grafe, Robert J.; and Leikam, Gary E., 4,443,863, Cl. 364-900.000.

Graham, Anne M.: *See—*
  Pesa, Frederick A.; Graham, Anne M.; and Kliewer, Wayne R., 4,443,639, Cl. 568-885.000.

Graham, Douglas A.; Baillet, Douglas G.; and Sankey, Mark. Digital goniometer. 4,442,606, Cl. 33-1.00N.

Grant, Frederic F., to Datatape Incorporated. Tape advancing method and apparatus with fast tape advance mode. 4,442,963, Cl. 226-97.000.

Grant, George G., to Reliance Electric Co. Gear type shaft coupling. 4,443,205, Cl. 464-16.000.

Gravelle, Alain: *See—*
  Marini, Jean; and Gravelle, Alain, 4,443,402, Cl. 376-252.000.

Graversen, Niels P. G.; and Pedersen, Svend P., to Danfoss A/S. Remote control temperature sensor with expansible material. 4,443,120, Cl. 374-201.000.

Gray, William T.: *See—*
  Chance, Allan; and Gray, William T., 4,442,735, Cl. 81-3.440.

Great Lakes Carbon Corporation: *See—*
  Secrist, Duane R.; Clark, James M.; and Grindstaff, Henry E., 4,443,314, Cl. 204-243.00R.

Greco, Claudio; and Fiorito, Gianfranco, to IAO Industrie Riunite S.p.A. Window regulator, particularly for motor vehicles. 4,442,632, Cl. 49-352.000.

Greco, Nicholas P., to Koppers Company, Inc. Refining lurgi tar acids. 4,443,636, Cl. 568-761.000.

Greene, Edward. Adaptor cartridge. 4,442,777, Cl. 102-444.000.

Gregg, Hans, to Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co. Pallet magazine. 4,442,935, Cl. 198-648.000.

Gregorovich, Charles J.: *See—*
  Grow, Arthur L.; Gregorovich, Charles J.; and Seyfried, Donald N., 4,442,691, Cl. 72-329.000.

Griffith, Jeffrey D.; and Ozretich, Thomas M., to Dow Chemical Co., The. Product for treating soil to suppress the nitrification of ammonium nitrogen therein. 4,443,625, Cl. 560-254.000.

Grimwood, Geoffrey L.; and Wright, John, to Thomas Broadbent & Sons Limited. Decanting type centrifuge. 4,443,213, Cl. 494-38.000.

Grinberg, Jan; Waldner, Michael; Braatz, Paul O.; and Jacobson, Alexander D., to Hughes Aircraft Company. High resolution AC silicon MOS-light-valve substrate. 4,443,064, Cl. 350-334.000.

Grinde, James E., to Yamaha Hatsudoki Kabushiki Kaisha. Snow vehicle. 4,442,913, Cl. 180-190.000.

Grindstaff, Henry E.: *See—*
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Grisebach, Hans-Theodor: *See—*
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Grodkiewicz, Raymond W.: *See—*
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Groeneweg, Willem H.: *See—*
  Aschwanden, Felix; and Groeneweg, Willem H., 4,443,769, Cl. 329-50.000.

Groll, Robert C. Piston machine. 4,442,758, Cl. 92-138.000.

Gronbeck, Peter W.; Mullaney, Dennis; and Smith, Kimberly M., to Steelstran Industries, Incorporated. Collapsible ladder. 4,442,920, Cl. 182-199.000.

Groos, Horst: *See—*
  Fusser, Hermann; Groos, Horst; and Schmoll, Heinz, 4,442,694, Cl. 72-453.010.

Gross, Glenn; and Moore, Douglas R., to Norlin Industries, Inc. Long duration aperiodic musical waveform generator. 4,442,745, Cl. 84-1.010.

Gross, Leo; and Skeist, S. Merrill, to Gross, Leo. High intensity discharge lamp with arc spreading means. 4,443,734, Cl. 313-26.000.

Gross, Reinhold; Willuhn, Dietrich; and Witte, Horst, to Klockner-Werke Aktiengesellschaft. Yieldable roof support for mine passages and the like. 4,443,134, Cl. 405-288.000.

Grow, Arthur L.; Gregorovich, Charles J.; and Seyfried, Donald N., to Minster Machine Company, The. Double action press having floating punch. 4,442,691, Cl. 72-329.000.

Grubb, Linda J.: *See—*
  Worden, Dexter; Wilson, Frederic T.; and Grubb, Linda J., 4,443,511, Cl. 428-198.000.

Gruetzmacher, Ralph W.: *See—*
  Isaacson, Bruce G.; Gruetzmacher, Ralph W.; and Schroeder, Kenneth W., 4,443,759, Cl. 324-216.000.

GTE Laboratories Incorporated: *See—*
  Fox, Jeffrey R., 4,443,715, Cl. 307-270.000.

Guiseley, Kenneth B., to FMC Corporation. Modified extractive of *Eucheuma cottonii* seaweed and composition containing same. 4,443,486, Cl. 426-584.000.

Gullace, Michael. Aeration device. 4,443,335, Cl. 210-220.000.

Gunther, Bernd-Rainer, to A. Nattermann & Cie GmbH. Process for the separation of acylated phospholipids from phosphatidylcholine products containing the same. 4,443,378, Cl. 260-403.000.

Gunther, Conrad J., to Dzus Fastener Co., Inc. Slotted fastener. 4,442,561, Cl. 10-1.00R.

Gunther, Siegfried; and Winterholler, Cohann, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Air lock, particularly to permit drying of a printed web in a controlled atmosphere. 4,442,611, Cl. 34-41.000.

Gutbrod, Robert: *See—*
  Dietz, Erwin; Maikowski, Michael; and Gutbrod, Robert, 4,443,263, Cl. 106-287.240.

Gutek, Beth I., to Dow Corning Corporation. Liquid organosiloxane resin compositions. 4,443,502, Cl. 427-387.000.

Guth, Jacob J.; and Verdicchio, Robert J., to Johnson & Johnson Baby Products Company. Detergent compounds and compositions. 4,443,362, Cl. 252-545.000.

Guthrie, Robert W.; Kierstead, Richard W.; Mennona, Francis A.; and Sullivan, Ann C., to Hoffmann-La Roche Inc. Chlorocitric acids. 4,443,619, Cl. 549-518.000.

Gutierrez, Antonio M., to Empresa Cubana Exportadora E Importadora de Productos Medicos. Apparatus for the confection of maxillar models through cephalometic analysis. 4,443,191, Cl. 433-56.000.

Haberland, Siegfried, to Robert Bosch GmbH. Fuel injection pump for internal combustion engines. 4,442,816, Cl. 123-457.000.

Haerer, James P. Hydraulically operated hand tool for forcing open doors. 4,443,001, Cl. 254-93.00R.

Haga, Tomoyuki: *See—*
  Sakuragi, Shiro; Imagawa, Kyoshiro; Kotani, Haruo; Saito, Mitsunori; and Haga, Tomoyuki, 4,443,684, Cl. 219-121.0LH.

Hagiwara, Takaaki; and Yatsuda, Yuji, to Hitachi, Ltd. Nonvolatile semiconductor memory with stabilized level shift circuit. 4,443,718, Cl. 307-530.000.

Hague, Yusuf A., to American Microsystems, Inc. High resolution fast diode clamped comparator. 4,443,717, Cl. 307-362.000.

Hahn, Granville J.; and Rutledge, Raleigh N., to Cosden Technology, Inc. Multiple-layered sheeting apparatus and process therefor. 4,443,397, Cl. 264-171.000.

Hahn, Norbert; Hipp, Steven J.; and Swessel, Michael A., to Rite-Hite Corporation. Releasable locking device. 4,443,150, Cl. 414-401.000.

Hahs, Charles A.; and Burbage, Charles H., to United States of America, Energy. Valve for gas centrifuges. 4,442,861, Cl. 137-595.000.

Haines, William E.: *See—*
  Hodkinson, Harold; and Haines, William E., 4,442,924, Cl. 188-79.5GT.

Hairston, Hannon S.; and Hanrath, M. E., to Mobile Pulley & Machine Works (A division of Lehigh Valley Industries, Inc.). Ball joint. 4,443,030, Cl. 285-263.000.

Haken, Roger A., to Texas Instruments Incorporated. High-voltage CMOS process. 4,442,591, Cl. 29-571.000.

Hall, Bertrand J.: *See—*
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Hall, Douglas D., to Armco Inc. Remotely operated tool for performing functions under water. 4,443,130, Cl. 405-190.000.

Hall, Norman M., Jr., to Calnor of El Paso. Gas detection system. 4,443,793, Cl. 340-634.000.

Halland, Bruce: *See—*
  Isaacson, Douglas T., 4,443,149, Cl. 414-326.000.

Halle, Reidar: *See—*
  Pastorino, Ronald L.; Bock, Lawrence A.; and Halle, Reidar, 4,443,376, Cl. 260-453.0RZ.

Hallmark Cards, Inc.: *See—*
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Hamai, Kyugo; Nakagawa, Yasuhiko; Nakai, Meroji; and Inoue, Ryuzaburo, to Nissan Motor Co., Ltd. Internal combustion engine ignition method. 4,442,821, Cl. 123-639.000.

Hamashima, Yoshio: *See—*
  Yoshioka, Mitsuru; Shoichiro, Uyeo; Hamashima, Yoshio; Kikkawa, Ikuo; Tsuji, Teruji; and Nagata, Wataru, 4,443,598, Cl. 544-90.000.

Hamilton, Luke C. Shelf bracket. 4,442,638, Cl. 52-36.000.

Hamilton, Stephen P.; and Hunter, Arthur C., to Texas Instruments Incorporated. Memory system having a common interface. 4,443,845, Cl. 364-200.000.

Hammer, Rudolf: *See—*
  Engel, Wolfhard; Trummlitz, Gunter; Schmidt, Gunther; Eberlein, Wolfgang; Hammer, Rudolf; and del Soldato, Piero, 4,443,452, Cl. 424-256.000.

Hammerling, Heinz; and Schairer, Werner, to Licentia Patent-Verwaltungs-GmbH. Data transmission system employing wire and wireless transmission paths. 4,443,786, Cl. 340-310.00R.

Hammond, Errol C., to Kerilea Cloche Limited. Cloches. 4,442,626, Cl. 47-29.000.

Hammond, Wayne H.; and Jones, George V., to Olin Corporation. Surfactant washing of polychloroisocyanuric acids. 4,443,600, Cl. 544-190.000.

Hanacek, William A.: *See—*
  Armstrong, Errol C.; Hanacek, William A.; and Spinetti, Thomas A., 4,443,151, Cl. 414-404.000.

Handlykken, Mathias B., to United States of America, National Aeronautics and Space Administration. Shaft transducer having DC output proportional to angular velocity. 4,443,724, Cl. 310-171.000.

Hannah, Bruce H., to Knoll International, Inc. Desk assembly. 4,443,046, Cl. 312-183.000.

Hanrath, M. E.: *See—*
  Hairston, Hannon S.; and Hanrath, M. E., 4,443,030, Cl. 285-263.000.

Hapad, Inc.: *See—*
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Harada, Nobuo: *See—*
  Yano, Mitsuo; Yoshizawa, Junji; Ishikawa, Kiyofumi; Harada, Nobuo; and Matsumoto, Ikuo, 4,443,459, Cl. 424-266.000.

Harada, Toshimitsu; and Watanabe, Koji, to Konishiroku Photo Industry Co., Ltd. Film winding device. 4,443,084, Cl. 354-173.110.

Haraguchi, Keisuke: *See—*
  Tomori, Yasumasa; Shimoda, Mituhiko; and Haraguchi, Keisuke, 4,443,085, Cl. 354-402.000.

Harrar, Jackson E.: *See—*
  Coon, Clifford L.; Harrar, Jackson E.; Pearson, Richard K.; and McGuire, Raymond R., 4,443,308, Cl. 204-103.000.

Harris, Craig W., to Burroughs Corporation. Interface circuit for subsystem controller. 4,443,850, Cl. 364-200.000.

Harrison, Anthony W., to Lucas Industries Limited. Gas suspension systems for vehicles. 4,443,026, Cl. 280-714.000.

Harshaw/Filtrol Partnership: *See—*
  Chiang, Robert L.; and Scherzer, Julius, 4,443,553, Cl. 502-68.000.
  Taylor, Dennis R.; and Demidowicz, Zenon, 4,443,379, Cl. 260-427.000.

Hartman, George D., to Merck & Co., Inc. Aminocrot onylpyridine N-oxides useful as adjuncts to radiation therapy. 4,443,457, Cl. 424-263.000.

Hartman, George D., to Merck & Co., Inc. Aminocrotonyl 3,5-dinitropyridine useful as adjuncts to radiation therapy. 4,443,458, Cl. 424-263.000.

Hartmann, Bernd. Cable bearer system. 4,442,989, Cl. 248-49.000.

Hartz, James F., to General Motors Corporation. Transmission center support mounting. 4,442,733, Cl. 74-606.00R.

Harvard, Jean F., to Brissonneau et Lotz Marine. Flexible couplings for mechanical jacking devices used in the installation of marine platforms. 4,443,000, Cl. 254-89.00R.

Hasegawa, Kaiichi, to Billcon Corporation of America. Document and currency counter. 4,443,006, Cl. 271-10.000.

Hasegawa, Yasumasa: *See—*
  Koike, Masaru; Hasegawa, Yasumasa; Shimosaka, Satoru; Aoyama, Nagara; and Yoshizumi, Toshihiko, 4,442,876, Cl. 144-2.00R.

Hasenauer, Dieter, to Brown, Boveri & CIE AG. High-temperature battery. 4,443,525, Cl. 429-102.000.

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  Meinhold, Henner; and Hasenauer, Dieter, 4,443,524, Cl. 429-99.000.

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Hashimoto, Shintaro; Morimoto, Masafumi; Nakanishi, Tosaku; Yoshida, Hideo; and Yanagiuchi, Shigenobu, to Sharp Kabushiki Kaisha. Electronic translator for modifying and speaking out sentence. 4,443,856, Cl. 364-513.500.

Hata, Fumio: *See—*
  Miyakawa, Hideaki; Takahashi, Yasuki; and Hata, Fumio, 4,443,090, Cl. 354-289.120.

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  Kaneko, Toshimi; and Hata, Yukio, 4,443,830, Cl. 361-275.000.

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  Fujii, Setsuro; Hattori, Eizou; Hirata, Mitsuteru; Watanabe, Koichiro; and Ishihama, Hiroshi, 4,443,603, Cl. 544-373.000.

Hattori, Kyo: *See—*
  Idogaki, Takaharu; Kawai, Hisasi; Hattori, Kyo; and Sakurai, Kazuhiro, 4,442,997, Cl. 251-129.000.

Hattori, Yutaka: *See—*
  Ohta, Minoru; Hattori, Yutaka; Kawakami, Tomio; and Onoda, Michitosi, 4,443,781, Cl. 338-34.000.

Hauck Manufacturing Company: *See—*
  Wojcieson, Raymond J.; and Nowak, Leonard G., 4,443,182, Cl. 431-183.000.

Hauenstein, Clifford A.: *See—*
  Wong, George S.; Catterfeld, Fritz C.; and Hauenstein, Clifford A., 4,443,152, Cl. 415-143.000.

Hauer, Jerome M.; and Thurer, Robert L. Blood collection and transfer apparatus. 4,443,220, Cl. 604-408.000.

Hauschild, John P.; and Principe, Joseph R., to Colgate-Palmolive Company. Packaged speckled dentifrice. 4,443,564, Cl. 523-105.000.

Hauser, Georg; and Hoggenstaller, Rolf, to J. Strobel & Sohne GmbH & Co. Ironing table with a movable blower unit. 4,442,616, Cl. 38-14.000.

Hauser, Theodor E., to Hapad, Inc. Orthopedic pads. 4,442,612, Cl. 36-43.000.

Haussmann, Wolfgang: *See—*
  Luder, Rainer; and Haussmann, Wolfgang, 4,443,774, Cl. 333-165.000.

Havot, Henri A. P. Plate-type antenna with double circular loops. 4,443,805, Cl. 343-803.000.

Hawie Mfg. Co., The: *See—*
  Hawie, Robert L., 4,442,623, Cl. 43-54.100.

Hawie, Robert L., to Hawie Mfg. Co., The. Container for umbrella rig. 4,442,623, Cl. 43-54.100.

Hawkins, Peter A. T. Mobile crusher vehicle. 4,442,766, Cl. 100-35.000.

Haworth, Floy, to Haworth, Juanita J. Combination cycle, dual process engine. 4,442,673, Cl. 60-618.000.

Haworth, Juanita J.: *See—*
  Haworth, Floy, 4,442,673, Cl. 60-618.000.

Hayakawa Rubber Company Limited: *See—*
  Ishido, Yoshinobu; and Tanaka, Hideo, 4,443,019, Cl. 277-227.000.

Hayakawa, Yoichi, to Aisin Warner Kabushiki Kaisha. Lubricating system for four-wheel drive torque transfer mechanism. 4,442,729, Cl. 74-467.000.

Hayashi, Asao: *See—*
  Oinoue, Kenichi; Hayashi, Asao; Ida, Masatoshi; Aoki, Masahiro; Nakamura, Junichi; and Fukuoka, Kenji, 4,443,079, Cl. 354-407.000.

Hayashi, Hitoaki, to Asahi Dempa Co., Ltd. Temperature-compensated crystal resonator unit. 4,443,732, Cl. 310-343.000.
Hayashi, Toshihiro: *See—*
  Mutoh, Masayuki; Ishidoh, Takanobu; and Hayashi, Toshihiro, 4,443,820, Cl. 358-296.000.
Hayashida, Shinsaku; Ogata, Seiya; and Yoshino, Sadazo, to Idemitsu Kosan Company Limited. Process for the production of butanol and novel microorganism composition used therein. 4,443,542, Cl. 435-160.000.
Hayes, Jerry R., to L. R. Nelson Corporation, Inc. Quick coupling assembly. 4,443,028, Cl. 285-38.000.
Hayes, Susan E.: *See—*
  Doin, James E.; and Hayes, Susan E., 4,443,579, Cl. 524-837.000.
Haynes, Richard, to Western Electric Company, Inc. Emulsion electrowinning. 4,443,305, Cl. 204-59.00M.
Hazel, Robert L.; and LaBudde, Edward V., to Burroughs Corporation. Optical memory system providing track following. 4,443,870, Cl. 369-44.000.
Hazeltine Corporation: *See—*
  Freyre, Frederick W., 4,443,066, Cl. 350-358.000.
Health Physics Systems, Inc.: *See—*
  Capella, Joseph A.; and Fowler, David E., 4,443,269, Cl. 134-12.000.
Hearn, Daniel P., to Atlantic Richfield Company. Hand operated level detector. 4,443,702, Cl. 250-357.100.
Hefner, Robert E., Jr., to Dow Chemical Company, The. DCPD Modified polyester physical property improvement. 4,443,580, Cl. 525-44.000.
Heikens, Harm H.; and Crommentuyn, Gerardus J., to Oce-Nederland B.V. Colored magnetically attractable toner powder, its preparation, and developing images with such powder. 4,443,527, Cl. 430-39.000.
Heikkila, Risto M.: *See—*
  Tuovinen, Frans H.; Norrman, Bengt J. F.; and Heikkila, Risto M., 4,443,878, Cl. 373-9.000.
Heinzelmann, Hans: *See—*
  Fehrenbacher, Wolfgang; Heinzelmann, Hans; and Scheer, Erich, 4,443,113, Cl. 368-72.000.
Hellberg, Arne, to Hellberg Protection AB. Adapter for a protective helmet. 4,442,551, Cl. 2-10.000.
Hellberg Protection AB: *See—*
  Hellberg, Arne, 4,442,551, Cl. 2-10.000.
Heller, Gerhard; Adelmann, Manfred; Wendorf, Wilfried; and Konigs, Wilhelm, to Alkem GmbH. Pressing device for producing compacts from source material in powder form, in particular pulverized nuclear reactor fuel. 4,443,174, Cl. 425-147.000.
Helman, Edward R.; Helman, Herbert A.; Holtschneider, Henry B.; Buford, Sidney P.; Fava, Donald C.; and Christopher, Jeffrey N., to Supreme Associates. Solar heat collector. 4,442,827, Cl. 126-430.000.
Helman, Herbert A.: *See—*
  Helman, Edward R.; Helman, Herbert A.; Holtschneider, Henry B.; Buford, Sidney P.; Fava, Donald C.; and Christopher, Jeffrey N., 4,442,827, Cl. 126-430.000.
Helms, Charles R., to Container Corporation of America. Peelable, sealable closure arrangement. 4,442,971, Cl. 229-43.000.
Hempell, L. Bruce, to Nabu Manufacturing Corporation. Wired program distribution system tamper detector. 4,443,815, Cl. 358-114.000.
Hennig, William G.: *See—*
  Whittingham, Thomas D.; Hennig, William G.; and Brahler, Thomas A., 4,442,741, Cl. 83-80.000.
Henning, Harold I. G.: *See—*
  Strow, Donald A.; and Henning, Harold I. G.. 4,443,126, Cl. 403-24.000.
Hennings, Willi: *See—*
  Hund, Franz; Hennings, Willi; Brunn, Horst; Kresse, Peter; and Rambold, Wolfgang, 4,443,264, Cl. 106-292.000.
Hennon, Gary J., to Midwest Research Institute. Situ method of coating buried conductive structures. 4,443,312, Cl. 204-181.00R.
Hepp, Gunter: *See—*
  Bonnekamp, Horst; Sauer, Baldur; Wolkewitz, Heinrich; Hepp, Gunter; and Kraemer, Walter, 4,443,184, Cl. 432-13.000.
Hercules Incorporated: *See—*
  Burkes, William M., Jr.; and Miller, William H., 4,442,669, Cl. 60-251.000.
Herlihy, Walter C.; and Fraser, Thomas H., to Repligen Corporation. (+),(−)-Tropicamide O-β-B-glucuronic acid, its diastereomers, and salts thereof. 4,443,608, Cl. 546-268.000.
Herman, Fred L.; and Johns, Kenneth H. Pipe testing apparatus. 4,442,703, Cl. 73-49.500.
Herrington, F. John, to Mobil Oil Corporation. Method and apparatus for the formation of profiled thermoplastic film. 4,443,400, Cl. 264-519.000.
Hersen, Rene M. J.: *See—*
  Legrand, Paul J.; and Hersen, Rene M. J., 4,442,987, Cl. 244-110.00B.
Herve Guy: *See—*
  de Sivry, Bruno; Migliarese-Caputi, Jean-Louis; Herve Guy; and Colas, Claude, 4,443,129, Cl. 405-170.000.
Hessburg, Philip C. Intraocular lens. 4,442,553, Cl. 3-13.000.
Hesse, Werner: *See—*
  Buchholz, Albert; Hesse, Werner; and Moller, Gunther, 4,443,021, Cl. 279-4.000.
Hickernell, Gary L.: *See—*
  Karmiol, Mark H.; Hickernell, Gary L.; and Hall, Bertrand J., 4,443,601, Cl. 544-274.000.
Hicter, Jean-Marie; Le Scoul, Thierry; and Mairet, Serge, to Societe de Vente de l'Aluminium Pechiney. Device for the treatment of a stream of aluminum or magnesium-based liquid metal or alloy during its passage. 4,443,004, Cl. 266-226.000.
Hidaka, Kunihiko: *See—*
  Fukushima, Naoto; Iwata, Kazuroh; Hidaka, Kunihiko; and Yabuta, Keiichiro, 4,442,925, Cl. 188-282.000.
Hierholzer, Frank J., Jr.; and Shelton, Gerald L., to Emerson Electric Co. Silicon carbide resistance element. 4,443,361, Cl. 252-516.000.
Higgins, William A.; and Perz, John S., to Lubrizol Corporation, The. One-component moisture curable urethane coating system. 4,443,577, Cl. 524-590.000.
Hikosaka, Mititika: *See—*
  Tamura, Shinichi; Seta, Toshio; Tanaka, Tsuneo; and Hikosaka, Mititika, 4,443,528, Cl. 430-56.000.
Hilbert, Thomas K.: *See—*
  Swapceinski, John P.; Rose, Leon A.; Probst, Stewart D.; McKeown, Donald G.; and Hilbert, Thomas K., 4,442,790, Cl. 118-657.000.
Hildebrand, Robert: *See—*
  Davis, George R.; Hildebrand, Robert; and Purcell, Harold, 4,442,571, Cl. 411-552.000.
Hill, Ronald A.; Tillmanns, Ralf; and Sieberling, Bernd, to W. L. Gore & Associates, Inc. Ribbon cable with a two-layer insulation. 4,443,657, Cl. 174-110.0FC.
Hiller, Wolfgang; and Kramer, Hans, to MERO-Werke Dr.-Ing. Max Mengeringhausen GmbH & Co. Construction panel for double floors in air conditioned rooms. 4,442,645, Cl. 52-221.000.
Hillman, Melville E. D., to Battelle Development Corporation. Thermochemical conversion of biomass to ethanol. 4,443,637, Cl. 568-876.000.
Hills, Derek W.; and White, George R., to Smith Kline & French Laboratories Limited. Tetrahydroimidazo(3,4-c)-1,3-diazocine intermediates for production of guanidines. 4,443,375, Cl. 260-245.600.
Hinds, Edward T., to Brunswick Corporation. Flow sensor. 4,443,671, Cl. 200-81.00R.
Hipp, Steven J.: *See—*
  Hahn, Norbert; Hipp, Steven J.; and Swessel, Michael A., 4,443,150, Cl. 414-401.000.
Hirano, Hirofumi: *See—*
  Ono, Keikichi; and Hirano, Hirofumi, 4,443,123, Cl. 400-145.200.
Hirano, Masachika: *See—*
  Kasamatsu, Kiyoshi; Hirano, Masachika; and Okuno, Takeshi, 4,443,438, Cl. 424-200.000.
Hirano, Seiichi, to Epson Corporation; and Kabushiki Kaisha Suwa Seikosha. Printer. 4,443,125, Cl. 400-328.000.
Hirao, Toshiki; and Okamoto, Kouichi, to Mitsubishi Denki Kabushiki Kaisha. Rotor of a superconductive rotary electric machine. 4,443,722, Cl. 310-45.000.
Hirata, Goichi: *See—*
  Samejima, Masayoshi; and Hirata, Goichi, 4,443,497, Cl. 427-213.360.
Hirata, Mitsuteru: *See—*
  Fujii, Setsuro; Hattori, Eizou; Hirata, Mitsuteru; Watanabe, Koichiro; and Ishihama, Hiroshi, 4,443,603, Cl. 544-373.000.
Hirokane, Tadashi: *See—*
  Yanagida, Kiyomi; Hirokane, Tadashi; Tsukiyasu, Tadashi; and Sato, Tomoari, 4,442,829, Cl. 126-452.000.
Hirose, Michio: *See—*
  Otani, Mitsunobu; Senda, Teruo; and Hirose, Michio, 4,443,337, Cl. 210-602.000.
Hirsch, Gustav M.; and Bar-Nof, Moshe, to Noga Engineering Ltd. Tool handle. 4,442,601, Cl. 30-169.000.
Hirsch, Martin: *See—*
  Meyer, Kurt; Reh, Lothar; Hirsch, Martin; Schnabel, Wolfram; and Serbent, Harry, 4,443,250, Cl. 75-26.000.
Hirschburger, Kurt. Device for intermediate storage of thread. 4,442,573, Cl. 28-271.000.
Hirschmanner, Franz; and Rom, Ernst, to Voest-Alpine Aktiengesellschaft. Coiler-furnace combination. 4,442,690, Cl. 72-128.000.
Hirshburg, Robert: *See—*
  Burket, Richard S.; Conaghan, Brian F.; and Hirshbürg, Robert, 4,443,504, Cl. 427-445.000.
Hisagen, Yoshiaki: *See—*
  Nakajima, Kaoru; Kobayashi, Kunio; and Hisagen, Yoshiaki, 4,443,490, Cl. 427-44.000.
Hisamitsu Pharmaceutical Co., INc.: *See—*
  Noda, Kanji; Nakagawa, Akira; Yamagata, Kenji; Nakashima, Yoichi; Tsuji, Masayoshi; Aoki, Tetsuo; and Ide, Hiroyuki, 4,443,626, Cl. 562-434.000.
Hitachi Koki Co., Ltd.: *See—*
  Ainoya, Masayuki; Kozawa, Hiroomi; and Chikuzenya, Takao, 4,443,091, Cl. 355-3.0TR.
  Moriguchi, Seki; Koizumi, Katsuo; and Nagayama, Sueji, 4,442,878, Cl. 145-4.000.
Hitachi, Ltd.: *See—*
  Hagiwara, Takaaki; and Yatsuda, Yuji, 4,443,718, Cl. 307-530.000.
  Ikegawa, Masato; Tojo, Kenji; and Shiibayashi, Masao, 4,443,166, Cl. 418-55.000.
  Imaizumi, Ichiro; Kimura, Masatoshi; Ochi, Shikayuki; Yoshimura, Masayoshi; Yamaguchi. Takashi; and Koda, Toyomasa, 4,443,812, Cl. 357-53.000.
  Kashiwaya, Mineo; Nakagawa, Tohru; Yamada, Kinsaku; Kamifuji, Hiroshi; Oyama, Yoshishige; Kuroiwa, Hiroshi; and Tsuruta, Hisato, 4,442,818, Cl. 123-494.000.
  Ohba, Shinya; Nakai, Masaaki; Ozaki, Toshifumi; and Takahashi, Kenji, 4,443,818, Cl. 358-213.000.

  Shimazu, Nobuo; Okubo, Tsuneo; Saitou, Norio; and Ozasa, Susumu, 4,443,703, Cl. 250-491.100.
  Suenaga, Masahide; Tsukada, Yukihisa; and Yamamoto, Hiroshi, 4,443,294, Cl. 156-656.000.
  Sukekawa, Masayuki; Tobita, Yoshimitsu; Kirihara, Seishin; Morimoto, Hisashi; Usami, Kenichi; and Iijima, Katsumi, 4,443,406, Cl. 420-584.000.
  Tanaka, Katsuyuki; Ohashi, Shin-ichi; Saito, Masakatsu; and Sampei, Tohru, 4,443,741, Cl. 315-307.000.
  Yatsuo, Tsutomu; and Nagano, Takahiro, 4,443,810, Cl. 357-38.000.
Hittel, Gerhard: *See—*
  Bergmann, Gerhard; and Hittel, Gerhard, 4,442,684, Cl. 66-84.00A.
Ho, Kuang-Ta, to Colt Industries Operating Corp. Superimposed high striking voltage power supply circuit for electrical discharge machining. 4,443,682, Cl. 219-69.00C.
Hodge, Edward B.; and Wolfrom, Glen W., to International Minerals & Chemical Corp. Method of promoting growth and enhancing feed efficiency in meat producing animals. 4,443,470, Cl. 424-279.000.
Hodgkin, Alan F., to Babcock Power Limited. Vapor generating and vapor superheating installations. 4,442,678, Cl. 60-676.000.
Hodkinson, Harold; and Haines, William E., to Automotive Products Limited. Internal shoe drum brakes. 4,442,924, Cl. 188-79.5GT.
Hoechst Aktiengesellschaft: *See—*
  Dietz, Erwin; Maikowski, Michael; and Gutbrod, Robert, 4,443,263, Cl. 106-287.240.
  Klinger, Wolfgang; and Milewski, Eckhard, 4,443,363, Cl. 252-547.000.
  Klinger, Wolfgang; and Milewski, Eckhard, 4,443,364, Cl. 252-547.000.
  Opitz, Konrad, 4,443,224, Cl. 8-527.000.
  Papenfuhs, Theodor; and Berthold, Rudiger, 4,443,630, Cl. 564-406.000.
  Petry, Rudolf, 4,442,568, Cl. 17-33.000.
  Rohser, Helmut, 4,443,226, Cl. 8-532.000.
Hoesch Werke AG: *See—*
  Ketschker, Walter; Marquart, Reinhard; and Stenert, Alois, 4,443,045, Cl. 308-223.000.
Hofer, Peter, to Purdue Frederick Company, The. Production of 3-pyrrolin-2-ones. 4,443,616, Cl. 548-543.000.
Hoffman, Stanley J., Jr.; and Waffner, William D., to Moog Inc. Fail-safe single-stage servovalve. 4,442,855, Cl. 137-83.000.
Hoffmann-La Roche Inc.: *See—*
  Guthrie, Robert W.; Kierstead, Richard W.; Mennona, Francis A.; and Sullivan, Ann C., 4,443,619, Cl. 549-518.000.
Hofmann, Gloris R., to Brunswick Corporation. Spark plug wiring assembly. 4,443,047, Cl. 339-26.000.
Hofmann, Horst; and Lochner, Karl-Heinz, to Kraftwerk Union Aktiengesellschaft. Control and monitoring device for influencing safety-relevant system parts of a power plant. 4,443,710, Cl. 307-80.000.
Hogan, Robert D., Jr.; Sanghvi, Narendra T.; and Morris, Richard F., to Indianapolis Center for Advanced Research, Inc. Digital video image splitter. 4,443,816, Cl. 358-160.000.
Hoggenstaller, Rolf: *See—*
  Hauser, Georg; and Hoggenstaller, Rolf, 4,442,616, Cl. 38-14.000.
Hogsett, Robert F.: *See—*
  Queneau, Paul B.; Hogsett, Robert F.; Beckstead, Leo W.; and Huggins, Dale K., 4,443,415, Cl. 423-68.000.
Hokama, Takeo, to Velsicol Chemical Corporation. Phenoxyphenoxypropionic acids and derivatives, and their use as herbicides. 4,443,248, Cl. 71-98.000.
Hokko Chemical Industry Co., Ltd.: *See—*
  Ishikawa, Hiromichi; Kitaori, Kazuhiko; Moriyama, Satoru; Chono, Tadashi; and Uchiyama, Tsugio, 4,443,439, Cl. 424-211.000.
Holden, M. James, to Mobil Oil Corporation. Reinforced packaging tray. 4,442,969, Cl. 229-2.50R.
Holland, Arthur: *See—*
  Izu, Masatsugu; Nath, Prem; and Holland, Arthur, 4,443,652, Cl. 136-251.000.
Holland, Floyd H.: *See—*
  Draper, Homer L.; Holland, Floyd H.; and Brost, Robert L., 4,443,570, Cl. 524-62.000.
Holland Hitch Company: *See—*
  Martin, Samuel A.; Bakker, Fredrick J.; Hungerink, Gerald W.; Gisinger, Jack L.; and Bush, James H., 4,443,025, Cl. 280-407.000.
Hollifield, Charles M.; and Smith, Teddy D., to Occidental Chemical Corporation. Process for removing particulate impurities from aqueous phosphoric acid. 4,443,421, Cl. 423-321.00R.
Holm, Kurt A., to Bycosin AB. Cleaning of objects with solvent. 4,442,851, Cl. 134-106.000.
Holmberg, Paul M., to Ardal og Sunndal Verk a.s. Anode butt remover. 4,442,593, Cl. 29-825.000.
Holstein & Kappert GmbH: *See—*
  Rademacher, Friedrich, 4,442,653, Cl. 53-266.00R.
Holtschneider, Henry B.: *See—*
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Holycross, Mark E.: *See—*
  Saccocio, Edward J.; and Holycross, Mark E., 4,443,409, Cl. 422-186.040.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
  Matsuura, Masaaki; and Nokano, Yoshikatsu, 4,442,806, Cl. 123-198.00F.
  Shimamura, Haruo; and Yamaoka, Yasuhiro, 4,442,811, Cl. 123-376.000.
  Wakatsuki, Goroei; and Yamamoto, Sadashi, 4,442,923, Cl. 188-79.50K.
Honda, Makoto: *See—*
  Aoki, Kunitoshi; Honda, Makoto; Dozono, Tetsuro; and Katsumata, Tsutomu, 4,443,556, Cl. 502-212.000.
Honeywell B.V.: *See—*
  Gort, Ydo, 4,442,853, Cl. 137-66.000.
Honeywell Inc.: *See—*
  LeFrois, Richard T., 4,443,180, Cl. 431-4.000.
  Planer, Norman G.; and Zansky, Zoltan, 4,443,719, Cl. 307-570.000.
Honeywell Information Systems Inc.: *See—*
  Genuit, Luther L.; and Nowell, John R., 4,443,709, Cl. 307-41.000.
  Lakhani, Kishor M.; and Ligon, Jerry L., 4,443,292, Cl. 156-634.000.
Honna, Kosaku: *See—*
  Iida, Hiroshi; Iino, Akira; and Honna, Kosaku, 4,443,552, Cl. 502-66.000.
Hoogovens Groep B.V.: *See—*
  Kreijger, Pieter J.; and Buhrmann, Gerardus P., 4,443,252, Cl. 75-48.000.
Hooker, Donald E.; and Tojza, Roman A., to Bally Manufacturing Corporation. Gaming apparatus having manually controllable-operating speed. 4,443,209, Cl. 474-94.000.
Hoover, John W.; Chapman, Raymond C.; Dammassa, Dominick F.; and Rutkowski, Richard G., to Dictaphone Corporation. Tape cassette. 4,443,827, Cl. 360-132.000.
Hori, Takahiro: *See—*
  Obitsu, Masamichi; Hori, Takahiro; Koinuma, Toyoji; and Sakaguchi, Yuriko, 4,443,496, Cl. 427-140.000.
Horiba, Ltd.: *See—*
  Sakuragi, Shiro; Imagawa, Kyoshiro; Kotani, Haruo; Saito, Mitsunori; and Haga, Tomoyuki, 4,443,684, Cl. 219-121.0LH.
Horikoshi, Koki; Shibanai, Ichiro; and Kato, Takashi, to Rikagaku Kenkyusho; and Shibanai, Ichiro. Process for the oil extraction from oil sand by using cyclodextrin and hydrocarbon solvents. 4,443,323, Cl. 208-11.0LE.
Horiuchi, Takefumi: *See—*
  Kawate, Yoshio; Nagai, Nobuyuki; Horiuchi, Takefumi; Tsurutani, Saburo; Kitamura, Minoru; Ito, Shuzo; Ohgami, Masahiko; Tochimori, Kenichi; and Inoue, Toshio, 4,442,706, Cl. 73-86.000.
Horiuchi, Tatsuo; and Kiyota, Kazushige, to Ushio Denki Kabushiki Kaisha. Auxiliary head lamp device for car equipped with cover. 4,443,836, Cl. 362-375.000.
Horner, Jack R.: *See—*
  Lindsey, Stanley D.; Ioannides, Socrates A.; Horner, Jack R.; Denton, William S.; Shell, Donald P.; and Bebb, Hubert, 4,442,639, Cl. 52-73.000.
Hornle, Reinhold: *See—*
  Wolff, Joachim; Wolf, Karlheinz; Koll, Jochen; Hornle, Reinhold; Molls, Hans-Heinz; and Paulat, Volker, 4,443,225, Cl. 8-549.000.
Horton, Gary L.: *See—*
  Ziegenhain, William C.; and Horton, Gary L., 4,443,634, Cl. 568-621.000.
Hoshino, Minoru; Shinohara, Tosio; Tanabe, Hiroyuki; Taki, Tooru; and Nakayama, Shunsuke, to Dai Nippon Toryo Co., Ltd. Anti-corrosive coating composition and process for formation of anti-corrosive coatings. 4,443,503, Cl. 427-421.000.
Hosoda, Yuuichi: *See—*
  Ikeda, Hisashi; and Hosoda, Yuuichi, 4,443,286, Cl. 156-245.000.
Hosoe, Kazuya; Kinoshita, Takao; Shinoda, Nobuhiko; Sakai, Shinji; Kawabata, Takashi; and Ito, Tadashi, to Canon Kabushiki Kaisha. Focus adjusting device. 4,443,086, Cl. 354-409.000.
Hotchkiss, Alan B.: *See—*
  Adamoski, William; and Hotchkiss, Alan B., 4,443,007, Cl. 271-269.000.
Howe, Michael W.: *See—*
  Sopp, Samuel W.; Lee, Leonard S.; and Howe, Michael W., 4,443,425, Cl. 423-635.000.
HRI, Inc.: *See—*
  Nongbri, Govanon, 4,443,330, Cl. 208-112.000.
Huai-Chieh, Hsu. Fuse switch with plural positionable fuse elements. 4,443,780, Cl. 337-257.000.
Huang, Fu-chih, to USV Pharmaceutical Corporation. Bicyclothiazoles. 4,443,610, Cl. 548-150.000.
Hubele, Adolf: *See—*
  Kunz, Walter; Eckhart, Wolfgang; and Hubele, Adolf, 4,443,618, Cl. 549-320.000.
Huber, Bernhard; Tamm, Rolf; and Tomoff, Toma, to Bodenseewerk Perkin-Elmer & Co., GmbH. Device useful for flameless atomic absorption spectroscopy. 4,443,105, Cl. 356-312.000.
Hubner, Heinz-Joachim: *See—*
  Schmitt, Werner; Purrmann, Robert; Jochum, Peter; Hubner, Heinz-Joachim; and Burger, Bernd, 4,443,587, Cl. 526-146.000.
Hubner, Karl-Heinz: *See—*
  Geissler, Klaus H.; and Hubner, Karl-Heinz, 4,443,840, Cl. 363-24.000.
Huggins, Dale K.: *See—*
  Queneau, Paul B.; Hogsett, Robert F.; Beckstead, Leo W.; and Huggins, Dale K., 4,443,415, Cl. 423-68.000.
Hughes Aircraft Company: *See—*
  Grinberg, Jan; Waldner, Michael; Braatz, Paul O.; and Jacobson, Alexander D., 4,443,064, Cl. 350-334.000.
Hulin, Jean-Pierre; DuBois, Gilles; and Paumier, Marcel, to Lignes Telegraphiques et Telephoniques. Tool-supporting device for ma-

chining a cylindrical rod and a machining head fitted with said device. 4,442,575, Cl. 29-33.500.

- Hulin, Jean-Pierre; Fierfort, Claude; and Coudol, Roger, to Schlumberger Technology Corporation. Device for measuring the flow of fluid in a well. 4,442,711, Cl. 73-155.000.
- Humphrey, Wayne R., to Associated Equipment Corporation. Portable battery booster assembly. 4,443,751, Cl. 320-2.000.
- Hund, Franz; Hennings, Willi; Brunn, Horst; Kresse, Peter; and Rambold, Wolfgang, to Bayer Aktiengesellschaft. Halogen-free zinc ferrite yellow pigments containing alumina and phosphorus oxide and production. 4,443,264, Cl. 106-292.000.
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  - Martin, Samuel A.; Bakker, Fredrick J.; Hungerink, Gerald W.; Gisinger, Jack L.; and Bush, James H., 4,443,025, Cl. 280-407.000.
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- ICI Americas Inc.: *See—*
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  - Oinoue, Kenichi; Hayashi, Asao; Ida, Masatoshi; Aoki, Masahiro; Nakamura, Junichi; and Fukuoka, Kenji, 4,443,079, Cl. 354-407.000.
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  - Noda, Kanji; Nakagawa, Akira; Yamagata, Kenji; Nakashima, Yoichi; Tsuji, Masayoshi; Aoki, Tetsuo; and Ide, Hiroyuki, 4,443,626, Cl. 562-434.000.
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  - Hayashida, Shinsaku; Ogata, Seiya; and Yoshino, Sadazo, 4,443,542, Cl. 435-160.000.
  - Iida, Hiroshi; Iino, Akira; and Honna, Kosaku, 4,443,552, Cl. 502-66.000.
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  - Ikeda, Hisashi; and Hosoda, Yuuichi, 4,443,286, Cl. 156-245.000.
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- Imperial Chemical Industries PLC: *See—*
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- Indianapolis Center for Advanced Research, Inc.: *See—*
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  - Busch, Dennis G.; Grafe, Robert J.; and Leikam, Gary E., 4,443,863, Cl. 364-900.000.
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  - Frater, Norman K.; Gill, Gregory G.; and Watrous, Robert B., 4,443,824, Cl. 360-104.000.
  - Gendler, Paul L.; and Twieg, Robert, 4,443,302, Cl. 204-2.000.
  - Zingher, Arthur R., 4,443,278, Cl. 156-64.000.
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- International Minerals & Chemical Corp.: *See—*
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  - Nooden, Robert A., 4,443,259, Cl. 106-38.270.
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- International Telephone and Telegraph Corporation: *See—*
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  - Saccocio, Edward J.; and Holycross, Mark E., 4,443,409, Cl. 422-186.040.
- InterNorth, Inc.: *See—*
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- INTEROX (Societe Anonyme): *See—*
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  - Tatem, William A., 4,443,659, Cl. 174-140.00C.
- Ioannides, Socrates A.: *See—*
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- Isaacson, Bruce G.; Gruetzmacher, Ralph W.; and Schroeder, Kenneth W., to Magnaflux Corporation. Magnetizing current supply for magnetic particle inspection with SCR's connected to three-phase secondary windings for rectification and control. 4,443,759, Cl. 324-216.000.
- Isaacson, Douglas T., to Halland, Bruce. Axially moveable auger. 4,443,149, Cl. 414-326.000.

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- Ishibashi, Hideyuki, to Bridgestone Cycle Co., Ltd. Method and device for displacing the head tube of a bicycle. 4,443,023, Cl. 280-278.000.
- Ishida, Yasuhiko: *See—*
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- Ishido, Yoshinobu; and Tanaka, Hideo, to Hayakawa Rubber Company Limited. Aqueously-swelling water stopper and a process of stopping water thereby. 4,443,019, Cl. 277-227.000.
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- Ishigaki, Tsuneo: *See—*
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- Ishii, Satoshi; and Koinuma, Hirosi, to Pioneer Electronic Corporation. Power amplifier. 4,443,771, Cl. 330-297.000.
- Ishii, Toshihiko: *See—*
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- Ishimaru, Shingo: *See—*
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- Ito, Shuzo: *See—*
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- Itoh, Takayuki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Reflecting telephoto zoom lens system. 4,443,068, Cl. 350-423.000.
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- Iwamoto, Noritada: *See—*
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- Iwamoto, Yasuhiko, to Meinan Machinery Works, Inc. Veneer reeling unit. 4,442,982, Cl. 242-55.000.
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- Iwasaki, Hiroshi: *See—*
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- Izumi, Yoshitaka, to Kimura Bed Mfg. Company Limited. Suction type urinating aid. 4,443,217, Cl. 604-73.000.
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- J. Strobel & Sohne GmbH & Co.: *See—*
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- Jansen, Gerardus L. M., to U.S. Philips Corporation. Electrodynamic device for translating an objective. 4,443,721, Cl. 310-14.000.
- Jansen, Lawrence G.: *See—*
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- Janssen Pharmaceutica N.V.: *See—*
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- Japan Marine Machinery Development Assoc.: *See—*
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- Japan Styrene Paper Corporation: *See—*
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- Jean Walterscheid GmbH: *See—*
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- Jennings, Richard E., to Sperry Corporation. Method and apparatus for converting a harvesting machine between operating and transport positions. 4,442,662, Cl. 56-228.000.
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- Jezbera, Vladimir K. Robotics positioning system. 4,442,754, Cl. 91-1.000.
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- Jobst Institute, Inc.: *See—*
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- Johannson, Richard J., to Towmotor Corporation. Adjustable slider bearing assembly. 4,442,922, Cl. 187-9.00E.

- Johansen, Richard P.: *See—*
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- John Wyeth & Brother Limited: *See—*
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- Johnson, Donald R.: *See—*
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- Johnson & Johnson Baby Products Company: *See—*
  - Guth, Jacob J.; and Verdicchio, Robert J., 4,443,362, Cl. 252-545.000.
- Johnson, Randy W.: *See—*
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- Johnson, Rick A. Juice press. 4,442,767, Cl. 100-116.000.
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  - Sashiki, Takashi; and Sakaeda, Keiko, 4,442,932, Cl. 198-366.000.
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  - Matsui, Takahiro, 4,443,195, Cl. 433-84.000.
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  - Koto, Haruhiko, 4,443,807, Cl. 346-140.00R.
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  - Dobbin, Thomas M., 4,442,613, Cl. 36-50.000.
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- Kajikawa, Teruo: *See—*
  - Iwai, Sakuya; and Kajikawa, Teruo, 4,443,575, Cl. 524-486.000.
- Kakimoto, Tetsuya: *See—*
  - Miyamoto, Yoshikazu; Kakimoto, Tetsuya; and Tanida, Wasaburo, 4,442,953, Cl. 222-14.000.
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  - Rudolph, Werner; and Fernschild, Guenter, 4,442,676, Cl. 60-671.000.
- Kallin, Fredrik L. N., to NCR Corporation. Staging apparatus used in a sheet feeding environment. 4,442,769, Cl. 101-93.190.
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  - Kashiwaya, Mineo; Nakagawa, Tohru; Yamada, Kinsaku; Kamifuji, Hiroshi; Oyama, Yoshishige; Kuroiwa, Hiroshi; and Tsuruta, Hisato, 4,442,818, Cl. 123-494.000.
- Kamimura, Kunio: *See—*
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  - Yamada, Shoji; Kanada, Eiji; and Mathubara, Eiji, 4,443,531, Cl. 430-204.000.
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  - Ezawa, Masashi; Makino, Hiroshi; and Futami, Tadao, 4,443,054, Cl. 339-273.00R.
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- Kaneko, Makoto; and Okumura, Takatoshi, to Nippon Gakki Seizo Kabushiki Kaisha. Frequency divider for electronic musical instrument. 4,442,748, Cl. 84-1.010.
- Kaneko, Noboru; and Tabata, Junichi, to Seiko Instruments & Electronics Ltd. Electronic timepiece with electrochromic display. 4,443,115, Cl. 368-82.000.
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  - Iijima, Tokuzo; Samejima, Yasushi; and Kano, Toshiji, 4,443,315, Cl. 204-253.000.
- Kanzaki Paper Manufacturing Co., Ltd.: *See—*
  - Kondo, Mitsuru; Yasui, Kiyoshi; Miyake, Makoto; Iwasaki, Hiroshi; and Shiraishi, Tetsuo, 4,443,614, Cl. 548-469.000.
- Kao Corporation: *See—*
  - Murata, Moriyasu; Suzuki, Akira; Nakae, Atsuo; and Ito, Susumu, 4,443,355, Cl. 252-174.120.
- Kaplan, Martin L.: *See—*
  - Joy, David C.; Kaplan, Martin L.; and Schmidt, Paul H., 4,443,532, Cl. 430-270.000.
- Karjalainen, Arto J.; and Kurkela, Kauko O. A., to Farmos-Yhtyma OY (Farmos Group Ltd.). 4-Benzyl- and 4-benzoyl-substituted imidazole derivatives and use as medicaments. 4,443,466, Cl. 424-274.000.
- Karl Mayer Textilmaschinenfabrik GmbH: *See—*
  - Bergmann, Gerhard; and Hittel, Gerhard, 4,442,684, Cl. 66-84.00A.
- Karmiol, Mark H.; Hickernell, Gary L.; and Hall, Bertrand J., to General Foods Corporation. Recovery of caffeine from caffeine adsorbents. 4,443,601, Cl. 544-274.000.
- Kasahara, Kanji; and Sakamoto, Akira, to Mitsubishi Monsanto Chemical Company. Thermoplastic resin composition containing metal foil fragments and process for its production. 4,443,565, Cl. 523-137.000.
- Kasamatsu, Kiyoshi; Hirano, Masachika; and Okuno, Takeshi, to Sumitomo Chemical Company, Limited. Insecticidal and/or acaricidal composition exhibiting low toxicity to mammals and fish. 4,443,438, Cl. 424-200.000.
- Kashihara, Toshitsugu; Yoshino, Tsunemi; Morioka, Akitoshi; and Iwata, Hiroshi, to West Electric Co., Ltd. Focus state indicator. 4,443,087, Cl. 354-401.000.
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- Katho, Eiichi: *See—*
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- Kato, Masayuki: *See—*
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- Kato, Takashi: *See—*
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- Kato, Tetsuro, to Sony Corporation. Digital velocity error compensator. 4,443,821, Cl. 358-326.000.
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- Katou, Takashi: *See—*
  - Teramura, Mitsuyoshi; Takimoto, Masatami; Nakamura, Norihiko; Itoh, Takaaki; Katou, Takashi; Morino, Toshiharu; and Sakakibara, Youzou, 4,443,388, Cl. 261-39.00A.
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  - Derderian, Scott K.; and Katsekas, James C., 4,443,725, Cl. 310-214.000.
- Katsumata, Tsutomu: *See—*
  - Aoki, Kunitoshi; Honda, Makoto; Dozono, Tetsuro; and Katsumata, Tsutomu, 4,443,556, Cl. 502-212.000.
- Katuragi Sangyo Co., Ltd.: *See—*
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- Kauffman, Kenneth W., to Franklin Institute, The. Variable effect absorption machine and process. 4,442,677, Cl. 60-673.000.
- Kaufmann, Heinrich: *See—*
  - Eisbein, Juergen; Kaufmann, Heinrich; Moser, Kurt; and Brenner, Friedhelm, 4,443,092, Cl. 355-3.00R.
- Kawabata, Takashi: *See—*
  - Hosoe, Kazuya; Kinoshita, Takao; Shinoda, Nobuhiko; Sakai, Shinji; Kawabata, Takashi; and Ito, Tadashi, 4,443,086, Cl. 354-409.000.
- Kawabe, Shinichi, to Idea Giken Ltd. Curling iron. 4,442,849, Cl. 132-37.00R.
- Kawai, Hisasi: *See—*
  - Idogaki, Takaharu; Kawai, Hisasi; Hattori, Kyo; and Sakurai, Kazuhiro, 4,442,997, Cl. 251-129.000.
  - Ina, Toshikazu; Kawai, Hisasi; Kohama, Tokio; Nishimatsu, Akira; Ishida, Yasuhiko; and Matsusita, Souichi, 4,442,820, Cl. 123-571.000.
- Kawai Musical Instrument Mfg. Co., Ltd.: *See—*
  - Deutsch, Ralph; and Deutsch, Leslie J., 4,442,747, Cl. 84-1.010.
- Kawakami, Tomio: *See—*
  - Ohta, Minoru; Hattori, Yutaka; Kawakami, Tomio; and Onoda, Michitosi, 4,443,781, Cl. 338-34.000.
- Kawamatsu, Yutaka; Saraie, Takahiro; and Yoshikawa, Harutoshi, to Takeda Chemical Industries, Ltd. Herbicidal pyridyl-ethoxy-phenyl urea derivatives. 4,443,246, Cl. 71-94.000.
- Kawashima, Yukio; Kobayashi, Makoto; and Murakami, Mayu, to TDK Electronics Co., Ltd. Electrode for electrolysis and process for its production. 4,443,317, Cl. 204-290.00F.
- Kawata, Shoji: *See—*
  - Ohyama, Tadashi; and Kawata, Shoji, 4,442,998, Cl. 251-129.000.
- Kawate, Yoshio; Nagai, Nobuyuki; Horiuchi, Takefumi; Tsurutani, Saburo; Kitamura, Minoru; Ito, Shuzo; Ohgami, Masahiko; Tochimori, Kenichi; and Inoue, Toshio, to Kabushiki Kaisha Kobe Seiko Sho. Probe and a system for detecting wear of refractory wall. 4,442,706, Cl. 73-86.000.
- Kearby, Ronald S.: *See—*
  - Smith, Burl L.; and Kearby, Ronald S., 4,442,868, Cl. 138-118.100.
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  - Meisch, Charles E.; and Keating, David M., 4,443,219, Cl. 604-317.000.
- Keatley, Lawrence A. Tweezers for the removal of parasites from animals. 4,442,837, Cl. 128-354.000.
- Keck, Hermann. Clip for fixing male and female parts of ground glass joints. 4,442,572, Cl. 24-562.000.
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  - Bogeso, Klaus P., 4,443,448, Cl. 424-250.000.
- Keil, Joseph W., to Dow Corning Corporation. Silicone hydraulic fluids and additive concentrates therefor. 4,443,351, Cl. 252-75.000.
- Keith, Alec D., to Key Pharmaceuticals, Inc. Anti-spilling drug capsule. 4,442,941, Cl. 206-540.000.
- Keller, Christian A., to Johns Hopkins University, The. Fluid level measuring device with linear, high resolution output. 4,443,699, Cl. 250-227.000.
- Kelly, Allan C.: *See—*
  - Donaldson, Donald J.; Kelly, Allan C.; Mulloy, Joseph W.; and Zwakenberg, Donald R., 4,443,416, Cl. 423-122.000.
- Kelly, Charles A. P., to Northern Telecom Inc. Meter to printer coupling circuit. 4,443,758, Cl. 324-113.000.
- Kemmer, Josef. Passivated semiconductor pn junction of high electric strength and process for the production thereof. 4,442,592, Cl. 29-572.000.
- Kemmer, Klaus, to ISCAR Hartmetall Gesellschaft mit beschrankter Haftung. Machine cutting tool. 4,443,136, Cl. 407-72.000.
- Kennis, Ludo E. J.; and Mertens, Josephus C., to Janssen Pharmaceutica N.V. Bicyclic pyrimidin-5-one derivatives. 4,443,451, Cl. 424-251.000.
- Kent, John E. Self-propelled troller. 4,442,621, Cl. 43-26.100.
- Keppel, Robert A.; Tremont, Samuel J.; Lee, Emerson H.; and Davis, George D., to Monsanto Company. Attrition resistant metal/oxygen compositions. 4,443,642, Cl. 585-428.000.
- Keppel, Robert A.: *See—*
  - Tremont, Samuel J.; Keppel, Robert A.; Lee, Emerson H.; and Davis, George D., 4,443,641, Cl. 585-428.000.
- Kerby, Robert C., to Cominco Ltd. Controlling metal electro-deposition using electrolyte containing two polarizing agents. 4,443,301, Cl. 204-1.00T.
- Kerilea Cloche Limited: *See—*
  - Hammond, Errol C., 4,442,626, Cl. 47-29.000.
- Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See—*
  - Struck, Bernd D., 4,443,316, Cl. 204-263.000.
- Ketley, Arthur D.: *See—*
  - Morgan, Charles R.; and Ketley, Arthur D., 4,443,495, Cl. 427-96.000.
- Ketschker, Walter; Marquart, Reinhard; and Stenert, Alois, to Hoesch Werke AG. Stabilized bearing for bogies. 4,443,045, Cl. 308-223.000.
- Ketting, Leendert: *See—*
  - Oetiker, Hans; Linzberger, Robert; Ketting, Leendert; and Winteler, Werner, 4,442,980, Cl. 241-34.000.
- Key Pharmaceuticals, Inc.: *See—*
  - Keith, Alec D., 4,442,941, Cl. 206-540.000.
- Kieninger & Obergfell: *See—*
  - Fehrenbacher, Wolfgang; Heinzelmann, Hans; and Scheer, Erich, 4,443,113, Cl. 368-72.000.
- Kierstead, Richard W.: *See—*
  - Guthrie, Robert W.; Kierstead, Richard W.; Mennona, Francis A.; and Sullivan, Ann C., 4,443,619, Cl. 549-518.000.
- Kihara, Kazuo; and Ikeda, Masashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor device. 4,443,808, Cl. 357-15.000.
- Kikkawa, Ikuo: *See—*
  - Yoshioka, Mitsuru; Shoichiro, Uyeo; Hamashima, Yoshio; Kikkawa, Ikuo; Tsuji, Teruji; and Nagata, Wataru, 4,443,598, Cl. 544-90.000.
- Kikuchi, Hiroshi: *See—*
  - Nasu, Sataroh; Iwanaga, Kouichi; and Kikuchi, Hiroshi, 4,442,596, Cl. 30-41.500.
- Kim, Bang M., to General Electric Company. Process for separation of molybdenum from tungsten leachates. 4,443,414, Cl. 423-54.000.
- Kimbara, Masahiko: *See—*
  - Suzuki, Hajime; Umemura, Yoshifumi; Iwano, Yoshimi; and Kimbara, Masahiko, 4,442,871, Cl. 139-435.000.
- Kimberly-Clark Corporation: *See—*
  - Bolick, Martha E.; Weber, Rebecca J.; and Lang, Theodore B., 4,442,552, Cl. 2-49.00R.
  - Meitner, Gary H.; and Notheis, Patrick J., 4,443,513, Cl. 422-195.000.
- Kimura Bed Mfg. Company Limited: *See—*
  - Izumi, Yoshitaka, 4,443,217, Cl. 604-73.000.

Kimura, Masatoshi: *See—*
  Imaizumi, Ichiro; Kimura, Masatoshi; Ochi, Shikayuki; Yoshimura, Masayoshi; Yamaguchi, Takashi; and Koda, Toyomasa, 4,443,812, Cl. 357-53.000.

Kimura, Shigeru, to Nifco Inc. Retainer device for car wind-up window. 4,442,634, Cl. 49-493.000.

Kimura, Tomio: *See—*
  Oshima, Tokio; Kimura, Tomio; Omata, Tetsuo; and Iwamoto, Noritada, 4,443,548, Cl. 435-280.000.

King, Arthur S. Liquid treater having electrical charge injection means. 4,443,320, Cl. 204-302.000.

King, Francis G.: *See—*
  Gable, Stewart V.; and King, Francis G., 4,442,708, Cl. 73-117.000.

King, William H., to Exxon Research and Engineering Co. Method for determining minimum lubricating oil-film thickness under operating engine conditions using electrical capacitance. 4,443,754, Cl. 324-61.00R.

Kinoshita, Takao: *See—*
  Hosoe, Kazuya; Kinoshita, Takao; Shinoda, Nobuhiko; Sakai, Shinji; Kawabata, Takashi; and Ito, Tadashi, 4,443,086, Cl. 354-409.000.

Kirihara, Seishin: *See—*
  Sukekawa, Masayuki; Tobita, Yoshimitsu; Kirihara, Seishin; Morimoto, Hisashi; Usami, Kenichi; and Iijima, Katsumi, 4,443,406, Cl. 420-584.000.

Kiritani, Masataka; and Asao, Yasuzi, to Fuji Photo Film Co., Ltd. Photographic resin-coated paper. 4,443,535, Cl. 430-538.000.

Kirkhuff, Shield & Fink: *See—*
  Kirkhuff, William J., 4,443,258, Cl. 106-18.120.

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Kirschner, Thomas F., to RCA Corporation. Video disc player having caddy lockout mechanism. 4,443,872, Cl. 369-77.200.

Kirst, Herbert A.; and Toth, John E., to Eli Lilly and Company. C-20-Modified macrolide derivatives of the macrolide antibiotics tylosin, desmycosin, macrocin, and lactenocin. 4,443,436, Cl. 424-180.000.

Kishi, Yoshio; and Mine, Norichika, to Sony Corporation. Apparatus for controlling a web transport system. 4,442,985, Cl. 242-186.000.

Kishida, Masahiko: *See—*
  Akiyama, Hiroyuki; Kuwabara, Hideki; Yamaguchi, Toru; and Kishida, Masahiko, 4,443,393, Cl. 264-53.000.

Kishimoto, Tomio: *See—*
  Nakamura, Noriaki; Kishimoto, Tomio; and Yamamoto, Yuichi, 4,443,670, Cl. 200-11.0DA.

Kissling, Bruno; Knobel, Walter; and Robinson, Tibor, to Sandoz Ltd. Composition and method for improving the fastness of direct and reactive dyeings on cellulose-containing substrates. 4,443,223, Cl. 8-496.000.

Kistner, Herbert: *See—*
  Sternisa, Danilo; and Kistner, Herbert, 4,443,567, Cl. 523-211.000.

Kitahama, Yoshiharu: *See—*
  Yamazoe, Katsuhiko; Yoshino, Akira; Kitahama, Yoshiharu; and Iwami, Isamu, 4,443,380, Cl. 260-429.200.

Kitamura, Koichiro, to Kitamura Machinery Co., Ltd. Tool cooling device for machine tools. 4,442,576, Cl. 29-39.000.

Kitamura Machinery Co., Ltd.: *See—*
  Kitamura, Koichiro, 4,442,576, Cl. 29-39.000.

Kitamura, Minoru: *See—*
  Kawate, Yoshio; Nagai, Nobuyuki; Horiuchi, Takefumi; Tsurutani, Saburo; Kitamura, Minoru; Ito, Shuzo; Ohgami, Masahiko; Tochimori, Kenichi; and Inoue, Toshio, 4,442,706, Cl. 73-86.000.

Kitamura, Mitsuaki; Nakayama, Toshio; Kamimura, Kunio; Seo, Iwao; and Yaguchi, Tomonobu, to Mitsubishi Petrochemical Co., Ltd. Biological piezoelectric transducer device for the living body. 4,443,730, Cl. 310-330.000.

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Kitaori, Kazuhiko: *See—*
  Ishikawa, Hiromichi; Kitaori, Kazuhiko; Moriyama, Satoru; Chono, Tadashi; and Uchiyama, Tsugio, 4,443,439, Cl. 424-211.000.

Kiyota, Kazushige: *See—*
  Horiuchi, Tatsuo; and Kiyota, Kazushige, 4,443,836, Cl. 362-375.000.

Kliewer, Wayne R.: *See—*
  Pesa, Frederick A.; Graham, Anne M.; and Kliewer, Wayne R., 4,443,639, Cl. 568-885.000.

Klinger, Wolfgang; and Milewski, Eckhard, to Hoechst Aktiengesellschaft. Detergent composition for cleaning hard surfaces and method of using the same. 4,443,363, Cl. 252-547.000.

Klinger, Wolfgang; and Milewski, Eckhard, to Hoechst Aktiengesellschaft. Detergent composition containing an antifoaming agent for cleaning hard surfaces and method of using the same. 4,443,364, Cl. 252-547.000.

Klockner-Becorit GmbH: *See—*
  Schungel, Peter, 4,443,016, Cl. 277-73.000.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
  Tholen, Paul, 4,442,803, Cl. 123-41.690.

Klockner-Werke Aktiengesellschaft: *See—*
  Gross, Reinhold; Willuhn, Dietrich; and Witte, Horst, 4,443,134, Cl. 405-288.000.

Klokova, Nadezhda P.: *See—*
  Komarova, Galina N.; Klokova, Nadezhda P.; Podboronov, Boris P.; and Piskov, Georgy M., 4,442,718, Cl. 73-766.000.

Klose, Dirk R.; and Skudera, Jr. William J., to United States of America, Army. Direction finding and frequency identification method and apparatus. 4,443,801, Cl. 343-442.000.

Knecht, Adolph; Schneider, Michael; and Ambrosch, Walter, to Warner-Lambert Company. Antacid material based on magnesium aluminum hydroxide and preparation thereof. 4,443,433, Cl. 424-157.000.

Knight, John C.; and Wovcha, Merle G., to Upjohn Company, The. Process for preparing an indenedione and a mycobacterium culture therefor. 4,443,541, Cl. 435-149.000.

Knipp, Jerry L.: *See—*
  Cuminale, Raymond J.; Otto, Stanley W.; Knipp, Jerry L.; Seibolt, Bernard P.; and Yarkoni, Fred E., 4,442,942, Cl. 211-163.000.

Knobbout, Huibert A.: *See—*
  van de Pas, Hermanus A.; and Knobbout, Huibert A., 4,442,967, Cl. 228-159.000.

Knobel, Walter: *See—*
  Kissling, Bruno; Knobel, Walter; and Robinson, Tibor, 4,443,223, Cl. 8-496.000.

Knoll International, Inc.: *See—*
  Hannah, Bruce H., 4,443,046, Cl. 312-183.000.

Knott, Henry J., to Federal-Mogul Corporation. Annular seal. 4,443,017, Cl. 277-152.000.

Kobayashi, Haruyoshi, to Kabushiki Kaisha Tokyo Kikai Seisakusho. Printing mode shifting device for blanket cylinders in offset rotary press. 4,442,773, Cl. 101-177.000.

Kobayashi, Kunio: *See—*
  Nakajima, Kaoru; Kobayashi, Kunio; and Hisagen, Yoshiaki, 4,443,490, Cl. 427-44.000.

Kobayashi, Makoto: *See—*
  Kawashima, Yukio; Kobayashi, Makoto; and Murakami, Mayu, 4,443,317, Cl. 204-290.00F.

Kobayashi, Masayoshi; Oshizawa, Hidekazu; Okamoto, Kenji; and Sekiguchi, Akira, to Diesel Kiki Co., Ltd. Control apparatus for internal combustion engine. 4,443,852, Cl. 364-431.030.

Kobayashi, Susumu: *See—*
  Muramoto, Yutaka; Kobayashi, Susumu; and Ishizaka, Hideo, 4,443,117, Cl. 374-1.000.

Kobayashi, Takeshi: *See—*
  Tsuda, Masatoshi; Kobayashi, Takeshi; and Kaitani, Katsumi, 4,443,404, Cl. 419-2.000.

Koda, Toyomasa: *See—*
  Imaizumi, Ichiro; Kimura, Masatoshi; Ochi, Shikayuki; Yoshimura, Masayoshi; Yamaguchi, Takashi; and Koda, Toyomasa, 4,443,812, Cl. 357-53.000.

Koehring Company: *See—*
  Shaftner, Robert S.; Chambers, Norman D.; Kagan, Michael A.; and Briggs, Eugene C., 4,443,187, Cl. 432-222.000.

Koenig, Richard G.: *See—*
  Kovit, Bernard; Koenig, Richard G.; and Kress, Robert W., 4,443,014, Cl. 273-363.000.

Kohama, Tokio: *See—*
  Ina, Toshikazu; Kawai, Hisasi; Kohama, Tokio; Nishimatsu, Akira; Ishida, Yasuhiko; and Matsusita, Souichi, 4,442,820, Cl. 123-571.000.

Koide, Huminori: *See—*
  Yoshino, Masaki; Oka, Kozo; and Koide, Huminori, 4,443,093, Cl. 355-3.0CH.

Koike, Masaru; Hasegawa, Yasumasa; Shimosaka, Satoru; Aoyama, Nagara; and Yoshizumi, Toshihiko, to Meinan Machinery Works, Inc. Apparatus for drying veneer sheet. 4,442,876, Cl. 144-2.00R.

Koike, Tsutomu, to Toku Kabushiki Kaisha. Miniature transformer. 4,443,777, Cl. 336-65.000.

Koinuma, Hirosi: *See—*
  Ishii, Satoshi; and Koinuma, Hirosi, 4,443,771, Cl. 330-297.000.

Koinuma, Toyoji: *See—*
  Obitsu, Masamichi; Hori, Takahiro; Koinuma, Toyoji; and Sakaguchi, Yuriko, 4,443,496, Cl. 427-140.000.

Koizumi, Katsuo: *See—*
  Moriguchi, Seki; Koizumi, Katsuo; and Nagayama, Sueji, 4,442,878, Cl. 145-4.000.

Kojima, Hirotaka: *See—*
  Uehara, Masaru; Uchida, Teruyoshi; and Kojima, Hirotaka, 4,442,841, Cl. 128-635.000.

Kojima, Kiyoshi: *See—*
  Sanai, Susumu; and Kojima, Kiyoshi, 4,443,276, Cl. 148-31.570.

Kojima, Tetsuro; Ishimaru, Shingo; Sugimoto, Naohiko; and Ikeda, Tadashi, to Fuji Photo Film Co., Ltd. Silver halide photographic elements containing polymers which filter UV light. 4,443,534, Cl. 430-512.000.

Kokusan Denki Co., Ltd.: *See—*
  Kondo, Tetsuya; and Nishi, Tadashi, 4,442,822, Cl. 123-643.000.

Kolges, Wilhelm; and Zodrow, Rudolph, to Jagenberg Werke AG. Labeling machine for objects such as bottles. 4,443,289, Cl. 156-384.000.

Koll, Jochen: *See—*
  Wolff, Joachim; Wolf, Karlheinz; Koll, Jochen; Hornle, Reinhold; Molls, Hans-Heinz; and Paulat, Volker, 4,443,225, Cl. 8-549.000.

Koller, Frank J., Jr.: *See—*
  Piersol, Jay L.; and Koller, Frank J., Jr., 4,443,262, Cl. 106-209.000.

Komarova, Galina N.; Klokova, Nadezhda P.; Podboronov, Boris P.; and Piskov, Georgy M. Strain gauge and electric circuit for adjustment and calibration of same. 4,442,718, Cl. 73-766.000.

Komiya, Kunihiko: *See—*
  Katoh, Hiroshi; Toyota, Hiromi; Koyama, Kazuo; and Komiya, Kunihiko, 4,443,272, Cl. 148-12.00C.

Kondo, Mitsuru; Yasui, Kiyoshi; Miyake, Makoto; Iwasaki, Hiroshi; and Shiraishi, Tetsuo, to Kanzaki Paper Manufacturing Co., Ltd. Triarylmethane derivatives. 4,443,614, Cl. 548-469.000.

Kondo, Tetsuya; and Nishi, Tadashi, to Kokusan Denki Co., Ltd. Ignition position controlling apparatus for multicylinder internal combustion engine. 4,442,822, Cl. 123-643.000.

Kong, Wendell M. T.: *See—*
  Wanuga, Stephen; Kong, Wendell M. T.; and Stearns, Cleo M., 4,442,574, Cl. 29-25.350.

Konigs, Wilhelm: *See—*
  Heller, Gerhard; Adelmann, Manfred; Wendorf, Wilfried; and Konigs, Wilhelm, 4,443,174, Cl. 425-147.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
  Harada, Toshimitsu; and Watanabe, Koji, 4,443,084, Cl. 354-173.110.
  Sakurai, Isao; and Minejima, Teruo, 4,443,101, Cl. 355-14.0SH.

Konno, Tatsuo: *See—*
  Sunouchi, Akio; Konno, Tatsuo; Fujino, Masahisa; and Suzuki, Ryuji, 4,443,089, Cl. 354-214.000.

Konrad, Charles E., to General Electric Company. Method and apparatus for charge enhancement of a commutating capacitor. 4,443,744, Cl. 318-269.000.

Konter, Wolfgang: *See—*
  Musch, Rudiger; Pampus, Gottfried; Muller, Peter; Eisele, Ulrich; Konter, Wolfgang; and Gobel, Wilhelm, 4,443,582, Cl. 525-215.000.

Kool-Fire Limited: *See—*
  Vandervaart, Gerry, 4,442,890, Cl. 165-124.000.

Kopetzky, Horst, to Siemens Aktiengesellschaft. Subscriber connection circuit. 4,443,669, Cl. 179-175.20C.

Koppers Company, Inc.: *See—*
  Greco, Nicholas P., 4,443,636, Cl. 568-761.000.

Kosmowski, Wojciech B., to Cooper Industries. Pinless pressure foot for machine tool. 4,443,141, Cl. 409-163.000.

Koster, William H.: *See—*
  Cimarusti, Christopher M.; Fox, Rita T.; Fritz, Alan W.; Koster, William H.; and Moniot, Jerome L., 4,443,374, Cl. 260-245.400.

Kostinko, John A., to J. M. Huber Corporation. Synthesis of zeolites of small and uniform size having a high magnesium exchange capacity. 4,443,422, Cl. 423-329.000.

Kostuch, Donald J.: *See—*
  Bradley, David J.; Eggebrecht, Lewis C.; Gibbs, Dennis S.; and Kostuch, Donald J., 4,443,847, Cl. 364-200.000.

Kosugi, Seiji, to Shoketsu Kinzoku Kogyo Kabushiki Kaisha. Electromagnetic switching valve. 4,442,864, Cl. 137-625.270.

Kotani, Haruo: *See—*
  Sakuragi, Shiro; Imagawa, Kyoshiro; Kotani, Haruo; Saito, Mitsunori; and Haga, Tomoyuki, 4,443,684, Cl. 219-121.0LH.

Kotick, Michael P.; and Leland, David L., to Miles Laboratories, Inc. 7β-Arylalkyl-6α, 7 α-oxymethylene-3-methoxy or 3-hydroxy-4, 5α-epoxy-17 methyl or 17-cycloalkyl-methyl morphinans. 4,443,605, Cl. 546-39.000.

Koto, Haruhiko, to Epson Corporation; and Kabushiki Kaisha Suwa Seikosha. Ink jet print head. 4,443,807, Cl. 346-140.00R.

Kotulla, Bernhard; Weiser, Martin; Faltin, Jurgen; Preis, Lothar; Schmidt, Rudolf; and Born, Eberhard, to Bayer Aktiengesellschaft; and Strabag Bau-AG. Anchoring of tension members. 4,443,132, Cl. 405-260.000.

Koumura, Noboru: *See—*
  Niwa, Yukichi; Ogino, Yasuo; Ohwada, Mitsutoshi; Tanaka, Kazuo; and Koumura, Noboru, 4,443,078, Cl. 354-403.000.

Kovit, Bernard; Koenig, Richard G.; and Kress, Robert W. Combat simulator means. 4,443,014, Cl. 273-363.000.

Kowa Company Limited: *See—*
  Fujii, Setsuro; Hattori, Eizou; Hirata, Mitsuteru; Watanabe, Koichiro; and Ishihama, Hiroshi, 4,443,603, Cl. 544-373.000.

Koyama, Kazuo: *See—*
  Katoh, Hiroshi; Toyota, Hiromi; Koyama, Kazuo; and Komiya, Kunihiko, 4,443,272, Cl. 148-12.00C.

Kozakae, Kunitoshi, to Bridgestone Cycle Co. Ltd. Speed-change gear mounted outside a bicycle. 4,443,208, Cl. 474-82.000.

Kozawa, Hiroomi: *See—*
  Ainoya, Masayuki; Kozawa, Hiroomi; and Chikuzenya, Takao, 4,443,091, Cl. 355-3.0TR.

Kraemer, Walter: *See—*
  Bonnekamp, Horst; Sauer, Baldur; Wolkewitz, Heinrich; Hepp, Gunter; and Kraemer, Walter, 4,443,184, Cl. 432-13.000.

Kraftwerk Union Aktiengesellschaft: *See—*
  Hofmann, Horst; and Lochner, Karl-Heinz, 4,443,710, Cl. 307-80.000.

Kramer, Hans: *See—*
  Hiller, Wolfgang; and Kramer, Hans, 4,442,645, Cl. 52-221.000.

Krause, Dieter, to Siemens Aktiengesellschaft. Mechanical gripping device for rotating jaw chucks or collet chucks. 4,443,020, Cl. 279-1.0DA.

Krauss-Maffei AG: *See—*
  Wohlrab, Walter, 4,443,179, Cl. 425-590.000.

Kreijger, Pieter J.; and Buhrmann, Gerardus P., to Hoogovens Groep B.V. Process for producing steel in a converter from pig iron and ferrous scrap. 4,443,252, Cl. 75-48.000.

Kress, Robert W.: *See—*
  Kovit, Bernard; Koenig, Richard G.; and Kress, Robert W., 4,443,014, Cl. 273-363.000.

Kresse, Peter: *See—*
  Hund, Franz; Hennings, Willi; Brunn, Horst; Kresse, Peter; and Rambold, Wolfgang, 4,443,264, Cl. 106-292.000.

Krogsrud, Harald, to Elkem a/s. Electrothermical furnace. 4,443,879, Cl. 373-71.000.

Krueger, Guenther. Pipe support device for plastic pipe. 4,442,990, Cl. 248-62.000.

Kubis, Charles S.: *See—*
  Walter, John: and Kubis, Charles S., 4,442,693, Cl. 72-354.000.

Kubis, Stanley E.: *See—*
  Foo, George; Grodkiewicz, Raymond W.; Kubis, Stanley E.; and Lindsay, Gordon C., 4,442,582, Cl. 29-403.300.

Kubo, Hiroshi, to Nippon Electric Co., Ltd. Method of detecting troubles in a receiver for a common control channel of a mobile radio telephone communication system and a system therefor. 4,443,661, Cl. 179-2.0EB.

Kubota Ltd.: *See—*
  Yamakami, Yoshiaki; and Yoshimitsu, Arata, 4,442,883, Cl. 164-448.000.

Kubozuka, Takao, to Nissan Motor Co., Ltd. Spark timing control system. 4,442,814, Cl. 123-425.000.

Kuckes, Arthur F., to Cornell Research Foundation, Inc. Method and apparatus for detecting the direction and distance to a target well casing. 4,443,762, Cl. 324-346.000.

Kudo, Akihito. GT-Cut quartz resonator. 4,443,728, Cl. 310-312.000.

Kuhn, John B., to Deere & Company. High lift mechanism for rear end of front mounted mower. 4,442,660, Cl. 56-15.900.

Kuji, Makoto: *See—*
  Nakazawa, Hiroshi; and Kuji, Makoto, 4,442,951, Cl. 220-319.000.

Kuka Schweissanlagen + Roboter GmbH: *See—*
  Pache, Norbert; and Mazac, Karel, 4,443,686, Cl. 219-123.000.

Kulite Semiconductor Products, Inc.: *See—*
  Kurtz, Anthony D.; and Mallon, Joseph R., 4,442,717, Cl. 73-766.000.
  Mallon, Joseph R.; and Kurtz, Anthony D., 4,443,293, Cl. 156-647.000.

Kumalae, Alfred G.: *See—*
  Curran, Steven H.; and Kumalae, Alfred G., 4,442,787, Cl. 114-363.000.

Kumata, Kiyoshi, to Sharp Kabushiki Kaisha. Electronic timepiece with melody alarm faculties. 4,443,114, Cl. 368-73.000.

Kume, Makoto; and Mizuno, Toshiaki, to Nippon Sheet Glass Co., Ltd. Glass composition suitable for production of fibrous wollastonite, method for producing said wollastonite, and wollastonite obtained thereby. 4,443,550, Cl. 501-65.000.

Kunii, Kazuya: *See—*
  Tsutsumi, Saburo; Dozono, Kichihiko; Matayoshi, Yutaka; and Kunii, Kazuya, 4,442,808, Cl. 123-279.000.

Kunsch, Robert, to Regie Nationale des Usines Renault. Process and apparatus for automatic and continuous measurement of the shearing resistance of green sand used in modern molding machines. 4,442,884, Cl. 164-456.000.

Kunz, Walter; Eckhart, Wolfgang; and Hubele, Adolf, to Ciba-Geigy Corporation. Fungicidal compounds. 4,443,618, Cl. 549-320.000.

Kupper, Willy. Spreader vehicle for solid and liquid thawing materials. 4,442,979, Cl. 239-656.000.

Kuraray Co., Ltd.: *See—*
  Fusayama, Takeo; and Yamauchi, Junichi, 4,443,197, Cl. 433-217.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
  Sakagami, Teruo; Arakawa, Noriyuki; and Murayama, Naohiro, 4,443,366, Cl. 260-112.00R.

Kurkela, Kauko O. A.: *See—*
  Karjalainen, Arto J.; and Kurkela, Kauko O. A., 4,443,466, Cl. 424-274.000.

Kurland, Heinrich: *See—*
  Schaper, Helmut; and Kurland, Heinrich, 4,443,266, Cl. 127-19.000.

Kuroiwa, Hiroshi: *See—*
  Kashiwaya, Mineo; Nakagawa, Tohru; Yamada, Kinsaku; Kamifuji, Hiroshi; Oyama, Yoshishige; Kuroiwa, Hiroshi; and Tsuruta, Hisato, 4,442,818, Cl. 123-494.000.

Kurooka, Shigeru: *See—*
  Sunahara, Noriyuki; Naruto, Shunsuke; Kagemoto, Akira; Kurooka, Shigeru; and Yokogawa, Kanae, 4,443,365, Cl. 260-112.00R.

Kurtis, Soma: *See—*
  Wilensky, Joseph, 4,442,675, Cl. 60-654.000.

Kurtz, Anthony D.; and Mallon, Joseph R., to Kulite Semiconductor Products, Inc. Compensation and normalization apparatus for shear piezoresistive gage sensors. 4,442,717, Cl. 73-766.000.

Kurtz, Anthony D.: *See—*
  Mallon, Joseph R.; and Kurtz, Anthony D., 4,443,293, Cl. 156-647.000.

Kurz, Craven H. Thermoplastic orthodontic arch wire retaining annular ligature and process. 4,443,190, Cl. 433-15.000.

Kushner, Burton A.; and Jirinec, Michael J., to Eutectic Corporation. Coating alloy. 4,443,521, Cl. 428-679.000.

Kuwabara, Hideki: *See—*
  Akiyama, Hiroyuki; Kuwabara, Hideki; Yamaguchi, Toru; and Kishida, Masahiko, 4,443,393, Cl. 264-53.000.

Kuwata, Masayoshi, to General Electric Company. Fluidized particle tray heat exchanger. 4,442,888, Cl. 165-104.160.

Kyoto University: *See—*
  Takagi, Toshinori; and Matsubara, Kakuei, 4,443,650, Cl. 136-211.000.

L. R. Nelson Corporation, Inc.: *See—*
  Hayes, Jerry R., 4,443,028, Cl. 285-38.000.

- L. Sauvageau & Cie: *See—*
  - Bleys, Christian, 4,443,003, Cl. 266-48.000.
- Labarre, Ernest D.: *See—*
  - Wallace, Edward M.; Gosselin, Robert G.; and Labarre, Ernest D., 4,442,603, Cl. 30-249.000.
- Laboratoires Jacques Logeais: *See—*
  - Maillard, J. Georges; and Legeai, Jacky, 4,443,468, Cl. 424-274.000.
- LaBudde, Edward V.: *See—*
  - Hazel, Robert L.; and LaBudde, Edward V., 4,443,870, Cl. 369-44.000.
- Lachmann, Ulrich: *See—*
  - Ertl, Wilhelm; Lachmann, Ulrich; and Pertsch, Heinrich, 4,443,275, Cl. 148-31.550.
- Lackwerke Wulfing GmbH & Co.: *See—*
  - Schroder, Manfred; and Subramanyam, Arty R. T., 4,443,569, Cl. 523-414.000.
- Lagakos, Nicholas: *See—*
  - Macedo, Pedro B.; Litovitz, Theodore A.; Lagakos, Nicholas; Mohr, Robert K.; and Meister, Robert, 4,443,700, Cl. 250-227.000.
- Lagus, Peter L.; and Peterson, Edward W., to S-Cubed. Method of hydrofracture in underground formations. 4,442,895, Cl. 166-250.000.
- LaHann, Thomas R.: *See—*
  - Buckwalter, Brian L.; and LaHann, Thomas R., 4,443,473, Cl. 424-300.000.
- Laitem, Leopold: *See—*
  - Broze, Guy; and Laitem, Leopold, 4,443,352, Cl. 252-94.000.
- Laitram Corporation, The: *See—*
  - Fowler, John T., 4,443,795, Cl. 340-870.310.
  - Lapeyre, James M., 4,443,708, Cl. 290-53.000.
- Lakhani, Kishor M.; and Ligon, Jerry L., to Honeywell Information Systems Inc. Wear resistant electrode head for electrographic printers. 4,443,292, Cl. 156-634.000.
- LaMattina, John L.; and Weeks, Paul D., to Pfizer Inc. p-Nitrophenyl 3-bromo-2,2-diethoxy-propionate and synthetic utility therefor. 4,443,621, Cl. 560-142.000.
- Lamort, Jean P., to E et M Lamort (Societe Anonyme). Processes and devices for the disintegration of cellulose materials. 4,443,296, Cl. 162-52.000.
- Landoussy, Claude: *See—*
  - Arretz, Emmanuel; Landoussy, Claude; Mirassou, Alfred; and Ollivier, Jean, 4,443,310, Cl. 204-158.00R.
- Lang, Elliot R.; and Tobolski, Edward L., to Page-Wilson Corporation. Clamping nosepiece for hardness tester. 4,442,705, Cl. 73-83.000.
- Lang, Franz J. Multiple story tower. 4,442,778, Cl. 108-111.000.
- Lang, Theodore B.: *See—*
  - Bolick, Martha E.; Weber, Rebecca J.; and Lang, Theodore B., 4,442,552, Cl. 2-49.00R.
- Langer, Robert S., Jr.; Linhardt, Robert; Cooney, Charles L.; and Galliher, Parrish M., to Massachusetts Institute of Technology. Process for producing heparinase. 4,443,545, Cl. 435-232.000.
- Lansing Bagnall Limited: *See—*
  - Gibbons, Ralph D., 4,442,872, Cl. 140-92.100.
- Lapeyre, James M., to Laitram Corporation, The. Apparatus for storing the energy of ocean waves. 4,443,708, Cl. 290-53.000.
- Larkey, John T.: *See—*
  - Cheshire, James O.; Lindgren, Douglas L.; Marinack, Robert J.; Janda, Bruce W.; Thut, Robert S.; Larkey, John T.; and Jostad, Ray E., 4,443,297, Cl. 162-101.000.
  - Cheshire, James O.; Lindgren, Douglas L.; Marinack, Robert J.; Janda, Bruce W.; Thut, Robert S.; Larkey, John T.; and Jostad, Ray E., 4,443,299, Cl. 162-264.000.
- Larwood, Laurie G. Psychic connection game. 4,443,010, Cl. 273-242.000.
- Lasslo, Andrew; Quintana, Ronald P.; Dugdale, Marion; and Johnson, Randy W., to Research Corporation. Platelet aggregation inhibitory agents and intermediates therefor. 4,443,450, Cl. 424-250.000.
- Latsch, Reinhard; Schlembach, Hans; and Scherenberg, Dieter, to Robert Bosch GmbH. Method for igniting lean fuel-air mixtures and an apparatus to perform the method. 4,442,807, Cl. 123-263.000.
- Laub, Herman. Fuel system for vehicles. 4,443,385, Cl. 261-18.00A.
- Lauckhardt, Gerhard; Fichtner, Rudi; and Broning, Manfred, to USM Corporation. Shoe lasting machine. 4,442,563, Cl. 12-145.000.
- Laurent, Daniel M.; and Theze, Claude, to Jeumont-Schneider Corporation. Information transmission device through the rails between a railway track and a vehicle assembly circulating on this track. 4,442,988, Cl. 246-34.0CT.
- Laurie, Alexander S.: *See—*
  - Adams, James E.; and Laurie, Alexander S., 4,442,627, Cl. 47-56.000.
- Laurizio, Jeremiah J.: *See—*
  - Dwinell, Davis B.; and Laurizio, Jeremiah J., 4,442,949, Cl. 220-257.000.
- Laxo, Darryl E., to Chevron Research Company. Tubular clamp assembly. 4,443,029, Cl. 285-93.000.
- Layton, James E., to Phillips Petroleum Company. Waveform generator. 4,443,713, Cl. 307-260.000.
- Le Blanc, Joseph R., Jr.; Moore, Dewey O.; and Schneider, Robert V., III, to M. W. Kellogg Company, The. Adiabatically reforming a reformed gas for producing methanol. 4,443,560, Cl. 518-703.000.
- Lee, Emerson H.: *See—*
  - Keppel, Robert A.; Tremont, Samuel J.; Lee, Emerson H.; and Davis, George D., 4,443,642, Cl. 585-428.000.
  - Tremont, Samuel J.; Keppel, Robert A.; Lee, Emerson H.; and Davis, George D., 4,443,641, Cl. 585-428.000.
- Lee, Leonard S.: *See—*
  - Sopp, Samuel W.; Lee, Leonard S.; and Howe, Michael W., 4,443,425, Cl. 423-635.000.
- Lee, Richard J., to Standard Oil Company (Indiana). 1,4,Bis-N,N'-dipolyalkylquinonyl aminopropyl piperazine. 4,443,604, Cl. 544-399.000.
- LeFrois, Richard T., to Honeywell Inc. Variable firing rate oil burner using aeration throttling. 4,443,180, Cl. 431-4.000.
- Legeai, Jacky: *See—*
  - Maillard, J. Georges; and Legeai, Jacky, 4,443,468, Cl. 424-274.000.
- Legrand, Michel; Canonne, Paul; and Brault, Christian, to Gerin, Merlin. Low voltage circuit breaker. 4,443,828, Cl. 361-93.000.
- Legrand, Paul J.; and Hersen, Rene M. J., to Societe Nationale d'Etude et de Construction de Moteurs D'Aviation "S.N.E.C.M.A.". Guidance device for the moving fairing of a thrust reverser system. 4,442,987, Cl. 244-110.00B.
- Leikam, Gary E.: *See—*
  - Busch, Dennis G.; Grafe, Robert J.; and Leikam, Gary E., 4,443,863, Cl. 364-900.000.
- Leimbach, J. George: *See—*
  - Barbier, William J.; and Leimbach, J. George, 4,442,680, Cl. 62-217.000.
- Leistner, Herbert E. Nail feed mechanism. 4,442,965, Cl. 227-136.000.
- Leland, David L.: *See—*
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- Morino, Toshiharu: *See—*
  - Teramura, Mitsuyoshi; Takimoto, Masatami; Nakamura, Norihiko; Itoh, Takaaki; Katou, Takashi; Morino, Toshiharu; and Sakakibara, Youzou, 4,443,388, Cl. 261-39.00A.
- Morioka, Akitoshi: *See—*
  - Kashihara, Toshitsugu; Yoshino, Tsunemi; Morioka, Akitoshi; and Iwata, Hiroshi, 4,443,087, Cl. 354-401.000.
- Morita, Minoru: *See—*
  - Numano, Masachik; and Morita, Minoru, 4,442,577, Cl. 29-33.00T.
- Morita, Misao: *See—*
  - Yasuda, Zenichi; Morita, Misao; and Nakajima, Takashi, 4,443,106, Cl. 356-357.000.
- Moriyama, Satoru: *See—*
  - Ishikawa, Hiromichi; Kitaori, Kazuhiko; Moriyama, Satoru; Chono, Tadashi; and Uchiyama, Tsugio, 4,443,439, Cl. 424-211.000.
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- Morris, Richard F.: *See—*
  - Hogan, Robert D., Jr.; Sanghvi, Narendra T.; and Morris, Richard F., 4,443,816, Cl. 358-160.000.
- MORWEN S.r.l.: *See—*
  - Giacomelli, Renato, 4,443,074, Cl. 351-178.000.
- Moseman, Merlin H.: *See—*
  - Jones, Brian L.; Johnson, David L.; and Moseman, Merlin H., 4,442,697, Cl. 73-12.000.
- Moser, Kurt: *See—*
  - Eisbein, Juergen; Kaufmann, Heinrich; Moser, Kurt; and Brenner, Friedhelm, 4,443,092, Cl. 355-3.00R.
- Motoren- und Turbinen-Union Munich GmbH: *See—*
  - Merz, Herbert, 4,443,343, Cl. 210-768.000.
- Motta, Valerio, to AGIP, S.p.A. Method for preparing thin sections for the microscopic study of small fragments of rock or dust, using a plate containing cells. 4,443,395, Cl. 264-117.000.
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  - Pouri, Theodore H.; and Mottin, Howard C., 4,442,753, Cl. 89-46.000.
- Mullaney, Dennis: *See—*
  - Gronbeck, Peter W.; Mullaney, Dennis; and Smith, Kimberly M., 4,442,920, Cl. 182-199.000.
- Muller, Bernard L.: *See—*
  - Schulte-Elte, Karl H.; Muller, Bernard L.; and Maillefer, Eric, 4,443,632, Cl. 568-375.000.
- Muller, Hans. Apparatus for combined cooling and aeration of biochemical-action vessels. 4,442,889, Cl. 165-109.00R.
- Muller, Hans, to DrM, Dr. Mueller, AG. Method of cleaning filter elements. 4,443,346, Cl. 210-785.000.
- Muller, Jean-Pierre: *See—*
  - Doremus, Bernard; and Muller, Jean-Pierre, 4,442,902, Cl. 166-374.000.
- Muller, Jorg, to Siemens Aktiengesellschaft. Doppler radar. 4,443,796, Cl. 343-5.0PD.
- Muller, Karl-Heinz: *See—*
  - Dworak, Wilhelm; Fader, Martin; Jons, Claus; Mayer, Siegfried; Muller, Karl-Heinz; Rasper, Manfred; Schuldt, Dietrich; Talmon, Wolfgang; and Wolff, Guenter, 4,443,168, Cl. 418-131.000.
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  - Musch, Rudiger; Pampus, Gottfried; Muller, Peter; Eisele, Ulrich; Konter, Wolfgang; and Gobel, Wilhelm, 4,443,582, Cl. 525-215.000.
  - Musch, Rudiger; Pampus, Gottfried; Casper, Rudolf; Muller, Peter; and Gobel, Wilhelm, 4,443,583, Cl. 525-215.000.
- Muller, Wolfgang: *See—*
  - Jentzsch, Arndt; Johne, Hans; and Muller, Wolfgang, 4,442,775, Cl. 101-365.000.
- Mulloy, Joseph W.: *See—*
  - Donaldson, Donald J.; Kelly, Allan C.; Mulloy, Joseph W.; and Zwakenberg, Donald R., 4,443,416, Cl. 423-122.000.
- Multifastener Corporation: *See—*
  - Smallegan, Jon M., 4,442,584, Cl. 29-432.000.
- Munson, Robert E.: *See—*
  - Stockton, Ronald J.; and Munson, Robert E., 4,442,590, Cl. 29-571.000.
- Muntjes, Wolfgang, to Ludw. Lindgens KG Lederfabrik. Apparatus for the tentering of skins or hides in the manufacture of leather. 4,442,687, Cl. 69-1.000.
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  - Kawashima, Yukio; Kobayashi, Makoto; and Murakami, Mayu, 4,443,317, Cl. 204-290.00F.
- Murakami, Naotaka: *See—*
  - Takashige, Masao; Kaneda, Kazuhisa; and Murakami, Naotaka, 4,443,399, Cl. 264-519.000.
- Murakami, Ryoichi: *See—*
  - Saito, Koichi; Mino, Yasutake; Nakatani, Nobuo; and Murakami, Ryoichi, 4,443,273, Cl. 148-6.15Z.
- Muramoto, Yutaka; Kobayashi, Susumu; and Ishizaka, Hideo, to Terumo Corporation. Measuring apparatus, method of manufacture thereof, and method of writing data into same. 4,443,117, Cl. 374-1.000.
- Murano, Tamio; Yamane, Satoshi; Suzuki, Toshitatsu; and Fukushima, Yoshio, to Ricoh Company, Ltd. Current signal controlled camera system. 4,443,082, Cl. 354-145.100.
- Murata Kikai Kabushiki Kaisha: *See—*
  - Shindo, Noboru, 4,442,663, Cl. 57-336.000.
- Murata Manufacturing Co., Ltd.: *See—*
  - Kaneko, Toshimi; and Hata, Yukio, 4,443,830, Cl. 361-275.000.
- Murata, Masayoshi: *See—*
  - Takaya, Takao; Takasugi, Hisashi; Murata, Masayoshi; and Yoshioka, Akiteru, 4,443,444, Cl. 424-246.000.
- Murata, Moriyasu; Suzuki, Akira; Nakae, Atsuo; and Ito, Susumu, to Kao Corporation. Detergent composition. 4,443,355, Cl. 252-174.120.
- Murayama, Naohiro: *See—*
  - Sakagami, Teruo; Arakawa, Noriyuki; and Murayama, Naohiro, 4,443,366, Cl. 260-112.00R.
- Murphy, James V., to Advanced Interconnections. Socket terminal positioning method and construction. 4,442,938, Cl. 206-329.000.
- Murphy, Judith K. Toilet training device. 4,443,200, Cl. 434-247.000.
- Muryobayashi, Takashi; Miyake, Hajimu; and Yamato, Takashi, to Ono Pharmaceutical Co., Ltd. Prostaglandin analogues. 4,443,478, Cl. 424-331.000.
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- Musgrave, Daniel D. Magazine hanger. 4,442,962, Cl. 224-255.000.
- Musseau, Joel R.: *See—*
  - Bos, Pierre H.; Musseau, Joel R.; and Rochez, Claude, 4,442,764, Cl. 99-633.000.
- Muto, Toshiaki, to Tokiko Kabushiki Kaisha. Simplified hydraulic damper. 4,442,926, Cl. 188-317.000.
- Mutoh, Masayuki; Ishidoh, Takanobu; and Hayashi, Toshihiro, to Minolta Camera Kabushiki Kaisha. Process for preparing hectographic printing masters. 4,443,820, Cl. 358-296.000.
- Nabu Manufacturing Corporation: *See—*
  - Hempell, L. Bruce, 4,443,815, Cl. 358-114.000.
- Nagai, Nobuyuki: *See—*
  - Kawate, Yoshio; Nagai, Nobuyuki; Horiuchi, Takefumi; Tsurutani, Saburo; Kitamura, Minoru; Ito, Shuzo; Ohgami, Masahiko; Tochimori, Kenichi; and Inoue, Toshio, 4,442,706, Cl. 73-86.000.
- Nagano, Takahiro: *See—*
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- Nagasaka, Mitsuaki: *See—*
  - Senda, Shigeo; Ohtani, Osamu; Katho, Eiichi; Nagasaka, Mitsuaki; Miyake, Hidekazu; Fujiwara, Khosuke; and Tanaka, Motoaki, 4,443,607, Cl. 546-141.000.
- Nagasawa, Kiyoto; and Yamada, Hiroshi, to Ricoh Company, Ltd. Exposure value control system for copying machines. 4,443,097, Cl. 355-68.000.
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- Nagata, Wataru: *See—*
  - Yoshioka, Mitsuru; Shoichiro, Uyeo; Hamashima, Yoshio; Kikkawa, Ikuo; Tsuji, Teruji; and Nagata, Wataru, 4,443,598, Cl. 544-90.000.

Nagatake, Kazuo: *See—*
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Nagayama, Sueji: *See—*
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Nagpal, Krishen L., to Buffalo Color Corporation. Pharmaceutical N-phenyl carbamoyl glycinate compositions. 4,443,474, Cl. 424-309.000.
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Nakagawa, Akira: *See—*
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Nakagawa, Tohru: *See—*
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Nakamura, Noriaki; Kishimoto, Tomio; and Yamamoto, Yuichi, to Matsushita Electric Industrial Co., Ltd. Rotary encoder contact disk. 4,443,670, Cl. 200-11.0DA.
Nakamura, Norihiko: *See—*
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Nakano, Tomio; and Takemae, Yoshihiro, to Fujitsu Limited. Semiconductor buffer circuit having compensation for power source fluctuation. 4,443,714, Cl. 307-269.000.
Nakano, Yoshiyuki, to Nippon Kogaku K.K. Driving apparatus in a camera. 4,443,083, Cl. 354-152.000.
Nakashima Seisakusho Co., Ltd.: *See—*
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Nakashima, Yoichi: *See—*
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Nakazawa, Hiroshi; and Kuji, Makoto, to Toho Sheet Frame Co., Ltd. Hermetically sealed container. 4,442,951, Cl. 220-319.000.
Nakhla, Michael S., to Northern Telecom Limited. Filters comprising reactive components, and a method of determining impedances thereof. 4,443,662, Cl. 179-2.00C.
Nalco Chemical Company: *See—*
Bhattacharyya, Bhupati I.; Slovinsky, Manuel; Wachala, Raymond J.; Beske, Lawrence E.; and McCullar, Michael L., 4,443,576, Cl. 524-522.000.
Namikoshi, Hajime; Okumura, Yoshiaki; and Sei, Tsuyoshi, to Daicel Chemical Industries Ltd. Cellulose ester derivatives and a process for the production thereof. 4,443,595, Cl. 536-58.000.
Narozny, Ronald S., to Thomas & Betts Corporation. Method for making an electrical connector. 4,442,594, Cl. 29-884.000.
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Nasu, Sataroh; Iwanaga, Kouichi; and Kikuchi, Hiroshi, to Matsushita Electric Works, Ltd. Casing of a washable electric appliance. 4,442,596, Cl. 30-41.500.
Nath, Dilip K.: *See—*
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Nath, Prem: *See—*
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National Can Corporation: *See—*
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National Institute for Researches in Inorganic Materials: *See—*
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National Instrument Company, Inc.: *See—*
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National Polymers Inc.: *See—*
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National Service Industries, Inc.: *See—*
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Nationwide Carriers Incorporated: *See—*
Veach, B. R., 4,442,819, Cl. 123-557.000.
Navach, Joseph H. Method and apparatus for making physiological measurements. 4,442,844, Cl. 128-663.000.
NCR Corporation: *See—*
Kallin, Fredrik L. N., 4,442,769, Cl. 101-93.190.
Neal, Brian P.; and Turner, Alan R., to Bendix Westinghouse Limited. Fluid injector devices. 4,442,957, Cl. 222-207.000.
Nederlandse Centrale Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek: *See—*
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Nederlandse Centrale Organistatie voor Toegepast Natuurwetenschappelijk Onderzoek: *See—*
den Otter, Johan L., 4,443,110, Cl. 366-97.000.
Needham, Donald G.; and Leland, John E., to Phillips Petroleum Company. Laser printable polyarylene sulfide compositions. 4,443,571, Cl. 524-90.000.
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Nemec, Joseph W.; and Cholod, Michael S., to Rohm and Haas Company. Preparation of methacrolein and methacrylonitrile from tert-butyl alkanoates. 4,443,383, Cl. 260-465.200.
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Newman, William A., to Utah Research & Development Co., Inc. Solid state battery charger. 4,443,752, Cl. 320-22.000.
Ng, Ying-Wah, to Bell Telephone Laboratories, Incorporated. Fast parity generation for find low order zero circuit. 4,443,876, Cl. 371-49.000.
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Ninomiya, Masakazu, to Nippondenso Co., Ltd. Optimum air-fuel ratio control for internal combustion engine. 4,442,815, Cl. 123-436.000.
Nippon Electric Co., Ltd.: *See—*
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Nippon Paint Co., Ltd.: *See—*
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Nishiyama, Mitsuru, to Sharp Kabushiki Kaisha. Liquid-injection passage structure contained within a display cell. 4,443,063, Cl. 350-334.000.
Nishizono, Masahisa, to Fujisawa Pharmaceutical Co., Ltd. Uric acid-lowering composition, method and use. 4,443,469, Cl. 424-275.000.
Nislick, Arthur S.: *See—*
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Noble, Allen T., to Noble Linear Irrigation, Inc. Land irrigation system and method. 4,442,974, Cl. 239-1.000.
Noble, Allen T., to Noble Linear Irrigation, Inc. Support structure for land irrigation system. 4,442,976, Cl. 239-183.000.
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Hirsch, Gustav M.; and Bar-Nof, Moshe, 4,442,601, Cl. 30-169.000.
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Nomizu, Isao: *See—*
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Nongbri, Govanon, to HRI, Inc. Catalyst activity in coal liquid upgrading. 4,443,330, Cl. 208-112.000.
Nooden, Robert A., to International Minerals & Chemical Corp. Coating for foundry cores and molds. 4,443,259, Cl. 106-38.270.
Norder, Stig; and Nilsson, Lars-Erik, to Aktiebolag Somas Ventiler. Electro-pneumatic signal converter. 4,442,854, Cl. 137-82.000.
Nordqvist, Sune, to Tenax Maskin AB. Method of preparing gypsum articles. 4,443,261, Cl. 106-109.000.
Norfab, Inc.: *See—*
Mehl, Donald N., 4,443,508, Cl. 428-122.000.
Norgaard, Donald E., to Nortech Laboratories Ltd. Acoustic apparatus and method. 4,443,889, Cl. 381-24.000.
Norlin Industries, Inc.: *See—*
Gross, Glenn; and Moore, Douglas R., 4,442,745, Cl. 84-1.010.
Normalair-Garrett (Holdings) Limited: *See—*
Carnegie, Alistair L., 4,442,835, Cl. 128-201.270.
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North American Philips Corporation: *See—*
Wank, Larry A.; and Braitling, Joseph G., 4,443,825, Cl. 360-104.000.
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Dinulescu, Horia A., 4,442,886, Cl. 165-76.000.
Northcutt, Donald R. Suspension system for electric heating elements. 4,443,881, Cl. 373-130.000.
Northern Telecom Inc.: *See—*
Kelly, Charles A. P., 4,443,758, Cl. 324-113.000.
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Nakhla, Michael S., 4,443,662, Cl. 179-2.00C.
Rokas, Bernard E., 4,443,277, Cl. 156-50.000.
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Migliori, Albert; and Northup, Stephen D., 4,443,837, Cl. 362-396.000.
Notheis, Patrick J.: *See—*
Meitner, Gary H.; and Notheis, Patrick J., 4,443,513, Cl. 422-195.000.
Novatome: *See—*
Plagnard, Andre, 4,443,403, Cl. 376-270.000.
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Wojcieson, Raymond J.; and Nowak, Leonard G., 4,443,182, Cl. 431-183.000.
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Yoshino, Yataro; Tsukada, Takami; Saito, Tadao; and Nozawa, Takamitsu, 4,442,944, Cl. 215-1.00C.
Numano, Masachik; and Morita, Minoru, to Nippon Kokan Kabushiki Kaisha. Processing of steel pipes or round bars. 4,442,577, Cl. 29-33.00T.
N.V. Biscuits Delacre S.A.: *See—*
Busseniers, Roger; and Deudon, Martial, 4,442,657, Cl. 53-500.000.
NYA Asfalt AB: *See—*
Cappe, Carl, 4,442,651, Cl. 52-745.000.
Oakes, Thomas R.: *See—*
Maloney, James E.; and Oakes, Thomas R., 4,443,357, Cl. 252-321.000.
Obitsu, Masamichi; Hori, Takahiro; Koinuma, Toyoji; and Sakaguchi, Yuriko, to Nissan Chemical Industries, Ltd. Agent and method for modifying surface layer of cement structures. 4,443,496, Cl. 427-140.000.
Obland, Donald R. Dual head edge sharpening device for skis. 4,442,636, Cl. 51-205.0WG.
Oboler, Leonard: *See—*
Dodds, Diego E. F., 4,443,389, Cl. 261-153.000.
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Hollifield, Charles M.; and Smith, Teddy D., 4,443,421, Cl. 423-321.00R.
Occidental Oil Shale, Inc.: *See—*
Ricketts, Thomas E., 4,443,036, Cl. 299-2.000.
Ricketts, Thomas E., 4,443,037, Cl. 299-2.000.
Oce-Nederland B.V.: *See—*
Heikens, Harm H.; and Crommentuyn, Gerardus J., 4,443,527, Cl. 430-39.000.
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Imaizumi, Ichiro; Kimura, Masatoshi; Ochi, Shikayuki; Yoshimura, Masayoshi; Yamaguchi, Takashi; and Koda, Toyomasa, 4,443,812, Cl. 357-53.000.
O'Connor, Terence A., to Teledyne Republic Manufacturing. Fluid pump. 4,443,162, Cl. 417-425.000.
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Ogata, Seiya: *See—*
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Ogden Electronics Ltd.: *See*—
  Steel, James, 4,442,915, Cl. 180-271.000.
Ogino, Yasuo: *See*—
  Niwa, Yukichi; Ogino, Yasuo; Ohwada, Mitsutoshi; Tanaka, Kazuo; and Koumura, Noboru, 4,443,078, Cl. 354-403.000.
Ohashi, Shin-ichi: *See*—
  Tanaka, Katsuyuki; Ohashi, Shin-ichi; Saito, Masakatsu; and Sampei, Tohru, 4,443,741, Cl. 315-307.000.
Ohba, Shinya; Nakai, Masaaki; Ozaki, Toshifumi; and Takahashi, Kenji, to Hitachi, Ltd. Solid-state imaging device. 4,443,818, Cl. 358-213.000.
Ohe, Takeshi; and Okamoto, Haruo, to Jidosha Kiki Co., Ltd. Flow control valve. 4,442,857, Cl. 137-117.000.
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  Masuda, Naosuke; and Ohe, Takeshi, 4,443,161, Cl. 417-310.000.
Ohgami, Masahiko: *See*—
  Kawate, Yoshio; Nagai, Nobuyuki; Horiuchi, Takefumi; Tsurutani, Saburo; Kitamura, Minoru; Ito, Shuzo; Ohgami, Masahiko; Tochimori, Kenichi; and Inoue, Toshio, 4,442,706, Cl. 73-86.000.
Ohkubo, Sumiharu, to Mitsubishi Denki Kabushiki Kaisha. Ventilation device for a rotating electric machine. 4,443,723, Cl. 310-53.000.
Ohsaki, Takashi: *See*—
  Ikegami, Shigeru; and Ohsaki, Takashi, 4,443,726, Cl. 310-248.000.
Ohta, Minoru; Hattori, Yutaka; Kawakami, Tomio; and Onoda, Michitosi, to Nippon Soken, Inc. Gas detecting sensor. 4,443,781, Cl. 338-34.000.
Ohtaka, Keiji, to Canon Kabushiki Kaisha. Focusing screen. 4,443,088, Cl. 354-200.000.
Ohtani, Osamu: *See*—
  Senda, Shigeo; Ohtani, Osamu; Katho, Eiichi; Nagasaka, Mitsuaki; Miyake, Hidekazu; Fujiwara, Khosuke; and Tanaka, Motoaki, 4,443,607, Cl. 546-141.000.
Ohtawa, Hisao: *See*—
  Itobayashi, Manabu; and Ohtawa, Hisao, 4,443,770, Cl. 330-284.000.
Ohwada, Hiroyuki, to Nippon Electric Co., Ltd. Error recovery system of a multi-processor system for recovering an error by transferring status singals from one processor to another without use of a main memory. 4,443,849, Cl. 364-200.000.
Ohwada, Mitsutoshi: *See*—
  Niwa, Yukichi; Ogino, Yasuo; Ohwada, Mitsutoshi; Tanaka, Kazuo; and Koumura, Noboru, 4,443,078, Cl. 354-403.000.
Ohyama, Tadashi; and Kawata, Shoji, to Aisin Seiki Kabushiki Kaisha. Electromagnetic valve unit. 4,442,998, Cl. 251-129.000.
Oinoue, Kenichi; Hayashi, Asao; Ida, Masatoshi; Aoki, Masahiro; Nakamura, Junichi; and Fukuoka, Kenji, to Olympus Optical Co. Ltd. Method and apparatus for detecting focus condition of objective lens. 4,443,079, Cl. 354-407.000.
Oka, Kozo: *See*—
  Yoshino, Masaki; Oka, Kozo; and Koide, Huminori, 4,443,093, Cl. 355-3.0CH.
Okabayashi, Ikuo: *See*—
  Miyoshi, Hajime; Asanagi, Etsuo; Iguchi, Junsuke; and Okabayashi, Ikuo, 4,443,260, Cl. 106-109.000.
Okai, Tamao. Bicycle stand unit. 4,443,024, Cl. 280-304.000.
Okajima, Shinpei, to Shimano Industrial Company Limited. Pedal for a bicycle. 4,442,732, Cl. 74-594.500.
Okamoto, Haruo: *See*—
  Ohe, Takeshi; and Okamoto, Haruo, 4,442,857, Cl. 137-117.000.
Okamoto, Kenji: *See*—
  Kobayashi, Masayoshi; Oshizawa, Hidekazu; Okamoto, Kenji; and Sekiguchi, Akira, 4,443,852, Cl. 364-431.030.
Okamoto, Kouichi: *See*—
  Hirao, Toshiki; and Okamoto, Kouichi, 4,443,722, Cl. 310-45.000.
Oki, Hisashi: *See*—
  Nohira, Hidetaka; Ito, Sumio; and Oki, Hisashi, 4,442,809, Cl. 123-316.000.
Okita, Tsutomu: *See*—
  Yamamoto, Nobuyuki; Nishikawa, Yasuo; Andou, Yuji; Naruo, Kyoichi; and Okita, Tsutomu, 4,443,514, Cl. 428-216.000.
Okubo, Tsuneo: *See*—
  Shimazu, Nobuo; Okubo, Tsuneo; Saitou, Norio; and Ozasa, Susumu, 4,443,703, Cl. 250-491.100.
Okumura, Takatoshi: *See*—
  Kaneko, Makoto; and Okumura, Takatoshi, 4,442,748, Cl. 84-1.010.
Okumura, Yoshiaki: *See*—
  Namikoshi, Hajime; Okumura, Yoshiaki; and Sei, Tsuyoshi, 4,443,595, Cl. 536-58.000.
Okuno, Takeshi: *See*—
  Kasamatsu, Kiyoshi; Hirano, Masachika; and Okuno, Takeshi, 4,443,438, Cl. 424-200.000.
Oldani, Karl: *See*—
  Buhler, Karl; and Oldani, Karl, 4,443,880, Cl. 373-74.000.
Olin Corporation: *See*—
  Brock, Andrew J.; and Mandigo, Frank N., 4,443,274, Cl. 148-6.310.
  Hammond, Wayne H.; and Jones, George V., 4,443,600, Cl. 544-190.000.
  Moore, Sanders H.; and Smith, Maurice R., 4,443,307, Cl. 204-98.000.
Ollenberger, Eugene. Therapeutic couch. 4,442,832, Cl. 128-71.000.
Ollivier, Jean: *See*—
  Arretz, Emmanuel; Landoussy, Claude; Mirassou, Alfred; and Ollivier, Jean, 4,443,310, Cl. 204-158.00R.
Olschewski, Armin; Brandenstein, Manfred; and Walter, Lothar, to SKF Kugellagerfabriken GmbH. Tension roller for belt drives. 4,443,210, Cl. 474-199.000.
Olsen, Eric G., to United Technologies Corporation. Soundproofing panel mounted to effect vibration isolation. 4,442,647, Cl. 52-393.000.
Olsen, Olav, to Ingenior Thor Furuholmen A/S; A/S Hoyer-Ellefsen; and Ingenior F. Selmer A/S. Method for constructing an offshore platform structure having a plurality of supporting legs inclined inwardly towards each other. 4,443,131, Cl. 405-203.000.
Olson, Donald C., to Shell Oil Company. Method of removing hydrogen sulfide from gases utilizing a polyvalent metal chelate solution and electrolytically regenerating the solution. 4,443,423, Cl. 423-573.00G.
Olson, Donald C., to Shell Oil Company. Method of removing hydrogen sulfide from gases utilizing a polyvalent metal chelate solution and electrolytically regenerating the solution. 4,443,424, Cl. 423-573.00G.
Olympus Optical Co., Ltd.: *See*—
  Mihara, Shin-ichi, 4,443,069, Cl. 350-469.000.
  Oinoue, Kenichi; Hayashi, Asao; Ida, Masatoshi; Aoki, Masahiro; Nakamura, Junichi; and Fukuoka, Kenji, 4,443,079, Cl. 354-407.000.
Olympus Optical Co., Ltd: *See*—
  Tanikawa, Kowji, 4,443,077, Cl. 354-21.000.
Omata, Katsumori, to Far East Engineering Co., Ltd. Automatic system for producing electrolyte impregnated capacitor elements. 4,442,588, Cl. 29-570.000.
Omata, Tetsuo: *See*—
  Oshima, Tokio; Kimura, Tomio; Omata, Tetsuo; and Iwamoto, Noritada, 4,443,548, Cl. 435-280.000.
Omron Tateisi Electronics Co.: *See*—
  Yamada, Takeshi, 4,443,838, Cl. 363-19.000.
Ono, Hironobu: *See*—
  Nagase, Masaomi; Miyagi, Hideo; Ono, Hironobu; and Nakano, Jiro, 4,442,813, Cl. 123-418.000.
Ono, Keikichi; and Hirano, Hirofumi, to Canon Denshi Kabushiki Kaisha. Small serial printer. 4,443,123, Cl. 400-145.200.
Ono Pharmaceutical Co., Ltd.: *See*—
  Muryobayashi, Takashi; Miyake, Hajimu; and Yamato, Takashi, 4,443,478, Cl. 424-331.000.
Ono, Takuo: *See*—
  Mikami, Wataru; Nagatake, Kazuo; and Ono, Takuo, 4,443,841, Cl. 363-41.000.
Onoda, Michitosi: *See*—
  Ohta, Minoru; Hattori, Yutaka; Kawakami, Tomio; and Onoda, Michitosi, 4,443,781, Cl. 338-34.000.
Onodera, Toshihiro; and Masuda, Youichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Single ended, separately driven, resonant DC-DC converter. 4,443,839, Cl. 363-20.000.
Opitz, Konrad, to Hoechst Aktiengesellschaft. Liquid reactive dyestuff preparations and their use. 4,443,224, Cl. 8-527.000.
Oppl, Gunter: *See*—
  Schmitt, Gunther; Oppl, Gunter; and Patel, Kirit, 4,442,664, Cl. 57-339.000.
Optical Coating Laboratory, Inc.: *See*—
  Anthon, Erik W., 4,443,873, Cl. 369-110.000.
Optical Technologies, Inc.: *See*—
  Bowley, George A., 4,442,750, Cl. 84-1.180.
Optimetrix Corporation: *See*—
  Johannsmeier, Karl-Heinz; and Phillips, Edward H., 4,443,096, Cl. 355-53.000.
Orlow, Ralph S., to Box Innards, Inc. Rotary apparatus for forming sheets with rounded corners. 4,442,742, Cl. 83-303.000.
Oros Company: *See*—
  de Nevers, Noel H., 4,443,332, Cl. 209-331.000.
Osaka Gas Company Limited: *See*—
  Shimizu, Shoji; and Mitsudomi, Hiroyuki, 4,443,183, Cl. 431-354.000.
Oshima, Tokio; Kimura, Tomio; Omata, Tetsuo; and Iwamoto, Noritada, to Ube Industries, Ltd. Process for preparing L-α-methylphenyl alanines. 4,443,548, Cl. 435-280.000.
Oshizawa, Hidekazu: *See*—
  Kobayashi, Masayoshi; Oshizawa, Hidekazu; Okamoto, Kenji; and Sekiguchi, Akira, 4,443,852, Cl. 364-431.030.
Oshlack, Benjamin; and Leslie, Stewart T., to Euroceltique, S.A. Extended action controlled release compositions. 4,443,428, Cl. 424-22.000.
Otani, Mitsunobu; Senda, Teruo; and Hirose, Michio, to Toray Industries, Inc. Biological treatment of waste water. 4,443,337, Cl. 210-602.000.
Otis Engineering Corporation: *See*—
  Foust, Tommy C., 4,442,893, Cl. 166-117.500.
  Gentry, Ernest B., 4,442,859, Cl. 137-242.000.
Otto, Stanley W.: *See*—
  Cuminale, Raymond J.; Otto, Stanley W.; Knipp, Jerry L.; Seibolt, Bernard P.; and Yarkoni, Fred E., 4,442,942, Cl. 211-163.000.
Oude Alink, Bernardus A.; and Redmore, Derek, to Petrolite Corporation. Tetrahydrothiazole phosphonic acids or esters thereof. 4,443,609, Cl. 548-111.000.
Outokumpu Oy: *See*—
  Tuovinen, Frans H.; Norrman, Bengt J. F.; and Heikkila, Risto M., 4,443,878, Cl. 373-9.000.
Overpeck, Charles D.; Overpeck, Dorothy S.; and Overpeck, George G. Easy-to-clean birdhouse. 4,442,793, Cl. 119-23.000.

Overpeck, Dorothy S.: *See*—
  Overpeck, Charles D.; Overpeck, Dorothy S.; and Overpeck, George G., 4,442,793, Cl. 119-23.000.
Overpeck, George G.: *See*—
  Overpeck, Charles D.; Overpeck, Dorothy S.; and Overpeck, George G., 4,442,793, Cl. 119-23.000.
Owen, R. Calvin, Jr.; and Plummer, William T., to Polaroid Corporation. Zone focusing optical system. 4,443,067, Cl. 350-422.000.
Owens, George H., Jr. Magnetic plumb bob holder. 4,442,610, Cl. 33-392.000.
Owens-Illinois, Inc.: *See*—
  Dorf, Arthur L.; Lovalenti, Sam; Pezzin, John J.; and Riggs, Darius O., 4,442,934, Cl. 198-344.000.
Oxley, Peter: *See*—
  Basten, Frank; and Oxley, Peter, 4,442,779, Cl. 108-131.000.
Oyama, Yoshishige: *See*—
  Kashiwaya, Mineo; Nakagawa, Tohru; Yamada, Kinsaku; Kamifuji, Hiroshi; Oyama, Yoshishige; Kuroiwa, Hiroshi; and Tsuruta, Hisato, 4,442,818, Cl. 123-494.000.
Ozaki, Toshifumi: *See*—
  Ohba, Shinya; Nakai, Masaaki; Ozaki, Toshifumi; and Takahashi, Kenji, 4,443,818, Cl. 358-213.000.
Ozasa, Susumu: *See*—
  Shimazu, Nobuo; Okubo, Tsuneo; Saitou, Norio; and Ozasa, Susumu, 4,443,703, Cl. 250-491.100.
Ozawa, Toshiaki, to Canon Kabushiki Kaisha. Printer with electromagnetically driven hammer. 4,443,124, Cl. 400-185.000.
Ozretich, Thomas M.: *See*—
  Griffith, Jeffrey D.; and Ozretich, Thomas M., 4,443,625, Cl. 560-254.000.
Pabst, Manfred: *See*—
  van Wersch, Kurt; and Pabst, Manfred, 4,442,560, Cl. 8-151.000.
Pache, Norbert; and Mazac, Karel, to Kuka Schweissanlagen + Roboter GmbH. Device for arc-welding ferromagnetic workpieces under the control of a magnetic field. 4,443,686, Cl. 219-123.000.
Pacific Scientific Instruments Company: *See*—
  Webster, Donald R., 4,443,108, Cl. 356-418.000.
Padilla, Amphlett G., to Upjohn Company, The. Selective halogenation of 2-fluoroaniline. 4,443,631, Cl. 564-412.000.
Padilla, Joseph R.; Richardson, Emmett M.; and Chatas, Angelos T., to Mobil Oil Corporation. Subsea well completion system. 4,442,900, Cl. 166-342.000.
Page-Wilson Corporation: *See*—
  Lang, Elliot R.; and Tobolski, Edward L., 4,442,705, Cl. 73-83.000.
Pajonas, Thomas L.; Barcikowski, Gerald F.; and Ennaco, Andrew J., to Combustion Engineering, Inc. Tempering air heating on pulverizing high moisture fuels. 4,442,783, Cl. 110-347.000.
Palmieri, Elsie: *See*—
  Van Achterberg, Johan; and Miles, George N., 4,442,761, Cl. 99-404.000.
Pampus, Gottfried: *See*—
  Musch, Rudiger; Pampus, Gottfried; Muller, Peter; Eisele, Ulrich; Konter, Wolfgang; and Gobel, Wilhelm, 4,443,582, Cl. 525-215.000.
  Musch, Rudiger; Pampus, Gottfried; Casper, Rudolf; Muller, Peter; and Gobel, Wilhelm, 4,443,583, Cl. 525-215.000.
Panico, C. Richard. Photoresist curing method. 4,443,533, Cl. 430-311.000.
Pansolli, Paolo; Barbaro, Aurelio; Maimone, Adriano; and Valdiserri, Mario, to E.N.I. Ente Nazionale Indrocarburi. Method and apparatus for the continuous separation of fructose from glucose starting from invert sugar or from isomerized glucose syrups. 4,443,267, Cl. 127-46.200.
Pantier, Earl A.: *See*—
  Jackovitz, John F.; Seidel, Joseph; and Pantier, Earl A., 4,443,526, Cl. 429-223.000.
Papenfuhs, Theodor; and Berthold, Rudiger, to Hoechst Aktiengesellschaft. Process for preparing 2-amino-5-nitrotoluene. 4,443,630, Cl. 564-406.000.
Parker-Hannifin Corporation: *See*—
  Sharp, Bernard C., 4,442,566, Cl. 15-250.420.
Parra, Gilbert T.: *See*—
  Coe, Charles F.; and Parra, Gilbert T., 4,442,716, Cl. 73-756.000.
Pastorino, Ronald L.; Bock, Lawrence A.; and Halle, Reidar, to Argus Chemical Corporation. Gem-diperoxyesters. 4,443,376, Cl. 260-453.0RZ.
Patarini, Leon M., to Sherwin-Williams Company, The. Quad-seal snap lock. 4,442,952, Cl. 220-354.000.
Pate, Harold T.: *See*—
  Borsh, Richard J.; Neff, Steven W.; and Pate, Harold T., 4,443,031, Cl. 285-419.000.
Patel, Kirit: *See*—
  Schmitt, Gunther; Oppl, Gunter; and Patel, Kirit, 4,442,664, Cl. 57-339.000.
Patterson, Leroy R.: *See*—
  Delvy, Robert J.; Pentecost, Harry L.; and Patterson, Leroy R., 4,443,829, Cl. 361-275.000.
Paulat, Volker: *See*—
  Wolff, Joachim; Wolf, Karlheinz; Koll, Jochen; Hornle, Reinhold; Molls, Hans-Heinz; and Paulat, Volker, 4,443,225, Cl. 8-549.000.
Paumier, Marcel: *See*—
  Hulin, Jean-Pierre; DuBois, Gilles; and Paumier, Marcel, 4,442,575, Cl. 29-33.500.
Payne, Thomas R.; and Baker, Alfred L., to General Electric Company. Power control for cooking appliance with transient operating modes. 4,443,690, Cl. 219-506.000.
Pearce, William: *See*—
  Buchanan, Thomas M.; Pearce, William; and Chen, Kirk C. S., 4,443,431, Cl. 424-92.000.
Pearson, Richard K.: *See*—
  Coon, Clifford L.; Harrar, Jackson E.; Pearson, Richard K.; and McGuire, Raymond R., 4,443,308, Cl. 204-103.000.
Pechiney Ugine Kuhlmann: *See*—
  Armand, Marcel; and Moinard, Philippe, 4,443,306, Cl. 204-64.00T.
Peck, Billy J.: *See*—
  McGehee, Fred N., Sr.; Peck, Billy J.; Betz, Clyde B.; and Morgan, Calvin R., Jr., 4,442,585, Cl. 29-432.000.
Pedersen, Svend P.: *See*—
  Graversen, Niels P. G.; and Pedersen, Svend P., 4,443,120, Cl. 374-201.000.
Peiler, Rolf, to Deere & Company. Self-cleaning screen for the cooling air inlet of an engine enclosure. 4,443,236, Cl. 55-269.000.
Penny, Alex: *See*—
  Austin, Warren; and Penny, Alex, 4,442,850, Cl. 133-3.00H.
Pentecost, Harry L.: *See*—
  Delvy, Robert J.; Pentecost, Harry L.; and Patterson, Leroy R., 4,443,829, Cl. 361-275.000.
Perkin-Elmer Corporation, The: *See*—
  Ringhardtz, Ingo, 4,443,104, Cl. 356-246.000.
Perl, Uwe W.: *See*—
  Modur, Bhaskar S.; Perl, Uwe W.; and Smick, Donald E., 4,443,177, Cl. 425-543.000.
Perrin, Arden. Hydro-therapy apparatus. 4,443,204, Cl. 441-129.000.
Personal Products Company: *See*—
  Roller, Judy, 4,443,492, Cl. 427-44.000.
Pertsch, Heinrich: *See*—
  Ertl, Wilhelm; Lachmann, Ulrich; and Pertsch, Heinrich, 4,443,275, Cl. 148-31.550.
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  Higgins, William A.; and Perz, John S., 4,443,577, Cl. 524-590.000.
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Radek, John R., to Ready Metal Manufacturing Company. Door control. 4,442,630, Cl. 49-115.000.
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    Aschwanden, Felix; and Groeneweg, Willem H., 4,443,769, Cl. 329-50.000.
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    Dholakia, Anil R., 4,443,871, Cl. 369-71.000.
    Gange, Robert A., 4,443,664, Cl. 179-5.500.
    Kirschner, Thomas F., 4,443,872, Cl. 369-77.200.
    Lipp, Steven A., 4,443,499, Cl. 427-258.000.
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Recon Ltd.: *See—*
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Reed, Barrie T. Flying splice apparatus. 4,443,291, Cl. 156-504.000.
Reese, Theodore J. Method of operating a blast furnace. 4,443,251, Cl. 75-42.000.
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Reid, John H. Conversion of plug flow and complete mix aeration basins to barrier oxidation ditches. 4,443,338, Cl. 210-629.000.
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Richards, Lawrence J., to Braner Enterprises, Inc. Turret stacker. 4,443,147, Cl. 414-71.000.
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    Wong, George S.; Catterfeld, Fritz C.; and Hauenstein, Clifford A., 4,443,152, Cl. 415-143.000.
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  - Meyer, Kurt; Reh, Lothar; Hirsch, Martin; Schnabel, Wolfram; and Serbent, Harry, 4,443,250, Cl. 75-26.000.
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- Seyfried, Donald N.: *See—*
  - Grow, Arthur L.; Gregorovich, Charles J.; and Seyfried, Donald N., 4,442,691, Cl. 72-329.000.
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  - Coq, Jean-Louis G.; and Seymus, Herman E., 4,443,574, Cl. 524-423.000.
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  - Ellis, Thomas E.; Lenk, Pedro A.; and Shah, Jayantkumar R., 4,443,663, Cl. 179-18.0ES.
- Shah, Kanu G., to Dana Corporation. Gasketing material. 4,443,517, Cl. 428-281.000.
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  - Stafford, Donald C.; Shah, Tushar K.; and Allo, Vincent F., 4,442,679, Cl. 62-123.000.
- Sharp, Bernard C., to Parker-Hannifin Corporation. Windshield wiper blade refill unit. 4,442,566, Cl. 15-250.420.
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  - Funada, Fumiaki; Matsuura, Masataka; and Wada, Tomio, 4,443,065, Cl. 350-335.000.
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  - Nishimura, Katsuji, 4,443,692, Cl. 235-379.000.
  - Nishiyama, Mitsuru, 4,443,063, Cl. 350-334.000.
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  - McKelvey, Harold E., 4,443,318, Cl. 204-298.000.
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  - Lindsey, Stanley D.; Ioannides, Socrates A.; Horner, Jack R.; Denton, William S.; Shell, Donald P.; and Bebb, Hubert, 4,442,639, Cl. 52-73.000.
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  - Boelema, Sikko J. A.; Post, Martin F. M.; and Sie, Swan T., 4,443,561, Cl. 518-704.000.
  - Lutz, Eugene F., 4,443,418, Cl. 423-226.000.
  - McLaughlin, William A., 4,443,635, Cl. 568-728.000.
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  - Hierholzer, Frank J., Jr.; and Shelton, Gerald L., 4,443,361, Cl. 252-516.000.
- Sheridan, James E.: *See—*
  - Flachbarth, Charles T.; Benscoter, Richard D.; and Sheridan, James E., 4,443,654, Cl. 174-48.000.
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- Sherman, William D., to REB Manufacturing, Inc. Lift platform automatic ramp barrier. 4,442,921, Cl. 187-8.520.
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  - Weir, Donald R.; and Masters, Ian M., 4,443,253, Cl. 75-120.000.
- Sherwin-Williams Company, The: *See—*
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- Sherwood, Nancy M.; Eiden, Lee E.; Brownstein, Michael J.; Spiess, Joachim; Rivier, Jean E. F.; and Vale, Wylie W., Jr., to Salk Institute for Biological Studies, The. Peptides affecting gonadal function. 4,443,368, Cl. 260-112.5LH.
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- Shigiya Machinery Works, Ltd.: *See—*
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- Shihabi, David S.; and Lutner, John D., to Mobil Oil Corporation. Method for reducing catalyst aging in the production of catalytically hydrodewaxed products. 4,443,327, Cl. 208-97.000.
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  - Okajima, Shinpei, 4,442,732, Cl. 74-594.500.
  - Shimano, Keizo, 4,443,008, Cl. 272-73.000.
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- Shimizu, Hiroshi; Fukano, Yoshisama; and Yoshizawa, Minoru, to Toray Silicone Company, Ltd. Foam control compositions. 4,443,359, Cl. 252-358.000.
- Shimizu, Shoji; and Mitsudomi, Hiroyuki, to Osaka Gas Company Limited. Combustion apparatus. 4,443,183, Cl. 431-354.000.
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- Shimosaka, Satoru: *See—*
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  - Sawada, Takeshi; Yoneda, Ko; Shinmi, Akira; Takagi, Hiroshi; Abiko, Shuzo; and Goto, Hirokazu, 4,443,826, Cl. 360-113.000.
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- Shinoda, Nobuhiko: *See—*
  - Hosoe, Kazuya; Kinoshita, Takao; Shinoda, Nobuhiko; Sakai, Shinji; Kawabata, Takashi; and Ito, Tadashi, 4,443,086, Cl. 354-409.000.
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- Shionogi & Co., Ltd.: *See—*
  - Yoshioka, Mitsuru; Shoichiro, Uyeo; Hamashima, Yoshio; Kikkawa, Ikuo; Tsuji, Teruji; and Nagata, Wataru, 4,443,598, Cl. 544-90.000.
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- Shiramizu, Takami, to Victor Company of Japan, Ltd. Frequency-dividing circuit. 4,443,887, Cl. 377-110.000.
- Shoichiro, Uyeo: *See—*
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  - Kosugi, Seiji, 4,442,864, Cl. 137-625.270.
- Shuey, John R.: *See—*
  - Eaby, Daniel G.; and Shuey, John R., 4,443,052, Cl. 339-113.00R.
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  - Cowher, Melvyn E.; and Shuskus, Alexander J., 4,443,489, Cl. 427-38.000.
- Shutt, Thomas C.; and Snider, L. Wayne. Method for producing glass particles in moisture protected condition. 4,443,240, Cl. 65-21.100.
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  - Reinherz, Ellis L.; and Schlossman, Stuart F., 4,443,427, Cl. 424-1.100.
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- Siegell, Jeffrey H., to Exxon Research and Engineering Co. Continuous chromatographic separations in a magnetically stabilized fluidized bed. 4,443,231, Cl. 55-3.000.
- Siegfried Aktiengesellschaft: *See—*
  - Mixich, Georg; and Thiele, Kurt, 4,443,612, Cl. 548-341.000.
- Siemens Aktiengesellschaft: *See—*
  - Bentele, Benedikt; Schmid, Norbert; and Schonwald, Siegfried, 4,443,158, Cl. 417-68.000.
  - Buchner, Klaus; and Saugeon, Ulrich, 4,443,862, Cl. 364-900.000.
  - Drexler, Johann; and Pfauntsch, Peter, 4,443,675, Cl. 200-243.000.
  - Ertl, Wilhelm; Lachmann, Ulrich; and Pertsch, Heinrich, 4,443,275, Cl. 148-31.550.
  - Franzen, Horst; and Rothmeier, Wolfgang, 4,443,784, Cl. 340-52.00F.
  - Kopetzky, Horst, 4,443,669, Cl. 179-175.20C.
  - Krause, Dieter, 4,443,020, Cl. 279-1.0DA.
  - Linse, Heinrich, 4,443,656, Cl. 174-52.0PE.
  - Luder, Rainer; and Haussmann, Wolfgang, 4,443,774, Cl. 333-165.000.
  - Muller, Jorg, 4,443,796, Cl. 343-5.0PD.
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  - Schiffner, Gerhard, 4,443,698, Cl. 250-227.000.
- Simmons, Carlton J., Jr.; and Uetrecht, Dale M., to Baldwin Piano & Organ Company. Electronic organ having an improved tone generator system. 4,442,746, Cl. 84-1.010.
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  - Ryan, David M.; and Simmons, Paul A., 4,443,697, Cl. 250-223.00R.
- Simon, Manfred: *See—*
  - Becker, Josef; Simon, Manfred; Spiess, Karl-Heinz; and Weiss, Richard, 4,443,392, Cl. 264-25.000.
- Simpson, Frank F., to Black & Decker Inc. Percussive drills. 4,442,906, Cl. 173-48.000.
- Singer Company, The: *See—*
  - Odermann, Charles R.; and Zylbert, Thaddeus J., 4,442,785, Cl. 112-279.000.
  - Weisz, William; and Tyburcy, Raymond S., 4,442,784, Cl. 112-158.00C.
- Singer, Laura G. Moisture and consistency soil sampler. 4,442,721, Cl. 73-863.310.
- Sivachenko, Eugene W. Girder construction. 4,442,650, Cl. 52-694.000.
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  - Gross, Leo; and Skeist, S. Merrill, 4,443,734, Cl. 313-26.000.
- SKF Kugellagerfabriken GmbH: *See—*
  - Olschewski, Armin; Brandenstein, Manfred; and Walter, Lothar, 4,443,210, Cl. 474-199.000.
  - Walter, Lothar; and Reith, Walter, 4,443,042, Cl. 308-6.00C.
- Skillern, Scott D. Method and composition for treatment of acne vulgaris. 4,443,442, Cl. 424-246.000.
- Skudera, Jr. William J.: *See—*
  - Klose, Dirk R.; and Skudera, Jr. William J., 4,443,801, Cl. 343-442.000.
- Skwarek, Jean-Pierre: *See—*
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- Slater, Billy R., to Forney Engineering Company. Combined mode supervisory program-panel controller method and apparatus for a process control system. 4,443,861, Cl. 364-900.000.
- Sloan, Jack: *See—*
  - Wilensky, Joseph, 4,442,675, Cl. 60-654.000.
- Sloan, Kenneth B.: *See—*
  - Bodor, Nicholas S.; Sloan, Kenneth B.; and Pogany, Stefano A., 4,443,435, Cl. 424-180.000.
- Slovinsky, Manuel: *See—*
  - Bhattacharyya, Bhupati I.; Slovinsky, Manuel; Wachala, Raymond J.; Beske, Lawrence E.; and McCullar, Michael L., 4,443,576, Cl. 524-522.000.
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- Smallegan, Jon M., to Multifastener Corporation. Nut installation apparatus, method and controls. 4,442,584, Cl. 29-432.000.
- Smick, Donald E.: *See—*
  - Modur, Bhaskar S.; Perl, Uwe W.; and Smick, Donald E., 4,443,177, Cl. 425-543.000.
- Smiesko, Frank A.: *See—*
  - Beiswenger, John L.; Smiesko, Frank A.; and Chaphalkar, Dhananjay V., 4,442,977, Cl. 239-332.000.
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- Smith, Burl L.; and Kearby, Ronald S., to Teepak, Inc. Food casing which will transfer a smoke color and flavor to food encased therein and basic natural liquid smoke for use therewith. 4,442,868, Cl. 138-118.100.
- Smith, Charles B.: *See—*
  - Long, Ralph W.; Smith, Charles B.; and Baer, Don E., 4,442,975, Cl. 239-150.000.
- Smith, Donald R. Wind rotor thrust-actuated brake. 4,443,155, Cl. 416-32.000.
- Smith, Francis X.; and Riedhammer, Thomas M., to Bausch & Lomb Incorporated. Contact lens disinfecting and preserving solution (polymeric). 4,443,429, Cl. 424-78.000.
- Smith, Howard W.: *See—*
  - Douthart, Robert H.; and Smith, Howard W., 4,443,749, Cl. 318-774.000.
- Smith, James G., to Du Pont de Nemours, E. I., and Company. Sterile docking process, apparatus and system. 4,443,215, Cl. 604-29.000.
- Smith, Kimberly M.: *See—*
  - Gronbeck, Peter W.; Mullaney, Dennis; and Smith, Kimberly M., 4,442,920, Cl. 182-199.000.
- Smith Kline & French Laboratories Limited: *See—*
  - Hills, Derek W.; and White, George R., 4,443,375, Cl. 260-245.600.
- Smith, Lawrence A., Jr., to Chemical Research & Licensing Company. Catalytic distillation structure. 4,443,559, Cl. 502-527.000.
- Smith, Leward N. Sharpener for industrial knife blades. 4,442,635, Cl. 51-56.00R.
- Smith, Lowell S.: *See—*
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- Smith, Maurice R.: *See—*
  - Moore, Sanders H.; and Smith, Maurice R., 4,443,307, Cl. 204-98.000.
- Smith, Richard, to West Point Pepperell, Inc. Method for making carbamates. 4,443,622, Cl. 560-166.000.
- Smith, Rodger L.: *See—*
  - Godfrey, Timothy D.; and Smith, Rodger L., 4,443,831, Cl. 362-80.000.

- Smith, Stephen N., to Ampro Corporation. Pole vaulter's landing cushion. 4,443,009, Cl. 272-104.000.
- Smith, Teddy D.: *See—*
  - Hollifield, Charles M.; and Smith, Teddy D., 4,443,421, Cl. 423-321.00R.
- Smith, Terry M., to Ford Aerospace & Communications Corporation. Modified difference mode coaxial antenna with flared aperture. 4,443,804, Cl. 343-786.000.
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- Smithers, Michael J.: *See—*
  - Davies, David H.; and Smithers, Michael J., 4,443,471, Cl. 424-279.000.
- SMS Schloemann-Siemag Aktiengesellschaft: *See—*
  - Fusser, Hermann; Groos, Horst; and Schmoll, Heinz, 4,442,694, Cl. 72-453.010.
- SNIA Viscosa S.p.A.: *See—*
  - Isome, Yasuo; Minami, Toshio; and Takahashi, Tadahiko, 4,443,596, Cl. 536-60.000.
- Snider, Hugh H., Jr.; and Marion, Richard A., to United States of America, Navy. Roller bearing hot box sensor. 4,443,119, Cl. 374-153.000.
- Snider, L. Wayne: *See—*
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- Snoy, Joseph B., to Twin Disc, Incorporated. Vehicle transmission system and a single lever control device therefor. 4,442,730, Cl. 74-475.000.
- Snyder, Carl E., Jr.; and Tamborski, Christ, to United States of America, Air Force. Fluorinated aliphatic polyalkylether lubricant with an additive composed of an aromatic phosphine substituted with perfluoroalkylether groups. 4,443,349, Cl. 252-49.900.
- Snyder, Nevin: *See—*
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- Societe Anonyme dite Compagnie Europeene d'Accumulateurs: *See—*
  - Dalibard, Gerard; and Viaud, Nicole, 4,443,405, Cl. 420-573.000.
- Societe de Vente de l'Aluminium Pechiney: *See—*
  - Hicter, Jean-Marie; Le Scoul, Thierry; and Mairet, Serge, 4,443,004, Cl. 266-226.000.
- Societe Generale de Mecanique et de Metallurgie: *See—*
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  - Legrand, Paul J.; and Hersen, Rene M. J., 4,442,987, Cl. 244-110.00B.
- Societe Nationale Elf Aquitaine (Production): *See—*
  - Arretz, Emmanuel; Landoussy, Claude; Mirassou, Alfred; and Ollivier, Jean, 4,443,310, Cl. 204-158.00R.
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  - Marion, Bernard, 4,443,214, Cl. 604-9.000.
- Sofranko, John A.: *See—*
  - Jones, C. Andrew; Leonard, John J.; and Sofranko, John A., 4,443,644, Cl. 585-500.000.
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- Soll, Manfred: *See—*
  - Seidler, Helmut; Soll, Manfred; and Wunderlich, Klaus, 4,443,369, Cl. 260-131.000.
- Solomon, Stanley J.: *See—*
  - Little, Roger G.; Wolfson, Robert G.; and Solomon, Stanley J., 4,443,488, Cl. 427-38.000.
- Sony Corporation: *See—*
  - Arai, Kiyoshi, 4,443,121, Cl. 400-120.000.
  - Kato, Tetsuro, 4,443,821, Cl. 358-326.000.
  - Kishi, Yoshio; and Minc, Norichika, 4,442,985, Cl. 242-186.000.
  - Matsumoto, Hiroyuki; Abe, Motoaki; and Ando, Tetsuo, 4,443,886, Cl. 377-58.000.
  - Nakajima, Kaoru; Kobayashi, Kunio; and Hisagen, Yoshiaki, 4,443,490, Cl. 427-44.000.
  - Sakamoto, Hitoshi, 4,443,823, Cl. 360-77.000.
- Sopp, Samuel W.; Lee, Leonard S.; and Howe, Michael W., to Calgon Corporation. Magnesium oxide composition for coating silicon steel. 4,443,425, Cl. 423-635.000.
- Souquet, Georges A. L., representative: *See—*
  - Jourdain, Philippe; Florens, Georges E., deceased; and Souquet, Georges A. L., representative, 4,442,966, Cl. 228-123.000.
- Spector, George: *See—*
  - Conn, George E.; and Spector, George, 4,442,933, Cl. 198-502.000.
- Speich, Francisco; and Bucher, Robert, to Textilma AG. Apparatus for the optical retention of the two reciprocatingly driven control elements of the shed forming arrangement associated with a loom. 4,442,869, Cl. 139-71.000.
- Spencer, Bob B., to Standard Pneumatic Motor Co., a Division of Hamilton Company. Automatic push-to-start screwdriver. 4,442,738, Cl. 81-470.000.
- Speranza, Donald, to Eaton Corporation. Low power put timer circuit and the application thereof within a tire pressure monitor. 4,443,785, Cl. 340-58.000.
- Sperry Corporation: *See—*
  - Adcock, Ralph L., 4,443,846, Cl. 364-200.000.
  - Jennings, Richard E., 4,442,662, Cl. 56-228.000.
  - Rubin, William L., 4,443,799, Cl. 343-17.2PC.
- Spiess, Joachim: *See—*
  - Sherwood, Nancy M.; Eiden, Lee E.; Brownstein, Michael J.; Spiess, Joachim; Rivier, Jean E. F.; and Vale, Wylie W., Jr., 4,443,368, Cl. 260-112.5LH.
- Spiess, Karl-Heinz: *See—*
  - Becker, Josef; Simon, Manfred; Spiess, Karl-Heinz; and Weiss, Richard, 4,443,392, Cl. 264-25.000.
- Spinetti, Thomas A.: *See—*
  - Armstrong, Errol C.; Hanacek, William A.; and Spinetti, Thomas A., 4,443,151, Cl. 414-404.000.
- Spire Corporation: *See—*
  - Little, Roger G.; Wolfson, Robert G.; and Solomon, Stanley J., 4,443,488, Cl. 427-38.000.
- Sporlan Valve Company: *See—*
  - Barbier, William J.; and Leimbach, J. George, 4,442,680, Cl. 62-217.000.
- Sprague Electric Company: *See—*
  - Avery, Grant D., 4,443,716, Cl. 307-309.000.
- Springford, Richard H.: *See—*
  - Minter, Thomas F.; Jansen, Lawrence G.; and Springford, Richard H., 4,442,618, Cl. 40-587.000.
- SRI International: *See—*
  - Crane, Hewitt D., 4,443,075, Cl. 351-209.000.
  - Wilson, David A.; and Buxton, James L., 4,442,713, Cl. 73-599.000.
- Stachitas, Bruce L. Method of externally sealing sewage system joints against entry of ground water to the system. 4,443,282, Cl. 156-152.000.
- Stadheim, James S. Vent pipe insulating sleeve. 4,442,643, Cl. 52-219.000.
- Stafford, Donald C.; Shah, Tushar K.; and Allo, Vincent F., to Chicago Bridge & Iron Company. Vertical shell and tube heat exchanger with sleeves around upper part of tubes. 4,442,679, Cl. 62-123.000.
- Stageberg, Sterling O., deceased; and Linney, Edward A., legal representative. Rotary fluid pump mechanism. 4,443,167, Cl. 418-91.000.
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  - Callahan, James L.; Shaw, Wilfrid G.; and Miller, Arthur F., 4,443,555, Cl. 502-211.000.
  - Crowell, Ronald F., 4,442,897, Cl. 166-280.000.
- Standard Oil Company (Indiana): *See—*
  - Lee, Richard J., 4,443,604, Cl. 544-399.000.
  - Pesa, Frederick A.; Graham, Anne M.; and Kliewer, Wayne R., 4,443,639, Cl. 568-885.000.
- Standard Pneumatic Motor Co., a Division of Hamilton Company: *See—*
  - Spencer, Bob B., 4,442,738, Cl. 81-470.000.
- Standley, Paul M., to Dayco Corporation. Method of making an endless power transmission belt. 4,443,280, Cl. 156-137.000.
- Starnes, William H., Jr., to Bell Telephone Laboratories, Incorporated. Technique for stabilization of vinyl chloride polymers. 4,443,586, Cl. 525-370.000.
- Stas, Georges; and Biver, Christian, to INTEROX (Societe Anonyme). Treatment of waste water containing organic sulphur compounds. 4,443,342, Cl. 210-759.000.
- Stauffer Chemical Company: *See—*
  - Dahlstrom, Robert V., 4,443,484, Cl. 426-266.000.
- Stearns, Cleo M.: *See—*
  - Wanuga, Stephen; Kong, Wendell M. T.; and Stearns, Cleo M., 4,442,574, Cl. 29-25.350.
- Steel, James, to Ogden Electronics Ltd. Vehicle control apparatus. 4,442,915, Cl. 180-271.000.
- Steelstran Industries, Incorporated: *See—*
  - Gronbeck, Peter W.; Mullaney, Dennis; and Smith, Kimberly M., 4,442,920, Cl. 182-199.000.
- Steenberg, Johannes, to U.S. Philips Corporation. Information-disc cassette. 4,443,874, Cl. 369-291.000.
- Steenbock, Arno, to Preussag Aktiengesellschaft. Tool for drilling curved sections of well holes. 4,442,908, Cl. 175-74.000.
- Steffler, Jean C.: *See—*
  - Samson, J. E. Benoit; Duncan, Lawrence W.; and Steffler, Jean C., 4,442,838, Cl. 128-369.000.
- Stegmeier, Karlheinz: *See—*
  - Witte, Ernst-Christian; Wolfe, Hans P.; Stegmeier, Karlheinz; and Roesch, Egon, 4,443,477, Cl. 424-319.000.
- Stellaccio, Robert J., to Texaco Inc. Partial oxidation process for slurries of solid fuel. 4,443,230, Cl. 48-197.00R.
- Stemerman, Michael B.; Weinstein, Robert; and Maciag, Thomas, to Beth Israel Hospital Association, The. Process and composition for propagating mammalian cells. 4,443,546, Cl. 435-240.000.
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  - Ketschker, Walter; Marquart, Reinhard; and Stenert, Alois, 4,443,045, Cl. 308-223.000.
- Stephens, Frederick R. N. Pulse curve analyser. 4,442,845, Cl. 128-687.000.
- Stern, Richard M.: *See—*
  - Gerster, John F.; and Stern, Richard M., 4,443,447, Cl. 424-248.530.
- Sternisa, Danilo; and Kistner, Herbert, to Upat GmbH & Co. Single-component hardenable synthetic resin composition and method of using same. 4,443,567, Cl. 523-211.000.
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- Stott, Michael A.: *See—*
  - Reichert, James K.; and Stott, Michael A., 4,443,767, Cl. 328-155.000.

- Stotz, Gerhard; Sedlak, Adolf; and Skwarek, Jean-Pierre, to Timex Corporation. Planetary gear for date mechanism in a wristwatch. 4,443,112, Cl. 368-37.000.
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  - Kotulla, Bernhard; Weiser, Martin; Faltin, Jurgen; Preis, Lothar; Schmidt, Rudolf; and Born, Eberhard, 4,443,132, Cl. 405-260.000.
- Strata Bit Corporation: *See—*
  - Radtke, Robert P., 4,442,909, Cl. 175-329.000.
- Straub, Richard L.: *See—*
  - Pou, Frederick M.; and Straub, Richard L., 4,442,774, Cl. 101-226.000.
- Streibert, Hans-Peter: *See—*
  - Farooq, Saleem; and Streibert, Hans-Peter, 4,443,445, Cl. 424-246.000.
- Streitenberger, Walter: *See—*
  - Achinger, Michael; Streitenberger, Walter; Voigt, Otto K. H.; and Wolter, Hans, 4,442,882, Cl. 164-187.000.
- Strix Limited: *See—*
  - Taylor, John C., 4,443,050, Cl. 339-99.00R.
- Stroetmann, Michael, to Serapharm Michael Stroetmann. Fibrinogen-containing dry preparation, manufacture and use thereof. 4,442,655, Cl. 53-428.000.
- Strohmeyer, Charles, Jr., to Electrodyne Research Corporation. Recirculating fluidized bed combustion system for a steam generator. 4,442,795, Cl. 122-4.00D.
- Strohmeyer, Charles, Jr., to Electrodyne Research Corporation. Migrating fluidized bed combustion system for a steam generator. 4,442,796, Cl. 122-4.00D.
- Strohmeyer, Charles, Jr., to Electrodyne Research Corporation. Gas and particle separation means for a steam generator circulating fluidized bed firing system. 4,442,797, Cl. 122-4.00D.
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  - Ellis, Thomas E.; Lenk, Pedro A.; and Shah, Jayantkumar R., 4,443,663, Cl. 179-18.0ES.
- Strow, Donald A.; and Henning, Harold I. G., to Envirex Inc. Water screening clamp strip. 4,443,126, Cl. 403-24.000.
- Struck, Bernd D., to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Electrolysis cell with intermediate chamber for electrolyte flow. 4,443,316, Cl. 204-263.000.
- Struthers, Ralph C. Metal/acid ion permeable membrane fuel cell. 4,443,522, Cl. 429-18.000.
- Stuart, Clifford H. Lawn mower pump. 4,442,661, Cl. 56-16.900.
- Studt, William L.: *See—*
  - Douglas, George H.; Studt, William L.; Dodson, Stuart A.; and Zimmerman, Harry K., 4,443,456, Cl. 424-263.000.
- Subramanyam, Arty R. T.: *See—*
  - Schroder, Manfred; and Subramanyam, Arty R. T., 4,443,569, Cl. 523-414.000.
- Suenaga, Masahide; Tsukada, Yukihisa; and Yamamoto, Hiroshi, to Hitachi, Ltd. Process for forming magnetic film pattern. 4,443,294, Cl. 156-656.000.
- Sugarman, Edward D.; and Brownlie, Alan W., to Sugarman, Edward D. Foot support device. 4,443,005, Cl. 269-328.000.
- Sugimoto, Naohiko: *See—*
  - Kojima, Tetsuro; Ishimaru, Shingo; Sugimoto, Naohiko; and Ikeda, Tadashi, 4,443,534, Cl. 430-512.000.
- Suh, Nam P.; and Tse, Ming K., to Massachusetts Institute of Technology. Method for non-destructive detection and characterization of flaws. 4,443,764, Cl. 324-456.000.
- Sukekawa, Masayuki; Tobita, Yoshimitsu; Kirihara, Seishin; Morimoto, Hisashi; Usami, Kenichi; and Iijima, Katsumi, to Hitachi, Ltd.; and Babcock-Hitachi Kabushiki Kaisha. Heat-resistant and corrosion-resistant weld metal alloy and welded structure. 4,443,406, Cl. 420-584.000.
- Sullair Technology AB: *See—*
  - Schibbye, Lars L. B.; and Englund, Rolf A., 4,443,170, Cl. 418-203.000.
- Sullivan, Ann C.: *See—*
  - Guthrie, Robert W.; Kierstead, Richard W.; Mennona, Francis A.; and Sullivan, Ann C., 4,443,619, Cl. 549-518.000.
- Sullivan, Edith. Retroreflective dangles. 4,443,056, Cl. 350-98.000.
- Sulzer Brothers Limited: *See—*
  - Jankovsky, Frantisek, 4,442,870, Cl. 139-185.000.
- Sumitomo Aluminium Smelting Company, Ltd.: *See—*
  - Yanagida, Kiyomi; Hirokane, Tadashi; Tsukiyasu, Tadashi; and Sato, Tomoari, 4,442,829, Cl. 126-452.000.
- Sumitomo Chemical Company, Limited: *See—*
  - Kasamatsu, Kiyoshi; Hirano, Masachika; and Okuno, Takeshi, 4,443,438, Cl. 424-200.000.
- Sumitomo Heavy Industries, Ltd.: *See—*
  - Ikegami, Shigeru; and Ohsaki, Takashi, 4,443,726, Cl. 310-248.000.
- Sunahara, Noriyuki; Naruto, Shunsuke; Kagemoto, Akira; Kurooka, Shigeru; and Yokogawa, Kanae, to Dainippon Pharmaceutical Company Limited. Method for determination of the valproic acid and reagents therein. 4,443,365, Cl. 260-112.00R.
- Sunbeam Plastics Corporation: *See—*
  - Bush, Randall G., 4,442,955, Cl. 222-153.000.
- Sunouchi, Akio; Konno, Tatsuo; Fujino, Masahisa; and Suzuki, Ryuji, to Canon Kabushiki Kaisha. Film winding and rewinding device for camera. 4,443,089, Cl. 354-214.000.
- Supreme Associates: *See—*
  - Helman, Edward R.; Helman, Herbert A.; Holtschneider, Henry B.; Buford, Sidney P.; Fava, Donald C.; and Christopher, Jeffrey N., 4,442,827, Cl. 126-430.000.
- Suzuki, Akira: *See—*
  - Murata, Moriyasu; Suzuki, Akira; Nakae, Atsuo; and Ito, Susumu, 4,443,355, Cl. 252-174.120.
- Suzuki, Fuminori: *See—*
  - Yoshida, Makoto; Watanabe, Shinichi; and Suzuki, Fuminori, 4,443,116, Cl. 368-202.000.
- Suzuki, Hajime; Umemura, Yoshifumi; Iwano, Yoshimi; and Kimbara, Masahiko, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Weft yarn guide for a fluid jet loom. 4,442,871, Cl. 139-435.000.
- Suzuki, Masakazu: *See—*
  - Ikeda, Toshiaki; Furuichi, Shuhei; and Suzuki, Masakazu, 4,443,843, Cl. 363-59.000.
- Suzuki, Ryuji: *See—*
  - Sunouchi, Akio; Konno, Tatsuo; Fujino, Masahisa; and Suzuki, Ryuji, 4,443,089, Cl. 354-214.000.
- Suzuki, Takashi, to Canon Kabushiki Kaisha. Metering device of a single lens reflex camera. 4,443,081, Cl. 354-479.000.
- Suzuki, Toshitatsu: *See—*
  - Murano, Tamio; Yamane, Satoshi; Suzuki, Toshitatsu; and Fukushima, Yoshio, 4,443,082, Cl. 354-145.100.
- Swanson, Richard G.: *See—*
  - Swanson, Sven V., Jr.; and Swanson, Richard G., 4,442,739, Cl. 82-2.500.
- Swanson, Sven V., Jr.; and Swanson, Richard G., to Litton Industrial Products, Inc. Multi-spindle work transfer device. 4,442,739, Cl. 82-2.500.
- Swapceinski, John P.; Rose, Leon A.; Probst, Stewart D.; McKeown, Donald G.; and Hilbert, Thomas K., to Eastman Kodak Company. Magnetic brush development apparatus. 4,442,790, Cl. 118-657.000.
- Swartz, George A., to RCA Corporation. Series connected solar cells on a single substrate. 4,443,651, Cl. 136-249.000.
- Swarz, Richard L., to Protocol Computers, Inc. Data line interface. 4,443,884, Cl. 375-121.000.
- Swearingen, Judson S. Viscosity meter. 4,442,704, Cl. 73-55.000.
- Swessel, Michael A.: *See—*
  - Hahn, Norbert; Hipp, Steven J.; and Swessel, Michael A., 4,443,150, Cl. 414-401.000.
- Swift, David E.: *See—*
  - Maurer, Donald D.; Swift, David E.; and Ioffe, Zosim, 4,442,839, Cl. 128-419.00R.
- Swoboda, Carl A., to United States of America, Energy. Ultrasonic hydrometer. 4,442,700, Cl. 73-32.00A.
- Systron Donner Corp.: *See—*
  - Magorien, Vincent G., 4,442,863, Cl. 137-614.030.
- Szanto, Elmer G., to Velo-Bind Inc. Punching machine. 4,442,743, Cl. 83-372.000.
- Tabata, Junichi: *See—*
  - Kaneko, Noboru; and Tabata, Junichi, 4,443,115, Cl. 368-82.000.
- Tabei, Masatoshi, to Fuji Photo Film Co., Ltd. Solid-state color imager with two layer three story structure. 4,443,813, Cl. 358-44.000.
- Taboada, John. Optical beam intensity control system. 4,443,696, Cl. 250-205.000.
- Tabuchi, Takahisa: *See—*
  - Asari, Akira; Noyori, Tatsuhiko; Tsuzuki, Hidehiro; Tabuchi, Takahisa; Masuda, Tsuneharu; and Takehata, Tetsuro, deceased, 4,443,143, Cl. 409-295.000.
- Taiho Pharmaceutical Co., Ltd.: *See—*
  - Senda, Shigeo; Ohtani, Osamu; Katho, Eiichi; Nagasaka, Mitsuaki; Miyake, Hidekazu; Fujiwara, Khosuke; and Tanaka, Motoaki, 4,443,607, Cl. 546-141.000.
- Takagi, Hiroshi: *See—*
  - Sawada, Takeshi; Yoneda, Ko; Shinmi, Akira; Takagi, Hiroshi; Abiko, Shuzo; and Goto, Hirokazu, 4,443,826, Cl. 360-113.000.
- Takagi, Toshinori; and Matsubara, Kakuei, to Kyoto University. Thermoelectric converter element. 4,443,650, Cl. 136-211.000.
- Takahashi, Kenji: *See—*
  - Ohba, Shinya; Nakai, Masaaki; Ozaki, Toshifumi; and Takahashi, Kenji, 4,443,818, Cl. 358-213.000.
- Takahashi, Masanobu, to Bridgestone Tire Company, Ltd. Heavy duty pneumatic tires. 4,442,880, Cl. 152-356.00R.
- Takahashi, Tadahiko: *See—*
  - Isome, Yasuo; Minami, Toshio; and Takahashi, Tadahiko, 4,443,596, Cl. 536-60.000.
- Takahashi, Yasuki: *See—*
  - Miyakawa, Hideaki; Takahashi, Yasuki; and Hata, Fumio, 4,443,090, Cl. 354-289.120.
- Takamatsu, Toshiaki: *See—*
  - Funada, Fumiaki; Takamatsu, Toshiaki; and Wada, Tomio, 4,443,819, Cl. 358-236.000.
- Takamori, Kazuo: *See—*
  - Seino, Akira; Takamori, Kazuo; and Morinaga, Kaoru, 4,443,745, Cl. 318-461.000.
- Takao, Mitsunori: *See—*
  - Mizuno, Toshiaki; and Takao, Mitsunori, 4,442,812, Cl. 123-417.000.
- Takashige, Masao; Kaneda, Kazuhisa; and Murakami, Naotaka, to Idemitsu Petrochemical Co., Ltd. Method of producing biaxially oriented sheet or film and apparatus therefor. 4,443,399, Cl. 264-519.000.
- Takasugi, Hisashi: *See—*
  - Takaya, Takao; Takasugi, Hisashi; Murata, Masayoshi; and Yoshioka, Akiteru, 4,443,444, Cl. 424-246.000.
- Takaya, Takao; Takasugi, Hisashi; Murata, Masayoshi; and Yoshioka, Akiteru, to Fujisawa Pharmaceutical Co., Ltd. Cephem compounds. 4,443,444, Cl. 424-246.000.

- Takeda Chemical Industries, Inc.: *See—*
  - Kamatani, Yoshio; and Fujita, Noriaki, 4,443,597, Cl. 544-67.000.
- Takeda Chemical Industries, Ltd.: *See—*
  - Kamatani, Yoshio; Tanaka, Michio; and Yamazaki, Kyuya, 4,443,590, Cl. 528-51.000.
  - Kawamatsu, Yutaka; Saraie, Takahiro; and Yoshikawa, Harutoshi, 4,443,246, Cl. 71-94.000.
- Takehata, Akemi, legal representative: *See—*
  - Asari, Akira; Noyori, Tatsuhiko; Tsuzuki, Hidehiro; Tabuchi, Takahisa; Masuda, Tsuneharu; and Takehata, Tetsuro, deceased, 4,443,143, Cl. 409-295.000.
- Takehata, Tetsuro, deceased: *See—*
  - Asari, Akira; Noyori, Tatsuhiko; Tsuzuki, Hidehiro; Tabuchi, Takahisa; Masuda, Tsuneharu; and Takehata, Tetsuro, deceased, 4,443,143, Cl. 409-295.000.
- Takemae, Yoshihiro, to Fujitsu Limited. Bootstrap circuit. 4,443,720, Cl. 307-578.000.
- Takemae, Yoshihiro, to Fujitsu Limited. Semiconductor memory device. 4,443,868, Cl. 365-205.000.
- Takemae, Yoshihiro: *See—*
  - Nakano, Tomio; and Takemae, Yoshihiro, 4,443,714, Cl. 307-269.000.
- Takeuchi, Hirosato; and Mikiya, Toshio, to Nitto Kohki Co., Ltd. Portable type solar heat cooker assembly. 4,442,828, Cl. 126-451.000.
- Taki, Tooru: *See—*
  - Hoshino, Minoru; Shinohara, Tosio; Tanabe, Hiroyuki; Taki, Tooru; and Nakayama, Shunsuke, 4,443,503, Cl. 427-421.000.
- Takimoto, Masatami: *See—*
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- Talmon, Wolfgang: *See—*
  - Dworak, Wilhelm; Fader, Martin; Jons, Claus; Mayer, Siegfried; Muller, Karl-Heinz; Rasper, Manfred; Schuldt, Dietrich; Talmon, Wolfgang; and Wolff, Guenter, 4,443,168, Cl. 418-131.000.
- Talon, Inc.: *See—*
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- Tamborski, Christ: *See—*
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- Tamm, Rolf: *See—*
  - Huber, Bernhard; Tamm, Rolf; and Tomoff, Toma, 4,443,105, Cl. 356-312.000.
- Tamura, Shinichi; Seta, Toshio; Tanaka, Tsuneo; and Hikosaka, Mititika, to Toyo Ink Manufacturing Co., Ltd. Photoconductive materials comprising nitro or cyano substituted phthalocyanine compounds for electrophotography. 4,443,528, Cl. 430-56.000.
- Tanabe, Hiroyuki: *See—*
  - Hoshino, Minoru; Shinohara, Tosio; Tanabe, Hiroyuki; Taki, Tooru; and Nakayama, Shunsuke, 4,443,503, Cl. 427-421.000.
- Tanabe Seiyaku Co., Ltd.: *See—*
  - Matsuoka, Manabu; Tsuchiya, Michihiro; and Tokuda, Yoshikazu, 4,443,615, Cl. 548-489.000.
  - Samejima, Masayoshi; and Hirata, Goichi, 4,443,497, Cl. 427-213.360.
- Tanaka, Hideo: *See—*
  - Ishido, Yoshinobu; and Tanaka, Hideo, 4,443,019, Cl. 277-227.000.
- Tanaka, Katsuyuki; Ohashi, Shin-ichi; Saito, Masakatsu; and Sampei, Tohru, to Hitachi, Ltd. Drive circuit for electroluminescent element. 4,443,741, Cl. 315-307.000.
- Tanaka, Kazuo: *See—*
  - Niwa, Yukichi; Ogino, Yasuo; Ohwada, Mitsutoshi; Tanaka, Kazuo; and Koumura, Noboru, 4,443,078, Cl. 354-403.000.
- Tanaka, Masamichi; and Wada, Hiroto, to Tokyo Shibaura Denki Kabushiki Kaisha. Electret device. 4,443,711, Cl. 307-400.000.
- Tanaka, Michio: *See—*
  - Kamatani, Yoshio; Tanaka, Michio; and Yamazaki, Kyuya, 4,443,590, Cl. 528-51.000.
- Tanaka, Minoru: *See—*
  - Sawada, Susumu; Yoshida, Yoshikazu; and Tanaka, Minoru, 4,443,288, Cl. 156-304.600.
- Tanaka, Motoaki: *See—*
  - Senda, Shigeo; Ohtani, Osamu; Katho, Eiichi; Nagasaka, Mitsuaki; Miyake, Hidekazu; Fujiwara, Khosuke; and Tanaka, Motoaki, 4,443,607, Cl. 546-141.000.
- Tanaka, Takayuki: *See—*
  - Yamada, Kozo; and Tanaka, Takayuki, 4,443,507, Cl. 428-114.000.
- Tanaka, Tsuneo: *See—*
  - Tamura, Shinichi; Seta, Toshio; Tanaka, Tsuneo; and Hikosaka, Mititika, 4,443,528, Cl. 430-56.000.
- Tandy Corporation: *See—*
  - Berger, Michael F., 4,443,883, Cl. 375-116.000.
- Tanida, Wasaburo: *See—*
  - Miyamoto, Yoshikazu; Kakimoto, Tetsuya; and Tanida, Wasaburo, 4,442,953, Cl. 222-14.000.
- Tanikawa, Kowji, to Olympus Optical Co., Ltd. Film cassette and a photographing device using the same. 4,443,077, Cl. 354-21.000.
- Tate & Lyle Public Limited Company: *See—*
  - Cheetham, Peter S. J., 4,443,538, Cl. 435-41.000.
- Tatem, William A., to Interpace Corporation. Glaze to pin connection for an electrical insulator with embedded metal fitting. 4,443,659, Cl. 174-140.00C.
- Taylor, Dennis R.; and Demidowicz, Zenon, to Harshaw/Filtrol Partnership. Solid bleaching composition for edible oils. 4,443,379, Cl. 260-427.000.
- Taylor, Donald K., to C.S.E. Automation Engineering & Services, Inc. Pilot control relay valve apparatus. 4,442,860, Cl. 137-557.000.
- Taylor, John C., to Strix Limited. Electrical interconnectors. 4,443,050, Cl. 339-99.00R.
- Taylor, Kenneth A.: *See—*
  - Cowherd, David C.; DeWitte, Jerry L.; Taylor, Kenneth A.; Whitaker, William C.; Wolfe, Daniel S.; and Wolfe, Gene A., 4,442,701, Cl. 73-32.00R.
- TDK Electronics Co., Ltd.: *See—*
  - Kawashima, Yukio; Kobayashi, Makoto; and Murakami, Mayu, 4,443,317, Cl. 204-290.00F.
- Teepak, Inc.: *See—*
  - Smith, Burl L.; and Kearby, Ronald S., 4,442,868, Cl. 138-118.100.
- TekSonix, Inc.: *See—*
  - Jubenville, Duncan B., 4,443,322, Cl. 208-11.0LE.
- Teldix GmbH: *See—*
  - Auer, Werner, 4,442,723, Cl. 74-5.470.
- Teledyne Industries, Inc.: *See—*
  - Trenary, John M., 4,442,831, Cl. 128-66.000.
- Teledyne Republic Manufacturing: *See—*
  - O'Connor, Terence A., 4,443,162, Cl. 417-425.000.
- Tempmaster Corporation: *See—*
  - Dean, Raymond H.; and Bader, Ghassan, 4,442,760, Cl. 98-40.00D.
- Tenax Maskin AB: *See—*
  - Nordqvist, Sune, 4,443,261, Cl. 106-109.000.
- Teng, Chuan C., to Dailey, Inc. Well tool. 4,443,206, Cl. 464-20.000.
- Tenud, Leander; and Blum, Rene, to Lonza Ltd. Process for the production of carnitine amide. 4,443,627, Cl. 564-136.000.
- Teramura, Mitsuyoshi; Takimoto, Masatami; Nakamura, Norihiko; Itoh, Takaaki; Katou, Takashi; Morino, Toshiharu; and Sakakibara, Youzou, to Toyota Jidosha Kabushiki Kaisha; and Aisan Industry Co., Ltd. Device for adjusting the degree of opening of the throttle valve of a carburetor. 4,443,388, Cl. 261-39.00A.
- Terumo Corporation: *See—*
  - Muramoto, Yutaka; Kobayashi, Susumu; and Ishizaka, Hideo, 4,443,117, Cl. 374-1.000.
- Tessier, Jean: *See—*
  - Martel, Jacques; Tessier, Jean; and Demoute, Jean-Pierre, 4,443,617, Cl. 549-302.000.
- Texaco Inc.: *See—*
  - Lionetti, Thomas A.; and MacLean, John P., 4,443,551, Cl. 502-41.000.
  - Schlinger, Warren G., 4,443,228, Cl. 48-86.00R.
  - Stellaccio, Robert J., 4,443,230, Cl. 48-197.00R.
- Texas Instruments Incorporated: *See—*
  - Haken, Roger A., 4,442,591, Cl. 29-571.000.
  - Hamilton, Stephen P.; and Hunter, Arthur C., 4,443,845, Cl. 364-200.000.
  - McElroy, David J., 4,443,864, Cl. 364-900.000.
  - Sahay, Bharat B.; and Jones, James J., 4,442,972, Cl. 236-1.0EA.
  - Sanford, Robert F., 4,443,694, Cl. 235-465.000.
  - Tubbs, Graham S.; and Ponder, James E., 4,443,811, Cl. 357-42.000.
  - Wiggins, Richard H., 4,443,859, Cl. 364-724.000.
- Textilma AG: *See—*
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- Thakur, Madhukar L., to Yale University. Blood agent. 4,443,426, Cl. 424-1.100.
- Theiler, Richard F.: *See—*
  - Sato, Kunito; and Theiler, Richard F., 4,443,483, Cl. 426-266.000.
- Theze, Claude: *See—*
  - Laurent, Daniel M.; and Theze, Claude, 4,442,988, Cl. 246-34.0CT.
- Thiele, Kurt: *See—*
  - Mixich, Georg; and Thiele, Kurt, 4,443,612, Cl. 548-341.000.
- Tholen, Paul, to Klockner-Humboldt-Deutz Aktiengesellschaft. Light metal cylinder head for internal combustion engines. 4,442,803, Cl. 123-41.690.
- Thomas & Betts Corporation: *See—*
  - Narozny, Ronald S., 4,442,594, Cl. 29-884.000.
- Thomas Broadbent & Sons Limited: *See—*
  - Grimwood, Geoffrey L.; and Wright, John, 4,443,213, Cl. 494-38.000.
- Thomas, Patrick D. P.: *See—*
  - Postle, Stephen R.; Thomas, Patrick D. P.; and Whitear, Brian R. D., 4,443,537, Cl. 430-566.000.
- Thomson-CSF: *See—*
  - Albarello, Alain, 4,443,857, Cl. 364-513.500.
  - Eumurian, Gregoire, 4,443,890, Cl. 455-613.000.
- THORN EMI plc: *See—*
  - Roy, Ashutosh, 4,443,738, Cl. 313-491.000.
- Thorp, Benjamin A. Controlled turbulence hydrofoil blade support member. 4,443,298, Cl. 162-252.000.
- Thurer, Robert L.: *See—*
  - Hauer, Jerome M.; and Thurer, Robert L., 4,443,220, Cl. 604-408.000.
- Thuries, Edmond, to Alsthom-Atlantique. Current transformer. 4,443,779, Cl. 336-92.000.
- Thut, Robert S.: *See—*
  - Cheshire, James O.; Lindgren, Douglas L.; Marinack, Robert J.; Janda, Bruce W.; Thut, Robert S.; Larkey, John T.; and Jostad, Ray E., 4,443,297, Cl. 162-101.000.
  - Cheshire, James O.; Lindgren, Douglas L.; Marinack, Robert J.; Janda, Bruce W.; Thut, Robert S.; Larkey, John T.; and Jostad, Ray E., 4,443,299, Cl. 162-264.000.
- Thyssen-Bornemisza Inc.: *See—*
  - Borsh, Richard J.; Neff, Steven W.; and Pate, Harold T., 4,443,031, Cl. 285-419.000.

- Tickner, Ernest G.: *See—*
  - Rasor, Julia S.; and Tickner, Ernest G., 4,442,843, Cl. 128-660.000.
- Tillmanns, Ralf: *See—*
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- Timex Corporation: *See—*
  - Stolz, Gerhard; Sedlak, Adolf; and Skwarek, Jean-Pierre, 4,443,112, Cl. 368-37.000.
- Timmerman, Terry D.: *See—*
  - True, Martin E.; and Timmerman, Terry D., 4,442,736, Cl. 81-57.150.
- Tobias, Michael A., to Mobil Oil Corporation. Acrylic modified anionic water dispersible cellulose esters. 4,443,589, Cl. 527-300.000.
- Tobita, Yoshimitsu: *See—*
  - Sukekawa, Masayuki; Tobita, Yoshimitsu; Kirihara, Seishin; Morimoto, Hisashi; Usami, Kenichi; and Iijima, Katsumi, 4,443,406, Cl. 420-584.000.
- Tobolski, Edward L.: *See—*
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- Tochimori, Kenichi: *See—*
  - Kawate, Yoshio; Nagai, Nobuyuki; Horiuchi, Takefumi; Tsurutani, Saburo; Kitamura, Minoru; Ito, Shuzo; Ohgami, Masahiko; Tochimori, Kenichi; and Inoue, Toshio, 4,442,706, Cl. 73-86.000.
- Togashi, Seigo; Tsuzuki, Akira; and Fujita, Hiro, to Citizen Watch Company Limited. Multi-layer display device with nonactive display element groups. 4,443,062, Cl. 350-332.000.
- Toho Beslon Co., Ltd.: *See—*
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  - Yamada, Kozo; and Tanaka, Takayuki, 4,443,507, Cl. 428-114.000.
- Toho Sheet Frame Co., Ltd.: *See—*
  - Nakazawa, Hiroshi; and Kuji, Makoto, 4,442,951, Cl. 220-319.000.
- Tojo, Kenji: *See—*
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- Tokico Ltd.: *See—*
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- Tokiko Kabushiki Kaisha: *See—*
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- Toku Kabushiki Kaisha: *See—*
  - Koike, Tsutomu, 4,443,777, Cl. 336-65.000.
- Tokuda, Tetsuro: *See—*
  - Fujitani, Hidetsugu; Ishigaki, Tsuneo; and Tokuda, Tetsuro, 4,443,775, Cl. 335-281.000.
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- Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
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  - Kihara, Kazuo; and Ikeda, Masashi, 4,443,808, Cl. 357-15.000.
  - Mori, Leo; Aoba, Takashi; and Tominaga, Mamoru, 4,443,814, Cl. 358-60.000.
  - Onodera, Toshihiro; and Masuda, Youichi, 4,443,839, Cl. 363-20.000.
  - Sakata, Hirotsugu; Nagatomo, Shigemi; and Matsuzaka, Takashi, 4,442,682, Cl. 62-401.000.
  - Seino, Akira; Takamori, Kazuo; and Morinaga, Kaoru, 4,443,745, Cl. 318-461.000.
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  - Yamaguchi, Ryoji, 4,443,043, Cl. 308-10.000.
- Tomaiuolo, Francesco; and Bocchino, Mauro, to Alfachimici S.p.A. Stabilizing mixture for a chemical copper plating bath. 4,443,257, Cl. 106-1.230.
- Tominaga, Mamoru: *See—*
  - Mori, Leo; Aoba, Takashi; and Tominaga, Mamoru, 4,443,814, Cl. 358-60.000.
- Tomoff, Toma: *See—*
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- Tomori, Yasumasa; Shimoda, Mituhiko; and Haraguchi, Keisuke, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera with an interchangeable lens. 4,443,085, Cl. 354-402.000.
- Toray Industries, Inc.: *See—*
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- Toshiba Kikai Kabushiki Kaisha: *See—*
  - Fujita, Shigeru, 4,443,178, Cl. 425-564.000.
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- Toth, Tibor E., to Union Carbide Corporation. Method and system for automatically terminating a MIG welding operation. 4,443,687, Cl. 219-130.210.
- Towmotor Corporation: *See—*
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- Toyo Engineering Corporation: *See—*
  - Sakurai, Masao; and Wada, Tetsuo, 4,443,328, Cl. 208-106.000.
- Toyo Ink Manufacturing Co., Ltd.: *See—*
  - Tamura, Shinichi; Seta, Toshio; Tanaka, Tsuneo; and Hikosaka, Mititika, 4,443,528, Cl. 430-56.000.
- Toyo Rubber Industry Co., Ltd., The: *See—*
  - Uemura, Yukihisa, 4,442,879, Cl. 152-209.00R.
- Toyota, Hiromi: *See—*
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- Toyota Jidosha Kabushiki Kaisha: *See—*
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  - Teramura, Mitsuyoshi; Takimoto, Masatami; Nakamura, Norihiko; Itoh, Takaaki; Katou, Takashi; Morino, Toshiharu; and Sakakibara, Youzou, 4,443,388, Cl. 261-39.00A.
- Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
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  - Nagase, Masaomi; Miyagi, Hideo; Ono, Hironobu; and Nakano, Jiro, 4,442,813, Cl. 123-418.000.
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- Trans-Texas Energy, Inc.: *See—*
  - Wyatt, William G., 4,442,898, Cl. 166-303.000.
- Tremont, Samuel J.; Keppel, Robert A.; Lee, Emerson H.; and Davis, George D., to Monsanto Company. Attrition resistant bismuth-containing metal/oxygen compositions. 4,443,641, Cl. 585-428.000.
- Tremont, Samuel J.: *See—*
  - Keppel, Robert A.; Tremont, Samuel J.; Lee, Emerson H.; and Davis, George D., 4,443,642, Cl. 585-428.000.
- Trenary, John M., to Teledyne Industries, Inc. On/off handle for oral hygiene apparatus. 4,442,831, Cl. 128-66.000.
- Trenk, Hugh L.: *See—*
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- Tribe, David E.: *See—*
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  - Rogers, Peter L.; and Tribe, David E., 4,443,544, Cl. 435-162.000.
- Tribotech: *See—*
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- Trijzelaar, Hans B.; de Bode, Ronus; and Welle, Handricus B. A., to ACF Chemiefarma N.V. Quinoline derivatives, pharmaceutical compositions containing such compounds, and methods for treating cardiovascular conditions with them. 4,443,453, Cl. 424-258.000.
- Triplett, James T. Floating crane stabilizer. 4,442,943, Cl. 212-192.000.
- True, Martin E.; and Timmerman, Terry D., to Weatherford/Lamb, Inc. Power pipe tong rotary plunger inserter. 4,442,736, Cl. 81-57.150.
- True Temper Railway Appliances, Inc.: *See—*
  - Fee, Graham M., 4,442,973, Cl. 238-349.000.
- Trummlitz, Gunter: *See—*
  - Engel, Wolfhard; Trummlitz, Gunter; Schmidt, Gunther; Eberlein, Wolfgang; Hammer, Rudolf; and del Soldato, Piero, 4,443,452, Cl. 424-256.000.
- Tsang, Paul J.: *See—*
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- Tse, Ming K.: *See—*
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- Tseng, C. C. Ceiling suspension device. 4,442,993, Cl. 248-327.000.
- Tsuchiya, Michihiro: *See—*
  - Matsuoka, Manabu; Tsuchiya, Michihiro; and Tokuda, Yoshikazu, 4,443,615, Cl. 548-489.000.
- Tsuchiya, Paul. Electronic metronome. 4,442,752, Cl. 84-484.000.
- Tsuda, Masatoshi; Kobayashi, Takeshi; and Kaitani, Katsumi, to Katuragi Sangyo Co., Ltd. Sintered porous metal plate and its production. 4,443,404, Cl. 419-2.000.
- Tsuji, Kiyoshi: *See—*
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- Tsuji, Masayoshi: *See—*
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- Tsuji, Teruji: *See—*
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- Tsukada, Takami: *See—*
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- Tsukada, Yukihisa: *See—*
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- Tsukiyasu, Tadashi: *See—*
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- Tsuruta, Hisato: *See—*
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- Tsurutani, Saburo: *See—*
  - Kawate, Yoshio; Nagai, Nobuyuki; Horiuchi, Takefumi; Tsurutani, Saburo; Kitamura, Minoru; Ito, Shuzo; Ohgami, Masahiko; Tochimori, Kenichi; and Inoue, Toshio, 4,442,706, Cl. 73-86.000.

- Tsushima, Shuichi; and Matsumoto, Fuyuhiko, to Ricoh Company, Ltd. Image transfer and sheet separation apparatus for electrophotographic system. 4,443,095, Cl. 355-14.00R.
- Tsutsumi, Saburo; Dozono, Kichihiko; Matayoshi, Yutaka; and Kunii, Kazuya, to Nissan Motor Company, Limited. Combustion chamber for spark ignition internal combustion engine. 4,442,808, Cl. 123-279.000.
- Tsuwano, Haruo: *See—*
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- Tubbs, Graham S.; and Ponder, James E., to Texas Instruments Incorporated. CMOS Integrated circuit device. 4,443,811, Cl. 357-42.000.
- Tucker, Kevin M.; and Sandman, Terry L., to Jobst Institute, Inc. Pneumatic splint. 4,442,834, Cl. 128-90.000.
- Tuovinen, Frans H.; Norrman, Bengt J. F.; and Heikkila, Risto M., to Outokumpu Oy. Method of mixing a hot furnace gas with another gas before the removal of the furnace gas from the furnace and a hood therefore. 4,443,878, Cl. 373-9.000.
- Tupper, Leland C.: *See—*
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- Turner, Alan R.: *See—*
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- Turner, Howard M., to Continental Group, Inc., The. Apparatus for and method of thermoforming plastic cans. 4,443,401, Cl. 264-544.000.
- Tuzson, John J., to Allis-Chalmers Corporation. Method and centrifugal apparatus for slurry erosion testing. 4,442,707, Cl. 73-86.000.
- Twieg, Robert: *See—*
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- Twin Disc, Incorporated: *See—*
  - Snoy, Joseph B., 4,442,730, Cl. 74-475.000.
- Tyburcy, Raymond S.: *See—*
  - Weisz, William; and Tyburcy, Raymond S., 4,442,784, Cl. 112-158.00C.
- Ube Industries, Ltd.: *See—*
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- UCB, Societe Anonyme: *See—*
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- Uchida, Shinobu, to Kabushiki Kaisha Daikin Seisakusho. Hydraulic clutch. 4,442,929, Cl. 192-52.000.
- Uchida, Teruyoshi: *See—*
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- Uchiyama, Tsugio: *See—*
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- Ueda, Ikuo; Matsuo, Masaaki; Tsuji, Kiyoshi; and Kato, Masayuki, to Fujisawa Pharmaceutical Co., Ltd. Cephem compounds. 4,443,443, Cl. 424-246.000.
- Ueda, Kosaku. Collapsible telescope. 4,443,071, Cl. 350-546.000.
- Uehara, Masaru; Uchida, Teruyoshi; and Kojima, Hirotaka, to Mitsubishi Rayon Company Limited. Electrode for living bodies. 4,442,841, Cl. 128-635.000.
- Uemura, Yukihisa, to Toyo Rubber Industry Co., Ltd., The. Irregular wear-resistant radial ply tire. 4,442,879, Cl. 152-209.00R.
- Uetrecht, Dale M.: *See—*
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- Uitermarkt, Edward L., to Vermeer Manufacturing Company. Machine control system for a wood or brush chipping machine. 4,442,877, Cl. 144-172.000.
- Ulvestad, Edward A., to Flex-Kleen Corporation. Dust collecting filter cartridge and attachment structure for suspending same from baghouse tube sheet. 4,443,237, Cl. 55-379.000.
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  - Suzuki, Hajime; Umemura, Yoshifumi; Iwano, Yoshimi; and Kimbara, Masahiko, 4,442,871, Cl. 139-435.000.
- Underdown, David R.; and Glaze, O. Howard, to Baker Oil Tools, Inc. Proppant charge and method. 4,443,347, Cl. 252-8.55R.
- Union Carbide Corporation: *See—*
  - Beddome, Robert A.; Saunders, John B.; and Fenner, Gary W., 4,443,238, Cl. 62-17.000.
  - Brown, Harry J.; Forgeng, William D.; and Brown, Charles W., 4,443,255, Cl. 75-251.000.
  - Robeson, Lloyd M.; and Matzner, Markus, 4,443,581, Cl. 525-92.000.
  - Toth, Tibor E., 4,443,687, Cl. 219-130.210.
- Unisearch Limited: *See—*
  - Rogers, Peter L.; and Tribe, David E., 4,443,543, Cl. 435-161.000.
  - Rogers, Peter L.; and Tribe, David E., 4,443,544, Cl. 435-162.000.
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    - Belton, John P., Jr., 4,443,766, Cl. 328-151.000.
    - Jones, Bruce B., 4,442,776, Cl. 102-275.120.
    - Snyder, Carl E., Jr.; and Tamborski, Christ, 4,443,349, Cl. 252-49.900.
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    - DeSantis, Charles M.; Zannella, Albert H.; Begala, Michael W.; Wills, John R.; and Czerwinski, Watson P., 4,443,803, Cl. 343-749.000.
    - Freeman, W. Larry, 4,443,303, Cl. 204-15.000.
    - Gaglione, Stanley, 4,443,800, Cl. 343-372.000.
    - Klose, Dirk R.; and Skudera, Jr. William J., 4,443,801, Cl. 343-442.000.
    - Pouri, Theodore H.; and Mottin, Howard C., 4,442,753, Cl. 89-46.000.
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    - Bongianni, Wayne L., 4,442,714, Cl. 73-606.000.
    - Coon, Clifford L.; Harrar, Jackson E.; Pearson, Richard K.; and McGuire, Raymond R., 4,443,308, Cl. 204-103.000.
    - Hahs, Charles A.; and Burbage, Charles H., 4,442,861, Cl. 137-595.000.
    - Nowlin, Charles H., 4,443,768, Cl. 328-167.000.
    - Pruett, David J.; and McTaggart, Donald R., 4,443,413, Cl. 423-10.000.
    - Shell, Pamela K., 4,443,186, Cl. 432-103.000.
    - Swoboda, Carl A., 4,442,700, Cl. 73-32.00A.
  - Health and Human Services: *See—*
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  - National Aeronautics and Space Administration: *See—*
    - Bailey, Gary C., 4,443,701, Cl. 250-332.000.
    - Compton, Leslie E., 4,443,321, Cl. 208-8.0LE.
    - Handlykken, Mathias B., 4,443,724, Cl. 310-171.000.
  - National Areonautics and Space Administration: *See—*
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    - Rousseau, David G., 4,442,986, Cl. 244-12.100.
    - Snider, Hugh H., Jr.; and Marion, Richard A., 4,443,119, Cl. 374-153.000.
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  - Brundige, William L., 4,443,390, Cl. 264-13.000.
  - Furtner, Gerhard, 4,443,822, Cl. 360-67.000.
  - Jansen, Gerardus L. M., 4,443,721, Cl. 310-14.000.
  - Jourdain, Philippe; Florens, Georges E., deceased; and Souquet, Georges A. L., representative, 4,442,966, Cl. 228-123.000.
  - Mewissen, Jan A. C., 4,443,778, Cl. 336-90.000.
  - Steenberg, Johannes, 4,443,874, Cl. 369-291.000.
  - van de Pas, Hermanus A.; and Knobbout, Huibert A., 4,442,967, Cl. 228-159.000.
  - van Roermund, Arthur H. M., 4,443,885, Cl. 377-57.000.
  - van Tol, Maurits W., 4,443,737, Cl. 313-431.000.
  - Woldring, Leonard, 4,443,739, Cl. 315-244.000.
- U.S. Terminals, Inc.: *See—*
  - Dozier, Hilliard, 4,442,770, Cl. 101-93.320.
- United Technologies Corporation: *See—*
  - Chenausky, Peter P.; and Newman, Leon A., 4,443,877, Cl. 372-38.000.
  - Cowher, Melvyn E.; and Shuskus, Alexander J., 4,443,489, Cl. 427-38.000.
  - Maciolek, Joseph R.; and Diamond, Edmond D., 4,443,853, Cl. 364-434.000.
  - Olsen, Eric G., 4,442,647, Cl. 52-393.000.
- Unitrode Corporation: *See—*
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- Universal Manufacturing Corp.: *See—*
  - Delvy, Robert J.; Pentecost, Harry L.; and Patterson, Leroy R., 4,443,829, Cl. 361-275.000.
- Universal Packaging, Inc.: *See—*
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- University of Delaware, The: *See—*
  - Catalano, Anthony W.; and Bhushan, Manjul, 4,443,653, Cl. 136-265.000.
- University of Georgia Research Foundation, Inc.: *See—*
  - Cormier, Milton J., 4,443,446, Cl. 424-247.000.
- University of Illinois Foundation: *See—*
  - Chervan, Munir; and Deeslie, William D., 4,443,540, Cl. 435-69.000.
  - Mayes, Paul E., 4,443,802, Cl. 343-729.000.
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  - Brighton, Carl T.; and Black, Jonathan, 4,442,846, Cl. 128-784.000.
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  - Carson, Don B., 4,443,419, Cl. 423-244.000.
- Upat GmbH & Co.: *See—*
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  - Anderson, Bradley D.; and Conradi, Robert A., 4,443,440, Cl. 424-243.000.
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  - Van Rheenen, Verlan H., 4,443,377, Cl. 260-397.400.
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  - Sukekawa, Masayuki; Tobita, Yoshimitsu; Kirihara, Seishin; Morimoto, Hisashi; Usami, Kenichi; and Iijima, Katsumi, 4,443,406, Cl. 420-584.000.
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- USV Pharmaceutical Corporation: *See—*
  - Huang, Fu-chih, 4,443,610, Cl. 548-150.000.
- Utah Research & Development Co., Inc.: *See—*
  - Newman, William A., 4,443,752, Cl. 320-22.000.
- Valdiserri, Mario: *See—*
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- van der Meijden, Johannes; and de Vries, Auke F., to Shell Oil Company. Process for the preparation of an aromatic hydrocarbon mixture. 4,443,640, Cl. 585-418.000.
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- van Tol, Maurits W., to U.S. Philips Corporation. Device for displaying pictures by means of a cathode-ray tube. 4,443,737, Cl. 313-431.000.
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  - Jentzsch, Arndt; Johne, Hans; and Muller, Wolfgang, 4,442,775, Cl. 101-365.000.
- Velo-Bind Inc.: *See—*
  - Szanto, Elmer G., 4,442,743, Cl. 83-372.000.
- Velsicol Chemical Corporation: *See—*
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- Vetter, Bruce W., to BagMan, Inc. Saddlebags. 4,442,960, Cl. 224-32.00A.
- Vetter, Ronald F., to United States of America, Navy. Fuel fire resistant motor. 4,442,666, Cl. 60-39.470.
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- Vidalin, Jacques. System for hi-speed comparisons between variable format input data and stored tabular reference data. 4,443,860, Cl. 364-900.000.
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  - Hirschmanner, Franz; and Rom, Ernst, 4,442,690, Cl. 72-128.000.
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  - Achinger, Michael; Streitenberger, Walter; Voigt, Otto K. H.; and Wolter, Hans, 4,442,882, Cl. 164-187.000.
- Vol-Pro Systems, Inc.: *See—*
  - Watts, Robert H., 4,443,109, Cl. 366-134.000.
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  - Downing, Gerald T., 4,442,939, Cl. 206-345.000.
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  - Worden, Dexter; Wilson, Frederic T.; and Grubb, Linda J., 4,443,511, Cl. 428-198.000.
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- Wada, Tetsuo: *See—*
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- Waffner, William D.: *See—*
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- Wakamatsu, Atsuyuki; and Tsuwano, Haruo, to Daiwa Can Company, Limited. Apparatus for automatically packing end closures for cans in paper bags. 4,442,652, Cl. 53-258.000.
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- Wakatsuki, Goroei; and Yamamoto, Sadashi, to Honda Giken Kogyo Kabushiki Kaisha. Automatic regulator for internally expanding drum brake. 4,442,923, Cl. 188-79.50K.
- Waldau, Geoffrey. Fuel feeder device for space heating stoves. 4,442,825, Cl. 126-68.000.
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- Walker, Brooks. Carrier for garment bags and the like. 4,442,927, Cl. 190-18.00A.
- Wallace, Edward M.; Gosselin, Robert G.; and Labarre, Ernest D., to Wallace Mfg. Corp. Sawing and pruning apparatus of the compound action passby blade type. 4,442,603, Cl. 30-249.000.
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- Walter, John; and Kubis, Charles S., to Continental Group, Inc., The. Method of and apparatus for shaping neck and providing terminal curl on can end. 4,442,693, Cl. 72-354.000.
- Walter, Lothar; and Reith, Walter, to SKF Kugellagerfabriken GmbH. Rolling bearing for lengthwise movement. 4,443,042, Cl. 308-6.00C.
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- Walwyn, Craig M.; and Bohonos, Donald E., to General Signal Corporation. Pellicle mounting fixture. 4,443,098, Cl. 355-74.000.

- Wank, Larry A.; and Braitling, Joseph G., to North American Philips Corporation. Magnetic head pole piece mount of TiO_2-CaO. 4,443,825, Cl. 360-104.000.
- Wanuga, Stephen; Kong, Wendell M. T.; and Stearns, Cleo M., to General Electric Company. Frequency trimming of saw resonators. 4,442,574, Cl. 29-25.350.
- Ward, Terence J., to John Wyeth & Brother Limited. N-[2-[[1-[1H-Indolylalkyl- or oxoalkyl]-4-piperidinyl]-amino]-2-oxoethyl]-arylcarboxamide derivatives. 4,443,461, Cl. 424-267.000.
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- Ware, Gordon K., to Chicago Roller Skate Company, The. Roller skate. 4,443,022, Cl. 280-11.280.
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  - Knecht, Adolph; Schneider, Michael; and Ambrosch, Walter, 4,443,433, Cl. 424-157.000.
- Warren, James C. Earplug mounting device with audio passageway. 4,443,668, Cl. 179-156.00A.
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- Waters, John M., to British Railways Board. Measuring vehicles for roadways. 4,442,709, Cl. 73-146.000.
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- Watson, James M.; and Forward, Cleve, to Cosden Technology, Inc. Reaction of benzene with ethylene oxide to produce styrene. 4,443,643, Cl. 585-437.000.
- Watt, Charles W., to Lukens General Industries, Inc. Conformable removable reflective marking tape. 4,443,510, Cl. 428-149.000.
- Watts, Donald R. Angular and swiveling head for gas consuming electric welding torches. 4,443,683, Cl. 219-74.000.
- Watts, Robert H., to Vol-Pro Systems, Inc. Method and apparatus for continuous feeding, mixing and blending. 4,443,109, Cl. 366-134.000.
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- Weber, Harvey L. Lock for garage door equipped with automatic garage door opener. 4,442,631, Cl. 49-199.000.
- Weber, John H.; and Gilman, Paul S., to Huntington Alloys Inc. Production of mechanically alloyed powder. 4,443,249, Cl. 75-0.50R.
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- Wei, Peter H. L.; and Bell, Stanley C., to American Home Products Corporation. Antiviral thiazolo [5,4-b] pyridine compounds. 4,443,606, Cl. 546-114.000.
- Weihe, Vernon I. Dead reckoning navigation instrument. 4,442,605, Cl. 33-1.0SD.
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- Weir, Donald R.; and Masters, Ian M., to Sherritt Gordon Mines Limited. Recovery of zinc from zinc containing sulphidic materials. 4,443,253, Cl. 75-120.000.
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- Weis, Robert, to Foster Grant Corporation. Continuous gradient dyeing of plastic ribbon. 4,442,788, Cl. 118-405.000.
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- Weiss, Richard: *See—*
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- Weisz, William; and Tyburcy, Raymond S., to Singer Company, The. Vertically stacked components in a control module for a sewing machine. 4,442,784, Cl. 112-158.00C.
- Welch, Clark M.: *See—*
  - Morris, Cletus E.; and Welch, Clark M., 4,443,222, Cl. 8-189.000.
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- Welker, Robert H., to Welker Engineering Company. Reinforced plug for flow regulators. 4,442,999, Cl. 251-358.000.
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  - Trijzelaar, Hans B.; de Bode, Ronus; and Welle, Handricus B. A., 4,443,453, Cl. 424-258.000.
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- Wells, John R. Serum preparator. 4,443,345, Cl. 210-782.000.
- Wells, Rodney L.; and Rowe, Monty L., to Allied Corporation. Additive dispersions and process for their incorporation with fiber-forming polymers. 4,443,573, Cl. 524-308.000.
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- West Electric Co., Ltd.: *See—*
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- Whitcomb, Carl E., to Board of Regents for Oklahoma Agricultural & Mechanical Colleges Acting for Oklahoma State University. Root-pruning container. 4,442,628, Cl. 47-66.000.
- White, Charles S. Method of making hot drawn low friction bearing. 4,442,578, Cl. 29-149.50S.
- White, George R.: *See—*
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- Whittingham, Thomas D.; Hennig, William G.; and Brahler, Thomas A. Meat log cutter. 4,442,741, Cl. 83-80.000.
- Wibom, Gustav H. O. Vehicle mounted hole forming machine. 4,442,904, Cl. 173-28.000.
- Wiggins, Richard H., to Texas Instruments Incorporated. Speech analysis circuits using an inverse lattice network. 4,443,859, Cl. 364-724.000.
- Wiklund, Johan E., to Boliden Aktiebolag. Method for separating gaseous, elementary mercury from a gas. 4,443,417, Cl. 423-210.000.
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- Wildman, Alexander J. Multi-purpose orthodontic bracket. 4,443,189, Cl. 433-10.000.
- Wilensky, Joseph, to Kurtis, Soma; and Sloan, Jack. Method for thermodynamic cycle. 4,442,675, Cl. 60-654.000.
- Wilkinson Sword Limited: *See—*
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- Willer, Rodney L., to United States of America, Navy. Trans-1,4,5,8-tetranitro-1,4,5,8-tetraazadecalin. 4,443,602, Cl. 544-350.000.
- William H. Rorer, Inc.: *See—*
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- Williams, Philip D. L.: *See—*
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- Wilson, David A.; and Buxton, James L., to SRI International. Frequency varied ultrasonic imaging array. 4,442,713, Cl. 73-599.000.

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- Wilson, Thomas P. Opening and closing means for a container top. 4,442,950, Cl. 220-269.000.
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- Witte, Horst: *See—*
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- Wohlford, William P., to Deere & Company. Track link including removable sprocket-engaging wear cap. 4,443,041, Cl. 305-43.000.
- Wohlrab, Walter, to Krauss-Maffei AG. Rapid-action mold closer. 4,443,179, Cl. 425-590.000.
- Wojciechowicz, Alexander, Jr. Electrical connector apparatus and method for a temporary cardiac pacing wire. 4,442,840, Cl. 128-419.00P.
- Wojcieson, Raymond J.; and Nowak, Leonard G., to Hauck Manufacturing Company. Burner and method. 4,443,182, Cl. 431-183.000.
- Woldring, Leonard, to U.S. Philips Corporation. Electric device comprising at least one low-pressure mercury vapor discharge tube. 4,443,739, Cl. 315-244.000.
- Wolf, Karlheinz: *See—*
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- Wolfe, Daniel S.: *See—*
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- Wolfe, Gene A.: *See—*
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- Wolff, Guenter: *See—*
  - Dworak, Wilhelm; Fader, Martin; Jons, Claus; Mayer, Siegfried; Muller, Karl-Heinz; Rasper, Manfred; Schuldt, Dietrich; Talmon, Wolfgang; and Wolff, Guenter, 4,443,168, Cl. 418-131.000.
- Wolff, Joachim; Wolf, Karlheinz; Koll, Jochen; Hornle, Reinhold; Molls, Hans-Heinz; and Paulat, Volker, to Bayer Aktiengesellschaft. Liquid-crystalline phase of an azo reactive dyestuff, and its use for the dyeing and printing of natural and synthetic substrates. 4,443,225, Cl. 8-549.000.
- Wolfrom, Glen W.: *See—*
  - Hodge, Edward B.; and Wolfrom, Glen W., 4,443,470, Cl. 424-279.000.
- Wolfson, Robert G.: *See—*
  - Little, Roger G.; Wolfson, Robert G.; and Solomon, Stanley J., 4,443,488, Cl. 427-38.000.
- Wolkewitz, Heinrich: *See—*
  - Bonnekamp, Horst; Sauer, Baldur; Wolkewitz, Heinrich; Hepp, Gunter; and Kraemer, Walter, 4,443,184, Cl. 432-13.000.
- Wolter, Hans: *See—*
  - Achinger, Michael; Streitenberger, Walter; Voigt, Otto K. H.; and Wolter, Hans, 4,442,882, Cl. 164-187.000.
- Wong, George S.; Catterfeld, Fritz C.; and Hauenstein, Clifford A., to Rockwell International Corporation. Axial slurry pump. 4,443,152, Cl. 415-143.000.
- Woo, James T. K., to SCM Corporation. Polymerization process and product. 4,443,568, Cl. 523-406.000.
- Wood, Eric, to Insituform International N.V. Cutters. 4,442,891, Cl. 166-55.200.
- Wood, Robin: *See—*
  - Brittain, David R.; and Wood, Robin, 4,443,465, Cl. 424-273.00R.
- Woods, Edward J.: *See—*
  - Jacovides, Linos J.; and Woods, Edward J., 4,443,678, Cl. 219-10.410.
- Wooley, Robert E., to National Service Industries, Inc. Envelope assembly apparatus. 4,443,211, Cl. 493-188.000.
- Wooten, James F. Test apparatus for circuit board racks. 4,443,755, Cl. 324-66.000.
- Worden, Dexter; Wilson, Frederic T.; and Grubb, Linda J., to W. L. Gore & Associates, Inc. Elastomeric waterproof laminate. 4,443,511, Cl. 428-198.000.
- Worni, Guido, to Ferag AG. Method of manipulating printed products and means and apparatus for performance thereof. 4,443,287, Cl. 156-247.000.
- Worrallo, Anthony C. Modular shelf support. 4,442,992, Cl. 248-243.000.
- Worthington, Paul A., to Imperial Chemical Industries PLC. Thiazolidinones. 4,443,454, Cl. 424-263.000.
- Worthington, Paul A., to Imperial Chemical Industries PLC. Fungicidal thiazolidinones. 4,443,455, Cl. 424-263.000.
- Wovcha, Merle G.: *See—*
  - Knight, John C.; and Wovcha, Merle G., 4,443,541, Cl. 435-149.000.
- Wright, John: *See—*
  - Grimwood, Geoffrey L.; and Wright, John, 4,443,213, Cl 494-38.000.
- Wright, John H.; and Smith, Alfred H., Jr., to General Electric Company. Protective lubricant composition. 4,443,348, Cl. 252-37.200.
- Wrightson, Robert W., to F.F. Seeley Nominees Pty. Ltd. Evaporative cooler pad frame support. 4,443,386, Cl. 261-29.000.
- Wunderlich, Klaus: *See—*
  - Seidler, Helmut; Soll, Manfred; and Wunderlich, Klaus, 4,443,369, Cl. 260-131.000.
- Wyatt, William G., to Trans-Texas Energy, Inc. Downhole vapor generator. 4,442,898, Cl. 166-303.000.
- Wylie, James C., Sr., to Universal Packaging, Inc. Filling and sealing machine for providing a flat bottom package. 4,442,656, Cl 53-552.000.
- X-Pert Well Service, Inc.: *See—*
  - Rhoads, Gerald A., Sr., 4,442,918, Cl. 182-10.000.
- Xerox Corporation: *See—*
  - Lux, Richard A., 4,443,102, Cl. 355-3.0DD.
  - Pirwitz, Robert G., 4,442,789, Cl. 118-653.000.
- Yabuta, Keiichiro: *See—*
  - Fukushima, Naoto; Iwata, Kazuroh; Hidaka, Kunihiko; and Yabuta, Keiichiro, 4,442,925, Cl. 188-282.000.
- Yaguchi, Tomonobu: *See—*
  - Kitamura, Mitsuaki; Nakayama, Toshio; Kamimura, Kunio; Seo, Iwao; and Yaguchi, Tomonobu, 4,443,730, Cl. 310-330.000.
- Yale University: *See—*
  - Thakur, Madhukar L., 4,443,426, Cl. 424-1.100.
- Yamada, Hiroshi: *See—*
  - Nagasawa, Kiyoto; and Yamada, Hiroshi, 4,443,097, Cl. 355-68.000.
- Yamada, Kinsaku: *See—*
  - Kashiwaya, Mineo; Nakagawa, Tohru; Yamada, Kinsaku; Kamifuji, Hiroshi; Oyama, Yoshishige; Kuroiwa, Hiroshi; and Tsuruta, Hisato, 4,442,818, Cl. 123-494.000.
- Yamada, Kozo; and Tanaka, Takayuki, to Toho Beslon Co., Ltd. Heat-moldable laminate and process for molding said laminated structures. 4,443,507, Cl. 428-114.000.
- Yamada, Shoji; Kanada, Eiji; and Mathubara, Eiji, to Mitsubishi Paper Mills, Ltd. Deleting agents for printing plates and method for deletion. 4,443,531, Cl. 430-204.000.
- Yamada, Takeshi, to Omron Tateisi Electronics Co. Regulated single-ended self oscillating, DC-DC converter. 4,443,838, Cl. 363-19.000.
- Yamagata, Kenji: *See—*
  - Noda, Kanji; Nakagawa, Akira; Yamagata, Kenji; Nakashima, Yoichi; Tsuji, Masayoshi; Aoki, Tetsuo; and Ide, Hiroyuki, 4,443,626, Cl. 562-434.000.
- Yamaguchi, Elaine S.; and Liston, Thomas V., to Chevron Research Company. Oil-soluble zinc cyclic hydrocarbyl dithiophosphate-succinimide complex and lubricating oil compositions containing same. 4,443,360, Cl. 252-46.700.
- Yamaguchi, Ryoji, to Tokyo Shibaura Denki Kabushiki Kaisha. Electric motor unit. 4,443,043, Cl. 308-10.000.
- Yamaguchi, Takashi: *See—*
  - Imaizumi, Ichiro; Kimura, Masatoshi; Ochi, Shikayuki; Yoshimura, Masayoshi; Yamaguchi, Takashi; and Koda, Toyomasa, 4,443,812, Cl. 357-53.000.
- Yamaguchi, Toru: *See—*
  - Akiyama, Hiroyuki; Kuwabara, Hideki; Yamaguchi, Toru; and Kishida, Masahiko, 4,443,393, Cl. 264-53.000.
- Yamaha Hatsudoki Kabushiki Kaisha: *See—*
  - Grinde, James E., 4,442,913, Cl. 180-190.000.
- Yamakami, Yoshiaki; and Yoshimitsu, Arata, to Kubota Ltd. Roll for continuous casting. 4,442,883, Cl. 164-448.000.
- Yamakawa, Toru, to Fuji Jukogyo Kabushiki Kaisha. Internal combustion engine provided with a plurality of power units. 4,442,805, Cl. 123-198.00F.
- Yamamoto, Hiroshi: *See—*
  - Suenaga, Masahide; Tsukada, Yukihisa; and Yamamoto, Hiroshi, 4,443,294, Cl. 156-656.000.
- Yamamoto, Nobuyuki; Nishikawa, Yasuo; Andou, Yuji; Naruo, Kyoichi; and Okita, Tsutomu, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,443,514, Cl. 428-216.000.
- Yamamoto, Sadashi: *See—*
  - Wakatsuki, Goroei; and Yamamoto, Sadashi, 4,442,923, Cl. 188-79.50K.
- Yamamoto, Sumio: *See—*
  - Yamashita, Yoshimi; and Yamamoto, Sumio, 4,443,704, Cl 250-491.100.
- Yamamoto, Toshiharu; and Nakatani, Koichiro, to Victor Company of Japan, Limited; and Nihon Velbon Seiki Kogyo Kabushiki Kaisha. Fixing device having two pivotally interconnected clamps. 4,443,128, Cl. 403-385.000.

- Yamamoto, Yuichi: *See—*
  - Nakamura, Noriaki; Kishimoto, Tomio; and Yamamoto, Yuichi, 4,443,670, Cl. 200-11.0DA.
- Yamane, Satoshi: *See—*
  - Murano, Tamio; Yamane, Satoshi; Suzuki, Toshitatsu; and Fukushima, Yoshio, 4,443,082, Cl. 354-145.100.
- Yamaoka, Yasuhiro: *See—*
  - Shimamura, Haruo; and Yamaoka, Yasuhiro, 4,442,811, Cl. 123-376.000.
- Yamashita, Yoshimi; and Yamamoto, Sumio, to Fujitsu Limited. Method of electron beam exposure. 4,443,704, Cl. 250-491.100.
- Yamato, Takashi: *See—*
  - Muryobayashi, Takashi; Miyake, Hajimu; and Yamato, Takashi, 4,443,478, Cl. 424-331.000.
- Yamauchi, Junichi: *See—*
  - Fusayama, Takeo; and Yamauchi, Junichi, 4,443,197, Cl. 433-217.000.
- Yamazaki, Kyuya: *See—*
  - Kamatani, Yoshio; Tanaka, Michio; and Yamazaki, Kyuya, 4,443,590, Cl. 528-51.000.
- Yamazoe, Katsuhiko; Yoshino, Akira; Kitahama, Yoshiharu; and Iwami, Isamu, to Asahi-Dow Limited. Organic europlum salt phosphor. 4,443,380, Cl. 260-429.200.
- Yanagida, Kiyomi; Hirokane, Tadashi; Tsukiyasu, Tadashi; and Sato, Tomoari, to Sumitomo Aluminium Smelting Company, Ltd. Material for selective absorption of solar energy and production thereof. 4,442,829, Cl. 126-452.000.
- Yanagiuchi, Shigenobu: *See—*
  - Hashimoto, Shintaro; Morimoto, Masafumi; Nakanishi, Tosaku; Yoshida, Hideo; and Yanagiuchi, Shigenobu, 4,443,856, Cl. 364-513.500.
- Yano, Mitsuo; Yoshizawa, Junji; Ishikawa, Kiyofumi; Harada, Nobuo; and Matsumoto, Ikuo, to Banyu Pharmaceutical Co., Ltd. α-Tocopheryl ester of 5-substituted picolinic acid and hypotensive composition containing it. 4,443,459, Cl. 424-266.000.
- Yarkoni, Fred E.: *See—*
  - Cuminale, Raymond J.; Otto, Stanley W.; Knipp, Jerry L.; Seibolt, Bernard P.; and Yarkoni, Fred E., 4,442,942, Cl. 211-163.000.
- Yasuda, Zenichi; Morita, Misao; and Nakajima, Takashi, to Nippon Paint Co., Ltd. Measuring device for measuring the amount of change in thickness of the paint layer. 4,443,106, Cl. 356-357.000.
- Yasui, Kiyoshi: *See—*
  - Kondo, Mitsuru; Yasui, Kiyoshi; Miyake, Makoto; Iwasaki, Hiroshi; and Shiraishi, Tetsuo, 4,443,614, Cl. 548-469.000.
- Yates, James A., to Conoco, Inc. Preparation of alcohols from internal olefins. 4,443,638, Cl. 568-882.000.
- Yatsuda, Yuji: *See—*
  - Hagiwara, Takaaki; and Yatsuda, Yuji, 4,443,718, Cl. 307-530.000.
- Yatsuo, Tsutomu; and Nagano, Takahiro, to Hitachi, Ltd. Gate turn-off amplified thyristor with non-shorted auxiliary anode. 4,443,810, Cl. 357-38.000.
- Yaure, Andrei G.: *See—*
  - Boev, Vladimir S.; Golev, Sergei P.; Dmitriev, Viktor I.; Pevzner, Efim M.; Yaure, Andrei G.; and Masandilov, Lev B., 4,443,748, Cl. 318-732.000.
- Ying, Lincoln, to Celanese Corporation. Sized reinforcing fibers suitable for use in composites of improved impact resistance. 4,443,566, Cl. 523-205.000.
- Yokogawa, Kanae: *See—*
  - Sunahara, Noriyuki; Naruto, Shunsuke; Kagemoto, Akira; Kurooka, Shigeru; and Yokogawa, Kanae, 4,443,365, Cl. 260-112.00R.
- Yoneda, Ko: *See—*
  - Sawada, Takeshi; Yoneda, Ko; Shinmi, Akira; Takagi, Hiroshi; Abiko, Shuzo; and Goto, Hirokazu, 4,443,826, Cl. 360-113.000.
- Yoshida, Hideo: *See—*
  - Hashimoto, Shintaro; Morimoto, Masafumi; Nakanishi, Tosaku; Yoshida, Hideo; and Yanagiuchi, Shigenobu, 4,443,856, Cl. 364-513.500.
- Yoshida Kogyo K. K.: *See—*
  - Matsuda, Nyuzen, 4,442,685, Cl. 66-193.000.
- Yoshida, Makoto; Watanabe, Shinichi; and Suzuki, Fuminori, to Citizen Watch Company Limited. Electronic timepiece. 4,443,116, Cl. 368-202.000.
- Yoshida, Yoshikazu: *See—*
  - Sawada, Susumu; Yoshida, Yoshikazu; and Tanaka, Minoru, 4,443,288, Cl. 156-304.600.
- Yoshii, Hisao, to Dainichi Kogyo Co., Ltd. Control circuit for a liquid fuel combustion apparatus. 4,443,157, Cl. 417-45.000.
- Yoshikawa, Harutoshi: *See—*
  - Kawamatsu, Yutaka; Saraie, Takahiro; and Yoshikawa, Harutoshi, 4,443,246, Cl. 71-94.000.
- Yoshimitsu, Arata: *See—*
  - Yamakami, Yoshiaki; and Yoshimitsu, Arata, 4,442,883, Cl. 164-448.000.
- Yoshimura, Masayoshi: *See—*
  - Imaizumi, Ichiro; Kimura, Masatoshi; Ochi, Shikayuki; Yoshimura, Masayoshi; Yamaguchi, Takashi; and Koda, Toyomasa, 4,443,812, Cl. 357-53.000.
- Yoshino, Akira: *See—*
  - Yamazoe, Katsuhiko; Yoshino, Akira; Kitahama, Yoshiharu; and Iwami, Isamu, 4,443,380, Cl. 260-429.200.
- Yoshino Kogyosho Co., Ltd.: *See—*
  - Yoshino, Yataro; Tsukada, Takami; Saito, Tadao; and Nozawa, Takamitsu, 4,442,944, Cl. 215-1.00C.
- Yoshino, Masaki; Oka, Kozo; and Koide, Huminori, to Fuji Xerox Co., Ltd. Electrostatic printing method. 4,443,093, Cl. 355-3.0CH.
- Yoshino, Sadazo: *See—*
  - Hayashida, Shinsaku; Ogata, Seiya; and Yoshino, Sadazo, 4,443,542, Cl. 435-160.000.
- Yoshino, Tsunemi: *See—*
  - Kashihara, Toshitsugu; Yoshino, Tsunemi; Morioka, Akitoshi; and Iwata, Hiroshi, 4,443,087, Cl. 354-401.000.
- Yoshino, Yataro; Tsukada, Takami; Saito, Tadao; and Nozawa, Takamitsu, to Yoshino Kogyosho Co., Ltd. Saturated polyester resin bottle and stand. 4,442,944, Cl. 215-1.00C.
- Yoshioka, Akiteru: *See—*
  - Takaya, Takao; Takasugi, Hisashi; Murata, Masayoshi; and Yoshioka, Akiteru, 4,443,444, Cl. 424-246.000.
- Yoshioka, Mitsuru; Shoichiro, Uyeo; Hamashima, Yoshio; Kikkawa, Ikuo; Tsuji, Teruji; and Nagata, Wataru, to Shionogi & Co., Ltd. 1-Oxadethiacepham compounds. 4,443,598, Cl. 544-90.000.
- Yoshizawa, Junji: *See—*
  - Yano, Mitsuo; Yoshizawa, Junji; Ishikawa, Kiyofumi; Harada, Nobuo; and Matsumoto, Ikuo, 4,443,459, Cl. 424-266.000.
- Yoshizawa, Minoru: *See—*
  - Shimizu, Hiroshi; Fukano, Yoshisama; and Yoshizawa, Minoru, 4,443,359, Cl. 252-358.000.
- Yoshizumi, Toshihiko: *See—*
  - Koike, Masaru; Hasegawa, Yasumasa; Shimosaka, Satoru; Aoyama, Nagara; and Yoshizumi, Toshihiko, 4,442,876, Cl. 144-2.00R.
- Young, Alastair J., to Young, Alastair John. Control means for rotary power transmission. 4,442,727, Cl. 74-336.00R.
- Young, Alastair John: *See—*
  - Young, Alastair J., 4,442,727, Cl. 74-336.00R.
- Yun, Chung J., to Crown Cork & Seal Company, Inc. Container actuated counterpressure filling valve. 4,442,873, Cl. 141-39.000.
- Zaferes, Constantine J., to Advanced Crystal Sciences, Inc. Apparatus for chemical vapor deposition of films on silicon wafers. 4,443,410, Cl. 422-245.000.
- Zahnraderfabrik Renk A.G.: *See—*
  - Jahnel, Ernst, 4,442,728, Cl. 74-361.000.
- Zahnradfabrik Friedrichshafen, AG: *See—*
  - Elser, Dieter, 4,442,759, Cl. 92-165.0PR.
  - Merz, Johann, 4,443,169, Cl. 418-171.000.
- Zamek, Paul, to Design Controls Corporation. Indexing apparatus for positioning and retaining a disk film. 4,443,100, Cl. 355-76.000.
- Zanias, Theodore J., to Masco Corporation. Vent assembly. 4,442,798, Cl. 122-17.000.
- Zannella, Albert H.: *See—*
  - DeSantis, Charles M.; Zannella, Albert H.; Begala, Michael W.; Wills, John R.; and Czerwinski, Watson P., 4,443,803, Cl. 343-749.000.
- Zansky, Zoltan: *See—*
  - Planer, Norman G.; and Zansky, Zoltan, 4,443,719, Cl. 307-570.000.
- Zero-Max Industries, Incorporated: *See—*
  - Altena, Edgar, 4,443,750, Cl. 318-808.000.
- Ziegenhain, William C.; and Horton, Gary L., to Conoco Inc. Removal of impurities. 4,443,634, Cl. 568-621.000.
- Zierhut, Clarence D., to Clarence Zierhut Incorporated. Portable pocket clothes brush. 4,442,565, Cl. 15-27.000.
- Zimmerman, Harry K.: *See—*
  - Douglas, George H.; Studt, William L.; Dodson, Stuart A.; and Zimmerman, Harry K., 4,443,456, Cl. 424-263.000.
- Zingher, Arthur R., to International Business Machines Corporation. Inspection of multilayer ceramic circuit modules by electrical inspection of green specimens. 4,443,278, Cl. 156-64.000.
- Zison, Stanley W., to Getty Synthetic Fuels, Inc. Landfill gas recovery method. 4,442,901, Cl. 166-369.000.
- Zobl, Hartmut: *See—*
  - Brautigam, Rolf; Wesemeyer, Jurgen; and Zobl, Hartmut, 4,443,835, Cl. 362-300.000.
- Zodrow, Rudolph: *See—*
  - Kolges, Wilhelm; and Zodrow, Rudolph, 4,443,289, Cl. 156-384.000.
- Zublin, Casper W., to Downhole Services, Inc. Hydraulic jet well cleaning assembly using a non-rotating tubing string. 4,442,899, Cl. 166-312.000.
- Zwakenberg, Donald R.: *See—*
  - Donaldson, Donald J.; Kelly, Allan C.; Mulloy, Joseph W.; and Zwakenberg, Donald R., 4,443,416, Cl. 423-122.000.
- Zylbert, Thaddeus J.: *See—*
  - Odermann, Charles R.; and Zylbert, Thaddeus J., 4,442,785, Cl. 112-279.000.
- 236913 Alberta Ltd.: *See—*
  - Rayton, Thomas R., 4,442,740, Cl. 83-29.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 17TH DAY OF APRIL, 1984

NOTE —Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Aspden, David, to Lucas Industries Limited. Electrical switches. Re. 31,557, Cl. 200-314.000.
- Beral Enterprises, Inc.: *See—*
  - Garren, Ralph F.; and Sarver, B., Re. 31,555, Cl. 73-864.110.
- Buchanan, Robert R. Kennel, circular facility. Re. 31,556, Cl. 119-19.000.
- Carter, Reid F., to Chevron Research Company. Combination flyer-jumper associated with a geophysical data acquisition system and method of manufacture. Re. 31,559, Cl. 367-76.000.
- Chevron Research Company: *See—*
  - Carter, Reid F., Re. 31,559, Cl. 367-76.000.
- Devine, Thomas M., Jr., to General Electric Company. Graphite disc assembly for a rotating x-ray anode tube. Re. 31,560, Cl. 378-125.000.
- Ford, Ralph E.; and Wright, Kim W., to Slimfold Manufacturing Company, Inc. Pivot and guide rod assembly for bi-fold door. Re. 31,553, Cl. 16-380.000.
- Garren, Ralph F.; and Sarver, B., to Beral Enterprises, Inc. Pipette. Re. 31,555, Cl. 73-864.110.
- General Electric Company: *See—*
  - Devine, Thomas M., Jr., Re. 31,560, Cl. 378-125.000.
- Giege, Sture; and Lagerqvist, Torgny C. B., to Sandvik Aktiebolag. Roll device. Re. 31,554, Cl. 29-117.000.
- Krause, Anthony V.: *See—*
  - Sinclair, Clive M.; and Krause, Anthony V., Re. 31,558, Cl. 313-422.000.
- Lagerqvist, Torgny C. B.: *See—*
  - Giege, Sture; and Lagerqvist, Torgny C. B., Re. 31,554, Cl. 29-117.000.
- Lucas Industries Limited: *See—*
  - Aspden, David, Re. 31,557, Cl. 200-314.000.
- Sandvik Aktiebolag: *See—*
  - Giege, Sture; and Lagerqvist, Torgny C. B., Re. 31,554, Cl. 29-117.000.
- Sarver, B.: *See—*
  - Garren, Ralph F.; and Sarver, B., Re. 31,555, Cl. 73-864.110.
- Sinclair, Clive M.; and Krause, Anthony V. Flat cathode ray tube with repeller electrode and optical magnifying means. Re. 31,558, Cl. 313-422.000.
- Slimfold Manufacturing Company, Inc.: *See—*
  - Ford, Ralph E.; and Wright, Kim W., Re. 31,553, Cl. 16-380.000.
- Wright, Kim W.: *See—*
  - Ford, Ralph E.; and Wright, Kim W., Re. 31,553, Cl. 16-380.000.

LIST OF DESIGN PATENTEES

- AB Trama: *See—*
  - Lohman, Oskar R., 273,445, Cl. D6-92.000.
- Ackerman, Arthur M., to Novelty Cord & Tassel Co., Inc. Tie back. 273,452, 4-17-84, Cl. D6-208.200.
- Akabane, Moriji, to Hori Glass Co., Ltd. Window pane holder or similar article. 273,459, 4-17-84, Cl. D8-373.000.
- American Telecommunications Corp.: *See—*
  - Perkins, George D., 273,491, Cl. D14-53.000.
- Anderson, Gerald R. Tape cartridge holder for an automobile. 273,441, 4-17-84, Cl. D3-35.000.
- Andreason, Gustav O.; Friberg, Ulf R.; Kuvaja, Heimo H.; and Qvarnstrom, Bengt G. L., to Stora Kopparbergs Bergslags AB. Seedling flat. 273,482, 4-17-84, Cl. D11-155.000.
- Arnolds, Gerd. Faucet set. 273,512, 4-17-84, Cl. D23-25.000.
- Arnott, Jerry, to Hanimex Pty. Limited. Camera. 273,498, 4-17-84, Cl. D16-6.000.
- Arnott, Jerry, to Hanimex Pty. Limited. Camera. 273,499, 4-17-84, Cl. D16-6.000.
- Autotronics, Inc.: *See—*
  - Lawrence, William J.; Harrison, Jerry W.; Wunderlich, Robert J.; Herron, Clifford W.; and Blasingame, Raymond W., 273,466, Cl. D10-50.000.
- Beirise, Jean M.: *See—*
  - Coons, John C.; and Beirise, Jean M., 273,492, Cl. D14-64.000.
- Black & Decker Inc.: *See—*
  - House, Lawrence E., II, 273,496, Cl. D15-132.000.
  - McDougall, Robert; Norton, Ian F.; Overbury, Douglas G.; and Overy, Colin, 273,456, Cl. D8-65.000.
- Blasingame, Raymond W.: *See—*
  - Lawrence, William J.; Harrison, Jerry W.; Wunderlich, Robert J.; Herron, Clifford W.; and Blasingame, Raymond W., 273,466, Cl. D10-50.000.
- Bowman, George D., to Model A and Model T Motor Car Reproduction Corp., The. Automobile seat back. 273,451, 4-17-84, Cl. D6-197.000.
- Bowman, George D., to Model A & Model T Motor Car Reproduction Co. Floor pan for an automobile. 273,485, 4-17-84, Cl. D12-159.000.
- Braun Aktiengesellschaft: *See—*
  - Ullmann, Roland, 273,521, Cl. D28-49.000.
- Canon Kabushiki Kaisha: *See—*
  - Kando, Masahiro; and Haranishi, Noriaki, 273,501, Cl. D18-1.000.
- Capers, Harry P., Jr. Wall mounted display holder for visored caps. 273,447, 4-17-84, Cl. D6-116.000.
- Carroll, George H. Pearl stud for piercing ears. 273,473, 4-17-84, Cl. D11-86.000.
- Champion International Corporation: *See—*
  - Mode, Duane R., 273,462, Cl. D9-431.000.
- Chen, Tung Sing. Telephone set. 273,490, 4-17-84, Cl. D14-53.000.
- Colquhoun, Ross M. Table. 273,448, 4-17-84, Cl. D6-177.000.
- Coons, John C.; and Beirise, Jean M., to Masco Corporation of Indiana. Telephone handset. 273,492, 4-17-84, Cl. D14-64.000.
- CPG Products Corp.: *See—*
  - Routzong. James E.; Richter, Russell; and Moraski, Alfred H., 273,504, Cl. D21-204.000.
  - Routzong, James E.; Richter, Russell; and Moraski, Alfred H., 273,505, Cl. D21-204.000.
  - Routzong, James E.; Richter, Russell; and Moraski, Alfred H., 273,506, Cl. D21-204.000.
- D.R.I. Industries, Inc.: *See—*
  - Zastera, Stephen R., 273,522, Cl. D34-17.000.
- DeFelsko Corporation: *See—*
  - Koch, Frank, 273,465, Cl. D10-46.000.
- DiSesa, Frank, to Tucker Housewares, Inc. Stackable plastic crate. 273,523, 4-17-84, Cl. D34-43.000.
- DiSesa, Frank, to Tucker Housewares, Inc. Stackable plastic crate. 273,524, 4-17-84, Cl. D34-43.000.
- DiSesa, Frank, to Tucker Housewares, Inc. Stackable plastic crate. 273,525, 4-17-84, Cl. D34-43.000.
- DiSesa, Frank, to Tucker Housewares, Inc. Stackable plastic crate. 273,526, 4-17-84, Cl. D34-43.000.
- Ditto, Donald R. Plaque. 273,481, 4-17-84, Cl. D11-139.000.
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CLASS 60	
39.12	4,442,665
39.281	4,442,667
	4,442,668
39.47	4,442,666
251	4,442,669
517	4,442,670
547.1	4,442,671
602	4,442,672
618	4,442,673
632	4,442,674
654	4,442,675
671	4,442,676
673	4,442,677
676	4,442,678
CLASS 62	
17	4,443,238
123	4,442,679
217	4,442,680
347	4,442,681
401	4,442,682
CLASS 65	
3.11	4,443,239
21.1	4,443,240
29	4,443,241
CLASS 66	
64	4,442,683
84 A	4,442,684
193	4,442,685
CLASS 68	
198	4,442,686
CLASS 69	
1	4,442,687
CLASS 70	
252	4,442,688
CLASS 71	
11	4,443,242
93	4,443,243
	4,443,244
	4,443,245
94	4,443,246
	4,443,247
98	4,443,248
CLASS 72	
41	4,442,689
128	4,442,690
329	4,442,691
349	4,442,692
354	4,442,693
453.01	4,442,694
459	4,442,695
CLASS 73	
1 E	4,442,696
12	4,442,697
23	4,442,698
28	4,442,699
32 A	4,442,700
32 R	4,442,701
49.2	4,442,702
49.5	4,442,703
55	4,442,704
83	4,442,705
86	4,442,706
	4,442,707
117	4,442,708
146	4,442,709
151	4,442,710
155	4,442,711
462	4,442,712
599	4,442,713
606	4,442,714
626	4,442,715
756	4,442,716
766	4,442,717
	4,442,718
861.29	4,442,719
863.31	4,442,720
	4,442,721
864.11	Re.31,555
864.18	4,442,722
CLASS 74	
5.47	4,442,723
10.41	4,442,724
89.15	4,442,725
117	4,442,726
336 R	4,442,727
361	4,442,728
467	4,442,729
475	4,442,730
571 R	4,442,731
594.5	4,442,732
606 R	4,442,733
CLASS 75	
0.5 R	4,443,249
26	4,443,250
42	4,443,251
48	4,443,252
120	4,443,253
123 B	4,443,254
251	4,443,255
CLASS 76	
107 A	4,442,734
CLASS 81	
3.44	4,442,735
57.15	4,442,736
448	4,442,737
470	4,442,738
CLASS 82	
2.5	4,442,739
CLASS 83	
29	4,442,740
80	4,442,741
303	4,442,742
372	4,442,743
614	4,442,744
CLASS 84	
1.01	4,442,745
	4,442,746
	4,442,747
	4,442,748
1.15	4,442,749
1.18	4,442,750
1.25	4,442,751
484	4,442,752
CLASS 89	
46	4,442,753
CLASS 91	
1	4,442,754
39	4,442,755
CLASS 92	
23	4,442,756
82	4,442,757
138	4,442,758
165 PR	4,442,759
CLASS 98	
40 D	4,442,760
CLASS 99	
404	4,442,761
427	4,442,762
	4,442,763
633	4,442,764
CLASS 100	
6	4,442,765
35	4,442,766
116	4,442,767
233	4,442,768
CLASS 101	
93.19	4,442,769
93.32	4,442,770
122	4,442,771
127.1	4,442,772
177	4,442,773
226	4,442,774
365	4,442,775
CLASS 102	
275.12	4,442,776
444	4,442,777
CLASS 106	
1.05	4,443,256
1.23	4,443,257
18.12	4,443,258
38.27	4,443,259
109	4,443,260
	4,443,261
209	4,443,262
287.24	4,443,263
292	4,443,264
306	4,443,265
CLASS 108	
111	4,442,778
131	4,442,779
CLASS 109	
29	4,442,780
53	4,442,781
CLASS 110	
225	4,442,782
347	4,442,783
CLASS 112	
158 C	4,442,784
279	4,442,785
CLASS 114	
255	4,442,786
363	4,442,787
CLASS 118	
405	4,442,788
653	4,442,789
657	4,442,790
669	4,442,791
CLASS 119	
16	4,442,792
19	Re.31,556
23	4,442,793
115	4,442,794
CLASS 122	
4 D	4,442,795
	4,442,796
	4,442,797
17	4,442,798
250 R	4,442,799
379	4,442,800
CLASS 123	
3	4,442,801
25 L	4,442,802
41.69	4,442,803
145 A	4,442,804
198 F	4,442,805
	4,442,806
263	4,442,807
279	4,442,808
316	4,442,809
357	4,442,810
376	4,442,811
417	4,442,812
418	4,442,813
425	4,442,814
436	4,442,815
457	4,442,816
489	4,442,817
494	4,442,818
557	4,442,819
571	4,442,820
639	4,442,821
643	4,442,822
CLASS 124	
78	4,442,823
CLASS 126	
14	4,442,824
68	4,442,825
400	4,442,826
430	4,442,827
451	4,442,828
452	4,442,829
CLASS 127	
19	4,443,266
46.2	4,443,267
CLASS 128	
66	4,442,830
	4,442,831
71	4,442,832
90	4,442,833
	4,442,834
201.27	4,442,835
314	4,442,836
354	4,442,837
369	4,442,838
419 P	4,442,840
419 R	4,442,839
635	4,442,841
660	4,442,842
	4,442,843
663	4,442,844
687	4,442,845
784	4,442,846
CLASS 130	
27 Z	4,442,847
CLASS 131	
108	4,442,848
CLASS 132	
37 R	4,442,849
CLASS 133	
3 H	4,442,850
CLASS 134	
2	4,443,268
12	4,443,269
25.2	4,443,270
34	4,443,271
106	4,442,851
135	4,442,852
CLASS 136	
211	4,443,650
249	4,443,651
251	4,443,652
265	4,443,653
CLASS 137	
66	4,442,853
82	4,442,854
83	4,442,855
98	4,442,856
117	4,442,857
207	4,442,858
242	4,442,859
557	4,442,860
595	4,442,861
601	4,442,862
614.03	4,442,863
625.27	4,442,864
874	4,442,865
CLASS 138	
31	4,442,866
93	4,442,867
118.1	4,442,868
CLASS 139	
71	4,442,869
185	4,442,870
435	4,442,871
CLASS 140	
92.1	4,442,872
CLASS 141	
39	4,442,873
166	4,442,874
348	4,442,875
CLASS 144	
2 R	4,442,876
172	4,442,877
CLASS 145	
4	4,442,878
CLASS 148	
6.15 Z	4,443,273
6.31	4,443,274
12 C	4,443,272
31.55	4,443,275
31.57	4,443,276
CLASS 152	
209 R	4,442,879
356 R	4,442,880
CLASS 156	
50	4,443,277

64 4,443,278
4,443,494
123 4,443,279
137 4,443,280
140 4,443,281
152 4,443,282
211 4,443,283
212 4,443,284
215 4,443,285
245 4,443,286
247 4,443,287
304.6 4,443,288
384 4,443,289
396 4,443,290
504 4,443,291
634 4,443,292
647 4,443,293
656 4,443,294
657 4,443,295

CLASS 160
25 4,442,881

CLASS 162
52 4,443,296
101 4,443,297
252 4,443,298
264 4,443,299
306 4,443,300

CLASS 164
187 4,442,882
448 4,442,883
456 4,442,884

CLASS 165
25 4,442,885
76 4,442,886
85 4,442,887
104.16 4,442,888
109 R 4,442,889
124 4,442,890

CLASS 166
55.2 4,442,891
85 4,442,892
117.5 4,442,893
156 4,442,894
250 4,442,895
278 4,442,896
280 4,442,897
303 4,442,898
312 4,442,899
342 4,442,900
369 4,442,901
374 4,442,902
385 4,442,903

CLASS 173
28 4,442,904
36 4,442,905
48 4,442,906
164 4,442,907

CLASS 174
48 4,443,654
52 PE 4,443,655
4,443,656
110 FC 4,443,657
113 C 4,443,658
140 C 4,443,659

CLASS 175
74 4,442,908
329 4,442,909

CLASS 177
25 4,442,910
165 4,442,911

CLASS 178
22.04 4,443,660

CLASS 179
2 C 4,443,662
2 EB 4,443,661
5.5 4,443,664
18 ES 4,443,663
99 H 4,443,665
111 E 4,443,666
115 R 4,443,667
156 A 4,443,668
175.2 C 4,443,669

CLASS 180
89.15 4,442,912
190 4,442,913
255 4,442,914
271 4,442,915

CLASS 181
120 4,442,916
135 4,442,917

CLASS 182
10 4,442,918
63 4,442,919
199 4,442,920

CLASS 187
8.52 4,442,921
9 E 4,442,922

CLASS 188
79.5 GT 4,442,924
79.5 K 4,442,923
282 4,442,925
317 4,442,926

CLASS 190
18 A 4,442,927

CLASS 192
3 N 4,442,928
52 4,442,929
85 AB 4,442,930
4,442,931

CLASS 198
344 4,442,934
366 4,442,932
502 4,442,933
648 4,442,935

CLASS 200
11 DA 4,443,670
81 R 4,443,671
144 AP 4,443,674
144 B 4,443,672
144 R 4,443,673
223 4,442,936
243 4,443,675
304 4,443,676
314 Re.31,557

CLASS 204
1 T 4,443,301
2 4,443,302
15 4,443,303
27 4,443,304
59 M 4,443,305
64 T 4,443,306
98 4,443,307
103 4,443,308
149 4,443,309
158 R 4,443,310
4,443,311
181 R 4,443,312
240 4,443,313
243 R 4,443,314
253 4,443,315
263 4,443,316
290 F 4,443,317
298 4,443,318
299 R 4,443,319
302 4,443,320

CLASS 206
315.4 4,442,937
329 4,442,938
345 4,442,939
425 4,442,940
540 4,442,941

CLASS 208
8 LE 4,443,321
11 LE 4,443,322
4,443,323
22 4,443,324
55 4,443,325
64 4,443,326
97 4,443,327
106 4,443,328
111 4,443,329
112 4,443,330

CLASS 209
211 4,443,331
331 4,443,332

CLASS 210
87 4,443,333
168 4,443,334
220 4,443,335
238 4,443,336
602 4,443,337
629 4,443,338
635 4,443,339
697 4,443,340
702 4,443,341
759 4,443,342
768 4,443,343
774 4,443,344
782 4,443,345
785 4,443,346

CLASS 211
163 4,442,942

CLASS 212
192 4,442,943

CLASS 215
1 C 4,442,944
218 4,442,945
230 4,442,946
344 4,442,947

CLASS 219
8.5 4,443,677
10.41 4,443,678
10.49 R 4,443,679
69 C 4,443,680
4,443,681
4,443,682
74 4,443,683
121 LH 4,443,684
4,443,685
123 4,443,686
130.21 4,443,687
222 4,443,688
469 4,443,689
506 4,443,690
522 4,443,691

CLASS 220
90.2 4,442,948
257 4,442,949
269 4,442,950
319 4,442,951
354 4,442,952

CLASS 222
14 4,442,953
55 4,442,954
153 4,442,955
185 4,442,956
207 4,442,957
213 4,442,958
402.24 4,442,959

CLASS 224
32 A 4,442,960
42.03 B 4,442,961
255 4,442,962

CLASS 226
97 4,442,963

CLASS 227
8 4,442,964
136 4,442,965

CLASS 228
123 4,442,966
159 4,442,967
231 4,442,968

CLASS 229
2.5 R 4,442,969
17 G 4,442,970
43 4,442,971

CLASS 235
379 4,443,692
458 4,443,693
465 4,443,694

CLASS 236
1 EA 4,442,972

CLASS 238
349 4,442,973

CLASS 239
1 4,442,974
150 4,442,975
183 4,442,976
332 4,442,977
453 4,442,978
656 4,442,979

CLASS 241
34 4,442,980

CLASS 242
7.19 4,442,981
55 4,442,982
84.51 R 4,442,983
106 4,442,984
186 4,442,985

CLASS 244
12.1 4,442,986
110 B 4,442,987

CLASS 246
34 CT 4,442,988

CLASS 248
49 4,442,989
62 4,442,990
146 4,442,991
243 4,442,992
327 4,442,993
547 4,442,994

CLASS 249
139 4,442,995

CLASS 250
205 4,443,695
4,443,696
223 R 4,443,697
227 4,443,698
4,443,699
4,443,700
332 4,443,701
357.1 4,443,702
491.1 4,443,703
4,443,704
558 4,443,705
4,443,706

CLASS 251
77 4,442,996
129 4,442,997
4,442,998
358 4,442,999

CLASS 252
8.55 R 4,443,347
37.2 4,443,348
46.7 4,443,360
49.9 4,443,349
62.54 4,443,350
75 4,443,351
94 4,443,352
103 4,443,353
174.12 4,443,355
190 4,443,354
301.17 4,443,356
321 4,443,357
353 4,443,358
358 4,443,359
516 4,443,361
545 4,443,362
547 4,443,363
4,443,364

CLASS 254
89 R 4,443,000
93 R 4,443,001

CLASS 256
59 4,443,002

CLASS 260
112 R 4,443,365
4,443,366
112.5 LH 4,443,368
112.5 R 4,443,367
131 4,443,369
145 B 4,443,370
169 4,443,371
239 A 4,443,372
245.2 R 4,443,373
245.4 4,443,374
245.6 4,443,375
397.4 4,443,377
403 4,443,378
427 4,443,379
429.2 4,443,380
439 R 4,443,381
448 R 4,443,382
453 RZ 4,443,376
465.2 4,443,383
982 4,443,384

CLASS 261
18 A 4,443,385
29 4,443,386
30 4,443,387
39 A 4,443,388
153 4,443,389

CLASS 264
13 4,443,390
22 4,443,391
25 4,443,392
53 4,443,393
65 4,443,394
117 4,443,395
136 4,443,396
171 4,443,397
235 4,443,398
519 4,443,399
4,443,400
544 4,443,401

CLASS 266
48 4,443,003
226 4,443,004

CLASS 269
328 4,443,005

CLASS 271
10 4,443,006
269 4,443,007

CLASS 272
73 4,443,008
104 4,443,009

CLASS 273
242 4,443,010
247 4,443,011
292 4,443,012
318 4,443,013
363 4,443,014

CLASS 277
30 4,443,015
73 4,443,016
152 4,443,017
189 4,443,018
227 4,443,019

CLASS 279
1 DA 4,443,020
4 4,443,021

CLASS 280
11.28 4,443,022
278 4,443,023
304 4,443,024
407 4,443,025
714 4,443,026

CLASS 283
83 4,443,027

CLASS 285
38 4,443,028
93 4,443,029
263 4,443,030
419 4,443,031

CLASS 290
4 R 4,443,707
53 4,443,708

CLASS 292
202 4,443,032
235 4,443,033

CLASS 296
65 R 4,443,034
190 4,443,035

CLASS 299
2 4,443,036
4,443,037
81 4,443,038

CLASS 301
64 SD 4,443,039

CLASS 303
50 4,443,040

CLASS 305
43 4,443,041

CLASS 307
41 4,443,709
80 4,443,710
140 4,443,712
260 4,443,713
269 4,443,714
270 4,443,715
309 4,443,716
362 4,443,717
400 4,443,711
530 4,443,718
570 4,443,719
578 4,443,720

CLASS 308
6 C 4,443,042
10 4,443,043
223 4,443,045

CLASS 310
14 4,443,721
45 4,443,722
53 4,443,723
171 4,443,724
214 4,443,725
248 4,443,726
261 4,443,727
312 4,443,728
330 4,443,729
4,443,730
334 4,443,731
343 4,443,732
369 4,443,733

CLASS 312
183 4,443,046

CLASS 313
26 4,443,734
345 4,443,735
414 4,443,736
422 Re.31,558
431 4,443,737
491 4,443,738

CLASS 315
244 4,443,739
284 4,443,740
307 4,443,741

CLASS 318
85 4,443,742
115 4,443,743
269 4,443,744
461 4,443,745
696 4,443,746
723 4,443,747
732 4,443,748
774 4,443,749
808 4,443,750

CLASS 320
2 4,443,751
22 4,443,752

CLASS 323
313 4,443,753

CLASS 324
61 R 4,443,754
66 4,443,755
73 PC 4,443,756
77 B 4,443,757
113 4,443,758
216 4,443,759
309 4,443,760
311 4,443,761
346 4,443,762
439 4,443,763
456 4,443,764

CLASS 328
55 4,443,765
151 4,443,766
155 4,443,767
167 4,443,768

CLASS 329
50 4,443,769

CLASS 330
284 4,443,770
297 4,443,771

CLASS 333
28 R 4,443,772
104 4,443,773
165 4,443,774

CLASS 335
281 4,443,775
302 4,443,776

CLASS 336
65 4,443,777
90 4,443,778
92 4,443,779

CLASS 337
257 4,443,780

CLASS 338
34 4,443,781
195 4,443,782

CLASS 339
26 4,443,047
63 M 4,443,048
75 MP 4,443,049
99 R 4,443,050
107 4,443,051
113 R 4,443,052
221 R 4,443,053
273 R 4,443,054

CLASS 340
32 4,443,783
52 F 4,443,784
58 4,443,785
310 R 4,443,786
347 P 4,443,787
4,443,788
365 R 4,443,789
539 4,443,790
612 4,443,792
634 4,443,791
4,443,793
748 4,443,794
870.31 4,443,795

CLASS 343
5 PD 4,443,796
5 SC 4,443,797
17.2 PC 4,443,799
372 4,443,800
442 4,443,801
729 4,443,802
749 4,443,803
786 4,443,804
803 4,443,805

CLASS 346
135.1 4,443,806
140 R 4,443,807

CLASS 350
6.5 4,443,055
98 4,443,056
281 4,443,057
294 4,443,058
310 4,443,059
317 4,443,060
318 4,443,061
332 4,443,062
334 4,443,063

4,443,064
335 4,443,065
358 4,443,066
422 4,443,067
423 4,443,068
464 4,443,070
469 4,443,069
546 4,443,071
584 4,443,072

CLASS 351
98 4,443,073
178 4,443,074
209 4,443,075

CLASS 353
101 4,443,076

CLASS 354
21 4,443,077
145.1 4,443,082
152 4,443,083
173.11 4,443,084
200 4,443,088
214 4,443,089
289.12 4,443,090
401 4,443,087
402 4,443,085
403 4,443,078
407 4,443,079
409 4,443,086
432 4,443,080
479 4,443,081

CLASS 355
3 CH 4,443,093
3 DD 4,443,102
3 R 4,443,092
3 SH 4,443,094
3 TR 4,443,091
14 R 4,443,095
14 SH 4,443,101
53 4,443,096
68 4,443,097
74 4,443,098
75 4,443,099
76 4,443,100

CLASS 356
152 4,443,103
246 4,443,104
312 4,443,105
357 4,443,106
373 4,443,107
418 4,443,108

CLASS 357
15 4,443,808
16 4,443,809
38 4,443,810
42 4,443,811
53 4,443,812

CLASS 358
44 4,443,813
60 4,443,814
114 4,443,815
160 4,443,816
167 4,443,817
213 4,443,818
236 4,443,819
296 4,443,820
326 4,443,821

CLASS 360
67 4,443,822
77 4,443,823
104 4,443,824
4,443,825
113 4,443,826
132 4,443,827

CLASS 361
93 4,443,828
275 4,443,829
4,443,830

CLASS 362
80 4,443,831
84 4,443,832
189 4,443,833
280 4,443,834
300 4,443,835
375 4,443,836
396 4,443,837

CLASS 363
19 4,443,838
20 4,443,839
24 4,443,840
41 4,443,841
4,443,842
59 4,443,843
132 4,443,844

CLASS 364
200 4,443,845
4,443,846
4,443,847
4,443,848
4,443,849
4,443,850
415 4,443,851
431.03 4,443,852
434 4,443,853
483 4,443,854
513 4,443,855
513.5 4,443,856
4,443,857
518 4,443,858
724 4,443,859
900 4,443,860
4,443,861
4,443,862
4,443,863
4,443,864
4,443,865
4,443,866

CLASS 365
19 4,443,867
205 4,443,868

CLASS 366
97 4,443,110
134 4,443,109
165 4,443,111

CLASS 367
76 Re.31,559

CLASS 368
37 4,443,112
72 4,443,113
73 4,443,114
82 4,443,115
202 4,443,116

CLASS 369
41 4,443,869
44 4,443,870
71 4,443,871
77.2 4,443,872
110 4,443,873
291 4,443,874

CLASS 370
60 4,443,875

CLASS 371
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		273,436
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	92	273,445
	113	273,446
	116	273,447
	177	273,448
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		273,450
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D7—	311	273,495
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	65	273,456
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	159	273,485
	162	273,486
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		273,506
	212	273,507
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	46	273,515
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	4,442,804		4,442,990		4,443,011		4,443,409		4,443,606		4,443,643
	4,442,961		4,443,100		4,443,013		4,443,462		4,443,636		4,443,694
	4,443,017		4,443,133		4,443,014		4,443,480		4,443,644		4,443,696
	4,443,025		4,443,185		4,443,046		4,443,555		4,443,645		4,443,702
	4,443,033		4,443,219		4,443,066		4,443,568		4,443,646		4,443,755
	4,443,057		4,443,231		4,443,102		4,443,577		4,443,647		4,443,765
	4,443,177		4,443,268		4,443,138		4,443,628		4,443,648		4,443,793
	4,443,271		4,443,293		4,443,200		4,443,637		4,443,649		4,443,811
	4,443,283		4,443,305		4,443,238		4,443,639		4,443,653		4,443,845
	4,443,318		4,443,325		4,443,249		4,443,677		4,443,674		4,443,859
	4,443,336		4,443,327		4,443,254		4,443,756		4,443,685		4,443,861
	4,443,351		4,443,356		4,443,255		4,443,790		4,443,736		4,443,863
	4,443,377		4,443,373		4,443,278		4,443,842		4,443,833		4,443,864
	4,443,394		4,443,374		4,443,298		4,443,865	44 :	4,442,938		4,443,883
	4,443,440		4,443,381		4,443,324	40 :	4,442,619	45 :	4,442,559	49 :	4,443,332
	4,443,476		4,443,382		4,443,348		4,442,628		4,442,648		4,443,752
	4,443,482		4,443,384		4,443,400		4,442,897		4,442,765	51 :	4,442,605
	4,443,502		4,443,390		4,443,414		4,442,916		4,442,943		4,442,750
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	4,443,541		4,443,430		4,443,429		4,442,940		4,443,516		4,442,793
	4,443,563		4,443,463		4,443,441		4,443,193		4,443,687		4,442,825
	4,443,611		4,443,492		4,443,474		4,443,292	46 :	4,442,643		4,443,058
	4,443,631		4,443,499		4,443,481		4,443,570	47 :	4,442,639		4,443,239
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	4,443,681		4,443,564		4,443,521		4,443,634		4,443,307		4,443,573
	4,443,785		4,443,566		4,443,536		4,443,638		4,443,314		4,443,744
	4,443,791		4,443,581		4,443,579		4,443,713		4,443,413		4,443,747
27 :	4,442,556		4,443,586		4,443,591	41 :	4,442,621		4,443,450	53 :	4,442,720
	4,442,629		4,443,589		4,443,592		4,442,659		4,443,768		4,443,103
	4,442,780		4,443,610		4,443,601		4,442,922	48 :	Re.31,559		4,443,431
	4,442,819		4,443,619		4,443,659		4,443,189		4,442,565		4,443,683
	4,442,839		4,443,620		4,443,673		4,443,697		4,442,591	54 :	4,443,654
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	4,442,913		4,443,651		4,443,706	42 :	4,442,583		4,442,669		4,442,617
	4,443,099		4,443,664		4,443,707		4,442,595		4,442,675		4,442,660
	4,443,180		4,443,754		4,443,734		4,442,612		4,442,703		4,442,695
	4,443,203		4,443,758		4,443,760		4,442,620		4,442,710		4,442,794
	4,443,354		4,443,772		4,443,762		4,442,624		4,442,736		4,442,939
	4,443,357		4,443,801		4,443,799		4,442,662		4,442,755		4,442,991
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	4,443,508		4,443,809		4,443,825		4,442,741		4,442,852		4,443,126
	4,443,549		4,443,869	37 :	4,443,211		4,442,795		4,442,859		4,443,150
	4,443,719		4,443,871		4,443,504		4,442,796		4,442,860		4,443,175
29 :	4,442,673		4,443,875		4,443,682		4,442,797		4,442,892		4,443,235
	4,442,680		4,443,882		4,443,749		4,442,824		4,442,893		4,443,297
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	4,443,312	36 :	Re.31,560		4,442,658		4,442,903		4,442,919	56 :	4,442,737
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	273,528		273,523		273,520		273,477		273,508		273,466
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09 :	273,470		273,525		273,450		273,479		273,513		273,489
11 :	273,442		273,526		273,472		273,480		273,515	49 :	273,510
	273,527										
17 :	273,460	26 :	273,451		273,500		273,487		273,518	55 :	273,440

PLANT PATENTS

06 :	5,219		5,220	17 :	5,221						

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Vol. 1041 Number 4

OFFICIAL GAZETTE
of the UNITED STATES PATENT AND TRADEMARK OFFICE

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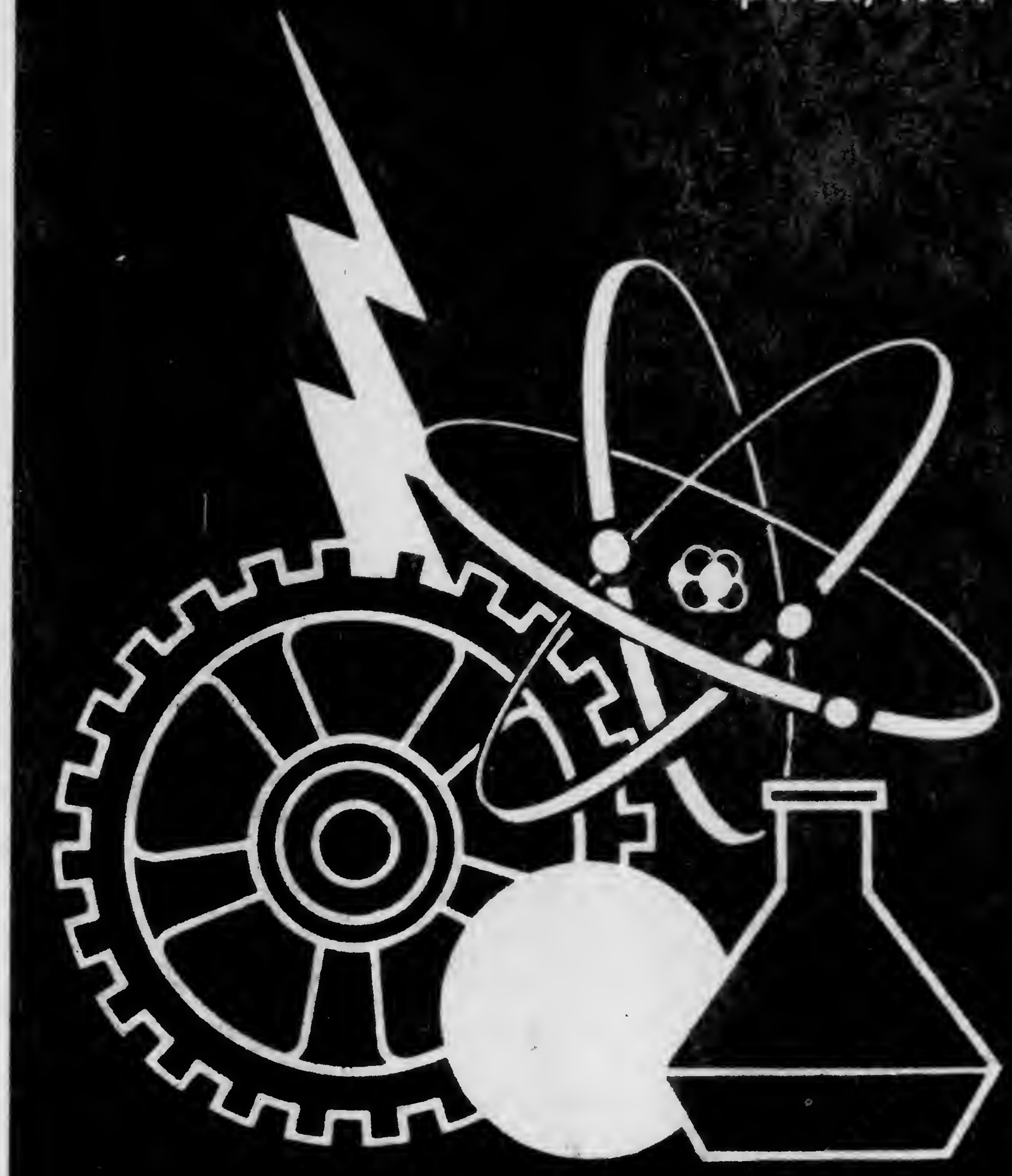
April 24, 1984



PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

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PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1037 O.G. 12 on Dec. 13, 1983. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. International PCT fees were changed by the PCT Assembly effective Jan. 1, 1984 and were announced at 1037 O.G. 12 on Dec. 13, 1983. The search fee for the European Patent Office was changed as of Feb. 14, 1984 and was announced at 1039 O.G. 142 on Feb. 21, 1984.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Prior corresponding U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	620.00
International Fees	
Basic fee (first 30 pages)	295.00
Basic Supplemental fee (for each page over 30)	6.00
Designation fee (for each national or regional office)	70.00

GERALD J. MOSSINGHOFF,
Jan. 30, 1984. *Commissioner of Patents*
and Trademarks.

Subscription Pricing Information

The annual subscription prices on the following publications have been changed as indicated below:

Title:	Official Gazette, Trademark Section	
	First-class domestic mailing	$238.00
	Fourth-class foreign mailing	297.50
	Single copies each, domestic	5.00
	Single copies each, foreign	6.25

Back issues will not be furnished.

This change is effective with Government Periodicals and Subscription Services Price List 36, dated Spring 1984.

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Checks for subscription orders should be made payable to the Superintendent of Documents. If a Deposit Account with the Superintendent of Documents is to be used, please include the Deposit Account Number with the order.

THERESA A. BRELSFORD,
Mar. 27, 1984. *Assistant Commissioner*
for Administration.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,307,980, Re. S.N. 566,640, Filed Dec. 29, 1983, Cl. 405/264, PROCESS FOR CONSOLIDATING AND SEALING OFF GEOLOGICAL AND ARTIFICIALLY DEPOSITED ROCK AND EARTH FORMATIONS, Frank Meyer, et al., Owner of Record: *Bergwerksverband GmbH, Essen, Federal Republic of Germany, and Bayer Aktiengesellschaft, Leverkusen, Federal Republic of Germany,* Attorney or Agent: Gene Harsh, et al., Ex. Gp.: 356

4,332,147, Re. S.N. 577,492, Filed Feb. 6, 1984, Cl. 464/109, ADJUSTABLE POWER TRANSMITTING DEVICE, Leonard Grech, Owner of Record: *Inventor,* Attorney or Agent: Gordon L. Peterson, Ex. Gp.: 342

4,363,675, Re. S.N. 577,906, Filed Feb. 7, 1984, Cl. 148/11.5, PROCESS FOR PRODUCING COMPOUND BASED SUPERCONDUCTOR WIRE, Kiyoshi Yoshizaki, Owner of Record: *Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: Richard C. Sughrue, et al., Ex. Gp.: 111

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,826,728, Reexam. No. 90/000,529, Requested: Mar. 19, 1984, Cl. 204/192R, TRANSPARENT ARTICLE HAVING REDUCED SOLAR RADIATION TRANSMITTANCE AND METHOD OF MAKING THE SAME, Douglas L. Chambers, et al., Owner of Record: *Shatterproof Glass Corp., Detroit, Mich.,* Attorney or Agent: Burton, Parker & Schramm, Ex. Gp.: 112, Requester: Shatterproof Glass Corp., Detroit, Mich.

4,145,025, Reexam. No. 90/000,534, Requested: Mar. 26, 1984, Cl. 251/63, CONTROL DEVICE, Ned A. Bergeron, Owner of Record: *B.W.B. Controls, Inc., Houma, La.,* Attorney or Agent: Robert W. B. Dickerson, Ex. Gp.: 341, Requester: ACF Industries, Inc., New York, N.Y.

4,354,492, Reexam. No. 90/000,532, Requested: Mar. 20, 1984, Cl. 604/247, MEDICAL ADMINISTRATION SET WITH BACKFLOW CHECK VALVE, Charles J. McPhee, Owner of Record: *American Hospital Supply Corp., Evanston, Ill.,* Attorney or Agent: Roger A. Williams, Ex. Gp.: 336, Requester: Burron Medical, Inc., Bethlehem, Pa.

Erratum

The renewal applicant in the following registration, listed in the "Index of Registrants" section of the Trademark Official Gazette of Nov. 29, 1983, for Registration

No. 762,396 was incorrectly identified as L. Farber Company.

The renewal applicant's name as corrected is L. Farber Co., Inc.

MARK M. NEWMAN,
Mar. 13, 1984. *Director, Trademark*
Examining Operation.

Erratum

The registrant in the following registration, listed in the "Index of Registrants" section of the Trademark Official Gazette of Jan. 10, 1984, for Registration No. 762,036 was incorrectly identified as TFR Industries, Inc.

The registrant's name as corrected is TFM Industries, Inc.

MARK M. NEWMAN,
Mar. 12, 1984. *Director, Trademark*
Examining Operation.

Status of PTO Services

The following is an update of the status of PTO services for March 1984:

Service Item	FY 1984 Performance Goal (Calendar Days)	Actual	Comment
Filing Receipts:			
Patents	22	29	Problems due to conversion to the new computer system.
Trademarks	30	71	
Patent/Trademark Copies:			
Window Coupons	5	99% within 5 days	
Mail Coupons	29	99% within 29 days*	
Letter Orders	34	99% within 34 days*	
Date of oldest unfilled order		Feb. 22, 1984	
Certified Copies:			
Trademark Registrations	30	13	
Applications-As-Filed	20	99% within 15 days	
File-Wrapper/Contents	N/A	95% within 7 days	
Walk-up Certification	1	99% within 1 day	
Trademark Search Library:			
Filing Drawings	21	16	
Filing Reg. Certificates	3	4	
Assignments:			
Patents	25	17	
Trademarks	25	15	
Avg. Days from Issue Fee Payment to Issue Date	90-100	89	
Patent Official Gazette:			
In Bookstore	Issue Date	On schedule	
Mailed	Issue Date	On schedule	
Patent Grants Mailed	Issue Date	Avg. 1 day late	
Patent Copies Available	Issue Date	Avg. 6 days late	Problems should be resolved by end of May.
Trademark Copies Available	Issue Date	Avg. 3 days late	Due to GPO printing contractor.
Trademark Official Gazette:			
In Bookstore	Issue Date	On schedule	
Mailed	Issue Date	On schedule	
Trademark Regs. Mailed	Issue Date	Avg. 4 days late	Due to GPO printing contractor.

*Figures include mail processing and delivery time.

Trademark Search Room

Effective Apr. 2, 1984, responsibility for the Trademark Search Room was transferred from Trademarks to Administration's Office of Patent and Trademark Services. This is the same Office currently responsible for the Patent Public Search Room.

The Trademark Search Room had been in Trademarks because it directly supported the Trademark examination process. With the implementation of an automated Trademark Search system this summer, examiners will no longer use the Trademark Search Room. It will be solely for the public.

Apr. 2, 1984.

THERESA A. BRELSFORD,
Assistant Commissioner
for Administration.

PATENT NOTICES

Certificates of Correction for the Week of Apr. 24, 1984

3,378,284
3,635,979
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4,432,679
4,434,481

Disclaimers

Des. No. 261,823.—*Robert J. Gamm,* Olivette, Mo. ATHLETIC SHOE WITH POCKET. Patent dated Nov. 17, 1981. Disclaimer filed May 16, 1983, by the assignee, *Kangaroos U.S.A., Inc.*

The term of this patent subsequent to Nov. 10, 1995 has been disclaimed.

3,812,184.—*Robert J. Theissen,* Westfield, N.J. 2-NITRO-5(HALOPHENOXY) BENZOYL CHLORIDES. Patent dated May 21, 1974. Disclaimer filed Feb. 22, 1984, by the assignee, *Rhone-Poulenc Agrochimie.*

Hereby enters this disclaimer to claims 2, 4 and 5 of said patent.

3,873,302.—*Robert J. Theissen,* Westfield, N.J. HERBICIDAL USE AND COMPOSITION OF HALOPHENOXY BENZOIC CHLORIDES. Patent dated Mar. 25, 1975. Disclaimer filed Feb. 22, 1984, by the assignee, *Rhone-Poulenc Agrochimie.*

Hereby enters this disclaimer to claims 2, 4, 5, 7, 9 and 10 of said patent.

4,296,559.—*Robert J. Gamm,* Olivette, Mo. ATHLETIC SHOE POCKET. Patent dated Oct. 27, 1981. Disclaimer filed May 16, 1983, by the assignee, *Kangaroos U.S.A., Inc.*

The term of this patent subsequent to Nov. 10, 1995 has been disclaimed.

4,379,054.—*William M. Ayers,* Duncan, Okla. OPEN SEA SKIMMER BARGE. Patent dated Apr. 5, 1983. Disclaimer filed Dec. 12, 1983, by the assignee, *Halliburton Co.*

Hereby enters this disclaimer to claims 1 through 4 of said patent.

4,384,350.—*Yong K. Lee,* Mountain View and *Joseph R. Domitrowich,* San Martin, Calif. MOS BATTERY BACKUP CONTROLLER FOR MICROCOMPUTER RANDOM ACCESS MEMORY. Patent dated May 17, 1983. Disclaimer filed Jan. 30, 1984, by the assignee, *Fairchild Camera and Instrument Corp.*

Hereby enters this disclaimer to claims 1–3 of said patent.

4,416,659.—*Barbara E. Simpson,* and *Norman A. Gervais,* Indianapolis, Ind. SUSTAINED RELEASE CAPSULE FOR RUMINANTS. Patent dated Nov. 22, 1983. Disclaimer filed Mar. 2, 1984, by the assignee, *Eli Lilly and Co.*

Hereby enters this disclaimer to all claims of said patent.

Dedications

4,029,923.—*Jeffry R. Meyer,* Pittsburgh and *Sylvester J. Dropik,* Jeannette, Pa. MAGNETIZING CURRENT SWITCH. Patent dated June 14, 1977. Dedication filed July 21, 1982, by the assignee, *Westinghouse Electric Corp.*

Hereby dedicates to the Public the entire term of said patent.

4,370,953.—*Peter G. Van de Walker,* Lake Villa, Ill. CYLINDER TWO STROKE ENGINE WITH TORSIONAL RESONANCE CONTROL. Patent dated Feb. 1, 1983. Dedication filed Dec. 23, 1983, by the assignee, *Outboard Marine Corp.*

Hereby dedicates to the Public the entire term of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF March 17, 1984

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-28-82
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	5-12-76
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	1-06-83
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	7-26-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-16-76
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	3-22-82
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	6-01-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	7-06-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	7-19-82
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	1-26-81
DESIGN, GROUP 290—KENNETH L. CAGE, Director Industrial Arts; Household, Personal and Fine Arts.	1-14-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	3-16-82
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—STEPHEN G. KUNIN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	8-03-82
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	11-04-76
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-20-81
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	7-23-81

Expiration of patents: The patents within the range of numbers indicated below expire during March 1984, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 3,307,200 to 3,311,920, inclusive
Plant Patents	Numbers 2,723 to 2,729 inclusive

REISSUES

APRIL 24, 1984

Matter enclosed in heavy brackets **[ ]** appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,561

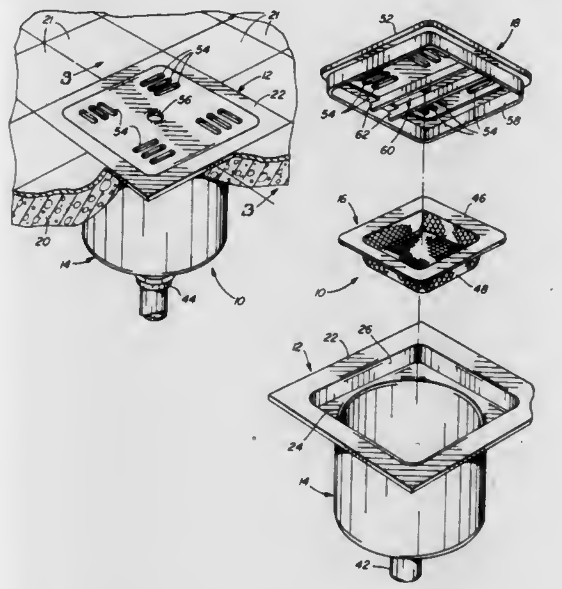
LARGE CAPACITY DRAINAGE RECEPTACLE

C. Ames Thompson, 3024 W. Weldon Ave., Phoenix, Ariz. 85017

Original No. 4,321,713, dated Mar. 30, 1982, Ser. No. 207,400, Nov. 17, 1980. Continuation-in-part of Ser. No. 93,310, Nov. 13, 1979, abandoned. Application for reissue Jul. 12, 1982, Ser. No. 397,012

Int. Cl.^{3} E03C *1/26*

U.S. Cl. 4—290 **19 Claims**



11. A large capacity drainage receptacle for mounting in a surface to be drained comprising:

a. a mounting flange for mounting flush in the surface to be drained and being formed of thin-wall metal, said mounting flange having an upper flange defining a central opening, an endless substantially vertical web integrally depending from the inner edge of said upper flange and a recessed flange extending integrally inwardly from the bottom dge of said web and defining a central opening; and

b. a receptacle body formed of thin-wall metal depending from the downwardly facing surface of said recessed flange so as to be coaxial with the central opening defined thereby, said receptacle body having a closed bottom with a drainage outlet opening formed centrally therein.

Re. 31,562

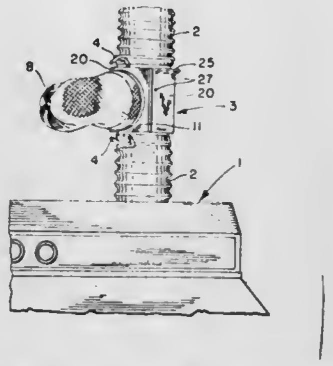
HEATING VENT FOR ELECTRIC CLOTHES DRYER

James D. Bede, Bay Village, Ohio, assignor to Bede Industries, Inc., Cleveland, Ohio

Original No. 4,156,973, dated Jun. 5, 1979, Ser. No. 839,572, Oct. 5, 1977. Application for reissue Jun. 3, 1981, Ser. No. 270,420

Int. Cl.^{3} F26B *19/00;* **F16K** *1/16*

U.S. Cl. 34—86 **8 Claims**



4. A heating vent for a clothes dryer comprising:

a housing adapted to be interposed in the dryer vent hose, said housing having

a first nipple forming an inlet passage to receive exhaust air from the dryer through a first section of hose clamped thereto, a irected indoors; ing an outdoor outlet passage for selective outdoor venting of said exhaust air through a second section of vent hose clamped thereto, and

a third lateral nipple forming a lateral outlet passage for selective indoor venting of such exhaust air;

a sock-like filter mountable on the downstream end of said third

a valve member pivotally connected in said housing for selective arcuate movement to a first position to close said lateral outlet passage thereby to provide fluidic communication between said first and second nipples for outdoor venting or alternatively to a second position to close the outdoor outlet passage thereby to provide fluidic communication between said first nipple and said third lateral nipple for indoor venting;

pivotal operating means connected to said valve member and extending exteriorly of said housing having

a handle member thereon extending generally radially of the pivot axis of said valve member along one side of said housing with pivotal movement of said handle member arcuately swinging the valve member between its first and second positions;

angularly spaced detent means on said one side of said housing cooperating with and selectively holding said handle means at opposite ends of its pivotal movement to apply a torque load on said valve member positively to close the lateral outlet passage or the outdoor outlet passage, the angular spacing of said detent means being greater than the angle of arcuate movement for the valve member between its two positions to apply said torque load to said valve member positively to bias the valve member into either its first or second closing position when the handle means is held by the detent means at the corresponding position of the handle means.

Re. 31,563

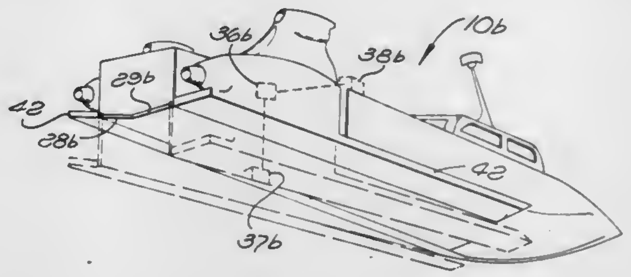
HYDRO-SKI CRAFT WITH LONGITUDINAL FLAPS

Ernest G. Stout, Glendale, and Francis L. Thornburg, Canoga Park, both of Calif., assignors to Lockheed Corporation, Burbank, Calif.

Original No. 4,067,286, dated Jan. 10, 1978, Ser. No. 550,564, Feb. 18, 1975. Application for reissue May 4, 1982, Ser. No. 374,663

Int. Cl.^{3} B63B *1/20*

U.S. Cl. 114—283 **24 Claims**



1. A hydro-ski craft comprising:

a hull;

powered means for advancing said hull in a predetermined forward direction along a body of water;

means carried by said hull forming a downwardly facing planing surface adapted to engage and plane along the upper surface of said body of water;

an auxiliary planing element having a planing surface and mounted for movement between an active position in which said planing surface thereof is located to contact and plane along the upper surface of a body of water and supplement the load supporting effect of said first mentioned planing surface, and an upwardly retracted position; and

a spray dam attached to and movable with said auxiliary planing element between a *dam* retracted position and [an active] *a dam active* position in which it [is located] *protrudes downwardly relative to its said dam retracted position* to block upward movement of water when said auxiliary planing element is in its *said upwardly* retracted position.

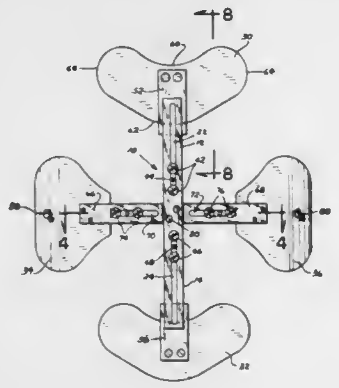
Re. 31,564
HYPEREXTENSION BACK BRACE

David A. Hendricks, c/o Cash Manufacturing 2303 E. Washington, Bloomington, Ill. 61701

Original No. 4,173,973, dated Nov. 13, 1979, Ser. No. 920,937, Jun. 30, 1978. Application for reissue Nov. 12, 1981, Ser. No. 320,835

Int. Cl.^{3} A61F *5/02*

U.S. Cl. 128—78 **18 Claims**



11. A hyperextension brace including
a main cruciform structure adapted to overlie the anterior thoracic area of the human body having
a rigid vertical arm secured to a rigid horizontal arm,
upper and lower arms selectively movable and securable throughout a given range to upper and lower ends of said vertical arm,
right and left arms selectively movable and securable throughout a given range to the right and left ends of said horizontal arm,
a sternum pad attached to the free end of said upper movable arm,
a pubic pad attached to the free end of said lower movable arm,
a right side pad attached to the free end of said right movable arm,
a left side pad attached to the free end of said left movable arm, said right and left side pads adapted to be positioned at the front of the sides of the body,
a back pad for contact with the back of the body,
right and left means for attaching the back pad to the right and left side pads,
a plurality of means for securing the movable parts in individually selected positions whereby said brace can be adjusted to fit all standard adult sizes.

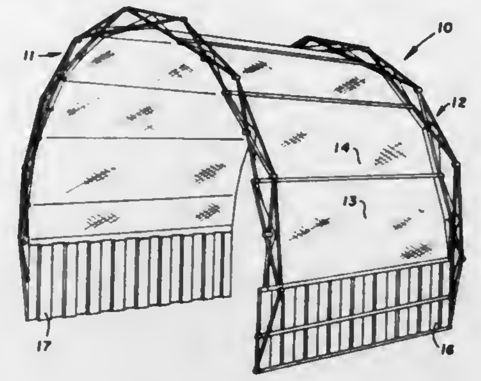
Re. 31,565
PORTABLE SHELTER

Bryan J. Beaulieu, Burnsville, Minn., assignor to Rupp Industries, Inc., Burnsville, Minn.

Original No. 4,156,433, dated May 29, 1979, Ser. No. 899,232, Apr. 24, 1978. Continuation-in-part of Ser. No. 807,144, Jun. 16, 1977, abandoned. Application for reissue May 26, 1981, Ser. No. 267,430

Int. Cl.^{3} A45F *1/16;* **E04B** *1/32, 1/347*

U.S. Cl. 135—102 **16 Claims**



12. In a collapsible shelter means having a pair of collapsible means disposed at opposed ends thereof and supporting panel means extending therebetween, said collapsible frame means comprising:

(a) a lazy-tong structure having first and second inter-connected linkage assemblies which in erect disposition form alternate inwardly and outwardly disposed structural spans, said inwardly disposed spans comprising rigid members pivotally coupled at mutually adjacent ends to neighboring rigid members to form a generally continuous semipolygon structure which in erect design is enclosed at the top and open at the bottom, each of said inwardly disposed span systems being interconnected at junction points disposed generally midway of the length thereof to longitudinally extending rails for spacing said opposed collapsible frame means one from the other;

(b) said outwardly disposed structural spans comprising a plurality of spanned apart apices; and

(c) strut brace means forming releasable outer compression braces between successive apices of said outwardly disposed spans, each said strut brace means comprising a rigid unitary strut brace having a free end and an end pivotally connected to one of said apices by a strut brace pivotal joint having a strut engaging surface for engagement by the free end of an adjacent strut brace, the length of said strut brace means being substantially equal to the length of the span between successive apices.

Re. 31,566
COOLING STRUCTURE FOR A METALLURGICAL FURNACE

Karl-Heinz Langlitz, Mülheim (Ruhr); Wolfgang Jansa, Moers-Asberg, both of Fed. Rep. of Germany; Karl H. Mahringer, deceased, late of Duisburg-Hamborn, Fed. Rep. of Germany; by Christine Mahringer, heir, and by Wolfgang L. Mahringer, heir, both of Geldern, Fed. Rep. of Germany, assignors to Mannesmann Demag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Original No. 3,601,379, dated Aug. 24, 1971, Ser. No. 819,322, Apr. 25, 1969. Application for reissue Aug. 23, 1979, Ser. No. 69,189

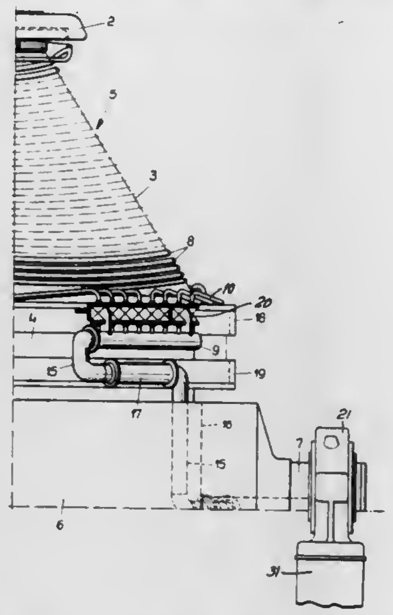
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1968, 1758562

Int. Cl.^{3} C21C *5/46*

U.S. Cl. 266—192 **11 Claims**

1. A metallurgical vessel construction, comprising a vessel having an exterior wall which is subjected to high temperatures, a plurality of [groups of] *individual discrete* coolant conduits positioned at a plurality of locations over said wall *each defining a discrete fluid flow path for coolant extending* to

cover at least a *widely distributed* portion of a defined area of said wall for cooling said wall, [a separate] coolant supply *means* for each conduit, [each of said groups including a plurality of separate coolant conduits and] each conduit being connected *respectively* to [a respective one of] said coolant supply *means,* [and] said conduits [of each of said groups] being located alongside each other in each location so that there is always one of said [separate] *discrete* coolant conduits located adjacent each other [so] *to* [that both] cover [and] adjacent [area] *areas* of said wall, [whereby at least one of said conduits will be effective in each groups even though another] *and valve means for enabling said coolant conduits to be individually shut off to terminate fluid flow therethrough, said conduits being arranged so that if any* of said conduits is ruptured or disconnected from its coolant supply, *any one of the other of said conduits through which fluid flow is maintained will provide a cooling effect which is widely distributed through the area of said wall to be cooled to compensate for the loss of conduits through which fluid flow is terminated.*



Re. 31,567
AUTOMATIC CONTROL INDICATION DEVICE IN AN AUTOMATIC CONTROL TYPE ELECTRONIC FLASH UNIT

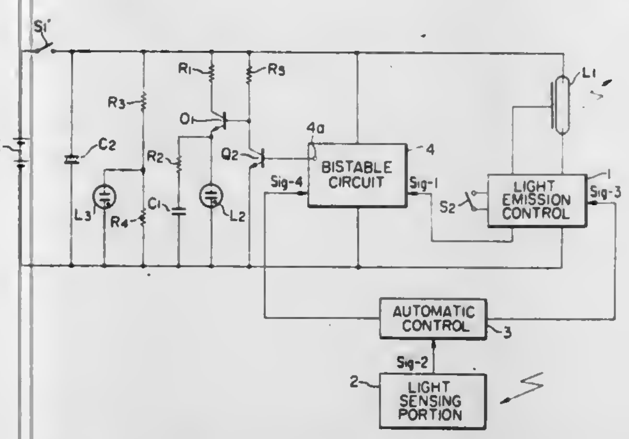
Hiroshi Hasegawa, Yokohama, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Original No. 3,999,193, dated Dec. 21, 1976, Ser. No. 595,420, Jul. 14, 1975. Application for reissue Jul. 26, 1982, Ser. No. 401,536

Claims priority, application Japan, Jul. 20, 1974, 49-82751

Int. Cl.^{3} G03B *7/16*

U.S. Cl. 354—413 **5 Claims**



6. An automatic control type electronic flash unit which has a light-sensing element for sensing reflection of light generated by a flashlight discharge tube with the aid of charging current of a capacitor and which automatically discontinues light emission of the flash light discharge tube when the light-sensing element has sensed a predetermined quantity of light, said unit comprising:
an indication element;
means for detecting a voltage of said capacitor;
first operative means for energizing said indicating element when said detecting means detects that said voltage has reached a predetermined value enough to ignite said flash discharge tube;
first signal generating means for generating a first signal when said light-sensing element has sensed a predetermined quantity of light; and
second operative means for receiving said first signal as input and energizing intermittently said indicating element after generation of flashlight of said flashlight discharge tube and before energization of said indicating element upon detection of said voltage.

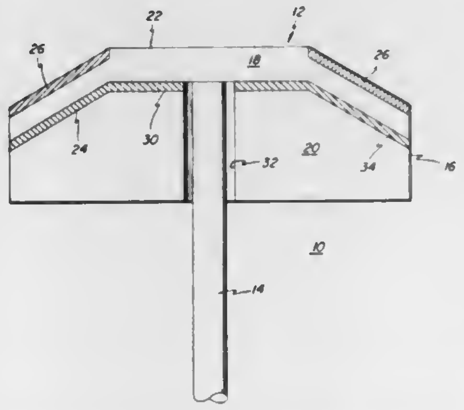
Re. 31,568
COMPOSITE SUBSTRATE FOR ROTATING X-RAY ANODE TUBE

Thomas M. Devine, Jr., Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Original No. 4,145,632, dated Mar. 20, 1979, Ser. No. 788,245, Apr. 18, 1977. Application for reissue Apr. 5, 1982, Ser. No. 365,079

Int. Cl.^{3} H01J *35/08*

U.S. Cl. 378—125 **6 Claims**



1. A composite substrate *for an anode target* for use in a rotating x-ray anode tube comprising

a first member *having a saucer-like configuration and being adapted to receive an anode target on the protruding surface thereof, the material of said first member being selected from the group consisting of tungsten, an alloy of tungsten, molybdenum and an alloy of molybdenum,*

a second member [comprising] *having surface configuration contoured to match the recessed surface of said first member, the material of said second member being* graphite, and
[a layer of metal consisting essentially of a non-carbide forming material joining the first member to the second member,]
[the metal is a material in which the solubility of carbon therein is practically zero up to a temperature of about 1300° C. but in which from 1 to 4 atomic weight percent of carbon is soluble therein at the temperature of joining the first member to the second member, and]
[the metal is soluble in the material of the first member.]
a metallic layer extending between and joining said first and second members; said metallic layer consisting of a barrier metal lamina flanked on opposite sides by first and second brazed regions; the metal constituting said barrier metal lamina providing an effective barrier against carbon diffusion and being selected from the group consisting of rhodium, osmium, ruthenium, palladium, platinum and an alloy of platinum and chromium; said first and second brazed regions consisting of alloys formed with the metal selected for said barrier metal lamina; said first brazed region, in which the metal selected for said barrier metal lamina has reacted with carbon, extending between one side of said barrier metal lamina and said second member, and
said metallic layer having a thickness of at least ¼ mil.

PLANT PATENTS

GRANTED APRIL 24, 1984

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,222

FLORIBUNDA ROSE PLANT—WILBLANK VARIETY

J. Benjamin Williams, Silver Springs, Md., assignor to Conard-Pyle Company, West Grove, Pa.

Filed Jun. 30, 1982, Ser. No. 393,873

Int. Cl.^{3} A01H *5/00*

U.S. Cl. Plt.—23 **1 Claim**

1. A new and distinct variety of Floribunda rose plant, substantially as illustrated and described, wherein:

(a) from the physical standpoint the plant with light green adult wood has a low sometimes irregular bushy growth habit, forms dark green shiny leaves, and forms double flowers which are white with a bright yellow center; and

(b) from the biological standpoint the plant has vigorous and sometimes regular vegetation, exhibits copious and repeated florescence, exhibits the ability of its flowers to clean well, and exhibits the ability to grow well in either an outdoor or greenhouse environment.

5,223

PEACH TREE

James Friday, Coloma, Mich., assignor to Hilltop Orchards & Nurseries, Inc., Hartford, Mich.

Filed Dec. 21, 1981, Ser. No. 333,122

Int. Cl.^{3} A01H *5/03*

U.S. Cl. Plt—43 **1 Claim**

1. A new and distinct peach tree substantially as shown and described.

5,224

LEUCOTHOE PLANT—ZEBEKOT VARIETY

Alex J. Zebehazy, Perry, Ohio, assignor to Conard-Pyle Company, West Grove, Pa.

Filed Jun. 22, 1981, Ser. No. 276,061

Int. Cl.^{3} A01H *5/00*

U.S. Cl. Plt.—54 **1 Claim**

1. A new and distinct variety of Leucothoe, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of:

(a) a dense, low-growing symmetrical habit of growth which is more low-growing and compact than that of the *Leucothoe fontanesiana* and *Leucothoe axillaris* parents, as well as the Zeblid and Zebonard varieties of the same cross,

(b) highly unique winter coloration which ranges from emerald green to a very slightly bronzed shade of green making the new variety an outstanding source of color in the landscape year-round,

(c) outstanding tolerance to shade making the new variety an important addition to that small group of plants that does well in reduced sunlight,

(d) the substantial absence of dead branches which are commonly found with *Leucothoe fontanesiana,*

(e) increased tolerance to cold when compared to *Leucothoe axillaris,* as is evidenced by the fact that the new variety has survived temperatures of –15° F. with little to no damage, whereas *Leucothoe axillaris* is listed as hardy to 0° F., and

(f) foliage which is considerably narrower and more lanceolate than that of the Zeblid and Zebonard varieties of the same cross.

PATENTS

GRANTED APR. 24, 1984

ERRATA

For CLASS	See PATENT NO.
346–208	4,444,844

PATENTS

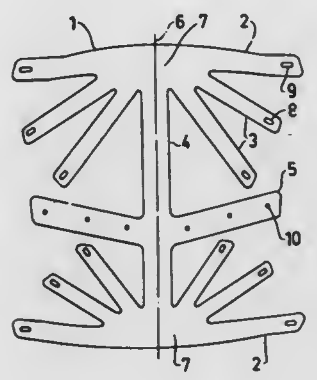
GRANTED APRIL 24, 1984

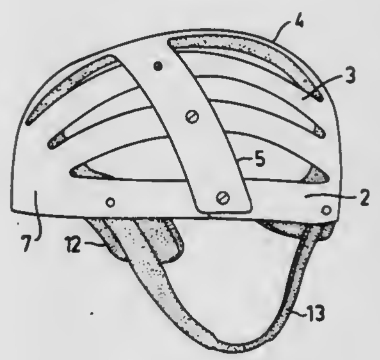
GENERAL AND MECHANICAL

4,443,891

BICYCLE HELMET

Rolf Blomgren, 131 Lövängsvägen, Täby, Sweden (S-130), and Ove Johnson, 68 Gotlandsgatan, Stockholm, Sweden (S-116)
PCT No. PCT/SE81/00151, 371 Date Jan. 15, 1982, 102(e) Date Jan. 15, 1982, PCT Pub. No. WO81/03267, PCT Pub. Date Nov. 26, 1981
PCT Filed May 21, 1981, Ser. No. 341,995
Claims priority, application Sweden, May 22, 1980, 8003831
Int. Cl.^{3} A61F *9/02*
U.S. Cl. 2—414 **5 Claims**





1. A helmet, intended for cyclists, skateboard runners, roller skaters and other runners moving by their own efforts, comprising a shell made of a flexible and hard plate-shaped material, the shell in its plane generally having the form of an I with extended cross-pieces and with tips attached so as to radiate between said cross-pieces, the tips extending from the connection between the cross-pieces and a stem of the I, lateral tips attached at approximately the center of the stem to both sides, the cross-pieces and tips being provided with attachment means such that free ends of one cross-piece after a bending of the stem can be connected to free ends of the other cross-piece, free ends of the tips being attached to suitable holders on the lateral tips, and damping means of plate-shaped material formed substantially similar to the stem and the lateral tips, said damping means being placed inside of the completely shaped shell.

4,443,892

HELMET OR HAT AND SUPPORT MEANS

Ralph C. Burgin, West Point, Iowa, assignor to Dadant & Sons, Inc., Hamilton, Ill.
Filed Mar. 30, 1982, Ser. No. 363,620
Int. Cl.^{3} A42B *3/00*
U.S. Cl. 2—418 **5 Claims**

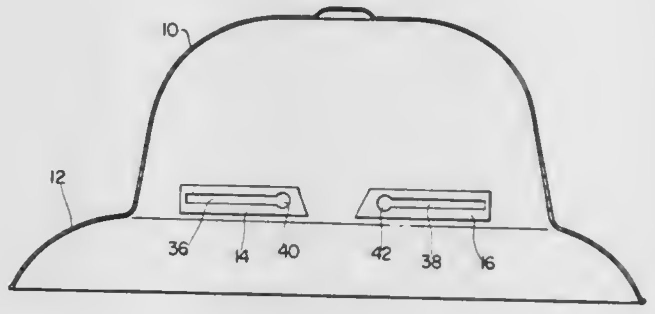
1. A dome-shaped plastic hat which is adapted to be supported a spaced distance away from the heat by a support structure that comprises:

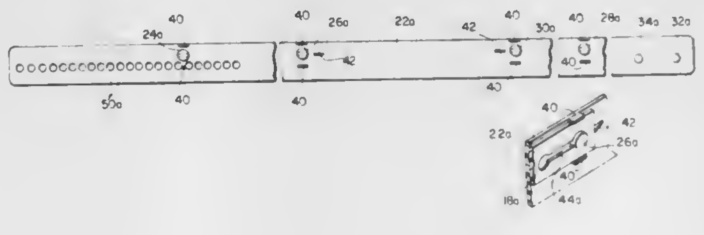
(a) a first pair of hat band supports located on one portion of the lower interior side of the hat, said hat band supports having closely adjacent inner ends that are formed as an integral part of the plastic hat and elongated sections that extend generally outwardly from said inner ends into the interior of the hat in a generally diverging relationship with respect to one another, each of said diverging elongated sections containing an elongated slot which extends over a substantial portion of its length,

(b) a second pair of hat band supports located on an opposite portion of the lower interior side of the hat at a point spaced away from said first pair of hat band supports, said second pair of hat band supports having the same construction and arrangement as said first pair of hat band supports, and

(c) a hat band in the form of a single strip of pliable plastic which is formed into a generally ring-like configuration with the end portions thereof in generally overlapping relationship, said hat band comprising

(1) a first end portion that contains a plurality of spaced apart apertures,





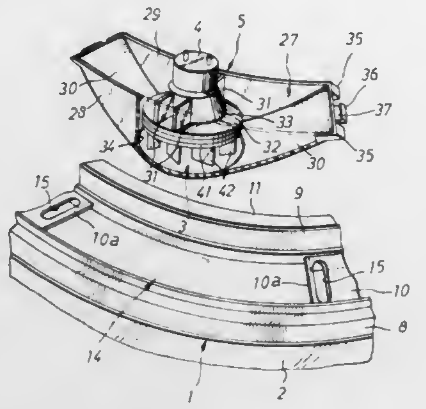
(2) a second end portion that contains at least one upstanding projection which is adapted to engage one of said spaced apart apertures depending upon the hat size of the wearer, and

(3) an intermediate portion extending between said first and second end portions, said intermediate portion being provided with four aligned spaced apart outwardly extending studs that slideably engage in respective elongated slots in said first and second pairs of hat band supports, the inner two studs having positioned between them two stop members adapted for limiting the movement of the hat band relative to the outwardly extending free end of one hat band support located on one side of the hat and the outwardly extending free end of a hat band support located on the opposite side of the hat.

4,443,893

GOGGLES FOR SKI USE

Kenji Yamamoto, Higashi-Osaka, Japan, assignor to Yamamoto Kogaku Co., Ltd., Osaka, Japan
Filed Jul. 31, 1981, Ser. No. 289,094
Claims priority, application Japan, Aug. 5, 1980, 55-111574[U]
Int. Cl.^{3} A61F *9/02*
U.S. Cl. 2—436 **3 Claims**



1. A sport goggle comprising:

a frame of relatively flexible substantially impervious material having an inner edge adapted to contact the face of the wearer and an outer edge in which a lens is mounted, said frame being formed with a plurality of vent holes in its periphery and an opening in its upper portion, said frame and lens forming an inner space about said wearer's face;

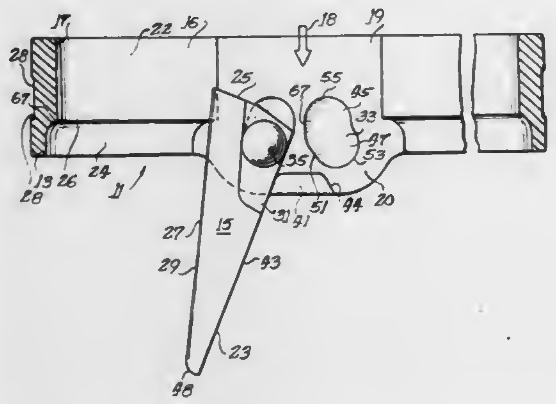
a mounting stand of relatively rigid material formed with a ventilating opening in its lower portion and an outwardly flared opening in its upper portion, said mounting stand being detachably positioned with its open upper portion in said opening of said frame and projecting into said inner space to form a duct between said inner space and said opening of said frame and

a fan disposed within said mounting stand adjacent to said ventilating opening, whereby operation of said fan will forceably withdraw air from said inner space through said ventilating opening and said duct and thereby cause fresh air to be drawn into said inner space through said vent holes.

4,443,894

HEART VALVE WITH DOG-LEG PIVOT

Jerome J. Klawitter, Austin, Tex., assignor to Hemex, Inc., Austin, Tex.
Filed Apr. 12, 1982, Ser. No. 367,298
Int. Cl.^{3} A61F *1/22*
U.S. Cl. 3—1.5 **21 Claims**



1. A heart valve prosthesis comprising

an annular valve body having an interior wall forming a central passageway therethrough of generally circular cross section,

a pair of leaflets proportioned to block blood flow through said passageway when said leaflets are disposed in a closed position,

each of said leaflets having an arcuate major edge which abuts said valve body in the closed position and a substantially planar minor edge,

means which pivotably interconnects each of said leaflets and said valve body for relative pivotal movement between the closed position and an open position, which interconnecting means includes pairs of depressions formed in generally opposite locations in said interior wall and pairs of guides extending laterally from each of said leaflets,

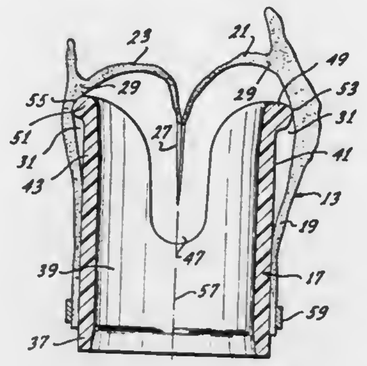
said depressions each having an upstream section which is aligned substantially parallel to the centerline of said central passageway and a downstream section which connects to said upstream section and angles outward from the point of connection, and

arcuate seat means formed in said heart valve body having surfaces facing downstream with respect to the normal direction of flow of blood through said passageway, said seat means being located relative to upstream ends of said depressions such that, upon the beginning of backflow, said leaflet guides first move from the downstream ends of said downstream sections to the ends of said upstream sections and thereafter finally move downstream within said upstream sections to intermediate locations when said leaflets engage said seat means, so that the force created by backflow blood pressure between said guides and the walls of said depression is unloaded when said leaflets reach said closed position, whereby wear at the location of said interconnecting means is minimized.

4,443,895

LOW-PRESSURE FIXATION OF VALVULAR TISSUE INTENDED FOR IMPLANTATION

Ernest Lane, Huntington Beach, Calif., assignor to American Hospital Supply Corporation, Irvine, Calif.
Division of Ser. No. 275,749, Jun. 22, 1981, Pat. No. 4,372,743. This application Jul. 9, 1982, Ser. No. 396,629
Int. Cl.^{3} A61F *1/04;* **C14B** *1/26*
U.S. Cl. 3—1.5 **5 Claims**



1. An insert for use in restraining an animal heart valve against distortion during fixation, said insert comprising:

a tubular peripheral wall open at both ends and defining a generally axial passage;

said peripheral wall having three generally axially extending projections, each of said projections terminating axially outwardly in a curved end surface as viewed in side elevation, each adjacent pair of said projections being circumferentially spaced by a recess;

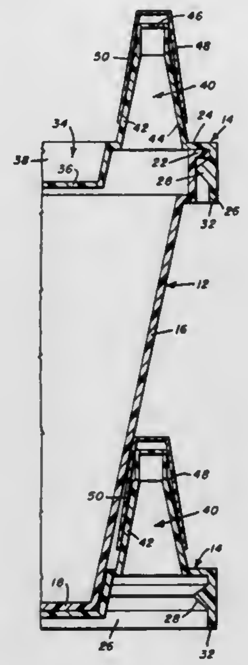
each of said projections having an outer tissue supporting surface closely adjacent its free end, the outer tissue supporting surface of one of said projections lying more radially outwardly of the axis of said passage than the outer tissue supporting surfaces of the other two projections whereby said outer tissue supporting surfaces are arranged eccentrically about the axis of said passage; and

at least the exposed surface of said insert being constructed of a biocompatible material.

4,443,896

STERILIZED URINE SPECIMEN CONTAINER

Michael Porat, 52 Hamitnadev St., Affeka Tel-Aviv, Israel (69690), and Amir Porat, 18 Highland Dr., N. Caldwell, N.J. 07006
Continuation of Ser. No. 362,556, Mar. 26, 1982, abandoned. This application Sep. 20, 1983, Ser. No. 534,110
Claims priority, application Israel, Apr. 6, 1981, 62591
Int. Cl.^{3} A47K *11/00*
U.S. Cl. 4—144.1 **9 Claims**

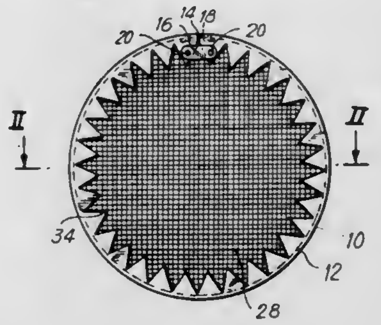


1. A urine specimen collecting unit including a cup and a separate lid selectively sealed to said cup, the cup being of a generally conical configuration tapering from a closed base end to a larger diameter open upper end, the lid comprising a central depression configured to receive the closed base end of the cup for a stacking of lid-closed cups, an annular rim surrounding said depression, a skirt depending peripherally from said rim for engaging about the open upper end of the cup upon a positioning of the lid thereover, said central depression being receivable centrally within the open upper end of the cup in inwardly spaced relation to the cup wall, and a spout communicating through said rim and projecting upwardly from said rim to lie adjacent the wall of a superimposed cup exteriorly thereof and within the confines of an imaginary cylinder surrounding said rim.

4,443,897

ANTI-CLOG SINK DEVICE

Anderson Austin, 2654 Broward Rd., Jacksonville, Fla. 32218
Filed Jul. 15, 1982, Ser. No. 398,661
Int. Cl.^{3} E03C *1/26*
U.S. Cl. 4—291 **1 Claim**

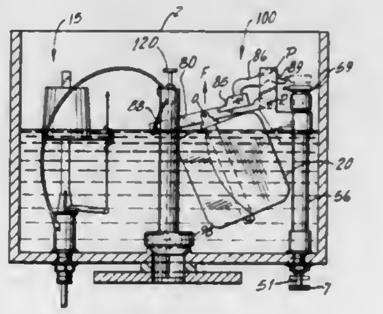


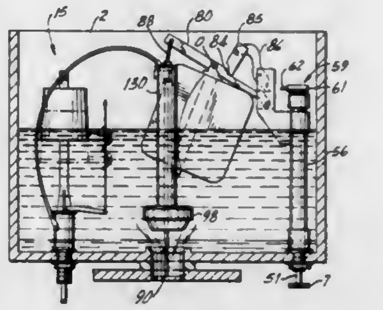
1. An anti-clog sink device including a support member, said support member having ends, a bridging member, said support member forming a cylindrical shape and having its ends joined by said bridging member, said bridging member secured to said support member by pins, said bridging member having a thickness and disposed inwardly of said cylindrical shape, a plurality of teeth, said teeth narrowing in width inward of said cylindrical shape, and said teeth being integral with one end of said support member and extending inwardly of said cylindrical shape in a plane perpendicular to the cylindrical axis of said support member, said teeth forming a support surface, a screen, said screen adapted to be seated on said support surface, said screen having a diameter greater than the cylindrical shape of said support member, said screen at its outer periphery having a rim at substantially right angles thereto and extending adjacent the inner surface of said support member with said rim adjacent the wall of said support member, a flexible retainer said retainer adapted to tightly fit inwardly of said support member biasing said rim against said support member, said thickness of said bridging member adapted to retain said screen and retaining member from falling free of the open end of said support member, a second bridging member joining the ends of said support member at two adjacent teeth and secured by pins, and a handle; said handle being semi-circular and having a span equal to the diameter of said support member; and said handle removably and rotatably engagable in bore holes in said support member.

4,443,898

AUTOMATIC TOILET FLUSHING DEVICE

Lazaro Aguero, Dade County, Fla.
Continuation-in-part of Ser. No. 179,766, Aug. 20, 1980, Pat. No. 4,329,745. This application May 7, 1982, Ser. No. 375,865
Int. Cl.^{3} E03D *5/04;* **H01H** *13/52*
U.S. Cl. 4—313 **2 Claims**





1. An automatic flushing device for toilets having a flush valve operable for releasing water from a flush tank to a toilet bowl provided with a seat hinged upon the bowl for pivotal movement around a horizontal axis at the rearward end of the seat, said device comprising, in operative combination:

a. an elongated arm secured to said seat and extending rearwardly underneath said flush tank;

b. means for reciprocating pivotal movements of said seat, and transmitted through said arm, along a vertical axis;

c. means for spring biasing said means for reciprocating pivotal movements of said seat so as to urge said arm slightly downwardly thereby lifting said seat slightly from said bowl;

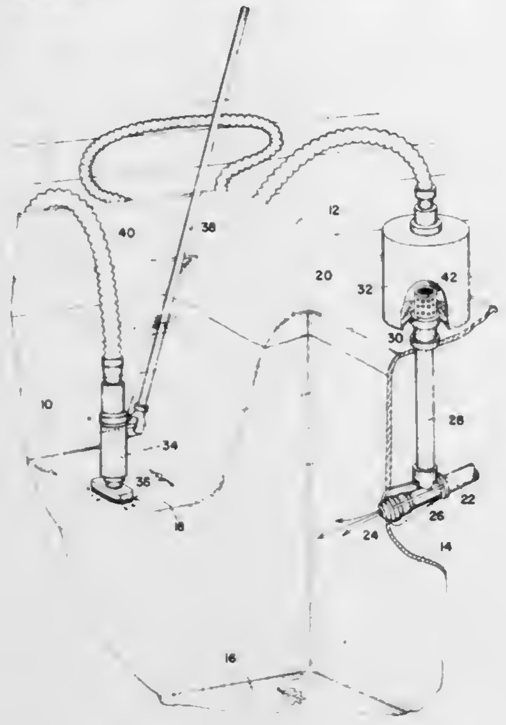
d. floating means for actuating said flush valve within predetermined water levels in said tank;

e. tripping means disposed so as to prevent said floating means from actuating said flush valve and responsive to the relative positions of said means for reciprocating for triggering its tripping function and wherein said tripping means includes an actuating link having a cam termination in cooperation with said means for reciprocating the pivotal movements of said seat and a shoe member hingedly connected to said actuating link and adapted to prevent the actuation of said flush valve by said floating means until said tripping means is actuated.

4,443,899
VACUUM CLEANING SYSTEM FOR A THERAPEUTIC TUB

Bruce R. Johnson, Petaluma, Calif., assignor to Jandy Industries, San Rafael, Calif.

Filed Dec. 20, 1982, Ser. No. 451,417
Int. Cl.^{3} E04H *3/20;* B08B *9/08*
U.S. Cl. 4—490 **4 Claims**



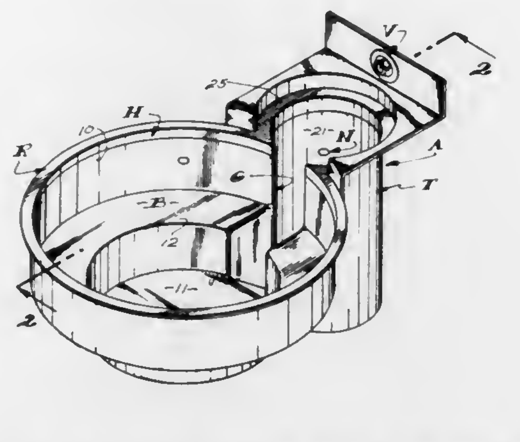
1. A vacuum cleaning system for a therapeutic tub;
said tub having a water conduit terminating in at least one jet nozzle mounted in a side wall thereof;
a restriction in said conduit to produce a high velocity, low pressure zone;
an upright air duct connected to said conduit at said low pressure zone; and
means forming an air intake opening at the upper end of said air duct;
said vacuum cleaning system comprising:
a vacuum head to be moved over the inner surface of said therapeutic tub;
an outlet port in said vacuum head;
means forming a flow passage from the bottom of said head to said outlet port;
a hose connected at one end thereof to said vacuum head outlet port; and
means on the other end of said hose to seal around said upper end of the air duct.

4,443,900
HYDROTHERAPY TANK

Willijan P. Remeyer, 11791 Loara St., Suite B, Garden Grove, Calif. 92640

Filed Feb. 3, 1983, Ser. No. 445,087
Int. Cl.^{3} E04H *3/16, 3/18;* A61H *33/02*
U.S. Cl. 4—492 **11 Claims**

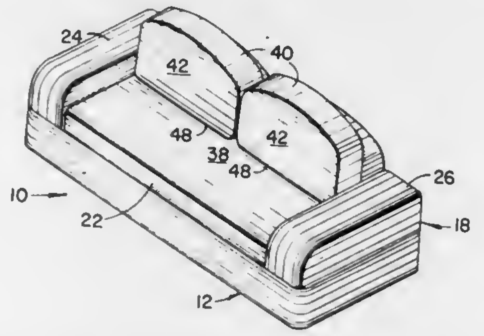
1. In combination, a water container with a substantially horizontal bottom, sides extending substantially upwardly from the bottom and an open top, said container is of sufficient depth and plane area to accommodate and substantially buoyantly support a plurality of people when filled with water; and a hydrotherapeutic massage structure comprising an elongate vertical tank outward of and adjacent to a side of the container and having a substantially horizontal bottom, verical sides and an open top on a plane close to the plane of the open top of the container, an elongate vertical and laterally opening gate substantially coextensive with the vertical extent of the tank establishing communication between the container and the tank and through which one person in the container can move substantially freely into said tank in a substantially upright position, a volume of water in and filling the container, gate and tank to a filled water level near the open tops thereof, the depth of water in the tank is substantially equal to the mean shoulder height of persons for whom the tank is established for use, the sides of the tank extend at least 180° about the central vertical axis of the tank, the gate and the sides of the tank are spaced radially outward from the central vertical axis of the tank a distance greater than the mean radial extent and less than three times the mean radial extent of persons for whom the tank is established for use when such a person is standing substantially upright centrally in the tank, a plurality of nozzles mounted at the sides of the tank in circumferential, radial and vertical spaced relationship about and disposed substantially radially inwardly toward the central vertical axis of the tank, at least one nozzle is positioned in close proximity to and is angularly disposed away from said gate and water recirculating means moving water from the container and the tank and delivering water to the nozzles at high pressure.



4,443,901
CONVERTIBLE SEATING FURNITURE

Jon P. Zimmerman, Spring City, Tenn., assignor to The Sherwood Corporation, Spring City, Tenn.

Filed Apr. 12, 1982, Ser. No. 367,368
Int. Cl.^{3} A47C *17/00*
U.S. Cl. 5—28 **5 Claims**

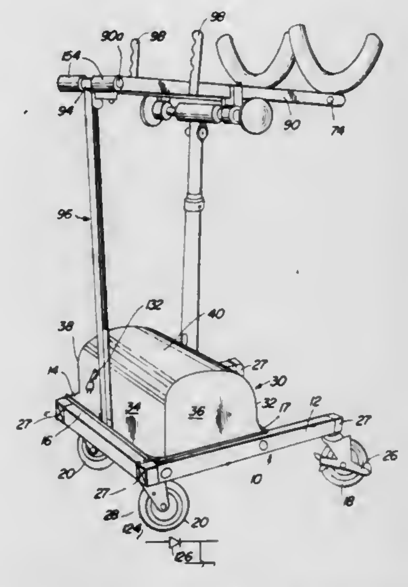


1. A convertible settee-bed comprising a substantially rectangular base in the form of a block for resting on a floor, and an occupant receiving portion normally positioned in overlying relation on the upper surface of the base for forming a settee, said occupant receiving portion including a seat member, an occupant receiving zone defined by a seating surface on the seat member bordered by a pair of spaced apart arm members and at least one back support member, a rear cross member spanning said arm members at the rear of the occupant receiving zone, each of said arm members and rear cross member having an upper surface spaced above the seating surface and at an elevation above the floor substantially equal to twice the elevation that the upper surface of said base is above the floor, said back support member having a thickness between a front and rear surface substantially equal to the difference in elevation between the seating surface and the upper surface of said arm members and rear cross member, a covering separately covering the base member and the occupant receiving portion and hingedly connecting the base member to the seat member and arm members along corresponding front edges, and a covering separately covering the back support member and hingedly connecting the back support member to the seating surface along corresponding edges of the occupant receiving zone, whereby said back support member may be pivoted from a normal substantially upright position with the rear surface abutting the rear cross member to a reclined position with the front surface abutting the seating surface, and the occupant receiving portion may be pivoted thereafter to a position in side-by-side relation with the base member for forming a bed.

4,443,902
INVALID WALKER AND TRANSFER DEVICE

Richard K. Baer, 5576 N. Elston Ave., Chicago, Ill. 60630

Filed Jul. 6, 1981, Ser. No. 280,211
Int. Cl.^{3} A61G *7/10;* A61H *3/00*
U.S. Cl. 5—81 B **12 Claims**



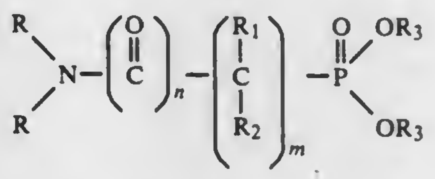
1. A motorized device for raising an invalid from sitting position to standing position and for transporting comprising a frame having elongated, longitudinally-extending side legs, a front leg and a medial leg positioned transversely at one end of said frame and between said side legs, a vertically-extending rod secured medially to said front leg, a transverse rod secured medially to the upper end of said vertical rod, a pair of lever arms pivotally secured at one end to said rod, a cradle pivotally secured medially to said front and medial legs, a reversible motor and gear reducer assembly pivotally secured to said cradle, a housing surrounding said motor and gear reducer, a jackscrew affixed at one end to said gear reducer assembly, a bevel gear secured to the lower end of said jackscrew, a worm gear affixed to and extending from said motor and gear reducer assembly cooperating with said bevel gear, a power rod, a nut affixed therein and cooperating with said jackscrew for extending and contracting said power tube, an enlarged tube affixed at one end to said housing, an interiorly-threaded short tube affixed medially to the upper end of said power rod, a pair of threaded rods positioned one in each end of said short threaded tube, a knob on the free ends of said threaded tube for rotating said rods, a pair of collars affixed one to each link arm forwardly of said first mentioned transverse rod and depending therefrom, said threaded rods supported in said collars, crutch arms with crutch pads on the distal end of said lever arms, a reversible battery, and switch means to establish an electric circuit from said battery to said motor and gear reducer assembly to raise and lower said power tube and said lever arms.

4,443,903
COMPOSITE UPHOLSTERED FURNITURE OR MATTRESS ASSEMBLY WITH FLAME RETARDANT-SMOLDER RESISTANT TEXTILE BACKCOATED FABRIC LAYER

George J. Leitner, Peekskill, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 297,549, Aug. 31, 1981, Pat. No. 4,404,313. This application Apr. 25, 1983, Ser. No. 488,500
Int. Cl.^{3} A47C *27/00;* B32B *7/00, 27/42*
U.S. Cl. 5—459 **12 Claims**

1. A composite upholstered furniture or mattress assembly comprising layers of material wherein the inside surface of the outermost normally smolder prone layer is in intimate contact with a fabric layer backcoated with an effective amount of a flame and smolder retardant composition comprising an aminophosphonate ester of the formula:



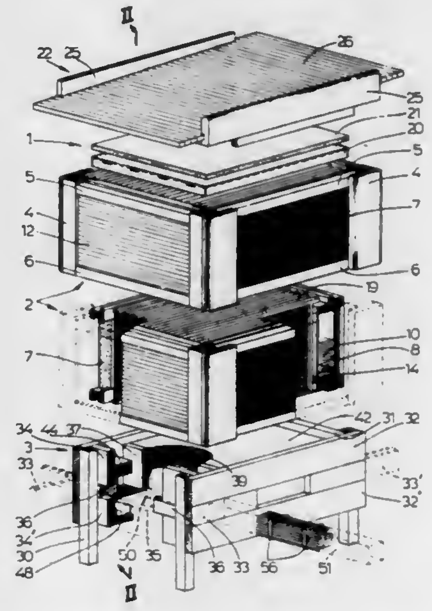
$$\begin{array}{c}R\\ \diagdown\\ \\ \diagup\\ R\end{array}\!N-\left(\begin{array}{c}O\\ \|\\ C\end{array}\right)_n-\left(\begin{array}{c}R_1\\ |\\ C\\ |\\ R_2\end{array}\right)_m-\overset{\overset{\displaystyle O}{\|}}{P}\begin{array}{c}OR_3\\ \\ OR_3\end{array}$$

in combination with a thermosetting nitrogen containing resin and a reactive latex copolymer compound wherein R is an alkyl, hydroxyalkyl or haloalkyl radical containing from 1 to 3 carbon atoms, R_1 and R_2 are alkyl radicals containing 1 to 6 carbon atoms or hydrogen, R_3 which may be the same or different is an alkyl, hydroxyalkyl, haloalkyl, alkoxyalkyl, or hydroxyalkoxyalkyl radical containing from 1 to 6 carbon atoms, the terminus of an alkylene forming a six-membered ring or halogenated analog, the terminus of an alkylene or alkyleneoxyalkylene bonded to a like phosphorus ester group, hydroxypolyoxyalkylene or hydroxy-substituted analogs thereof, n is an integer from 0–1 and m is an integer of 1–2.

4,443,904
BEE HIVE

Willem G. F. van Muyden, Noord 27, 8377 HA Kalenberg, Netherlands

Filed Apr. 6, 1982, Ser. No. 366,009
Claims priority, application Netherlands, Apr. 13, 1981, 8101797
Int. Cl.^{3} A01K *47/06, 53/00*
U.S. Cl. 6—1 **14 Claims**

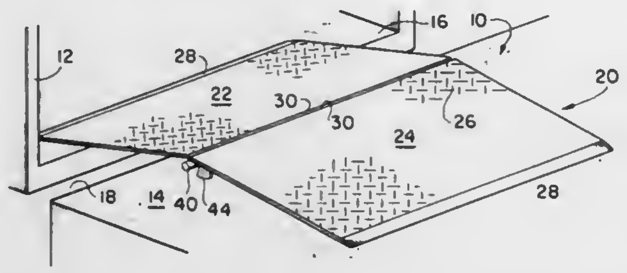


1. A bee hive assembly comprising one or more box-like hive elements one stacked upon the other, each hive element comprising four sides and each being adapted to receive a plurality of comb frames in spaced parallel relationship extending perpendicularly to two opposite ones of said four hive element

sides, a roof element for said one or more hive elements, and a base element for supporting said one or more hive elements and having a bee entrance opening, each of said hive elements having in at least one of its said two opposite sides a window-like frame opening, a transparent panel covering said frame opening, and a transparent liquid storage tank fittingly mounted in said frame opening inwardly of and spaced from said transparent panel to form a substantially closed heat insulating air space between said panel and tank, said tank including a transparent front wall and rear wall, and said tank being closed at its upper side, a drinking trough arranged at the lower side of the inwardly facing wall of said tank, said trough communicating with the interior of the tank and having a width smaller than the width of the body of a worker-bee, and liquid level control means for maintaining the liquid in said drinking trough at a substantially constant level which is accessible to the bees from the inside of the hive.

4,443,905
LOADING RAMP

Clarence Kopp, 293 Fillmore St., Centerport, N.Y. 11721
Filed May 20, 1982, Ser. No. 380,030
Int. Cl.^{3} E01D ***1/00***
U.S. Cl. 14—69.5 **3 Claims**

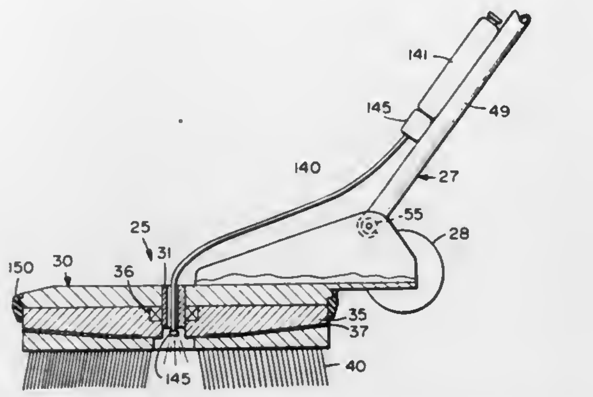


1. A loading ramp of the type having an operative position in spanning relation over the space between a loading dock and a cargo platform of a truck or the like, said loading ramp comprising at least two planar body members presenting a cooperating pair of edges in adjacent position along which said body members are adapted to be pivotally conneced to each other, a select number in spaced locations along each said body member edge and in a cooperating staggered relation to each other of an operative arrangement of attached hinge members, each said hinge member having a body bounding a cylindrical opening oriented substantially parallel to said edge and having a hinge-supporting foot member extending in depending relation therefrom, and a hinge pin sized to be projected through an aligned arrangement of said cylindrical openings for hingedly interconnecting said body members along said cooperating edges thereof, whereby in said spanning operative position of said loading ramp said interconnected edges of said body members are in a raised position supported on said foot members and edges opposite to said cooperating edges are in contact with said loading dock and said truck cargo platform respectively due to the angular position assumed by said body members about said hinge pin.

4,443,906
MACHINE FOR FLOOR MAINTENANCE

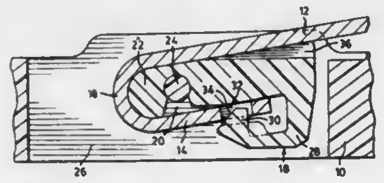
Hartwell F. Tucker, 1300 Holly Ave., Los Altos, Calif. 94022; Jeffrey R. Tucker, 2544 Katrina Way, Mountain View, Calif. 94040; Dennis Ross, 1746 Carpentier St., San Leandro, Calif. 94577, and Jeffrey G. Knirck, 787 Race St., San Jose, Calif. 95126
Filed Aug. 20, 1982, Ser. No. 409,845
Int. Cl.^{3} A47L ***11/03, 11/14***
U.S. Cl. 15—50 R **25 Claims**

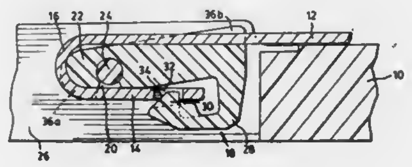
1. A floor machine comprising:
(a) a body;
(b) a stator housing supported by said body;
(c) a shaft disposed in said stator housing with the axis thereof coincident with the axis of said stator housing;
(d) armature winding supported by said stator housing concentric therewith, said armature winding including an array of radially disposed coils with the axial extent of said coils less than the radial extent of said coils taken respectively;
(e) a rotor housing journalled for rotation relative to said stator and having an axis coincident with the axis of said shaft;
(f) an array of radially disposed permanent magnets supported by said rotor housing concentric therewith for concurrent movement, said permanent magnets having alternate magnetic fields in succession with the axial extent of said permanent magnets less than the radial extent of said permanent magnets taken respectively;
(g) a plurality of sensors in said stator housing disposed concentrically with said armature winding and responsive to said permanent magnets; and
(h) a switching circuit responsive to said sensors and connected to said armature winding for exciting said armature winding to impart rotation to said rotor housing;
(i) said rotor comprising means adaptable for supporting floor maintenance means.



4,443,907
COMBINATION WINDSHIELD WIPER CLIPS

Howard W. Chamberlain, Dundas, Canada, assignor to Tridon Limited, Hamilton, Canada
Filed Oct. 21, 1982, Ser. No. 435,857
Int. Cl.^{3} B60S ***1/40***
U.S. Cl. 15—250.32 **8 Claims**

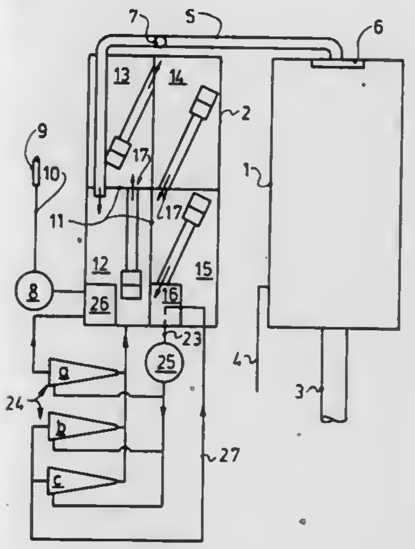




1. A combination windshield wiper clip for the selective detachable attachment of a windshield wiper assembly to at least two wiper arms of the hooked end type having arm ends of different transverse widths, the clip comprising:
a clip body including attachment means for releasable pivoting attachment of the clip within a slot in the superstructure of a wiper assembly,
the clip body being shaped to fit within the hooked end of a first wiper arm of a wider width and to be closed embraced thereby with the arm in a respective first angular orientation in a longitudinal plane,
the clip body having therein a groove for the reception therein of the hooked end of a second wiper arm of narrower width disposed in said longitudinal plane in a respective second angular orientation different from said first orientation for transverse retention of the narrower hooked wiper arm end in the groove,
and retaining means for the releasable retention of either a wider or a narrower wiper arm hooked end closely embracing the clip body within the arm hooked end.

4,443,908
SEWER CLEANING VEHICLE

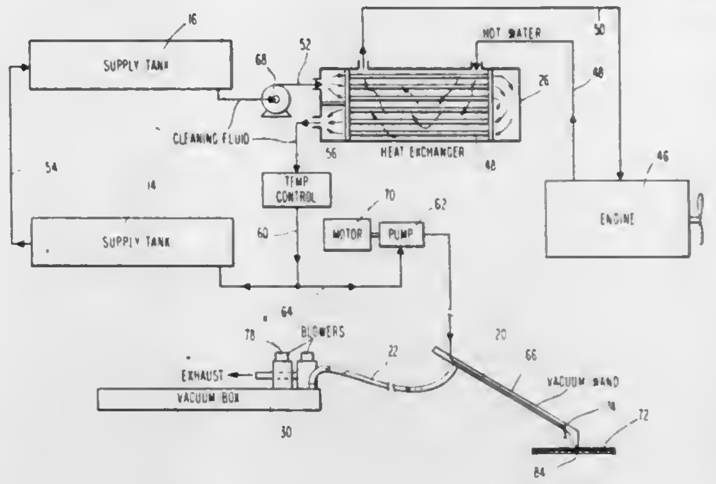
Karl Wiedemann, Haldenloh 2 a, 8901 Welden, Fed. Rep. of Germany
Filed Apr. 23, 1982, Ser. No. 371,178
Int. Cl.^{3} B08B ***3/02, 9/04***
U.S. Cl. 15—302 **7 Claims**



1. In a sewer cleaning vehicle with a swilling water tank fixedly supported on a chassis of said vehicle and having a breadth generally equal to the breadth of said vehicle, said swilling water tank having a top wall designed with an upward opening hollow pocket running along the middle of said vehicle, a sewer cleaning hose having a cleaning nozzle, joined with said tank and designed to be let down into a sewer for cleaning the same with water from said tank, with a waste tank nested in said pocket and matching said pocket cross-sectionwise, said waste tank being furthermore designed to be pivoted about an axis near a back end of said vehicle, with an aspiration hose opening at one end into said waste tank, with a pumping connection joining the waste tank with the swilling water tank and with a system having a water cleaing unit, said system being designed for topping up the swilling water tank with water from said waste tank, the invention residing in that said swilling water tank is walled off by generally upright separating walls into a battery of spaces hydraulically cascaded together in series starting at a first head space designed to take up material from said pumping connection, each said space in said battery being joined up with the hydraulically next one in the battery by a let-through opening in one of said separating walls, each said let-through opening having on an upstream side thereof a flexible hollow skimming pipe with a float at an open skimming end thereof furthest from said separating wall opening for keeping said skimming end generally at the top of water in said space.

4,443,909
CARPET CLEANING SYSTEM

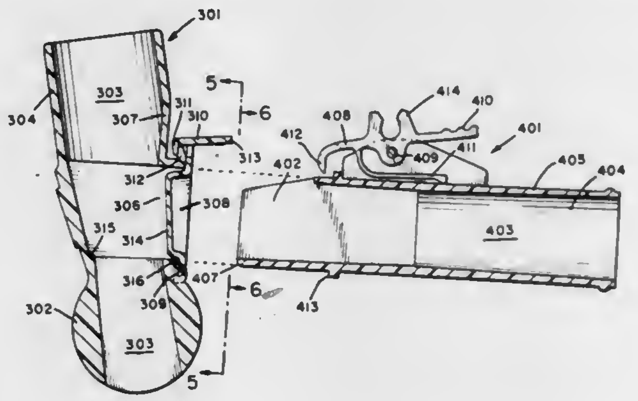
James D. Cameron, 1426 Cider Knoll Way, Westchester, Pa. 19380
Filed Sep. 8, 1981, Ser. No. 299,945
Int. Cl.^{3} A47L ***5/12***
U.S. Cl. 15—320 **10 Claims**



1. A mobile carpet cleaning apparatus including means for suctioning dirt and heated cleaning fluid from carpets and having frames attached to cleaning fluid-filled tanks in the chassis of a vehicle comprising:
a framework having a top and a bottom integrally connected to and removably mounted on said chassis;
pivot flanges vertically extending from the top of and rigidly secured at one end to the side of said framework and rotatively attached at the other end to said frames for providing rotation of said tanks in said frame about said flanges; and
braces angularly extending from and removably secured at one end to the side of said framework and at the other end to said frames for prohibiting rotation of said tanks from a position over the rear wheels of said vehicle to a position over said framework until said braces are disconnected from said framework.

4,443,910
ABOVE-THE-FLOOR ADAPTOR FOR UPRIGHT VACUUM CLEANER

Edwin Fitzwater, Rahway, N.J., assignor to General Signal Corporation, Stamford, Conn.
Filed Jun. 29, 1982, Ser. No. 393,275
Int. Cl.^{3} A47L ***5/32***
U.S. Cl. 15—337 **13 Claims**



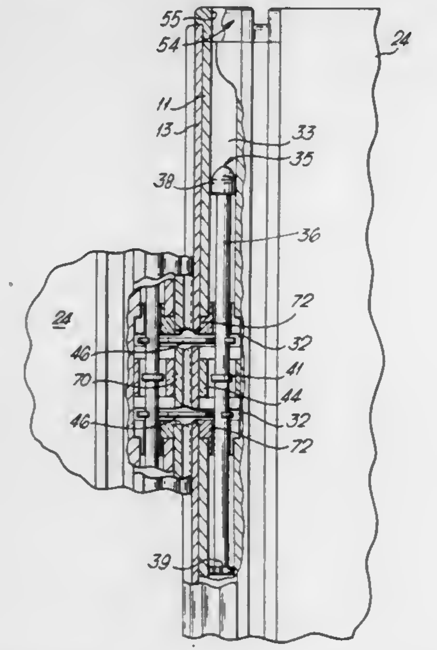
1. A convertible upright vacuum cleaner which comprises a floor nozzle structure, a handle section with a suction motor and a filter bag, a swivel joint section coupling said handle section and nozzle structure, said swivel joint section being attached to and extending longitudinally from the lower end of said handle section, said swivel joint section having a first passageway for passing air and entrained dirt picked up from

said nozzle, said first passageway extending in the longitudinal direction through said swivel joint section, a second passageway in said swivel joint section extending transversely to said first passageway, into said first passageway and intersecting said first passageway, said second passgeway and said first passageway where intersected by said second passageway being rectilinear in cross-section, an adaptor providing a connection to a cleaning wand at one end and having a section of rectilinear cross-section at the opposite end, the forward portion of said adaptor proximate to the opposite end thereof having a "U" shape closed at its base and sides and open at its top to close said first passageway at its base and provide a path for air and dirt from said wand through said adaptor into said handle section.

4,443,911

DEVICE FOR INTERCONNECTING PANELS

Brian C. Bannister, North Mimms, England, assignor to Marler Haley Exposystems Limited, Hertfordshire, England
Filed Nov. 24, 1982, Ser. No. 444,175
Int. Cl.^{3} E05D *3/06;* **E04B** *1/344;* **A47G** *5/00*
U.S. Cl. 16—354 **7 Claims**



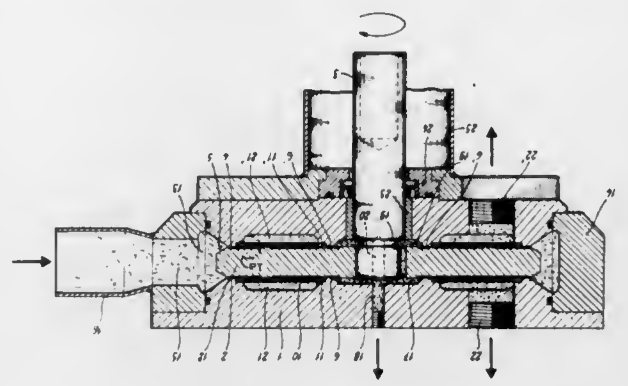
1. An adjustable structure comprising two members each having ribs and grooves interengaging with one another after the fashion of gear teeth so that the members can roll relative to one another about respective axes, each said member carrying a resilient spindle element disposed substantially coaxially with the respective said member and resiliently displaceable, at least in part, transversely of said axis, said members being held together by at least one connecting element providing openings or recesses receiving respective said resilient spindle elements of the two members, the configuration of the connecting element and/or the spindle elements being such that resilient displacement of said spindle elements transversely of said axes, towards one another is necessary to apply the connecting element to or detach it from said spindle elements.

4,443,912

METHOD AND APPARATUS FOR REMOVING SOLID PARTICLES FROM A PASTY MASS

Gerardus H. J. Ketels, Grave, Netherlands, assignor to Procom B. V., Oss, Netherlands
Filed Nov. 12, 1981, Ser. No. 320,611
Claims priority, application Netherlands, Oct. 6, 1981, 8104544
Int. Cl.^{3} A22C *17/00;* **B01D** *25/00;* **B02C** *7/00*
U.S. Cl. 17—1 G **8 Claims**

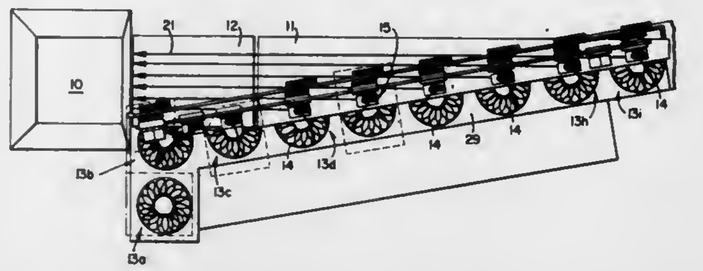
1. Apparatus for separating solid particles such as bone particles from a fluid mass of paticles such as meat particles comprising means defining at least one slit-shaped channel having an inlet and an outlet and defined by at least one wall in which one or more apertures are provided, and a wall extending in parallel and spaced relation to said wall in which said spacing is of the same order of magnitude as the diameter of said apertures, the size of said apertures and the spacing of said walls being less than the shortest of the long dimension of the solid particles to be removed for orienting the solid particles so that their long dimension extends parallel to said walls, means for advancing the mass to be treated to the inlet of the channel and for its advancement through the channel and for pressurizing the mass for driving the fluid particles through the apertures and advancing the solid particles from the inlet to the outlet, means for receiving the treated mass of fluid particles passing through said apertures, and discharge means communicating with the outlet of the channel for receiving the solid particles.



4,443,913

CREEL

Jaroslav Klazar, Pretoria, South Africa, assignor to GLP Industrial Property Bureau, Udine, Italy
Filed Jul. 21, 1981, Ser. No. 285,466
Claims priority, application South Africa, Jul. 25, 1980, 80/4520
Int. Cl.^{3} B65H *67/04;* **D01H** *9/02*
U.S. Cl. 19—159 A **13 Claims**

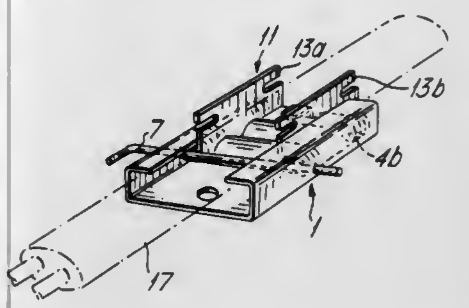


1. A creel comprising a plurality of feed stations, arranged in a bank, for feeding slivers of fibres to a sliver processing machine, a reserve feed station for feeding a reserve sliver to the machine upon disruption of sliver feed at any station, means for removing the station where feed is interrupted from the bank of feed stations, means for entering the reserve feed station, upon operation thereof, into the bank of feed stations, each of said feed stations including a carriage member for drawing a sliver by means of rollers or other feed means, from a sliver reservoir and delivering the sliver to a pathway leading to the processing machine, the carriage members being movable for purposes of entering or removing a station from the bank of feed stations, said carriage members being movable upstream and downstream relative to the processing machine such movement being respectively towards the station most remote from the machine and towards the station in closest proximity to the machine, so that in the event of feed at a station being interrupted, its carriage member can be moved downstream from the bank of stations to a reserve station position while the carriage members downstream therefrom and the reserve station carriage member can be moved upstream to refill the bank.

4,443,914

DEVICE FOR TIGHTENING A ROPE, PREFERABLY AN ELECTRIC WIRE

Jan Christensen, Haugveien 10A, N-1838 Flateby, Norway
Filed Mar. 22, 1982, Ser. No. 360,384
Claims priority, application Norway, Mar. 25, 1981, 811018
Int. Cl.^{3} F16G *11/03*
U.S. Cl. 24—115 R **10 Claims**

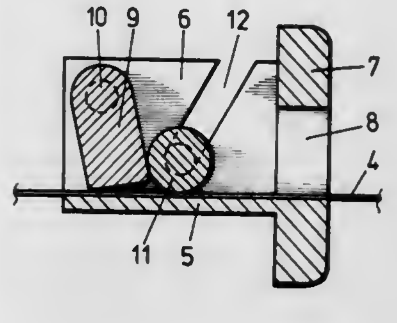


1. Device for tightening a rope, preferably an electric wire, along a support, comprising a base member (1; 101) adapted to be attached to the support, a holding member (11; 111) adapted for the wire (17; 117) to be attached thereto, and resilient means which in the installed condition of the device exerts a certain force between said members and thereby a tightening force on the wire, characterized in that the resilient means (*4a, 4b; 104a, 104b*) are carried or held by the base member (1; 101), and that the holding member (11; 111) is displaceably arranged in the base member (1; 101) itself so as to allow movement in relation thereto in the longitudinal direction of said wire under the influence of the resilient means.

4,443,915

CORD LOCKING DEVICE FOR A SUN-BLIND OR THE LIKE

Remmelt C. Niemeyer, Enschede, Netherlands, assignor to Verosol B.V., Enschede, Netherlands
Filed Feb. 18, 1981, Ser. No. 235,769
Claims priority, application Netherlands, Nov. 3, 1980, 8006008
Int. Cl.^{3} F16G *11/00*
U.S. Cl. 24—132 R **6 Claims**



1. A locking device for the cords of a blind or the like, said blind including an upper beam and at least one web of sunblinding material connected thereto, the cords of said blind entering into said upper beam at one end thereof and extending through the interior of said beam for raising and lowering said blind, said locking device comprising,

a generally U-shaped member having a bottom and sides and an aperture at one end thereof adapted to receive at least one of said cords of said blind, said U-shaped member being adapted for slidable insertion into said upper beam at said one end thereof,

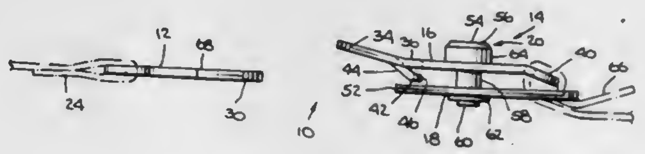
a first tumbler member movably mounted in said U-shaped member and adapted for vertical movement in said U-shaped member toward and away from said bottom thereof and said cords of said blind, said cords extending through said aperture in said U-shaped member between said tumbler member and said bottom of said U-shaped member, said tumbler member being adapted for movement toward said bottom of said U-shaped member into locking engagement with said cords of said blind,

said aperture in said U-shaped member including a cord-engaging surface which is at least partially inclined vertically upwardly away from said bottom of said U-shaped member in a direction transverse to the longitudinal axis of said upper beam, said cords of said blind being slidably engaged with said surface and being movable transversely thereover so as to move said tumbler member vertically upwardly away from said bottom of said U-shaped member out of engagement with said cords of said blind.

4,443,916

LATCHING DEVICES

James P. Tiemann, 64 Central St., Huntington, N.Y. 11743
Filed Nov. 30, 1981, Ser. No. 325,856
Int. Cl.^{3} A44B *11/25*
U.S. Cl. 24—664 **27 Claims**

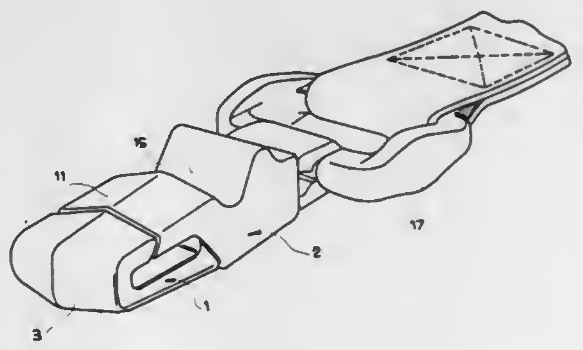


1. A quick-engagement, quick-release latching device comprising a clasping unit and a tongue unit, engageable with said clasping unit, latching means provided on said clasping unit and said tongue unit to interlock said tongue unit and said clasping unit, said clasping unit including only two non-resilient leaf members superposed one over the other and being relatively divergent, said tongue unit being receivable between the leaf members upon divergence thereof, into a predetermined insertion position to permit engagement of said latching means, and joining means extending from one of said leaf members to the other said leaf member for joining said leaf members in said superposed relationship, said clasping unit further including resilient means for opposing divergent movement of said leaf members, said one leaf member being a lift-to-release member, said tongue unit being releasable from said predetermined insertion position upon lifting said one leaf member for diverging said leaf members a predetermined amount in opposition to said resilient means to permit disengagement of said latching means.

4,443,917

PLASTIC SNAP-HOOK

Manrico Oddenino, Turin, Italy, assignor to ITW Fastex Italia, S.p.A., Turin, Italy
Filed Apr. 29, 1982, Ser. No. 372,888
Claims priority, application Italy, Apr. 29, 1981, 21426 A/81
Int. Cl.^{3} A44B *13/02*
U.S. Cl. 24—239 **8 Claims**



1. A two-piece locking plastic snap-hook including a first element which is shaped as a strip-like base folded at one end

thereof over said base in the form of a hook, and folded at the other end over said base as a flexible arched tongue, said strip-like base serving as an interconnecting body with lateral edges between said overlying hook and tongue; and a second element comprising a channel U-shaped slider having depending legs carrying spaced inward projections which embrace the lateral edges of said first element said slider adapted to slide along a predetermined path between a closed and an open position relative to said hook, said second element having means engaged by said arched tongue with said tongue at an angle to said predetermined path whereby said slider is urged resiliently by said flexible tongue which tends to bring it back to the closed position relative to said hook.

4,443,918
PROCESS OF PRODUCING GRIDS FOR A BATTERY

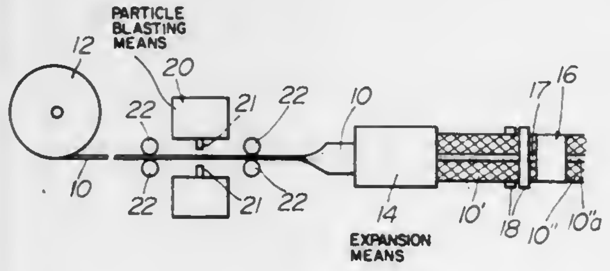
Ryosuke Morinari, and Mitsuru Koseki, both of Honjoh, Japan, assignors to Shin-Kobe Electric Machinery Co., Ltd., Tokyo, Japan

Filed Jul. 16, 1981, Ser. No. 283,990

Claims priority, application Japan, Jul. 18, 1980, 55-98322; May 25, 1981, 56-79087

Int. Cl.^{3} B23P *13/00*

U.S. Cl. 29—3 **9 Claims**



1. A process of producing plate grids for a lead acid storage battery comprising the steps of:

striking hard particles against surfaces of grid material to form roughness on the surfaces thereof with such grid material disposed in a vertical plane;

forming said grid material into a mesh-like grid material; and striking hard particles against surfaces of said mesh-like grid material to form roughness on all surfaces thereof with said mesh-like material disposed in a vertical plane.

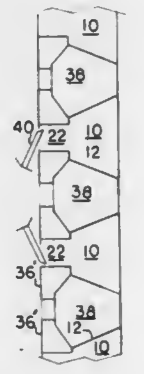
4,443,919
METHODS FOR SETTING STONES AND TOOLS FOR PERFORMING SUCH METHODS

Frank Guida, and Bernice Guida, both of 11755 7th St. East, Treasure Island, Fla. 33707, assignors to Michael Colello; Joseph Colello, both of Springfield, N.J.; Frank Guida and Bernice Guida, both of Treasure Island, Fla., a part interest

Filed Aug. 5, 1981, Ser. No. 290,373

Int. Cl.^{3} B23P *5/00*

U.S. Cl. 29—10 **4 Claims**



1. A method of setting stones in a metallic base means, comprising the steps of,

providing a base means in the form of a generally rectangular in cross section base member and having a predetermined uniform thickness along its length,

forming a plurality of at least two longitudinally spaced, laterally aligned stone mounting holes of uniform dimensions in said base member, centrally thereof, said mounting holes extending completely through said base member from a top surface thereof to a bottom surface thereof,

and cutting the top surface of said base member along its length to form a pair of transversely spaced reflecting surfaces that are beveled outwardly relative to one another, thereby defining an elongate unabraded medial or table portion therebetween within which said mounting holes are formed,

cutting said medial portion of said base member to form a transversely spaced pair of substantially parallel, discontinuous bar means formed integrally with said base member top surface and projecting upwardly therefrom,

setting a stone within each of said mounting holes after said forming of said bar means,

and securing said stones within their respective mounting holes by manually deforming said bar means such that the portion of each segment of said bar means contiguous to a stone overlies the peripheral margin of its associated stone.

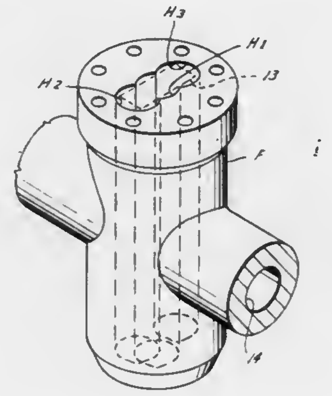
4,443,920
METHOD OF MANUFACTURING A GATE VALVE BODY

John P. Oliver, 37 Stillforest, Houston, Tex. 77024

Filed Sep. 8, 1981, Ser. No. 300,216

Int. Cl.^{3} B21D *53/00;* **B21K** *29/00;* **B23P** *15/02, 15/04*

U.S. Cl. 29—157.1 R **8 Claims**



1. In a method of manufacturing a gate valve , the steps of drilling a first hole having a closed end within a forging from which the body of the valve is to be made, drilling at least one other hole having a closed end within the forging which is parallel to and overlaps a prior drilled hole therein so as to form a generally rectangular cavity closed end in the body in which a gate may be received for movement between positions opening and closing a flowway through the body which intersects the cavity and inserting a gate into said generally rectangular cavity.

2. In a method of manufacturing a gate value body, the steps of drilling a first hole having a conical closed end within a forging from which the body of the value is to be made, drilling at least one other hole having a conical closed end within the forging which is parallel to and overlaps a prior drilled hole therein so as to form a generally rectangular closed end cavity in the body in which a gate may be received for movement between positions opening and closing a flowway through the body which intersects the cavity, and removing the outer portions of the conical ends to form substantially coplanar landing surfaces for an end of the gate by using a rotating tool having a flat bottom cutting surface.

4,443,921
METHOD FOR THE MANUFACTURE OF HEAT EXCHANGERS WITH CURVED ELEMENTS

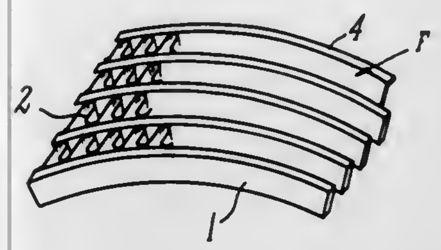
Michel A. Allemandou, Charenton-le-Pont, France, assignor to Societe Anonyme des Usines Chausson, Hauts de Seine, France

Filed Jul. 27, 1981, Ser. No. 287,051

Claims priority, application France, Sep. 1, 1980, 80 18875

Int. Cl.^{3} B23P *15/26*

U.S. Cl. 29—157.3 R **10 Claims**



1. A method for the manufacture of heat exchangers comprising the steps of:

shaping rectilinear tubes of a substantially rectangular cross section having two parallel smaller sides and two parallel larger sides;

mounting said rectilinear tubes with said larger sides of the tubes being parallely disposed relative to each other and said smaller sides respectively defining two substantially parallel planes;

fixing dissipators in the shape of corrugated bands between said rectilinear tubes on the larger sides thereof, thereby forming a unit; and

curving said unit by applying a bending force to said smaller sides of the rectilinear tubes.--.

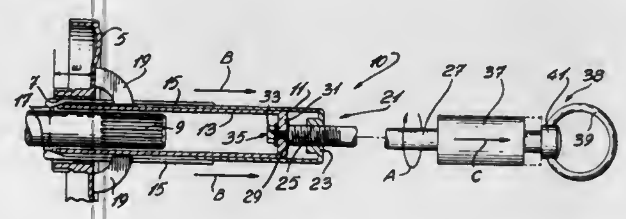
4,443,922
EXTRACTING TOOL

Francois Deland, 250 Montigny, Mont-St-Hilaire J3H 2T9, Quebec, Canada

Filed Aug. 10, 1981, Ser. No. 291,786

Int. Cl.^{3} B23P *19/04*

U.S. Cl. 29—254 **7 Claims**



1. A tool for extracting an object, having a central circular opening, from an assembled arrangement, comprising:

an outer, hollow, cylindrical member;

an inner, hollow, cylindrical member having an open free end;

said inner cylindrical member being telescopingly mounted in said outer cylindrical member such that said open free end extends from said outer cylindrical member and such that said outer cylindrical member is telescopingly movable relative to said inner cylindrical member;

means for telescopingly moving said outer cylindrical member relative to said inner cylindrical member;

leg means comprising at least one elongated leg member, made of a flexible material, extending longitudinally from the outer surface of said outer cylindrical member and over the outer surface of said inner cylindrical member, said leg member comprising camming means at a free end thereof, said camming means being oriented toward the inner cylindrical member such that said camming means is forced radially outwardly of said inner cylindrical member when said outer hollow cylindrical member is moved relative to said inner hollow cylindrical member in a manner to bring said camming means into engagement with said inner cylindrical member free end; and

stop means disposed on the outer surface of said inner cylindrical member and inwardly spaced from the free end thereof;

wherein said open free end of said inner cylindrical member is adapted to be inserted in said circular opening of said object, until said stop means abuts a side surface of said object, whereupon said means for moving is adapted to move said outer cylindrical member, and said leg, outwardly so that said camming means engages the free end of said inner cylindrical member to force said leg outwardly against the inner surface of said circular opening of said object to thereby tightly engage the tool against said object to facilitate the extraction of said object from said arrangement;

said means for moving comprising:

a back wall on said outer cylindrical member having a threaded circular central opening therethrough:

a back wall on said inner cylindrical member having an opening therethrough;

a shaft having a threaded inward end and an outward end, the threads of said shaft matingly engaging the threads of said circular control opening of said back wall of said outer cylindrical member so that said shaft threadingly extends therethrough;

bolt means extending through said opening in said back wall of said inner cylindrical member and attached to the inward end of said shaft so that said shaft is attached to said inner cylindrical member;

whereby rotation of said shaft will cause telescoping movement of said outer cylindrical member relative to said inner cylindrical member.

4,443,923
METHOD OF AND APPARATUS FOR MANUFACTURING A CONTINUOUS SLIDE FASTENER STRINGER CHAIN WITH ELEMENT-FREE SPACE PORTIONS

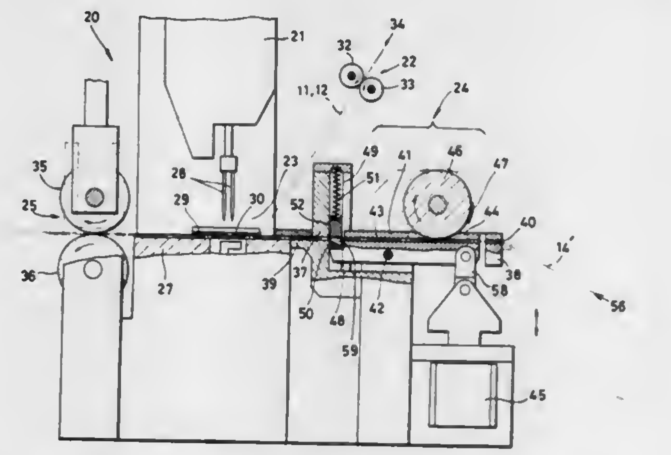
Kihei Takahashi, Uozu, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Jun. 23, 1982, Ser. No. 391,163

Claims priority, application Japan, Jun. 24, 1981, 56-93319

Int. Cl.^{3} B21D *53/52, 53/50;* **A41H** *37/06*

U.S. Cl. 29—408 **13 Claims**



1. A method of manufacturing a continuous slide fastener stringer chain including space portions devoid of coupling elements at longitudinal intervals, the method comprising the steps of:

(a) introducing a pair of continuous slide fastener stringer tapes and a pair of interengaged rows of continuous coupling elements into a sewing area of a sewing machine such that said pair of interengaged rows of continuous coupling elements is held on inner longitudinal edges of said pair of stringer tapes, respectively;

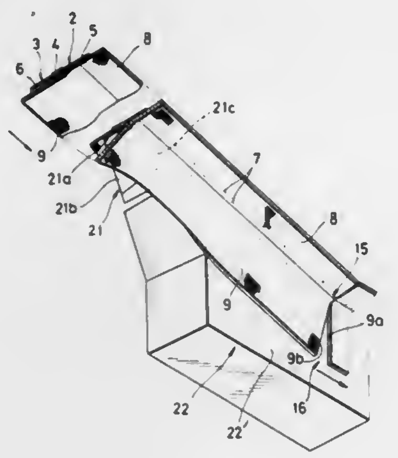
(b) continuously driving said sewing machine to sew said

pair of interengaged rows of continuous coupling elements to said pair of continuous slide fastener stringer tapes along said inner longitudinal edges, respectively;
(c) continuously feeding said slide fastener stringer tapes, in synchronism with said sewing machine, to said sewing area along a first longitudinal path;
(d) intermittently feeding said pair of interengaged coupling elements, in synchronism with said sewing machine, to said sewing area along a second longitudinal path; and
(e) cutting off a length of coupling elements then being sewn from said pair of interengaged rows of continuous coupling elements each time the latter stops moving.

4,443,924

METHOD OF AND APPARATUS FOR DETECTING ENDS OF SUCCESSIVE FLY STRIPS CONNECTED BY A SLIDE FASTENER CHAIN

Tatsuo Osaki, Uozu, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan
Filed Jun. 24, 1982, Ser. No. 391,940
Claims priority, application Japan, Jun. 30, 1981, 56-100550; Sep. 9, 1981, 56-140885
Int. Cl.^{3} B21D *53/50, 53/52;* **A41H** *37/06*
U.S. Cl. 29—408 **5 Claims**



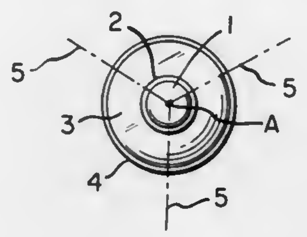
1. A method of detecting ends of successive fly strips connected end to end in substantially abutting relation by a pair of continuous slide fastener stringers, the fly strips being attached to a tape of one of the fastener stringers by at least one line of stitching dividing each fly strip into a first and a second flap, said method comprising the steps of:
(a) feeding the successive fly strips along a first straight path, with the first flaps superimposed on the tape of the one fastener stringer and with the second flaps superimposed on the other fastener stringer;
(b) deflecting the successive second flaps to such an extent that each second flap lies at a right angle to the general plane of the fastener stringers;
(c) shifting the direction of movement of the successive fly strips at a turning point to a second straight path inclined with respect to said first straight path so as to provide temporarily a triangular space between onfronting ends of an adjacent pair of the deflected second flaps when said confronting ends arrive at said turning point; and
(d) sensing the presence of said successive triangular spaces.

4,443,925

METHOD OF SEPARATING PARTS OF A PLASTIC BOTTLE

Floyd H. Fish, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Jan. 13, 1981, Ser. No. 224,686
Int. Cl.^{3} B23P *19/00*
U.S. Cl. 29—426.4 **5 Claims**

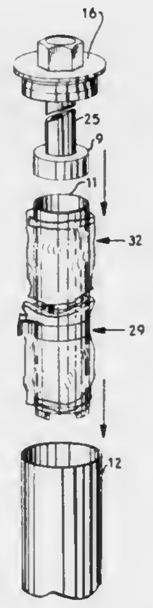
1. A method of separating material components of a plastic bottle assembly, said plastic bottle assembly comprising a main body portion of a first plastic material, said main body portion being generally symmetrical about a longitudinal axis and having attached thereto at least one part of a material other than said first plastic material, said method comprising removing said at least one part from said main body portion by cutting said plastic bottle assembly in at least one plane in which said longitudinal axis lies such that the cut is extended completely through said at least one part, and
optionally, vibrating said main body portion to separate therefrom any portion of said at least one part which has not separated from said main body portion after said cutting.



4,443,926

METHOD OF ASSEMBLING SHOCK ABSORBERS

Robert M. Pearson, Plymouth, and Robert J. Womac, Belleville, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Feb. 8, 1982, Ser. No. 346,476
Int. Cl.^{3} B23P *11/00*
U.S. Cl. 29—436 **8 Claims**

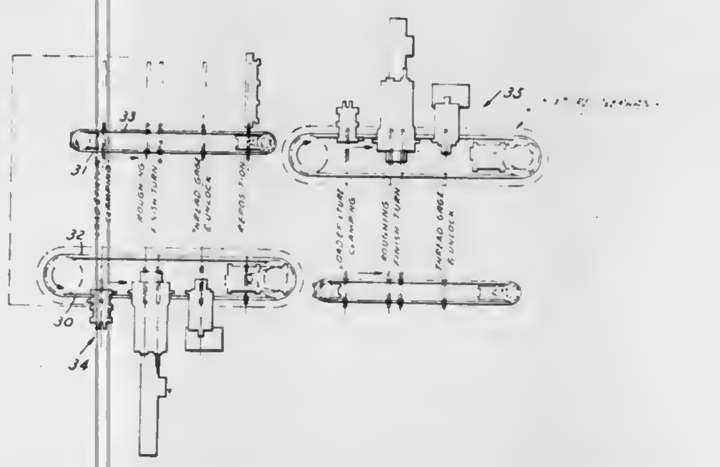


1. A method of assembling a shock absorber for use in an automotive vehicle, the shock absorber having inner and outer concentrically nested tubular containers between which is sandwiched a polymeric film cell containing a high molecular weight gas, said cell being impervious to hydraulic fluid and said gas but pervious to air and water vapor, said cell being formed as a pillow from two plys of polymeric material sealed at peripheral margins and sealed at ribs extending laterally inwardly at intermediate sections thereof, the steps comprising:
(a) wrapping said cell about the inner tubular container of said absorber to form a jacket thereabout, said cell containing a quantity of high molecular gas therein at predetermined pressure;
(b) mechanically securing the laterally extending ribs of said cell to the inner tubular container for defining an assembly;
(c) inserting said assembly into the outer tubular container; and
(d) after one of step (b) and step (c), applying closure means to one end of said outer tubular container and closure means having fluid valve means to a corresponding one end of said inner tubular container to define chambers within the inner container and between said tubular containers;
(e) in direct succession after step (d), filling said chambers with hydraulic fluid and inserting piston means therein; and
(f) sealing said tubular containers to complete said shock absorber.

4,443,927

SUCKER ROD MACHINING SYSTEM

Ray E. Colonius, Bloomfield Hills; John P. Vederko, Dearborn, and Don A. Cargill, Bloomfield Hills, all of Mich., assignors to Cargill Detroit Corp., Clawson, Mich.
Filed Nov. 23, 1981, Ser. No. 323,966
Int. Cl.^{3} B23Q *7/03*
U.S. Cl. 29—563 **9 Claims**



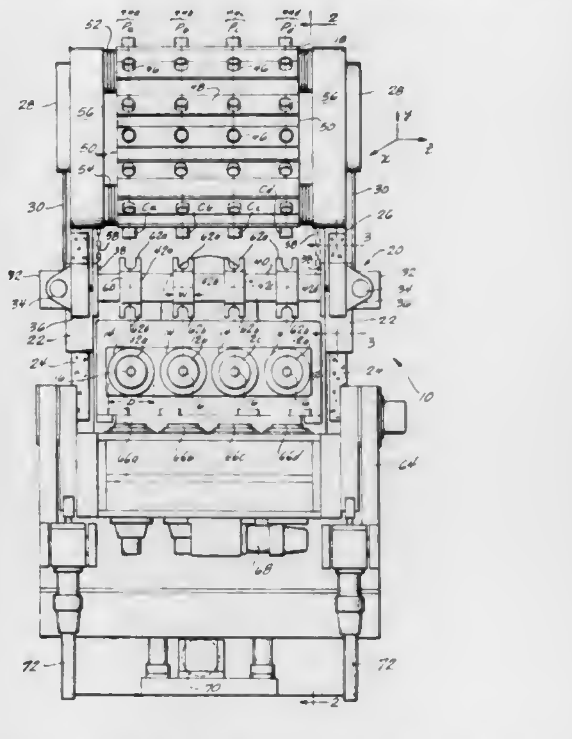
1. Sucker rod machining system comprising a plurality of aligned spaced machining stations for performing sequential machining operations, rotatable tooling aligned at one side of each station for performing a machining operation on one end of a sucker rod while it is held stationary at said station, fixturized pallet conveyor means extending past said stations, fixturized pallet means transportable from station to station by said conveyor means, clamp means on each fixturized pallet for rigidly holding said sucker rod end without release throughout the succession of machining operations, accurate pallet locating and clamping means at each machining station for rigidly holding the end of the sucker rod to be machined in fixed accurately oriented position with the end and axis of the rod precisely located relative to and extending laterally away from the other side of each station's tooling, and supplemental conveyor means for transporting and supporting the other end of said sucker rod during transport and machining of said one end, each of said conveyor means and supplemental conveyor means comprising a closed loop conveyor, and each sucker rod being angularly positioned relative to the plane of said loop to override and clear the return path of each conveyor means.

4,443,928

MULTIPLE-SPINDLE TOOL CHANGER

Ervin J. Kielma, West Allis, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.
Filed Jan. 21, 1982, Ser. No. 341,562
Int. Cl.^{3} B23Q *3/157*
U.S. Cl. 29—568 **14 Claims**

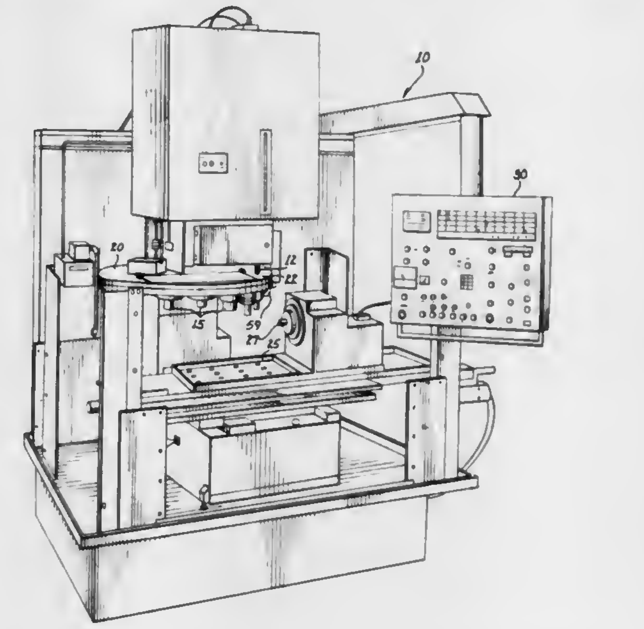
1. Tool changing apparatus for use with a multiple-spindle machining center, said apparatus comprising:
a tool carrying means corresponding to each of the spindles of said machining center, each of said tool carrying means comprising means for selectively engaging tools dedicated for use with one of said spindles, and for transporting engaged tools between one of said spindles and one of a plurality of tool storage magazines;
first linear translation means for moving each of said tool carrying means in parallel relationship with a first axis when said tool carrying means are transporting engaged tools between said spindles and said magazines;
second linear translation means for moving each of said tool carrying means in parallel relationship with a second axis when said tool carrying means are transporting engaged tools between said spindles and said magazines, said second axis being in orthogonal relationship with said first axis; and
rotation means for rotating each of said tool carrying means around a common axis which is orthogonal to said first and second axes when said tool carrying means are transporting engaged tools between said spindles and said magazines.



4,443,929

MACHINING CENTER

Jack L. Bayer, 2145 E. Pasadena, Phoenix, Ariz. 85016, and Walter J. Breitkopf, 6050 E. Wilshire, Scottsdale, Ariz. 85257
Filed Mar. 15, 1982, Ser. No. 358,291
Int. Cl.^{3} B23Q *3/157*
U.S. Cl. 29—568 **23 Claims**



1. In a machining center having: a frame; a spindle for driving tools, rotatable about an axis and movable rectilinearly along said axis for engaging tool holders to move said tool holders, and tools secured thereto, toward a work piece; the improvement comprising:

a. a positioning means for holding a plurality of tool holders and arranged to move a selected tool holder into a work station where the tool holder may be removed from the positioning means and attached to said spindle;

b. a tool holder, for attaching a tool thereto such as a drill or reamer, having an axis of rotation, removably secured to said positioning means and movable from a stored position on said positioning means to an operating position out of contact with said positioning means; said tool holder including a first section for attachment to said spindle for rotation therewith, a second section adapted to be restrained against rotation; and a third section for attachment to a tool for rotationally driving said tool; said tool holder including drive means interconnecting said first and third section for transmitting torque from said spindle to said tool;

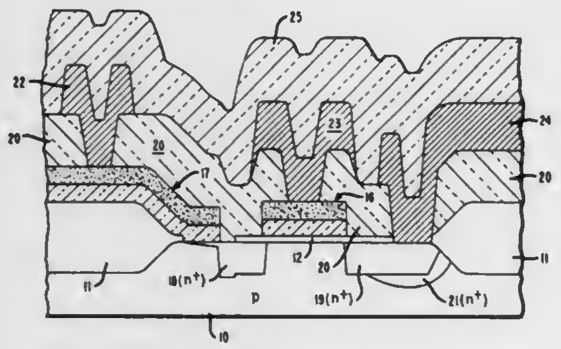
c. an anti-rotation device comprising a disengageable coupling including a first portion secured to the second section of said tool holder and a second portion secured against rotation to said frame and movable along a rectilinear path parallel to the axis of rotation of said tool holder.

4,443,930

MANUFACTURING METHOD OF SILICIDE GATES AND INTERCONNECTS FOR INTEGRATED CIRCUITS

Thomas J. Hwang; Steven H. Rogers, and Mary E. B. Coe, all of Colorado Springs, Colo., assignors to NCR Corporation, Dayton, Ohio

Filed Nov. 30, 1982, Ser. No. 445,392
Int. Cl.^{3} H01L *21/283*
U.S. Cl. 29—571 **16 Claims**



1. A process of forming silicon-rich metal silicide on a substrate by co-sputtering a target of said metal silicide and a target of doped silicon.

5. A process of forming a low sheet resistance conductor for an integrated circuit on a semiconductor substrate having a layer of polysilicon, said process comprising:

sputter depositing a silicon-rich tungsten silicide layer on the polysilicon layer by co-sputtering a target of tungsten disilicide and a target of silicon; and

simultaneously etching the silicon-rich tungsten silicide and polysilicon dual layer into a conductor.

4,443,931

METHOD OF FABRICATING A SEMICONDUCTOR DEVICE WITH A BASE REGION HAVING A DEEP PORTION

Bantval J. Baliga, Clifton Park, and Michael S. Adler, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 28, 1982, Ser. No. 392,870
Int. Cl.^{3} H01L *21/22*
U.S. Cl. 29—571 **9 Claims**

1. A process of fabricating a semiconductor device with a base region having a deep portion, comprising the steps of:

(a) forming an insulating layer on the upper surface of a wafer of semiconductor material comprised of a substrate with a layer of one dopant type thereon;

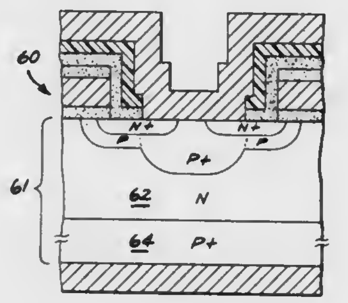
(b) forming a refractory electrode layer on the upper surface of the insulating layer;

(c) opening a first window through the refractory electrode layer;

(d) forming a first mask layer at least in the first window and opening a second window in the first mask layer, the second window being located within the first window;

(e) introducing into the wafer through the second window a first region of the opposite dopant type and of predetermined depth;

(f) forming a second mask layer selectively located within the second window;



(g) selectively removing the first mask layer, thereby opening a third window defined by the first window and the second mask layer located within the first window;

(h) introducing into the wafer through the third window a second region of the same dopant type as the first region but of lesser depth;

(i) introducing into the wafer through the third window a third region of the one dopant type and of lesser depth than the second region, the P-N junction thus-formed between the first and third regions terminating at the upper surface of the wafer beneath the second mask layer;

(j) removing the second mask layer; and

(k) metallizing the semiconductor material exposed as a result of removing the second mask layer, the metallization thereby implementing an electrical short across the P-N junction.

4,443,932

SELF-ALIGNED OXIDE ISOLATED PROCESS AND DEVICE

Sal Mastroianni, Mesa, and Walter F. Krolikowski, Scottsdale, both of Ariz., assignors to Motorla, Inc., Schaumburg, Ill.

Filed Jan. 18, 1982, Ser. No. 339,954
Int. Cl.^{3} H01L *21/316, 21/76*
U.S. Cl. 29—576 W **9 Claims**

1. A method for fabricating at least two self-aligned device regions in a substrate, comprising:

providing a sub-master-mask layer on said substrate of a first material resistant to device forming processes;

providing an etch stop layer on said sub-master-mask layer of a second material different from said first material;

patterning said etch stop layer and said sub-master-mask layer to provide at least two openings having location and shape substantially corresponding to said at least two self-aligned device regions and penetrating to and exposing said substrate in said openings;

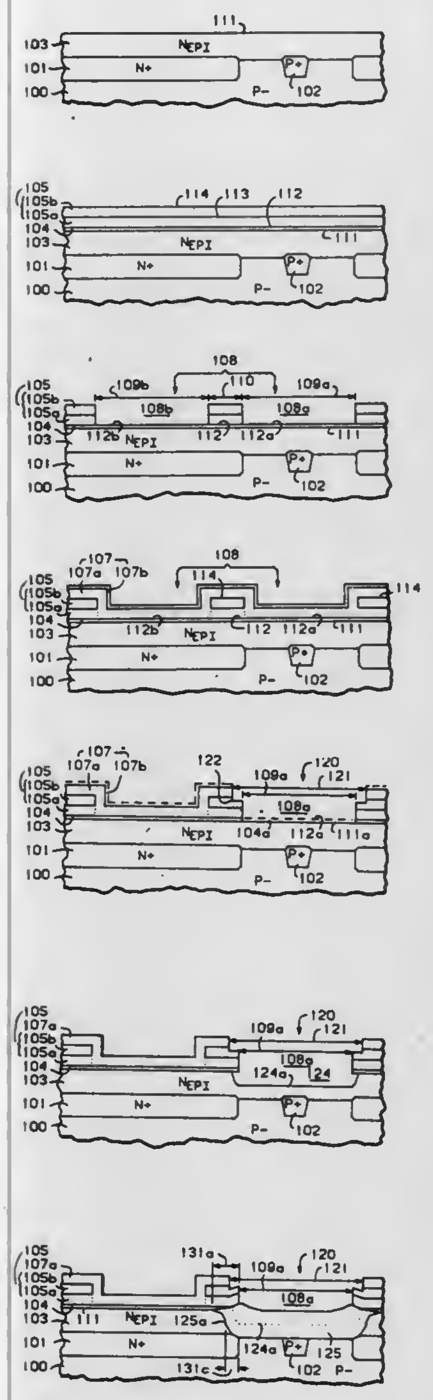
providing a selector layer covering said etch stop layer and said substrate exposed in said opening, said selector layer being of a third material resistant to oxidation and differentially etchable with respect to said second material so that portions of said selector layer can be removed without substantially attacking said etch stop layer;

patterning said selector layer to provide at least one aperture larger than and encompassing a first of said at least two openings to re-expose said substrate in said first opening;

applying a first of said device forming processes to form a first device region in said first opening;

removing, without use of a patterning step, said selector layer in a second of said at least two openings so as to re-expose said substrate in said second opening; and

applying a second of said device forming processes to form a second device region in said second opening.



4,443,933

UTILIZING MULTI-LAYER MASK TO DEFINE ISOLATION AND DEVICE ZONES IN A SEMICONDUCTOR SUBSTRATE

Michel X. M. de Brebisson, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 169,573, Jul. 17, 1980, abandoned, which is a continuation of Ser. No. 22,574, Mar. 21, 1979, abandoned, which is a continuation of Ser. No. 812,261, Jul. 1, 1977, abandoned. This application Apr. 12, 1982, Ser. No. 367,506

Claims priority, application France, Jul. 15, 1976, 76 21646
Int. Cl.^{3} H01L *21/26, 21/308*
U.S. Cl. 29—578 **4 Claims**

1. A method of manufacturing a semiconductor integrated circuit having at least one semiconductor circuit element, which comprises:

providing a semiconductor body comprising an epitaxial layer of a first conductivity type on a substrate of a second conductivity type opposite to that of the first;

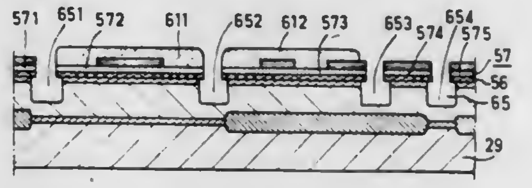
providing a third insulating layer directly on the semiconductor body surface;

providing a first insulating layer of a material other than that of said third layer and comprising silicon nitride on said third insulating layer;

providing a substantially planar and uniform second insulating layer of a material other than that of said first and said third layers on said first insulating layer;

simultaneously providing apertures in said substantially planar and uniform second layer at a plurality of areas where surface-adjoining zones of said semiconductor circuit element are to be formed; including at least one aperture surrounding a semiconductor island in which said semiconductor circuit element is to be provided, to form a basic mask which will simultaneously and precisely define the dimensions and locations of all dimensionally-critical regions of the circuit element to be formed; then

covering all but at least a part of said one surrounding aperture with a covering layer; then



selectively removing said first insulating layer within the uncovered region; then

selectively removing said third insulating layer within at least said part of said one aperture; then

removing said covering layer; then

selectively etching recesses in the uncovered semiconductor material in said one aperture; then

thermally oxidizing the uncovered semiconductor material in said one aperture to selectively form a recessed oxide insulating zone extending down to said substrate and surrounding said island; then

selectively removing the first insulating layer within all remaining apertures of the basic mask in the second insulating layer to form a replica of said remaining aperture in said first insulating layer without removing the underlying third insulating layer; and

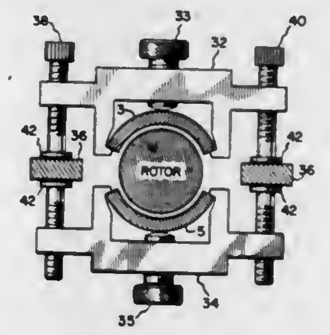
then selectively forming said surface-adjoining semiconductor zone of said semiconductor circuit element in at least one of said remaining apertures by ion implantation through said third insulating layer.

4,443,934

METHOD OF ASSEMBLING PERMANENT MAGNET DC MACHINES

John S. Hickey, Burnt Hills, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 4, 1982, Ser. No. 432,612
Int. Cl.^{3} H02K *15/16*
U.S. Cl. 29—593 **6 Claims**



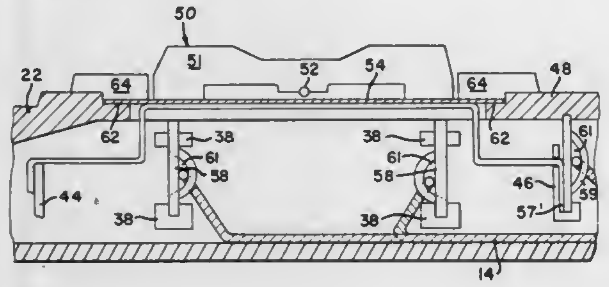
1. A method of assembling a dc permanent magnet machine comprising the steps of:

situating a layer of curable flux conductive spacer material between at least one magnet and at least one of two pole pieces associated with the magnet in the stator of the machine;
positioning a rotor in the stator equidistant in the radial direction from the stator;
applying pressure to the pole pieces to move the pole pieces towards one another compressing the spacer material, while keeping the rotor equidistant from the stator;
measuring the rotor inductance while applying pressure to the pole pieces; and
removing pressure from the pole pieces when a predetermined value of rotor inductance is reached, thereby achieving the desired rotor air gap.

4,443,935
PROCESS FOR MAKING ELECTROSURGICAL SCALPEL PENCIL

Gene Zamba, Oldsmar, and Carl Foltz, North Largo, both of Fla., assignors to Trident Surgical Corporation, Clearwater, Fla.

Filed Mar. 1, 1982, Ser. No. 353,479
Int. Cl.^{3} H01H *11/06;* A61B *17/36*
U.S. Cl. 29—622 **11 Claims**



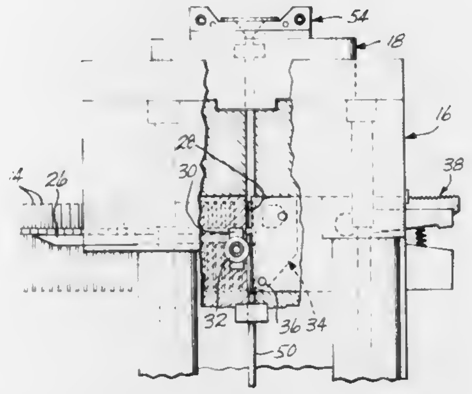
1. A process for manufacture of an electrosurgical pencil, comprising the steps of:
(a) attaching wire contact clips to wire ends of a multi-conductor cable;
(b) placing a spring contact member within a housing portion of a two piece electrosurgical pencil casing;
(c) mounting said wire contact clips to said housing portion adjacent to and spaced from said spring contact member;
(d) placing a second housing portion on said first housing portion, and sealing the second housing portion to said first housing portion to complete a casing;
(e) selecting an asymmetric generator plug, and coupling the contact clips on the opposite ends of said wires to said plug;
(f) mounting a seal, switch body, and cap frame to a switch seat defined in said casing adjacent said spring contact; and
(g) securing said cap frame to said casing, retaining said seal and switch body.

4,443,936
CONTACT CRIMPER AND METHOD OF USING

Luis J. Lazaro, Jr., Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.
PCT No. PCT/US81/01320, 371 Date Sep. 30, 1981, 102(e) Date Sep. 30, 1981, PCT Pub. No. WO83/01347, PCT Pub. Date Apr. 14, 1983
PCT Filed Sep. 30, 1981, Ser. No. 322,302
Int. Cl.^{3} H01R *43/04*
U.S. Cl. 29—863 **8 Claims**

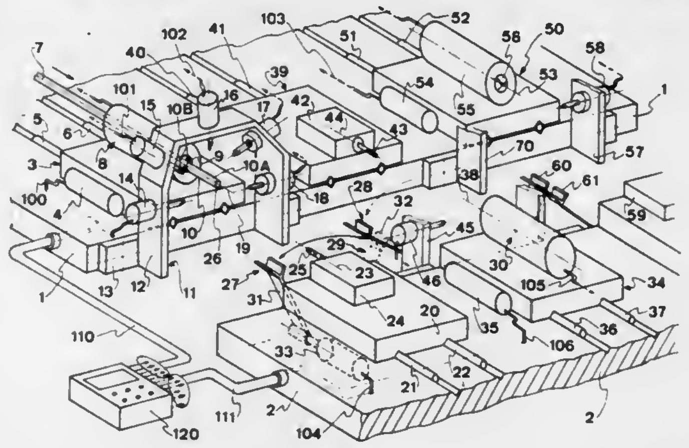
1. A method of crimping a contact to a wire end, with steps comprising: feeding a line of contacts into an alignment hole in a guide block, holding a positioned contact with a shaped end of a snap-out plug, moving the end of the plug aside while raising the contact up into a crimper head, inserting a wire end through a guiding funnel into the contact, opening the funnel and bottoming the wire in the contact, and crimping the contact to the wire.

3. An apparatus for crimping a contact to a wire end comprising: means located on a support means for automatically feeding a succession of wire contacts to a reference hole in a guide block, a crimping device on the support means aligned over the reference hole, a plunger axially aligned in the reference hole and means for reciprocally moving the plunger, a multi sectional funnel located over the crimper to axially align all wires of a wire end into a barrel of the contact, means located above said crimper for opening the funnel to bottom the wire end in the barrel before crimping the contact to the wire end, resilient means located in the guide block for aligning the contact in the reference hole, means located below the guide block for moving the resilient aligning means aside as the plunger moves the contact up into position, and means operably located for sequencing all the devices to crimp the wire ends into the contacts.



4,443,937
METHOD FOR MAKING AN ELECTRICAL CONNECTOR PIN

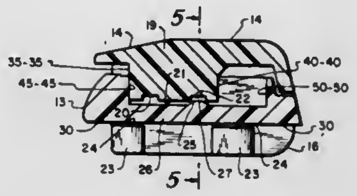
Jean P. Dominici, and Michel Morand, both of Cluses, France, assignors to Souriau-Cluses (S.A.), Boulogne, France
Filed Apr. 5, 1982, Ser. No. 365,682
Claims priority, application France, Apr. 24, 1981, 81 08168
Int. Cl.^{3} H01R *43/00*
U.S. Cl. 29—874 **5 Claims**

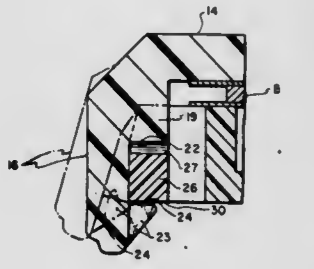


1. Method for making an electrical connector pin from a substantially cylindrical workpiece, said method comprising the steps of:
performing, at a first location, a first machining operation on a first end part of said cylindrical workpiece while holding it by the other, second end part,
moving said workpiece from the first location to the second location, while maintaining the axis of the workpiece substantially perpendicular to the direction of movement,
following the second step, performing a second machining operation on the second end part while holding said first end part,
and repeating the steps above as required for the complete machining of said cylindrical workpiece to give it a final form, after said workpiece having undergone the previous machining operations and maintaining the orientation of the workpiece such that its axis is generally perpendicular to the direction of movement from one location to another, such that at said positions, alternate end parts of said workpiece are exposed for machining.

4,443,938
DISPOSABLE RAZOR WITH SLIDING CAP

Peter Bowman, Sandy Hook, Conn., and Allan S. Frieze, Salt Lake City, Utah, assignors to Warner-Lambert Company, Morris Plains, N.J.
Continuation-in-part of Ser. No. 108,747, Dec. 31, 1979, Pat. No. 4,328,615. This application Mar. 18, 1982, Ser. No. 359,341
The portion of the term of this patent subsequent to May 11, 1999, has been disclaimed.
Int. Cl.^{3} B26B *21/06*
U.S. Cl. 30—47 **23 Claims**



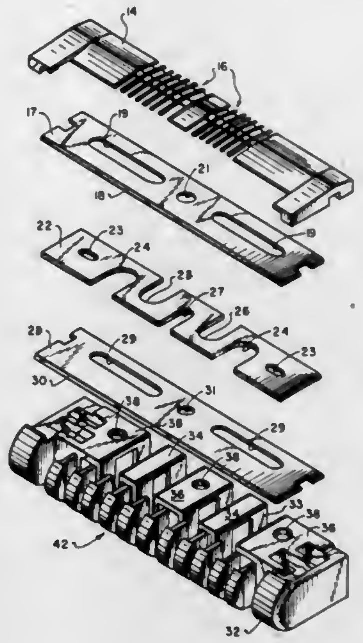


1. A disposable razor comprising a plastic handle and contiguous rigid seat member for supporting a blade package, said seat member having opposed rails, said handle and seat member defining a single piece-part, blade means carried by and permanently fixed to said seat member, and a flexible plastic cap slidable on said seat member along said rails, said cap and said seat member being formed with interlocking elements which effect a snap-on action creating a snap fit between the cap and seat member and facilitating relative motion between the cap and the seat member through a definite stroke between a first and a second position while precluding separation of the cap and seat member, wherein the blade support and the cap are formed with cooperating detent means which relatively and releasably lock the cap in the first or second position.

4,443,939
FLEXIBLE RAZOR BLADE CARTRIDGE

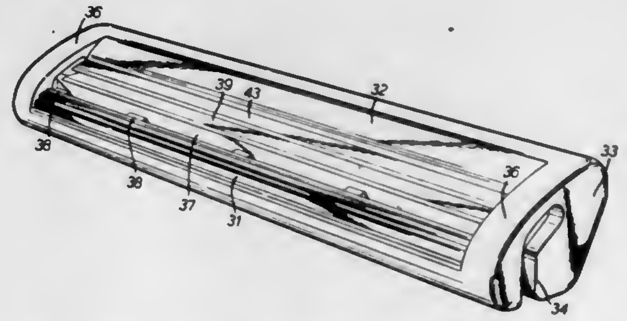
Vincent C. Motta, West Norwalk, and Ernest F. Kiraly, Fairfield, both of Conn., assignors to Warner-Lambert Company, Morris Plains, N.J.
Filed Apr. 30, 1982, Ser. No. 373,365
Int. Cl.^{3} B26B *21/14*
U.S. Cl. 30—49 **7 Claims**

1. A flexible blade package or cartridge for wet shaving comprising a plastic blade support, one or more blades, and a cap, said blade support defining a sinuous cage-like structure composed of a plurality of contiguous sinews, ribs or ribbons, said blade support having a segmented guard bar projecting therefrom, said support having a planar surface for receiving and supporting one or more blades, said cap being formed with pin means making a snap fit with the blade support for securing the cartridge into a unitary assembly and said cage-like structure defining generally a sine wave.



4,443,940
SAFETY RAZOR HEAD

John F. Francis, Horsell Woking; Brian R. Kirk, Tadley, and John C. Terry, Tilehurst, all of England, assignors to The Gillette Company, Boston, Mass.
Division of Ser. No. 152,271, May 22, 1980, Pat. No. 4,335,508. This application Dec. 1, 1981, Ser. No. 326,354
Claims priority, application United Kingdom, May 25, 1979, 7918270; Mar. 26, 1980, 80103134
Int. Cl.^{3} B26B *21/06, 21/14*
U.S. Cl. 30—50 **3 Claims**



1. A safety razor head comprising a guard member, a platform member fixed to the guard member and extending in parallel spaced relationship thereto, a leading blade fixed to said platform member substantially along its length, a cap member located above and parallel to said platform member, a following blade fixed to said cap member, and flexible bridge portions interconnecting said guard and cap members, said bridge portions extending transversely to cutting edges of said blades said bridge portions permitting resilient flexing of said cap member relative to said guard member during a shaving operation to tilt said following blade relative to said leading blade and to change the angle therebetween thereby increasing the exposure of said following blade.

4,443,941
INTRAMEDULLARY PIN CUTTING INSTRUMENT

Jack L. McPhaul, 17411 F.M. 529, Houston, Tex. 77095
Filed Oct. 16, 1981, Ser. No. 312,182
Int. Cl.^{3} B26D *1/09*
U.S. Cl. 30—241 **7 Claims**

1. An instrument for cutting an elongated metal pin to a

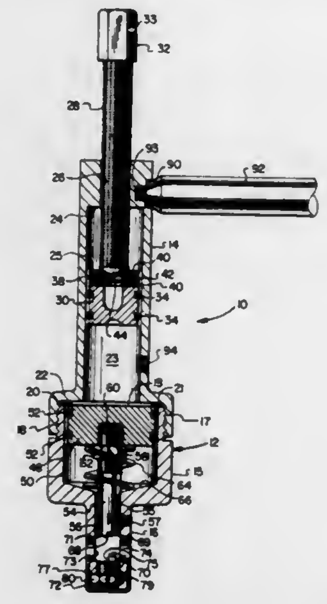
predetermined length by forcibly severing said pin, said instrument comprising:

a housing including a first section forming a first cylindrical bore defining at least in part a pressure fluid chamber, and a portion supporting an anvil;

a member disposed in said housing and movable relative to said anvil for engagement with a pin disposed against said anvil to forcibly sever said pin;

a screw actuator mounted on said housing and enaged with a threaded part of said housing and operable to cause said member to move toward said anvil to sever said pin in response to rotation of said screw actuator;

hydraulic force transmitting means interconnecting said screw actuator and said member including a first piston slidably disposed in said chamber and sealingly engaged with said bore, said first piston being connected to said member for moving said member toward said anvil in response to pressure fluid acting on said first piston, a second housing section including a second cylindrical bore of reduced diameter with respect to the diameter of said first bore, a second piston slidably disposed in said second bore and sealingly engaged with the wall of said second bore and delimiting said chamber, said second piston being interengaged with said screw actuator and responsive to axial movement of said screw actuator to displace pressure fluid in said chamber to move said first piston and said member toward said anvil for providing a substantial force acting on said member to sever said pin in response to a moderate turning effort exerted on said screw actuator, a handle connected to said second housing section and extending transversely with respect to the axis of rotation of said screw actuator for holding said instrument against rotation while said scrw actuator is being rotated to displace said second piston; and



an elongated reduced diameter portion of said second housing including said second bore and further including at least two threaded holes for alternately receiving a threaded end portion of said handle.

4,443,942

TOOL FOR TRIMMING LAPPING EDGE PORTIONS OF SHEET MATERIAL

Paul J. Demeter, 36 Stoneleigh Ave., Buffalo, N.Y. 14223

Filed May 17, 1982, Ser. No. 379,278

Int. Cl.³ B26B *26/60*

U.S. Cl. 30—293 **13 Claims**

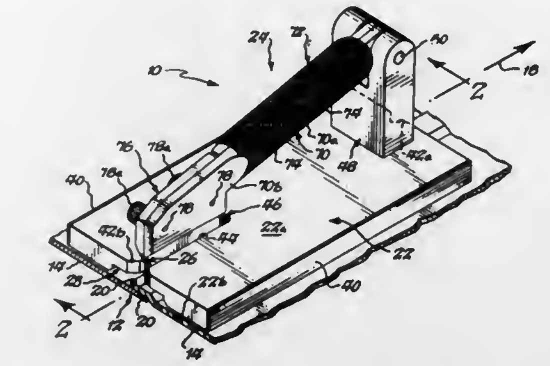
1. A tool for trimming lapping edge portions of a pair of sheets to form a butt seam therebetween, said tool comprising in combination:

a base having front and rear ends and means for supporting said base on exposed surfaces of said sheets in a straddling and non-contacting relation to said lapping edge portions and for movement in a direction extending lengthwise thereof;

a handle having a front end and a rear end for removably mounting a sheet cutting blade;

pivot means for pivotally mounting said front end of said handle on said front end of said base to permit movement of said handle, with said blade disposed within a plane extending normal to said base and in alignment with said direction, between positions in which said blade projects below said base for purposes of cutting said sheets and in which said blade is disposed above said base to facilitate changing of said blade;

locking means for releasably locking said handle in a carrying/cutting position wherein said handle may freely undergo a limited range of movement relative to said base for permitting the distance said blade projects below said base to be varied for purposes of adjustment of the depth of cut of said blade, the extent of said range of movement being less than the extent of movement of said handle permitted by said pivot means; and



adjustment means for limiting movement of said handle within said range of movement in a direction relatively towards said base for adjustably varying the distance said blade may be projected below said base by tool operator applied force exerted on said handle, while permitting the picking up of said tool by said handle to move said handle within said range of movement in a direction relatively away from said base to reduce the distance said blade projects below said base.

4,443,943

PIPE CUTTER

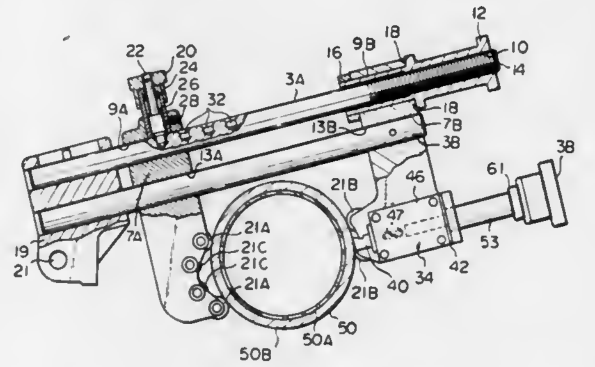
Masaaki Maruyama, Kyoto, Japan, assignor to Rex Industries Co., Ltd., Osaka, Japan

Filed Jan. 27, 1982, Ser. No. 343,171

Claims priority, application Japan, May 27, 1981, 56-75798[U]

Int. Cl.³ B23D *21/06*

U.S. Cl. 30—94 **7 Claims**



1. A pipe cutter comprising: a guide member; a pair of supporting arms which are arranged on the guide member so that they can approach each other and separate from each other; pipe holding members provided with rotatable supporting rollers, which are arranged on said supporting arms to confront each other so that a pipe to be cut is held on at least three points of the periphery thereof between the pipe holding members; a sliding member having a cutting tool fixed thereto, which is mounted on at least one of the pipe holding members so that the sliding member can move in the radial direction of the pipe to be cut; a handle; a feed screw shaft attached between said handle and said sliding member and screwed to said sliding member, wherein by turning the feed screw shaft by means of the handle, the sliding member and cutting tool can be moved in a direction toward said pipe; and clutch means for disengageably engaging said handle and said feed screw shaft so that rotation of the handle is transmitted to the screw shaft only when the cutting resistance acting on the side of the feed screw shaft is smaller than a predetermined value, said clutch means including a first clutch member which is connected to the feed screw shaft and which is frictionally engaged by the handle, said clutch means further including a plurality of balls and individual biasing means associated with each of said balls for biasing each of said balls into frictional engagement between said first clutch member and said handle.

4,443,944

SPRING RETRACTED TAPE MEASURE

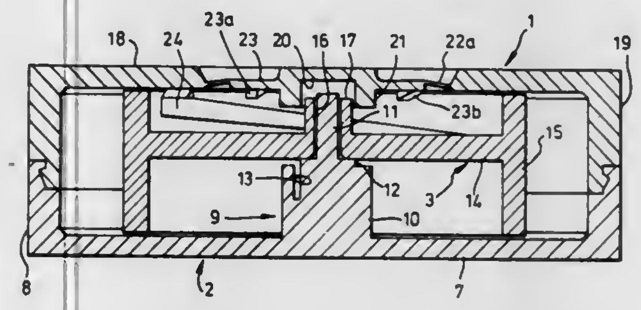
Phillip G. Beesley, Guisborough, England, assignor to Howard Wall Limited, London, England

Filed Aug. 26, 1982, Ser. No. 411,599

Claims priority, application United Kingdom, Aug. 27, 1981, 8126221

Int. Cl.³ G01B *3/10*

U.S. Cl. 33—138 **14 Claims**



12. A tape measure comprising a casing formed by a first shell and a second shell; a drum mounted for rotation within the casing about a pillar formed integrally with the second shell; a measuring tape wrapped around the drum and adapted to be withdrawn from the casing; a spring means adapted to rotate the drum to retract the tape after it has been at least partly withdrawn from the casing; a ratchet mechanism comprising a first ratchet member constituted by a plurality of ratchet teeth formed integrally with the first shell arranged on a circle which is substantially coaxial with the axis of rotation of the drum and at least one further ratchet member constituted by an arm resiliently mounted at one end thereof on the side of the drum facing the first shell, said arm having a free end with an abutment to engage the first ratchet member; and a disengagement means adapted to move said at least one arm from an engagement position in which it engages the first ratchet member to a retracted position in which there is no such engagement to enable rotation of the drum by the spring means, said disengagement means being constituted by an area of the first shell which is bounded by a flexible region of the first shell and which is movable with respect to the remainder of the first shell, said area being located adjacent the end of said pillar and being movable axially of the pillar to engage said at least one arm and to move said at least one arm from the engagement position to the retracted position.

4,443,945

ELECTRIC MICROMETER

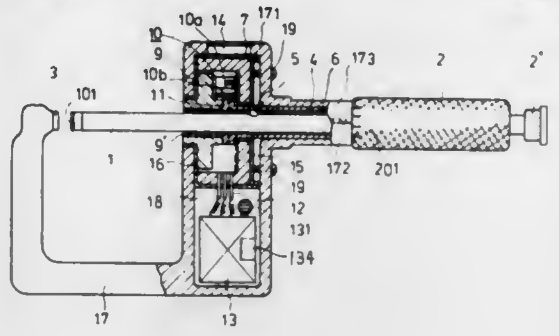
Takehide Takemura, and Hiroshi Yamada, both of Hirakata, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Aug. 28, 1981, Ser. No. 297,500

Claims priority, application Japan, Sep. 5, 1980, 55-126326[U]

Int. Cl.³ G01B *3/18*

U.S. Cl. 33—166 **14 Claims**



1. An electric micrometer comprising:

a U-shaped frame having first and second arms,

an anvil held by a first arm of said frame,

a spindle screw-movably held by said second arm of said frame,

a sleeve rotatably held by said second arm in such a manner to be rotated coaxially with said spindle without an axial advancing,

a contact type rotary encoder which comprises a disk substrate provided with conductor patterns thereon fixed to said arm of said frame, and a rotary brush holder provided with rotary brush contacts being mounted to link to said sleeve,

a count-and-control circuit means contained in said frame for counting output signals of said rotary encoder and proceeding with a predetermined control,

digital indicator means disposed in said frame for indicating measured results issued from said count-and-control circuit,

and wherein said brush holder is linked to said sleeve by means of a shaft coupler provided with at least a spring means disposed between said sleeve and said brush holder for preventing back-lash.

4,443,946

PROBE FOR MEASURING WORKPIECES

David R. McMurtry, Wotton-under-Edge, England, assignor to Renishaw Electrical Limited, Wotton-under-Edge, England

Filed Jun. 26, 1981, Ser. No. 277,637

Claims priority, application United Kingdom, Jul. 1, 1980, 8021508

Int. Cl.³ G01B *7/28*

U.S. Cl. 33—174 L **8 Claims**

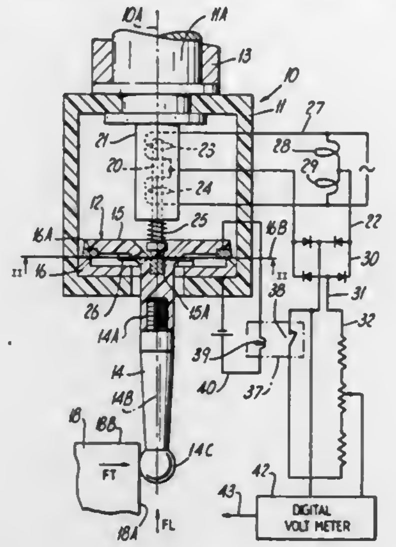
1. A probe for measuring workpieces comprising

a fixed member having an axis;

a movable member including an elongate stylus supported on said fixed member and having a free end, said stylus being displaceable relative to the fixed member in the direction of said axis by a corresponding axial displacement of said free end and angularly displacable relative to said axis by a displacement of said free end in a direction transverse to said axis;

a transducer connected between said movable member and said fixed member, said transducer producing an initial output corresponding to a displacement of said free end, the initial output responsive to a given axial displacement of said free end differing from the corresponding initial output responsive to an equal transverse displacement of said free end;

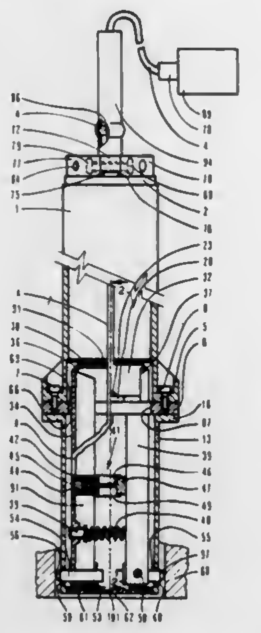
means for generating a signal responsive to one of the axial and angular displacements of said stylus; and means responsive to said signal for modifying the output of said transducer to produce a final output which is equal



for equal axial and transverse displacements of said free end.

4,443,947
PLUG COMPARATOR FOR CHECKING THE DIAMETER OF HOLES

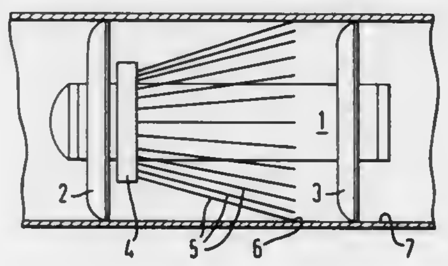
Mario Possati; Guido Golinelli, both of Bologna, and Narciso Selleri, Monteveglio, all of Italy, assignors to Finike Italiana Marposs S.p.A., S. Marino di Bentivoglio, Italy
Filed May 29, 1981, Ser. No. 268,632
Claims priority, application Italy, Jun. 2, 1980, 3437 A/80
Int. Cl.^{3} G01B *5/12*
U.S. Cl. 33—178 E 4 Claims



1. A gauge for checking linear sizes of mechanical parts, comprising: a support; an integral member including a first section coupled to the support, two resiliently flexible sections connected to the first section and defining relevant fulcrum devices; two further sections, each defining a relevant movable arm, connected to the flexible sections for rotation movement about the relevant fulcrum devices; two feelers coupled to the movable arms, respectively, for contacting the part to be checked; and transducer means coupled to the movable arms for providing a signal responsive to the mutual position of the movable arms, the transducer means including two transducer parts coupled to the movable arms, respectively, each transducer part and each feeler being coupled to the relevant movable arm on the same side with respect to the relevant fulcrum device, wherein the gauge further includes a protective nosepiece substantially housing the movable arms and having an open end defining a seat, said support being substantially a plate defining first and second sides and at least a through hole, the moving arms passing through the plate, and wherein the gauge also includes a substantially circular closure base plate adapted to be coupled to said seat, the base plate having a cut substantially in diametral direction which divides it into two adjacent portions connected by a third portion, the third portion being elastically yieldable to permit bringing the first two portions together to insert the base plate in said seat and effect the fitted connection of the base plate in the seat.

4,443,948
INTERNAL GEOMETRY TOOL

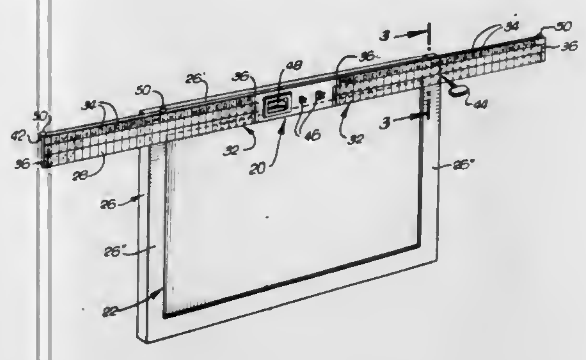
Richard Reeves, 61 Dines Close, Wilstead, Bedford, England
Filed Sep. 23, 1981, Ser. No. 304,958
Claims priority, application United Kingdom, Nov. 11, 1980, 8036116
Int. Cl.^{3} G01B *7/12, 7/28*
U.S. Cl. 33—178 E 1 Claim



1. An apparatus for monitoring the topography of the internal surface of a pipe, said device comprising a carrier member which is movable within the pipe to be monitored; means attached to said carrier member to enable said carrier member to be moved along the pipe; a plurality of sensor means mounted around said carrier member for monitoring the contour of the internal surface of the pipe at a corresponding number of points as the carrier moves along the pipe, each sensor means including a feeler arm which is pivotally mounted at a first end thereof to the carrier member and including a sensing tip at its second end which contacts the internal surface of the pipe, each said feeler arm including a magnetic sensing coil near its first end; spring means attached to each said feeler arm to bias its position such that the sensing tip at its second end is in continuous contact with the internal surface of the pipe as said carrier member moves along the pipe; bias coil windings connected to said carrier member to create an alternating magnetic field in which each said magnetic sensing coil will be movable as the respective feeler arms pivot due to irregularities detected in the internal surface of the pipe by the sensing tip thereof; means for supplying a controlled, induced voltage to each said magnetic sensing coil; means for processing the signals emitted from said magnetic coils, said signal processing means including at least two multiplexers to which the signals from said magnetic sensing coils are fed, an adder to which the output signals from each of said multiplexers are fed, a voltage signal member for generating a signal representative of the nominal diameter of the pipe, a differential amplifier to which the output signals from both said adder and said voltage signal member are fed, means providing a predetermined threshold voltage representing permissible departure from roundness, and a comparator means to which the signals from said differential amplifier and said means providing a predetermined threshold voltage are fed, said comparator means providing respective output signals if the voltage signals from the differential amplifier exceed the predetermined threshold voltage; and means for recording the output signals from said comparator means.

4,443,949
PICTURE-HANGING TEMPLATE

Charles Newton, 1000 San Pasqual St., Apt. #14, Pasadena, Calif. 91106
Filed Oct. 18, 1982, Ser. No. 434,839
Int. Cl.^{3} G01B *3/14*
U.S. Cl. 33—180 R 26 Claims

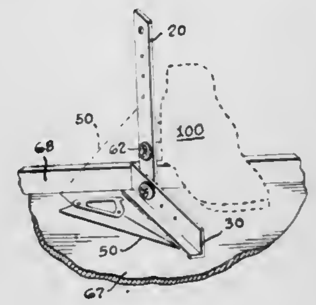


1. A template for use in marking fastener attachment points on a wall and a wall-supported member to be hung on the wall, comprising:

an elongated template body having two visibly distinguishable and substantially mirror image arrays of longitudinally spaced holes formed therein on opposite sides of the longitudinal center thereof, each of said holes of one of said arrays being correlated with a corresponding one of said holes of the other of said arrays to provide a plurality of correlated pairs of holes substantially equidistant from the longitudinal center of the template body, whereby a selected one of said correlated pairs of holes is usable to mark an identically spaced pair of attachment points on the wall and the wall-supported member.

4,443,950
PRECISION SAW BLADE ADJUSTMENT DEVICE

Eugene A. Cockeram, 5306 Boy Scout Rd., Florence, Oreg. 97439
Filed Dec. 23, 1981, Ser. No. 334,051
Int. Cl.^{3} B27G *23/00*
U.S. Cl. 33—185 R 5 Claims



1. A precision powered saw blade adjustment apparatus for use in combination with an adjustable triangle to obtain precision blade angle settings for powered saw blades, comprising

a first major component in the form of an elongated rectangular member having two enlarged apertures, wherein at least one of the enlarged apertures is dimensioned to receive the arbor of a powered saw blade, and a plurality of small apertures disposed along its length between the said two enlarged apertures,

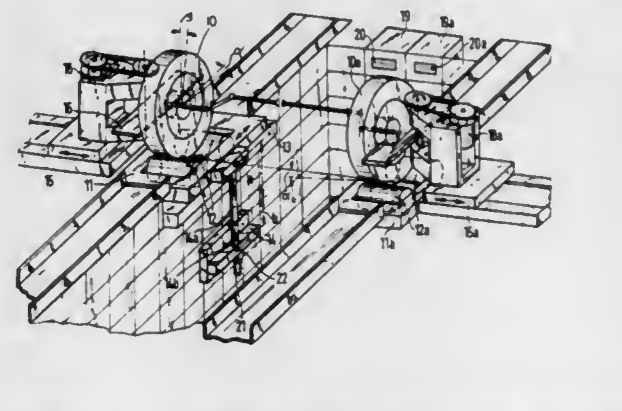
a second major component comprising of an elongated L-shaped member, having a plurality of small aperatures disposed along the longitudinal center line of its vertical leg, and

securing means dimensioned to be received within the said small apertures on the first and second major components to join the components together,

whereby the two major components are substituted for the saw blade on the arbor, and used in conjunction with the adjustable triangle, to determine the angle of adjustment of the arbor required to produce a given blade setting.

4,443,951
ARRANGEMENT FOR THE MEASURING AND CORRECTING OF THE STEERING GEOMETRY OF MOTOR VEHICLES

Claus Elsässer; Günther Ross, both of Oberndorf, and Volker Schwarz, Zimmern, all of Fed. Rep. of Germany, assignors to Mauser-Werke Oberndorf GmbH, Oberndorf, Fed. Rep. of Germany
Filed Jul. 16, 1981, Ser. No. 283,833
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1980, 3027089
Int. Cl.^{3} G01B *5/255*
U.S. Cl. 33—203.13 10 Claims



1. An arrangement for measuring and correcting the steering geometry of a motor vehicle, said arrangement comprising:

(a) first and second wheel angle measuring means, each of said means being mounted on a carriage means for reciprocation into engagement with a pair of wheels to be measured, each of said means generating a signal indicative of the initial camber and toe in angle of the wheel being meaasured;

(b) first and second wheel positioning means for supporting a pair of wheels to be measured,

(i) said first wheel positioning means being fixed with respect to a transverse axis of reciprocation for said wheel angle measuring means;

(ii) said second wheel positioning means being mounted for displacement along a longitudinal axis perpendicular to said transverse axis;

(c) measuring means for measuring the longitudinal displacement of said second wheel positioning means and generating a signal Δ_x indicative of said longitudinal displacement;

(d) computer means for generating a correcting angle α_k by comparing a track W with said signal Δ_x;

(e) means for displaying the desired correcting α_k and the initial camber and toe in angles from said wheel angle measuring means.

4,443,952
GYROSCOPIC APPARATUS

Howard E. Schulien, Montville; Raymond M. Bendett, and Michael J. Lanni, both of Ridgewood, all of N.J., assignors to The Bendix Corporation, Teterboro, N.J.
Filed Nov. 9, 1981, Ser. No. 319,483
Int. Cl.^{3} G01K *19/384*
U.S. Cl. 33—324 26 Claims

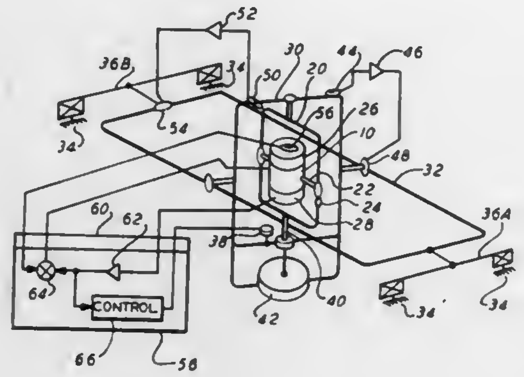
1. Apparatus operable gyroscopically to determine direction and to determine north, comprising:

a case;

gimbal means rotatably mounted in said case for rotating azimuthally; and

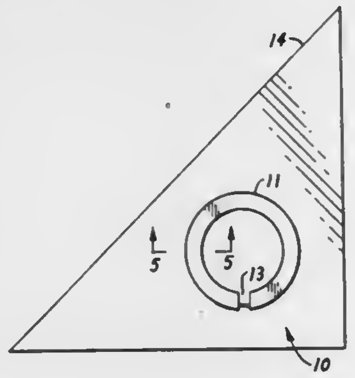
a central gyro having transverse to its spin axis a single degree of rotational freedom, said central gyro being rotatably mounted in said gimbal means for rotation about

said spin axis to shift said degree of freedom between a vertical and a horizontal axis, said central gyro including:
transducer means for sensing motion about said single degree of freedom and for providing a deflection signal signifying said motion; and



torque means connected to said transducer means and responsive to its deflection signal for applying a torque to said central gyro tending to affect motion about said single degree of freedom when said single degree of freedom is oriented along said vertical axis.

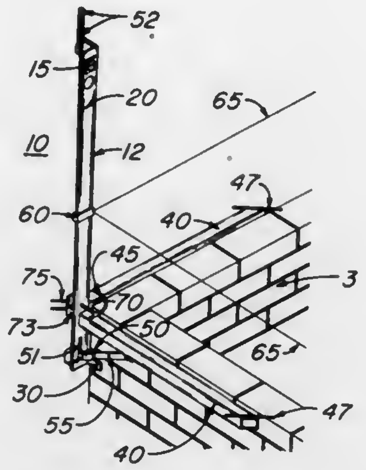
4,443,953
HANDLE FOR A DRAFTING INSTRUMENT
Stephen E. Gregory, 3217 Celanese Rd., Rock Hill, S.C. 29730
Filed May 26, 1982, Ser. No. 381,936
Int. Cl.^{3} G01B *3/00*
U.S. Cl. 33—403 **19 Claims**



1. A drafting instrument with a handle comprising a partial ring which may be compressed and inserted into a mating hole in the drafting instrument; said ring including mating means for frictionally engaging said drafting instrument without projecting below the bottom surface of the drafting instrument and which when the compressed ring is released expands to firmly engage the periphery of the mating hole, the mating means then providing secure attachment of the handle to the drafting instrument without interfering with the slidability of the drafting instrument, and the part of the ring exposed above the surface of the drafting instrument thus providing a handle for the easy manipulation of the drafting instrument.

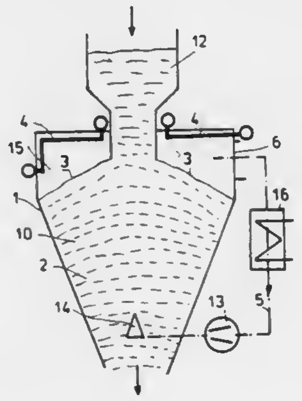
4,443,954
MASONRY GUIDE
John S. Clark, P.O. Box 71, Hines, Oreg. 97738
Filed Sep. 22, 1982, Ser. No. 421,235
Int. Cl.^{3} G01C *15/10*
U.S. Cl. 33—404 **10 Claims**

1. A masonry guide comprising:
a vertically upright standard;
a fork secured to said standard adjacent its lower end, said fork adapted to engage the corner of a building structure;
a pair of horizontally extending arms pivotally engaging said standard at right angles one to another, each of said arms provided with a pin adjacent its terminal end, and a common pin adjacent their pivotal ends, said pins adapted for positioning upon the top surface of a corner building structure;



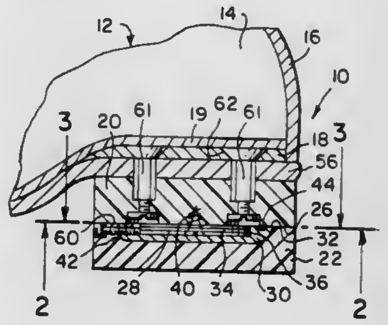
adjustment means connected between and pivotally engaging said standard and each of said arms for plumbing said standard; and
guideline attachment means connected to said standard above said arms for holding one or more guidelines in place.

4,443,955
METHOD AND INSTALLATION FOR COOLING HOT BULK MATERIAL
Georg Beckmann, Jacquingasse, Austria, assignor to Waagner-Biro A.G., Austria
Filed May 26, 1981, Ser. No. 267,337
Claims priority, application Austria, May 30, 1980, 2875/80
Int. Cl.^{3} F26B *5/00*
U.S. Cl. 34—20 **9 Claims**



1. A method for cooling hot bulk material, such as red-hot coke, sinter, or clinker, in a cooler into the housing of which the hot bulk material is charged so as to define a free surface of spread bulk material therewithin, and in particular, for reducing the temperature to which a cooling gas stream flowing through the hot bulk material would otherwise be increased during its flow through the hot bulk material, comprising the steps of:
providing a radiation cooling surface within the cooler housing positioned in substantially opposed, spaced and non-contacting relation with respect to the free surface of spread bulk material;
charging additional hot bulk material into the cooler housing onto the free surface of spread bulk material already within the cooler so as to define a new free surface of spread bulk material therewithin which is in substantially opposed, spaced and non-contacting relation with the radiation cooling surface;
initially cooling the hot bulk material by absorbing and removing the radiant heat radiated from the free surface of the hot bulk material in the radiation cooling surface, substantially without the transfer of convective heat from the bulk material to the radiation cooling surface; and
substantially further cooling the initially cooled bulk material by passing a cooling gas stream through the same;
whereby the temperature to which the cooling gas stream is increased during its flow through the initially cooled hot bulk material is reduced relative to the temperature to which it would have otherwise been increased in the absence of said initial cooling step.

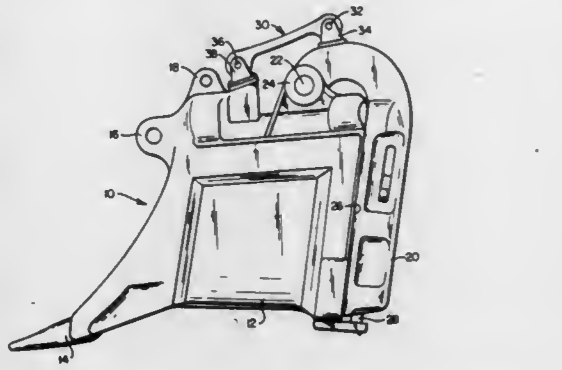
4,443,956
SHOE REPLACEABLE HEEL KIT
Albert Caccavale, 215B Faller Dr., New Milford, N.J. 07646
Filed Sep. 22, 1982, Ser. No. 421,447
Int. Cl.^{3} A43B *21/38, 21/36*
U.S. Cl. 36—36 R **3 Claims**



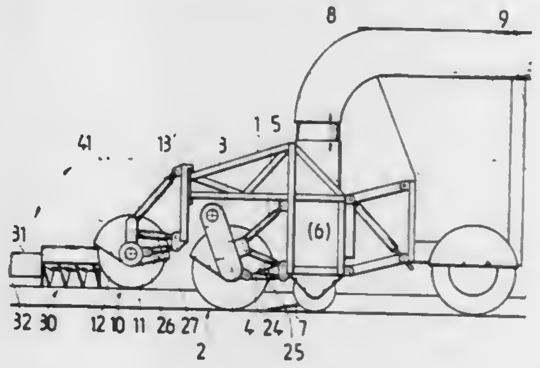
1. A shoe replaceable heel device, in combination comprising:
a heel base mounted on the bottom of the heel portion of the sole of a shoe, said base having an underside,
a replaceable heel,
connecting means for removably screwing said replaceable heel to said underside of said base, and
fastening means for securing said heel base to said sole, wherein said connecting means includes a circular base plate secured to said underside of said heel base and a circular replaceable plate secured to the top of said replaceable heel, said base plate having a male threaded perimeter and said replaceable plate having female screw threads adapted to mate with said threaded perimeter of said base plate, wherein said base plate extends downward from said heel base and said replaceable plate is embedded in said replaceable heel, wherein said sole has opposed top and bottom sides and wherein said fastening means includes a planar member disposed over said sole and at least one blind fastener nut disposed through said planar member, said sole, and said base heel, further including replaceable plate connecting means for securing said replaceable plate to said heel, said replaceable plate connecting means including a screw laterally extending from the inner side of said heel through said replaceable plate, wherein said circular replaceable plate forms a plurality of slats around the inner portion of the perimeter of said replaceable plate, said slats being adapted to receive said heel.

4,443,957
SNUBBER HAVING UNITARY ELASTIC BODY
Raymond J. Novotny, Sparta, and Henry J. Ihlein, Ringwood, both of N.J., assignors to Abex Corporation, New York, N.Y.
Filed Feb. 22, 1982, Ser. No. 350,942
Int. Cl.^{3} E02F *3/46*
U.S. Cl. 37—118 R **5 Claims**

1. A snubber for use with a dipper which includes an opening and a door pivoted to the dipper for movement through an intermediate position between positions opening and closing the opening, characterized by the snubber having a pair of end lugs interconnected by an elongated elastomeric working section, each end lug having mounting means for connecting the snubber between the dipper and the door so that the working section is subjected to tensile stress during movement from the intermediate position to the closed position to retard door closing, is subjected to bending stress during door movement from the intermediate position to the open position to retard door opening, and is unstressed in the intermediate position, the snubber is a unitary elastomeric body in which the end lugs are integral with the working section, and the working section has a substantially uniform and generally rectangular cross-section and a thickness/width ratio of less than 1.



4,443,958
MEANS FOR REMOVING SNOW FROM ROAD
Veijo E. Huotari, Kauppakatu 29 A 11, SF-87100 Kajaani 10, Finland
Filed Apr. 22, 1982, Ser. No. 370,616
Claims priority, application Finland, Apr. 28, 1981, 811324
Int. Cl.^{3} E01H *5/09*
U.S. Cl. 37—238 **4 Claims**



1. An apparatus for removing snow and/or ice from a roadway, comprising a mobile vehicle, a substantially horizontal helical first cutter mounted on the vehicle and extending laterally of the direction of movement of said vehicle, drive means for rotating said first cutter around its axis, first pivot means for pivoting said first cutter in a vertical direction, operation of said first cutter serving to dislodge ice and/or snow from said roadway, delivery means for conducting the dislodged ice and/or snow to a collection site, a second helical cutter disposed generally parallel to said first cutter and located ahead of said first cutter, a frame connected to said vehicle, guide means on said frame for guiding the second cutter in movement relative to said first cutter in a direction parallel to the axis of said first cutter from an extended position where the second cutter extends outwardly beyond the first cutter to a retracted position where the second cutter is in substantial registry with the first cutter, displacement means for moving said second cutter between said retracted and extended positions, and second pivot means for pivoting the second cutter relative to said guide means in a vertical direction and including an end cutter disposed generally horizontal and extending normal to said second cutter, said end cutter disposed adjacent an end of said second cutter.

4,443,959
STACKABLE PHOTOGRAPH HOLDERS

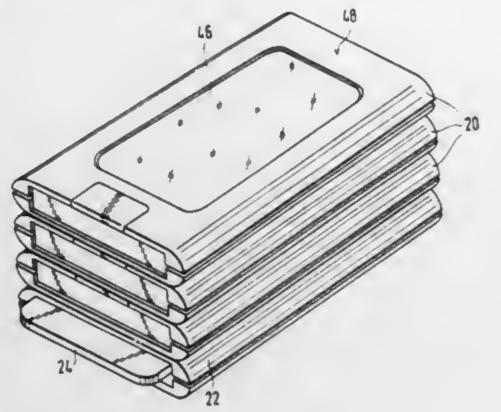
Peter Ackeret, Kusnacht, Switzerland, assignor to Licinvest AG, Chur, Switzerland

Filed Mar. 12, 1982, Ser. No. 357,764

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1981, 3110025

Int. Cl.^{3} G09F ***1/12***

U.S. Cl. 40—152 **16 Claims**



9. Apparatus for the storage of information bearing flat items comprising:

a plurality of holders, said holders each being configured for receiving at least a first of the flat items, said holders each including:

an outer higher frame portion surrounding a central depression on the upper side of the holder, said depression defining a plane; and

at least a first interlocking element on each of the upper and lower sides of the holder, said upper side interlocking element being defined by at least a portion of the transition edge between the outer higher frame portion and the plane of the central depression, said lower side interlocking element being defined by a land which at least in part is substantially complementary to the central depression but is shallower than said transition edge, said transition edge having a flat inner portion and a rounded outer portion, said land having a surface which defines a plane and having a contour which is interrupted by a plurality of flat-edged projections, said flat-edged projections fitting within the space bounded by the flat inner portion of the said transition edge of an identical holder;

said interlocking elements fitting loosely into one another when the holders are stacked one upon another; and

base means, said base means including slide-resistant means on its underside and an interlocking element on its upper side, said base means interlocking element being defined by at least a portion of a transition edge between an outer higher frame portion and a central depression, said base means transition edge having a flat inner portion and a rounded outer portion, said base means interlocking element depression defining a flat surface region, said base means interlocking element being at least complementary to said holder land whereby a holder may be positioned above and loosely captured by said base means, said base means transition edge being of less height than the height of said holder land whereby the surface of a land of a holder positioned on said base means will be spaced from the surface region of said base means depression.

4,443,960
FRAME STRAIGHTENING AND SUPPORTING DEVICE

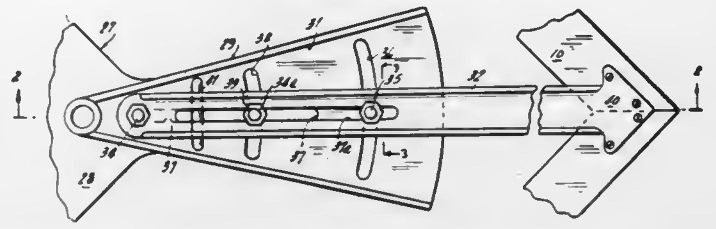
Jack Abel, 16-24 202 St., Bayside, N.Y. 11360, and Cora Abel, 12 Lee St., Cambridge, Mass. 02139

Division of Ser. No. 184,521, Sep. 5, 1980, Pat. No. 4,373,279. This application Sep. 13, 1982, Ser. No. 416,716

Int. Cl.^{3} G09F ***1/12***

U.S. Cl. 40—152.1 **4 Claims**

1. A frame supporting and tightening device comprising a rigid central plate disposed parallel to the plane of the frame, a plurality of adjustable longitudinally slidable and angularly displacable segmented arms secured at one end to the central plate and extending outwardly thereof, said segmented arms comprising a substantially wedge shaped inner segment and an outer segment slidably carried by each of the inner segments and swingable therein, pivot means including spaced adjusting screws carried by the outer arm segment to adjustably secure the segments together, at least one bracket secured at the free end of each of the segmented arms and means to vary the angular position of the arm segments with respect to each other and the central plate to apply a desired force to portions of the frame.



4,443,961
DISPLAY HOLDER FOR GROCERY TYPE CARTS

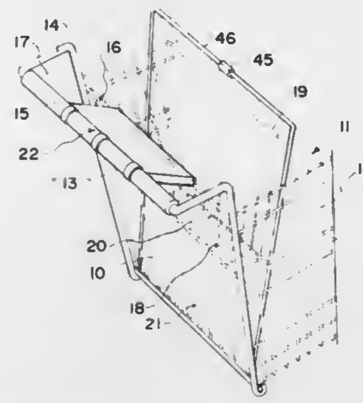
Edward J. Gilroy, 623-5th St. E., Saskatoon, Saskatchewan, Canada (S7H 1G4)

Filed Jan. 19, 1983, Ser. No. 459,047

Claims priority, application Canada, Feb. 9, 1982, 395830

Int. Cl.^{3} G09F ***3/00***

U.S. Cl. 40—308 **12 Claims**



1. A display holder for grocery carts and the like which include a transverse push bar and an upper transverse rod at the rear of the cart body spaced and parallel to the push bar; said display holder comprising in combination a substantially rectangular panel assembly including an upper side and a lower side defining at least one relatively thin recess therebetween opening out onto one longitudinal side of the panel assembly for detachably retaining display means therein, at least the upper side being transparent over the relatively thin recess, means to secure said panel assembly by the one longitudinal side thereof to the push bar of the associated grocery cart and means to secure said panel assembly by the other longitudinal side thereof, to the upper transverse rod at the rear of the cart body, said means to secure said panel assembly to the push bar of the associated cart including at least one clamp extending around the push bar and being secured adjacent to one longitudinal edge of the panel assembly.

4,443,962
BOLT SLOT GUARD FOR A HAND WEAPON

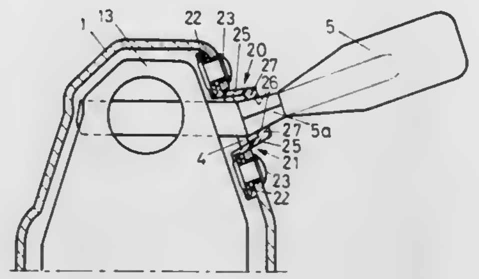
Alois Bernet, Neuhausen am Rheinfall, and Eduard Brodbeck, Beringen, both of Switzerland, assignors to SIG Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Dec. 4, 1981, Ser. No. 327,506

Claims priority, application Switzerland, Dec. 30, 1980, 9646/80

Int. Cl.^{3} F41C ***11/00, 27/08***

U.S. Cl. 42—16 **16 Claims**



1. In a hand weapon including a weapon housing, a breechblock accommodated in the housing for reciprocating motion, a bolt affixed to the breechblock and a slot, having opposite longitudinal edges, provided in the weapon housing; said bolt projecting through said slot and a slot guard arranged for covering said slot; the improvement wherein said slot guard comprises a first and a second sealing lip held by the housing along respective said longitudinal edges of said slot and projecting outwardly; said sealing lips being, at least along outer edge portions thereof, in a face-to-face engagement with one another; said sealing lips being locally spread apart by said bolt; further wherein each said sealing lip has a mounting part at which the respective sealing lip is mounted inside the housing and an elastic lip portion projecting outwardly through said slot.

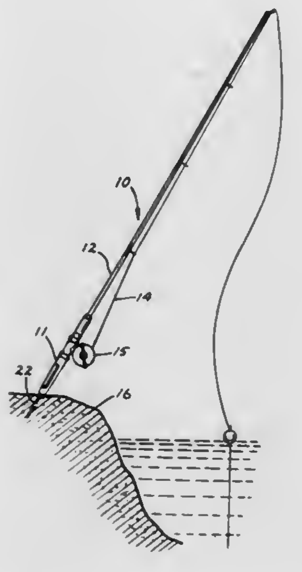
4,443,963
FISHING ROD

Donald L. Braaten, Box 384, Colfax, Wis. 54730

Continuation-in-part of Ser. No. 97,308, Nov. 26, 1979, abandoned. This application Apr. 27, 1981, Ser. No. 257,884

Int. Cl.^{3} A01K ***97/10***

U.S. Cl. 43—21.2 **1 Claim**



1. A fishing rod comprising:

a fishing rod section;

a fishing rod handle connected at a forward end to the fishing rod section;

said fishing rod handle having an axial bore open at the rearward end of the handle;

a bolt having an elongate shank located in the bore and axially movable therein between a first position of storage in the axial bore and a second position with an end portion of the shank extending rearwardly and outwardly of the handle and axial bore through said opening for engagement with structure for unattended support of said fishing rod;

said handle having an elongate slot means open to and parallel to said axial bore;

a locking arm having a stem, an interior end of said stem being assembled to said bolt shank, said stem extending from said shank through the slot means with an exterior end located exteriorly of said handle for manual manipulation to move said shank in said bore;

means to releasably lock the locking arm including an aperture formed in the shank of the bolt and extending transversely therethrough, said stem of the locking arm being movably assembled in said aperture with an end extendable out of the aperture on the side of the shank opposite the slot means, a first locking indent located in the side wall of the bore opposite the slot means and axially located to be engaged by the end of the stem extending through the aperture in the shank when the shank is in the first of said positions to lock the shank in said position;

a second locking indent formed in the side wall of the bore opposite the slot means and axially located to receive the end of the stem extending through said transverse aperture in the shank when the shank is in the second position to lock the shank in position;

said stem having a notch proximate the end of the stem extendable out of the aperture, a transverse pin secured to the shank extended across the aperture and located across the notch, said notch having an inner edge positioned to be intercepted by the transverse pin upon limited outward movement of the stem to restrict the amount of outward movement of the stem and maintain it engaged in the aperture.

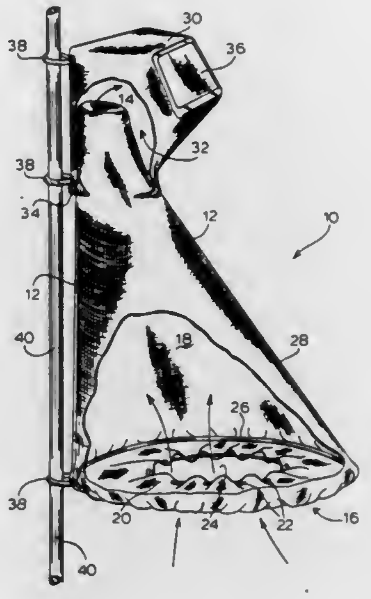
4,443,964
INSECT TRAP

John D. Horn, Hingham, and Ralph J. Hodosh, Norwood, both of Mass., assignors to Albany International Corp., Albany, N.Y.

Filed Oct. 9, 1981, Ser. No. 309,983

Int. Cl.^{3} A01M ***1/02, 1/10***

U.S. Cl. 43—118 **1 Claim**



1. A trap, which comprises:

a skewed frusto-conic member having a reticulated sidewall of a flexible, synthetic, material an open upper end, a partially closed lower end, a bore communicating between the ends, one portion of said sidewall being obliquely inclined outwardly from upper to lower end, another portion of said sidewall being substantially vertical;

a container with reticulated sidewalls of a synthetic, poly-

meric resin defining a chamber, having an open end adapted by size and configuration to mate with and close the upper open end of the skewed frusto-conic member;
said container being mounted through its open end on the upper open end of the skewed frusto-conic member so as to close said open end, whereby the bore of the member is in open communication with the chamber;
removable closure means in a wall of the container providing access to the chamber and means attached to the member along said substantially vertical portion of said sidewall for supporting the assembled member and container in an upright position.

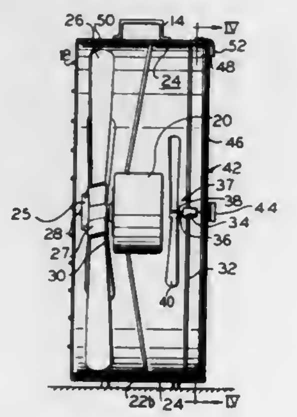
4,443,965
MOSQUITO KILLER

Ong T. Gie, Budimulia Jl. Ampera Besar 13A, Pademangan Barat, Jakarta Utara, Indonesia

Filed Jan. 7, 1982, Ser. No. 337,948

Int. Cl.^{3} A01M *1/06, 5/02;* **B01D** *46/28*

U.S. Cl. 43—139 **5 Claims**



1. An insect killer comprising:
a housing;
a suction fan assembly mounted within said housing;
a screening material covering a rear opening of said housing;
a second fan assembly mounted within said housing and positioned between said suction fan assembly and said screening material;
a killer bar rotatably mounted within said housing and in sliding contact with said screening material; and
means for mounting said second fan and said killer bar so that the air flow generated from said suction fan comprises the means for driving said second fan, and that said second fan comprises the means for driving said killer bar simultaneously such that the rotation of said killer bar crushes and kills any insects held onto an interior side of said screening material by means of a suction effect produced by said suction fan assembly.

4,443,966
TOY CAR

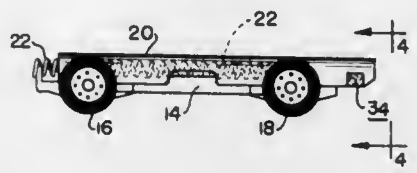
John D. Birdsall, 1262 Sunset Plaza Dr., Los Angeles, Calif. 90069

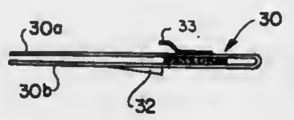
Continuation of Ser. No. 146,228, May 5, 1980, abandoned. This application Dec. 10, 1981, Ser. No. 329,174

Int. Cl.^{3} A63H *17/00*

U.S. Cl. 46—206 **6 Claims**

1. A toy vehicle comprising: a chassis; a separate vehicular body supported by said chassis; support wheels mounted on the chassis; an elongated tubular spring-retainer housing mounted on the chassis and extending longitudinally along the chassis from one end thereof toward the other end thereof; and a coil spring mounted in the housing and extending from one end of the housing to the other end of the housing, the forward end of the spring being secured to the chassis at the forward end of the housing, the rear end of the spring being freely movable along the housing, a bifurcated key having a U-shaped longitudinal cross section comprising a spaced parallel pair of plates joined in the back and generally held in a spaced relationship, one of said plates having a detent and the other of said plates having an immobilizing means extending therefrom, said key being configured to simulate an automobile key having a handle and a shaft, said key and housing having complementary contours so that the shaft of the key may be inserted into the rear end of the tubular housing simply by a linear sliding of said key to bear against the rear end of the spring and to move the rear end of the spring forwardly in the housing thereby compressing the spring, the tubular housing and said detent on one plate of the key forming cooperating latching means to interlock within said tube without having to separately manipulate parts of said key and to cause the spring to cock after the key is inserted a predetermined distance into the rear end of the tubular housing, said handle part of said key projecting out the back of the vehicle; the latching means comprising a notch in said housing and said detent forming a mating latch on said shaft, said latching means being released when the portion of the spaced parallel plates forming the handle of the key is moved in a particular direction after the spring has been cocked while said immobilizing means on the other of said plates holds it.





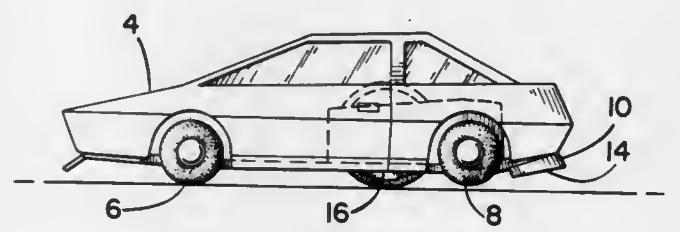
4,443,967
FLYWHEEL DRIVEN TOY CAR

Lawrence T. Jones, Playa Del Rey; Anson Sims, Granada Hills, and Ashley G. Howden, Los Angeles, all of Calif., assignors to California R & D, Culver City, Calif.

Filed Feb. 12, 1982, Ser. No. 348,301

Int. Cl.^{3} A63H *29/20*

U.S. Cl. 46—209 **12 Claims**



1. A toy vehicle comprising:
a frame member;
support means for supporting one end of the frame member during translation across a support surface;
drive means for driving the frame member in a translational movement including a rotatable flywheel member contacting the supporting surface during a driving translational movement;
means for manually introducing kinetic energy to the rotatable flywheel member during movement of the frame member while simultaneously disengaging its contact with the support surface during a preliminary energization movement whereby subsequent contact of the rotatable flywheel member with the support surface will drive the vehicle, including a rear wheel assembly and a gear train assembly interconnecting the rear wheel assembly with the flywheel member, the rear wheel assembly is mounted relative to the flywheel member so that it does not engage the support surface when the support means and rotatable flywheel member are both engaged with the support surface.

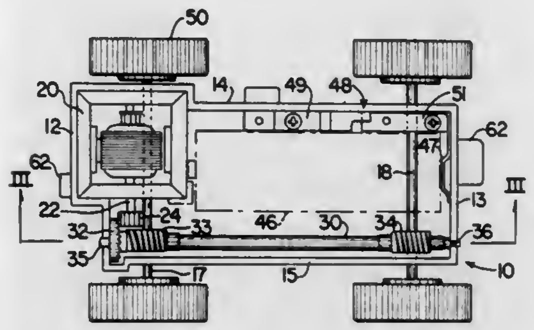
4,443,968
FOUR WHEEL DRIVE TOY VEHICLE

N. Y. Law, Kowloon, Hong Kong, assignor to Soma Traders, Ltd., Kowloon, Hong Kong

Filed May 17, 1982, Ser. No. 378,878

Int. Cl.^{3} A63H *17/00*

U.S. Cl. 46—251 **6 Claims**



1. A miniature self-powered, four wheel drive vehicle comprising:
(a) a frame;
(b) front wheel means and rear wheel means mounted to the frame for rotation about mutually parallel front and rear axes spaced about two inches apart, each of the wheel means having high friction peripheral surfaces;
(c) an electric motor mounted on the front of the frame so that its center of mass is not behind the front axis and having a driveshaft extending outwardly therefrom toward one side of the frame in a direction which is parallel to the front axis;
(d) pinion attached to an outwardly extending end of the driveshaft;
(e) a first spur gear attached to the front wheel means and positioned near the side of the frame toward which the driveshaft extends;
(f) a second spur gear attached to the rear wheel means and also positioned near the side of the frame toward which the driveshaft extends;
(g) a propeller shaft having opposite ends thereof supported by opposite ends of the frame and positioned perpendicular to and above the wheel axes and near the side of the frame toward which the drive shaft extends and having a crown gear at one end positioned to engage the pinion, a first worm gear positioned to engage the first spur gear and a second worm gear positioned to engage the second spur gear;
(h) battery holder means attached to the frame for releasably holding a standard AA size battery perpendicular to the wheel axes and approximately centered on the frame; and
(i) means for electrically connecting the battery to the motor.

4,443,969
MUSHROOM CASING COMPOSITION AND PROCESS

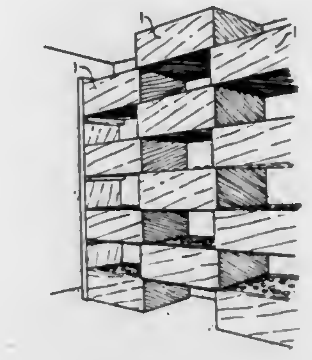
William A. Hanacek, Salinas; James E. Kahl, Scotts Valley, and Angus B. Mackenzie, Salinas, all of Calif., assignors to Castle & Cooke, Inc., San Francisco, Calif.

Division of Ser. No. 141,460, Apr. 18, 1980, Pat. No. 4,337,594. This application Apr. 14, 1982, Ser. No. 368,181

Int. Cl.^{3} A01G *1/04*

U.S. Cl. 47—1.1 **17 Claims**

1. In a process for the cultivation of mushrooms, consisting of the steps of preparing the beds by filling them with a pre-prepared compost composition, to a depth of about 8 to 10 inches; mixing with said compost, selected mushroom spores; casing or capping the beds after 7 to 8 days with a suitable capping material; and watering said mushroom beds every other day; the improvement which comprises the steps of: (a) using as the casing material a composition comprising a foam forming, hydrophilic, synthetic, organic prepolymer resin; a casing substrate; a buffering agent; and water in sufficient quantities to form a slurry and (b) watering said mushroom beds every 7 or 8 days.



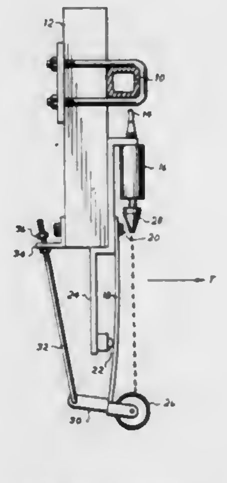
4,443,970
PLANT DAUBER

Joe G. Randolph, Rte. 1, Shallowater, Tex. 79363

Filed Oct. 15, 1979, Ser. No. 84,602

Int. Cl.^{3} A01M *21/00*

U.S. Cl. 47—1.5 **2 Claims**



1. An agricultural device for treating plants by applying treatment liquid thereto comprising in combination;
a. a source of treatment liquid,
b. a mounting bracket,
c. transport means with the bracket thereon for moving the bracket through an agricultural field of plants to be treated,
d. a contact bar of permeable, absorbant, exudative material mounted on the mounting bracket to rub against plants to be treated,
e. replenishing means attached to the mounting bracket for placing liquid onto the contact bar,
f. a valve connecting the replenishing means to the source of treatment liquid, and
g. activating means activatingly connected to the valve for opening the valve each time the contact bar rubs a plant,
h. said activating means including:
  i. a spring arm connecting the contact bar to the mounting bracket, and
  ii. a microswitch attached to the mounting bracket close to the spring arm.

4,443,971
HERBICIDE-TOLERANT PLANTS

Roy S. Chaleff, Ithaca, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

Continuation of Ser. No. 85,432, Oct. 16, 1979, abandoned. This application Oct. 14, 1981, Ser. No. 311,129

Int. Cl.^{3} A01G ***1/00***

U.S. Cl. 47—58 **11 Claims**

1. A method for the preparation of a relatively herbicide tolerant plant, selected from the group consisting of tobacco, rice, corn, potato, oats, alfalfa, carrot and sugar cane, which displays heritable increased tolerance to said herbicide, which method comprises:

(a) tissue culturing, in the presence of a herbicide to which a parent plant is sensitive, and to which a tissue culture derived from said parent plant is also sensitive, tissue from said parent plant, said tissue culturing being conducted in the presence of an amount of said herbicide sufficient to kill at least 90% of the tissue initially present and

(b) subjecting the surviving culture tissue or plants derived therefrom to a process which isolates plant tissue or plants which display heritable increased tolerance to said herbicide.

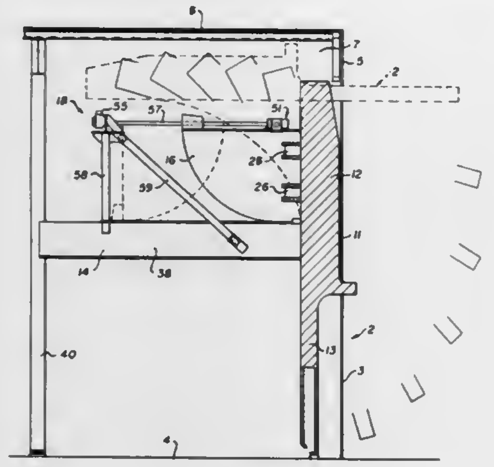
4,443,972
OVERHEAD TILTING DOOR ASSEMBLY

Alfred W. J. Dolhaine, 467 Cedarpark Dr. SW., Calgary, Alberta, Canada

Filed Apr. 6, 1981, Ser. No. 251,241

Int. Cl.^{3} E05F ***11/00***

U.S. Cl. 49—200 **5 Claims**



1. An overhead tilting door assembly provided in a building having an opening closed by the door member, and a header extending downwardly a small distance into the opening comprising:

a non-counterweighted door and quadrant assembly including a door member and a pair of quadrant members, each of the quadrant members being connected to and extending rearwardly from the upper corner of the door member, and each quadrant member having an arced edge, the door member comprising adjoining upper and lower door portions, the upper portion having an increased thickness, substantially across its width, relative to that of the lower portion for providing transverse rigidity to the door member, the upper portion being sized to clear the header as the door member is tilted between open and closed positions, whereby, in the open position, the lower door portion, of decreased thickness, extends below the header;

a pair of generally horizontal fixed support members, one on either side of the door member, extending generally rearwardly from the door member, each of the quadrant members being supported along the arced edge by the support member such that the quadrant members can roll along the support members to tilt the door member between a generally vertical closed position and a generally horizontal open position;

drive means connected to at least one of the quadrant members for tilting the door member and for locking the door member against tilting movement unless being tilted by the drive means, said drive means providing all of the force required to tilt said door member;

anti-skid means, located between the arced edges of the quadrant members and the support members and interconnecting the fixed support members and the movable quadrant members, said anti-skid means being operative to force the quadrant members to roll along the support members as the door is being tilted;

each quadrant member including a pair of angularly disposed radii bounding the arced edges, the radii meeting at an apex opposite the arced edge; and wherein the drive means comprises

an internally-threaded, rotatably driven nut member supported rearwardly from the quadrant member;

a threaded rod arranged parallel to the support member, one end of the rod being pivotally connected to the apex of the quadrant member, the other end of the rod being threadably received in the nut member, the threads of the rod and the nut member being self-locking such that the threaded rod is locked against movement through the nut member unless the nut member is being rotatably driven,

whereby rotation of the nut member moves the rod through the nut member causing the quadrant member to roll along the support member to tilt the door member.

4,443,973
ACCESS DOOR AND FRAMING APPARATUS FOR THE ACCESS DOOR'S FRAMEWORK

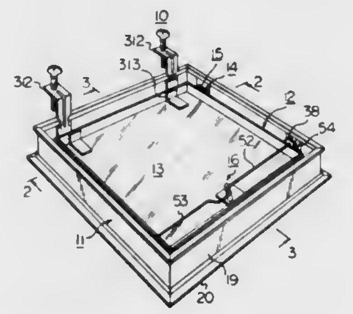
Hiromitsu Naka, Saitama, Japan, assignor to Kabushiki Kaisha Naka Gijutsu Kenkyusho, Sapporo, Japan

Filed Jul. 14, 1981, Ser. No. 283,541

Claims priority, application Japan, Aug. 27, 1980, 55-118132

Int. Cl.^{3} E06B ***3/34***

U.S. Cl. 49—381 **22 Claims**



1. An access door comprising:

an outer framework adapted to be fitted in a rough opening formed in a building ceiling, wall, or the like, said outer framework including four outer framework elements positioned in square so as to define four first corners, said four outer framework elements having first upper and lower inserting grooves at opposite ends thereof at the outer sides of each of said four first corners, and four outer framework corner members respectively disposed in said first upper and lower inserting grooves at said four first corners so as to hold said four outer framework elements in abutting relation at said four first corners;

an inner framework set in an opening in the outer framework, said inner framework including four inner framework elements positioned in square so as to define four second corners, said four inner framework elements having second upper and lower inserting grooves at opposite ends thereof at the outer sides of each of said four second corners, and four inner framework corner members respectively disposed in said second upper and lower inserting grooves at said four second corners so as to hold said four inner framework elements in abutting relation at said four second corners;

a cover plate secured to the inner framework so as to close the opening in the inner framework;

a pair of bearings on one of the opposed inner surfaces of the outer framework and outer surfaces of the inner framework, said bearings having U-shaped grooves, respectively;

a pair of bearing pins projecting from the other of the opposed inner surfaces of the outer framework and the outer surfaces of the inner framework, and pivotally supported in the bearings, respectively; and

a locking means including a box extending through and secured to the cover plate, a shaft supporting bracket, a shaft fitted in the box and rotatably supported on the inner framework by the shaft supporting bracket, said shaft being operable from the outside of the cover plate, and locking bars pivotally connected to the shaft so as to be movable into and out of the outer framework upon the rotation of the shaft.

4,443,974
DOOR HAVING A FRAME COMPRISING SECTIONS GLUED TO EACH OTHER

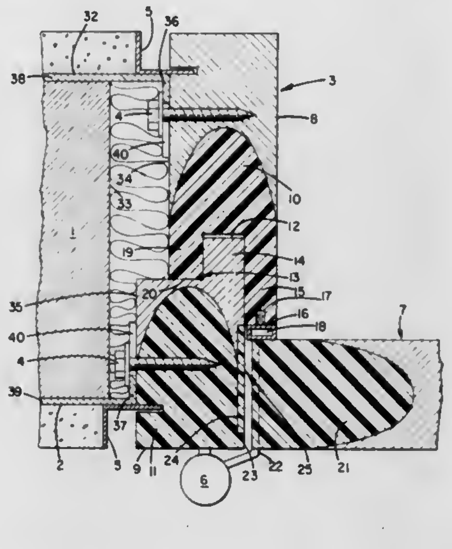
Hans Schulthess, Klingnau, Switzerland, assignor to Keller & Co., Aktiengesellschaft, Klingnau, Switzerland

Filed Mar. 2, 1982, Ser. No. 354,257

Claims priority, application Switzerland, Mar. 6, 1981, 1569/81

Int. Cl.^{3} E06B ***1/04***

U.S. Cl. 49—505 **8 Claims**



1. A fire resistant door having a frame with said frame comprising

a frame shim including

sections of elongated plates of a porous material which are glued together, said plate sections located in planes extending parallel to each other and mounted to each other at their longitudinal extending sides by means of a keyway-like connection with a first longitudinal side of one of said plates having a groove and a second longitudinal side of the other of said plates having a ridge fitted into said groove,

said first longitudinal side of one of said plates having said groove in a portion of said porous material strengthened by pressed in water glass,

said second longitudinal side of the other of said plates having said ridge having another side of said plate from said ridge strengthened by pressed in water glass,

a strip of material which foams at an increased temperature arranged in the surface of said other of said elongated plates where said surface faces a panel of the door, and

a strip of aluminum on both sides of said strip of material which foams at an increased temperature.

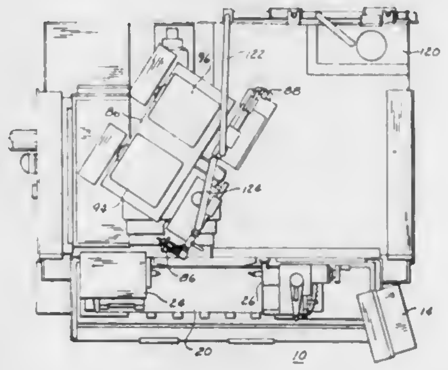
4,443,975
DUAL WHEEL CYLINDRICAL GRINDING CENTER

Martin A. German, Holden, Mass., and Joseph F. Volk, Chagrin Falls, Ohio, assignors to The Warner & Swasey Company, Cleveland, Ohio

Filed Jan. 26, 1981, Ser. No. 228,424

Int. Cl.^{3} B24B ***5/12***

U.S. Cl. 51—3 **12 Claims**



1. A machine for grinding a workpiece comprising a base, a swivel table adjustably mounted on the base, a driven work head disposed on the swivel table, a footstock disposed on the swivel table for use with the work head to support the workpiece therebetween, characterized by:

a first pair of ways disposed on said base;

a driven carriage mounted on said first pair of ways for movement therealong;

a second pair of ways disposed on said carriage and extending othogonal to said first pair of ways;

a driven wheel slide mounted on said second pair of ways for movement therealong;

a wheel head having a pair of independently driven external grinding wheels mounted thereon and which is angularly positionable to bring either one of said pair of grinding wheels into position for grinding the workpiece;

longitudinal guide means disposed beneath said work head and said footstock for engaging and guiding said driven carriage for movement along said first pair of ways.

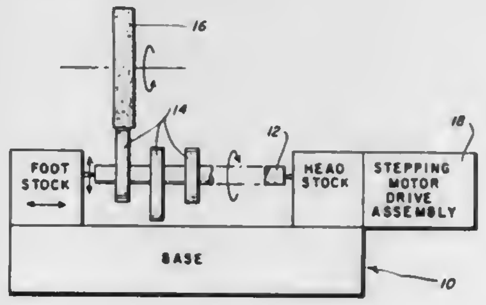
4,443,976
CYLINDRICAL GRINDING MACHINE

Russell E. Kaiser, Jr., Mercersburg, Pa., assignor to Litton Industrial Products, Inc., Waynesboro, Pa.

Filed Jan. 29, 1982, Ser. No. 344,065

Int. Cl.^{3} B24B ***5/00***

U.S. Cl. 51—97 NC **3 Claims**



1. A cylindrical grinder for effecting stock removal from a plurality of coaxial cams on a workpiece which are to be sequentially located at a grinding location for stock removal, each of the plurality of cams including a base portion, a nose portion and flank portion joining the base and nose portions, the nose portion having a smaller radius of curvature than the base portion and being more distant from the axis of rotation of the cam than the base portion, comprising

means for supporting the workpiece for rotation about a predetermined axis coaxial with the axis of the cams,

means for defining a selected velocity profile for each revolution of the particular cam which is at the grinding location, the velocity profile having a plurality of acceleration/deceleration segments whereby the velocity of the surface of the cam at the grinding location is selectively varied,

stock removal means including a grinding wheel and grinding wheel feed control means,

said grinding wheel feed control means including

means for infeeding said grinding wheel first and second increments in a rough grinding program,

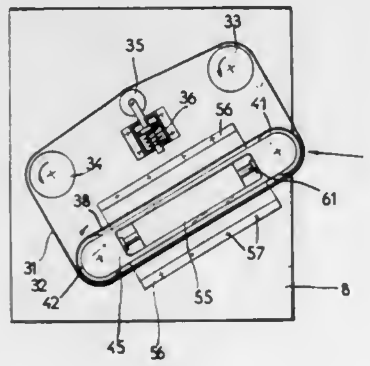
means for sensing the presence of a selected orientation of a rotating cam located at the grinding location, and

means for actuating the first feed increment of said rough grinding program when the selected cam orientation is sensed and for actuating the second feed increment of said rough grinding program when the selected orientation is next sensed.

4,443,977
MACHINE FOR PRODUCING PARTS HAVING SKEW SURFACES OF PREDETERMINED CONFIGURATION

Robert Gaiani, Figeac, France, assignor to Ratier-Figeac, Figeac, France

Filed Dec. 22, 1981, Ser. No. 333,329
Claims priority, application France, Dec. 23, 1980, 80 27284
Int. Cl.³ B24B *21/16*
U.S. Cl. 51—146 3 Claims

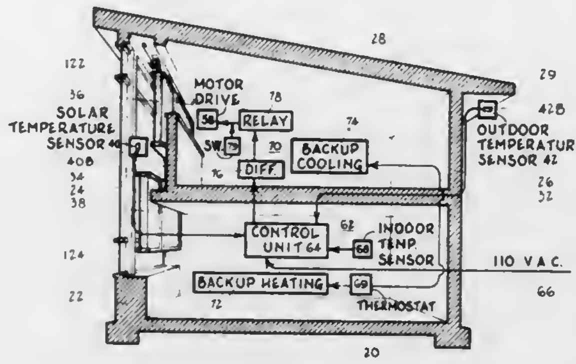


1. In an apparatus for abrading a surface on a workpiece, the apparatus including an endless abrasive belt which has essentially inelastic circumferential length, deformable elastic transverse width and an abrasive outer surface, a base for holding said workpiece and supporting said endless belt, a support movably mounted on said base for maintaining said belt in tension, first drive means for driving said belt circumferentially, and second drive means for moving said support and thereby moving said belt into engagement with said workpiece, the improvement wherein said support comprises: a plurality of frames generally aligned and mounted on said support, each frame generally having opposite ends, a first set of similar cylindrical shaping rollers, one rotatably mounted on one end of each frame, a second set of similar cylindrical rollers, one rotatably mounted on the opposite end of each frame, the axes of said rollers being parallel, the distance between the axes of the two rollers on each frame being the same, each frame having a longitudinal axis extending between the axes of the two rollers thereon, a first belt circumscribing said two sets of rollers, said first belt having essentially inelastic circumferential length and deformable elastic transverse width, said frames being aligned with their longitudinal axes generally coplanar, each frame being movable in the direction of its longitudinal axis relative to said support and to the other frames, whereby the peripheral edges of the adjacent shaping rollers define (a) a profile curve corresponding to the relative moved position of said frames and (b) a straight cylindrical surface when the axes of these rollers are coincident and the portion of said first belt that engages said first set of rollers being deformed according to said profile curves, said abrasive belt being caused to circumscribe at least the portion of said first belt which engages said first set of rollers, said belts being driven by said first drive means, and said abrasive belt being deformed similarly as said first belt, said second drive means adapted to move said frames selectively to create a selected profile curve in said abrasive belt for engaging said workpiece.

4,443,978
MOVABLE THERMAL BARRIER FOR SOLAR HEATED BUILDING

Robert B. Butler, Carmel, N.Y., assignor to Butler-Merritt Inc., Mahopac, N.Y.

Filed Dec. 14, 1982, Ser. No. 449,682
Int. Cl.³ E04B *1/62;* **E06B** *3/00*
U.S. Cl. 52—1 52 Claims



1. In a building having at least two floors and a two-story high glass wall generally facing in a southerly direction, a thermal barrier comprising:

(A) a thermal-insulated stationary rail panel mounted behind said glass wall and in a position intermediate between the top and bottom of said glass wall;

(B) a translucent thermal-insulated vertically movable inner panel positionable between the vertical plane of said rail panel and said glass wall and adapted to be moved into a position in horizontal alignment with said rail panel;

(C) a translucent thermal-insulated vertically movable outer panel positionable between the vertical plane of said inner panel and said glass wall and adapted to be moved into a position in horizontal alignment with said rail panel and spaced a predetermined distance from said glass wall to form an air space between said outer panel and said glass wall; and

(D) panel mounting means connected to said building and adapted to movably support said inner panel and said outer panel so that one of said panels may be move from adjacent said ral panel to above said ral panel to provide a translucent thermal barrier between the upper portion of said glass wall and the inside of said building, and the other of said panels may be moved from adjacent said rail panel to below said rail panel to provide a translucent thermal barrier between the lower portion of said glass wall and the inside of said building; and

(E) whereby when said inner and outer panels are in horizontal alignment with said rail panel, heated air in said air space rises via convection and passes over said horizontally aligned panels into the interior of said building and is replaced by cooler interior air entering from below said horizontally aligned panels.

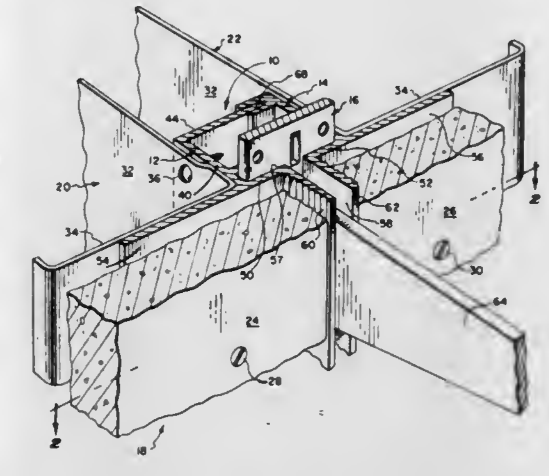
4,443,979
ADAPTER FOR BRACKET SECUREMENT TO WALL STUDS AND METHOD OF MANUFACTURE

David Varon, Highland Park; Steven C. Dorner, Western Springs, and Burton L. Siegal, Skokie, all of Ill., assignors to Crown Metal Manufacturing Company, Chicago, Ill.

Filed Aug. 24, 1981, Ser. No. 295,487
Int. Cl.³ A47B *5/00*
U.S. Cl. 52—36 17 Claims

1. An adapter including a slotted vertical standard for receiving shelve brackets in the slots thereof for connection with a pair of back-to-back sheet metal studs in constructing a wall, with the adapter being substantially hidden except for an entrance groove for said brackets leading to said standard, the wall being covered with wallboard members, the adapter comprising:

A. a box-like housing to be mounted between said studs, said housing having opposite side walls, a rear wall, wallboard receiving wings, a pair of parallel forwardly extending entrance forming flanges, a pair of interior flanges connected with respective opposite side walls and inward extensions of said wings, the entrance forming flanges being integral with said inward extensions, the inward extensions and interior flanges forming an elongate standard receiving channel having its center connecting with the space between the entrance forming flanges,



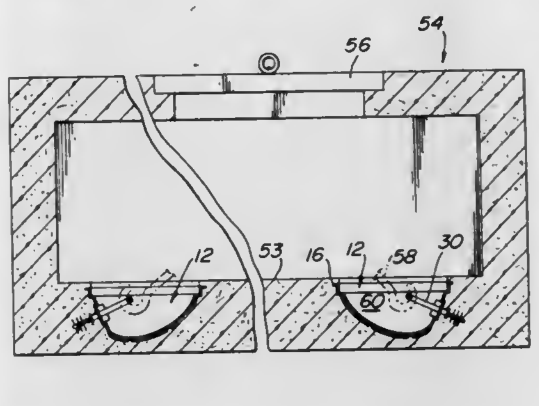
B. a flat steel bar having a central line of slots engaged in the channel and forming said standard, said interior flanges being tightly engaged against said bar and clamping the bar between the flanges and the rear of the inward extensions,

C. parallel rows of recesses in the rear surface of the bar and aligned with said interior flanges, there being protrusions on said flanges extending into said recesses and forming locking keys to hold said bar permanently in said channel.

4,443,980
PULLING IRON ENCLOSURE

J. Edward Pennypacker, Birchrunville, Pa., assignor to Pennsylvania Insert Corporation, Devault, Pa.

Filed Mar. 19, 1981, Ser. No. 245,298
Int. Cl.³ E04D *15/00*
U.S. Cl. 52—125.4 19 Claims

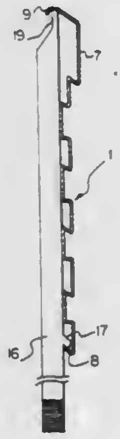


1. Apparatus for recessing a pulling iron in a wall of a vault comprising an enclosure defined by a base and a removable cover, said enclosure having a cavity therein, said cover overlying one side of the cavity, a wall of said enclosure base having an elongated opening of length a plurality of times its width through which the V-shaped central portion of a pulling iron may extend for positioning of the pulling iron in the cavity, and means for mounting said enclosure in a mold with a face of said cover juxtaposed to a wall of a mold, said base having an outwardly extending flange at said one side of the cavity, the elongated opening being in a planar wall of said base which is at an acute angle with respect to said base flange, said base having a shoulder inwardly of said base flange and adjacent said one side of the cavity, said cover being supported on said shoulder, said shoulder being interposed between said planar wall and said base flange.

4,443,981
CONCRETE FORM SYSTEM

David Weiss, P.O. Box 27, Armstrong, B.C., Canada

Filed Sep. 3, 1981, Ser. No. 299,085
Int. Cl.³ E02D *5/74*
U.S. Cl. 52—155 10 Claims



1. A permanent, in-place, concrete retaining form comprising in combination:

(a) a longitudinal rail having along the length thereof, vertically disposed above one another, at least two alternating grooves and ridges, and at the top region thereof a top ridge which at the bottom edge thereof extends outwardly and downwardly to a location below the elevation where the top ridge meets the body of the rail, and at the top edge thereof terminates in a downwardly extending lip;

(b) a stake in the shape of a U-shaped channel, the top portion of the stake fitting under the top lip of the rail, the lower portion of the stake having therein a hook means for securing the bottom region of the rail to the stake; and,

(c) a clip which is formed to fit snugly over the end of the rail.

4,443,982
METHOD AND DEVICE FOR SWIMMING POOL CONSTRUCTION

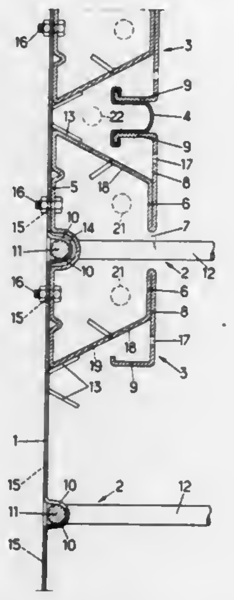
Jacques Dalbanne, 6, Rue du Lac, 06400 Cannes, France

Filed Jul. 2, 1982, Ser. No. 394,771
Claims priority, application France, Jul. 10, 1981, 81 13673
Int. Cl.³ E02D *27/34*
U.S. Cl. 52—169.7 6 Claims

1. A structure for the construction of swimming pools, comprising:

a plurality of rigid vertical sections each having at least one outer face and one inner face provided with an opening, and with lateral ends,

at least one relatively flexible base band having at regular intervals means for securing said outer faces in such a way that only a small space remains between successive outer faces, a plurality of keys which are relatively deformable transversely and are capable of fitting onto the lateral ends of said inner faces to fix together and fill in the varying interval between the ends of two successive sections.



4,443,983

MEANS FOR FASTENING A FRAME TO A WALL STUD

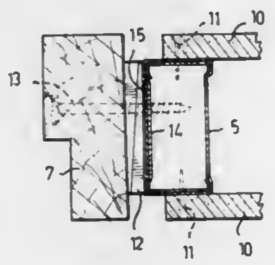
Tore Karlström, Snellmansgränd 5, 22150 Jomala, Finland

Filed May 28, 1982, Ser. No. 383,331

Claims priority, application Finland, Jun. 16, 1981, 811887

Int. Cl.^{3} E06B *1/04*

U.S. Cl. 52—210 **3 Claims**



1. A mount for attaching a frame such as a door or window frame to a wall stud having a substantially U-shaped cross-section, the open section of said stud facing the frame, said mount comprising a channel number having a length less than the length of said wall stud and a U-shaped cross section substantially conforming to that of said wall stud, said mount being superimposed over the open side of said stud with the respective side walls in abutment, means for joining the abutting side walls in fixed engagement and a reinforcing plate secured to the web interconnecting the side walls of said U-shaped channel member to which said frame may be fastened.

4,443,984

DOOR, WINDOW, AND PARTITION CASING ARRANGEMENT FOR DRY WALL PARTITIONS

Robert R. Rasmussen, 1120 Grandview La., Lake Forest, Ill. 60045

Filed Jun. 25, 1981, Ser. No. 277,226

Int. Cl.^{3} E06B *1/04*

U.S. Cl. 52—213 **11 Claims**

1. For use in a dry wall partition framework mounted on a building floor structure, which framework is of the type that includes a plurality of vertically extending studs disposed in spaced apart substantially coplanar relation, wallboard sheeting mounted on said studs on one side of the framework, and wallboard sheeting mounted on the other side of said framework, said sheetings masking said studs, and means for anchoring said sheetings to said studs, with the framework being formed to define a rectangular service opening therethrough of a predetermined height from and above the floor structure comprising an adjacent pair of said vertical studs being spaced apart to define between them the width of the opening, and with said sheetings being interrupted along the confronting margins of said stud pair and between same coextensively with said opening predetermined height to complete said opening, through the framework,

a casing arrangement for forming the framework opening jamb along, and masking the framework along, one stud of said pair of studs, said casing arrangement comprising:

a first casing side frame mounted on one side of the framework at said one stud and a second casing side frame mounted on the other side of the framework at said one stud,

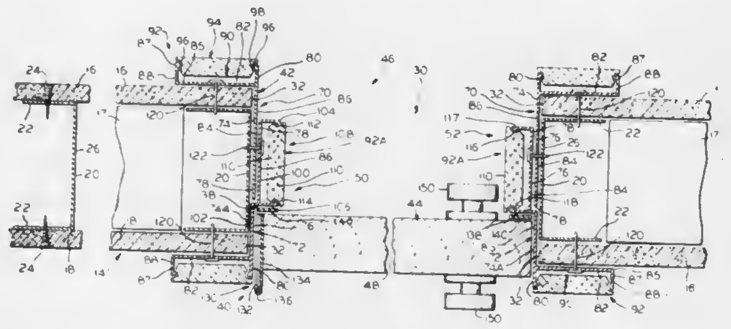
said casing side frames overlying said one stud in and for the height of the framework opening and from the respective sides of the framework,

said casing side frames each comprising:

first and second elongated plates each defining a web portion extending longitudinally thereof and projecting into the framework opening from the respective sides of the framework, and having the opening jamb defining sides of same on one side surfacing thereof and the other side surfacings of same facing said one stud and forming the framework masking sides of same,

said plate web portions each having first and second marginal edge portions extending longitudinally of same along either side edging of said plate web portions,

said plates along said first marginal edge portions thereof each defining a terminal edging, and on said framework masking sides of same each defining a lateral wing flange extending normally and longitudinally of the respective web portions and set back from said terminal edging of said first marginal edge portions, respectively, for seating against the respective sheetings, and having along its projecting edge a stub flange paralleling said web portions, respectively, and terminating in a terminal edging,



said first marginal edge portion, said wing flange, and said stub flange of the respective said plates defining a channel shaped first masking recess extending longitudinally of the respective said plates,

said plates along said second marginal edge portion of said web portions thereof being juxtaposed within the framework opening in flush overlapping slip fit relation over and adjacent said one stud, to define over and under overlapped web portions of said plates, that are adjustable to either side of the framework to accommodate varient framework thicknesses, and said wing flanges of the respective plates being seated against the respective framework sheetings on either side of the partition to set said web portions of said plates, respectively, in said overlapped relation,

first fastener means for anchoring the respective wing flanges to said one stud through the framework sheeting overlying same,

said plates each defining, along and within said first recesses thereof, confronting snap fit beads along either side of the respective recesses that are respectively located adjacent the respective terminal edgings of said plates,

said first recesses being of like transverse cross-sectional

configuration for the length thereof including said beads thereof,

said first recesses each having mounted in same a trim piece, with the respective trim pieces each comprising imperforate elongate members proportioned to extend the length of the respective recesses and each defining oppositely disposed side edge portions that are socketed for snap fit application into the respective recesses for compressive gripping by the respective recess confronting beads, to dispose the respective trim pieces in masking relation to said first fastener means, respectively, along either side of the framework, and subject to compression from either side edge thereof and in the plane thereof,

with the plate web portion that overlies said other plate web portion in defining said overlapping relation further defining first and second stub flanges projecting in the plane of the framework opening normally of said plate web portions, toward the other stud of said stud pair, and oppositely of said wing flange thereof,

said first and second stub flanges being located in spaced apart parallel relation along and within the framework opening and defining a channel shaped second masking recess extending longitudinally of said plates,

second fastener means for anchoring said overlapped plate web portions to said one stud from within the framework opening and between said first and second stub flanges,

said first and second stub flanges further each defining along and within said second recess confronting snap fit beads along either side of said second recess,

said second recess having a transverse cross-sectional configuration for the length thereof including said beads thereof that conforms to that of said first recesses,

said second recess having mounted in same a trim piece that comprises an imperforate elongate member proportioned to extend the length of said second recess and defining oppositely disposed side edge portions that are socketed for snap fit application into said second recess for compression gripping of said second recess mounted trim piece by said second recess confronting beads, to dispose said second recess mounted trim piece in masking relation to said second fastener means the height of and within said framework opening,

said trim pieces and said recesses being similarly configured and proportioned for optional applicability of any one of said trim pieces to any one of said recesses in masking relation to said fastener means underlying same with the same compression gripping of the respective trim pieces as applied to the respective said recesses,

and with the stub flange of said first and second stub flanges that is closest to said first marginal edge portion of said overlying plate web portion forming a casing side wall for fitting door and window structures relative to said casing side frames.

4,443,985

COMPOSITE BUILDING CONSTRUCTION COMPRISING A COMBINATION OF PRECAST AND POURED-IN-PLACE CONCRETE

Jaime Moreno, 2074 Pratt Ave., Chicago, Ill. 60645

Filed Aug. 31, 1981, Ser. No. 297,983

Int. Cl.^{3} E04B *1/00*

U.S. Cl. 52—236.8 **2 Claims**

1. A building construction, comprising

a plurality of columns arranged in a plurality of rows,

a plurality of composite beam structures supported by said columns of each row and extending along said rows between said columns in each row,

and a plurality of precast concrete floor slabs extending between said beam structures of adjacent rows and supported by said beam structures,

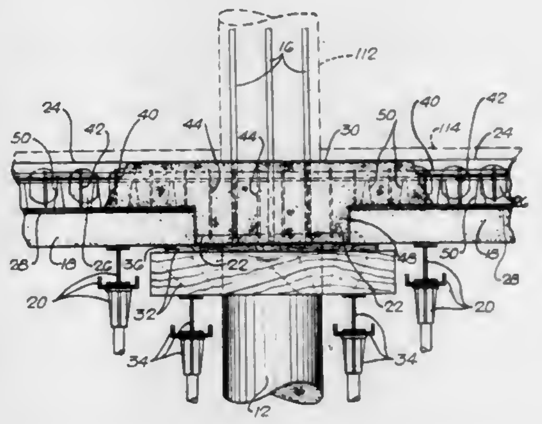
each of said beam structures comprising a plurality of lower members in the form of longitudinally aligned precast concrete beams which are comparable but somewhat shorter in length than the distance between the successive columns in the corresponding row so that the ends of said precast beams are short of said colummns and do not rest upon said columns,

each of said beam structures further comprising a monolithic concrete upper member made of poured-in-place reinforced concrete extending along the entire row of columns and directly bearing on said columns in the row while filling the space between the upper ends of the columns and the ends of the precast concrete beams,

said precast concrete floor slabs having end portions resting upon and partially overlapping said precast concrete beams,

said monolithic concrete member engaging the upper sides of said precast concrete beams and filling the spaces between the ends of said precast concrete floor slabs and the precast concrete beams to unite said floor slabs and said beams,

said monolithic concrete member having its upper surface terminating substantially flush with the upper surface of said precast concrete floor slabs,



said monolithic concrete member having integral portions filling the spaces between the ends of said precast concrete beams and supported directly by said columns for uniting said columns and said precast concrete beams,

said precast concrete beams including reinforcing members having portions embedded in said beams and other portions projecting upwardly out of said beams and embedded in portions of said monolithic concrete members between the ends of said precast concrete floor slabs,

said precast concrete beams including longitudinal reinforcing tension members extending longitudinally therethrough and having portions extending out of the ends of said precast concrete beams and embedded in the portions of said monolithic concrete members between the ends of said precast concrete beams and above said columns,

said precast concrete floor slabs having a multiplicity of hollow core openings extending longitudinally therethrough,

said monolithic concrete members having portions extending partway into said hollow core openings and interlocking with said floor slabs.

4,443,986

PANEL CONSTRUCTION SYSTEM

Paul L. Propst, Holland; Larry P. Gzym, Rockford; Ralph Murrel, Grand Rapids; Donald A. Richardson, Kentwood, and Carl B. Hinrichs, Grand Haven, all of Mich., assignors to Stow/Davis Furniture Company, Grand Rapids, Mich.

Filed Mar. 15, 1982, Ser. No. 358,277

Int. Cl.^{3} E04B *2/74;* E04C *2/38*

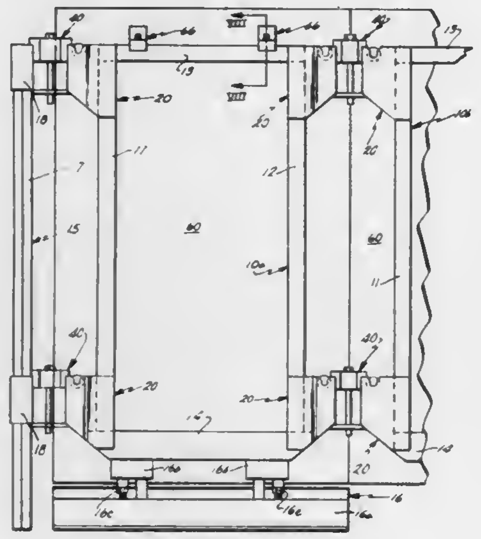
U.S. Cl. 52—239 **20 Claims**

1. A panel construction assembly comprising:

a panel support frame assembly including first and second spaced uprights and first and second gussets including plate support means secured to said first and second uprights, respectively, said first and second gussets extending toward one another from said uprights to space said plate support means from said uprights, each of said gussets defining an upwardly opening slot, each slot including a portion beveled downwardly inwardly with respect to said gusset;

a connector block defining first and second slot means for slidingly receiving said first and second plate support means, respectively;

means for urging said first and second plate support means into said connector block to secure said spaced uprights together;

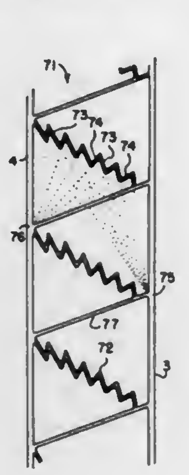


a wall panel; and

a mounting stud extending from said wall panel and secured within one of said gussets, said stud including a shank slidably positioned within one of said beveled slots and a head connected to said shank to prevent said shank from pulling out of said slot, whereby said wall panel is drawn toward said gussets and frame as said stud slides downwardly within said slot to removably suspend said panel on said frame.

4,443,987
UNITARY SOLAR WINDOW PANEL

Robert A. Erb, Valley Forge, Pa., assignor to The Franklin Institute, Philadelphia, Pa.
Continuation of Ser. No. 24,518, Mar. 28, 1979. This application Sep. 3, 1981, Ser. No. 299,161
Int. Cl.^{3} E06B *7/12*
U.S. Cl. 52—309.1 **33 Claims**



1. A solar panel adapted for use as a window for a structure located at a particular latitude of the earth, which panel combines light transmitting and light reflecting members to permit passage of direct solar radiation at a low solar altitude and to prevent passage of direct solar radiation at a high solar altitude, and which panel provides insulating dead air spaces to retard heat transfer through the panel structure, which panel comprises

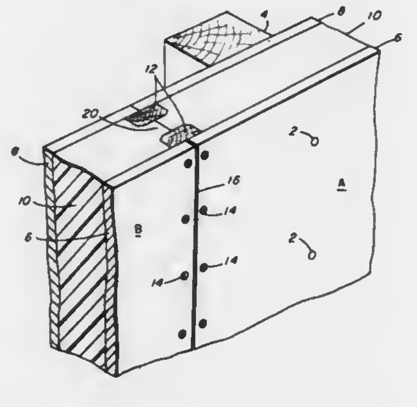
an inner face and an outer face spaced therefrom, each face being essentially planar and being adapted to be positioned along the inner and outer portions of the structure to which it is connected, respectively and

a plurality of fixed integral rib members connected to and extending between the inner face and the outer face, at least some of which are essentially opaque to solar radiation, those ribs which are not essentially opaque to solar radiation being essentially transparent,

said inner face, outer face and ribs being integrally formed of fixed, rigid unitary construction, said rib member having a slope in the range from horizontal to upwardly inclined from the inner face toward the outer face of the panel, the fixed angle of inclination, the width of the rib members and the relative spacing of the opaque rib member being selected for the particular latitude of the building to determine a cut-off angle for solar radiation at that latitude, so that when the sun is below a particular altitude, there is direct transmission of light and energy into the structure, but when the sun is above the particular altitude the panel will absorb or reflect substantially all solar radiation impinging upon the panel.

4,443,988
INSULATED BUILDING PANEL

Walter H. Coutu, Sr., Acton, Mass., assignor to Atlas Insulation Company, Inc., Ayer, Mass.
Filed Oct. 2, 1981, Ser. No. 307,806
Int. Cl.^{3} E04B *1/00, 5/00, 7/00*
U.S. Cl. 52—309.9 **3 Claims**



1. A thermally insulated building structure comprising two butted panels each including a laminate of exterior building material and interior building material with solid insulation between them characterized by:

the exterior building material being shorter than the solid insulation creating a gap in the exterior surface to receive calking material;

a pair of complimentary grooves formed in the insulation of each panel which extend lengthwise of an edge of the panel proximate the inner surfaces of said exterior and interior building materials and exposing a portion of said surfaces,

the walls of each groove being substantially parallel,

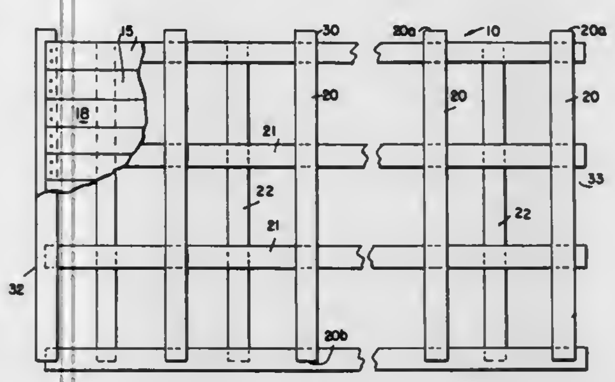
a rearward portion of each groove is remote from an inner surface of said exterior and interior building materials having a taper which intersects the closed end of the groove to render the dimension of the open end of a groove greater than the dimension of its closed end,

splines for joining the two adjacent panels together located half in each groove of a butted panel, each spline being tapered at one corner to facilitate its entering into the groove and to firmly mate with the taper at the closed end,

screws inserted through the exterior and interior building materials directly into the splines to pull them toward the insulation engaging surfaces of the exterior and interior building material.

4,443,989
DANCE FLOOR CONSTRUCTION

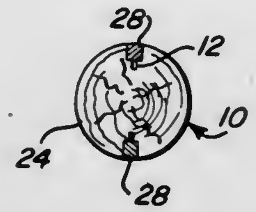
Perry Silvey, New York, N.Y., and Ronald Bates, Demarest, N.J., assignors to Lycan-Howard, Ltd., New York, N.Y.
Filed Dec. 7, 1981, Ser. No. 328,079
Int. Cl.^{3} E04F *15/22;* E04B *1/56*
U.S. Cl. 52—402 **4 Claims**



1. Flooring, comprising; an assembly unit comprising a covering; a first plurality of spaced parallel planks disposed beneath said covering; a second plurality of spaced parallel planks disposed beneath said first plurality of planks; and a third plurality of spaced parallel planks disposed beneath said second plurality of planks; and wherein said first and third pluralities of planks are parallel to each other, and said second plurality of planks is in perpendicular disposition to said other said pluralities of planks, and means to interconnect said covering and said planks, with said planks being so formed so as to provide cushion spaces beneath the surface of the covering, said means to interconnect said pluralities of planks and covering providing a unitized assembly, having four sides, with tongue and groove construction on each of the two oppositely disposed sides; wherein a portion of one plank of said first plurality of planks forms one of said tongues; wherein portions of said second plurality of planks and a portion of one plank of said first plurality and said covering, being formed so as to provide one of said grooves; wherein cushion spaces being provided below the entire covering surface; and whereby multiple units can be assembled to provide an entire cushioned floor of the assembled unit.

4,443,990
METHOD OF PRODUCING CRACK FREE LOGS

Wilfred B. Johnson, Star Rte. Box 3289, Manistique, Mich. 49854
Filed Mar. 11, 1982, Ser. No. 357,202
Int. Cl.^{3} B27K *5/00*
U.S. Cl. 52—514 **9 Claims**



7. The method of processing and producing logs into crack free logs comprising the steps of:

substantially immediately after harvesting the logs and prior to curing same making a radial saw cut in opposite longitudinal surfaces of each of the logs;

then curing the logs in a ventilated shaded air space so that any cracks which occur will be concentrated along the inner edge of the saw cuts;

forming a wider radial groove in registry with each saw cut;

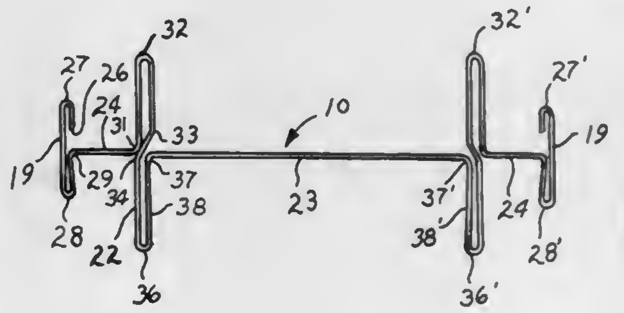
placing a wood filler strip and securing the same in each wider groove; and

peeling the wood strips evenly with the surrounding log producing a contiguous finished log product.

9. An improved log structure comprising: a log having a longitudinally extending cut along opposite sides of the log for concentrating crack formation in the cut, a wider longitudinally extending groove in registry with each cut at the outer end of the cut, and a longitudinally extending wood filler strip secured in each groove for hiding the cut, each filler strip having an outer surface which is flush and smooth with the outer surface of the log.

4,443,991
DEMOUNTABLE PARTITION STRUCTURE

David F. Mieyal, Strongsville, Ohio, assignor to Donn, Incorporated, Westlake, Ohio
Filed Oct. 9, 1980, Ser. No. 195,411
Int. Cl.^{3} E04B *2/78*
U.S. Cl. 52—729 **6 Claims**



1. A stud for walls including a pair of spaced rows of panels, said stud comprising a single piece of sheet metal that provide a central web and panel engaging and suporting portions along each edge of said web, said piece of sheet metal being shaped so that said panel engaging and supporting portions each includes;

a first leg joined at one edge to one edge of said web and extending at a substantial angle therefrom to a reverse bend,

a first flange portion extending from said reverse bend of said leg along a first plane forming a substantial angle to said web to its opposite edge,

a shallow offset along the edge of said first flange portion opposite said first reverse bend extending inwardly of said stud,

a second leg extending from said offset at a location spaced back from said first plane to a second reverse bend,

a second flange portion extending from said second reverse bend along said first plane to a substantially right angle bend substantially adjacent to said offset,

a flange joining portion extending from said first substantially right angle bend in a direction outwardly of said stud to a second substantially right angle bend,

a third flange portion extending from said second right angle bend to a third reverse bend along a second plane spaced from and substantially parallel to said first plane, and

a fourth flange portion extending from said third reverse bend past said second substantially right angle bend to an opposite edge,

each of said first and second flanges being engageable with the inner surface of an associated pair of substantially abutting panels adjacent to their edges,

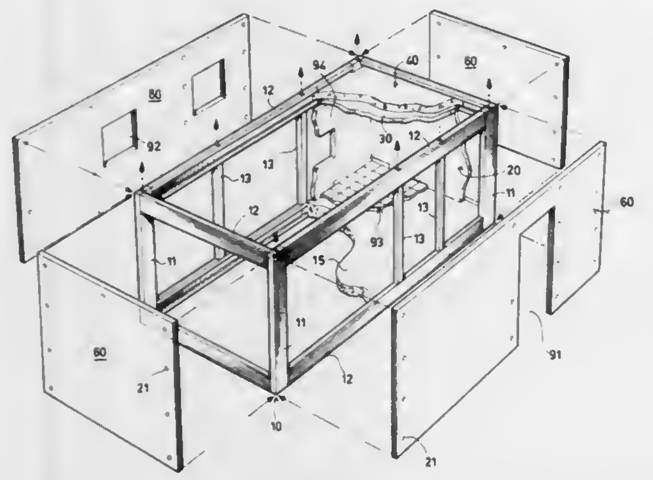
said third and fourth flange portions being engageable with opposed surfaces of said pair of panels adjacent to their edges and being operable to maintain said inner surfaces against said first and second flanges, each first flange portion and its associated offset being spaced from said web and from said first leg except at said first bend whereby said leg provides a resilient connection between said flange portions and said web to resist transmission of vibration through said stud between said pair of spaced row of panels, said first and second flange portions extending laterally beyond said third and fourth flange portions.

4,443,992

METHOD OF PREFABRICATED CONSTRUCTION, AND BUILDING STRUCTURE CONSTRUCTED IN ACCORDANCE WITH SUCH METHOD

Mordechai Shechter, Derech Haganim 43, Kfar Shmaryahu, Israel

Filed Sep. 22, 1981, Ser. No. 307,116
Claims priority, application Israel, Oct. 13, 1980, 61258
Int. Cl.^{3} E04B ***1/00***
U.S. Cl. 52—745 **8 Claims**



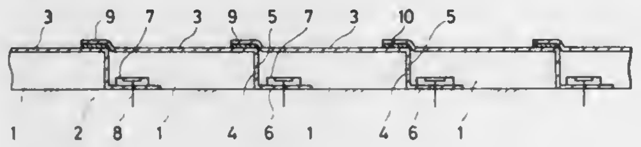
1. A method of construction by the use of prefabricated building units, characterized in that an open three-dimensional steel cage of steel profile members is constructed according to the desired specific configuration of the building unit; pre-cast concrete wall panels are attached to the sides of said steel cage, by welding metal rings embedded within openings in the pre-cast concrete panels to laterally-projecting metal rings welded to the steel cage, to form the walls of the building unit and to add strength and rigidity to the building unit; and the building unit is completed with a floor and roof further adding strength and rigidity to it.

4,443,993

METHOD OF HEAT-INSULATING AND WATER-PROOF CONSTRUCTION

Toshiaki Fujiki, and Hikaru Kano, both of Hyogo, Japan, assignors to Mitsuboshi Belting Ltd., Hyogo, Japan

Filed Nov. 13, 1981, Ser. No. 321,012
Int. Cl.^{3} E04D ***3/35***
U.S. Cl. 52—746 **13 Claims**



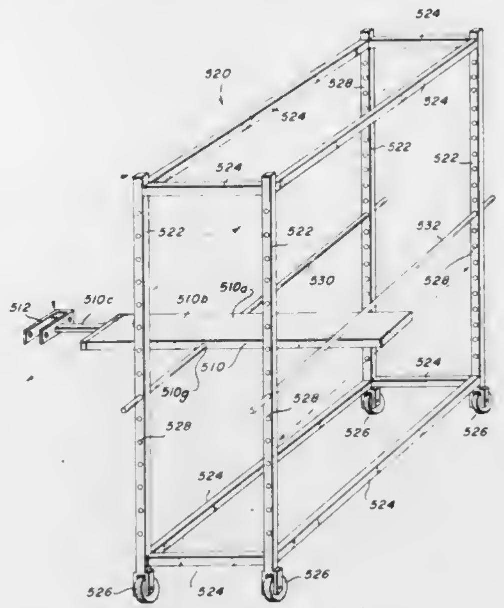
1. A method of constructing a heat insulating and waterproof structure by employing a plurality of heat insulating members and a plurality of waterproof membranes, comprising the steps of:
- laying a first heat insulating member on a base surface, said member being composed of at least one heat insulating material;
- placing a first waterproof membrane on said first heat insulating member;
- bending one longitudinal edge of said first waterproof membrane about one longitudinal edge of said first heat insulating member;
- securing a first part of said one longitudinal edge of said waterproof membrane to said base surface;
- laying a second heat insulating member on said base surface and said first part of said one longitudinal edge of said first waterproof membrane 3 adjacent to and in contact with a second part of said one longitudinal edge of said waterproof membrane which is adjacent to said first part, said second part being held between said first and second heat-insulating members;
- placing a second waterproof membrane on said second heat insulating member;
- bending one longitudinal edge of said second waterproof membrane about one longitudinal edge of said second heat insulating member;
- securing a first part of said one longitudinal edge of said second waterproof membrane to said base surface; and
- joining the other longitudinal edge of said second waterproof membrane to said first waterproof membrane.

4,443,994

BRICKLAYER APPARATUS

Manfred W. A. Petzinger, Elizabethtown, Ky. 42701

Filed Sep. 11, 1980, Ser. No. 186,070
Int. Cl.^{3} G01C ***15/00***
U.S. Cl. 52—749 **2 Claims**



1. Apparatus for successively positioning a plurality of individual bricks in a horizontal plane to form a linear wall, comprising
- a. first and second horizontal support bars;
- b. support means for said first and second horizontal support bars;
- c. an elongated connecting arm having a transverse bore therethrough, said first horizontal support bar riding in said transverse bore with said arm being pivotable and linearly displaceable with respect to said first horizontal support bar, said connecting arm disposed beneath said second horizontal support bar such that when said connecting arm abuts said second horizontal support bar said connecting arm is disposed in a substantially horizontal plane; and
- d. a brick guide adjustably connected to said elongated connecting arm.

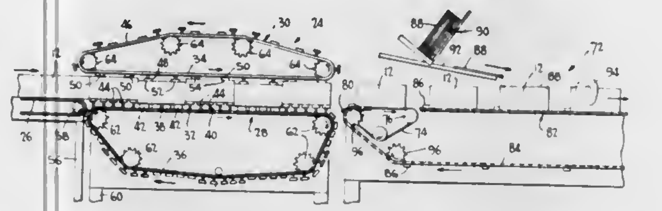
4,443,995

METERING DEVICE AND METHOD

John H. Myers, Emerson, and Edward Waleck, Closter, both of N.J., assignors to Federal Paper Board Co., Inc., Montvale, N.J.

Filed Jun. 23, 1981, Ser. No. 276,452
Int. Cl.^{3} B65B ***35/30, 11/08***
U.S. Cl. 53—443 **20 Claims**

1. A method of metering articles supplied in end-to-end relation into separate units, said method comprising the step of continuously feeding the articles along a path at a preselected speed and in longitudinal end-to-end touching relation, and without changing the speed of the articles transversely offsetting every other article a distance less than the transverse dimension of said articles relative to said path and to adjacent articles at opposite ends of each said every other article while maintaining said touching relationship, said articles being supplied in laterally adjacent rows and articles from said rows being separated into sets of laterally aligned articles by said offsetting, and transversely offset adjacent sets of articles laterally align articles of each set due to the end-to-end touching relation of articles of adjacent sets during said transversely offsetting.

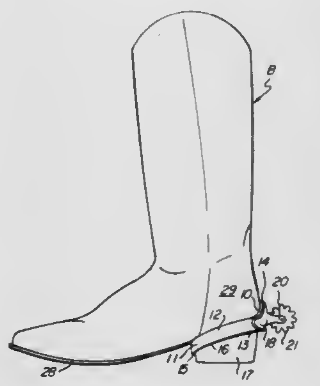


4,443,996

FLEXIBLE SPUR HOLDERS AND SPURS

Charles L. Welton, Rte. 1, Box 505 V, Golden, Colo. 80401, and Pershing R. Van Scoyk, 7193 W. 32nd Ave., Wheatridge, Colo. 80033

Filed Aug. 3, 1981, Ser. No. 289,808
Int. Cl.^{3} A43C ***17/02***
U.S. Cl. 54—83 R **12 Claims**



1. A spur holder, for a spur having a shank and a rowel mounted on said shank and for holding said spur on a boot having a sole and a heel, comprising:
- a rear body and sides connecting said body to a front loop, said holder being formed of flexible material, whereby said front loop may be stretched over said heel to engage the front of said heel with said rear body disposed at the rear of said boot adjacent the upper edge of said heel, said sides stretched between said front loop and said rear body in an essentially straight direction; and
- means for attaching said shank to said rear body.

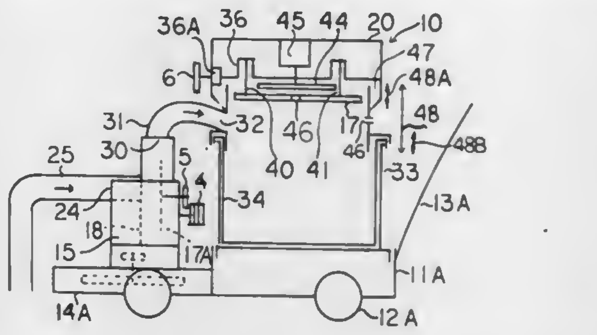
4,443,997

APPARATUS FOR VACUUM COLLECTION AND COMPACTING OF LEAVES AND GRASS CLIPPINGS

Bahram Namdari, P.O. Box 17366, Milwaukee, Wis. 53217

Filed Mar. 3, 1982, Ser. No. 354,236
Int. Cl.^{3} A01D ***35/22***
U.S. Cl. 56—13.3 **16 Claims**

1. Vacuuming and compacting apparatus for material such as leaves and grass clippings comprising:
- a support;
- a prime mover on said support;
- a vacuum pump on said support and drivable by said prime mover, said vacuum pump having an inlet port for ingesting material and an outlet port for expelling material;
- a receptacle on said support and having an inlet port connected to the outlet port of said vacuum pump;
- and a compactor on said support and drivable by said prime mover, said compactor including a reciprocably movable ram for entering said receptacle and compacting the material therein, said ram moves to a position below said inlet port of said receptacle and further including a centrifuge for blowing material deposited on said ram therepast and into said receptacle.

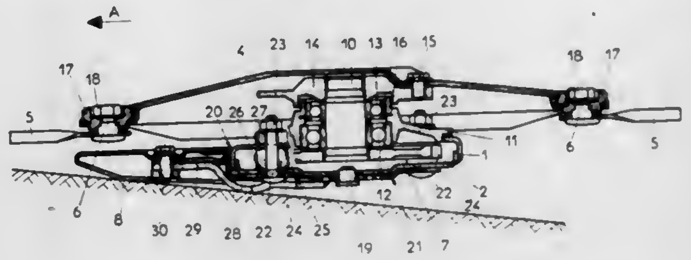


4,443,998

MOWER HAVING AN IMPROVED CUTTER BAR

Horst Neuerburg, Haegen, France, assignor to Kuhn, S.A., Saverne, France

Filed Dec. 14, 1981, Ser. No. 330,272
Claims priority, application France, Dec. 19, 1980, 80 27569
Int. Cl.^{3} A01D ***35/26***
U.S. Cl. 56—13.6 **6 Claims**



1. In a mower including a casing comprising an upper and a lower portion; a plurality of disks located above said casing each provided with cutting means;
- said upper portion including bearing block means supported by said casing and secured thereto, at least one of said disks being guided by said bearing block means; and transmission means located in said casing driving at least said one disk;
- the improvement comprising,
- a plurality of securing means interconnecting the upper and lower portions of the casing and being operable to secure said bearing block means to said casing; and
- a plurality of bracing means each positioned adjacent a securing means and abutting the inner surfaces of the upper and lower portions of said casing thereby bracing the casing.

4,443,999

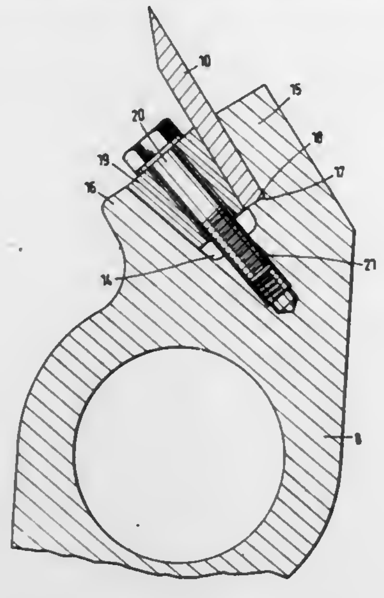
CHOPPING CUTTER OF A SUGAR CANE HARVESTER

Günter Leigers, Harsewinkel, Fed. Rep. of Germany, assignor to Claas OHG, Harsewinkel, Fed. Rep. of Germany

Filed Apr. 30, 1982, Ser. No. 374,599
Claims priority, application Fed. Rep. of Germany, May 9, 1981, 8113762[U]
Int. Cl.^{3} A01D ***45/10, 49/00;*** **B27G** ***13/04***
U.S. Cl. 56—13.9 **5 Claims**

1. A cutting device for a sugar cane harvester, comprising a pair of cutting rollers rotatably mounted on the harvester for rotation about parallel axes and each provided with at least one elongated cutting strap including a plurality of blades positioned in said strap side by side to each other, said strap cooperating with the cutting strap of another roller to cut sticks passing therebetween upon rotation of said rollers; and means for clamping said cutting strap on the respective roller, each

said roller being formed with an elongated supporting strip extended in an axial direction of said roller and a plurality of supporting projections spaced from each other in said axial direction, said projections being spaced from said supporting strip so as to form a plurality of grooves extended in said axial direction and spaced from each other in said axial direction and adapted to receive respective blades of said cutting strap, one side wall of each groove being formed by said supporting strip and an opposite side wall of each groove being formed by a respective supporting projection, said supporting strip defining a first bearing surface for the respective blade received in said groove, said clamping means including a plurality of clamping elements each slidably inserted into the respective groove together with the respective blade, each clamping element defining a second bearing surface for the respective blade received in said groove, and a plurality of releasable bolts extending through the respective clamping elements into the respective grooves and received in said rollers, said bolts clamping the respective blades in the respective grooves so that each blade is pressed between said first bearing surface and said second bearing surface.



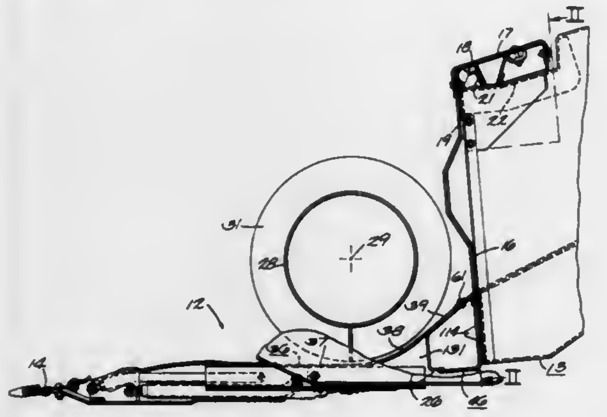
4,444,000
HARVESTER HEADER CONSTRUCTION

Michael H. Enzmann, Blue Springs, and Lyle L. Jensen, Independence, both of Mo., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Jun. 1, 1982, Ser. No. 383,741

Int. Cl.^{3} A01D *35/12*

U.S. Cl. 56—15.6 **2 Claims**



1. In a harvester having a feeder housing and a crop header connected to the front end of said feeder housing, said header including

a pair of laterally opposite outer ends,

an upright back wall extending between said opposite ends with a central opening for discharge of crop material to said feeder housing,

a transverse auger forwardly of said back wall having flights the outer peripheries of which define a transverse cylinder, said auger extending between said opposite ends and being rotatable about its transverse axis, and

a bottom structure including

a floor between said opposite ends having a flat front portion extending rearwardly to approximately directly below said transverse axis of said auger, a concave intermediate portion curving upwardly and rearwardly at a curvature generally complimentary to said transverse cylinder and a flat rear portion sloping upwardly and rearwardly from said intermediate portion toward said back wall, and

a hollow beam of quadrilateral cross section extending between and secured to said opposite ends and disposed at the lower rear of said header below said central opening, said hollow beam having an upwardly extending rear wall generally aligned with said header back wall, a substantially horizontal bottom wall and a top wall sloping downwardly and forwardly from the top of said rear wall parallel to and in supporting relation to said rear portion of said floor, said rear wall of said beam having wall means defining laterally spaced latch openings in the portion of said rear wall of said beam beneath said central opening,

said feeder housing including a pair of latches with movable latch parts releasably inserted through said latch openings and releasably engaging the front side of the rear wall of said beam.

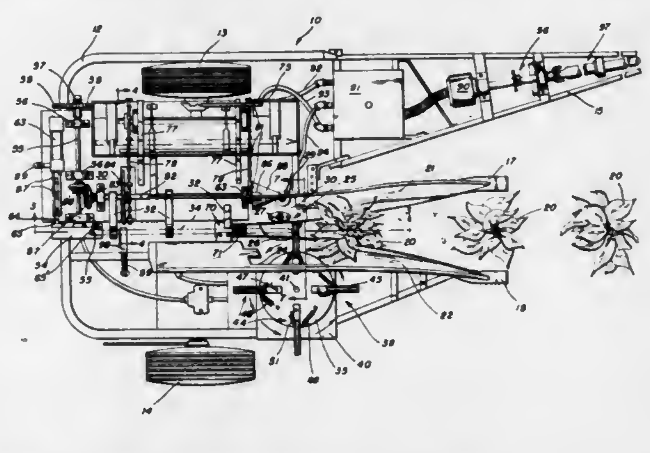
4,444,001
TOBACCO HARVESTER

Henry J. Thurnau, 216 Voorhees Ave., New Milford, N.J. 07646; Ray K. Smalling, Rte. 2, Box 15, and Peter F. Thurnau, Rte. 2, Box 210, both of Lafayette, Tenn. 37083

Filed Sep. 30, 1982, Ser. No. 431,594

Int. Cl.^{3} A01D *45/16*

U.S. Cl. 56—27.5 **11 Claims**



1. A tobacco harvesting apparatus comprising:

(a) a mobile frame having a cutting station adapted to be moved in a forward longitudinal direction along a row of tobacco plants having stalks projecting upward from the ground,

(b) a movable cutter blade mounting on said frame at said cutting station in the path of the tobacco stalks, means for driving said movable cutter blade to cut each successive stalk adjacent the ground as said frame moves forward over the ground,

(c) a stick receiver on said frame behind said cutting station for supporting a tobacco stick having a pointed end longitudinally in a stick receiving position, in which said pointed end projects forward and is located at said cutting station above said cutter blade,

(d) a paddle assembly mounted on said frame adjacent said cutting station for rotary movement about an upright axis, and comprising a plurality of circumferentially spaced paddle members,

(e) each paddle member comprising a pair of vertically spaced, radially projecting, upper and lower arms, each said upper arm being above said stick receiving position and each said lower arm being below said stick receiving position and above said cutter blade, and

(f) means for driving each said paddle member through said cutting station, so that each said pair of upper and lower arms moving through said cutting station engages and impales a tobacco stalk at said cutting station on a tobacco stalk in said stick receiving position.

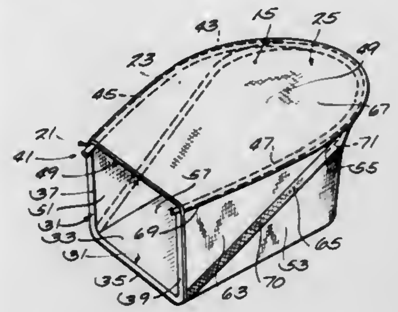
4,444,002
GRASS CLIPPING CATCHER

Richard A. Heismann, Knoxville, and Richard R. Morse, Galesburg, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Aug. 6, 1982, Ser. No. 405,734

Int. Cl.^{3} A01D *53/06*

U.S. Cl. 56—202 **5 Claims**



1. A grass catcher for a rotary lawn mower, said catcher comprising a relatively rigid frame including a first frame portion defining a mouth adapted to receive grass clippings from a lawn mower and a second frame portion extending from said first frame portion and defining an area removably coverable to facilitate clipping accumulation in and discharge from the catcher, and a bag on said frame including a pair of spaced side walls fixed to and extending from said first frame portion, a rear wall fixed to and extending from said second frame portion, located in spaced relation from said first frame portion, and extending between and connected to said side walls, an additional wall fixed to and extending from said first frame portion in opposing relation to said area, extending between and connected to said side walls, and connected to said rear wall, a cover including a pair of spaced end panels fixed to and extending from said first frame portion and from adjacent said additional wall and in partially overlying relation to said side walls, and a cover panel extending from said mouth and between and connected to said end panels, said cover panel being locatable in covering relation to said area, and means including an elastic member for releasably retaining said cover panel in covering relation to said area.

4,444,003
TURBULENT SPINNING APPARATUS FOR THE PRODUCTION OF YARN

Konrad Götzfried, Ausburg, Fed. Rep. of Germany, assignor to Murata Machinery Ltd., Kyoto, Japan

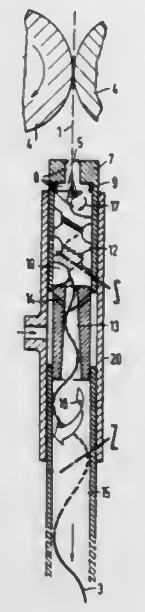
Filed Jan. 27, 1982, Ser. No. 343,184

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1981, 3103510; Jan. 8, 1982, 3200378

Int. Cl.^{3} D01H *1/13;* D02G *3/36*

U.S. Cl. 57—5 **10 Claims**

1. An apparatus for the pneumatic spinning of a yarn made up of staple fibers (1) and an endless filament (2) comprising a pair of interacting supply rollers (4) forming a clamping line (4*a*) therebetween, an axially elongated spinning tube (20) arranged in axial alignment with the clamping line (4*a*) of said supply rollers (4), said spinning tube having a first end adjacent to said supply rollers and a second end more remote from said supply rollers, said spinning tube (20) has an inlet opening (5) at the first end thereof for receiving the staple fibers and the endless filament, a helical chamber (19) located downstream from said inlet opening, a first smooth-walled channel (13) located downstream from said helical channel (19), said first channel (13) has an upstream end and a downstream end, nozzles for supplying compressed air open into said first smooth-walled channel (13) close to the upstream end thereof, the openings of said nozzles (14) into said first channel (13) have a tangential component with respect to said first smooth-walled channel (13) and a downstream directed axial component with respect to the first smooth-walled channel (13), wherein the improvement comprises that said inlet opening (5) has an edge (6) at the downstream end thereof, a chamber (8) located between said inlet opening (5) and said helical channel (19) and said chamber (8) has a larger cross-sectional area transverse of the axis of said spinning tube (20) and widens from the downstream said edge (6) of said inlet opening (5).



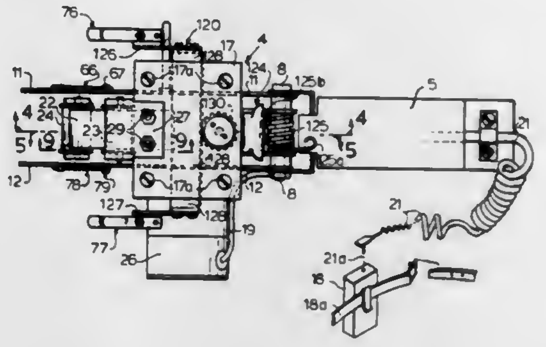
4,444,004
HAND-HELD TRAVERSABLE YARN SPLICER

Fred P. Rankin, and Buren L. Goins, both of Gastonia, N.C., assignors to A. B. Carter, Inc., Gastonia, N.C.

Filed Dec. 21, 1981, Ser. No. 333,255

Int. Cl.^{3} B65H *69/06*

U.S. Cl. 57—22 **11 Claims**



1. A portable device (4) adapted to be held and manipulated by one hand independently of the other hand of an operator to splice overlapped oppositely extending yarn ends (62*a*, 63*a*) comprising a frame including a hand grip means (5, 122), a wrap wheel (22) mounted on said frame for winding a splicing thread (92) around said overlapped ends, a traverse mechanism (120) mounted on said frame for reciprocatory movement in a path substantially parallel to said overlapped ends, said mechanism including a pair of clamps (76, 77) spaced apart at a fixed distance one from the other and disposed respectively on opposite sides of said winding means, said clamps adapted to releasably hold a segment of the overlapped ends under tension, and means responsive to said hand grip means for reciprocating said mechanism concurrently with the operation of said wheel to thereby consecutively wind at least two concentric courses

(**h1, h2**) of said splicing thread around said segment to form a wrap splice, said responsive means including an elongated retatable element (**119**) provided with an axially disposed twist section (**136**) pitched in one direction and a second axially disposed twist section (**138**) pitched in the opposite direction, and a follower (**118**) carried by said hand grip means for successively engaging said sections.

4,444,005

STOP MOTION FOR SPINNING FRAME

Konrad Klein, Ebersbach-Sulpach; Friedrich Dinkelmann, Rechberghausen, and Hermann Guttler, Uhingen, all of Fed. Rep. of Germany, assignors to Zinser Textilmaschinen GmbH, Fed. Rep. of Germany

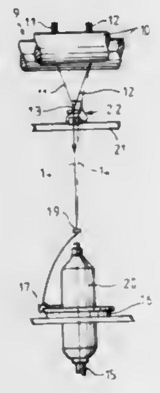
PCT No. PCT/EP81/00065, 371 Date Jan. 12, 1982, 102(e) Date Jan. 12, 1982, PCT Pub. No. WO81/03502, PCT Pub. Date Dec. 10, 1981

PCT Filed Jun. 7, 1981, Ser. No. 342,022

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1980, 3021614

Int. Cl.³ D01H *13/16, 13/18*

U.S. Cl. 57—80 **6 Claims**



1. In a spinning frame of the type having a plurality of spinning locations with each spinning location having means for drawing two fibers, bringing said fibers together at a union point and twisting said fibers together to form a yarn and fiber break guard means having fiber sensing means which, as a consequence of the breaking of one of the individual fibers, is displaced from its normal operational position by the lateral movement of the remaining fiber, the improvement comprising first and second fiber clamping means mounted on said frame with at least said first clamping means being pivotally mounted on said frame and being in operative contact with said fiber sensing means so that upon lateral movement of said remaining fiber said fiber sensing means will be displaced to cause said first clamping means to pivot and clamp said remaining fiber against said second clamping means.

4. In a spinning frame of the type having a plurality of spinning locations with each spinning location having means for drawing two fibers, bringing said fibers together at a union point and twisting said fibers together to form a yarn and fiber break guard means having fiber sensing means which, as a consequence of the breaking of one of the individual fibers, is displaced from its normal operational position by the lateral movement of the remaining fiber, the improvement comprising a pair of spring means mounted on said frame on opposite sides of said yarn to define said fiber sensing means, a pair of electrical contacts disposed in spaced relation to the free end of the spring means respectively, fiber severing means and circuit means including said spring means, said contact means, and said fiber severing means so that upon breaking of one of said individual fibers one of said spring means will be displaced by the lateral movement of the remaining fiber to engage a respective contact means to energize said fiber severing means to sever said remaining fiber.

4,444,006

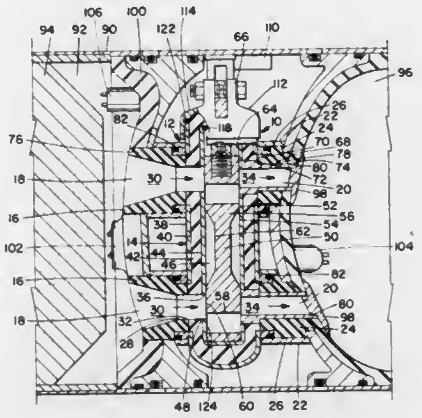
NOZZLE/VALVE DEVICE FOR A DUCTED ROCKET MOTOR

William M. Burkes, Jr., and William H. Miller, both of McGregor, Tex., assignors to Hercules Incorporated, Wilmington, Del.

Filed Feb. 4, 1981, Ser. No. 231,633

Int. Cl.³ F02K *9/56*

U.S. Cl. 60—251 **9 Claims**



1. A nozzle/valve device for controlling flow of high temperature gases from a fuel generator to a secondary combustion chamber of a ducted rocket motor, said nozzle/valve comprising, in combination,

a valve body having a stem section and two flow sections intersecting and attached to the ends of said stem section, said stem section comprising an outer stem member and a stem insulator for said outer stem member housed with said outer stem member and extending throughout the length of the outer stem member, the interior surface of said stem insulator defining a central longitudinal stem cavity extending throughout the length of the stem insulator and containing openings in registration extending transversely through the side walls of said outer stem member and stem insulator;

flow sections respectively comprising a tubular flow insulator contiguous with the upper and lower ends of said stem insulator and defining flow ports in registration with said transversely extended openings in said stem insulator, to form flow channels and transversely intersecting said central longitudinal cavity;

a guillotine rod having two end positioned flow blockage elements joined by a heat insulator portion, said blockage elements being mounted within said central longitudinal stem cavity in slidable contact with the interior surface of said stem insulator and intersecting said flow channels, each flow blockage element having a hole spaced with respect to the other hole to individually complete the definition of said flow channels, said guillotine rod being endwise linked to an actuator device means for positioning the guillotine rod, as desired, within said central longitudinal stem cavity to effect a position in which the spaced holes of said flow blockage elements are in desired registration with the remainder of each flow channel, to provide the desired amount of interference with flow of gases through said flow channels from said generator to said secondary combustion chamber.

4,444,007

METHOD FOR COMBINED CYCLE ELECTRICAL POWER GENERATION

David S. Mitchell, and David R. Sageman, both of San Rafael, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Mar. 12, 1982, Ser. No. 357,457

Int. Cl.³ F02C *3/28*

U.S. Cl. 60—39.02 **4 Claims**

1. A method for combined cycle electrical power generation comprising:

(a) introducing a coal/water slurry into a gasifier;

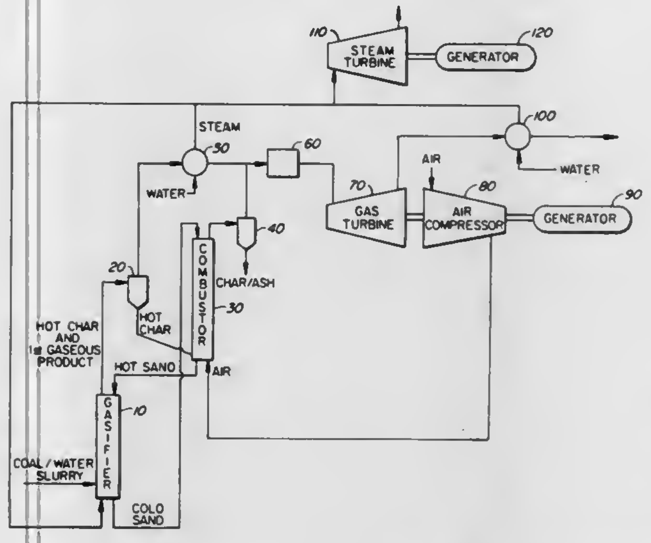
(b) passing steam through said gasifier to react with said coal/water slurry to form a hot char and a first gaseous product, wherein the heat necessary for said reaction is supplied by a heat-transfer material;

(c) removing the hot char and first gaseous product from the gasifier; separating the hot char from the first gaseous product; and introducing at least a portion of the hot char into a combustor;

(d) removing the heat-transfer material from said gasifier; and introducing at least a portion of the heat-transfer material into the combustor;

(e) heating the heat-transfer material to an elevated temperature in said combustor by combusting the char with air to form a combusted char and a second gaseous product, and contacting the heat-transfer material with the combusted char;

(f) recycling at least a portion of said heat-transfer material to said gasifier as a source of heat-transfer material;



(g) removing the combusted char and the second gaseous product from the combustor and separating the second gaseous product from the combusted char;

(h) feeding said first gaseous product and said second gaseous product to a gas turbine to drive said gas turbine, wherein said gas turbine drives an electrical generator to produce electrical power; and

(i) exhausting said first gaseous product and said second gaseous product from said gas turbine, and passing said first gaseous product and said second gaseous product through a waste heat boiler which produces steam which drives a steam turbine, which in turn drives an additional electrical generator to produce electrical power, wherein at least some of the first gaseous product separated from said hot char is passed through a second waste heat boiler which produces additional steam to drive said steam turbine.

4,444,008

FUEL CONTROL SYSTEM FOR A GAS TURBINE ENGINE

Hugh F. Cantwell, Derby, England, assignor to Rolls-Royce Limited, London, England

Filed Jan. 25, 1982, Ser. No. 342,227

Claims priority, application United Kingdom, Mar. 4, 1981, 8106808

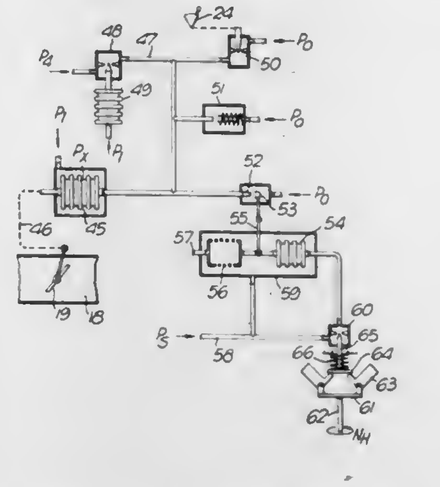
Int. Cl.³ F02C *9/28*

U.S. Cl. 60—39.281 **5 Claims**

1. A fuel control system for a gas turbine engine having a high pressure compressor comprising:

a power lever selectively operable to a power lever angle for a desired engine thrust level;

a main fuel control unit for varying fuel flow to the engine in accordance with a ratio between engine inlet pressure and compressor delivery pressure to provide an approximation of the desired thrust level as set by the power lever angle of said power lever, said main fuel control unit including a first variable orifice means controlled by the ratio of engine inlet pressure and compressor delivery pressure and having an outlet for a modified compressor delivery pressure, a second variable orifice means controlled by said power lever and having an outlet for a modified ambient pressure, means interconnecting said outlet of said first orifice means with the outlet of said second orifice means to provide a control pressure for said main fuel controller unit based on a function of said modified compressor delivery pressure and said modified ambient pressure, means operable by said control pressure of said main fuel control unit to vary the fuel to the engine; and



an override idling fuel control unit operable only at ground idle for controlling the control pressure of said main fuel control unit to prevent rotational speed of the high pressure compressor falling below a predetermined minimum, said override idling fuel control unit being operatively controlled by rotational speed of the high pressure compressor to vary the control pressure of said main control unit in accordance therewith when speed of the high pressure compressor is below a normal operating value.

4,444,009

HYDRODYNAMIC TORQUE CONVERTER

Hans Merkle, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

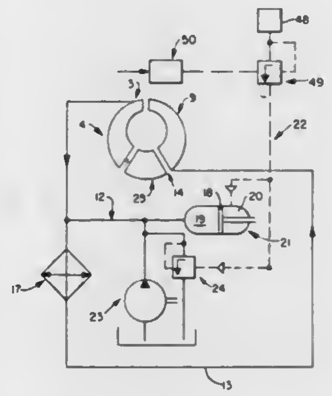
Continuation of Ser. No. 131,173, Mar. 17, 1980, abandoned.

This application Jan. 17, 1983, Ser. No. 458,531

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1979, 2910111

Int. Cl.³ F16D *33/16*

U.S. Cl. 60—358 **26 Claims**

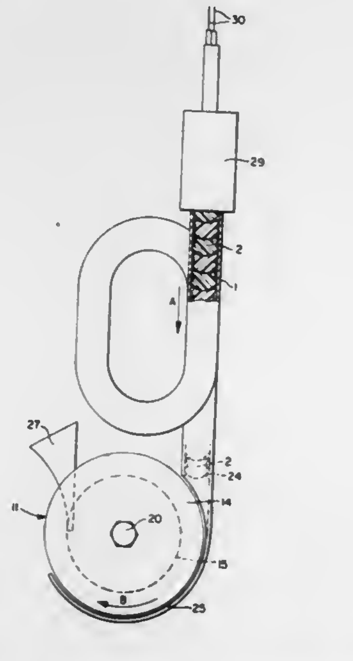


1. A hydrodynamic torque converter which includes a turbine rotor, a pump impeller, means for defining an outer torus of an internal hydrodynamic circuit of the converter, line means for supplying a booster pressure into the internal hydrodynamic circuit, an inlet means communicating with the inter-

nal hydrodynamic circuit, the inlet means being in a zone of the outer torus at a radial position with respect to an axis of rotation of the converter which position has a radius which is larger than a smallest radius of the torus with respect to the axis of rotation of the converter, characterized in that the inlet means are disposed through a wall of the turbine rotor and are connected with the line means for enabling a supplying of the booster pressure in the line means into the internal hydrodynamic circuit.

4,444,010
ROTARY POWER ELEMENT

Hellmut Bendler, Fürth-Dambach, Fed. Rep. of Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany
Filed Jul. 30, 1980, Ser. No. 173,841
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1979, 2931164
Int. Cl.³ A62B *35/02*
U.S. Cl. 60—407 **22 Claims**

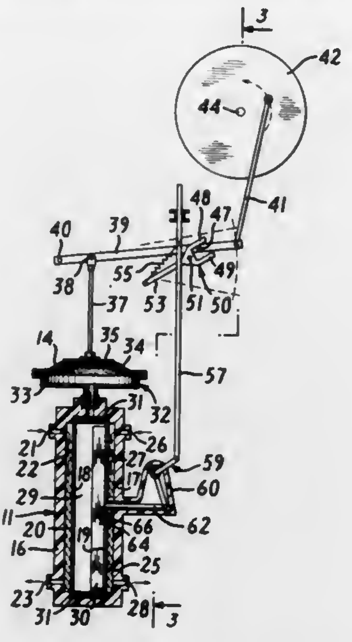


1. A rotary power element for actuating tensioning devices which comprises a rotatable drive mechanism, a compressed-gas generator means, a tubular element between the drive mechanism and the compressed-gas generator means, and a plurality of preformed acceleration members arranged in mutual contact with each other in said tubular element, said compressed-gas generator means including a propellant charge means for simultaneously driving said acceleration members in mutual contact forward through and out of said tubular element against the drive mechanism under the action of compressed gas to rotate and to accelerate the drive mechanism.

4,444,011
HOT GAS ENGINE

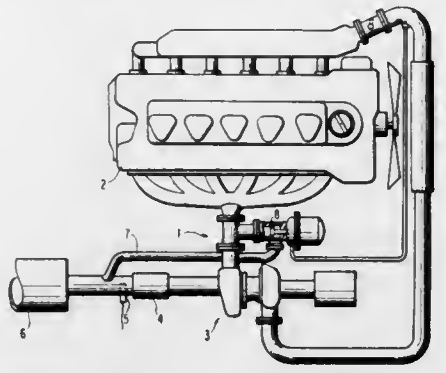
Ivo Kolin, Zagreb, Yugoslavia, assignor to Grace Dudley, Lausanne, Switzerland
Filed Apr. 7, 1981, Ser. No. 251,918
Claims priority, application Yugoslavia, Apr. 11, 1980, 1009/80
Int. Cl.³ F02G *1/04*
U.S. Cl. 60—517 **14 Claims**

1. A hot gas engine comprising:
means forming a chamber for containing a working gas,
displacer means disposed for reciprocation between two maximum displacement positions in the chamber forming means,
working piston means mounted for reciprocation and exposed to the working gas, and
means coupling the displacer means with the working piston means for rapidly shifting the displacer means between the two maximum displacement positions, the coupling means including elastic means and biasing the displacer means towards its two positions of maximum displacement.



4,444,012
EXHAUST PIPE ARRANGEMENT FOR A TURBOCHARGED MULTI-CYLINDER INTERNAL COMBUSTION ENGINE HAVING CATALYTIC CONVERTERS

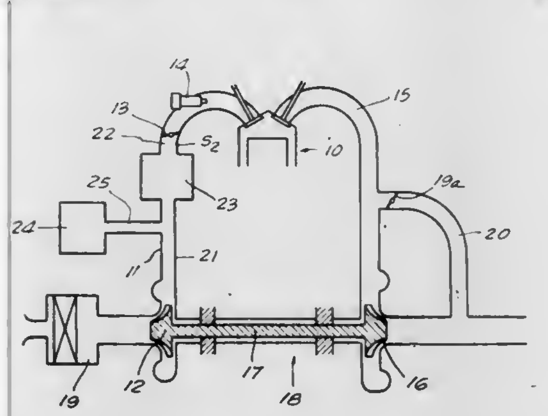
Ulrich-Joachim Gauffres, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany
Filed Apr. 19, 1982, Ser. No. 369,647
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1981, 3115739
Int. Cl.³ F02B *37/00*
U.S. Cl. 60—602 **3 Claims**



1. An exhaust arrangement for a multicylinder internal combustion engine, the exhaust arrangement comprising an exhaust pipe means, an exhaust gas turbocharger means, a bypass conduit means for circumventing the exhaust gas turbocharger means, the bypass conduit means terminating in the exhaust pipe means, blow off valve means being controlled by a supercharging pressure of the exhaust gas turbocharger means disposed in the bypass conduit means, a starter catalyst means being arranged in the exhaust pipe means at a position upstream of a junction of the bypass conduit means and the exhaust pipe as viewed in a normal flow direction of exhaust gases, an air/fuel ratio detector means being arranged in the exhaust pipe means at a position upstream of the junction of the bypass conduit means and the exhaust pipe means, a main catalyst means being arranged at a position downstream of the exhaust gas turbocharger means, starter catalyst means, and air/fuel ratio detector means, as viewed in a normal flow direction of exhaust gases.

4,444,013
SUPERCHARGER FOR MOTORCYCLE ENGINE

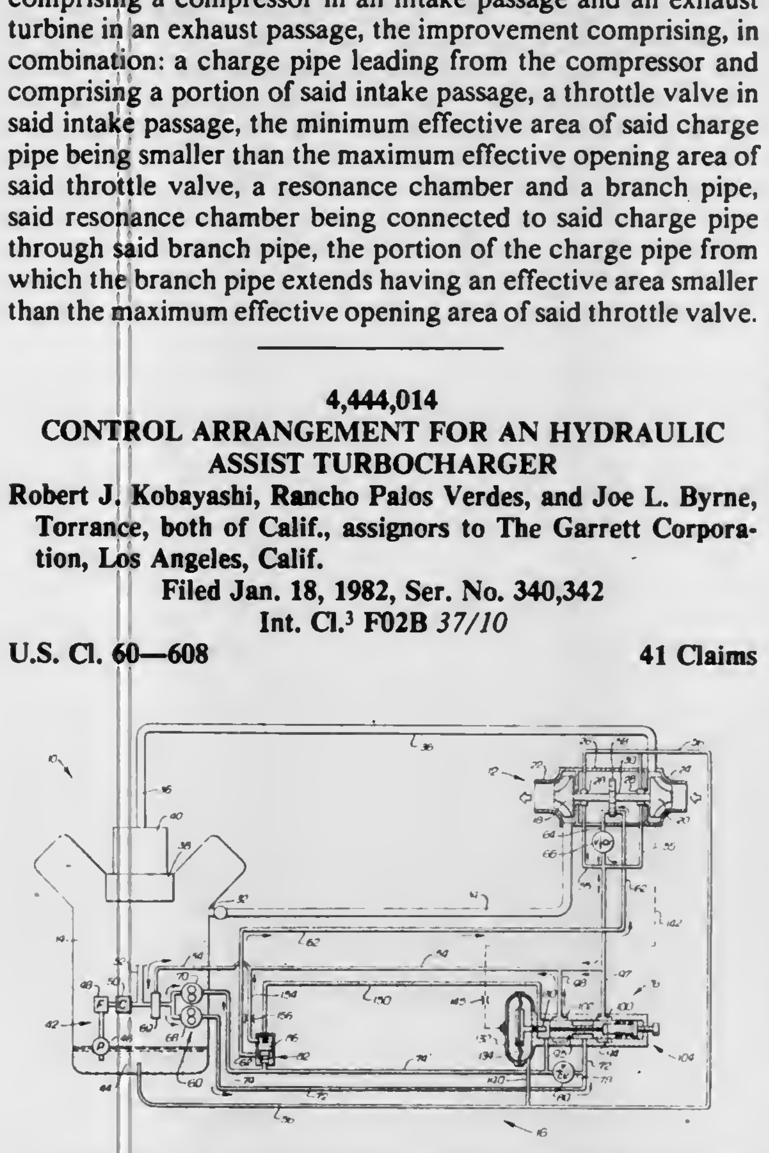
Kazuo Inoue, Tokyo; Masatoshi Suzuki, Saitama, both of Japan, and Ryo Narisawa, Quebec, Canada, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 14, 1981, Ser. No. 301,638
Claims priority, application Japan, Sep. 17, 1980, 55-128008
Int. Cl.³ F02B *37/00*
U.S. Cl. 60—605 **4 Claims**



1. In an internal combustion engine having a super-charger comprising a compressor in an intake passage and an exhaust turbine in an exhaust passage, the improvement comprising, in combination: a charge pipe leading from the compressor and comprising a portion of said intake passage, a throttle valve in said intake passage, the minimum effective area of said charge pipe being smaller than the maximum effective opening area of said throttle valve, a resonance chamber and a branch pipe, said resonance chamber being connected to said charge pipe through said branch pipe, the portion of the charge pipe from which the branch pipe extends having an effective area smaller than the maximum effective opening area of said throttle valve.

4,444,014
CONTROL ARRANGEMENT FOR AN HYDRAULIC ASSIST TURBOCHARGER

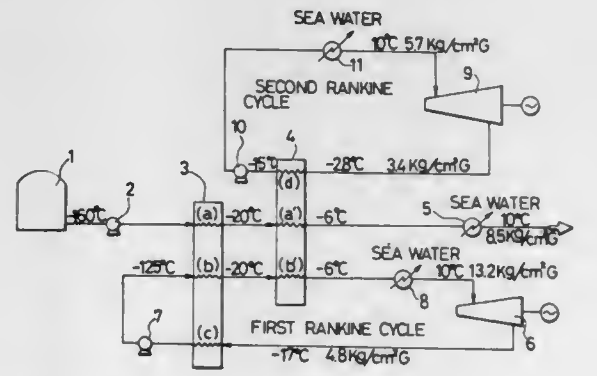
Robert J. Kobayashi, Rancho Palos Verdes, and Joe L. Byrne, Torrance, both of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.
Filed Jan. 18, 1982, Ser. No. 340,342
Int. Cl.³ F02B *37/10*
U.S. Cl. 60—608 **41 Claims**



1. For use in a turbocharged engine including an hydraulic assist turbocharger having an exhaust gas driven turbine for rotatably driving a compressor, and an hydraulic turbine for supplementally driving the compressor, a control arrangement for controlling the supply of hydraulic fluid to the hydraulic turbine for rotatably driving the hydraulic turbine, comprising:
a pump assembly including a plurality of pumping elements for providing a plurality of hydraulic flow outputs for supply to the hydraulic turbine; and
control valve means including means for responding to engine speed and means for responding to engine load for coupling the hydraulic flow outputs to the hydraulic turbine during one condition of engine operation for maximum supplemental driving of the compressor, and for serially and progressively uncoupling the hydraulic flow outputs from the hydraulic turbine one at a time in response to changes in at least one of engine speed and load indicative of a requirement for reduced supplemental driving of the compressor.

4,444,015
METHOD FOR RECOVERING POWER ACCORDING TO A CASCADED RANKINE CYCLE BY GASIFYING LIQUEFIED NATURAL GAS AND UTILIZING THE COLD POTENTIAL

Osamu Matsumoto, Inagi, and Ichizo Aoki, Yokohama, both of Japan, assignors to Chiyoda Chemical Engineering & Construction Co., Ltd., Japan
Filed Jan. 27, 1981, Ser. No. 228,921
Int. Cl.³ F01K *23/04, 25/06*
U.S. Cl. 60—648 **7 Claims**



1. A method for recovering power according to a cascaded Rankine cycle in which liquefied natural gas is gasified and the cold potential thereof is utilized, comprising the steps of selecting a first medium having a low pressure cooling curve substantially corresponding to a vaporizing curve in gasifying the liquefied natural gas as a mixture of hydrocarbons having 1-6 carbon atoms or a mixture of halogenated hydrocarbons of boiling points close to those of said hydrocarbons,
using the first medium in a first Rankine cycle with the liquefied natural gas as a low temperature source,
exchanging heat of the liquefied natural gas and high pressure first medium with the low pressure first medium in the first Rankine cycle at a first multifluid heat exchanger during the first Rankine cycle, thereby completely condensing said low pressure first medium, vaporizing said liquefied natural gas and vaporizing said high pressure first medium in the first Rankine cycle,
using a first pump means to pressurize said condensed first medium to provide said high pressure flat medium between two successive passages of said first medium through said multifluid heat exchanger,
using a first turbine for recovering the power generated during the first Rankine cycle,
selecting a second medium, having a higher boiling point than said first medium and having a low pressure cooling curve substantially corresponding to a vaporizing curve of said first medium at a high pressure, from the group consisting of a single hyudrocarbon component having 1-6 carbon atoms of a mixture thereof; one or more halogenatedd hydrocarbons having a boiling point close to that of said hydrocarbon components having 1-6 carbon atoms; and ammonia,
using said second medium in a second Rankine cycle,
cascading said first and second Rankine cycles by using part of said first Rankine cycle as the low temperature source for said second Rankine cycle,
exchanging heat of said second medium at a low pressure in the second Rankine cycle with the high pressure first medium after said first multifluid heat exchanger in the first Rankine cycle at a heat exchanger during the cascad-

ing of the first and second Rankine cycle, thereby completely condensing said second medium in the second Rankine cycle and further vaporizing said high pressure first medium,

using a second pump means to pressurize said condensed second medium, and

using a second turbine to recover power during the second Rankine cycle.

4,444,016

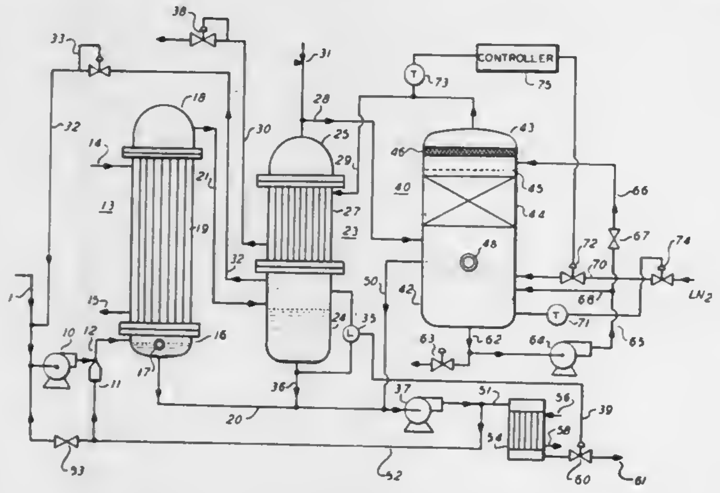
HEAT EXCHANGER APPARATUS

Ratan Banerjee, New Brunswick, N.J., assignor to Airco, Inc., Montvale, N.J.

Filed May 20, 1981, Ser. No. 265,264

Int. Cl.^{3} F17C *13/00*

U.S. Cl. 62—54 **5 Claims**



1. Apparatus for condensing a vapor component of a gas mixture comprising a reflux heat exchange device adapted to contain a body of the liquid phase of said vapor component in a lower section thereof and having a gas-liquid contact stage disposed above said lower section; means for introducing said gas mixture into said device at a location above the surface of said body of said liquid phase; means for introducing a flow of cryogenic liquid having a boiling point below the boiling point of said liquid phase into said body of said liquid phase to chill and stir said body of said liquid phase whereby freezing of said body of said liquid phase is substantially precluded; means for removing said chilled liquid phase from said lower portion and means for introducing said removed, chilled liquid phase into said reflux heat exchanger as reflux at a location above said contact stage such that said reflux is effective to condense the vapor component of said gas mixture upon contact therewith in said contact stage.

4,444,017

METHOD AND APPARATUS FOR CONTROLLING THE OPERATION OF A COMPRESSOR CRANKCASE HEATER

Mario F. Bricceti, Liverpool, and Wayne R. Reedy, Cazenovia, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 29, 1982, Ser. No. 362,785

Int. Cl.^{3} F25B *43/02;* F01M *5/00*

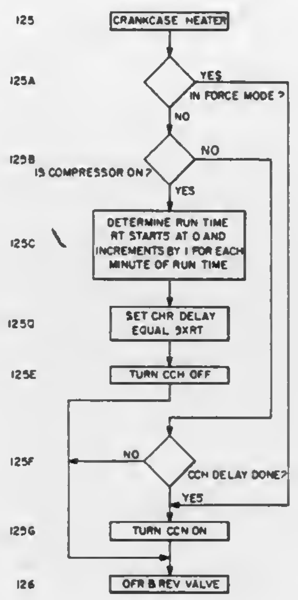
U.S. Cl. 62—84 **13 Claims**

1. A method of regulating the operation of a crankcase heater for supplying heat energy to lubricating oil contained within a refrigerant compressor which comprises the steps of:

sensing if the compressor is operating;

detecting the length of the time period of continuous compressor operation; and

energizing the crankcase heater except when the step of sensing ascertains the compressor is operating and except for a delay period after compressor operation, the length of said delay period being a function of the length of the time period of compressor operation ascertained by the step of detecting.



4,444,018

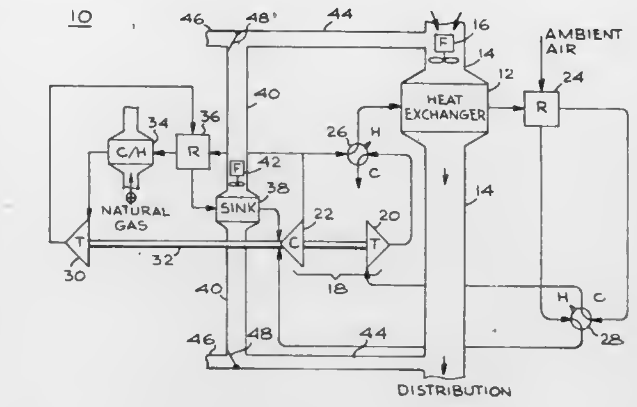
HEAT PUMP SYSTEMS FOR RESIDENTIAL USE

Robert C. Kinsell, Los Angeles, and James C. Noe, Canoga Park, both of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Division of Ser. No. 172,631, Jul. 25, 1980, Pat. No. 4,347,714. This application Sep. 2, 1982, Ser. No. 414,233

Int. Cl.^{3} F25B *9/00*

U.S. Cl. 62—87 **16 Claims**



1. The method of operating an enclosed space conditioning system having a load heat exchanger for exchanging heat between recirculation air and conditioned air comprising the steps of:

directing conditioned air from the load heat exchanger to a regenerator for exchanging heat with inlet ambient air to bring the ambient air to near the temperature of the residential space;

directing the conditioned air and the ambient air in separate paths to separate points in a turbo-compressor having a common shaft coupled to be driven by a primary power source, the primary power source comprising a combustor/heat exchanger and Brayton turbine, the Brayton turbine being coupled to drive the shaft;

directing conditioned air from the compressor of the turbo-compressor in a heating mode to the load heat exchanger to heat the recirculation air therein;

directing conditioned air from the regenerator in the heating mode to the inlet of the turbo-compressor for expansion therein to develop power to assist the primary power source in driving said shaft;

thereafter exhausting air from the turbine to ambient;

directing combustion heated gases from the combustor/heat exchanger to drive the Brayton turbine;

directing the Brayton turbine exhaust to a recuperator for transferring heat to inlet air for the combustor heat/exchanger; and

thereafter directing the combustion heated gases to a sink heat exchanger for transferring waste heat to the residential space when in the heating mode.

4,444,019

METHOD OF COLD GENERATION AND A PLANT FOR ACCOMPLISHING SAME

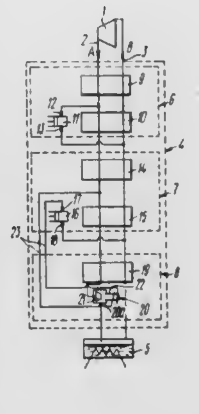
Alexei M. Arkharov, Rostovskaya naberezhnaya, 5, kv. 103, Moscow; Alexandr T. Desyatov, ulitsa Textilschikov, 11, kv. 7; Vitaly L. Bondarenko, ulitsa, Bykovskogo, 16, kv. 6, both of Moskovskaya oblast, Balashikha, all of U.S.S.R.; Vladimir G. Pronko, deceased, late of Moscow, U.S.S.R.; Natalia D. Pronko, heir, II B. Kozlovsky perculok, kv. 42, Moscow, U.S.S.R.; Boris D. Krakovsky, Narodnaya ulitsa, 13, kv. 136, Moscow, U.S.S.R.; Sergei M. Korsakov-Bogatkov, 5 Parkovaya ulitsa, 56, korpus 6, kv. 74, Moscow, U.S.S.R.; Viktor P. Jushin, Proletarsky prospekt, 64, korpus 1, kv. 72, Moscow, U.S.S.R.; Alexandra M. Kopova, ulitsa 26 Bakinskikh Komissarov, 3, korpus 3, kv. 229, Moscow, U.S.S.R.; Petr V. Gorodnov, 3 Setunsky proezd, 3, kv. 299, Moscow, U.S.S.R.; Julian Y. Borisov, Frunzensky val, 4, kv. 80, Moscow, U.S.S.R.; Vadim V. Ermilov, 7 mikroraion, 21, kv. 29, Alma-Ata, U.S.S.R., and Jury P. Romanteev, ulitsa Mirzoiana, 118, kv. 18, Alma-Ata, U.S.S.R.

Filed Aug. 17, 1981, Ser. No. 293,126

Claims priority, application U.S.S.R., Sep. 8, 1980, 2970551

Int. Cl.^{3} F25B *9/00*

U.S. Cl. 62—87 **9 Claims**



1. A method of cold generation, wherein refrigerant is circulated within a closed circuit having a forward flow line and a return flow line, comprising the steps of:

compressing said refrigerant in a compression zone;

feeding said compressed refrigerant into said forward flow line;

expanding within a refrigerant expansion zone at least part of said refrigerant so as to provide generation of acoustic waves;

converting the acoustic wave energy into another energy form suitable for the withdrawal thereof from the refrigerant expansion zone;

extracting the energy of said another energy form from said refrigerant expansion zone, thus causing chilling of said refrigerant;

supplying said chilled refrigerant to a cold consumer;

directing said refrigerant into said return flow line for return to said compression zone for recompression to repeat the cooling cycle.

4,444,020

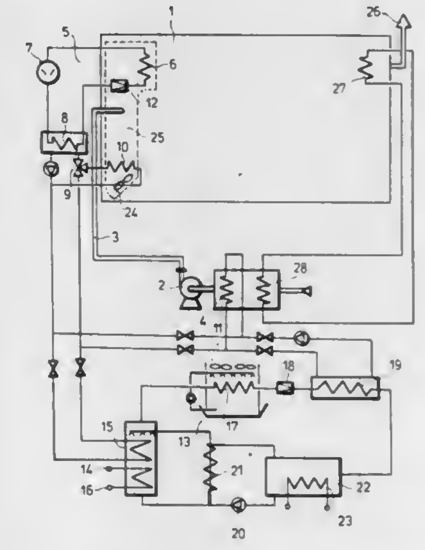
HEAT TRANSFORMATION PROCESS AND APPARATUS FOR AIR-CONDITIONING IN ROOMS FOR A GREAT NUMBER OF LIVING CREATURES, PARTICULARLY BUILDING FOR ANIMAL BREEDING

Agnes Varga, Budapest, Hungary, assignor to Kozponti Valto Es Hitelbank Rt., Budapest, Hungary

Filed Jan. 21, 1982, Ser. No. 341,219

Int. Cl.^{3} F25B *41/04;* A01K *1/00*

U.S. Cl. 62—93 **10 Claims**



1. A process for maintaining the environment of a room housing a large number of animals wherein the foul air is continuously replaced with fresh air, comprising the steps of providing a medium at a temperature below the dew point of said room to condense the humidity in said room, thereafter compressing said medium to raise the temperature thereof to a level greater than the temperature in the room, subsequently condensing said compressed medium to release the heat therein, radiating a portion of said released heat directly to the environment within said room and passing a portion of said released heat selectively to one of a heat exchanger for preheating the fresh air and a heat exchanger comprising the heating portion of a refrigeration circuit to pre-cool said fresh air.

4,444,021

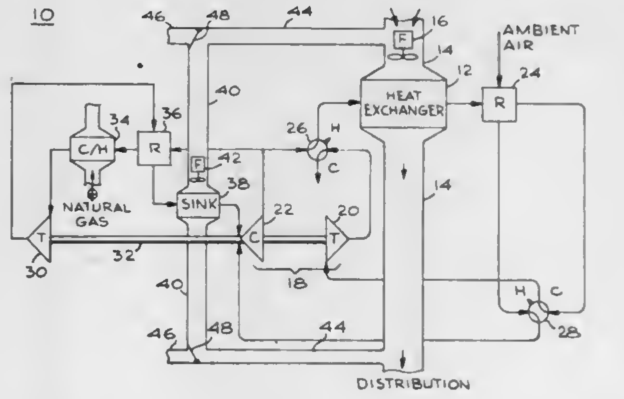
HEAT PUMP SYSTEMS FOR RESIDENTIAL USE

Robert C. Kinsell, Los Angeles, and James C. Noe, Canoga Park, both of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Division of Ser. No. 172,631, Jul. 25, 1980, Pat. No. 4,347,714. This application Sep. 2, 1982, Ser. No. 414,202

Int. Cl.^{3} F25D *17/06*

U.S. Cl. 62—95 **10 Claims**



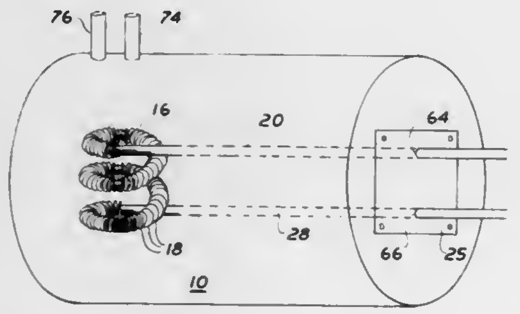
1. The method of providing cooling air to an enclosed space comprising the steps of:

cooling ambient air in a regenerative heat exchanger with conditioning air from a load heat exchanger;

expanding the cooled ambient air in a turbine of a turbo-

compressor to further cool the air and drive the turbo-compressor;
cooling the conditioned air to be provided to the enclosed space with the expanded cooled air from the turbine; and
compressing the conditioning air from the load heat exchanger in the compressor of the turbo-compressor.

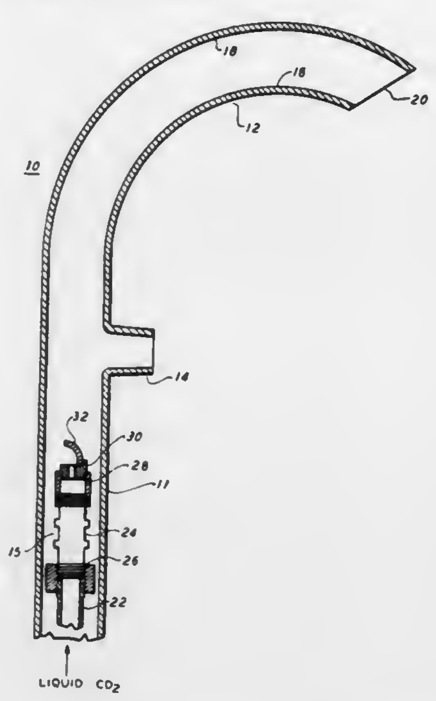
4,444,022
WATER HEATING SYSTEM
Ronald A. Holt, Delmont, and Robert B. Whitesides, Murrysville, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.
Continuation-in-part of Ser. No. 224,146, Jan. 12, 1981, Pat. No. 4,328,683. This application Apr. 22, 1982, Ser. No. 370,722
The portion of the term of this patent subsequent to May 11, 1999, has been disclaimed.
Int. Cl.^{3} F25B *27/02*
U.S. Cl. 62—238.6 **5 Claims**



1. A container construction and combination including the following components and structure:
a horizontally disposed container having a wall structure for confining a fluid to be heated in the container,
an upper and a lower opening provided in a side wall of the container,
a metal heat exchanger disposed within the container, and in a manner that permits the force of gravity to remove condensed refrigerant from the heat exchanger, the heat exchanger being comprised of a tube structure provided with fins extending outwardly from the outer surface of the structure and vertically within the container, the tube structure of the heat exchanger having two tube portions extending respectively through the two openings provided in the side wall of the container, such that the ends of said portions are located outside the container, and
insulating bushings located in the upper and lower openings to free the combination of corrosive galvanic action between the components thereof when the fluid to be heated is present in the container.

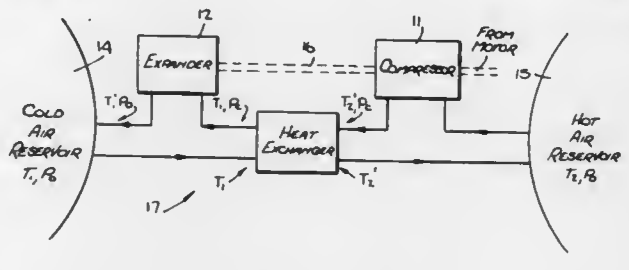
4,444,023
SNOW HORNS
Richard J. Barbini, Islip Terrace, N.Y., and Matthew C. DeCicco, Berkeley Heights, N.J., assignors to The BOC Group, Inc., Montvale, N.J.
Continuation-in-part of Ser. No. 295,282, Aug. 24, 1981, Pat. No. 4,375,755. This application Mar. 3, 1983, Ser. No. 471,607
Int. Cl.^{3} F25D *13/00*
U.S. Cl. 62—330 **2 Claims**

1. A snow horn device for depositing a ribbon of solid CO_2 of substantially uniform depth comprising:
a horn section having an inlet and outlet and a rectangular cross section of increasing area in the direction from said inlet to said outlet and having curved inner and outer wall sections;
means for discharging a flow of liquid CO_2 to form a stream of CO_2 solid and gas through said horn section from said inlet to said outlet;
further curved inner and outer wall sections spaced away from said inner and outer wall sections, respectively, to form first and second passages, and means for placing said first and second passages in communication with one another to enable liquid CO_2 to flow sequentially through said passages and warm said inner and outer curved walls and cool said liquid CO_2; and



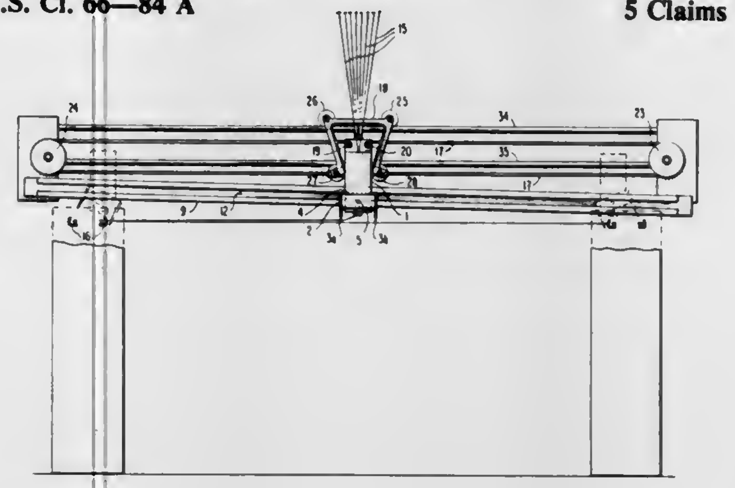
means for supplying said cooled liquid CO_2 to said discharge means as said flow of liquid CO_2.

4,444,024
DUAL OPEN CYCLE HEAT PUMP AND ENGINE
Richard McFee, R.D. #1, Union Springs, N.Y. 13160
Division of Ser. No. 290,101, Aug. 4, 1981, Pat. No. 4,402,193, which is a continuation of Ser. No. 146,600, May 5, 1980, Pat. No. 4,326,388. This application Jan. 28, 1983, Ser. No. 462,031
Int. Cl.^{3} F25D *9/00*
U.S. Cl. 62—401 **7 Claims**



1. A dual open cycle engine comprising:
a cold air reservoir for storing air at a first temperature and pressure;
a hot air reservoir for storing air at a second temperature greater than said first temperature and at a pressure equal to said first pressure;
a positive displacement compressor connected to said cold air reservoir to receive and compress a flow of cold air therefrom;
a heat exchanger having a pair of countercurrent flow paths therein, one of said flow paths being connected to said compressor to receive a flow of compressed air therefrom and the other of said flow paths being connected to and between said reservoirs to conduct a flow of hot air from said hot air reservoir to said cold air reservoir in heat exchange relation with a flow of compressed air in said one path; and
a positive displacement expander connected to and between said one path of said heat exchanger and said hot air reservoir to expand and deliver a flow of expanded air from said heat exchanger to said hot air reservoir.

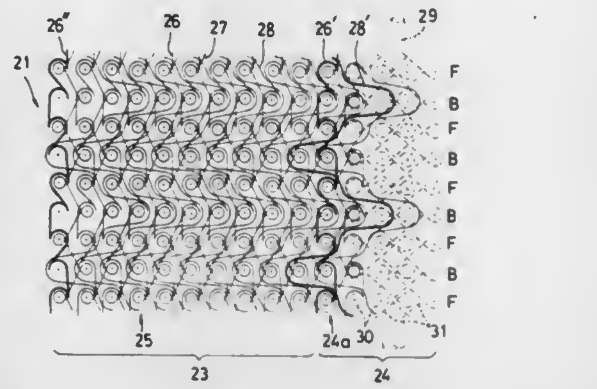
4,444,025
CARRIER MECHANISM FOR WEFT INSERTION
Ronald G. Krueger, Statesville, N.C., assignor to Proform, Inc., Minneapolis, Minn.
Filed May 11, 1982, Ser. No. 377,211
Int. Cl.^{3} D04B *23/06*
U.S. Cl. 66—84 A **5 Claims**



1. A carrier mechanism for weft insertion, comprising:
a frame provided with upper and lower sets of aligned guide holes through which weft fibers may be led from a source of such fibers,
a presser bar apparatus comprising first and second presser bars and a rigid connecting portion therebetween and affixed thereto, said presser bar apparatus being rotatably mounted upon said frame in a fashion such that said presser bars are capable of movement through an arc, the lowest point of said arc being beneath and below said frame,
said presser bar apparatus further bearing a protrusion located off-center of said connecting portion which may be slidably engaged with a carrier cam horizontally mounted upon and extending entirely across the width of a knitting machine wherein said weft fibers will be incorporated in a fabric, said carrier cam being mounted at a slight angle to the horizontal level,
such that when said carrier mechanism is positioned at one end of the cam, the first presser bar is depressed to a position below and beneath said frame, thereby depressing fibers led through said frame, and when said carrier mechanism is positioned at the opposite end of said cam said second bar is depressed to a position below and beneath said frame thereby depressing fibers led through said frame, whereby, when said carrier mechanism frame is moved from one end of said cam to the other, the presser bar apparatus is caused to undergo rotational movement, which rotational movement is continuous throughout said carrier mechanism frame movement.

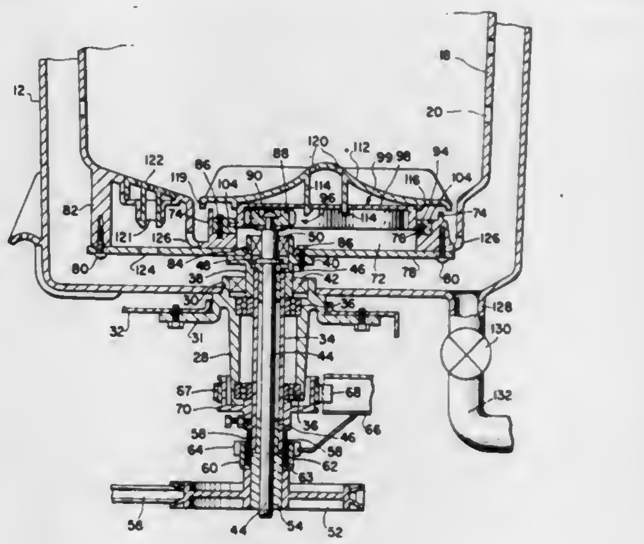
4,444,026
WRAP-KNIT STRINGER TAPE FOR SLIDE FASTENERS
Yoshio Matsuda, Nyuzen, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan
Filed Feb. 25, 1982, Ser. No. 352,324
Claims priority, application Japan, Feb. 26, 1981, 56-27433
Int. Cl.^{3} D04B *7/16*
U.S. Cl. 66—202 **27 Claims**

1. A warp-knit stringer tape for a slide fastener having a pair of rows of coupling elements, comprising:
(a) an elongate double-faced knit structure having a plurality of longitudinal wales on opposite sides, said double-faced knit structure including a longitudinally stretchable elongate web portion, and a longitudinally non-stretchable marginal portion extending along one longitudinal edge of said web portion for supporting one coupling element row of the slide fastener;
(b) said web portion including a plurality of first threads extending longitudinally of the wales and forming stitch loops therealong, said first threads comprising textured yarns; and
(c) said marginal portion including a core thread extending



longitudinally therealong, and a plurality of second threads surrounding said core thread and linked with said web portion, said core thread and said second threads comprising gray yarns having a coefficient of thermal shrinkage higher than that of the textured yarns.

4,444,027
WASHING APPARATUS
Yoshio Ikeda, Aichi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan
Filed Oct. 20, 1981, Ser. No. 313,352
Claims priority, application Japan, Oct. 31, 1980, 55-154220
Int. Cl.^{3} D06F *17/08, 23/04*
U.S. Cl. 68—23.6 **21 Claims**



1. A washing apparatus, comprising:
an outer tub for holding and draining a liquid;
a spinnable tub arranged inside of said outer tub for receiving materials to be washed and extracting the liquid from the materials;
a generally disk-shaped driven rotary base disposed in said spinnable tub on the bottom at an eccentric position with respect to the axis of rotation of said spinnable tub;
support means for rotatably supporting said driven rotary base;
drive means for selectively rotating said spinnable tub or said driven rotary base; and
a pulsator detachably mounted on said driven rotary base.

4,444,028
MACHINE FOR SPLITTING SKINS

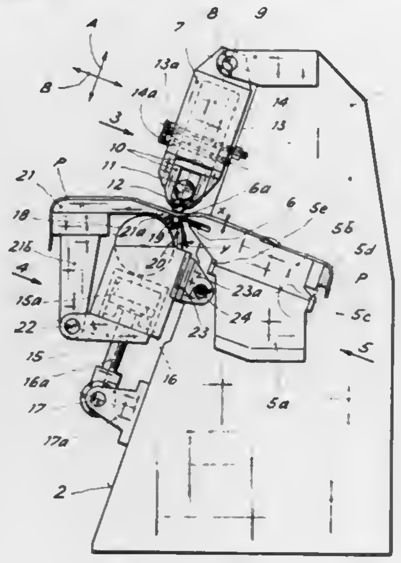
Silvio Repetto, Modena, Italy, assignor to S.p.A. Luigi Rizzi & C., Modena, Italy

Filed Nov. 16, 1981, Ser. No. 321,617

Claims priority, application Italy, Nov. 19, 1980, 26084 A/80

Int. Cl.^{3} C14B *1/14*

U.S. Cl. 69—13 **10 Claims**



1. A machine for splitting skins comprising:
an endless band blade having a cutting edge for splitting the skins at a cutting location;
means for supporting the band blade with the cutting edge for travel along a fixed path at the cutting location;
feed rollers arranged to bear against opposite faces of the skin to advance the skin towards the cutting edge at the cutting location in a direction normal to the direction of travel of the cutting edge; and
means for displacing the feed rollers in a first direction substantially parallel to the direction of advance of the skin and in a second direction normal to the first direction and to the path of travel of the cutting edge, one of said feed rollers being arranged to bear against one face of the skin, a first bridge member carrying said one feed roller and being mounted for angular displacement about an axis parallel to the direction of travel of said band blade at said cutting location, and displacing means being provided and operable angularly to displace said first bridge member about said axis and displace said one feed roller along an arc of sufficient radius to displace said one feed roller in said first direction substantially parallel to the direction of advance of the skin.

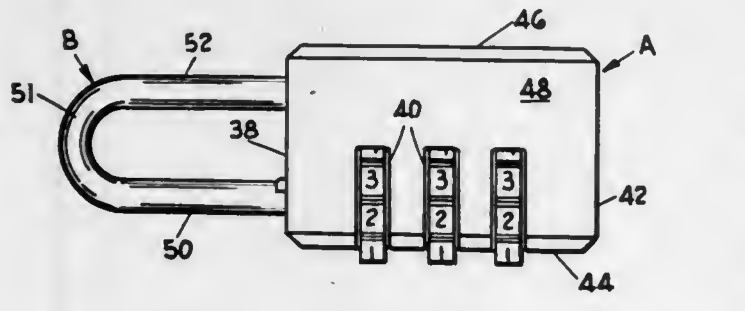
4,444,029
COMBINATION LOCK WITH ANTI-PICK FEATURE

Richard C. Remington, Pompton Plains, N.J., assignor to Presto Lock, Inc., Garfield, N.J.

Filed Feb. 16, 1982, Ser. No. 348,717

Int. Cl.^{3} E05B *37/06, 63/00*

U.S. Cl. 70—25 **6 Claims**



1. A combination lock including rotary elements having longitudinally extending peripheral teeth, at least one tooth being omitted on each element so as to define a gap forming a bypass means between a pair of teeth, the rotary elements being disposed in axially adjacent positions and being adapted to be moved axially in unison to open the lock, blocking means for each rotary element formed in a lock body adjacent the respective rotary elements for preventing the elements from being moved axially in unison to open the lock when a tooth on at least one of the elements aligns with the respective blocking means, and for allowing the rotary elements to be moved axially in unison to open the lock when the rotary elements are turned so as to align all of said bypass means with the respective blocking means, characterized in that at least one tooth on each rotary element is shorter than an adjacent tooth at one end of the teeth adjacent the respective blocking means.

4,444,030
DEVICE FOR THEFT-PROVING VEHICLES

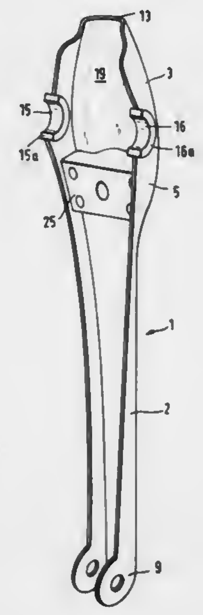
Ladislao F. Dausch, Postiach 76, 6208 Bad Schwalbach, Fed. Rep. of Germany

Filed Jun. 16, 1982, Ser. No. 389,094

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1981, 8118060[U]

Int. Cl.^{3} B60R *25/00*

U.S. Cl. 70—209 **6 Claims**



1. A device for theft-proving of vehicles comprising
a club-shaped body,
said body having two halves, each half comprising:
a thickened end and a shank having a slim end,
means for pivotionally connecting said body halves at their slim ends,
said body halves having recesses at their thickened end, said recesses registering in pairs,
a lock and a lock counterpart,
said lock being housed in said first body half in a transitional section between thickened end and shank,
the lock counterpart being housed in said second body half in a transitional section between thickened end and shank.

4,444,031
SECURITY DEVICE FOR TACKLE BOXES AND THE LIKE

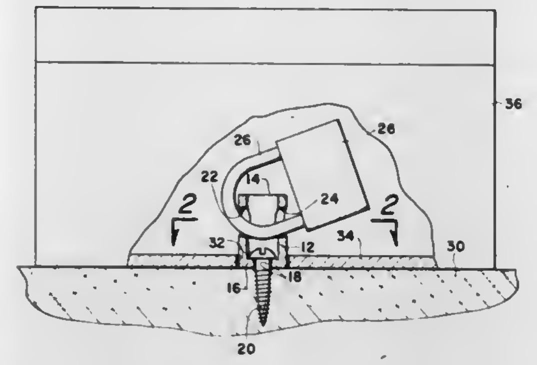
Glen A. Watson, 1530 Maple Rd., Rogers, Ark. 72756

Filed Aug. 13, 1981, Ser. No. 292,667

Int. Cl.^{3} F16B *41/00*

U.S. Cl. 70—232 **4 Claims**

1. A security device for securing a container against accidental loss and comprising sleeve means adapted to be secured to a supporting structure for insertion into the interior of the container whereby the outer end of the sleeve means terminates within the interior of the container, locking means engagable with the portion of the sleeve means disposed within the container for precluding outward longitudinal movement of the container along the outer periphery of the sleeve means when the locking means is engaged with the sleeve means for securing the container against accidental loss, and wherein the sleeve means is provided with one open end and one closed end, said closed end being adapted for disposition against said supporting structure and provided with aperture means therein, and screw means insertable through the open end and through said aperture means for securing the sleeve means to said supporting structure.



4,444,032
DEVICE FOR THE UNLOCKING AND LOCKING OF DOORS

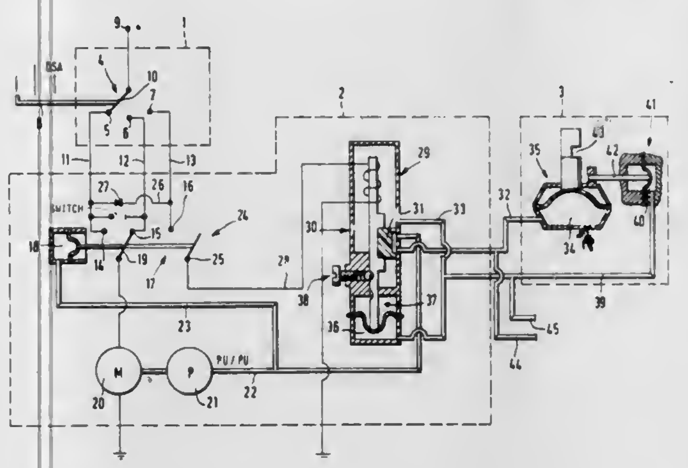
Bernhard Stier, Kelkheim-Fischbach, and Klaus Rathmann, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed May 21, 1982, Ser. No. 380,501

Claims priority, application Fed. Rep. of Germany, May 25, 1981, 3120778

Int. Cl.^{3} E05B *65/36*

U.S. Cl. 70—264 **16 Claims**



1. In a device for the unlocking and locking of doors, particularly the doors of automotive vehicles, in which door locking mechanisms having pneumatic setting members are provided on individual doors and a pneumatic pump means with an electric control unit is provided centrally, the device being adapted to be controlled by at least one main door switch by means of a main-door key into first and second switch positions of the main door switch and the electric control unit of the pump means being such that upon each operation thereof at an operative outlet of said pump means it provides alternately above-atmospheric pressure or vacuum, the outlet of said pump means operatively communicating with said pneumatic setting members, the improvement wherein
the door switch has a third switch position cooperating with means in said control unit for controlling the pump means, said door switch constitutes means for being actuated into said third switch position only with a special key,
pneumatically actuatable blocking means for being actuated in the third switch position for blocking the setting members for mechanical locking of the doors, and
valve means for communicating the outlet of the pump means with said blocking means with actuating pressure therefrom in the third switch position of the door switch, said valve means being operatively connected to the outlet of the pump means.

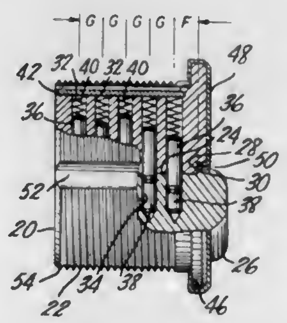
4,444,033
CYLINDER ASSEMBLIES FOR LOCK SYSTEM AND METHOD OF MANUFACTURE

Gary W. Deckert, 1512 Laurel La., Plano, Tex. 75074

Filed May 5, 1981, Ser. No. 260,835

Int. Cl.^{3} E05B *9/04, 29/04*

U.S. Cl. 70—364 A **18 Claims**



1. A lock system of cylinder assemblies for operating a plurality of locking mechanisms in a commercial or institutional establishment which system of cylinder assemblies comprises:
(a) a plurality of exterior body members each having a main cylindrical bore therein for a rotatable plug,
(b) a plurality of plugs for said members said plugs when assemblied in said cylindrical bores providing an exposed keyway face at one end portion thereof,
(c) said plurality of exterior body members having one or more pin bores therein and said plurality of plugs having one or more pin bores therein which said pin bores are aligned when said plugs are assembled in the cylindrical bores of said members, and
(d) said one or more pin bores in each said plurality of members and plugs being located a constant distance away from a reference point of said cylinder assembly and the exposed keyway face on said plurality of plugs when assembled in said cylindrical bores being positioned at different distances away from said reference point whereby the exterior body members and plugs are interchangeable and the one or more pin bores in any one plug of the plurality will be aligned with the one or more pin bores in any one of the plurality of members when the plug is assembled therein.

4,444,034
PULL-RESISTANT LOCK CORE

Walter E. Best, and William R. Foshee, both of Indianapolis, Ind., assignors to Best Lock Corporation, Indianapolis, Ind.

Filed Jul. 16, 1981, Ser. No. 284,082

Int. Cl.^{3} E05B *9/04, 27/04*

U.S. Cl. 70—369 **23 Claims**

1. A key-removable lock core having increased pull resistance, comprising
a core body of figure-8 cross section and having a key plug lobe formed with an axial bore therethrough, and a parallel pin tumbler lobe,
a key plug rotatable on an axis in the key plug lobe,
a control sleeve inserted axially in said bore and having a cylindrical interface with said key plug defining an operating shear line between the key plug and sleeve,
said sleeve including a wide rib extending longitudinally substantially the fully length of the key plug and said pin tumbler lobe having a wide recess in which such rib is

movable through a limited angle about the axis of said bore, the outer face of said rib and the inner face of said recess defining a control shear line therebetween,

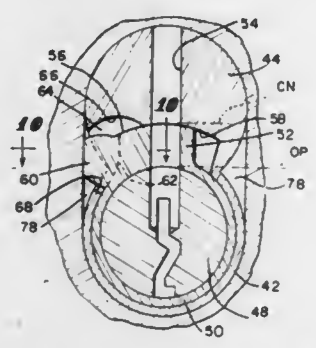
a series of pin tumbler barrels in said pin tumbler lobe and extending into the key plug, substantially all of which barrels extend across both said shear lines and through said wide rib so that the core can be combinated at substantially all of said barrels at the control shear line,

said rib-receiving recess having side walls interconnecting the two lobes of the core body over a portion of the length of the body and the one side wall having an opening therethrough over a rear end portion of the core body and the rib having a retaining lug portion movable in said opening between a projected position in which it will engage behind a shoulder of a core receptacle to retain the core therein and a retracted position in which it releases the core for removal from such receptacle,

and including the improvement comprising

an enlargement recess in the pin tumbler lobe of the core body extending forward from the rear end of the body and adjoining said side wall opening,

and an enlargement on said retaining lug extending radially of said sleeve beyond the face thereof which defines said control shear line, said lug enlargement serving to increase the cross-sectional area of said retaining lug and being movable with such lug between a retracted position within said enlargement recess in the pin tumbler lobe and a projected position in which it provides an enlarged cross section on the retaining lug for engagement behind a shoulder of the core receptacle.



4,444,035

STEEL PIPE ROLLING MILL

Shinji Akita; Masayuki Hatanaka, both of Yokohama, and Akira Uemura, Nakamachi, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

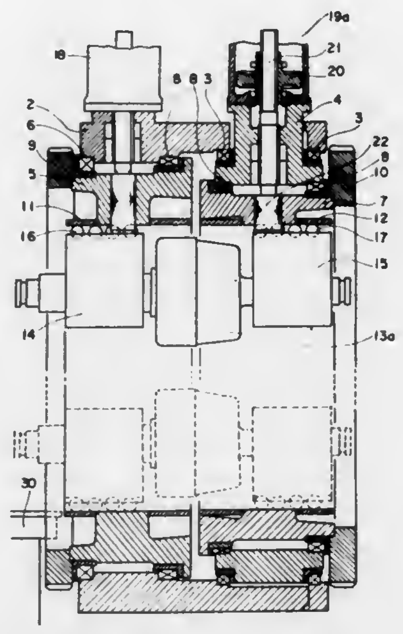
Filed Jul. 16, 1982, Ser. No. 398,813

Claims priority, application Japan, Jul. 24, 1981, 56-115386

Int. Cl.^{3} B21B ***31/08***

U.S. Cl. 72—100 **5 Claims**

1. In a steel pipe rolling mill comprising a three-roll Assel mill having three rolls which are arranged within a housing proper and rotated in the same direction to roll a steel pipe to be rolled, the improvement wherein an inner housing is rotatably mounted within each of a fixed housing disposed in said housing proper and a rotary housing rotatably supported in said fixed housing, wherein said three rolls are mounted inside said inner housings at equal spaces, and wherein cradles of each of said rolls are placed on rails disposed on said inner housings, whereby said inner housings are rotated to successively align said rails with transfer rails laid externally and thereby move in or out said rolls along said transfer rails.



4,444,036

METHOD OF FORMING A COIL SPRING

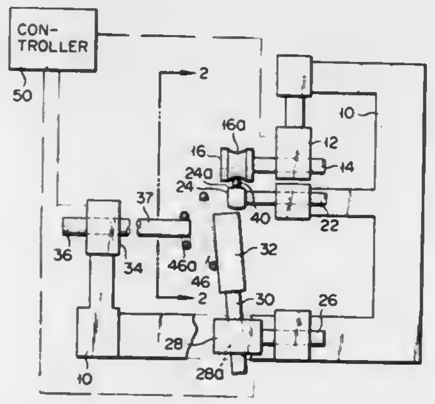
Masaharu Shibata, Kamakura, and Tsutomu Furuyama, Yokohama, both of Japan, assignors to NHK Spring Co., Ltd., Yokohama, Japan

Filed Jul. 10, 1981, Ser. No. 281,946

Claims priority, application Japan, Jul. 18, 1980, 55-98473

Int. Cl.^{3} B21F ***3/10***

U.S. Cl. 72—138 **9 Claims**



1. A method of hot-forming a coil spring, comprising:

feeding an element wire along its longitudinal direction for forming a coil spring;

feeding said element wire through a first gap defined between a support roller disposed on one side of a path of the element wire and having a rotating shaft substantially perpendicular to said path and a first pressing roller disposed on the other side of said path and having a rotating shaft substantially parallel with said support roller;

feeding said element wire passed through said first gap through a second gap for winding said element wire to form a coil turn at the forward end of said element wire, said second gap being defined between said support roller and a second pressing roller disposed on the same side of said element wire as said first pressing roller and having a rotating shaft substantially parallel with said first pressing roller;

contacting said element wire delivered from said second gap against a rotatable pitch tool for adjustably shifting said element wire delivered from said second gap in parallel with said rotating shafts of said three rollers, thereby providing a coil with a desired pitch or pitches, said shifting being performed by said pitch tool which is rotatable when said element wire is being delivered from said second gap; and

supporting the coil by inserting a freely rotatable support shaft within said coil turn and thereafter axially moving said support shaft while maintaining said support shaft in its supporting position within said coil turn at said forward end as further turns of the coil are subsequently wound by the continuous passage of said element wire through said first and second gaps so that coil turn does not slide on the surface of said support shaft and said coil does not sag due to the effect of gravity acting thereon, thereby preventing the coil from being undesirably scratched or deformed due to gravity;

the winding radius of each portion of said coil spring being determined by pressing said element wire against the surface of said support roller by means of said first and second pressing rollers and curving said element wire with a radius which is a function of the relative positions of said three rollers.

4,444,037

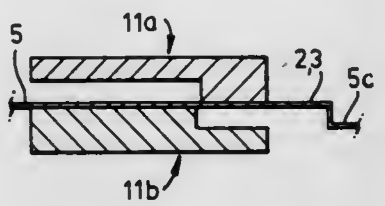
MANUFACTURE OF ROOFING OR CLADDING TILES

Robert B. Norgate, Hamilton, New Zealand, assignor to Hunter Douglas Industries B.V., Rotterdam, Netherlands

Filed Nov. 4, 1981, Ser. No. 318,311

Int. Cl.^{3} B21D ***11/18***

U.S. Cl. 72—177 **8 Claims**



1. A method of forming longitudinally and laterally extending tile impressions in a strip of material comprising the step of:

(i) providing a die tool comprising first and second cooperating die parts, each of said parts being formed as a unitary structure and including:
  (a) a first section having a surface area whose length is equivalent to the length of at least one tile main surface area plus the length of a stepped portion of a tile to be impressed;
  (b) a single stepped portion;
  (c) a second section having a surface area generally parallel to said surface area of said first section, and wherein the surface area of said first and second sections have longitudinally extending ornamentation thereon and wherein the surface area of the stepped portion is ornamental, the surface areas of the first and second sections and stepped portions of one die part being complementary to the first and second sections and stepped portion of the other die part, effective to impress a tile pattern in a strip of material when such material is sandwiched between the first and second parts of the die tool;

(ii) advancing said strip of material between the oppositely disposed and complementary surface areas of said die tool parts, whereby a forward end of the material is positioned just short of the stepped portions of the two die tools and an advanced portion of the strip material overlies and underlies the first sections of the two die tools;

(iii) closing the die tools and sandwiching the advance portions of the strip material between the ornamental and complementary first sections of the two die tools to preform the strip of material to the general longitudinal surface ornamentation of the tile to be impressed;

(iv) moving the die tools apart and advancing the strip of material further so that a portion of the strip which has previously been preformed extends forwardly of the stepped portions of the die tool parts;

(v) closing the two die tool parts together and sandwiching the advance portions of the strip between the two parts of the die tool to provide at least the final deformation of the longitudinally extending tile impressions and to form a stepped portion of the strip material.

4,444,038

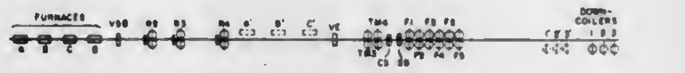
METHOD OF MODERNIZING A HOT STRIP MILL

Vladimir B. Ginzburg, Pittsburgh, Pa., assignor to Tippins Machinery Company, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 306,894, Sep. 29, 1981. This application Oct. 26, 1981, Ser. No. 314,580

Int. Cl.^{3} B21B ***1/26***

U.S. Cl. 72—234 **4 Claims**



1. A method of rolling hot slabs having a thickness on the order of 7-12 inches into strip on the order of 500 PIW on a hot strip mill includng a roughing train, a finishing train having a plurality of mill stands F1 though FX and a pair of tandem mill stands TM3 and TM4 positioned upstream F1 and spaced for continuous tandem rolling with the finishing train comprising:

A. feeding to the rolling mill a slab having a temperature on the order of 1800 to 2200° F.;

B. reducing said slab in a roughing train to a transfer bar thickness of 3.8 to 5 inches; and

C. reducing said transfer bar to strip having a minimum thickness on the order of 0.080 by passing it continuously through said pair of tandem mill stands and the finishing train while maintaining a constant mass flow on each stand.

4,444,039

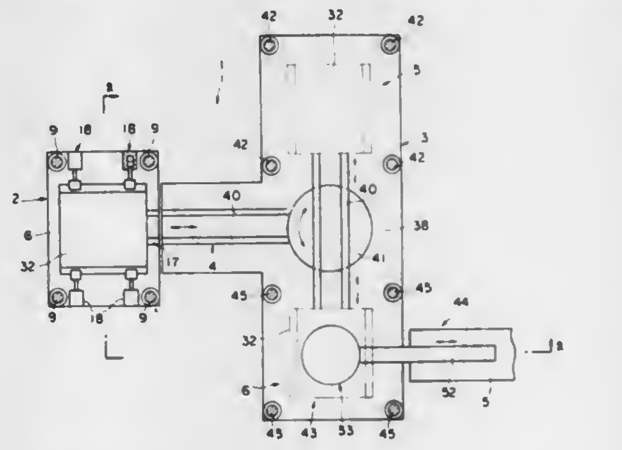
DIE FORGING PRESS

Akira Asari, Osaka, and Toshio Kurosaki, Akashi, both of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Apr. 26, 1982, Ser. No. 371,921

Int. Cl.^{3} B21D ***37/16***

U.S. Cl. 72—342 **2 Claims**



1. A die forging press comprising:

(a) a plurality of die sets each of which comprises an upper die and a lower die;

(b) at least two bolster plates each of which is adapted to detachably mount one of said die sets;

(c) a press machine adapted to detachably mount one of said bolster plates during forging operations;

(d) a T-shaped bed having the end of the center portion thereof located adjacent to said press machine and the two

ends of the legs of the T-shaped bed located at a distance from said press machine;
- (e) a die setting section located at the end of one of the legs of said T-shaped bed, said die setting section comprising apparatus for detachably mounting one of said die sets on one of said bolster plates;
- (f) a die preheating section located at the end of the other one of the legs of said T-shaped bed, said die preheating section comprising:
  - (i) a plurality of guide posts;
  - (ii) a punch holder comprising means for gripping the upper die in one of said die sets;
  - (iii) means for moving said punch holder vertically on said guide posts while said punch holder grips the upper die in one of said die sets, whereby said upper die is spaced from the corresponding lower die; and
  - (iv) means for preheating the opposing faces of said one of said die sets mounted on one of said guide posts and pivotable between a stand-by position in which it is spaced from said die sets and an operational position in which it is inserted between said upper and lower dies in position to preheat said die set;
- (g) a turntable located at the center of said T-shaped bed;
- (h) paired parallel rails laid in and between said press machine and said turntable, in and between said die setting section and said turntable, in and between said die preheating section and said turntable, and on said turntable; and
- (i) a plurality of wheels mounted on said bolster plates in position to engage with said paired parallel rails for transferring said bolster plates from said die setting section to said preheating section, from said preheating section to said press machine, and from said press machine to said die setting section.

4,444,040
METHOD AND APPARATUS FOR DETECTING GAS COMPONENTS IN OIL IN OIL-FILLED DEVICE

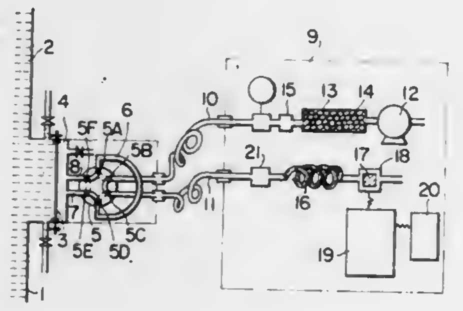
Seiichi Sakai, Kagawa; Toshihiko Gange, Takamatsu; Katuo Sugawara, Hitachi; Hideo Tsukioka, Mito; Ictitaro Tani, Kitaibaraki; Shigeo Shiono, and Etsunori Mori, both of Hitachi, all of Japan, assignors to Hitachi, Ltd. and Shikoku Electric Power Company, Inc., both of Tokyo, Japan

Filed Jul. 20, 1982, Ser. No. 400,020

Claims priority, application Japan, Jul. 27, 1981, 56-117925; Jul. 27, 1981, 56-117926

Int. Cl.^{3} G01N *7/10*

U.S. Cl. 73—19 **6 Claims**



1. A method for detecting gas components in the oil in an oil-filled device, which comprises separating gas components dissolved in an insulating oil in an oil-filled device through a gas-permeating material, storing the separated gas components in a gas calibration tube through a switch valve, and detecting the gas components stored in the gas calibration tube by a gas chromatographic device, wherein an improvement comprises pushing the gas components separated from the insulating oil and stored in the gas calibration tube in advance off from the gas calibration tube by a carrier gas, and mixing the gas components by stirring before the detection in the gas chromatographic device.

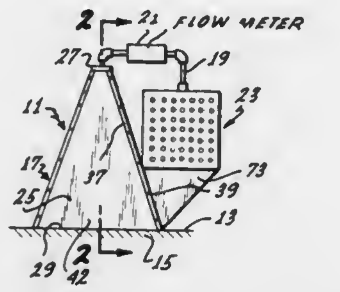
4,444,041
METHOD AND APPARATUS FOR DETERMINING THE VENTING RATE OF LANDFILL GAS

Stanley W. Zison, Irvine, Calif., assignor to Getty Synthetic Fuels, Inc., Signal Hill, Calif.

Filed Aug. 23, 1982, Ser. No. 410,331

Int. Cl.^{3} G01N *7/14, 1/22*

U.S. Cl. 73—19 **18 Claims**



7. A method of measuring the flow of landfill gas from surface of a landfill wherein the landfill produces landfill gas at a positive pressure and such positive pressure causes the landfill gas to vent from said surface of the landfill, said method comprising:
- placing a receiver having an opening therein on said surface with the opening confronting the surface so that the gas can flow through the opening and enter the receiver as a result of such positive pressure;
- conducting the landfill gas from the receiver through a conduit;
- measuring the flow of the landfill gas in the conduit; and
- discharging the landfill gas from the conduit to the atmosphere through a dynamic pressure attenuator with the attenuator materially reducing the effect of the dynamic pressure of the wind on the discharging of the landfill gas.

4,444,042
ENGINE-KNOCK DETECTION METHOD AND APPARATUS

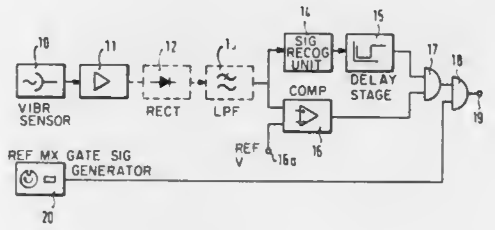
Jörg Bonitz, Mühlacker; Robert Entenmann, Benningen; Rochus Knab, Kornwestheim; Siegfried Rohde, Schwieberdingen, and Herbert Schramm, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 20, 1981, Ser. No. 294,513

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1980, 3031511

Int. Cl.^{3} G01L *23/22*

U.S. Cl. 73—35 **6 Claims**



4. Apparatus for detecting engine-knock of an internal combustion engine having a crankshaft and an engine block, said apparatus further comprising
- means for converting mechanical vibrations occurring at an engine-knock sensitive location of said engine block into electrical signals;
- amplifying, rectifying and low-pass filtering means connected to and responsive to said converting means and for deriving an amplitude envelope signal from said electrical signals;
- means including a peak detector for deriving a value of a maximum characteristic of said envelope signal;
- means connected to and responsive to the output of said peak detector for producing a delayed signal occurring later than the occurrence of said maximum characteristic by a delay proportional to said value of said maximum characteristic;
- means for comparing said envelope signal with a reference signal and for providing a comparison result signal when said envelope signal exceeds said reference signal in magnitude;
- means for producing a coincidence signal when said delayed signal and said comparison result signal occur at the same time; and
- means for producing an engine-knock signal utilizing said coincidence signal.

4,444,043
KNOCKING DETECTOR FOR INTERNAL COMBUSTION ENGINE

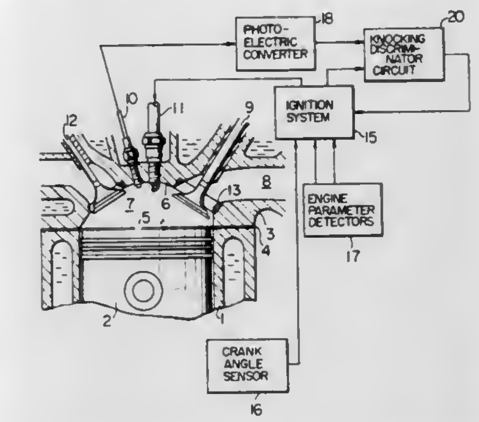
Tadashi Hattori; Yoshiki Ueno, both of Okazaki; Osamu Kashima, Kariya, and Masamichi Shibata, Toyota, all of Japan, assignors to Nippon Soken, Inc., Nishio and Nippondenso Co., Ltd., Kariya, both of, Japan

Filed Oct. 26, 1981, Ser. No. 315,262

Claims priority, application Japan, Oct. 27, 1980, 55-151216

Int. Cl.^{3} G01L *23/22*

U.S. Cl. 73—35 **2 Claims**



1. A knocking detector for an internal combustion engine having a combustion chamber, including:
- an illumination detector mounted on the internal combustion engine and having an illumination sensor with a hemispherical forward end and exposed to the combustion chamber and made of a transparent material;
- photo-electric converting means for receiving from said illumination detector the illumination intensity of combustion of the air-fuel mixture in the combustion chamber and for converting the received illumination into an electrical signal in response to the intensity of the received illumination; and
- knocking discriminating means for receiving said electrical signal from said photo-electric converting means and for discriminating whether knocking has occurred, said discriminating means comprising:
  - (a) filter means for receiving the electrical signal from said photo-electric converting means and for generating a high pass signal related to the high frequency components thereof,
  - (b) integrating means for integrating the high pass signal from said filter means,
  - (c) an amplifier for amplifying the integrated signal from said integrating means,
  - (d) holding means for holding the amplified signal from said amplifier which is produced during a predetermined period beginning at the time of combustion, and
  - (e) a comparator for comparing the integrated signal from said integrating circuit with the amplified signal held in said holding means, to thereby discriminate whether knocking has occurred.

4,444,044
METHOD AND APPARATUS FOR DETERMINING THE FOAMING CHARACTERISTICS OF A CRUDE OIL STREAM AT THE WELLHEAD

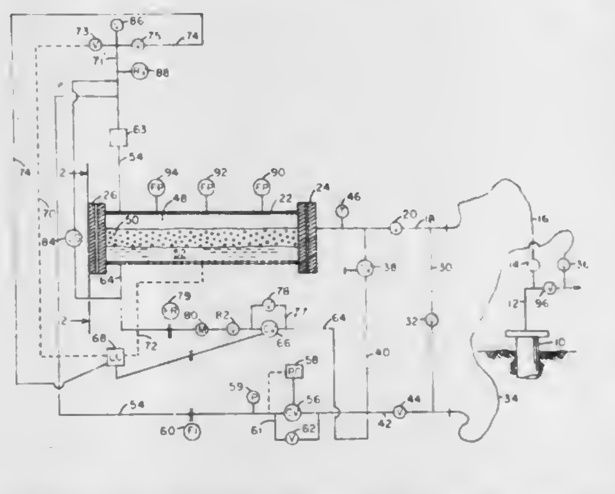
Curtis L. Humphries, Duncanville; Melwyn L. Mathis, Arlington; Eddie F. Schultz, Arlington, and Henry A. Seal, Arlington, all of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 20, 1982, Ser. No. 399,943

The portion of the term of this patent subsequent to Jan. 24, 2001, has been disclaimed.

Int. Cl.^{3} G01N *13/00, 33/28*

U.S. Cl. 73—60.1 **15 Claims**



1. A method for measuring the foaming characteristics of a gaseous crude oil well stream comprising:
- (a) flowing the well stream from the well at a predetermined pressure and introducing said well stream at a controlled flow rate into one end of a separator comprising an elongated horizontal vessel, said separator maintained at a controlled pressure lower than the crude oil well stream pressure so that the crude oil separates into a gaseous portion that passes to the upper portion of the separator, a body of liquid oil that extends along the bottom of the separator and a layer of foam that accumulates on top of the body of oil;
- (b) measuring the temperature of said crude oil entering said separator;
- (c) withdrawing gas from the upper portion of said separator near the end opposite the crude oil inlet and measuring the flow rate and pressure of said gaseous stream;
- (d) withdrawing oil from the bottom portion of said separator opposite the crude oil inlet and measuring the flow rate of said crude oil stream;
- (e) controlling the liquid level of crude oil within said separator;
- (f) measuring the volume of oil in said separator; and
- (g) measuring the volume of foam in said separator.

4,444,045
HAND-OPERATED HARDNESS METER

Alfred Ernst, Via San Martino 6, 6943 Vezia Ticino, Switzerland

Filed Mar. 12, 1982, Ser. No. 357,559

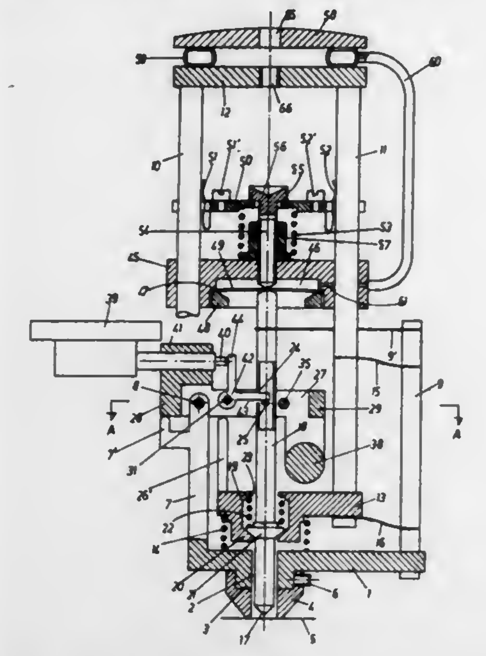
Claims priority, application Switzerland, Apr. 22, 1981, 2639/81

Int. Cl.^{3} G01N *3/48*

U.S. Cl. 73—82 **10 Claims**

1. Apparatus for measuring the hardness of a material, comprising: a stationary-frame structure having an axis; means for penetrating the material, the penetrating means being movable in an axial direction with respect to the stationary frame structure and having one end provided to penetrate the material and another end; means for applying a penetrating force onto the penetrating means and including a first member being continu-

ously in contact with the other end of the penetrating means and movable between a first position in which no force is exerted on the other end and a second position in which the penetrating force is exerted thereon, and a second member constituting an inertia mass which cooperates with the first member in such a manner that upon movement of the first member into the second position, the penetrating means is caused to penetrate the material while the inertia mass is simultaneously accelerated in opposite direction to the movement of the penetrating means; means for driving the first member from the first into the second position; and means for measuring the hardness of the material in dependance on the penetration of the penetrating means into the material.



4,444,046
DEVICE FOR INDICATING THE INSTANTANEOUS FUEL CONSUMPTION OF AN AUTOMOTIVE VEHICLE

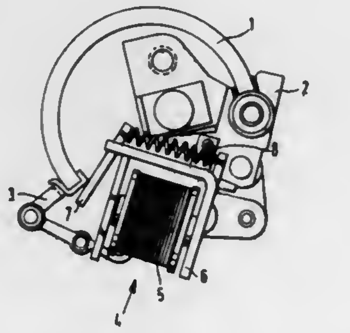
Josef R. Krumpholz, Karben, and Karl-Martin Medler, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 24, 1982, Ser. No. 351,807

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1981, 3108122

Int. Cl.³ G01L *23/24*

U.S. Cl. 73—113 **9 Claims**



1. In a device for indicating the instantaneous fuel consumption of an automotive vehicle with spark-ignition or Otto engine, which vehicle has a pressure gauge including a Bourdon tube, the tube of said gauge being connectable to an intake pipe of the engine and which vehicle has means for placing the pressure gauge in operation only when the transmission is in the highest gear of a set of driving gears, the improvement comprising

a mechanical barrier means for blocking said pressure gauge in all gears of said set of gears of the vehicle except said highest gear, and wherein

a free end of said tube presses against said barrier means except during engagement of said highest gear of the transmission when said free end is spaced apart from said barrier means.

4,444,047
APPARATUS FOR DETERMINING THE FUEL CONSUMPTION OF INJECTION INTERNAL COMBUSTION ENGINES

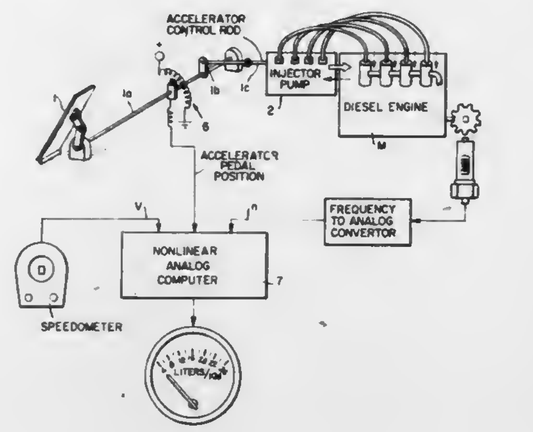
Eckhard Kern, Hofheim, Fed. Rep. of Germany, assignor to VDO Adolf Schindling A.G., Fed. Rep. of Germany

Continuation-in-part of Ser. No. 1,601,861, Jun. 19, 1980, abandoned. This application Jul. 16, 1982, Ser. No. 399,125

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1979, 2926268

Int. Cl.³ G01L *3/26;* G01M *15/00*

U.S. Cl. 73—114 **8 Claims**


ACCELERATOR CONTROL ROD
INJECTOR PUMP
DIESEL ENGINE
ACCELERATOR PEDAL POSITION
FREQUENCY TO ANALOG CONVERTOR
NONLINEAR ANALOG COMPUTER
SPEEDOMETER
LITERS/

1. Apparatus for determining the fuel consumption prevailing at each instant of operation of an internal combustion engine of a motor vehicle wherein the engine is supplied by a fuel pump whose output is regulated by the number of revolutions of the engine, comprising:

first means for supplying a data signal based on the number of revolutions of the engine;

second means for supplying a signal based on the position of an accelerator pedal of the engine;

third means for supplying a signal based on the speed of the vehicle; and

an electric circuit capable of generating a family of fuel consumption versus engine number of revolution characteristic outputs and to which all of the above means may be simultaneously connected to generate an output signal corresponding to the instantaneous fuel consumption of the internal combustion engine.

4,444,048
APPARATUS FOR DETECTING MALFUNCTION IN CYCLICALLY REPETITIVE PROCESSES IN AN INTERNAL COMBUSTION ENGINE

Werner Nitschke, Ditzingen; Alfred Schulz, Oberriexingen; Klaus Glöckler, Asperg; Heinrich Baumann, Schwieberdingen; Peter Dilger, Neuried, and Wilfried Venzke, Moglingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 205,270, Nov., 1980, abandoned. This application Sep. 24, 1982, Ser. No. 422,381

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1979, 2945543

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—117.3 **13 Claims**

1. Internal combustion engine control system in which the engine operates in repetitive operating cycles and having at least one rotating shaft,

said system including

means (18, 22) for receiving reference mark signals (U22, BM, 19) in synchronization with shaft rotation;

means (18, 20, 21, 32, 33) for providing engine operating parameter signals representative of engine operating or operation parameters;

main computing means (17) connected to and controlled by the reference signals and by the engine parameter signals for furnishing main engine control signals (U17) at least in part in dependence on said reference mark signals, and

wherein said control signals have a flank characteristic which alternates with a flank characteristic of said reference mark signals;

auxiliary computing means (30) connected to and controlled by said engine parameter signals (32, 33) providing auxiliary engine control signals during malfunction of said main computing means;

output means (31) for initiating a predetermined operation of said internal combustion engine in response to one of said control signals;

switch means (26) for selectively connecting said main computing means (17) or said auxiliary computing means (30) to said output means (31),

and error signal generating means (44) connected

(a) to said reference mark signal supply means (22) and

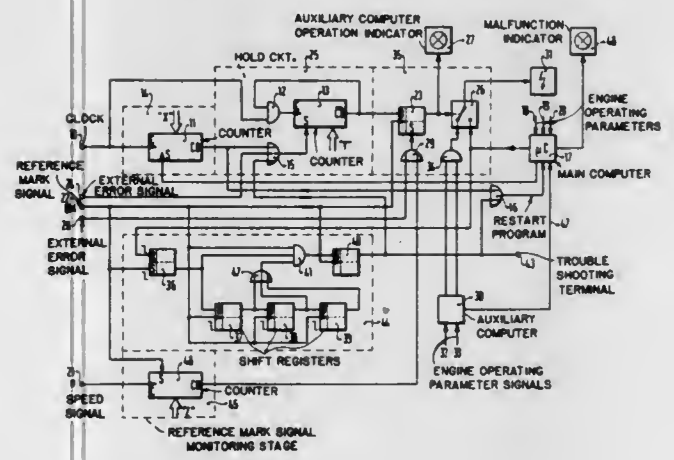
(b) to said main computing means (17), responsive to the alternating sequencing of the reference mark signals (U22, BM) and to the main control signals (U17) including

means (36, 40, 41) for sensing alternation of occurrence of said reference mark signals and said main engine control signals,

and furnishing a first error signal in the absence of alternation between said main engine control signal and said reference mark signals;

and first counting means (37–42) connected to said first error signal generating means and having its output connected to said switch means (26) to control change-over thereof by connecting the auxiliary engine control signals from the auxiliary computer means (30) to the output means (31) instead of the main engine control signals (U17),

if absence of alternation between said main engine control signals and said reference mark signals recurs during a predetermined counted number of sequential ones of said operating cycles.



4,444,049
ENGINE TESTING APPARATUS AND METHODS

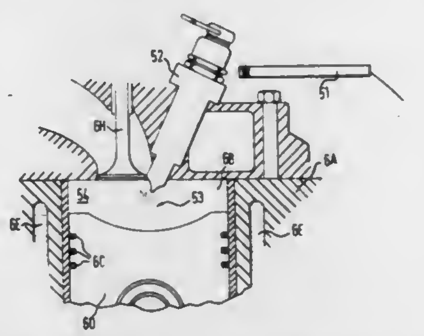
Keith N. Hitchcock, Worcester, England, assignor to Froude Consine Limited, England

Continuation-in-part of Ser. No. 333,386, Dec. 22, 1981, abandoned, and a continuation-in-part of Ser. No. 333,382, Dec. 22, 1981, abandoned, and a continuation-in-part of Ser. No. 333,387, Dec. 22, 1981. This application Jan. 3, 1983, Ser. No. 455,418

Claims priority, application United Kingdom, Dec. 22, 1980, 8040969; Dec. 22, 1980, 8040966; Jan. 22, 1981, 8102004; Jan. 4, 1982, 8200089; Sep. 13, 1982, 8226057

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—119 A **33 Claims**



1. A method of indicating a predetermined position of a crankshaft of a piston engine, said engine comprising at least one piston reciprocating in a cylinder and connected to said crankshaft, said method comprising: transmitting and receiving an ultrasonic signal at a place intermediate the ends of the piston stroke in the cylinder; producing first and second electrical signals responsive to first and second changes respectively in the received ultrasonic signal due to passage of a part of the piston past the said place on first and second successive strokes respectively of the piston;

providing a third electrical signal corresponding to incremental rotary positions of the crankshaft; and

determining the predetermined position of the crankshaft from the first, second, and third electrical signals.

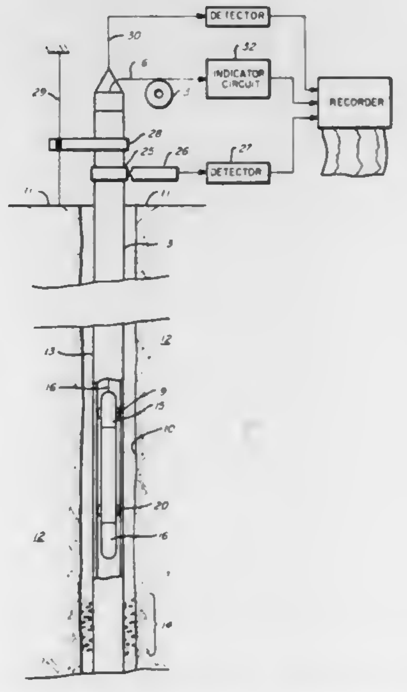
4,444,050
FREEPOINT INDICATOR

Lowell W. Revett, Youngsville, La., assignor to Halliburton Company, Duncan, Okla.

Filed Nov. 18, 1981, Ser. No. 322,487

Int. Cl.³ E01B *47/09*

U.S. Cl. 73—151 **4 Claims**



1. A method in analyzing the nature of deflection of a string

of pipe in a well bore between a surface location and a stuck point in a well bore comprising the steps of:

sequentially locating a free point indicator means at a series of locations along a pipe string in a well bore;

at each of such locations temporarily attaching the free point indicator means relative to the string of pipe and, while said free point indicator means is temporarily attached to said string of pipe, applying a deflection force to the string of pipe at the earth's surface;

measuring the deflection of the string of pipe at the earth's surface;

measuring the deflection of the string of pipe at the location of the stretch point indicator means;

recording each of said measurements as a function of time.

4,444,051

ELECTRONIC LIQUID LEVEL GAUGE

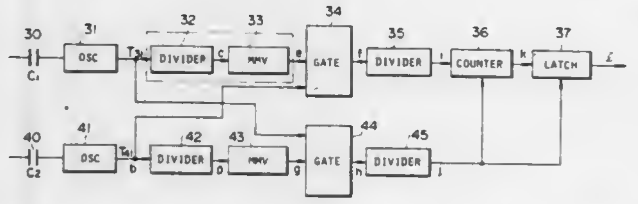
Kiyoshi Yamaki, and Hidetaka Suzuki, both of Yokosuka, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 12, 1982, Ser. No. 357,585

Claims priority, application Japan, Mar. 18, 1981, 56-39186; Jun. 22, 1981, 56-96350

Int. Cl.³ G01F *23/26*

U.S. Cl. 73—304 C **17 Claims**



10. An apparatus for measuring the level of a liquid contained in a vessel, said liquid having a specific inductive capacity, comprising:

(a) a first electrode having an electrostatic capacity determined by the liquid level, said first electrode being connected to a first oscillator for generating first oscillator pulses at a repetition period directly proportional to the electrostatic capacity of said first electrode;

(b) a second electrode having an electrostatic capacity determined by the specific inductive capacity of said liquid, said first electrode being connected to a second oscillator for generating second oscillator pulses at a repetition period directly proportional to the electrostatic capacity of said second electrode;

(c) a counter for counting said second oscillator pulses from said second oscillator;

(d) a control circuit for generating a control signal to reset and at the same time start said counter counting second oscillator pulses each time a predetermined number of first oscillator pulses occurs;

(e) a first gate circuit for disconnecting said second oscillator from said counter for a predetermined time each time a predetermined number of first oscillator pulses occurs; and

(f) a second gate circuit for disconnecting said first oscillator from said control circuit for a predetermined time each time a predetermined number of second oscillator pulses occurs, thereby permitting said counter to accumulate a count equal to the liquid level for a time interval between successive control signals.

4,444,052

COMPENSATING BRAKE FLUID RESERVOIR

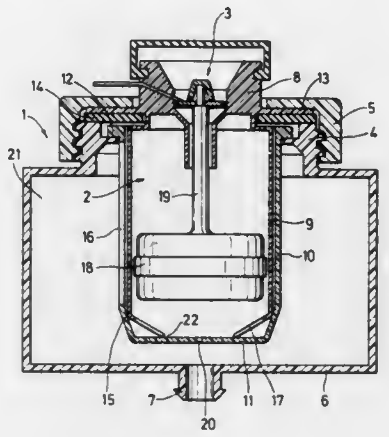
Hans-Dieter Reinartz, Frankfurt am Main; Waldemar Vatter, Laubach, and Peter Hinze, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Continuation of Ser. No. 252,703, Apr. 9, 1981, abandoned. This application Apr. 20, 1983, Ser. No. 485,384

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1980, 3016434

Int. Cl.³ G01F *23/10*

U.S. Cl. 73—308 **22 Claims**



1. A compensating reservoir having a brake fluid level alarm device for a vehicular hydraulic brake system comprising:

a brake fluid reservoir having an upper open end; and

a float chamber disposed in said reservoir surrounding a float, said chamber being defined by a tubular body suspended from said open end and a bottom element distinct from said tubular body, which after installation in said reservoir, cooperates with a supporting device disposed in contact with said tubular body so as to substantially close said chamber at least to the extent that during operation inflow and outflow of brake fluid in said chamber is restricted to provide a damping effect on said float;

said bottom element being supported by said supporting device, said supporting device having at least one opening to permit unrestricted flow of said brake fluid therethrough and into said chamber upon insertion of at least said supporting device into said reservoir to prevent fluid spill from said reservoir.

4,444,053

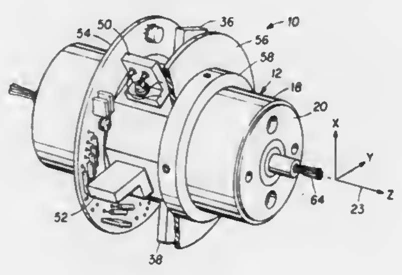
SENSOR ASSEMBLY FOR STRAPPED-DOWN ATTITUDE AND HEADING REFERENCE SYSTEM

Billie F. Rider, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 21, 1982, Ser. No. 370,641

Int. Cl.³ G01C *19/06;* G01P *15/08*

U.S. Cl. 73—504 **7 Claims**



1. A sensor assembly, comprising:

a hysteresis motor having a central shaft fixed with respect to a major axis of reference of a vehicle, a stator affixed to the shaft, and a rotating element including a cylindrical housing, means for journaling the cylindrical housing to the shaft, the cylindrical housing having a spin axis coaxial with the shaft, and means mounted centrally disposed inside the cylindrical housing for driving the cylindrical housing, the driving means being responsive to alternating current applied to the stator, the driving means surrounding the stator and juxtaposed therewith, the cylindrical housing being driven at a substantially constant spin frequency;

a first cantilevered piezoelectric bender element mounted exteriorly on the cylindrical housing for rotation therewith, said first bender element having a bending axis essentially normal to the spin axis of the cylindrical housing and an axis of sensitivity essentially parallel with the spin axis of the cylindrical housing;

a second cantilevered piezoelectric bender element mounted exteriorly on the cylindrical housing for rotation therewith, said second bender element having a bending axis essentially parallel with the spin axis of the cylindrical housing and an axis of sensitivity essentially normal to the spin axis of the cylindrical housing;

means mounted exteriorly on the cylindrical housing for bearing circuit means;

first circuit means on said circuit-bearing means responsive to electrical signals generated by said first cantilevered piezoelectric bender element for generating a first output signal at the spin frequency representative of angular displacement with respect to inertial space of said major axis of reference of said vehicle;

second circuit means on said circuit-bearing means responsive to electrical signals generated by said second cantilevered piezoelectric bender element for generating a second output signal at the spin frequency representative of linear acceleration of said vehicle in a plane perpendicular to said major axis of reference of said vehicle;

means for supplying power to said first and said second circuit means, said power supply means including a power transformer having primary winding affixed around the shaft and an annular secondary winding coaxial with the primary winding, the secondary winding of the power transformer being affixed to the cylindrical housing for rotation therewith; and

means for coupling the first and second output signals off the rotating element of said hysteresis motor, said coupling means including a signal transformer having a secondary winding affixed to the shaft, and an annular primary winding coaxial with the secondary winding, the annular primary winding being affixed to the cylindrical housing for rotation therewith and coupled to at least one of said first and said second circuit means, the secondary winding of the signal transformer serving to couple the output signals of the at least one of said first and said second circuit means to an external user device.

4,444,054

TEMPERATURE COMPENSATION FOR DIFFUSED SEMICONDUCTOR STRAIN DEVICES

Alfred Schaff, Jr., Marina Del Rey, Calif., assignor to Ametek, Inc., New York, N.Y.

Filed Aug. 30, 1982, Ser. No. 412,959

Int. Cl.³ G01L *19/04*

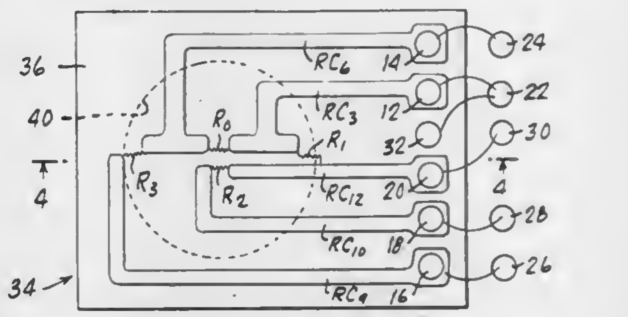
U.S. Cl. 73—708 **17 Claims**

1. A semiconductor device responsive to an externally applied stimulus to provide a characteristic electrical output signal comprising:

a base material; an electrical device formed in said base material; means for providing a biasing potential to said base material;

means for providing excitation potential to said electrical device;

said biasing potential and said excitation potential being selected relative to each other to permit a predetermined variation of a characteristic of said semiconductor device with temperature over an extended temperature range whereby compensation for the variation of the characteristic of said semiconductor device with temperature can be applied to extend the useful temperature range of said semiconductor device.



4,444,055

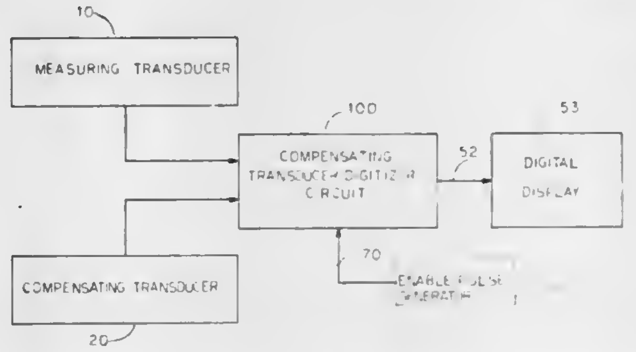
COMPENSATING TRANSDUCER DIGITIZER

Hayati Balkanli, P.O. Box 35725, Houston, Tex. 77035

Filed Jul. 20, 1981, Ser. No. 285,385

Int. Cl.³ G01L *9/00, 19/04*

U.S. Cl. 73—708 **7 Claims**



1. A compensating transducer digitizer for compensating the digital output of a measuring transducer with the digitial output of a compensating transducer, comprising:

first accumulator means for accumulating a first preselected number N_{T1} of M pulses from the measuring transducer;

gate means for providing a second preselected number of pulses N, the second preselected number of pulses N being the gated digital output from the compensating transducer when the gate means is at a first state and the gated digital output from the measuring transducer when the gate means is in a second state;

second accumulator means for accumulating the second preselected number of pulses N;

first load means for loading in the first accumulator means, the M pulses from the measuring transducer during a period of time T_i that the first preselected number of pulses, N_{T1} are being accumulated;

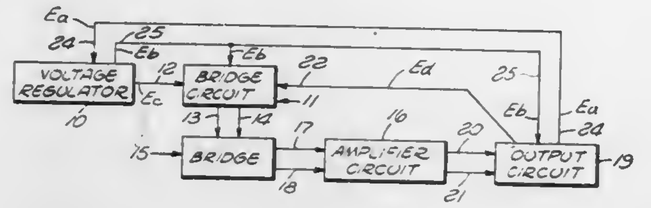
second load means for setting the gate means to the first state to load in the second accumulator means, the second preselected number of pulses N that include C pulses from the compensated transducer stored in the second accumulator means during the period of time T_1 that the M pulses are stored in the first accumulator means until N_{T1} pulses are accumulated and to set the gate means to the second state to load the M pulses from the measuring transducer if the number of C pulses is less than the second preselected number of pulses N, or until the second preselected number of pulses N is accumulated if the second preselected number of pulses N is greather than the first preselected number of pulses N_{T1}; and

third accumulator means for accumulating the difference of M pulses between the number of C pulses accumulated during the time periopd T_1 and the second preselected number of pulses N, said difference being the compensated digital output of the measuring transducer.

4,444,056
TEMPERATURE COMPENSATED CIRCUIT

Edgar A. Romo, Costa Mesa, Calif., assignor to ITT Corporation, New York, N.Y.

Filed May 5, 1982, Ser. No. 374,972
Int. Cl.^{3} G01L *19/04*
U.S. Cl. 73—708 **4 Claims**

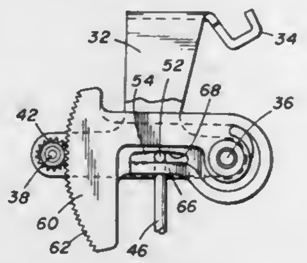


1. Differential pressure apparatus comprising: a Wheatstone bridge having first, second, third and fourth junctions, a first leg including a first strain gage connected between said first and second junctions, a second leg including a second strain gage connected between said second and third junctions, a first resistor connected between said third and fourth junctions, a second resistor connected between said fourth and first junctions; a first differential amplifier having a first noninverting input, a first inverting input and a first output; a second differential amplifier having a second noninverting input, a second inverting input and a second output, said first output being connected to said third junction; resistor means to connect said second noninverting input from said first output; resistor means to supply a regulated voltage to said second inverting input; resistor means to connect said second output to said first noninverting input; resistor means to supply a regulated voltage to said first noninverting input; and a third resistor connected from said first junction to a point of reference potential, said first junction being connected to said first inverting input.

4,444,057
MOVEMENT CONSTRUCTION FOR CONDITION RESPONSIVE GAUGE INSTRUMENT

Richard H. Wetterhorn, Fairfield, Conn., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Aug. 31, 1981, Ser. No. 297,663
Int. Cl.^{3} G01L *7/04*
U.S. Cl. 73—739 **7 Claims**

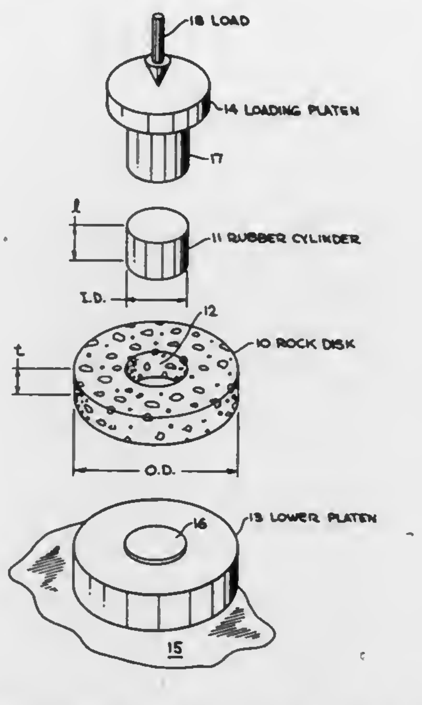


1. In a movement for a gauge instrument operative to transmit displacement motion from a condition responsive element to a rotatable output shaft and comprising a segment arm defining a segment gear thereon and having a first connection for receiving an input displacement from the condition responsive element and a second connection displaced from said first connection for receiving axis means to define a pivot axis therefor and a pinion gear mounted on the output shaft and meshing with the segment gear to arcuately drive the output shaft concomitantly with pivotal motion incurred by the segment arm, the improvement comprising spring means extending from said segment arm and away therefrom to effect a spring bias urging at least one of said connections in a grip relation against the segment arm for substantially securing said at least one connection in position thereat.

4,444,058
METHOD AND APPARATUS FOR DETERMINING TENSILE STRENGTH

Joe L. Ratigan, Rapid City, S. Dak., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 28, 1982, Ser. No. 382,997
Int. Cl.^{3} G01N *3/08*
U.S. Cl. 73—834 **10 Claims**



1. In a method for the determination of apparent tensile strength of rock, the improvement including the steps of:

forming a non-inflatable, substantially solid, cylindrically shaped deformable member so as to have a length less than a length of an opening extending through a rock specimen to be tested,

inserting the deformable member into the opening extending through the specimen to be tested,

providing load applying means configured to have protruding portions thereon for extending into the opening of the rock specimen,

positioning the load applying means on opposite sides of the deformable member such that the protruding portions of the load applying means abuts opposite ends of the deformable member, and

applying a force to the load applying means causing longitudinal compression and radial expansion of the deformable member which causes fracturing of the rock specimen.

4,444,059
OSCILLATING TUBE MASS FLOW RATE METER

James E. Smith, Boulder, Colo., assignor to Micro Motion, Boulder, Colo.

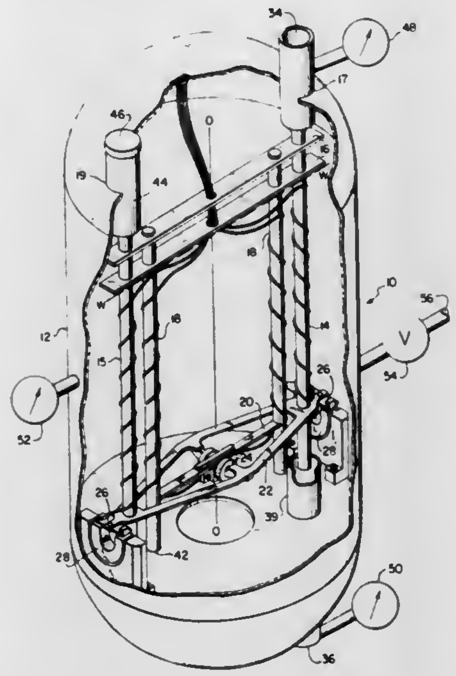
Filed Sep. 13, 1982, Ser. No. 417,626
Int. Cl.^{3} G01F *1/78*
U.S. Cl. 73—861.37 **14 Claims**

1. An apparatus for measuring the mass flow rate of a fluid, comprising:

(a) a resilient straight open sensing tube through which said fluid is passed, fixedly mounted at one end thereof, in cantilever fashion, to a support;

(b) a resilient, straight, complementary tube, also fixedly mounted at one end thereof, in cantilever fashion, to said support and in parallel relationship to said sensing tube, which tubes are characterized by an axis of bending located near said fixedly attached ends and in the same plane as and perpendicular to said tubes, so that the moments of inertia of both tubes about said axis of bending are essentially equal and the spring constants of both tubes about said axis of bending are essentially equal, said tubes being further characterized by essentially equal moments of inertia and essentially equal spring constants about the longitudinal axes of each tube;

(c) a rigid connecting means fixedly attached near the free ends of said tubes, whereby the resonant frequency of said tubes and rigid connecting means about said bending axis is different from the resonant frequency about a torsion axis located in the same plane as said tubes, perpendicular to said bending axis and essentially parallel to and midway between said tubes; and,



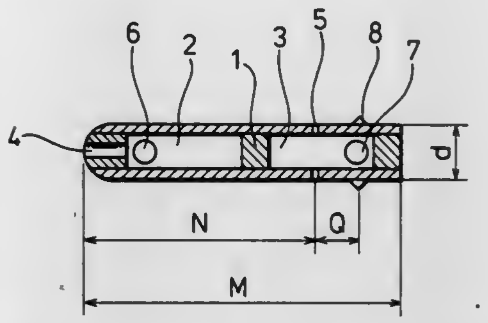
(d) means attached to said rigid connecting means to sinusoidally drive said tubes about said bending axis at the resonant frequency;

whereby the flow of fluid passing through said oscillating sensing tube causes Coriolis force induced deflections of said rigid connecting means and said tubes about said torsion axis so that the mass flow rate of said fluid is measured as a direct function of the time interval between the deflection-caused passage through the mid-plane of oscillation of the second tube after the deflection-caused passage of the first tube through said mid-plane.

4,444,060
FLUID PRESSURE SENSING APPARATUS

Yasuo Yamamoto, Tokyo, Japan, assignor to Nihon Cambridge Filter Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 23, 1982, Ser. No. 351,736
Claims priority, application Japan, Mar. 6, 1981, 56-31294; Mar. 6, 1981, 56-30354
Int. Cl.^{3} G01F *1/46;* G01P *5/165*
U.S. Cl. 73—861.66 **12 Claims**



1. A fluid pressure sensing apparatus comprising at least one fluid pressure sensor element, said fluid pressure sensor element comprising:

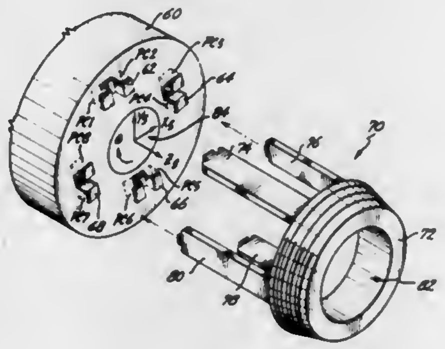
a flat hollow structure adapted to extend transverse to the direction in which a fluid flows through a duct, said hollow structure having therein a partition which extends transverse to the flow direction so as to divide the interior of the hollow structure into an upstream chamber and a dowstream chamber, a plurality of total pressure measuring holes which extend through an upstream end wall of the hollow structure in the flow direction so that the upstream chamber of the hollow structure is open through said total pressure measuring holes, a plurality of static pressure measuring holes extending transversely to the flow direction through at least one wall of said hollow structure which extends parallel to the flow direction, so that said downstream chamber of said hollow structure is open through said static pressure measuring holes, wherein the total pressure may be measured from the upstream chamber and the static pressure may be measured from the downstream chamber of said hollow structure, and pressure outlets formed for the respective chambers and connected by respective connector pipes to associated measuring instruments,

and further comprising a ridge-like auxiliary member for static pressure measurement projecting from the exterior of said hollow structure at a position downstream of said static pressure measuring holes.

4,444,061
FORCE AND TORQUE SENSOR FOR MACHINE TOOLS

Richard A. Mathias, Renton, Wash., assignor to Camtech Inc., Renton, Wash.

Filed Mar. 26, 1982, Ser. No. 362,451
Int. Cl.^{3} G01L *5/16*
U.S. Cl. 73—862.06 **39 Claims**



1. A sensor for use with a machine tool in which substantially all of the load on a first machine tool member is borne by a second machine tool member, said sensor being responsive to displacement of the first machine tool member to measure the force and torque exerted thereon and comprising:

first means adapted to be mounted in proximity to the first machine tool member, said first means including: a first pressure chamber that is filled with an incompressible fluid; a membrane of a rigid material that forms at least one wall of said first pressure chamber; and, means measuring the pressure within said first pressure chamber;

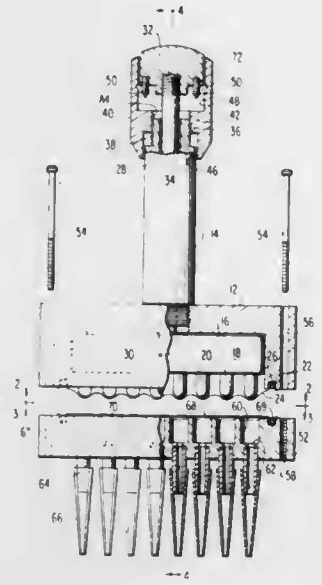
an elongated pressure arm of a rigid material; and,

means for affixing a first end of said pressure arm to the first machine tool member at a location along the longitudinal axis thereof at which force and torque are to be measured so that a second end of said pressure arm bears on said membrane in said first means.

4,444,062
LIQUID TRANSFER DEVICE

John T. Bennett, 10087 Tyler Pl., Ijamsville, Md. 21754, and Jack E. Goodman, 24141 Kings Valley Rd., Germantown, Md. 20874

Filed May 5, 1982, Ser. No. 375,161
Int. Cl.³ B01L *3/02*
U.S. Cl. 73—863.32 **7 Claims**



1. A liquid transfer device comprising housing means having a downwardly open recess, plunger means located within said recess and having at least one downwardly projecting rod adapted to extend outwardly of the recess when said plunger means is in engagement with the bottom of said recess, barrel means detachably secured to said housing means and having at least one upwardly open well therein disposed in alignment with said rod and downwardly opening passage means in communication with said well and an elastic membrane secured between said housing means and said barrel means under tension whereby when said barrel means is connected to said housing means, said rod will extend said membrane into said well in sealing engagement therewith and means for moving said rod further into said well against the elastic force of said membrane.

4,444,063
TORQUE MEASURING SYSTEMS

David C. Snowden, Near Abridge; Joseph J. Osborne, Enfield; David E. Thomas, Enfield, and David W. Simms, Bishops Stortford, all of England, assignors to Sangamo Weston Limited, Enfield, England

Filed Aug. 25, 1981, Ser. No. 296,043
Claims priority, application United Kingdom, Aug. 27, 1980, 8027722
Int. Cl.³ G01L *3/10*
U.S. Cl. 73—862.34 **10 Claims**

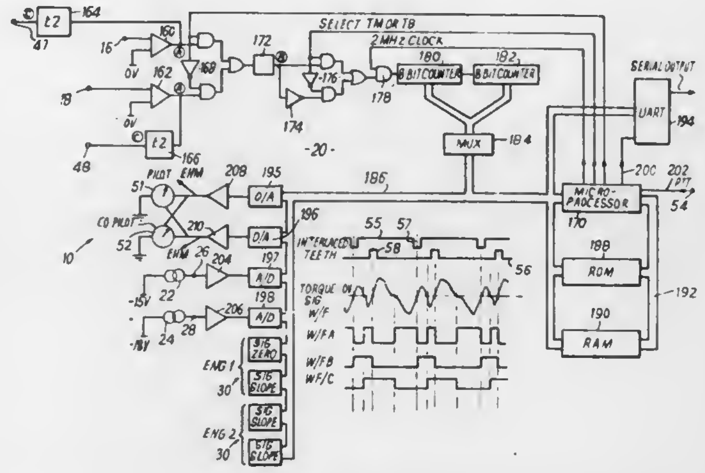
1. A digital torque measuring system comprising:

sensor means adapted to be mounted adjacent a shaft whose torque is to be measured, the sensor means being arranged to produce a mark-space output signal whose mark-space ratio is a function of said torque;

a source of clock pulses;

counter means arranged to count said clock pulses during groups of M successive ones of at least one of the mark periods or the space periods of said output signal;

recursive digital filter means connected to receive successive ones of the counts accumulated by the counter means, and responsive to each such count to combine at least that count with at least one previous output of the digital filter means in accordance with a predetermined function selected to produce a new output which is representative of the period represented by that count, but which has a resolution greater than that of that count; and

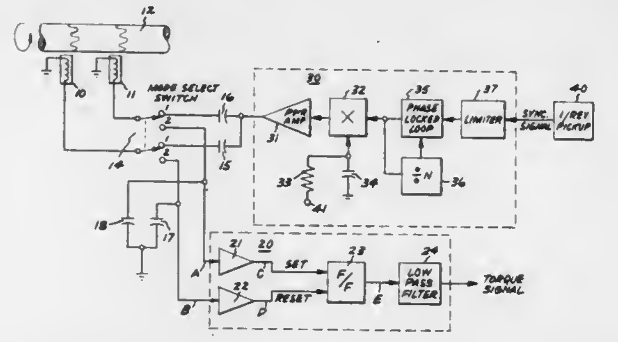


calculator means arranged to receive each successive output from the digital filter means and to calculate said torque therefrom.

4,444,064
ELECTROMAGNETIC TORQUE MEASURING INSTRUMENTATION FOR A ROTATING SHAFT

John F. Wolfinger, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 14, 1982, Ser. No. 388,282
Int. Cl.³ G01L *3/10*
U.S. Cl. 73—862.34 **15 Claims**



1. Torque monitoring instrumentation for continuously measuring torque between first and second axially separate locations on a rotating shaft, comprising:

first and second electromagnetic probes fixed with respect to said shaft and located in proximity to the surface thereof at said first and second locations, respectively, said first and second probes being operable in a first mode to induce a fixed circumferential magnetic pattern on to the surface of said shaft at said first and second locations, respectively, and being operable in a second mode to produce first and second output signals, respectively, in response to the movement of said magnetic patterns as said shaft is rotating, said first and second output signals each having a frequency indicative of the instantaneous angular velocity of said shaft at said first and second locations, respectively;

switching means operable to switch said first and second probes between said first and second modes;

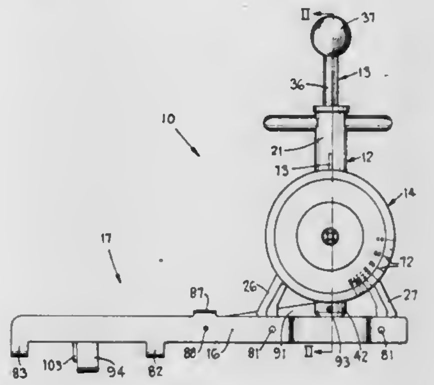
excitation means for generating an excitation signal and for supplying said signal to said first and second probes in said first mode to cause said probes to induce said fixed circumferential magnetic patterns, said excitation means including means for synchronizing the frequency of said excitation signal with shaft speed so that said fixed circumferential magnetic pattern is invariant with shaft speed in said first mode; and

phase detection means operable in combination with said first and second probes in said second mode to receive said first and second output signals and to produce a phase signal indicative of the phase relationship between said first and second output signals, said phase relationship being indicative of the torque on said shaft between said first and second locations.

4,444,065
BELT TENSION GAUGE

James A. Okamuro, Kalamazoo, Mich., assignor to Borroughs Tool & Equipment Corporation, Kalamazoo, Mich.

Continuation of Ser. No. 240,711, Mar. 5, 1981, abandoned. This application Sep. 24, 1982, Ser. No. 423,419
Int. Cl.³ G01L *5/06*
U.S. Cl. 73—862.47 **10 Claims**



1. A gauge for measuring the tension on an elongated flexible element, comprising:

a frame;

an actuating member supported on said frame for reciprocal movement between first and second positions;

an extender mounted to and extending away from said frame;

an element engaging mechanism provided on said extender at a location spaced from said frame and said actuating member, including:

first and second element engaging surfaces spaced from each other and facing in substantially the same direction;

a third element engaging surface facing in said direction and supported for reciprocal movement substantially in said direction between a retracted position and an advanced position, said third element engaging surface being intermediate and substantially coplanar with said first and second element engaging surfaces in said advanced position; and

a fourth element engaging surface for engaging a side of the elongate element opposite said third element engaging surface;

first resilient means for continually urging said fourth element engaging surface into said engaging relation with the elongate element and thereby continually urging the elongate element against said third element engaging surface;

linkage means cooperable with said element engaging mechanism and said actuating member for effecting said movement of said third element engaging surface between said retracted and advanced positions in response to movement of said actuating member between said first and second positions, respectively;

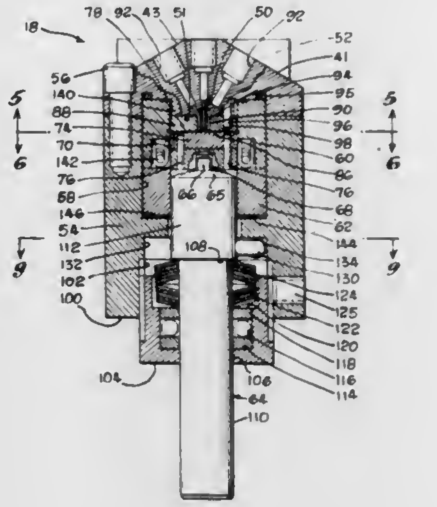
second resilient means for urging said third element engaging surface toward said retracted position; and

indicator means responsive to said movement of said third element engaging surface for indicating the distance between said third element engaging surface and said advanced position, such distance being proportional to the tension in the element.

4,444,066
HIGH PRESSURE SAMPLE INJECTOR VALVE

David G. Ogle, Los Altos, and John T. Taylor, Santa Clara, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jun. 29, 1981, Ser. No. 278,771
Int. Cl.³ G01N *1/10*
U.S. Cl. 73—863.72 **6 Claims**



1. A sample injector valve for use in an analyzer system having a sample source, a buffer source, a measuring loop, an analyzer column, and a rinse solution source, said injector valve comprising:

a housing;

a stator member mounted in said housing and having a plurality of ports, said ports being in fluid communication respectively with said sample source, said buffer source, said measuring loop, said analyzer column and said rinse solution source;

a rotor member mounted in said housing in juxtaposed relation with said stator member and having a generally flat contact surface in contact with a generally flat surface of said stator member, said rotor member movable between a bypass and an inject position, said movement between said bypass and inject positions being less than 60°, said rotor having a plurality of passageways, one of said passageways being in fluid communication with said buffer source and said analyzer column when said rotor member is in said bypass position, said one of said passageways not being in fluid communication with any of said ports when said rotor member is in said inject position, said one passageway only receiving buffer material for introduction to said analyzer column when said rotor member is in said bypass position;

bearing means in said housing surrounding said rotor for maintaining alignment between said stator member and said rotor member;

a bearing surface adjacent one end of said housing;

a biasing spring mounted in said housing for applying a force toward said bearing surface, said rotor and said stator being located between said biasing spring and said bearing surface;

adjusting means external to said valve for adjusting the force of said biasing spring on said rotor and said stator toward said bearing surface.

4,444,067

POWER DRIVE INCLUDING A DRIVE SLIDE FOR ELECTRIC SWITCHGEAR

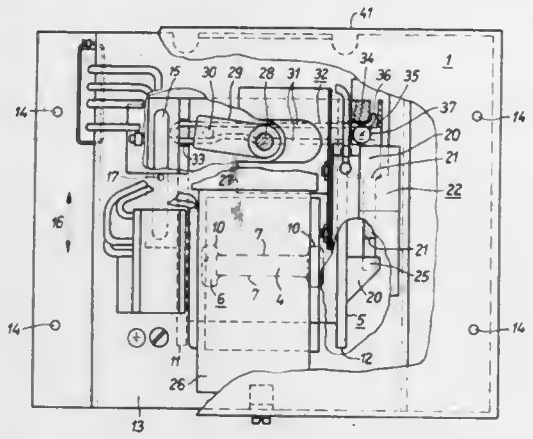
Bernhard Preuss, and Reinhard Zeuke, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Apr. 13, 1981, Ser. No. 253,585

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1980, 3014824

Int. Cl.³ H01H *71/70*

U.S. Cl. 74—108 **15 Claims**



1. In a power drive for electric switchgear, particularly protective low-voltage breakers, including a support plate and a drive slide having a window-like opening into which an actuating member of the switchgear extends to couple the drive slide to the actuating member, the improvement comprising arrangement of the drive slide between the support plate and a surface of the switchgear beyond which the actuating member extends, the drive slide being in sliding engagement with said support plate and said surface and being guided therebetween.

4,444,068

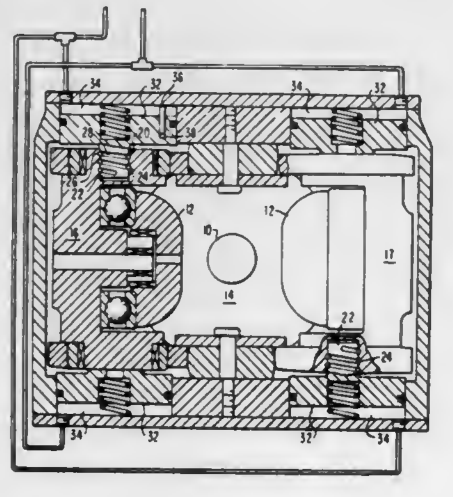
INFINITELY VARIABLE TRACTION ROLLER TRANSMISSION

Charles E. Kraus, Austin, Tex., assignor to Excelermatic Inc., Austin, Tex.

Filed Jan. 26, 1982, Ser. No. 343,906

Int. Cl.³ F16H *15/40, 15/08*

U.S. Cl. 74—200 **4 Claims**



1. An infinitely variable traction roller transmission comprising: coaxial input and output shafts; toric traction discs mounted opposite each other, one on each of said shafts; at least two motion transmitting traction rollers arranged between, and in firm engagement with, said toric discs for the transmission of motion therebetween; a pivotal support trunnion for each of said traction rollers rotatably supporting said rollers and being supported pivotally about an axis which extends normal to a plane including the axis of said input and output shafts to permit changes of the ratio of power transmission from the input to the output shaft; means for axially moving said trunnions to initiate transmission ratio changing pivoting thereof; and a ball screw structure operatively associated with at least one of said trunnions, one part of said ball screw structure having a predetermined axial position relative to said trunnion depending on the trunnions pivot position.

4,444,069

PLAY-FREE PRECISION DRIVE APPARATUS

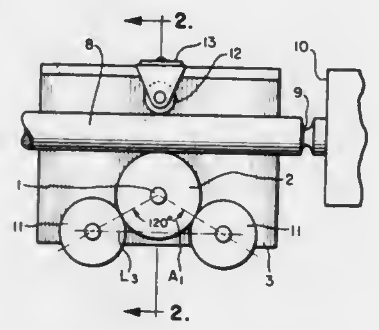
Holmer Dangschat, Traunreut, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Feb. 9, 1981, Ser. No. 232,962

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1980, 3005147

Int. Cl.³ F16H *13/00, 13/12*

U.S. Cl. 74—209 **12 Claims**



1. A play-free precision drive apparatus comprising:
a rotatable drive element for driving a driven element;
two rotatable support elements positioned to support the drive element such that each support element abuts the drive element along its periphery, wherein the support elements are positioned such that the centers of the support elements and the center of the drive element define an angle of less than 180° having its apex at the center of the drive element, such that the centers of the support elements define a line substantially parallel to a tangent to the drive element which passes through a contact point between the drive element and the driven element, and such that each support element defines a respective axis of rotation oriented perpendicularly to the direction of motion of the contact point; and
biasing means for urging one of the driven element and the drive element into engagement with the other.

4,444,070

VARIABLE RATIO RACK AND PINION STEERING GEAR

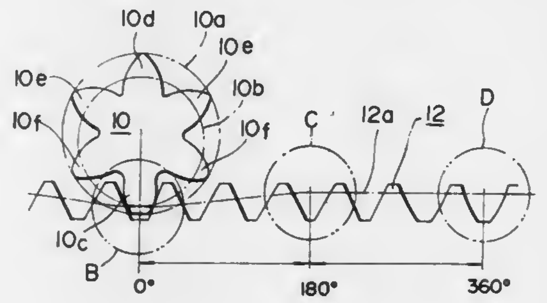
Tokiyoshi Yanai, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Aug. 31, 1981, Ser. No. 297,932

Claims priority, application Japan, Sep. 1, 1980, 55-119825

Int. Cl.³ F16H *1/04;* **B62D** *1/20;* **G05G** *1/03*

U.S. Cl. 74—422 **6 Claims**



1. A variable ratio rack and pinion steering gear comprising:
a circular driving pinion having a plurality of teeth and an axis of rotation and an addendum circle concentric with said axis of rotation, the teeth of the pinion being formed to correctly mesh with a uniformly toothed rack profile and to provide a variable pitch circle radius, said variable radius having a maximum at a predetermined position of the pinion and gradually reducing in accordance with rotary movement of the pinion in either direction from said predetermined position and having a minimum at 180° of rotary movement from said predetermined position; and
a driven rack adapted to mesh with said pinion, the teeth of the rack being formed from a profile of said pinion teeth to provide a variable ratio between the pinion and the rack, said rack having a first group of teeth of variable shape and size and a second group of teeth of uniform shape and size.

4,444,071

METHOD FOR ASSEMBLING A WOkM SCREW MOTOR-REDUCTION GEARBOX COMBINATION WITH A DOUBLE KINEMATIC CHAIN, AND A MOTOR DRIVE REDUCTION GEARBOX COMBINATION RESULTING THEREFROM

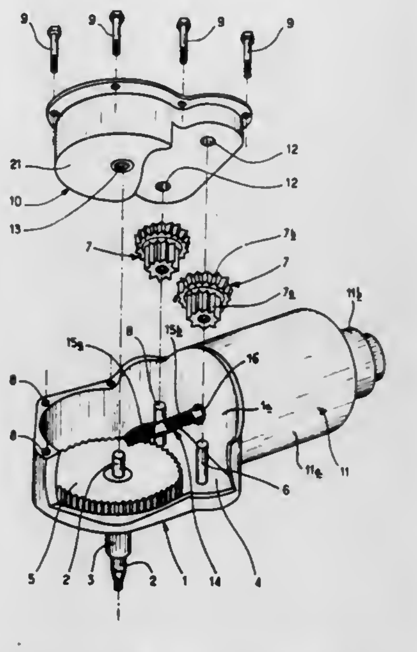
Roland R. Guichard, Chaource, France, assignor to Equipments Automobiles Marchal, Issy-les-Moulineaux, France

Filed Oct. 13, 1981, Ser. No. 310,924

Claims priority, application France, Oct. 14, 1980, 80 21911

Int. Cl.³ F16H *1/16, 1/20, 57/00;* **B23P** *11/00*

U.S. Cl. 74—427 **9 Claims**



4. A motor-reduction gearbox combination including a motor; a casing having a floor; a driving shaft within said casing; means on said driving shaft defining first and second worm screw portions of opposite hand having k_1 and k_2 thread starts, respectively, k_1 and k_2 being integers greater than 1; a driven shaft in said casing; an output gearwheel on said driven shaft and in said casing; and first and second kinematic chain means connecting said driven shaft to the driving shaft, each said kinematic chain means comprising a respective double gear unit comprising a wheel having n teeth and a pinion having p teeth, said pinion and wheel being coaxial with one another and fixed against relative rotation with respect to one another; wherein said wheel of the double gear unit of said first kinematic chain means meshes with said first worm screw portion of the driving shaft and the wheel of the said double gear unit of the second kinematic chain means meshes with the said second worm screw portion and the pinions of both said kinematic chain means mesh with said output gearwheel carried by the driven shaft, wherein the ratio n/p of said double gear unit of the first kinematic chain means is equal to the integer k_1 and the ratio n/p of said double gear unit of the second kinematic chain is equal to the integer k_2, and wherein said output gearwheel is arranged in said casing between the driving shaft and the floor of the casing.

4,444,072

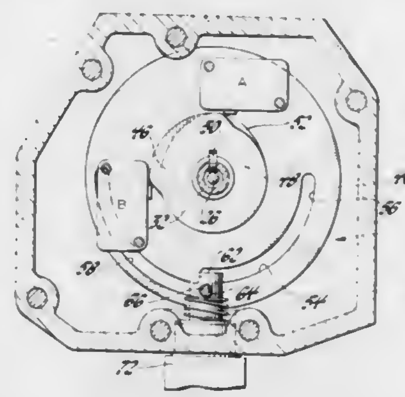
SHIFT MECHANISM WITH A NEUTRAL STOP CONTROL FOR A TWO-SPEED TRANSMISSION

Michael P. Grimes, Ypsilanti, and William J. Vukovich, Pittsfield Township, Washtenaw County, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 30, 1982, Ser. No. 373,348

Int. Cl.³ F16H *3/08, 53/06;* **G05G** *1/04;* **B60K** *20/00*

U.S. Cl. 74—473 R **2 Claims**



1. An improvement in transmission shift mechanisms having a mechanical shift mechanism driven by an electric motor for operation between two transmission ratios with a neutral position intermediate the two ratios wherein the improvement comprises; plate means rotatable with said electric motor; slot means formed in said plate means including a first circumferentially extending slot at one diameter, a second circumferentially extending slot at another diameter and an interconnecting radial slot interconnecting the first and second circumferentially extending slots and cooperating therewith to form first and second stop surfaces circumferentially aligned with the first and second circumferentially extending slots respectively; pin means disposed in said slot means and being selectively aligned for abutment with said first and second stop surfaces to stop said plate means and the electric motor at neutral during a ratio change; and solenoid means for selectively positioning said pin means in said slot means.

4,444,073

TORQUE TRANSFER MECHANISM WITH HYDRAULIC CONTROL SYSTEM FOR A FOUR WHEEL DRIVE VEHICLE

Shuzo Moroto, Handa, and Yoichi Hayakawa, Toyoake, both of Japan, assignors to Aisin Warner Kabushiki Kaisha, Aichi, Japan

Filed Mar. 30, 1981, Ser. No. 249,278

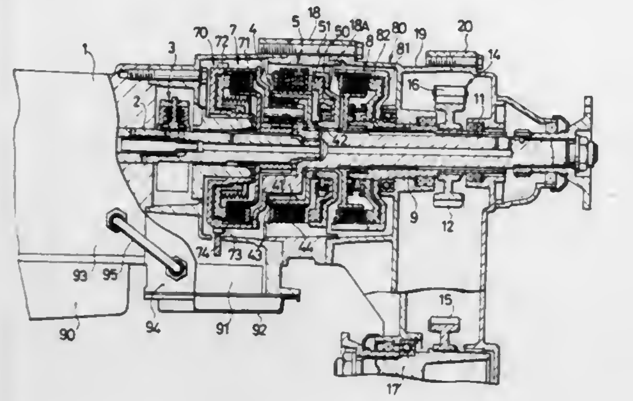
Claims priority, application Japan, Mar. 31, 1980, 55-41456

Int. Cl.³ F16H *37/06, 37/00;* **B60K** *41/08;* **F01N** *7/18*

U.S. Cl. 74—665 G **11 Claims**

1. A torque transfer mechanism for a four wheel drive vehicle having an automatic transmission, said torque transfer mechanism comprising:
an input shaft for receiving torque from said automatic transmission;
a first output shaft connected to one of front and rear drive axles of the vehicle;
a second output shaft connected to the other one of the drive axles;
means for transmitting the rotation of said first output shaft to said second output shaft;
an engaging means for connecting and disconnecting said first output shaft to and from said second output shaft;
a hydraulic control system including;
a source of a first pressurized fluid;

first conduit means for supplying, when connected, said first pressurized fluid to said engaging means;
a valve means for selectively connecting said first conduit means with said engaging means;
a source of a second pressurized fluid the pressure of said second pressurized fluid being commensurate with the vehicle speed;

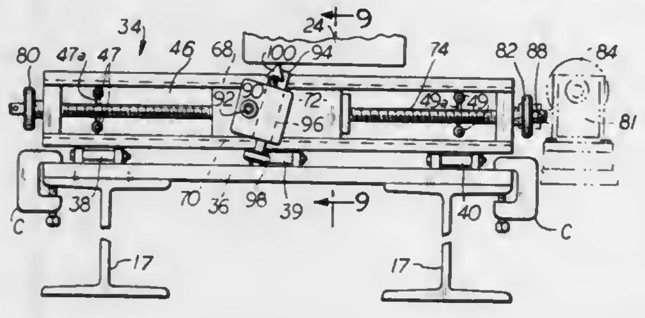


second conduit means for supplying said second pressurized fluid to said valve means, said second pressurized fluid operating with said valve means to connect said first conduit means with said engaging means when the pressure of said second pressurized fluid falls below a predetermined level and said second pressurized fluid operating with said valve means to disconnect said first conduit means from said engaging means when the pressure of said second pressurized fluid exceeds said predetermined level.

4,444,074

METHOD AND APPARATUS FOR RESURFACING STEEL TIRES

Robert S. Richardson, Columbia Heights, Minn., assignor to R.S.D. Investments Inc. DBA Proto, St. Paul, Minn.
Filed Jan. 18, 1982, Ser. No. 340,503
Int. Cl.³ B23B *5/00*
U.S. Cl. 82—4 R **4 Claims**

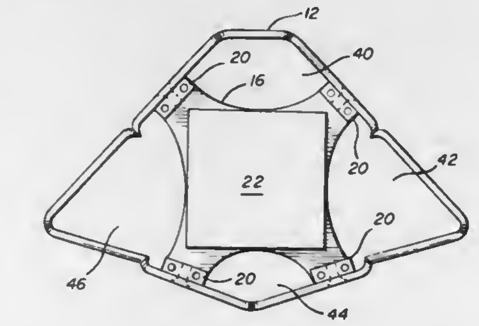


1. A tire resurfacing apparatus comprising a supporting base, the base is a member adapted to be secured to a framework supporting a workpiece that requires resurfacing,
a backing plate mounted on the base,
the backing plate has a free upper edge and a lower edge on the opposite side from the upper edge and the lower edge is pivotably connected to the base for moveably supporting the backing plate on the base to establish the rake of a cutting tool,
a support plate on the backing plate and being supported thereby,
releasable fastener means extending between the backing plate and the support plate for holding the plates together and for releasably securing them to one another in a desired position, said plates being pivotable relative to one another along an axis perpendicular to said pivot between the base and the support plate,
an extensible brace member is operatively connected between the base and the upper free end of the support plate,
releasable locking means is provided for controlling the length of the extensible member to regulate the rake of the tool, and the releasable fasteners enable the support plate to be releasably locked to the backing plate for changing the depth of cut and the path of the cut with respect to the base and the tire axis,
a slide plate mounted for sliding motion on the support plate, screw means for advancing the slide plate laterally on the support plate, a tool holder on the slide plate, a cutting tool mounted on the tool holder and said tool holder including means for selectively moving the tool toward or away from the tire to control the depth of cut.

4,444,075

PAPER EJECTION ATTACHMENT FOR CUTTING DIE

Lawrence S. Mulry, 517 W. Arch St., Frackville, Pa. 17931
Continuation-in-part of Ser. No. 202,185, Oct. 28, 1980, abandoned. This application Aug. 20, 1982, Ser. No. 410,038
Int. Cl.³ B26F *1/44*
U.S. Cl. 83—128 **3 Claims**

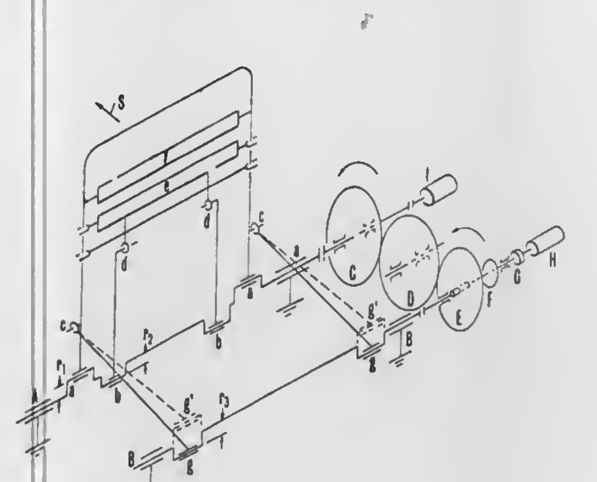


1. A peripherally continuous horizontal frame-type die for cutting predetermined shapes of sheet paper from a stack of sheet paper, the lower peripheral edge of said die being sharpened, a horizontal plate spanning and supported from remote peripheral portions of said die, a resilient paper ejecting block supported from and beneath said plate and generally centrally disposed within said die, said block being of a vertical thickness extending downwardly from said plate to a level at least generally flush with the lower peripheral edge of said die, said block being sufficiently spaced from opposing inner peripheral surfaces of said die to allow for horizontal expansion of said block responsive to vertical compression thereof with said block remaining spaced inwardly of all inner peripheral surfaces of said die when vertically compressed and horizontally expanded, said plate defining outwardly opening notches formed therein and spaced peripherally thereabout, said notches, together with opposing portions of said die, defining openings through said plate outwardly of the corresponding peripheral portions of said block, said plate extending between and being securely fastened to said remote peripheral portions of said die and functioning as a support for said paper ejecting block and with said notches being of sufficient size to define handgrip openings through said plate through which digital access from above may be readily gained for manually gripping of said block between spaced peripheral portions thereof in order to lift said die from said stack of sheet paper, said block serving to upwardly eject said die from said stack after downward force on said die to cut said stack is released and said openings further serving to enable manual ejection of a few cut sheets of paper remaining in said die after a cutting operation has been completed.

4,444,076

ROCKING TYPE FLYING SHEARS WITH STATIONARY SHEARING FUNCTION

Kenji Terai; Katsuto Sudo, and Yoshiki Nakamura, all of Fukuoka, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
Continuation of Ser. No. 190,888, Sep. 25, 1980, abandoned. This application Sep. 20, 1982, Ser. No. 420,577
Claims priority, application Japan, Sep. 29, 1979, 54-126291
Int. Cl.³ B23D *25/06*
U.S. Cl. 83—316 **1 Claim**



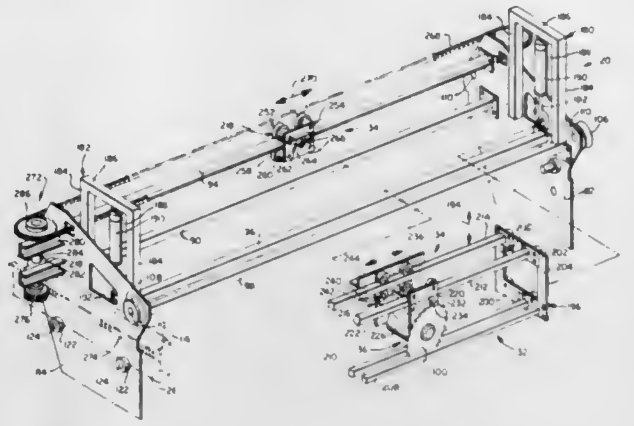
1. Rocking type flying shears comprising:
a first blade having an upper cutting edge;
a second blade having a lower cutting edge;
a main crank shaft coupled to said first and second blades with a first eccentricity (r1) controlling movement of said first blade up and down and a second eccentricity (r2) controlling movement of said second blade up and down to effect shearing;
a rocking crank shaft mounted for swaying motion with a third eccentricity (r3);
a rocking type flying shear body coupling said first blade to said main crank shaft for effecting said up and down movement of said first blade, said second blade being mounted for sliding movement along said shear body, said body having rocking pins thereon;
means coupling said rocking crank shaft to said rocking pins for transmitting said swaying motion to said blades;
a motor;
a gear train including at least two synchronizing gears for transmitting the drive force of said motor simultaneously to said main and rocking crank shafts;
a phase converter including a first clutch for coupling said main and rocking crank shaft for setting the shears for operation in a first mode in which material to be sheared is in repose and a second mode in which material to be sheared is moving, the change between modes being achieved by rotating the main and rocking crank shafts 180° with respect to each other while said first clutch is open; and
a torque actuator and a second clutch coupled to one of said crank shafts for rotating said one shaft to effect said change of mode,
the ratio r1/r3 satisfying the formula

$$\frac{r1}{r3} \approx \frac{\text{Distance from the center of the main crank shaft to the tip of the upper cutting edge}}{\text{Distance from the center of each rocking pin to the tip of the upper cutting edge}}$$

4,444,077

FLYING SAW APPARATUS

Robert J. Wise, Eugene, and James P. Petermann, Beaverton, both of Oreg., assignors to Georgia-Pacific Corporation, Atlanta, Ga.
Filed Sep. 25, 1981, Ser. No. 305,715
Int. Cl.³ B27B *5/06;* B23D *45/18*
U.S. Cl. 83—319 **30 Claims**



1. A flying saw apparatus for severing a predetermined length of material from a continuously moving length of the material comprising:
a main frame assembly;
a saw carriage including a saw bridge extending transversely of the direction of motion of the material, said saw carriage being supported by said frame assembly for reciprocating motion parallel to the direction of motion of the material to be severed;
a saw shuttle connected to said saw bridge for reciprocating motion transverse to the direction of motion of said saw carriage;
a saw, having a saw blade, carried by said saw shuttle;
carriage drive means for driving said saw carriage in its reciprocating motion;
means for coupling said carriage drive means to the drive mechanism of the moving length of material to coordinate the motion of the length of material to the motion of said saw carriage;
shuttle drive means for moving said saw shuttle in its reciprocating motion, said shuttle drive means including a fixed rack extending in the direction of motion of said saw carriage, a pinion rotatably carried by said saw carriage in meshing engagement with said rack, and means for drivingly connecting said pinion to said saw shuttle whereby the reciprocal motion of said saw carriage is transferred into the reciprocal motion of said saw shuttle along the length of said saw bridge.

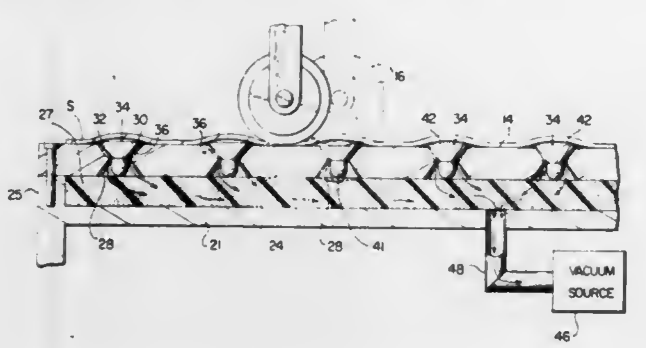
4,444,078

APPARATUS FOR CUTTING SHEET MATERIAL

David R. Pearl, West Hartford, Conn., assignor to Gerber Garment Technology, Inc., South Windsor, Conn.
Filed Feb. 4, 1982, Ser. No. 345,707
Int. Cl.³ B26D *7/06;* B65H *35/00*
U.S. Cl. 83—374 **22 Claims**

1. In an apparatus for cutting sheet material and having means defining a bearing surface for supporting sheet material to be cut, said bearing surface having openings therein, a cutting instrument, means for moving the cutting instrument in cutting engagement with the bearing surface to cut sheet material spread thereon, a vacuum source, and means communicating with said vacuum source and with said openings for applying vacuum to sheet material spread on said bearing surface, the improvement comprising closure elements movable between open and closed positions relative to said openings for opening and closing said openings, said closure elements having closure surfaces for cutting engagement with said cutting instrument when said closure elements are in said closed posi-

tions, and means for moving at least one closure element to its closed position relative to an associated one of said openings in response to movement of said cutting instrument to a predetermined position relative to said one opening.



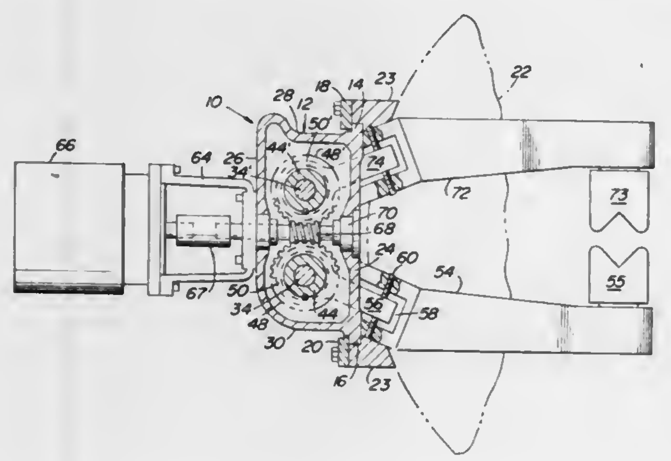
4,444,079
PROFILE CONTROL FOR SHEAR MECHANISM

Mark C. Newkirk, Vineland, N.J., assignor to Maul Technology Corporation, Millville, N.J.

Filed Jun. 14, 1982, Ser. No. 388,052

Int. Cl.³ C03B *5/38*

U.S. Cl. 83—600 **21 Claims**



1. Profile control for a shear mechanism having blades driven between open and closed positions by an oscillating shaft of a motor in synchronism with the feeder mechanism of a glass processing machine, comprising:
- means for generating motor command pulses spaced proportional to the desired speeds of the blades;
- means for causing the motor to move the shaft in response to each command pulse at a speed proportional to the spacing between successive command pulses;
- means responsive to said motor command pulses for generating a direction signal representative of a reversal in the desired direction of travel of the motor shaft; and
- means for causing the motor to reverse the direction of travel of the shaft in response to the direction signal.

4,444,080
TOOL FOR MAKING ROWS OF PERFORATIONS IN PAPER WEBS OR THE LIKE

Helmut Schulz, Schopfheim, Fed. Rep. of Germany, assignor to Grapha-Holding AG, Hergiswil, Switzerland

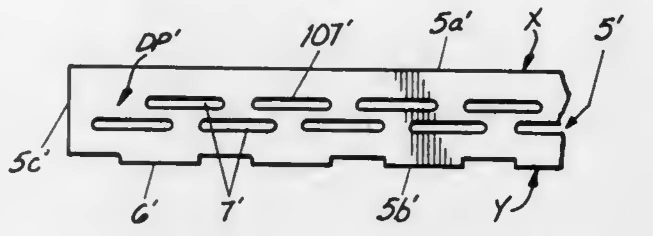
Filed Dec. 17, 1981, Ser. No. 331,929

Claims priority, application Switzerland, Jan. 9, 1981, 119/81

Int. Cl.³ B26D *1/20*

U.S. Cl. 83—660 **11 Claims**

1. A tool for making rows of perforations in webs consisting of paper or the like, comprising a blade having first and second longitudinal edge faces, a row of perforating teeth extending along said first edge face, first and second transverse edge faces, and an elastically deformable portion extending lengthwise of and between said longitudinal edge faces so as to enable at least some of said teeth to yield in response to the application of stresses acting against one of said longitudinal edge faces in a direction toward the other of said longitudinal edge faces, said deformable portion having first and second ends at least one of which is spaced apart from the respective transverse edge face.



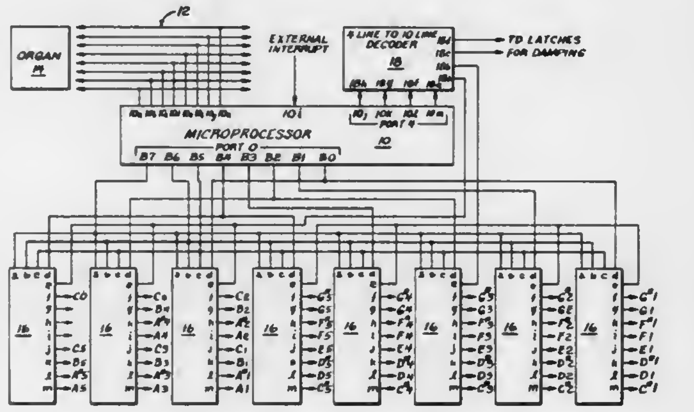
4,444,081
ARPEGGIO GENERATING SYSTEM AND METHOD

Edward M. Jones, Cincinnati, and Carlton J. Simmons, Jr., Westchester, both of Ohio, assignors to Baldwin Piano & Organ Company, Cincinnati, Ohio

Filed Jun. 4, 1982, Ser. No. 384,856

Int. Cl.³ G10F *1/00*

U.S. Cl. 84—1.03 **32 Claims**



1. In an electronic musical instrument having an array of playing keys, an apparatus for generating arpeggios from one or more musical notes, said apparatus comprising:
- a plurality of stored musical voice related patterns of tones, each pattern having a controlled number of sequential progressions;
- musical voice priority means for selecting a dominant musical voice-related pattern of tones from said plurality of musical voice-related patterns of tones;
- means for selecting a rhythm synchronization variation;
- up/down flag means included in each musical voice-related pattern for controlling the upward or downward sequential progression of the pattern;
- first memory means for storing data representing notes of the keys played and notes in higher octaves corresponding to the keys played;
- second memory means for storing data representing the lowest note and highest note stored in said first memory means, the selected musical voice-related pattern, the selected rhythm synchronization variation, and the condition of the up/down flag means;
- sequencing means for placing data representing the selected musical voice-related pattern for a current progression into said second memory means;
- third memory means for receiving data from said first memory means;
- selector means for scanning said first and second memory means and for placing one or more selected notes from the played and higher octave notes available in said first memory means into said third memory means in a progression controlled by the data stored in said second memory means;
- processing means for generating from the data in said third memory means ouput pulses in said controlled progression; and
- audio output means for generating and sounding the notes of the selected musical voice-related pattern corresponding to said output pulses generated by said processing means, whereby an arpeggio commences upon the playing of one or more keys and continues until all the keys are released.

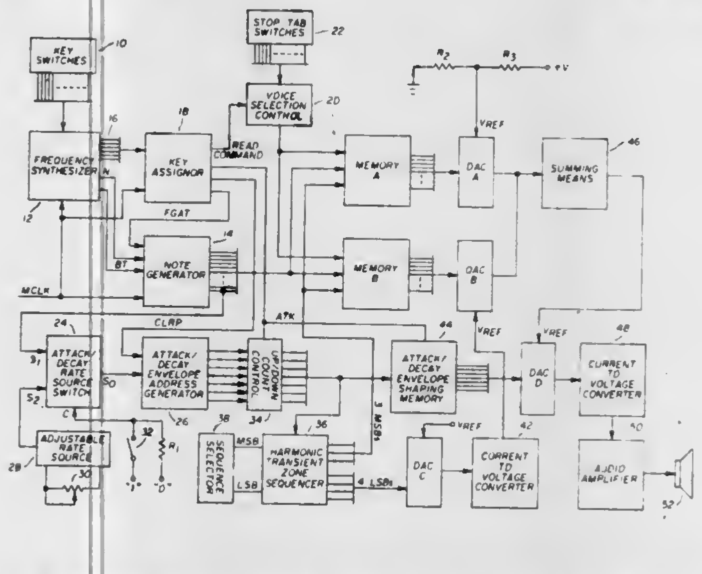
4,444,082
MODIFIED TRANSIENT HARMONIC INTERPOLATOR FOR AN ELECTRONIC MUSICAL INSTRUMENT

John T. Whitefield, Harleysville, Pa., assignor to Allen Organ Company, Macungie, Pa.

Filed Oct. 4, 1982, Ser. No. 432,583

Int. Cl.³ G10H *1/057, 1/08*

U.S. Cl. 84—1.21 **24 Claims**



1. In an electronic musical instrument having a greater number of selectively actuable switches than note generators to cause the production of sounds corresponding to the respective notes of a musical scale, an apparatus for interpolating between harmonic structures of a waveform stored in memory during portions or the entire transient periods of said waveform comprising:
- at least first and second memories having a number of locations or zones in each memory, said number of zones being equivalent to the number of harmonic structures;
- a fixed harmonic structure in each zone of the first memory;
- a difference value in each zone of the second memory, said difference value equal to the difference between the fixed harmonic structures in adjacent zones of the first memory;
- means for controlling the length of time of the interpolation between harmonic structures of a waveform during the transient periods of said waveform by generating addresses for selectively causing the reading out from each said memory the contents of each zone in accordance with the output of said means for controlling the length of time of the interpolation, said zone address being the upper segment of the output, for selectively controlling the scaling of the difference values read out from each zone of said memory by a digital to analog converting means, said digital to analog converting means address being the lower segment of the output;
- means for converting and scaling the fixed harmonic structure read out of a selected zone of the first memory having a scaling factor being a fixed value;
- means for converting and scaling the difference value read out of a selected zone of the second memory having a scaling factor varying in accordance with the lower segment of the output;
- summing means for combining the converted and scaled fixed harmonic structures read out of the selected zones of the first memory with the converted and scaled difference values read out of the selected zones of the second memory and generating an output;
- means for converting and scaling the generated transient waveform envelope having a scaling factor in accordance with the generated output of the summing means; and,
- amplifying means for producing the interpolated transient harmonic structures of the waveform as sound through an audio transducing means.

4,444,083
KEYBOARD INSTRUMENT, ESPECIALLY A PIANO OR SIMILAR INSTRUMENT

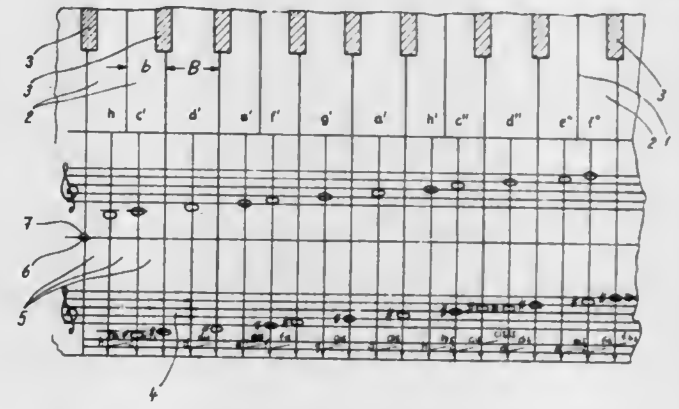
Siegfried Apel, Ziegenrückstr. 24, and Marlene Apel, Kellerstr. 9, both of D-8647 Stockheim, Fed. Rep. of Germany

Filed Feb. 1, 1982, Ser. No. 344,640

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1981, 3105724

Int. Cl.³ G10C *3/12;* G10G *1/02*

U.S. Cl. 84—423 R **15 Claims**



1. A keyboard instrument, in particular a piano or similar instrument having a keyboard with keys arranged such that each C-major scale octave consists of seven white keys which sequentially produce the notes C, D, E, F, G, A, and B and five black keys which produce the notes C#, D#, F#, G#, and A#, one end of said black keys terminating along a smooth continuous line and the corresponding ends of each said white keys having a portion extending equidistant beyond said line, said keyboard being usable in conjunction with aids to learning in the form of templates, the improvement comprising: the width of said portion of the white keys that produce the notes B, C, E, and F having a first value and the width of said portion of the white keys that produce the notes D, G, and A having a second value, the ratio of said first value to said second value being 3:4.

4,444,084
ADJUSTABLE TENSIONING AND LOCKING DEVICE

Lucien Vessichelli, 108 Deerfield Rd., West Caldwell, N.J. 07006

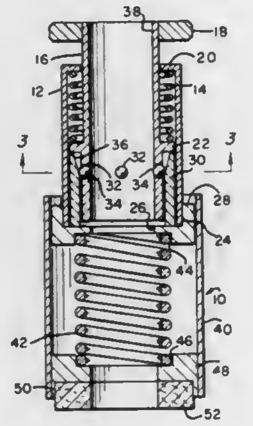
Filed Dec. 13, 1982, Ser. No. 449,538

Int. Cl.³ D04C *3/18*

U.S. Cl. 87—57 **7 Claims**

1. An adjustable tensioning device comprising:
- a first outer cylinder including a fixed ring shaped bushing within one end and a slidable ring shaped bushing within the other end, a first spring having respective ends secured between said bushings and extending longitudinally within said outer cylinder, a friction pad extending outwardly from the one end of said first cylinder and fixed bushing;
- a second smaller diameter outer cylinder having one end fixedly secured to said slidable bushing for axial movement into the other end of said first cylinder and extending outwardly from said first cylinder;
- an inner cylinder having one end extending and slidable within said second cylinder and the other end extending outwardly from said second cylinder, an annular ring

around the outer periphery of said inner cylinder at an intermediate longitudinal position between the opposite ends and enclosed within said second cylinder, a second spring positioned longitudinally about said inner cylinder and within said second cylinder between said annular ring and the other end of said second cylinder, said second spring normally biasing said inner cylinder toward said one end of said second cylinder, a wedged ring positioned longitudinally about said inner cylinder and within said second cylinder between said annular ring and the one end of said second cylinder, said inner cylinder including a plurality of holes about the peripheral walls adjacent said wedged ring, a plurality of rotatable bearings positioned in respective said holes, said bearings extending radially inwardly and outwardly from said walls, said inner cylinder and fixed and slidable bushings and first spring and friction pad having a hollow central tubular area to receive a longitudinal shaft therethrough, and means at the other end of said inner cylinder for manually moving said inner cylinder outwardly from said second cylinder.



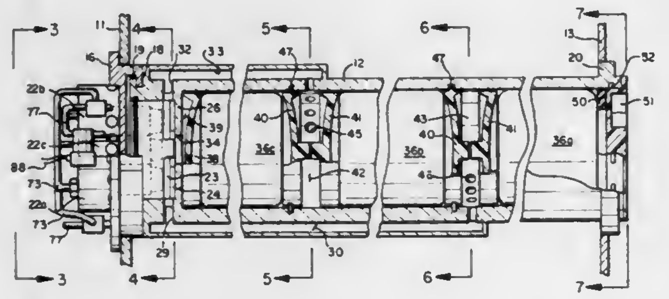
4,444,085
PNEUMATIC LAUNCHER SYSTEM

Leo Dragonuk, Plymouth Meeting, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 25, 1982, Ser. No. 342,543

Int. Cl.³ F41F *5/02;* **B64D** *1/04*

U.S. Cl. 89—1.5 R **13 Claims**



8. A pneumatic dispenser for sequentially ejecting a plurality of stores comprising, in combination:
- a plenum of compressed gas;
- a tube formed to receive the stores in spaced relation along the length thereof and having a breech operatively connected to said plenum and a discharge end, said tube including passages formed to communicate between said breech and the breech end of each of the stores; and
- first valve means connected to said plenum and said tube for selectively controlling flow of the gas to said passages.

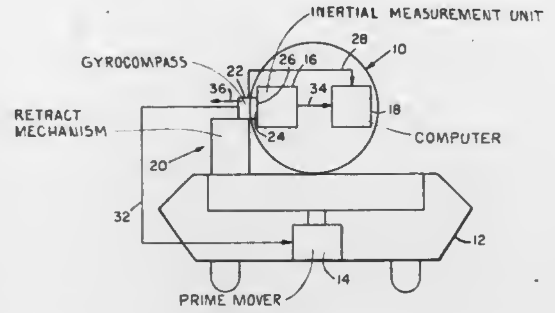
4,444,086
MISSILE AZIMUTH AIMING APPARATUS

Harold V. White, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 23, 1981, Ser. No. 333,583

Int. Cl.³ F41G *3/02*

U.S. Cl. 89—1.8 **5 Claims**



1. Apparatus for fast, accurate aiming of a missile positioned on a launch vehicle, said missile having a strapdown inertial measurement unit carried thereon, said apparatus comprising:
- a. a retract mechanism supported on said launch vehicle;
- b. a gyrocompass carried on said retract mechanism;
- c. said strapdown inertial measurement unit having a precision surface thereon and said gyrocompass having a reference surface thereon for intimate contact therebetween;
- d. said retract mechanism disposed for displacement for separation of said gyrocompass from said inertial measurement unit responsive to said gyrocompass acquiring the desired azimuth information.

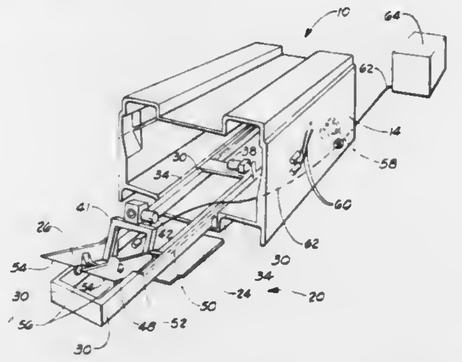
4,444,087
MISSILE CONTAINER AND EXTRACTION MECHANISM

Alex B. Hunter, and George T. Pinson, both of Huntsville, Ala., assignors to The Boeing Company, Seattle, Wash.

Filed Jan. 28, 1982, Ser. No. 343,540

Int. Cl.³ F41F *3/04*

U.S. Cl. 89—1.802 **11 Claims**



1. A missile container and extraction mechanism for storing and extracting a missile and placing the missle in an attitude for launch therefrom, the container and mechanism comprising:
- an enclosed individual missile container housing;
- a hinged door mounted in front of the housing;
- a slide assembly mounted on the bottom of the housing and adapted for sliding outwardly from the front of the housing when the hinged door is opened;
- slide assembly drive means for sliding the slide assembly outwardly from the front of the housing and retracting the slide assembly into the housing;
- a launch platform mounted on the slide assembly, the platform adapted for receiving the missile thereon; and
- attitude means attached to the slide assembly for raising the launch platform to the proper attitude prior to launching the missile.

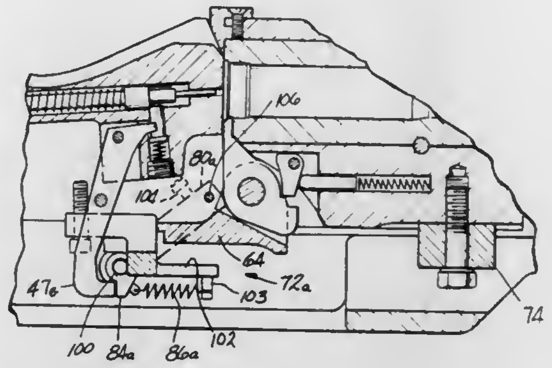
4,444,088
AUTO-FIRE ASSEMBLY FOR INDUSTRIAL SHOTGUN

Richard H. Olson, Florissant, Mo., assignor to Olin Corporation, Stamford, Conn.

Filed Mar. 8, 1982, Ser. No. 356,063

Int. Cl.³ F41F *11/00, 11/075, 1/00*

U.S. Cl. 89—25 **1 Claim**



1. In a breech loaded industrial gun of the type having a firing pin, a breech block with the front of the block being vertically rotatable about a pin at the rear of the block between a first upper firing position fully closing the gun breech and a second lower loading position uncovering the breech and having an operating lever movable between a first firing and second loading position for moving said breech block between said breech block positions, an improved autofire assembly which comprises:
- a horizontal shaft rotatable between first and second positions and biased toward said second position;
- stop bracket, attached to said gun for supporting said horizontal shaft with the axis of said shaft in a fixed position relative to gun during operation of said gun and for limiting downward rotation of the breech block to said second position;
- a trip arm, attached to said shaft, for coming into contact with said operating lever and rotating said shaft from said second to said first position against said bias only in response to movement of said operating lever into said first firing position;
- a trigger actuator attached to said shaft for rotation therewith; and
- a trigger, attached to said breech block, for contacting said trigger actuator when and only when said breech block is in said first upper firing position and for releasing said firing pin in response to rotation of said trigger actuator when said shaft rotates from said second to said first shaft position.

4,444,089
STABILIZING AND AIMING DRIVE MEANS FOR A TURRET OF A VEHICLE

Ludwig Pietzsch, and Bernhard Stehlin, both of Karlsruhe, Fed. Rep. of Germany, assignors to Dr.-Ing. Ludwig Pietzsch, Karlsruhe, Fed. Rep. of Germany

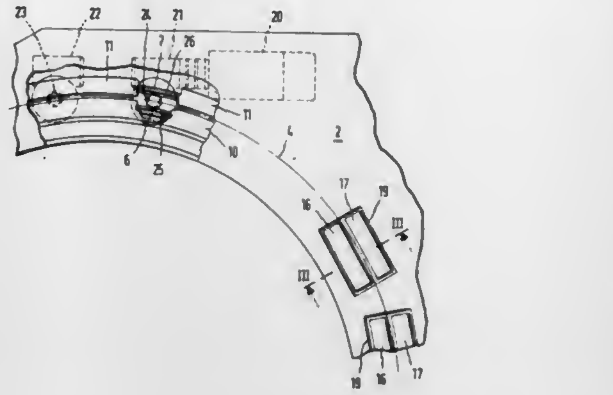
Filed Feb. 26, 1982, Ser. No. 352,869

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1981, 3108368

Int. Cl.³ F41G *5/24;* **F41F** *21/14;* **F41H** *7/08*

U.S. Cl. 89—36 K **13 Claims**

1. In a stabilizing and aiming drive means for the turret of a vehicle, which turret is mounted on a track on the vehicle superstructure for rotation in response to alignment adjusting moments applied by the selective movement of friction linings against oppositely driven brake surfaces, the improvement:
- wherein said brake surfaces include two concenteric revolving rings disposed adjacent the mean radius of the rotation track, said surfaces being supported on one of (i) said vehicle superstructure and (ii) said turret for driving rotation in opposite directions, and
- wherein said friction linings (12, 13) are supported for movement parallel to the axis of turret rotation on said one of (i) said vehicle superstructure and (ii) said turret and are disposed on the same mean radius as that of said revolving rings in proximity to said revolving rings.



4,444,090
GOVERNING MEANS FOR A HYDRAULIC ACTUATOR

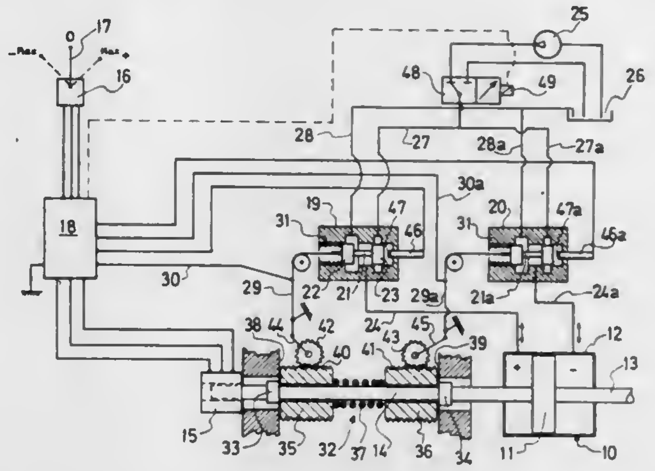
Karl E. Joelson, Poststrasse 3 C, Klecken, Rosengarten, Fed. Rep. of Germany DE 2107

Filed Dec. 11, 1981, Ser. No. 329,820

Claims priority, application Sweden, Dec. 16, 1980, 8008827

Int. Cl.³ F15B *9/10, 9/03, 9/09*

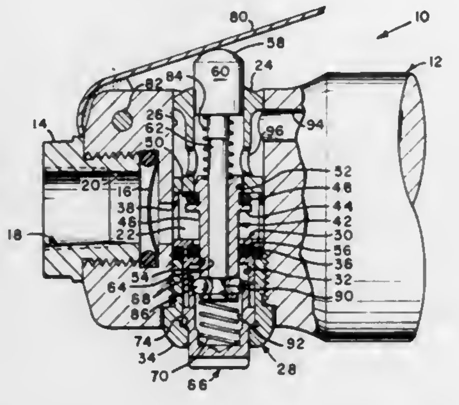
U.S. Cl. 91—363 R **7 Claims**



1. Governing means for a hydraulic actuator of the type which has a piston having a piston rod passing into a cylinder and supplied with working fluid from a source of pressurized fluid, and comprising:
- (A) at least one fluid control means in conduitry between said pressure fluid source and said cylinder,
- (B) an arbitrarily adjustable, nominal position signal transmitter and an actual position signal transmitter operable by said piston rod,
- (C) an electric resistance wire operatively connected to said fluid control means and means to activates said wire,
- (D) said activating means comparing nominal position signals and actual position signals and issuing a signal for determining the supply of electric current to said electric resistance wire, and
- (E) compensating means operable by said piston rod and adapted to transfer to said electric resistance wire a feedback movement partly counteracting thermal movement thereof caused by said activating means.

4,444,091
SAFETY LOCK-OFF THROTTLE DEVICE

Harry S. Jorgensen, Jr., Bedford, Ohio, assignor to The Stanley Works, New Britian, Conn.
Filed Aug. 26, 1981, Ser. No. 296,472
Int. Cl.^{3} F15B *13/04;* F16K *35/00;* B23B *45/04*
U.S. Cl. 91—427 **18 Claims**

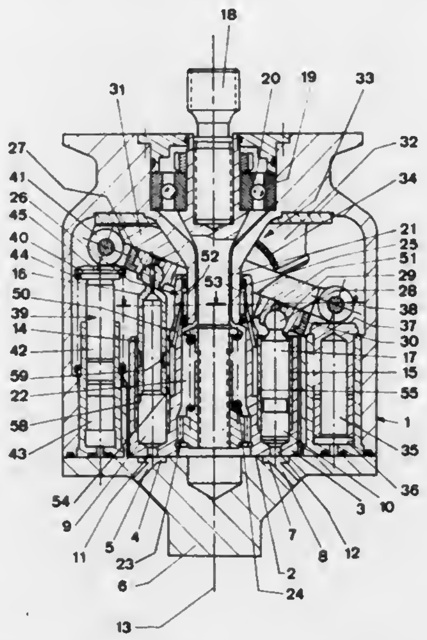


1. In a power tool including a fluid operated motor, a housing having a fluid supply passageway for supplying fluid to the motor and an on-off valve mounted in the housing for movement between a normally closed position and an open position for establishing closed and open fluid flow conditions in the passageway, a safety device for controlling the on-off valve comprising first and second independently operable valve controls respectively movable between starting and actuated positions, means in the housing supporting the second valve control for movement in non-interfering relation to the first valve control, the second valve control being freely movable from its starting position toward its actuated position regardless of the position of the first valve control, a selectively operable interlock for drivingly connecting the second valve control in its starting position to the on-off valve solely when the first valve control is in its actuated position for moving the on-off valve between its closed and open positions responsive to movement of the second valve control between its starting and actuated positions, the first valve control in its starting position rendering the second valve control ineffective for moving the on-off valve from its normally closed position.

4,444,092
HYDRAULIC PUMP

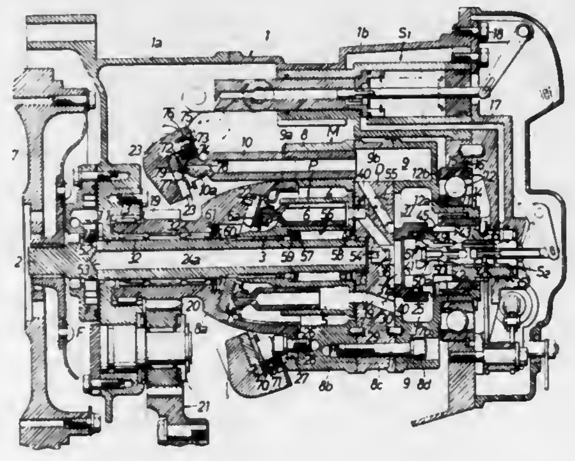
Marcel Schott, Fontenay-le-Fluer, France, assignor to Messier-Hispano-Bugatli (SA), Montrouge, France
Filed Apr. 2, 1982, Ser. No. 364,700
Claims priority, application France, Apr. 2, 1981, 81 06609
Int. Cl.^{3} F01B *13/04*
U.S. Cl. 91—486 **5 Claims**

1. Hydraulic pump comprising:
a hollow support casing,
a bearing block integral with said support casing,
a slide face provided at one end of said casing and bearing two ports respectively for suction and discharge,
a barrel mounted within said casing and capable of pivoting, on the one hand around an axis perpendicular to the surface of said slide face in said bearing block and, on the other hand, sliding against said slide face, said barrel comprising a plurality of hollow cylinders each having an opening leading to said slide face such that said openings pass over said ports when the barrel rotates,
pistons sliding in a sealed manner respectively in said cylinders,
means for controlling, when rotation is imparted to said barrel, on the one hand the movement of said pistons away from the opening of the cylinders in which they slide when this opening passes in front of the suction port and, on the other hand, the movement of said pistons toward the opening of said cylinders in which they slide when this opening passes in front of the discharge port, and
means for sequentially applying fluid pressure developed during pump operation by supply of hydraulic fluid to said suction port and prevailing in said cylinders on a given portion between said bearing block and a drum part of said barrel engaging said bearing block, and wherein the means for sequentially applying fluid pressure prevailing in said cylinders on a given portion between the bearing block and said drum part engaging said bearing block comprises cavities associated respectively with each set of cylinders and pistons sliding in the cylinders, said cavities being defined between said bearing block and said barrel, the pistons being designed in the form of cylindrical pieces comprising hollow recesses having an opening towards the side of said barrel cooperating slidably with said slide face, a channel providing communication between each cavity and cylinder with which it is associated, a hole in the wall of each piston between said recess and the exterior, said hole being located such that when the piston moves in its cylinder, it passes opposite the location where said communication channel leads into said cylinder, and such that said channel is otherwise being constantly closed off by the wall of said piston.



4,444,093
SLANT PLATE TYPE HYDRAULIC DEVICE

Kiyoshi Koga, Ooi; Kenichi Ikejiri, Kawagoe, and Eiichiro Kawahara, Tokorozawa, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 22, 1981, Ser. No. 313,983
Claims priority, application Japan, Oct. 22, 1980, 55-147690
Int. Cl.^{3} F01B *13/04*
U.S. Cl. 91—488 **8 Claims**

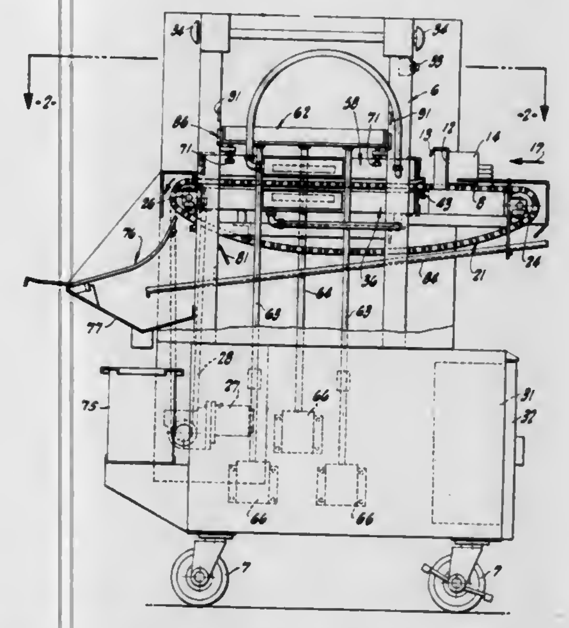


1. A slant plate type hydraulic device comprising:
(a) a frame;

(b) a cylinder rotatably mounted in said frame;
(c) a plurality of plunger means slidably fitted into said cylinder, said plunger means being positioned in a circular pattern about the axis of said cylinder;
(d) holder means;
(e) slant plate means wherein said holder means holds said slant plate means such that said slant plate means and cylinder are rotatable with respect to one another;
(f) a plurality of shoe means, each said shoe means being universally, rotatably mounted on one of said plunger means, wherein said shoe means are in sliding contact with said slant plate means; and
(g) biasing means for holding said shoe means in contact with said plate means, said biasing means comprising
a seat plate contacting said shoe means on a side thereof opposite to the side which contacts said slant plate means;
a press plate which is spline-connected to the holder means in an axially slideable manner;
bearing means between said seat plate and said press plate for permitting the relative movement therebetween; and spring means contacting said press plate for pushing said press plate, bearing means and seat plate toward said shoe means, thereby holding said shoe means in contact with said slant plate.

4,444,094
INTERMITTENT AUTOMATIC GRILL FOR HAMBURGER PATTIES

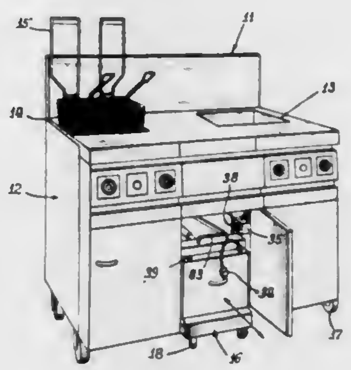
Edward D. Baker, San Francisco; Nils Lang-Ree, Los Altos, and John S. Brown, Half Moon Bay, all of Calif., assignors to Taylor Freezer Company, Rockton, Ill.
Filed Sep. 24, 1982, Ser. No. 422,893
Int. Cl.^{3} A47J *37/00, 37/04, 37/08*
U.S. Cl. 99—327 **7 Claims**



1. An intermittent automatic grill for hamburger patties comprising a frame, a lower platen having an upper cooking surface, means for fixing said lower platen on said frame with said upper surface substantially horizontal, supporting stops mounted for variable vertical positioning on said frame, an upper platen having a lower cooking surface, means for disposing said upper platen to rest on said stops in registry above said lower platen with said lower cooking surface substantially parallel to said upper cooking surface, means intermittently energizable and effective when energized for lifting and holding said upper platen relative to said frame and spaced above said stops, means for heating said lower platen and said upper platen, a chain conveyor having cross-bars spaced apart a distance greater than the diameter of a patty, means for mounting said chain conveyor on said frame for advancement of at least one of said cross-bars between said lower platen and said upper platen, means for advancing said conveyor intermittently, means on said frame for supporting a hamburger patty substantially level with and in the path of advancement of said cross-bar over said supporting means and onto said lower platen, means operating in time with the intermittent advancement of said chain conveyor for energizing and deenergizing said lifting and holding means, means on said frame for receiving a hamburger patty discharged from said lower platen by said cross-bar, and means interposed between said lower platen and said receiving means for guiding a hamburger patty therebetween.

4,444,095
DEEP FAT FRYER SYSTEM

Richard J. Anetsberger, and John A. Anetsberger, both of Northbrook, Ill., assignors to Anetsberger Brothers, Inc., Northbrook, Ill.
Filed Feb. 12, 1982, Ser. No. 348,361
Int. Cl.^{3} A47J *37/12*
U.S. Cl. 99—408 **11 Claims**



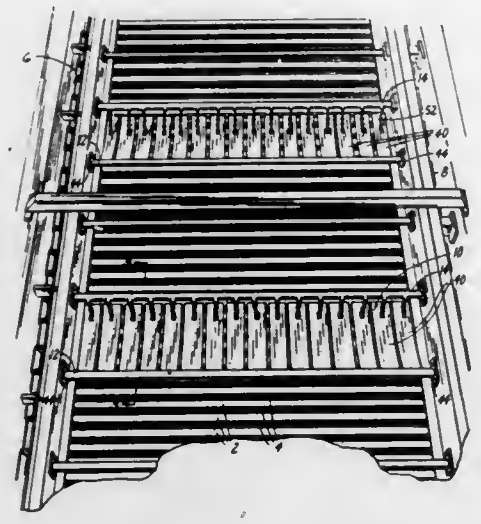
1. A deep fat fryer system comprising an outer cabinet, a fryer supported by said cabinet, including electrical control means, conduit means in said cabinet for supplying oil to said fryer, drain means disposed within said cabinet, selectively operable drain valve means interconnecting said fryer and said drain means, a portable filter unit having a motor driven pump mounted thereon, heater means mounted in the bottom of said filter unit employable to melt solid shortening placed in the latter, whereby the resulting liquid fat may be delivered to said fryer by said pump, quick-connector means for interconnecting said pump and said conduit means, auxiliary support rollers mounted on said filter unit, and track means secured to said cabinet for receiving and supporting said rollers to insure accurate alignment and connection of said connector means as said filter unit is being moved into operative position in said cabinet.

4,444,096
FRUIT PEELING ROLLERS

Jesus A. Silvestrini, and Juan C. Morsucci, both of Mendoza, Argentina, assignors to IMDEC S.R.L., Figueroa Alcorta, Argentina
Filed Oct. 29, 1982, Ser. No. 437,735
Int. Cl.^{3} A23N *7/00, 7/02*
U.S. Cl. 99—585 **4 Claims**

1. In a fruit peeling machine including a plurality of pairs of counter-rotating rollers carried by an endless member for movement along an endless path in which a portion of said path faces upwardly to support a fruit thereupon, the improvement comprising:
at least one of each said pair of counter-rotating rollers having a plurality of axially extending ribs projecting radially outwardly from the center of the roller and having roller intermediate portions extending between each said rib, said ribs projecting sufficiently radially outwardly to provide that contact between a supported fruit and said roller occurs substantially only with the radially outermost surfaces of said outwardly projecting ribs, and each said rib including on said radially outermost surface

a pointed toothed portion whereby the roller intermediate portions remain substantially out of contact with the fruit



to localize the contact pressure between the fruit and the roller upon said ribs and their toothed portions.

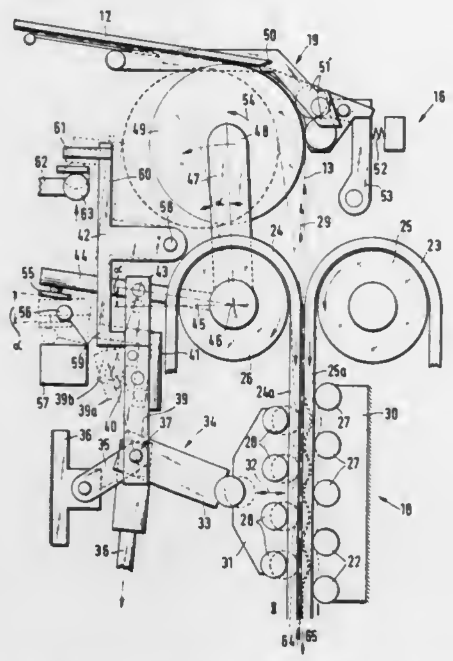
4,444,097
DEVICE FOR APPLYING AND TENSIONING A STRAPPING BAND AROUND A PACKAGE
Hubert Wehr, Bornheim; Karl-Heinz Schlosser, Bruhl, and Rolf-Gunther Fritze, Cologne, all of Fed. Rep. of Germany, assignors to Cyklop International Emil Hoffmann KG, Fed. Rep. of Germany

Filed May 10, 1982, Ser. No. 376,580

Claims priority, application Fed. Rep. of Germany, May 12, 1981, 3118712

Int. Cl.³ B65B *13/22*

U.S. Cl. 100—4 **10 Claims**



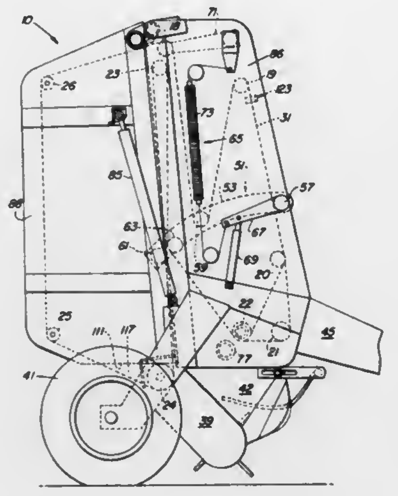
1. A device for applying and tensioning a strapping band around a package which comprises: a feed mechanism for feeding the band about the package; a tension device, having a pair of pressure members for nipping the band and for tensioning the band about the package; and control means connected to the pressure member of the tension device for causing the pressure exerted by the pressure member to be proportional to the tension in the band thereby preventing the band from slipping with respect to said pressure members.

4,444,098
CYLINDRICAL BALER WITH SELF-CLEANING GATE
Gust S. Soteropulos, Ottumwa, Iowa, assignor to Deere & Company, Moline, Ill.

Filed May 28, 1982, Ser. No. 382,885

Int. Cl.³ B30B *5/06*

U.S. Cl. 100—88 **10 Claims**



1. In a baler for forming cylindrical bales, said baler comprising:

a frame including a pair of parallel spaced sidewalls;

a plurality of rollers mounted on and extending between said sidewalls, a spaced pair of said rollers mounted adjacent a lower edge of said sidewalls;

a plurality of side-by-side, longitudinally extending, bale engaging belts supported on said rollers, transversely spaced between said sidewalls and defining a bale forming chamber with a throat through which crop material is fed, said belts having a belt span extending between said pair of said rollers and extending below said lower edge;

said sidewalls, said belts and said rollers defining a volume contiguous with said bale forming chamber; and

one of said pair of rollers defining the lowermost portion of said volume, the improvement comprising:

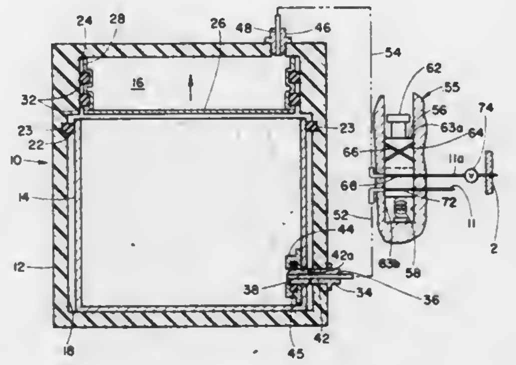
said belt span defining a pair of openings in said volume adjacent to said one roller for permitting crop material accumulated in said volume to escape.

4,444,099
AIRBORNE REFUSE COMPACTOR
Maurice Paleschuck, 140 Redwood Dr., Roslyn, N.Y. 11576

Filed Sep. 20, 1982, Ser. No. 419,741

Int. Cl.³ B30B *9/04*

U.S. Cl. 100—127 **11 Claims**



1. A refuse compactor for use within the pressurized cabin of an aircraft in flight comprising:

a. receptacle means for the collection of refuse; and

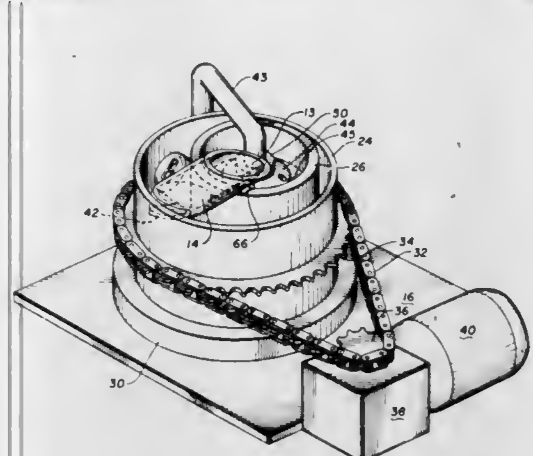
b. means actuated by the difference in cabin and outside pressures for compacting said refuse within said receptacle means.

4,444,100
CAN CRUSHING MACHINE
James T. Newman, Jamestown, N. Dak., assignor to Canmaster, Inc., Jamestown, N. Dak.

Filed Jan. 4, 1982, Ser. No. 336,576

Int. Cl.³ B30B *9/32*

U.S. Cl. 100—157 **6 Claims**



1. A machine for crushing cans comprising:

a base portion;

drum means having a drum wall with an inner surface generated about a central axis and a generally concentric outer surface, said drum means having a length in direction along the central axis, the drum wall terminating along a plane generally perpendicular to the central axis to define an interior chamber having a wall;

means to rotatably mount the drum means on the base portion for rotation about the central axis including bearing means positioned to the exterior of the drum wall and engaging the drum wall;

roller means positioned on the interior of the drum means and having an outer surface;

support means mounted on the base portion and including a section extending along the exterior of the drum means and spanning the drum wall;

means on the support means for rotatably mounting the roller means on the interior of the chamber with the outer surface of the roller means in engagement with the inner surface of the drum means for rotation about an axis parallel to the central axis;

means for spring loading the roller means against the inner surface of the drum wall with a force sufficient to crush a can introduced into a nip defined by the convergence of the outer surface of the roller means and the inner surface of the drum wall; and

drive means for rotating the drum means comprising an endless flexible drive member surrounding the outer surface of the drum wall at location along the length of the drum wall, and motor means mounted on the base driving the endless flexible drive member to thereby rotate the drum means and to move cans to be crushed engaged by the drum wall and roller means into said nip and past said roller means for crushing said can.

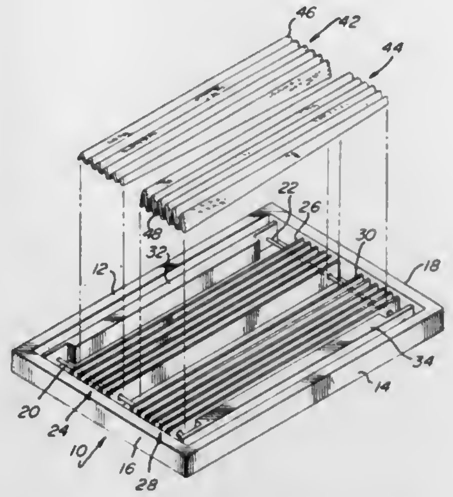
4,444,101
METHOD OF PRINTING LINES ON PLEATED FABRIC
Michael Weiner, 8 Darby Rd., Marlboro, N.J. 07746, and Jose Grajeda, 1964 Wall St., Rahway, N.J. 07065

Filed Feb. 14, 1983, Ser. No. 465,967

Int. Cl.³ B41F *17/00*

U.S. Cl. 101—35 **10 Claims**

1. A method of printing lines on pleated fabric or the like comprising the steps of supporting a pleated fabric by a plurality of thin horizontally disposed blades with the ridge of each pleat lying along the upper edge of a blade while the blades are spaced from each other, moving the blades towards each other to a compacted position so that only the ridges of the pleats are exposed above the blades retaining the blades in the compacted position while printing a pigment on said exposed ridges, moving the blades to a spaced apart position so that air may flow between the blades, then curing the pigment on said ridges while the ridges are supported by the blades, and then removing the fabric off the blades.

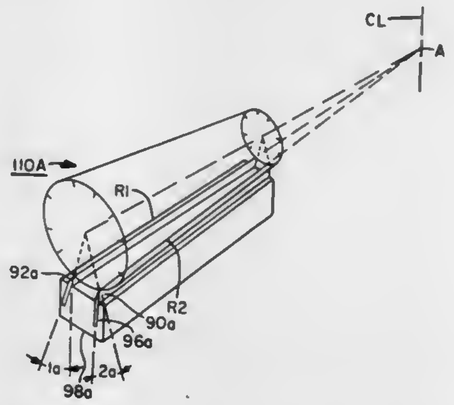


4,444,102
SELF ALIGNING DOCTOR/APPLICATOR BLADE ASSEMBLY
Edwin E. Clark, Knoxville, Pa.; William E. Lock, Horseheads, N.Y.; Paul E. Paiement, deceased, late of Horseheads, N.Y., and by Paula J. Miles, executrix, Erin, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Dec. 21, 1981, Ser. No. 332,724

Int. Cl.³ B41F *9/10, 17/28;* B41M *1/10*

U.S. Cl. 101—36 **30 Claims**



21. A method for applying inking fluid to an ink carrying surface comprising the steps of: mounting a conical surface for rotation about a central axis, establishing an apex for said conical surface along said axis; gimbal mounting at least one doctoring means having a pair of doctoring surfaces for engagement in close contact with the conical surface so that each doctoring surface will lie along a line of contact having a locus of points common with the conical surface and intersecting the apex of the conical surface, and rotating the conical surface about its axis while at the same time applying inking fluid thereon.

4,444,103
BELT-TYPE PRINTING MACHINE
Francis S. Cronin, Sunderland, England, assignor to Edward Thompson (International) Limited, Sunderland, England

Filed Sep. 29, 1982, Ser. No. 427,538

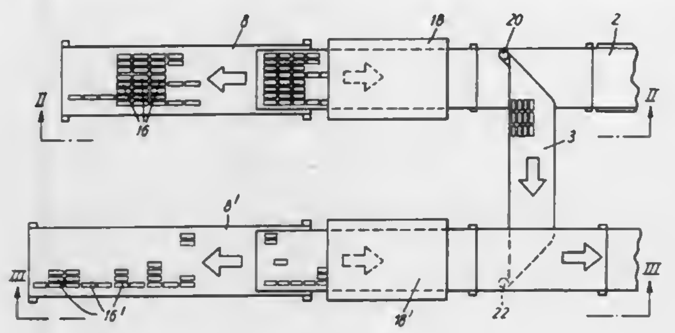
Claims priority, application United Kingdom, Oct. 7, 1981, 8130333

Int. Cl.³ B41J *1/18*

U.S. Cl. 101—93.13 **6 Claims**

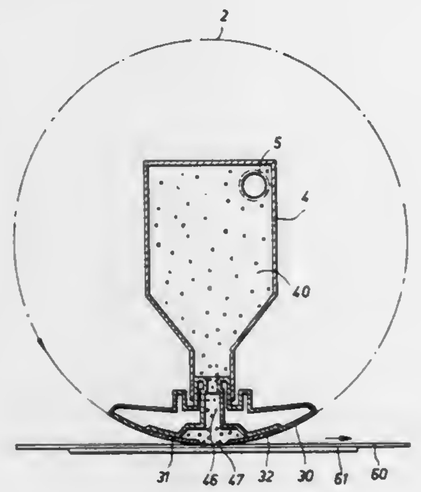
1. A belt-type printing machine for printing a plurality of

printed sheets, the machine comprising at least two endless belts, and an ordered sequence of printing plates of the same dimensions carried on each of said belts, each plate on a first belt being associated with the printing of a first sub-area of a sheet and each plate on the at least one further belt being associated with the printing of a further sub-area of the sheet, the first and further belts being of different lengths whereby said belts carry different numbers of printing plates thereon, the arrangement being such that, on controlled passage of a series of sheets past each endless belt in turn and on rotation of said belts to move the printing plates thereon at the same speeds, first and further sub-areas of each sheet are sequentially printed by the first and further belts respectively to produce a series of printed sheets each comprising a combination of sub-areas printed from printing areas on different belts, each rotation of a belt displacing the printing plates thereon relative to the plates on the at least one further belt whereby, on continuous rotation of the belts, a plurality of printed sheets each with different combinations of sub-areas thereon are printed.



4,444,104
APPARATUS FOR APPLYING A FOAMED TREATING MEDIUM TO A SUBSTRATE

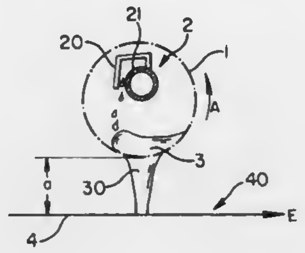
Mathias Mitter, Schloss Holte, Fed. Rep. of Germany
Filed Sep. 8, 1981, Ser. No. 300,171
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1980, 3034804
Int. Cl.³ B41L *13/06*
U.S. Cl. 101—119 **11 Claims**



1. Apparatus for applying a foamed treating medium to a workpiece, comprising a screen arranged to be located above a workpiece; first means defining above said screen an enclosed space having a predetermined volume and an opening facing said screen, the opening being closed by the workpiece and screen; second means communicating with said space for admitting a foamed treating medium into the same essentially uniformly within said enclosed space; and third means for foaming a treating medium and for supplying the foamed treating medium in adjustable quantities of liquid in the foam and volumes of gas in the foam to said second means so as to establish and maintain in said space an essentially constant pressure.

4,444,105
APPARATUS FOR APPLYING INK TO NAPPED FABRICS OR THE LIKE

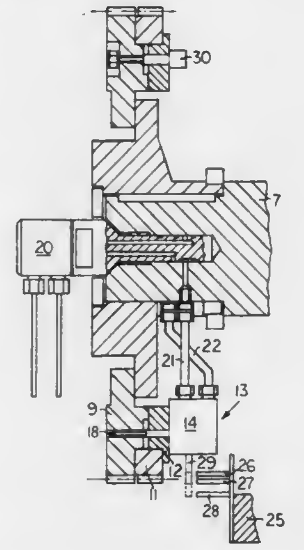
Mathias Mitter, Falkenstrasse 57, D-4815 Schloss Holte, Fed. Rep. of Germany
Filed Sep. 15, 1982, Ser. No. 418,414
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1981, 3137763
Int. Cl.³ B41L *13/00;* **B05C** *5/00*
U.S. Cl. 101—120 **30 Claims**



1. A screen printing apparatus, comprising a circulating hollow porous screen; means defining a path for the stock to be treated at a level below and spaced apart from said screen; and means for feeding into the interior of said screen at least one liquid medium which forms therein a pool and passes through the pores of the screen to descend onto the stock in said path exclusively by gravity and without contacting any mechanical parts intermediate said screen and the stock in said path.

4,444,106
ARRANGEMENT FOR SELECTIVELY CONNECTING COAXIAL GEAR WHEELS OF A GEAR TRAIN OF A DUAL MODE PRINTING MACHINE

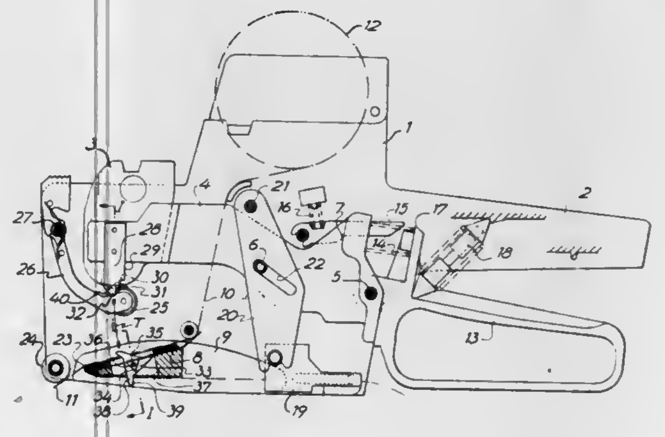
Werner Frenzel, Radebeul; Johannes Naumann, Coswig; Otfried Rudolph, Dresden; Gunter Peter; Karlheinz Fischer, both of Coswig; Alfred Schott, Radebeul, and Hans-Jürgen Tappert, Coswig, all of German Democratic Rep., assignors to Veb Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, German Democratic Rep.
Continuation-in-part of Ser. No. 330,773, Dec. 14, 1981, abandoned. This application Mar. 8, 1982, Ser. No. 355,537
Int. Cl.³ B41F *5/06, 13/00*
U.S. Cl. 101—183 **13 Claims**



1. An arrangement for selectively connecting and disconnecting two associated gear wheels of a gear train which are rotatable about a common axis axially adjacent to one another and axially movable relative to each other, especially for use in a printing machine which includes a plurality of printing units having respective rollers commonly driven by the gear train and which is selectively operatable in a first page printing mode and in a first and second page printing mode, said arrangement comprising a clamping element having at least a portion situated at an opposite axial side of one of the two associated gear wheels from the other of the two associated gear wheels and axially movable toward and away from the one gear wheel; and hydraulically operatable moving means for axially moving said clamping element between a first position in which it axially displaces the two associated gear wheels toward one another and presses the same axially against each other to establish rotationally entraining connection between the two associated gear wheels, and a second position in which it permits the two associated gear wheels to move axially away from each other to terminate the rotationally entraining connection and thus to release the two associated gear wheels for relative angular displacement about the common axis.

4,444,107
PORTABLE LABELING MACHINE

Werner Becker, Hirschhorn, Fed. Rep. of Germany, assignor to Esselte Pendaflex Corporation, Garden City, N.Y.
Filed Feb. 1, 1982, Ser. No. 344,880
Claims priority, application Switzerland, Feb. 16, 1981, 996/81
Int. Cl.³ B41J *5/00*
U.S. Cl. 101—288 **6 Claims**

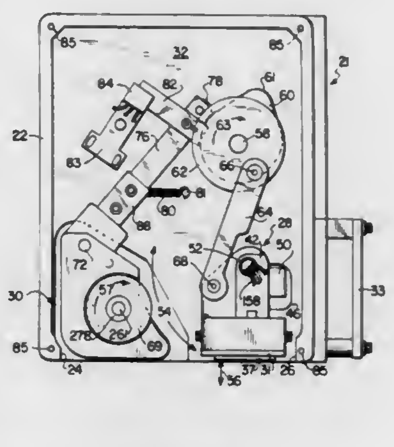


1. A portable labeling machine comprising a housing provided with a carrying handle, a printing assembly located in said housing, said printing assembly having a printhead with type selector and a print-platen adapted to meet each other for the typing of selected characters, stepping means for driving a continuous adhesive-backed label-bearing strip along a circuit passing over said print-platen, lever-shaped trigger means connected to said printing assembly and to said stepping means to cause upon each actuation thereof the typing of the selected characters on a label of the continuous strip and the advance of said strip, and means for separating the label from the continuous strip and dispensing the same towards the outside of the housing to permit adhesive attachment thereof to items to be labeled, the improvement of a device for preventing a second printing of characters on said label before release of the lever-shaped trigger means, comprising:

(a) at least one pusher, at least one stop, and at least one notch arranged on one of said printhead and print-platen;
(b) at least one rotary cam arranged for rotation by said pusher on the other of said printhead and print-platen;
(c) a plurality of fingers peripherally arranged on said rotary cam for selective sequential actuation by said pusher upon each typing and for successive movement against said stop and subsequently within said notch upon rotation of said rotary cam; and
(d) spring means assembled to the other of said printhead and print-platen for selectively controlling the rotation of said rotary cam whereby upon each typing, the pusher encounters said finger and rotates the rotary cam until the following finger comes against the stop, whereby upon movement apart of said printhead and print-platen as a result of rebound the said following finger engages into the notch by action of the spring means on the rotary cam, and whereby upon release of the lever-shaped trigger means the spring means further rotates said rotary cam to withdraw the said following finger from said notch and present said following finger to the next action of the pusher.

4,444,108
PRINTING APPARATUS AND PROCESS

Peter Jenness, III, Spofford, N.H., assignor to Markem Corporation, Keene, N.H.
Filed Aug. 4, 1982, Ser. No. 405,189
Int. Cl.¹ B41F *1/04*
U.S. Cl. 101—305 **18 Claims**



1. Printing apparatus comprising:
(a) a supporting frame,
(b) a printing member arranged for back-and-forth pivoting movement relative to said supporting frame along an arcuate path between a first position in proximity to a surface to be printed and a second position remote from said surface, said pivoting movement being centered about an axis,
(c) a printing element carried by said printing member for forming printed images on the surface to be printed,
(d) drive means for cyclically moving said printing member in opposite directions along said arcuate path from the first position to the second position and then back to the first position, said drive means including a source of rotary power having an output shaft,
(e) ink applying means mounted for rocking movement relative to said supporting frame along a path which intersects the arcuate path of the printing member, said ink applying means including a rotatable inking roll,
(f) actuating means coupled to said drive means for cyclically rocking said ink applying means in timed relation to the arcuate movement of the printing member, said rocking of the ink applying means being such that the inking roll is maintained out of contact with the printing element durin movement of the printing member in one direction and is brought into rolling contact with the printing device in order to apply ink thereto during movement of the printing member in the opposite direction, said actuating means comprising:
  (1) a rotatable cam affixed to the output shaft of the rotary power source,
  (2) a follower arm having acam follower at one end thereof, said follower arm being attached at its opposite end to the ink applying means in order to impart rocking motion thereto in response to the rotation of the cam, and
  (3) biasing means for urging said cam follower into contact with said cam.

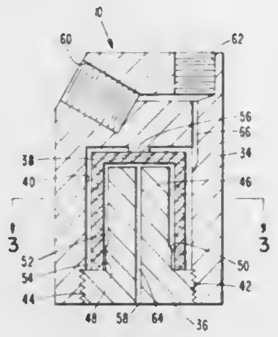
4,444,109
FLAME ARRESTOR DEVICE WITH POUROUS MEMBRANE

Lincoln S. Gifford, Jr., Lake Katrine, N.Y., assignor to Hercules Incorporated, Wilmington, Del.

Filed Nov. 19, 1982, Ser. No. 443,343

Int. Cl.^{3} F42D *5/00;* F17D *3/00*

U.S. Cl. 102—200 **22 Claims**



10. A combined flame arrestor and firing device for checking upstream flashback in an explosives detonation system activated by ignition means and a detonatable gas mixture under pressure, said device comprising, in combination

an arrestor housing having an upstream entry port opening to an interior housing well, a downstream exit port, a housing gas flow passage flowably interconnecting said exit port and said interior housing well, an ignitor housing containing ignitor means and an interior threaded port opening to said housing gas flow passage for mounting said ignitor means in contact with said detonatable gas mixture;

membrane holding means positioned within the entry port and housing well of said arrestor housing and endwise secured in gas-tight relation at the bottom upstream end of the arrestor housing, said membrane holding means having an outside diameter less than the corresponding inside diameter of the arrestor housing well and entry port to define an interspace along the inside top and sides of the arrestor housing; and

a gas-permeable flash resistant porous membrane positioned within said interspace and endwise secured in gas-tight relation to the membrane holding means whereby said interspace is partitioned into first and second gaps said first gap being positioned downstream of said flash resistant membrane in isolation from said second gap other than through gas-permeable pores in said membrane and flowably connected to said downstream exit port of the arrestor housing by said interconnecting housing gas flow passage, while said second gap is positioned upstream of said flash resistant membrane and flowably connected by interconnecting flow passage and flow passage entry through the membrane holding means to conveniently located gas feeding means upstream of said arrestor device;

whereby said explosive detonation system is safely activated for detonation by said ignition means without danger from upstream flashback.

4,444,110
ARRANGEMENT FOR GENERATING A FIRING SIGNAL FOR OVERFLIGHT-FLYING BODIES

Friedrich Lindner; Dietmar Stützle, both of Lauf, and Nikolaus Argyrakis, Nuremberg, all of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

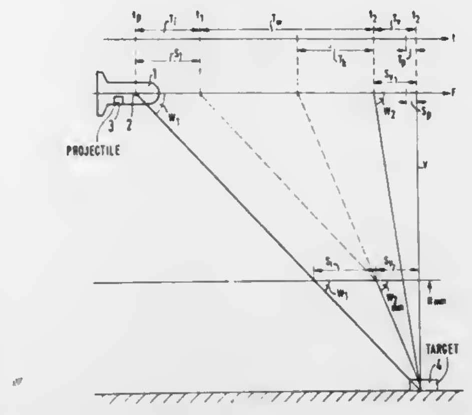
Filed May 25, 1982, Ser. No. 381,896

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1981, 3122252

Int. Cl.^{3} F42C *13/02*

U.S. Cl. 102—213 **4 Claims**

1. In an arrangement for the generating of a firing signal for a projectile conveyed in a flying body overflying a target, including a target identifying circuit requiring a processing time period for the identification of a detected target pursuant to predetermined characteristics, and wherein after a waiting time period dependent upon the flying altitude there occurs a lag time between the initiation of the firing signal and the ejection of target impact of the projectile; the improvement comprising: optical sensor means for target detection being arranged at a first acute angle relative to the flight path of the flying body, said angle being measured so that at a minimum flying altitude of the flying body the flying time from target detection to overflight of a vertical from the target is at least equal to the sum of the processing time period and lag time; means for positioning said sensor means upon identification of a selected target at a second acute angle which is larger than the first angle and takes into consideration the lag time, said second angle conforming to the lag time and an altitude-dependent corrective time, and said firing signal being triggered after the corrective time period when said identified target is below said second angle.



4,444,111
CROWD CONTROL PROJECTILE AND METHOD OF EJECTING SAME

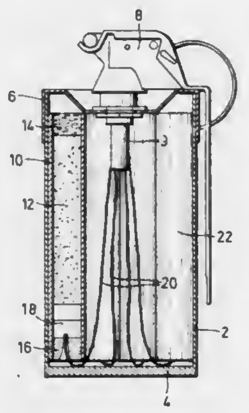
Willi Luebbers, Trittau, Fed. Rep. of Germany, assignor to Nico-Pyrotechnik Hanns-Juergen Diederichs KG, Trittau, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 080,052, Sep. 28, 1979, abandoned. This application Feb. 25, 1982, Ser. No. 352,369

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1978, 2842797

Int. Cl.^{3} F42B *4/14, 27/06*

U.S. Cl. 102—360 **11 Claims**



1. A projectile adapted for crowd control comprising a housing containing a first delay charge, at least one ejector and scatter charge, and a fuse acting on the first delay charge for igniting the ejector and scatter charge, a plurality of elongated cylindrical flash and acoustic charges disposed in separate containers which are adapted to be ejected from the housing by the ejector charge without destroying the housing upon the ignition of the ejector charge, the housing having a lid which is blown off by gas pressure generated by ignition of the delay charge in the container without destroying the housing, at least one flash and acoustic shock charge is arranged in each container which is operatively mounted in the housing together with said ejector and scatter charge, said ejector and scatter charge being adapted to be ignited by the first delay charge via at least one fuse cord connected to said fuse.

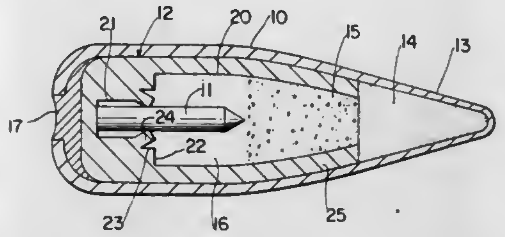
4,444,112
MULTI-CAPABILITY PROJECTILE AND METHOD OF MAKING SAME

Kaare R. Strandli, and Arne M. Ostlie, both of Raufoss, Norway, assignors to A/S Raufoss Ammunisjonsfabrikker, Raufoss, Norway

Filed Mar. 27, 1981, Ser. No. 248,539

Int. Cl.^{3} F42B *11/24*

U.S. Cl. 102—364 **7 Claims**



1. In a multi-capability projectile of the type having a heavy primary armour piercing penetration element surrounded over its full length by a secondary armour piercing penetration element which extends forward of the primary penetration element to form a cavity having a bursting chage therein, the secondary penetration element being constructed to splinter and fragment upon ignition of the bursting charge, and a nose portion ahead of the secondary penetration element and having an impact ignition charge therein, the improvement wherein:

said secondary penetration element has a rearward portion having a recess with a smaller internal diameter than the portion forward thereof and a radially extending, axially facing shoulder between the said recess and the portion extending forward thereof, the back end of the primary penetration element being cylindrical in shape and received in said recess, an annular groove formed in said shoulder, a portion of the shoulder located radially inwardly of the groove forming an annular rimmed part bent inwardly against the cylindrical side of the back end of the primary penetration element to hold the primary penetration element in the said recess of the rearward portion and hence stationary with respect to the secondary penetration element.

6. In a multi-capability projectile of the type having a heavy primary armour piercing penetration element surrounded over its full length by a secondary armour piercing penetration element which extends forward of the primary penetration element to form a cavity having a bursting charge therein, the secondary penetration element being constructed to splinter and fragment upon ignition of the bursting charge, and a nose portion ahead of the secondary penetration element and having only an impact ignition charge therein, the improvement wherein:

said secondary penetration element has a rearward portion having a recess with a smaller internal diameter than a portion forward thereof, a back end of the primary penetration element being cylindrical in shape, the cylindrical side thereof being positively held by the said rearward portion and extending forwardly thereof to form an annular part of said cavity between the front of a primary penetration element and the inside wall of the secondary penetration element forward of the said rearward portion, and an incendiary charge in said annular part, and said bursting charge being located in the cavity forward of the incendiary charge and the primary penetration element.

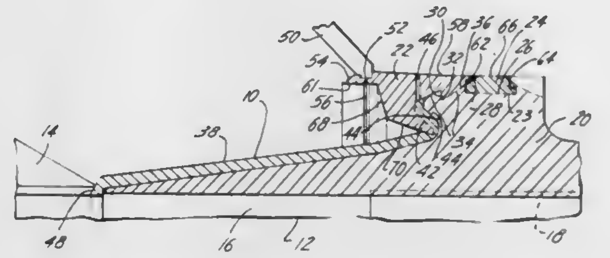
4,444,113
HIGH-PRESSURE SELF-SEALING OBTURATOR IN SABOT DISCARD PROJECTILE

Ralph F. Campoli, Mine Hill, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 6, 1981, Ser. No. 251,633

Int. Cl.^{3} F42B *13/16*

U.S. Cl. 102—430 **5 Claims**



1. A discarding sabot projectile assembly for a gun tube which comprises:

(a) sub-caliber projectile having a tail end and a tubularly shaped midsection, said midsection having a plurality of external concentric buttress grooves circumferentially disposed therein;

(b) segmented sabot assembly means surrounding said mid sections for use as a full caliber carrier for said sub-caliber projectile and for obturating propellant gases during projectile launch, which includes;

a plurality of sabot ramp surfaces on an outer surface of said sabot assembly means, said plurality of sabot ramp surfaces being tapered to a rear of said sabot means;

(c) a centering band seat operatively disposed in said sabot means;

(d) a centering band positioned in said centering band seat having a tapered face to a rear of the sabot means, said tapered face of said centering band being an extension of one of said sabot ramp surfaces a centering band during extrusion prevents initial low pressure gases from escaping; and

(e) a self-sealing obturator having an rearward extension for a mating case mouth cemented to the obturator to reduce movement of the obturator, and outer surface of the obturator conforming to chamber walls of the gun tube, and obturator ramp means in contact with said sabot ramp surfaces and said tapered face of said centering band for producing intimate contact between said outer surface of said obturator and said gun tube, said propellant gases forcing said obturator ramp means to slide on said sabot ramp surfaces and to continually feed material of the obturator between said gun tube and said centering band, and a retaining lip on said obturator ramp means to overlap a retaining surface on said plurality of sabot ramp surfaces on the sabot means which prevents said obturator from backing off during initial impact against bore walls of said gun tube.

4,444,114
MUNITIONS ROUND FOR BARREL-TYPE WEAPONS

Bernhard Bisping, Ratingen; Rudolf Romer, Kaarst; Klaus Gerbach, Willich, and Peter Wallow, Düsseldorf, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Aug. 21, 1979, Ser. No. 68,865

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1978, 2836963

Int. Cl.^{3} F42B *5/02*

U.S. Cl. 102—430 **10 Claims**

1. A munitions round for a barrel-type weapon, comprising:

an elongated casing having a closed rear end and an open forward end;

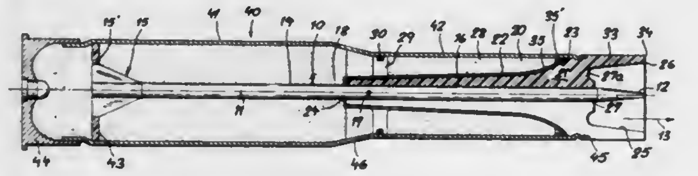
a fin-stabilized subcaliber elongated projectile disposed in said casing with clearance, said projectile having a large length/diameter ratio and a center of gravity between its ends;

a gas-generating propellant charge in said casing at least partly surrounding said projectile; and

an elongated drive body form-fittingly engaging said projectile and disposed at least in part forwardly of said center of gravity in the direction of propulsion of said projectile, said drive body being formed with:

a plurality of segments mutually contacting at angularly spaced confronting contact surfaces at which said segments separate upon emergence of the projectile from the barrel of said weapon,

a forwardly concave air-encountering surface formed by said segments and defined between a leading outer edge spaced radially from the periphery of said projectile and a trailing inner edge proximal to said periphery of said projectile and rearwardly of said outer edge,



an outer periphery of said body formed by said segments having a diameter substantially equal to the caliber of said barrel and engaged by said forward end of said casing,

at least one sealing member bridging the mutually confronting contacting surfaces and converging rearwardly toward the projectile away from said outer periphery, and

a continuous pressure-receiving surface extending rearwardly from said outer periphery of said body at a circular outer edge thereof to an inner edge proximal to the periphery of said projectile and axially rearwardly of said outer edge of said body, said pressure-receiving surface being of progressively decreasing diameter rearwardly and defining a space with said casing receiving a portion of said charge, said pressure-receiving surface being outwardly concave and curved at least in the region of said outer periphery of said body, the rate of decrease of said diameter being greatest in the region of said outer edge.

4,444,115

CARTRIDGE-TYPE MUNITION HAVING A DESTRUCTIBLE OR PARTIALLY COMBUSTIBLE CASING

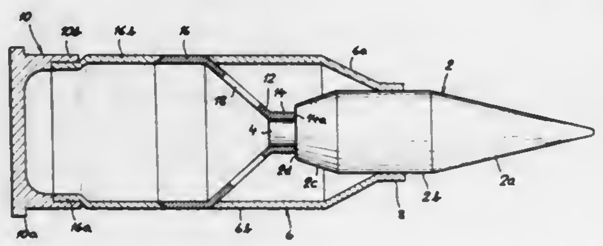
Rudolf Romer; Jürgen Winkelmann, and Horst Sabinski, all of Karst, Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Jun. 25, 1979, Ser. No. 54,152

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1978, 2828251

Int. Cl.^{3} F42B ***5/16***

U.S. Cl. 102—431 **16 Claims**



1. A cartridge-type munition round for a barrel-type weapon, comprising:

a projectile having a projectile body and an extension projecting rearwardly from said body;

a casing receiving said extension whereby the bulk of the projectile projects from the casing and secured to said projectile, said casing being adapted to contain a firing charge for the projectile, said casing being composed at least in part of combustible material, said casing having a forwardly converging neck at a forward end of the casing engaging said projectile around said body at a first location; and

a support element within said casing surrounding and engaging said extension at a location axially spaced from said neck, said support element extending at least in part radially inwardly from said casing to said extension, said support element having generally the configuration of a disk subdividing the interior of said casing into two charge-receiving chambers and formed with at least one opening communicating between said chambers, one of said charge-receiving chambers extending between said neck and said disk around said body, said support element being composed of the same combustible material as said casing.

4,444,116

MISSILE SUCH AS HAND GRENADE, NOTABLY FOR ANTITANK FIGHTING

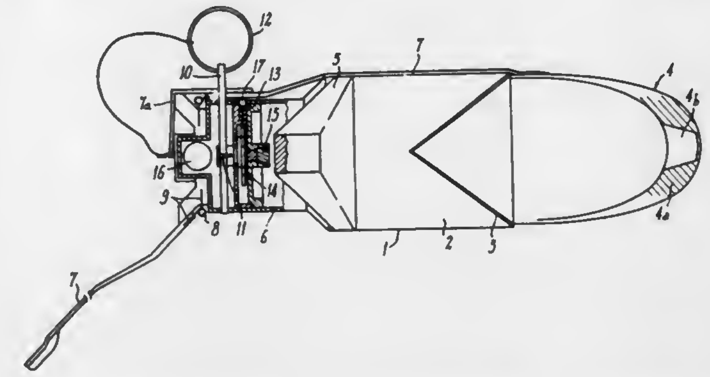
Luc Mitard, St Denis de Palin, and Claude Cabanel, St Florent sur Cher, both of France, assignors to Luchaire S.A., Paris, France

Filed May 19, 1982, Ser. No. 379,993

Claims priority, application France, Jun. 26, 1981, 81 12684

Int. Cl.^{3} F42B ***27/02***

U.S. Cl. 102—476 **5 Claims**



1. In a missile adapted to be thrown by hand, such as a hand grenade, said missile being of the type including a casing having opposite forward and rear ends, and a hollow charge within said casing and adapted upon detonation to form an explosive jet through said forward end of said casing, the improvement of means for rapidly stabilizing the trajectory of said missile after launching thereof such that said missile is capable of descending in a vertical position with said forward end down, said means comprising:

spreadable empannage means, attached adjacent said rear end of said casing and operable upon launch of said missile to spread outwardly from said casing, to aerodynamically stabilize said missile;

an ogive-shaped nosepiece attached to said forward end of said casing;

weight means in said nosepiece for additionally stabilizing vertical downward flight of said missile with said nosepiece positioned downwardly; and

said weight means having means for preventing interference with the explosive jet of said hollow charge upon detonation, said preventing means comprising a recess formed in said weight means and having a shape and dimensions to enable the explosive jet to pass therethrough.

4,444,117

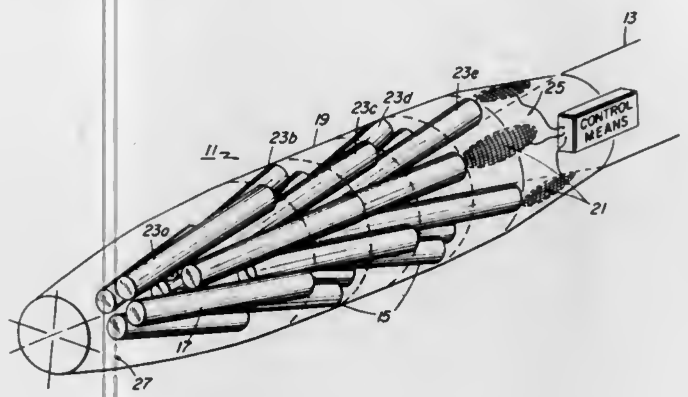
STACKED TUBE SUBMUNITION DISPENSER

Lawrence C. Mitchell, Jr., Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Mar. 30, 1981, Ser. No. 248,674

Int. Cl.^{3} F42B ***13/50***

U.S. Cl. 102—489 **10 Claims**



1. A stacked tube submunition dispenser comprising:

(a) an elongated dispenser housing having a forward and rear section and a central axis;

(b) a plurality of launch tube clusters disposed within said housing;

(c) each cluster having a plurality of fixed launch tubes arranged around the central axis of said housing and, for each cluster, said launch tubes having forward ends lying in a forward common plane, through said housing, and rearward ends lying in a rearward common plane,

(d) the launch tubes of adjacent clusters offset azimuthally from each other;

(e) said launch tubes of each cluster extending rearwardly and outwardly from the central axis of said housing in a substantially conical configuration and having a symmetry axis coincident with the central axis of said housing; and

(f) each cluster offset longitudinally along the housing central axis with respect to adjacent clusters and the forward common plane of at least one of said clusters lying between the forward and rearward common planes of an adjacent cluster to thereby form a fixed, nested configuration.

4,444,118

PROJECTILE, PARTICULARLY ARMOR-PIERCING SHELL

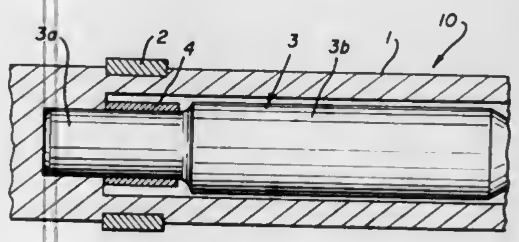
Dietrich Hoffmann, and Oswin Günther, both of Schramberg, Fed. Rep. of Germany, assignors to Mauser-Werke Oberndorf GmbH, Fed. Rep. of Germany

Filed Feb. 25, 1981, Ser. No. 237,907

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1980, 3009774

Int. Cl.^{3} F42B ***11/06***

U.S. Cl. 102—518 **2 Claims**



1. An armor piercing projectile, comprising: a ballistic hood; a shell **(1)** extending from said hood in an axial direction; a core **(3)** centrically positioned in said shell and having a head portion **(36)** with a large diameter and a rear portion **(3*a*)** with a diameter smaller than said large diameter; and a liner of pyrophoric material having a radial extent which is not greater than said large diameter of said head portion **(3*b*)** of said core **(3)**, said liner of pyrophoric material being composed of a plurality of hollow cylindrical bodies **(4*b*)** which are provided on said rear portion **(3*a*)** of said core and arranged in radial superposition, said liner of pyrophoric material being firmly connected to the rear portion by at least one of a press-fit, a cementing thereto and a screwed connection thereto, and said plurality of cylindrical bodies **(4*b*)** being formed of pyrophoric materials which are of different characteristics.

4,444,119

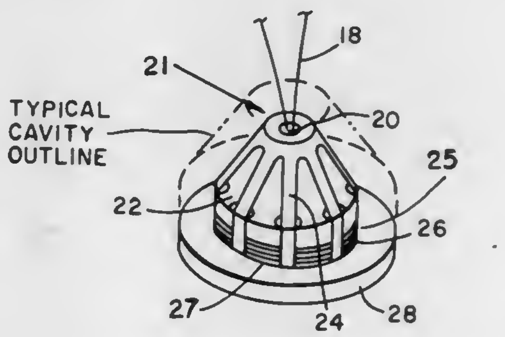
FAST RESPONSE IMPULSE GENERATOR

Elso R. Caponi, Longwood, Fla., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 2, 1982, Ser. No. 394,566

Int. Cl.^{3} F42B ***3/04***

U.S. Cl. 102—530 **3 Claims**



1. An electrically initiated explosively driven impulse generator comprising:

a. a body of inert substrate having upper and lower surfaces;

b. an explosive charge adjacent said lower surface of said inert substrate said explosive charge provided with an outer peripheral surface;

c. an explosive bridge disposed on said upper surface of said inert substrate; including

an explosive path means connected to said explosive bridge and including radially extending portions in engagement with said outer peripheral surface of said explosive charge;

d. electric initiator means disposed on said upper surface of said explosive bridge and connected to said explosive path means, and,

e. an impulse disc disposed adjacent said explosive charge.

4,444,120

TRACK-BOUND ELECTRIC MOTOR VEHICLE

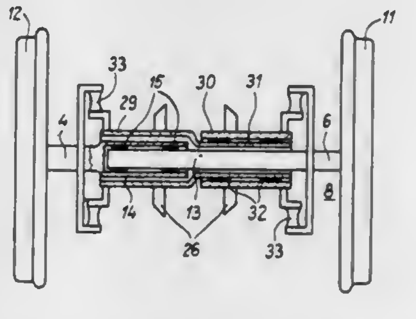
Günter Bille, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 17, 1981, Ser. No. 274,442

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1980, 3025278

Int. Cl.^{3} B61C ***9/44***

U.S. Cl. 105—131 **10 Claims**



1. In a track-bound motor vehicle including an axle having two wheels, electric motor means for driving each wheel and gearing for coupling the electric motor means to the wheels, the improvement comprising an axle having a separate shaft

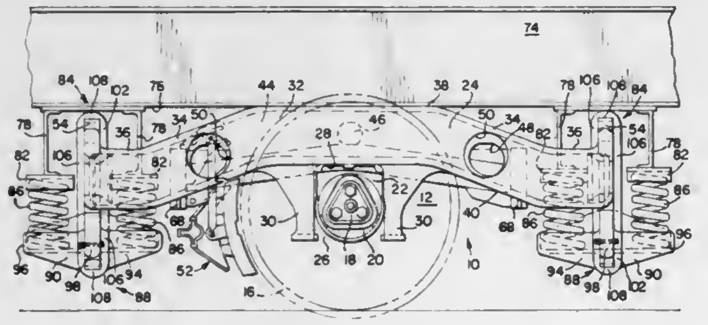
section coupled to each wheel, one of the shaft sections including a reduced dimension portion and the other of the shaft sections having a hollow portion which receives the reduced dimension portion of the one shaft section, bearing means for supporting the reduced dimension portion of the one shaft section in the hollow portion of the other shaft section, a hollow shaft surrounding each separate shaft section with clearance, one of the hollow shafts having a reduced dimension portion which is received in and supports the other of the hollow shafts, and an elastic coupling connected to each separate shaft section for elastically supporting the hollow shafts and coupling them to the separate shaft sections.

4,444,121

SINGLE WHEELSET RAILWAY TRUCK RIGID TRANSOM CONNECTED SIDEFRAMES

Lynn K. Tilly, Hinsdale, Ill., and James M. Kemper, Valparaiso, Ind., assignors to AMSTED Industries Incorporated, Chicago, Ill.

Filed Oct. 22, 1981, Ser. No. 313,945
Int. Cl.³ B61F *3/00, 5/24, 5/44*
U.S. Cl. 105—165 **5 Claims**



1. A side frame particularly adapted for use in a railroad car truck having a single wheelset, said side frame comprising,

a hollow, elongated body defined by spaced inner and outer side walls joined together by a top and bottom wall,

a bracket at each end of said body extending inwardly from end walls on said body,

said inner side wall formed with a pair of oblong shaped openings in spaced, sloped intermediate portions of said side frame to provide access to brake rigging of said truck, and

a pair of outer ribs formed within said body and integrally joined to said side walls and said top and bottom wall, one each of said pair of ribs located between said opening and said bracket respectively with each of said ribs in substantial alignment with a respective one of longitudinally spaced transom cross bars joining a pair of said side frames into a rigid unit.

5. A side frame particularly adapted for use with a single wheelset, said side frame comprising,

an elongated, hollow tubular body defined by an inner and outer side wall joined together by a top and a bottom wall with spaced end portions joined to said bottom wall to define in part a pedestal jaw to receive an axle end to said wheelset,

a pair of partial inner rib means located so that one of each is equidistant on each side of a center of said side frame and in substantial vertical alignment with an inner web member of each said pedestal jaw end portion, each of said inner rib means being integrally joined to an inside of said frame top wall and side walls,

a pair of intermediate rib means located one each equidistant on each side of said side frame center and in proximate vertical alignment with an outer end of said pedestal jaw end portions, each intermediate rib means joined to said inside of said side frame top and bottom wall and said side walls,

a pair of spaced raised portions formed as part of said side frame inner side wall, said raised portions positioned between said intermediate rib means and end walls of said side frame respectively with each said raised portion having an oblong-like shaped opening therein, and

a pair of spaced outer rib means located one each between said openings and said end walls respectively in substantial alignment with a transom cross bar joined to said inner side wall, each said outer rib means integrally joined to said inside of said side frame top and bottom wall and said side walls,

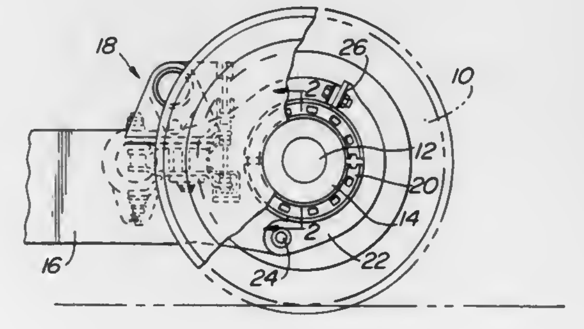
wherein said rib means transfer torsion and bending forces from said inner side wall to reduce an accumulation effect of said forces therein.

4,444,122

PRIMARY SUSPENSION SYSTEM FOR A RAILWAY CAR

William W. Dickhart, III, Fort Washington, Pa., assignor to The Budd Company, Troy, Mich.

Filed Aug. 27, 1981, Ser. No. 296,796
Int. Cl.³ B61F *5/30*
U.S. Cl. 105—224.1 **9 Claims**



1. In a railway truck having a side frame for receiving an axle disposed to ride on a journal bearing assembly,

a primary suspension system disposed between said journal bearing assembly and said side frame comprising:

(a) a first inner metal ring including two spaced segments;

(b) a second outer metal ring including two spaced segments;

(c) an elastomeric ring comprising two segments, each of said segments being disposed between and bonded to one of said first and second metal ring segments to permit said elastomeric ring to withstand higher stresses in said primary suspension system and to minimize creep therein;

(d) said elastomeric ring having a plurality of spaced cut-out portions therein and extending around said journal bearing assembly to provide a selected spring rate dependent on said cut-out portions;

(e) said first inner metal ring being in engagement with said journal bearing assembly; and

(f) said second outer ring being in engagement with said side frame,

whereby relatively soft spring rates in vertical and longitudinal directions are provided.

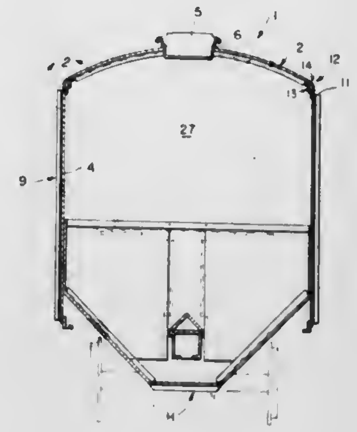
4,444,123

CURVED ROOF HOOPER CAR

Ryan M. Smith, Woodstock; David A. Stoller, Sr., Dunwoody; William B. Culler, Norcross, and Paul E. Wiesner, Cumming, all of Ga., assignors to Portec, Inc., Oak Brook, Ill.

Filed Dec. 9, 1981, Ser. No. 329,206
Int. Cl.³ B61D *17/12, 17/18, 17/39*
U.S. Cl. 105—377 **9 Claims**

1. A covered hopper car including, substantially vertically disposed side sheets each having a top edge, a roof sheet provided with centrally disposed hatch openings, said roof sheet extending outwardly and downwardly from said hatch openings and having opposite lateral edges spaced above and inwardly of said side sheet top edges, a top chord assembly spanning each spaced apart side sheet and roof sheet edge, each said top chord assembly comprising an outer cover element and an inner top chord, said top chord including a vertical side sheet leg and an opposite angular roof sheet leg, said top chord provided with a pair of offset portions substantially normal to one another and respectively joined to said angular leg and vertical leg, a smoothly curved juncture between said pair of offset portions and between each said offset portion and respective leg, said vertical leg flushly joined in an overlying manner to the interior surface of said side sheet adjacent said top edge, said angular leg flushly joined in an overlying manner to the interior surface of said roof sheet adjacent said lateral edge, said cover element including a curved configuration having opposite roof and side flanges, said outer cover element including a curved center section intermediate said roof and side flanges, said roof and side flanges substantially co-planar with and abutting said roof sheet lateral edge and side sheet top edge respectively, said roof flange overlying said top chord angular leg juxtaposed said roof sheet lateral edge and said side flange overlying said vertical leg juxtaposed said side sheet top edge whereby a smooth continuously descending exterior profile is defined by said cover element from said roof sheet adjacent said hatch openings to said side sheets.

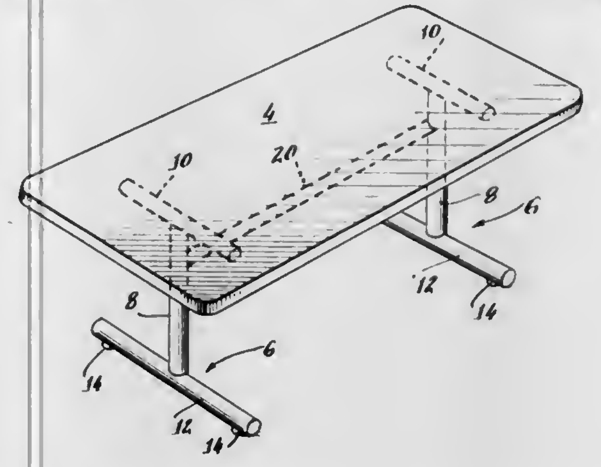


4,444,124

FOLDABLE TRESTLE TYPE TABLE

Alan C. Burr, East Norwalk, Conn., assignor to Howe Furniture Corporation, New York, N.Y.

Filed Oct. 26, 1981, Ser. No. 314,672
Int. Cl.³ A47B *3/00, 3/08;* **F16M** *11/38*
U.S. Cl. 108—131 **12 Claims**



1. A foldable table comprising:

a top having an upper and lower surface,

a pair of opposed legs and means for pivotally mounting said pair of opposed legs to the lower surface of said top, said pair of legs being selectively foldable between a first compact position in which said pair of legs are folded onto said lower surface of said top and a second unfolded, operative position in which said pair of legs are substantially normal to said lower surface of said top,

at least one latch carried by said means for pivotally mounting said legs to said top,

at least one of said pair of opposed legs having a slot defined therein and being so positioned such that said slot is aligned with and receives said latch only when said one leg is in said unfolded, operative position, for securing said leg in said unfolded, operative position by said latch received in said slot,

a trestle bar disposed between said pair of opposed legs,

means for movably connecting each end of said trestle bar to the leg adjacent thereto such that the range of relative movement between said legs and said trestle bar is between a first position in which said legs are normal to said trestle bar and a second position in which said legs are parallel to said trestle bar,

said trestle bar being parallel to said table top when said table is both in its said first compact position and its said second unfolded, operative position,

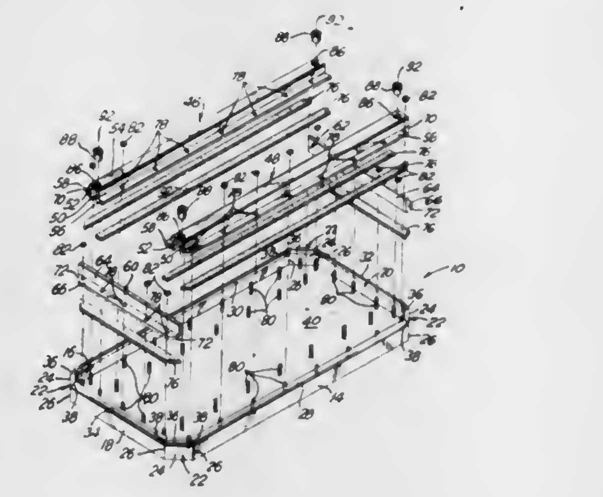
said legs being folded over said trestle bar and both of said legs and said trestle bar being parallel to said table top when said legs are in said first compact position.

4,444,125

KNOCK DOWN WORK TABLE

John H. Welsch, Moscow, and Rodney Brancher, Wilkes-Barre, both of Pa., assignors to Metropolitan Wire Corporation, Wilkes-Barre, Pa.

Filed Dec. 23, 1981, Ser. No. 333,995
Int. Cl.³ A47B *3/06, 3/12*
U.S. Cl. 108—155 **18 Claims**



1. A work table comprising:

a table top;

corner support posts for supporting said table top, recesses being provided on each post adjacent respective upper ends thereof;

a pair of matingly engaging sleeve sections for clamping about each support post, said sleeve sections being joined to provide a tapered exterior surface, protruding means being provided internally in each of said sleeve sections for locking into an associated one of said recesses on said support posts;

corner collar members having a respective tapered bore therein, said corner collar members being secured to an underside of said table top for receiving respective pairs of said sleeve sections and urging them into a secure clamping engagement on said support posts;

a support frame secured onto said underside of said table top, said collar members depending from said support frame; and

said support frame including a pair of elongated, side channel members, and a pair of elongated end angle members interconnecting said side channel members and closing off their respective open ends so as to provide a closed support frame.

4,444,126

APPARATUS FOR COMBUSTION OF A SUSPENSION OF COAL PARTICLES IN WATER

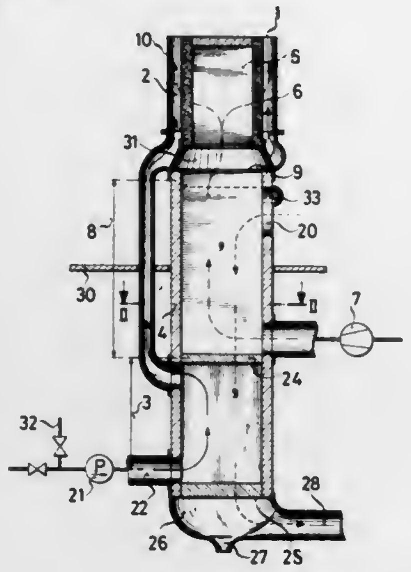
Seigfried Förster, Alsdorf, Fed. Rep. of Germany, assignor to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Continuation of Ser. No. 253,163, Apr. 10, 1981, abandoned. This application May 28, 1982, Ser. No. 382,927

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1980, 3014242

Int. Cl.³ F23G *7/00*

U.S. Cl. 110—238 **3 Claims**



1. A burner for the combustion of a suspension of coal particles in water, comprising:

means for preheating the suspension to a first temperature range;

first duct means for feeding said preheated suspension to a burner orifice;

a porous wall structure provided in the end portion of said first duct means near said orifice for introduction of hot air therethrough from an adjacent air duct and constituting a porous partition between said first duct means and said adjacent air duct;

means for preheating combustion supporting air to a second temperature range much higher than said first temperature range;

second duct means for leading said preheated air to said air duct adjoining said first duct means,

said air duct being closed off so that it has no exit other than said porous partition constituted by said porous wall structure, for permitting a pressure to be built up for causing said preheated air to flow into said suspension upstream of said orifice for substantial vaporization of the water of said suspension and admixture before the thus aerated suspension reaches said orifice.

4,444,127

INCINERATOR

Francis V. Spronz, Rochester, N.Y., assignor to Spronz Incinerator Corp., Rochester, N.Y.

Filed Jul. 23, 1982, Ser. No. 400,990

Int. Cl.³ B09B *3/00*

U.S. Cl. 110—235 **12 Claims**

1. An incinerator, comprising

a furnace having an arcuate ceiling the axis of which extends longitudinally of the furnace between its front and rear walls, respectively,

a retaining wall extending longitudinally of the furnace in spaced, parallel relation to its side walls, and operatively partitioning the furnace interior into primary and secondary combustion chambers, respectively,

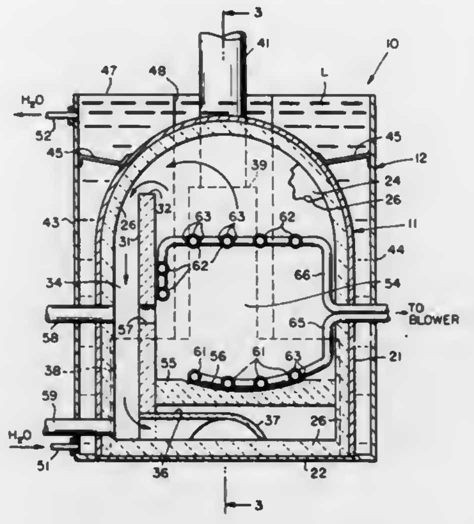
a hearth extending transversely across said primary chamber between said retaining wall and one side wall of said furnace,

means for supplying oxygen to said primary chamber to support combustion of waste material positioned on said hearth, and

means connecting said primary chamber to a smoke stack mounted at the rear of said furnace,

said means including an exhaust duct extending longitudinally of said furnace beneath said hearth and being sealed intermediate its ends from said primary chamber,

said duct opening at one end thereof adjacent the bottom of the secondary combustion chamber as defined by the space between said retaining wall and the other side wall of said furnace, and communicating at its opposite end with said stack, and



said retaining wall having the upper edge thereof disposed in spaced, confronting relation to said arcuate ceiling of the furnace, thereby to define a passage connecting the upper ends of said primary and secondary chambers, and having an opening therethrough adjacent its lower edge connected to said one end of said duct, whereby by-products of combustion in said primary chamber may pass downwardly through said secondary chamber and succcessively through said exhaust duct and said stack to the atmosphere.

4,444,128

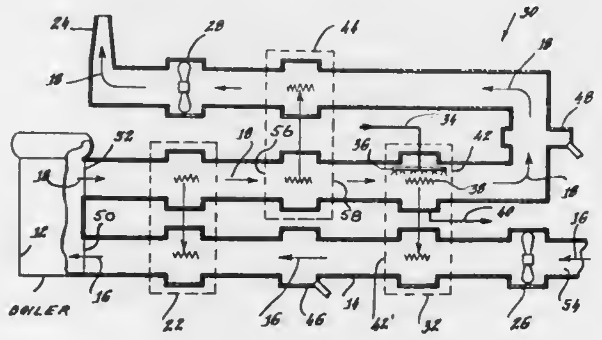
HEAT GENERATOR

Richard J. Monro, 41 Sunset La., Ridgefield, Conn. 06877

Continuation of Ser. No. 218,355, Dec. 19, 1980, abandoned, which is a continuation of Ser. No. 26,028, Apr. 2, 1979, abandoned. This application Jun. 4, 1982, Ser. No. 385,051

Int. Cl.³ F23J *11/00*

U.S. Cl. 110—345 **27 Claims**



1. In a method for operating a heat generator wherein a fuel, containing pollutants, is burned with an inflow of air to generate a hot combustion gas which, after transfer of heat therefrom, exhausts as a flue gas at an elevated temperature and contains particulates and gaseous pollutants, the improvement comprising the steps of:

passing the flue gas and the inflow of air through a heat exchanger for the transfer of heat from the flue gas to said inflow of air for a preheating thereof, wherein the heat exchange relationship with the inflow of air is sufficient to reduce the temperature of the flue gas from a transfer of heat therefrom to the inflow of air for an enhanced thermal efficiency of the heat generator, with the temperature of the flue gas being reduced by said transfer of heat by said heat exchanger to a level where at least one of said pollutants condenses out from the flue gas within the heat exchanger; and

simultaneously applying pollutant removing liquid onto the heat exchanger at a location enabling said liquid to remove, from the flue gas, pollutants and particulates while protecting said heat exchanger from removed and condensed corrosive pollutants and particulates.

4,444,129

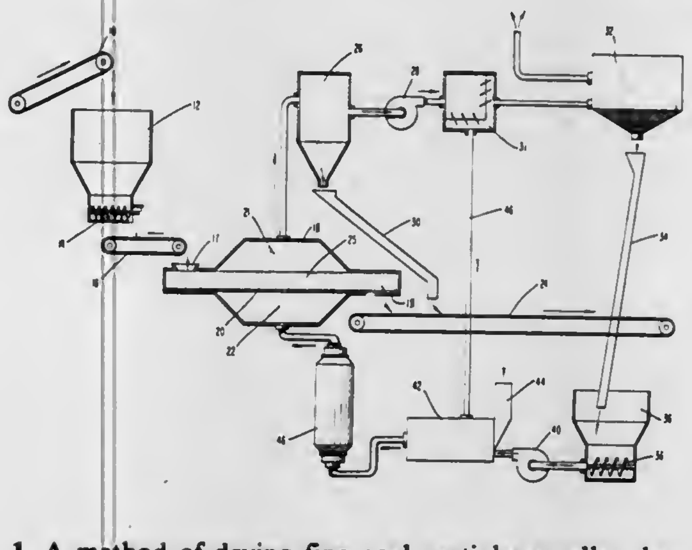
METHOD OF DRYING FINE COAL PARTICLES

Max A. Ladt, Paducah, Ky., assignor to Lecorp, Paducah, Ky.

Filed Nov. 5, 1982, Ser. No. 439,629

Int. Cl.³ F23D *1/00*

U.S. Cl. 110—347 **4 Claims**



1. A method of drying fine coal particles smaller than approximately 28 mesh in size, comprising the steps of:

(a) heating gases with a coal fueled burner;

(b) passing the gases heated by the burner through a regenerative separator to remove substantially all particulate ash particles therefrom to prevent ignition of the coal particles;

(c) passing coal particles to be dried from an inlet to an outlet of a fluidized bed type dryer;

(d) directing the gases from the regenerative separator through the fluidized bed dryer to dry the coal particles as they are passed therethrough;

(e) collecting dried coal particles for future use as fuel;

(f) recirculating the bulk of the gases to the burner prior to passing the gases through the regenerative separator, gases not recirculated being limited to that amount required to discharge water equivalent to that removed from the coal stream to be dried; and

(g) the step of passing the heated gases through the regenerative separator including the steps of providing rotational movement to the gases by intersecting curved blades positioned in the path of the heated gases, and removing the ash particles during the rotation of the gases through the side of the separator.

4,444,130

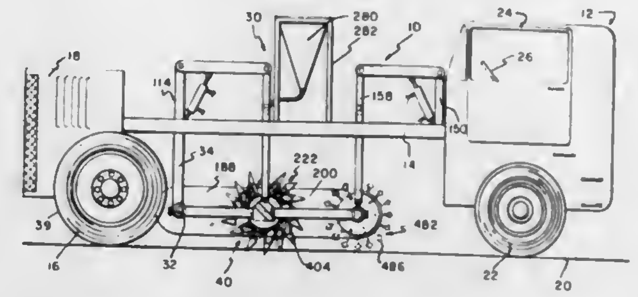
SEED PLANTING MACHINE

Frank L. Ray, Winfield, Kans., assignor to Gretchen L. Wilson, Marengo, Wis.

Filed Aug. 14, 1980, Ser. No. 178,135

Int. Cl.³ A01C *5/04, 5/06, 7/18, 7/20*

U.S. Cl. 111—1 **2 Claims**



1. In a planter of the class wherein a rotary planter wheel having a horizontal axis is provided with a plurality of discharge means circumferentially spaced about its periphery for discharging seeds, each of said discharge means being provided with means rotatable with the wheel for delivering seed from a position adjacent the axis of the wheel to the discharge means, and feed means for sequentially feeding individual quantitized portions of seed to individuals of the plurality of delivery means as they sequentially rotate by said position at a rate that is a function of the rate of rotation of the wheel in one direction, the improvement comprising each of said delivery means being operative to delay delivery of a quantized portion of seed fed thereto to the discharge means until at least a predetermined amount of rotation of the wheel in said one direction occurs following such seed portion having been fed to the delivery means, each of said discharge means comprising a planter shoe adapted for ground penetration, and means for rotating the wheel while translating the wheel horizontally in a direction normal to the axis thereof, and wherein the velocities of rotation and translation are maintained directly proportional to each other and are so related that the shoes in the lowermost portion of their movement have a resultant horizontal velocity component relative to the axis of the wheel that is greater than and opposite in direction to that of wheel translation, whereby the planter shoe moves rearwardly relative to the ground penetrated thereby, a packer wheel having a horizontal axis parallel to that of the planter wheel, means for horizontally translating the packer wheel in the same direction and at the same velocity as that of the planter wheel with the packer wheel trailing the planter wheel with respect to the direction of translation, said packer wheel having a plurality of circumferentially spaced feet, with each of said feet being adapted to push soil into small earthen depressions over which the same may be moved during translation and rotation of the packer wheel, means for rotating the packer wheel in the same direction and at a rate proportional to the rate of rotation of the planter wheel, with said packer wheel rotating at a rate such that the feet during the lowermost portion of their travel have resultant horizontal velocity component less than and in the same direction as that of the translation of the wheels, and with the shoes, feet, and velocities of translation and rotation being so selected and arranged that sequentially lowermost feet successively occupy the same spaces as previously occupied sequentially by lowermost shoes, a power drive means common to both of said means for rotating the wheels, whereby the drive requirement for the planter wheel is partially met by the packer wheel, wherein said planter and packer wheels are respectively provided with a planter axle and a packer axle in axial alignment and rotatable therewith, a drive shaft parallel to and disposed forwardly of said planter and packer axles, a planter frame mounted on the drive shaft for vertical swinging movement about the axis thereof, said planter axle being journaled in said planter frame, a packer frame mounted on the planter axle for vertical swinging movement about the axis thereof, said packer axle being journaled in the packer frame, a

vehicle inclusive of a frame and a traction wheel, said drive shaft being carried by the vehicle frame, a prime mover drivingly connected to the drive shaft and the traction wheel, said drive shaft being drivingly connected to the planter axle with the latter being drivingly connected to the packer axle, a first fluid powered means for adjustably applying a supporting force to the planter axle from the vehicle frame, and a second fluid powered means for adjustably applying a supporting force to the packer axle from the vehicle frame.

4,444,131
SEEDLING PLANTING MEANS

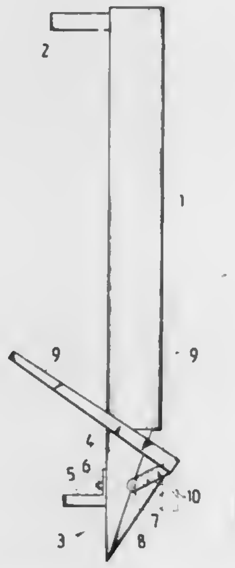
Toivo Marttinen, Puntala, Finland, assignor to T. Marttinen Ky, Puntala, Finland

Filed Nov. 18, 1982, Ser. No. 442,837

Claims priority, application Finland, Nov. 20, 1981, 813685; Feb. 24, 1982, 820609

Int. Cl.^{3} A01C *11/02*

U.S. Cl. 111—4 **2 Claims**



1. Improvement in a seedling planting means comprising a planting tube provided with a handle and having on its lower end a crown which produces in the soil a planting hole, this crown comprising on the continuation of the planting tube a stationary jaw tapering in wedge fashion towards its tip and having a cross sectional shape conforming to that of the planting tube, and to the lateral margins of this jaw having been affixed pivot pins located in the vertical plane passing through the planting tube's centre-line, on these pivot pins being turnably carried a moving jaw, likewise tapering in wedge fashion in its tip portion, and a yoke lever with U-shaped legs, to the bow part of which has been affixed a pedal lever located on one side of the planting tube, by depressing which the jaw can be made to assume its opened, planting position, in which it is securable with a locking means comprising, affixed to the stationary jaw on the side opposite to the pedal lever, a substantially vertical elastic metal wire provided with two bends spaced from each other vertically and serving as upper and lower dead-point, and this locking means furthermore comprising, belonging as an integral part to the movable jaw, a lug rotatably carried on the pivot pin on the side of the wire and carrying at its tip a pin departing to some distance in lateral direction, wherein the improvement comprises that the yoke lever has been attached to one end of the pedal lever at an acute angle pointing downward therefrom, and that the length of the legs of the yoke lever is equivalent to the distance of the upper end of the movable jaw from the pivot pins so that on pressing down on the pedal lever the bow part of the yoke lever comes into contact with the upper end of the jaw, compelling the jaw to turn about the pivot pins, whereat as the lug is set into a circular motion the pin becomes detached from the bend constituting the upper dead point and slides on the surface of the wire to the bend constituting the lower dead point, becoming locked there by effect of the elasticity of the wire.

4,444,132
YARN BREAKAGE STOP MOTION DEVICE FOR TEXTILE MACHINES

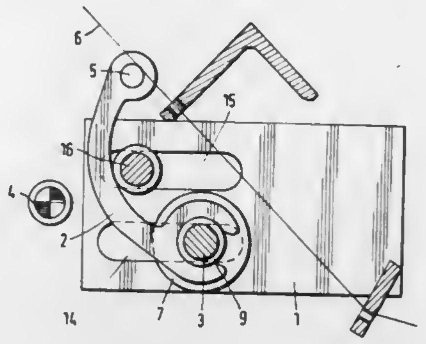
Alfred Breitenbach, Fulda, Fed. Rep. of Germany, assignor to Dura Tufting GmbH, Fulda, Fed. Rep. of Germany

Filed Sep. 10, 1982, Ser. No. 416,674

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1982, 3200524

Int. Cl.^{3} D05C *15/00*

U.S. Cl. 112—79 R **11 Claims**



1. A yarn breakage stop motion device comprising:
a support frame;
a carrier axle mounted on said support frame;
a plurality of plate members having two end portions;
a closed eye in the first of said end portions for guiding the passage of yarn therethrough;
an eye with an aperture in the second of said end portions;
means for pivotally and removably mounting said plate members to said carrier axle whereby each plate is held up by yarn passing through its closed eye and drops, pivoting about said axle when the yarn passing through its closed eye breaks, said mounting means comprising:
a plurality of spacer rings mounted on said carrier axle;
means for securing said spacer rings against one another; and
an annular shoulder on each spacer ring surrounding said carrier axle, said shoulder having an external diameter corresponding to the diameter of said eye in the second of said end portions;
wherein the said aperture has a width greater than the diameter of said carrier axle and less than the external diameter of said shoulders; and
means for sensing the dropping of one of said plate members in response to breakage of the yarn passing through the closed eye thereof.

4,444,133
EMBROIDERING MACHINE HAVING COORDINATE MOVEMENT CONTROL FOR A WORK CARRIER WITH A DISENGAGEABLE CLUTCH

Kurt Bolldorf, Kaiserslautern, and Gottfried Schmidt, Stebach, both of Fed. Rep. of Germany, assignors to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

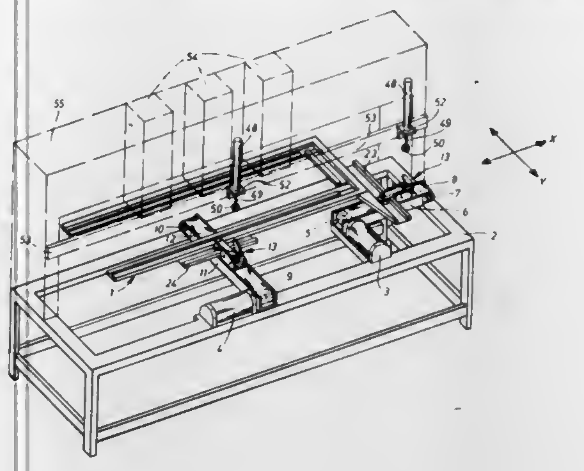
Filed May 2, 1983, Ser. No. 490,353

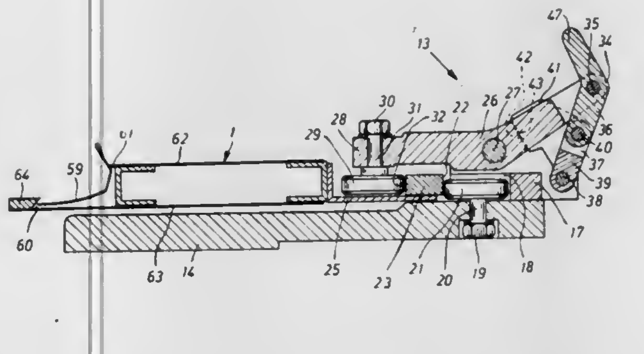
Claims priority, application Fed. Rep. of Germany, May 13, 1982, 3217962

Int. Cl.^{3} D05C *9/02*

U.S. Cl. 112—103 **6 Claims**

1. A workpiece moving device for an embroidering machine having at least one embroidering head, comprising a work carrier, at least one coordinate control mechanism connected to said work carrier for shifting said carrier along at least one coordinate backwardly and forwardly in respect to the embroidering head and in accordance with the embroidery pattern to be imparted to the workpiece, said control mechanism including a coordinate movement member movable along the coordinate and a clutch member connected to said member movable therewith, and engagement means associated with said clutch mechanism engageable with said work carrier upon actuation of said clutch mechanism to move said carrier with said coordinate movement member.





4,444,134
COMPUTER CONTROLLED PATTERN STITCHING MACHINE

Hisaichi Maruyama, Hyogo, and Kohichi Ohniwa, Aichi, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

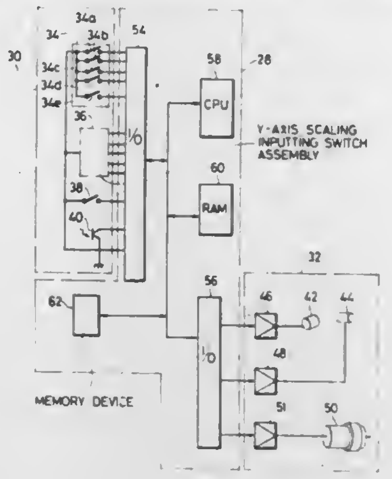
Filed Sep. 10, 1981, Ser. No. 300,825

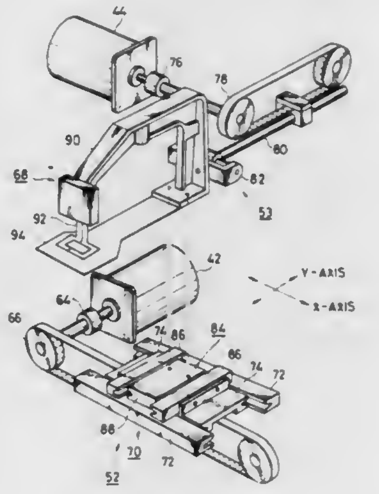
Claims priority, application Japan, Sep. 19, 1981, 55-130168

Int. Cl.^{3} D05B *21/00*

U.S. Cl. 112—121.12 **4 Claims**

1. A pattern stitching machine, comprising:
drive means (32) including cloth feeding devices driven by electric motors (42, 44);
control means (28) including a memory device (62) for storing data for controlling the driving of said electric motors, and a microcomputer (58) for controlling the operation of said drive means and said cloth feeding devices; and
input means (30) for supplying control instructions to said control means,
said control means operating to enlarge or contract a pattern to be stitched in response to control instructions from said input means and to read said drive control data out of said memory device sequentially to control the drive of said electric motors, wherein said drive means includes an X-axis cloth feeding pulse drive motor (42), a Y-axis cloth feeding pulse drive motor (44), and a sewing machine drive motor (50), and wherein said drive means further comprises an X-axis cloth feeding device (52) having said X-axis drive motor coupled thereto through a coupling (64) to a first timing belt (66), an X-axis rail member (70) on which a cloth holding device (68) is disposed for movement in the X direction, said X-axis rail member comprising X-axis stationary rails (72) mounted on a machine bed, and a first moving plate (74) which is mounted through bearings on said stationary rails and which is secured to said first timing belt to move therewith in the X direction, and a Y-axis cloth feeding device (53) having said Y-axis drive motor (44) disposed orthogonal to said X-axis drive motor and fixedly secured to a machine arm coupled to said Y-axis feeding device through a coupling (76) to a second timing belt (78), a bearing (82) being provided at the end of a shaft (80) secured to the second timing belt to move therewith in the Y direction, said cloth holding device being secured to the end of said bearing, a Y-axis rail member (84) mounted on said X-axis rail member orthogonal thereto, said Y-axis rail member having Y-axis stationary rails (86) secured orthogonal to said moving plate of said X-axis rail member, and a second moving plate (88) mounted on said Y-axis stationary rails through bearings, said cloth holding device being secured on said second moving plate of said Y-axis rail member and comprising said bearing, a cloth retaining arm (90) secured to said second moving plate, a cloth retainer (92) provided at the end of said cloth retaining arm, and a cloth retaining lower plate (94) provided below said cloth retainer.





4,444,135
PROGRAMMING DEVICE FOR AN AUTOMATIC SEWING MACHINE

Toshiaki Yanagi, and Yoshinori Bessho, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Aug. 13, 1982, Ser. No. 407,801

Claims priority, application Japan, Sep. 3, 1981, 56-139378; Sep. 3, 1981, 56-139379

Int. Cl.^{3} D05B *21/00*

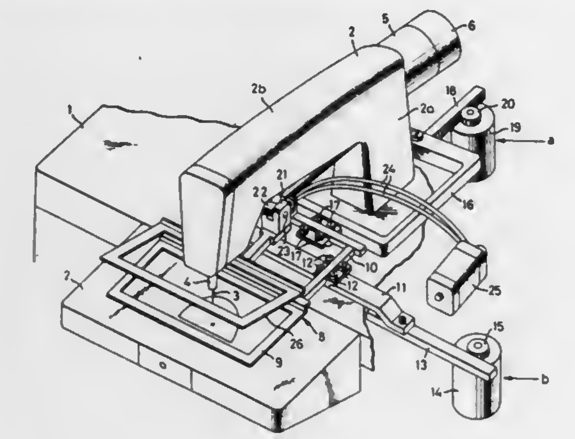
U.S. Cl. 112—121.12 **7 Claims**

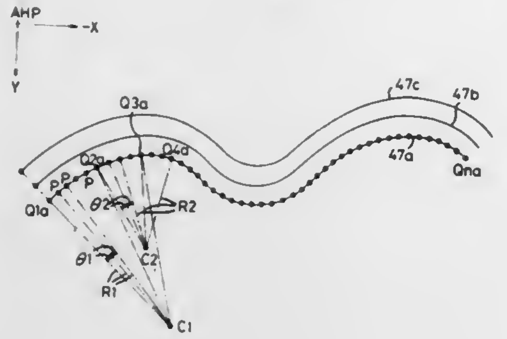
1. A programming device for an automatic sewing machine, wherein a succession of stitches are formed by relative movements between a needle and a work holder according to a batch of sewing instructions corresponding to a desired profile registered via a pattern record medium, said programming device comprising:
stitch pitch setting means for setting a pitch of said stitches;
reading means for sequentially reading coordinate positions

spaced along said profile at an interval longer than said pitch set by said setting means;

first memory means for storing coordinate data of said coordinate positions read by said reading means;

first control means for sequentially reading out said coordinate data from said first memory means such that the coordinate data of three consecutive ones of said coordinate positions are always available;





second control means for preparing a series of sewing instructions to form the stitches which are located on a circular arc passing the three consecutive coordinate positions defined by said coordinate data thereof and equally spaced at the pitch set by said setting means; and

second memory means for storing said sewing instructions prepared by said second control means.

4,444,136

DEVICE FOR INTERRUPTING A NEEDLE BAR DRIVE

Heinz-Georg Slomma, Viersen, Fed. Rep. of Germany, assignor to Maschinenfabrik Carl Zangs Aktiengesellschaft, Krefeld, Fed. Rep. of Germany

Filed Jul. 7, 1982, Ser. No. 395,900

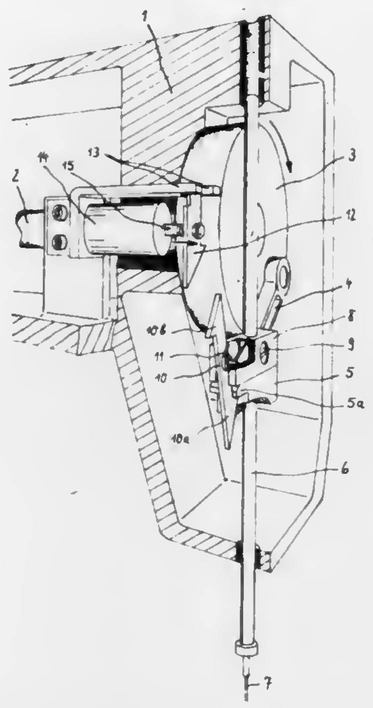
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1981, 8120717[U]

Int. Cl.³ D05B *55/16*

U.S. Cl. 112—221 **17 Claims**

1. In a device for temporarily interrupting the movement of an embroidery needle on an automatically controlled embroidery or sewing machine having a housing and at least one needle bar adapted to be driven by a connecting rod and a crank from a drive shaft, on which needle bar there is fastened a driver couplable, by means of a shift pawl formed as a double-armed lever, with a drive carriage pivotally connected to the connecting rod, the shift pawl being movable in a plane of movement by forces on the shift pawl, one arm of the lever cooperating with a catch formed on the drive carriage and respectively the other arm of the lever cooperating by form-interlocking with a holding pawl for holding the needle bar fixed in an upper dead-center position with simultaneous disconnection from the drive carriage, and an actuating means for controlling the holding pawl, the improvement comprising

holding means at least partly non-movably connected to the housing for holding by housing holding forces the holding pawl in a form-interlocking engagement against the shift pawl, counter to the forces of the shift pawl such that by the form-interlocking engagement between the holding pawl and the shift pawl, the holding forces are transmitted via the housing and not operatively via the actuating means,



said actuating means is for moving the holding pawl at least partly out of the plane of movement of the shift pawl.

4,444,137

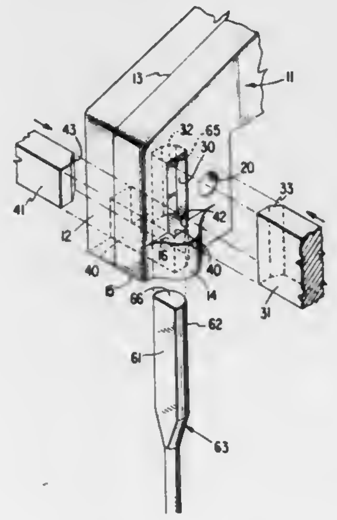
SEWING MACHINE NEEDLE CLAMP

Gary W. Ponte, Passaic, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Apr. 4, 1983, Ser. No. 481,546

Int. Cl.³ D05B *55/04*

U.S. Cl. 112—226 **4 Claims**



1. A sewing machine needle clamp for accommodating in only one predetermined orientation the cylindrical butt of a sewing machine needle formed with a lengthwise flat at one side,

a needle carrying member having a free extremity,

said needle carrying member being formed with a plurality of interdigitated recesses, each of said recesses projecting only part way into said needle carrying member from mouths arranged on opposite sides thereof,

said recesses overlapping each other and formed with contiguous complementary surfaces,

that one of said recesses which is closest to the free extremity of said needle carrying member communicating with said free extremity at least along that segment of its length which is opposite to the overlapping portions of said plurality of recesses,

the same one side of each of said plurality of recesses being formed substantially flat over its entire length,

the opposite side of each of said plurality of recesses being formed with a filleted corner,

whereby a composite needle butt accommodating channel is provided in the needle carrying member extending from the free extremity and successively through each of said plurality of recesses, said composite needle butt accommodating channel conforming generally in cross sectional shape to that of a cylindrical sewing machine needle butt with a lengthwise flat at one side,

and clamp means carried by said needle carrying member and engageable adjacent the mouth of one of said recesses with the cylindrical butt of a sewing machine needle inserted into said needle butt accommodating channel.

4,444,138

THREAD CONTROLLING MECHANISM FOR MULTIPLE NEEDLE SEWING MACHINE

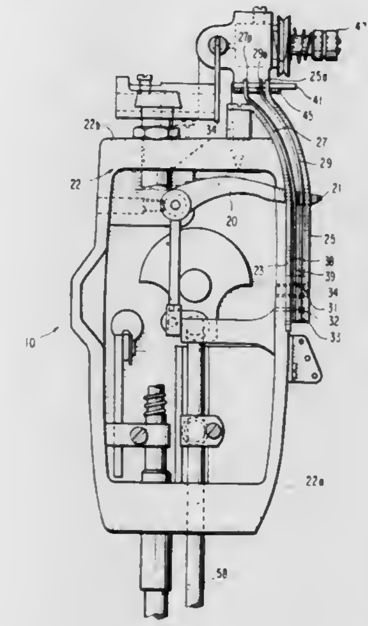
Masayuki Yamazawa, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed May 2, 1983, Ser. No. 490,894

Claims priority, application Japan, May 7, 1982, 57-076362

Int. Cl.³ D05B *49/00*

U.S. Cl. 112—241 **4 Claims**



1. A sewing machine comprising three selectively operable needle bars mounted for reciprocation in the free end of the sewing machine arm, a take-up lever mounted for vertical oscillating movement in said arm and adapted to be operably engaged with three threads leading to needles on said needle bars, first and second stationary plates secured together and superimposed in parallel spaced relation on said arm with each plate having elongated slot means through which said take-up lever extends, first and second flexible plates secured at the lower end thereof between said first and second stationary plates and having elongated slot means therethrough aligned with the slot means in said first and second stationary plates through which said take-up lever extends, spacer means disposed between the lower end portion of said first and second flexible plates and between the lower end portions of said first and second flexible plates and said first and second stationary plates to define first, second and third thread passages between said plates for said three yarns, respectively, whereby upon vertical oscillating movement of said take-up means said threads can be moved vertically in said thread passages between said plates, and operating means for selectively controlling the position of the upper end portions of said first and second flexible plates for selectively clamping any two of said threads in the vicinity of the top dead center position of said take-up lever when all of said threads have been lifted to said position by said take-up lever.

4,444,139

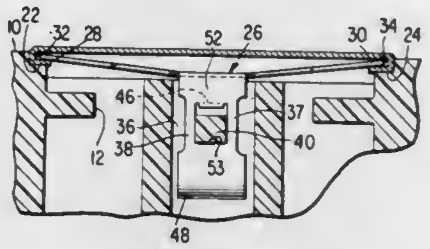
ARRANGEMENT FOR SECURING IN A SLIDE PLATE HOLD-DOWN SPRING IN A SEWING MACHINE BED

Walter H. W. Marsh, Scotch Plains; John Patricia, Elizabeth, and Alfred Mack, Bayonne, all of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Dec. 10, 1982, Ser. No. 448,669

Int. Cl.³ D05B *73/12*

U.S. Cl. 112—260 **7 Claims**



1. In combination, a sewing machine bed including a well with a protuberance therein projecting from a wall of the well, a slide plate receivable on a seat provided in the bed, and a hold-down spring for the slide plate including wings to engage the slide plate above the elevation of the seat and apply a downward force to the plate, the depending portion of the spring including a window in which the protuberance engages the spring to prevent the spring from being moved upwardly, said depending portion of the spring being formed to extend into engagement in the well with a wall on the opposite side of the well from said protuberance.

4,444,140

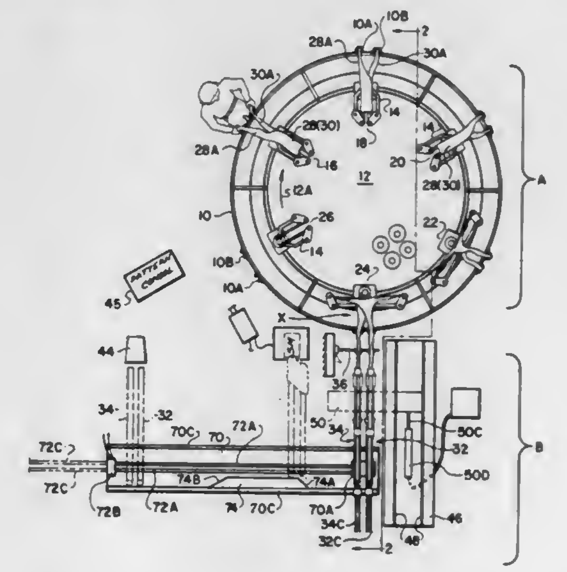
METHOD OF MAKING PANTY HOSE AND APPARATUS TO MAKE SAME

Charles R. Moyer, Charlotte, N.C., assignor to Monarch Knitting Machinery Corporation, Glendale, N.Y.

Filed Dec. 14, 1981, Ser. No. 330,654

Int. Cl.³ D05B *1/00, 21/00, 37/04;* **D05C** *9/04*

U.S. Cl. 112—262.2 **7 Claims**



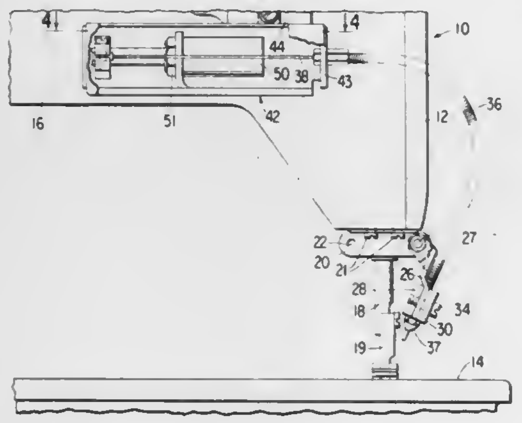
1. Method of operating a first machine, a second machine and a transfer attachment to make individual panty hose having panty, leg and foot portions from pairs of individual seamless tubular hosiery blanks each of which has open welt, leg and open toe portions, comprising the step of operating the first machine to form the panty portion of the panty hose from the welt portions of each such pair of hosiery blanks, the step of integrating the operation of the first machine, the second machine and the transfer attachment to automatically transfer the hosiery blanks onto the second machine from the first machine, including the step of retaining the panty portion of the hosiery on the first machine while the leg and toe portions

thereof are being transferred to the second machine and the step of operating the second machine to close the open toe portions of the hosiery blanks by sewing together the open toes thereof, thereby to make the panty hose.

4,444,141
STARTING POSITION INDICATOR FOR INDUSTRIAL SEWING MACHINE

David Forrest, Jamesburg, N.J., assignor to The Singer Company, Stamford, Conn.

Filed May 11, 1982, Ser. No. 377,232
Int. Cl.^{3} D05B *29/12*
U.S. Cl. 112—271 **11 Claims**

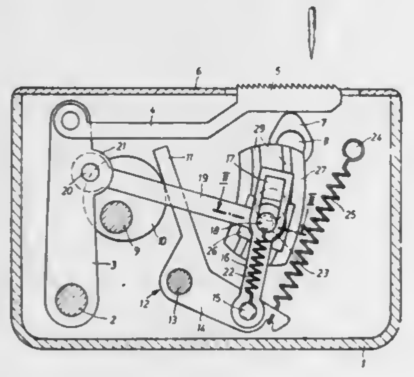


1. A position indicator for an industrial sewing machine having a frame including a work supporting bed and supporting therein a presser bar for selectively urging a work material against said work supporting bed and a needle carrying needle bar for stitching on said work material, said position indicator indicating to an operator a starting position for said work material, the indicator comprising: an elongated slender member of sufficient rigidity to enable endwise motion by exerting a force on one end thereof, tubular means for enclosing said member, means for supporting at least one end of said tubular means, and means for selectively exerting said force for extending said member through said tubular means to place the other end thereof in a selected position adjacent said work supporting bed to indicate said starting position for said work material.

4,444,142
SEWING MACHINE CONTROL ASSEMBLY FOR ADJUSTING STITCH LENGTH

Willi Meier, Karlsruhe-Durlach, Fed. Rep. of Germany, assignor to Dorina Nahmaschinen GmbH, Fed. Rep. of Germany

Filed May 21, 1982, Ser. No. 380,957
Claims priority, application Fed. Rep. of Germany, May 29, 1981, 3121266
Int. Cl.^{3} D05B *27/22*
U.S. Cl. 112—315 **14 Claims**

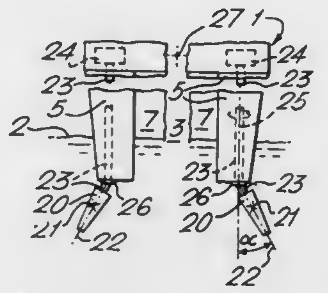


1. A sliding block control assembly for varying the transmission ratio of the feed and/or stitch width adjusting mechanism of a sewing machine, comprising an adjustable guide means connected to setting means for setting the guide means in a given stationary angular position of adjustment for varying such transmission ratio, and a sliding block mounted for oscillating sliding displacement in the guide means in any position of adjustment thereof and operatively connected to an oscillating drive for the feed and/or stitch width mechanism and which drive is adapted to be coupled to the sewing drive of the sewing machine for synchronous operation therewith, the guide means and sliding block having opposed mating pairs of sliding surfaces which extend obliquely to a plane of motion of said sliding block, and spring means for self-adjustably biasing said mating pairs of sliding surfaces toward each other in mutual sliding non-positive engagement with each other in any position of adjustment of the guide means during oscillating displacement of the sliding block relative thereto, the sliding surfaces of at least one of the guide means and the sliding block being composed of a plastic material having good sliding characteristics.

4,444,143
MARINE VEHICLES

Edward G. Tattersall, Southampton, and Jack Ruler, Maidstone, both of England, assignors to Vosper Hovermarine Limited and Marconi Avionics Limited, both of, England

Continuation-in-part of Ser. No. 46,071, Jun. 6, 1979, abandoned. This application Jul. 17, 1981, Ser. No. 284,455
Claims priority, application United Kingdom, Jun. 6, 1978, 26395/78
Int. Cl.^{3} B63B *1/38*
U.S. Cl. 114—67 A **16 Claims**



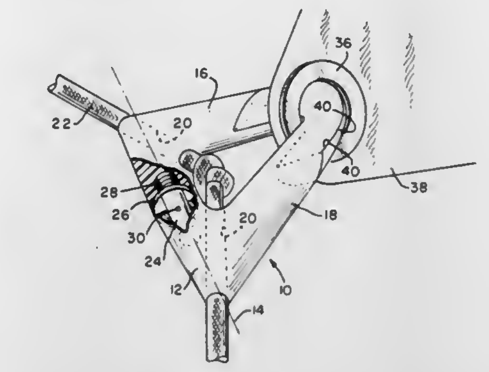
1. A marine vehicle, comprising:
a pair of rotatable steering rudders mounted beneath the vehicle and on opposite sides of the longitudinal axis thereof, the rudders being disposed in planes which are inclined to the vertical and which intersect above said axis; and,
means for sensing incipient undesirable motions of the vehicle about the pitch and roll axes of the vehicle, and operable so as to continuously apply restoring forces to the vehicle by rotating the rudders in movements which are compounded with steering movements of the rudders.

4,444,144
JIB SHACKLE

George J. Kopilak, 7 Center Ave., Wickatunk, N.J. 07765

Filed Jan. 4, 1982, Ser. No. 336,845
Int. Cl.^{3} B63H *9/08*
U.S. Cl. 114—114 **11 Claims**

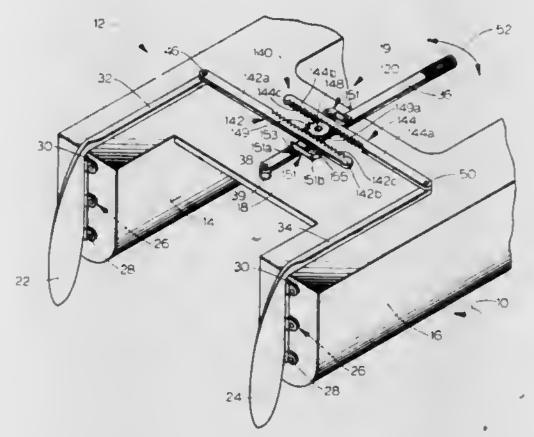
1. A jib shackle, comprising:
a body having an axial length of a given dimension from one end thereof to the other thereof;
said body also having means for securing filamentary material to said axis ends thereof; and
limbs fixed to said body and extending, from first ends thereof, from said body at angles transverse to said axial length of said body, defining with said body angular junctures; wherein
said limbs and second ends thereof comprise means cooperative with said body defining a closed loop therebetween;
said securing means comprises apertures formed through said angular junctures, opening externally of said shackle and internally thereof onto said closed loop, to receive therethrough a length of filamentary material and to accommodate a portion of such filamentary material within said loop;
each of said limbs is of substantially circular cross-section throughout a first length thereof, and of substantially semi-circular cross-section throughout a second length thereof;
said second lengths of said limbs have substantially flat surfaces; and
said flat surfaces of said second lengths of said limbs are disposed in confronting relationship.



4,444,145
STEERING APPARATUS FOR BOATS WITH MULTIPLE RUDDERS

Douglas A. Kohl, 417 - 6th Ave. NE., Osseo, Minn. 55369

Filed Dec. 11, 1981, Ser. No. 329,803
Int. Cl.^{3} B63H *25/06*
U.S. Cl. 114—163 **10 Claims**

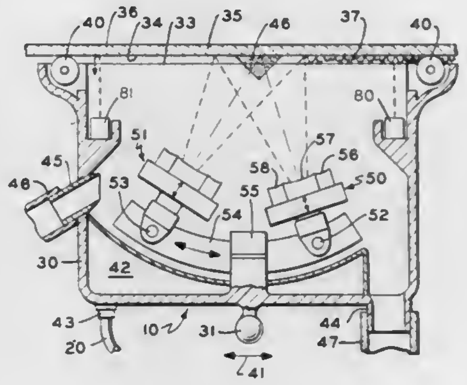


1. Steering apparatus for a sailboat comprising first and second rudders mounted for pivotal movement about laterally spaced and generally vertical axes, a first control arm rigidly connected to said first rudder and extending forwardly of the pivotal axis of the first rudder, a second control arm rigidly connected to said second rudder and extending forwardly of said second rudder, and first means pivotally connected to the forward end portion of said first control arm, second means pivotally connected to the forward end portion of said second control arm, means mounting said first and second means for movement relative to each other in a generally parallel direction for transmitting an actuating force from the first rudder, when said first rudder is pivoted in one direction about its pivotal axis via the first control arm, to the second rudder via said first and second means and the second control arm to cause said second rudder to pivot in an opposite direction from said one direction in which said first control arm is pivoted so as to substantially equalize the hydrodynamic forces on the rudders, and a pivotally mounted tiller arm, said first and second means also being movable relative to said tiller arm when moving in their said parallel direction, whereby the drag produced on said rudders is minimized.

4,444,146
ULTRASONIC SUBSURFACE CLEANING

Gerhard H. De Witz, La Verne, and Bernard W. Yaeger, Glendora, both of Calif., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 13, 1982, Ser. No. 339,196
Int. Cl.^{3} B63B *59/08*
U.S. Cl. 114—222 **1 Claim**



1. Apparatus for cleaning marine fouling material from a submerged surface, comprising, in combination:
a submersible housing moveable along a submerged surface to be cleaned and having an opening for apposition with said surface;
and first and second transducer assemblies carried by said housing and having radiating surfaces for directing beams of ultrasonic energy to intersect at a zone of cavitation at said submerged surface,
said assemblies comprising transducers operable at different frequencies and at levels of excitation just below the onset of cavitation at their radiating surfaces, so that said beams combine and result in cavitation and non-linear interaction in said zone, to give sum and difference frequencies; and
means mounting said assemblies in pairs spaced along said housing, each mounting means comprising an arcuate member slideable transversely of said housing, means pivoting said assemblies to said arcuate member at sites spaced therealong, and means clamping said member to said housing at a site between the sites of pivoting of said assemblies.

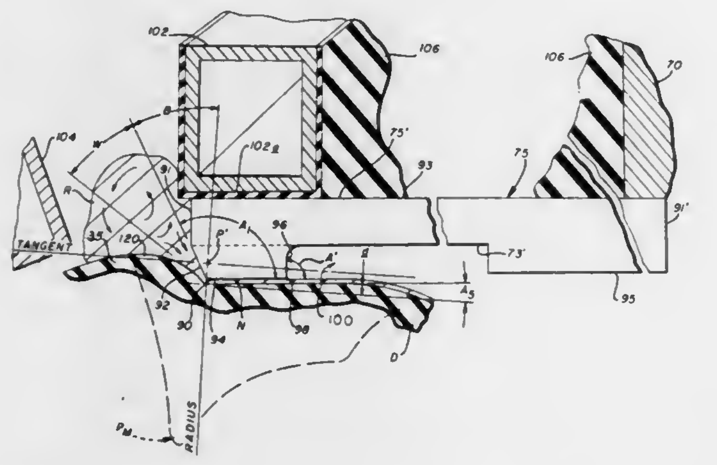
4,444,147
COATING APPARATUS

Harold P. Dahlgren, 4008 Buena Vista, Dallas, Tex. 75205; John W. Gardiner, 2116 Oak Meadows, Bedford, Tex. 76021, and James E. Taylor, 4129 Drowsy La., Dallas, Tex. 75233

Continuation-in-part of Ser. No. 282,294, Jul. 13, 1981. This application Nov. 19, 1981, Ser. No. 323,099
Int. Cl.^{3} B05C *1/08*
U.S. Cl. 118—261 **5 Claims**

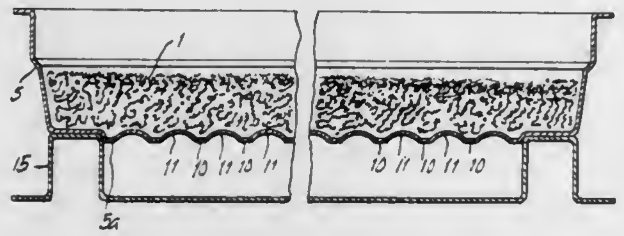
1. Liquid metering apparatus comprising: a roll having a resilient surface; means to rotate said roll; a metering member; means to urge said metering member into pressure indented relation with said resilient surface, said metering member comprising a hard, generally flat, elongated metallic strip having an upper surface and a lower surface; a side surface on the strip extending between and intersecting said upper and lower surfaces, a portion of said side surface and a portion of said lower surface adjacent said side surface being polished such that said side surface and said portion of the lower surface intersect at an angle of greater than 90° at an apex to form a straight, polished, first metering edge which is substantially free of surface irregularities, the lower surface of said elongated strip having a relieved area formed therein, said relieved area having a depth of at least 0.020 inch to leave a resilient metallic portion on said

strip between the upper surface of the strip and the relieved area and said relieved area having a polished surface bounding the relieved area in the lower surface on the opposite side of the polished portion of the lower surface from the first metering edge, said polished surface bounding the relieved area in the lower surface being inclined relative to said polished portion of the lower surface at an angle of at least 30° to form a second polished edge spaced from said first metering edge, said relieved area being formed to prevent engagement of the metering member with a metered film of liquid on a resilient roll surface except by the portion of the metering member lying between the first and second polished edges; heat exchanger means adjacent said upper surface of the metallic strip adjacent said metering edge to cool said metering member adjacent said metering edge; and a flexible, heat conductive material between the heat exchanger means and the upper surface of the metering member to provide a resilient heat conductor between adjacent surfaces of the heat exchanger means and the metering member.



4,444,148
WASTE RECEPTACLES HAVING ODOR BARRIERS

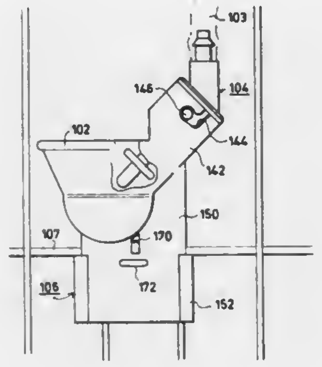
Harry L. Lander, Grand Rapids, Mich., assignor to Cattus Limited, Midland, Tex.
Filed Aug. 24, 1981, Ser. No. 295,740
Int. Cl.³ A01K *1/015*
U.S. Cl. 119—1 23 Claims



1. A device for receiving small animal waste comprising
- (a) a foraminous tray;
- (b) means vertically attached or fitted about the perimeter of said foraminous tray;
- (c) a layer of substantially non-absorbent buoyant hydrophobic, non-water wettable granular material substantially uniformly dispersed on the tray to form an odor barrier, said hydrophobic, non-water wettable granular material consisting of buoyant granular material treated with a hydrophobic, non-water wettable substance, such as paraffin wax, so as to coat said granular material, to provide said granular material with a hydrophobic, non-water wettable coating thereon, said granular material being of sufficient size to be retained on the tray, and
- (d) collecting means positioned beneath and supporting the tray for receiving liquid waste material deposited in said granular material.

4,444,149
POULTRY WATERING DEVICE

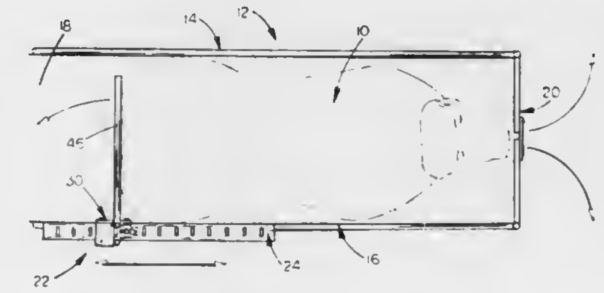
Yair Shomer, DN Menashe, Israel, assignor to Plasson Maagan Michael Industries Ltd., Menashe, Israel
Filed Jan. 4, 1982, Ser. No. 336,830
Claims priority, application Israel, Jan. 16, 1981, 61915; Dec. 10, 1981, 64499
Int. Cl.³ A01K *7/06, 39/02*
U.S. Cl. 119—18 9 Claims



1. A poultry watering device connectable to a water supply line and including an open-top cup receiving water from the supply line, a valve assembly having a valve operator disposed within the cup and controlling a valve member for admitting water into the cup from the water supply line, and mounting means for mounting the device to a support within the cup positioned to permit the poultry to drink water from the cup through the open top thereof; said mounting means comprising: a plate integrally formed with the cup and depending from its bottom; and a bracket including a socket for receiving said depending plate and a hook for attaching the bracket to the poultry cage; said bracket including a plurality of semi-cylindrical recesses formed on its inner face for selectively receiving a wire of the poultry cage on which the bracket is to be mounted, said hook being at the upper end of the mounting bracket, and said mounting plate including a rib on its inner face slidable over the hook and snappable under its lower face for releasably retaining the mounting plate within the socket of the mounting bracket.

4,444,150
ANIMAL RESTRAINING DEVICE

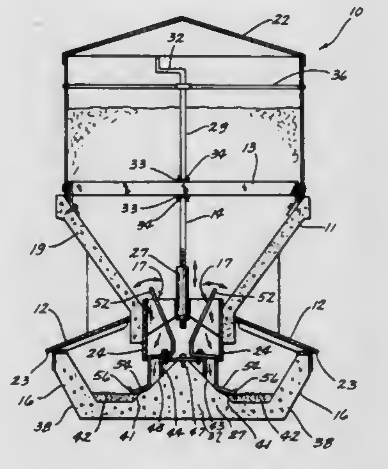
Nolan E. Hueftle, and Karl N. Hueftle, both of Rte. 2, Box 85, Cozad, Nebr. 69130
Filed Jul. 9, 1982, Ser. No. 396,802
Int. Cl.³ A01K *15/04;* **A61D** *3/00*
U.S. Cl. 119—27 3 Claims



1. An animal restraining device, comprising,
an elongated animal pen having opposite ends and sides, one end of said pen being open to permit the animal to enter said pen,
closure means selectively closing the other end of said pen whereby said closure means will prevent the animal from passing through said other end of said pen when in its closed position and will permit the animal to leave the pen when in its open position,
and an animal restraining apparatus selectively longitudinally movably mounted on one side of said pen and including a pivotal bar means which is pivotally movable from an inoperative position generally parallel to the side of said pen to an operative position extending towards the other side of the pen closely rearwardly of the hind legs of the animal to restrain the movement of the animal in said pen,
said apparatus including a horizontally disposed frame member at said one side of said pen and including a flat horizontally disposed upper surface, a plurality of longitudinally spaced stops on said upper surface,
a bar support means selectively longitudinally movably mounted on said frame member,
a spring loaded dog, in engagement with said stops, pivotally mounted on said support means and adapted to engage said stops to prevent said bar support means from moving away from said other end of said pen unless said dog is selectively pivotally moved out of engagement with said stops,
said dog pivotally moving over said stops as said bar support means is moved towards said other end of said pen,
means for manually moving said dog out of engagement with said stops to permit said bar support means to be moved towards said one end,
said bar means being pivotally movable on said bar support means.

4,444,151
SWINE FEEDING APPARATUS

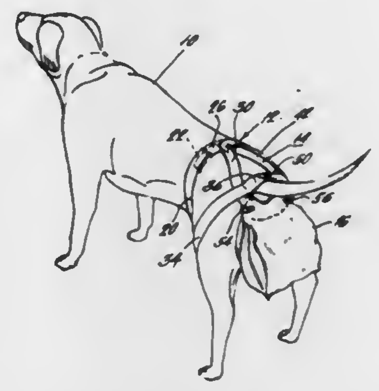
Orville R. Bohlmann, Bohlmann, Inc., P.O. Box 369, Denison, Iowa 51442
Filed Jun. 21, 1982, Ser. No. 390,302
Int. Cl.³ A01K *5/00*
U.S. Cl. 119—53.5 5 Claims



1. An improved swine feeding apparatus of the type having a feed storage unit operably connected to a feed receiving and dispensing trough unit, the improvement including at least one agitator unit, comprising:
- (a) an agitator base connected to said feed receiving and dispensing trough unit;
- (b) an agitator member having a first end disposed within said feed storage unit and a second end rigidly attached to the first end thereof and disposed within said feed receiving and dispensing trough;
- (c) a pivot member rotatably connected to said agitator member and pivotably connected to said agitator base; such that said agitator member may rotate about said pivot member and said pivot member may pivot with respect to said agaitator base.

4,444,152
DEVICE FOR COLLECTION OF ANIMAL WASTES

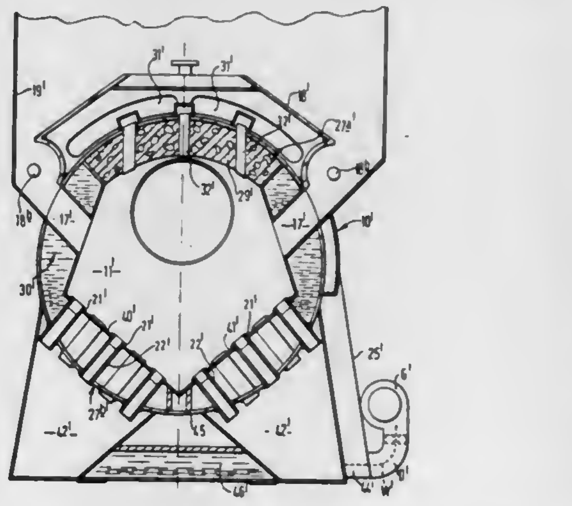
Carmen R. Berardo, 3185 S. Sydenham St., Philadelphia, Pa. 19145
Filed May 19, 1982, Ser. No. 379,660
Int. Cl.³ A01K *23/00*
U.S. Cl. 119—95 16 Claims



1. A device for collecting animal wastes comprising harness means adapted for attachment to an animal, said harness means including harness members disposed adjacent the anal region of the animal including a tail strap disposed so as to pass above the tail of the animal, said harness means establishing a plurality of attachment points around the periphery of the anal region of the animal including an attachment point on said tail strap near the anal region of the animal, and attachment means secured to said harness at each of said attachment points, said attachment means comprising independently attachable and releasable fastener assemblies for positive connection to any selected point along the continuous open edge of an imperforate garbage bag of thin plastic material, one of said fastener assemblies being secured to said tail strap at said attachment point near the anal region of the animal, thereby permitting attachment of the bag to the harness with the open edge of the bag encircling the anal region of the animal.

4,444,153
GRATELESS FURNACE FOR SOLID FUEL

Trevor D. Smith, Abergavenny, England, assignor to Suxe Combustion Limited, Abergavenny, England
Filed Aug. 17, 1981, Ser. No. 293,475
Int. Cl.³ F22B *33/00;* **F23B** *7/00*
U.S. Cl. 122—2 6 Claims



1. A furnace comprising an elongate substantially cylindrical combustion chamber having an unobstructed internal configuration, a central axis disposed horizontally, said combustion chamber comprising a furnace roof preventing passage of products of combustion therethrough, a furnace bottom, said bottom having two inclined parts in a V configuration extending along the length of the combustion chamber and an opening being provided along the apex of the V for the passage of

slag out of the combustion chamber, a lower region of the furnace having a wall cooled by a water jacket, an upper region of the furnace having a horizontally extending passage for the egress of products of combustion horizontally out of the combustion chamber, said upper region being lined with a refractory material, channels being provided through said wall of said lower region above said bottom, to permit of passage of solid fuel under gravity through said channels and into said combustion chamber and to permit said fuel to form a quiescent fire bed supported on said inclined parts, nozzles in said inclined parts to direct primary air through said bed to assit in combustion thereof, said nozzles extending through said water jacket, and a hopper above the furnace in which the solid fuel is stored with the fuel resting on a guide to ensure an even flow of fuel from the hopper over the entire length of the combustion chamber, the guide being of inverted V-configuration to permit the fuel to be fed to both sides of the combustion chamber simultaneously, with the fuel fed into the combustion chamber from the hopper through said channels, each of which communicates with the combustion chamber, gates valves being provided to regulate the flow of fuel to the furnace and to shut off the flow of fuel altogether if required.

4,444,154
STEAM GENERATOR WITH FLUIDIZED BED FIRING

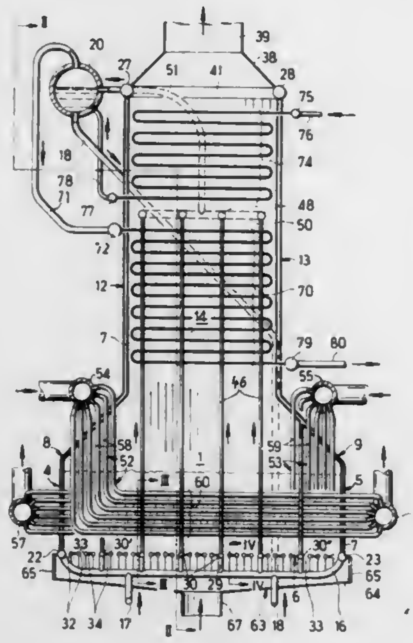
Anton Weber, Pfungen, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Apr. 5, 1982, Ser. No. 365,551

Claims priority, application Switzerland, Apr. 23, 1981, 2651/81

Int. Cl.^{3} B09B *3/00*

U.S. Cl. 122—4 D **16 Claims**



1. A steam generator comprising
- a combustion chamber having a plurality of walls for defining a fluidized bed combustion zone, said walls including a plurality of evaporation tubes secured together in seal-tight relation;
- a gas flue of smaller cross-section than said combustion chamber above said combustion chamber;
- at least one inclined wall surface connecting said combustion chamber with said flue;
- at least one bunch of heater tubes, each said heater tube being of L-shape having a long and shorter limb, said long limb extending substantially horizontally within said fluidized bed combustion zone and through a vertical combustion chamber wall and said shorter limb extending substantially vertically within and through said combustion zone;
- a header connected to said heater tubes at one end outside said combustion zone; and
- a collector connected to said heater tubes at an opposite end outside said combustion zone.

4,444,155
SEALED HEAT EXCHANGER CHAMBER WITH DISPOSITION OF LONGITUDINAL WATER TUBES CONCENTRICALLY DISPOSED TO A CENTRAL BURNER

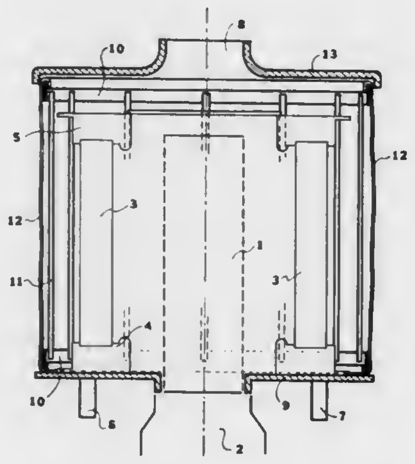
Jean-Claude Charron, Saint Maur, and Philippe Mulsant, Villiers sur Marne, both of France, assignors to Societe Anonyme Saunier Duval Eau Chaude Chauffage, Montreuil, France

Filed Oct. 27, 1981, Ser. No. 315,416

Claims priority, application France, Oct. 31, 1980, 80 23288

Int. Cl.^{3} F22B *5/02*

U.S. Cl. 122—19 **7 Claims**



1. A gas-tight combustion chamber for a heat exchanger of the type having water tubes arranged concentrically around a forced-air burner, and elements for holding the water tubes in place, said combustion chamber enveloping the water tubes and serving to collect and discharge combustion products into a chimney, and said combustion chamber comprising:
- an air-tight and light flexible rubberized sheet material cylindrical shell impervious to gases;
- an upper cover (13) and a lower base (9); and
- a cylindrical frame support on which said shell is mounted, said frame support tightly positioning said shell between said upper cover and said lower base wherein said flexible cylindrical shell constitutes means for prevention of the sound-pressure waves produced by the thermodynamic phenomena associated with high thermal gradients resulting from combustion.

4,444,156
WATER HEATER

Yasutaka Iwasaki, Nishinomiya; Mitsuru Tanaka, Neyagawa; Akihiko Yasuda, Higashiosaka; Munetaka Kinugasa, Nara; Toshihiko Kikuchi, Nagaokakyo, and Masao Maruyama, Toyonaka, all of Japan, assignors to Kabushiki Kaisha Youei Seisakusho, Higashiosaka, Japan

Continuation of Ser. No. 266,145, May 22, 1981, abandoned. This application Dec. 9, 1982, Ser. No. 448,276

Claims priority, application Japan, May 28, 1980, 55-71730; May 28, 1980, 55-71731; Oct. 7, 1980, 55-143750[U]

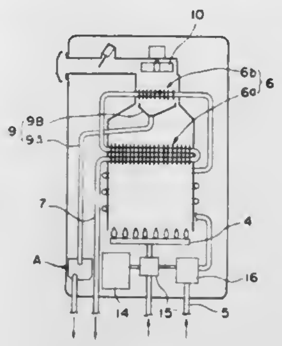
Int. Cl.^{3} F22D *1/00;* **B01D** *53/34*

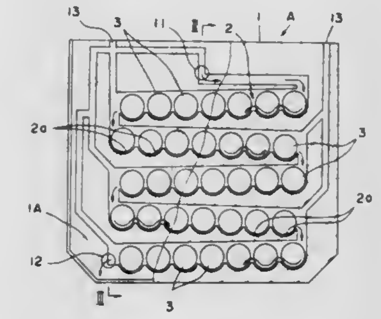
U.S. Cl. 122—20 B **1 Claim**

1. A water heater comprising:
- a heat exchanger through which water is passed;
- a burner for generating hot combustion gases;
- means for directing the hot gases over said exchanger to heat the water therein whereby acidic condensate is formed on said exchanger;
- means for collecting the acidic condensate on said exchanger; and
- drain means connected to said collecting means;

characterized in that:

an acid neutralizing unit is connected into said drain means and comprises a box-shaped case having therein drain channel means, including a plurality of downwardly inclined drain courses series connected in zigzag form with a gentle slope for each course, the lower surface of each of said courses being provided with a plurality of arc-like recesses with the axes thereof extending transversely of the corresponding course, said box-shaped case being formed of plastic material and including a cover of transparent material forming a side wall of each of said courses, and a solid piece of acid-neutralizing magnesium in each of said recesses.





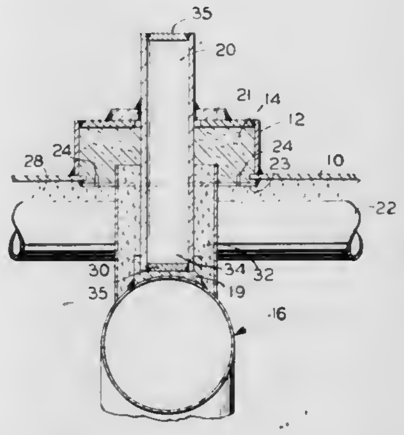
4,444,157
LIQUID COOLED TUBE SUPPORTS

Arthur C. Worley, Mt. Tabor, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Dec. 10, 1982, Ser. No. 448,838

Int. Cl.^{3} F22B *37/24*

U.S. Cl. 122—510 **9 Claims**



1. In a hybrid boiler, a metal roof casing, insulation below said roof casing, horizontally disposed water tubes below said roof casing, at least one serpentine process tube below said water tubes, said serpentine tube having substantially parallel and spaced apart vertical straight run portions joined by upper and bottom bend portions, tubular metal supports in thermal contact with and attached to the upper bend portions of said process tube, said metal supports extending upwardly through the insulation and through the roof casing, said metal supports being in thermal contact with and attached to said roof casing being sealed and containing a vaporizable liquid therein whereby under conditions of use said supports are cooled by vaporization of said liquid in contact with a relatively hot portion of the supports, the condensation of the vaporized liquid in a relatively cool portion of the support and the return of the condensed liquid by gravity to the portion of the support extending below the roof casing.

6. In a hybrid boiler of the type including a metal roof casing with insulation of the bottom surface thereof and a plurality of water tubes horizontally disposed below the insulation and including a plurality of serpentine process tubes having straight run portions, upper bend portions and lower bend portions, said tubes located so that said straight run portions are vertically disposed in said boiler, the improvement comprising metal tubular supports attached to and in thermal contact with the upper bends of said process tubes, said supports extending upwardly through said insulation and being attached to and in thermal contact with said supports having a vaporizable liquid sealed therein whereby under conditions of use said supports are cooled by vaporizing the liquid from one portion of the support below the roof casing and condensing the so vaporized liquid at another portion of the support above the roof casing and wherein said condensed vaporized liquid returns to the portion of support below the roof casing by gravity.

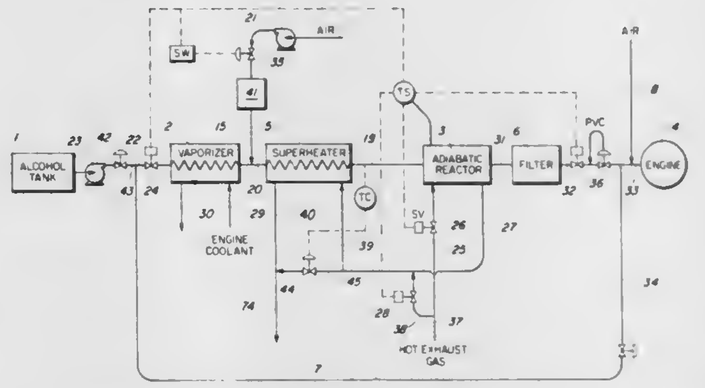
4,444,158
ALCOHOL DISSOCIATION PROCESS FOR AUTOMOBILES

Heeyoung Yoon, McMurray, Pa., assignor to Conoco Inc., Wilmington, Del.

Filed Sep. 3, 1982, Ser. No. 414,744

Int. Cl.^{3} F02B *75/12*

U.S. Cl. 123—1 A **2 Claims**

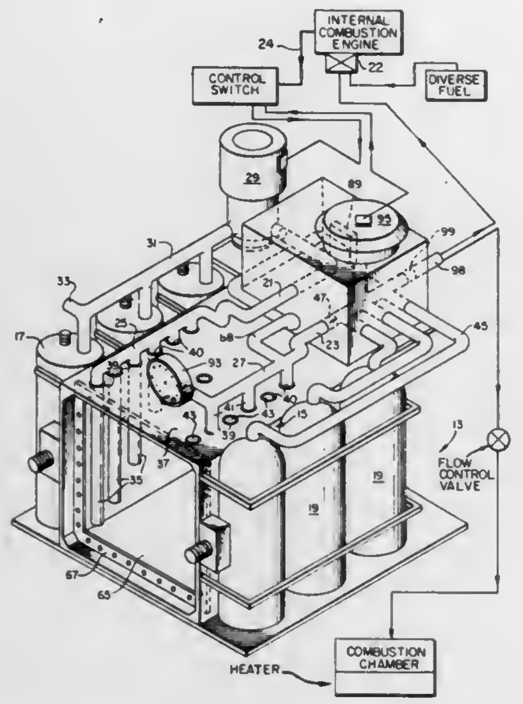


1. A substantially adiabatic method of methyl alcohol treatment for operation of an automobile internal combustion engine comprising the sequence of steps as follows:
- (a) heating a catalyst bed reactor to a start-up temperature using exhaust gas from an internal combustion engine being operated on atomized methyl alcohol; said catalyst bed reactor comprising a partial combustion catalyst and a methanol dissociation catalyst;
- (b) isolating said catalyst bed reactor from said exhaust;
- (c) vaporizing liquid methyl alcohol to form alcohol vapor;
- (d) mixing said alcohol vapor with air in a constant ratio of oxygen to alcohol at variable alcohol flow rates, to form a partial combustion mixture;
- (e) contacting said partial combustion mixture and said partial combustion catalyst to exothermically form a dissociation mixture said dissociation mixture comprising methanol vapor, water vapor, carbon monoxide, and hydrogen each in substantial proportion;
- (f) contacting said dissociation mixture and said dissociation catalyst to endothermically form a hydrogen-rich fuel said hydrogen-rich fuel comprising hydrogen and carbon monoxide each in substantial proportion, said hydrogen-rich fuel being formed from said alcohol vapor substantially adiabatically;
- (g) mixing air and said hydrogen rich fuel to form a total combustion mixture;

(h) burning said total combustion mixture in an internal combustion engine.

4,444,159
CALCIUM CARBIDE/WATER ACETYLENE GAS GENERATOR

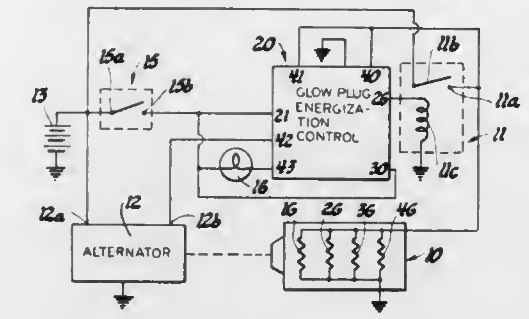
Gregory K. Earl, 4924 Crescent St., Chevy Chase, Md. 20015
Filed Jun. 29, 1982, Ser. No. 393,483
Int. Cl.^{3} F02B *43/10;* C10H *5/00*
U.S. Cl. 123—3 **13 Claims**



1. A gas generating fuel cell capable of producing acetylene gas from calcium carbide comprising:
(a) an inner housing having one open side, a flange on the exterior of the open side, a plurality of support brackets for supporting a plurality of grids in a horizontal position and a plurality of openings;
(b) an outer housing having an open side into which the inner housing fits so as to meet with the outer housing with the open side of the inner housing aligning with the open side of the outer housing, a flange on the open side and a plurality of openings which align with the plurality of openings in the inner housing when the inner housing is nested in the outer housing;
(c) a water supply means for providing pressurized water to the inner housing;
(d) a gas recirculation means for allowing withdrawal of gas from the inner housing;
(e) a plurality of tubes which sealingly fit into said plurality of openings in the inner and outer housings, at least one of which tubes is connected to the water supply means to enable the water supply means to provide the pressurized water to the inner housing and at least another of which is connected to the gas recovery means to enable the gas recovery means to withdraw gas from the inner housing, the inner housing forming an inner chamber for the generation of gas;
(f) a water control means for controlling the amount of water supplied by the water supply means;
(g) a sealing means associated with the flange on the open side of the outer housing for permitting the inner housing to seal against the open side of the outer housing ;
(h) a door capable of sealing against the flange of the open side of the inner housing;
(i) a plurality of trays mountable in the fuel cell in a horizontal position on the support bracket, the trays offering support for a solid material such as CaC_2 and promoting exposure of the solid material to the water provided to the inner housing; and
(j) a plurality of grids mountable in the fuel cell in a horizontal position and supported on the trays, the grids dispersing water to the solid material.

4,444,160
ENERGIZATION INDICATION CONTROL FOR DIESEL GLOW PLUG

Robert E. Steele, Cortland, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Sep. 9, 1982, Ser. No. 416,212
Int. Cl.^{3} F02N *17/00*
U.S. Cl. 123—179 H **3 Claims**



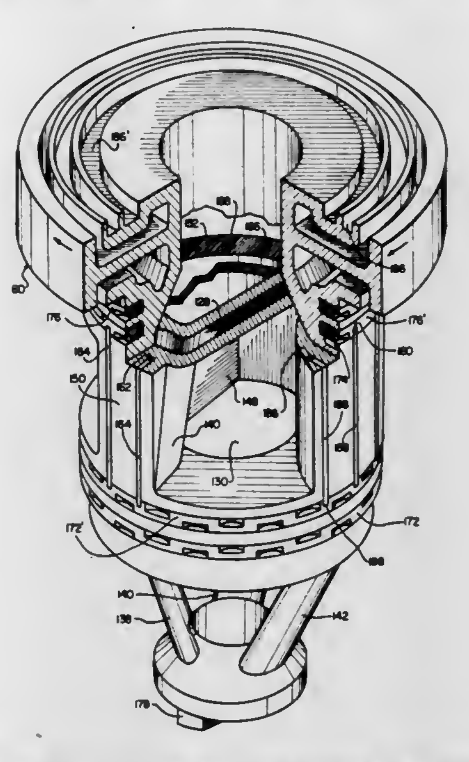
1. An energization indication control for a glow plug in a diesel engine comprising, in combination:
an indicating lamp and a PTC thermistor connectable in series across an electrical power source having a supply voltage sufficient to energize either of the indicating lamp or PTC thermistor separately, said indicating lamp and PTC thermistor being effective to self heat when energized and each having an electrical resistance increasing sufficiently with temperature to drop substantially most of the supply voltage and prevent the energization of the cold other, the resistance increase of the indicating lamp being substantially faster than that of the PTC thermistor;
first means effective, when actuated, to intermittently energize the glow plug to maintain said glow plug in a predetermined temperature condition;
second means responsive to the first means to make and break a low resistance shunt path around said indicating lamp as the glow plug is deenergized and energized, respectively; and
third means actuable to simultaneously actuate the first means and connect the indicating lamp and PTC thermistor in series across the electric power source to energize the indicating lamp for the duration of the first period of energization of the glow plug, if any, and if and when the indicating lamp is not energized, to energize the PTC thermistor to increase its resistance and thus prevent further energization of the indicating lamp.

4,444,161
ROTARY VALVE FOR INHERENTLY BALANCED ENGINE

Thomas V. Williams, 2901 W. Cheltenham, Philadelphia, Pa. 19150
Continuation-in-part of Ser. No. 132,606, Mar. 21, 1980, Pat. No. 4,392,460. This application Jan. 11, 1982, Ser. No. 338,207
Int. Cl.^{3} F01L *7/00*
U.S. Cl. 123—190 E **17 Claims**

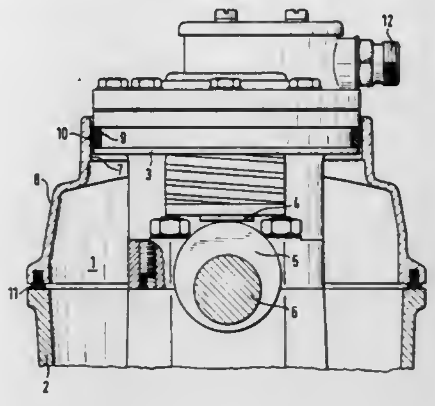
1. A rotary valve for an internal combustion engine comprising
a generally cylindrical housing, the housing being adapted for rotation about an axis, the housing comprising a peripherally positioned narrow sealing section and a peripherally positioned large sealing section;
an air-fuel passage provided in the rotary valve housing, the air-fuel passage extending from an air-fuel inlet in the valve to an air-fuel port;
an exhaust gas passage provided in the rotary valve housing, the exhaust gas passage extending from an exhaust gas port to an exhaust gas outlet;

first axial seal means between the air-fuel port and the exhaust gas port to prevent flow of gas between said ports, the first axial seal means being positioned within the narrow sealing section;
second axial seal means between the air-fuel port and the exhaust gas port to prevent gas flow between said ports, the second axial seal means being positioned within the large sealing section;
third seal means extending circumferentially about the housing at one longitudinal side of the air-fuel port and the exhaust gas port to prevent longitudinal gas flow exteriorly of the housing, the third seal means comprising a pair of circular rings;
fourth seal means extending circumferentially about the housing adjacent the other longitudinal side of the air-fuel port and the exhaust gas port to prevent longitudinal gas flow exteriorly of the housing, the fourth seal means comprising a second pair of circular seal rings;
at least one of the seal rings being provided with a plurality of arcuate notches.



4,444,162
INTERNAL COMBUSTION ENGINE WITH A SECONDARY AGGREGATE

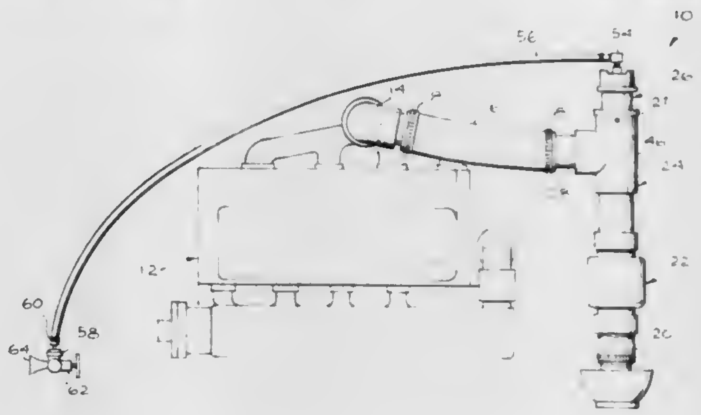
Hans Gibisch, Munich; Joachim Hahn, Wolfratshausen; Richard Henning, Munich, and Waldemar Jende, Groebenzell, all of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Apr. 12, 1982, Ser. No. 367,555
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1981, 3114690
Int. Cl.^{3} F02B *77/00*
U.S. Cl. 123—198 C **9 Claims**



1. An internal-combustion engine having an auxiliary aggregate driven by means of a driving part of the valve drive, with said auxiliary aggregate being fastened on the cylinder head cover of the internal-combustion engine, characterized in that the auxiliary aggregate is a vacuum pump, that the cylinder head cover has a passage opening and that a connecting branch of the vacuum pump projects through the passage opening in an elastically sealing engagement with the cylinder head cover.

4,444,163
AIR METERING SYSTEM FOR DIESEL ENGINE

Gary J. Ulinskas, La Jolla, Calif., assignor to Whittaker Corporation, Los Angeles, Calif.
Filed May 26, 1981, Ser. No. 266,641
Int. Cl.^{3} F02B *77/00*
U.S. Cl. 123—198 E **14 Claims**



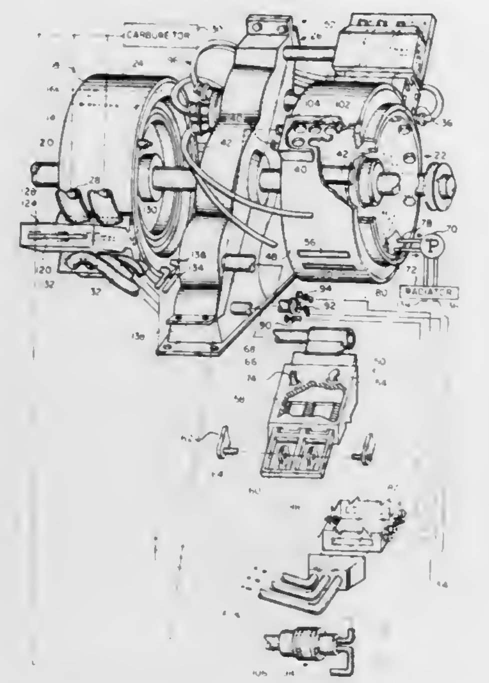
1. A selectively controllable air intake system for a diesel engine or the like which is located within a generally enclosed space, the system comprising:
a housing coupled to the engine air intake and defining an air intake passage including an inlet port remote from the engine air intake;
a valve mounted within the passage for selectively blocking the admission of air from the inlet port;
pressure responsive means coupled to said valve to close the valve when the enclosed space is pressurized;
means for coupling to a storage container of compressed air for selectively pressurizing the pressure responsive means and the enclosed space to a level above ambient atmospheric pressure; and
means downstream of the valve for admitting air into the housing in limited amount to enable the engine to operate at a restricted power level with the valve is closed.

4,444,164
INTERNAL COMBUSTION ROTARY POWER PLANT SYSTEM

Ching-Ho Tseng, 7307 Caracas Dr., Houston, Tex. 77083
Division of Ser. No. 160,628, Jun. 18, 1980. This application Apr. 14, 1982, Ser. No. 368,391
Int. Cl.^{3} F02B *53/08*
U.S. Cl. 123—237 **1 Claim**

1. In a system including: an engine, a compressor for supplying gaseous fuel to the engine, means for synchronizing operation of the engine and compressor, including a driveshaft mounting the engine and compressor, the engine having: an engine housing, a rotor in the engine housing, a plurality of runners on the rotor, a plurality of engine stations on the engine housing, means at each engine station for engine-chamber forming with the runners within the engine housing, and a plurality of engine exhaust locations in the engine housing, the improvement comprising: the engine housing including: an annular member having in cross-sectional view first and second legs with respective inner ends for containing the rotor rotatably therebetween, at least one of said first and second legs being detachably affixed to the annular member, means for sealing said annular member and rotor while permitting said relative rotation, comprising: at least one gasket between each

of the first and second legs and said rotor, the rotor having first and second flanges, each of said first and second flanges extending axially outward past a said inner end of one of said first and second legs proximate a said at least one gasket, a plurality of anti-friction bearings with respective inner and outer races, each outer race engaging one of said first and second legs in a direction axial to said engine housing, and respective screw-threaded means mounting each inner race to one of said first and second flanges.



4,444,165

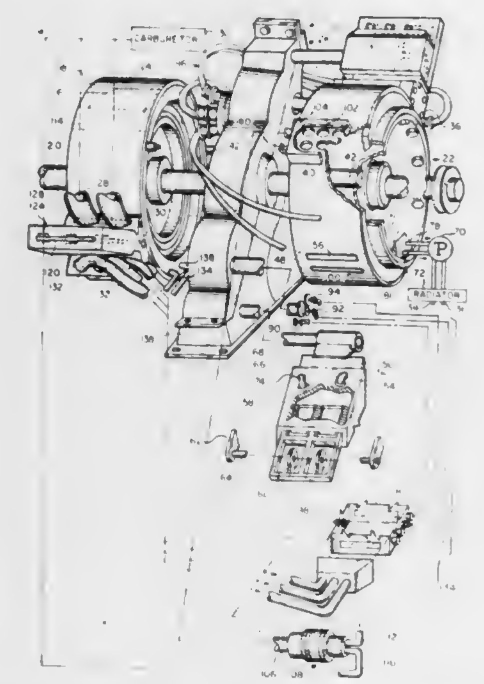
INTERNAL COMBUSTION ROTARY POWER PLANT SYSTEM

Ching-Ho Tseng, 7307 Caracas Dr., Houston, Tex. 77083

Division of Ser. No. 160,628, Jun. 18, 1980. This application Apr. 14, 1982, Ser. No. 368,393

Int. Cl.³ F02B ***53/08***

U.S. Cl. 123—237 **1 Claim**



1. In a system including: an engine, a compressor for supplying gaseous fuel to the engine, means for synchronizing operation of the engine and compressor, the engine having: an engine housing, a rotor in the engine housing, a plurality of runners on the rotor, a plurality of engine stations on the engine housing, means at each engine station for engine-chamber forming with the runners within the engine housing, and a plurality of engine exhaust locations in the engine housing, the improvement comprising: the compressor having: a compressor housing, a compressor rotor with a plurality of lobes thereon in the compressor housing, a plurality of members for forming compression chambers with the lobes, a gaseous fuel intake at each of said members, a gaseous fuel exhaust at each of said members, the compressor housing being cylindrical in shape with at each end thereof protruding from the cylindrical shape an inwardly extending circular flange with an interior conical shape, the compressor rotor structure having at each end thereof an exterior conical shape fitting the interior conical shape of a respective said circular flange, means for adjusting the axial distance between inwardly extending circular flanges for adjusting the fit thereof to the compressor rotor structure exterior conical shape, the means for adjusting axial distance including one said inwardly extending circular flange being separate from the compressor housing and having an outer periphery with screw threads thereon, and the compressor housing cylindrical shape having screwthreads on the inner periphery thereof for engaging the circular flange screw threads.

4,444,166

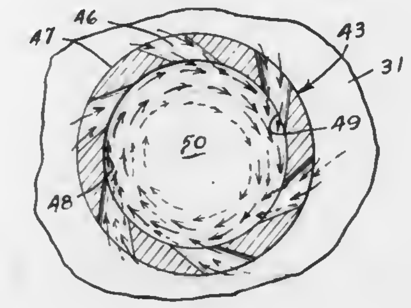
METHOD AND APPARATUS FOR REDUCING THE OPERATING COMPRESSION RATIOS OF COMPRESSION IGNITION ENGINES

Geza Kovacs; Mihaly Kovacs; Endre Kovacs, and Peter Kovacs, all of Plant City, Fla., assignors to Kovacs Research Center, Inc., Plant City, Fla.

Continuation-in-part of Ser. No. 274,134, Jun. 16, 1981, abandoned. This application Mar. 4, 1983, Ser. No. 472,317

Int. Cl.³ F02B ***3/00, 33/00***

U.S. Cl. 123—262 **21 Claims**



1. An ignition chamber for use in internal combustion compression ignition engines comprising a mounting portion and a housing, said housing being generally spherical and extending outwardly from one end of said mounting portion and having inner and outer surfaces, said inner surface of said housing being generally continuous and defining a hollow spherical cavity, said cavity being completely closed except for at least one opening disposed through said housing between said inner and outer surfaces for receiving fuel and air into said cavity, said opening being spaced from said mounting portion and being substantially tangentially oriented with respect to said inner surface of said housing and substantially oriented so as to direct fluid passing therethrough in a uniform manner about a common axis within said cavity, said opening tapering inwardly along its length and said opening providing the only fluid communication into said cavity, and the total of the cross-sectional surface area of said openings taken at said inner surface of said housing not exceeding approximately 5% of the total inner surface area of said cavity.

4,444,167

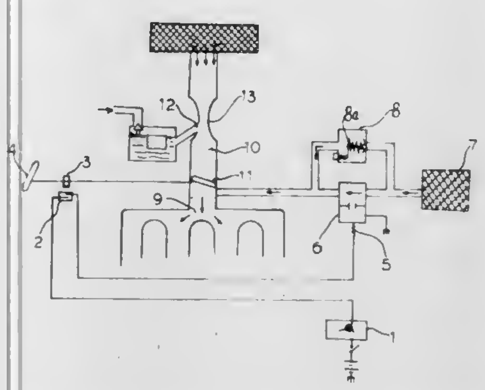
AIR VALVE DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Won F. You, 3rd Fl., 162, Fu Hsing S. Rd., Sec. 1, Taipei, Taiwan

Filed May 10, 1982, Ser. No. 376,817

Int. Cl.³ F02M ***23/06***

U.S. Cl. 123—327 **7 Claims**



1. An air valve device for an internal combustion engine which has a fuel supply with an air intake providing an air fuel mixture to an inlet of the engine, the air valve device comprising

at least first and second alternative air intake channels in a parallel relationship to each other which bypass the fuel supply and supply air directly to the inlet of the engine,

first valve means to control air flow through said first air intake channel, allowing air flow through said first air intake channel, allowing air flow through said first channel when the pressure at the inlet of the engine falls below a preset limit,

second valve means to control air flow through said second air intake channel,

tachometer means to indicate the speed of the engine, connected to said second valve means to permit the passage of air through said second air intake channel when the speed of the engine is greater than a preset limit,

said tachometer means including

a rectifying stage, an integrating stage, and amplifying stages electrically interconnected to rectify and then integrate a signal input to said tachometer means and amplify the signal to an overall gain in said amplifying stages such that the output current from said tachometer means is large enough to operate said second valve means when the rotational speed of the engine exceeds 920 revolutions per minute.

4,444,168

ENGINE IDLING SPEED CONTROL METHOD AND APPARATUS

Toshimi Matsumura, Oobu, and Norio Omori, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jan. 27, 1982, Ser. No. 343,366

Claims priority, application Japan, Jan. 29, 1981, 56-12121

Int. Cl.³ F02D ***1/04***

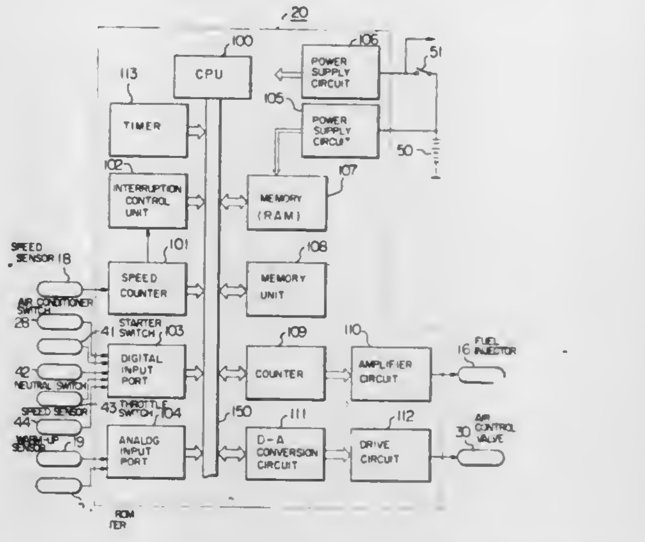
U.S. Cl. 123—339 **6 Claims**

1. In a method of controlling an idling speed of an internal combustion engine in accordance with a basic control variable preliminary established for controlling an idle air flow so as to maintain the idling speed at a rate corresponding to a warming condition of the engine, the improvement including:

selectively using at least two different supply sources for supplying said basic control variable in accordance with engine conditions and load conditions of said engine,

wherein said supply sources include at least a first basic control variable supply source for engine starting purposes and a second basic control variable supply source for warming up purposes, and

wherein upon change-over between said sources, said control variable obtained in accordance with said first source is decreased by a predetermined value every predetermined interval such that when said control variable becomes smaller than one obtained in accordance with said second source, said control variable is varied in accordance with said second source.



4,444,169

AIR-FUEL RATIO CONTROLLING DEVICE FOR INTERNAL COMBUSTION ENGINES

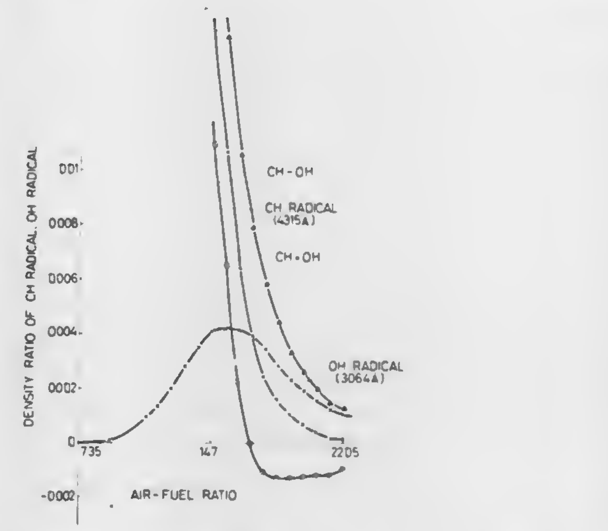
Tadashi Kirisawa; Teruo Yamauchi, and Yoshishige Oyama, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 4, 1982, Ser. No. 439,300

Claims priority, application Japan, Nov. 11, 1981, 56-179766

Int. Cl.³ F02M ***7/10***

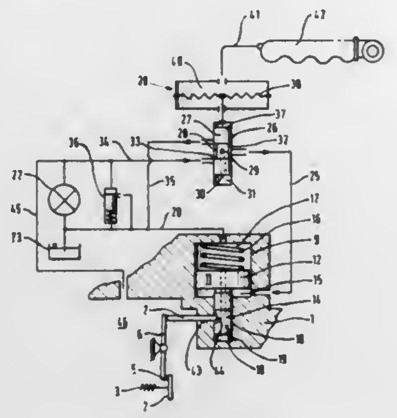
U.S. Cl. 123—344 **7 Claims**



1. An air-fuel ratio controlling device for internal combustion engines, comprising a means for detecting a flow rate of the air supplied into a cylinder in an internal combustion engine, a means for detecting an air-fuel ratio of a gaseous mixture supplied into said cylinder, a control means for setting the air-fuel ratio to an optimum level on the basis of output signals from said air flow rate detecting means and said air-fuel ratio detecting means, and a means for controlling the supplying of the fuel into said cylinder, in accordance with an output signal from said control means in such a manner that the air-fuel ratio is in an optimum level, said air-fuel ratio detecting means consisting of a means for detecting the light generated by a flame in a combustion chamber, to determine the combustion condition, which corresponds to an actual air-fuel ratio, in said cylinder.

4,444,170
FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

Gerald Höfer, Weissach, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Aug. 19, 1982, Ser. No. 409,419
Claims priority, application Fed. Rep. of Germany, Oct. 7, 1981, 3139789
Int. Cl.^{3} F02D *7/00*
U.S. Cl. 123—382 **4 Claims**



1. A fuel injection pump for internal combustion engines including combustion chambers, said fuel injection pump including a fuel injection quantity adjustment member and an associated device for the adjustment of the adjustment member, an adjustment device having a first control piston adjustable against an adjustable control spring and arranged to be placed under varying control pressures, whereby movement of the injection quantity adjustment member is adjustable, said pump further including a control device for changing the control pressure, said control device including a second control piston having at least a frontal side, means for operating said second piston in response to a force generated by the density of air supplied to the combustion chambers of the internal combustion engine, and by a control pressure which is disposed in a cylinder, and said second control piston further arranged to delimit with said frontal side a pressure chamber, which is connected by way of a constantly open control pressure line with a work space of said first control piston, said second control piston has first and second control edges, said first control edge controls only a pressure line leading from a pressure source into said pressure chamber and said second control edge controls only a relief line leading from said pressure chamber to a return line, said second control piston having one position at which said first and second control edges close said pressure line and said relief line leading to said second piston.

4,444,171
ELECTRONIC IGNITION TIMING

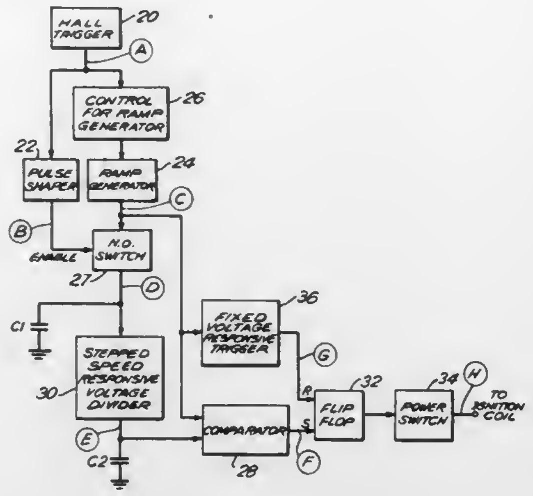
Keith Baxter, Washington, D.C., assignor to Echlin, Inc., Branford, Conn.
Filed Nov. 10, 1982, Ser. No. 440,547
Int. Cl.^{3} F02P *5/04*
U.S. Cl. 123—418 **14 Claims**

1. In an electronic ignition system, the timing circuit improvement to provide an advance in the ignition as a function of engine speed, comprising:

first means responsive to engine speed to generate a base signal having a magnitude representative of the time duration between spark ignition signals and thus being an inverse function of engine speed,

ramp generator means responsive to engine speed to provide a ramp signal having a duration that is an inverse function of engine speed,

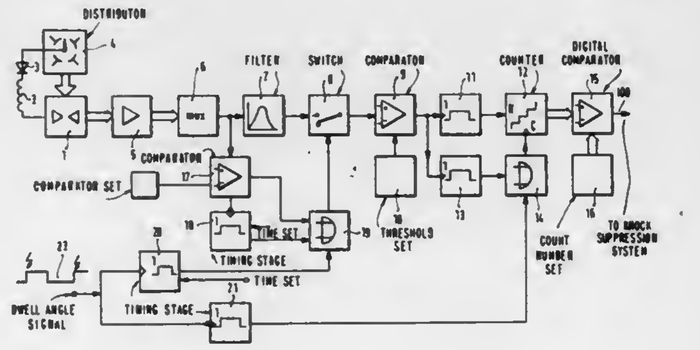
modifier means coupled to said base signal to provide a modified base signal having a magnitude that is reduced by predetermined amounts as a function of predetermined increases in engine speed,



first comparator means to compare said modified base signal and said ramp signal to provide a spark ignition signal when said ramp signal exceeds said modified base signal.

4,444,172
INTERNAL COMBUSTION ENGINE KNOCK SENSING SYSTEM

Franz Sellmaier, Schwieberdingen; Bernward Böning, Ludwigsburg; Rudolf Nagel, Asperg, and Rainer Bone, Vaihingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Jun. 18, 1982, Ser. No. 389,586
Claims priority, application Fed. Rep. of Germany, Jul. 18, 1981, 3128554
Int. Cl.^{3} G01M *15/00;* **F02P** *5/14;* **F02D** *9/00*
U.S. Cl. 123—425 **16 Claims**



1. In combination with an internal combustion engine,
a knock sensing system having

an ion current sensor (1) located in a combustion chamber of the engine and providing an ion current signal upon sensing occurrence of combustion in the chamber;

means (2, 3, 4) supplying an energizing voltage to the ion current sensor;

an evaluation circuit means connected to the ion current sensor for evaluating and analyzing the ion current supplied by the sensor,

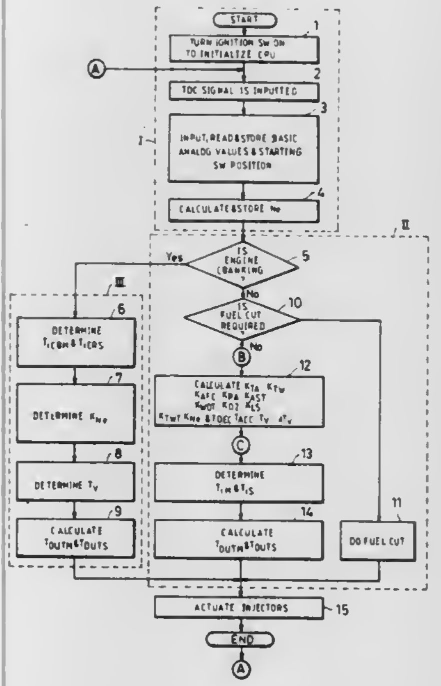
and comprising

means coupled to the internal combustion engine responsive to engine operation which results in disturbance signals in the current sensor, for providing disturbance control output signals;

and interruption means connected in said evaluation circuit means inhibiting analysis and evaluation in said evaluation circuit means of the signals from the sensor upon sensing of disturbance signals in the ion current signal.

4,444,173
ELECTRONIC FUEL INJECTION CONTROL SYSTEM FOR USE WITH AN INTERNAL COMBUSTION ENGINE, HAVING AN AFTER-START FUEL INCREASING FUNCTION

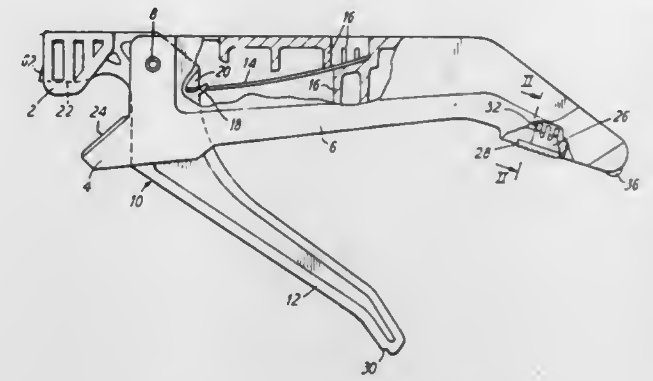
Akihiro Yamato, Sayama, and Shigeo Umesaki, Saitama, both of Japan, assignors to Honda Motor Co., Ltd., Tokyo, Japan
Filed Jun. 7, 1982, Ser. No. 385,517
Claims priority, application Japan, Jun. 11, 1981, 56-89931
Int. Cl.^{3} F02B *3/00*
U.S. Cl. 123—491 **4 Claims**



1. An electronic fuel injection control system employing digital processing circuitry for electronically controlling the quantity of fuel being supplied to an internal combustion engine which is equipped with a starter, a starting switch and a direct current voltage power source connected to said starter by way of said starting switch, said system comprising: a first sensor for sensing the rotational speed of said engine; a second sensor for sensing the temperature of said engine to supply an output signal representative of the engine temperature; analog-to-digital converter means for converting at least said output signal from said second sensor into a corresponding digital signal; means for generating a pulse signal in synchronism with rotation of said engine; means adapted to generate a signal indicative of said engine being in a starting state, when said starting switch is in a closed position thereof and a value of the rotational speed of said engine sensed by said first sensor is lower than a predetermined value corresponding to a cranking speed of said engine; means for increasing the quantity of fuel being supplied to said engine upon and after termination of generation of said engine start-indicative signal, said fuel increasing means being adapted to calculate an initial value of fuel increment applicable upon and after termination of generation of said engine start-indicative signal as a function of a value of said corresponding digital signal from said analog-to-digital converter means, solely one time, and gradually decrease said initial value thus calculated, in synchronism with generation of said pulse signal, at least said fuel increasing means and said analog-to-digital converter means being arranged to have operating voltage thereof supplied from said direct current voltage power source.

4,444,174
TILE PARTING DEVICES

Paul S. Hepworth, Oadby, and Martin G. Whitehouse, Fleckney, both of England, assignors to Plas Plugs Limited, England
Filed Jan. 18, 1982, Ser. No. 339,868
Int. Cl.^{3} B26F *3/00;* **B28D** *1/32*
U.S. Cl. 125—23 T **9 Claims**



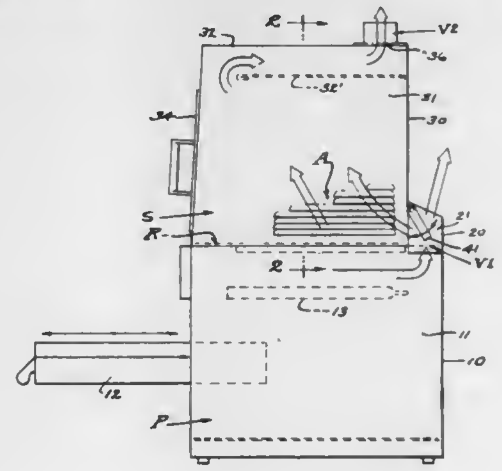
1. A tile parting system for parting cladding tiles along a pre-determined path, comprising:

(a) measuring means having a caliper arrangement for measuring the width of an area to be covered by a tile, means for receiving a tile of a width in excess of the width so measured, and means defining an elongated slot, for indicating upon a surface of said tile the path of a parting line to reduce the width of the tile by a required amount at least as great as the excess width; and

(b) scoring and parting means including a cutting edge, said cutting edge selectively insertable through said slot such that said tile may be scored along said parting line path by said cutting edge, and jaw members movably disposed in said scoring and parting means and having a chevron-shaped tile-receiving opening.

4,444,175
CONVECTION HEATED SECONDARY OVEN

Howard S. Reynolds, 1085 San Juan, Tustin, Calif. 92680
Filed Dec. 29, 1982, Ser. No. 437,143
Int. Cl.^{3} A21B *1/00*
U.S. Cl. 126—21 R **20 Claims**



1. A secondary convection oven above a primary oven and heated thereby, said including in combination;

a common pan-roof separating the two ovens,

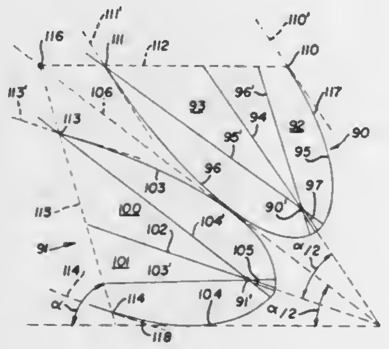
burner means in the primary oven and a first hot air exhaust vent discharge therefor,

an ambient air inlet through a side of the secondary oven for convection flow of outside air into said oven,

adjustable damper means at the first hot air exhaust vent of the primary oven dividing the said hot air exhaust from the burner means for convection flow proportionately into the secondary oven and externally of said two ovens, and a second hot air exhaust vent from the secondary oven, selective adjustment of said adjustable damper means increasing and decreasing secondary oven temperature.

4,444,176
SOLAR ENERGY COLLECTOR

Wallace G. Hanson, Rte. 2, Box 103, Dodge Center, Minn. 55927
Division of Ser. No. 12,838, Feb. 16, 1979, Pat. No. 4,297,988. This application Aug. 24, 1981, Ser. No. 295,749
Int. Cl.^{3} F24J *3/02*
U.S. Cl. 126—439 **4 Claims**



1. A stationary solar concentrator, fixed with respect to the earth comprising:

a collector module having entrance apertures and having two bidirectional energy receivers;

means for concentrating onto one or both said bidirectional energy receivers rays of the sun incident to said entrance apertures, comprising a first, a second, a third and a fourth cusp; said first and said second cusps comprising concave reflectors opposing a first plane reflector; said first plane reflector comprising, respectively, the obverse and reverse faces of a central plane bilateral reflector lying in a first plane forming with the horizontal a dihedral angle equal to three-fourths the maximum summer angle of apparent elevation of the sun; said third and fourth cusps comprising concave reflectors opposing a second plane reflector; said second plane reflector comprising, respectively, the obverse and reverse faces of a second central plane bilateral reflector lying in a second plane forming with the horizontal a dihedral angle equal to one-fourth the maximum summer angle of apparent elevation of the sun.

4,444,177
APPARATUS FOR CONVERTING SOLAR ENERGY INTO HEAT

Hermann Kirchmayer, Dorfstr. 18a, Antdorf, Fed. Rep. of Germany D-8121
Filed Dec. 14, 1981, Ser. No. 330,490
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1980, 3048499
Int. Cl.^{3} F24J *3/02;* **F24D** *11/00*
U.S. Cl. 126—437 **22 Claims**

1. An energy conversion system for converting solar energy into heat comprising

a solar collector including at least one first collector element transmissive of solar radiation having a first heat transfer fluid channel and at least one second collector element having a second heat transfer fluid channel, said first and second collector elements being mountable so that said first collector element receives more solar radiation than said second collector element;

a high-temperature accumulator for receiving high-temperature heat transfer fluid from said first channel;

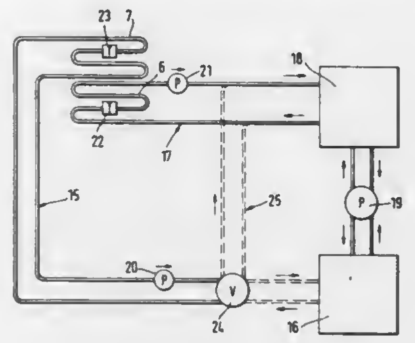
a low-temperature accumulator for receiving low-temperature heat-transfer fluid from said first channel;

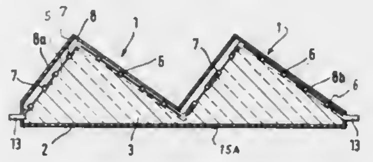
first communication means for communicating said high-temperature accumulator with said first channel;

second communication means for communicating said low temperature accumulator with said first channel;

third communication means for communicating said low-temperature accumulator with said second channel;

first pump means for circulating heat transfer fluid between said first channel and said accumulators;





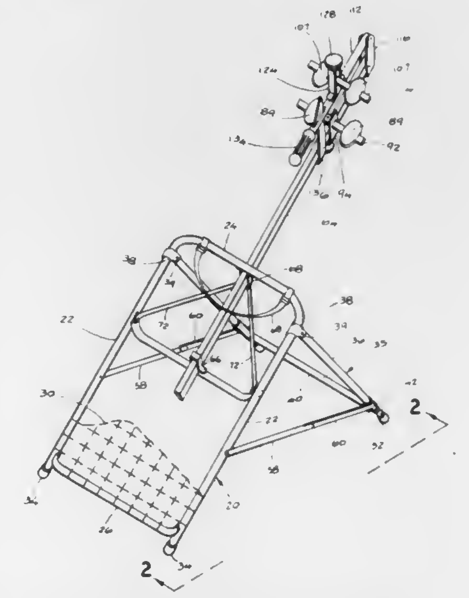
second pump means for circulating heat transfer fluid between said second channel and said low temperature accumulator;

temperature responsive valve means for directing high-temperature fluid from said first channel to said high temperature accumulator and for directing low temperature fluid to said low-temperature accumulator; and

heat pump means for extracting heat energy from the low temperature fluid in said low temperature accumulator.

4,444,178
INCLINED TRACTION FRAME

Ming C. Kuo, 19350 Christina Ct., Cerritos, Calif. 90701
Filed Sep. 17, 1982, Ser. No. 419,226
Int. Cl.^{3} A63B *23/02*
U.S. Cl. 128—74 **14 Claims**



1. An inclined traction frame comprising:

a body-supporting frame;

means for mounting the body-supporting frame in a fixed angularly inclined position, the body-supporting frame in its angular position having an elevated upper end sufficient to support the weight of a user;

an elongated rigid leg support beam extending axially away from the body-supporting frame to an elevated position spaced from and elevated above the upper end of the body-supporting frame;

ankle support means carried on the leg support beam for supporting the underside of the user's lower legs in the vicinity of the ankles;

an elongated lever arm extending along and above the leg support beam;

means pivoting the lever arm to the leg support beam on the side of the beam opposite the ankle support means;

instep support means carried on the lever arm for supporting the instep of the user, the instep support means being raised away from or lowered toward the ankle support means when the lever arm is pivoted away from or toward the leg support beam, respectively;

guide means engaged with the lever arm for guiding pivotal motion of the lever arm toward and away from the leg support beam;

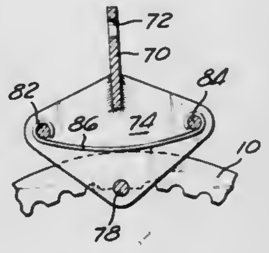
a latch on the guide means;

a spring-biased detent on the lever arm for engaging the latch in a snap lock when the lever arm is lowered toward the leg support beam for holding the instep support means in a leg clamping position spaced from the ankle support means, with the lever arm being held in a positively locked position preventing the lever arm from pivoting away from the leg support beam; and

means for moving the lever arm axially relative to the leg support beam against the bias of the spring-biased detent for releasing the detent from its locked position on the latch for allowing the lever arm to rotate away from the locked position to widen the spacing between the instep support means and the ankle suport means.

4,444,179
ORTHOPEDIC TONGS

Anthony C. Trippi, P.O. Box 4309, San Luis Obispo, Calif. 93403
Filed Mar. 2, 1981, Ser. No. 239,214
Int. Cl.^{3} A51F *5/04*
U.S. Cl. 128—75 **1 Claim**



1. Orthopedic traction tongs for applying tension at selected vector angles, measured with reference to an imaginary axis line extending vertically upwardly through the center of the head of a user patient when the tongs are in use, for being attached to the head of the user patient when in use by cranial pins, comprising the combination of:

main support means generally in the configuration of a rigid arc so constructed and configured as, when in use, to extend from side of the user patient's head over the top to the other side of the user patient's head;

a pair of pin support means for securing cranial pins to the orthopedic traction tongs, each pin support means comprising a generally arcuate member extending from the ends of the main support means, when in use, partially around the head of the user patient for permitting cranial pins to be inserted into the skull of the user patient at radially spaced intervals;

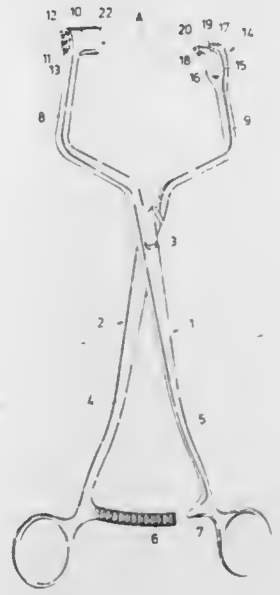
tension applying means positioned between the two ends of and on the main support member;

means for selectively attaching the tension applying means at any preselected position generally centrally of the main support member, for applying, when in use, tension at a preselected angle, measured with reference to the imaginary axis line, side-to-side and front-to-back of the head of the user patient; and

rod connecting means secured to the respective ends of the main support means for securing fixation rods to the traction tongs for applying force through said rods to said main support means, said rod connecting means each comprising a pair of relatively rotatable clamp elements and means for securing said clamp elements to each other in a fixed relationship for thereby applying said force as tension to the head of the user patient at a preselected angle measured, when in use, with reference to said imaginary line from front-to-back of the head of the user patient.

4,444,180
SURGICAL INSTRUMENT FOR ENGAGING A BONY PART OF THE HUMAN BODY AND GUIDING A DRILL BIT INTO A SPECIFIC LOCATION IN THE BONY PART

Gerhard Schneider, Älta, and Lars G. B. Peterson, Partille, both of Sweden, assignors to Aktiebolaget Stille-Werner, Stockholm, Sweden
Filed Mar. 1, 1982, Ser. No. 353,707
Int. Cl.^{3} A61F *5/04*
U.S. Cl. 128—92 EB **9 Claims**



1. A surgical instrument for joining a ligament to a bony part of the human body, by immovably engaging a bony part of the human body and precisely guiding a drill bit into a specific precisely defined location in the bony part, comprising, in combination, a pair of lever arms pivotably attached at a point intermediate their ends; locking means for locking the arms together in a fixed position with respect to each other; means on each arm on the same side of the pivot attachment for manipulating the arms in a swinging movement about the pivot; each arm on the other side of the pivot attachment being shaped so that the pair of arms can embrace the bony part during an operation; one of the arms carrying immovably and fixedly mounted on one end on said other side a guide head having at least one through passage to guide a drill bit, and the other arm carrying immovably and fixedly mounted at one end on the said other side an engagement head having at least one opening therethrough defining an open area corresponding to the specific precisely defined location to be drilled into in the bony part; the inner facing surfaces of the guide head and engagement head being provided with a plurality of projections shaped to immovably and fixedly engage said bony part, the through passage in the guide head being aligned along an axis which in the operating position of the instrument, with the guide head and the engagement head engaging said bony part, is directed towards and within the dimensions of the open area defined by the opening through the engagement head, so as to

precisely direct the drill bit along said axis to the selected specific precisely defined location in the bony part.

4,444,181
BONE CLIP

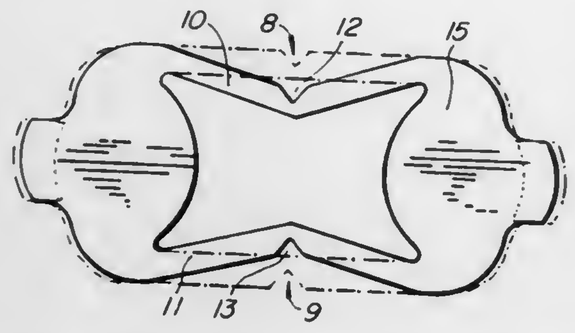
Henk S. Wevers; Charles Sorbie, both of Kingston, and Gerald A. B. Saunders, Bath, all of Canada, assignors to Queen's University at Kingston, Kingston, Canada

Filed Oct. 20, 1981, Ser. No. 312,939

Claims priority, application Canada, Nov. 10, 1980, 364395

Int. Cl.^{3} A61F *5/04*

U.S. Cl. 128—92 D **3 Claims**



1. A one piece endoprosthetic bone clip for joining bones in vivo under a selected compressive force, comprising:

an elongated metallic body member having an elongated slot means in a central portion thereof and having coplanar, unilaterally extending single legs at each longitudinal end thereof; said legs being formed unitarily with and extending substantially perpendicular to said body member; said legs being adapted for insertion into respective predrilled holes in said bones being joined;

said body member including arm means, contiguous said slot means, for being plastically deformed in a plane perpendicular to the plane of said legs, so as to draw said legs towards each other in parallel relation, imparting said selected force, and thereby joining said bones.

4,444,182
ANAESTHETIC VAPORIZER

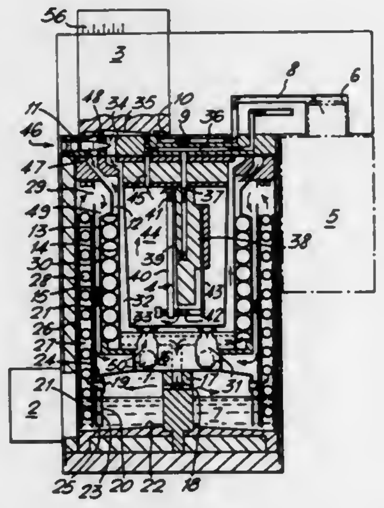
Raymond S. Gregory, Bingley, England, assignor to The Medishield Corporation Limited, London, England

Filed Aug. 27, 1981, Ser. No. 296,651

Claims priority, application United Kingdom, Sep. 9, 1980, 8029083

Int. Cl.^{3} A61M *17/00*

U.S. Cl. 128—204.14 **23 Claims**



1. An anaesthetic vaporiser comprising a chamber defining at least in part a sump for volatile liquid anaesthetic, an inlet into and an outlet from the chamber for the passage therethrough of gas, gas/vapour, a main flow path connecting the inlet to the outlet with said inlet in fluid communication with said sump, the main flow path including a tortuous section having a total free volume not less than the maximum volume of liquid intended to be held in the sump; and a by-pass flow path means communicating with said main flow path, for fluidically bypassing said tortuous section said by-pass flow path means extending into said sump and defining a duct having a first port means which is blocked by the presence of liquid in the sump when the vaporiser is in its intended upright orientation ready for use, said first port means positioned to be unblocked to permit the passage of gas, gas/vapour from the inlet to the outlet through said by-pass flow path means when the vaporiser is displaced substantially from its intended upright orientation such that liquid flows from the sump and occupies space within the tortuous section.

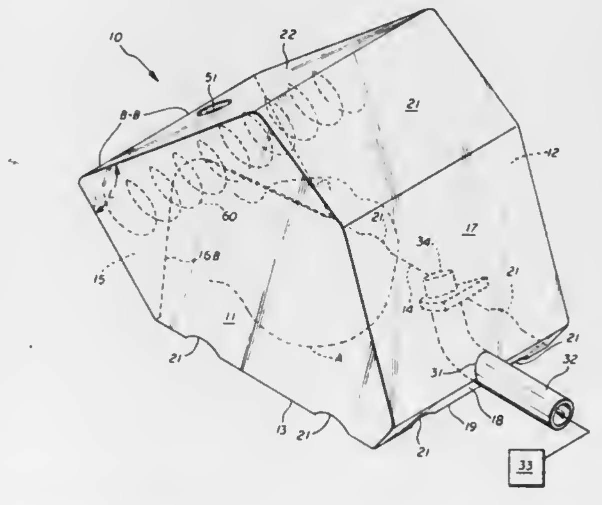
4,444,183
HOOD

David E. Heckendorn, 4719 Third St., Bacliff, Tex. 77518

Filed Dec. 4, 1981, Ser. No. 327,418

Int. Cl.^{3} A61M *16/02*

U.S. Cl. 128—205.26 **1 Claim**



1. A hood comprising:

a compartment open at the bottom thereof, said compartment including;

a front planar wall having a portion thereof adapted to be placed over a patient, a rear planar wall means comprising at least one planar surface, said rear planar wall means having means for receiving gas inlet means therethrough, means for causing gas entering said receiving means to form a continuous reservoir of gas adjacent said front planar wall, said reservoir forming means including a pair of connecting upper wall planar portions, one of which upper wall planar portions is linked to said front planar wall and the other of which is linked to said one rear planar surface, said upper wall planar portions forming an obtuse angle therebetween, said other upper wall planar portion and said one rear planar surface forming an obtuse angle therebetween, and said one upper wall planar portion and said front planar wall having a curved juncture and being approximately perpendicular to each other, and

gas inlet means positionable within said gas inlet receiving means, said gas inlet means being so positionable as to direct gas at an acute angle relative to said other upper wall planar portion, said pair of upper wall planar portions being so angularly related that gas from said gas inlet means striking said other upper wall planar portion at an acute angle will thereafter strike said one upper wall planar portion at an acute angle, and said one upper wall planar portion and said front planar wall are so angularly related that said gas from said gas inlet means striking said one upper wall planar portion will thereafter strike said front wall in an approximately perpendicular manner.

4,444,184
SURGICAL INSTRUMENT FOR OPERATING ON JOINTS

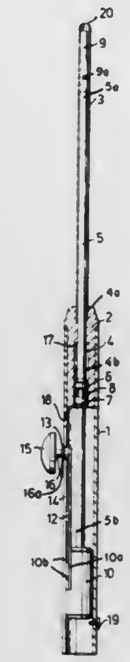
Nils Oretorp, Linköping, Sweden, assignor to Aktiebolaget Stille-Werner, Stockholm, Sweden

Filed Nov. 20, 1978, Ser. No. 962,262

Claims priority, application Sweden, Nov. 29, 1977, 7713526

Int. Cl.^{3} A61B *17/32*

U.S. Cl. 128—305 **12 Claims**



1. A surgical instrument especially designed for operating on joints which is independent of any light transmitting devices, and which can be manipulated freely while sealing off the joint so that body fluids cannot escape through the instrument itself, comprising, in combination, an elongated hollow body; an elongated cylindrical tube fixedly connected at one end to the body, and adapted for insertion into a joint at a selected location; a manipulator shaft axially movable in the tube and in the body; a substantially planar cutting means on one end of the shaft; and means manipulatable by the fingers to move the shaft between a first position in which the cutting means is withdrawn within the tube and a second position in which the cutting means is extended beyond the end of the tube; the cylindrical tube having a rounded closed end with a slot therethrough through which the cutting means is extended and withdrawn, and effective to guide the cutting means during such movement and to restrain the cutting means against rotation during such movement and while cutting.

4,444,185
FIBEROPTIC TRACHEOTOMY METHOD

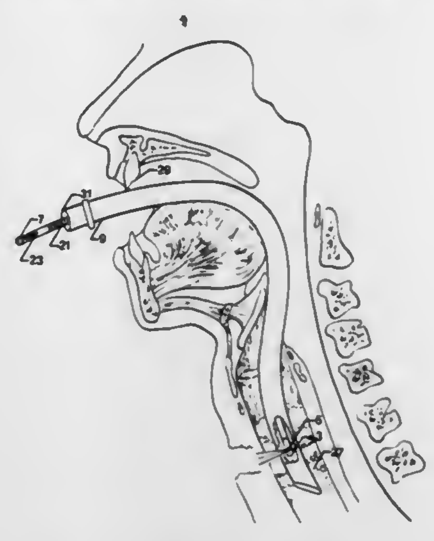
Martin A. Shugar, 3520 N. 30th Ter., Hollywood, Fla. 33021

Filed Aug. 19, 1981, Ser. No. 294,414

Int. Cl.^{3} A61F *17/32*

U.S. Cl. 128—305.3 **8 Claims**

1. A method for performing tracheotomies comprising incising the skin and subcutaneous tissues in the anterior portion of the neck of the patient, dividing the strap muscles and thyroid isthmus, inserting a flexible elongated tubular fiberoptic device down through an endotracheal tube which is at least partially transparent to visible light and which extends beyond the desired point of external entry into the trachea, said device capable of emitting high intensity light from an aperture means at the end inserted into the patient and said device having distance marking means on its exterior surface along its length enabling the determination of the distance from a point of observation on said device to said aperture means, advancing said device into the proximal trachea an appropriate distance with reference to said aperture means depending on the patient's age, sex and height, said distance being measured from a fixed point of observation in the immediate vicinity of said distance marking means on said exterior surface of said device, rotating said device in said endotracheal tube until said aperture means is positioned anteriorly to the patient's neck, turning on said light source and observing externally from said patient's neck through the exposed tissues of said patient through which light is transmitted the exact locus of the aperture means of said device from which light eminates which is also the exact locus of the appropriate point of entry into said trachea, and completing said tracheotomy through said point of entry.



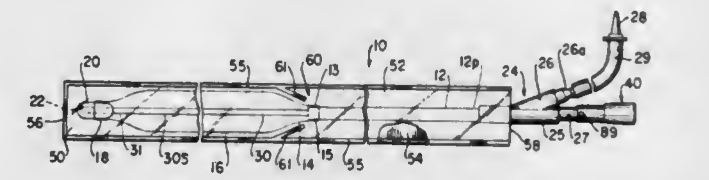
4,444,186
ENVELOPE WRAPPING SYSTEM FOR INTRA-AORTIC BALLOON

Sidney Wolvek, Brooklyn, N.Y.; Bruce L. Hanson, Wayne, and John J. Lucas, Sparta, both of N.J., assignors to Datascope Corporation, Oakland, N.J.

Filed Jun. 15, 1981, Ser. No. 273,407

Int. Cl.^{3} A61B *17/12*

U.S. Cl. 128—325 **14 Claims**



1. A wrapping system for an intra-aortic balloon comprising:

a balloon assembly including a hollow catheter and an elongated envelope having its proximal end connected to said catheter,

a member coupled to the distal end of said envelope and extending through it to support the envelope along its length,

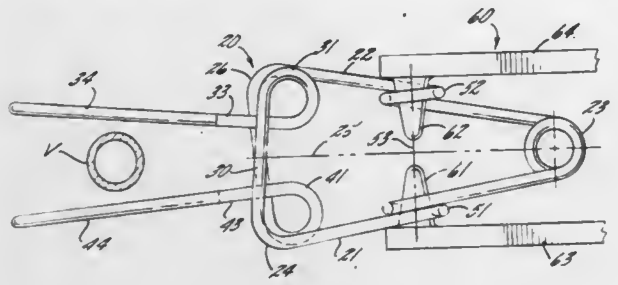
means coupled to the distal end of said envelope and extending through it to support the envelope along its length,

means coupled to said distal end of said envelope for rotating said distal end, and

a housing in which said envelope is located, said housing having means for restraining the proximal end of said envelope as the distal end is rotated to cause wrapping of the envelope relative to the catheter to proceed from the distal end of the envelope toward the proximal end.

4,444,187
MINIATURE SURGICAL CLIP FOR CLAMPING SMALL BLOOD VESSELS IN BRAIN SURGERY AND THE LIKE

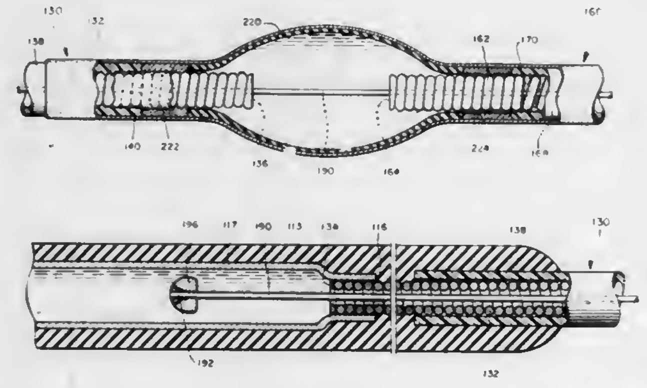
Alfred R. Perlin, Highland Park, Ill., assignor to Metatech Corporation, Northbrook, Ill.
Filed Dec. 9, 1982, Ser. No. 448,177
Int. Cl.^{3} A61B *17/00, 17/12*
U.S. Cl. 128—346 **8 Claims**



1. A miniature surgical clip made of a single continuous length of spring wire for clamping blood vessels in brain surgery and the like comprising, in combination, a pair of operating members arranged at an acute angle with respect to one another connected together at a common apex and lying adjacent a common plane, the operating members being symmetrically formed and each having an inwardly bent base leg, the inwardly bent legs being extended mutually inwardly in overlapping relation resulting in parallel portions which are spaced apart by an amount equal to the thickness of the wire so as to define between them a lateral guideway lying in the common plane, each of the inwardly bent legs terminating in a 270° exit loop having straight exiting portions which are captive in, and which extend through, the guideway parallel to one another to form cooperating jaws which are straight and parallel, the operating members being outwardly sprung with respect to one another for biasing the jaws resiliently into clamping engagement so that when mutually inward force is applied to the operating members the jaws are spread apart for engagement of a blood vessel between them and so that when the force is released the jaws are guided by the guideway into directly opposed clamping engagement with the blood vessel.

4,444,188
BALLOON CATHETER

Seymour Bazell, 9235 N. Latrobe, Skokie, Ill. 60077, and Edward M. Goldberg, 225 Maple Hill Rd., Glencoe, Ill. 60022
Continuation-in-part of Ser. No. 178,305, Aug. 15, 1980, Pat. No. 4,351,341. This application Jul. 22, 1981, Ser. No. 285,781
Int. Cl.^{3} A61M *25/00*
U.S. Cl. 128—348.1 **10 Claims**



1. A balloon catheter for insertion in a body passage, said catheter comprising:

a proximal cathether segment comprising a proximal coil spring disposed inside a proximal sheath that is sized to fit within the body passage;

a distal catheter segment comprising a distal coil spring disposed inside a distal sheath that is sized to fit within the body passage;

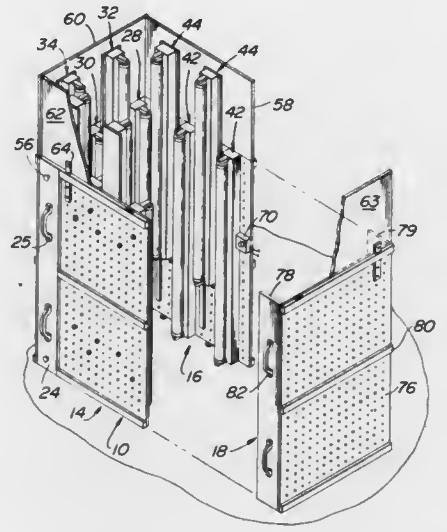
the proximal and distal coil springs being movable apart under pressure of fluid introduced through the lumen of the proximal coil spring;

an inflatable resilient balloon member secured to and disposed between the proximal and distal catheter segments and sized to fit within the body passage, the balloon member having a proximal end secured to the proximal sheath and a distal end secured to the distal sheath, such that fluid introduced into the lumen of the proximal coil spring is confined within a volume bounded by the balloon member and the proximal and distal sheaths; and

means for coupling the proximal catheter segment to the distal catheter segment such that the separation therebetween and therefore the length of the balloon member in the direction of the catheter increases automatically as the balloon member inflates, yet the separation therebetween is prevented from exceeding a maximum value.

4,444,189
PHOTOTHERAPY BOOTH

Paul J. Seiverd, 550 Arlington Ave., Milmont Park, Pa. 19033
Filed Dec. 21, 1981, Ser. No. 333,226
Int. Cl.^{3} A61M *33/00, 33/06*
U.S. Cl. 128—395 **9 Claims**

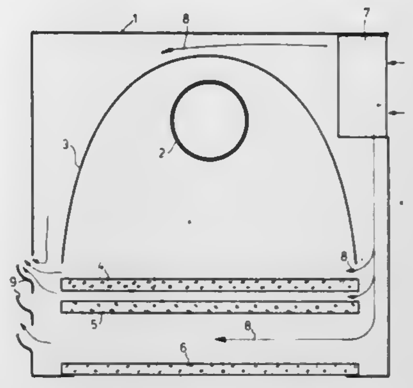


1. A booth for exposing a person to light within a confined space comprising at least three walls with the first wall extending between a side edge of each of the second and third walls, means coupling said walls together, said walls being rigid perforated substrates, ultraviolet lamps on each of said walls, at least one lamp on each wall being vertically adjustable along a track on its wall for increasing the effective height of light exposure to a person within the booth, switch means on one of said walls for controlling said lamps, and electrical conductor means interconnecting the lamps on said one wall to the lamps on said other walls.

4,444,190
DEVICE FOR THE PHOTOTHERAPEUTIC TREATMENT OF HYPERBILIRUBINEMIA

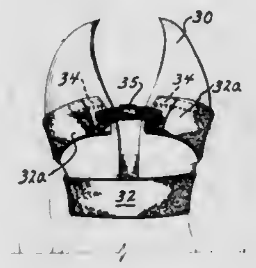
Maximilian F. Mutzhas, Sonnenstr. 17, D-8000 Müchen 2, Fed. Rep. of Germany
Filed Nov. 9, 1981, Ser. No. 319,454
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1980, 3044184
Int. Cl.^{3} A61N *5/00*
U.S. Cl. 128—396 **24 Claims**

1. A phototherapeutic irradiation device for the treatment of hyperbilirubinemia in newborn infants comprising radiator means for producing radiation having an effective range of between 405 and 545 nm; means for limiting to 10% at most the radiation in said range below about 460 nm; and means for directing said radiation along a path.



4,444,191
COMFORT GARMENT

Marguerite J. Harned, 6301 Lincoln Ave., Evansville, Ind. 47715
Continuation-in-part of Ser. No. 50,708, Jun. 21, 1979, abandoned. This application Jul. 21, 1981, Ser. No. 285,771
Int. Cl.^{3} A41C *3/02;* **A61F** *5/02*
U.S. Cl. 128—482 **16 Claims**



1. A comfort garment for the breast area of the torso of a female comprising a first portion encircling the region of the female below said breast area, a second portion extending upwardly and slantingly from said first portion in an overlapping holding down relationship with the upper portions of the breasts, and a third portion overlying the front of the breasts also in a movement restricting relationship.

4,444,192
BRASSIERE

Harold Stern, Wyckoff, N.J., and Elisabeth Suleiman, Newark, Del., assignors to International Playtex, Inc., Stamford, Conn.
Continuation-in-part of Ser. No. 269,916, Jun. 2, 1981, Pat. No. 4,372,322. This application Feb. 4, 1983, Ser. No. 464,074
Int. Cl.^{3} A41C *3/00*
U.S. Cl. 128—491 **29 Claims**

1. A brassiere comprising:

two breast receiving cups each having an inner edge, an outer edge, and a bottom edge;

cup framing means peripherally extending about said cups;

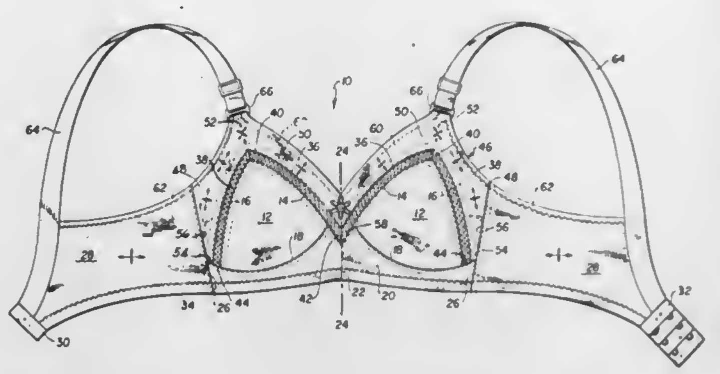
body encircling means affixed laterally outward of said framing means;

shoulder straps extending upward of said cup framing means;

said cup framing means comprising:

a non-stretchable bottom portion connected directly to said bottom edge of a respective cup, and secured at its outer edge to a respective body encircling means;

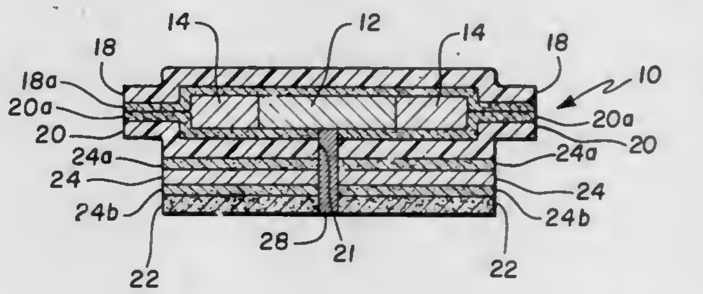
a plurality of frame panels of multi-directional stretchable material for each cup extending along the inner and outer edge of said cups; and



transition means interconnecting said frame panels and the inner and outer edge of said cup for providing a transition between the cup and the multi-directional stretchable frame panels.

4,444,193
FLUID ABSORBENT QUANTITATIVE TEST DEVICE

Eric J. Fogt, Maple Grove; Marye S. Norenberg, Blaine; Darrel F. Untereker, Cedar, and Arthur J. Coury, St. Paul, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.
Filed Jan. 11, 1982, Ser. No. 338,274
Int. Cl.^{3} A61B *5/00*
U.S. Cl. 128—632 **22 Claims**

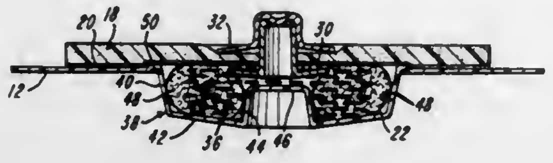


1. A test device which provides a visual indication of the content of a substance in a fluid in excess of a predetermined amount, comprising: absorbent means of a predetermined absorbency for absorbing a predetermined volume of fluid, the absorbent means defining first and second reaction areas; the first reaction area being circular in shape, of a predetermined diameter and including means defining a substantially centrally located inlet to the first reaction area for the introduction of the substance-containing fluid thereto; the second reaction area being arranged in interconnecting relationship with the first reaction area about the perimeter of the first reaction area whereby fluid introduced into the center of the first area migrates radially outward through the first area and into the second area; the first reaction area including a composition of predetermined amount which reacts with an initial amount of the substance in the fluid, up to the predetermined amount, so as to preclude any substantial effect of such initial amount of the substance in the second reaction area; the second reaction area including a composition which undergoes a visual change in appearance upon contact with any of the substance remaining in the fluid after migration of the fluid through the first reaction area to produce a visual change in appearance of at least a portion of the second reaction area upon migration of substance-containing fluid into the second reaction thereby indicating the presence of the substance in the fluid in excess of the predetermined amount.

4,444,194
MEDICAL ELECTRODE ASSEMBLY

Larry R. Burcham, Xenia, Ohio, assignor to NDM Corporation, Dayton, Ohio

Filed Mar. 8, 1982, Ser. No. 356,097
Int. Cl.³ A61B *5/04*
U.S. Cl. 128—641 **13 Claims**

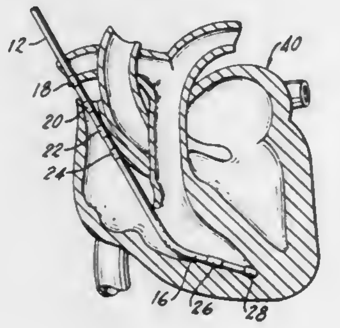


1. In a disposable medical electrode assembly of the type having a pre-gelled medical electrode including a supporting sheet having an adhesive coating on one surface, a foam gel pad adjacent said one surface, a conductor comprising a snap fastener part projecting through said supporting sheet and said gel pad and squeezing a portion of said gel pad against said supporting sheet, surrounding portions of said gel pad cooperating with said snap fastener part to form a cup-like cavity, and a cover engaging said adhesively coated surface and receiving said gel pad, the improvement wherein said cover comprises a sheet construction formed to include a substantially planar panel secured to said supporting sheet by the adhesive coating thereon, said sheet construction further including a gel pad receiving cavity comprising a protuberance projecting from said panel, said protuberance having a bottom wall and a plug extending from said bottom wall toward said panel, said plug being partly received in said cup-like cavity.

4,444,195
CARDIAC LEAD HAVING MULTIPLE RING ELECTRODES

Philip Gold, Pompano Beach, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed Nov. 2, 1981, Ser. No. 317,461
Int. Cl.³ A61B *5/04;* **A61N** *1/04*
U.S. Cl. 128—642 **5 Claims**



1. An endocardial lead comprising:

an elongated, flexible electrically insulative tubing having proximal and distal ends and an outer surface, said insulative tubing having at least one pair of closely spaced apertures extending through the wall of the tubing at predetermined positions intermediate said proximal and distal ends;

at least one elongated, flexible, electrical conductor positioned within the insulative tubing and extending for substantially the entire length of the insulative tubing, said electrical conductor having an insulative coating surrounding the electrical conductor over substantially the entire length thereof except for proximal and distal terminal portions;

the proximal terminal portion of said electrical conductor being connected to an electrical connector adapted for connection to a tissue stimulating or monitoring device;

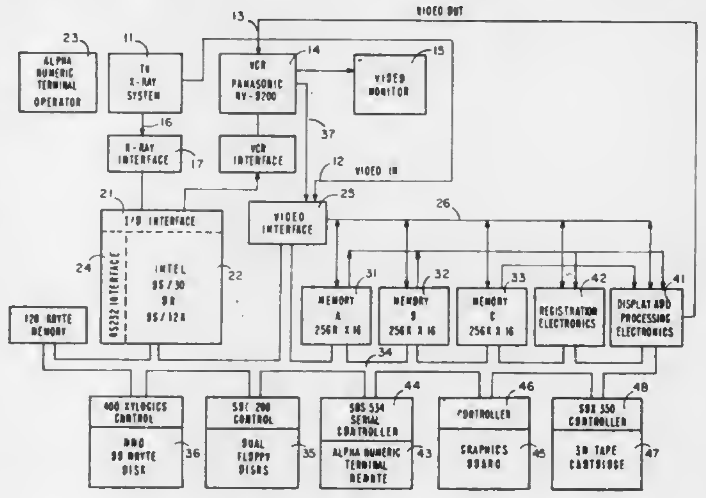
the distal terminal portion of said electrical conductor extending out of one aperture of said pair of apertures in said insulative tubing, first axially forwardly, second around the circumference of the tubing defining a loop, third under or over the axially forwardly extending portion of said conductor and fourth axially forwardly over or under the loop to and into the other aperture, whereby said electrical conductor is fixed in a knot formation at the distal end thereof in such a manner as to prevent the pulling out of said conductor from said tubing; and,

at least one metal sleeve defining a ring electrode on the outer surface of said insulative tubing, said metal sleeve having an inner surface and being frictionally received over said insulative tubing and positioned over said at least one pair of apertures having an electrical contact surface on the inner surface of the at least one metal sleeve in contact with said distal terminal portion of said conductor whereby, when said metal sleeve is frictionally received over said insulative tubing and positioned over said at least one pair of apertures, said contact surface presses against and makes electrical contact with said distal terminal portion of said conductor between said pair of apertures.

4,444,196
DIGITAL INTRAVENOUS SUBTRACTION ANGIOGRAPHY

Jay A. Stein, Bedford, Mass., assignor to Diagnostic Technology, Inc., Bedford, Mass.

Filed Jun. 21, 1982, Ser. No. 390,256
Int. Cl.³ A61B *6/00;* **H04N** *5/32*
U.S. Cl. 128—654 **17 Claims**



1. In a method of performing digital intravenous subtraction angiography including the steps of directing penetrating radiation through a subject before and after intravenous injection of radiopaque material that significantly attenuates said radiation to obtain corresponding analog video signals that are converted into digital form that are processed to form a data signal representative of a shadowgraph with said material and a mask signal representative of substantially the same shadowgraph with significantly less of said material to provide a difference digital signal that is converted into analog form as an output video signal and displayed, the improvement comprising:

(a) cumulatively combining a sequence of digital video signals each representative of substantially the same shadowgraph to form an intermediate image signal;

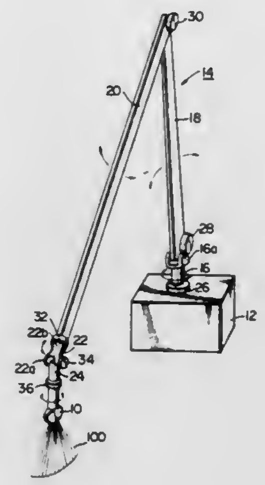
(b) selecting at least one but less than all of said intermediate signals to form a mask signal; and

(c) differentially combining the mask signal thus formed with at least one non-adjacent intermediate image signal having substantial maximum contrast in response to injection of said material to provide an output digital difference signal.

4,444,197
ULTRASONIC DIAGNOSTIC PROBE SCANNER

Akira Koyano, and Seiichiro Mizuno, both of Tokyo, Japan, assignors to Aloka Co., Ltd., Tokyo, Japan

Filed Mar. 25, 1982, Ser. No. 361,762
Claims priority, application Japan, Mar. 26, 1981, 56-43175
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—660 **8 Claims**



1. An ultrasonic diagnostic probe scanner comprising:

a base;

a support rotatably coupled to said base such that said support is perpendicular to said base and rotates about an axis perpendicular to said base;

a first sensor for sensing an angle of rotation of said support;

a first arm swingably coupled to said support such that it swings relative to said support;

a second sensor for sensing an angle of swing of said first arm relative to said support;

a second arm swingably coupled to said first arm such that it swings relative to said first arm;

a third sensor for sensing an angle of swing of said second arm relative to said first arm;

a grip rotatably coupled to said second arm such that it rotates about a longitudinal axis of said second arm;

a fourth sensor for sensing an angle of rotation of said grip relative to said second arm;

a first support rod swingably coupled to said grip such that it swings relative to said grip;

a fifth sensor for sensing an angle of swing of said first support rod relative to said grip;

a second support rod rotatably coupled to said first support rod such that it rotates about a longitudinal axis of said first support rod;

a sixth sensor for sensing an angle of rotation of said second support rod relative to said first support rod; and

an ultrasonic probe coupled to an end of said second support rod;

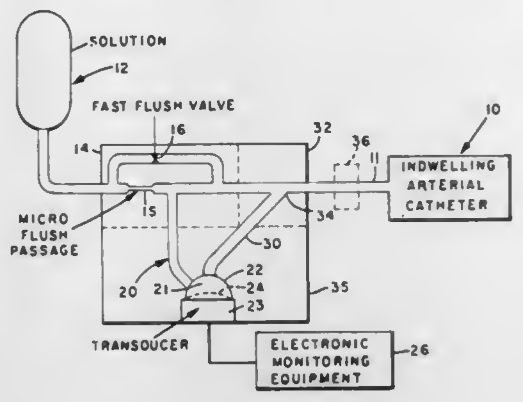
whereby outputs of said first, second, third, fourth, fifth and sixth sensors accurately and repeatably set a position of said probe.

4,444,198
CIRCULATORY MONITORING SYSTEM AND METHOD

John H. Petre, 3253 Bradford Rd., Cleveland Heights, Ohio 44118

Filed Dec. 21, 1981, Ser. No. 332,737
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—673 **54 Claims**

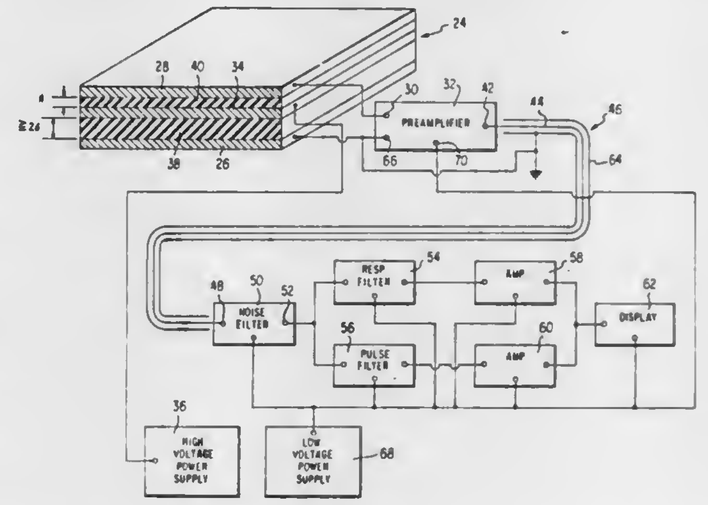
1. In an arterial monitoring system combination, an indwelling catheter, a source of solution under pressure, a dynamic line connecting the catheter to the source, a chamber between said source and catheter, a normally static line connecting the dynamic line to the chamber, a transducer operative to monitor pressure fluctuations in the chamber, and means to flush said chamber to said dynamic line without compromising the system when said chamber is closed or non-vented to the atmosphere.



4,444,199
METHOD AND APPARATUS FOR MONITORING PHYSIOLOGICAL CHARACTERISTICS OF A SUBJECT

William A. Shafer, 1745 Soledad Way, San Diego, Calif. 92109, assignor to William A. Shafer and Decision Science, Inc., both of San Diego, Calif.

Filed Jul. 21, 1981, Ser. No. 287,073
Int. Cl.³ A61N *5/04*
U.S. Cl. 128—691 **7 Claims**



1. A method of monitoring the phsiological characteristics of a subject by measuring changes in the streaming potential caused by the flow of electrolytes within the blood stream of said subject, said method comprising the steps of

placing sensor means for measuring said streaming potential adjacent to and spaced from the body of said subject;

generating a sensor output signal corresponding to said streaming potential, said streaming potential being determined by the physiological responses of said subject;

filtering said sensor output signal to provide a filter output signal having frequency components not higher than 4 Hz; and

displaying said filter output signal, the displayed signal corresponding to changes in said streaming potential and being indicative of the physiological characteristics of said subject.

4,444,200

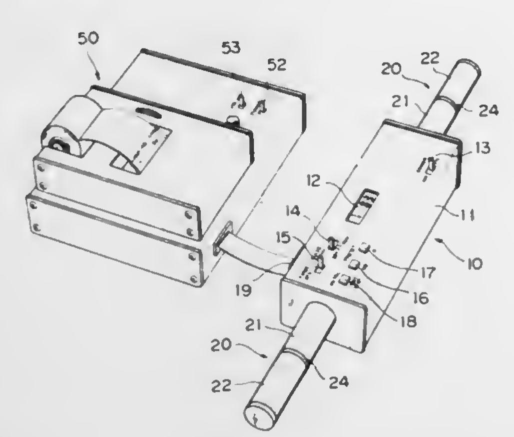
HEART PULSE RATE MEASURING SYSTEM

Iwao Fujisaki, Ichikawa; Shuichi Kosuge, Tama; Syuu Ogawa, Kasukabe; Kimihiko Sato, Funabashi, and Toshimi Soeda, Tokyo, all of Japan, assignors to Senoh Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 4, 1981, Ser. No. 299,578

Int. Cl.^{3} A61B *5/04*

U.S. Cl. 128—706 **5 Claims**



1. An apparatus for measuring the heart pulse rate of a user, comprising:

(a) a casing;

(b) a pair of rod-shaped grip sensors extending outwardly from the opposite sides of said casing, each of said grip sensors being composed of first and second cylindrical conductive electrode means arranged in axially aligned relationship and electrically insulated from each other for sensing a heart pulse signal utilizing potentials at four points on the user's body, obtained when the user grips both of said first and second electrode means of each said grip sensor with one hand; and

(c) an electric circuit contained in said casing, said electric circuit including:

a differential amplifier having a common ground electrically connected to said first conductive electrode means of each of said grip sensors and a pair of additional inputs respectively electrically connected to said second electrode means of each of said grip sensors for providing an output corresponding to a difference between the heart pulse signals from said grip sensors;

a filter circuit means having an input from said differential amplifier for eliminating noises from the heart pulse difference signal applied thereto from said differential amplifier;

a digital computer means responsive to an input from said filter circuit means for calculating a heart pulse rate;

a display means associated with said digital computer means for displaying the calculated heart pulse rate;

an AC-DC converter connected between said differential amplifier and said digital computer means for converting an AC signal from said differential amplifier into a corresponding DC signal; and

said digital computer means including means sensitive to the DC signal from said AC-DC converter for causing said display means to start displaying the calculated heart pulse rate thereon.

4,444,201

RESPIRATION MONITORING APPARATUS AND METHOD

Ayao Itoh, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 19, 1981, Ser. No. 294,290

Claims priority, application Japan, Aug. 27, 1980, 55-118162

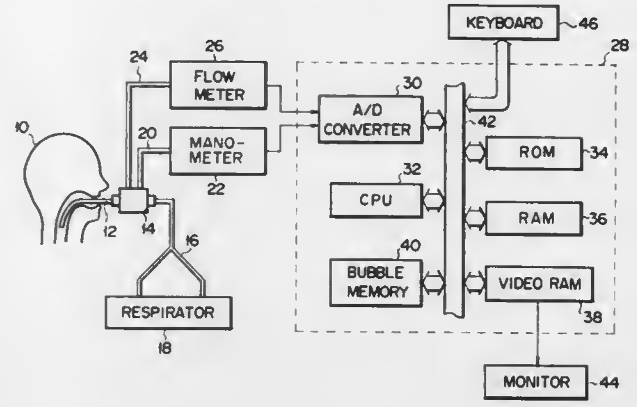
Int. Cl.^{3} A61B *5/08*

U.S. Cl. 128—716 **12 Claims**

1. A respiration monitoring apparatus which comprises:

means for measuring the airway pressure and the flow rate of air of a living body fitted with an artificial respirator; and

signal processing means for determining the end of an expiratory period in accordance with the flow rate of breathed air measured by said measuring means, for storing the airway pressure being measured by said measuring means at the end of the expiratory period, for detecting when the measured level of the airway pressure falls below the level of the previously stored airway pressure, and for sending forth a detection signal when the measured level of the airway pressure falls below the level of airway pressure previously stored.



4,444,202

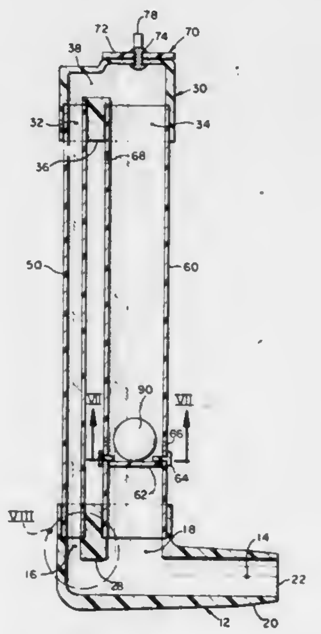
BREATHING EXERCISER

Howard Rubin, 1937 Nester St., Philadelphia, Pa. 19115, and Brent Weinerman, 897 Bridge St., Philadelphia, Pa. 19124

Continuation-in-part of Ser. No. 363,793, Mar. 31, 1982. This application Apr. 16, 1982, Ser. No. 369,174

Int. Cl.^{3} A61B *5/08;* A63B *23/00*

U.S. Cl. 128—725 **7 Claims**



1. A breathing exerciser, comprising:

first and second tubes;

a lower cap member, said lower cap member having means for receiving one end of each of the tubes, the lower cap member having a lower inlet/outlet opening defining a mouth-piece and a passageway communicating between the first tube and said lower inlet/outlet opening;

an upper cap member, said upper cap member having means for receiving the other ends of the tubes and having an upper inlet/outlet opening and a passageway communicating between both the tubes and said upper inlet/outlet opening;

means for closing the lower end of the second tube;

a floatable indicating member disposed in the second tube, the indicating member being upwardly movable by a vacuum induced during fluid flow along a fluid flow path from the upper inlet/outlet opening, through the first tube and out of the lower inlet/outlet opening, the amount of movement depending upon the rate of fluid flow;

means disposed in said upper inlet/outlet opening for adjustably limiting and delimiting the fluid flow rate in an effective range; and,

means for calibrating the effective range of the adjusting means, including the second tube having at least one opening immediately above the closing means and at least one opening immediately below the upper cap member,

whereby the tidal volume of air inhaled through the exerciser can be monitored and controlled.

4,444,203

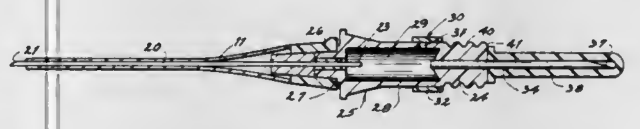
INTRAVENOUS CATHETER PLACING AND SPECIMEN GATHERING DEVICE

Allan Engelman, Walla Walla, Wash., assignor to Lab-A-Cath, Inc., Hermiston, Oreg.

Filed Mar. 26, 1982, Ser. No. 362,319

Int. Cl.^{3} A61B *5/00*

U.S. Cl. 128—764 **16 Claims**



9. An intravenous catheterization and blood sampling kit, comprising:

an elongated tubular hypodermic catheter needle with an open hollow core extending from a base end to a pointed end;

a hub fixedly mounting the catheter needle base end and defining a flashback chamber directly and openly communicating with the catheter needle core and having a transparent viewing wall, for receiving blood from the catheter needle following venipuncture by the pointed catheter needle end;

a vent hole formed through the viewing wall of the flashback chamber opening into the chamber to permit passage of fluid from the chamber;

an elongated catheter releasably received over the catheter needle and having a reduced end slidably engaging the catheter needle near the pointed catheter needle end and an enlarged end releasably received by the hub;

a vacuum container needle affixed to the hub and projecting in a direction opposite the catheter needle from the hub and having a hollow core opening directly into the flashback chamber, and leading from the hub to a pointed end;

a vacuum container formed of a hollow tube sealed by a resilient plug; and

vacuum container guide means for slidably receiving the vacuum container, plug first, through an open first end and having an opposite axially spaced second end to be removably secured to the hub with the vacuum container needle projecting into the guide means in the path of the resilient plug, for guiding the vacuum container axially in relation to the vacuum container needle.

4,444,204

SCOLIOSIS INCLINOMETER

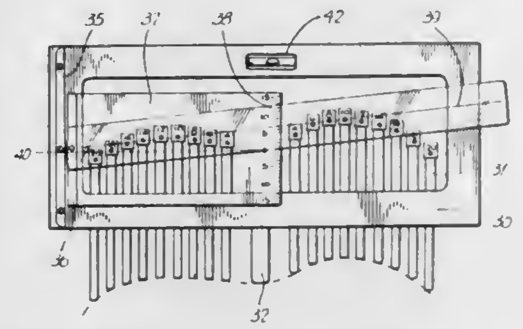
John T. Bryant; Michael Ashworth, both of Kingston, and Gerald Saunders, Bath, all of Canada, assignors to Queen's University at Kingston, Kingston, Canada

Filed Apr. 28, 1982, Ser. No. 372,475

Claims priority, application Canada, May 8, 1981, 377165

Int. Cl.^{3} A61B *5/10*

U.S. Cl. 128—781 **6 Claims**



1. A device for use in the preliminary evaluation of scoliosis, comprising:

a frame;

a plurality of stiff, parallel, laterally spaced elongated members arranged in pairs along a side edge of the frame with the two members of one pair being equally spaced on opposite sides of a centerline of the side edge, said elongated members being longitudinally frictionally slidable through the frame parallel to the centerline of the side edge thereof;

means on said frame for aligning said centerline with a patients' longitudinal spinal axis; and

means on said frame to determine an angle defined as a rib hump angle and subtended between a first line perpendicular to the movement of the elongated members and a second line intersecting said first line and passing through a selected position on each respective member of a selected said pair of members, and comprising scale means slidably mounted on said frame for movement parallel to said movement of said elongated members including line means corresponding to said first line, and cursor means pivotally mounted on said scale means for alignment with said second line.

4,444,205

APPARATUS FOR ASSESSING JOINT MOBILITY

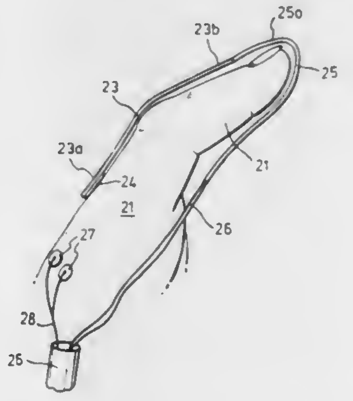
John Jackson, Strathclyde, Scotland, assignor to University of Strathclyde, Glasgow, Scotland

Filed May 27, 1981, Ser. No. 267,471

Claims priority, application United Kingdom, May 31, 1980, 8017898

Int. Cl.^{3} A61B *5/10*

U.S. Cl. 128—782 **5 Claims**



1. Apparatus for obtaining a signal indicative of mobility of a skeletal joint, comprising an assembly formed by a pair of like members physically oriented in parallel and mutually separated

by a non-electrically-conductive elastomer, each said member being made of a material which is both elastomeric and electrically conductive having an electrical resistance which varies with elastic extension and contraction of the member, positioning means on the assembly for positioning both members of the assembly simultaneously at a joint to be tested such that movement of the joint elastically extends and contracts both members of the assembly whereby the electrical resistance of each member is varied, a resistance-sensitive electrical network, conductor means connected to each said member and interconnecting each said member with said electrical network to provide a pair of electrical outputs from said network which vary, in use, with movement of the joint under test.

4,444,206

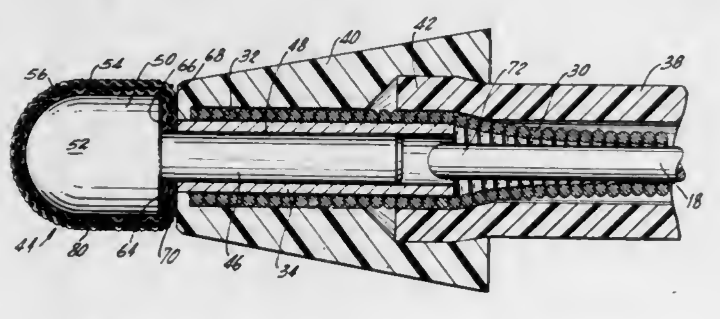
MESH TIP PACING LEAD ASSEMBLY

Philip Gold, Pompano Beach, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed Apr. 29, 1982, Ser. No. 373,081

Int. Cl.^{3} A61N *1/04*

U.S. Cl. 128—784 **15 Claims**



1. A pacing lead assembly comprising: a terminal member adapted to be electrically coupled to a pulse generator, an electrode assembly, an electrically conductive flexible wire connected at one end to said terminal member and at the other end to said electrode assembly, an insulative coating extending over a major portion of the length of said flexible wire, and said electrode assembly including a body, an electrode tip including a head having a smooth outer surface and a shank, and a thin porous shell around and in electrical contact with said smooth outer surface thereby to form interstices within which tissue from an organ to be stimulated may bond but with tissue ingrowth being limited by the thickness of said shell, said shank being received in a socket in the distal end of said body, and said shell comprising at least two layers of mesh wire screen with a portion of said layers being received behind said head and clamped between said head and said body.

4,444,207

METHOD OF ANCHORING A TEMPORARY CARDIAC PACING LEAD

Francis Robicsek, Charlotte, N.C., assignor to Cordis Corporation, Miami, Fla.

Filed Oct. 19, 1981, Ser. No. 312,898

Int. Cl.^{3} A61N *1/02*

U.S. Cl. 128—785 **1 Claim**

1. A method of temporarily pacing a heart comprising the steps of:

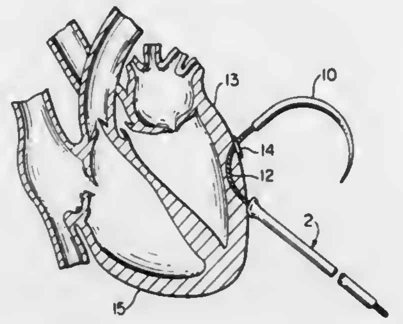
providing a pacing lead comprising an electrically conductive multiple stranded, flexible wire conductor comprising a twisted strand of wire and having an insulating coating extending over a major portion of the entire length of the wire conductor except for an uninsulated conductive terminal forming portion at each end of the wire conductor, and a needle connected to one of the conductive terminal forming portions;

inserting the needle into the myocardial wall of the heart at a first position on the wall;

passing said needle through a portion of the heart so as to embed a first portion of the conductive terminal forming portion to extend out of the wall of the heart;

passing the needle through an insulative anchor button;

frictionally moving the insulative anchor button over said needle and over said second portion of the conductive terminal forming portion to a position adjacent to the wall of the heart to keep said wire anchored and said twisted strands of said wire from fraying;



severing the second portion of the conductive terminal forming portion at a position adjacent to the insulative anchor button to thereby temporarily fix the position of the conductive terminal forming portion within the heart;

and, when it is desired to withdraw the pacing lead from the heart, pulling on the proximal end of the wire conductor to withdraw same from frictional engagement within the anchor button, said anchor button being allowed to remain within the pericardial cavity with no ill effects to the patient.

4,444,208

COMBINE HARVESTER

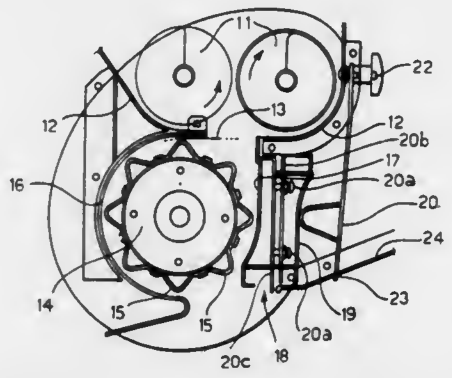
Giuseppe Raineri, Bassano del Grappa, Italy, assignor to Pietro Laverda S.p.A., Breganze, Italy

Filed Jul. 2, 1982, Ser. No. 394,989

Claims priority, application Italy, Aug. 28, 1981, 53561/81[U]

Int. Cl.^{3} A01F *12/18*

U.S. Cl. 130—27 R **9 Claims**



1. A combine harvester including a fixed structure, a threshing unit carried by said fixed structure, a pair of transverse contra-rotating distributor augers rotatably mounted in said fixed structure and located downstream of said threshing unit relative to the product flow direction and arranged to receive the product leaving said threshing unit and discharge it downwardly for distribution over the entire width of the harvester, an accelerator roller rotatably mounted in said fixed structure below said two distributor augers for accelerating the fall of the product, a box element having two opposing longitudinal walls adjustably secured to said fixed structure adjacent said accelerator roller so as to selectively present one of said walls to said accelerator roller to provide a substantially vertical fixed wall adjacent the accelerator roller for cooperation therewith to accelerate the product, and a cleaning unit located below said accelerator roller and including at least one fan for directing a current of air at the product accelerated by said accelerator roller wherein one of said walls of said box element is provided with a rough hulling surface and the other of said walls of said box element is provided with a smooth surface.

4,444,209

WEB GUIDE DEVICE

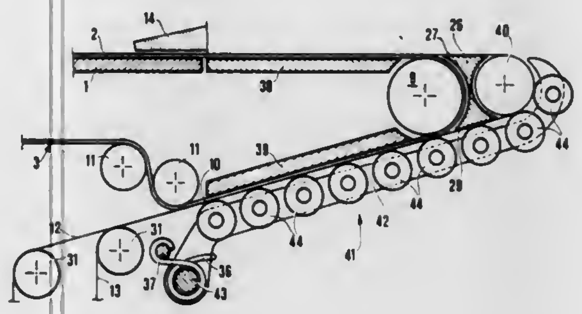
Enzo Seragnoli, Bologna, Italy, assignor to G.D Societa' per Azioni, Bologna, Italy

Filed Mar. 11, 1982, Ser. No. 357,183

Claims priority, application Italy, Apr. 10, 1981, 48248 A/81

Int. Cl.^{3} A24C *5/14, 5/20*

U.S. Cl. 131—60 **5 Claims**



1. A guide device for a web, particularly a paper web, the device comprising a belt conveyor for said web, said belt conveyor comprising a first pulley and a belt extending about said pulley, a first portion and a second portion of said belt extending upstream and downstream respectively from said first pulley in the direction of advancement of said web and respectively defining part of a path for first and second end sections of a U-shaped path for said web, said web having first and second end sections connected to one another by an intermediate curved section extending about a second pulley, and a web guide element in contact with the web and movable at the same speed and in the same direction as said web and arranged adjacent to said web path and upstream from said web second end section.

4,444,210

APPARATUS FOR RECIPROCATING THE ROD GUIDE IN THE CUTOFF OF A CIGARETTE ROD MAKING OR LIKE MACHINE

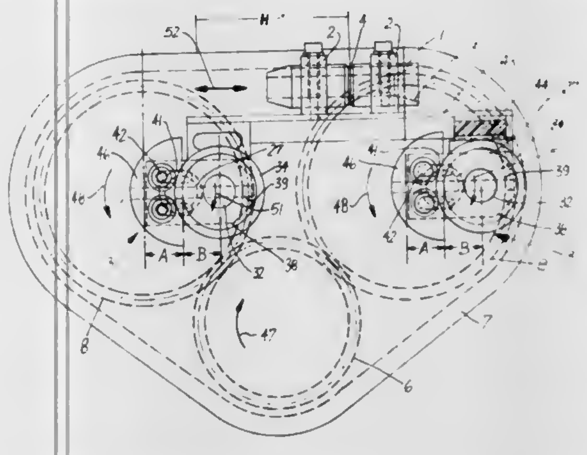
Peter Schumacher, Hamburg, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

Filed Oct. 27, 1981, Ser. No. 315,413

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1980, 3044483

Int. Cl.^{3} A24C *5/28*

U.S. Cl. 131—84 R **9 Claims**



1. Apparatus for guiding a continuous rod during lengthwise movement through the severing station of a machine for the making of rod-shaped smokers' products, comprising a device which guides the rod during said lengthwise movement; identical first and second drives each including a rotary first driving unit, means for rotating said first unit in a first direction and at a first rotational speed, a second driving unit eccentrically mounted on said first unit, means for rotating said second unit in a second direction counter to said first direction and at a second speed twice said first speed; means for mounting said device, said mounting means being eccentrically installed on said second driving units and the eccentricity of said mounting means with reference to said second units being identical with the eccentricity of each second unit with reference to the respective first unit; and elastic cushioning means interposed between said mounting means and at least one of said second driving units.

4,444,211

PIPE BOWL REAMER AND SCOOP

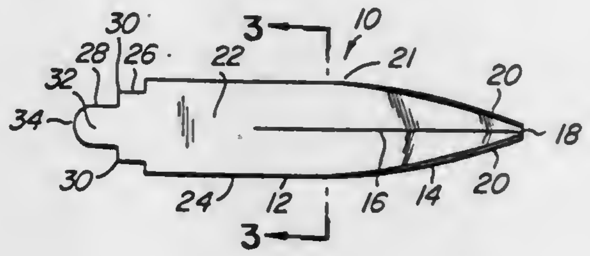
Wallace J. MacDonald, 91 Old Petty Harbour Rd., St. John's, Newfoundland, Canada A1G 1H6

Filed Mar. 4, 1982, Ser. No. 354,576

Claims priority, application Canada, Apr. 16, 1981, 375672

Int. Cl.^{3} A24F *9/00, 9/04*

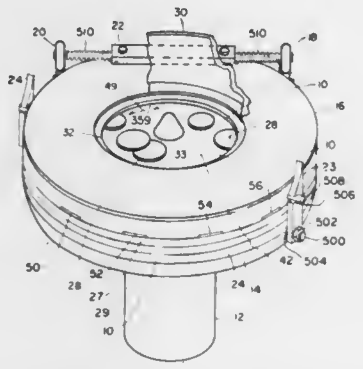
U.S. Cl. 131—246 **11 Claims**



1. A smoker's implement serving as a combined scoop and bowl reamer for a smoking pipe, said implement comprising a unitary, elongated, lamelliform body having a central portion which exhibits the maximum width of said body, said body being of dimensions adapted for ready insertion into the bowl of a smoking pipe, said body being of lesser width than said central portion at both ends of said body to provide a first end portion of said body which is adapted to be used as a scoop and a second end portion of said body, opposite to said first end portion, which is adapted to be used as a bowl reamer, said first end portion of said body which serves as said scoop also being adapted to be used as a handle for said implement when the second end portion of said body is used as a bowl reamer, said first end portion having smooth edges uniformly tapering toward one end of the body from a point on said central portion approximately midway of the length of the body; the second end portion of the body, serving as a reamer or cutting end, having a substantially rectangular part of said maximum width extending from said point partially toward the other end of the body followed by a plurality of inwardly stepped sides with cutting edges extending from said rectangular part to the other end of said body, at least the endmost one of said stepped sides being of predetermined height to control the amount of cutting of hard cake in the pipe bowl.

4,444,212
COIN HANDLING MACHINE

Victor G. Ristvedt, and Roy B. Johnson, both of Manchester, Tenn., assignors to Ristvedt-Johnson, Inc., Manchester, Tenn.
Continuation-in-part of Ser. No. 921,063, Jun. 30, 1978, Pat. No. 4,234,003, which is a continuation of Ser. No. 735,060, Oct. 22, 1976, Pat. No. 4,098,280. This application Nov. 18, 1980, Ser. No. 207,963
The portion of the term of this patent subsequent to Jul. 4, 1995, has been disclaimed.
Int. Cl.^{3} G07D *3/00*
U.S. Cl. 133—3 A **10 Claims**



1. A coin sorter for sorting different denominations of coins comprising:

a rotatable member having a resilient surface;

an annular-shaped stationary member having a surface substantially parallel with said resilient surface and positioned sufficiently close to said resilient surface so that a portion of the stationary surface presses coins in contact therewith into the opposed resilient rotatable surface so that the resiliency of the rotatable surface urges the coins against the stationary surface with sufficient pressure to prevent radial movement of coins by centrifugal force due to rotation of the rotatable member, while permitting circumferential movement of the coins by rotation of the rotatable member;

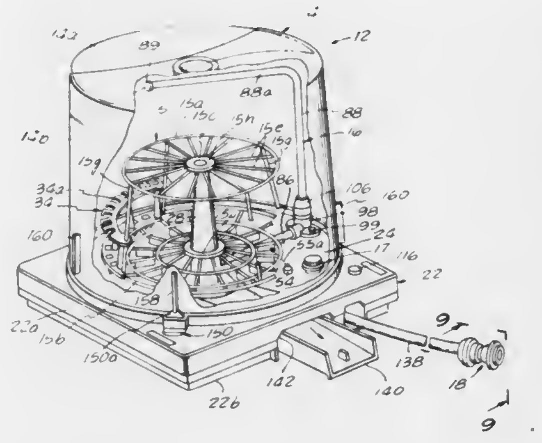
selected area of the surface of said stationary member being recessed for releasing any coins entering such recessed areas from the pressure of said resilient surface and thereby permitting radial movement of coins within the recessed areas by centrifugal force due to rotation of the rotatable member, said recessed areas being shaped to first guide coins outward in single file along a predetermined path, and second, to permit coins of different sizes to escape radially from between said surfaces by centrifugal force at different preselected positions along the periphery of said stationary member;

said recessed areas which permit coins of different sizes to escape radially being curved along an arc which intersects the direction of rotation of said rotatable member.

4,444,213
NON-ELECTRIC PORTABLE DISHWASHER

Frank J. P. Taylor, 4120 Birsh St., Ste. 105, Newport Beach, Calif. 92660
Continuation-in-part of Ser. No. 205,710, Nov. 13, 1982, Pat. No. 4,368,747. This application Nov. 12, 1982, Ser. No. 441,384
Int. Cl.^{3} B08B *3/02*
U.S. Cl. 134—56 D **12 Claims**

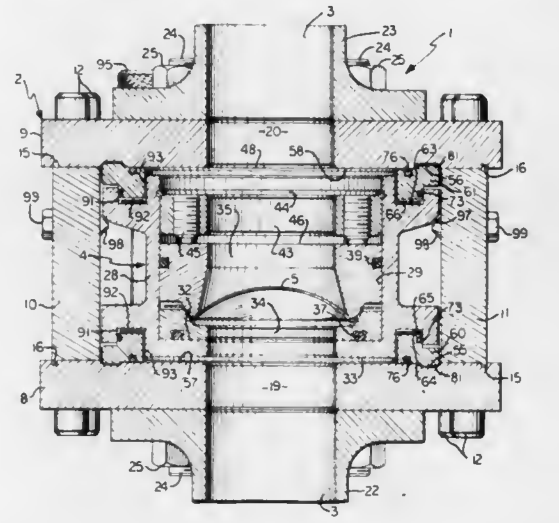
1. A dishwasher, comprising:
(a) a base;
(b) a closure housing carried by said base;
(c) a rack rotatably mounted within said housing, said rack being adapted to support articles to be washed;
(d) jet means for directing a jet of water in the direction of said rack to impart rotational movement thereto, said jet means comprising:
(1) a first collimated jet means for emitting a collimated stream of water in the direction of said rack for initiating rotation of said rack; and
(2) a second spray jet means for sustaining rotation of said rack; said means comprising a first conduit extending beneath said rack, a second generally vertically extending conduit and a third conduit interconnected with said second conduit and extending above said rack, said second and third conduits being angularly adjustable relative to said rack;



(3) control means for controllably and simultaneously regulating the flow of water between said first collimated jet means and said second spray jet means whereby a stream of water can be directed at said rack with sufficient velocity to initiate rotation thereof; and
(e) drain means carried by said base and extending externally of said housing for draining water from the interior of said housing to the exterior thereof.

4,444,214
REPLACEABLE RUPTURE DISC CARTRIDGE ARRANGEMENT

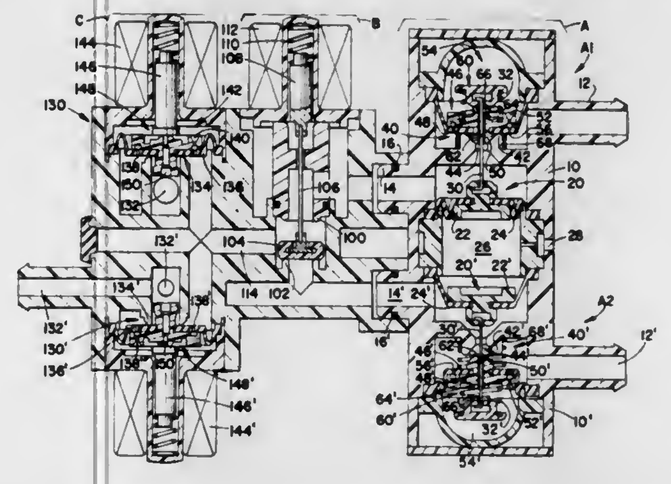
Herman L. Paul, Jr., Lebanon, Pa., assignor to Continental Disc Corporation, Kansas City, Mo.
Filed May 18, 1981, Ser. No. 264,276
Int. Cl.^{3} F16K *13/04*
U.S. Cl. 137—68 R **22 Claims**



1. A replaceable rupture disc cartridge arrangement comprising:
(a) a rupture disc cartridge receptacle having end walls and structural means to maintain said end walls in fixed and spaced apart relation, each wall having a pressure relief aperture therethrough, said receptacle being adapted for installation with the pressure relief apertures thereof in communication with a pressure relief vent;
(b) a rupture disc cartridge body having a central passage therethrough and having opposite ends, said cartridge body being manually and removably inserted in said receptacle with said passage communicating with said pressure relief apertures and while said end walls remain in said spaced apart relation;
(c) a rupture disc removably retained in said passage and preventing fluid flow therethrough prior to rupture thereof;
(d) sealing means operatively positioned between said ends of said cartridge body and respective facing internal surfaces of said end walls of said receptacle to prevent the leakage of pressure therebetween;
(e) a locking mechanism for locking said cartridge body within said receptacle when positive pressure is present in said central passage; said locking mechanism including a locking member received in a first of said receptacle or said cartridge body and being slidable to a first position wherein said locking member does not interfer with placement of said cartridge body into said receptacle; and
(f) said locking mechanism further including a seat cooperating with said locking member in a second of said cartridge body or said receptacle; said locking member communicating with said central pressure such that fluid pressure biases said locking member into a second position wherein said locking member engages said seat when said cartridge body is in said receptacle and there is positive pressure within said passageway thereby locking said cartridge body within said receptacle.

4,444,215
MIXING VALVE

Keith E. Zukausky, St. Charles, Ill., assignor to Eaton Corporation, Cleveland, Ohio
Filed Jul. 2, 1981, Ser. No. 279,763
Int. Cl.^{3} G05D *11/03*
U.S. Cl. 137—98 **16 Claims**



1. A mixing valve for selectively mixing a first incompressible fluid and a second incompressible fluid, the mixing valve comprising:

means defining a first fluid inlet which is adapted to be connected with a source of the first incompressible fluid under pressure;

a first regulating assembly operatively connected with the first fluid inlet means for regulating the rate of flow of the first fluid therethrough so as to maintain a generally constant first preselected pressure adjacent a means for defining a first regulator outlet, whereby the pressure and flow rate of the first incompressible fluid through the first regulator outlet is substantially independent of the pressure of the first incompressible fluid at the first fluid inlet;

means for defining a second fluid inlet which is adapted to be connected with a source of the second incompressible fluid under pressure;

a second regulating assembly operatively connected with the second fluid inlet means for regulating the flow of the second fluid therethrough so as to maintain a generally constant second preselected pressure adjacent a means for defining a second regulator outlet, whereby the pressure and flow rate of the second incompressible fluid through the second regulator outlet is substantially independent of the pressure of the second incompressible fluid at the second fluid inlet;

fluid pressure proportioning means disposed between the first and second regulator outlets and a proportioning means outlet for selectively proportioning a back pressure at the proportioning means outlet between the first and second regulator outlets without controlling fluid flow therethrough, the proportioning means causing the first and second regulating assemblies to control the relative flow rates of the first and second incompressible fluids such that the first preselected pressure is maintained in the first regulator outlet and the second preselected pressure is maintained in the second regulator outlet, whereby the total flow rate of the first and second incompressible fluids mixed together and the back pressure in the proportioning means outlet remains substantially constant as the proportioning means varies the proportion of the first and second incompressible fluids;

proportioning control means for selectively controlling the fluid pressure proportioning means to vary the proportioning of the back pressure between the first and second regulating assemblies, whereby the proportioning control means indirectly causes the first and second regulating assemblies to control the relative flow rates of the first and second incompressible fluids;

mixed fluid flow rate selecting means for selectively restricting a flow path downstream from the proportioning means outlet, such that restricting the flow path tends to increase the back pressure in the proportioning means outlet causing the first and second regulating assemblies to decrease the fluid flow therethrough to hold the first and second preselected pressures and the back pressure substantially constant and such that enlarging the flow path tends to decrease the back pressure in the proportioning means outlet causing the first and second regulating assemblies to increase the fluid flow therethrough to hold the first and second preselected pressures and the back pressure substantially constant, whereby the mixed flow rate selecting means varies the total flow rate without varying the relative flow rates of the first and second incompressible fluids;

whereby the proportioning means and the mixed fluid flow rate selecting means act on the mixed first and second incompressible fluid downstream from the first and second regulating assemblies to cause the first and second regulating assemblies to control the relative and total flow rates of the first and second incompressible fluids.

4,444,216
PRESSURE REDUCING AND REGULATING VALVE

Ronald L. Loup, Clarkson, Mich., assignor to Koomey, Inc., Brookshire, Tex.
Filed Jan. 15, 1982, Ser. No. 339,554
Int. Cl.^{3} F16K *3/18;* **G05D** *16/00*
U.S. Cl. 137—116 **19 Claims**

1. A pressure reducing and regulating valve comprising,

a body having a body cavity,

a plunger movable in the body,

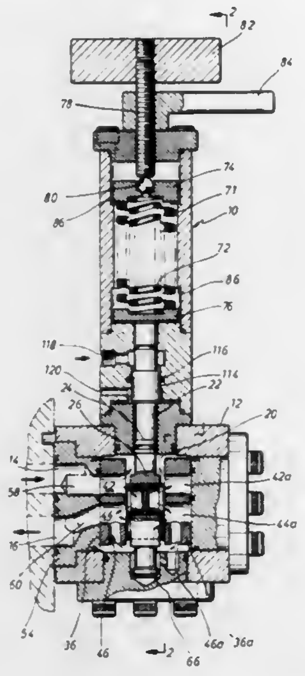
a piston connected to the plunger and exposed to pressure in the cavity,

a seal container connected to the piston and movable in the body cavity,

said container having an opening therethrough having a circular sliding seal in the opening,

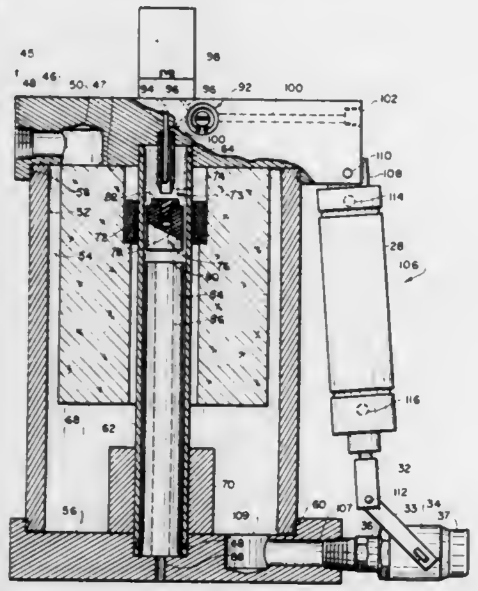
first and second flow plates in said body positioned on opposite sides of the seal container,

each flow plate including an inlet port for communicating with the body cavity but closed when the opening in the container is aligned with said inlet ports, each flow plate including an outlet port communicating with the body cavity and communicable with the inlet port through the opening when the opening is moved to overlap both the inlet and outlet ports.



4,444,217
AUTOMATIC DRAIN TRAP

Ernest W. Cummings, Concord, and Nick Valk, Greeneville, both of Tenn., assignors to Drain-All, Inc., Greeneville, Tenn.
Filed Sep. 8, 1981, Ser. No. 299,966
Int. Cl.³ F16K *31/34*
U.S. Cl. 137—195 13 Claims



1. An automatic drain valve system for filter traps used in the accumulation of condensables and foreign materials present in a pneumatic system, which comprises:

a housing provided with an inlet and an outlet for flow-through communication with said pneumatic system;

a reservoir attached to said housing and communicating with said housing for collecting said condensables and foreign material, said reservoir provided with a sump at the lowest level thereof;

a vertical sleeve mounted within said reservoir and sealed against communication with said reservoir, said sleeve been provided with an air discharge passageway extending externally to said reservoir;

a pilot valve mounted axially within a top portion of said sleeve, said pilot valve comprising a fixed annular seat at an end of a sensor tube and an axially moving valve plug cooperating with said seat;

an annular buoyant float respondable to liquid in said reservoir surrounding said sleeve and slidable along said sleeve from a low position to a high position;

an annular magnet of one polarity mounted in said float proximate said sleeve;

a second magnet mounted in said valve plug having a magnetic coupling with said annular magnet from said low position to said high position of said float, said second magnet normally having a polarity opposite the polarity of said annular magnet;

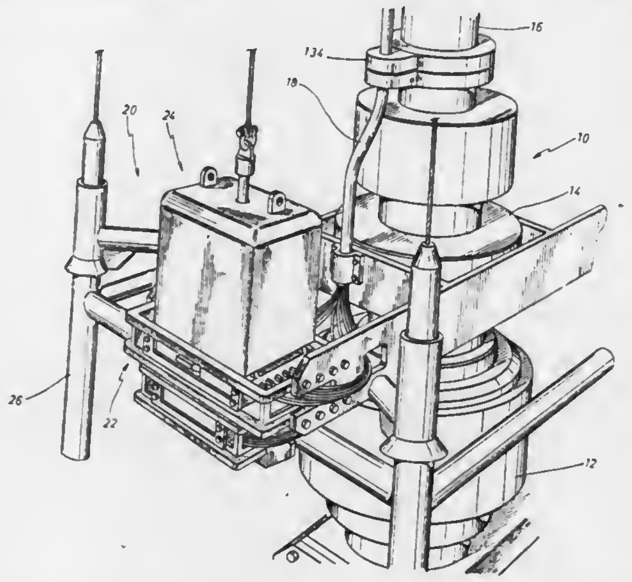
a drain valve for said reservoir mounted external to said reservoir, said drain valve having an inlet and an outlet, said inlet communicating with said sump of said reservoir;

a pneumatic valve operator mounted on said housing external to said reservoir and attached to said drain valve for the opening and closing of said drain valve; and

pneumatic means connected between said pilot valve and said valve operator whereby said valve operator quickly opens said drain valve when said float reaches said high position and quickly closes said drain valve when said float reaches said low position.

4,444,218
UNDERWATER FLUID CONNECTOR

Hollis A. Baugh, Hempstead, Tex., assignor to Koomey, Inc., Houston, Tex.
Division of Ser. No. 202,086, Oct. 30, 1980, Pat. No. 4,328,826. This application Apr. 26, 1982, Ser. No. 371,633
The portion of the term of this patent subsequent to May 11, 1999, has been disclaimed.
Int. Cl.³ E21B *33/06*
U.S. Cl. 137—236 S 3 Claims



1. An underwater connector for providing fluid power for actuating and controlling underwater equipment comprising,

a first member fixedly positioned underwater adjacent the underwater equipment, said member having a surface and a plurality of fluid passageways terminating at the surface, some of said passageways being control passageways and some of said passageways being fluid power passageways,

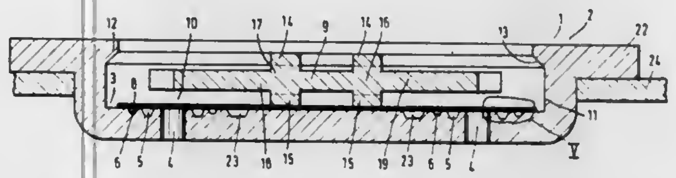
a second retrievable member adapted to engage and disengage from said first member, said second member including a surface for mating with the first member surface and having a plurality of fluid passageways terminating at the second member surface for sealingly mating with the first member passageways, some of said passageways being control passageways and some of said passageways being fluid power passageways,

said second member including a plurality of pilot control valves in communication with and actuated from the control passageways in the first member and controlling the fluid flow in the fluid power passageways in the second member, and

hydraulic power supply and control lines extending from the water surface to the control and fluid power passageways of the first member for providing fluid control of said valves and for supplying fluid power to be controlled by said valves whereby the retrievable member may be retrieved without retrieving the hydraulic power supply and control lines.

4,444,219
OVERPRESSURE VALVE FOR PACKAGES WITH FLEXIBLE WALLS

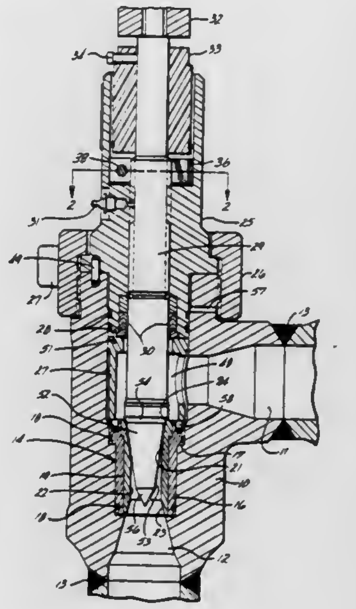
Erwin B. Hollenstein, Schwerzenbach, Switzerland, assignor to Wipf AG Verpackungen, Volketswil, Switzerland
Filed Jun. 29, 1982, Ser. No. 393,444
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1981, 3125496
Int. Cl.³ F16K *51/00, 15/16*
U.S. Cl. 137—246 23 Claims



1. In an overpressure valve for a flexibly walled package, having a valve body designed to be fixed air-tightly in said wall and an elastic diaphragm in said body placed so that valve openings in said valve body are shut by said diaphragm resting against a valve seat of said body, said openings in said seat being at the ends of holes stretching through said body from said seat to an opposite side of said body, the invention residing in that each of the valve openings in the valve seat at the ends of said holes running through said body has at least two concentric channels placed around it in the valve seat, such channels having a sealant therein, said diaphragm being generally free of any hole and being supported at a middle part thereof against said valve seat, whereas parts of said diaphragm next to said valve openings are able to be freely winged towards away from said seat.

4,444,220
HIGH PRESSURE VALVE

Fritz O. Seger, Mission Viejo, Calif., assignor to Willis Division of Smith International, Inc., Newport Beach, Calif.
Division of Ser. No. 230,392, Feb. 2, 1981, Pat. No. 4,337,788. This application Dec. 28, 1981, Ser. No. 335,250
Int. Cl.³ F16K *24/02, 43/00*
U.S. Cl. 137—312 6 Claims



1. A high pressure valve comprising:

a valve body having a side inlet passage and an end outlet passage;

a valve seat in the valve body;

an axially movable stem aligned with the valve seat for opening and closing the valve;

a removable bonnet surrounding the stem for retaining the stem in the valve body;

a seal between the bonnet and the valve body; means for retaining the bonnet on the valve body; and

a covered bleed passage between the inside of the valve body and the outside of the valve body outside the seal, the bleed passage being uncovered in response to operation of the retaining means to disassemble the bonnet from the valve body and the passage located so that upon disassembly of the bonnet from the valve body the seal can pass the bleed passage before the bonnet is disconnected from the valve body for bleeding fluid from the valve body before removal of the bonnet

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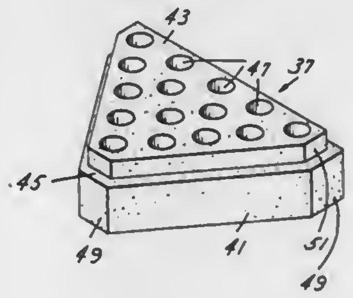
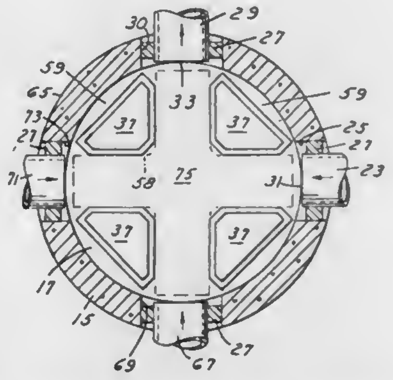
4,444,221
SEWER MANHOLE CHANNEL CONSTRUCTION AND METHOD

Gary F. LaBenz, 13027 Dixie Highway, Holly, Mich. 48442
Continuation of Ser. No. 129,362, Mar. 11, 1980, Pat. No. 4,341,236. This application May 17, 1982, Ser. No. 379,212
Int. Cl.³ F16L *5/00;* E04B *2/00*
U.S. Cl. 137—363 7 Claims





1. In a sewer manhole construction having a cylindrical bottom section adapted for placement within the ground at a pre-determined depth, and having bottom and side walls;

there being spaced inlet and outlet openings in said side wall above said bottom wall adapted to receive the ends of sewer conduits;

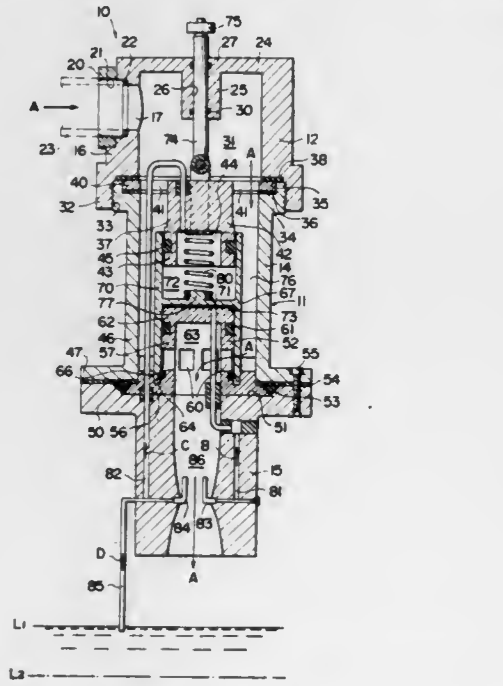
the improvement comprising a flooring upon said bottom wall, said flooring including a plurality of pre-formed channel elements of generally triangular shape and of uniform height, said pre-formed elements being made from a light weight foam plastic material and being mounted upon and around said bottom wall adjacent said side wall, one inner wall of each element registering with the inner walls of adjacent elements and spaced from the inner wall of opposed elements to generally define a first channel underlying and interconnecting said inlet and outlet openings;

each generally triangular channel element having a base portion and a top portion inset along its sides from the sides of the base portion to define a continuous ledge around said generally triangular channel element between said base and top portions with the corners of the base and top portions being generally truncated;
each channel element having a plurality of upright apertures extending therethrough;
and a layer of concrete filling all of said apertures and the interstices between the channel elements and between the channel elements and side wall, partly filling said first channel and overlying said channel elements providing a flooring above the channel elements, the concrete filling the channel element apertures for defining a series of concrete columns within said channel elements and terminating in the top of the flooring above the channel elements;
there being a concave floor channel formed in the top of said concrete flooring in registry with said first channel and at its ends communicating with said inlet and outlet openings.

4,444,222
AUTOMATIC LIQUID-SUPPLY STOPPER PLUG

Tamio Yamagiwa, Tokyo, Japan, assignor to Hi-Sonic Co., Ltd., Tokyo, Japan

Filed May 13, 1982, Ser. No. 377,610
Claims priority, application Japan, May 18, 1981, 56-74361
Int. Cl.³ F16K *21/18*
U.S. Cl. 137—393 **15 Claims**

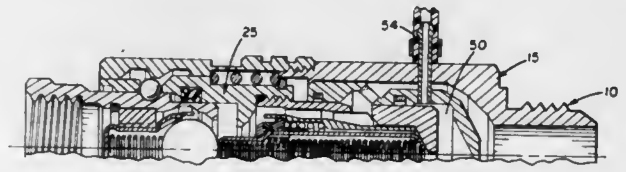


1. An automatic liquid-supply stopper plug, comprising:
a casing body **11** having an inlet port **17** at the upper portion thereof and a liquid discharge port **86** at the lower end portion thereof;
an inverted cup shaped member **37** fixedly received in said casing body **11** to be suspended within said casing body **11**;
a valve seat member **52** mounted in said casing body at the position below said inverted cup shaped member **37** and having a generally tubular wall **57** extending downward from the top face thereof, said downward-extending wall **57** being provided with at least one window type opening **60** communicating with said liquid discharge port **86** of said casing body **11**;
a movable valve member **67** having a generally tubular wall **70** and a partition wall **71** of disk shape for sealingly and slidably surrounding said inverted cup shaped member **37** and for sealingly and disengageably covering said window type opening **60** of said valve seat member **52** to open or close said opening **60**, said tubular wall **70** and said partition wall **71** defining an upper chamber **72** in combination with said inverted cup shaped member **37**, and said tubular wall **70** and said partition wall **71** defining a lower chamber **73** in combination with said valve seat member **52**;
a compression spring **80** fitted between the inner face of said inverted cup shaped member **37** and the top face of said valve member **67** for normally depressing said valve member **67** in the downward direction;
a manually operated knob **75** connected to said valve member **67** to be raised to a liquid supply position at which said opening **60** of said downward-extending wall of said valve seat member **52** is uncovered from said tubular wall **70** of said valve member **67**;
a first conduit **81** for hydraulically communicating said liquid discharge port **86** of said casing body **11** with said lower chamber **73** and having a liquid receipt port **83** projecting into said liquid discharge port **86**;
a second conduit **82** for hydraulically communicating said liquid discharge port **86** of said casing body **11** with said upper chamber **72** and having a liquid receipt port **84** projecting into said liquid discharge port **86**; and
a third conduit **85** diverging from said second conduit **82** and extending downward to detect the liquid level, the liquid received by said liquid receipt port **84** flowing down through said third conduit until the liquid level has not reached a pre-set level so that the lower end opening of said third conduit **85** is exposed to atmosphere and flowing upward through said second conduit **82** for filling into said upper chamber **72** when the lower end opening of said third conduit **85** is submerged under the surface of the accumulated liquid.

4,444,223
QUICK DISCONNECT COUPLING

Ojars Maldavs, Lincoln, Nebr., assignor to Imperial Clevite Inc., Glenview, Ill.

Filed May 26, 1981, Ser. No. 267,139
Int. Cl.³ F16L *37/28*
U.S. Cl. 137—614.04 **1 Claim**

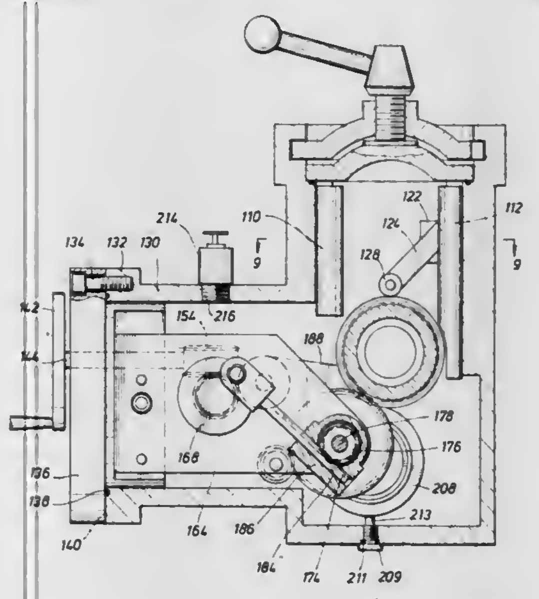


1. A hydraulic quick disconnect coupling for the female half of a male-female connection for a flow stream comprising a flow means terminating in a rigid tubular housing having an open end, a fitting slidably mounted in said housing and having a bore sized to receive the male half of said connection when the same is inserted into said open end, a flow path-defining member fixedly mounted in the bore of said housing remote from said open end, said member also being equipped with an axial bore slidably supporting a portion of said fitting and closed at the end thereof remote from said housing open end, said housing and member being equipped with passage means to vent the space between said fitting closed end and said member closed end and in which a pressure means can be coupled to said passage means to provide for remote control of disconnection, a spring outside of said flow stream interposed between said housing and fitting urging said fitting toward a predetermined position, said fitting adjacent said open end being equipped with a plurality of radially extending, circumferentially spaced openings, a ball in each opening for coaction with depression means in said male half to maintain said connection when said fitting is in said predetermined position, said housing adjacent said open end being equipped with a pair of circumferentially extending, axially spaced recesses for selectively receiving said balls, a landed area between said recesses for coaction with said balls when said fitting is in said predetermined position, said fitting being closed at the end thereof remote from said open end and having a single piece portion with two seals contained therein and an internal sliding member made of a single piece, a valve slidably mounted in said fitting, and a flow port in said outer housing intermediate the ends thereof.

4,444,224
MECHANIZED ORIFICE FITTING

Bernard H. Geisow, Houston, Tex., assignor to Daniel Industries, Inc., Houston, Tex.

Filed Jul. 8, 1982, Ser. No. 396,419
Int. Cl.³ F16D *1/00*
U.S. Cl. 138—44 **32 Claims**

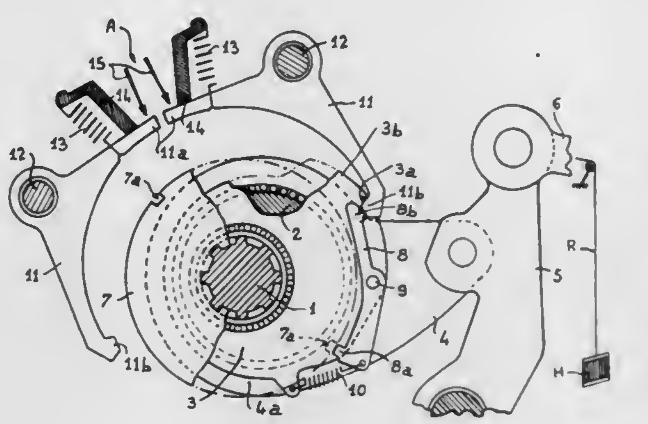


1. An orifice fitting mechanism comprising:
(a) a body structure defining flow passage means and adapted for connection into a conduit system, said body structure defining an internal chamber and having an access opening through which an orifice plate is introduced into said internal chamber and removed therefrom, said body structure further defining a plate receptacle opening communicating said internal chamber with said flow passage means;
(b) an orifice plate being movably positioned within said chamber and being movable between an operative position wherein said orifice plate is positioned within said orifice plate receptacle and an inoperative position where said orifice plate is removed from said orifice plate receptacle;
(c) orifice plate ejector means being disposed within said internal chamber and having a sealing plate portion and an ejector portion, said ejector means being movable from a retracted position permitting said orifice plate means to be positioned within said orifice plate receptacle and an ejecting position where said sealing plate portion is moved into said orifice plate receptacle and displaces said orifice plate from said operative position to said inoperative position;
(d) seat means for selectively sealing said orifice plate and said sealing plate portion relative to said body structure at said orifice plate receptacle, said sealing means being retractable to a position allowing movement of said orifice plate and sealing plate structure relative to said orifice plate receptacle; and
(e) seat drive means for imparting controlling movement to said seat means in coordinated relation with movement of said orifice plate ejector means.

4,444,225
ROTATING DOBBIES

Joseph Palau, Duingt, and Jean-Paul Froment, Doussard, both of France, assignors to S.A. Des Etablissements Staubli, Fauerges, France

Filed Aug. 12, 1982, Ser. No. 407,512
Claims priority, application France, Oct. 29, 1981, 81 20502
Int. Cl.³ D03C *1/00*
U.S. Cl. 139—66 R **4 Claims**



1. In a dobby of the rotating type having multiple control elements each including an actuating rod for each heddle frame of a weaving loom, the loom having a main shaft driven with intermittent rotational motion and having reading-device push elements located adjacent to the shaft, each control element comprising:
(a) an open circular boss on the heddle frame actuating rod and surrounding the shaft;
(b) an eccentric member rotatably supported on the shaft and having an outer surface eccentrically offset from its center of rotation on which the circular boss of the actuating rod is rotatably supported;
(c) a plate member fixed to the eccentric member for rotation therewith, the plate member having an outer periphery with a notch therein;
(d) a pawl pivotally supported by the plate member adjacent thereto, the pawl having a first end having a finger thereon extending toward the shaft and having a second end underlying said notch in the plate member;
(e) drive means on the shaft and disposed to underlie the pawl and including two diametrically opposed notches shaped to receive said finger;
(f) a spring urging the pawl to pivot in a direction to insert its finger into a drive means notch; and
(g) two levers supported on fixed pivots, the levers respectively having ends carrying diametrically opposed noses extending toward the shaft and located opposite the outer surface of the plate member, and the levers having spring means urging the levers to pivot in directions to move their outer ends toward engagement of a nose in the notch in the surface of the plate member and to thereby displace the second end of the pawl to disengage its finger from a notch in the drive means, and the levers respectively having control ends disposed to be engaged by the reading-device push elements to pivot the levers to move their noses away from engagement in the notch in the surface of the plate member.

4,444,226

DEVICE FOR MEASURING THE LENGTH OF A WEFT IN A SHUTTLELESS LOOM

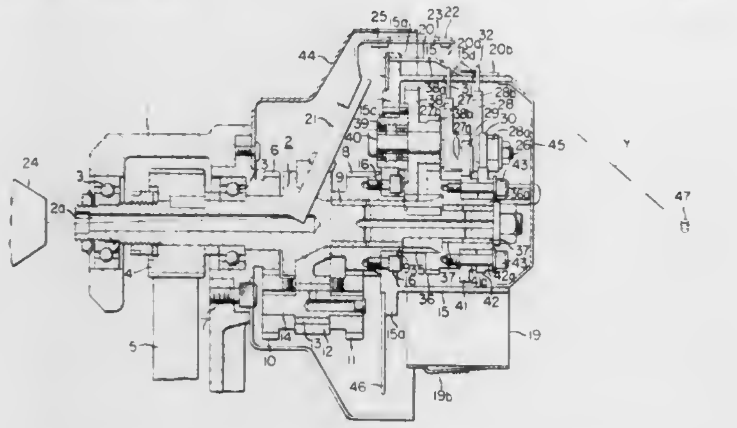
Kimio Ichikawa, Higashiura; Hiroshi Arakawa, Kariya, and Takeshi Nakamura, Gamagori, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Dec. 15, 1981, Ser. No. 330,965

Claims priority, application Japan, Dec. 20, 1980, 55-181075; Dec. 22, 1980, 55-181677; Dec. 22, 1980, 55-181678; Aug. 25, 1981, 56-132063

Int. Cl.³ D03D *47/36*

U.S. Cl. 139—452 **13 Claims**



1. A device for measuring the length of weft to be inserted into the warp shed of a shuttleless loom, comprising a weft storage drum, means for maintaining the weft storage drum in a stationary condition, weft guiding and winding means mounted for rotation around the weft storage drum for guiding the weft supplied from a weft supply bobbin to the weft storage drum and for winding it in a coil on the weft storage drum, said weft storage drum having means defining an outer, substantially peripheral surface, and a free end from which the wound weft is unwound from the drum as it is being inserted into the warp shed, a length measuring control pin for retaining the weft as it is being wound on said drum to remove the weft length necessary for one weft insertion as determined by the diameter of the weft storage drum, a weft unwinding control pin spaced from said length measuring control pin in the axial direction and towards said free end of said weft storage drum for storing the length of measured weft on the weft storage drum until the commencement of the weft insertion, a cam mechanism disposed substantially within said drum for supporting the control pins in said axially spaced relationship and for driving them so as to selectively project above, and recede to respective positions substantially within said drum from the outer peripheral surface of the weft storage drum, and means responsive to said receding of said length measuring control pin for transferring the weft wound on the weft storage drum toward said drum free end and to a position within said axial spacing between said pins, said means defining said peripheral surface of said drum comprising at least two surface-defining portions at least one of which is radially adjustable for selectively changing the effective diameter of said weft storage drum to correspondingly change said measured weft length.

4,444,227

MECHANISM FOR BENDING STRAIGHT WIRES INTO ZIG-ZAGS, IN PARTICULAR FOR MACHINES FOR THE PRODUCTION OF DIAGONAL GRIDS

Hans Gött; Josef Ritter; Klaus Ritter, and Gerhard Ritter, all of Graz, Austria, assignors to EVG Entwicklungs-u. Verwertungs-Gesellschaft m.b.H., Graz, Austria

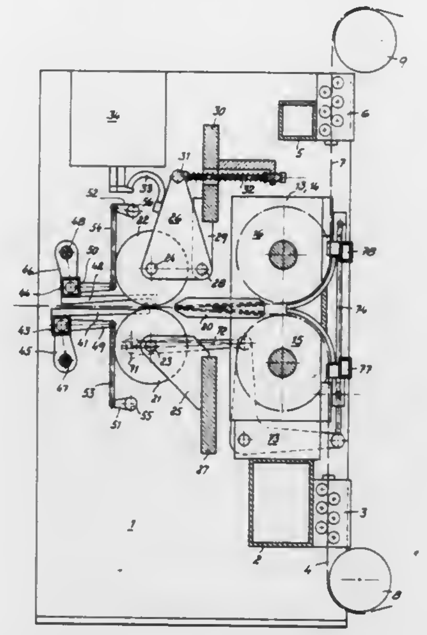
Filed Nov. 10, 1981, Ser. No. 320,011

Claims priority, application Austria, Dec. 2, 1980, 5885/80

Int. Cl.³ B21F *1/00*

U.S. Cl. 140—105 **6 Claims**

1. In a mechanism for bending a coplanar family of straight wires into zig-zags, said mechanism comprising means for feeding said wire family longitudinally in parallel with one another, bars adapted to be displaced transversely to said wire family and carrying wire-deflector pins at intervals corresponding with the pitch of said wires, and a control device for moving said bars alternately in opposite directions transversely to the feed direction of said wires, the improvement comprising means hinging each of said bars to one ends of at least two parallel bearer arms of equal length, and means pivotally supporting said bearer arms about axes extending substantially perpendicular to the plane of bend whereby said bars are displaced transversely to said wires upon swivelling of said bearer arms, and said control device being adapted to cause only one of said bars at a time to be displaced transversely to said wires to make a working bending stroke.



4,444,228

WIRE UNWRAPPING TOOL

John Demirjian, 69 Harlow St., Arlington, Mass. 02174

Filed Jul. 16, 1982, Ser. No. 398,973

Int. Cl.³ B21F *1/02*

U.S. Cl. 140—123 **7 Claims**

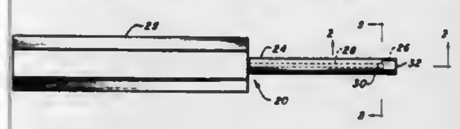
1. An unwrapping tool for unwrapping and removing a wire from a terminal pin upon which it is wrapped, comprising:

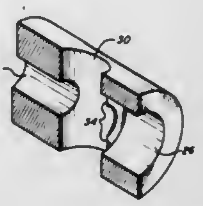
a cylindrical shaft;

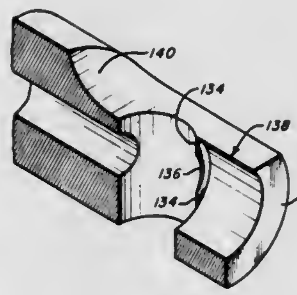
said shaft having an axial outer bore extending from a first end of said shaft to a substantially planar inner face of said outer bore, for receipt of the wrapped wire when the shaft is placed over the terminal pin;

said shaft having an axial inner bore concentric with said axial outer bore and extending axially inward from said inner face of said axial outer bore, for receipt of said terminal pin when the shaft is placed over the terminal pin;

said shaft having a diametrical bore whose axis is perpendicular to and intersects the axis of said inner bore, said diametrical bore being located at a longitudinal axial position along such shaft such that a portion of said diametrical bore intersects said inner face of said axial outer bore in such a way as to form gripping means for gripping the wrapped wire when the tool is placed over the terminal pin.







4,444,229

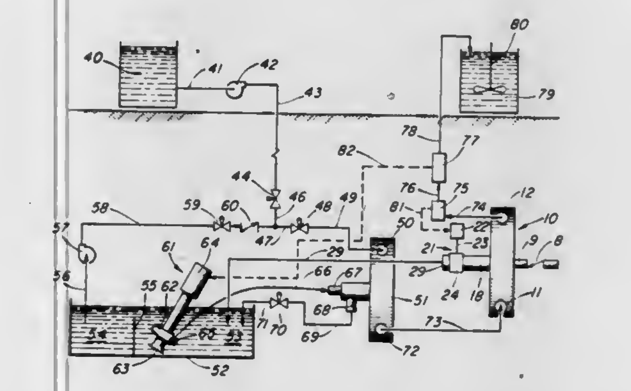
SLURRY CONCENTRATION APPARATUS

Jeffrey L. Beck, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Filed May 18, 1981, Ser. No. 264,917

Int. Cl.³ B65B *31/00*

U.S. Cl. 141—1 **9 Claims**



9. An apparatus for concentrating slurry from a sump which has a slurry section containing solids and water and a water separation section, dredge means mounted in said slurry section for removing said slurry and communicating said output to a slurry concentration regulation apparatus comprising:

(a) a chamber with a substantially circular cross section and having a high pressure inlet and outlet means mounted through said chamber, each having its axis tangent to a diameter of said chamber and means coupling said high pressure inlet means to said communication means from said dredge means;

(b) a low pressure outlet means mounted through said chamber having the axis of said outlet means parallel to the axis of said chamber and centrally located in order to form a vortex with the slurry when injected into the high pressure inlet means;

(c) valve means mounted across said low pressure outlet, said valve means having a control means for operating said valve, said control means having a signal input;

(d) means coupling the output from said valve to said sump;

(e) concentration measuring means having an input mounted at said high pressure outlet means and generating a signal output corresponding to the measured concentration; and

(f) means coupling said measuring means signal output to the signal input of said valve means

whereby said slurry will be maintained at a substantially uniform concentration.

4,444,230

TANK-MOUNTED FILLING DEVICE

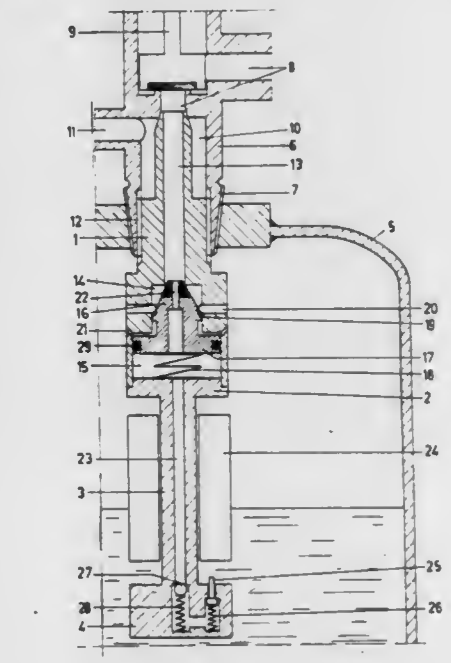
Pieter M. E. Van Mullem, Tienen, Belgium, assignor to "Valico", personenvennootschap met beperkte aansprakelijkheid, Belgium

Filed Jan. 21, 1982, Ser. No. 341,209

Claims priority, application Netherlands, Jan. 23, 1981, 8100326

Int. Cl.³ B65B *57/00;* F16K *21/18, 31/18*

U.S. Cl. 141—198 **8 Claims**



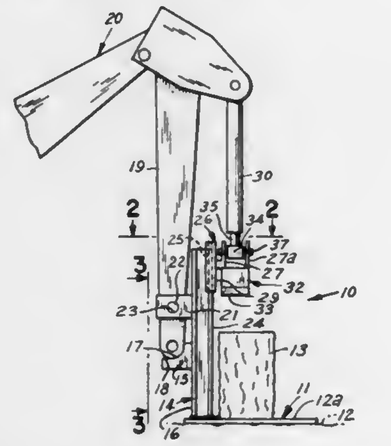
1. A tank, particularly for liquefied gas, which comprises a wall defining an inner volume, a floating mechaninsm having a float arranged in said inner volume and a filling device mounted on the wall, which filling device comprises:

- a. a housing mounted in the tank wall, which housing has a chamber and a supply duct opening with one end therein,
- b. a valve seat on the end of the duct,
- c. a cut-off valve which is arranged inside said chamber, which valve has:
  - a head cooperating with said valve seat and closing off said duct in the closing position, but still leaving free in said position a space about itself, said space extending to the closed duct, and
  - a piston forming body which separates said space about the head from a backmost volume lying on that valve side removed from the duct,

which valve is provided with a duct free from any valve, extending length-wise through the body and the head thereof, between the backmost chamber volume and an outlet in the head facing the supply duct, the housing being provided with at least one opening which brings the tank inner volume into communication with said space about the head and, in the valve open position, also with the supply duct, the housing being also provided with a duct between the backmost chamber volume and the tank inner volume,

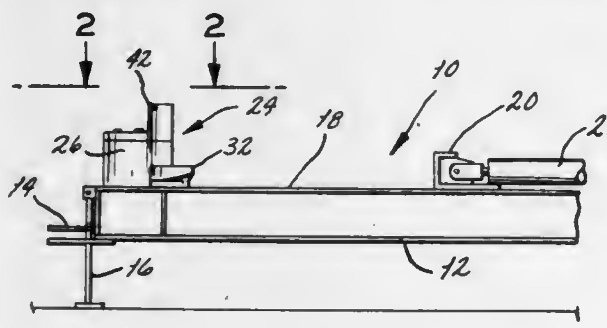
d. a spring which pushes the cut-off valve to the closing position,
e. a valve which is controlled by the float mechanism and is mounted inside the duct between the backmost chamber volume and the tank inner volume and cuts off said duct when the liquid inside the tank has reached a determined level, and,
f. a one-way valve which is mounted between said float mechanism-controlled valve and said chamber inside the housing, inside said duct between the backmost chamber volume and the tank inner volume, which one-way valve only lets fluid flow to the tank inner volume.

4,444,231
LOG SPLITTER FOR BACKHOE VEHICLES
Raymond L. Dillon, 8315 Joppa Rd., Huron, Ohio 44839
Filed Dec. 28, 1981, Ser. No. 334,475
Int. Cl.^{3} B27L *7/00*
U.S. Cl. 144—193 A **1 Claim**



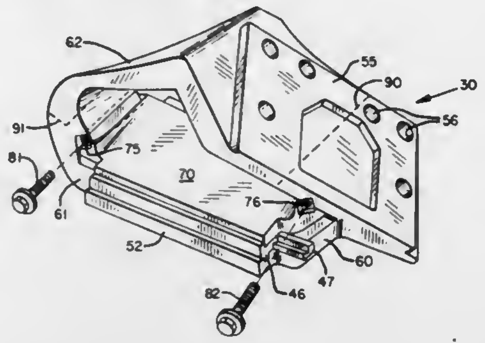
1. A log splitter for backhoe vehicles, comprising, in combination, a horizontal base plate for standing up a log thereupon, a vertical "I" beam welded upon one end of said base plate, bracket means on a rear flange of said "I" beam for removable securement to a boom of said backhoe vehicle, a channel member being slidably fitted on a front flange of said "I" beam, an "L"-shaped projection welded on a face of said front flange, a wedge welded to an underside of said "L"-shaped projection, said wedge comprising a vertically positioned, flat, rectangular central plate sharpened along its lower edge, and an angularly inclined, upwardly diverging, flat, rectangular side plate abutted to each opposite flat side of said central plate, a triangular end plate affixed at one end of said wedge including an upwardly projection that is parallel to an upward portion of said "L"-shaped projection, and an aligned opening through said each projection receiving a removable pin therethrough and through a hole in a block on an end of a piston rod of an hydraulic cylinder carried on said boom.

4,444,232
LOG SPLITTER
Eugene W. Loos, 408 E. Water, Pinckneyville, Ill. 62274
Filed Aug. 23, 1982, Ser. No. 410,266
Int. Cl. B27L *7/00*
U.S. Cl. 144—193 A **7 Claims**



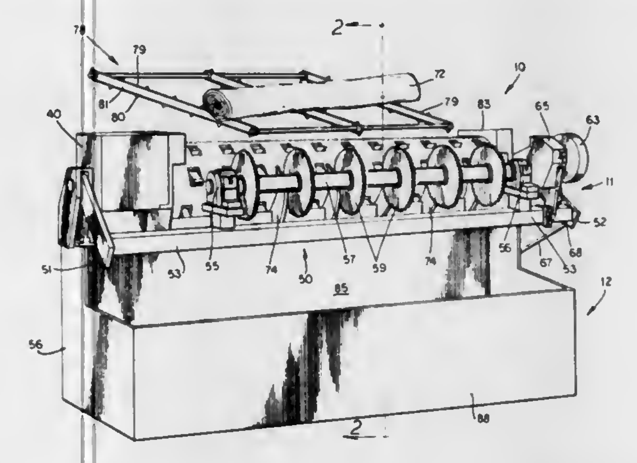
3. (Amended) *A log splitter including a base having a log splitting device at one end and a ram movable along said base for splitting logs by forcing end faces of the log against said splitting device, characterized by said splitting device comprising a splitting wedge having a cutting edge and a widened portion rearwardly of the cutting edge, the widened portion increasing in thickness rearwardly of the cutting edge with wedge configuration, the cutting edge being perpendicular to the movement of said ram, a log penetrating device extending forwardly from said splitting wedge for initially penetrating the face of a log, the penetrating device having a penetrating edge parallel to and in front of said cutting edge, the penetrating edge having a height less than the cutting edge and being positioned relative to the rail for initially penetrating the log face at a location near said rail and proximate the lower end of the cutting edge, when the log is driven by the ram toward the splitting device, the penetrating device having diverging portions extending rearwardly from the penetrating edge and located on opposite sides of the cutting edge for providing increasing thickness rearwardly of both the penetrating edge and the cutting edge to cause inititial partial splitting of the log face near its periphery prior to its being driven against the cutting edge thereby to enhance entry of said cutting edge into the log face for splitting of the log, the splitting wedge having a dorsal vertical extension for causing the splitting wedge to split a log of increased diameter than would be split by said splitting wedge,* [A log splitter according to Claim 5 and further characterized by] the dorsal extension defining a further cutting edge aligned with and extending upwardly from the first-said cutting edge in perpendicular relationship to the movement of the ram.

4,444,233
KNIFE HOLDER IN WOODWORKING MACHINE
Fred L. B. Miller, Lake Oswego, Oreg., assignor to Dorothy W. Miller, Lake Oswego, Oreg.
Filed May 17, 1982, Ser. No. 378,498
Int. Cl.^{3} B27G *13/04*
U.S. Cl. 144—220 **1 Claim**



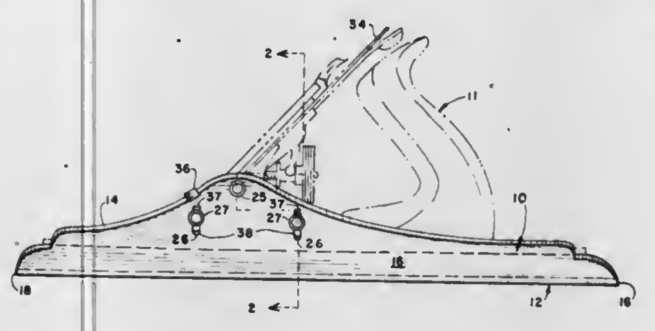
1. A knife holder for a woodworking knife comprising a support member having a surface arranged to support one face of the knife, a resilient cambered clamp plate in permanent, precise fixed position having a convex face confronting the opposite face of the knife, a pair of sliding wedges in said support member engaging the opposite face of said clamp plate along opposite side edge portions thereof to flatten the clamp plate against said knife and clamp the knife against said supporting surface, a longitudinal adjusting screw in each of said wedges having screw threaded engagement in the small end of the wedge and having a head end bearing on said support member to tighten the wedge, said screw heads being accessible for rapping on the screw heads to drive the wedges to loosened positions when the screws have been unscrewed a short distance in the wedges, a transverse backing bar secured in fixed position by screws in said support member, and means to position said knife in working position in said support member comprising a transverse wedge slidable between said backing bar and the back end of the knife, said backing bar clamping said transverse wedge in adjusted position against said support member when said backing bar screws are tightened, said backing bar abutting the back end of said clamp plate to position the clamp plate in said permanent, precise fixed position.

4,444,234
LOG PROCESSING APPARATUS AND METHOD
Stanley D. Arasmith, P.O. Box 2458, Rome, Ga. 30164
Filed Nov. 19, 1981, Ser. No. 323,056
Int. Cl.^{3} B27B *1/00*
U.S. Cl. 144—370 **15 Claims**



11. A method for removing material from the exterior surface of a log, comprising the steps of:
supporting said log in a log-receiving cradle defined between the surface of an elongate cylindrical drum and the peripheries of a plurality of toothed rollers positioned closely adjacent to the surface of said drum, said drum including a plurality of cutters arrayed along the length of said drum and extending outwardly therefrom;
rotating said elongate cylindrical drum about its longitudinal axis in a first direction such that said cutters engage said log and remove material therefrom; and
rotating said log by rotating said plurality of toothed rollers.

4,444,235
ATTACHMENT FOR A WOODWORKING PLANE
Ronald K. Hott, 5533 Pony Farm Dr., Richmond, Va. 23227
Filed Aug. 19, 1981, Ser. No. 294,410
Int. Cl.^{3} B27G *17/02*
U.S. Cl. 145—20 **6 Claims**

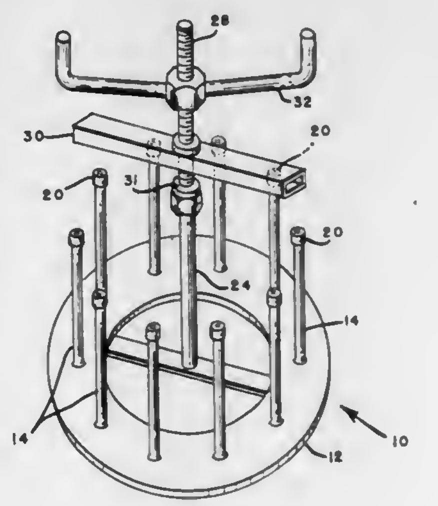


1. An attachment adapted to be mounted upon a woodworking plane having sidewalls rising from a flat underside associated with a cutting blade, said plane and attachment mounted thereon being adapted to cut an edge surface adjacent a face surface of a workpiece, said attachment being comprised of:
(A) an elongated rigid bracket comprised of:
  (a) a side panel having upper, lower, forward and rearward extremities and parallel flat outside and inside faces, a threaded channel adjacent said upper extremity perpendicularly communicating between said outside and inside faces, two slotted channels disposed below said threaded channel and substantially equally spaced therefrom, said slotted channels communicating perpendicularly between said outside and inside faces, the cross-sectional configuration of said slotted channels being elongated with two ends, said ends being directed toward upper and lower extremities of said side panel,
  (b) a ledge associated with the inside face of said side panel and extending substantially the entire length thereof, said ledge having a flat upper surface extending perpendicularly from said inside face and terminating in a corner edge disposed parallel to said inside face and serving as an abutment edge adapted to contact the underside of said plane,
  (c) a flat abutment face extending downwardly from said abutment edge along its entire extent and adapted to lie against the face surface of said workpiece, and
  (d) a groove recessed into the flat upper surface of said ledge and disposed in a manner to accommodate said cutting blade, and
(B) three machine bolts, each comprised of a head and a threaded shaft, said threaded shafts being adapted to enter said threaded and slotted channels at the outside face of said side panel and extend beyond the inside face of said panel when the heads of said bolts abut against said outside face, whereby the bolt which engages the threaded channel adjacent the upper extremity of the bracket acts upon the sidewall of the plane to urge the bracket away from the plane, and the bolts which engage said slotted channels serve to draw said bracket toward the plane, thereby urging said abutment edge tightly against the underside of the plane and causing said abutment face to be disposed at adjustable angles with respect to the underside of said plane,
whereby the edge surface of said workpiece may be cut at an angle of between 70° and 90° with respect to the face surface of said workpiece.

4,444,236
TIRE TREAD HAVING LOW ROLLING RESISTANCE
Masanori Kan, Amagasaki; Takuya Okazaki, Toyonaka, and Tatsuo Sakashita, Suita, all of Japan, assignors to The Toyo Rubber Industry Co., Ltd., Osaka, Japan
Filed Jun. 15, 1982, Ser. No. 388,694
Claims priority, application Japan, Jun. 24, 1981, 56-98627
Int. Cl.^{3} B60C *11/00, 1/00;* **C08L** *7/00*
U.S. Cl. 152—209 R **4 Claims**

1. An automotive tire tread having a low rolling resistence comprising a cap tread rubber and a base tread rubber, wherein solution polymerization star-shaped SBR is used for said cap tread rubber, the value of the loss tangent of said cap rubber being not more than 0.24 at 50 Hz frequency, 5% dynamic strain and 30° C., the value of the resilience of said cap rubber being more than 60% in accordance with BS-903 at 23° C. and the value of the loss tangent of the base tread rubber is less than that of the cap tread rubber.

4,444,237
SPLIT WHEEL ASSEMBLER/DISASSEMBLER TOOL
Eldridge J. Reed, 992 W. 2200 N., Layton, Utah 84041
Filed Feb. 2, 1982, Ser. No. 345,119
Int. Cl.^{3} B60C *25/06*
U.S. Cl. 157—1.2 **5 Claims**



1. A tool for use in assembling and disassembling a split

wheel having a wheel subassembly, a tubeless tire positioned about said wheel subassembly, a demountable flange removably securable to said wheel subassembly, and a plurality of bolts for securing said demountable flange to said wheel subassembly, said tool comprising:

a base plate,

a plurality of outstanding elements, each of said outstanding elements being secured at one end thereof to said base plate in aligned relationship with respect to each of said plurality of bolts for securing said demountable flange to said wheel subassembly, respectively, each of said outstanding elements having a socket-like element being non-rotatably but removably attached to the other end of said outstanding element for engaging each of said bolts, respectively, in order to prevent said bolts from rotating;

an element centrally upstanding from said base plate; and

means operable connected to said centrally upstanding element for compressing said tire prior to securement of said demountable flange to said wheel assembly;

whereby said assembly and disassembly of said split wheel is accomplished rapidly.

4,444,238

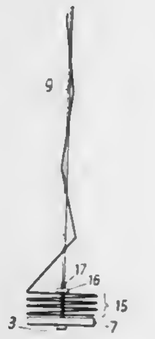
INSECT PROTECTION FOR OPENINGS OF BUILDINGS

Leopold Adler, Rudolf Kassnerg. 18a, A-1190 Vienna, Austria

Filed Jun. 9, 1982, Ser. No. 386,844

Int. Cl.³ E06B *9/262*

U.S. Cl. 160—84 R **5 Claims**



1. Insect protection for an opening in a building, said opening being defined by a pair of substantially vertical side boundary surfaces, an upper boundary surface and a lower boundary surface, said protection comprising:

a net of elastic weather-resistant and corrison-resistant material placed within said opening and provided with permanent horizontal creases, said net adapted for vertical motion between a first position in which said net is folded at said creases in zig-zag configuration to at least partially expose said opening, and a second substantially stretched position in which said net substantially seals said opening, the width of said net when in non-deformed condition being greater than the width of said opening so that the lateral edges of said net are compressed between said vertical side boundary surfaces;

a horizontal stabilizing rod fixed to the lower edge of said net, the length of said rod being less than the width of said opening;

a pair of traction cords for moving said net upward and downward between said first and second positions, each such cord extending upward through a series of vertically disposed openings in said net, one such opening being situated between each such pair of adjacent creases and the lower end of each such cord being secured to said stabilizing rod; and

means for securing in tightly folded configuration the excess length of said net to permit adjustment of the stretched length of said net to the height of said building opening.

4,444,239

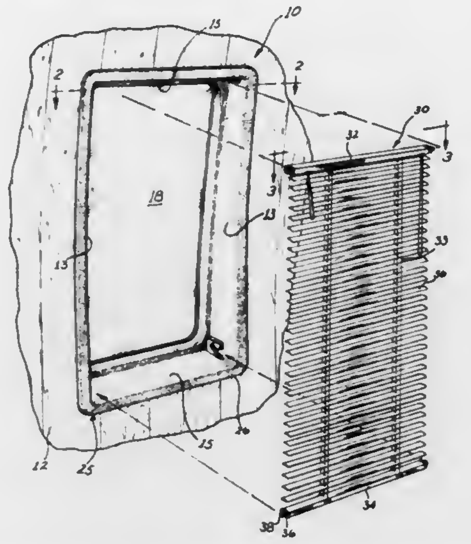
VENETIAN BLIND AND FRAME FOR VEHICLES

Richard K. Haines, 2317 W. Lexington, Elkhart, Ind. 46515

Continuation-in-part of Ser. No. 326,767, Dec. 2, 1981, abandoned. This application Jan. 31, 1983, Ser. No. 462,414

Int. Cl.³ E06B *3/32*

U.S. Cl. 160—107 **6 Claims**



1. In combination, an upwardly and inwardly inclined window frame mounted in and having walls lining a motor vehicle window opening formed in an upwardly and inwardly curved vehicle wall, and a venetian blind fitting in said frame with clearance and having upper and lower headers with projecting end pintles, a plurality of spaced horizontal slats, slat supports and tension means connected to and extending between said headers for pulling toward each other said headers and tensioning said slat supports, said frame having upper openings for receiving the end pintles of said upper header, and rigid socket means at a lower portion of said frame having grooves for releasably receiving the pintles of said lower header, said tension means retaining said lower header pintles in locking engagement in said grooves and positioning said slats within the upwardly and inwardly inclined space outlined by said frame walls, whereby said tensioning means serve the dual purpose of positioning said slats within the outline of the window frame when said lower header pintles are locked in said grooves and of collapsing said blind vertically when said lower header pintles are released from said grooves.

4,444,240

FOLDABLE DEVICE

Brian C. Bannister, North Mymms, England, assignor to Marler Haley Exposystems Ltd., Barnet, England

Filed Jul. 2, 1982, Ser. No. 394,768

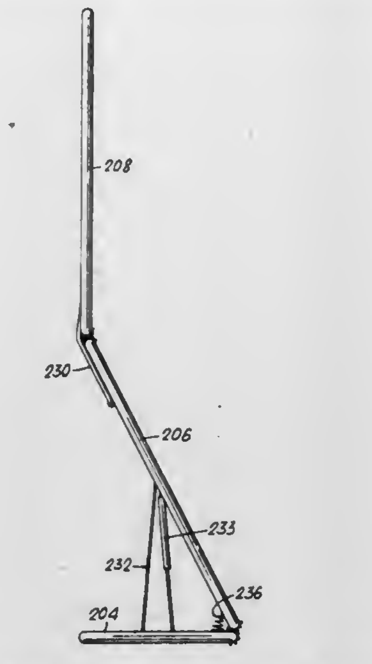
Claims priority, application United Kingdom, Jul. 6, 1981, 8120852

Int. Cl.³ E06B *3/48*

U.S. Cl. 160—135 **9 Claims**

1. A foldable device comprising a plurality of planar members having ends, means pivotally connecting said members end to end in series whereby the device can be folded up compactly and can readily be unfolded into an erected condition, means for maintaining desired relative positions of the members in said erected position, said means pivotally connecting said planar members together including, for each pair of adjacent planar members, a connecting member, means pivotally connecting said connecting member with one of the planar members of the pair for pivoting about one axis parallel with said planes and means pivotally connecting said connecting member with the adjacent planar member for pivoting about a further axis, parallel with, and spaced transversely from said one axis, all of said axes being parallel with one another whereby in the folded condition of the device the planar members can lie in face to face engagement with one another, and wherein said means for maintaining said desired

relative positions of said planar members in the erected condition includes spring means which, at least in said erected condition of the device, acts to urge at least two adjoining planar members apart, and means for limiting such movement of said members apart to a predetermined extent.



4,444,241

BLIND OR SHUTTER FOR WINDOWS OR THE LIKE

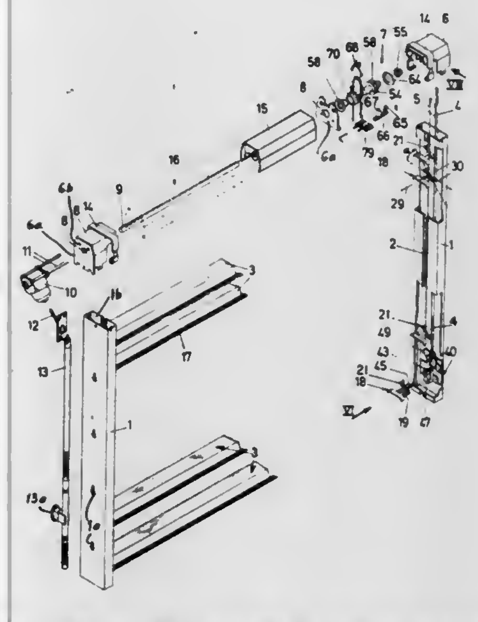
Bruno Amsler, Olten, and Alfred Frei, Schönenwerd, both of Switzerland, assignors to Emil Schenker AG, Schönenwerd, Switzerland

Filed Sep. 29, 1981, Ser. No. 306,708

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1980, 3037701

Int. Cl.³ E06B *9/30*

U.S. Cl. 160—172 **20 Claims**



1. A shutter, particularly for use in window or door openings, comprising a liftable and lowerable curtain of substantially horizontal interconnected light-intercepting members having first and second end portions and including a lowermost member; a pair of hollow upright guide rails for the respective end portions of said light-intercepting members; a mechanism for lifting and lowering said curtain; and arresting means for preventing unauthorized lifting of said lowermost member, including a pair of blocking devices each connected to a different end portion of said lowermost member and installed in the respective guide rail, said blocking devices being arranged to jam against the respective guide rails and to thus prevent lifting of said lowermost member except by way of said mechanism, and said mechanism comprising force transmitting elements extending into said guide rails and actuatable to apply to the respective blocking devices upwardly directed forces which disengage said blocking devices from the respective guide rails, each of said blocking devices including a lever, a carriage movable up-and-down in the respective guide rail, and means for articulately connecting said levers to the respective carriages, and each of said levers having a portion remote from the respective connecting means into a lower position of frictional engagement with the respective guide rail and pivotable by said forces about the respective connecting means into an upper position of disengagement from the respective guide rail.

4,444,242

MODULAR SHUTTER FOR WINDOWS OR THE LIKE

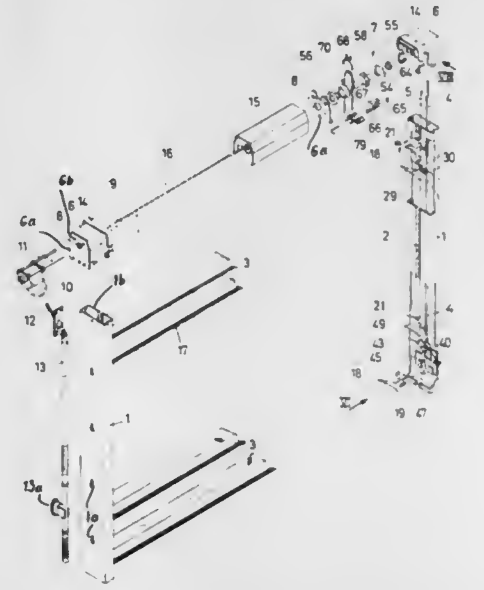
Bruno Amsler, Olten; Daniel Voney, Schönenwerd; Josef Koch, Aarau, and Alfred Frei, Schönenwerd, all of Switzerland, assignors to Emil Schenker AG, Schönenwerd, Switzerland

Filed Sep. 29, 1981, Ser. No. 307,081

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1980, 3037725

Int. Cl.³ E06B *9/30*

U.S. Cl. 160—172 **36 Claims**



1. A shutter for doors, windows or the like comprising a plurality of prefabricated components including a curtain of liftable and tiltable slats having a lowermost slat, hollow guide rails for said slats, housings attached to said guide rails, a horizontal main shaft rotatably mounted in said housings, and means for rotating said shaft clockwise and counterclockwise, said components including quick make-and-break connections for attachment of cooperating components to each other, and at least one of said housings and the corresponding guide rail comprising a slat tilting and lifting mechanism, said mechanism including a carriage movable up and down in said corresponding guide rail, a flexible element movable up and down in response to rotation of said shaft in the respective directions, means for connecting said flexible element to said carriage, and means for coupling said lowermost slat to said carriage.

4,444,243

SHUTTER FOR WINDOWS OR THE LIKE

Daniel Voney, Schönenwerd, and Bruno Amsler, Olten, both of Switzerland, assignors to Emil Schenker AG, Schönenwerd, Switzerland

Filed Sep. 29, 1981, Ser. No. 307,079

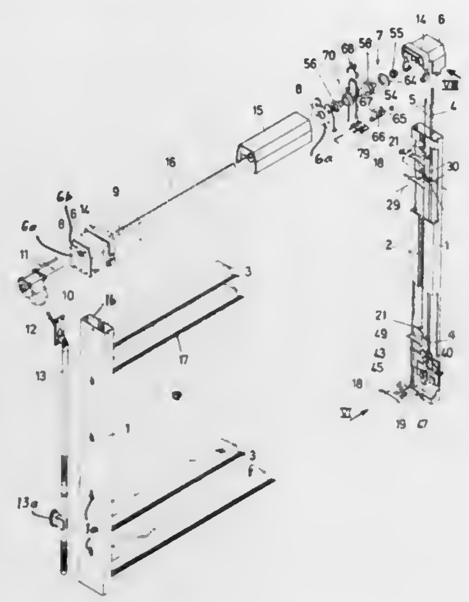
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1980, 3037759

Int. Cl.³ E06B *9/30*

U.S. Cl. 160—172 **13 Claims**

1. A shutter for doors, windows or the like, comprising a curtain of slats; a reel; means for rotating said reel clockwise and counterclockwise; a flexible element connected to said reel and arranged to respectively lift and allow said slats to descend

in response to rotation of said reel in first and second directions; and a slat tilting unit including a rotary clutch element coaxial with said reel and arranged to effect tilting of slats in first and second directions in response to rotation of said clutch element in first and second directions, a spring interposed between said reel and said clutch element to normally rotate said clutch element in response to rotation of said reel, said spring having first and second end portions arranged to move along a predetermined path in response to rotation of said spring with said reel, and means for interrupting the rotation of said spring in predetermined angular positions of said clutch element including stop means disposed in said path.



4,444,244
APPARATUS FOR CONTINUOUS CASTING ON A GROOVED WHEEL

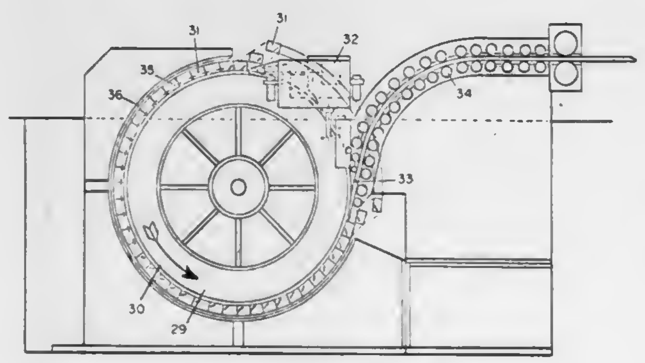
Robert Petit, Ugine, France, assignor to Ugine Aciers, Paris, France

Filed May 4, 1982, Ser. No. 374,780

Claims priority, application France, May 15, 1981, 81 10098

Int. Cl.^{3} B22D *11/06*

U.S. Cl. 164—429 **7 Claims**



1. In an apparatus for use in continuous casting of metals and alloys in bar or strip form, including a rotary casting wheel, said wheel having a grooved rim and means for closing the rim along a portion of its periphery, means for introducing liquid metal into said groove and means spaced about the periphery for extracting the solidified continuous stock, the improvement comprising said closing means being in the form of a plurality of movable flaps (**31, 39**), each pivotally mounted on the casting wheel so that each flap is fixed in location along the rim (**30**) of the wheel during its rotation, means (**44, 36**) for opening and closing the flaps so that the flaps are in the closed position between the point of liquid metal introduction and solidifed metal extraction, and are open from the extraction point to the introduction point.

4,444,245
CONTINUOUS CASTING APPARATUS

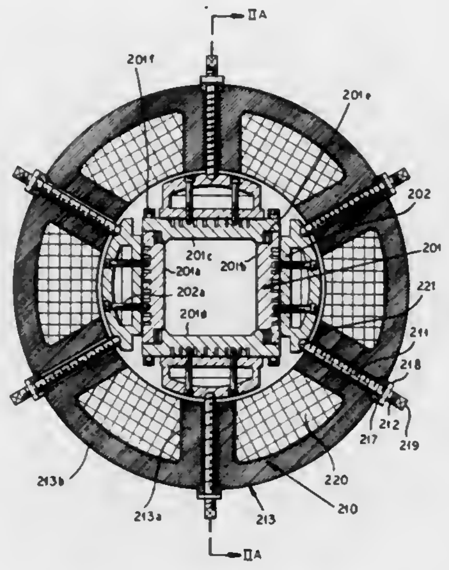
P. Hippert, Dudelange, Luxembourg, assignor to Arbed S.A., Luxembourg

Filed Jan. 25, 1982, Ser. No. 342,396

Claims priority, application Luxembourg, Jan. 27, 1981, 83099

Int. Cl.^{3} B22D *11/00, 27/02*

U.S. Cl. 164—504 **5 Claims**



1. A continuous casting apparatus comprising:

a plate mold including a plurality of interconnected mold plates defining a mold cavity adapted to receive a melt for the continuous casting thereof;

a respective cooling chamber affixed to a side of each of said plates turned away from the mold cavity;

an inductor surrounding said mold and said cooling chambers, said inductor comprising a core formed by a stack of laminations and including pole pieces reaching toward said cooling chambers, each of said pole pieces being traversed by a respective passage parallel to the laminations of said stack; and

respective support elements extending through said passages and engaging said cooling chambers for connecting said inductor to said mold, said inductor having coils energizable to magnetically induce rotary movement of the melt, said pole pieces being directly juxtaposed with said cooling chambers and said support elements being retractable to allow dismounting of said mold from said inductor.

4,444,246
FLASH JET COOLANT CIRCULATION SYSTEM

Arnold Otto W. Reinsch, 13140 Carousel La., Del Mar, Calif. 92014

Division of Ser. No. 920,986, Jun. 30, 1978, Pat. No. 4,280,796, which is a division of Ser. No. 684,853, May 10, 1976, abandoned. This application Mar. 19, 1981, Ser. No. 243,646

Int. Cl.^{3} F28D *15/00*

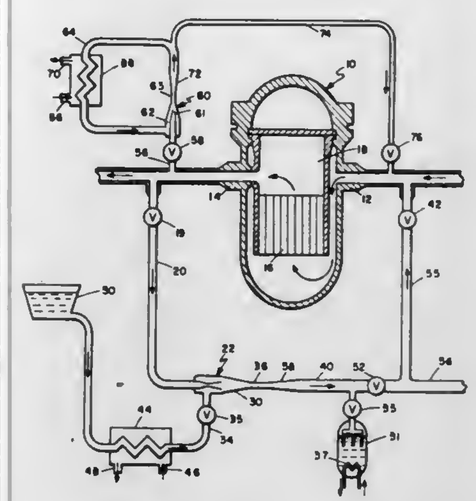
U.S. Cl. 165—104.22 **4 Claims**

1. A system for using the energy of steam produced from coolant water in a vessel by a source of heat to power a jet pump in a system for eliminating the steam by condensation, the system comprising:

jet pump means having a coolant inlet and having a steam inlet which is connected to said vessel for utilizing any steam in said vessel to circulate coolant in a circulation loop;

condenser means comprising a mixing tube in which condensation can occur to produce condensed coolant downstream of said jet pump;

heat rejection means for extracting heat from at least a portion of said condensed coolant and returning at least a portion of said condensed coolant, from which heat has been extracted to said coolant inlet of said jet pump, and a portion of said condensed coolant being circulated by said jet pump means into said vessel for converting and returning steam generated in said vessel to vessel as condensed coolant.



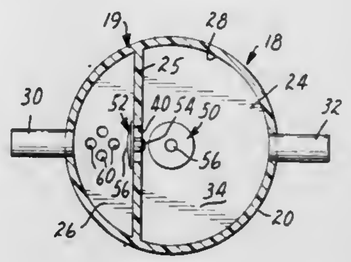
4,444,247
FILTER-CONDITIONER FOR MOTOR COOLING LIQUID

Gerald R. Franck, St. Paul, and David B. Olsen, Lake Elmo, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 26,406, Apr. 2, 1979, abandoned. This application Sep. 18, 1981, Ser. No. 303,520

Int. Cl.^{3} F28F *19/00*

U.S. Cl. 165—119 **9 Claims**



1. In an engine cooling system comprising a cooling liquid filled radiator having an overflow tube; pressure valve means in said radiator for allowing cooling liquid to flow out of said overflow tube from said radiator when the pressure in said radiator exceeds atmospheric pressure by a predetermined amount as a result of heat expansion of the liquid in the radiator, and for allowing cooling liquid to flow back into said radiator through said overflow tube under the influence of atmospheric pressure when the pressure in said radiator drops below atmospheric pressure as the cooling liquid in said radiator cools; and reservoir means coupled to said overflow tube for containing cooling liquid expelled through said outlet tube and for supplying cooling liquid under about atmospheric pressure at said outlet opening when the pressure in said radiator drops, the improvement wherein said system includes:

wall portions defining a filter chamber;

a filter within said filter chamber comprising a porous wall for filtering particles from liquid moving through said porous wall;

chemical means within said filter chamber for chemically conditioning cooling liquid passing through said filter chamber; and

means coupling said overflow tube, reservoir means and filter chamber together including valve means for causing fluid flowing between said radiator and said reservoir means under the influence of differential pressure to bypass said filter during movement of fluid through said overflow tube in one direction, and to pass through the porous wall of said filter during movement of fluid through said overflow tube in the other direction.

4,444,248
APPARATUS FOR COOLING OR HEATING ARTICLES CARRIED ON A SPIRAL CONVEYOR

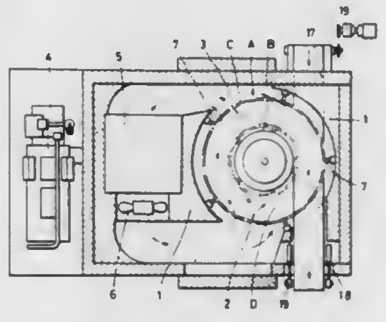
Onodera Hirosuke, 306, 3-chome, Imazunaka, Tsurumi-ku Osaka, Japan

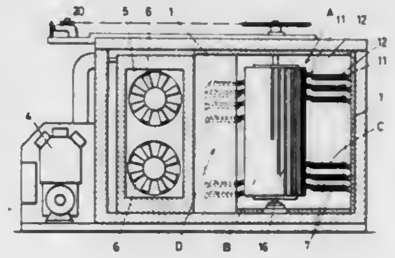
Filed Dec. 21, 1981, Ser. No. 332,542

Claims priority, application Japan, Mar. 16, 1981, 56-38271

Int. Cl.^{3} F28F *5/02;* **F24H** *9/06*

U.S. Cl. 165—120 **1 Claim**





1. An apparatus for cooling or heating articles carried on a spiral conveyor adapted to helically rotate around the outer periphery of a small diameter drum with an outer periphery, comprising in combination:

(a) a heat insulated peripheral wall (**1**) around at least a portion of said spiral conveyor;

(b) a recessed groove (**16**) in said drum outer periphery; (c) a blower port (**2**) and a suction port (**3**) defined on opposite sides of said peripheral wall (**1**), a conveying space (**D**), defined around said drum, fan means (**6**) and heat exchanger means (**5**) for communication between said blower and suction ports (**2, 3**);

(d) a conveyor belt (**C**) having juxtaposed transverse shafts (**15**) with a pair of links (**11, 12**) rotatably pivoted on both sides thereof, disposed for moving in said defined conveying space (**D**), one link being flexibly coupled with the link of the preceeding transverse shaft, the other link being flexibly coupled with the link of the succeeding transverse shaft, spiral rails (**8**), roller means (**14**) externally fitted on the outside of said links (**11, 12**), mounted on said rails (**8**), outward projection means (**15**) on said conveyor belt extending into said groove (**16**).

4,444,249
THREE-WAY HEAT PIPE

Edwin C. Cady, Orange, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Aug. 20, 1981, Ser. No. 294,566

Int. Cl.^{3} F28D *15/00;* **F25B** *29/00*

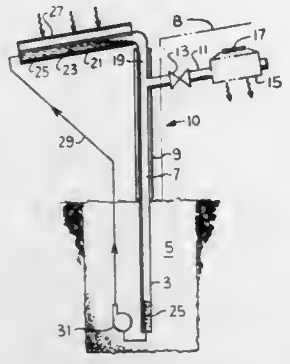
U.S. Cl. 165—48 S **23 Claims**

1. A closed ended heat pipe system for the transfer of thermal energy by heat of vaporization and condensation, said system comprising:

a first heat pipe including:
  a first condenser arm;
  a first evaporator arm;
  a first heat storage arm connected to said first condenser and first evaporator arms and positioned with respect to

gravity below said first condenser and first evaporator arms;

a first heat storage means contacting said first heat storage arm;



a working fluid in said first heat pipe for the transfer of thermal energy by heat of vaporization and condensation between said first condenser, first heat sink, and first evaporator arms; and

first means to pump said working fluid in liquid form from said first heat sink arm to said first evaporator arm.

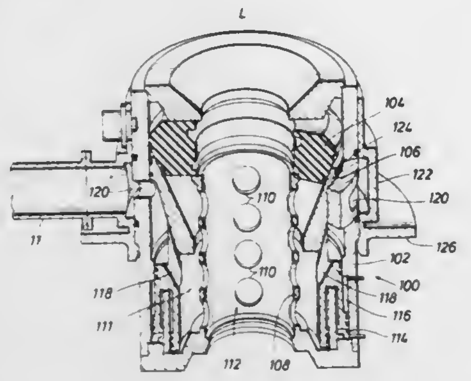
4,444,250
FLOW DIVERTER

Julian D. Keithahn, Houston; Charles D. Morrill, and Joseph R. Roche, both of Humble, all of Tex., assignors to Hydril Company, Los Angeles, Calif.

Filed Dec. 13, 1982, Ser. No. 449,375

Int. Cl.^{3} E21B *33/06*

U.S. Cl. 166—84 **5 Claims**



5. Apparatus adapted for use as a flow diverter for directing pressurized well bore fluid of a well bore away from a drilling rig via a diverter vent line, comprising

a cylindrical housing having one or more outlet passages provided in its wall, the outlet passages connected for fluid communication with the diverter vent line,

a packer in the housing having an annulus of resilient material,

a packer-actuating piston in fluid communication with the borehole within the housing and engaged with the packer and actuatable to apply radially inwardly directed pressure to the packer for sealing with a pipe or other object in the well bore or for closing the well bore in the absence of any object in the well bore,

the piston having one or more passages for fluid communication between the borehole and the outlet passage provided in the housing wall.

4,444,251
COMBINED INSTALLATION COMPRISING AN ACTIVATION PUMP AND A SAFETY VALVE DISPOSED BELOW THIS PUMP, IN A HYDROCARBON PRODUCTION WELL

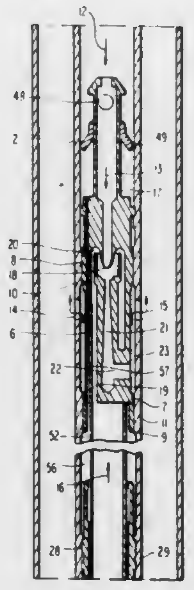
Hervé M. Lefebvre, Chartres, and Francois C. Gueuret, Voisins le Bretonneux, both of France, assignors to Compagnie Francaise des Petroles, Paris, France

Filed Dec. 1, 1982, Ser. No. 445,869

Claims priority, application France, Dec. 2, 1981, 81 22543

Int. Cl.^{3} E21B *34/10*

U.S. Cl. 166—105 **6 Claims**



1. An installation comprising an activation pump installed in a production pipe and a safety valve disposed below said activation pump and comprising an operating member and a control chamber, said operating member being movable inside said valve for opening said valve under the control of said control chamber, said control chamber being connectable to receive a pressurised fluid present at the level of the pump, wherein an annular passage is provided inside the production pipe along at least one wall connecting said pump to said valve and extending from said pump, where means are provided for bringing said passage into communication with said pressurised fluid present at pump level, to said valve, where said passage is in communication with said control chamber.

4,444,252
SLACK ADJUSTMENT FOR SLIP SYSTEM IN DOWNHOLE WELL APPARATUS

Hiram H. Fisher, Jr., deceased, late of Houston, Tex. (by Hiram H. Fisher, III, executor), assignor to Baker International Corporation, Orange, Calif.

Continuation of Ser. No. 272,410, Jun. 10, 1981, abandoned. This application Jun. 24, 1982, Ser. No. 391,859

Int. Cl.^{3} E21B *33/129, 33/128*

U.S. Cl. 166—134 **13 Claims**

1. Apparatus for insertion in a conduit such as a well to provide a seal in an annulus formed between said conduit and a member disposed within said conduit, said apparatus including:

an elongated mandrel;

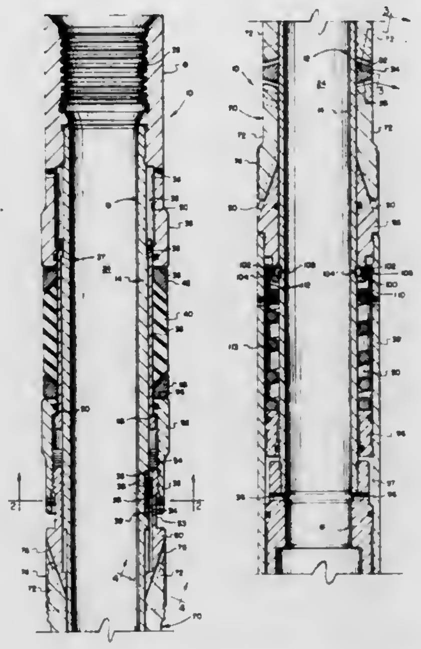
first seal urging means disposed around said mandrel;

second seal urging means disposed around said mandrel and facing said first seal urging means, said second seal urging means being axially movable with respect to said first seal urging means in a first direction to move said seal urging means toward each other;

annular sealing means disposed between said first and second seal urging means and responsive to axial movement of said seal urging means in said first direction to move radially outwardly into sealing engagement with said conduit;

a slip assembly, including a plurality of radially movable slip members having surfaces thereon engageable with cooperable surfaces formed on means comprising a wedge member disposed around said mandrel, said wedge member being movable in a first direction to force said slip members to a radially extended position with respect to said mandrel into gripping engagement with said conduit; and

slack adjusting means comprising a slack adjusting member engageable with said wedge member and disposed between said annular sealing means and said slip assembly for adjustably positioning said wedge member to cause said slip members to be retained in a radially inwardly retracted position with respect to said mandrel to substantially prevent said slip members from engaging said conduit during insertion of said apparatus therein, said slack adjusting member including said second seal urging means.



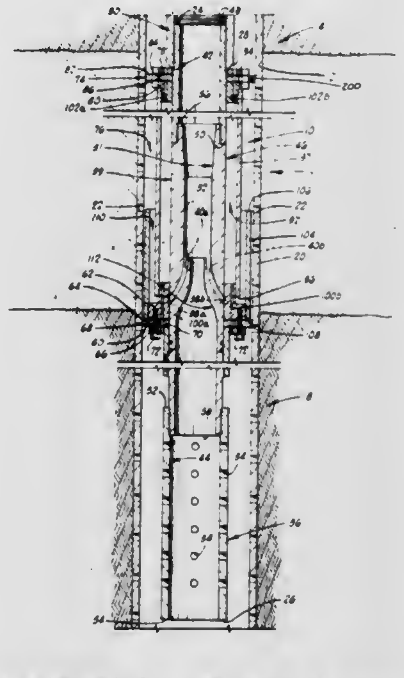
4,444,253
TUBING STRING EXTENSION

David A. Smith, Enid, and Marvin D. Smith, Stillwater, both of Okla., assignors to A. Glen Smith, Del City, Okla.

Filed Jun. 21, 1982, Ser. No. 390,631

Int. Cl.^{3} E21B *33/12*

U.S. Cl. 166—191 **9 Claims**



1. An apparatus adapted for use with a pump equipped tubing string within a casing for use in conjunction with an oil well comprising:

a tubing string extension having an upper end, a lower end, an outer peripheral surface and an opening extending therethrough intersecting the upper and the lower ends thereof, the upper end of the tubing string extension being co-axially connected to the depending end of the tubing string, the tubing string extension a reduced diameter portion intermediate the upper and the lower ends thereof, and at least two nozzle openings being formed through a portion of the tubing string extension with each nozzle opening having one end intersecting the opening in the tubing string extension in the reduced diameter portion of the tubing string extension and the opposite end of the nozzle opening intersecting the outer peripheral surface of the tubing string extension;

a lower seal assembly surrounding the tubing extension and disposed generally below the intersections of the nozzle openings and the outer peripheral surface of the tubing string extension, the lower seal assembly being adapted for sealingly engaging the tubing string extension and sealingly engaging the inside surface of the casing, thereby forming a seal therebetween;

an upper seal assembly surrounding the tubing string extension and disposed generally above the intersections of the nozzle openings and the outer peripheral surface tube, the tubing string extension, the upper seal assembly being adapted for sealingly engaging the tubing string extension and sealingly engaging the inside surface of the casing, thereby forming a seal therebetween, the upper seal assembly and the lower seal assembly cooperating with the casing to substantially sealingly isolate the space between the upper and the lower seal assemblies and between the tubing string extension and the casing; and

vent means between the upper and the lower seal assemblies for venting gas existing generally below the lower seal assembly in the space between the tubing extension and the casing through the lower and the upper seal assemblies substantially to reduce such gas presence in the area near the intersections of the nozzle openings with the outer peripheral surface of the tubing string extension, the fluid passing through the reduced diameter portion of the tubing string extension resulting in a pressure reduction near the nozzle openings thereby causing fluid to be drawn through the nozzle openings in the tubing string extension into the opening in the tubing string extension.

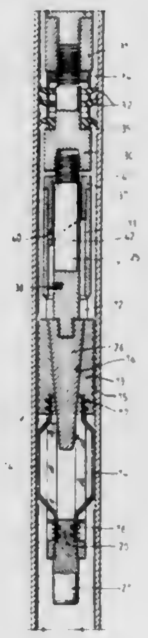
4,444,254
SLIP ASSEMBLY FOR HYDRAULIC PIPE TESTING

Lloyd C. Rathburn, 701 Falling Leaf, Friendswood, Tex. 77546

Filed Jun. 1, 1982, Ser. No. 383,517

Int. Cl.^{3} E21B *23/00*

U.S. Cl. 166—216 **5 Claims**



1. A slip assembly for use in anchoring an associated tool in

a section of pipe, comprising: a tubular body member; slip members mounted on said body member for movement between normally retracted positions adjacent one another and expanded positions where teeth on the outer peripheries thereof engage and grip a surrounding pipe wall; resilient means frictionally engaging the pipe wall and supporting said slip members on said body member; a control rod telescopically received in the upper end of said body member; expander means connected to the lower end of said control rod, said control rod and expander means being movable between upper positions where said expander means enables retraction of said slip members and lower positions where said expander means shifts said slip members outwardly; and control means including a sleeve mounted within the upper end of said body member and having a pocket formed therein that cooperates with lug means on said control rod for normally maintaining said rod in an upper position, said pocket being defined in part by upper and lower upwardly inclined wall surfaces, said lower wall surface preventing disengagement of said lug means from said pocket during downward movement of said assembly in the pipe, said upper wall surface causing relative rotation and disengagement of said lug means from said pocket when said control rod is moved upwardly relative to said body member.

4,444,255

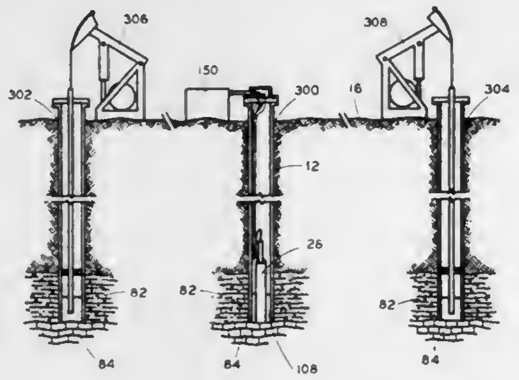
APPARATUS AND PROCESS FOR THE RECOVERY OF OIL

Lloyd Geoffrey, 6214½ Belpree, Amarillo, Tex. 79106; Randall Carr, 4624 S. Georgia, Amarillo, Tex. 79110; Donald L. Carr, 5406 Hillside, Amarillo, Tex. 79109, and Rodger H. Flagg, 1415 Lynn Ave., Ft. Wayne, Ind. 46805

Filed Apr. 20, 1981, Ser. No. 255,825

Int. Cl.³ E21B *43/00, 43/16*

U.S. Cl. 166—248 **22 Claims**



1. Apparatus for regenerating pressure within oil wells for the secondary recovery of oil within an oil field comprising: an elongated conduit comprised of electrically insulating material, elongated electrodes longitudinally received within said conduit, and of staggered immersed heights therein, means for imposing an alternating current input to said electrode rods, variable transformer means for generating a preferred, AC voltage output of from 10,000 to 500,000 volts; variable oscillator means for converting said input from 60,000 to 500,000 cycles per second to said variable length electrode rods which are at least partially immersed in the residual oil and accompanying liquid at the base of the depleted well, and means for continuously supplying microfine carbon by electrolytic decomposition of the petroleum stock, and comprising two sparking electrodes, and means for providing an AC current of controlled voltage and cycles per second to effect a spark discharge within liquid phase hydrocarbon which is cracked to produce the supply of microfine carbon powders.

4,444,256

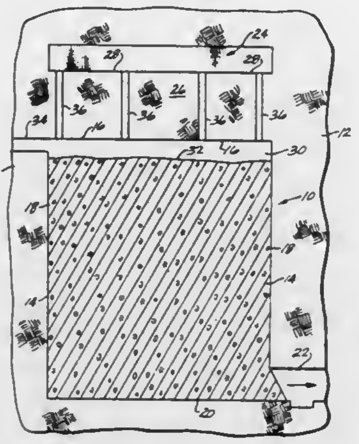
METHOD FOR INHIBITING SLOUGHING OF UNFRAGMENTED FORMATION IN AN IN SITU OIL SHALE RETORT

Jian C. Shen, Houston, Tex., assignor to Occidental Research Corporation, Irvine, Calif.

Filed Aug. 2, 1982, Ser. No. 404,475

Int. Cl.³ E21B *43/247;* E21C *41/10*

U.S. Cl. 166—259 **23 Claims**



1. A method for igniting an in situ oil shale retort in a subterranean formation containing oil shale, such a retort containing a fragmented permeable mass of formation particles containing oil shale and having top, bottom, and side boundaries of unfragmented formation, the method comprising the steps of:

(a) establishing a combustion zone in a top surface region of the fragmented mass in the retort;

(b) advancing the leading face of the combustion zone downwardly through the fragmented mass;

(c) extinguishing the combustion zone;

(d) introducing a cool inert gas into the retort for cooling carbonaceous materials in the top surface region of the fragmented mass to below the self-ignition temperature of such carbonaceous materials while leaving carbonaceous materials in the fragmented mass below the top surface region at temperatures greater than the self-ignition temperature of such carbonaceous materials;

(e) discontinuing introduction of the cool inert gas into the retort; and thereafter

(f) introducing an oxygen-supplying gas into the retort for igniting carbonaceous materials located below the surface region of the fragmented mass to thereby re-establish the combustion zone in the fragmented mass below its surface and for advancing the combustion zone downwardly through the retort.

4,444,257

METHOD FOR IN SITU CONVERSION OF HYDROCARBONACEOUS OIL

Laurence O. Stine, Western Springs, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 12, 1980, Ser. No. 215,995

Int. Cl.³ E21B *43/24, 43/243*

U.S. Cl. 166—261 **2 Claims**

1. A process for the in situ catalytic conversion of a heavy hydrocarbonaceous crude oil having a gravity of less than about 20° API at 60° F.; a melting point greater than about 100° F. and a trace metal content of from about 5 ppm to about 50,000 ppm, wherein said trace metals are either vanadium, nickel, iron or a combination thereof, which process comprises:

(a) injecting ambient air into said crude oil;

(b) igniting said crude oil to consume a portion of tar deposits in said crude oil to raise the surrounding crude to a temperature in the range of from about 500° F. to about 1400° F.;

(c) discontinuing said injection of ambient air;

(d) contacting said hot crude oil in situ with hydrogen at a pressure of from about 200 to about 5000 psig to catalytically in situ hydroconvert at least a portion of said crude oil employing as a catalyst said indigenous vanadium, nickel, iron metals or combinations thereof in their trace quantities;

and

(c) recovering said hydroconverted crude oil.

4,444,258

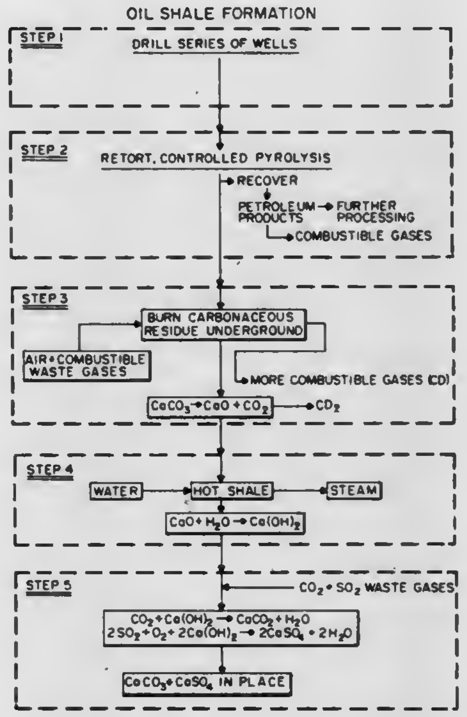
IN SITU RECOVERY OF OIL FROM OIL SHALE

Nicholas Kalmar, 637 Arlington Ave., Berkeley, Calif. 94707

Filed Nov. 10, 1981, Ser. No. 319,926

Int. Cl.³ E21B *43/243, 43/30, 43/40*

U.S. Cl. 166—261 **15 Claims**



1. A method for in situ recovery of oil from oil shale containing kerogen, comprising:

thermally decomposing the kerogen underground to produce oil vapors, combustible gases, and solid carbon residue at a temperature below about 1100° F.,

conducting the oil vapors and combustible gases to aboveground and recovering them there, while leaving the solid carbon residue below ground,

only after completing the recovering of the oil vapors and combustible gases at a given portion of a site, burning the solid carbon residue at that portion of the site underground at a controlled rate such that the temperature of the formation rises to about 1500° to 1900° F. but remains below the softening temperature of the spent shale and at controlled oxidation, so that carbon monoxide is produced,

conducting the gases containing carbon monoxide aboveground and recovering the carbon monoxide there,

injecting water into the hot formation at that portion of the site only after the burning step is completed at that portion of the site to produce steam at high temperature, and

conducting the high temperature steam aboveground and recovering its heat values there.

4,444,259

APPARATUS AND METHOD FOR PURGING HYDROGEN SULFIDE GASES FROM WELL WATER

Joseph A. Schwall, 1450 Sanders Rd., Northbrook, Ill. 60062

Filed Jan. 15, 1982, Ser. No. 339,682

Int. Cl.³ E21B *43/00, 43/34*

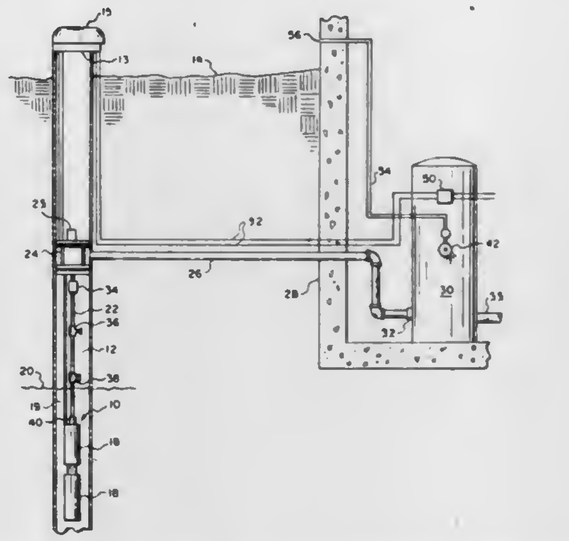
U.S. Cl. 166—265 **15 Claims**

1. An apparatus for purging well water of hydrogen sulfide gases comprising:

(a) means including a delivery conduit in a well for pumping the well water under pressure from an underground source of water to a water delivery system of an edifice;

(b) a constantly open bleeder opening in said conduit at about the height of the surface of the well water in said well for delivering a relatively small portion of the well water under pressure to, at and into the surface of the well water in said well to cause turbulence in the well water to facilitate purging of hydrogen sulfide gases from the well water; and

(c) means for venting the freed hydrogen sulfide gases to the atmosphere.



12. The method of purging hydrogen sulphide gases from well water comprising the steps of:

(a) pumping water under pressure from said well to a water delivery system;

(b) delivering a relatively small portion of said water under pressure to the surface of the water in said well, causing turbulence in the well water to facilitate release of hydrogen sulfide gases from the well water; and

(c) venting said released hydrogen sulfide gases to the atmosphere.

4,444,260

OIL SOLVATION PROCESS FOR THE TREATMENT OF OIL CONTAMINATED SAND

Phil A. Boyd, and James E. Stolhand, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Aug. 17, 1981, Ser. No. 293,554

Int. Cl.³ E21B *43/40*

U.S. Cl. 166—267 **11 Claims**

1. In a process for the treatment of production fluids from a well penetrating a subterranean oil reservoir to recover oil and clean sand from an oil contaminated sand, having steps comprising:

(a) producing from said well a production fluid comprising crude oil having sand entrained therein;

(b) separating said production fluid into a plurality of components, one of said components comprising an oil-contaminated sand;

(c) contacting the oil-contaminated sand mixture with water; and

(d) gravity separating said mixture into discrete sand, water, and oil phases the improvement comprising:

(e) adding a light oil solvent to the oil contaminated sand prior to step (c).

4,444,261

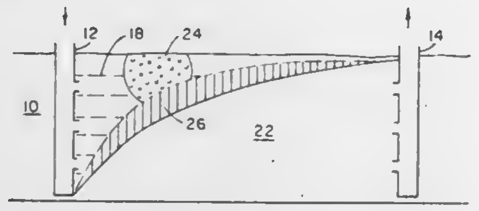
HIGH SWEEP EFFICIENCY STEAM DRIVE OIL RECOVERY METHOD

Philip N. Islip, Plano, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 30, 1982, Ser. No. 430,181

Int. Cl.^{3} E21B *33/138, 43/24*

U.S. Cl. 166—272 **12 Claims**



7. A method for recovering oil from a subterranean, viscous oil-containing formation penetrated by at least one injection well and at least one spaced-apart production well said wells being in fluid communication with a substantial portion of the formation, comprising:

(a) injecting steam into the formation nd producing fluids including oil from the formation via the production well for a predetermined period of time, thereby forming a steam-swept zone in the formation;

(b) injecting a predetermined amount of a diverting fluid comprising a mixture of a high molecular weight hydrocarbon selected from the group consisting of atmospheric residue from an atmospheric crude oil distillation column having a boiling point in excess of 650° F., vacuum residue having a boiling point of about 1050° F., heavy vacuum gas oil having a boiling point within the range of 650°-1050° F., and light vacuum gas oil having a boiling point within the range of 650°-850° F., or mixtures thereof and a volatile hydrocarbon solvent, said solvent volatilizing from said mixture under the conditions of temperature and pressure existing in the formation thereby enabling the high viscosity diverting fluid to effectively block the steam-swept zone to further steam injection; and

(c) thereafter injecting steam into the formation via the injection well and recovery fluids including oil from the formation via the production well.

4,444,262

METHOD OF USING AMINES AS SACRIFICIAL AGENTS FOR CHEMICAL FLOODING

Helen K. Haskin, Houston, and Phillip E. Figdore, Bellaire, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 13, 1982, Ser. No. 449,079

Int. Cl.^{3} E21B *43/22*

U.S. Cl. 166—274 **6 Claims**

1. A method of recovering petroleum from a subterranean hydrocarbon formation which is penetrated by at least one injection well and at least one production well wherein chemicals are injected into the formation to sweep oil through the formation, which comprises:

injecting into the formation a solution containing about 0.01% to about 5.0% by weight of an amine sacrificial agent designed to prevent the loss to the formation of said injected chemicals,

said amine sacrificial agent selected from the group consisting of ethylenediamine, polyamines and mixtures thereof.

4,444,263

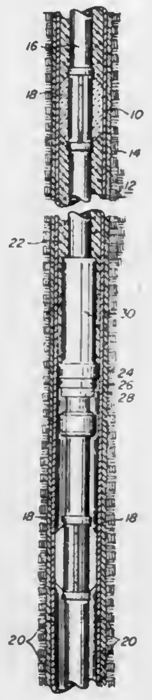
PERMANENT THERMAL PACKER METHOD

Johan F. Ploeg, Fullerton, and Arlo L. Oden, Bakersfield, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 288,258, Jul. 29, 1981, Pat. No. 4,403,656. This application Apr. 22, 1983, Ser. No. 487,790

Int. Cl.^{3} E21B *33/13*

U.S. Cl. 166—285 **1 Claim**



1. A method for completing a hot fluid injection well along a cased outer conductor above a subsurface zone along said well into which said hot fluid is to be injected comprising the steps of:

(a) assembling at the wellhead a string of injection tubing;

(b) adding at least one upward facing, one-way packer to said injection tubing string;

(c) adding a ported cement collar to said injection string above said upward facing, one-way packer;

(d) running said assembled injection string into said cased outer conductor on the end of an inner well conductor;

(e) positioning said ported cement collar at the desired position along said well above said subsurface zone;

(f) flowing a liquid cement material down said inner well conductor, out said ported cement collar and into the annulus between said cased outer conductor and said inner well conductor and above said upward facing, one-way packer to fill said annulus along a substantial vertical length thereof;

(g) allowing said cement to set to produce a cement packer capable of withstanding temperatures higher than the temperature of said hot fluids to be injected and to produce a complete seal of said annulus above said upward facing one-way packer and along said substantial vertical length of said annulus;

(h) clearing the inside of said inner well conductor to provide access to said injection tubing and said subsurface zone along said inner conductor from said wellhead;

(i) and filling at least a portion of the annulus between the outside of said inner well conductor and the inside of said outer well conductor and above said cement packer with an insulating material to reduce heat loss from said inner well conductor to the earth formations along said well above said cement packer.

4,444,264

METHOD OF USING A DIVERTING MATERIAL FOR WELL TREATMENT

Walter R. Dill, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Jun. 17, 1982, Ser. No. 389,314

Int. Cl.^{3} E21B *33/138, 43/26, 43/27*

U.S. Cl. 166—294 **22 Claims**

1. A method of diverting formation treating fluids to less permeable portions of a subterranean formation which comprises the steps of:

pumping into said formation a composition which comprises: a carrier fluid, and graded phthalimide particles, said particles being present in a suitable particle size range and in an amount sufficient to divert a formation treating fluid to a less permeable portion of said formation.

4,444,265

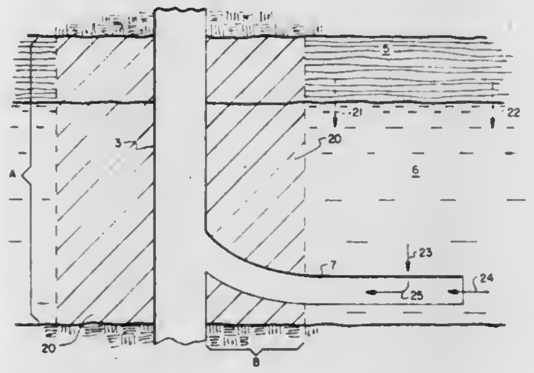
DRAIN HOLE DRILLING

Jerry W. Schmidt, Hobbs, N. Mex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Sep. 2, 1982, Ser. No. 414,211

Int. Cl.^{3} E21B *33/138, 43/32*

U.S. Cl. 166—295 **11 Claims**



1. In a method for drilling at least one drain hole wellbore which extends laterally from a primary wellbore into an area of the earth that produces both gas and liquid, the improvement comprising said area of the earth that produces both gas and liquid is composed of a liquid producing formation and at least one adjacent gas producing formation, said at least one drain hole wellbore is drilled into said liquid producing formation as far from said gas producing formation as possible while staying within said liquid producing formation, treating a significant portion of the earth around said primary wellbore in said gas and liquid producing area to render said treated portion essentially impermeable to gas, and thereafter drilling or completing drilling said at least one drain hole wellbore through said treated portion and into the untreated gas and liquid producing area whereby undesired gas coning into said primary and/or drain hole wellbores is at least substantially reduced and liquid production from said drain hole wellbore is substantially enhanced.

4,444,266

DEEP SET PISTON ACTUATED WELL SAFETY VALVE

Ronald E. Pringle, Houston, Tex., assignor to Camco, Incorporated, Houston, Tex.

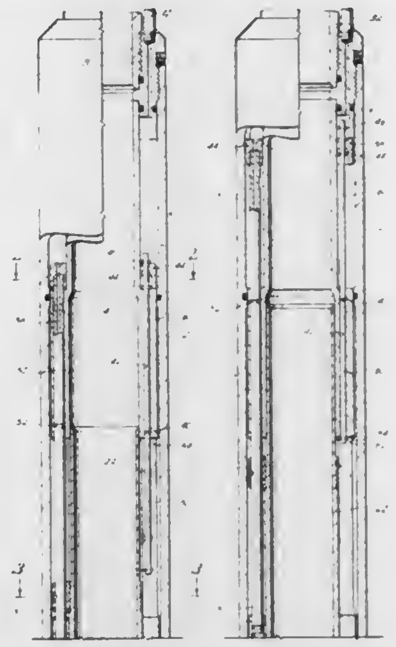
Filed Feb. 3, 1983, Ser. No. 463,462

Int. Cl.^{3} E21B *34/10*

U.S. Cl. 166—324 **7 Claims**

1. In a well tubing safety valve for controlling the fluid flow through a well tubing and including a tubular housing having a bore therein and a valve closure member moving between open and closed positions for controlling the fluid flow through the bore, a longitudinal tubular member telescopically movable in the housing coaxially with the bore for controlling the movement of the valve closure member, means for biasing the tubular member in a first direction for causing the valve closure member to move to the closed position, the improvement in means for moving the tubular member in a second direction for opening the valve closure member comprising,

at least one piston telescopically movable within and having its longitudinal axis within the housing and outside of the tubular member, said piston being in communication with hydraulic fluid extending to the well surface for actuating said member in the second direction to open said valve member and the piston has a small cross-sectional area for reducing the hydrostatic force of the hydraulic fluid acting on the piston, said piston having a piston rod extending upwardly from the piston for connection to the tubular member whereby the piston rod and piston are acted on in tension by the hydraulic fluid to move the tubular member to the open position thereby allowing the piston rod and piston to carry greater loads.



4,444,267

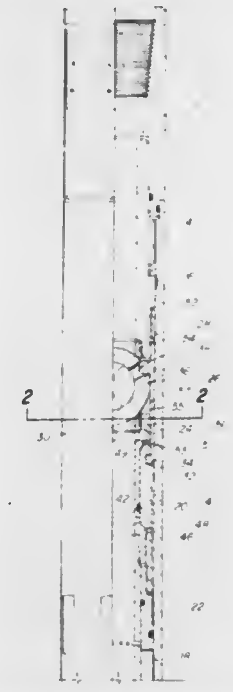
BALL VALVE HOUSING

Harold K. Beck, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Dec. 30, 1981, Ser. No. 307,913

Int. Cl.^{3} E21B *34/12*

U.S. Cl. 166—330 **3 Claims**



1. A well testing apparatus having an annular adapter, annular outer case, annular upper mandrel including an annular recess in the interior in one end thereof, annular power mandrel, an actuation arm having a lug thereon, annular lower

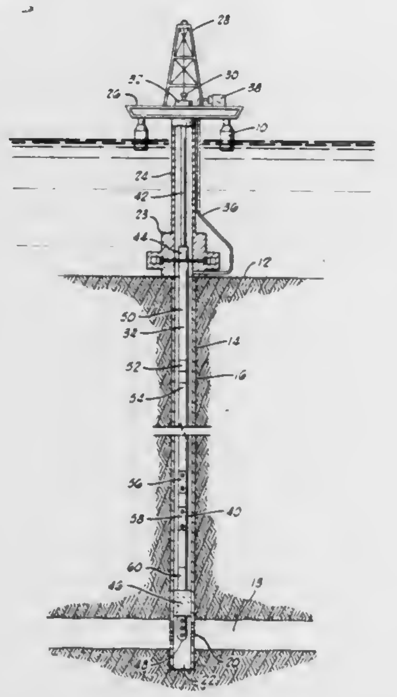
mandrel, and a spherical valve member having recesses therein, a bore therethrough, and being restrained from axial movement within said valve testing apparatus between an upper valve seat received and retained in the annular recess in the end of the annular upper mandrel and lower valve seat by a valve cage, said spherical valve member movable within said well testing apparatus by the lug means of said actuation arm engaging the recesses in said spherical valve member, said valve cage comprising:

an annular elongated cylindrical member having a lower portion having a bore therethrough, an intermediate portion having said lower valve seat retained therein abutting an annular shoulder in the intermediate portion and an axial recess in the exterior surface thereof slidably retaining said actuation arm therein, a valve portion which slidably receives a portion of said actuation arm therein, and an upper portion releasably secured to said annular upper mandrel to retain said spherical valve member from axial movement within said testing apparatus.

4,444,268
TESTER VALVE WITH SILICONE LIQUID SPRING

Burchus Q. Barrington, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Mar. 4, 1982, Ser. No. 354,529
Int. Cl.³ E21B *34/06*
U.S. Cl. 166—373 **16 Claims**



1. A method of flow testing a well, said method comprising the steps of:

providing an annulus pressure operated flow tester valve having a liquid spring means for returning said valve to its closed position;

maintaining said liquid spring means at substantially atmospheric pressure prior to placing said flow tester valve in said well;

lowering said flow tester valve into said well with said liquid spring means initially still at substantially atmospheric pressure as said lowering is begun;

transmitting annulus fluid pressure from an annulus of said well to said liquid spring means as said flow tester valve is lowered into said well;

locating said flow tester valve with said well at a final depth;

pressurizing said annulus an additional amount, above a hydrostatic pressure therein, sufficient to open said flow tester valve;

transmitting at least a portion of said additional amount of annulus pressure to said liquid spring means;

depressurizing said annulus to a final annulus pressure;

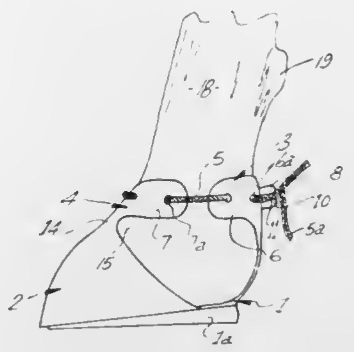
as said annulus is depressurized, trapping a portion of the pressure in said liquid spring means in excess of said final annulus pressure sufficient to close said flow tester valve, so that a trapped amount of liquid pressure energy trapped in said liquid spring means in excess of an amount of liquid pressure energy within said liquid spring means when said liquid spring means was at substantially atmospheric pressure is entirely obtained from transmittal of liquid pressure energy from said well annulus to said liquid spring means; and

closing said flow tester valve, upon depressurizing of said annulus, by use of said trapped liquid pressure energy.

4,444,269
ANIMAL HOOF COVER

Geoffrey J. Laurent, R.D. 1, Cambridge, New Zealand

Filed Oct. 14, 1981, Ser. No. 311,244
Claims priority, application New Zealand, Oct. 20, 1980, 195295
Int. Cl.³ A01L *3/00*
U.S. Cl. 168—1 **4 Claims**



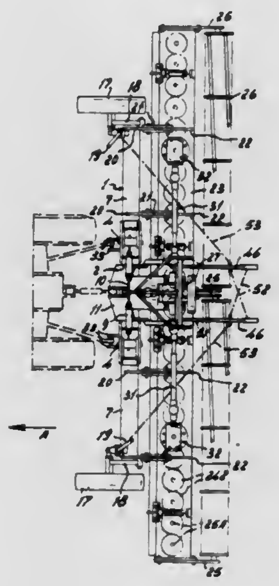
1. An animal hoof cover for use in covering an animal's hoof during veterinary treatments, said hoof cover comprising a base, a toe cap fixed to and overlying the base, said base having a sideless flat portion extending in a converging taper to a narrow end and away from the toe cap, first fastener support means comprising a first set of laterally extending tabs formed at the narrow end of the flat sideless portion, second fastener support means comprising a second set of laterally extending tabs joined to an upper curved edge of the toe cap by a central joining piece such that there exists a slotted opening between the second set of tabs and the curved edge of the toe cap, said first and second fastener support means being adapted to mount tie means, the arrangement and construction being such that the hoof cover can be secured to an animal's hoof when tie means fixed relative to the tabs of the first and second fastener support means are drawn and secured such that said sideless flat portion forms a rear hoof protecting portion protecting the rear of an animal's hoof and there exists an opening between the sideless flat portion, the toe cap and the first and second fastener support means where contact with tender regions of the animal's hoof is avoided.

4,444,270
SOIL CULTIVATING IMPLEMENTS

Ary van der Lely, Maasland, and Cornelis J. G. Bom, Rozenburg, both of Netherlands, assignors to C. Van der Lely N.V., Maasland, Netherlands

Filed Feb. 25, 1982, Ser. No. 352,173
Claims priority, application Netherlands, Mar. 3, 1981, 8101017
Int. Cl.³ A01B *33/06, 69/041, 69/043*
U.S. Cl. 172—47 **11 Claims**

9. A soil cultivating implement comprising a frame and a plurality of soil working groups being connected to a main beam of said frame, each group comprising an elongated frame portion that is interconnected to said beam and the latter being located in front of said frame portions with respect to the normal direction of travel, coupling means on said beam, said coupling means including a forward coupling trestle and a rear carrying structure that extends to the rear of said beam, said structure being releasably secured to said trestle with fastening means and including at least one rear coupling point for interconnecting an auxiliary implement to said trestle, said trestle being mounted on a cenntral portion of said main frame beam and the latter extending substantially horizontally transverse to the direction of travel, said beam comprising said central portion and corresponding outer beam portions having pivot connections to said central portion for tilting upwardly relative thereto, each said outer beam portion being linked to a corresponding said elongated frame portion, at least one said group of soil working members being mounted on each said frame portion to be rotatable about respective upwardly extending axes, said structure comprising pivotal arms forming two lower rear coupling points for the aforesaid auxiliary implement, each of said arms being connected by a corresponding flexible, but inextensible tie-member to a location adjacent the outboard end of a respective one of said outer beam portions remote from said pivot connection thereof to said central portion.

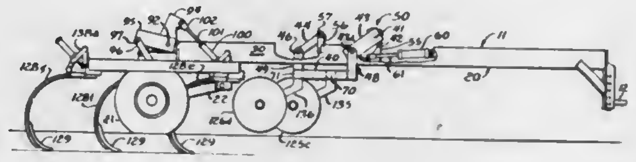


11. A soil cultivating implement comprising a frame and a plurality of soil working groups being connected to a main beam of said frame, each group comprising an elongated frame portion that is interconnected to said beam and the latter being located in front of said frame portions with respect to the normal direction of travel, coupling means on said beam, said coupling means including a forward coupling trestle and a rear carrying structure that extends to the rear of said beam, said structure being releasably secured to said trestle with fastening means and including two upper coupling means and two lower rear coupling points, said two upper coupling means spaced farther apart than said two lower rear coupling points, said two lower rear coupling points being on pivotal arms, first flexible, but inextensible tie members connecting each said upper rear coupling means with the nearest of said pivotal arms, second flexible but inextensible tie-members connecting each said pivotal arm forward of its said lower coupling point to the opposite said pivotal arm near its said coupling point in an arrangement that said second flexible tie-members cross one another when viewed in plan, each said first tie member connected to its said pivotal arm forward of such arm's said lower coupling point and extending in a direction generally away from the nearest said second tie-member as seen in plan.

4,444,271
TILLAGE APPARATUS WITH INDEPENDENT DEPTH ADJUSTMENT

William J. Dietrich, Sr., Congerville, Ill., assignor to DMI, Inc., Goodfield, Ill.

Continuation-in-part of Ser. No. 220,419, Dec. 29, 1980, which is a division of Ser. No. 934,585, Aug. 17, 1978, Pat. No. 4,245,706.
This application Nov. 6, 1981, Ser. No. 318,838
Int. Cl.³ A01B *13/08*
U.S. Cl. 172—140 **20 Claims**

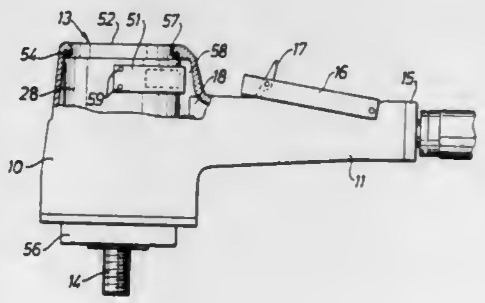


1. An agricultural tillage implement adapted to be pulled by a vehicle comprising a main frame adapted to carry first ground working tools; wheels rotatably mounted to said main frame for support of said frame; means for raising and lowering said main frame upon said wheels; a sub-frame carrying second ground working tools; lift means for mounting said sub-frame to said main frame including a rock shaft mounted to said main frame for rotation about a horizontal axis; power means for rotating said rock shaft; at least one shaft arm having a proximal end fixed to said rock shaft and a distal end rotatably mounted to said sub-frame; connecting arm means pivotally connected to said main frame at one end and pivotally connected to said sub-frame at the other end and extending generally parallel to said shaft arm; characterized in that said lift means includes only one rock shaft, said rock shaft being rotatable to move said shaft arm, sub-frame and connecting arm means in a four-bar linkage motion thereby raising and lowering said sub-frame relative to said main frame, maintaining said sub-frame in a generally horizontal position for all working depths to allow the adjustment of the working depth of ground working tools carried on said sub-frame relative to the working depth of ground working tools carried on said main frame.

4,444,272
OVERSPEED SAFETY DEVICE

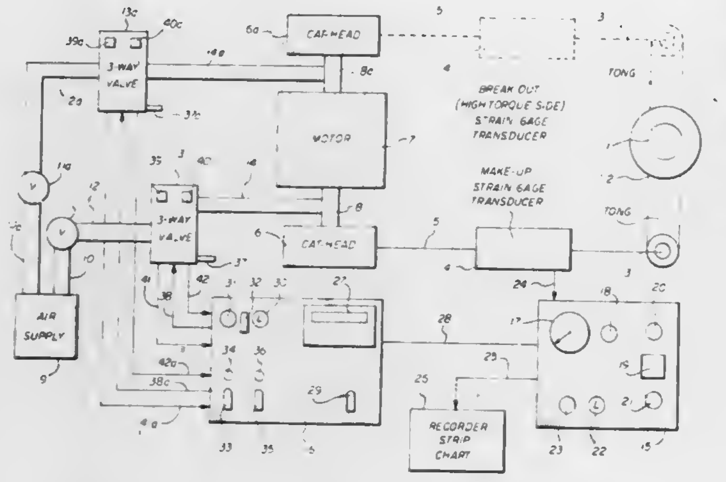
Karl G. Kardén, Östervägen, and Anders H. Nilsson, Rudsjövägen, both of Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Oct. 14, 1982, Ser. No. 434,178
Claims priority, application Sweden, Oct. 21, 1981, 8106209
Int. Cl.³ B24B *23/00*
U.S. Cl. 173—12 **9 Claims**



1. An overspeed safety device for a pneumatically powered rotation tool (12) comprising a housing (10) and being provided with a speed limiting means coupled to the motor (12), characterized in that said speed limiting means forms a safety unit (13) for replaceable mounting in the housing, said safety unit (13) being designed to act at a predetermined speed level and carrying a maximum speed mark (52), the housing (10) being formed with an aperture (57) through which said maximum speed mark (52) of the safety unit (13) is readable from outside the housing (10).

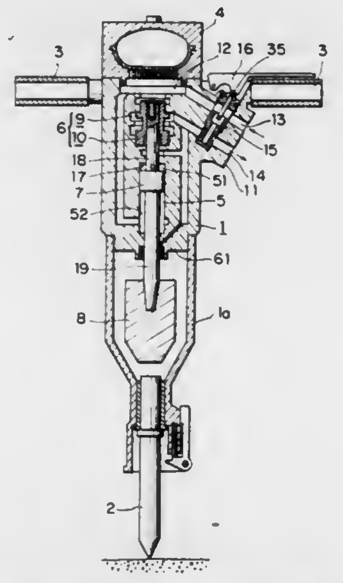
4,444,273
TORQUE CONTROL SYSTEM FOR CATHEADS
Glenn E. Ruby, 2201 Hayes Rd., Apt. 3905, Houston, Tex. 77077
Filed Mar. 3, 1981, Ser. No. 239,984
Int. Cl.³ B23Q *5/027;* E21B *19/16*
U.S. Cl. 173—12 **21 Claims**


3-WAY VALVE
CATHEAD
MOTOR
BREAK OUT (HIGH TORQUE SIDE) STRAIN GAGE TRANSDUCER
MAKE-UP STRAIN GAGE TRANSDUCER
TONG
AIR SUPPLY
RECORDER STRIP CHART

1. A system for controlling make up torque in a threaded connection where the torque is applied by a catline from a cathead, having a pneumatic pressure operated clutch, to the arm of a tong secured to one member of the threaded connection, comprising
means to sense the tension in said catline,
means to convert the tension sensed by said tension sensing means to ft.lb. of torque,
comparator means including means to set a selected maximum torque setting and operable to compare the torque sensed with the maximum torque setting,
controllable valve means controlling the application of pneumatic pressure to said clutch,
said comparator means being operable to actuate said valve means to a position cutting off the application of pneumatic pressure to said clutch in response to a sensed torque equal to or greater than said maximum torque setting,
electric alarm means, and
pressure sensing means operable to actuate said alarm means if the pneumatic pressure applied to said clutch is not cut off within a predetermined time after said sensed torque equals or exceeds said selected maximum torque setting.

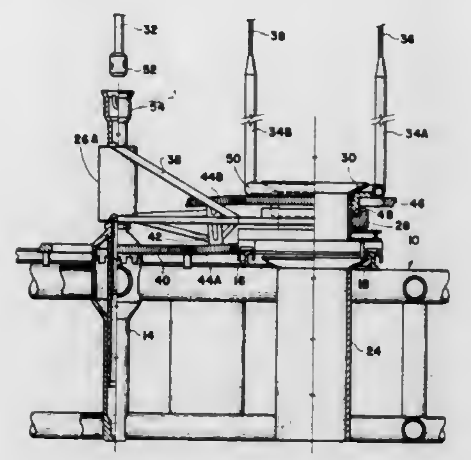
4,444,274
LIQUID PRESSURE STRIKING DEVICE
Isaku Suwabe, Mishima, Japan, assignor to Maruzen Kogyo Company Limited, Mishima, Japan
Filed Aug. 19, 1981, Ser. No. 294,173
Claims priority, application Japan, Aug. 29, 1980, 55-118288; Sep. 19, 1980, 55-133238[U]
Int. Cl.³ F01B *7/18;* F01L *25/06*
U.S. Cl. 173—134 7 Claims

1. A pressure liquid-striking device operating as a double-acting cylinder and comprising a main body (1); a tool mounted at a lowest portion of said body; an up-and-down reciprocating piston including a lower piston portion (19), an upper piston portion (18) and an intermediate portion (7) therebetween; a hammer (8) suspended on said lower piston portion coaxially with said tool so that the hammer imparts a striking motion to said tool upon reciprocation of said piston, said intermediate portion (7) being of a diameter (W) larger than diameters (W_1 and W_2) of said lower and upper piston portions, a change over mechanism (6) including a valve body (10) coaxially surrounding said upper piston portion (18) and having a ring-like head portion (25) and operative for automatically switching a pressure liquid flow by vertical movement of the piston, and a valve chamber (9) formed in said main body for accommodating said valve body (10) and controlling the movement of the valve body (10) together with the reciprocation of the piston; said main body being formed with an inlet passage (13) and an outlet passage (14) parallel to said inlet passage; an actuating valve (15) mounted in said main body for connecting said inlet passage to said outlet passage; said main body being further provided with an upper chamber (12) connected with an end of said inlet passage (13), a lower piston chamber (52), an upper piston chamber (51) and a through passage (27) connecting said upper chamber (12) with the lower piston chamber (52); an accumulator (4) mounted to said main body in communication with said upper chamber (12); a first connecting means (30) between said valve chamber (9) and said upper piston chamber (51); a second connecting means (31) between the outlet passage (14) and said upper piston chamber (51); said valve chamber (9) including a first concave (91), said ring-like head portion (25) normally interrupting communication between the upper chamber (12) and the first concave (91), said first connecting means (30) making communication between the upper chamber (12) and the upper piston chamber (51) only when said piston moves down, said valve chamber (9) further including a second concave (92) and a third concave (93) through which the liquid flows from the upper piston chamber (51) and said second connecting means (31) into the outlet passage (14) when the piston moves up, the second connecting means (31) being adapted to be blocked when the piston moves down; said main body being formed with a concave (29) below said valve chamber (9), said upper piston portion (18) being formed with a recess (21) between said valve chamber (9) and the upper piston chamber (51), said concave (29) communicating with the valve chamber (9) and the outlet passage (14) via said recess (21) only when the piston is switched upwardly to discharge pressure liquid to said outlet passage (14).

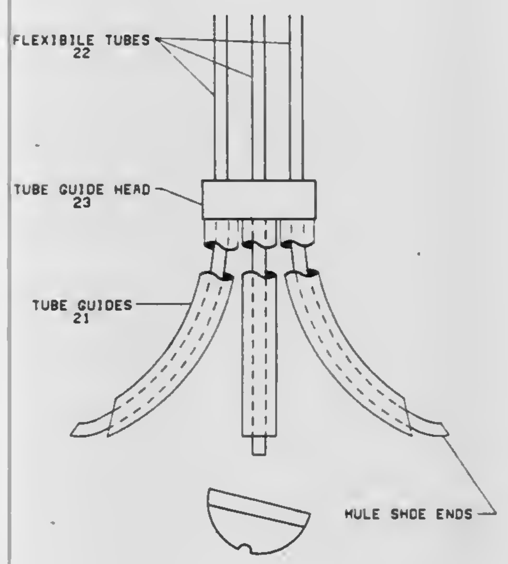


4,444,275
CAROUSEL FOR VERTICALLY MOORED PLATFORM
Pierre A. Beynet, Tulsa, Okla., and Johnce E. Hall, Kingwood, Tex., assignors to Standard Oil Company, Chicago, Ill.
Filed Dec. 2, 1981, Ser. No. 326,967
Int. Cl.³ E21B *15/02*
U.S. Cl. 175—7 **8 Claims**

1. A subsea drilling system with which a plurality of wells are drilled and maintained from a floating platform, said subsea drilling system comprising:
(a) a guide frame having a guide track positioned on the sea floor and having a plurality of guide frame well slots and including a vertical turning post having an axis within the plurality of well slots;
(b) a carousel structure movably supported on said guide frame for movement along said guide track;
(c) a well slot platform with a well slot, said well slot platform being supported from said carousel structure to permit rotation about the axis of said well slot;
(d) means to position said platform well slot successively over each of said guide frame well slots and to rotate said well slot platform about the axis of said well slot as a function of the movement of said structure along a path defined by said guide frame well slots.

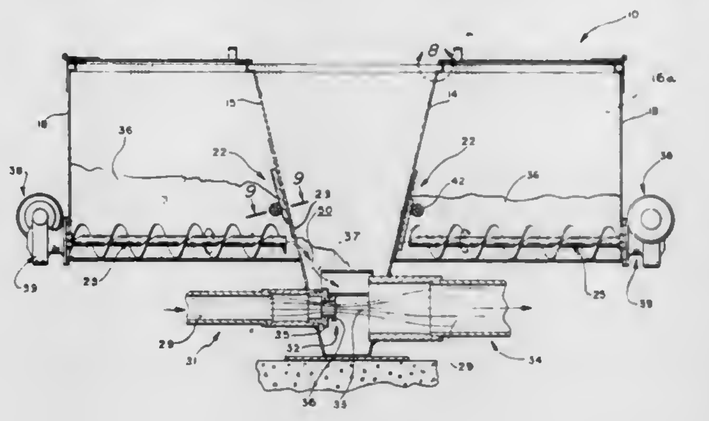


4,444,276
UNDERGROUND RADIAL PIPE NETWORK
Dewey L. Peterson, Jr., Tulsa, Okla., assignor to Cities Service Company, Tulsa, Okla.
Filed Nov. 24, 1980, Ser. No. 209,567
Int. Cl.³ E21B *7/04*
U.S. Cl. 175—61 **3 Claims**



1. An underground radial pipe network comprising, in a related sequence,
an adapter manifold, cylindrically shaped, having an upper horizontal surface having an outlet, useful for connecting the manifold with drill pipe, and a lower horizontal surface attached to the hollow cylindrical shell of the manifold and having a plurality of outlets, the manifold having internal passageways allowing fluid passage from the drill pipe to the outlets,
a plurality of tubes, flexible in nature, fastened individually to the outlets of the lower horizontal surface of the manifold, and extending generally downwardly from the manifold,
a tube guide head, circular in shape, horizontally placed, and having a plurality of openings to accomodate individually the flexible tubes extending from the manifold, with tube guides attached, on the lower surface of the tube guide head, to said openings, to receive the tubes extending from the manifold, said tube guides being arcuately shaped when in a released position and relatively straight when in an assembled position, the tube guides and the tube guide head surrounding and being free to move along the flexible tubes extending from the manifold, and
an end cap, generally in the form of a hollow hemisphere with the spherical portion extending downwardly relative to the tube guide head, the cap having a keeper plate mounted on and covering the open portion of the hemisphere, with the keeper plate having individual openings to receive the distal ends of the individual flexible tubes extending from the distal ends of the tube guides, and with the end cap having an outlet opposite the keeper plate,
wherein the network has an assembled position in which the end cap receives and holds the tubes, in a vertical tube bundle array extending downwardly from the adapter manifold, and a released position, in which the end cap is removed, allowing the tubes and the surrounding tube guides to assume arcuate shapes.

4,444,277
APPARATUS AND METHOD FOR CONDITIONING OIL WELL DRILLING FLUID
H. Roger Lewis, #3 Prows Cir., Layton, Utah 84041
Filed Sep. 23, 1981, Ser. No. 304,657
Int. Cl.³ E21B *7/00*
U.S. Cl. 175—66 **26 Claims**



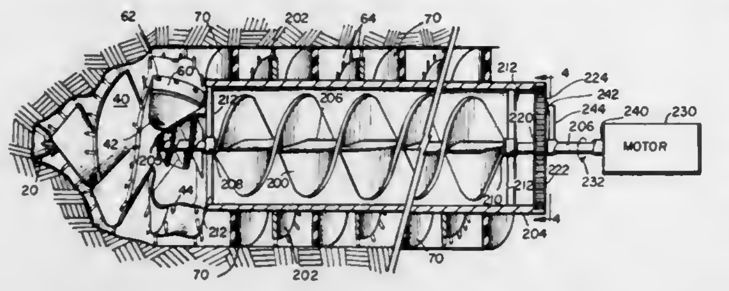
1. In a device for entraining finely divided dry additives into oil well drilling mud, said device comprising an entrainment chamber and pumping, piping and nozzle means for producing a high velocity free jet of the mud across and through the chamber, the improvement comprising:
at least one hopper for containing a supply of dry additive;
means for transporting the additive from the hopper into the entrainment chamber, comprising additive passage means between the hopper and the chamber and means for urging the additive in the hopper to and through the passage means at selected rates to be entrained and mixed within the mud of the jet; and
the passage means is adjustable in area.

4,444,278
ROTATABLE DRILLING HEAD
Frankie Rocchetti, P.O. Box 195, Crumpler, W. Va. 24825
Continuation-in-part of Ser. No. 371,984, Apr. 26, 1982, Pat. No. 4,402,371. This application Aug. 23, 1982, Ser. No. 410,816
The portion of the term of this patent subsequent to Sep. 6, 2000, has been disclaimed.
Int. Cl.³ E21B *10/44*
U.S. Cl. 175—108 **8 Claims**

1. A drilling head for use in mining operations adapted for being rotatable about its elongated axis in a predetermined rotational direction and advanceable so as to cut and remove material particles from a seam of material, said drilling head comprising in combination:
a cylindrical drum having a front end and an open rear end and defining between said front and rear ends an interior cavity;
first spiral means rigidly fixed to the exterior surface of said

drum and outwardly projecting therefrom spirally disposed between said front and rear ends, the convolutions of said first spiral means being arranged for forwardly advancing said material particles as said drum rotates in said predetermined direction;

nose spiral means axially disposed in advance of said front end, the radial dimension of successive convolutions of said nose spiral means decreasing away from said front end and arranged for encouraging rearward advancement of said material particles as said drum rotates in said predetermined direction, said nose spiral means at said front end terminating with the forward portion of said first spiral means and defining therewith at least one recovery aperture in communication with said interior cavity so that material particles forwardly advancing by virtue of said first spiral means and rearwardly advancing by virtue of said nose spiral means will pass through said at least one recovery aperture to said interior cavity;



adjustable plate means covering a portion of said at least one recovery aperture for restricting the size of material particles which pass therethrough;

second spiral means coaxially disposed in said drum between said front and rear ends in said interior cavity, the convolutions of said second spiral means being arranged for encouraging said material particles which pass through said at least one recovery aperture to rearwardly advance in said interior cavity when said second spiral means rotates in a direction opposite to said predetermined direction; and

mounting means for mounting said drum and said second spiral means for independent rotational movement relative to one another.

4,444,279
DRILLING TOOL

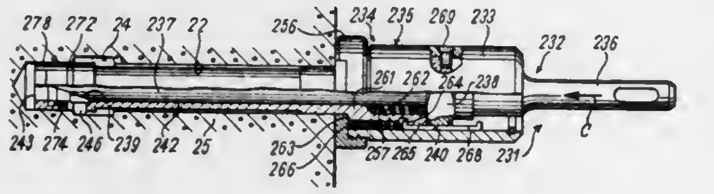
Juergen Kessler, Stuttgart, and Harry Melzer, Leinfelden-Echterdingen, both of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Schaan, Fed. Rep. of Germany

Filed Jun. 30, 1980, Ser. No. 164,276

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1979, 2928555

Int. Cl.^{3} B23B *29/034;* E21B *23/00*

U.S. Cl. 175—202 **2 Claims**



2. A drilling tool adapted to produce a radial enlargement along a cylindrical drilled hole, said tool comprising a drill sleeve with at least one slot therein, at least one cutter mounted in said slot, means for retaining said cutter in said slot against axial and rotational movement relative to said sleeve, and a spreader element provided with at least one chamfered surface mounted within said sleeve and movable axially relatively to the latter to engage said cutter with the chamfered surface and push out the cutter radially relatively to said sleeve, the improvement in which the tool is provided with a directly-drivable and rotatable shank which receives said drill sleeve, is close-fittedly engaged with the latter in the peripheral direction, is movable relatively to the sleeve in the axial direction, and is firmly connected to said spreader element, and in which the tool further includes an abutment piece to which the end of the drill sleeve projecting from the elementary drilled hole is connected in the working condition and which abuts against the work to determine the position of the radial enlargement in the drilled hole, both the spreader element and the drill sleeve being axially movable by the application of axial pressure on the tool shank, a first compression spring located within said drill sleeve and in bearing contact with said sleeve and said shank, a second compression spring having a more powerful preloading than said first compression spring and located radially outwardly from said first compression spring, said second compression spring arranged to bias said drill sleeve in the direction out of the cylindrical drilled hole, the axial movement of the drill sleeve taking place after a preliminary, and then along with further, axial movement of the spreader element against the biasing action of said first and second compression spring, the axial advance of the spreader element alone, and the axial advance of the spreader element together with the drill sleeve, are limited by abutment of a crosspiece on the tool shank against the end of the drill sleeve and by application of the drill sleeve against the abutment piece.

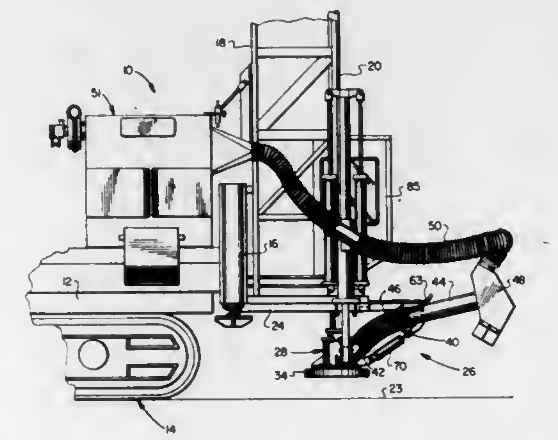
4,444,280
DRILL CUTTINGS CONVEYING APPARATUS WITH FLEXIBLE DUCT FOR IMPROVED GROUND CLEARANCE

D. Franklin Howeth, P.O. Box 6517, Fort Worth, Tex. 76115

Continuation-in-part of Ser. No. 223,036, Jan. 7, 1981. This application Dec. 21, 1981, Ser. No. 332,616

Int. Cl.^{3} E21B *21/06;* E21C *7/02*

U.S. Cl. 175—206 **10 Claims**



1. A drill cuttings conveying apparatus for a portable drill rig which generates drill cuttings and evacuates said drill cuttings from a drillhole with a velocity flowstream of bailing air, said drill rig including a frame including a portion generally overlying and disposed above said drillhole during drilling operations, said apparatus being supported generally beneath said frame for conveying said drill cuttings away from the vicinity of said drillhole;

said apparatus including a head member forming a flow conducting passage for conveying substantially all of said flowstream away from the vicinity of said drillhole;

an enclosure disposed spaced from said head member for separating drill cuttings from said flowstream;

means for moving said head member with respect to said frame between a retracted position and an extended position of said head member for conveying said flowstream from said drill hole;

a duct assembly interconnecting said head member and said enclosure, said duct assembly including a flexible duct section interconnecting a first substantially rigid duct portion connected to said head member and a second substantially rigid duct portion, said flexible duct section being operable to effect bending of said duct assembly with respect to said head member to permit movement of said head member to said retracted position for transport of said drill rig; and

actuator means for bending said flexible duct section of said duct assembly including a pressure fluid actuator connected to said duct assembly and operable to move said duct assembly from a substantially straight configuration to a bent configuration to permit said head member to be retracted.

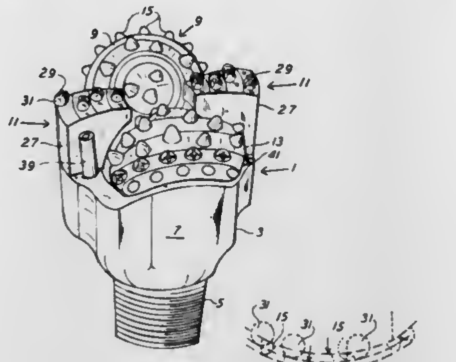
4,444,281
COMBINATION DRAG AND ROLLER CUTTER DRILL BIT

Percy W. Schumacher, Jr., Houston; Kenneth W. Jones, Kingwood; Henry W. Murdoch, and Paul E. Pastusek, both of Houston, all of Tex., assignors to Reed Rock Bit Company, Houston, Tex.

Filed Mar. 30, 1983, Ser. No. 480,560

Int. Cl.^{3} E21B *10/14*

U.S. Cl. 175—336 **6 Claims**



1. A rotary drill bit for drilling a well bore, the bit comprising:

a bit body having a threaded pin at its upper end adapted to be detachably secured to drill pipe or the like for rotating the bit, and at least one depending leg at its lower end having a generally cylindrical bearing journal;

at least one roller cutter rotatably mounted on the bearing journal, said roller cutter comprising a generally frustoconical roller cutter body and a plurality of hard metal cutting elements thereon, said cutting elements projecting outwardly beyond the roller cutter body to tips adapted to bear on the formation at the bottom of the well bore for drilling the formation by crushing it, the tips, upon rotation of the bit, defining a first cutting surface of the bit extending over substantially the entire area of the bottom of the well bore; and

at least one drag cutting means comprising a support on the bit body and a plurality of drag cutting elements on the support each having a lower cutting edge, said cutting edges of the drag elements being so arranged relative to the tips of the hard metal cutting elements as to define, upon rotation of the bit, a second cutting surface of generally the same configuration as the first cutting surface but spaced above it a distance less than the protrusion length of the hard metal cutting elements, whereby upon drilling a relatively brittle formation, which the hard metal cutting elements penetrate only slightly, only the hard metal cutting elements bear on the formation for cutting the formation by fracturing the formation between adjacent hard metal cutting elements thereby protecting the drag cutting elements, and upon drilling a relatively plastically deformable material, which the hard metal cutting elements penetrate to a relatively deep depth without causing substantial fracturing of the formation between adjacent hard metal cutting elements, both the hard metal and the drag cutting elements engage the formation for improved drill bit cutting action and increased rates of drilling penetration.

4,444,282
COMBINATION WEIGHING DEVICE

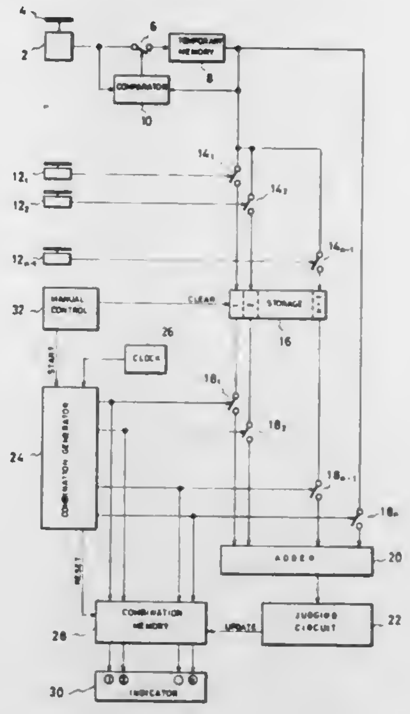
Shozo Kawanishi, Kobe, Japan, assignor to Yamato Scale Company, Ltd., Hyogo, Japan

Filed Apr. 12, 1982, Ser. No. 367,369

Claims priority, application Japan, Apr. 15, 1981, 56-57487

Int. Cl.^{3} G01G *19/22*

U.S. Cl. 177—25 **1 Claim**



1. A combination weighing device, comprising at least one weighing unit for weighing a product and producing an output signal indicative of the weight of said product, a plurality of receptacles for holding the products weighed by said weighing unit, a plurality of memories corresponding respectively to said receptacles for storing the measured weights, a combination logic circuit coupled to the outputs of said plurality of memories for suitably combining some of the contents of said memories to select a combination having a sum weight meeting a predetermined condition, and means for allotting the output of said weighing unit to said memories, said allotting means including a first normally-open switch and a temporary memory connected in series to the output of said weighing unit, a comparator for comparing the input signal of said normally-open switch and the output signal of said temporary memory and producing an output signal to close said normally open switch when the former is greater than the latter to record said weight in said temporary memory, and a plurality of second normally-open switches coupled between the output of said temporary memory and the inputs of said plurality of memories, respectively, and each of said receptacles including means for responding to the product put thereon to close the corresponding one of said second normally-open switches to feed the contents of said temporary memory to one of said plurality of memories.

4,444,283
COLLECTING CHUTE FOR A COMBINATORIAL WEIGHING APPARATUS

Yoshiharu Mikami, Kyoto, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Sep. 8, 1982, Ser. No. 415,796

Claims priority, application Japan, Sep. 9, 1981, 56-134715[U]

Int. Cl.^{3} G01G *13/16*

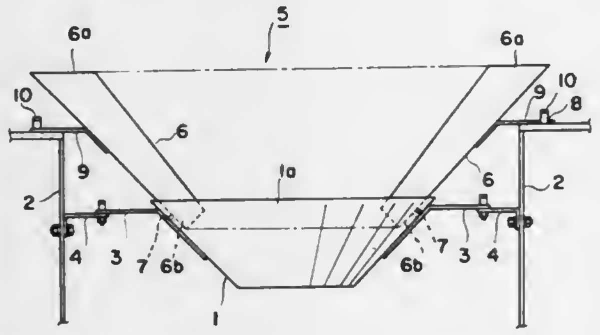
U.S. Cl. 177—59 **3 Claims**

1. A collecting chute, supported on a frame, for collecting and discharging articles released from the lower ends of a

plurality of weighing machines arranged in a circular or other pattern for weighing or counting the articles before release, which collecting chute comprises;

an upper chute, including a plurality of discrete chute members corresponding to respective ones of the plurality of weighing machines, each chute member having a central portion at which the chute member is mounted on said frame, said upper chute having an upper end for receiving the articles and a lower end for discharging the articles, and

a lower chute supported on said frame for engaging with and supporting the lower end of said upper chute, and for receiving and discharging the articles discharged from the lower end of said upper chute.



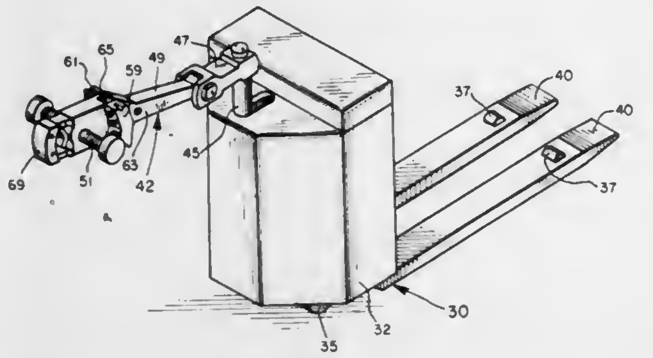
4,444,284
CONTROL SYSTEM

Thomas O. Montemurro, Lake Delton, Wis., assignor to Big Joe Manufacturing Company, Lincolnwood, Ill.

Continuation of Ser. No. 40,094, May 18, 1979, abandoned. This application Aug. 5, 1981, Ser. No. 290,342

Int. Cl.³ B62D *51/04*

U.S. Cl. 180—19.1 **7 Claims**



1. A control handle for an industrial lift truck, said truck including a horn, a brake, forks, a mechanism for lifting said forks and a mechanism for lowering said forks, said control handle comprising:

a housing having a first side and a second side;

a first and a second horizontal grip bar secured to said first and said second sides, respectively;

a first and a second control panels secured to said first and said second sides, respectively;

a plurality of control buttons mounted in said first control panel and a plurality of control buttons mounted in said second panel, said control buttons being for activating the horn, the brake, the mechanism for lifting forks and the mechanism for lowering the forks, said buttons being positioned so as to be reachable by operator's fingers when his hands are on said first and said second horizontal grip bars;

a cam plate having a plate surface and a side surface, said plate being rotatably mounted in said housing for rotation about an axis normal to said plate surface, said plate surface having a plurality of arcuate, contiguous grooves formed therein, said grooves being concentric about an axis;

an actuating lever plate connected to and substantially perpendicular to said cam plate, said actuating lever plate extending above said housing and positioned between said grip bars so as to be reachable and operable by the operator's thumb;

a plurality of switches, each switch having a contact surface urged against and riding on said plate surface such that each of the contact surfaces traverses a respective arcuate path on said plate surface, said arcuate paths being concentric about said axis, each of said grooves being along the path of the respective contact surface, each of said switches being actuated upon entering and leaving its groove to produce electrical signals for selecting the speed and the drive direction of said lift truck;

a spring mounted on said housing and said cam plate for returning said cam plate to its neutral position;

a plurality of detents on said cam plate;

means for engaging one of said detents as the cam is rotated to a discrete position, said engaging means permitting the spring to return said cam plate to its neutral position whenever the cam is not subjected to an external force but sufficiently restricting the rotation of said cam to permit the operator to choose discrete settings of the plate and to reduce the force required to maintain said plate in the selected position, said control handle permitting the operator to actuate desired buttons and to select the speed and the drive direction of the truck while steering said truck.

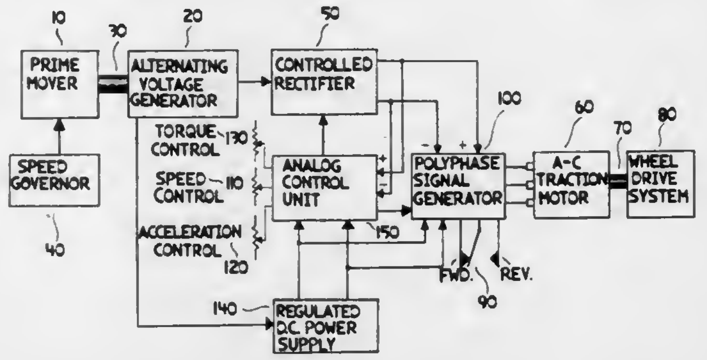
4,444,285
ELECTRO-MECHANICAL PROPULSION SYSTEM

Charles F. Stewart, P.O. Box 7166, Huntington Beach, Calif. 92615, and Jack K. Stewart, P.O. Box 2281, Deming, N. Mex. 88030

Filed Jul. 30, 1981, Ser. No. 288,538

Int. Cl.³ B60K *1/00*

U.S. Cl. 180—65.4 **14 Claims**



1. An Electro-Mechanical Propulsion Systems for a vehicle having a motive drive system, comprising:

(a) A prime mover having a first rotor shaft;

(b) An alternating voltage generator having a rotor and a stator;

(c) Means for coupling the prime mover first rotor shaft to the alternating voltage generator;

(d) A controlled rectifier, adaptable to accept the generator alternating voltage and a DC control voltage, wherein the generator alternating voltage is converted to a variable DC voltage that is proportional to the applied DC control voltage, the variable DC voltage appearing between an upper bus and a lower bus wherein the upper bus is always positive with respect to the lower bus;

(e) An AC motor having a second rotor shaft and multiple input terminals for accepting motor drive signals of identical frequency and differing electrical phase, and whose second rotor shaft rotational rate is a function of the frequency of the AC motor drive signals;

(f) Means for coupling the second rotor shaft to the vehicle motive drive system;

(g) A manually-operable switch to control the direction of rotation of the second rotor, adapted to produce a forward/reverse voltage;

(h) Means for producing a speed control voltage for controlling the frequency and voltage of the motor drive signals;

(i) Means for producing a torque control voltage for controlling the torque supplied to the AC motor;

(j) Means for producing an acceleration control voltage for controlling the acceleration rate of the AC motor in response to a step change in the speed control voltage;

(k) An analog control unit, operable to accept the speed control voltage, the torque control voltage, the acceleration control voltage, and the variable DC voltage generated by the controlled rectifier, wherein is generated a DC control voltage to be applied to the controlled rectifier that is a function of the speed control voltage, the torque control voltage and the variable DC voltage, and whose response rate is proportional to the acceleration control voltage, and wherein is also generated a frequency control voltage that is a function of the speed control voltage and whose response rate is proportional to the acceleration control voltage;

(l) A polyphase AC signal generator, operable to accept the frequency control voltage, the forward/reverse voltage, and the variable DC voltage between upper bus and lower bus, wherein the variable DC voltage is converted to a plurality of AC motor drive signals whose frequency is proportional to the frequency control voltage, and the electrical phase difference between any adjacent motor drive signals is equal to 360 degrees divided by the number of motor drive signals, and the forward/reverse voltage is operable to change the phase relationship between adjacent motor drive signals to thereby reverse the rotation of the motor rotor; and

(m) Means for generating a regulated voltage supply for the analog control unit and polyphase AC signal generator.

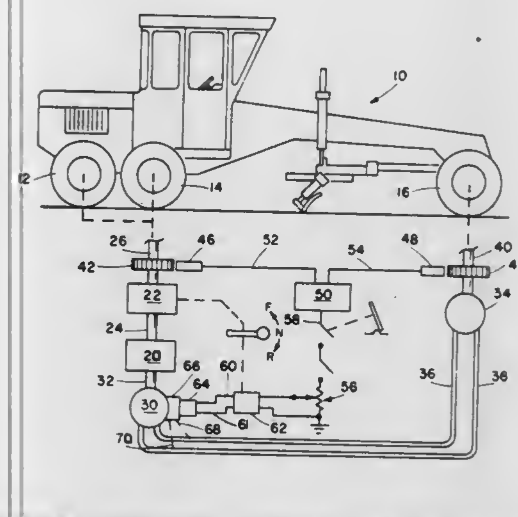
4,444,286
TORQUE-CONTROL WITH OVERSPEED REGULATION AND METHOD OF CONTROLLING A HYDROSTATIC DRIVE

Royal R. Hawkins, Burlington, and Leland E. Kuntz, Edina, both of Minn., assignors to Sundstrand Corporation, Rockford, Ill.

Filed May 13, 1982, Ser. No. 377,872

Int. Cl.³ B60K *17/34*

U.S. Cl. 180—197 **16 Claims**



12. A torque control with overspeed regulation for a vehicle auxiliary hydrostatic drive, said vehicle having a first pair of primary driven wheels and a second pair of auxiliary driven wheels driven independently of said first wheels, the drive train for said second pair of wheels including a vehicle prime mover and a hydrostatic transmission comprising a variable displacement pump driven by said prime mover, a motor drivingly connected to said second pair of wheels, and first and second hydrostatic lines interconnecting said pump and motor in a closed loop in a manner that said motor is hydrostatically driven by said pump, said torque control characterized by:

torque sensing means responsive to the pressure differential in first and second hydrostatic lines to generate a torque signal representative of the torque transmitted by said hydrostatic transmission, torque responsive means including valve means and responsive to said torque signal to modulate flow of control fluid through said valve, a hydrostatic servo mechanism operatively connected to said pump and responsive to the flow of control fluid through said valve to modulate the displacement of said pump,

speed ratio control means comprising first and second speed sensing means responsive to the RPM of said first and second pairs of wheels to generate first and second speed signals, comparator means for comparing said first and second speed signals to generate a speed ratio signal proportional to the RPM ratio of said auxiliary driven second pair of wheels to said primary driven first pair of wheels,

aggressive control means associated with said speed ratio control to selectively modify the speed ratio signal of the comparator in a manner that the vehicle operator can modulate the desired speed ratio between the auxiliary drive to said second pair of wheels and the primary drive to said first pair of wheels,

adjustable maximum torque allowed control means adapted to receive said speed ratio signal and limit the maximum strength of the speed ratio signal,

an electro-hydraulic transducer which converts said speed ratio signal as modified by said maximum torque allowed control into a pressure differential output signal, fluid communication means for conducting said pressure differential output signal from said electro-hydraulic output signal to said valve in a manner which permits said pressure differential signal to bias said valve to further modulate flow through said valve in addition to the modulation caused by the torque signal to provide a torque control with overspeed regulation for said hydrostatic transmission.

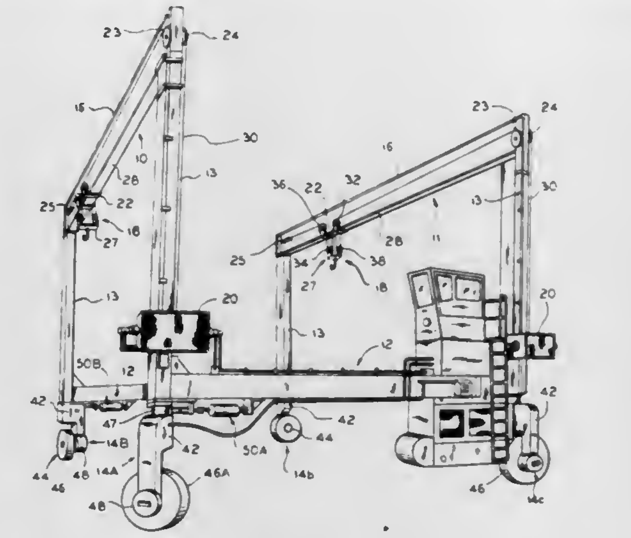
4,444,287
STEERING SYSTEM FOR MOBILE CRANE

Richard F. Voelz, Butler, Wis., assignor to Renner Manufacturing Company, Milwaukee, Wis.

Filed Nov. 28, 1980, Ser. No. 211,410

Int. Cl.³ B60K *17/30*

U.S. Cl. 180—252 **5 Claims**



1. A mobile crane having a plurality of spaced apart wheels,

steering means coupled to first and second ones of said wheels for simultaneously pivoting the same about substantially vertical axes,

first and second fluid motor means respectively coupled to said first and second wheels for rotating the same,

first and second independent fluid supply means respectively coupled to said first and second fluid motor means for individually driving the same independently of the rate of fluid flow at the other fluid motor means whereby said wheels are normally rotated at substantially the same speed,

first and second variable flow valve means interconnecting said first and second motor means,

coupling means for coupling said steering means to said first and second valve means and being operative to maintain said valve means in a closed position when said steering means is oriented such that said wheels are in an unpivoted position and directed for movement generally in a longitudinal direction relative to said crane, said coupling means being constructed and arranged for progressively moving said valve means between closed and open positions when said steering means is actuated progressively to pivot said wheels out of their unpivoted position thereby interconnecting the first and second fluid motor means so that the fluid motor means driving the wheel having the largest turning radius may receive additional fluid from the fluid supply means connected to the other fluid motor means, the amount of additional fluid being related to the degree that said steering means is turned.

4,444,288

MUFFLER FOR INTERNAL COMBUSTION ENGINE

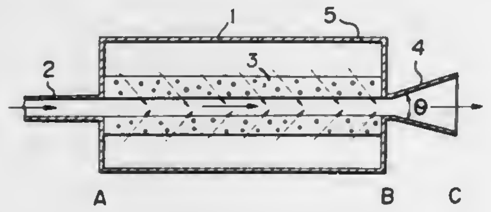
Mutuo Sekiya; Hideharu Tanaka, both of Amagasaki; Fusaoki Uchikawa, Kamakura, and Yasufumi Ohata, Tokyo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 21, 1981, Ser. No. 332,826

Claims priority, application Japan, Mar. 17, 1981, 56-40079[U]; Mar. 17, 1981, 56-40080[U]; Mar. 17, 1981, 56-40081[U]; Mar. 17, 1981, 56-40082; Mar. 17, 1981, 56-41385[U]

Int. Cl.^{3} F01N *1/10, 1/14*

U.S. Cl. 181—258 **15 Claims**



1. A muffler for an internal combustion engine, said muffler comprising:

(a) a casing extending along a longitudinal axis, said casing having an inlet at one longitudinal end thereof and an outlet at the other longitudinal end thereof in axial alignment with said inlet, said inlet and said outlet being of substantially the same diameter;

(b) a porous sound absorber in tubular form extending from said inlet of said casing to said outlet of said casing, said porous sound absorber having an inner diameter substantially the same as said inlet and said outlet of said casing and an outer diameter which is substantially less than the inner diameter of said casing, thereby defining an annular empty volume between said porous sound absorber and said casing;

(c) a diffuser the inlet of which is connected to said outlet of said casing and the outlet of which is open to the atmosphere, said diffuser acting to create a pressure inside said porous sound absorber which is less than the ambient pressure, which less than ambient pressure is in turn communicated through said porous sound absorber to said annular empty volume between said porous sound absorber and said casing; and

(d) a through-hole formed in said casing to permit ambient air to be drawn into said annular empty volume between said porous sound absorber and said casing, through said porous sound absorber, and out through said outlet of said casing, which flow of ambient air prevents the adhesion of tar and soot contained in the exhaust gas to the inner surface of said porous sound absorber.

4,444,289

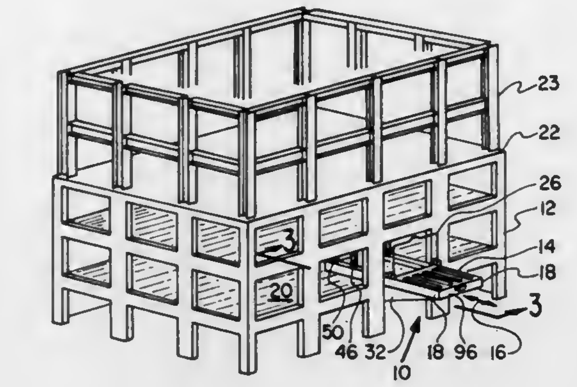
CONSTRUCTION PLATFORM AND METHOD

Emil A. Jungman, 1027 Moody Dr., Escondido, Calif. 92027

Filed Jan. 4, 1983, Ser. No. 455,508

Int. Cl.^{3} E04G *3/06*

U.S. Cl. 182—36 **18 Claims**



1. A removable construction device for use on a building under construction, the device being positioned partly inside the building and partly cantilevered outside of the building and having a movable platform section that may be positioned inside or outside of the building on the device, comprising:

(a) a frame;

(b) a movable platform section positioned on and carried by the frame, the platform section being designed to be movable on the frame from a position outside of the building to a position inside the building for moving a load into or out of the building;

(c) means, associated with the frame and the platform section, for moving the platform section; and

(d) means associated with a portion of the frame and the building, for locking the frame to the building prior to moving a load into or out of the building.

4,444,290

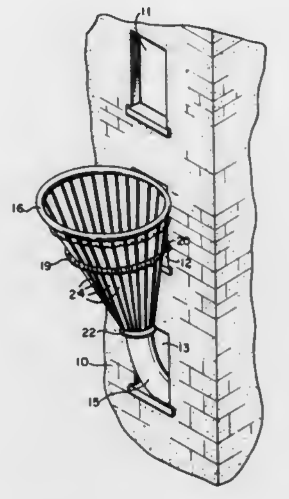
RESCUE APPARATUS

Joseph F. Valerio, Jr., 118 W. Sixth St., Bridgeport, Pa. 19405

Filed Oct. 28, 1981, Ser. No. 315,955

Int. Cl.^{3} A62B *1/20*

U.S. Cl. 182—48 **6 Claims**



1. Rescue apparatus comprising

a funnel adapted to be expanded to an operating condition for reception of a person to be rescued,

said funnel at the upper end thereof has a tube around its periphery for expanding the upper end,

means for supporting said funnel at the side of a building at a window opening accessible for the person to be rescued,

said funnel at the lower end thereof has a ring around its periphery for expanding the lower end,

air supply means are provided to provide air to expand said funnel, and

said funnel has a delivery chute connected to the lower end thereof in communication with said funnel and extending into a window opening below said first window opening.

4,444,291

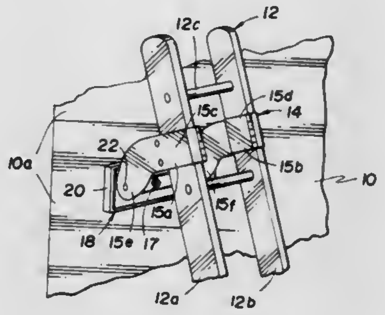
LADDER ACCESSORY

Larry T. McPherson, 5850 Pratt Rd., Lapeer, Mich. 48446

Filed Oct. 4, 1982, Ser. No. 432,639

Int. Cl.^{3} E06C *7/48*

U.S. Cl. 182—214 **6 Claims**



1. An accessory for a ladder, comprising:

a pair of brackets, each having a means for releasably holding it to one of the ladder legs;

and a downwardly inclined hook portion having a curved periphery adaptable to be received in a building eavestrough;

an arcuate cut-out portion formed in each of said hook portions for clearance from the eavestrough outer edge;

a pivotal crossbar connected between said hooked portions; and

a removable rigid member with a resilient facing member removably attached to said crossbar and adapted to abut an adjacent flat wall surface.

4,444,292

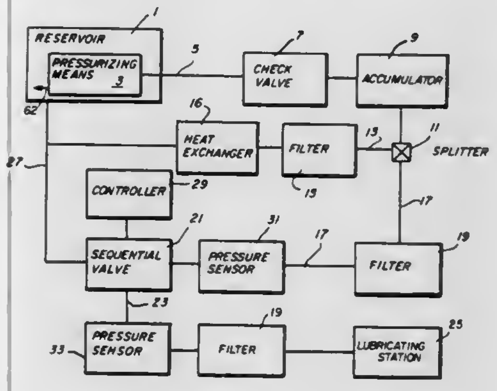
METHOD AND APPARATUS FOR LUBRICATING A MACHINE

Cloyce L. Brown, Bainbridge, and Darrell Tanner, Alma, both of Ga., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Aug. 12, 1981, Ser. No. 292,294

Int. Cl.^{3} D03J *1/00*

U.S. Cl. 184—6 **16 Claims**



1. A method for providing periodic liquid lubrication to at least one lubricating station on a textile machine said method comprising:

generating pressure in a liquid lubricant obtained from a reservoir by

(a) reciprocating a piston in said reservoir of liquid lubricant,

(b) compressing a portion of said liquid lubricant in a chamber by moving said piston into said chamber,

(c) withdrawing pressurized liquid lubricant from said chamber,

(d) passing remaining liquid lubricant from said chamber directly to said reservoir, and,

(e) controlling the distance said piston moves into said chamber by varying the flow of said remaining liquid lubricant from said chamber to said reservoir;

passing said pressurized liquid lubricant irreversibly to an accumulator;

directing said pressurized liquid lubricant from said accumulator to a splitter;

maintaining said accumulator under essentially constant pressure by passing a first stream of pressurized liquid lubricant from said splitter to said reservoir;

directing a second stream of pressurized liquid lubricant from said splitter to a sequential valve; and,

controlling said sequential valve to provide said second stream of pressurized liquid lubricant to a lubricating station at predetermined intervals and at all other times to return said second stream of pressurized liquid lubricant to said reservoir.

4,444,293

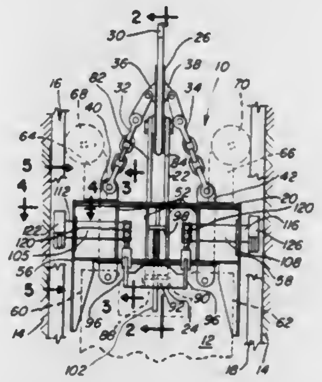
SAFETY ARRESTER FOR MINE-SHAFT CONVEYANCES USING TUBING GUIDES

Willard S. Paul, Lakewood, and Gary K. Christian, Littleton, both of Colo., assignors to Card Corporation, Denver, Colo.

Filed Aug. 3, 1981, Ser. No. 289,186

Int. Cl.^{3} B66B *5/18*

U.S. Cl. 187—87 **11 Claims**



1. A mine shaft cage and skip safety arrester for use with tubing guides, the arrester comprising:

(a) a conveyance body supported by a lifting cable and arranged to move within a mine shaft, said conveyance body includes a support beam arranged transverse to the conveyance body and to support the weight of said body, said mine shaft having at least two tubing guides mounted longitudinally on opposite sides of said shaft and arranged to stabilize the motion of said conveyance body;

(b) two pairs of arrester cams rotatably mounted on said support beam, each pair of said arrester cams being arranged at opposite ends of said support beam and aligned to straddle each of said guides;

(c) actuation means arranged to rotate the shafts supporting said arrester cams in a self-feeding, counter-rotation direction against the sides of said guides, said actuation means further including a drawbar arranged to slideably move through the center of said support beam and having one end attached to said lifting cable, the opposite end of said drawbar being attached to cross members arranged transverse to said support beam and located in a first position in contact with said support beam when said lifting cable supports the weight of said conveyance body spring means positioned to act on said cross member to move said cross members to a second position if said lifting cable should fail, said cross-members being connected to means for rotating said cams whereby said arrester cams will normally be held in a ready position when said support members are held in said first position to an arresting position when said support member moves to said second position; and,

(d) each of said arrester cams having a plurality of steel cable segments arranged in parallel position around the circumference of the cam contact surface, said cables being ridgedly attached to the surface of said cam whereby as the cam is rotated to the arresting position the cables will contact the surface of said guides with continuously increasing braking force whereby the surface of said cables will gall upon contact with said guides creating an extremely high co-efficient of friction and deform the tubing continuously following the deformation of said guides producing a maximum area braking surface for decelerating and stopping the falling motion of said conveyance body.

4,444,294
BRAKE SHOE MOUNT FOR BRAKE APPARATUS

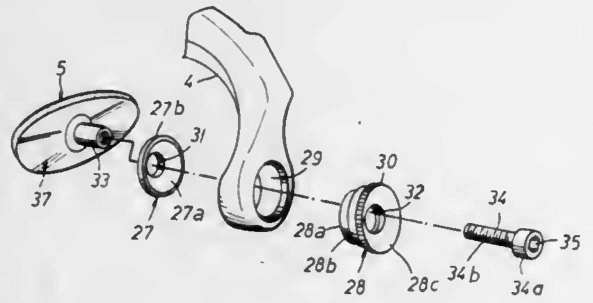
Toshiharu Yoshigai, Higashi-Osaka, Japan, assignor to Yoshigai Kikai Kinzoku Kabushiki Kaisha, Osaka, Japan

Filed Sep. 29, 1981, Ser. No. 306,759

Claims priority, application Japan, Dec. 8, 1980, 55-176551; Feb. 26, 1981, 56-28288; May 13, 1981, 56-70398; Jun. 3, 1981, 56-82908

Int. Cl.³ B62L *1/08*

U.S. Cl. 188—24.11 **3 Claims**



1. A brake shoe mount for a brake apparatus having a pair of brake arms for attaching a brake shoe to a forward end of each of the brake arms, the mount comprising:

- a pair of disks inserted in a circular bore formed through the forward end of the brake arm, said circular bore having a first axis through its center and having large-diameter portions at its inner and outer openings respectively, the disks being so shaped as to fit in the circular bore as well as the large-diameter portions, whereby the disks are adapted to rotate about the first axis in the bore;
- a shoe holder having the brake shoe fixed thereto and having a first screw member projecting from its rear side, said first screw member being inserted into eccentric holes formed through the pair of disks, said eccentric holes having a second axis through their centers which is in parallel to and away from the first axis, whereby the first screw member is adapted to rotate about the second axis in the eccentric holes;
- a second screw member which is in screw-thread engagement with said first screw member, whereby when the two screw members are tightened, the disks are non-rotatably fixed to the brake arm in clamping engagement with the portion between the large-diameter portions while causing the shoe holder to be non-rotatably fixed to the inner disk in pressing contact therewith.

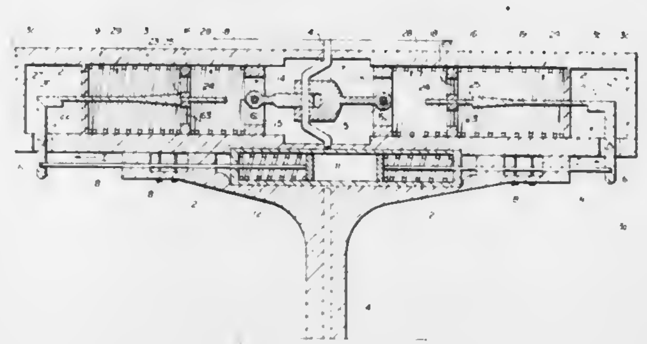
4,444,295
SPRING/PISTON BRAKE DEVICE

John R. Collinsworth, 11240 Trail Dr., Mesquite, Tex. 75149

Filed Oct. 21, 1981, Ser. No. 313,259

Int. Cl.³ B65H *59/10*

U.S. Cl. 188—67 **6 Claims**



1. A brake for retarding rotation of a powered shaft comprising in combination:

- a crankshaft means disposed on a section of said shaft,
- piston means operatively disposed on said crankshaft means, said piston means slidably positioned in cylinder means defined by a chamber within which said piston means is slideably disposed, said chamber having a partition wall at an extremity remote from said piston means,
- damping means disposed in said cylinder means remote from said shaft adapted to brake said shaft by retarding piston motion wherein said chamber has provided therein at least one major spring defining said damping means and said chamber includes a minor spring operating in concert with said major spring, said major and minor springs separated by means of a stop disc interposed therebetween,
- and means for increasing said damping means to increase the braking rate wherein said means for increasing said damping means includes a hydraulic cylinder, an actuating shaft operatively connected to said hydraulic cylinder, a lever connected to said actuating shaft remote from said hydraulic cylinder including a lever extremity provided with a spring control rod extending through said partition wall and through said stop disc, said spring control rod having an outwardly flared portion including a stepped shoulder adapted to abut against said stop disc, whereby one of said springs can be relatively disengaged from compression by means of said piston means.

4,444,296
SPOT-TYPE DISC BRAKE WITH ADDITIONAL AXIAL FORCE APPLICATION TO A REGION OF THE BRAKE SHOE

Vlad Marianu, Ffm.-Griesheim, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Jan. 28, 1982, Ser. No. 343,658

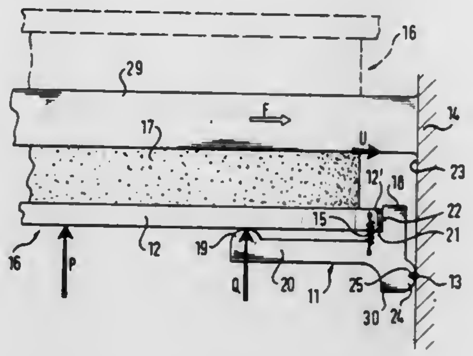
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1981, 3114047

Int. Cl.³ F16D *65/04*

U.S. Cl. 188—72.2 **19 Claims**

1. A spot-type disc brake unit for use with a brake disc rotatable about an axis relative to a support at least in a forward circumferential direction, comprising

- a brake shoe carrier member non-rotatably mounted on the support in use;
- at least one brake shoe mounted on said carrier member for movement axially of the brake disc and with freedom of limited displacement at least in the forward circumferential direction of the brake disc in use,
  - said brake shoe having a friction surface facing toward and a backing surface facing away from the brake disc, and disc entry and exit end faces respectively facing substantially opposite to and in the forward circumferential direction of the brake disc in use;
- means for moving said brake shoe during a braking operation into a position in which said friction surface engages the brake disc to brake the same and the brake disc entrains said brake shoe for limited displacement therewith in the forward circumferential direction;
- means for applying an additional force to a selected region of said brake shoe during the braking operation, including
  - at least one bell-crank lever element disposed at said disc exit end face and having
  - a first arm extending into the path of displacement of said disc exit end face in said forward circumferential direction to receive an actuating force therefrom,



  - a fulcrum portion axially movable relative to said carrier member and so engaging at least during the braking operation as to prevent relative axial movement therebetween, and
  - a second arm extending into juxtaposition with said backing surface at said selected region of said brake shoe and operative for applying the additional force thereto upon angular displacement of said lever element by said actuating force about said fulcrum portion; and
- means for resiliently attracting said lever element to said brake shoe such that, between the braking operations, said lever element and the area of engagement of the fulcrum portion thereof with said carrier member follow said brake shoe in its axial movement toward the brake disc as wear at said friction surface gradually reduces the axial thickness of said brake shoe.

4,444,297
CONTROL SYSTEM FOR A FLUID PRESSURE ENGAGED CLUTCH

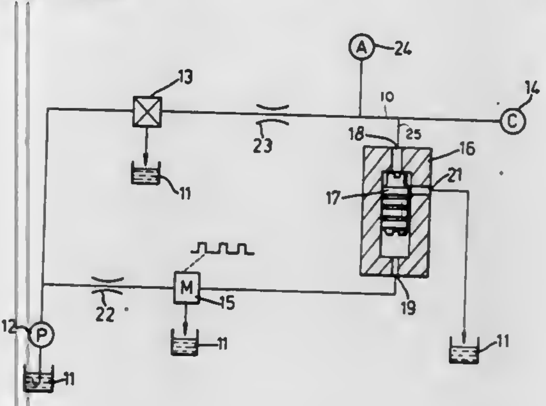
David Parsons, Kenilworth, England, assignor to Automotive Products Limited, Leamington Spa, England

Filed Nov. 9, 1981, Ser. No. 319,325

Claims priority, application United Kingdom, Nov. 27, 1980, 8038034

Int. Cl.³ F16D *43/28*

U.S. Cl. 192—3.58 **4 Claims**



1. Clutch control means to regulate fluid pressure in hydraulic actuation means for a clutch under the control of an electrical signal indicative of a desired clutch operating pressure and comprising:

- a fluid pressure source;
- pilot pressure means connected to said fluid pressure source and responsive to said electrical signal to provide a pilot pressure as a proportion of source pressure;
- supply means for supplying fluid from said source to said hydraulic actuation means,
- a branch connection leading from said supply means; and control valve means comprising:
- a body having a bore therein,
- a piston reciprocal in the bore and having one side thereof connected to said pilot pressure means and exposed only to pilot pressure and the opposite side thereof connected to the branch connection and exposed only to pressure in said supply means as applied to said actuation means; and

a drain port whose opening is controlled by said piston such that the drain port is connected to relieve pressure in said branch connection, supply means and hydraulic actuation means whenever that pressure exceeds pilot pressure.

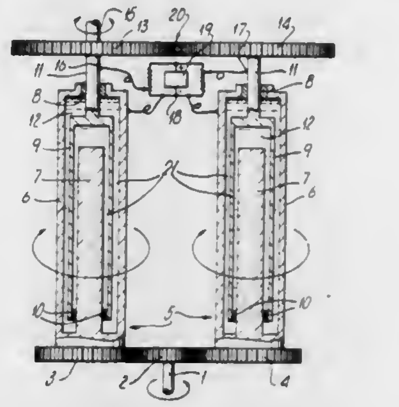
4,444,298
VISCOUS SHEAR CLUTCH

James E. Stangroom, Castleton, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Jul. 10, 1981, Ser. No. 282,296

Int. Cl.³ F16D *27/00, 29/00, 27/12*

U.S. Cl. 192—21.5 **9 Claims**



1. A viscous shear clutch comprising a housing containing an input shaft journalled in said housing, at least two input pluralities of electrically conductive interconnected drive plates rotatable by the input shaft, at least two output pluralities of electrically conductive interconnected plates, the driven plates of each output plurality being non-engageably interleaved in evenly spaced alternating relationship with the drive plates of a respective one of the input pluralities so as to provide a series of intercommunicating interstices interjacent the alternately confronted drive and driven plates, an output shaft journalled in said housing and rotatable by the output pluralities, one of said input and output shafts being connected directly to its respective two pluralities so as to rotate conjointly therewith and the other being connected by gearing to its respective two pluralities so as to rotate differentially therewith, electrical connecting means to each plurality of drive plates and driven plates for the application of control voltages, and an electro-rheological fluid disposed throughout the interstices.

4,444,299
AUTOMATIC CONTROL SYSTEM FOR OPERATING THE CLUTCH OF A CAR

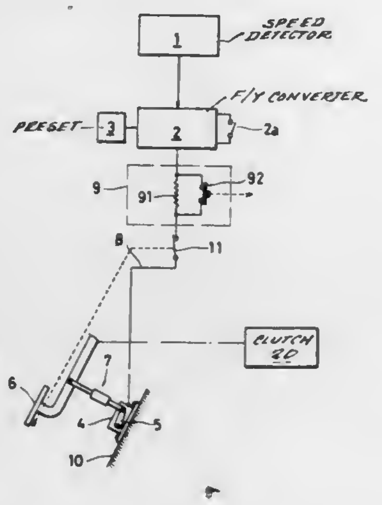
Suehiro Mizukawa, 4-25, Nishi 5-chome, Torigai, Setsushi, Osaka, Japan

Filed Oct. 2, 1981, Ser. No. 307,936

Claims priority, application Japan, Oct. 8, 1980, 55-141499; Nov. 10, 1980, 55-158680

Int. Cl.^{3} B60K *41/28*

U.S. Cl. 192—0.055 3 Claims



1. An control system for automatically operating the clutch pedal of a car and capable of being attached to cars of manual shift transmission type comprising:

servomotor means, adapted to be coupled to said clutch pedal and rotated forwardly and reversely, depending upon an increase and decrease of a control voltage, for driving said clutch pedal in directions in which a clutch is connected and disconnected;

circuit means for generating pulses related to the speed of an engine in said car;

frequency-voltage converting means for generating said control voltage related to said pulses;

a resistor connected between said frequency-voltage converting means and said servomotor means;

first switching means, connected in parallel with said resistor, for shorting said resistor when an accelerator pedal of said car is in a predetermined position; and

second switching means, connected in parallel with said resistor, for shorting said resistor when a brake pedal of said car is in a predetermined position.

4,444,300
VISCOUS FLUID COUPLING DEVICE

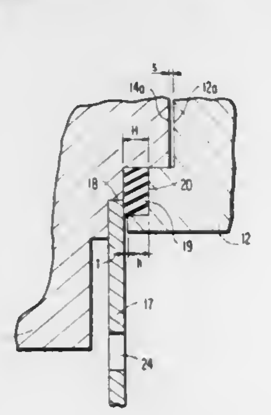
Masaharu Hayashi, and Makoto Nakagawa, both of Aichi, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 28, 1981, Ser. No. 306,617

Claims priority, application Japan, Oct. 9, 1980, 55-141402

Int. Cl.^{3} F16D *35/00*

U.S. Cl. 192—58 B 2 Claims



1. A viscous fluid coupling device comprising an input shaft, a rotor secured to said input shaft, an output member journaled on said shaft and a casing sealingly connected to said output member to define a fluid housing, a partition member dividing said housing into a reservoir chamber and a working chamber with said rotor being disposed in said working chamber, passage means communicating said reservoir chamber with said working chamber, gasket means between said output member, said casing and said partition plate for clamping said partition plate against said casing under pressure upon securement of said casing against said output member and shoulder means on said output member within said housing for supporting said gasket means with the depth of said shoulder means being smaller than the thickness of said gasket means whereby said gasket means will be compressed upon clamping said casing means to said output means, and wherein said gasket means is comprised of a ring of elastomeric material having a rectilinear cross-section with one axially directed face thereof bearing against said output member and the other axially directed face thereof bearing against said casing means and said partition member.

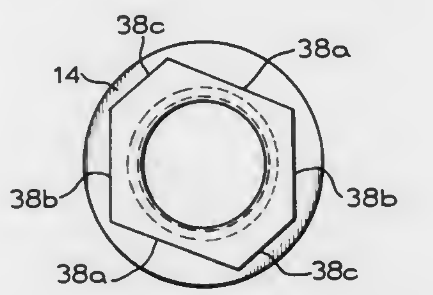
4,444,301
MOUNTING SYSTEM FOR CONVEYOR IDLERS

Roger A. Granberry, 2106 Sherwood Dr., Valparaiso, Ind. 46383

Filed Jan. 2, 1981, Ser. No. 222,020

Int. Cl.^{3} B65G *39/02;* F16B *37/00*

U.S. Cl. 193—35 R 10 Claims



9. For use in a support system incorporating a supporting shaft for supporting an idler roller on a mounting bracket, an assembly nut adapted to be threadably received by said shaft and having an extending part comprising three or more pairs of parallel opposing faces spaced apart by a different distance for each pair, the orientation of said nut determining the horizontal distance between faces aligned in vertical planes, said extending part being adapted to be received in a slot of said mounting bracket with one pair of said faces in close fitting relationship with side walls of said notch.

4,444,302
CABLE DRIVE SYSTEMS FOR MOVING WALKWAYS

Phillip E. Dunstan, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Aug. 17, 1981, Ser. No. 293,591

Int. Cl.^{3} B65G *23/00*

U.S. Cl. 198—334 28 Claims

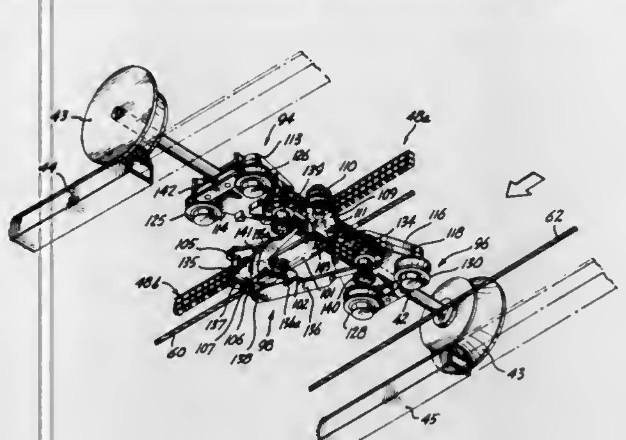
6. A cable drive system for an accelerating and decelerating moving walkway including a plurality of overlapping walkway platforms serially connected in a closed loop to travel along a circuitous walkway path of travel, said walkway path of travel having substantially constant speed zones wherein said platforms travel in substantially opposite directions between change-of-direction regions connecting said constant speed zones, said walkway further including overlap control means for controlling the amount of overlap between serially adjacent platforms to effect the acceleration and deceleration of said platforms in acceleration and deceleration zones lying between said constant speed zones and said change-of-direction regions, said cable drive system comprising;

a drive cable;

sheave means supporting and guiding said drive cable along a predetermined cable circuit underlying said constant speed zones;

drive means engaging said drive cable for moving said cable along said cable circuit;

cable-coupling means mounted on said walkway platforms for gripping and releasing said drive cable; and,



actuating means forming part of said overlap control means for causing said cable-coupling means to grip said drive cable as said platforms enter said constant speed zones and release said drive cable as said platforms leave said constant speed zones.

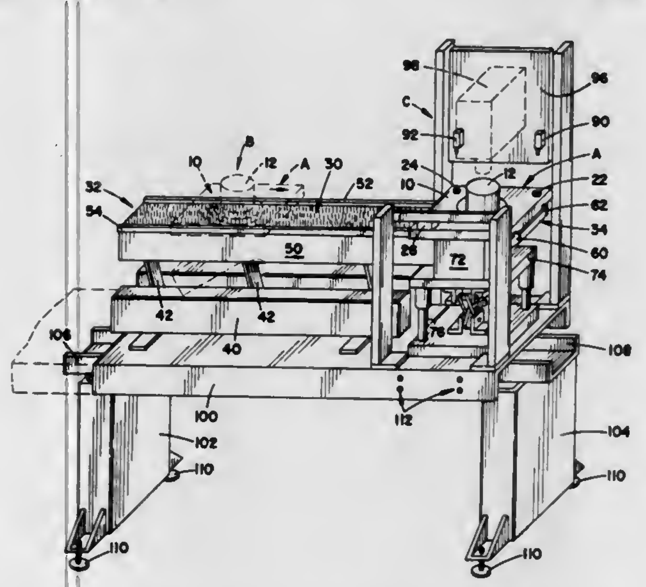
4,444,303
VIBRATORY FEEDING WORK STATION MODULE AND SYSTEM

Warren C. Burgess, Jr., 31922 Lake Rd., Avon Lake, Ohio 44012

Filed Oct. 9, 1981, Ser. No. 310,083

Int. Cl.^{3} B65G *47/00*

U.S. Cl. 198—345 15 Claims



1. A system for conveying workpieces comprising:

a plurality of workpiece carriers for carrying workpieces, each workpiece carrier including a lower surface in which at least one guide slot is defined, the guide slot including an inner surface and a pair of oppositely disposed side surfaces;

a generally horizontal conveying surface along which the workpiece carriers are moved, the conveying surface including a multiplicity of resilient fibers projecting upwardly therefrom to engage the workpiece carrier lower surfaces and to support the workpiece carriers;

a directing rail mounted on the conveying surface and extending upwardly beyond the fibers, the directing rail having at least one generally vertical friction reducing surface, the directing rail being loosely received in the guide slot and displaced from the guide slot inner surface such that the resilient fibers support the workpiece carriers and the directing rail intermittently engages the guide slot side surfaces as the workpiece carrier becomes misaligned; and,

motivating means for vibrating the conveying surface and directing rail, such that the carriers move along the resilient fibers.

4,444,304
SCRAPER CHAIN CONVEYOR CHANNEL SECTION

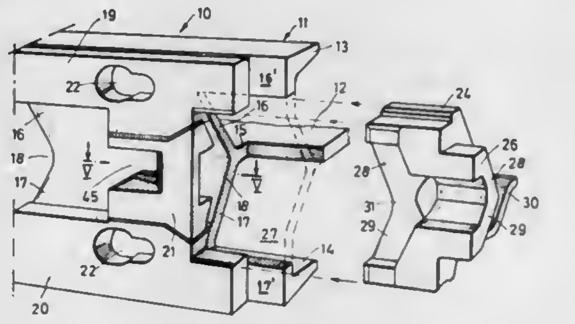
Manfred Redder, Bergkamen-Oberaden; Dieter Gründken, and Volker Behm, both of Lunen, all of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Jun. 23, 1981, Ser. No. 276,718

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1980, 3024460

Int. Cl.^{3} B65G *19/28*

U.S. Cl. 198—735 16 Claims



1. A channel section for a scraper-chain conveyor, the channel section comprising a pair of side walls and a floor plate extending between the side walls and connecting the side walls together, each of the side walls having a generally sigma-shaped cross section defining a V-shaped groove extending longitudinally along the exterior surface thereof and three vertically-spaced inwardly-extending flanges, the central flange being joined to the upper and lower flanges by a pair of outwardly-divergent inclined wall portions and by respective short vertical wall sections, each of the side walls having elongate stiffening members extending substantially the entire length thereof and attached to said short vertical wall sections, each end zone of each side wall being provided with a coupling element for coupling the channel section to an adjacent similar channel section, each of the coupling elements being housed in a cut-away part formed at the adjacent end zone of the respective inclined wall portions and being shaped to protrude outwardly beyond the profile of its side wall by approximately the thickness of the stiffening members attached to that side wall, the stiffening members associated with each of the side walls being interconnected at longitudinally spaced intervals adjacent to each coupling element, by transverse members which are positioned at the level of the V-shaped groove in the associated side wall and which are welded to the stiffening members, each transverse member being provided with a slot for receiving the shank of a bolt, with a socket at its rear for receiving a bolt head, and with an aperture with inclined guide surfaces for guiding the head of a bolt into said socket.

4,444,305
CONVEYOR BELTING FOR HANDLING BAKERY GOODS

Roy B. Parker, Monmouth, Me., and Stephen P. Beecher, West Seneca, N.Y., assignors to Globe International Inc., Buffalo, N.Y.

Filed Feb. 16, 1982, Ser. No. 349,018

Int. Cl.^{3} B65G *15/30, 15/34*

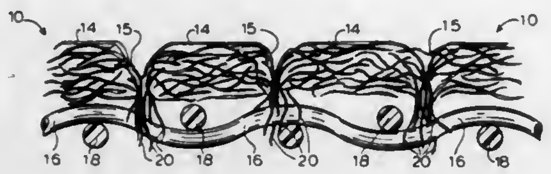
U.S. Cl. 198—844 1 Claim

1. A conveyor belting useful in conveying edible dough and baked articles made therefrom, which comprises;

a base of interwoven, polyester yarns; and a conveyor surface of a batt of non-woven, polypropylene fibers;

said batt being secured to said yarns by engagement of fibers in said batt with the yarns;

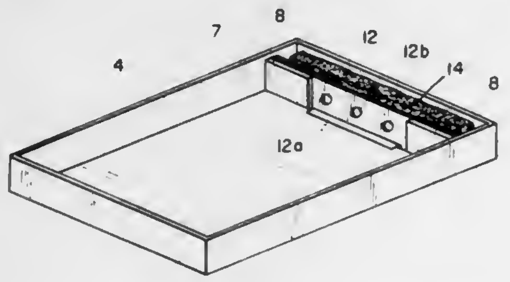
said engagement being of the character associated with needling;



said polyester and said polypropylene being of a grade acceptable for contact with edible dough and bakery products;

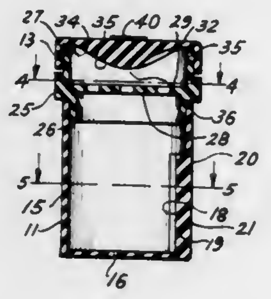
said conveyor surface having been singed and calendered.

4,444,306
PALETTE BOX
Florence Benaquista, 524 Lincoln Ave., Pittsburgh, Pa. 15202
Filed Jan. 3, 1983, Ser. No. 455,111
Int. Cl.³ B44D *3/00;* B65D *81/24, 57/00*
U.S. Cl. 206—1.7 **4 Claims**



1. An artist's palette box of rectangular outline including a readily detachable lid forming a substantially airtight fit of the box, a partition extending across the portion of the box of smaller width and near the end of said box to form a narrow compartment, said partition including a readily removable central portion, and stop means extending laterally of said central portion to hold down the top surface of a palette placed in said box.

4,444,307
DEVICE FOR CLEANING AND STERILIZING A SOFT, PLASTIC LENS
Arthur C. Jermyn, 15914 Overview Rd., Poway, Calif. 92064
Filed Jan. 5, 1983, Ser. No. 436,505
Int. Cl.³ A45C *11/04;* A61L *2/18;* B01F *11/00*
U.S. Cl. 206—5.1 **3 Claims**



1. A device for cleaning and sterilizing a soft, plastic lens, comprising:

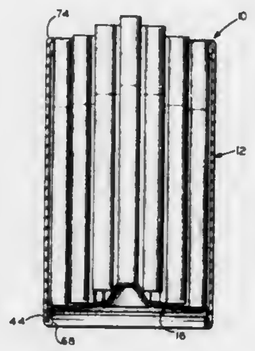
an elongated, hollow, transparent container having a generally circular bottom wall, a continuous side wall encircling the periphery of the bottom wall and a generally circular open end opposite the bottom wall for selectively receiving a lens cleaning liquid and a lens sterilizing liquid and the lens;

a strainer having a first generally hollow, cylindrical open end insertable and extending into the open end of the container, a second generally hollow, cylindrical open end extendable beyond the open end of the container and a flat, perforated portion arranged between the first and second open ends of the strainer for receiving the lens on the face of the flat portion facing the first open end of the strainer upon inversion of container to remove the sterilizing liquid and the container from the strainer;

a removable cap having a generally flat portion, including a first surface and a second surface, and a peripheral flange extending from the portion in the direction of the first surface for selectively enclosing the open end of the container and the second open end of the strainer; and

a plurality of impellers on the first surface of the removable cap, each of the impellers being similarly oriented and inclined in a radial direction from a high point at the center of the first surface to a low point on the first surface adjacent the flange and each side of which is pitched at a different angle.

4,444,308
CONTAINER AND DISPENSER FOR CIGARETTES
George E. MacEwen, Kansas City, Mo., assignor to Sealright Co., Inc., Kansas City, Mo.
Filed Jan. 3, 1983, Ser. No. 455,380
Int. Cl.³ B65D *85/10;* A24F *15/02*
U.S. Cl. 206—249 **42 Claims**

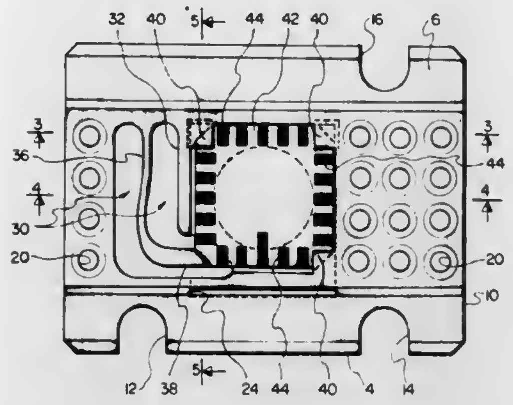


1. A container comprising:

a tubular container sidewall having an inner surface and an outer surface and upper and lower open ends, and said upper open end having an end face; and

bottom closure means disposed within said tubular container sidewall for closing said open lower end of said sidewall said bottom closure means having a center portion lying in a plane generally normal to the longitudinal axis of said container sidewall; a first tapered portion communicating at the upper end portion thereof with said center portion and tapering downwardly and outwardly from said center portion toward said lower end of said tubular container sidewall; a first upwardly concave portion communicating with the lower end portion of said first tapered portion; and a second tapered portion communicating at the lower end portion thereof with said first upwardly concave portion and tapering upwardly and outwardly from said first upwardly concave portion toward said upper end of said tubular container sidewall.

4,444,309
CARRIER FOR A LEADLESS INTEGRATED CIRCUIT CHIP
William D. Morton, Jr., Santa Clara, Calif., assignor to Bourns, Inc., Riverside, Calif.
Filed Feb. 19, 1982, Ser. No. 350,246
Int. Cl.³ B65D *85/00;* H01R *13/54*
U.S. Cl. 206—329 **12 Claims**



1. A mobile carrier for a leadless integrated circuit chip, said chip having an upper surface with a plurality of spaced electrical contact pads, said carrier comprising:

a body having an upper and lower surface, a plurality of side walls, a cavity extending inwardly from the upper surface, said cavity being laterally bounded by the body and large enough to accomodate a chip with its contact pads substantially fully exposed from the top, and a floor at the lower end of the cavity for supporting a chip,

one of said side walls having an access opening extending inwardly to the cavity to permit the introduction of a chip into the cavity through the access opening with the bottom of the chip supported by the cavity floor and its upper surface substantially exposed,

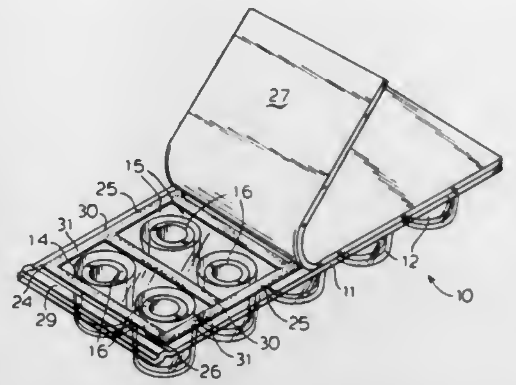
a plurality of projections formed integrally with the carrier body and extending into the upper portion of the cavity to block the upward removal of a chip located within the cavity and the downward placement of a chip into the cavity from above the carrier, said projections being vertically aligned with spaces on the chip between the contact pads, and thereby enabling the contact pads to be probed from above, and

a spring means supported on said body and normally extending into said cavity in blocking relationship to the access openings to at least partially block the introduction of a chip into the cavity, said spring means being movable to a position permitting the introduction or removal of a chip through the access opening, and when released bearing against a chip in the cavity under a spring bias to hold the chip in a fixed position within the cavity.

4,444,310
SEGMENTED MULTI-PRODUCT PACKAGE ASSEMBLY
Robert Odell, Franklin Lakes, N.J., assignor to Becton, Dickinson and Company, Paramus, N.J.
Filed Jul. 26, 1982, Ser. No. 401,794
Int. Cl.³ B65D *83/04, 85/62, 81/04*
U.S. Cl. 206—366 **6 Claims**

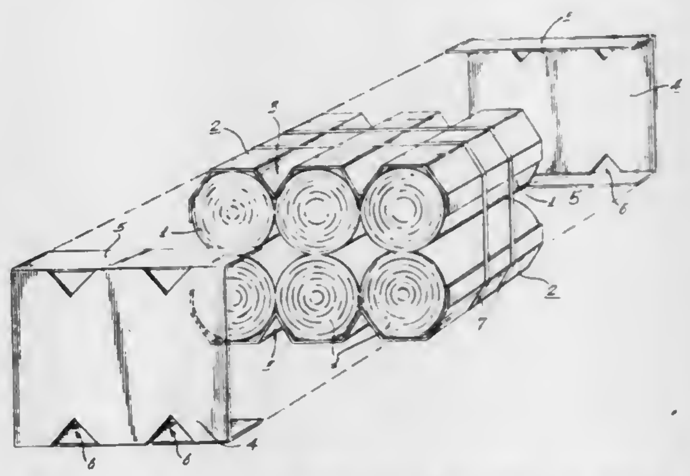
3. A segmented package containing syringe tip caps comprising:

an oblong tray having a plurality of receptacles therein, each of said receptacles terminating in an open end at an upper surface of said tray, said receptacles disposed substantially periodically in at least one row along said upper surface, said receptacles arranged so that a sealing area on said upper surface lies between adjacent open ends in each row, each of said receptacles containing a tip cap for sealing a hypodermic syringe tip and adapted to prevent the tip cap from toppling from its inserted position, said sealing area including two substantially parallel longitudinal strips extending along said upper surface adjacent to said receptacles, said receptacles being positioned between said longitudinal strips, and a plurality of cross strips joining said longitudinal strips, said cross strips extending transversely across said upper surface; and



cover means removably sealed to said sealing area and covering said receptacles, said cover means being partially removable from said tray to expose a selectable number of said tip caps, the unused tip caps adapted to remain protected in sealed receptacles.

4,444,311
MULTI-ROLL PACKAGE OF COMPRESSIBLE MATERIALS
Jean-Claude Rias, Villennes sur Seine, France, assignor to Isover Saint-Gobain, Paris, France
Continuation of Ser. No. 217,001, Mar. 9, 1981, abandoned. This application Sep. 23, 1982, Ser. No. 422,283
Claims priority, application France, Jul. 9, 1979, 79 17771
Int. Cl.³ B65D *85/20*
U.S. Cl. 206—391 **13 Claims**



1. A package comprising an assembly of at least two superposed layers of rolls of a compressible material, the rolls of each layer being placed side-by-side with their axes in a common plane and the rolls of each pair of adjoining rolls in each layer being in direct contact with each other, characterized in that:

the rolls of adjacent superposed layers are in direct contact with each other along the lowermost and uppermost surfaces thereof and are compressed against each other to provide a roll package of predetermined height;

two contoured panels respectively adjoin the upper surfaces of the uppermost layer and the lower surfaces of the lowermost layer of the compressed rolls;

a first binding comprising panels overlying the ends of the rolls and having flanges with flange surfaces overlying and secured to end portions of the contoured panels and forming in combination with the contoured panels a binding extending around the assembly in a plane paralleling the axes of the rolls;

the panels at the ends of the assembly of rolls having a dimension in the direction of superposing of the layers of rolls, which dimension is smaller than the uncompressed layers of rolls, thereby maintaining the rolls of the assembly in partially compressed condition and establishing an assembly of said predetermined height; and

a second binding comprising at least one strip extended around the assembly of rolls in a plane perpendicular to the axes of the rolls.

4,444,312

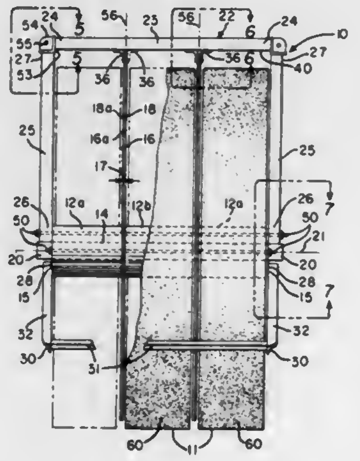
PACKAGE AND METHOD OF PACKAGING FOR FLAT ELONGATED MATERIAL

James E. McGraner, Columbus, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 234,083, Feb. 13, 1981, Pat. No. 4,366,661, which is a division of Ser. No. 95,198, Nov. 19, 1979, Pat. No. 4,274,538. This application Aug. 6, 1982, Ser. No. 405,842

Int. Cl.^{3} B65D *85/671*

U.S. Cl. 206—394 **2 Claims**



1. A method for separating the package of at least two side-by-side lengths of flat elongated sheet material into a number of smaller units corresponding to the number of side-by-side lengths of sheet material, the package including:

(a) two cylindrical outer shells each having a central bore extending axially therethrough, inner and outer ends, and a divider plate being rigidly joined to the inner end thereof, said divider plate extending radially outwardly beyond the circumference of said shells, said shells being positioned end-to-end, with their central bores aligned and their divider plates adjacent to and aligned with one another to form a pair of parallel plates having axially adjacent and axially most distant parallel surfaces;

(b) an elongated central member passing through the aligned central bores of said end-to-end shells, and extending axially beyond the outer ends of said end-to-end shells;

(c) a frame including an upper member extending axially and generally horizontally an amount about equal to the combined axial dimension of said end-to-end shells;

(d) a side member rigidly joined with and depending from each end of said upper member, each side member having its radially inner end rigidly joined to said central member and the outer end of the respective shell to prevent axial movement of said shells with respect to said central member;

(e) at least two tie members spaced substantially equally apart in the circumferential direction of said shells from one another and from said upper member, said tie members each having a portion spaced radially outwardly from the outer circumference of said shells and extending axially an amount about equal to the combined axial dimension of said end-to-end shells, said tie members each having a portion extending radially inwardly from each end of said axial portion and overlying part of an outer end of said end-to-end shells, each said radial portion being rigidly joined to a respective one of said axial portions and a respective outer end of said end-to-end shells; and

(f) a plurality of bifurcated members whose legs extend at right angles to one another with one leg of each bifurcated member extending radially inwardly and being rigidly joined to a radially inwardly facing surface of said upper member and the other leg of each bifurcated member extending radially inwardly and being rigidly joined to one of the axially most distant surfaces of a pair of parallel plates; the method comprising:

(1) cutting and removing the axially extending portion of each tie-member;

(2) cutting the upper member at planes which intersect the axis of rotation of the package between each pair of divider plates; and

(3) cutting the side members parallel to the axis of rotation of the package at their junction with the central member leaving the side members joined to their respective outer ends of the outer shells.

4,444,313

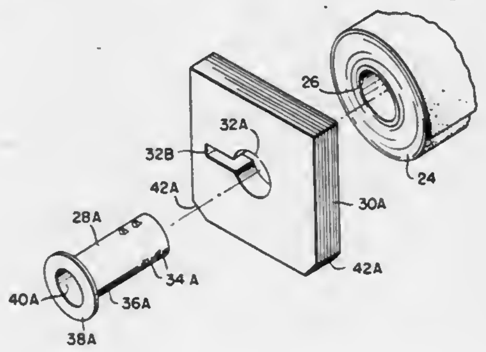
STORAGE, SHIPPING, DISPLAY AND DISPENSING PACKAGE OF ROLL MATERIAL

Travis C. Tyson, 106 Diane Dr., Dalton, Ga. 30720

Filed Oct. 29, 1981, Ser. No. 316,442

Int. Cl.^{3} B65D *85/66, 85/671*

U.S. Cl. 206—397 **13 Claims**



1. A package for storage, shipping, display, and dispensing of a roll of flooring material comprising:

a container having a first end, a second end, and a center therebetween;

a roll of flooring material disposed within said container and extending axially along a roll axis between said first end and said second end;

a first end piece having a hole extending therethrough and disposed at said first end of said container;

a first core insert having a flange and an axially extending part including a relatively high friction roll gripping portion and a relatively low friction bearing portion in between said flange and said roll gripping portion;

said first core insert being rotatably supported by said first end piece with said axially extending part extending from said flange towards said center through said hole of said first end piece and with said bearing portion bearing against said hole of said first end piece; and

wherein said roll gripping portion secures said first core insert to said roll of flooring material such that said first core insert rotates when flooring material is unwound from said roll.

4,444,314

STORING DEVICE FOR FLAT OBJECTS

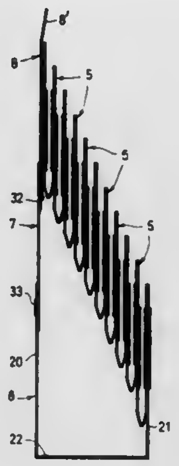
Carl L. Jacobsson, Bellmansgatan 11, Göteborg S-411 28, Sweden

Filed Jul. 9, 1982, Ser. No. 396,607

Claims priority, application Sweden, Jul. 31, 1981, 8104637

Int. Cl.^{3} B65D *85/00*

U.S. Cl. 206—425 **4 Claims**



1. A device for storing flat objects comprising:

(A) a plurality of structurally identical, pocket-like receptacles for receiving the objects to be stored, each of them being formed by double-folding a generally rectangular blank of thin but stiff sheet material and having a front wall portion and a rear wall portion, the height of the latter exceeding that of the front wall portion,

(a) said pocket-like receptacles being slidably interconnected in series, one to the next, in a manner to permit limited relative movement of them between a first, storing position, in which they are all located straight behind one another, and a second, stepped and partly exposed position, in which each receptacle behind projects vertically beyond the next adjacent receptacle in front a predetermined distance at least approximately corresponding to the difference in height between the front and rear wall portions of each receptacle;

(B) an inner cover enclosing said interconnected receptacles when they are in said first position but leaving them free to be moved into said second, partly exposed position, said inner cover including a fore wall member and a back wall member, both being of approximately the same size as said pocket-like receptacles,

(b) the front wall portion of the foremost receptacle in said series of receptacles being connected to said fore wall member of said inner cover;

(C) a slide member, to which the rear wall portion of the rearmost receptacle in said series of receptacles is attached,

(c) said slide member being connected to said back wall member of said inner cover in a manner to permit guided and limited vertical movement thereof in parallel relationship to said back wall member; and

(D) an outer box-like case receiving said series of interconnected receptacles, said inner cover, and said slide member, and having an opening, through which said slide member together with at least some of said interconnected receptacles may be pulled out,

(d) said inner cover being retained in said outer box-like case in a manner to form a lining therein;

and wherein

(E) the interconnection between adjacent receptacles is provided solely by means of interengaging tabs and slits formed in the two wall portions of each receptacle, the slits extending vertically therein and each tab being cut out integral with the respective wall portion in a manner to lie substantially in the plane thereof and to extend laterally into the corresponding slit of the next adjacent receptacle.

4,444,315

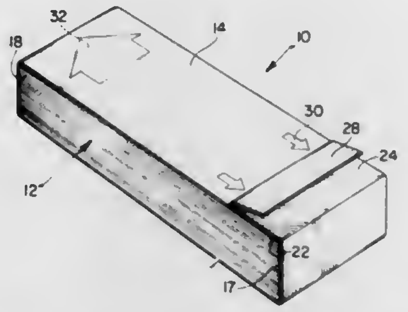
Z-FOLD CHART PAPER PACKAGE

David M. Gaskill, Jr., Providence, R.I., assignor to Atlan-Tol Industries, Inc., West Warwick, R.I.

Filed Mar. 14, 1983, Ser. No. 475,347

Int. Cl.^{3} B41L *1/32;* **B65D** *85/62, 5/02*

U.S. Cl. 206—449 **3 Claims**



1. A chart paper package for a recorder and the like of the type having an elongated chart paper compartment for receiving and containing chart paper in said recorder and the like, and for dispensing said paper therefrom for use in said recorder and the like, said compartment having an access opening at one end thereof for the loading thereof, said package comprising:

a. a stack of paper defined by an elonated paper strip having leading and trailing edges and folded in a zigzag configuration, sequential fold lines in said strip defining opposite first and second ends of said stack, the portions of said stack adjacent said leading and trailing edges lying in opposite first and second faces, respectively, of said stack, and

b. a flexible wrapper of closed loop configuration snugly received on said stack so that it extends along said faces thereof, said wrapper being separable to an open configuration to provide access to said stack, said wrapper having first and second end portions, said second end portion overlying said first end portion and terminating in a free tab portion, said first and second end portions being detachably interconnected adjacent said second stack end, said leading edge being disposed adjacent said second stack end, said package being receivable in the chart compartment of said recorder with said second stack end adjacent the access opening to said compartment,

c. whereby said stack is insertable in said compartment with said wrapper received on said stack to prevent the unfolding thereof, and thereafter said wrapper is separable to said open configuration to provide access to said stack for the dispensing thereof.

4,444,316

GAS SCAVENGER AGENTS FOR CONTAINERS OF SOLID CHLOROISOCYANURATES

John M. Casberg, Cheshire, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Sep. 3, 1982, Ser. No. 414,277

Int. Cl.^{3} B65D *81/24;* **C09K** *3/00*

U.S. Cl. 206—524.4 **20 Claims**

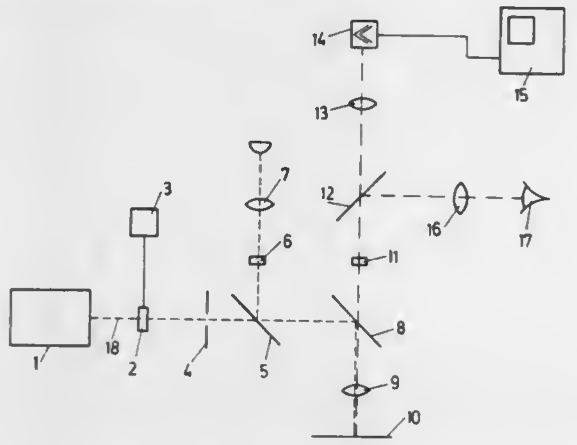
1. In a container for a solid chloroisocyanurate composition, the improvement which comprises enclosing therein a gas scavenging agent consisting essentially of a mixture of silica gel, an alkali metal bicarbonate, and carbon, wherein each of the components of the mixture is present in at least 5 percent by weight.

11. A gas scavenger package comprised of a gas permeable spun-bonded polyolefin envelope sealingly enclosing therein a gas scavenging composition for chlorine-containing gases consisting essentially of a mixture of silica gel, an alkali metal bicarbonate, and carbon.

4,444,317

OBSERVATION OF IMMUNOFLUORESCENE FOR DISTINGUISHING BETWEEN SPECIFIC AND NONSPECIFIC BINDING OF CONJUGATES

Georg Wick; Günther Böck, and K. Schauenstein, all c/o Institute for General and Experimental Pathology, University of Innsbruck, Fritz-Pregl-Strasse 3, A-6020 Innsbruck, Austria
Filed Aug. 26, 1981, Ser. No. 296,562
Int. Cl.³ B07C *5/02*
U.S. Cl. 209—3.1 **2 Claims**

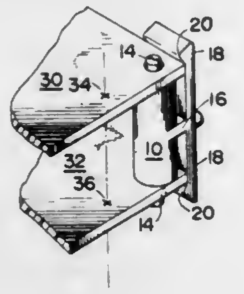


1. A method for distinguishing particles or regions therein to which fluorochrome-labeled antibodies or antigens, termed conjugates, are bound by the specific immune reaction of an antibody with its homologous antigen from particles or regions to which the conjugates are nonspecifically bound, comprising illuminating of the particles or regions with a laser, measuring the resulting fluorescence at three or more moments within the first three milliseconds after the beginning of illumination while illumination continues, comparing the observed bleaching behavior of the particle or region with the characteristic curves of specific and nonspecific binding previously obtained by observation of other particles, and producing a signal indicating the type of binding observed.

4,444,318

SNAP-IN SPACING DEVICE FOR CIRCUIT BOARDS

Donnald A. Alexander, Tigard, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.
Filed May 10, 1982, Ser. No. 376,330
Int. Cl.³ F16B *19/00*
U.S. Cl. 211—41 **4 Claims**

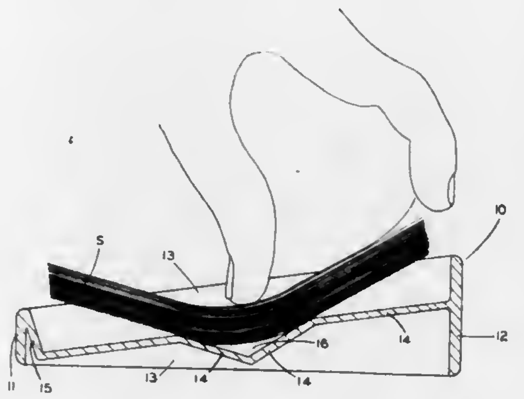


1. A one-piece spacing device for circuit boards, comprising:
a spacer body;
pin means axially disposed at each end of said body for insertion into a corresponding hole in a circuit board; and
clip means attached to said body and spaced apart therefrom for gripping a circuit board, said clip means comprising a resilient member extending along said body in both directions from a fixed central portion to a pair of free ends, each of said free ends including a nib positioned near a respective end of said body for gripping said circuit board.

4,444,319

NOTE PAPER RETRIEVAL TRAY

Jerry L. Sharber, Toledo, Ohio, assignor to Sheller-Globe Corporation, Toledo, Ohio
Filed Jun. 8, 1981, Ser. No. 271,704
Int. Cl.³ A47F *7/00*
U.S. Cl. 211—50 **2 Claims**

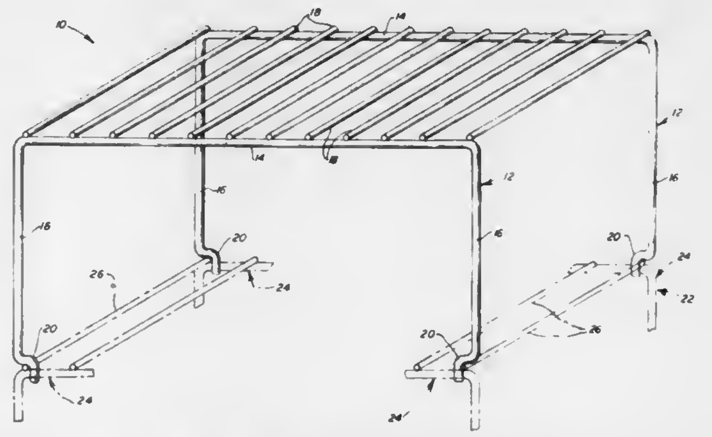


1. A tray comprising a downwardly inclined bottom wall including a transverse depression separating said bottom wall into two coplanar portions, an upwardly and outwardly inclined end wall affixed to the lower end of said inclined flat bottom wall, a stack of note paper sheets on said bottom wall and abutting said inclined end wall, said transverse depression in said bottom wall disposed approximately midway of said stack whereby manual pressure on the top of said stack forces same into said depression and causes the stack end portions to flex upwardly and free upper sheets of the stack from each other.

4,444,320

STACKABLE SHELF UNIT

John P. Chap, Lemont, Ill., assignor to Selfix, Inc., Chicago, Ill.
Filed Sep. 4, 1981, Ser. No. 299,319
Int. Cl.³ A47F *5/00*
U.S. Cl. 211—134 **3 Claims**

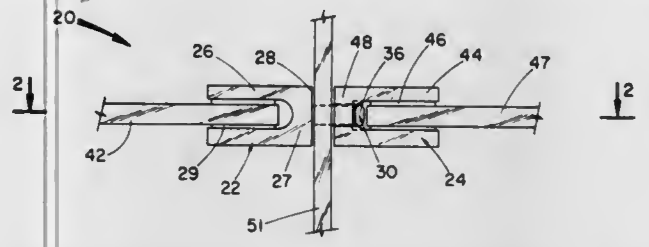


1. A stackable shelf unit capable of being supported and stacked upon an associated like shelf unit without the use of fasteners, comprising:
- a pair of laterally spaced, generally U-shaped side frame members arranged in parallel relation, each said side frame member comprising a single length of metal wire and each including a horizontal portion and a pair of integral, downwardly depending resiliently flexible legs extending downwardly from respective ends of said horizontal portion at generally right angles;
- a plurality of spaced apart, laterally extending shelf members affixed to and extending between said horizontal portions of said side frame members for supporting objects, said resilient legs depending freely below said shelf members, the endmost ones of said shelf members extending between respective ends of said horizontal portions in closely spaced relation to said freely depending resilient legs; and
- releasably lockable stacking means comprising an offset portion of each of said legs; each said offset portion including a substantially horizontal support portion adapted to be supported on said like shelf unit, and a substantially vertical locking portion depending from said horizontal portion, each said horizontal portion extending longitudinally relative to said shelf unit a distance corresponding to the relative positioning of said endmost ones of shelf members with respect to said freely depending legs so that stacking with said like shelf unit can be effected by disposition of the endmost ones of the shelf members of the like shelf unit at the respective junctions of the horizontal support portions and vertical locking portions of the offset portions of said freely depending legs,
- said stacking means providing resiliently biased, releasable engagement of each said offset portion with said associated like shelf unit by the resilience of said legs for support and stacking of the shelf unit on said like shelf unit.

4,444,321

BRACKET STRUCTURE FOR SUPPORTING A SHELF OR PARTITION OF A DISPLAY CASE OR THE LIKE

William Carlstrom, E. Fox Chase Rd., Chester, N.J. 07393
Filed May 17, 1982, Ser. No. 378,592
Int. Cl.³ A47B *47/00*
U.S. Cl. 211—186 **10 Claims**



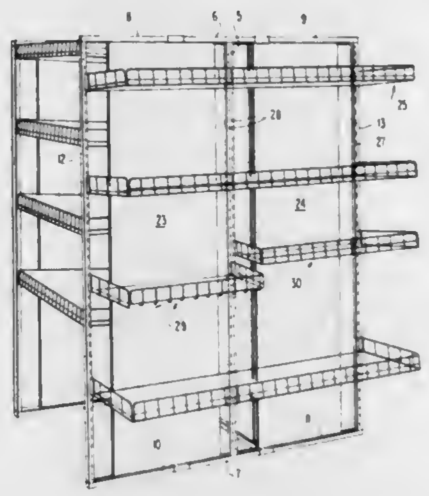
1. A bracket structure for supporting horizontal or vertical sheet-like members and adapted for attachment to a supporting apertured panel, comprising:
- a clip having a U-shaped body, said body having two opposing, spaced flat side walls joined by an integral end wall; said side walls having ridges integrally formed on inner opposing sides of said side walls for frictionally engaging one of said sheet-like members; and
- a stem extending outwardly of an outer side of said end wall, said stem having a cylindrical neck with a diametrical slot extending from a point intermediate the end of said stem and the outer side of said end wall to the end of said stem to define two flexible parallel spaced bifurcations, each having equal cross-sectional areas throughout their respective extents and each bifurcation terminating in a tip having a larger radius than that of said neck, both of said tips when abutted defining a head adapted to pass through an aperture in said supporting apertured panel.

4,444,322

DISPLAY RACK

Vernon E. Lee, Dallas, Tex., assignor to Frito-Lay, Inc., Dallas, Tex.
Filed Oct. 8, 1981, Ser. No. 309,770
Int. Cl.³ A47F *5/10*
U.S. Cl. 211—190 **6 Claims**

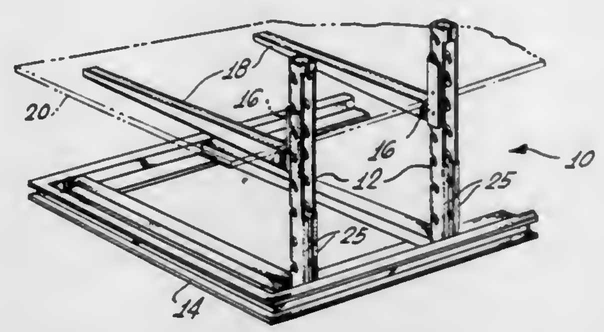
1. A display rack including adjustable panels defining frames capable of supporting at least one shelf for packaged food items comprising a pair of generally parallel end structure assemblies and a pair of center structure assemblies, each having vertical and horizontal surfaces,
- each structure assembly further comprises centrally-positioned vertical support members, upper and lower horizontal support members positioned at the upper and lower terminus of said centrally-positioned vertical support members having horizontal telescopic end members slidably mounted thereon, and vertical support members attached to the distal ends of said horizontal telescopic support members;
- said end structure assemblies being in parallel relationship to each other; said center structure assemblies also being in parallel relationship to each other and positioned between and perpendicular to said parallel end structure assemblies wherein said end vertical support members of said center structure assemblies are positioned on opposing sides of said centrally-positioned vertical support members of said parallel end structure assemblies, and each distal end of said horizontal telescopic support members of said center structure assemblies being fixedly secured to said horizontal telescopic support members of said adjacent end structure assemblies;
- means for selectively mounting at least one movable shelf to the outside surfaces of said support members of said end structure assembly; and
- means for selectively mounting at least one movable shelf to the outside surfaces of said members of each center structure assembly.



4,444,323

RETAINING MEANS FOR ADJUSTABLE CANTILEVER STORAGE RACKS

Merton A. Travis, Shingle Springs, Calif., assignor to Travis Handling Systems, Inc., Shingle Springs, Calif.
Filed May 11, 1981, Ser. No. 262,445
Int. Cl.³ A47B *47/00*
U.S. Cl. 211—193 **8 Claims**



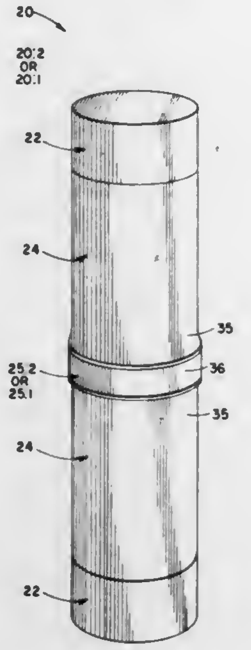
1. An adjustable cantilever storage rack comprising:
- an upright, channel member having a vertical front wall and two parallel side walls generally perpendicular to the front wall, at least one of said walls being a primary load bearing surface;
- a bracket having a vertical front wall and two side walls, and shaped such that said channel member and said bracket fit together;
- a cantilever arm projecting generally away from the walls of said bracket;

connecting means for connecting said channel member with said bracket, said connecting means comprising an inclined bayonet slot formed in a wall of said channel member and inclined downwardly and away from said primary load bearing surface, an elongated portal formed in a wall of said channel member and opening into the upper portion of the bayonet slot, and an inwardly directed pin on the inside of a bracket wall, said pin drawing said bracket against said primary load bearing surface of said channel member as said pin engages said inclined bayonet slot, whereby a downward force on said bracket causes said pin to move downwardly and away from said primary load bearing surface to cause said bracket to engage said primary load bearing surface;

retaining means comprising a retaining pin arranged to fit within an aperature located in a wall different from that having said inclined bayonet slot and substantially on a neutral axis of said load bearing surface of said channel member for restricting upward movement of said bracket relative to said channel member, said connecting means and said retaining means cooperating to rigidly support said cantilever arm on said channel member, whereby the likelihood of accidental disengagement of the connecting means by upwards, sideways or oblique torsional blows on the cantilever arm is substantially reduced.

4,444,324
COMPARTMENTED STORAGE CONTAINER

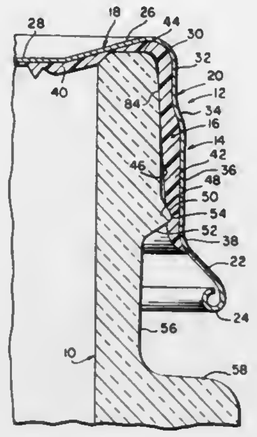
David J. Grenell, 1396 Hadden Cir., Akron, Ohio 44313
Filed Sep. 30, 1982, Ser. No. 430,705
Int. Cl.³ B65D *1/04, 81/38;* **A45C** *11/20;* **A47J** *41/00*
U.S. Cl. 215—6 **3 Claims**



1. A container for storing liquids or foods in either of two compartments defined by two insulated cylindrical body members having juxtaposed and open base ends, the top end of each said body member having a dispensing opening, each said dispensing opening having a removable insulated closure, said body member open base ends being interconnected by a medial connector, said medial connector having an insulated annular flange with an outer diameter conforming generally to the outer diameter of said body member base ends and with a thickness permitting manual rotation and manipulation thereof, said connector flange carrying two oppositely directed closure rings, each said closure ring having external threads for mating engagement with internal threads around said openings in said body member base ends.

4,444,325
CLOSURE AND PRY-OFF RESEALABLE FINISH

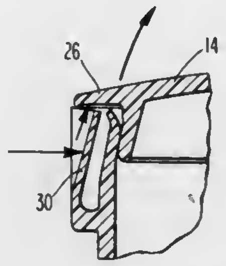
Frank H. Lecinski, Jr., Harwood Heights, Ill., assignor to Continental White Cap, Inc., Northbrook, Ill.
Filed Jul. 27, 1982, Ser. No. 402,454
Int. Cl.³ B65D *41/22*
U.S. Cl. 215—31 **8 Claims**



1. A container neck finish for receiving in pry-off relation a closure which may be resealed with said neck finish, said neck finish providing an end surface for sealing engagement by a closure, and axially below said end surface in remote spaced relation a radially outwardly projecting locking bead for locking engagement by a closure to retain such closure on said neck finish, said locking bead being spaced from said end surface by an axially elongated cylindrical surface, and the peripheral size of the exterior of said neck finish above said locking bead being greater than the peripheral size of the exterior of said neck finish below said locking bead with an upper surface of said locking bead being a camming surface and a lower surface of said locking bead being a locking surface.

4,444,326
CHILD-RESISTANT CONTAINER CLOSURE

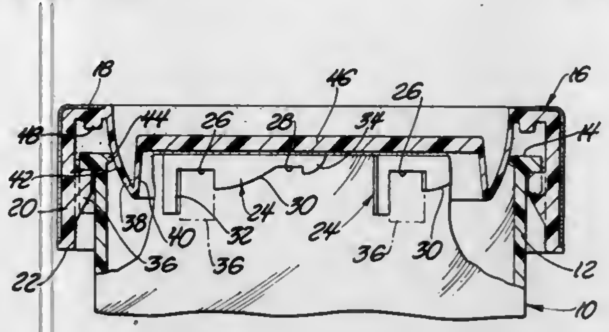
Robert J. Musel, Northfield, N.J., assignor to Wheaton Industries, Millville, N.J.
Filed Jun. 13, 1983, Ser. No. 503,877
Int. Cl.³ B65D *55/02*
U.S. Cl. 215—209 **12 Claims**



1. A container closure, the closure including a closure neck having an opening surrounded by an inner and an outer wall, and a closure cap including a skirt which matingly engages said inner wall, and a lip which extends to said outer wall, and said outer wall includes at one preselected location an inwardly deformable segment adapted to permit deformation by finger pressure inward, whereupon the underside of the lip of said closure cap is accessible for upward opening finger pressure, the improvement comprising reinforcement means to resist deformation of said closure neck and said closure cap other than at said preselected location.

4,444,327
TIGHT VIAL ASSEMBLY WITH ONE-PIECE CAP

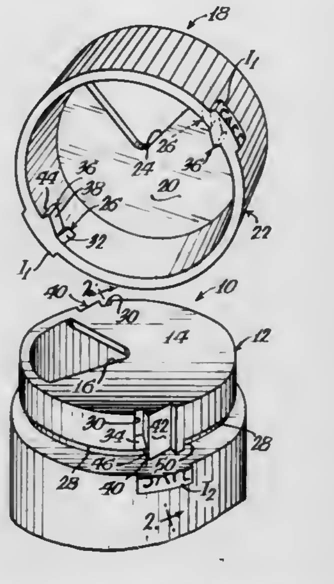
Peter Hedgewick, 3691 Victoria Blvd., Windsor, Ontario, Canada
Filed Mar. 11, 1983, Ser. No. 474,437
Int. Cl.³ B65D *55/02*
U.S. Cl. 215—211 **12 Claims**



1. A one-piece molded plastic safety cap of the type adapted to be applied to and removed from a container by axial motion followed successively by rotative motion relative to the container; said cap comprising a relatively stiff, outer annular base portion, a peripheral skirt portion projecting axially from said base portion for receiving the mouth of a container; a plurality of cap locking elements spaced peripherally from each other on the inner surface of said skirt portion for engaging complementary container locking elements on the container; a relatively thin, radially outwardly curved sealing portion joined integrally to said base portion and extending axially therefrom; a relatively stiff, inner disc-like base portion; a resilient, annular biasing portion having an inner, annular end joined integrally to the inner base portion and extending axially therefrom and an outer annular end joined integrally to the sealing portion, the sealing portion extending axially in the opposite direction therefrom; said biasing portion biasing said sealing portion to axially spaced positions, such that when the cap is placed on a container, the biasing portion biases the cap in a fixed axial sealing position relative to the container and simultaneously applies pressure to the sealing portion.

4,444,328
TAMPER-RESISTANT PACKAGING ARRANGEMENT

Henry P. Glass, Northfield, Ill., assignor to Martin Abrams, Chicago, Ill.
Filed Feb. 25, 1983, Ser. No. 469,989
Int. Cl.³ B65D *55/12*
U.S. Cl. 215—230 **12 Claims**



1. A tamper-resistant packaging arrangement, comprising:

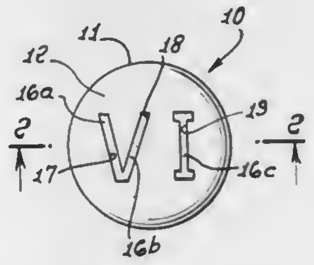
a container having a container opening;

a closure having a top wall portion defining a closure opening, and an annular skirt portion depending from said top wall portion; and

coacting means on said closure and said container for retaining said closure on said container and for initially maintaining said closure in an initially closed first position with respect to said container after application of said closure thereto, said container opening and said closure opening being out of alignment in said first position so that said too wall portion closes said container opening, said coacting means permitting relative movement of said closure from said first position to permit alignment of said closure opening and said container opening in a second open position, said coacting means preventing relative movement of said closure to said first position after movement therefrom.

4,444,329
CONTAINER CAP AND SEAL FORMATION OF INDICIA

Gary L. Vollers, 11471 Tampa Ave., No. 149, Northridge, Calif. 91326
Filed Sep. 29, 1982, Ser. No. 428,356
Int. Cl.³ B65D *53/04*
U.S. Cl. 215—230 **1 Claim**



1. An indicia presenting bottle cap assembly comprising:

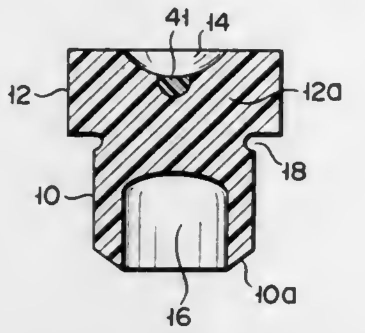
(a) a cap top wall integrally joined to a cap side wall having threading adapted to be applied to a bottle neck, the top wall having inner and outer sides,
(b) and a resinous seal in the cap and extending as a continuous layer adjacent substantially the entirety of the cap top wall inner side,
(c) the cap top wall having multiple through apertures therein and extending in multiple and different directions in a plane defined by said top wall, and the seal extending in such relation to the apertures to be visible from the cap exterior and at said apertures,
(d) the seal having protruding portions extending into said apertures but entirely confined below the level of said cap top wall outer side,
(e) said seal protruding portions in said apertures defining an alphanumeric character or characters,
(f) said apertures having walls and said seal protruding portions in said apertures being interlocked with the aperture walls,
(g) the seal being everywhere spaced from said threading.

4,444,330
MEDICAL CONTAINER STOPPER

Masaaki Kasai, Zama, and Toshiji Ichikawa, Tokyo, both of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 27, 1982, Ser. No. 402,281
Claims priority, application Japan, Oct. 2, 1981, 56-157278
Int. Cl.³ B65D *39/00*
U.S. Cl. 215—247 **14 Claims**

1. A medical container stopper for hermetically sealing an

opening of a rigid medical container, comprising an injection-moldable polymeric material containing a blend of 30 to 90% by weight of a butyl-based rubber and 70 to 10% by weight of a thermoplastic elastomer.



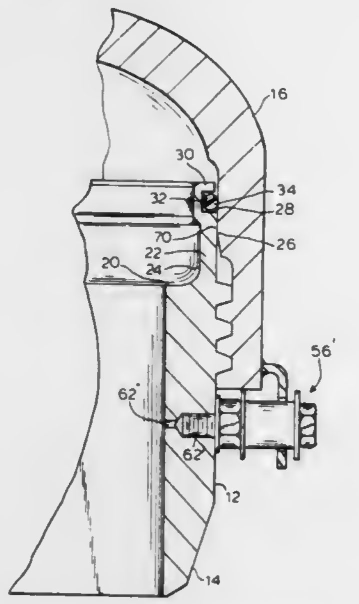
4,444,331
CLOSURE ASSEMBLY

Robert J. Lankston, Shawnee, Kans., assignor to Gulf & Western Manufacturing Co., Southfield, Mich.

Filed Nov. 8, 1982, Ser. No. 439,692

Int. Cl.³ B65D *41/04, 53/02*

U.S. Cl. 220—304 **1 Claim**



1. A closure assembly for high pressure applications comprising:

- a substantially cylindrical hollow member having a first open end adapted for attachment to a pressure vehicle and an opposing externally threaded open end and having an internal surface between the ends;
- an annular projection extending from said open end, said projection including a thin wall portion and a sealing portion mounted to a distal end of said thin wall portion, said thin wall portion being thinner than said hollow member;
- said sealing portion including an annular internal surface and an external circumferential groove defined by a shoulder, an annular external surface, and a radially extending annular flange opposing said shoulder;
- an O-ring positioned within said groove;
- said thin wall portion including substantially flat, annular internal and external surfaces positioned a selected distance from the axis of said hollow member, the annular internal surface of said thin wall portion being spaced radially outwardly from the internal surface of said hollow member;
- said radially extending annular flange having a radially outermost surface defined within the radius of said flat annular external surface;
- said annular internal surface of said sealing portion being located radially inwardly with respect to said annular internal surface of said thin wall portion; and
- a cap having a closed end and an open internally threaded end for attachment to the threaded end of said hollow member, a substantially flat annular internal surface positioned within and adjacent to said threaded end, said substantially flat annular external surface of said thin wall portion being adjacent said substantially flat annular internal surface of said cap and said O-ring making sealing contact therewith when said threaded end of said cap is secured to said threaded end of said hollow member;
- said thin wall portion capable of dilating under pressure into contact with said cap.

4,444,332
CONTAINER AND CLOSURE HAVING INTEGRAL SEALING MEANS

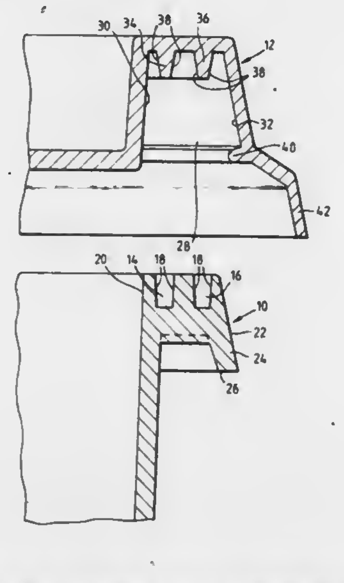
Sune Widen, Vallörtsvägen, 352 51 Växjö; Börge Jensen, Linnegatan 22, 340 14 Lagan, and Lars Björk, Hulie, 340 14 Lagan, all of Sweden

Filed Aug. 14, 1981, Ser. No. 292,939

Claims priority, application Sweden, Aug. 19, 1980, 8005819

Int. Cl.³ B65D *41/16, 41/18*

U.S. Cl. 220—306 **3 Claims**



1. In a container structure including a substantially cylindrically shaped plastic container and closure member therefore wherein the container has adjacent its open end a rim portion provided with sealing means adapted to cooperate with complimentary sealing means on a rim portion of the closure member, the improvement wherein said rim portions comprise radially extending flanges and said sealing means on said closure member comprise said flange on the closure having a substantially inverted U-shaped cross-section with a radially extending base forming inner and outer walls facing each other and tapering outwardly from said base, two annular beads extending downwardly from said base spaced from said walls and each other, the sides of said beads tapering inwardly from said base, two complimentary annular grooves in the upper surface of the container flange having downwardly inwardly tapering sides to receive said beads in sealing engagement therewith, complimentary inner and outer tapering walls on said container flange corresponding to said inner and outer walls on said closure member to be received within said U-shaped cross-section of said closure member flange with said corresponding walls in cooperating sealing engagement, the angle of taper of said sides of said beads with respect to said base of the U being greater than the angle of taper of said sides of said grooves, and the width of each bead at said base being greater than the width of the open end of each respective groove, so that when said closure member is fitted onto said container there are six tightly sealing surfaces therebetween.

4,444,333
DEVICE FOR THE VENTILATION OF A FUEL TANK, PARTICULARLY FOR A MOTOR VEHICLE

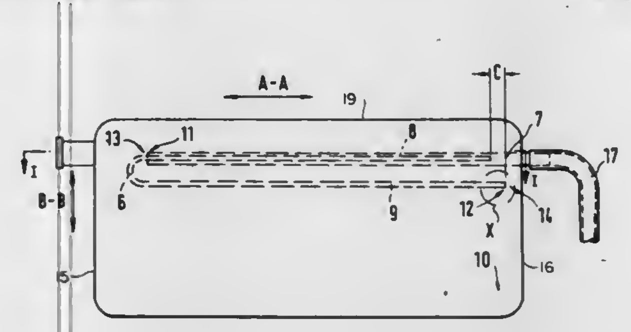
Sigmund Anhegger, Renningen, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche A.G., Stuttgart, Fed. Rep. of Germany

Filed Apr. 15, 1982, Ser. No. 368,660

Claims priority, application Fed. Rep. of Germany, May 2, 1981, 3117380

Int. Cl.³ B65D *25/00*

U.S. Cl. 220—85 S **8 Claims**



1. A device for the ventilation of a fuel tank, particularly for a motor vehicle, comprising at least two ventilation pipes which are disposed within a fuel tank in a manner extending in a transverse direction relative to an intended orientation of the fuel tank within a vehicle, said ventilation pipes having a free end and an end adjacent to an outlet pipe, one of the ends adjacent the outlet pipe connected thereto, said ventilation pipes having intake ports which are respectively disposed on the free ends of the ventilation pipes adjacent to opposite, lateral vertical boundary walls of the fuel tank, wherein said ventilation pipes comprise a first and a a second ventilation pipe, said second ventilation pipe being larger in diameter than said first ventilation pipe, the first ventilation pipe having forked pipe sections, one of which is surrounded by said second ventilation pipe, and another of which is disposed outside of the second pipe.

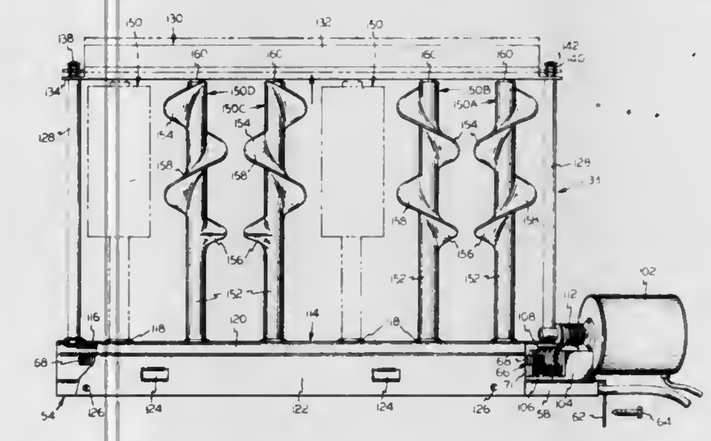
4,444,334
MODULAR DISPENSING MECHANISM FOR VENDING MACHINE

Albert L. Hughes, Jr., Mt. Pleasant, S.C., assignor to Choice Vend Industries, Inc., Windsor Locks, Conn.

Filed Aug. 4, 1981, Ser. No. 289,929

Int. Cl.³ G07F *11/36*

U.S. Cl. 221—75 **16 Claims**



1. A modular mechanism for dispensing generally cylindrical articles from a plurality of stacks contained in a vending machine, and readily mountable therein by inserting said mechanism rearwardly into a chassis portion thereof, comprising: elongated support means, including a base and an overlying support member, said support means being of substantially uniform cross-sectional configuration in all planes perpendicular to its longitudinal axis; a plurality of gear members mounted in meshing engagement with one another on said base for simultaneous rotation about parallel, generally rectilinearly aligned axes; a plurality of helical carriers vertically mounted within and fully supported by said support means and adapted to support the articles generally horizontally within their convolutions, each of said carriers being aligned on the axis of rotation of one of said gear members and having an upper helix portion and a lower helix portion, said upper helix portion being adapted to receive the articles and said lower helix portion being adapted to permit the release thereof at at least one rotational position of said carrier; means for affixing said carriers to said gear members for conjoint, coaxial rotation; a motor mounted on said support means and operatively connected to drive said gear members; and a vend limit switch in the energizing circuit of said motor, said limit switch also being mounted on said support means and being operatively connected to at least one of said gear members to cause deenergization of said motor, depending upon the position thereof, each time that the lower helix portion of any of said carriers is in one of the article-release rotational positions thereof, said mechanism being adapted, by virtue of said support means configuration and the unitary assembly thereon of said gear members, said carriers, said motor, and said switch, for quick and facile installation and removal from the machine; whereby easy replacement and ready access to the parts and assemblies of the mechanism are afforded, and whereby the articles, withdrawn from the stacks and progressively lowered within the convolutions of said carriers during rotation thereof, can be discharged in a predetermined sequence depending upon the relationship between said lower helix portions of said carriers.

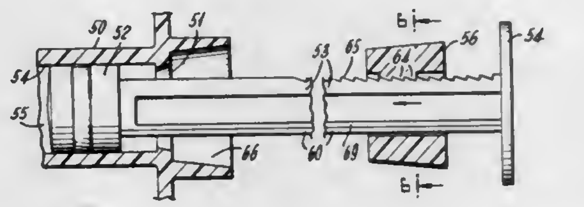
4,444,335
DELIVERY OF ADJUSTABLE QUANTITIES OF MATERIALS

William E. Wood, Hudson, Mass., and Roy A. Rosen, Woodstock, Conn., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sep. 14, 1981, Ser. No. 301,671

Int. Cl.³ G01F *11/02;* **B67D** *5/02*

U.S. Cl. 222—43 **1 Claim**



1. A delivery device comprising a housing having an outlet for material to be delivered therefrom: a plunger which can be reciprocated within said housing and means for controlling the extent of reciprocation of said plunger to regulate the amount of material expelled and delivered from said outlet wherein the controlling means is a stop means comprising an ajustably positioned collar surrounding said plunger and located externally of said housing wherein said collar includes compressible side portions to assist in fixing the adjustment position of said collar.

4,444,336
DISPENSING UNIT

Carl P. Nielsen, Hunters Hill, Australia, assignor to Burns, Philp & Company, Ltd., New South Wales, Australia

Filed Aug. 17, 1981, Ser. No. 293,724

Claims priority, application Australia, Aug. 27, 1980, PE5283

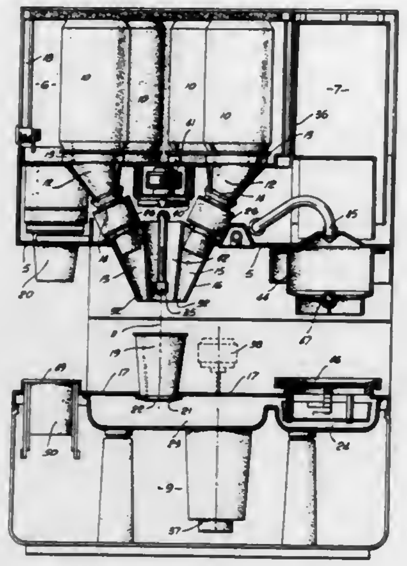
Int. Cl.³ B67D *5/56*

U.S. Cl. 222—129.4 **9 Claims**

1. Beverage dispensing apparatus for selectively dispensing a quantity of one or more of a number of dry ingradients into a receptacle for mixing with hot liquid such as water comprising:

- a plurality of hoppers arranged in a circular array,
- individual dispensing chutes extending from each hopper downwardly and inwardly in a conical array so as to dispense ingradients selected from any of said hoppers

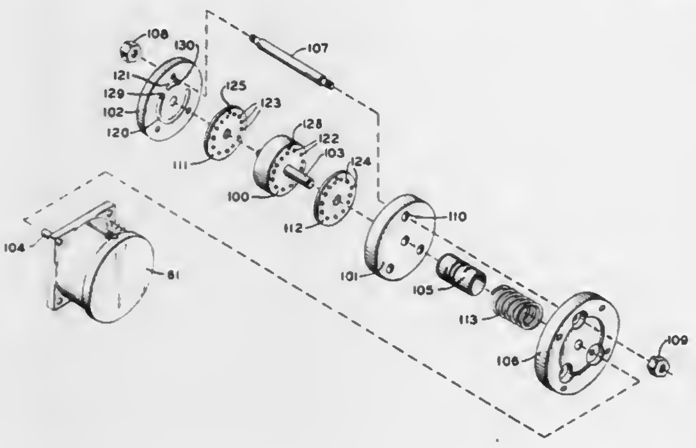
into said receptacle when it is positioned beneath the vertex of said conical array, and a dispensing cone located beneath said conical array and having a central passage and an annular region separate from said central passage,



said annular region being divided into a plurality of downwardly extending passages circumferentially spaced around said dispensing cone, each said dispensing chute discharging into one of said circumferentially spaced passages.

4,444,337
APPARATUS FOR PROPORTIONING FLUIDS

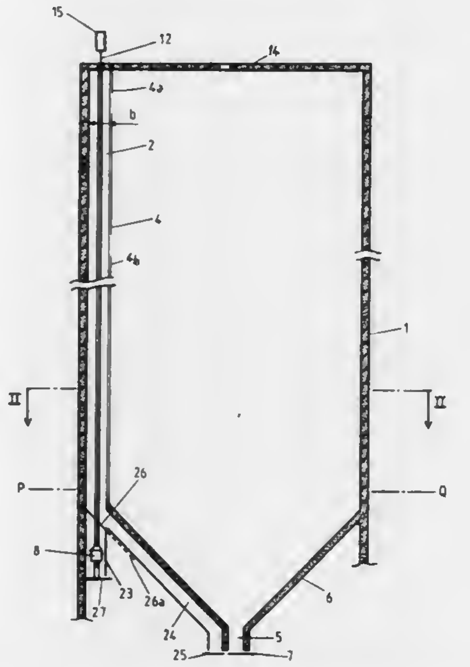
William B. Kude, Plymouth; A. Noel J. Pearman, and Daniel L. Youngbauer, both of St. Paul, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.
Division of Ser. No. 105,794, Dec. 20, 1979, abandoned. This application Jun. 8, 1981, Ser. No. 271,477
Int. Cl.³ G01N *27/26;* **B01F** *3/02*
U.S. Cl. 222—139 **13 Claims**



2. Apparatus for establishing a mixture of interest of known volumetric porportions comprising:
- a rotary proportioning system comprising at least:
  - a first inlet means adapted to connect to a source of a first component to be mixed;
  - second inlet means adapted to connect to a source of a second component to be mixed;
  - first outlet means for discharging to effluent;
  - second outlet means for discharging the mixture of interest;
  - rotatable member, said rotatable member being adapted to be continuously rotated in a desired direction and provided with a plurality of fixed hollow volumes having open accesses at the extremes thereof such that upon rotation of said rotatable member each of said volume is sequentially connected between first inlet and said first outlet and said second inlet and said second outlet, said rotatable member further comprising a cylinder provided with dual inner and outer series of spaced radially distributed openings forming a symmetrical pattern such that each inner opening is paired with a corresponding outer opening and hollow grooves connecting the bottoms of the holes in each pair forming U-shaped passages thereby; and
- wherein said apparatus further comprises a non-rotating member further comprising;
  - inner and outer pairs of parallel fixed partially annular grooves juxtaposed to and aligned with said inner and outer series of openings, each of said pairs of grooves comprising a shorter and a longer groove spaced apart and wherein the two shorter and two longer grooves are in radial alignment;
  - wherein one of said shorter grooves connects to said source of said first component and the other of said shorter grooves connects to an effluent outlet; and
  - wherein one of said longer grooves is connected with said slource of said second component and the other of said longer grooves is connected with an outlet for said mixture of interest; and
  - means for rotating said rotatable member.

4,444,338
VESSEL FOR THE STORAGE OF POWDERED OR GRANULAR PRODUCTS

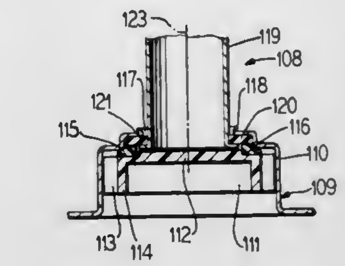
André Reimbert, 67, Boulevard de Reuilly, F-75012 Paris, France
Filed Aug. 20, 1981, Ser. No. 294,744
Claims priority, application France, Sep. 4, 1980, 80 19097
Int. Cl.³ B65D *88/54;* **B65G** *65/46*
U.S. Cl. 222—149 **12 Claims**



1. A vessel for the storage of particulate products in which a vertical discharge duct is provided on the vessel wall, said duct communicating with the interior of said vessel and having at least one discharge opening adjacent its lower end, and a duct-clearing carriage carrying a rotary disaggregating device for dislodging the stored material from the duct, said carriage being mounted for movement over a distance corresponding to the full height of the vertical discharge duct, the lower end of said duct being provided with an extension so arranged as to constitute a housing for said carriage in its out-of-service position.

4,444,339
TILTABLE VALVE EMPLOYING A MOVEABLE CUP

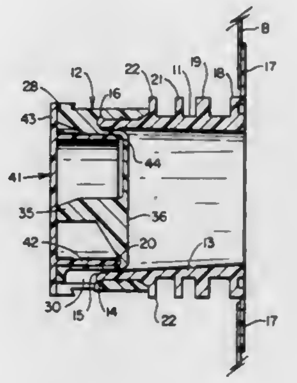
Walter Beard, South St., Middlebury, Conn. 06762
Filed Dec. 30, 1982, Ser. No. 454,710
Int. Cl.³ B65D *83/14*
U.S. Cl. 222—402.22 **16 Claims**



1. A fluid dispensing valve structure for dispensing the viscous contents of a pressurized container comprising:
- a valve mounting cup peripherally sealing securable to said pressurized container and including wall portions defining an interior valve receiving chamber with central upper and lower longitudinally spaced apertures defined therein;
- a first resilient seal member positioned around and radially adjacent said upper aperture in said valve receiving chamber;
- an elongated tubular nozzle means having a dispensing orifice in one end thereof and having a second opposed and radially outwardly flanged end extending through said upper aperture and yieldingly sealingly supported by said first resilient seal member, said second end being adapted to make seating engagement with said first resilient seal member when said tubular nozzle means is in a normally generally straight upright extended position relative to said valve mounting cup;
- a moveable valve cup means longitudinally reciprocally slidably carried within said valve receiving chamber and normally biasable into an adjacent relationship with said second end to form a seal means for normally sealing the contents of said container with respect to said valve mounting cup;
- said contents of said pressurized container being dispensable through said valve receiving chamber when said one end is tiltably displaced relative to said generally straight upright extended position by an external deflecting operating force applied thereagainst, thereby opening said seal means;
- seal moveable valve cup member including:
  - (A) a valve plate portion positioned to extend across said second end having perimeter regions,
  - (B) a second resilient seal member positioned circumferentially on at least said perimeter regions adjacent said second end arranged to make seating engagement with a region extending circumferentially around said second end said region being comprised of at least one of said first resilient seal member, said second end, and said wall portions in said valve receiving chamber, when said tubular nozzle means is in said generally straight upright extended position,
  - (C) guidance means for guiding said moveable valve cup member along said wall portions in said valve receiving chamber during said reciprocal sliding movements;
- channel means defined cooperatively by said moveable valve cup means and by adjacent portions of said walls for passage of said contents therethrough to said second end, and existing at least when said nozzle means is so tiltably displaced; and
- the interrelationship between said moveable valve cup means and said valve mounting cup being such that a substantially unobstructed flow of said contents through said valve structure occurs when said one end is so tiltably displaced.

4,444,340
SELF-SEALING DISPENSING VALVE AND SPOUT ASSEMBLY

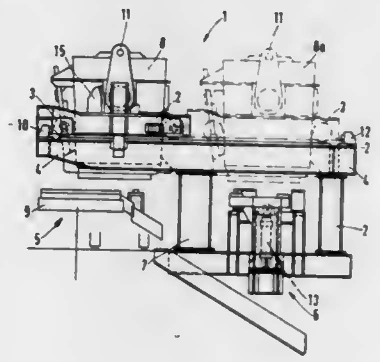
Curtis J. Bond, Marion, and John G. Ulm, Upper Sandusky, both of Ohio, assignors to Liqui-Box Corporation, Worthington, Ohio
Filed May 27, 1982, Ser. No. 382,485
Int. Cl.³ B65D *47/08*
U.S. Cl. 222—498 **8 Claims**



1. A dispensing valve and spout assembly comprising:
- an annular spout having an outer end lip; a valve member formed of resiliently flexible material and comprising inner and outer concentric walls which are joined at their outer portions but spaced apart to provide an axially opening socket for receiving the spout so that the inner wall sealingly engages the spout inwardly of its lip and the outer wall extends outwardly beyond the spout lip where an outlet opening is provided therein, said inner wall having a transverse wall connected thereto at its inner end, means on said transverse wall for flexing it and said inner wall to move it away from sealing engagement with said spout to provide a dispensing passage between said inner wall and spout to said outlet in said outer wall, and a removable sleeve insert positioned within said inner wall to hold it in sealing position with said spout; said flexing means being a lever projecting outwardly from said transverse wall, said sleeve insert surrounding said lever; said sleeve being carried by an outer disc which covers the lever and extends over the outer end of the outer wall.

4,444,341
TRANSPORTATION DEVICE FOR CONTINUOUSLY SUPPLYING MOLTEN METAL TO A CONTINUOUS CASTING PLANT

Herbert Hansen, Düsseldorf, and Rudolf Hoffmann, Krefeld, both of Fed. Rep. of Germany, assignors to SMS Schloemann-Siemag A.G., Duesseldorf, Fed. Rep. of Germany
Filed May 4, 1981, Ser. No. 259,810
Claims priority, application Fed. Rep. of Germany, May 8, 1980, 3017548
Int. Cl.³ B22D *41/12*
U.S. Cl. 222—591 **5 Claims**



1. A device for providing a continuous supply of molten

metal to a continuous casting plant, comprising: a transportation device for exchanging filled and empty ladles of molten metal, and a lifting means for carrying said filled and empty ladles to and away from said transportation device, said transportation device comprising:

a track;

a single casting ladle bogie generally of U-shaped configuration;

means for supporting said bogie on said track for movement between an operative position over an intermediate vessel, and an inoperative stand-by position for a ladle;

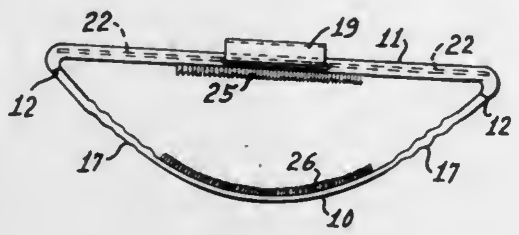
means on said bogie for removably holding a ladle; and

raising and support means for lifting a ladle from said bogie and supporting said ladle in said stand-by position free of said bogie;

wherein said bogie is disposed on said track such that the open portion of said U faces said stand-by position whereby said bogie can be moved into and out of said stand-by position while a ladle is supported in said stand-by position.

4,444,342
WAISTBAND POUCH

David J. Powell, 9252 San Jose Blvd., Jacksonville, Fla. 32217
Filed Jan. 28, 1983, Ser. No. 462,059
Int. Cl.³ A45F *5/02*
U.S. Cl. 224—252 **16 Claims**



1. A detachable waistband pouch comprising a generally rectangular pouch having a front panel and a rear panel joined along two sides and along the bottom with the top being selectively openable and closeable, a spring clip having a body comprising a back portion and a front portion joined to each other along the top edge with a spring means tending to retain the respective bottom edges in close proximity to each other, said back portion having two arms extending laterally from said spring means, said rear panel having casing means for releaseably receiving said arms with said front portion of the spring means extending outwardly of the casing means.

4,444,343
STEERING COLUMN ARTICLE HOLDER

Leon Perlsweig, 23017 Gainford St., Woodland Hills, Calif. 91364
Filed Sep. 7, 1982, Ser. No. 415,403
Int. Cl.³ B60R *7/02*
U.S. Cl. 224—276 **4 Claims**

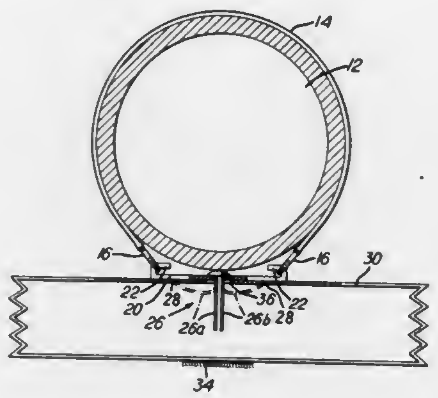
1. An article holder for mounting on a vehicle steering column or the like comprising:

an elongated stretchable band of non-scratching flexible material adapted to engage the periphery of said steering column, said stretchable band including hook means at each end thereof,

non-stretchable clip means having a pair of spaced detent means adapted to engage respective ones of said hook means on said stretchable band to retain said band under tension and in snug engagement with said steering column,

a receptacle for articles, said receptacle having an aperture in one wall thereof, and

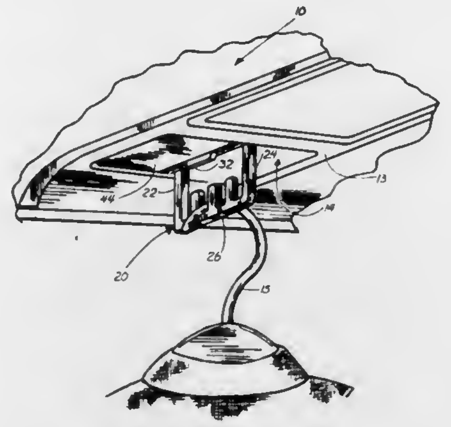
fastener means including a pair of bendable prongs adapted to be inserted through said aperture and manually bent outwardly and backwardly against the interior surface of said receptacle wall,



said receptacle including means for engaging said fastener means to prevent relative rotation between said receptacle and said clip.

4,444,344
HANGER SUPPORT

Konrad H. Marcus, and Michael J. Cody, both of Holland, Mich., assignors to Prince Corporation, Holland, Mich.
Filed Sep. 23, 1982, Ser. No. 422,075
Int. Cl.³ B60R *7/08*
U.S. Cl. 224—313 **6 Claims**



1. A support which can be mounted to a vehicle for receiving clothes hangers comprising:

a frame having brace means adapted to be secured to a vehicle roof above the vehicle headliner to define a recess in the headliner; and

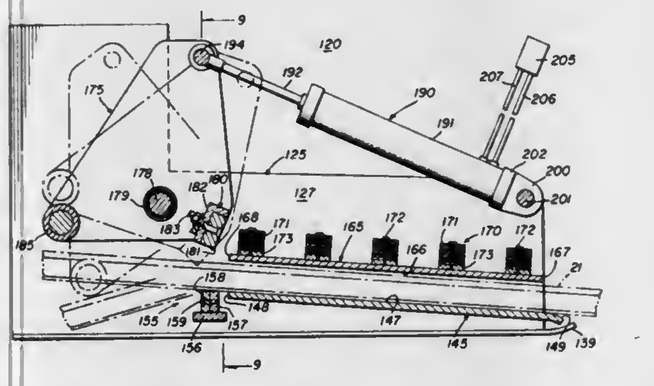
a generally U-shaped support having side legs and a cross leg, wherein ends of each of said side legs are pivotally mounted to said brace means of said frame and pivot said support between a stored position substantially flush with said frame and above the vehicle headliner and a lowered use position in which one or more clothes hangers can be hung over said cross leg extending between said side legs.

4,444,345
RAIL LIFTING AND CUTTING MACHINE

Steven P. Solomon, 2949 Harrison, Paducah, Ky. 42001, and James L. Dunaway, Grand Chain, Ill. 62941
Continuation-in-part of Ser. No. 246,409, Mar. 23, 1981, Pat. No. 4,383,630. This application Oct. 15, 1981, Ser. No. 311,657
Int. Cl.³ B26F *3/00*
U.S. Cl. 225—96.5 **3 Claims**

1. Apparatus for simultaneously removing and in situ severing of rails from a rail bed to produce a plurality of rail sections of predetermined lengths comprising a sled frame defining a rail channel having upper and lower plates, an anvil mounted on said sled frame rearwardly of and across said rail channel, hammer and blade means mounted on said sled frame movable

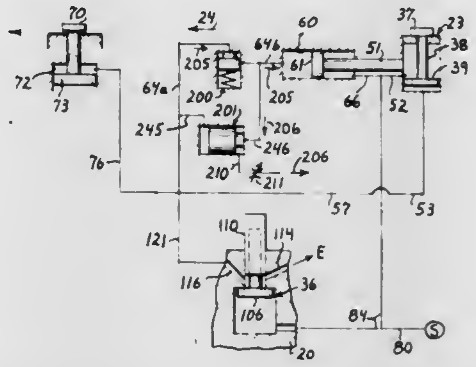
between a first position wherein said blade means is driven into the top surface of a rail positioned in said rail channel to score and weaken the rail and a second position wherein said hammer means is driven onto the rail to the rear of said anvil and said rail channel to force the rail into contact with said rail channel upper plate and thereafter to sever the rail, and control



mechanism associated with said hammer and blade means for actuating said hammer and blade means sequentially into the first and second positions thereof, whereby movement of said sled frame along the rail bed and operation of said hammer and blade means causes the rails to be lifted from the rail bed and scored and severed into predetermined lengths.

4,444,346
PNEUMATIC FEEDER FOR PUNCH PRESSES

Albert W. Scribner, 6 Country Club Rd., Darien, Conn. 06820
Filed Mar. 1, 1982, Ser. No. 353,328
Int. Cl.³ B65H *17/36, 17/44*
U.S. Cl. 226—162 **2 Claims**



1. A pneumatically operated stock feeder for intermittently advancing stock into the work station of a punch press or the like: comprising

a frame;

a feed slide reciprocally carried by said frame for movement in feed and index directions;

stock gripping means carried by said feed slide;

a main double-acting fluid motor means carried by said frame for reciprocally actuating said feed slide;

a second double-acting fluid motor means carried by said feed slide for actuating said stock gripping means between stock gripping and stock release conditions;

said main and second double-acting fluid motor means each having a head end and a rod end;

fluid conduit means adapted and arranged to enable supply pressure fluid to be continuously applied to the rod ends of both said main and second double-acting fluid motor means so as to thereby continuously bias said double-acting fluid motor means so that said stock gripping means is normally moved to a stock gripping condition and said feed slide is normally moved in a stock feed direction;

pneumatic control means for controlling the supply and exhaust of pressure fluid to and from the said head ends of both said main and second double-acting fluid motor means so that alternate index and feed strokes respectively of said feeder may be executed;

said control means including

a main normally closed three-way control valve, said main control valve including means defining an output line through which pressure fluid is adapted to be supplied and exhausted to and from the head end of said second double-acting fluid motor means on said feed slide in response to the opening and closing respectively of said main control valve;

means defining a separate exhaust line for the said head end of said main fluid motor means; a fluid pressure controlled inlet valve means shiftable between a

first open condition and a second closed condition for respectively peermitting and blocking the flow therethrough of pressure fluid during the supply and exhaust, respectively, of pressure fluid to and from the head end of said main fluid motor means, said inlet valve means being adapted to be shifted to its said first open condition in response to a flow of pressure fluid into said main valve output line whereby pressure fluid will then be supplied

(a) through said main valve output line to the head end of said second double-acting fluid motor means so as to cause said stock gripping means to move to a stock release condition, and

(b) through said inlet valve means to the head end of said main double-acting fluid motor means so as to cause said feed slide to move in an index direction,

said movements of said stock gripping means and said feed slide both taking place against the said continuous fluid biasing action at the rod ends of said second and main double-acting fluid motor means respectively so that an index stroke of the feeder is thereby executed;

a fluid pressure controlled exhaust valve means shiftable between a first closed condition and a second open condition for respectively blocking and permitting the exhaust flow therethrough of pressure fluid from the head end of said main fluid motor means to said separate exhaust line, said exhaust valve means being adapted to be shifted to its said second open condition in response to the exhaust of pressure fluid from said main valve output line, whereby pressure fluid will then be exhausted

(a) through said main valve from the head end of said second double-acting fluid motor means so as to cause said stock gripping means to move to a stock gripping condition, and

(b) through said exhaust valve means from the head end of said main fluid motor means to said separate exhaust line so as to cause said feed slide to move in a feed direction,

said last mentioned movements of said stock gripping means and said feed slide both taking place under the action of said continuous fluid biasing action so that a stock feed stroke of the feeder is thereby executed;

said exhaust valve means being disposed in its said first and second conditions when said inlet valve means is disposed in its said first and second conditions respectively; and

actuating means responsive to

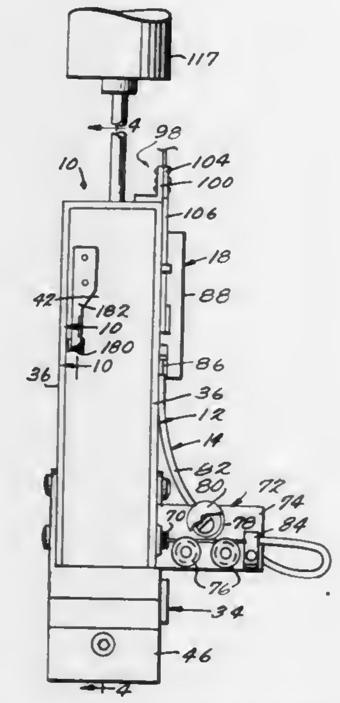
(a) the flow of pressure fluid into the said main valve output line for causing said exhaust valve means to be shifted to its said exhaust flow blocking condition, and

(b) the exhaust of pressure fluid from said main valve output line for causing said exhaust valve means to be shifted to its said exhaust flow permitting condition.

4,444,347
STAPLING DEVICE FOR USE WITH WIRE STAPLE SUPPLY

Robert E. Males, West Warwick, R.I., assignor to Textron Inc., Providence, R.I.

Filed Jan. 18, 1982, Ser. No. 340,045
Int. Cl.³ B25C *5/08*
U.S. Cl. 227—88 20 Claims



1. A stapling device for use with a staple supply in the form of a roll of wire comprising

a housing assembly,

means for supporting a roll of wire so that the wire can be unwound from the roll by extending an end portion thereof from the roll and for supporting the end portion for movement along a vertical path terminating in a horizontal path,

wire receiving means on said housing assembly for receiving an end section disposed along said horizontal path of the extended end portion of the wire,

wire feeding means mounted on said housing assembly for reciprocating movement along said vertical wire path through successive cycles each of which includes (1) a downward feeding stroke during which the end portion of the wire is moved with respect to said receiving means so that an end section thereof is received therein and (2) an upward return stroke,

wire cutting and staple forming means mounted on said housing assembly for vertical cooperative reciprocating movement with respect to said receiving means through successive operative cycles each of which includes (1) a downward cutting and forming stroke during which the end section of wire received by said receiving means is cut from said wire end portion and formed into a U-shaped staple and (2) an upward return stroke,

staple driving means mounted on said wire cutting and staple forming means for vertical reciprocating movement through successive operative cycles each of which includes (1) a downward staple driving stroke during which a U-shaped staple formed by said cutting and forming means is driven into a workpiece and (2) an upward return stroke,

a motion transmitting member mounted on said housing assembly for vertical reciprocating movement through successive operative cycles each of which includes (1) a downward operative stroke equal in vertical extend to that of the staple driving stroke of said staple driving means and (2) a corresponding upward return stroke,

means operatively connecting said motion transmitting member with said wire feeding means for moving the latter (1) through a downward feeding stroke in response to the movement of said motion transmitting member through an initial portion of its downward operative stroke of an extent less than the downward extent of said feeding stroke and (2) through an upward return stroke in response to the movement of said motion transmitting member through a portion of its upward return stroke,

said means operatively connecting said motion transmitting member with said wire feeding means comprising a lever pivotally mounted on said housing assembly, a pin and slot connection between said lever and said feed member, a latch mounted on said motion transmitting member for movement therewith and for movement with respect thereto between a lever engaging position and a lever releasing position and means operable to effect movement of said latch between said lever engaging position and said lever releasing position during the feeding stroke and return stroke of said motion transmitting member so that said latch is disposed in said lever engaging position only during said initial portion of the downward stroke of said motion transmitting member and a corresponding final portion of the return stroke of said motion transmitting member,

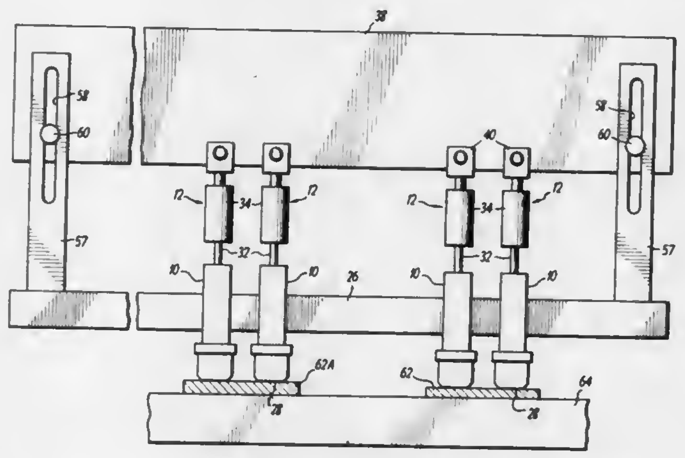
means operatively connecting said motion transmitting member with said wire cutting and staple forming means for moving the latter (1) through a downward cutting and forming stroke in response to the movement of said motion transmitting member through an intermediate portion of its downward operative stroke of a vertical extent equal to the vertical extent of said cutting and forming stroke so that after an end section of wire has been moved into received relation with said wire receiving means by said wire feeding mean it is cut therefrom and formed into a U-shaped staple thereby and (2) through an upward return stroke in response to the movement of said motion transmitting member through a portion of its upward return stroke, and

means for operatively connecting said motion transmitting means with said staple driving means for moving the latter (1) through a staple driving stroke in response to the movement of said motion transmitting member through its downward operative stroke so that during the final portion thereof a cut and formed staple is driven into the workpiece and (2) through an upward return stroke in response to the movement of said motion transmitting member through its upward return stroke.

4,444,348
COMPENSATING NAIL CHUCK

Alexander M. Campbell, Jr., Fredricksburg, Va., assignor to Campbell Atlantic, Inc., Ladysmith, Va.

Filed Feb. 22, 1982, Ser. No. 350,855
Int. Cl.³ B25C *7/00*
U.S. Cl. 227—149 8 Claims



1. A compensating nail chuck system which compensates for boards of different thicknesses to thereby allow a plurality of nail chucks to simultaneously nail adjacent boards of different thicknesses to a common board, the nailing chuck system comprising:

a plurality of holding means, each for holding a nail in a proper attitude for driving;

a chuck bar having said plurality of holding means mounted thereon said chuck bar including a support means for engaging a driving head and providing relative sliding motion between said chuck bar and said driving head;

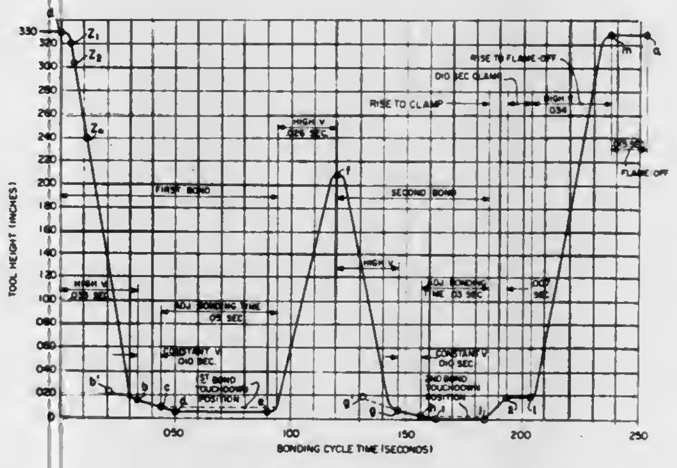
mounting means for mounting said plurality of said holding means on said chuck bar but allowing each of said holding means to have independent lost motion relative to said chuck bar, said lost motion for each holding means not occuring until the respective holding means contacts a board to be nailed whereby as each holding means contacts a board, its motion toward the board stops while the chuck bar, and other holding means not yet in contact with boards, continue to move toward boards until all holding means come to rest on their respective boards;

an elongated driving rod for each of said holding means passing through its respective holding means, said rod having a first rod end portion for impinging on a head of said held nail to drive the opposite nail end into a respective board once said holding means is in contact with its respective board and a second rod end portion for receiving a driving force from said driving head, said driving rod including beween said first and second rod end portions a force transmitting member for transmitting driving energy from said driving head to said nail, but for yielding and thereby allowing said driving rod to significantly compress in size in response to a back force created by driving said nail.

4,444,349
WIRE BONDING APPARATUS

Glenn B. Bilane, Huntington Valley; Lawrence M. Rubin, Coatesville; Albert Soffa, Wynnewood, and Dan Vilenski, Hatboro, all of Pa., assignors to Kulicke & Soffa Industries, Inc., Horsham, Pa.

Division of Ser. No. 260,352, May 4, 1981, which is a division of Ser. No. 902,916, Nov. 22, 1978, Pat. No. 4,266,710. This application May 11, 1982, Ser. No. 377,452
Int. Cl.³ H01L *21/58*
U.S. Cl. 228—102 5 Claims



1. A method of setting the high speed limits of travel of a wire bonding tool for a wire bonder of the type having a processor controlled Z drive motor, comprising the steps of:

moving the bonding tool downward to engage a wire bonding target on a semiconductor,

sensing the first point of engagement of said bonding tool with said semiconductor to establish the bonding position,

recording said sensed first point of engagement in said processor,

calculating a tolerance inflection point at a predetermined distance from said first point of engagement representative of the start of constant velocity approach to said bonding position,

raising said bonding tool,

lowering said bonding tool downward to engage a fixed member,

sensing the second point of engagement of said bonding tool with said fixed member,

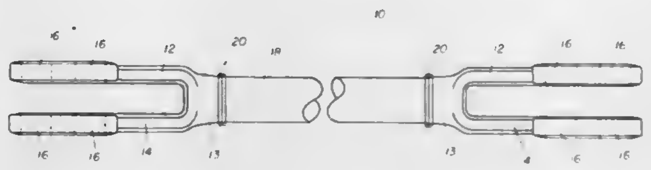
recording said sensed second point of engagement of said bonding tool with said fixed member, and

calculating a reset point at a predetermined distance from said second point of engagement representative of the start of rapid acceleration approach to said second bonding position.

4,444,350
METHOD OF MANUFACTURING BRAKE RODS

Donald L. Crummett, Joshua, Tex., assignor to Halliburton Company, Duncan, Okla.

Continuation of Ser. No. 244,199, Mar. 16, 1981, abandoned. This application May 16, 1983, Ser. No. 494,678
Int. Cl.³ B23K *27/00*
U.S. Cl. 228—112 4 Claims



1. A method of making a brake rod for a railcar, said brake rod including brake jaws interconnected by a rod portion, said method comprising the steps of:

selecting a rod means;

cutting the rod means to a desired length thereby forming a rod portion;

selecting said brake jaws, each brake jaw including a shank having a plurality of lugs secured thereto, each lug having aperture means therein;

inertia welding shanks of said brake jaws to opposite ends of the rod portion thereby forming a brake rod having brake jaws interconnected by the rod portion;

removing said brake rod from the location where the inertia welding step occurred;

placing said brake rod into a fixture;

securing a brake jaw secured to one end of the rod portion from movement after placing said brake rod into the fixture;

heating at least a portion of the rod portion of the brake rod and brake jaws;

aligning the lugs of the brake jaw secured to one end of the rod portion into generally parallel relationship with respect to the lugs of the brake jaw secured to the other end of the rod portion by rotating a portion of the rod portion of the brake rod and brake jaws which have been heated in the heating step;

removing said brake rod from the fixture; and

checking the alignment of the lugs of the brake jaw secured to one end of the rod portion with respect to the alignment of the lugs of the brake jaw secured to the other end of the rod portion by inserting said brake rod onto a fixture having pins which mate with the apertures in the lugs of the brake jaws to ensure that the lugs of the brake jaws are in a generally parallel relationship wherein a horizontal plane passing through each lug of one brake jaw of said brake rod is within substantially three degrees of alignment of a horizontal plane passing through each lug of another brake jaw of said brake rod.

4,444,351

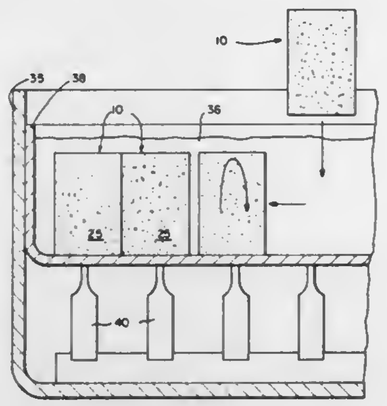
METHOD OF SOLDERING METAL OXIDE VARISTORS

Paul P. Dries, Janesville; Christopher J. Kulis, Caledonia, and Theodore O. Sokoly, Greenfield, all of Wis., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Nov. 16, 1981, Ser. No. 321,732

Int. Cl.^{3} B23K *1/06*

U.S. Cl. 228—121 **7 Claims**



1. A method of electrically interconnecting a plurality of varistor bodies formed predominantly of metal oxide, comprising the steps of: applying molten solder to receiving surfaces provided on opposite sides of each said varistor body, subjecting said applied molten solder to vibrations of from 5,000 to 35,000 hertz whereby the solder strongly adheres to the receiving surfaces, and soldering a plurality of said varistor bodies to one another along their respective receiving surfaces to electrically interconnect said varistor bodies, said varistor bodies each having a pair of receiving surfaces on opposite sides thereof and an intermediate surface area extending between said receiving surfaces, said method including a preliminary masking step in which said intermediate surface of each said varistor body is masked to prevent solder from adhering to said intermediate surface area during subsequent steps in said method, said masking step including coating said intermediate surface area of each of said varistor body with solder inhibitor means for preventing adherence of solder to said varistor body thereby producing a masked varistor body, the subsequent steps in said method serving to electrically interconnect a plurality of said masked varistor bodies.

4,444,352

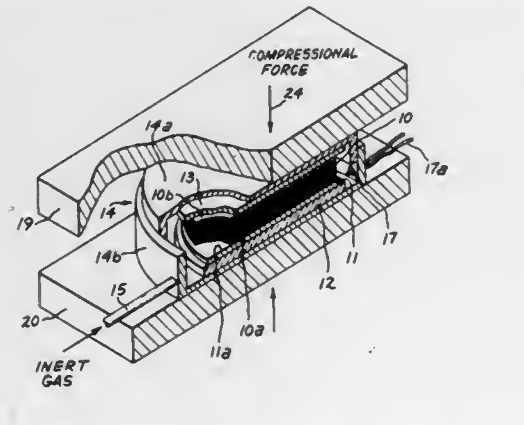
METHOD OF THERMO-COMPRESSION DIFFUSION BONDING TOGETHER METAL SURFACES

Homer H. Glascock, II, and Harold F. Webster, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 17, 1981, Ser. No. 302,950

Int. Cl.^{3} B23K *20/02, 20/14*

U.S. Cl. 228—193 **29 Claims**



1. An improved method of thermo-compression diffusion bonding a first metal surface of a first article of metal to a second metal surface of a second article of metal, said second article of metal comprising a metalized layer on a semiconductor device, the improved method comprising the steps of:

(a) exposing said first and second metal surfaces to an inert atmosphere;

(b) heating said first and second articles of metal to a desired maximum temperature for thermo-compression diffusion bonding;

(c) pressing together said first and second metal surfaces to a desired maximum pressure, said pressing together occurring only after said first and second articles of metal have reached substantially said desired maximum temperature; and

(d) cooling from substantially said desired maximum temperature said first and second articles of metal, said cooling step occurring independently of said pressing together step.

4,444,353

BRAZING FILLER METAL COMPOSITION AND PROCESS

John H. McMurray, Stratford, and Jule Miller, Derby, both of Conn., assignors to Avco Corporation, Stratford, Conn.

Division of Ser. No. 281,794, Jul. 9, 1981, Pat. No. 4,379,121. This application Oct. 21, 1982, Ser. No. 435,732

Int. Cl.^{3} B23K *1/04*

U.S. Cl. 228—231 **8 Claims**

1. A vacuum brazing process comprising (a) applying a brazing filler metal composition to a subject base metal to form joints, said filler metal composition comprising, by weight, from about 3.0% to about 4.0% chromium, from about 1.0% to about 2.0% boron; from about 2.0% to about 2.5% silicon; from about 1.0% to about 2.0% iron; from about 5.0% to about 6.0% phosphorus; a maximum of about 0.06% carbon; and the remainder nickel, and said subject base metal having a higher melting point than the filler metal composition; (b) heating to the brazing temperature of the filler metal composition and (c) cooling.

4,444,354

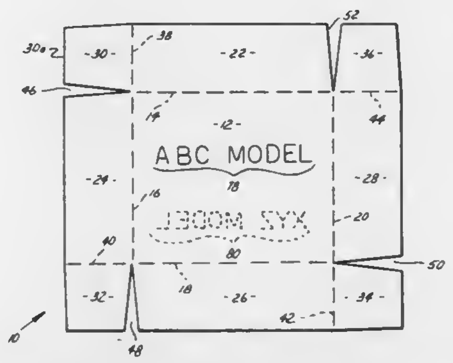
TRAY WITH TELESCOPING COVER FORMED FROM IDENTICAL BLANKS

Daniel H. Staelgraeve, 435 Ruff Dr., Monroe, Mich. 48161

Filed Jul. 12, 1982, Ser. No. 397,323

Int. Cl.^{3} B65D *5/20;* G09F *23/10*

U.S. Cl. 229—23 BT **21 Claims**



1. Packaging comprising two package halves telescopically engaged, each half comprising a main end wall and a sidewall, said halves being fabricated from flat blanks having congruent perimeters, each half having a set of boundary lines defining the perimeter of its main end wall, the sets of boundary lines of the two halves being congruent, each half having its own sidewall folded about its own main end wall's set of boundary lines, each sidewall comprising sidewall segments meeting at corners, said sidewall segments joining together at each corner by means of a flap integral with a sidewall segment and overlapping and secured to an adjacent sidewall segment, the nature of the telescopic engagement of the two halves being such that all corners of one of said two halves are disposed within the interior of the other of said halves, the telescopic engagement being provided by the flaps of said one half having a greater amount of overlap with the adjacent sidewall segments which they overlap and are secured to than do the flaps of said other half with the adjacent sidewall segments which they overlap and are secured to.

4,444,355

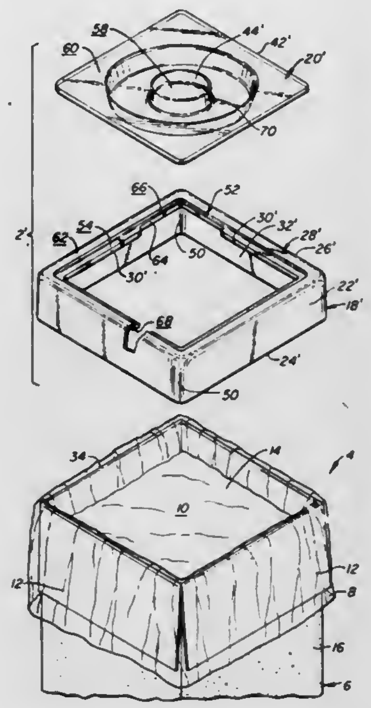
CONTAINER COVER ASSEMBLY

Robert S. Cary, 120 N. Hunter St., Stockton, Calif. 95202

Continuation-in-part of Ser. No. 240,044, Mar. 3, 1981, abandoned. This application Nov. 18, 1982, Ser. No. 442,693

Int. Cl.^{3} B65D *5/68, 43/06*

U.S. Cl. 229—43 **5 Claims**



1. A container cover assembly for use with a container having a circumferential sidewall terminating in an open end, said open end defined by a rim, comprising:

a frame having a downwardly extending circumferential side, said side having upper and lower edges, said side sized for engagement around said open end to circumscribe said open end and lie adjacent said sidewall of said container;

said frame having an inwardly extending lip portion supporting said frame on said rim, said lip portion having an inner edge defining an access opening to said container, said access opening sized so that a substantial portion of the open end of said container is free from overlying material;

said inner edge including a set-back portion directly overlying the container rim to allow the contents of the container to be scooped out of the container; and

a lid adapted for removable engagement with said frame and sized to completely cover said access opening.

4,444,356

WINDOW ENVELOPE MODIFIER

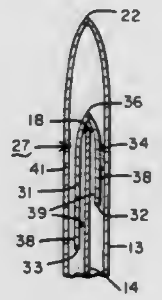
Walter L. Hays, 1800 Berkeley Ave., St. Paul, Minn. 55105

Filed Dec. 30, 1981, Ser. No. 335,823

Int. Cl.^{3} B65D *27/04*

U.S. Cl. 229—71 **3 Claims**

1. A window envelope modifier for selective manual insertion is previously manufactured standard window envelopes of various sizes at the time of and for the purpose of inserting and positioning a document of smaller size, i.e. having longitudinal and vertical outer edges at least one of which is shorter, when such document is prepared for mailing with the address of the recipient shown thereon, than the corresponding inside dimension of such a standard window envelope, such envelope having a window opening through which the address on said document is to be maintained in an externally visible position when the document is placed in such standard envelope with at least one of its longitudinal and vertical edges aligned and in engagement with the corresponding inside edge of the window envelope, said modifier being adapted for use when such a standard window envelope has at least one pair of opposite longitudinal and vertical inside edges spaced substantially farther apart than the spacing between the corresponding aligned edge and opposite edge of the document in a direction perpendicular to said aligned edge to an extent permitting possible undesired relative movement of the document between said inside envelope edges and a resulting loss of full visibility of the recipient's address through the window opening of the envelope, said modifier comprising a flat body portion having a construction and shape adapted for manual insertion in the standard window envelope to overlie a portion of the document opposite said aligned edge, and said modifier having retaining means for holding said document with its one edge in such aligned engagement, said retaining means including a strip of precoated adhesive on one surface of said flat body portion, said adhesive strip being positioned on said body portion at a location for selective engagement with at least one of said document and standard window envelope members to prevent shifting of the document away from the aligned inner edge of the envelope to a location where the address is not fully visible through the window opening, a removable cover strip initially adhered to and protecting said precoated adhesive strip and manually removable therefrom to expose the adhesive strip for use, said body portion being formed of sheet material having means providing a premarked fold line for folding the body portion on itself in one direction to provide opposed inner surfaces connected by a folded edge section for receiving the document edge which is opposite to such an aligned document edge and to provide opposite outer surfaces for gripping engagement to hold such aligned document edge temporarily within the folded edge for insertion of the modifier and document into aligned position inside the window envelope, and said precoated adhesive strip being positioned on the body portion parallel to said premarked fold line on the surface which is to constitute one of the opposite outer surfaces of the folded modifier for adhesive engagement with an inner surface of the envelope when the modifier and document have been inserted therein to such aligned position.



4,444,357

DIFFERING-TEMPERATURE LIQUID-MIXING APPARATUS AND METHOD USING PULSED, DUTY-CYCLE TEMPERATURE CONTROL

M. Dee Lynch, Beaverton, and James W. Bernklau, Tigard, both of Oreg., assignors to Quadratec Associates, Beaverton, Oreg.

Filed Feb. 9, 1982, Ser. No. 347,103

Int. Cl.^{3} G05D *23/00*

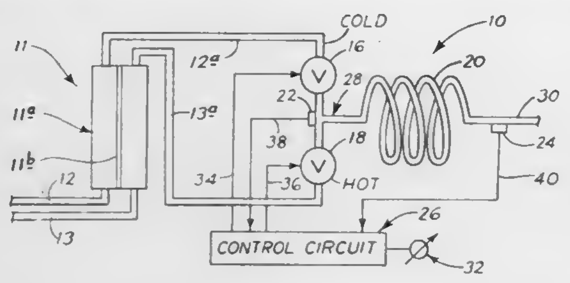
U.S. Cl. 236—12.12 **3 Claims**

1. Apparatus for supplying from two liquid input streams which are at different temperatures, an output stream with a regulated temperature which is intermediate the different temperatures, said apparatus comprising:

valve means having inlets compleable to receive liquid from the two input streams, and an outlet adapted to supply the output stream, said valve means being electrically switchable between two different mutually exclusive, operating states, in each of which liquid is permitted to flow to said outlet from a different one-only of said two inlets, a changeable-electrical-characteristic temperature sensor located immediately adjacent said outlet for exhibiting a readable electrical characteristic which is directly relatable to the temperature of liquid flowing from the outlet,

circuit means, including temperature-setting means, operatively interposed between said valve means and said sensor for actuating the former in response both to the setting of said temperature-setting means, and to the value of the read characteristic of the latter, the actuation producing pulsed, substantially constant-temperature liquid flow from said outlet as determined by the setting of said temperature-setting means, and being characterized by a fixed operating interval with a variable internal duty cycle, where changes in duty cycle effect temperature control,

elongated, high thermal conductivity, heat-exchanging fluid conduit means having a feed end coupled to said outlet, and a discharge end remote from said outlet, said conduit means being adapted to receive an output stream from said outlet, and to accommodate continuous, heat-exchanging flow of the output stream toward the conduit means' said discharge end, and



a second changeable-electrical-characteristic temperature sensor, located immediately adjacent said discharge end for exhibiting a readable electrical characteristic which is directly relatable to the temperature of liquid flowing from said discharge end and which is connected operatively to said circuit means, and wherein said circuit means, in addition to responding to the respective conditions of said first-mentioned sensor and said temperature-setting means, also responds to the condition of said other sensor vis-a-vis actuating said valve means.

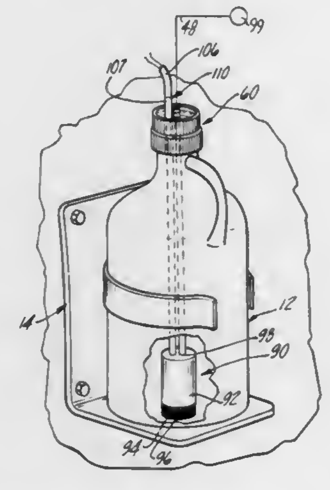
4,444,358
FLUID RESERVOIR AND CONNECTOR

Daniel M. Spohn, 8451 Miller Rd., Box 28, Swartz Creek, Mich. 48473, and Brian A. Snyder, 920 Copeman Blvd., Flint, Mich. 48504

Continuation-in-part of Ser. No. 113,458, Jan. 21, 1980, abandoned. This application May 6, 1981, Ser. No. 260,918

Int. Cl.^{3} B60S *1/50*

U.S. Cl. 239—284 R **16 Claims**



1. A windshield washer solvent supply for vehicles having an engine compartment, a washer fluid pump having an inlet and an outlet, and a conduit directed to expel fluid toward the windshield, said supply comprising:

a washer fluid reservoir wherein said reservoir is a container in which the washer fluid is readily purchased at wholesale or retail and includes a cylindrical neck with a diameter substantially equal to one of at least two diameters;

a support bracket having means for releasably securing said container to said bracket;

means for securing said bracket to a wall in the engine compartment of the vehicle;

a connector means for fluidly connecting the interior of the container with the pump inlet, said connector means having a first neck engaging means and a second neck engaging means, wherein said first neck engaging means is appropriately dimensioned to securely engage said neck having said one diameter, and wherein said second neck engaging means is appropriately dimensioned to securely engage a neck having at least another of said at least two diameters;

wherein said connector means comprises at least one tubular wall portion and a circular wall portion substantially closing one end of each said at least one tubular wall portion, said circular wall portion having a first throughbore and a second throughbore;

a tubular coupling inserted through said first throughbore;

a first conduit member connected at one end to one end of said tubular coupling and at its other end connected to said pump inlet; and

a second conduit member connected at one end to the other end of said tubular coupling and having its other end in fluid communication with the interior of said fluid container near the bottom of said container.

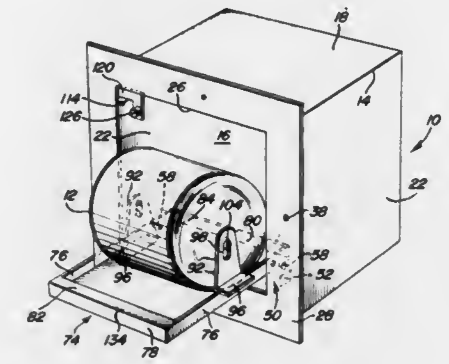
4,444,359
TOILET ROLL RECEPTACLE

Jack B. Butler, P.O. Box 1699, Kilgore, Tex. 75662

Filed Jul. 2, 1982, Ser. No. 394,791

Int. Cl.^{3} B65H *19/00*

U.S. Cl. 242—55.53 **10 Claims**



1. A toilet roll receptacle for containing a roll of toilet tissues, the receptacle comprising a body portion providing an enclosure formed by top, bottom, side and back walls and open at the front, a door covering said open front, a hinge connection securing the door pivotally to said side walls and the hinge connection being positioned along the sidewalls intermediate a midpoint of the sides of the door and an extremity thereof for matingly engaging with side elements of the door, support means for said roll of toilet tissues and including a flanged base having opposite side arms extending from said base, means securing said base onto a portion about said midpoint of the sides of the door, and stop means mounted at each end of the path traversed by the door for receiving impactment and thereby limiting further displacement of the door.

4,444,360
WEB SEVERING APPARATUS IN A WEB WINDING MACHINE

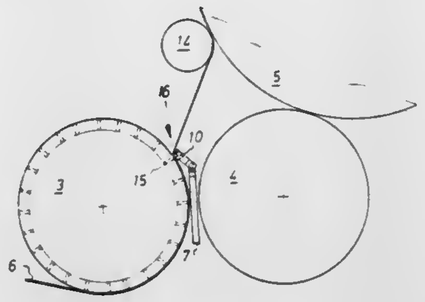
Walter Kaipf, Haunsheim, and Herbert Ulmer, Heidenheim, both of Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Mar. 2, 1982, Ser. No. 353,979

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1981, 3109587

Int. Cl.^{3} B65H *19/20*

U.S. Cl. 242—56 R **7 Claims**



1. In a web winding machine in which a spool on which a web is wound is supported by at least a pair of support rollers with the web fed through a space formed between the support rollers and the spool from around at least a portion of the peripheral surface of one support roller and having an apparatus for severing the web, the improvement comprising:

a support member;

web tearing means mounted on the support member on a side thereof to face arriving web;

web holding means mounted on the the support member in proximity to the web tearing means on said side thereof;

said support member with said web tearing means and said web holding means being operatively positioned in the space between the support rollers and the spool;

means for moving the support member with said web tearing means and said web holding means between a position enabling said web to feed and a web severing position where said web holding means presses the web against said portion of the peripheral surface of said one support roller without requiring a lifting away of the spool;

said web tearing means being so located relative to the web holding means as to be spaced a predetermined distance from the peripheral surface of said one support roller when moved to said web severing position so as to enable said web to be severed when a wound spool is being moved away from the support roller against which the web holding means presses the web.

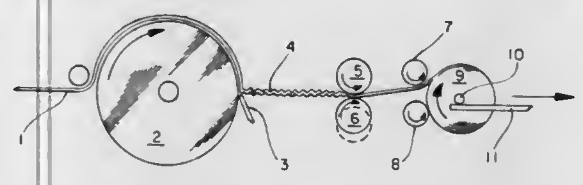
4,444,361
VERTICALLY-ORIENTED, CLOSELY-COUPLED, TWO-DRUM REEL CALENDER

David A. Nuttall, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Apr. 19, 1982, Ser. No. 369,678

Int. Cl.^{3} B65H *17/08*

U.S. Cl. 242—65 **6 Claims**



1. In a process for manufacturing creped wadding wherein a creped web is dislodged from a creping cylinder and wound onto a reel spool, the improvement comprising:

(a) calendering the creped web directly after leaving the creping cylinder between a single pair of vertically-oriented, independently driven calender rolls; and

(b) winding the calendered web onto a reel spool driven by a pair of independently driven, vertically-oriented reel drums which are closely coupled with said calender rolls, such that the web passes between the two reel drums prior to being wound onto the reel spool.

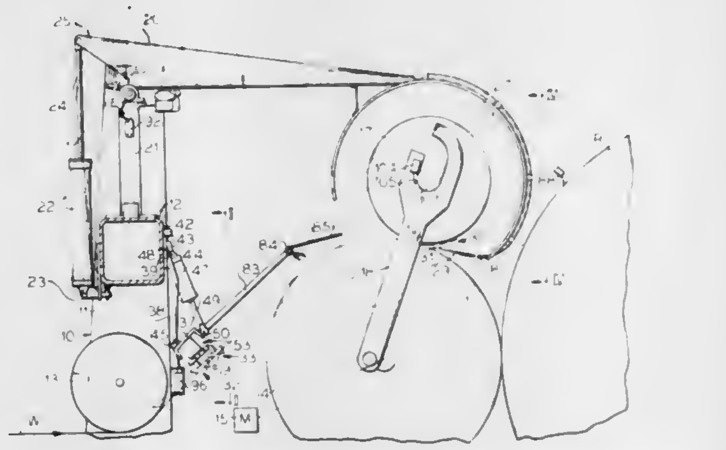
4,444,362
APPARATUS AND METHOD FOR STARTING SUCCESSIVE LEADING ENDS ON TRAVELLING WEB IN A WINDER

Gerald W. Karr, South Beloit, Ill., assignor to Beloit Corporation, Beloit, Wis.

Filed Mar. 5, 1982, Ser. No. 355,234

Int. Cl.^{3} B65H *35/04*

U.S. Cl. 242—56.6 **20 Claims**



1. In apparatus for winding web running continuously in a machine direction into successive rolls, and including means for starting winding of a respective leading end of the web onto a respective fresh rotating core for each successive roll while maintaining continuous running velocity of the web and continuous winding velocity of the immediately preceeding roll to completion of the winding thereof:

slitting means located upstream from said fresh rotating core and said immediately preceeding roll;

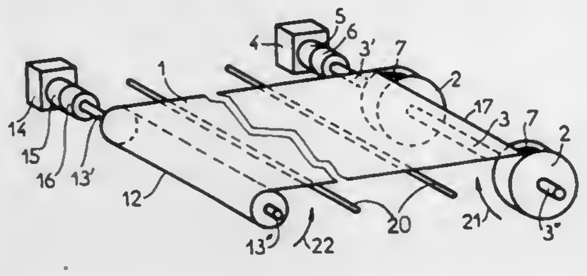
means for operating said slitting means, after a preceeding roll has been wound to a desired diameter, for starting a fresh leading end on the upstream length of the continuously running web by slitting the web, while still attached to the downstream length of the web which is being wound onto said preceeding roll, in a generally oblique cross-machine direction from the tip of a leading starter tongue projection extending downstream toward said fresh rotating core, and for thereby progressively separating the fresh leading end from the length of web wound on said preceeding roll;

said winding starting means being adapted for directing said starter tongue projection, after said tip reaches said core, with said fresh leading end into winding relation onto the fresh rotating core for winding of the upstream length of the web into another roll;

and said slitting means being coordinated to complete severing of said downstream length of the web from said leading end after winding of said starting tongue projection is started on said fresh rotating core.

4,444,363
DEVICE FOR DRIVING A FLEXIBLE PROTECTION WEB ROLLED UP ON A SHAFT

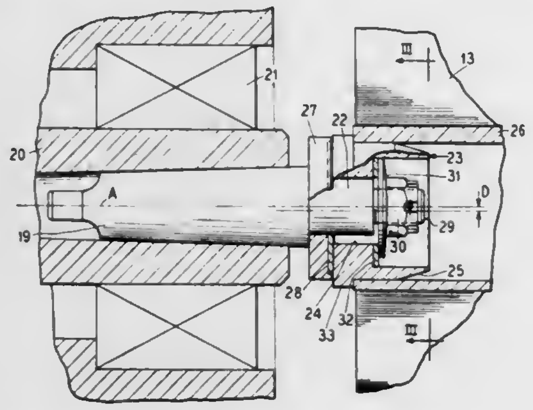
Dominique Jacquel, Marnaz; Louis Plumer, Caen, both of France, and Henri Giust, Gaggiano, Italy, assignors to Somfy, Cluses, France
Filed Mar. 10, 1982, Ser. No. 356,779
Claims priority, application France, Mar. 24, 1981, 81 05821
Int. Cl.^{3} B65H *17/02*
U.S. Cl. 242—67.4 5 Claims



1. Apparatus comprising a flexible protection element, a winding shaft for supporting the flexible protection element in the form of a roll, at least one winding drum, mounted in spaced-apart relation to the winding shaft, at least one flexible bond secured to a free end of the flexible protection element and also to the winding drum, a pair of electric motors, a pair of reversible reduction gears connecting the two motors respectively to the winding shaft and winding drum, one motor being adapted to rotate in one direction for rolling up said flexible bond on said winding drum and the other motor being adapted to rotate in one direction for rolling up said flexible element on said winding shaft, a pair of electromagnetic brakes of the type operating by current deficiency respectively operatively associated with the motors, and control means for energizing either one of said pair of electric motors and simultaneously energizing and thereby releasing both of said electromagnetic brakes.

4,444,364
SELF-ALIGNING CORE CHUCK

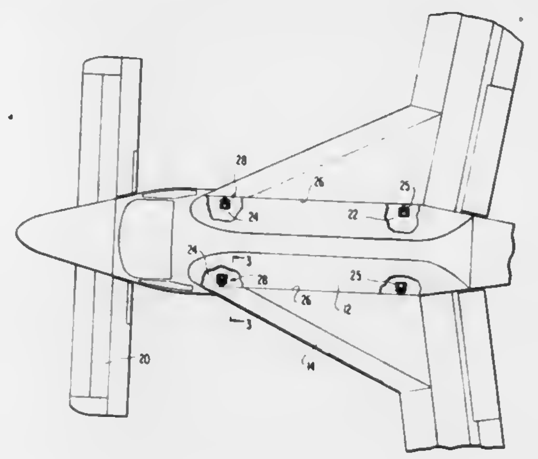
Carl B. Dahl, Rockton, Ill., and Roy A. Langdon, Beloit, Wis., assignors to Beloit Corporation, Beloit, Wis.
Filed Jan. 29, 1982, Ser. No. 344,000
Int. Cl.^{3} B65H *17/12*
U.S. Cl. 242—68.3 4 Claims



1. A chuck assembly adapted for insertion into an open-ended core of a paper windup roll comprising:
- a shaft having an axis coinciding with the desired axis of rotation of said core,
- bearing means supporting said shaft for rotation therein,
- a stub shaft forming an extension of said shaft and having a reduced diameter threaded end portion,
- a chuck having an axial bore into which said stub shaft extends, said axial bore being sufficiently larger than the diameter of said stub shaft so as to permit some limited relative movement therebetween, said chuck having a tapered end portion arranged to be received in wedged relation in the open end of said core,
- a ring through which a portion of said stub shaft extends,
- a first low friction thrust washer disposed between one face of said ring and the rearward end of said chuck,
- a resilient annular spring mounted over said threaded end portion,
- a second low friction thrust washer seating against one face of said annular spring, and
- tensioning means for applying an adjustable tension on said annular spring.

4,444,365
DOUBLE CAM MOUNTING ASSEMBLY FOR MOUNTING AN AIRCRAFT WING TO A FUSELAGE TO PROVIDE AN ADJUSTABLE ANGLE OF ATTACK

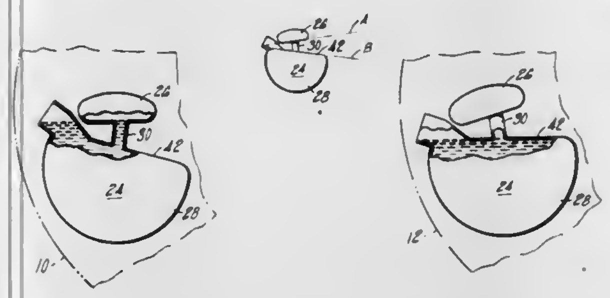
Lawrence K. Heuberger, Reno, Nev., assignor to Omac, Inc., Reno, Nev.
Filed Nov. 25, 1981, Ser. No. 324,894
Int. Cl.^{3} B64C *3/38, 1/26;* **F16D** *1/12*
U.S. Cl. 244—48 4 Claims



1. A double cam mounting assembly for mounting an aircraft wing to an aircraft fuselage to permit limited adjustment in the angle attack of the wing, said wing being cantilever mounted at its inboard end to the side of the aircraft fuselage at spaced forward and aft locations relative to the confronting side of the fuselage, the improvement wherein said double cam mounting assembly mounts said wing at one of said forward or aft wing locations and comprises:
- first and second bracket members mounted respectively to said wing and said fuselage and having projections projecting outwardly from the base of said bracket members at right angles to the longitudinal axis of the aircraft fuselage with said projections overlapping each other in side by side fashion,
- circular holes being provided within respective projections,
- a pin projecting longitudinally through the holes of said bracket members,
- first and second circular cam means carried by said pin, sized to and disposed within respective holes of said bracket members, and
- means for adjusting the angular position of said first and second cam means relative to each other to selectively raise and lower the aircraft wing at one of said aft and forward locations relative to the other of said locations and to thereby vary the angle attack for the wing,
- and wherein said first cam means comprises a first eccentric integral with said pin, and wherein said second cam means comprises a rotatable bushing carried by said pin to the side of said first cam means and bearing an eccentric,
- and wherein said assembly further comprises means for independently locking said first and second cam means at given angularly adjusted positions.

4,444,366
OIL TANK FOR AIRCRAFT

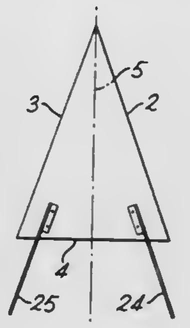
Anthony F. Limoncelli, Marlborough, Conn., assignor to United Technologies Corporation, Hartford, Conn.
Filed Feb. 25, 1982, Ser. No. 352,486
Int. Cl.^{3} B64D *37/02;* **B65D** *6/02*
U.S. Cl. 244—135 R 4 Claims

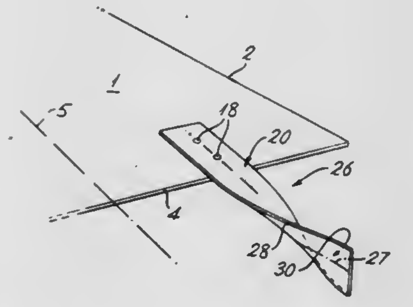


1. An aircraft having dihedral angled disposed wings, at least one engine on each wing, an engine oil tank for supplying oil to each engine for powering said aircraft, each of said tanks having a lower portion defining a reservoir for said oil and an upper portion defining an expansion chamber and a connection therebetween, said lower portion having a top wall that is angled substantially parallel with the dihedral angle of one wing and the expansion chamber having a bottom wall that is angled substantially parallel with the dihedral angle of the opposing wing, whereby the filled capacity of each tank will be substantially equal relative to each other.

4,444,367
AEROFOIL BODIES

John J. Spillman, Bedford, England, assignor to National Research Development Corporation, London, England
Filed Mar. 24, 1981, Ser. No. 247,113
Claims priority, application United Kingdom, Mar. 25, 1980, 8009253
Int. Cl.^{3} B64C *23/06*
U.S. Cl. 244—199 12 Claims



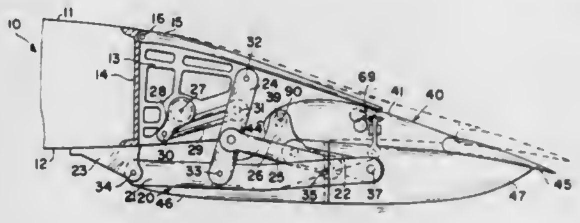


1. An aerofoil body adapted in use for motion relative to a surrounding mass of fluid and presenting:
- a fore-and-aft centerline lying parallel to said motion;
- a trailing edge relative to said motion;
- at least one swept leading edge relative to said motion, said edge presenting a spanwise tip giving rise in use to a respective primary coil-form vortex sheet;
- a single strip-form device corresponding to each said swept leading edge, each said strip-form device being mounted on said body at a location lying directly aft of at least part of said swept leading edge and projecting rearwardly from said trailing edge at a location inboard of said spanwise tip, the projecting length of each said strip being considerably greater than their spanwise dimension, with none of said strips being oriented relative to the said fore-and-aft centerline in a sense opposite to that of the sweep of said swept leading edge with which it corresponds, and
- each said device being so located as to modify the said coil-form vortex sheet generated by the corresponding said swept leading edge so as to improve the lift-to-drag ratio of said body.

8. An aerofoil body adapted in use for motion relative to a surrounding mass of fluid and presenting:
- a trailing edge relative to said motion;
- at least one swept leading edge relative to said motion; and
- at least one strip-form device carried by said body and projecting rearwardly from said trailing edge, said device being so oriented as to modify the vortex sheets generated by the interaction of said edges with said fluid and so to improve the lift-to-drag ratio of said body, said one strip-form device being twisted and having a free end with the hand of said twist being such that in proceeding from said attached to said free end of said device, the inboard edge of said device rises relative to the plane of the mean chord of said body.

4,444,3[illegible]
SLOTTED VARIABL[illegible]MBER FLAP

Dana G. Andrews, Seattle, Wash., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Oct. 30, 1981, Ser. No. 315,588
Int. Cl.^{3} B64C *9/20*
U.S. Cl. 244—216 16 Claims



1. A device for varying slotted flap wing camber comprising:
- a wing having upper and lower surfaces;
- flap means including trailing edge forward and aft flaps for increasing chord and lift of said wing;
- actuator means for controlling translation of said flap means thereby increasing chord and lift of said wing;
- flap linkage assembly means for supporting said flap means, and translating said flap means from a tucked to a deployed position;
- flap pivot means for attaching said flap means to said flap linkage assembly means, and allowing said flap means to rotate with respect to said flap linkage assembly means; and
- variable camber actuator means for independently controlling rotation of said trailing edge forward and aft flaps with respect to said flap linkage assembly means and for controlling rotation independent of translational movement of said flap means, whereby the camber of said wing is varied by rotating said flap means.

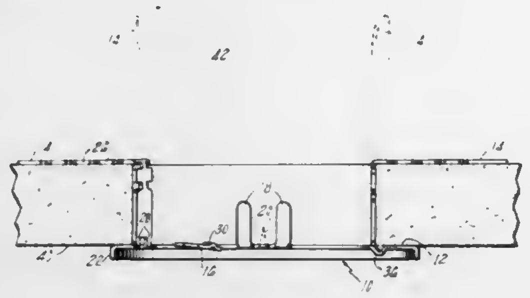
4,444,369
MOUNTING RING

E. Gale Job, Greeneville, Tenn., assignor to Essex Group, Inc., Fort Wayne, Ind.

Filed Sep. 7, 1982, Ser. No. 415,772

Int. Cl.^{3} G12B *9/00*

U.S. Cl. 248—27.1 **13 Claims**



1. A mounting ring adapted for installation in an opening in a ceiling or wall to support a device within the opening, comprising:

- an annular frame portion;
- at least two retaining tabs extending from the frame portion, each said retaining tab including a relatively narrow central spine having a plurality of cross-ribs arrayed therealong, said retaining tabs being extendible inward through said opening and being manually deformable into retaining engagement with the ceiling or wall to thereby maintain said frame portion positioned adjacent to the ceiling or wall in substantially parallel relation therewith; and
- said frame portion including means for engaging and supporting the device in a predetermined position relative thereto.

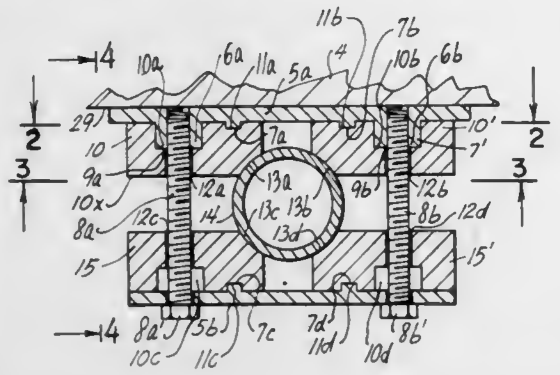
4,444,370
PIPE SUPPORT DEVICE

Guenther Krueger, 16 Bristol Cts., Berkeley Heights, N.J. 07922

Filed Jun. 14, 1982, Ser. No. 387,955

Int. Cl.^{3} F16L *3/08*

U.S. Cl. 248—74.1 **7 Claims**



1. A pipe support element comprising in combination: a pair of vise plates each having spaced-apart bolt holes therethrough at opposite ends from one-another of each vise plate; four pipe support members utilizable between opposing ones of the pair of vise plates in a clamped spaced-apart relationship to one-another with each contributing to support an intermediate pipe therebetween, each of said pipe support members having a bolt-mounting aperture therethrough alignable with one of said bolt holes when positioned between said pair in said clamped spaced-apart relationship, and each of said pipe support members having spaced-away-from each said bolt-mounting aperture a plate-anchor means including at least one of a recess and a projection extending along an axis substantially parallel to said bolt-mounting aperture of a common one of said pipe support members for maintaining the common one in alignment relative to said pipe between said pipe support members in said clamped spaced-apart relationship thereby enabling support of the pipe by the spaced-apart pipe-support members when a bolt is mounted through the aligned bolt-holes and bolt-mounting apertures and tightened to clamp the pipe support members in spaced-apart relationships supportingly against a circumscribing outer-surface of the intermediate pipe, said pair each including adjacent each of the spaced-apart bolt holes, a meshing locking-structure for locking with said plate-anchor means; the spaced-apart bolt-holes in each of said pair being sufficiently distant from one-another such that a pair of the pipe support members mounted on a common-one of said vise plates are spaced-apart and non-contacting with other pipe support members when in said clamped spaced-apart relationship.

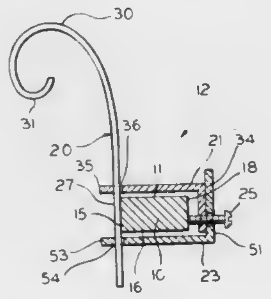
4,444,371
HANGER ASSEMBLY

Peter D. Ragen, 921 S. 102nd St., West Allis, Wis. 53214

Filed Jul. 6, 1981, Ser. No. 280,826

Int. Cl.^{3} F16L *3/08*

U.S. Cl. 248—225.31 **5 Claims**



1. A hanger assembly including:

- an elongate hanger member having hanger means formed at one end and a relatively linear portion at its opposite end,
- first clip means including first and second legs oriented generally normally one to the other, said first leg having an elongate slot formed therein for receiving the opposite end of said hanger member,
- an aperture formed in one of said legs and adapted to receive a fastener for mounting said first clip to support structure with said first leg extending generally horizontally and said slot oriented vertically,
- second clip means having first and second legs oriented generally normally,
- an elongate slot formed in the first leg of said second clip means and complementary to the slot in the first clip means, and
- an aperture formed in the second legs of each said clip means and adapted to be in alignment when said second legs are disposed in a side-by-side relation and said slots are in alignment, one of said apertures being threaded for receiving a threaded fastener,
- whereby when the opposite end of said hanger member extends through said slot it will engage and be supported by the edges of said slot and said support structure to permit an object to be hung from said hanger means.

4,444,372
TENSILE FORCE ABSORBING ANCHORING IN CONCRETE

Ingvar Klingstedt; Holger E. Klingstedt, both of Skellefteå, and Artur E. Berggren, Piteå, all of Sweden, assignors to Miljotakmontage AB, Skellefteå, Sweden

PCT No. PCT/SE80/00248, 371 Date Jun. 10, 1981, 102(e) Date Jun. 10, 1981, PCT Pub. No. WO81/01036, PCT Pub. Date Apr. 16, 1981

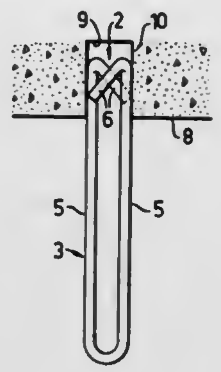
PCT Filed Oct. 10, 1980, Ser. No. 276,356

Claims priority, application Sweden, Oct. 11, 1979, 7908430; Sep. 4, 1980, 8006167

Int. Cl.^{3} A47H *1/10*

U.S. Cl. 248—317 **6 Claims**

1. A tensile force absorbing anchoring in hard material, such as for example concrete, rock, sheet metal or the like, comprising an anchoring member with an anchoring portion in a hole made in the material for co-operation with opposed wall portions of the hole, a leg portion extending from the hole and integral with the anchoring portion for applying a tensile force producing load, the anchoring portion being formed of steel wire and comprising two gripping members, each of the gripping members having a free end engaging one of the opposed wall portions of the hole, the gripping members being formed with a respective shank, each of the shanks abutting a wall portion of the hole opposite from the wall portion engaged by the free end of the respective gripping member and extending axially out of the hole, the shanks constituting portions of the leg portion of the anchoring member and forming an acute angle with the respective gripping member, each gripping member having a length between its free end and the associated shank which exceeds the hole diameter, the gripping members being stiff against bending along their entire length, and the free end of the respective gripping member prior to the application of the anchoring member in the hole being located at a perpendicular distance from the associated shank which distance exceeds the hole diameter for obtaining an initial clamping force upon the application of the anchoring member in the hole.



4,444,373
FUEL TANK MOUNTING ASSEMBLY FOR MOTOR VEHICLE

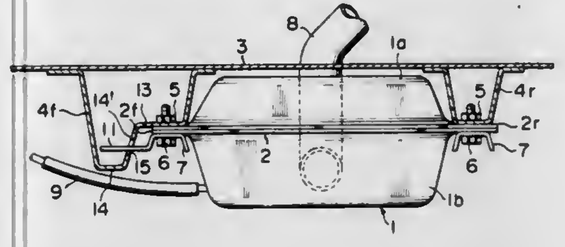
Isao Hayashi, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 29, 1982, Ser. No. 363,150

Claims priority, application Japan, May 22, 1981, 56-76754

Int. Cl.^{3} F16M *13/00*

U.S. Cl. 248—544 **10 Claims**



1. A fuel tank mounting assembly for a motor vehicle, having a body with a floor panel and fastening means for mounting a fuel tank in a suspended manner underneath the floor panel of the body, said assembly comprising:

- support means for temporarily supporting at least part of the weight of said fuel tank before said fastening means are engaged to fixedly mount said fuel tank in position, said support means comprising first means provided on the body of said motor vehicle for bearing at least part of the weight of said fuel tank, and second means provided on said fuel tank for engaging said first means to provide the temporary support for said fuel tank when said fuel tank is to be mounted in position.

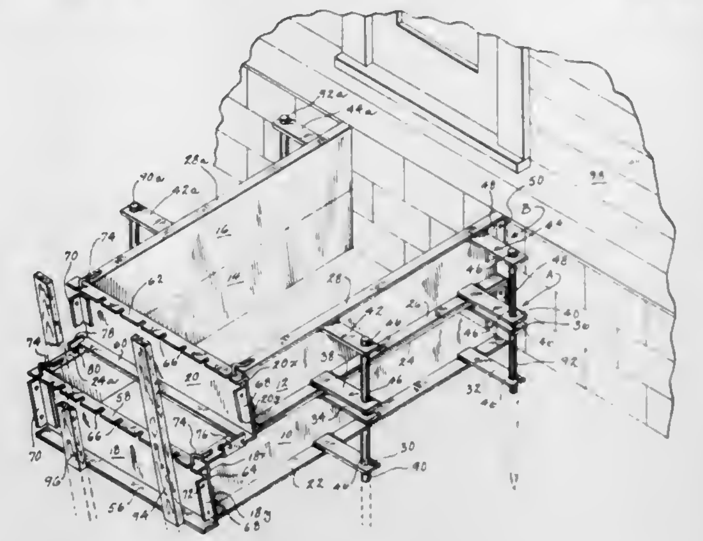
4,444,374
PREFABRICATED CONCRETE FORMS ASSEMBLY

Selmer E. Gramstad, 217 11th Ave., SE., Rochester, Minn. 55901

Filed Jul. 12, 1982, Ser. No. 397,112

Int. Cl.^{3} B28B *7/22*

U.S. Cl. 249—14 **2 Claims**



1. A prefabricated concrete forms assembly comprising a first pair of spaced parallel oppositely disposed side panels, a first front panel bridging front opposite ends of said side panels, a second pair of side panels respectively vertically stacked on said first side panels and being of shorter lengths than said first side panels so as to leave front portions of said first side panels exposed, a second front panel bridging front opposite ends of said second pair of side panels, each of said panels having upper and lower outwardly extending flanges, means detachably connecting the lower edge of said second front panel to upper parts of the respective ones of said first side panels, and means for detachably connecting upper parts of said first and said second pair of side panels to upper parts of the respective ones of said front panels bridging the respective side panels so that the assembly defines an enclosure for receiving fluent concrete, said means detachably connecting the lower edge of said second front panel to upper parts of the respective ones of said first side panels including a clip swingably mounted on the upper flange of each of said first side panels by means of a pin-like part extending through the clip and through the respective upper flange and being of just sufficient length so that when swung to bring its remote end at the closest distance toward said second front panel it holds said second front panel in contact with the adjacent front ends of said second pair of side panels, said means detachably connecting upper parts of said side panels to upper parts of the respective front panels comprising a hook on each of said side panels, each of said hooks having parts substantially at right angles to each other with one of said parts of each hook being fixed on to the upper flange of each of said side panels and the other part extending downwardly along the respective front panel and having a length substantially less than the height of the front panel to extend for substantially less than the height of the front panel.

4,444,375
HUNTER'S TOWING MACHINE

Earl E. Horn, 2910 G St., Eureka, Calif. 95601

Continuation-in-part of Ser. No. 077,025, Sep. 19, 1979, abandoned. This application May 17, 1982, Ser. No. 378,906

Int. Cl.^{3} B66D *3/18*

U.S. Cl. 254—346 **8 Claims**

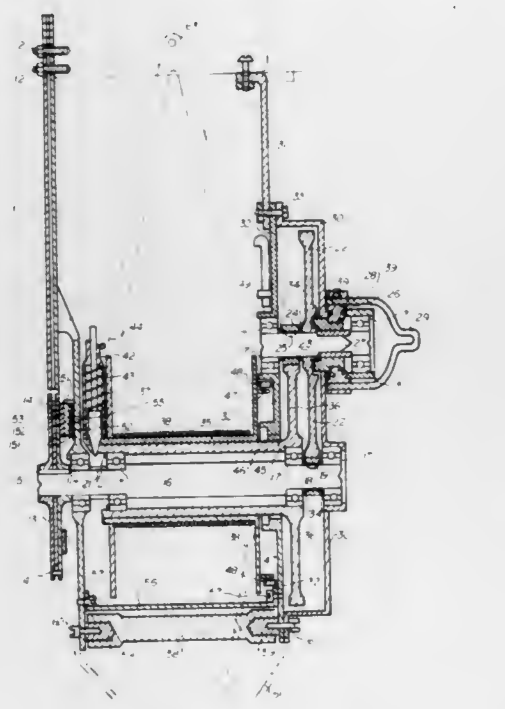
1. A towing machine for taking up cable and powered by a chainsaw or the like comprising in combination:

- an elongate housing connected to the chainsaw,
- a main shaft extending transversely through said housing, supported in said housing with bearings,

a drive sprocket connected to said main shaft at an extremity thereof outside of said housing,

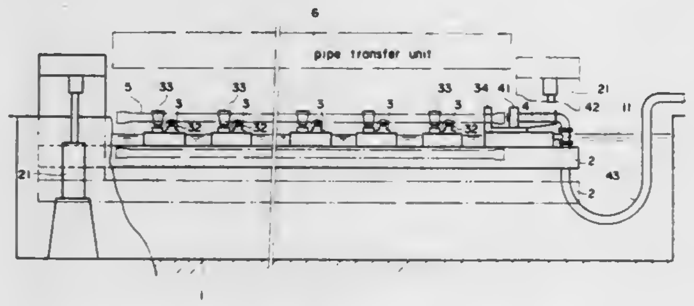
chain means extending from the chainsaw to said drive sprocket to rotate said shaft,

a cable drum carried on a drum quill within said housing, means disposed between said cable drum and said main shaft to selectively rotate said cable drum to thereby take up the cable under power, and first and second braking means for stopping said cable drum, said first braking means manually operable, said second braking means allowing only unidirectional motion, wherein said means for selectively rotating said cable drum comprises: an intermediate shaft supported in said housing on bearings, an intermediate spur gear interconnecting said intermediate shaft to said main shaft, a pinion gear on said intermediate shaft, and said drum quill having a gear portion to mesh with said pinion gear and fixedly drive said cable drum, and clutch means to selectively engage said main shaft to said drum quill including freewheeling means connecting said cable drum to said drum quill frame whereby when retracted, said cable drum is dissociated from said drum and can pay out cable free of said means to selectively rotate said cable drum.



4,444,376
MULTI-PIPE TYPE QUENCHING APPARATUS

Harumi Noguchi, Kamakura; Kazuo Atago, Yokohama; Katsumi Sakurai, Kawasaki, and Tatsuo Ono, Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 399,252, Jul. 19, 1982, abandoned. This application Sep. 6, 1983, Ser. No. 529,668
Claims priority, application Japan, Jul. 20, 1981, 56-112220
Int. Cl.³ C21D *9/08*
U.S. Cl. 266—117 2 Claims



1. A multi-pipe quenching apparatus comprising:

(a) a steel pipe holding table for holding a plurality of steel pipes arranged in parallel, which table is provided with a plurality of sets each including a plurality of clamp means for clamping a steel pipe at a plurality of points in the lengthwise direction thereof, each of said clamp means comprising a supporting role for placing a steel pipe thereon and a pair of inverted frustoconical clamp rolls for clamping said steel pipe, and cooling water supply means for supplying water into said pipe through a nozzle pressed thereagainst, said clamp rolls including means to permit said rolls to rotate in only one direction and thereby prevent disengagement of said pipe from said nozzle;

(b) a quenching tank capable of containing water up to a predetermined level as occasion demands;

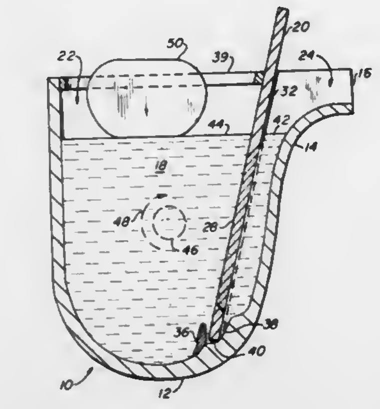
(c) pipe transfer means arranged above said steel pipe holding table, said pipe transfer means comprising a plurality of pipe holding arms, a pipe holding arm support having said holding arms attached thereto, a plurality of hydraulic cylinders for controlling the vertical movement of said support, and variable pitch means connected to said plurality of pipe holding arms;

(d) alignment means having variable pitch means attached thereto and arranged on a pipe entry side of said pipe transfer means; and

whereby said pipe holding table is lowered into and raised from said quenching tank and the supply of water is controlled by said cooling water supply means thereby quenching said steel pipes.

4,444,377
MOLTEN METAL TRANSFER CRUCIBLE

Daniel E. Groteke, 1228 Ridge Cliff Rd., Cincinnati, Ohio 45215, and Avery L. Kearney, Valparaiso, Ind., assignors to Daniel E. Groteke, Cincinnati, Ohio
Filed Jul. 14, 1982, Ser. No. 398,406
Int. Cl.³ C21C *7/04*
U.S. Cl. 266—227 7 Claims



1. An improved transfer crucible for containing molten metal, having a spout, and means for providing flow of molten metal through the spout, the improvement comprising:

at least one removable blade positioned to divide the crucible into a first chamber, and a second chamber, said blade having a passage therethrough;

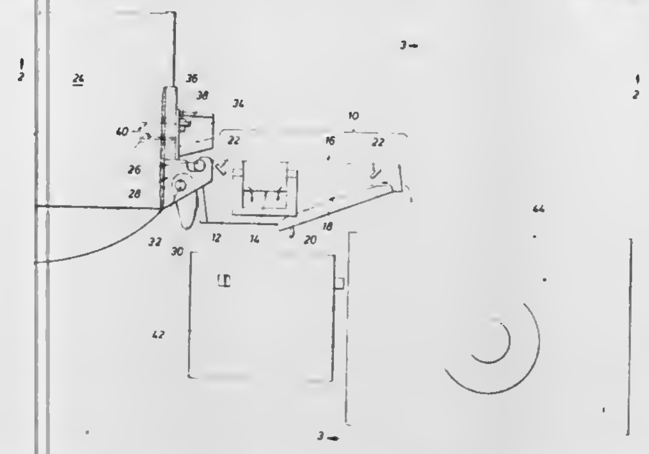
a filter element positioned in said passage, said filter element positioned with respect to the crucible such that said filter element interrupts the flow of metal in a manner such that filtered metal flows from the spout of the transfer crucible;

a track in the sidewall of the crucible for positioning said blade; and

a resilient seal placed between said track and said blade for affixing said blade.

4,444,378
APPARATUS FOR SEPARATING SLAG FROM A MOLTEN METAL

Thurston F. Reese, deceased, late of Duluth, Ga.; by Alma C. Reese, executrix, and by John F. Reese, executor, both of 3324 McClure Bridge Rd., Duluth, Ga. 30136
Filed Aug. 11, 1982, Ser. No. 407,035
Int. Cl.³ C21C *7/00;* F27B *9/38*
U.S. Cl. 266—237 14 Claims



1. An apparatus suitable for separating a molten metal from a non- or weakly-magnetizable material floating on said molten metal supported by a container suitable for melting or refining solid metals and producing a molten metal and delivering said molten metal by tilting comprising:

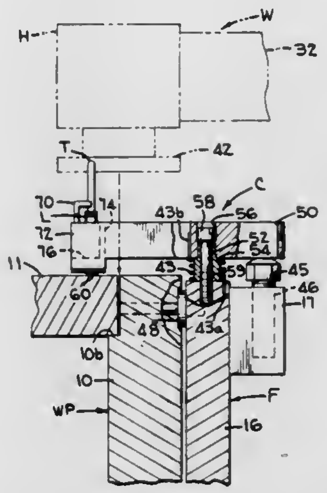
a receiver having sides, a bottom, and an open upper end and adapted to receive a mixture of said molten metal and non- or weakly-magnetizable material, having an overflow weir at a level below the open upper end on at least one side and adapted to maintain said overflow weir in a substantially horizontal position as said container is tilted; and

a trough having a lower end at the lowest point in the receiver and ascending to a discharge point above the level of the overflow weir and having an inductor positioned beneath said trough to inductively pump molten metal up a flow path in said trough and out said discharge point,

whereby molten metal may be pumped from the receiver and up the trough and said non- or weakly-magnetizable material may overflow the overflow weir.

4,444,379
TRIGGER RELEASE CLAMP

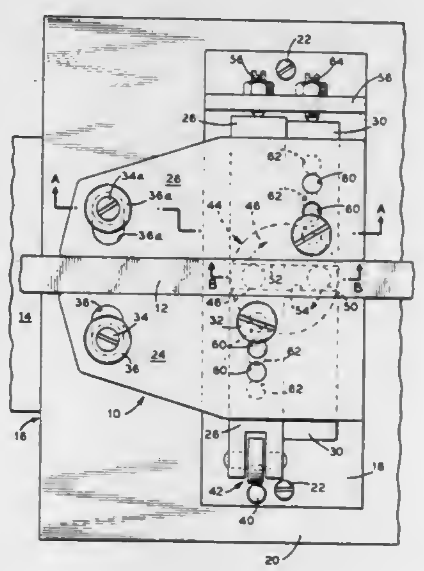
Thomas H. Hopkins, San Jose, Calif., assignor to FMC Corporation, Chicago, Ill.
Filed Jan. 11, 1982, Ser. No. 338,795
Int. Cl.³ B25B *1/00*
U.S. Cl. 269—87 12 Claims



1. A workpiece fixture having a workpiece clamp for holding the workpiece on the fixture during relative motion of the fixture and a tool along a path having a central axis, said clamp comprising an elongated mounting member, means disposed normal to said elongated mounting member for swingably mounting said elongated mounting member on the fixture for movement between a released position entirely on one side of said central axis of said path and a clamping position having an outer portion of said mounting member extending across said central axis of said path, a clamping jaw movably mounted on said outer portion of said mounting member, clamping jaw clamping and release means including a trigger on said mounting member, said trigger projecting into the path of said tool when in said clamping position, and means connected between the fixture and said mounting member for swinging said clamping jaw and said elongated mounting member relative to said fixture to said released position clear of said path of relative fixture and tool motion upon release of said clamping jaw when the tool actuates the trigger.

4,444,380
CENTERING AND GRASPING DEVICE

Edwin G. Chambers, and Albert J. Kraus, both of Columbus, Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.
Filed Aug. 13, 1981, Ser. No. 292,555
Int. Cl.³ B25B *1/02*
U.S. Cl. 269—87 4 Claims



1. A device for guiding strip material with respect to the die of a punch press comprising:

a first slide member movably mounted to the punch press;

a second slide member proximately located to said first slide member and being movably mounted to the punch press;

a pair of parallel guide members for locating the strip material therebetween having a first and second guide member respectively mounted to said first and second slide members to move with said slide members;

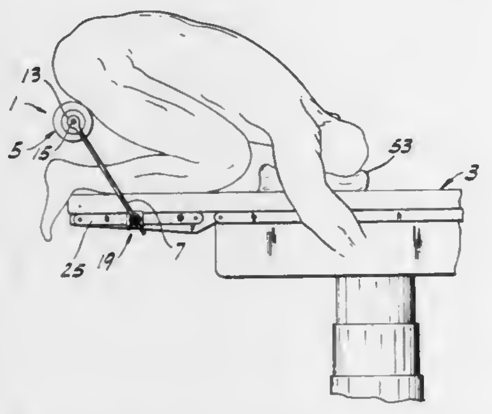
coupling means for coupling said first and second slide members to have said first slide member move in a direction opposite said second slide member in response to movement of either slide member;

grasping means for moving said pair of parallel guide members together to hold the strip material therebetween whenever the punch press is performing the punching operation including a roller member mounted to one of said slide members and an actuating rod mounted to the press proximate said roller member to engage said roller member whenever the punch die press is closed to thereby move said slide member to close the space between said pair of parallel guide members; and

adjustable stop means for limiting the movement of said grasping means including an adjustable screw mounted at the opposite end of said slide member having said roller member to limit the movement of said slide member whenever said roller member is engaged by said actuating rod.

4,444,381
OPERATING TABLE ACCESSORY, PARTICULARLY FOR LUMBAR LAMINECTOMIES

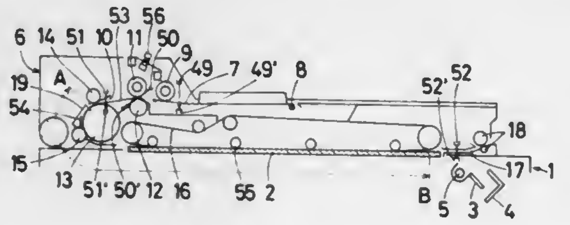
Sherwyn J. Wayne, 896 Blue Spring La., Frontenac, Mo. 63131
Filed May 11, 1982, Ser. No. 376,944
Int. Cl.³ A61G *13/00*
U.S. Cl. 269—328 3 Claims



1. An operating table having rod-end receiving means at each side, each said rod-end receiving means being movable lengthwise of the table and rotatable around a generally horizontal axis extending transversely with respect to the table, each rod-receiving means having an opening extending transversely to its axis of rotation for receiving a rod and means for clamping the rod in the opening, and an accessory on the table for use in positioning a patient in a modified tuck position on the table for a lumbar laminectomy, said accessory comprising a roller in a position extending transversely of the table above the table, and a pair, one at each end of the roller, of rigid rods for rotatably supporting the roller in said position, each rod extending downwardly generally at right angles to the axis of the roller, and having its lower end detachably clamped in position in the opening in a respective rod-receiving means at a respective side of the table, said accessory being manipulable by adjustment of the rods in the openings,, movement of the rod-receiving means lengthwise of the table and rotation of the rod-receiving means, rods and roller about said axis for engagement of the roller under the patent's buttocks and positioning of the roller to maintain the buttocks lifted.

4,444,382
SHEET FEEDING SYSTEM

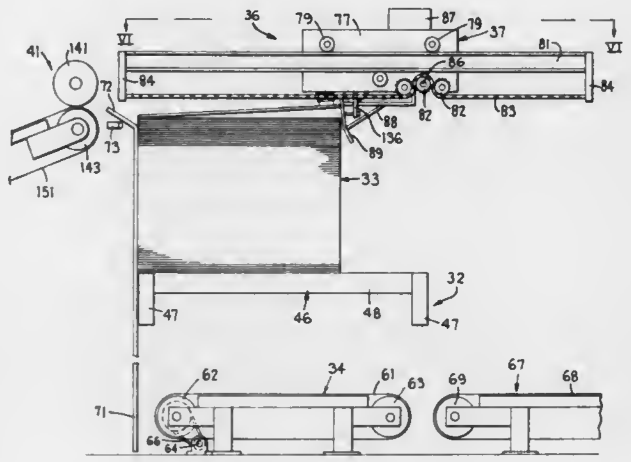
Takuma Ishikawa, and Toshio Matsui, both of Toyokawa, Japan, assignors to Minolta Camera KK, Osaka, Japan
Filed Mar. 31, 1982, Ser. No. 363,875
Claims priority, application Japan, Apr. 11, 1981, 56-54805
Int. Cl.³ B65H *5/00*
U.S. Cl. 271—10 5 Claims



1. A sheet feeding system for automatically feeding sheets from a sheet tray, including:
- a first feed roller means for sending out sheets on a sheet tray;
- a drive means for bringing said sheet tray into or out of contact with said first feed roller means;
- a second feed roller means located downstream of said first feed roller means in the direction of sheet feeding;
- a parting roller means arranged to be engageable to and disengageable from said second feed roller means and to be driven to rotate so as to send said sheet in a direction opposite to normal direction of sheet feeding;
- a first detection means for detecting the leading end of said sheet when it has reached between said second feed roller means and said parting roller means;
- a stopper means located further downstream of said second feed roller means in the direction of sheet feeding which is driven to open or close a sheet threading path;
- a second detection means for detecting the leading end of said sheet when it has reached the vicinity of said stopper means;
- a transmitting means for a start signal for starting said sheet feeding; and
- a control means whereby upon transmission of said start signal a drive means is started to bring said sheet tray into contact with said first feed roller means as well as to rotate said first feed roller means and upon detection of the leading end of said sheet by said first detection means said sheet tray is caused to be separated from said first feed roller means and later upon detection of said sheet by said second detection means said second feed roller is stopped after a delay time that said sheet is slightly looped with its leading end in contact with said stopper means closing said sheet threading path and upon the lapse of a predetermined time said stopper means is driven to open said sheet threading path with simultaneous disengaging of said parting roller means from said second feed roller means.

4,444,383
ROTARY SLOTTER SHEET FEEDER

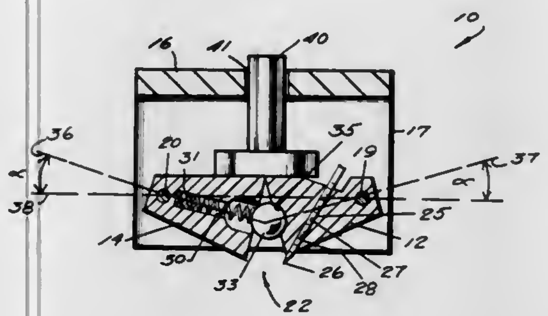
Paul F. Crislip, Plainwell, and Frederick W. Harrison, Richland, both of Mich., assignors to Hycorr Machine Corporation, Kalamazoo, Mich.
Filed Sep. 22, 1981, Ser. No. 304,530
Int. Cl.³ B65H *5/08*
U.S. Cl. 271—14 13 Claims



1. An apparatus for picking up a single sheet of semi-rigid material from the top of a stack of such sheets and transporting the sheet in a forward direction away from the stack, comprising:
- elevator means for supporting thereon the stack of sheets and for lifting same upwardly;
- a pinch roller device having opposed counter-rotating rolls defining a nip therebetween for receiving and drivingly engaging a single sheet;
- first horizontally-reciprocal carriage means positioned above said stack and having positioning means associated therewith positionable adjacent the upper rear edge of the stack;
- suction-type pick-up means mounted on said first carriage means at a location positioned over the stack adjacent the rear edge of the top sheet for permitting engagement with the top sheet and lifting of the rear edge portion thereof, said pick-up means including a suction member vertically movable between an upper position for maintaining the rear edge portion of the sheet in a raised condition, and a lower position for permitting engagement with the rear edge portion of the top sheet;
- said suction-type pick-up means including a suction source, a suction box defining therein a suction chamber, said suction box being mounted on said first carriage means and having opening means therethrough for providing communication between said suction chamber and the surrounding atmosphere, conduit means connected between said suction source and said suction box for creating a suction within said suction chamber, a valve member movably mounted on said suction box and movable for opening and closing said opening, a suction pick-up member positioned below said suction box and being in communication with said suction chamber, said suction member having a lower annular portion which defines an opening and which is adapted to be moved into engagement with the upper surface of the top sheet, and an activating device connected between said first carriage means and said suction pick-up member for vertically reciprocating the latter; and
- second carriage means movably supported on said first carriage means for back-and-forth movement in the widthwise direction of said stack, said second carriage means having sheet engaging means thereon disposed for supportingly engaging the raised rear edge portion of the top sheet and pushing said sheet forwardly so that the leading edge thereof is moved into engagement with the pinch roller device.

4,444,384
CLOTH PICKUP AND FOLDING HEAD

John H. Keeton, Box 296, Campbellsville, Ky. 42718
Filed Jul. 16, 1981, Ser. No. 283,977
Int. Cl.³ B65H *3/22*
U.S. Cl. 271—18.3 14 Claims

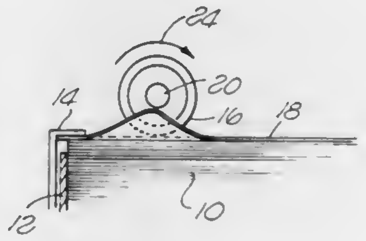


1. A cloth pickup device comprising:
- first and second elongated jaws;
- means for pivotally mounting said jaws about first and second axes substantially parallel to each other and spaced so that said jaws are pivotable from a first position wherein they are in operative clamping position with respect to each other to clamp a piece of cloth therebetween, to a second position wherein they are in an unobstructed open position to allow a piece of cloth to freely pass into a position between said jaws; and
- overcenter spring means acting directly on said jaws for maintaining said jaws in either said first or second position thereof once moved to that position.

4,444,385
SHEET FEEDER

Jack Berry, Fremont, Calif., assignor to Qume Corporation, San Jose, Calif.
Filed Jan. 18, 1982, Ser. No. 340,260
Int. Cl.³ B65H *3/32*
U.S. Cl. 271—22 13 Claims

1. Apparatus for feeding a single sheet from a stack of sheets comprising:
- (a) support means for supporting a stack of sheets;
- (b) separating means positioned at laterally opposed front corners of the top of the stack of sheets;
- (c) feed roller means fixedly positioned above the stack and in frictional contact with said top sheet of the stack of sheets;
- (d) drive means for causing said feed roller means to rotate in a first direction corresponding to the advancement of said top sheet from said stack towards said separating means in response to a first control signal; and
- (e) means for applying at least three of said first control signals to said drive means and thereby causing said feed roller to rotate in said first direction at least two separate times while the front corners of said top sheet are in contact with said separating means and thereafter to rotate in said first direction a third separate time during the further advancement of said top sheet from said stack.



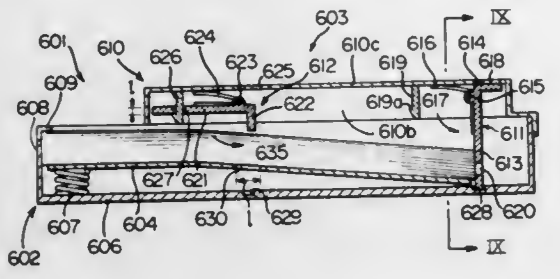
8. A method of feeding a single sheet from a stack of sheets comprising the steps of:
- (a) supporting a stack of sheets;
- (b) restraining a leading edge of at least an exposed outer sheet of the stack of sheets;
- (c) locating at least one feed roller at a fixed position relative to said stack and in frictional contact with said exposed outer sheet; and
- (d) causing said feed roller alternately to rotate in a first direction and to substantially stop at least two separate times while said leading edge is restrained by said separating means and to again rotate in said first direction thereby causing said exposed outermost sheet to buckle relative to the remaining sheets in said stack as said leading edge is restrained as a result of coaction of said restraining and the jerking motion imparted to said outermost sheet by the intermittent rotation of said feed roller and then to advance in the direction of said leading edge.

4,444,386
CASSETTE CASING WITH PIVOTING SHEET STOPS FOR AN ELECTROSTATIC COPYING APPARATUS

Naoaki Murata, Takarazuka; Masahiro Yoshioka, Matsubara; Kiyoshi Hayashi, Takatsuki, and Yasusuke Tohi, Sakai, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan
Division of Ser. No. 99,720, Dec. 3, 1979, Pat. No. 4,325,626.
This application Aug. 25, 1981, Ser. No. 296,055
Claims priority, application Japan, Dec. 13, 1978, 53-153203; Feb. 2, 1979, 54-10304; Mar. 29, 1979, 54-41643[U]; Apr. 5, 1979, 54-40302; Apr. 14, 1979, 54-44877; May 25, 1979, 54-70992[U]; May 25, 1979, 54-70993[U]; May 25, 1979, 54-70994[U]; May 25, 1979, 54-70995[U]
Int. Cl.³ B65H *1/12*
U.S. Cl. 271—127 5 Claims

1. A cassette casing for a stack of sheet-like copying papers of at least two different sizes, said casing comprising: a rectangular box-like housing having a longitudinal axis and an open top; a closure plate detachably mounted on the top of said housing and having at least one display window therein; and at least two sheet stop members mounted on the under side of said closure plate in spaced apart relation in the direction of the longitudinal axis of said cassette casing for pivotal movement about an axis extending transversely to said longitudinal axis, each of said sheet stop members having a sheet stop portion

which, when said sheet stop member is pivoted to a sheet restricting position extends downwardly into said housing for restricting the position of the rear end of copying papers accommodated in said housing, and a display portion having an indication of the size of copying papers thus restricted, said display portion being positioned adjacent said display window when said sheet stop portion is pivoted to its sheet restricting position.

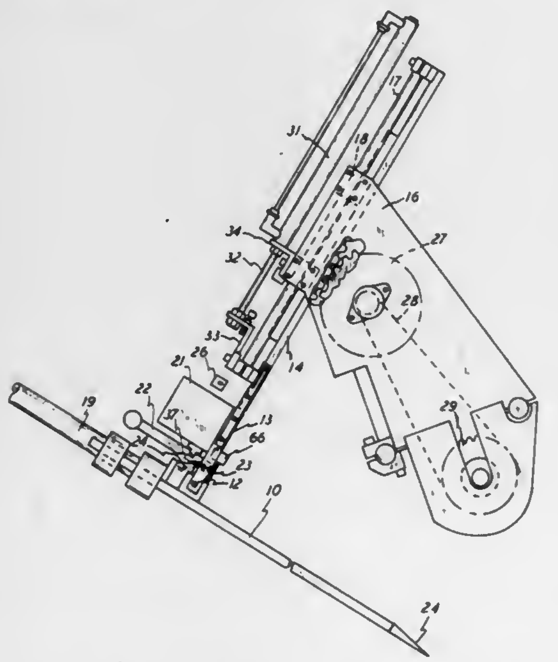


4,444,387

SHEET STACKER WITH A SEPARATOR PLATE

Walter J. Stobb, Pittstown, N.J., assignor to Stobb, Inc., Clinton, N.J.

Filed Jun. 28, 1982, Ser. No. 392,333
Int. Cl.³ B65H *29/34*
U.S. Cl. 271—189 **5 Claims**



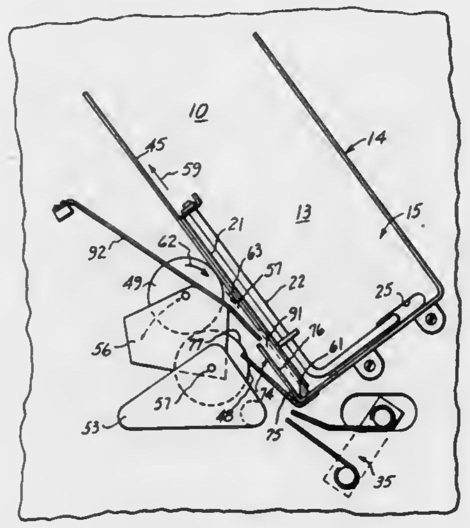
1. In a sheet stacker with a separator plate and having a movable stacker table with a stack supporter thereon, a movable separator plate, said stacker table and said separator plate being movably mounted for movement upward and downward along a path of stacking, drive means, two clutch means interconnected between said drive means and both said stacker table and said separator plate for the downward movement of both, lift means connected with both said stacker table and said separator plate for the upward movement of both, the improvement comprising said lift means including an additional single drive means operatively connected jointly with both said stacker table and said separator plate for the upward movement of both, and two driven members operatively interconnected between said additional single drive means and respectively with each of said stacker table and said separator plate for the alternate upward movement of said stacker table and said separator plate.

4,444,388

STACKING METHODS AND APPARATUS

Rafn Stefannson, San Marino, and Raymond M. McManaman, Glendora, both of Calif., assignors to Bell & Howell Company, Chicago, Ill.

Filed Sep. 15, 1981, Ser. No. 303,298
Int. Cl.³ B65H *29/58*
U.S. Cl. 271—293 **30 Claims**



1. In a method of stacking sheets of various intermixed lengths in a stacking location with the aid of distinct first and second sheet drive roller means at a sheet feed path adjacent said stacking location, the improvement comprising in combination:

rotating said first sheet drive roller means in a first sense of rotation for driving each of said sheets along said sheet feed path in a first direction;

maintaining for each of said sheets said second sheet drive roller means out of said sheet feed path while driving the particular sheet with said first sheet drive roller means in said first direction past a stacking position at the stacking location;

rotating said second sheet drive roller means in a second sense of rotation for driving each of said sheets in a second direction opposed to said first direction; and

introducing for each of said sheets driven past said stacking position said second sheet drive roller means into said sheet feed path for driving the particular sheet in said second direction into said stacking location;

said first sheet drive roller means being maintained radially stationary at said sheet feed path before, during and after each introduction of said second sheet drive roller means into said sheet feed path; and

each of said sheets being applied to said radially stationary first sheet drive roller means for driving along said sheet feed path in said first direction.

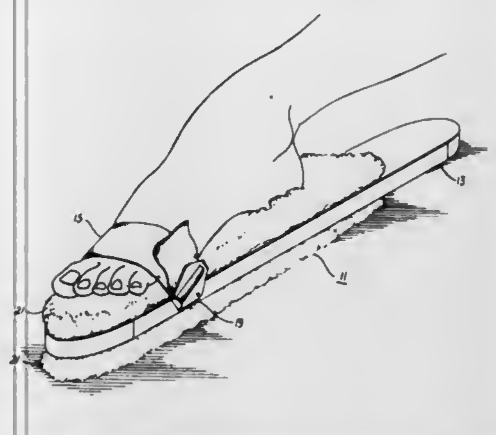
4,444,389

TENDON STRETCHING DEVICE

Robert T. Wrucke, 30 Cima Way, Portola Valley, Calif. 94025

Filed Oct. 23, 1981, Ser. No. 314,200
Int. Cl.³ A63B *23/04*
U.S. Cl. 272—96 **5 Claims**

1. A device for stretching tendons in the foot to increase the angle to which a foot can be pointed in an outwardly direction away from the knee comprising a long rigid base member having an upper and lower face and a restraining assembly connected near one end of the base member, said restraining assembly adapted to cross over the top of the foot and is pivotally attached to said base member whereby the device may be used from either side of the long rigid base member with the restraining assembly positioned optimally over the top of the foot, said long rigid base member being approximately twice the length of the user's foot.

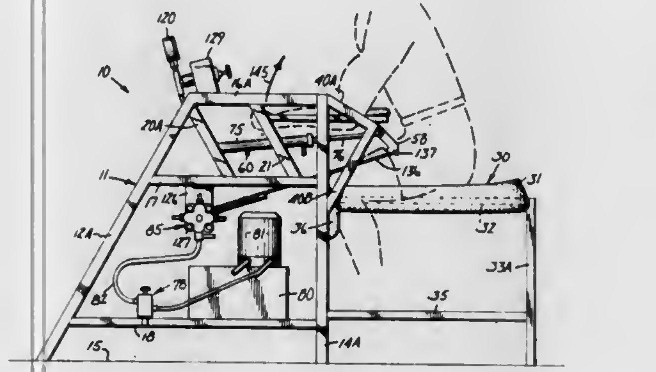


4,444,390

HYDRAULIC EXERCISING DEVICE

David T. Erickson, 18001 Hwy. 7, Suite 200, Minnetonka, Minn. 55343

Continuation-in-part of Ser. No. 208,659, Nov. 20, 1980, Pat. No. 4,363,481. This application Sep. 7, 1982, Ser. No. 415,145
Int. Cl.³ A63B *21/00*
U.S. Cl. 272—130 **10 Claims**



1. An exercise device of the type wherein an exercising person works against a force occasioned by a pressure difference between ends of a hydraulic actuator, comprising:

frame means;

a reaction bar engageable by an exercising person for sequential movement with respect to the frame means in a first direction and in a second direction generally opposite to the first direction;

fluid operated means including a first hydraulic actuator of the type having a housing defining a chamber, a piston movably located in the chamber, and a rod fixed to the piston and extendible and retractable with respect to the housing, said hydraulic actuator being operably connected between the frame means and the reaction bar to exert hydraulic force on the reaction bar;

said housing and chamber having a high pressure end and a low pressure end whereby the piston tends to move toward the low pressure end to tend to move the reaction bar in the second of said directions;

a source of hydraulic fluid under pressure;

an adjustable flow control valve with a valve inlet connected to the source of hydraulic fluid under pressure and a valve outlet connected to the high pressure end of the hydraulic actuator housing;

a first adjustable pressure reduction valve having a valve inlet connected to the valve outlet of the flow control valve, and a valve outlet connected to the low pressure end of the housing whereby the pressure difference between the high pressure end and the low pressure end of the housing provides a force on the reaction bar tending to move it in said second direction and whereby the exercising person exerts manual force on the reaction bar opposed to the force exerted upon the reaction bar by the hydraulic actuator to overcome the force to move the reaction bar in the first direction and then resist the force while permitting the movement of the reaction bar in the second direction.

4,444,391

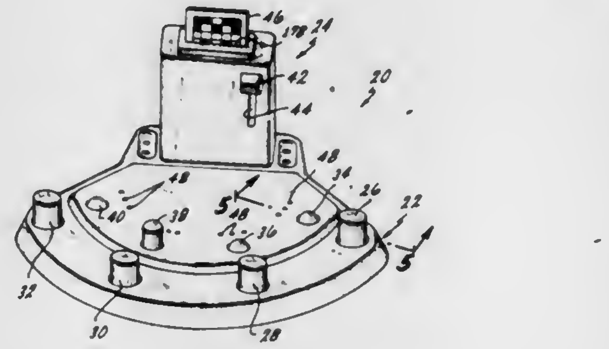
TEACHING TOY WITH STOP ACTION

Takashi Kaga, and Yoshiaki Funakoshi, both of Tokyo, Japan, assignors to Tomy Kogyo Co., Inc., Japan

Filed May 13, 1982, Ser. No. 377,814

Claims priority, application Japan, May 14, 1981, 56-69731[U]

Int. Cl.³ A63F *1/18*
U.S. Cl. 273—1 GE **11 Claims**



1. A toy which comprises:

a housing;

at least two operator interface means located on said housing;

a control means located on said housing in operative association with each of said operator interface means, each of said operator interface means capable of independently interacting with said control means when said control means is in a first control mode and when a first of said operator interface means interacts with said control means said interaction between said first operator interface means and said control means shifting said control means from said first control mode to a second control mode and said shifting of said control means to said second control mode by said interaction with said first operator interface means preventing subsequent interaction between any other interface means with said control means;

a plurality of indicating means equal in number to the number of said operator interface means, each of said indicating means associated with one of said operator interface means, each indicating means capable of indicating if the operator interface means with which it is associated has interacted with said control means and shifted said control means from said first control mode to said second control mode;

an inhibitor means operatively associated with said control means and capable of inhibiting said each of said operator interface means from interacting with said control means when said control means is in said second control mode;

a plurality of reset means equal in number to the number of said operator interface means, each of said reset means operatively associated with said control means and capable of shifting said control means from said second control mode back to said first control mode, each of said reset means associated with one of said operator interface means such that if said operator interface means is said first operator interface means to interact with said control means, and has interacted with said control means the reset means associated with said first operator interface means is capable of shifting said control means from said second control mode back to said first control mode;

output means associated with said housing and operatively associated with said control means, said output means having a first output parameter and a second output parameter, said output means exhibiting said first output parameter in response to said control means being in said first control mode and said output means exhibiting said second output parameter in response to said control means being in said second control mode;

a plurality of indicator-reset elements equal in number to the number of said operator interface means, each of said indicator-reset elements associated with one of said operator interface means, each of said indicator-reset elements comprising a functional portion of the one of said reset means and one of said indicating means which are also associated with the operator interface means with which the particular indicator-reset element is associated;

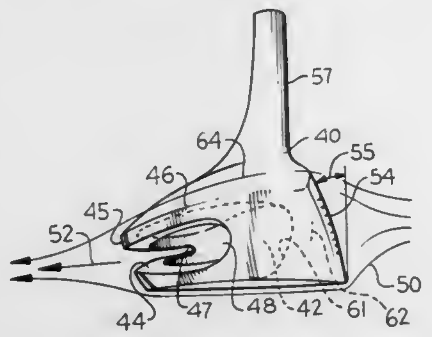
said output means including a drive means and a drive governing means, said drive means capable in a first instance of producing an output and in a second instance of producing no output;

said governing means operatively associated with both said control means and said drive means such that said drive means produces said output when said control means is in said first control mode and said drive means produces no output when said control means is in said second control mode.

4,444,392
GOLF DRIVER CLUB HEAD

Clovis R. Duclos, 6327 Marina Pacifica Dr., Long Beach, Calif. 90803

Filed Jul. 16, 1982, Ser. No. 398,970
Int. Cl.^{3} A63B *53/04*
U.S. Cl. 273—77 A **9 Claims**



1. A golf driver head having: a closed front impact surface adapted for striking a golf ball;

a hosel adjacent one side of said front impact surface for engagement with a golf club shaft;

a rear surface;

an interior cavity isolated from said closed front impact surface; and

a slot communicating said interior cavity through said rear surface whereby air entrapped within said internal cavity can flow through said slot to any area of reduced pressure adjacent said rear surface.

4,444,393
BOX FOR PARTY GAMES

Miodrag Brankovic, Svetozara Markovi/ a 38/III, 11000 Beograd, Yugoslavia

Filed Mar. 15, 1982, Ser. No. 358,303
Int. Cl.^{3} A63F *7/26*
U.S. Cl. 273—85 D **3 Claims**

1. A box for party games comprising:

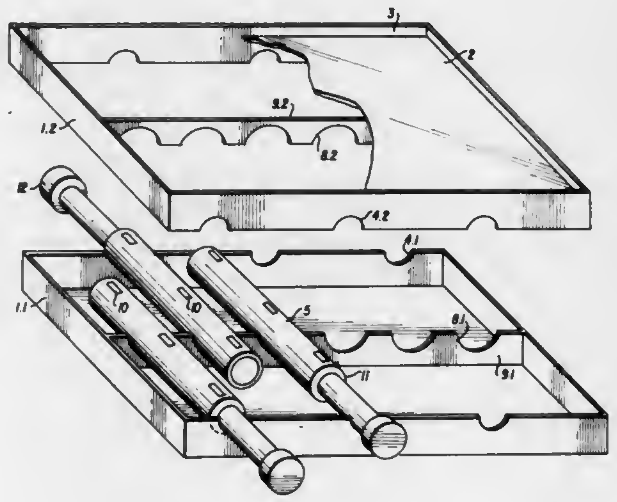
a rectangular frame having opposite parallel ends, parallel sides, and a top;

a flat surface fixed in said frame perpendicular to said ends and sides at a position below said top defining an edge rim;

replaceable sheets bearing indicia of various games insertable onto said flat surface below said top;

a plurality of non-magnetic, round tubes mounted in said frame close to said flat surface and extending through said sides in parallel with said flat surface, one half of said plurality extending through one side, the other half extending through the opposite in an alternating array;

means in said frame for supporting each of said plurality of tubes for unlimited clockwise and counter clockwise rotation and for reciprocation;



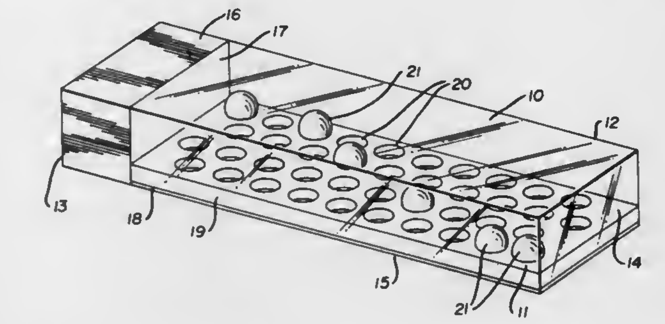
means on each of said tubes for limiting the amount of reciprocation; and

two or more permanent magnets carried by each of said tubes, said magnets being disposed with regard to a particular tube at equal distances from each other and parallelly with respect to a plane passing through the axis of the tube, the same magnetic poles of the magnets on a particular tube pointing in the same direction.

4,444,394
VARIABLE NUMBER GAME DEVICE

Anthony Pasquine, 1750 Lucretia Dr., Girard, Ohio 44420

Filed Jan. 31, 1983, Ser. No. 462,399
Int. Cl.^{3} A63F *3/06*
U.S. Cl. 273—144 B **6 Claims**

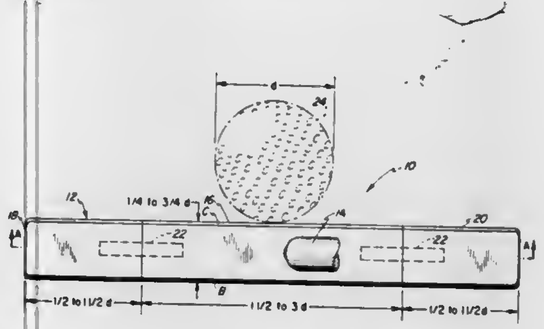


1. A variable number game device comprising a substantially rectangular closed hollow transparent housing defined by top and bottom portion oppositely disposed sides and oppositely disposed ends spacing said top and bottom portions, a block positioned in one end of said housing adjacent one of said oppositely disposed ends, a card positioned on said bottom portion of said transparent housing adjacent said block, an apertured plate positioned on said card, indicia comprising different numbers on said card arranged for registry with the apertures in said apertured plate, said apertures being circular and of uniform diameter, a plurality of balls formed of a material substantially harder than said block freely positioned in said hollow transparent housing above said apertured plate, said balls being of diameters registrable in said circular apertures so as to be temporarily held thereby when they are rebounded from said block by longitudinal motion imparted said game device.

4,444,395
GOLF CLUB

Morton M. Reiss, 16220 NE. 13th Ave., North Miami Beach, Fla. 33162

Filed Oct. 21, 1982, Ser. No. 435,756
Int. Cl.^{3} A63B *69/36*
U.S. Cl. 273—171 **7 Claims**



1. A golf club for putting, said golf club comprising:

a shaft having an upper end and a lower end, said shaft upper end for holding and swinging said golf club;

a club head having an elongated central portion and two end portions positioned at either end of said central portion, each of said portions including a striking surface adapted to impact a golf ball during a putting stroke;

said shaft lower end connected for use to said central portion at a suitable angle to said central portion;

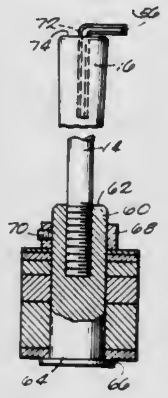
means for connecting each of said two end portions to a different end of said central portion;

the weight of said two end portions being equal to 60 to 90 weight percent of the weight of said club head.

4,444,396
WEIGHTED GOLF SWING EXERCISE CLUB

William P. Wendt, 712 S. Oak Ave., Marshfield, Wis. 54449

Filed Aug. 20, 1982, Ser. No. 410,056
Int. Cl.^{3} A63B *69/36*
U.S. Cl. 273—193 A **5 Claims**



1. An exercising device for improving a golf swing comprising

a shaft with an upper end and a lower end,

a grip on said upper end of said shaft,

a series of circular discs including perforations receiving said shaft, said discs progressing geometrically in weight from one ounce to sixteen ounces,

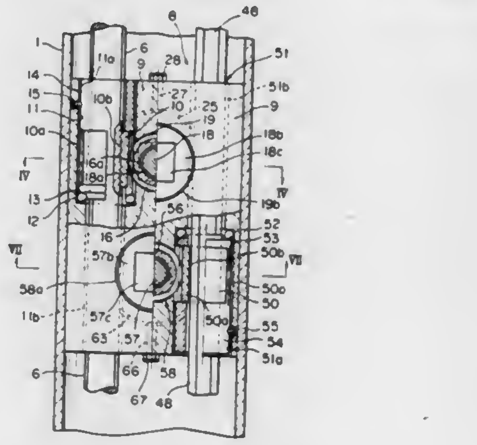
means for releasably securing any combination of said discs on said lower end of said shaft, said lower end of said shaft being a cylindrical portion with a diameter generally equal to the widest portion of said grip, said means for releasably securing said discs on said shaft comprising an upper collar releasably secured on said cylindrical portion and a flange extending radially outwardly from a lower end of said cylindrical portion.

4,444,397
ADJUSTING DEVICE FOR A NET POLE

Hisashi Kaburagi, Urawa; Seiji Hayamizu; Chiaki Negishi, both of Koshigaya, and Yoshiaki Ozawa, Tokyo, all of Japan, assignors to Senoh Kabushiki Kaisha, Tokyo, Japan

Filed May 26, 1982, Ser. No. 382,299

Claims priority, application Japan, Dec. 26, 1981, 56-195510[U]; Dec. 26, 1981, 56-195511[U]
Int. Cl.^{3} A63B *61/04*
U.S. Cl. 273—411 **16 Claims**



1. An adjusting device for a net pole comprising:

an outer tube;

an inner tube telescopically inserted in said outer tube;

a rope holding means for holding or releasing a net rope, said means disposed at the top end of said inner tube, said rope holding means being adapted to stretch the end of the net rope without winding by leading the net rope into the inner tube; and

a drive means for driving said inner tube to move upwards or downwards along said outer tube and for driving said holding means to hold or release the net rope, said drive means being housed in said outer tube and actuated by a detachable handle, said drive means comprising:

a first drive system including a first drive unit which is adapted to engage with said detachable handle through an opening formed in said outer tube and prevented from counter-rotating, and a first linkage connected between said first drive unit and said inner tube; and

a second drive system including a second drive unit which is adapted to engage with said detachable handle through another opening formed in said outer tube and prevented from counter-rotating, and second linkage connected between said second drive unit and said rope holding means.

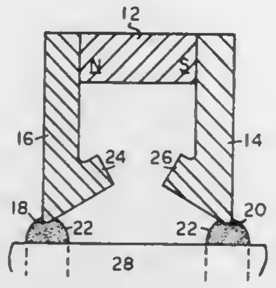
4,444,398
SELF-ACTIVATING FERROFLUID SEAL APPARATUS AND METHOD

Thomas J. Black, Jr., Lowell, and Philip Stahl, Holliston, both of Mass., assignors to Ferrofluidics Corporation, Nashua, N.H.

Filed Feb. 22, 1983, Ser. No. 468,333
Int. Cl.^{3} F16J *15/40*
U.S. Cl. 277—1 **22 Claims**

16. In a method of sealing a magnetically permeable shaft element with a seal apparatus, which seal apparatus comprises a permanent-magnet ring element disposed to surround the shaft element and first and second magnetically permeable pole pieces, which pole pieces, at the one end, are in a magnetic flux relationship with the ring element, and which pole pieces at the other ends extend into a close, noncontacting relationship with the surface of the shaft element to form a small radial gap therebetween, and the first and second pole pieces defining an air cavity therebetween, the improvement which comprises:

(a) forming a retaining gap of magnetically permeable elements in the air cavity, the retaining gap having a width greater than the radial gap and in a magnetic relationship with the permanent magnet sufficient to provide a magnetic field intensity across the retaining gap to retain the ferrofluid in the retaining gap, prior to the insertion of a shaft element into the seal apparatus; and

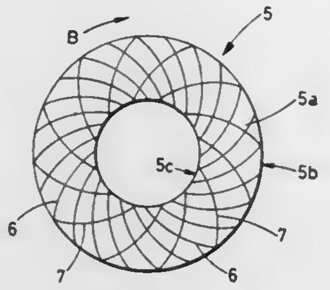


(b) inserting the shaft element into the seal apparatus to alter the magnetic flux path, to concentrate the magnetic flux at the radial gap, to provide for movement of the ferrofluid from the retaining gap to the radial gap, to form a ferrofluid O-ring seal, on rotation of the shaft element.

4,444,399

MECHANICAL SEAL AND METHOD OF FORMING A SLIDING SURFACE THEREOF

Tadamasa Yanai, Takahashi; Risaburo Sagehashi, Souja; Yoshio Kameyama, Souja, and Takao Shimomura, Souja, all of Japan, assignors to Eagle Industry Co., Ltd., Tokyo, Japan
Division of Ser. No. 317,814, Nov. 3, 1981, Pat. No. 4,420,162. This application Sep. 2, 1982, Ser. No. 414,240
Claims priority, application Japan, Nov. 4, 1980, 55-153840; Mar. 5, 1981, 56-30450
Int. Cl.^{3} F16J *15/34*
U.S. Cl. 277—1 **6 Claims**

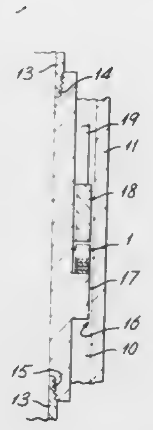


1. A method of forming fine grooves on the surface of a seal ring of the type which is in rotary sliding contact with a seal member, comprising photo-printing a first plurality of forwardly inclined grooves on the surface of said seal ring extending to the outer peripheral edge and to the inner peripheral edge of said surface, photo-printing a second plurality of rearwardly inclined lines on the surface of said seal ring extending to the outer peripheral edge and the inner peripheral edge of said surface, said first and said second plurality of grooves being inclined forwardly and rearwardly with respect to the relative rotational direction of said seal ring, said second plurality of grooves being greater in number than said first plurality of grooves, arranging said first plurality of grooves relative to said second plurality of grooves such that said first plurality of grooves intersect said second plurality of grooves, and subjecting said surface to an etching treatment such that said grooves are etched into said surface, whereby during operation of said seal, said forwardly inclined grooves effect a lubricating action and said rearwardly inclined grooves effect a pumping action such that the provision of said greater number of rearwardly inclined grooves than forwardly inclined grooves produce a greater pumping action of said rearwardly inclined grooves than the intake capacity of said forwardly inclined grooves.

4,444,400

SEAL ASSEMBLIES AND CORRUGATED METAL PACKER MEMBERS THEREFOR

William S. Norman, Braddan, Isle of Man, assignor to National Research Development Corporation, London, England
Filed Apr. 14, 1981, Ser. No. 254,103
Claims priority, application United Kingdom, Apr. 22, 1980, 8013231
Int. Cl.^{3} F16J *15/08;* F16L *19/06*
U.S. Cl. 277—9 **3 Claims**



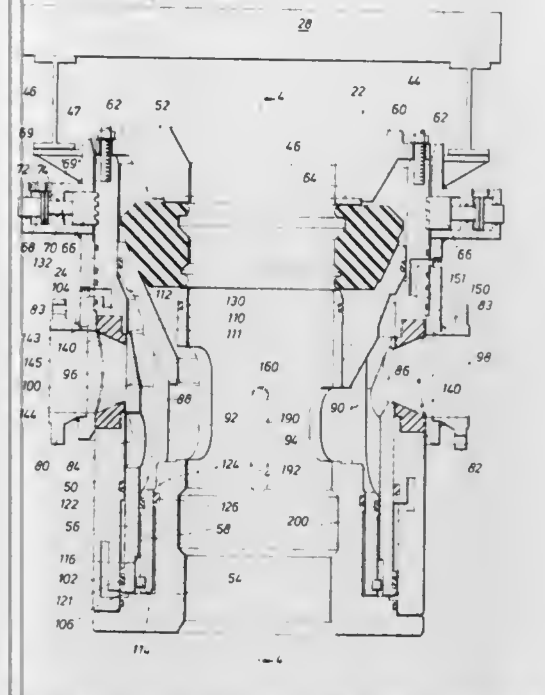
1. A seal assembly for first and second sections that are relatively stationary when sealed, said assembly comprising:
- a first casing section;
- a second tubing section located coaxially within said first casing section and forming a clearance therebetween, said first casing section having an inner wall;
- a cylinder member coupled to said second tubing section and presenting an axially-facing surface;
- a packer member supported on said surface wherein said packer member further comprises at least one ring coaxial with said first and second sections and formed with a plurality of corrugations, axes of said corrugations lying in substantially radial directions relative to the axis of the at least one ring and wherein height dimensions of said corrugations lie in directions parallel to the axis of said at least one ring, said at least one ring having in a corrugated state an outer diameter such that said at least one ring is freely slidable within said first casing section; and
- means for compressing said packer member in an axial direction such that said outer diameter of said at least one ring increases and forms a tight joint against said surface and against said inner wall of said first casing section and said second tubing section is held stationary with respect to said first casing section.

4,444,401

FLOW DIVERTER SEAL WITH RESPECTIVE OBLONG AND CIRCULAR OPENINGS

Joseph R. Roche, Humble, and William L. Clark, Houston, both of Tex., assignors to Hydril Company, Los Angeles, Calif.
Filed Dec. 13, 1982, Ser. No. 449,377
Int. Cl.^{3} F16J *15/06;* E21B *33/035*
U.S. Cl. 277—30 **9 Claims**

1. A seal for installation in the cylindrical outer wall of the housing of a flow diverter about an outlet passage through the housing wall, the outlet passage connecting an oblong hole in the interior of the wall with a substantially circular hole in the exterior of the wall, the seal comprising,
- an integral member having
- an outer section adapted to conform generally with the curvature of the outside of the cylindrical housing wall and having a generally circular opening therein with at least one generally circular sealing shoulder disposed outwardly from the circular opening,
- an inner section adapted to conform generally with the curvature of the inside of the cylindrical housing wall and having an oblong opening therein with a first oblong sealing shoulder disposed outwardly from the oblong opening,

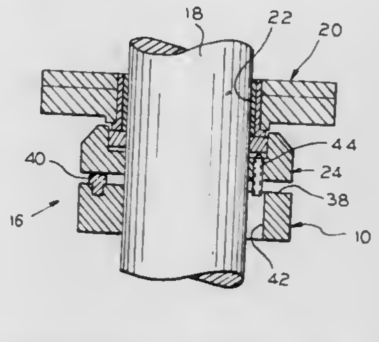


- a connecting section between the outer section and inner section having a bore therein connecting the circular hole with the oblong hole; and
- means for sealing the seal to the housing wall.

4,444,402

SEALING ASSEMBLY WITH ROTATABLE COLLAR

Jesse W. Escue, 1010 Buell Ave., Joliet, Ill. 60435, and David L. Okon, 938 Surrey Ct., Joliet, Ill. 60436
Filed Jul. 21, 1982, Ser. No. 400,909
Int. Cl.^{3} F16J *15/34*
U.S. Cl. 277—93 R **16 Claims**

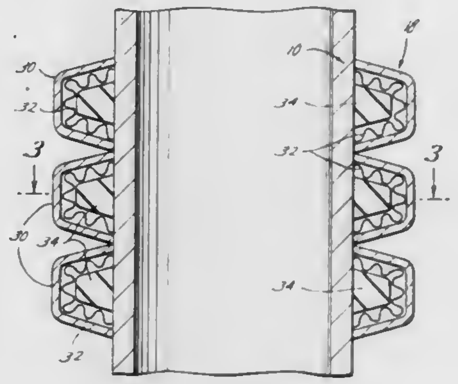


1. A high pressure sealing assembly for a device having a rotatable shaft, comprising:
- stationary seal means associated with said device and having an opening generally conforming to said rotatable shaft;
- rotatable seal means adapted to be mounted on said rotatable shaft to engage and cooperate with said stationary seal means;
- a rotatable seal collar adapted to be mounted on said rotatable shaft to engage and cooperate with said rotatable seal means;
- said rotatable seal collar cooperating with said rotatable shaft to maintain said rotatable seal means in engagement with said stationary seal means, said rotatable seal collar including a shaft-receiving opening therein and being split through said shaft-receiving opening along a diameter thereof, said shaft-receiving opening being defined by a shaft-conforming surface having means for resisting movement along said rotatable shaft, said movement resisting means including means for biting into the surface of said rotatable shaft, said surface biting means having a radial dimension slightly less than the radial dimension of said rotatable shaft; and
- means for securing said diametrically split portions of said rotatable seal collar together so as to cause said surface biting means to bite into the surface of said rotatable shaft.

4,444,403

THERMAL AND/OR CORROSION SEAL FOR A WELL TOOL

Arthur J. Morris, Magnolia, Tex., assignor to Camco, Incorporated, Houston, Tex.
Filed Jun. 21, 1982, Ser. No. 390,088
Int. Cl.^{3} F16J *15/06*
U.S. Cl. 277—228 **2 Claims**

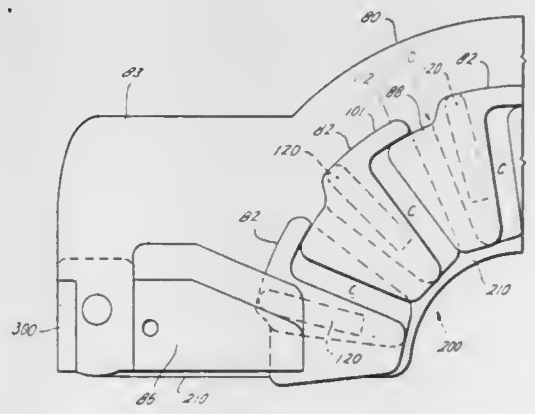


1. In a well tool having an expandable seal for sealing off the space between two well members, the improvement in an expandable seal for overcoming high thermal and/or corrosive environments comprising,
- an outer protective layer,
- a second pliable layer encapsulated in the outer first layer, said second layer being impervious to well fluids and being a flexible metal, and
- a third layer encapsulated within the second layer being of an elastic material.

4,444,404

VARIABLE BORE RAM PACKING ELEMENT AND BLOWOUT PREVENTER

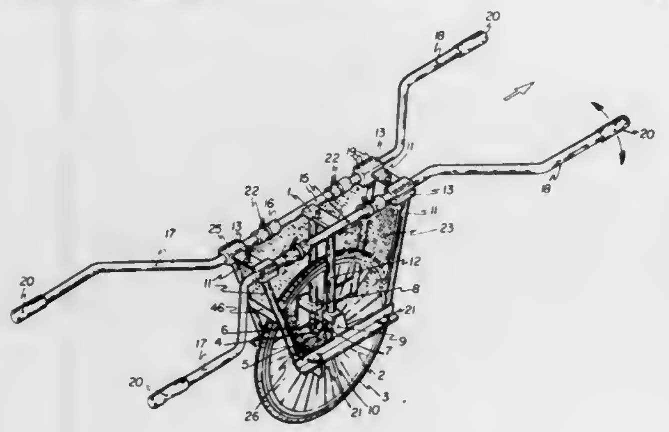
Glenn C. Parks, Jr., Shawnee, Okla., assignor to Hydril Company, Los Angeles, Calif.
Filed Oct. 19, 1982, Ser. No. 435,346
Int. Cl.^{3} F16J *15/00;* B65D *53/00;* E21B *33/06*
U.S. Cl. 277—235 R **14 Claims**



1. A seal element adapted for use over a range of operating diameters in a blowout preventer having a ram block with upper and lower ram block members, the seal element comprising,
- an essentially semicircular section of a resilient, compressible material having an inner surface adapted to engage a pipe or the like in a well bore having a plurality of radially disposed substantially identical rigid support elements embedded in said material,
- each support element having a pair of essentially parallel stair-stepped anti-extrusion members that are disposed on

opposite longitudinal sides of the semi-circular section and that are interconnected by an integral rib,
the integral rib being attached between the top-most step of the lower parallel anti-extrusion member and the lowermost step of the higher parallel anti-extrusion member, said rib extending to said outermost end of said members while being set back from the innermost end of said members,
the anti-extrusion members having surfaces for overlapping with adjacent anti-extrusion members,
the seal element being adapted to fit within the longitudinal space between said upper and lower ram block members of said blowout preventer such that said ram block members overlap the outermost ends of said top and bottom anti-extrusion members when said seal element is operative on the smallest of its operating diameters.

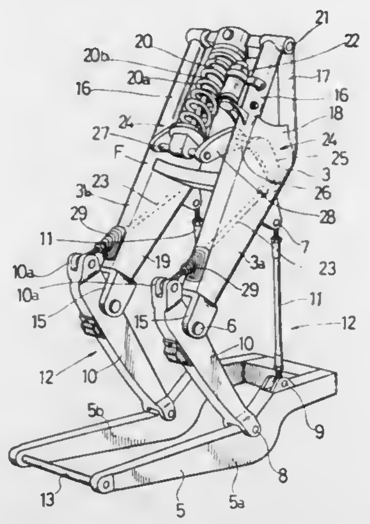
4,444,405
ROUGH TERRAIN CART
Dwight M. Barrus, 326 Joya Loop, Los Alamos, N. Mex. 87544
Filed Jul. 2, 1981, Ser. No. 279,935
Int. Cl.^{3} B62B ***1/18***
U.S. Cl. 280—47.3 **4 Claims**



1. A lightweight rough terrain cart for carrying backpacks, camp gear, and infants comprising in combination:
a. a single wheel,
b. a rigid, noncollapsible frame means that encloses said wheel to about its axle and provides mounting for the wheel and the load carried by the cart,
c. an elastically deformable suspension system means connected to the axle and partially contained within a vertical frame tube, and
d. a continuous and independent pivotal height adjustable handle means connected to each end of a horizontal frame tube, and said handle means comprising a split clamp having a precision contoured surface that grips and locks an aluminum alloy, bent, thin-walled tube handle, said clamp having multiple adjusting screws that fit the clamping surface to the tube handle, and a spreader screw which opens or closes the clamp.

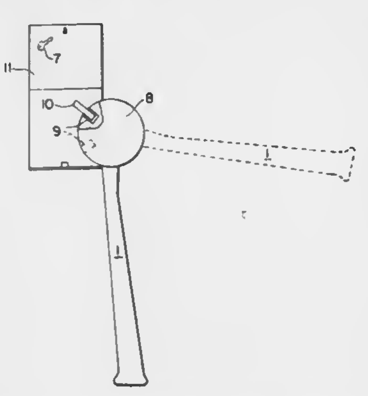
4,444,406
FRONT WHEEL SUSPENSION FOR MOTORCYCLES
Tokio Isono, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 22, 1981, Ser. No. 333,463
Claims priority, application Japan, Dec. 25, 1980, 55/184555
Int. Cl.^{3} B62K ***25/12***
U.S. Cl. 280—277 **5 Claims**

1. A front wheel suspension for a motorcycle, comprising:
a pair of quadrilateral first linkages including a pair of upper fork members pivotably supported so as to be steerable on a body of said motorcycle, a pair of lower fork members rotatably supporting a front wheel of said motorcycle, and a pair of front link members and a pair of rear link members interconnecting said upper and lower fork members;
a shock absorber disposed between said upper fork members;
a pair of second linkages each including at least one rod member and operatively connecting one end of said shock absorber to either of said first linkages;
said upper fork members each having a hollow portion accommodating therein at least a part of either of said second linkages;
each said second linkage comprising said rod member having one end thereof jointed to a link member of one pair of said front and rear pairs of link members, and a lever member connecting the other end of said rod member with said one end of said shock absorber;



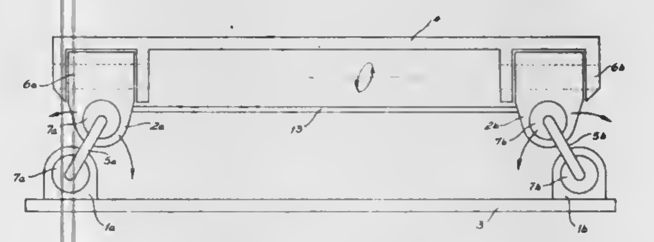
said lever member including an intermediate portion pivotably supported on said upper fork member, a first arm portion having one end thereof joined to said intermediate portion and the other end thereof connected to said other end of said rod member, and a second arm portion having one end thereof joined to said intermediate portion and the other end thereof connected to said one end of said shock absorber; and
said rod member and said first arm portion being substantially accommodated in said hollow portion of said upper fork member.

4,444,407
ANTI-THEFT DEVICE FOR MOTORCYCLES APPLIED TO THE PARKING STAND
Renzo Calmonte; Silla Martini, and Ezio Pinarello, all of Via Bassanese, 35, 31037 Loria (TV), Italy
Filed Dec. 14, 1981, Ser. No. 330,356
Claims priority, application Italy, Oct. 15, 1981, 49493 A/81
Int. Cl.^{3} B62H ***5/00***
U.S. Cl. 280—297 **7 Claims**



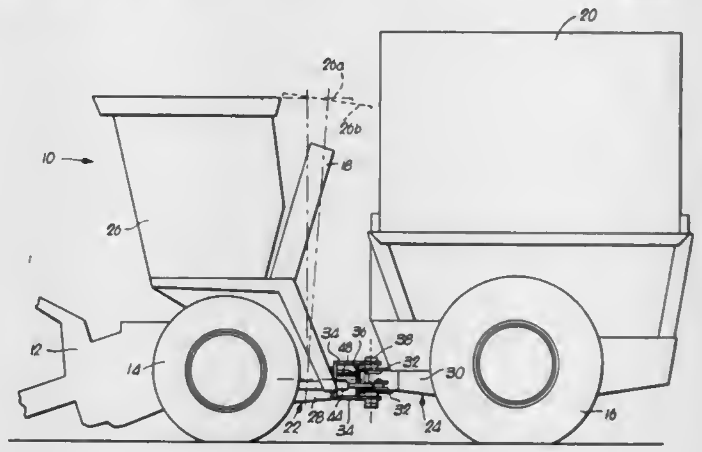
1. An anti-theft device for a vehicle having a frame and two wheels, comprising,
an elongated stand (1) supported on the vehicle frame for movement between a raised position and a lowered position, said stand when in said lowered position being operable to engage the ground to raise a wheel of the vehicle from the ground,
a member (8, 13) affixed to and movable with said stand,
a lock pin (10, 15) for engaging said member, said lock pin being supported for movement from a retracted position where it is spaced from said member to an extended position where it lies in the path of at least a portion of said member when the stand is in its lowered position, said lock pin being operable when in its extended position to prevent movement of the stand to its raised position,
means (16) for biasing the lock pin toward its extended position,
holdback means (18, 20) for engaging the lock pin and holding the lock pin at its retracted position so that the lock pin is spaced from the member, and
means (17, 23) for releasing the holdback means in response to movement of the stand from its lowered position toward its raised position, said biasing means being operable to bias the lock pin directly against the member when the holdback means is released so that the lock pin will automatically move to its extended position when the stand is subsequently moved to its lowered position.

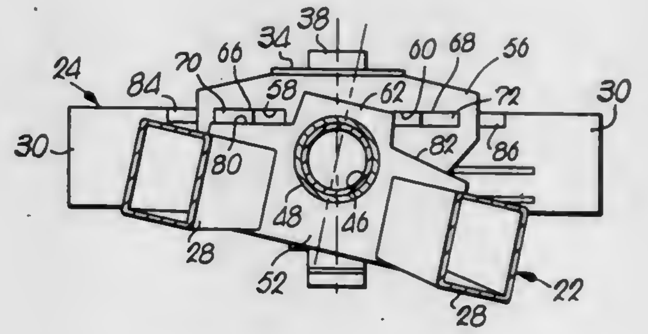
4,444,408
SWINGING LINK MECHANISM
John Goth, Guildford, Australia, assignor to James Goth, New South Wales, Australia
Filed Mar. 26, 1982, Ser. No. 362,165
Claims priority, application Australia, Jun. 1, 1981, PE9116
Int. Cl.^{3} B62D ***53/08***
U.S. Cl. 280—438 A **8 Claims**



1. A swinging link mechanism for longitudinally connecting a trailer to a prime mover which comprises:
a first pair of laterally spaced mountings for attachment to the prime mover,
a second pair of laterally spaced mountings for connection to the trailer, each mounting of said first pair of mountings being associated with and spaced from a different one of the mountings of said second pair of spaced mountings and together constituting an associated pair of mountings, and
a different swinging link pivotally attached to and connecting the opposed mountings of each associated pair of mountings to one another such as to allow relative swinging motion of said first and second pairs of mountings along said lateral direction;
the spacing between said first pair of mountings exceeding the spacing between said second pair of mountings such that said two swinging links are inclined towards one another;
the upper ends of the swinging links being closer together than the lower ends thereof whereby the lateral swinging motion of the second pair of mountings relative to said first pair of mountings takes place around a centre which is spaced above second pair of mountings.

4,444,409
OSCILLATOR LIMIT IN ARTICULATED LAND VEHICLE
Harold K. Garrison, Newton, Kans., assignor to Hesston Corporation, Hesston, Kans.
Filed Jul. 26, 1982, Ser. No. 402,147
Int. Cl.^{3} B62D ***53/02***
U.S. Cl. 280—492 **9 Claims**





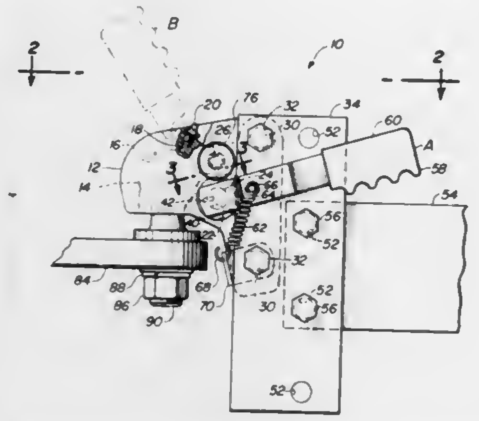
1. In a mobile vehicle,
a pair of independent frames each provided with a wheel and axle assembly in supporting relationship thereto;
means interconnecting the frames for articulation relatively about a normally upright axis;
steering means for effecting turning movement of one of the frames about said axis;
means effecting oscillatory movement of said one frame relative to the other frame about a normally horizontal axis extending fore and aft of the vehicle, permitting tilting of said one frame in opposite directions over uneven terrain;
means limiting the extent of said tilting in both directions and in all steered positions of said one frame regardless of ground contour; and
means for progressively decreasing said extent of tilting in both directions as the one frame is turned a predetermined distance to the left or to the right.

4,444,410
BALL HITCH APPARATUS
E. Joel Martin, Westmont, Ill., assignor to Sperry Corporation, New Holland, Pa.
Continuation of Ser. No. 191,043, Sep. 25, 1980, abandoned. This application Feb. 22, 1982, Ser. No. 350,693
Int. Cl.^{3} B60D ***1/06***
U.S. Cl. 280—512 **5 Claims**

1. A ball hitch apparatus comprising:
means for receiving a ball portion of a hitch, said means including a member having a ball socket formed therein;
a first pin pivotally mounted in said member adjacent said socket;
a cam eccentrically connected to said first pin;
means for pivoting said cam to a first position into engage-

ment with an associated ball in said socket and to a second position free of engagement with said ball, said means being a lever carried by said first pin;

means for maintaining said lever in said first position, said means being a second pin resiliently urged against said



lever for automatically extending from said member into pivot limiting engagement with said lever in response to said lever being moved to said first position; and

means for manually moving said second pin out of pivot limiting engagement with said lever.

4,444,411
SAFETY SKI BINDING

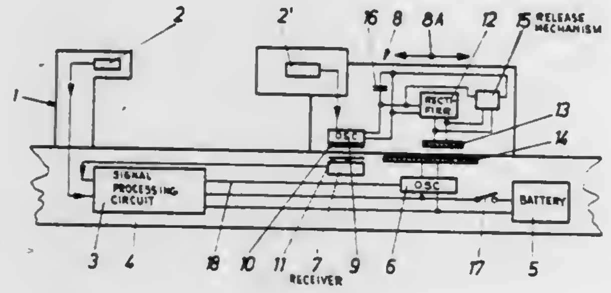
Josef Svoboda, Schwechat, and Gerhard Oberleitner, Vienna, both of Austria, assignors to TMC Corporation, Baar, Switzerland

Filed Apr. 29, 1982, Ser. No. 373,310

Claims priority, application Austria, May 4, 1981, 1964/81

Int. Cl.³ A63C *9/00*

U.S. Cl. 280—611 **4 Claims**



1. In a safety ski binding adapted to be mounted on a ski and having two jaws and a signal-processing circuit which controls at least one release mechanism and is connected with said release mechanism and with a sensor through respective transmitting paths, at least one of said transmitting paths having a first transmitter-receiver arrangement which includes a first transmitter and a first receiver which are separated galvanically from one another, the improvement comprising wherein the other of said transmitting paths has a second transmitter-receiver arrangement which includes a second transmitter and a second receiver, and wherein said signal-processing circuit is connected to said first transmitter and to said second receiver of said first and second transmitter-receiver arrangements, respectively, said first transmitter being arranged for transmitting to said first receiver a release command and also the energy needed for operation of said second transmitter and said release mechanism, both of which are arranged in one of said jaws.

4,444,412
REAR FASTENING FOR CROSS COUNTRY SKI

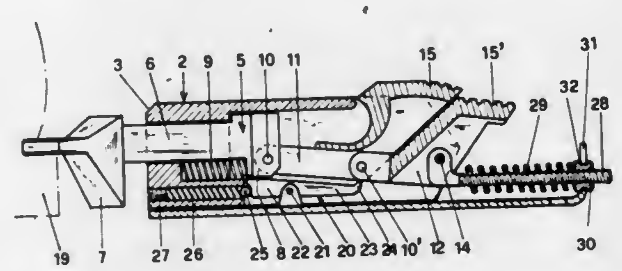
Mario Callegari, Montebelluna, Italy, assignor to Calzaturificio Binnaig di Bonsembiante Gianni, Cusignana di Giavera, Italy

Filed Feb. 17, 1982, Ser. No. 349,193

Claims priority, application Italy, Feb. 18, 1981, 61916/81[U]; Jan. 22, 1982, 84104 A/82

Int. Cl.³ A63C *9/00*

U.S. Cl. 280—614 **4 Claims**



1. A cross country ski rear fastener comprising a body adapted to be fastened to a ski, a forked member adapted to lock a footwear heel on a ski movably mounted on said body for fore and aft movement relative to footwear on a ski, spring means engaging the forked member and biasing it rearwardly toward a position of disengagement with the footwear heel, a lever system on the body having a connection with said forked member and operable by a skier to force the forked member forwardly into engagement with the footwear heel against the force of said spring means, the lever system having an over-dead-center locking position to hold the forked member engaged with the footwear heel, and a safety release means for said lever system including a rocker element having one end portion bearing on the lever system at an articulation point therein, and being resiliently biased at its other end portion toward engagement with a part of the forked member within said body.

4,444,413
HEELHOLDER FOR SAFETY SKI BINDINGS

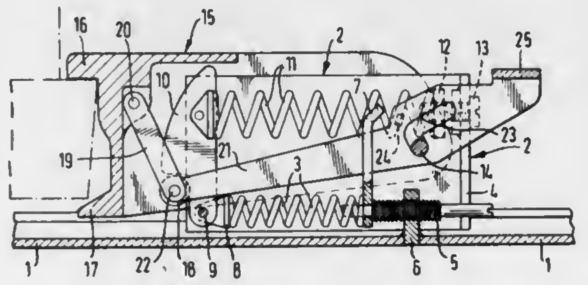
Manfred Richert, Farchant, and Roland Jungkind, Garmisch-Partenkirchen, both of Fed. Rep. of Germany, assignors to Marker-Patentverwertungsgesellschaft mbH., Baar, Switzerland

Filed Aug. 31, 1981, Ser. No. 298,154

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1980, 3033021

Int. Cl.³ A63C *9/084*

U.S. Cl. 280—632 **10 Claims**



1. A heelholder for a safety ski binding, said heelholder comprising:

a baseplate attachable to the top of a ski;

stop means mountable in a fixed position relative to said baseplate;

slide means slidably mounted on said baseplate for movement between a forward position when no boot is in the binding and a rearward position when a boot is in the binding, said slide means being biassed towards the forward position;

a soleholder pivotally mounted on said slide means for rotation between open and closed positions, said soleholder being biassed towards the open position and movable to the closed position upon insertion of a boot into the binding;

locking means mounted on said soleholder and movable between an obstructed position for holding said soleholder in the closed position and an unobstructed position for releasably holding said soleholder from the closed position;

locking lever means pivotally mounted on said slide means and movable between a locking position for obstructing said locking means against movement from the obstructed position and an unlocking position for enabling said locking means to move from the obstructed position, said locking lever means being biassed towards the locking position; and

blocking means having a blocking condition for holding said locking means in the obstructed position and an unblocking condition for moving said locking means to the unobstructed position, said blocking means cooperating with said stop means to assume the unblocking condition in response to movement of said slide means towards the forward position.

4,444,414
APPARATUS FOR FACILITATING AN ADJUSTMENT OF FRONT AND/OR REAR JAWS OF SKI BINDINGS

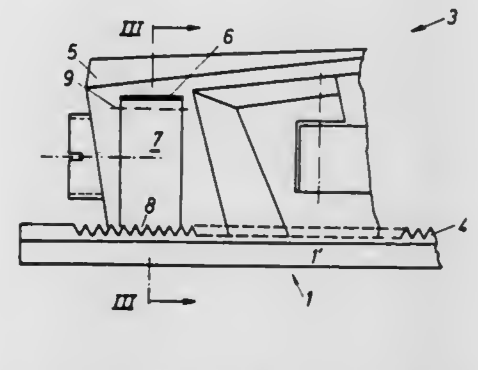
Helmut Bauer, and Erwin Krob, both of Vienna, Austria, assignors to TMC Corporation, Baar, Switzerland

Filed Apr. 27, 1982, Ser. No. 372,403

Claims priority, application Austria, Apr. 28, 1981, 1893/81

Int. Cl.³ A63C *9/08*

U.S. Cl. 280—633 **14 Claims**



1. In an apparatus for adjusting the position of a ski binding jaw on a ski, including a guide rail which is adapted to be secured on an upper surface of the ski, means supporting said jaw on said guide rail for movement longitudinally of the ski, said guide rail having a toothed bar which extends longitudinally of the ski and has plural teeth projecting upwardly generally perpendicular to the upper surface of the ski, and toothed detent means supported on said jaw for movement transversely of the ski and having a spring which biases said toothed detent means toward a position in which it engages said toothed bar, the improvement comprising wherein said toothed detent means includes a lever pivotally supported on an axle which extends longitudinally of the ski and is provided on a sidewall of a housing of said jaw, said sidewall being adjacent said toothed bar of said guide rail, and at least one tooth provided on said lever at a location spaced from said axle and being movable into and out of meshing engagement with selected teeth on said toothed bar under and against the resilient urging of said spring.

4,444,415
INDEPENDENT WHEEL SUSPENSION

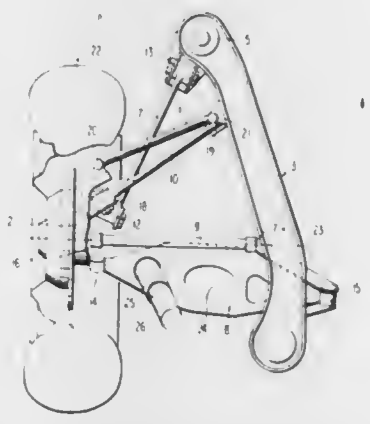
Manfred von der Ohe, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz AG, Stuttgart, Fed. Rep. of Germany

Filed Dec. 23, 1981, Ser. No. 334,075

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1980, 3048794

Int. Cl.³ B60G *3/00*

U.S. Cl. 280—701 **26 Claims**



1. An independent wheel suspension for a motor vehicle, the wheel suspension comprising wheel guide means for each suspended wheel, each of the wheel guide means including upper and lower articulation means for supporting a wheel carrier at a body portion of the vehicle, characterized in that the upper articulation means includes a transversely extending camber strut means and, as viewed in the normal driving direction, a forwardly extending tension strut means and the lower articulation means includes a compression strut means extending obliquely forwardly, as viewed in a normal driving direction of the vehicle, and inwardly toward a longitudinally extending center plane of the vehicle, means are provided for articulatingly connecting the compression strut means to the wheel carrier and the body portion of the vehicle, and a spring link extending transversely of the vehicle for carrying a spring suspension means, means are provided for articulatingly connecting the spring link at the wheel carrier and at the body portion of the vehicle, a point of articulation of the spring link at the wheel carrier is disposed at a position behind a transversely extending center plane of the wheel, as viewed in the normal driving direction, and near a longitudinally extending center plane of the wheel, the compression strut means and spring link are arranged such that a point of intersection of a longitudinal center axis of the compression strut means and the spring link is disposed rearwardly of the transversely extending center plane of the wheel near the longitudinally extending center plane of the wheel, the guide means further includes a track rod means extending substantially transversely of the vehicle obliquely forwardly, as viewed in the normal driving direction, and inwardly toward the longitudinal center plane of the vehicle, the track rod means is disposed forwardly of the transversely extending center plane of the wheel, and in that means are provided for articulatingly connecting the track rod means to the wheel carrier and the body portion of the vehicle wherein the point of articulation of the track rod means at the wheel carrier is higher than the point of articulation of the spring link at the wheel carrier.

4,444,416
VEHICLE

Berry Söderström, Box 13, S-814 01 Skutskär, Sweden

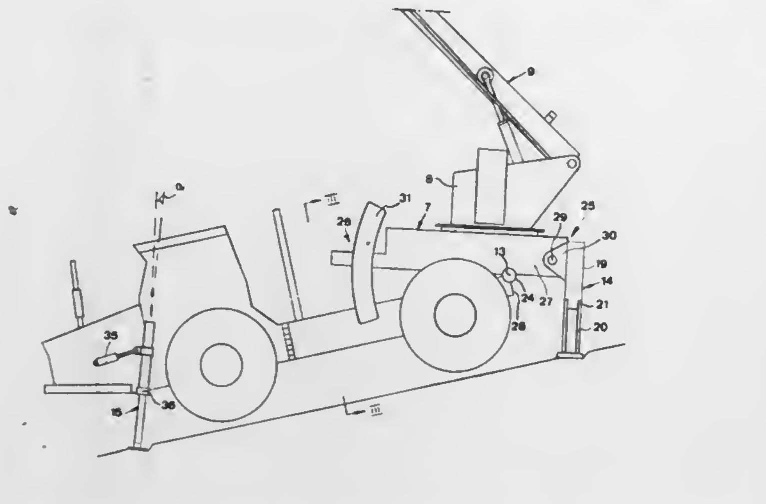
Continuation of Ser. No. 299,032, Aug. 31, 1981, abandoned. This application Oct. 7, 1983, Ser. No. 539,638

Claims priority, application Sweden, Jan. 9, 1980, 7910706

Int. Cl.³ B66C *5/00*

U.S. Cl. 280—763.1 **15 Claims**

1. A vehicle comprising a chassis carried by wheels (5,6), a carrier (7) arranged on said chassis and adapted to support a working equipment (9), said carrier being pivotable by a hinge (24) about an axis (13) extending at an angle to the longitudinal direction of the vehicle, said carrier further being adapted to be connected to the vehicle during use as well as transportation of the working equipment, and power means (34) acting between the carrier and the chassis to pivot the carrier relative to the chassis about said axis to compensate for inclination of the ground, one or more stabilizing ground supports (14) to directly bear the vehicle against the ground being provided on the pivotable carrier (7), characterized in that the hinge (24) forming the pivot axis (13) of the carrier (7) is, as viewed in the longitudinal direction of the vehicle, located between a rear end area (25) of the carrier, in which the ground supports (14) exert their bearing action, and a front end area (26) of the carrier, said vehicle being defined by rear and forward vehicle portions (1, 2) interconnected by a hinge (3) having a generally vertical axis (4), said vehicle portions being restrained from rotating relative to each other about an axis extending in the longitudinal direction of the vehicle, said carrier (7) being provided on the rear vehicle portion (1), and said forward vehicle portion (2) being provided with at least another stabilizing ground support (15) to directly bear said forward vehicle portion against the ground.



4,444,417

LATCH DEVICE FOR A MOVING RUNNER MEMBER USED IN AN AUTOMATIC SEAT BELT SYSTEM

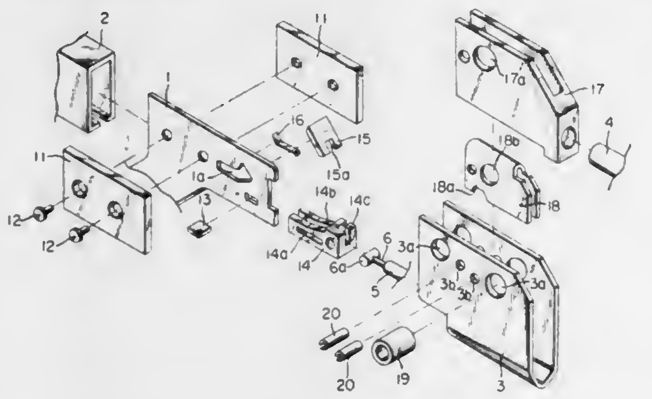
Takeo Ueda, Fujisawa, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 19, 1982, Ser. No. 369,566

Claims priority, application Japan, Apr. 25, 1981, 56-59214[U]

Int. Cl.³ B60R ***21/10***

U.S. Cl. 280—804 **5 Claims**



1. A latch device for a moving runner member used in an automatic seat belt system comprising:

a runner member having webbing attached thereto and adapted to be moved between a seat occupant restraining position and a seat occupant liberating position along a guide member secured to a vehicle body by a drive member movable in response to the opening-closing of a door;

an operating member mounted on said runner member for movement between a first position and a second position and having one end of said drive member attached thereto, said operating member being adapted to assume said first position by said drive member when moved with said runner member from said seat occupant liberating position to said seat occupant restraining position by said drive member and to move from said first position to said second position and be moved with said runner member by said drive member when it begins to be moved from said seat occupant restraining position to said seat occupant liberating position;

a biasing means;

a lock member supported by said runner member for movement between an engaging position and a non-engaging position and biased by said biasing means toward said engaging position, said lock member being capable of assuming said engaging position in accordance with the biasing force of said biasing means when said operating member is in said first position, said operating member having means for moving said lock member to said non-engaging position against said biasing force of said biasing means when said operating member is moved from said first position to said second position; and

a latch member secured to the vehicle body and adapted to engage and restrain said lock member moved to said engaging position when said runner member is moved to said seat occupant restraining position and to be disengaged from said lock member when said runner member is about to move toward said seat occupant liberating position.

4,444,418

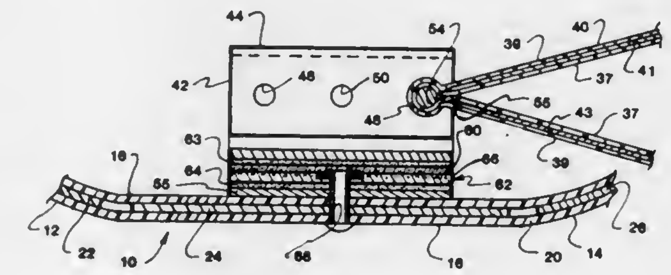
PORTABLE CARRYING CASE WITH REMOVABLE FOLIO ASSEMBLY

Stanley Goldstein, P.O. Box 29376, Dallas, Tex. 75229

Filed May 7, 1982, Ser. No. 375,718

Int. Cl.³ B42F ***13/00***

U.S. Cl. 281—45 **5 Claims**



1. A folio carrying case comprising:

a pair of opposed cover portions joined to a central spine portion, said cover portions each being hinged to said spine portion along opposite longitudinal sides of said spine portion;

a folio assembly adapted to be removably mounted in said case between said cover portions, said folio assembly including at least one folio, a plurality of elongated support members, each comprising a rod of elastically deflectable material secured to said folio along one edge of said folio;

a support frame member for releasably supporting said plurality of elongated support members in substantially side-by-side relation at opposite ends of said plurality of support members; and

quick release retaining means comprising cooperating elastic hook and loop fastener members mounted on said spine portion and said frame member, respectively,

whereby said at least one folio may be secured to said case and may be selectively removed from said case by removing the particular one of said plurality of support members associated with said at least one folio from said frame or by removing said at least one folio and said frame member in assembly from said case.

4,444,419

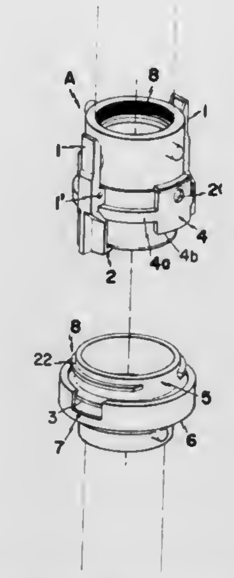
STRUCTURE FOR PREVENTION OF MIXING OF DIFFERENT KINDS OF OILS FOR OIL-FEEDING COUPLINGS

Sozaburo Maeshiba, 1-33 2 chome, Tani, Chuo-ku Fukuoka, Japan

Filed Mar. 1, 1982, Ser. No. 353,213

Int. Cl.³ F16L ***37/12***

U.S. Cl. 285—12 **1 Claim**



1. A fluid coupling arrangement for minimizing the danger of connecting and transferring an undesired fluid through the coupling comprising, a first coupling member, latching means on said first coupling member for detachably connecting and latching said first coupling member to any one of several second coupling members upon movement of the first coupling member to a coupling position with respect to a second coupling member, and means to permit movement of said coupling members to said coupling position only when said second coupling member corresponds to said first coupling member, said means comprising, cooperating surface and projection means for engaging said first member with a second member only when the first member is in a predetermined angularly aligned position with respect to a second member, said latching means comprising, locking levers pivotally connected to said first coupling member at circumferentially spaced apart locations on the first coupling member, said locking levers projecting toward said second member and having locking portions at ends thereof, said locking portions being detachably engageable with locking projections of the second member, said cooperating surface and projection means comprising said end portions of said locking levers, and recesses in a ring on said second member circumferentially spaced apart the same distance as said locking levers, said recesses exposing said locking projections for engagement by said levers, said ring being circumferentially adjustable to preset the second coupling in accordance with the desired fluid to be transferred, and adjustable means mounted on said first coupling member for movement to a plurality of different circumferential positions indicative of the fluid to be transferred by the coupling member, means for retaining said circumferentially adjustable means in each of said circumferential positions, abutment means on said adjustable means for permitting connecting of said first member only to a second coupling member having a fixed surface mateable with said abutment means, different ones of said second coupling members having their respective rings set at different positions thereon corresponding to different positions of adjustment of said adjustable means, so that said first coupling member can be moved to said coupling position and connected only to a second member having a correspondingly adjusted ring, for each different position of adjustment of the adjustable means.

4,444,420

INSULATING TUBULAR CONDUIT APPARATUS

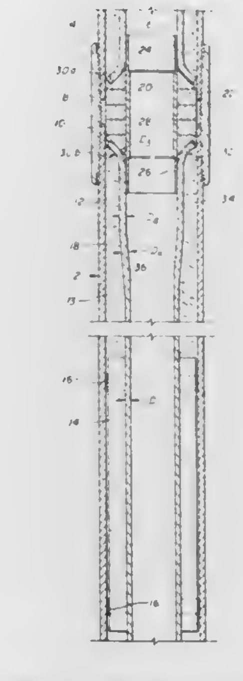
David M. McStravick, and David V. Chenoweth, both of Houston, Tex., assignors to Baker International Corporation, Orange, Calif.

Continuation of Ser. No. 272,411, Jun. 10, 1981, Pat. No. 4,396,211. This application Jun. 1, 1983, Ser. No. 499,996

The portion of the term of this patent subsequent to Aug. 2, 2000, has been disclaimed.

Int. Cl.³ F16L ***9/18***

U.S. Cl. 285—47 **1 Claim**



1. A concentric walled insulating tubular conduit for forming a tubular string in a subterranean well to transport a heated fluid between the surface of the well and a subterranean location while minimizing the heat loss from the heated fluid during transport, comprising: an outer tubular member; an inner concentric tubular member having at least one outwardly flared end, said inner tubular member initially comprising a tubular member with at least one enlarged upset end with a wall thickness greater than the nominal wall thickness of the tubular member intermediate the ends, said outwardly flared end having a wall thickness greater than the nominal wall thickness of said inner tubular member intermediate the ends thereof and less than the wall thickness of the initially upset end; welded connections at both ends of the inner tubular member to the outer tubular member with a single circumferential weld joining a flared end of the inner tubular member directly to the outer tubular member at the flared end with greater wall thickness, said inner tubular member being spaced from said outer tubular member intermediate the welded ends thereof to define an annular insulating cavity therebetween, said flared end on the inner tubular member defining one end of said annular insulating cavity, said welded connections forming a seal for said annular insulating cavity.

4,444,421

DRIVEABLE PILE CONNECTIONS

Arthur G. Ahlstone, Ventura, Calif., assignor to Varco International, Inc., Orange, Calif.

Filed Nov. 12, 1980, Ser. No. 206,015

Int. Cl.³ F16L ***15/00***

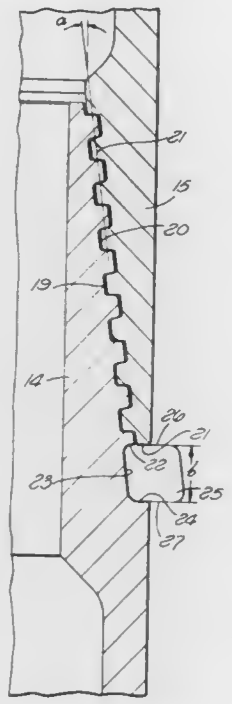
U.S. Cl. 285—86 **13 Claims**

1. A driveable pipe connection comprising:

first and second sections having interengageable internal and external threads;

said threads being tapered to progressively decrease in diam-

eter as they advance axially at an angle between about 6 and 9 degrees with respect to the axis of said threads;
each of said threads having opposite side faces which converge slightly toward one another as they advance from the root of the thread toward its crest;
said two faces at opposite sides of each thread being disposed at an angle to a line perpendicular to and intersecting the axis of said threads, which angle is not over about 5.5 degrees;
each of said threads having crest and root surfaces which taper essentially conically between said opposite side faces of the thread and which are received opposite corresponding root and crest surfaces respectively of the other thread, said crest surface of each thread, as viewed in axial section, having a length greater than the height of the thread from its root to its crest surface taken perpendicular to the pitch line;
a first of said threads as viewed in axial section having a corner at the juncture of its crest surface and one of said opposite side faces which is more abrupt than an engaging corner formed on the second thread at the juncture of its root surface and one of said opposite side faces in a relation causing interference between said corners and requiring slight deformation of one of the corners when engaged to assist in locking the threads in connected relation;
each thread as viewed in axial section having one of said opposite side faces disposed at an angle to a line perpendicular to said crest surface which is at least about three times as great as the angle of the other side face of the same thread with respect to a line perpendicular to said crest surface;
all axial driving and rebounding forces between the sections in the fully made-up condition of the connection being taken entirely by said engaging threads, with no additional engagement between shoulders on the two sections to limit the extent to which the threads are connected together.

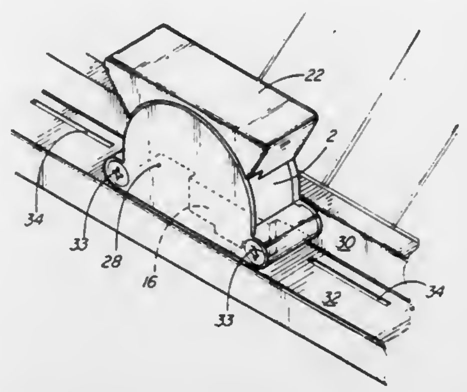


4,444,422
SASH LOCK

James R. Donaldson, and Kurt Koberstein, both of Winnipeg, Canada, assignors to Storm-Tite Industries, Ltd., Winnipeg, Canada

Filed Apr. 6, 1982, Ser. No. 366,065
Int. Cl.^{3} E05C *1/12*
U.S. Cl. 292—169 **2 Claims**

1. A sash lock adapted to be affixed to a sliding window adjacent an adjoining slotted track;
a body member having an interior compartment including unitary vertical flat side walls, each of said side walls having a horizontal indentation therein near the top thereof, adapted to receive the ends of a horizontal spring retainer bar, having a central downwardly depending spring retainer finger;
a rectangular latch plate having a unitary upper lip and a central hole in the top of said lip, adapted to receive one end of a coil spring, the other end of said coil spring being retained by said spring retainer finger on said retainer bar, said spring normally urging said latch plate away from said retainer bar;

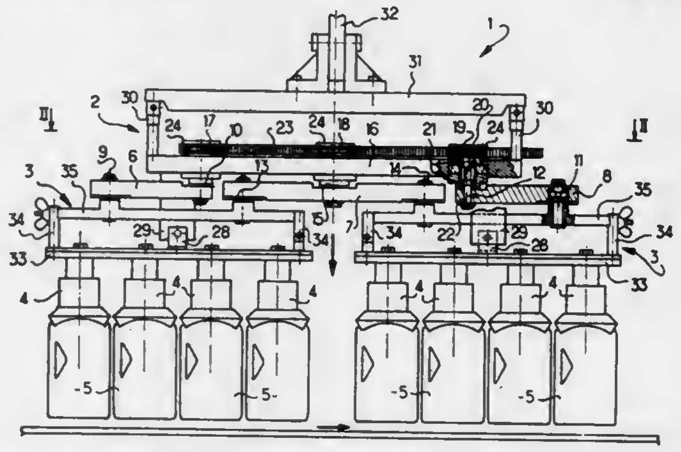


a handle on said body having a unitary, downwardly depending member with a latch release lug on each side of the lower edge thereof adapted for engagement with said lip on said latch plate, said handle being pivotally mounted on said body by a unitary circular projection on said downwardly depending member, adapted for rotatable restraint within a circular recess on the interior of said body member, whereby said handle is pivotally mounted on said body;
and a unitary stop member provided on said latch plate, to limit movement thereof away from said spring retainer bar.

4,444,423
VARIABLE CONFIGURATION HEAD FOR SEIZING AND HANDLING OBJECTS

Daniel Montferme, Vernouillet, and Didier Lemaire, Cherisy-Vernouillet, both of France, assignors to E. P. Remy et Cie, Dreux, France

Filed Oct. 23, 1981, Ser. No. 314,406
Claims priority, application France, Nov. 10, 1980, 80 23991
Int. Cl.^{3} B65G *47/26*
U.S. Cl. 294—87 R **4 Claims**

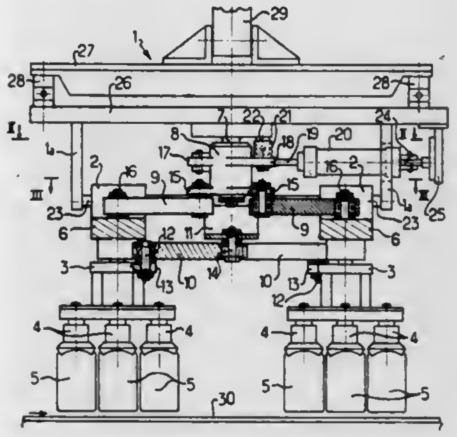


1. A variable-configuration head for seizing and handling an array of objects, the head including a frame, a plurality of links, each link being connected to the frame for swiveling about a respective point fixed in relation to the frame, and a pair of seizing member supports, each support carrying at least one row of seizing members and being swivelled from at least two links, wherein the improvement comprises: the swivel points of the links with respect to the frame and the swivel points of the seizing member supports with respect to the links together define corners of two identical articulated parallelograms having opposite angles located at a common vertex, such that the seizing member supports can be swivelled about the frame from a first position in which the supports are aligned in one direction to a second position in which the supports are aligned transversely to said one direction.

4,444,424
EXTENSIBLE HEAD FOR GRIPPING AND MODIFYING A GROUP OF OBJECTS

Gérard Lebret, Saint Lubin des Joncherets, France, assignor to E. P. Remy et Cie, Dreux, France

Filed Nov. 4, 1981, Ser. No. 318,257
Claims priority, application France, Dec. 9, 1980, 80 26121
Int. Cl.^{3} B65G *47/26*
U.S. Cl. 294—87 R **2 Claims**

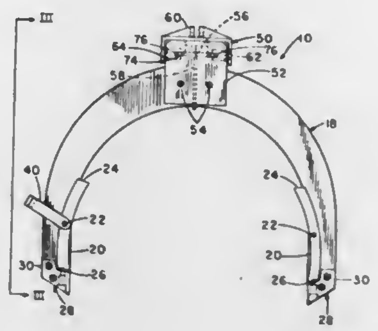


1. Apparatus for separating and reorienting a group of objects, the apparatus including a stationary frame, elongated guide means fixed to the frame, a plurality of carriages slidably mounted on the guide means, a plurality of gripping members carried by each carriage, a crank member pivotally mounted on the frame, a plurality of first links coupling the crank member to the carriages, and means for rotating the crank member between a first position at which the carriages are drawn together and a second position at which the carriages are spaced apart on said guide means, wherein the improvement comprises:
support means mounted on each carriage for rotation about a vertical axis, the respective plurality of gripping members being mounted on the support means of the carriage;
a plurality of second links, each having one end pivotally attached to a corresponding one of the support means and the other end pivotally connected to the frame such that translation of the carriages resulting from rotation of the crank member between the first position and the second position causes simultaneous rotation of each support means and its associated gripping members through a predetermined angle with respect to the corresponding carriage, each support means comprising a lug spaced from the axis of rotation of the support means, the said one end of the corresponding second link being swivelled on said lug, and said crank member being positioned between the carriages, the crank member comprising
a first pair of diametrically opposed lugs, said means for rotating the crank member being coupled to one of said first lugs; and
a second pair of diametrically opposed lugs, the other end of the second link associated with the carriage on one side of the crank member being swivelled on one of said second lugs, and the other end of the second link associated with the carriage on the other side of the crank member being swivelled on the other of said second lugs.

4,444,425
CYLINDRICAL OBJECT RECOVERY DEVICE

Donald Miller, Del Mar, and Clark A. Bowers, San Diego, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 2, 1981, Ser. No. 298,700
Int. Cl.^{3} B66C *3/16*
U.S. Cl. 294—88 **10 Claims**



1. A grabber type cylindrical object recovery apparatus comprising:
a U-shaped frame which is curved substantially 180°;
a pair of curved pad means, each pad means being pivoted to a lower extremity of a respective leg of the U-shaped frame with the inside of the curves of the pad means facing inwardly with respect to the U-shaped frame for movement between grabbing and releasing positions with respect to the cylindrical object;
a top portion of each pad means extending slightly into a open area within the frame in the releasing position so as to be in position for forcible engagement with a top portion of the cylindrical object and a bottom portion of each pad means extending the curve of the respective leg beyond the 180° of the frame in a grabbing position so as to engage a bottom portion of the cylindrical object for retention purposes; and
a pair of locking means, each locking means being mounted to the frame for locking a respective pad means alternately in its releasing position or in its grabbing position and responsive to said forcible engagement to change the locking means from a locked released position of the pad means to a locked grabbing position of the pad means.

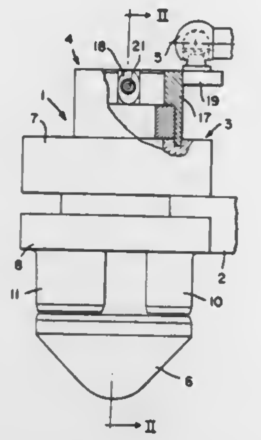
4,444,426
LOCKING DEVICE ASSEMBLY OF A LIFTING BEAM OR SPREADER PARTICULARLY FOR CONTAINERS

Richard J. Taylor, Oxelbärsgränd 13, S-162 40 Vällingby, Sweden

PCT No. PCT/SE81/00096, 371 Date Nov. 20, 1981, 102(e) Date Nov. 20, 1981, PCT Pub. No. WO81/02727, PCT Pub. Date Oct. 1, 1981
PCT Filed Mar. 26, 1981, Ser. No. 325,426
Claims priority, application Sweden, Mar. 26, 1980, 8002353
Int. Cl.^{3} B66C *1/42*
U.S. Cl. 294—81 SF **8 Claims**

1. A locking device assembly or twistlock assembly for mounting into a lifting beam or spreader, for releasable coupling to an object to be lifted, such as a container, having at its top side corner castings incorporating oval openings, the spreader **(2)** having rotatable twistlocks **(20)** with oval locking heads **(6)** which in their open position (A) in a way known per se can be inserted into said openings and after being rotated approximately 90 degrees to a locking position (B) secure the corner castings to the twistlock heads **(6)** thereby coupling together the container and the spreader, each twistlock **(20)** being mounted in a bearing house and rotated by an operating device **(5)**, e.g. a hydraulic cylinder, and being releasably connected to a coupling means, such as a turning element **(17, 41)**, surrounding the opposite end part **(14)** of the locking head of the twistlock **(20)** and demountably but unturnably affixed

to the twistlock (**20**), e.g. by a key (**18**), characterized in each twistlock (**20**) below the end part (**14**) opposite the head having an annular groove (**13**) for insertion of radially removable bearing elements (**15, 16**), e.g. a split bearing ring, forming a stop to the bearing plate (**3**) of the twistlock, for fixation of the shaft (**20**) to axial displacement at lifting whereat the turning sleeve element (**17, 41**) is arranged to keep the bearing rings (**15, 16**) in their position in the groove (**13**) of the twistlock and that the turning sleeve element (**17, 41**) is also arranged to be fixed to axial displacement by interacting means (**22–25**; **17, 30, 31**; **41–44, 45**) acting between the turning sleeve element (**17, 41**) and its fixed surrounding parts, in the first place said bearing plate (**3**), in such a way that the sleeve element is fixed axially at rotation within the working area (A–B), i.e. from the open position (A) of the twistlock to its locking position (B) and vice versa, but is released axially for freeing and removing the bearing rings (**15, 16**) at rotation outside the working area, thus passing said positions (A, B).



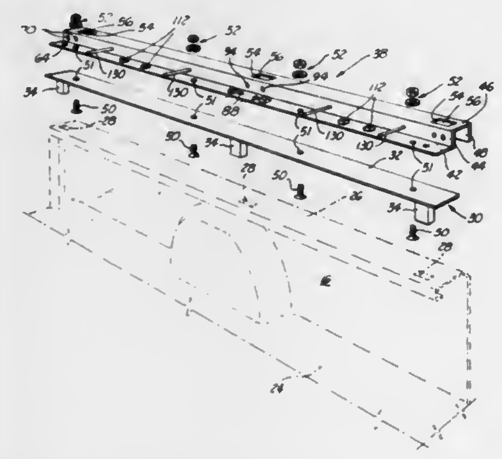
4,444,427
AUXILIARY STRUCTURAL ELEMENTS FOR A PICKUP TRUCK

John A. Martin, P.O. Box 19054, Oklahoma City, Okla. 73144

Filed May 10, 1982, Ser. No. 376,516

Int. Cl.³ B60P *7/06*

U.S. Cl. 296—43 **13 Claims**



1. A support apparatus for an auxiliary deck and auxiliary side elements having projecting leg members in a pickup truck of the type having a pair of opposed first and second sidewalls each having an upper surface, comprising:
- a first frame member supported by the upper surface of the first sidewall, comprising:
  - a support element, having a generally horizontal support surface;
  - a retaining element, having a generally vertical retaining surface disposed in transverse engagement with the support element; and
  - a plurality of upwardly opening frame pockets disposed adjacent the retaining element, in non-overlying relationship to the support element;
- a second frame member supported by the upper surface of the second sidewall, comprising:
  - a support element, having a generally horizontal support surface;
  - a retaining element, having a generally vertical retaining surface, disposed in transverse engagement with the support element; and
  - a plurality of upwardly opening frame pockets disposed adjacent the retaining elements in non-overlying relationship to the support element;
- the support and retaining elements of the first and second frame members forming a deck-supporting enclosure in which the auxiliary deck may be clearingly lowered and received; and
- the frame pockets of each frame member forming a side-supporting structure in which the projecting leg members of the auxiliary side elements may be clearingly lowered and received.

4,444,428
JOINING STRUCTURE OF AUTOMOTIVE VEHICLE BODY

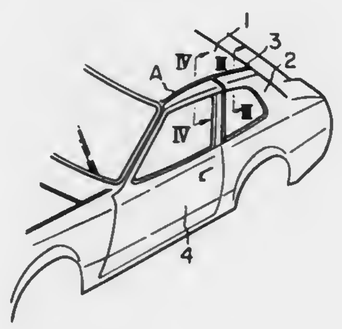
Shinya Iwakura, Oohashi, and Yasushi Suzuki, Sayama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 87,483, Oct. 23, 1979, abandoned. This application Jun. 15, 1981, Ser. No. 273,922

Claims priority, application Japan, Oct. 25, 1978, 53-145743[U]

Int. Cl.³ B60J *9/00*

U.S. Cl. 296—154 **2 Claims**



1. A roof-side-door assembly in a two-door type automotive vehicle body, which comprises:
- (a) a roof panel (**1**);
- (b) a side panel (**2**), a side edge of said roof panel (**1**) being superposed upon an upper edge bent portion of said side panel (**2**) at the upper surface of the vehicle body, said side edge superposed portions being welded together so as to form a U-shaped channel (C) with side walls and a bottom wall, said bottom wall being comprised of said side edge, defining an upwardly opening groove, the said weld being at said bottom wall of said U-shaped channel;
- (c) an opening (**0**) where a door member (**4**) is fitted;
- (d) an upper frame (**6**) to reinforce the top side of said opening (**0**), a continuation of said side edge of said roof panel (**1**) being superposed upon a flange portion of said upper frame (**6**) and said edge and flange being welded to one another to form a second portion with said side edge being continuous to said first superposed portion forming the bottom of said U-shaped channel, said second superposed portion being extended in the direction of the door member (**4**);
- (e) a meeting portion (A) being formed by an upper edge of said door member (**4**) and said second superposed portion at the closing of the door member (**4**) to define a U-shaped channel defining an upwardly opening groove;
- said first superposed portion channel (C) and said meeting portion (A) being positioned on the same line to define a substantially continuous upwardly opening groove extending along the upper edge of the door member and rearwardly of said door member along said roof panel when said door member is closed.

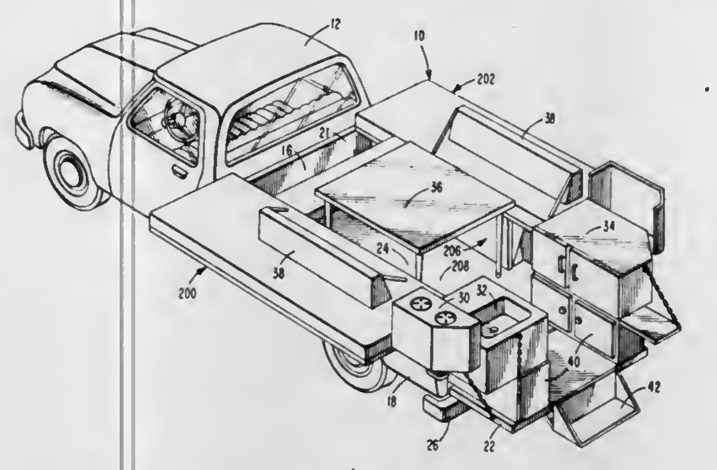
4,444,429
RECREATIONAL UNIT FOR VEHICLE BEDS

Les A. Dawes, Tustin, Calif., assignor to Industrial Financial Group, Tustin, Calif.

Filed Mar. 25, 1982, Ser. No. 361,611

Int. Cl.³ B60P. *3/32*

U.S. Cl. 296—170 **20 Claims**



1. A recreational unit for a vehicle bed having a floor, two vertical side walls and a tailgate movable between upstanding and horizontal positions, said recreational unit comprising:
- two cantilever outrigger units supportable on opposite sides of said vehicle bed and movable between a storage position and an extended position, each of said cantilever outrigger units comprising a horizontal shelf capable of resting on a vertical side wall of said vehicle bed and an upstanding shelf support positionable within said vehicle bed and connected to said horizontal shelf;
- said horizontal shelf being slidable on said vertical side wall of said vehicle bed between the storage and extended positions;
- a floor support member placeable on said floor of said vehicle bed to support said cantilever outrigger units, said floor support member including a slot proximate said vertical side wall of said vehicle bed to receive the bottom end of said upstanding shelf support of said cantilever outrigger unit, said slot and said vertical side wall forming a rigid cantilever support for said outrigger unit when said outrigger unit is in the extended position;
- a tent having sides attached to said cantilever outrigger units;

and
- frame means fastened to said tailgate for automatic deployment of said tent when said tailgate is lowered from the upstanding position to the horizontal position, said frame means extending from said tailgate at a substantially right angle to said tailgate and moving from a substantially horizontal stored position to an erect position when said tailgate is lowered to automatically deploy said tent.

4,444,430
SEAT HAVING PNEUMATIC COMPONENT

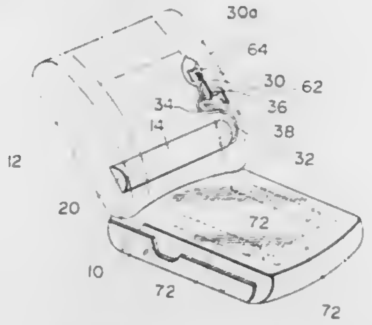
Youki Yoshida, Yokosuka, and Kenji Ichikawa, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd. and Ikeda Bussan Co., Ltd., both of Yokohama, Japan

Filed Apr. 17, 1981, Ser. No. 255,248

Int. Cl.³ A47C *3/00*

U.S. Cl. 297—284 **8 Claims**

1. In a seat:
- an air pump built into the seat;
- a pneumatic component built into the seat, said pneumatic component communicating with said air pump to receive air under pressure and communicating with the ambient atmosphere;
- valve means for controlling said communication of said pneumatic component with said ambient atmosphere, said valve means normally closing the communication of said pneumatic component with the ambient atmosphere, said valve means being manually operable to open said communication of said pneumatic component with the ambient atmosphere; and
- means for operating said air pump, said air pump operating means including,
  - a shaft rotatably mounted within the seat, said shaft having two end portions;



  - an arm fixedly mounted to said shaft on one end portion thereof, said arm having one end in operative engagement with said air pump to operate said air pump; and
  - a manual lever fixedly mounted to said shaft on the other end portion thereof, said manual lever being accessible from the outside of the seat, whereby movement of said manual lever causes movement of said arm to operate said pump.

4,444,431
LOCKING MECHANISM FOR VEHICLE SEATS

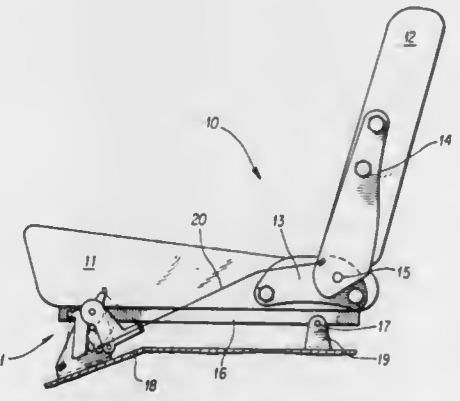
Saburo Suzuki, Anjo, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 8, 1982, Ser. No. 396,331

Claims priority, application Japan, Jul. 15, 1981, 56-110282

Int. Cl.³ A47C *1/02;* **B60N** *1/02*

U.S. Cl. 297—316 **3 Claims**



1. A locking mechanism for a vehicle seat having a seat cushion and a backrest, comprising:
- a bracket fixed to a vehicle floor and provided with an elongated groove;
- a locking pin fixed to said seat cushion and guided in said elongated groove of said bracket;
- first latch means pivotably mounted on said bracket and provided with an engaging groove engageable with said locking pin for retaining said seat cushion in a first position, said first latch means further provided with a projecting portion and a sliding face;
- second latch means for retaining said seat cushion in a second position vertically displaced from said first position, said second latch means pivotably mounted on said bracket and provided with a recessed portion engageable with said locking pin and a cam surface engageable with said projecting portion of said first latch means;

first spring means for urging said engaging groove of said first latch means into engagement with said locking pin;
second spring means for urging said recessed portion of said second latch means into engagement with said locking pin; and
wire means for effecting disengagement of said first and second latch means, said wire means having one end engaged with said backrest and other end engaged with said first latch means, whereby pivotal movement of said backrest in one direction effects disengagement of said first latch means and pivotal movement of said backrest in the opposite direction effects disengagement of said second latch means by engagement of said projecting portion of said first latch means with said cam surface of said second latch means.

4,444,432
SEAT BELT CONNECTING DEVICE

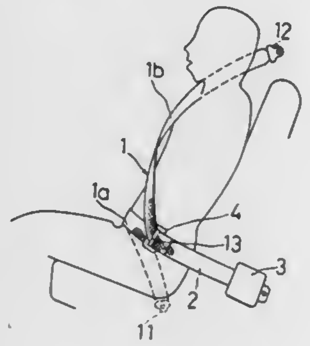
Tetsuro Kikuchi, Aichi, Japan, assignor to Nippon Soken, Inc., Nishio, Japan

Filed Mar. 25, 1981, Ser. No. 247,552

Claims priority, application Japan, Mar. 28, 1980, 55-42086[U]; Nov. 13, 1980, 55-163110[U]

Int. Cl.³ B60R *21/10;* **A62B** *35/00*

U.S. Cl. 297—476 **10 Claims**



1. A seat belt connecting device for connecting an outer belt composed of a lap belt portion and a shoulder belt portion to an inner belt, comprising:
a rectangular-shaped frame member, to one side of which one end of said inner belt is fastened;
an outer belt supporting member which supports said outer belt between said lap belt portion and said shoulder belt portion;
both ends of said outer belt supporting member being rotatably and slidably supported by opposed sides of said frame member in parallel with said side to which said inner belt is fastened;
at least one portion of a surface of said outer belt supporting member being formed so as to generate friction resistance relative to said outer belt;
an elastic member which is provided between said frame member and said outer belt supporting member so as to push said outer belt supporting member in the direction opposite to the tensioning direction of said outer belt; and
a locking member which is formed in said frame member for locking said outer belt supporting member to stop the rotation and the sliding movement of said outer belt supporting member when said outer belt supporting member slides, overcoming a pushing force of said elastic member, pulled by said outer belt at an emergency time.

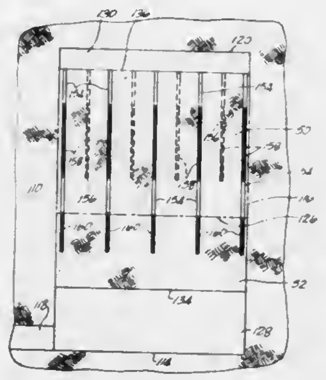
4,444,433
METHOD FOR FORMING AN IN SITU OIL SHALE RETORT IN DIFFERING GRADES OF OIL SHALE

Thomas E. Ricketts, Grand Junction, Colo., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Apr. 5, 1982, Ser. No. 365,303

Int. Cl.³ E21B *43/247, 43/263;* **E21C** *41/10*

U.S. Cl. 299—2 **29 Claims**



7. A method for forming an in situ oil shale retort in a retort site within a subterranean formation containing oil shale and having at least one region of relatively richer oil shale and at least one region of relatively leaner oil shale within the retort site, such an in situ oil shale retort containing a fragmented permeable mass of formation particles containing oil shale, the method comprising the steps of:
excavating formation from within the retort site for forming at least one free face extending across the retort site, leaving a portion of unfragmented formation including such regions of richer and leaner oil shale extending across the retort site adjacent such a free face;
placing an array of mutually spaced apart explosive charges in the region of richer oil shale;
placing another array of mutually spaced apart explosive charges in the region of leaner oil shale, the array of explosive charges in the region of leaner oil shale having a greater equivalent point charge scaled depth of burial (sdob) than the array of explosive charges in the region of richer oil shale; and
detonating the explosive charges in the regions of leaner and richer oil shale for forming a fragmented permeable mass of formation particles containing oil shale in the in situ oil shale retort.

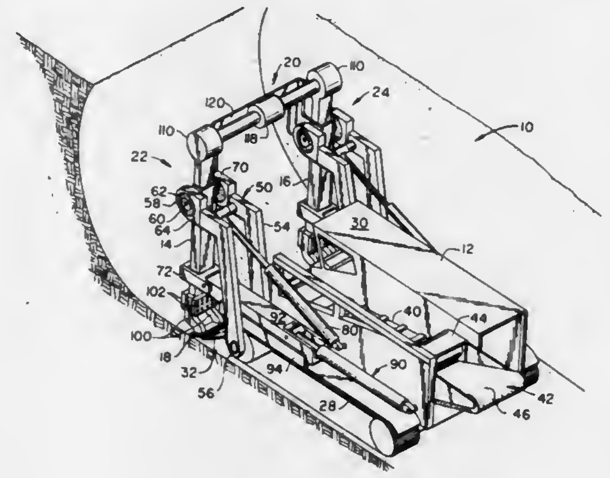
4,444,434
CONTINUOUS MINER

Raymond A. Gurries, Reno, Nev., assignor to Resonant Technology Company, Sparks, Nev.

Filed Oct. 20, 1981, Ser. No. 313,100

Int. Cl.³ E21C *25/00*

U.S. Cl. 299—14 **12 Claims**



1. A continuous miner capable of excavating ore from the ground both by making horizontal cuts and making vertical cuts, said continuous miner comprising:
a tractor;
a blade support frame pivotally secured to the forward end of the tractor;
a pair of substantially similar elongate resonant beams each having anti-nodes at each end and at least two nodes therebetween; said beams being pivotally suspended from the upper end of the support frame;
a cutting blade extending between the lower ends of the resonant beams and rigidly secured thereto, said cutting blade being off-set behind the center line of the beams by a distance greater than one-half the expected amplitude of reciprocation of the blade;
means for resonantly exciting the beams so that the blade is reciprocated to penetrate the ground;
means for pivoting the support frame to tilt the beams so that the blade assumes a proper inclination for making a horizontal cut as the tractor is driven forward; and
means for translating the lower node about the pivotal attachment of the beam to the support frame so that the blade can make a vertical cut as the tractor remains stationary.

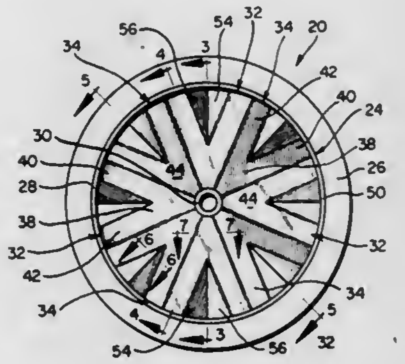
4,444,435
MOLDED WHEEL CENTER

Horst L. A. Honsa, Savannah, Tenn., assignor to Sun Metal Products, Inc., Warsaw, Ind.

Filed Mar. 15, 1982, Ser. No. 357,905

Int. Cl.³ B60B *3/02, 3/06, 5/02*

U.S. Cl. 301—63 PW **3 Claims**



1. A wheel center comprising: a cylindrical rim having relatively axially inner and outer circular edges; a hub disposed coaxially with said rim, said hub having relatively axially inner and outer end portions corresponding generally with the inner and outer rim edges; a first plurality of V-shaped spokes disposed adjacent said inner rim edge and said inner hub end portion and extending from an apex connected with said hub to an arcuate base connected with said rim; a first triangularly-shaped, dihedral rib inlet into each of said first plurality of spokes, said rib having an arcuate base connected with said rim and an apex disposed radially inwardly from said rim spaced apart from said hub whereby to define a central stabilizing spoke panel, the intersection of the respective surfaces of said ribs being disposed adjacent said outer rim edge and a second plurality of V-shaped spokes alternately arranged interjacent said first-mentioned spokes spaced relatively axially apart therefrom; radial wall elements connecting adjacent edge portions of said alternating first and second pluralities of spokes; and a second triangularly-shaped, dihedral rib inlet into each of said second plurality of spokes, each of said last-mentioned ribs having an arcuate base connected with said rim and an apex disposed radially inwardly from said rim spaced apart from said hub to define a central stabilizing spoke panel, the intersection of the respective surfaces of said last-mentioned ribs being disposed adjacent said inner rim edge, each of said first dihedral ribs being arcuately separated from the adjacent second dihedral ribs by a first spoke panel, a portion of a said radial wall element, and a second spoke panel.

4,444,436
HYDRAULIC PRESSURE CONTROL VALVE

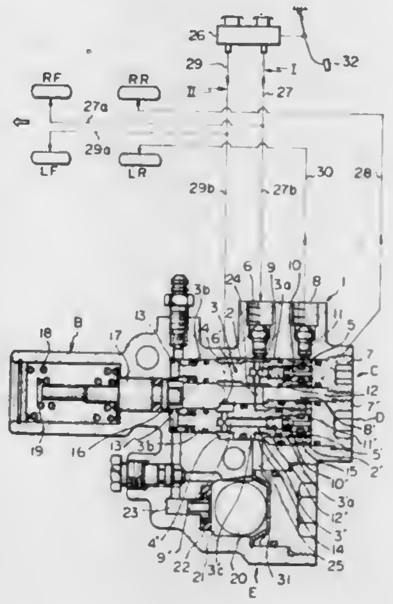
Naganori Koshimizu, Kanagawa, Japan, assignor to Tokico Ltd., Kanagawa, Japan

Filed Oct. 29, 1981, Ser. No. 316,426

Claims priority, application Japan, Nov. 1, 1980, 55-156816[U]

Int. Cl.³ B60T *8/14, 11/34*

U.S. Cl. 303—6 C **1 Claim**



1. A hydrualic pressure control valve for use in a vehicle braking system and comprising:
first and second pressure control mechanisms provided in a common valve housing, each said pressure control mechanism including a stepped piston mounted for displacement in a respective bore in said housing, an inlet chamber and an outlet chamber with fluid therein exerting pressure on the respective said piston, and a valve mechanism controlling fluid flow between said inlet chamber and said outlet chamber in response to displacement of said respective piston;
each said stepped piston having extending therethrough an opening for connecting the respective said inlet chamber and outlet chamber, and the respective said valve mechanism including a valve member for opening or closing said opening;
a spring force controlling mechanism including a spring force controlling pressure chamber normally connected to said inlet chamber of said first pressure control mechanism and receiving fluid acting as means for urging said stepped pistons of said pressure control mechanisms in directions for opening the respective said valve mechanisms, a plunger having a first end exposed to the pressure in said spring force controlling pressure chamber, a first spring normally acting on a second end of said plunger to urge said plunger toward said spring force controlling pressure chamber, and a second spring acting on said second end of said plunger to urge said plunger toward said spring force controlling pressure chamber when the displacement of said plunger exceeds a predetermined distance;
said second pressure control mechanism including an additional chamber separate from said inlet and outlet chambers thereof, said additional chamber being connected to said inlet chamber of said first pressure control mechanism and receiving therefrom fluid the pressure of which acts in opposition to the pressure in said inlet chamber of said second pressure control mechanism;
an inertia valve provided in a passage connecting said inlet chamber of said first pressure control mechanism and said spring force controlling pressure chamber, said inertia valve disconnecting communication between said inlet chamber of said first pressure control mechanism and said spring force controlling pressure chamber when the decel-

eration of the vehicle during a brake applying operation exceeds a predetermined level;

said first stepped piston having a small diameter portion and a large diameter portion, with said inlet chamber of said first pressure control mechanism being defined between said small and large diameter portions, and said outlet chamber of said first pressure control mechanism being separated from said inlet chamber thereof by said large diameter portion;

said second stepped piston having a small diameter portion and a large diameter portion corresponding respectively to said small and large diameter portions of said first stepped piston and an increased diameter portion larger than said large diameter portion of said second stepped piston and arranged between said small and large diameter portions of said second stepped piston, with said inlet chamber of said second pressure control mechanism being defined between said small diameter portion and said increased diameter portion of said second stepped piston, said additional chamber being defined between said increased diameter portion and said large diameter portion of said second stepped piston, and said outlet chamber of said second pressure control mechanism being separated from said additional chamber by said large diameter portion of said second stepped piston; and

and small diameter portions of said first and second stepped pistons being permanently exposed to said spring force controlling pressure chamber and the pressure therein.

4,444,437
DECELERATION-SENSING MODULATOR VALVE ASSEMBLY FOR VEHICLE BRAKING SYSTEMS

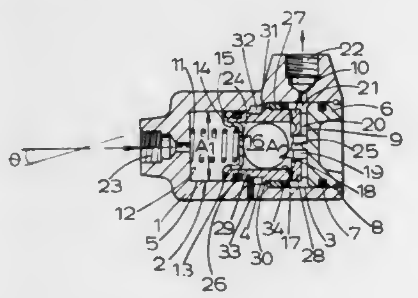
Ivan Mortimer, Solihull, England, assignor to Lucas Industries public limited company, Birmingham, England

Filed Jul. 26, 1982, Ser. No. 401,558

Claims priority, application United Kingdom, Aug. 5, 1981, 8123901

Int. Cl.^{3} B60T *8/14, 8/26*

U.S. Cl. 303—6 C **6 Claims**



1. A deceleration-sensing modulator valve assembly for vehicle braking systems comprising a housing provided with a brake pressure inlet and outlet, a control piston assembly working in said housing for controlling the relationship between the inlet and outlet pressures, and a deceleration sensing element located in said housing for closing a valve seat on deceleration of the housing above a deceleration threshold, said control piston assembly comprising a primary piston and an annular secondary piston slidably mounted on said primary piston, resilient means biassing said primary piston in a forward direction, a stop carried by said primary piston for limiting rearward movement of said secondary piston relative to said primary piston, a fixed abutment on said housing directly engageable by said secondary piston for restricting rearward movement of said secondary piston relative to said housing, said primary piston being provided with a bore, said deceleration sensing element being located substantially in said bore, said valve seat being associated with said primary piston for controlling fluid communication between said inlet and outlet, and the arrangement is such that prior to closure of said valve seat by said sensing element the net pressure effective area of said primary piston subject to inlet pressure is forwardly facing whereby inlet pressure urges said primary piston rearwardly against the biassing of said resilient means, and after closure of said valve seat the net pressure effective area of said primary piston subject to inlet pressure is rearwardly facing, a forwardly facing area of said primary piston then being exposed to outlet pressure, and said secondary piston is subject at all times on its front face to outlet pressure.

4,444,438
POWER-MANUAL BRAKE SYSTEM

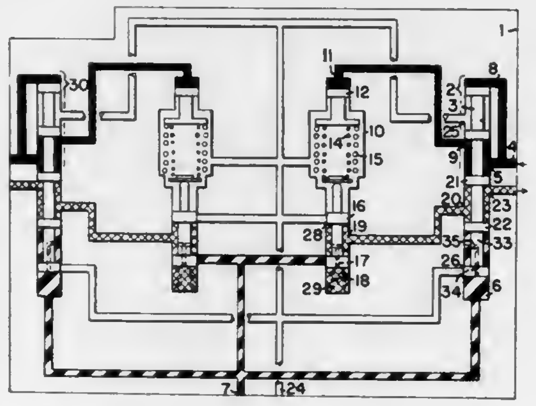
Kibourne H. Knox, Woodland Hills, Calif., assignor to Tempco Engineering, Inc., Sun Valley, Calif.

PCT No. PCT/US82/00972, 371 Date Aug. 31, 1982, 102(e) Date Aug. 31, 1982, PCT Pub. No. WO84/00333, PCT Pub. Date Feb. 2, 1984

PCT Filed Jul. 19, 1982, Ser. No. 432,899

Int. Cl.^{3} B60T *8/02*

U.S. Cl. 303—13 **4 Claims**



2. A hydraulic vehicle brake system selectively power or manually operable, comprising;

(a) power pressure means **(10)** to apply hydraulic fluid pressure to at least one vehicle brake of said system,

(b) manual pressure means **(5,23)** to apply hydraulic fluid pressure to at least the said one vehicle brake in the absence of pressure from said power pressure means,

(c) an isolation valve **(2)** actuable by hydraulic fluid pressure from said manual pressure means to isolate the same from said power pressure means in the absence of pressure from said power pressure means,

(d) said isolation valve comprised of;

(1.) a valve body **(32)**,

(2.) a translatable piston **(3)** within said valve body, and

(3.) at least one port **(9)** within said body hydraulically connected to said power pressure means, disposed in said valve body to be closed by translation of said piston upon manually produced pressure being exerted upon said piston in the absence of system **(7)** pressure,

so that the full volume of hydraulic fluid and the full pressure thereon produced by said manual pressure means is exclusively applied to at least said one vehicle brake, and

(e) a restrictor passage **(34,35)** in said piston **(3)** leading from a system pressure volume **(6)** to a pressure vent port **(26)**, to reduce residual system pressure in said system pressure volume **(6)**.

4,444,439
APPARATUS FOR ADJUSTING A MECHANICALLY-CONTROLLED, LOAD-DEPENDENT BRAKING-POWER REGULATOR

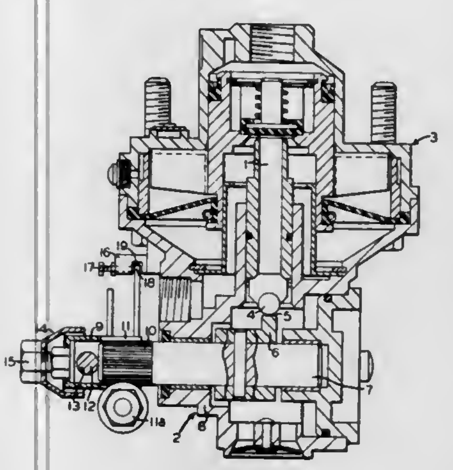
Gerhard Fauck, Hanover; Bernd-Joachim Kiel, Wunstorf; Wolfgang Pohl, Garbsen, and Helmut Ulrich, Springe, all of Fed. Rep. of Germany, assignors to WABCO Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Oct. 26, 1981, Ser. No. 314,825

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1980, 3041248

Int. Cl.^{3} B60T *8/22*

U.S. Cl. 303—22 R **6 Claims**



1. Apparatus for adjusting a mechanically-controlled load-dependent braking force regulator for fluid pressure operable brakes for motor vehicles, said apparatus comprising:

(a) an axially positionable rod for effecting supply of brake-applying pressure according to the axial position of said rod;

(b) a control shaft disposed partially within the braking force regulator for effecting adjustment of said rod upon rotational movement of said control shaft, said control shaft having a portion extending outwardly of the braking force regulator;

(c) an adjusting lever connected to said outwardly extending portion of said control shaft;

(d) adjusting means for adjusting the position of said adjusting lever in relation to said control shaft;

(e) referencing means disposed around a portion of said control shaft for identifying a rotational position of said control shaft corresponding to a predetermined setting of the braking force regulator;

(f) marking means fixedly attached to the braking force regulator for marking said referencing means with an externally perceivable mark.

4,444,440
HYDRAULIC BOOSTERS FOR VEHICLE BRAKING SYSTEMS

Glyn P. R. Farr, Leek Wootton, England, assignor to Lucas Industries public limited company, Birmingham, England

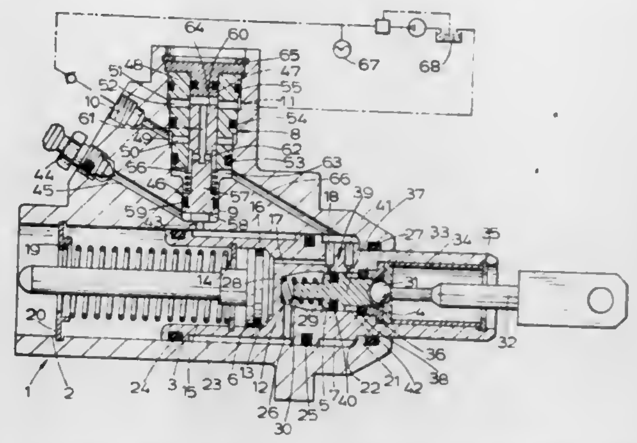
Filed Apr. 12, 1982, Ser. No. 367,337

Claims priority, application United Kingdom, Apr. 23, 1981, 8112632

Int. Cl.^{3} B60T *13/14*

U.S. Cl. 303—50 **10 Claims**

1. An hydraulic booster for a vehicle braking system, comprising a housing provided with a bore, an inlet for connection to a source of hydraulic pressure fluid and an outlet for connection to a reservoir for fluid, a pedal-operated input member, an output member, and a boost piston working in said bore, said boost piston being advanced in said bore in response to pressurisation of a boost chamber by pressurised fluid from said source, valve means for controlling pressurisation of said boost chamber, said valve means being operative to control communication between said inlet and said boost chamber, and between said boost chamber and said outlet, and said valve means being operable in reponse to relative movement of parts of said booster on movement of said input member, and said output member is movable relative to said boost piston through a distance determined by a limiting means, and an auxiliary pressure chamber is defined between said boost piston and said output member, the area of said boost piston on which pressure in said auxiliary chamber acts being greater than or equal to the area of said boost piston on which pressure in said boost chamber acts, and said booster has two stages of operation, in a first stage following an initial movement of said input member, said valve means is operative to supply pressurised fluid from said source to said auxiliary chamber, whereby said output member is advanced through said distance determined by said limiting means, without said boost piston being advanced in said bore, and in a second stage following further movement of said input member said limiting means is operative to ensure that said output member and said boost piston move together in response to pressurisation of said boost chamber.



4,444,441
TRACK LINK FOR A TRACKED VEHICLE

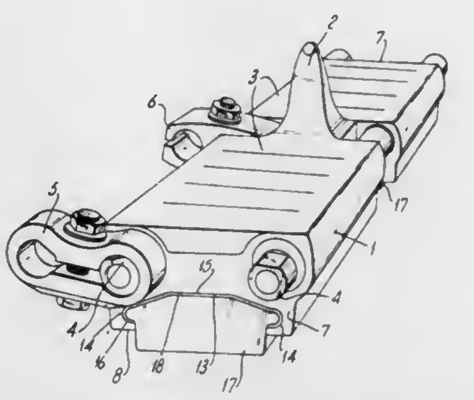
Robert A. Parker, Camberley, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, England

Filed Jul. 14, 1981, Ser. No. 283,195

Claims priority, application United Kingdom, Jul. 14, 1980, 8022932

Int. Cl.^{3} B62D *55/22*

U.S. Cl. 305—35 R **7 Claims**



1. A track link for a tracked vehicle comprising:

means defining a ground opposable face containing at least one slideway;

a load bearing shell longitudinally insertable into said slideway, said shell having a central longitudinal portion with bowed cross-sectional configuration and edge longitudinal portions on opposite sides of said central longitudinal portion, each of said edge portions being turned back to define a "C" shaped cross section, the area of each said edge portion adjacent said central portion being substantially parallel to said ground opposing face and defining with said central portion an inner bearing surface and the area of each said edge portion parallel to said inner bearing surface defining an outer bearing surface, said inner and outer bearing surfaces of said edge portions engaging said slideway ; and

a resilient ground engagement pad secured to the concave surface of said load bearing shell so as to protrude outwardly therefrom beyond said outer bearing surfaces, said shell being disposed in said slideway in use with the pad protruding outwardly from the ground opposable face so that when said shell and said pad are subjected to outwardly acting centrifugal forces, said bowed central portion and said edge portions are flattened by reactive forces generated at said outer bearing surfaces, thereby increasing the grip of said shell upon said pad and extending said shell laterally to increase its retention in said slideway.

4,444,442

BEARING APPARATUS

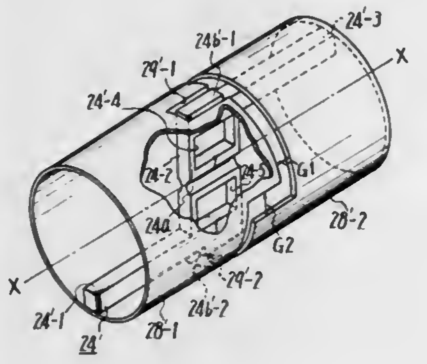
Takeshi Hojo, and Michio Fukano, both of Kuroiso, Japan, assignors to K. K. Tokyo Keiki, Tokyo, Japan

Division of Ser. No. 111,670, Jan. 14, 1980, Pat. No. 4,336,967. This application Mar. 25, 1982, Ser. No. 361,985

The portion of the term of this patent subsequent to Jun. 29, 1999, has been disclaimed.

Int. Cl.³ F16C *11/12*

U.S. Cl. 308—2 A **2 Claims**



1. A bearing apparatus comprising, a fixed portion, a rotary member, a first cylindrical member which is to be secured to said fixed portion and has a tubular axis coincidence with a rotation axis of said rotary member, a second cylindrical member which is to be secured to said rotary member and has a tubular axis coincidence with the rotation axis of the rotary member, first and second opposed bar members respectively attached to said first and second cylindrical members on the insides thereof and with portions aligned with each other, a flexible member with opposite ends attached to said first and second opposed bar members, said flexible member having a first pair of spaced arms with first ends attached to said first opposed bar member and extending toward said second bar member and said first pair of arms having a greater thickness in a direction lying in a plane lying in a diameter of said first and second cylindrical members than they have in a direction normal to said plane, said flexible member having a second pair of spaced arms with first end attached to said second opposed bar member and extending toward said first bar member and said second pair of arms having a greater thickness in a direction lying in said plane that in a direction normal to said plane, and said flexible member including a longitudinal member which extends in said direction normal to said plane which is attached to the second ends of said first and second pair of arms and said longitudinal member having a smaller dimension in a direction lying in said plane than said first and second pair of arms.

4,444,443

UNLIMITED SLIDING BALL BEARING SPLINE ASSEMBLY

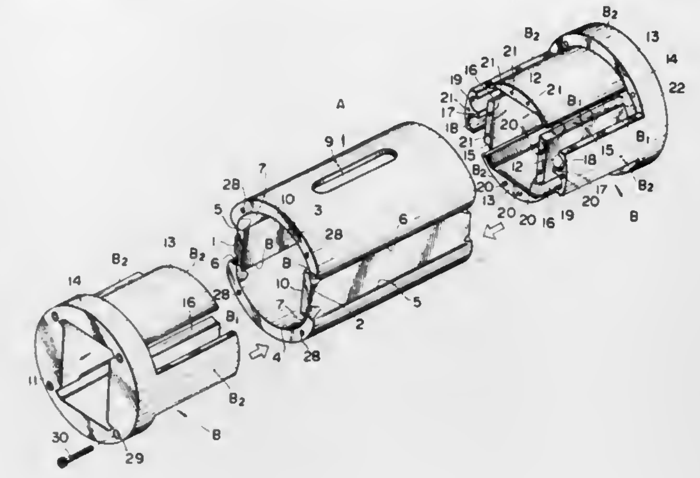
Hiroshi Teramachi, 2-34-8, Higashi-Tamagawa, Setagaya-ku, Tokyo, Japan

Filed Jan. 26, 1983, Ser. No. 461,159

Claims priority, application Japan, Feb. 12, 1982, 57-20966

Int. Cl.³ F16C *29/06*

U.S. Cl. 308—6 C **4 Claims**



1. A ball bearing spline assembly comprising:

a cylindrical outer sleeve means having a pair of outer peripheral grooves for guiding no-load carrying balls and a pair of inner peripheral grooves for guiding load carrying balls formed longitudinally in outer and inner walls of said outer sleeve, respectively, so that said outer peripheral grooves and said inner peripheral grooves are alternated with each other in the circumferential direction of said outer sleeve, said outer peripheral grooves being symmetrically disposed in diametrical opposition to each other, said inner peripheral grooves also being symmetrically disposed in diametrical opposition to each other, wherein first ball rolling surfaces are formed at both longitudinal sides of each of said inner peripheral grooves, each of said first ball rolling surfaces having a center of curvature lying on a first line which is inclined at an angle of ca. 45° relative to a second line which passes the longitudinal center line of each of said outer peripheral grooves and said axial center of said outer sleeve, while second ball rolling surfaces are formed at both longitudinal sides of each of said outer peripheral grooves, each of said second ball rolling surfaces having a center of curvature lying on a third line which intersects said first line at an angle of ca. 90° and extending toward said second line;

a pair of cage half means including outer guide members, each of which has an inwardly projecting partition wall at a position corresponding to said second line grooves for guiding the no-load carrying balls formed at both sides of each of said partition walls, respectively, each of said grooves cooperating with the adjacent one of said ball rolling surfaces formed in each of said outer peripheral grooves, and inner guide members provided with grooves for guiding the load carrying balls in cooperation with said first ball rolling surfaces formed in said inner peripheral grooves of said outer sleeve, respectively, each of said load carrying ball guiding grooves having a longitudinal slit, said outer and inner guide members projecting longitudinally from a base portion of said cage half with a predetermined space therebetween, said pair of cage halves being connected together in an end abutting relation to constitute a cage unit; and

a spline shaft means slideably inserted in a bore defined by said inner guide members and having a plurality of longitudinal protrusions adapted to be received, respectively, in a corresponding number of recesses defined by rows of balls accommodated within said ball guiding grooves and held between said outer sleeve and said cage unit.

4,444,444

EQUIPMENT FOR STORAGE OF ENERGY UNDER KINETIC FORM AND RECOVERY THEREOF IN ELECTRIC FORM AND METHOD OF USING SUCH EQUIPMENT

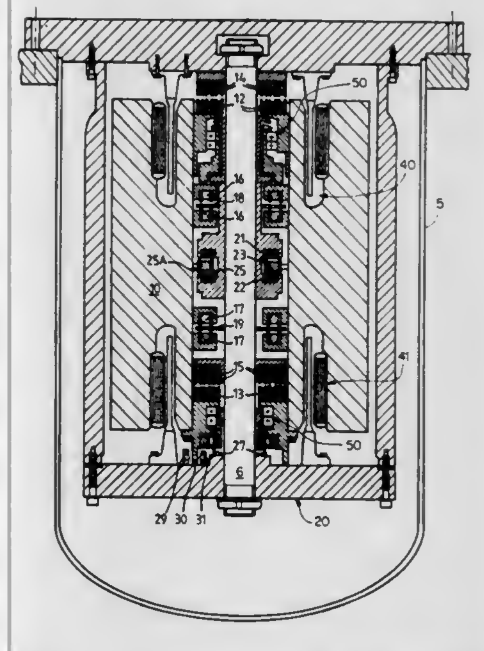
Alain Benedetti, Meulan; Luc Laury, Orsay; Francis Legrand, Rocquencourt; Pierre Poubeau, Le Pecq, and Bernard Weisser, Verneuil-sur-Seine, all of France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Oct. 19, 1981, Ser. No. 313,041

Claims priority, application France, Aug. 17, 1981, 81 15831

Int. Cl.³ F16C *39/06*

U.S. Cl. 308—10 **31 Claims**



1. An equipment for storing energy under kinetic form and uninterrupted recovery of this energy in electric form in a gravity field, of the type comprising an enclosure, a stator within said enclosure, a flywheel rotor adapted to be magnetically suspended relative to said stator and disposed within said enclosure, touch-down bearings between said stator and said rotor to support said rotor when the latter is not suspended magnetically, and means for magnetically suspending said rotor relative to said stator and maintaining said rotor in equilibrium relative to said stator, including permanent magnet rings on said stator opposite an equivalent number of permanent rings on said rotor for creating a lifting force on said stator, a double electromagnet comprising a permanent magnet ring having electromagnet coils on each side of said last magnet ring with said ring being mounted on said rotor and with said electromagnet coils being mounted on said stator, axial rate sensor means to detect the axial rate of the rotation of said rotor and comprising coils fixed to said stator adjacent a magnet attached to said rotor, servoloop means for maintaining applied forces including the weight of said rotor compensated with lifting forces of said opposing permanent magnet rings, by connecting said electromagnet coils in feedback relationship with said rate sensor coils, a lift-off logic in said servoloop means to control the sense of initial current of said servoloop means when said rotor is supported by said touch-down bearings and no axial rate is detected by said rate sensor, damping means to prevent excessive radial excursion and comprising opposing permanent magnets and a centering member passing between them and a motor and a generator having at least one armature mounted for rotation with said rotor.

4,444,445

APPARATUS INCLUDING ELECTRIC CURRENT TRANSFER

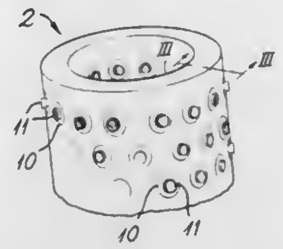
Evan J. Davies, and Alec G. Allen, both of Sutton Coldfield, England, assignors to National Research Development Corporation, London, England

Filed Jan. 20, 1982, Ser. No. 341,183

Claims priority, application United Kingdom, Jan. 26, 1981, 8102313; Jun. 29, 1981, 8119930

Int. Cl.³ H01R *39/00*

U.S. Cl. 339—5 M **1 Claim**



1. Apparatus including first, second and third members, said first and third members being two mutually rotatable and axially displaceable concentric conductive members between which electric current is to be transferred, said first and said third members having surfaces facing each other and their relative motion being such that the distance apart of the surfaces remains substantially the same, said second member being an intermediate annular member which is concentric with said first and third members, said second, intermediate member having a plurality of spaced resilient tufts of wire disposed in substantially radially extending throughholes in said second member, said tufts being long enough to protrude both inwardly and outwardly thereof and the ends of said tufts thereby being under pressure and simultaneously brushing the facing surfaces of said first and third members to effect the current transfer, the pressure being accommodated elastically as a helical twist imparted to said tufts.

4,444,446

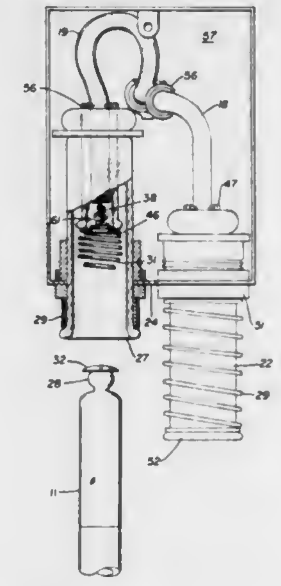
ELECTRICAL CONNECTOR FOR LUMINOUS DISPLAY HAVING ELECTRIC DISCHARGE TUBE

Neil Hageman, 39 Moraga Dr., Chico, Calif. 95926

Continuation-in-part of Ser. No. 202,193, Oct. 30, 1980, abandoned. This application Sep. 21, 1981, Ser. No. 303,955

Int. Cl.³ H01R *33/08*

U.S. Cl. 339—50 R **5 Claims**



1. An electrical connector for luminous displays having a gaseous electric discharge tube within a tube housing and doubled back on itself to present adjacent laterally spaced apart electrode bearing ends, comprising:

a connector housing adapted for mounting within said tube housing and being adapted for receipt of a pair of high-tension wires;

a pair of tubular dielectric members carried by said connector housing for longitudinal reciprocation through a wall thereof with proximal and distal ends of said members positioned respectively within and externally of said connector housing;

said members each being mounted for reciprocation between extended and retracted positions of its distal end with respect to said connector housing wall, each of said distal ends being open and formed to telescopically receive one of said electrode bearing ends of said tube;

spring means urging said members to extended positions;

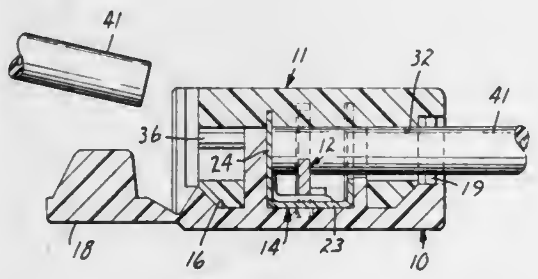
an electric contact carried within each of said members and formed for engagement with an electrode contact on one of said tube ends,

the proximal ends of said members being open for receipt of said high-tension wires in said connector housing for connection of said electric contacts; and

said members being laterally spaced apart along said wall to be aligned with said spaced apart tube ends; the members each being retractable into said connector housing to an extent to permit movement of the tube end laterally through the space occupied by said member in extended position and into a stationary position of axial alignment with said member, said member then being extendable to move its distal open end towards and telescopically over said electrode contact of said stationary tube end and initiate engagement of said electric and electrode contacts outwardly of said connector housing.

4,444,447
ELECTRICAL WIRE CONNECTOR

Terrance L. Markwardt, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed May 24, 1982, Ser. No. 381,340
Int. Cl.³ H01R *4/24*
U.S. Cl. 339—98 **6 Claims**



1. An electrical wire connector comprising:

a hollow, open-topped, insulating body having a base wall and a pair of generally parallel side walls extending generally perpendicularly from said base wall,

a flat plate, wire connector element formed of a copper alloy with a plurality of wire connecting slots, said wire connector element being retained in said body perpendicular to said side walls and said base wall generally centrally of the length of said body for electrical connection of a plurality of insulated wires,

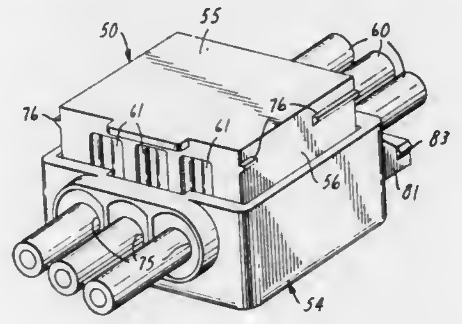
a U-shaped wire cut-off and strain relief element of a metal having a hardness greater than that of said wire connector element, said wire cut-off and strain relief element having a base passing between the base wall of said body and said wire connector element and end walls parallel to said flat plate wire connector element, one of said end walls being sharpened along its top edge in alignment with at least one of said wire connecting slots in said wire connector element and the second end wall comprising at least one leg projecting transversely into the path of a wire from each wire connecting slot to the end of said insulating body adjacent said second end wall to engage the insulation on the wire and thereby to strain relieve the wire, and

an insulating cover formed to telescope with said body, said cover having means to carry a wire into each said connector element slot and to cooperate with said sharpened end wall of said wire cut-off and strain relief element to sever at least one wire extending through said connector upon telescoping of said cover and said body fully together,

said body and cover being formed with complementry latch members to retain said body and cover in an open position to permit one wire for each wire connecting slot in said wire connector element to be inserted through said connector between said body and cover and to retain said body and cover in a crimped position with said cover and body fully telescoped together.

4,444,448
WIRE CUTTING ELECTRICAL CONNECTOR

Raymond A. Silbernagel, Ramsey, and Garry L. Sjolander, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation of Ser. No. 107,887, Jan. 14, 1980, Pat. No. 4,326,767, Continuation-in-part of Ser. No. 19,577, Mar. 12, 1979, abandoned. This application Feb. 3, 1982, Ser. No. 345,331
The portion of the term of this patent subsequent to Apr. 27, 1999, has been disclaimed.
Int. Cl.³ H01R *13/39*
U.S. Cl. 339—98 **14 Claims**



1. A wire connector comprising:

a hollow, open-topped, insulating body having a base wall, a pair of generally parallel side walls extending generally perpendicularly from said base wall and an end wall extending from said base wall between said side walls at one end of said body, the end of said body opposite said end wall being open for access by at least one wire,

a U-shaped, resilient, conductive wire connector element, the legs of the U being wide and thin, one of the legs being formed with at least one wire connecting slot extending from the top of said leg toward the base of said U, the second leg being sharpened along its top edge in alignment with at least one said wire connecting slot in said first leg, said connector element being positioned in said body with the base of the U on said base wall of said body and said second leg abutting and extending above said body end wall, and

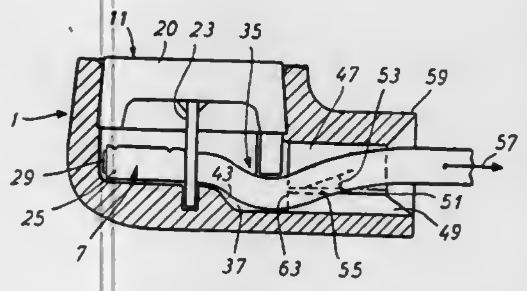
an insulating cover formed to telescope with said body, said cover having means to carry a wire into each said connector element slot and to cooperate with said sharpened second leg of said connector element to sever at least one wire extending through said connector upon telescoping of said cover and said body fully together,

said body and cover being formed with complementary latch members to retain said body and cover in an open position to permit at least one wire to be inserted into said body end that is open for access by at least one wire and through said connector between said body and cover and to retain said body and cover in a crimped position with said cover and body fully telescoped together, and

means to seal the end of said connector adjacent said sharpened second leg of said connector element when said body and cover are in said crimped position, said connector end seal comprising a hinged door and means to latch said door in position to seal the end of said connector adjacent said sharpened second leg of said connector element.

4,444,449
ELECTRICAL CONNECTOR

James E. Aysta, Stillwater, Minn.; Geoffrey Gibson, and Rainer A. Tuukkanen, both of Hamburg, Fed. Rep. of Germany, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Feb. 8, 1982, Ser. No. 346,486
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1981, 3110144
Int. Cl.³ H01R *13/38*
U.S. Cl. 339—99 R **6 Claims**



1. An electrical connector for non-prestripped wires, comprising:

a lower housing portion having wire guides for insertion to preassembled positions of wires to be connected, each guide comprising a double channel with a wire introduction channel aligned with a wire connecting area within the lower housing and a parallel clamping channel of smaller cross-section connected to the introduction channel by a constricted transition slit, and a strain relief recess between said double channel and said wire connecting area,

an upper housing portion adapted to be pressed into the lower housing portion, said upper housing portion having a slotted contact element which cuts through the wire insulation and electrically connects the wires upon pressing the housing parts together, and a projection for deforming the wire and clamping it in said lower housing recess while forcing a portion of the wire into and through said transition slit upon pressing the housing parts together.

4,444,450
FLAT TRANSMISSION CABLE CONNECTOR AND HOUSING THEREFOR

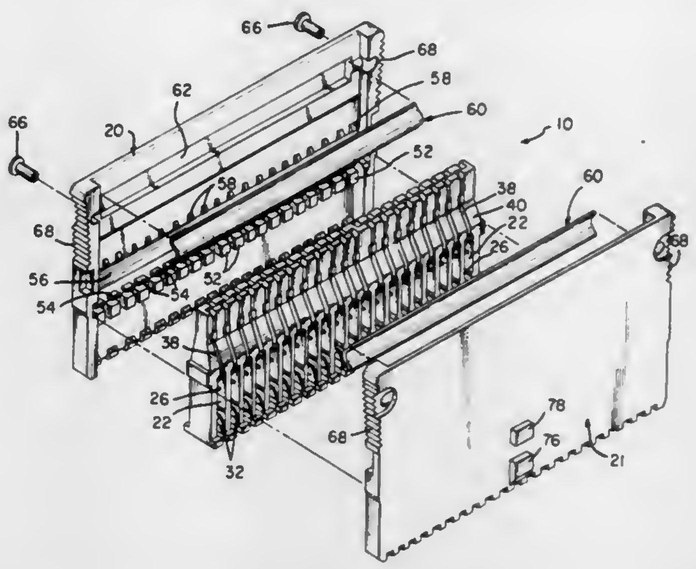
John H. Huber, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Jan. 28, 1982, Ser. No. 343,630
Int. Cl.³ H01R *13/58*
U.S. Cl. 339—107 **18 Claims**

6. An electrical connector for flat transmission cable including signal conductors and drain conductors comprising:

body means having terminal-receiving passageways and conductor-receiving passageways in respective communication therein;

electrical terminal means disposed in said terminal-receiving passageways and having conductor-terminating sections for terminating respective sections of the signal and drain conductors positioned in said conductor-receiving passageways;

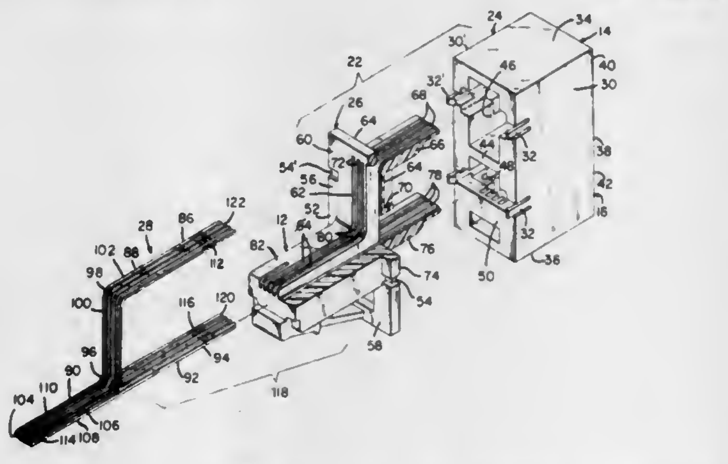
cover members mountable on and adapted to be secured onto said body member and extending along said terminal-receiving and conductor-receiving passageways and an end of the cable; and



strain relief means in said conductor-receiving passageways and on said cover members for engaging the conductors thereby providing strain relief for the conductors.

4,444,451
MODULAR PLUG-DUAL MODULAR JACK ADAPTOR

Ronald W. Myers, Landisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Mar. 5, 1982, Ser. No. 354,974
Int. Cl.³ H01R *13/506, 13/514*
U.S. Cl. 339—154 A **10 Claims**



1. A modular plug-dual modular jack adaptor of the type comprising a first modular plug and first and second modular jacks, the modular jacks having plug-receiving faces which lie in a common plane and having backwalls which lie in a common plane which is substantially parallel to, and spaced from, the common plane of the plug-receiving faces, the modular plug extending from the common plane of the backwalls of the modular jacks, a plurality of conductors, each conductor having a first jack contact portion in the first modular jack, a first connecting portion extending from the first modular jack to the modular plug and having an intermediate portion in the modular plug, the intermediate portion being reversely bent upon itself and forming a plug contact in the modular plug, a second connecting portion extending from the intermediate portion to the second modular jack, and a second jack portion in the second modular jack, the adaptor being characterized in that:

the first and second modular jacks are side-by-side with the corresponding first and second jack contacts in the first and second modular jacks lying in the same plane,

each of the conductors is a continuous one-piece uninsulated conductive member, the intermediate portion comprising first and second parallel sections in the modular plug which extends from the reverse bend to the rearward end of the modular plug, the first connecting portion extending normally from the first parallel section across the back wall of the first modular jack, the first connecting portion being bent intermediate its ends and extending through the back wall of the first modular jack and into the first modular jack,

the second connecting portion extending as a straight line extension of the second parallel section through the back wall of the second modular jack and into the second modular jack whereby,

upon mating the modular plug of the adaptor with an additional modular jack and plugging additional modular plugs into the first and second modular jacks, the conductors in the additional modular jacks are connected to the corresponding conductors in the additional modular plugs.

4,444,452

APPARATUS FOR CENTRAL ARRANGEMENT OF ELECTRICAL CONNECTOR ELEMENTS IN MOTOR VEHICLES

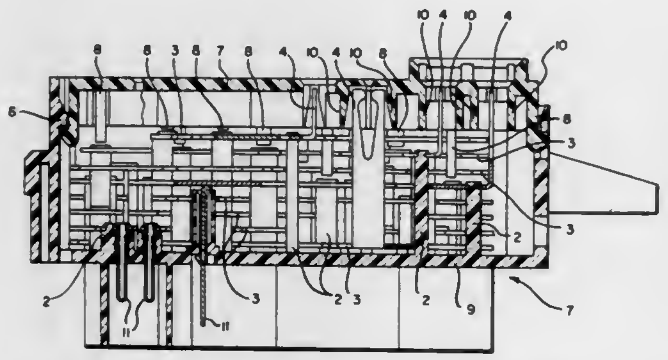
Martin Hilbrandt, Iserlohn; Uwe Ossenberg, Luedenscheid, and Wilhelm Lüsebrink, Halver, all of Fed. Rep. of Germany, assignors to Leopold Kostal GmbH & Co. KG, Leudenscheid, Fed. Rep. of Germany

Filed Nov. 9, 1981, Ser. No. 319,127

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1980, 3045329

Int. Cl.^{3} H01R *9/00, 13/405*

U.S. Cl. 339—176 M **15 Claims**



1. A connector block for centrally mounting electrical connector elements in motor vehicles comprising a housing of an insulating material having integrally formed at its base a plurality of upwardly projecting support posts, to the free ends of which bar-shaped conductor plates are attached, said conductor plates being disposed in different spaced-apart levels and being thereby electrically insulated from one another solely by air, whereby the need for insulating material between said conductor plates to support and to electrically insulate them from one another is eliminated for each said level a number of support posts of equal lengths are provided, with the support posts of different levels having different lengths, corresponding to the level with which the support posts are associated, pre-determined ones of said conductor plates placed at a lower level being passed by or through by the support posts of higher level conductor plates.

4,444,453

ELECTRICAL CONNECTOR

Allan B. Kirby, Sidney Center, N.Y., and Geoffrey P. Johnson, Movato, Calif., assignors to The Bendix Corporation, Southfield, Mich.

Filed Oct. 2, 1981, Ser. No. 308,061

Int. Cl.^{3} H01R *17/18*

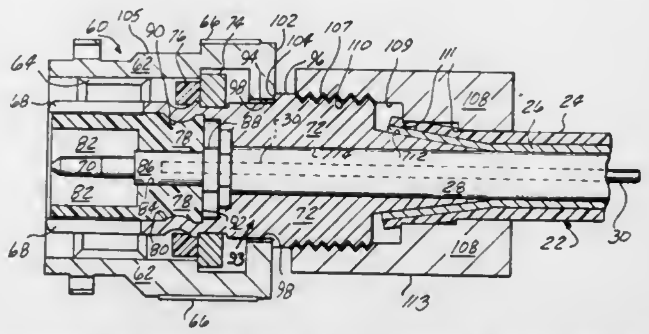
U.S. Cl. 339—177 R **1 Claim**

1. In combination with an electrical connector of the type having a generally cylindrical outer contact; a central contact; means for telescopically mounting said central contact; means for coupling the connector to another electrical connector including a coupling sleeve mounted to said electrical connector and surrounding the outer contact; and clamping means for mechanically connected said electrical connector to a coaxial cable and for electrically connecting said outer cable to a conductive braided conductor layer of said coaxial cable, the clamping means characterized by:

a generally cylindrical, conductive outer contact-clamping body having a portion thereof forming said outer contact, an integral, cylindrical intermediate section, and an integral end portion having a clamping cone surface formed thereon, said outer contact-clamping body being formed with a wrenching feature, said wrenching feature comprised of flats recessed into said cylindrical intermediate section for a limited distance to thereby form a shoulder;

a clamping nut;

said coupling sleeve carrying an inwardly extending rim portion being formed with an opening having partially circular portions of a diameter sized to fit over said cylindrical intermediate section, said opening also formed with intermediate flats located radially inward from said partially circular portions configured to mate with said flats formed on said cylindrical intermediate section; said coupling sleeve movable on said clamping body to allow movement of said rim over said clamping body flats and against said shoulder to thereby locate said flats on said coupling sleeve rim opening in engagement with said flats on said clamping body; and to allow movement of said rim to a position away from said clamping body flats, said opening allowing rotation of said coupling sleeve on said clamping body in said position; said coupling sleeve formed with wrenching features to enable wrenching of said clamping body by said coupling sleeve;



means for enabling a threadable engagement between said clamping nut and said intermediate section of said contact-clamping body;

said clamping nut having an internal, generally conical clamping surface corresponding to and received over said clamping surface and adapted to be drawn theretowards by said threadable engagement between said clamping nut and said contact-clamping body, said clamping nut being formed with wrenching flats, whereby said coaxial cable braided conductor layer may be clamped between said clamping surfaces to establish said mechanical and electrical connection.

4,444,454

FIELD INSTALLABLE COAXIAL PLUG CONNECTOR

Alan I. Horowitz, Windsor Locks, Conn., assignor to Hi-G Incorporated, Windsor Locks, Conn.

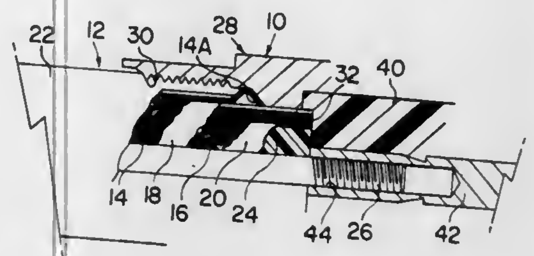
Filed Sep. 13, 1982, Ser. No. 417,331

Int. Cl.^{3} H01R *17/18*

U.S. Cl. 339—177 R **9 Claims**

1. In combination, a coaxial cable having coaxially arranged layers of shield between an outer insulating jacket and an inner dielectric covering a center conductor, and a cable connector including a cylindrical housing having an internally threaded end opening with a predetermined thread pitch to be manually threaded onto the outside of the jacket in a twist-on assembly, and a center contact having an internally threaded end opening with a preselected thread pitch different from the thread pitch of the internally threaded end opening of the housing, the

center contact being manually threaded onto the outside of the center conductor in a twist-on attachment, thereby to provide a dual threaded connection to the coaxial cable of high electrical and mechanical integrity.



4,444,455

FUSE CLIP FOR A CARTRIDGE FUSEHOLDER

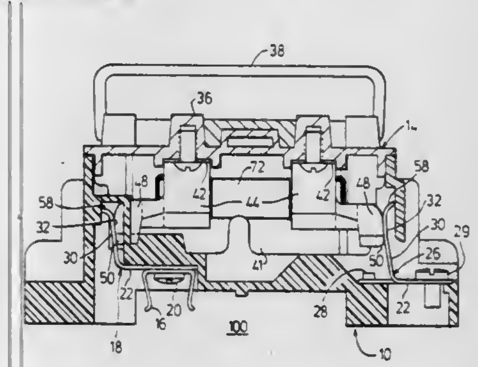
Paul R. T. Wiancko, Thornhill, and Victor D. Koniuk, Scarborough, both of Canada, assignors to Federal Pioneer Limited, Toronto, Canada

Filed Jul. 16, 1979, Ser. No. 58,019

Claims priority, application Canada, Mar. 9, 1979, 323148

Int. Cl.^{3} H01R *13/38*

U.S. Cl. 339—258 F **7 Claims**



1. A fuseholder assembly for use with a cartridge fuse having a longitudinal axis, said assembly characterized by a pair of spaced apart fuse clips that are axially aligned about said longitudinal axis, each of said fuse clips having a base and two legs extending outwardly from said base to substantially form a U shape within which each of said fuse clips is capable of holding a conductive end portion of said fuse, a line contact and a load contact each making electrical contact with a different one of said spaced apart fuse clips, the improvement in said fuseholder assembly comprising said fuse clips each having two mutually opposed blade portions which are substantially parallel to said longitudinal axis, each blade portion having a broad contacting surface area, said line contact and said load contact each including a base portion having two resilient side strips lying closely adjacent to one another, each of said side strips having a smooth contact surface portion lying on a plane normal to said longitudinal axis and being independently biased towards said broad contacting surface area of a corresponding one of said two mutually opposed blade portions to provide wiping electrical contact therewith.

4,444,456

HOLOGRAPHIC METHOD AND APPARATUS FOR TRANSFORMATION OF A LIGHT BEAM INTO A LINE SOURCE OF REQUIRED CURVATURE AND FINITE NUMERICAL APERTURE

Kantilal Jain; Milton R. Latta, and Glenn T. Sincerbox, all of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 23, 1982, Ser. No. 391,100

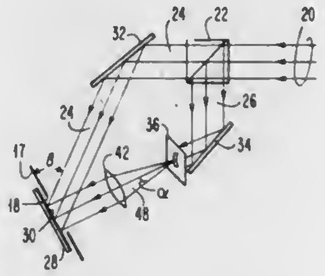
Int. Cl.^{3} G02B *5/32*

U.S. Cl. 350—3.7 **5 Claims**

1. Apparatus for producing a radiation source of a desired shape and numerical aperture from a monochromatic beam comprising:

means for directing the monochromatic beam along a predetermined path;

means to position a hologram in a fixed position along said predetermined path so that the chief ray of said monochromatic beam impinges upon said hologram at a predetermined angle, said hologram formed by interference between a first recording beam and a second recording beam, both said first and said second recording beams derived from the same source of coherent radiation, said first and said second recording beams being directed by first and second optical means to a photosensitive medium, said second optical means comprising diffuser means preceded by mask means having a central opening having a continuous aperture of the desired shape comprising a sector of an annulus, said interference between said first and said second recording beams being recorded in said photosensitive medium to produce said hologram;



said predetermined angle of said chief ray of said monochromatic beam being chosen to be conjugate to said first recording beam so that playback of said recorded hologram produces a continuous self-luminous source of said desired shape and numerical aperture.

4,444,457

PROCESS AND DEVICE FOR THE PRODUCTION OF A TELECENTRIC LIGHT BEAM AND USE OF THE PROCESS

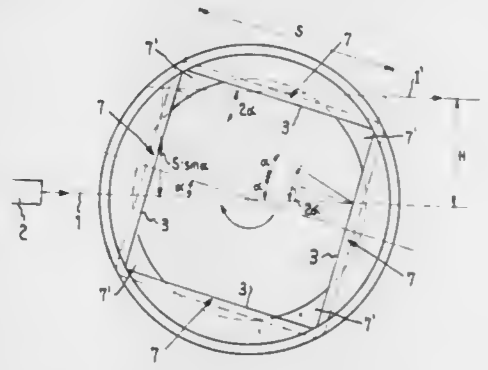
Urs-Peter Studer, Riehen, Switzerland, assignor to Zumbach Electronic AG, Orpund, Switzerland

Filed May 24, 1982, Ser. No. 381,520

Claims priority, application Switzerland, Jun. 4, 1981, 3671/81

Int. Cl.^{3} G02B *27/17*

U.S. Cl. 350—6.8 **15 Claims**



1. A device for the production of at least one telecentric light beam which is to be deflected parallel to itself through a defined region, said device comprising,

a carrier;

at least one pair of plane, parallel internally directed mirrors arranged on said carrier;

means rotatably supporting said carrier on one side thereof;

window means provided in said carrier on the side thereof supported by said supporting means;

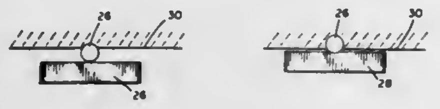
said carrier being open on the side thereof opposite from that supported by said supporting means;

and means for directing a light beam towards said carrier along a path inclined relatively to the plane of rotation of the carrier and the mirrors, whereby said light beam can pass through said carrier laterally of the mirrors by way of said window means and said open side of the carrier, being reflected within the carrier by means of said internally directed mirrors.

4,444,458
SUBSTRATE RUGGEDIZED OPTICAL FIBER APPARATUS

David W. Stowe, Buffalo Grove, and Paul M. Kopera, Franklin Park, both of Ill., assignors to Gould Inc., Rolling Meadows, Ill.

Filed May 26, 1981, Ser. No. 267,187
Int. Cl.³ G02B *7/26*
U.S. Cl. 350—96.15 39 Claims

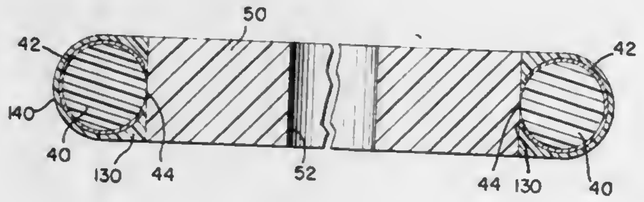


33. An optical device, comprising:
(a) an optical fiber;
(b) a rigid glass support material; and
(c) an interface region in which said support material is fused directly to an outer surface portion of said optical fiber, at least one of said fiber and said support material being provided with a diffusible constituent which diffuses into the other material as said support material and said outer surface portion are fused together in said interface region to provide an optical device being capable of relatively uniform etching.

4,444,459
FIBER OPTIC SLIP RING

Philip E. Woodwell, Puyallup, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jun. 29, 1981, Ser. No. 278,015
Int. Cl.³ G02B *5/172*
U.S. Cl. 350—96.15 4 Claims

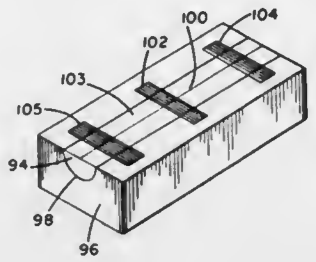


1. A fiber optic slip ring for transmitting light signals from a first body to a second body, one of said bodies being capable of rotation relative to the other body about an axis of rotation, said slip ring comprising:
a first body comprising an optically transparent light transmitting ring, said transparent ring having an outer circumferential surface and an inner circumferential surface;
at least one optical fiber having a core surrounded by cladding adapted to guide light along said fiber;
an opening formed in said cladding to expose said core along a portion of its length and about a portion of its circumference;
means for affixing said fiber to said outer surface, said opening facing the entire circumference of said outer surface;
means forming a light source coupled to said fiber, and
a second body disposed adjacent to but separated from said inner surface, said body comprising means for detecting light.

4,444,460
OPTICAL FIBER APPARATUS INCLUDING SUBTSTRATE RUGGEDIZED OPTICAL FIBERS

David W. Stowe, Buffalo Grove, Ill., assignor to Gould Inc., Rolling Meadows, Ill.

Filed May 26, 1981, Ser. No. 267,205
Int. Cl.³ G02B *7/26*
U.S. Cl. 350—96.19 16 Claims

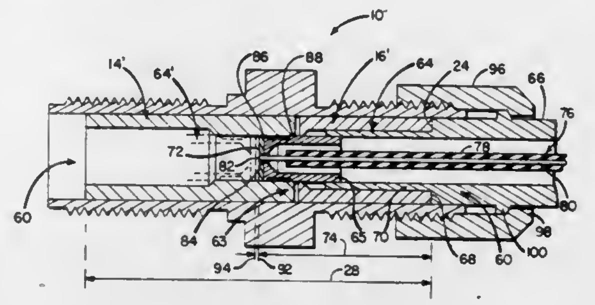


1. An optical device comprising:
(a) an optical fiber having an outer surface;
(b) support means for rigidly supporting said outer surface in a fixed relationship to said support means, a portion of said outer surface and said support means being directly molecularly interfaced along a longitudinal portion of said outer surface of said fiber, said fiber being asymmetrically disposed with respect to said support means;
(c) a wavelength-selective filter superimposed on a portion of said fiber and said support means to diffract predetermined wavelengths of light at the outer surface of the fiber; and
(d) tension means for providing axial tension to said optical fiber while said support means is being directly molecularly interfaced along said longitudinal portion of said outer surface of said fiber.

4,444,461
FIBER OPTIC CONNECTOR AND METHOD OF MANUFACTURE

Robert A. Wey, Plainville; Harold A. Roberts, North Attleboro, both of Mass., and Roger Dery, Greenville, R.I., assignors to Augat Inc., Mansfield, Mass.

Filed Dec. 3, 1981, Ser. No. 327,096
Int. Cl.³ G02B *7/26*
U.S. Cl. 350—96.21 25 Claims

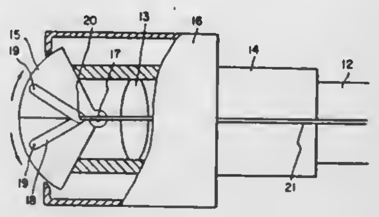


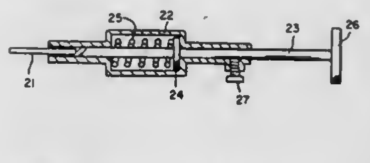
1. A system for maintaining ferruled fibers in spaced-apart axial alignment comprising:
an interconnect housing having a bore; and,
a pair of inserts pressfit into said bore in spaced-apart opposition, the distal ends of said inserts being a predetermined distance apart and each having a channel adapted to receive a fiber-retaining ferrule with a flange at the distal end thereof, the sum of the lengths of the ferrules from tip-to-flange being less than said predetermined distance, whereby when opposed inserted ferrules seat at the distal ends of respective inserts, the ends of said fibers are maintained at a predetermined non-zero spacing.

4,444,462
PICTURE IMAGE OBSERVATION SYSTEM

Kimizo Ono; Yoshikazu Nishiwaki; Koichi Tsuno; Tohru Iwai, and Mitsuru Nishikawa, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Aug. 28, 1981, Ser. No. 297,177
Int. Cl.³ G02B *5/17*
U.S. Cl. 350—96.25 7 Claims



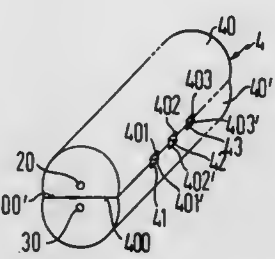


1. A picture image observation system of the type comprising an image transmission line of plural optical fibers bundled in alignment; an image-forming lens housed in a cylindrical adaptor mounted on the forward end of said transmission line which focuses a picture image of an object located in front thereof on the forward end surface of said image transmission line; a magnifying lens provided on the back end of said transmission line which is used for observing said picture image which is transmitted thereto, said picture image observation system being characterized by an arrangement comprising a pair of protective lids which are rotatably mounted on a pair of pins projected from the tip end of said adaptor and which covers the front end of said adaptor; a pair of links for opening/closing which is fixed by pins on one end thereof to said lids; and a remote control means which extends along said image transmission line and which connects one end with the other end of said links so as to push/pull the lids from the back end.

4,444,463
GLASS FIBERS WITH TRANSVERSE OPENINGS AND METHODS OF THEIR PRODUCTION

Hartmut Schneider, Munich, and Friedrich Weidinger, Taufkirchen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 8, 1981, Ser. No. 252,082
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1980, 3016705
Int. Cl.³ G02B *5/14;* C03B *37/075*
U.S. Cl. 350—96.33 13 Claims



1. A glass fiber used as a light waveguide, said glass fiber comprising a one piece member having at least one transverse opening extending therethrough to subdivide a section of the fiber into two portions connected at each end in the zones of the fiber free of the opening.

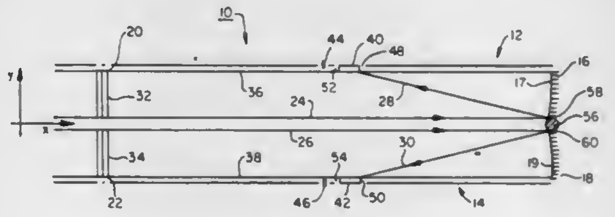
3. A glass fiber according to claim 1, wherein the fiber contains two cores of a material with an index of refraction higher than the index of refraction of the remaining portion of the fiber, each of said cores extending in a longitudinal direction with one being disposed on each side of each opening of the fiber, said cores in the zones free of openings being disposed in the fiber sufficiently close to each other so that light in one core can couple over into the other core.

4. A method of producing a glass fiber having at least one transverse opening, each opening subdividing a section of the fiber into a pair of portions which are connected at each end in the zones of the fiber free of the opening, said method comprising the steps of providing a mass of softened glass, drawing a fiber from the mass of softened glass and forming at least one transverse opening through the fiber while the fiber is still in a soft state and taking measures to prevent the opening from being completely closed during the drawing operation.

4,444,464
DUAL APERTURE MULTISPECTRAL SCHMIDT OBJECTIVE

Peter O. Minott, Bowie, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 13, 1982, Ser. No. 378,535
Int. Cl.³ G02B *27/10, 17/08*
U.S. Cl. 350—172 18 Claims



1. A Schmidt optical objective (**10**), comprising:
a pair of primay mirrors (**16, 18**) having concave spherical reflective surfaces (**17, 19**) positioned on opposite sides of a common plane (x, z) of optical symmetry, said spherical reflective surfaces having separated centers of curvature (**20, 22**) and focal planes (**44, 46**) along parallel optical axes (**36, 38**) spaced apart laterally from opposite sides of said common plane; means (**32, 34**) positioned between said centers of curvature and intersecting said common plane for transmitting light and introducing correcting aberrations in said transmitted light equal and opposite to the total of aberrations produced by said primary mirrors;
a beam separating element (**40/42**) having an entrance and an exit surface, said entrance and exit surfaces being optically concentric to a respective one of said centers of curvature.

4,444,465
CRT SHIELD

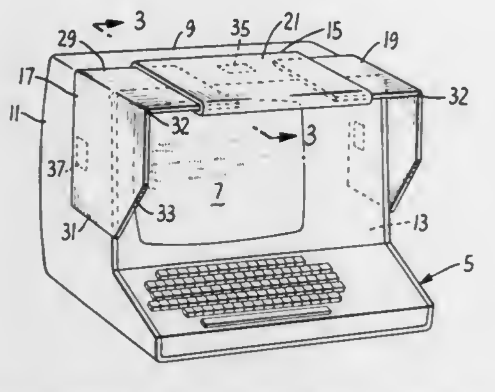
Joe D. Giulie, and Jean W. Giulie, both of 1015 Corporation Way, Palo Alto, Calif. 94303

Filed Dec. 23, 1981, Ser. No. 333,818
Int. Cl.³ G02B *27/00*
U.S. Cl. 350—276 R 4 Claims

1. An adjustable shield for a CRT in an enclosure, comprising in combination:
a. a center portion of generally rectangular configuration having a flat surface with two ends and a front and a back,
b. the end-to-end length of the central portion being no longer than the width of the smallest enclosure on which the shield is to be used,
c. the front and back edges of the center portion being rolled under to provide U-shaped edges with a gap between the terminal ends and the underside of the flat surface,
d. two L-shaped end portions which are mirror images, each having a horizontal portion adapted to fit into the gaps

formed at the front and back of the central portion, and each having a down turned end whereby:

e. said center portion can be placed on the top of the enclo-



sure with the front edge of the center and end portions extending forward of said enclosure and the two end portions telescoped therein to provide a shield over the front and sides of the CRT.

4,444,466

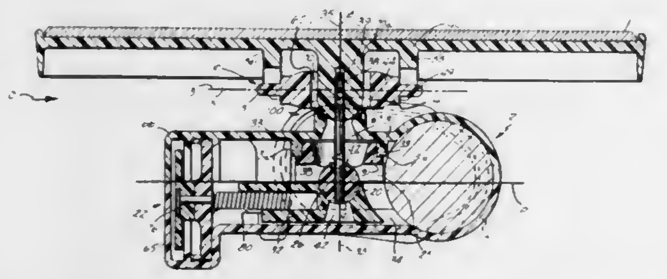
UNIVERSAL JOINT SEAL AND VIBRATION DAMPER FOR REMOTELY ACTUATED PIVOTAL DEVICES

Walter R. Deshaw, Sparta, Mich., assignor to Keeler Corporation, Grand Rapids, Mich.

Filed Jan. 28, 1982, Ser. No. 343,426

Int. Cl.^{3} G02B *7/18;* **F16C** *11/08*

U.S. Cl. 350—289 **32 Claims**



1. A universal joint seal and vibration damper for a pivotally actuated device comprising:

a housing;

means for mounting said device on said housing for pivotal movement about X and Y axes;

a spherical projection disposed on the back of the pivotally actuated device;

a socket disposed on said housing;

a circular elastomeric O-ring disposed in said socket;

means for actuating said pivotally actuated device extending through said socket;

said spherical projection being disposed within said socket, said pivotally actuated device being capable of independent pivotal movements about said socket; and

said means for mounting said device on said housing comprising a universal joint, said universal joint comprising a cross having four arms and a bearing means disposed on each of said arms, a first pair of said bearing means pivotally mounting said cross on said device and a second pair of said bearing means pivotally mounting said cross on said housing, said first and second pairs of bearing means being provided with a dimensional relationship with said device and said housing, respectively, that compresses said spherical projection against said O-ring to provide both a weathertight seal for said socket and a vibration damper for said pivotally actuated device.

4,444,467

COATED LASER MIRROR AND METHOD OF COATING

Alexander J. Shuskus, West Hartford, Conn., and Melvyn E. Cowher, East Brookfield, Mass., assignors to United Technologies Corporation, Hartford, Conn.

Filed Aug. 10, 1981, Ser. No. 291,851

The portion of the term of this patent subsequent to Jun. 14, 2000, has been disclaimed.

Int. Cl.^{3} G02B *5/08;* **B05D** *5/06*

U.S. Cl. 350—310 **11 Claims**

1250 X

1. A laser mirror substrate suitable for subsequent deposition of a laser radiation reflecting outer layer comprising a laser mirror substrate coated with an intermediate bonding layer of plasma enhanced chemical vapor deposited amorphous silicon, amorphous germanium, or mixtures thereof.

6. A method of coating a laser mirror substrate with an intermediate bonding layer comprising surface polishing the mirror surface, baking the polished mirror surface to remove impurities, depositing a layer of amorphous silicon, amorphous germanium, or mixtures thereof on the mirror surface by plasma enhanced chemical vapor deposition, and polishing the coated mirror to a substantially void-free, highly polished surface finish.

4,444,468

APPARATUS FOR COLLECTING SOLAR BEAMS

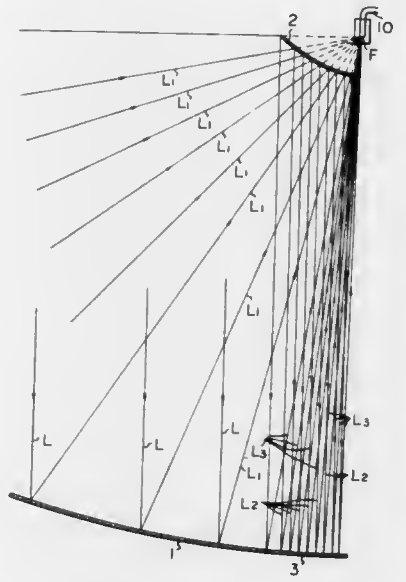
Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan

Filed Aug. 12, 1981, Ser. No. 292,123

Claims priority, application Japan, Aug. 18, 1980, 55-113289

Int. Cl.^{3} G02B *5/10, 5/14*

U.S. Cl. 350—294 **6 Claims**



1. Apparatus for collecting the solar beams comprising:

a first parabolic mirror for receiving and reflecting the solar beams arriving thereon;

a second parabolic mirror having a focal point common to that of said first parabolic mirror for reflecting the solar beams from said first mirror to condense them into parallel beams with an enhanced light energy density;

a third parabolic mirror for reflecting said parallel beams from said second mirror to converge them towards a focal point thereof, and;

at least one light conductor having an inlet positioned at the focal point of said third mirror, so that the solar beams from said third mirror are introduced into said light conductor.

4,444,469

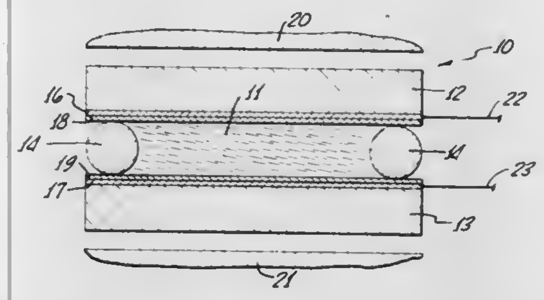
NARROW BAND REJECTION FILTER UTILIZING A LIQUID CRYSTAL CELL

Wilbur I. Kaye, Corona Del Mar, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Continuation of Ser. No. 45,719, Jun. 5, 1979, abandoned. This application Jun. 1, 1981, Ser. No. 269,140

Int. Cl.^{3} G02F *1/137*

U.S. Cl. 350—347 E **10 Claims**



4. A method for rejecting light of a given wavelength while at least partially transmitting light of all other wavelengths comprising the steps of:

selecting a wavelength to be rejected;

positioning a liquid crystal cell between a pair of crossed or parallel polarizers in the path of a beam with said cell being positioned with its optic axis at a 45° angle to the planes of polarization of said polarizers, said cell including a pair of parallel, transparent plates, a liquid crystal material between said plates, and conductor means on the inside surfaces of said plates;

applying a voltage to said conductor means to tune said cell to reject said selected wavelength at a particular order of said cell; and

stepping the voltage applied to said conductor means to change the order of said cell while rejecting said selected wavelength.

4,444,470

MULTIBEAM OPTICAL MODULATION AND DEFLECTION APPARATUS

Akio Ioka, and Koichiro Kurahashi, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 55,633, Jul. 6, 1979, abandoned. This application Oct. 14, 1981, Ser. No. 311,328

Claims priority, application Japan, Jul. 14, 1978, 53-86594

Int. Cl.^{3} G02F *1/11*

U.S. Cl. 350—358 **2 Claims**

1. A multibeam optical modulation and deflection apparatus for receiving a plurality of input signals and for producing a plurality of laser beams, comprising:

an acousto-optic deflector means for receiving a beam of laser light;

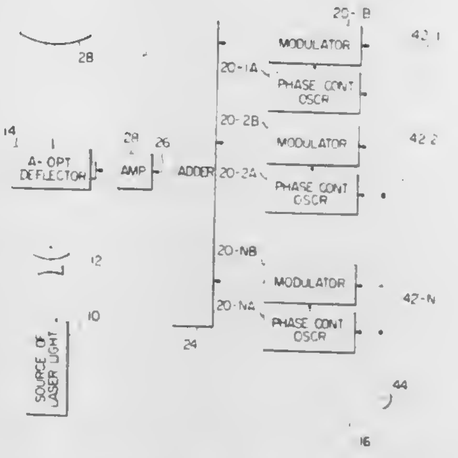
a driving means for generating a plurality of high frequency driving signals for driving said acousto-optic deflector, wherein said acousto-optic deflector is simultaneously driven by said plurality of high frequency driving signals so as to produce a plurality of beams of laser light which are modulated and deflected independently of one another;

a phase control means contained within said driving means for independently controlling phases of said plurality of high frequency driving signals in accordance with a phase control signal;

a first sensor for sensing the number of printing signals which are in an ON state and for providing an output corresponding thereto;

a second sensor for sensing the ON/OFF pattern of said printing signals and for providing an output corresponding thereto;

and a phase pattern determination circuit means which is connected to said first and second sensor outputs for storing therein a plurality of different phase patterns and



for producing said phase control signal as an output used for controlling the phases of said plurality of high frequency driving signals;

wherein each of said stored phase patterns comprises a predetermined optimum phase pattern for each input signal ON/OFF pattern, and wherein said predetermined optimum phase pattern is selected by said phase pattern determination circuit means from said stored phase patterns in response to said outputs of said first and second sensors.

4,444,471

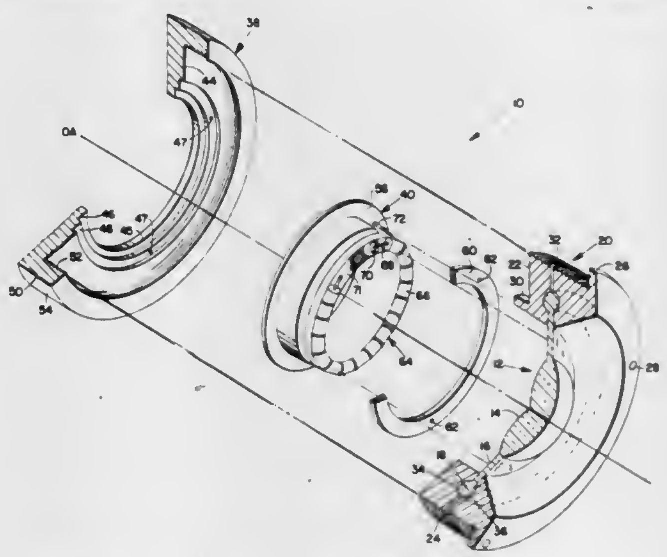
VARIABLE FOCUS LENS SYSTEM EMPLOYING ELASTOMERIC LENS

John W. Ford, Jr., Framingham; Howard G. Rogers, Weston, and Christy P. Thomas, Sharon, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 12, 1982, Ser. No. 357,838

Int. Cl.^{3} G02B *1/04, 3/12, 15/14*

U.S. Cl. 350—423 **11 Claims**



1. A variable focus lens system comprising:

a lens element formed of at least one transparent, homogeneous elastomeric material selectively shaped to provide said lens element with a predetermined focus when said lens element is in a relaxed state;

means for supporting said lens element in a relaxed or nearly relaxed state along and perpendicular to its optical axis and for creating a radial tensile stress uniformly distributed around the periphery of said lens element in response to the application of force to selected parts of said support means in directions parallel to said lens element optical axis; and

means for applying a selectively variable force to said selected parts of said support means in directions parallel to said lens element optical axis and substantially uniformly distributed about said optical axis to cause said radial stress uniformly distributed around the periphery of said lens element to be selectively variable to selectively alter said relaxed shape of said lens element in a predetermined manner so that the focus of said lens element can be changed in a continuous manner over a predetermined range.

4,444,472

LENS SYSTEM HAVING COLOR SEPARATION OPTICS

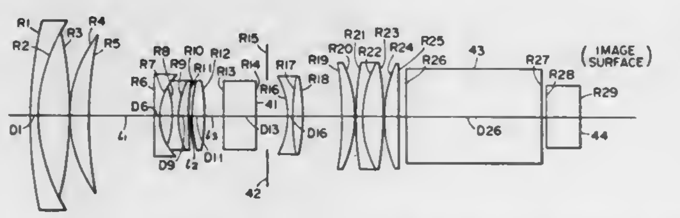
Kazuo Tanaka, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 5, 1980, Ser. No. 175,523

Claims priority, application Japan, Aug. 8, 1979, 54-101115

Int. Cl.³ G02B *13/22, 15/14, 27/14*

U.S. Cl. 350—423 **4 Claims**



1. A lens system having a color separation optical system, comprising in the order from the object field side:

a first lens group having focusing means and variable magnification lens means;

a diaphragm for limiting a light beam from said first lens group;

a second lens group being constantly placed at a fixed position, and forming the exit pupil at a substantially infinite distance position from the image plane of said lens system; and

a color separation optical system disposed between said second lens group and the image plane, said diaphragm and said second lens group further being arranged to cause the principal rays of the light beam emerging from said second lens group to enter said color separation optical system in parallel.

4,444,473

GAUSS TYPE LENS SYSTEM

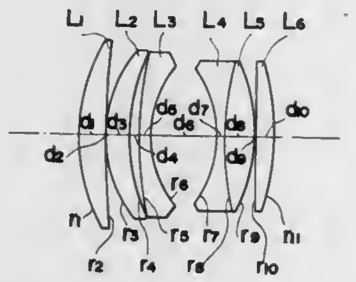
Yoshinobu Kudo, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 22, 1980, Ser. No. 189,224

Claims priority, application Japan, Oct. 4, 1979, 54-128564; Jan. 23, 1980, 55-7099

Int. Cl.³ G028 *9/60*

U.S. Cl. 350—467 **13 Claims**



1. A modified Gauss type lens system of five units six-elements comprising from the object to the image side:

a first unit consisting of a positive meniscus single lens element convex to the object side;

a second unit consisting of a positive meniscus single lens element convex to the object side;

a third unit consisting of a negative meniscus single lens element convex to the object side;

a fourth unit consisting of a doublet composed of a biconcave lens element and a biconvex lens element cemented to the biconcave lens element at the image side thereof; and

a fifth unit consisting of a positive lens element, the absolute value of the radius of curvature of the object side surface of the positive lens element being greater than that of the image side surface of the positive lens element,

wherein the lens system fulfills the following conditions:

$$0.05\frac{1}{f} < \frac{1}{r_8} < 1.4\frac{1}{f} \tag{1}$$

$$0.52\,f < \Sigma d < 0.65\,f \tag{2}$$

$$0.9\frac{1}{f} < \frac{1}{f_1} < 1.3\frac{1}{f} \tag{3}$$

$$0.09\frac{1}{f} < \left|\frac{1}{f_{45}}\right| < 0.5\frac{1}{f}\,,\ f_{45} < 0 \tag{4}$$

$$0.2\frac{1}{f} < \left|\frac{1}{F_{23}}\right| < 0.5\frac{1}{f}\,,\ F_{23} < 0 \tag{5}$$

$$1.7 < \frac{N_1 + N_6}{2} < 1.75 \tag{6}$$

$$1.6 < N_2,\ N_3,\ N_4,\ N_5 < 1.7 \tag{7}$$

wherein

f represents the focal length of the whole lens system;

r_8 represents the radius of curvature of the intermediate cemented surface of the doublet of the fourth unit;

Σd represents the total length of the whole lens system;

f_1 represents the focal length of the first unit;

f_{45} represents the focal length of the fourth unit;

F_{23} represents the focal length of an air lens formed between the second and third units ($F_{23}=N_3/\phi_{23}$, if the refractive power of the air lens is ϕ_{23}); and

N_1 represents the refractive indices of the glass materials numbered consecutively from the object side.

4,444,474

STATIONARY EYEPIECE TELESCOPE

Edward H. Pasko, 307 E. Tunnell St., Santa Maria, Calif. 93454

Filed Jan. 25, 1982, Ser. No. 342,516

Int. Cl.³ G02B *17/06, 23/06*

U.S. Cl. 350—503 **5 Claims**

1. A telescope comprising

(a) a substantially cylindrical main housing, the first extremity of which is closed, and the opposed viewing extremity of which is provided with closure means having a circular aperture centered on the longitudinal axis of said main housing and perpendicular thereto,

(b) a narrow cylindrical barrel equipped with a viewing lens system insertively engaged with said centered aperture in coaxial alignment with said main housing and slideably adjustable with respect thereto,

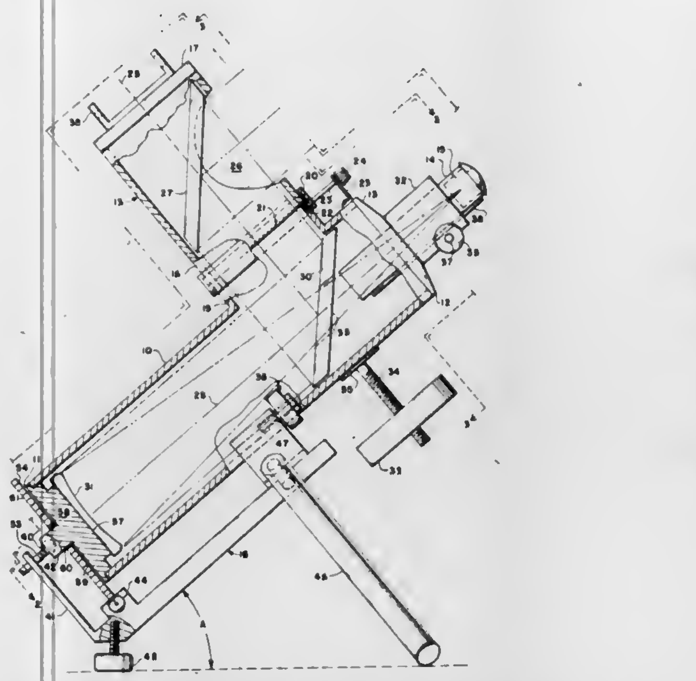
(c) a cylindrical turret having a closed upper extremity rotatively mounted at its lower open extremity to said main housing in communication with the interior thereof, said mounting being such that said turret rotates about its cylindrical axis which perpendicularly intersects the axis of said main housing,

(d) an entrance aperture positioned within the sidewall of said turret,

(e) a first flat mirror of elliptical periphery disposed opposite said entrance aperture and at a 45° angle with respect to

the cylindrical axis of said turret and adapted to reflect light received from said entrance aperture into said main housing,

(f) a second flat mirror of elliptical periphery having an elliptical aperture centered therein in the same orientation as the elliptical periphery, said second flat mirror being disposed within said main housing at a 45° angle with respect to the axes of both said main housing and turret and adapted to reflect light toward the first extremity of said main housing,



(g) a concave primary mirror of round periphery mounted within said main housing adjacent said first extremity and perpendicularly centered on the axis of said housing, said concave mirror being adapted to reflect focused light through said elliptical aperture and toward said viewing lens system, and

(h) pedestal means associated with the main housing below said turret, said pedestal means serving to support the telescope and permit rotative movement about the axis of said main housing.

4,444,475

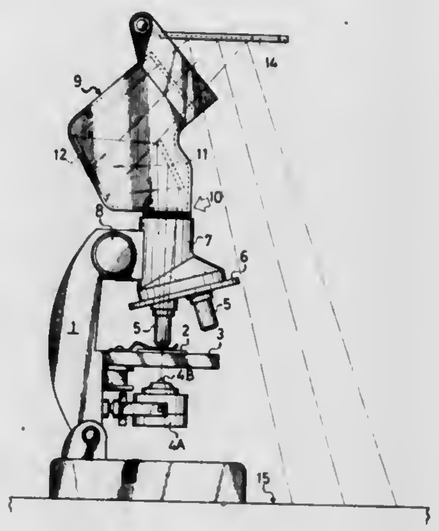
MICROSCOPE WITH PROJECTOR

Toshikatsu Yamada, Tokyo, Japan, assignor to K.K. Yamada Kogaku Seisaku, Tokyo, Japan

Filed Dec. 28, 1981, Ser. No. 334,788

Int. Cl.³ G02B *21/36*

U.S. Cl. 350—508 **7 Claims**



1. A projection hood for a microscope having a vertically orientated optical path from an objective lens, said hood comprising:

(a) a housing disposed on said microscope, said housing having first and second openings therein;

(b) reflecting means disposed within said housing for receiving light along the vertically oriented path from the objective lens through said first opening and reflecting said light along a second optical path disposed at approximately 45° angle to the vertical, said second optical path passing through said second opening;

(c) a projection screen which is removably received on said housing at said second opening; and

(d) mirror means pivotally mounted on said housing adjacent said second opening, said mirror means being movable in said second optical path passing through said second opening.

4,444,476

OBJECTIVE REFRACTOMETERS

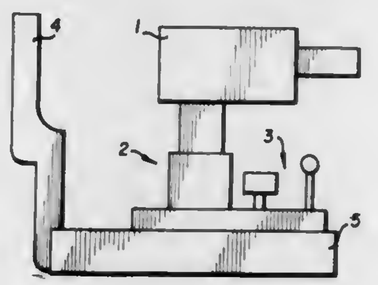
Jacques F. Simon, Paris; Didier R. Bruneau, Palaiseau, and Joël E. Corno, Angervillers, all of France, assignors to Fiat Francais, France

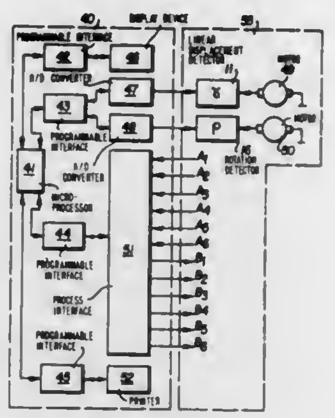
Filed Jul. 6, 1981, Ser. No. 280,216

Claims priority, application France, Jul. 31, 1980, 80 16001

Int. Cl.³ A61B *3/10*

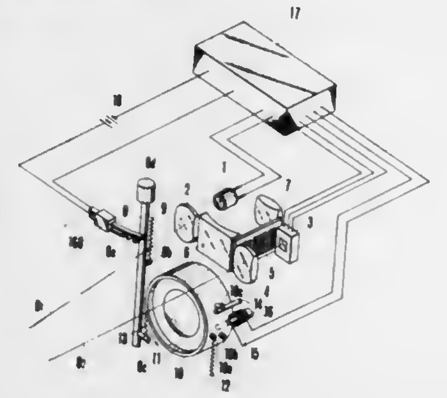
U.S. Cl. 351—211 **9 Claims**





1. An objective refractometer which permits a practitioner visually to effect optical pointings by projecting onto the retina of a patient the image of at least one point light source, said refractometer comprising a stand bearing stationary objectives and means forming part of a an image projection path and means forming part of an image observation path as well as a movable unit bearing an eyepiece and comprising means supplementing said image projection and observation paths, said refractometer further comprising test patterns for image projection and electronic control means comprising a microprocessor (**41**) associated with a detector (**11**) of linear displacements of the movable part (**12**) with respect to the stand (**6**) and a detector (**16**) of angular displacements of at least one of said test patterns around optical axes of the said image projection path as well as means (**43, 47, 48**) for transmission, under the control of a practitioner, of the information derived from said detectors whereby said image is projected onto an eye and a pointing is effected whereupon the information from said indicators is transmitted to said microprocessor.

4,444,477
AUTOMATIC FOCUS ADJUSTING DEVICE
Shuichi Tamura, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 18, 1981, Ser. No. 332,208
Claims priority, application Japan, Dec. 24, 1980, 55-184859
Int. Cl.^{3} G03B *3/00*
U.S. Cl. 354—403 **11 Claims**

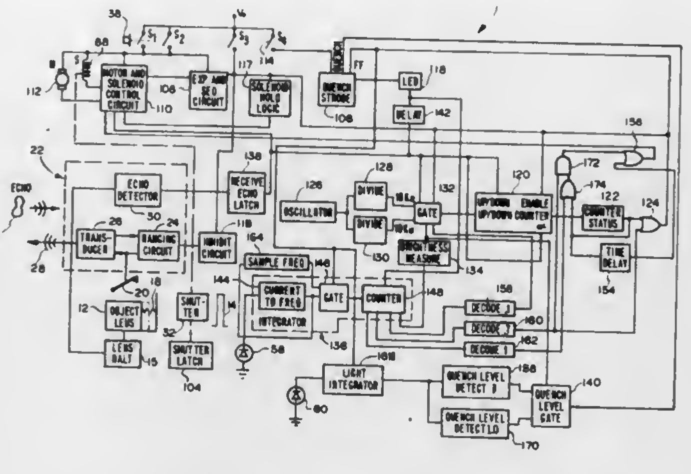


1. An apparatus for setting a lens means to one of a plurality of distinct positions on an optical axis thereof in correspondence to an object distance, said apparatus comprising:
- (A) radiation projecting means for projecting a beam of radiaton towards an object;
- (B) radiation receiving means for receiving radiation reflected by the object, said receiving means being disposed at a distance of a predetermined base line length from said projecting means and having a radiation sensor which produces an electrical output corresponding to the received radiation;
- (C) circuit means for determining, on the basis of the output of said sensor in said receiving means, a position out of said plurality of distinct positions where said lens means is to be set;
- (D) manually operable driving means for driving said lens means from a predetermined initial position toward the position determined by said circuit means;
- (E) resetting elastic means for automatically resetting the lens means to said initial position when manual operation to said driving means is released;
- (F) locking means for locking the lens means at the initial position against the urging force of the resetting elastic means; and
- (G) engagement means engageable with the lens means and contactable to a position discriminated by said circuit means,

said engagement means shifting in accordance with an output from said circuit means, and the contact position of the lens means being determined in accordance with the shifting of the engagement means.

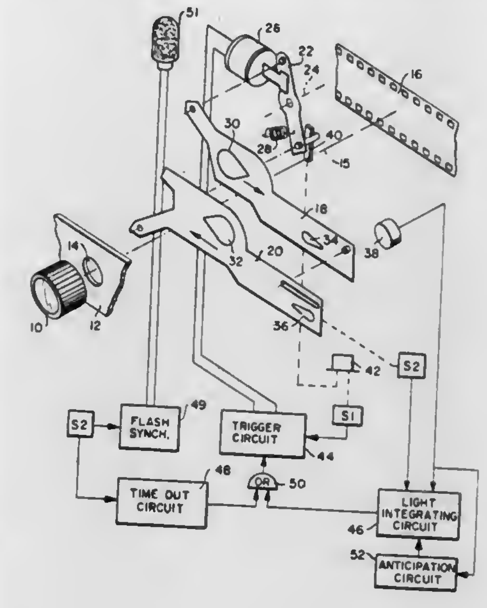
4,444,478
HYBRID CAMERA ARRANGEMENT
Laura E. Keith, Reading; Marie T. Smyth, Sudbury, and George D. Whiteside, Lexington, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed Nov. 16, 1982, Ser. No. 442,238
Int. Cl.^{3} G03B *7/14*
U.S. Cl. 354—417 **10 Claims**

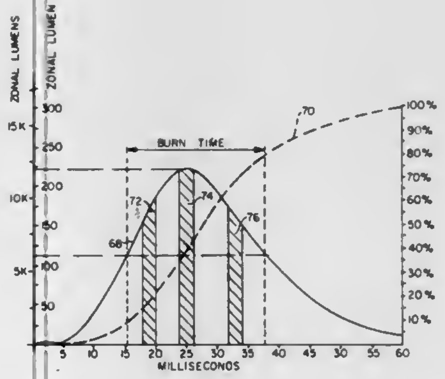
1. A photographic camera for use with an electronic flash of the quench type and including means for defining a film plane, said camera comprising:
- rangefinding means for providing an output response generally corresponding to the distance from the camera to a photographic subject to be photographed;
- a blade mechanism;
- means for mounting said blade mechanism for displacement from an initial closed arrangement wherein said blade mechanism precludes scene light from being transmitted to the film plane to an open arrangement wherein said blade mechanism defines a maximum size aperture to allow the passage of scene light to the film plane and then to a final closed arrangement wherein said blade mechanism again precludes scene light from being transmitted to the film plane;
- drive means responsive to the actuation thereof for effecting the displacement of said blade mechanism from its initial closed arrangement to its said open arrangement and then into its final closed arrangement to define an exposure interval during which scene light is incident upon the film plane;
- means for detecting and integrating scene light in correspondence with the scene light admitted by said blades mechanism to the film plane during the photographic exposure interval and for providing an output signal in response to the detected and integrated scene light; and
- control means responsive to the output response from said rangefinding means for providing a flash fire signal during the exposure interval to ignite the electronic flash when said blade mechanism defines an aperture value corresponding to said camera-to-subject distance and thereafter responding to said output signal from said scene light detecting and integrating means for providing a quench signal for quenching the electronic flash, whereby said exposure is determined as a hybrid function of both camera-to-subject range and scene brightness, wherein said scene light detecting and integrating means comprises first and second photoresponsive elements for receiving scene light in correspondence with the scene light admitted by said blade mechanism to the film plane to provide a first output signal responsive to the scene light incident to said first photocell and a second output signal responsive to the scene light incident to said second photocell and wherein said control means responds to said first output signal from said scene light detecting and integrating means for providing a blade close command signal to actuate said drive means to effect the displacement of said blade mechanism back to its said final closed arrangement and to said second output signal from said second light detecting and integrating means for providing said quench signal.



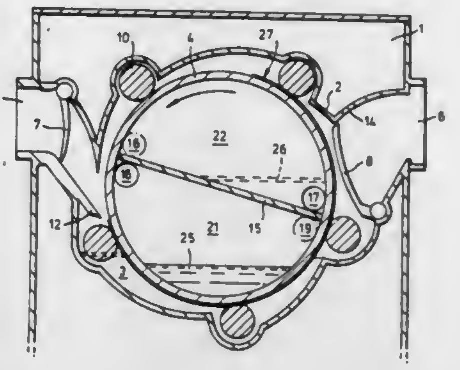
4,444,479
PHOTOGRAPHIC SYSTEM WITH SLOW BURN FLASH BULB
Bruce K. Johnson, Andover, and George D. Whiteside, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Continuation-in-part of Ser. No. 222,562, Jan. 5, 1981, abandoned. This application Jan. 27, 1982, Ser. No. 343,160
Int. Cl.^{3} G03B *7/14*
U.S. Cl. 354—413 **6 Claims**

1. A photographic system for exposure of film having a fast film speed, said system comprising:
- a camera having an objective lens adequate to yield a range of camera/subject distances extending from a minimum focus distance and within such range the image of a subject is focused at a film plane defined by the camera;
- a shutter operable between an open condition defining a fixed exposure aperture to pass light from said lens to said film plane and a closed condition to block such passage of light, said shutter constituting the sole means for determining light to which the film is exposed;
- means responsive to initiation of a camera cycle for actuating said shutter to its said open condition;
- means for generating a shutter closing signal in response to scene light including an anticipation circuit to advance the time of said shutter closing signal in accordance with increased scene illumination;
- means responsive to said shutter closing signal for moving said shutter from said open condition to said closed condition during a definite interval of shutter closing time;
- a vaporizable filament flashbulb mounted on said camera, said flash bulb producing illumination of a fixed amount limited to provide proper exposure of light sensitive film at said film plane for a predetermined maximum camera/-subject flash distance and having an intensity of illumination variable with time between minimum and maximum values, said flash bulb having an extended burn time, measured between the rise and fall of the intensity to approximately one-half said maximum value, substantially equal to the longest interval of time compatible with hand-held camera operation; and
- means for energizing said flash bulb in fixed relation to opening said shutter to said fixed aperture and so that said interval of shutter closing time occurs exclusively during said extended burn time for camera/subject distances between said minimum focus distance and said predetermined maximum camera/subject flash distance, to thereby maximize the exposure time for said given aperture for each subject distance and reduce the proportionate amount of flash illumination passed to the film plane during the closing interval while maintaining flash bulb efficiency.



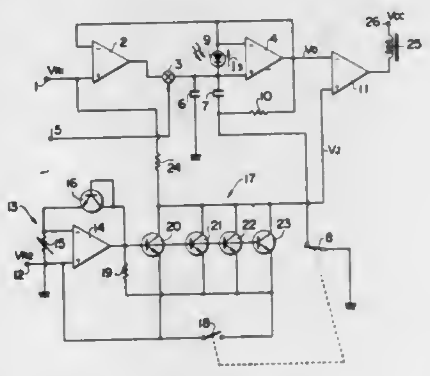


4,444,480
ROTATING DRUM-CONTAINING SHEET OR WEB PROCESSING APPARATUS
Barrie A. Freeman, Wickford, England, assignor to Ciba-Geigy AG, Basel, Switzerland
Filed Nov. 3, 1982, Ser. No. 438,840
Claims priority, application United Kingdom, Apr. 11, 1981, 8133188
Int. Cl.^{3} G03D *3/04, 3/08*
U.S. Cl. 354—329 **6 Claims**



1. A processing apparatus for sheet or web material which comprises a vessel containing processing liquid in which is partially immersed a driven drum which helps to guide the sheet or web material through the vessel, the said drum comprising within its body at least a first and second cavity, each said first and second cavity having at least a first and second aperture positioned on opposing drum surfaces defining said first and second cavity, each said first and second aperture leading from its respective cavity to the outside of the drum, said first and second cavity being so formed and said first and second apertures being so located that when the drum is rotating, a body of liquid from the vessel enters one of said first and second cavity through said first aperture at a lower level in the vessel, is raised to a higher level in the vessel and leaves the said one cavity at a high level through the second aperture of said one cavity, thus circulating the liquid in the vessel.

4,444,481
EXPOSURE CONTROL CIRCUIT FOR A CAMERA
Kazunori Mizokami, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Japan
Filed Dec. 7, 1981, Ser. No. 328,001
Claims priority, application Japan, Dec. 26, 1980, 55-190675[U]; Mar. 6, 1981, 56-031282[U]
Int. Cl.^{3} G03B *7/08*
U.S. Cl. 354—401 **5 Claims**

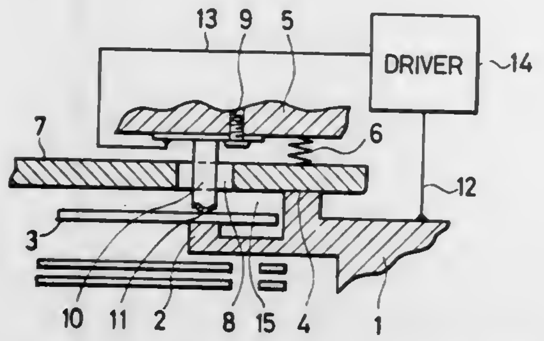


1. An exposure control circuit for a camera, comprising:
- a photoelectric transducer element for photometry which produces a photocurrent in accordance with the magnitude of the brightness of an object being photographed;
- an integrating circuit including a plurality of integrating

capacitors for integrating the photocurrent produced by the transducer element;
an operational amplifier for photometry which delivers a photometric output in the form of an integrated voltage of the integrating circuit;
a film speed information presetting circuit for developing a film speed information voltage which corresponds to the film speed of a film being used;
a decision voltage circuit for converting an output voltage from the film speed information presetting circuit into a decision voltage, said decision voltage circuit comprising a current mirror circuit including a plurality of transistors, the changeover switch means including a changeover switch to which the mirror circuit is connected, the changeover switch causing the current mirror circuit to generate the decision voltage by amplifying the film speed information voltage by a first amount when the changeover switch is in a first position and causing the current mirror circuit to generate the decision voltage by amplifying the film speed information voltage by a second amount different than the first amount, when the changeover switch is in the second position;
an exposure decision circuit for comparing the photometric output from the operational amplifier against the decision voltage from the decision voltage circuit to control an exposure period;
and changeover switch means connected in both the integrating circuit and the decision voltage circuit for concurrently switching the effective capacitance of the integrating circuit and the decision voltage of the decision voltage circuit.

4,444,482
FILM DETECTING DEVICE IN AUTOMATIC FILM WINDING TYPE CAMERA

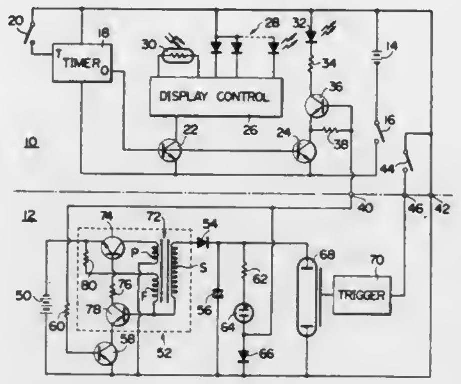
Takumi Kobayashi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 28, 1981, Ser. No. 316,152
Claims priority, application Japan, Oct. 31, 1980, 55-155719[U]
Int. Cl.³ G03B *1/00*
U.S. Cl. 354—173.1 **4 Claims**



1. In a camera having an electrically operated camera mechanism, said camera having film transported along a film path, the improvement comprising:
film detecting means for detecting the presence of said film in said film path and for disabling said camera mechanism when no film is detected, said film detecting means comprising: first and second electrical contacts disposed in opposite sides of said film path, said film passing between said contacts to isolate them from one another when said film is in said film path;
a film pressure plate having an aperture therein;
a rear camera portion on which said first contact is mounted, said first contact extending through said aperture;
means for urging said pressure plate toward said film path from said rear camera portion; and
said second contact comprising an electrically conductive camera body portion.

4,444,483
CONTROL CIRCUIT FOR POWER SUPPLY ASSOCIATED WITH AN ELECTRONIC FLASH UNIT

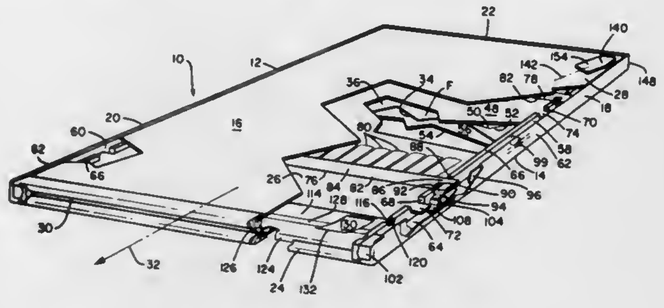
Yukio Nakajima, Hachioji, Japan, assignor to Olympus Optical Company, Ltd., Japan
Filed Sep. 16, 1981, Ser. No. 302,756
Claims priority, application Japan, Nov. 10, 1980, 55-157897
Int. Cl.³ G03B *15/05*
U.S. Cl. 354.1—128 **8 Claims**



1. Apparatus comprising:
(A) a camera having an operating switch which initiates an operating mode of said camera when said switch is enabled;
(B) an electronic flash unit associated with said camera and including a voltage booster for boosting the power output of a power cell to feed a flash illumination circuit of said flash unit;
(C) a control circuit including:
  (1) a timer circuit located in said camera for producing at least one time limit signal having a predetermined duration responsive to the enabling of said operating switch; and
  (2) a switching element located in said electronic flash unit for activating said voltage booster in response to a time limit signal derived from said timer circuit;
and
(D) means for displaying exposure information responsive to a time limit signal derived from said timer circuit.

4,444,484
PHOTOGRAPHIC CASSETTE AND DISPENSING METHOD

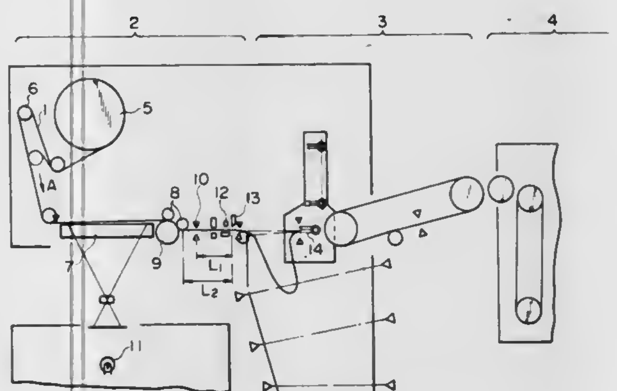
David E. Best, and John J. Niedospial, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Aug. 25, 1982, Ser. No. 411,226
Int. Cl.³ G03B *17/26*
U.S. Cl. 354—276 **25 Claims**



1. In a cassette for holding a photographic sheet, the cassette having one end with a slot therein through which the sheet is movable along an exit path, another end opposite said one end, one side joined to and forming a corner with said other end, and another side opposite said one side, an improvement comprising:
means mounted near said corner and engageable with the sheet for moving the sheet obliquely, relative to the exit path, into buckling engagement with said other side prior to movement of the sheet along the exit path and through said slot, to thereby facilitate removal of the sheet from the cassette.

4,444,485
PHOTOGRAPHIC PRINTING APPARATUS

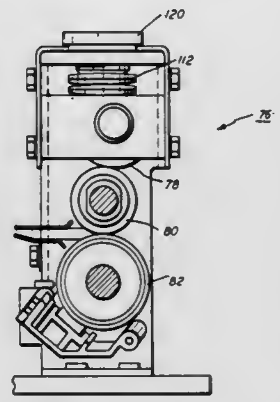
Mikio Kogane, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Mar. 30, 1982, Ser. No. 363,751
Claims priority, application Japan, Apr. 1, 1981, 56-47149[U]
Int. Cl.³ G03B *29/00*
U.S. Cl. 355—29 **6 Claims**



1. A photographic printing apparatus comprising printing means, means for supplying a strip of photographic paper to said printing means, a cutter for cutting a printed portion of said strip of photographic printing paper from the the remaining unprinted portion thereof, feeding means for feeding said strip from said printing means to said cutter, and return means for returning the leading edge of said unprinted portion to said feeding means whereby upon return of the unprinted portion adjacent said leading edge to said printing means printing may take place on said unprinted portion so that substantially all of said paper strip may be printed without waste.

4,444,486
THREE-ROLL COLD PRESSURE FUSE FOR FIXING TONER IMAGES TO COPY SUBSTRATES INCLUDING AN OVERSKEWED ROLL

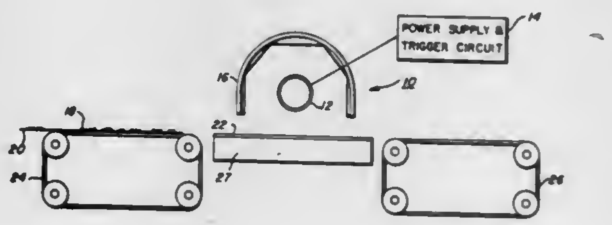
Edwin R. Monkelbaan, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Jun. 10, 1982, Ser. No. 387,061
Int. Cl.³ G03G *15/20*
U.S. Cl. 355—3 FU **6 Claims**



1. Fuser apparatus for fixing toner images to copy substrates solely by the application of pressure, said apparatus comprising:
frame structure;
a fuser roller and support bearings therefor, said support bearings being fixedly mounted in said frame structure;
a pressure roller adapted to form a nip with said fuser roll through which said substrate pass with said toner images contacting said fuser roller, said pressure roller being movably supported in said frame whereby it can be biased into pressure engagement with said fuser roll;
a backup roller mounted for engagement with said pressure roll for applying a load force thereto to thereby create pressure in said nip suitable for fusing toner images to copy sheets passing through said nip such that said toner images contact said fuser roller;
means for urging said backup roller into pressure engagement with said pressure roller, the axes of said fuser and pressure roller being parallel and said backup roller being overskewed with respect to the axes of said fuser and pressure rollers whereby the force distribution between said backup roller and said pressure roller is a maximum at the center of said backup roller and zero at its ends.

4,444,487
MULTIPLE-FLASH FUSER

Joel S. Miller, El Toro, Calif., and Dana G. Marsh, Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Jul. 2, 1979, Ser. No. 54,381
Int. Cl.³ G03G *15/20*
U.S. Cl. 355—3 FU **5 Claims**



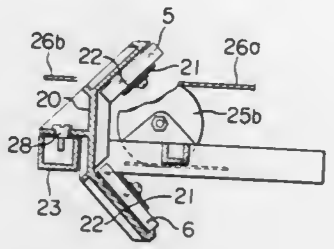
1. Apparatus for fixing toner images by coupling radiant energy to the toner; said apparatus comprising:
a flash lamp;
means for flashing said flash lamp a plurality of times, each flash being insufficient to cause coalescing of the toner forming the images;
means for effecting relative movement between said flash lamp and a substrate carrying said toner images, said movement being at a rate permitting irradiation of a discrete portion of said copy substrate a plurality of times sufficient to effect coalescing of toner forming said images;
means for supporting said substrate during said movement; and
a reflector for focusing the irradiation from said flash lamp onto said substrate and images, said flash lamp being disposed intermediate said reflector and said supporting means, said reflector comprising five facets with a reflecting surface approximating the reflective pattern of an elliptical reflector.

4,444,488
ADJUSTABLE MIRROR SUPPORT FOR COPYING APPARATUS

Yozo Fujii; Kazuo Murakami, and Hirofumi Sakaguchi, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan
Filed Jan. 5, 1982, Ser. No. 337,321
Claims priority, application Japan, Feb. 3, 1981, 56-15318
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—11 **2 Claims**

1. In an electrophotographic copying apparatus of the type in which the illuminated image of an original placed on a transparent glass is directed toward a photosensitive member by an optical system which includes a first movable mirror, and second and third movable mirrors travelling at half the speed of the first movable mirror, the improvement comprising a slidable frame, a support, means mounting said second and third mirrors on said support in spatial relationship one with

the other, facing one another at a 90° angle, means pivotally mounting said support on said frame for adjustably positioning said second and third mirrors relative to said first mirror and other elements of the optical systems, and means holding said mirror support in the desired adjusted position.



4,444,489

APPARATUS FOR INFLUENCING THE COLOR OF COPYING LIGHT IN PHOTOGRAPHIC COPYING MACHINES OR THE LIKE

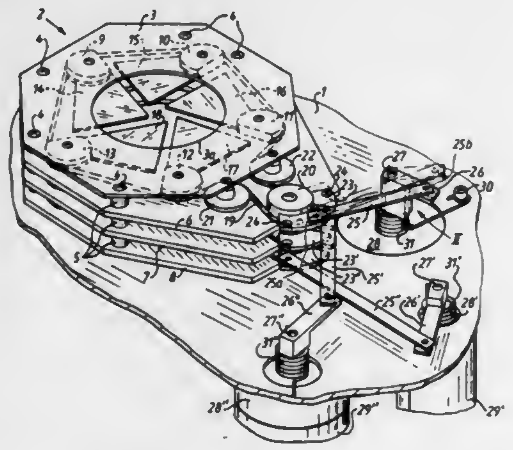
Siegfried Bartel, Gauting; Ernst Biedermann, Taufkirchen; Wolfgang Ermer, Hirten, and Erich Nagel, Anzing, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 13, 1982, Ser. No. 417,636

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1981, 3136901

Int. Cl.^{3} G03B ***27/72, 27/76***

U.S. Cl. 355—35 **15 Claims**



1. Apparatus for influencing the beam of copying light in a copying machine, comprising at least one composite filter including at least three discrete sectors movable into and from the path of the beam between first positions at least substantially outside of such path, second positions in which the sectors extend at least substantially across the entire path, and a plurality of intermediate positions; and means for moving said sectors jointly between said first and second positions, including stepping motor means and motion transmitting means interposed between said motor means and said sectors, said motion transmitting means including transmission means for varying the rate at which said sectors move into or from said path during different stages of movement of said sectors between said first and second positions.

4,444,490

DATA STORAGE SYSTEM FOR STORING DOCUMENTS AND THE LIKE

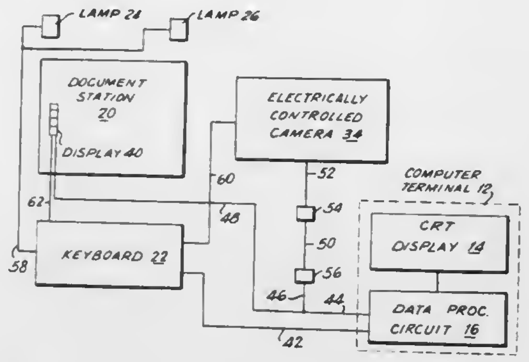
Gary Stark, Westport, Conn., and Gidion Elkeles, Glenview, Ill., assignors to MML Computers, Inc., New York, N.Y.

Filed Apr. 20, 1982, Ser. No. 370,075

Int. Cl.^{3} G03B ***27/52***

U.S. Cl. 355—40 **17 Claims**

1. A data storage system comprising station means for supporting a document at a document station for reading by an operator, said document having at said station horizontal and vertical axes, camera means superposed above said station means to photograph the document thereon, computer means for data processing, display means on said station means adjacent said station, said camera means having a field adapted to encompass said station and said display means, a keyboard means adjacent said station and coupled to said computer means so that said operator can read data from said document and enter said data into the computer means, said keyboard means including control means coupled to said computer means and to said camera means for operating the camera means to photograph simultaneously said document and said display means, said camera means including film transport means selectively adapted for being aligned to transport film along a path in parallel with said horizontal axis, post means to support said camera means above said station means, and adaptor means to position said camera means on said post means with said path parallel to said horizontal axis, said adaptor means and post means including electrical connection means coupled in series to couple said camera means to said keyboard means.



4,444,491

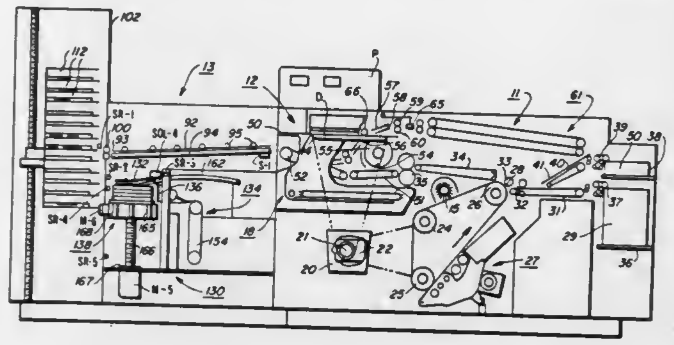
VERY HIGH SPEED DUPLICATOR WITH FINISHING FUNCTION

Stephen A. Rinehart, New Orleans, La.; James E. Britt, Penfield, N.Y.; Kenneth W. Laskowski, Pittsford, N.Y.; Jeffrey L. Sisson, Macedon, N.Y., and Gerald A. Buddendeck, Penfield, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 180,184, Aug. 21, 1980, abandoned. This application Feb. 10, 1983, Ser. No. 465,403

Int. Cl.^{3} G03G ***15/00;*** **B65H** ***39/02***

U.S. Cl. 355—50 **12 Claims**



1. In a reproduction system having a document handling apparatus adapted to transport individual document sheets from a supply stack to an exposure platen of a reproduction processor and effecting multiple exposure of each of the document sheets before returning a sheet to the supply stack, wherein the processor produces copy sheets of the exposed document sheets, the combination of:

a sorter array having a plurality of bins arranged to receive the copy sheet output from the processor at a fixed receiving station and to collate the same,

a finishing apparatus adapted to receive collated sets of copy sheets of a set of document sheets when activated and to bind the same, and

means for producing indexing movement of said array of bins in a copy sheet receive mode simultaneously with the activation of said finishing apparatus.

4,444,492

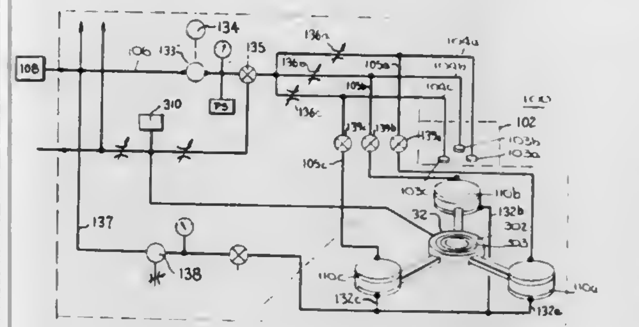
APPARATUS FOR PROJECTING A SERIES OF IMAGES ONTO DIES OF A SEMICONDUCTOR WAFER

Martin E. Lee, Saratoga, Calif., assignor to General Signal Corporation, Stamford, Conn.

Continuation of Ser. No. 264,249, May 15, 1982, abandoned. This application Jul. 29, 1982, Ser. No. 403,277

Int. Cl.^{3} G03B ***27/52***

U.S. Cl. 355—55 **15 Claims**



1. In a projection stepping machine of the type including an illumination system for substantially uniformly illuminating a reticle having a pattern with an area substantially smaller than that of a wafer on which an image of said pattern is to be projected; a stationary projection optical system for projecting an image identical in size and form to said pattern onto a predetermined focal plane; an alignment system for detecting the presence of a marker on a wafer; and a platform responsive to said alignment system for supporting a wafer and for moving said wafer to align at least a portion of said wafer corresponding in area to the area of said pattern with the projected image of said pattern, the improvement comprising:

a fluid servo focusing means operatively associated with said optical system and said platform for producing a fluid pressure signal indicative of the position of said portion of said wafer relative to said focal plane at a plurality of positions surrounding said projected image;

conduit means for transmitting said fluid pressure signal;

means connected to said conduit means and actuated by said fluid pressure signal for fluidically optimally maintaining said portion of said wafer within the depth of focus of said optical system;

means for increasing the output of said illumination system to a level sufficient to expose a photosensitive layer on said wafer; and

means coupled to said platform for moving said wafer an incremental step to position a further portion of said wafer for exposure to said projected image.

4,444,493

PLATEN COVER FOR A COPIER HAVING A DOCUMENT RETAINING POCKET

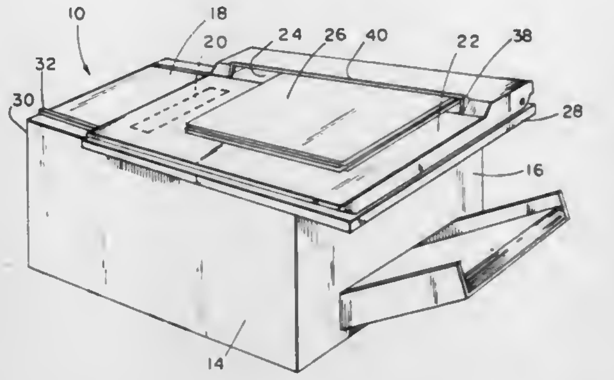
Gary L. Webster, Fairfield, and Eugene P. Lavin, Stratford, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Apr. 1, 1982, Ser. No. 364,333

Int. Cl.^{3} G03B ***27/62***

U.S. Cl. 355—75 **4 Claims**

1. In a document cover for a copying machine having a platen on which documents are placed for copying and which platen reciprocates between, and stops abruptly at, two terminal positions to permit an optical scanning mechanism in the copying machine to scan the document as part of the copying process, the document cover being mounted on the platen for movement therewith by hinge means to permit the document cover to be raised and lowered with respect to the platen, the document cover also having a document retaining means formed thereon along the longitudinal edge thereof adjacent the hinge means for holding documents in place on the upper surface of the document cover while it is being raised and lowered, the improvement comprising: said document retaining means being an enclosed pocket extending along a major portion of the length of said document cover and extending laterally along a relatively short portion of the width of said document cover whereby documents resting on said upper surface of said document cover are maintained in position thereon and cannot slide off of said upper surface when said platen stops abruptly at said terminal positions.



4,444,494

COPYING APPARATUS EQUIPPED WITH AN ORIGINAL-SUPPORT DEVICE, AND AN ORIGINAL-HOLDING MECHANISM THEREFOR

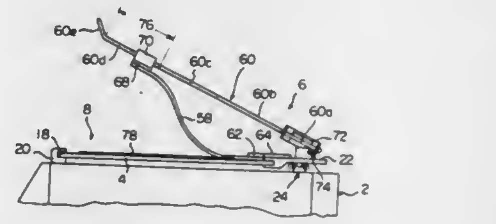
Shigeo Koyama, Toyonaka; Ryutaro Yamagata, Nishinomiya; Nobuhiko Kozuka, Suita, and Hiromi Sakata, Neyagawa, all of Japan, assignors to Mita Industrial Co., Ltd., Japan

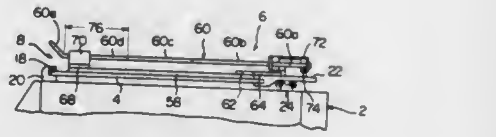
Division of Ser. No. 292,842, Aug. 14, 1981. This application Jan. 17, 1983, Ser. No. 458,689

Claims priority, application Japan, Aug. 27, 1980, 55-120578

Int. Cl.^{3} G03B ***27/62***

U.S. Cl. 355—75 **5 Claims**



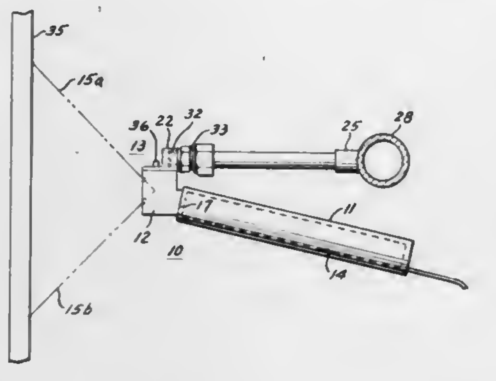


1. In an original-holding mechanism for an original-support device in a copying apparatus, said original-holding mechanism including a flexible holding member for covering an original document placed on a transparent plate and a rigid supporting member located outwardly of the flexible holding member with respect to the transparent plate; the improvement comprising first means mounting the flexible holding member with one end edge portion thereof adjacent to one end edge of the transparent plate, second means mounting the base portion of the rigid supporting member for pivotal movement about an axis extending along said one end edge of the transparent plate, a first reinforcing piece extending along and affixed to the free end edge portion of the flexible holding member, a connecting member fixed to the reinforcing piece at an intermediate por-

tion thereof in the direction of said axis and slidably connected to the free end portion of the rigid supporting member for slidable movement over a predetermined range thereon in a direction perpendicular to said axis, whereby the free end edge portion of the flexible holding member is connected to the free end portion of the rigid supporting member and is slidable with respect thereto to permit movement over the predetermined range.

4,444,495
METHOD AND APPARATUS FOR ALIGNMENT OF SPRAY NOZZLES IN CONTINUOUS CASTING MACHINES

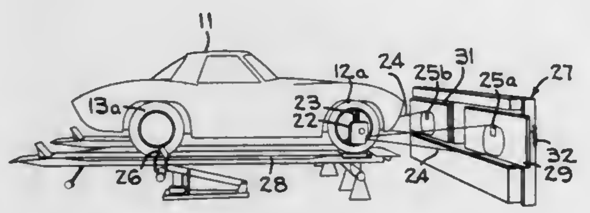
Dwight W. S. A. Bramwell, Houston, Tex., and Herbert L. Gilles, Bethlehem, Pa., assignors to Bethlehem Steel Corp., Bethlehem, Pa.
Filed Apr. 28, 1981, Ser. No. 258,340
Int. Cl.^{3} G01B *11/26*
U.S. Cl. 356—138 **2 Claims**



1. Apparatus for alignment of a spray nozzle which is disposed to apply liquid coolant on a target area, comprising:
(a) said spray nozzle having a nozzle tip with a slot therein for causing said liquid to flow along an axis of said spray nozzle in a wide angle flat spray plane,
(b) a laser source of light energy,
(c) light beam projecting means for projecting two light beams from the laser onto the target area in a plane which is the same as the spray plane of liquid coolant flow,
(d) clamping device including a tubular member having an axis in the plane defined by the light beams and the spray nozzle axis mounted on the light beam projecting means for clamping onto the spray nozzle, whereby the plane defined by the light beams and the spray nozzle axis is the same as the spray plane of liquid coolant flow, and
(e) spray nozzle adjusting means mounted on the clamping device.

4,444,496
4-WHEEL ALIGNMENT METHOD AND APPARATUS

James L. Dale, Jr., Conway, Ark., assignor to FMC Corporation, Chicago, Ill.
Filed Sep. 8, 1981, Ser. No. 300,153
Int. Cl.^{3} G01B *11/275*
U.S. Cl. 356—155 **11 Claims**

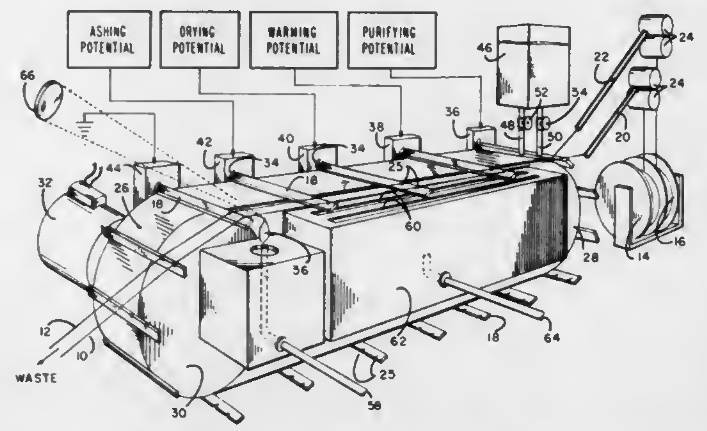


1. A method of setting toe for wheels supporting the chassis of a vehicle having pairs of steerable front and nonsteerable rear wheels, and a steering wheel for controlling the steerable wheels, utilizing apparatus including a pair of reversible alignment projector heads having projecting screens thereon and operating to project a light array in a direction substantially parallel to the plane of rotation of a wheel on which mounted, the array including a scale reference mark, a support structure adapted to be situated at one end of a position for receiving the vehicle, wherein the support structure has a mirror bar supported therein which is adjustable in orientation and which has reflecting surfaces mounted thereon, a pair of positionable targets, and wheel clamps adapted to be mounted on the wheels and to receive the projector heads, comprising the steps of

mounting the pair of alignment heads one on each of the steerable front wheels,
placing one of the positionable targets on each side of and at the rear of the chassis substantially equidistant from a point midway between the rear wheel pair,
projecting the light arrays rearwardly to strike the positionable targets,
steering the front wheel pair until the scale reference marks strike similar points on the positionable targets,
projecting the light arrays forwardly to strike the reflecting surfaces attached to the mirror bar,
adjusting the orientation of the mirror bar until the reflected scale reference marks strike the alignment head projection screens at similar points thereon,
rotating the steering wheel to a centered steering position,
setting the toe of each front wheel to desired toe position using the projected light arrays as toe position indicators,
mounting the pair of alignment heads one on each of the rear wheels,
projecting the light arrays forwardly,
and setting the toe of each rear wheel to desired toe position using the projected light arrays as toe position indicators.

4,444,497
UNIFORM SAMPLE TRANSPORT AND MANIPULATION SYSTEM AND METHOD FOR SPECTROMETERS

Karl J. Hildebrand, Tyngsboro, and John Leeman, Andover, both of Mass., assignors to Leeman Labs, Inc., Lowell, Mass.
Continuation-in-part of Ser. No. 260,334, May 4, 1981, Pat. No. 4,396,287. This application Nov. 12, 1981, Ser. No. 320,668
The portion of the term of this patent subsequent to Aug. 2, 2000, has been disclaimed.
Int. Cl.^{3} G01N *21/74*
U.S. Cl. 356—244 **2 Claims**

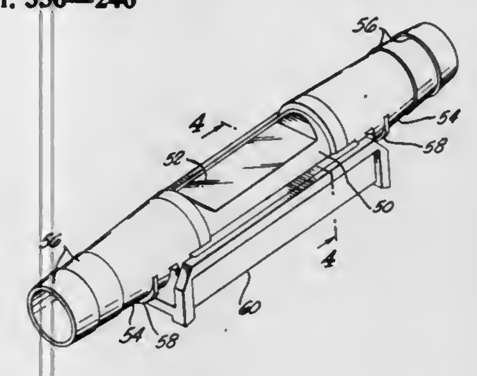


1. In a spectrometer having an optical input situs coincident with the excitation situs of a sample excitation device, a sample transport and manipulation system for exciting a quantitatively uniform sample for analysis over an extended period of time comprising in combination:
a. a quantity of electrically conductive uniform sample transport medium;
b. means for supporting said medium;
c. means for uniformly depositing a sample in solution over a portion of said medium;
d. means for heating said medium comprising a variable electrical power source comprising:
   1. a plurality of separate contact points;

   2. means for applying variable levels of electrical power to each of said separate points; and
   3. means for sequentially connecting separate portions of said medium to said separate points; and
e. means for transporting said portion and said sample at a uniform rate through said excitation situs for excitation whereby successive quantitatively uniform portions of said excited sample are sequentially exposed to said spectrometer at a uniform rate for analysis.

4,444,498
APPARATUS AND METHOD FOR MEASURING BLOOD OXYGEN SATURATION

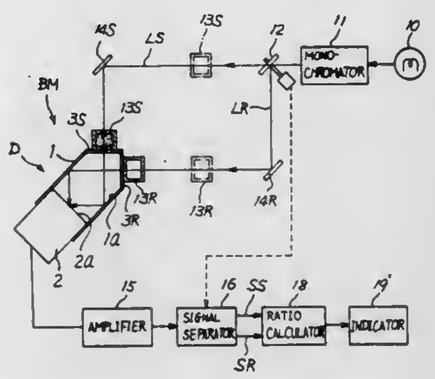
Stanley O. Heinemann, Irvine, Calif., assignor to Bentley Laboratories, Irvine, Calif.
Division of Ser. No. 236,941, Feb. 27, 1981. This application Aug. 20, 1982, Ser. No. 410,039
Int. Cl.^{3} G01N *21/05, 33/48*
U.S. Cl. 356—246 **5 Claims**



1. A cuvette for use in conjunction with electrooptical measurement of blood parameters, comprising:
a body portion comprised of an optically clear biocompatible material;
a substantially flat window area disposed in said body portion;
end portions for connection to tubing or apparatus for conducting blood or other liquids therethrough; and
a lightproof backing having light absorbing properties on the surface proximate to said body portion, said backing located on at least the surface of said body portion opposite said window area, but not on said window area.

4,444,499
DETECTOR FOR USE IN OPTICAL MEASURING INSTRUMENTS

Osamu Akiyama, Kyoto, and Tetsuo Ichikawa, Shiga, both of Japan, assignors to Shimadzu Corporation, Kyoto, Japan
Filed Mar. 24, 1982, Ser. No. 361,144
Claims priority, application Japan, Apr. 28, 1981, 56-64807
Int. Cl.^{3} G01J *3/42*
U.S. Cl. 356—325 **15 Claims**

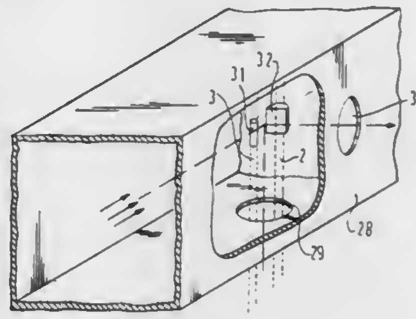


1. A detector for use in an optical measuring instrument, comprising: a photoelectric element having a photosensitive surface; a pair of light diffusing plates so arranged generally symmetrically that said plates meet along the corresponding edges thereof at a predetermined angle θ to form a generally roof-shaped configuration having a ridge formed by said meeting edges, said light diffusing plates being spaced a predetermined distance d from and in generally axial alignment with said photosensitive surface of said photoelectric element; and means for enclosing the space between said light diffusing plates and said photosensitive surface.

13. A double-beam spectrophotometer comprising: means for producing a monochromatic light beam; means for causing said light beam to alternately advance along a first and a second optical path; a detector comprising a photoelectric element having a photosensitive surface, a pair of light diffusing plates so arranged generally symmetrically that said plates meet along the corresponding edges thereof at a predetermined angle to form a generally roof-shaped configuration having a ridge formed by said meeting edges, said light diffusing plates being spaced a predetermined distance from and in generally axial alignment with said photosensitive surface of said photoelectric element; optical means for directing said beam on said first optical path onto one of said light diffusing plates and said beam on said second optical path onto the other of said light diffusing plates; a first cell disposed in said beam on said first optical path; and a second cell disposed in said beam on said second optical path.

4,444,500
DEVICE FOR MEASURING PARTICLES IN A FLUID

Harry J. Flinsenberg, and Jan P. van Dijke, both of Eindhoven University of Technology, Department of Electrical Engineering, P.O. Box 513, 5600 MB Eindhoven, Netherlands
Filed Jun. 12, 1981, Ser. No. 273,187
Claims priority, application Netherlands, Jun. 13, 1980, 8003429
Int. Cl.^{3} G01N *15/02*
U.S. Cl. 356—336 **7 Claims**

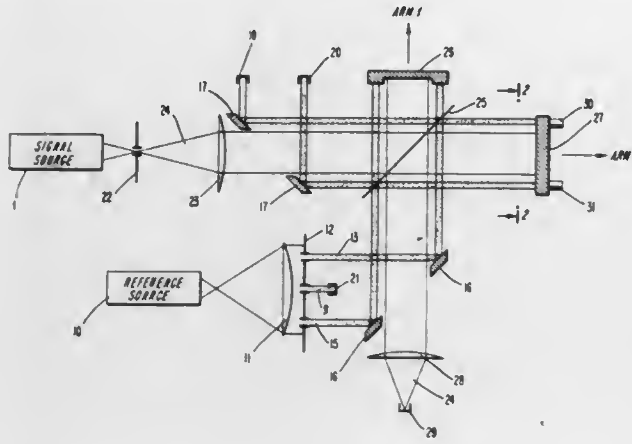


1. In a method for electro-optically measuring the number and size of particles in a streaming fluid with the aid of a laser beam by splitting this beam into two different beams, both running through the fluid, and by subsequently detecting and recording the scattered radiation from the particle traversing the beams, the improvement wherein
a. the laser beam is divided into a first beam and a second beam such that, with respect to the direction of the stream of the fluid, the second beam is preceded by a first beam, which first beam is more narrow in cross-section than the second beam and wherein both beams are aligned almost parallel such that the centrelines of the beams are in one plane;
b. the light scattered by a particle in the first beam and the light scattered by said particle when it is in the second beam is detected and is separately converted into pulses;
c. the pulse caused by a particle traversing the first beam is used as a timing signal to time the detection of the scattered light in said second beam so that the particle is in that special portion of the second beam which has a relatively constant spatial intensity distribution.

4,444,501
STABILIZATION MECHANISM FOR OPTICAL INTERFEROMETER

Ronald L. Schwiesow, Boulder, Colo., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Feb. 12, 1982, Ser. No. 348,576
Int. Cl.³ G01B ***9/02***
U.S. Cl. 356—346 **14 Claims**

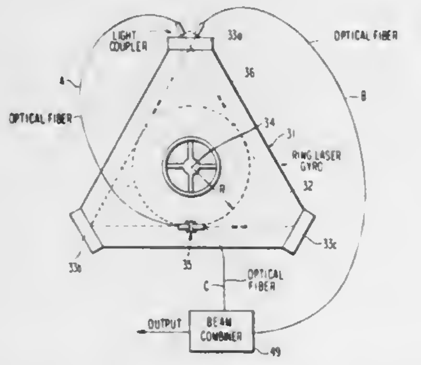


1. A method of providing a signal output indicative of at least one of a change of wavelength of electromagnetic radiation from a reference source and the spacing between and relative alignment of the mirrors of an at least one arm interferometer having a signal beam and a signal beam path, said method comprising the steps of:
- generating at least one reference beam adjacent a signal beam;
- generating a reference signal;
- directing said at least one reference beam through said interferometer with said reference beam path having an optical path length different from a signal beam path length in one arm of said at least one arm interferometer;
- directing a signal from interference within said reference beam, said detected signal at a substantially one-half power point when the inteference within said signal beam is at a relative extremum, said one-half power point due to said difference in path lengths; and
- comparing said resultant detected signal to said reference signal, with any change in said comparison comprising said desired output.

4,444,502
RING LASER GYROSCOPE WITH FIBER OPTIC BEAM COMBINER

Bo H. G. Ljung, Wayne, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Jun. 4, 1981, Ser. No. 270,287
Int. Cl.³ G01C ***19/64***
U.S. Cl. 356—350 **11 Claims**

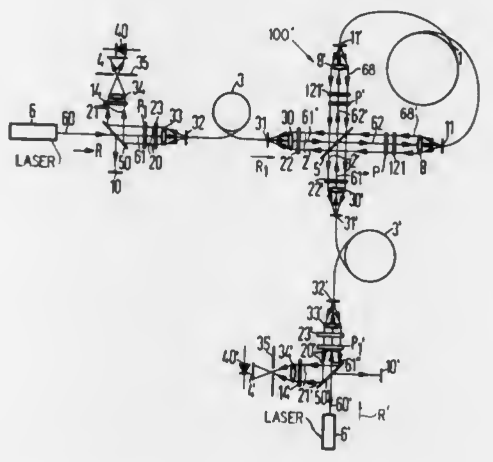


1. In a ring laser gyroscope (RLG) having clockwise (CW) and counterclockwise (CCW) light beams traveling along a predetermined internal geometric path inscribing a circle therein, the improvement comprising:
- a mirror at an apex of the path which permits partial light transmission;
- a prism contacting the mirror for directing the CW and CCW beams in predetermined directions;
- first and second lens means connected to the prism for focussing the CW and CCW beams transmitted through the prism;
- first and second optical fibers respectively connected at first ends thereof to the lens means for directing the CW and CCW beams externally of the RLG; and
- means for combining the CW and CCW beams, carried in the fibers, and generating an electrical signal output in response thereto.

4,444,503
RING INTERFEROMETER WITH A MODE DIAPHRAGM

Gerhard Schiffner, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 18, 1980, Ser. No. 178,787
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1979, 2936284
Int. Cl.³ G01C ***19/64***
U.S. Cl. 356—350 **11 Claims**

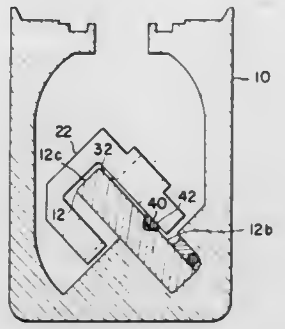


1. In a ring interferometer having an optical waveguide wound in a coil and having two ends, each end providing a separate coupling location at which light from a first source is coupled into the light waveguide and propagates to the opposite end for uncoupling, said interferometer including first means for superimposing the light output coupled from one end with the light output coupled from the opposite end and creating two portions of superimposed output coupled light, means for directing one portion of output coupled light at a first light-receiving surface over a common path in a direction opposite to a direction of light from said first source being coupled into the waveguide, said common path being capable of propagating a plurality of modes, and means for directing the other portion of the two portions of superimposed output coupled light at a second light-receiving surface, the improvements comprising a first mode diaphragm transmitting only one mode being arranged in the common path to receive the one portion of the superimposed beam and the light from the first source, a second mode diaphragm disposed in the path of said other portion, and a separate second light source being arranged for coupling into the second mode diaphragms so that light can be coupled into said optical waveguide either from the first source through the first mode diaphragm or from the second source through the second mode diaphragm and the portion of superimposed output light being received at the first light-receiving surface passes through the same mode diaphragm as the light from the first source.

4,444,504
DISPLACEMENT MEASURING INSTRUMENT

Kinji Takizawa, Kawasaki, Japan, assignor to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed Apr. 21, 1981, Ser. No. 256,034
Claims priority, application Japan, Jul. 21, 1980, 55-102944[U]
Int. Cl.³ G01B ***11/04***
U.S. Cl. 356—374 **9 Claims**



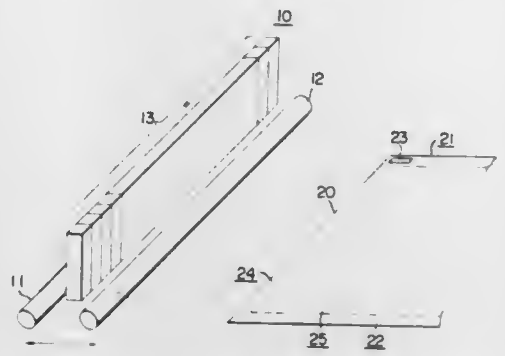
1. A displacement measuring instrument wherein said instrument comprises a light transmitting type main scale which has a graduated surface, a carriage which is movable along said main scale and an index scale which is mounted on said carriage and has another graduated surface opposed to said graduated surface of said main scale through a minute space, and a value of relative displacement between said main scale and said carriage is measured from a variation in the intensity of light emitted to said main scale and said index scale and transmitted therethrough due to the relative movement between said scales, characterized in that a travel guide means for said carriage comprises:
- a slider or sliders secured to said carriage and slidable on said graduated surface of said main scale;
- a travel guide mechanism having a groove formed in the moving direction of said carriage adjacent to one of said graduated surfaces of said scales, said groove being formed adjacent said slider(s) with the graduation of said scale therebetween;
- convex guide means secured to the surface opposed to said groove and guided in travel by said groove; and
- a biasing means for urging said carriage against said main scale;
- whereby the space formed between said two scales is maintained by said slider(s) and said travel guide mechanism, and the positional relationship between said two scales in the widthwise direction of said main scale is maintained by said travel guide mechanism.

4,444,505
OFFSET PRINTING PLATE PRINTING IMAGE AREA MEASURING DEVICE

Tsunehiko Imamoto, Yokohama, and Satoru Horiguchi, Saitama, both of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Filed Mar. 8, 1983, Ser. No. 473,195
Claims priority, application Japan, Aug. 3, 1979, 54-99262; Oct. 11, 1979, 54-129997; Jan. 23, 1980, 55-5653; Apr. 30, 1980, 55-57465
Int. Cl.³ G01B ***11/28***
U.S. Cl. 356—380 **6 Claims**

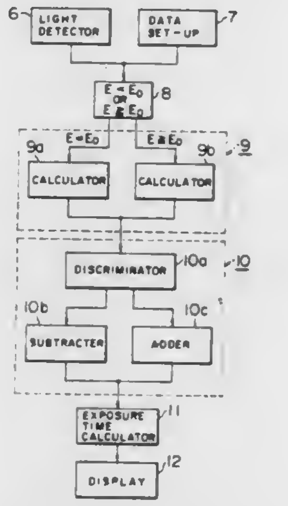
1. Apparatus for measuring the printing image area on a printing plate, comprising:
- a printing plate having a front side containing an imaged region having printing thereon and a calibration mark offset from the imaged region,
- a stage means for holding the back side of the plate in a registration against a flat retaining surface,
- a photoelectric means having a light source for providing a line of light extending laterally across the plate and a plurality of detectors including a calibration detector also disposed laterally across the plate for receiving reflected illumination from the imaged plate region and providing an output signal indicative of the amount of reflected light incident thereon, said calibration detector being also connected to the photoelectric means that is arranged to receive reflected light from the calibration mark and to provide an output signal indicative thereof,
- scanning means for moving the photoelectric means longitudinally along the length of the plate to scan unitary areas on the plate surface, and
- processing means operatively connected to the output of the image area detectors and the calibration detector for averaging the amount of light reflected from the imaged region and adjusting the averaged data in proportion to the amount of light reflected by the calibration mark.



4,444,506
METHOD AND APPARATUS FOR CORRECTING THE RECIPROCITY LAW FAILURE OF A PHOTOSENSITIVE MATERIAL

Koichi Isono, Hikone, and Tsuneo Takagi, Kurita, both of Japan, assignors to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

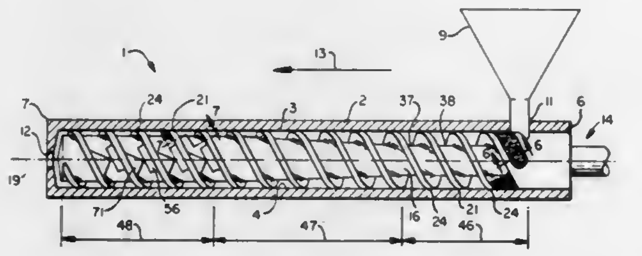
Filed Aug. 24, 1981, Ser. No. 295,263
Claims priority, application Japan, Sep. 22, 1980, 55-130789
Int. Cl.³ G01J ***3/50;*** **G03B** ***27/78***
U.S. Cl. 356—404 **4 Claims**



1. A method for correcting the reciprocity law failure of a photosensitive material to be exposed, for use in a picture reproducing machine, comprising the steps of:
- (a) detecting a luminous energy of an original picture;
- (b) comparing the detected luminous energy with a predetermined standard luminous energy;
- (c) obtaining an exposure time by using the comparison result and a predetermined standard exposure time; and
- (d) obtaining a predetermined correction factor for reciprocity law failure of the photosensitive material, the luminous energy and each of the colors.

4,444,507
APPARATUS AND METHOD FOR MELTING AND CONVEYING PLASTICATED MATERIAL

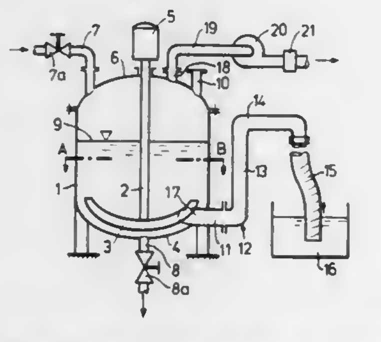
Robert F. Dray, Rte. 1, Box 273M, Hamilton, Tex. 76531
Filed Jun. 28, 1982, Ser. No. 392,759
Int. Cl.^{3} B29B *1/06*
U.S. Cl. 366—81 **20 Claims**



1. Apparatus for melting and conveying plasticated material comprising:
(a) a barrel having a cylindrical bore therethrough;
(b) a shaft rotatable in said bore and having a substantially circular cross section and a longitudinal axis for rotation concentric with said bore;
(c) at least one continuous helical flight having a diameter which is less than the diameter of said bore integral with said shaft, said flight and said shaft defining a channel having a predetermined cross-sectional area between consecutive turns of said flight for conveying said plasticated material introduced into said channel in a downstream direction as said shaft is rotated, said flight further having a pushing side and a trailing side, said pushing side being oriented downstream from said trailing side;
(d) at least one groove in said shaft located at a position in said channel at which said plasticated material has substantially melted, said groove being disposed along said channel substantially adjacent to said pushing side of said flight; and,
(e) diverting means secured to said shaft and said trailing side of said flight for directing said plasticated material into and out of said groove, said diverting means being disposed transversely across said channel from said trailing side of a turn of said flight which is downstream from said groove to an edge of said groove to thereby mix and homogenize said plasticated material as said plasticated material flows into and out of said groove.

4,444,508
PROCESS FOR MIXING PULVERULENT ADDITIVES INTO A LIQUID REACTION COMPONENT

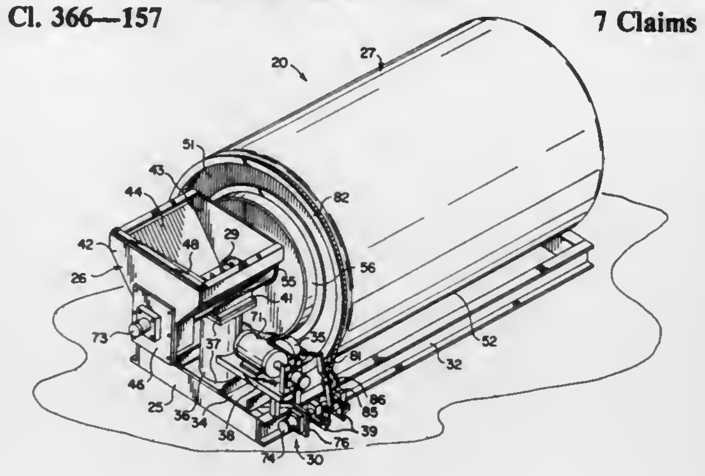
Karl D. Kreuer, Leverkusen, and Lothar Klier, Leichlingen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Jun. 21, 1982, Ser. No. 390,565
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1981, 3127218
Int. Cl.^{3} B01F *13/06, 15/02*
U.S. Cl. 366—139 **3 Claims**

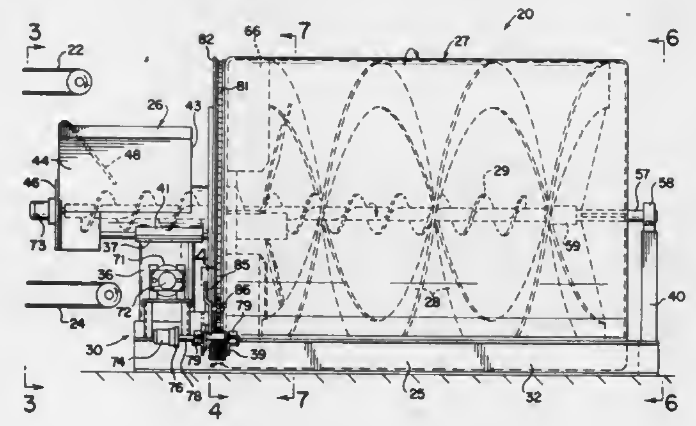


1. A process for mixing a pulverulent additive into one of the liquid reaction components for the preparaion of a reaction mixture which forms a solid substance or a foam, wherein the reaction components are introduced into separate chambers and subjected to turbulence by stirring and the pulverulent additive is stirred into at least one of the reaction components and that liquid reaction component charged with the additive is transferred to a second reaction component and mixed therewith, characterized in that the liquid reaction component to which the pulverulent additive is to be introduced is charged into a closed chamber to a predetermined fill level, the chamber is sealed off and a vacuum is applied above the fill level, then the additive is introduced into the chamber below the liquid level by means of the vacuum and is uniformly distributed within the liquid reaction component by the turbulence produced by stirring, while the reaction component and the additive are freed from the air carried with them by the degassing effect of the vacuum.

4,444,509
FEED MIXING APPARATUS

Marvin B. Steiner, and Roy I. Steiner, both of Orrville, Ohio, assignors to Sevenson Company, Orrville, Ohio
Filed Apr. 13, 1981, Ser. No. 253,307
Int. Cl.^{3} B01F *15/02*
U.S. Cl. 366—157 **7 Claims**

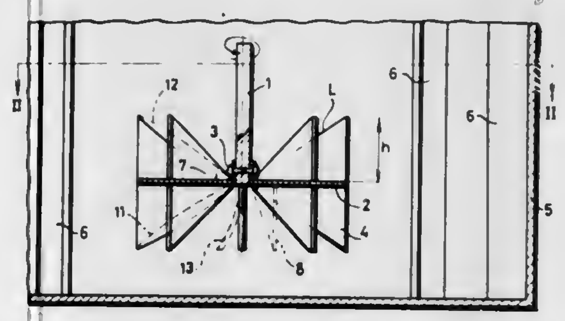




1. In a mixing apparatus for livestock feed constituents having a frame, a cylindrical drum with front and rear walls and internal spiral mixing and conveying blades rotatably mounted on said frame, the front wall of said drum having an axial opening, and a funnel-shaped hopper unit supported on the front of said frame for receiving unmixed feed constituents and having an opening for moving said feed constituents toward the interior of said drum for mixing therein, the improvements wherein:
said feed constituents move from said opening in said hopper unit into an upwardly opening semi-cylindrical front segment of a feed pipe extending into said drum through said axial opening in the drum front wall as a fully cylindrical medial sleeve segment and terminating within said drum in an upwardly opening semi-cylindrical rear segment, said rear feed pipe segment directing feed constituents toward the rear wall of said drum and being opened to receive mixed feed for discharge from said drum, said hopper unit further having an opening adjacent said front feed pipe segment for discharging mixed feed toward a delivery point;
a rotatable feeder screw auger shaft extends from said front feed pipe segment and through said medial sleeve segment and over said rear feed pipe segment and through said drum axially of said spiral mixing and conveying blades; and,
a drive means is mounted on said frame for selective rotation of said drum and said feeder screw auger shaft, said drive means having components to provide a unidirectional rotational movement for said drum so that either feed constituents or mixed feed will always be moving toward said rear feed pipe segment, said drive means also having components to provide a bidirectional rotational movement for said feeder screw auger shaft so that feed constituents will be moving from said hopper unit and into said rotating drum, or, so that mixed feed will be moving from said rear feed pipe segment and said rotating drum into said front feed pipe segment and through said opening in the hopper unit for discharging mixed feed toward a delivery point.

4,444,510
STIRRER, HAVING SUBSTANTIALLY TRIANGULAR, RADIAL BLADES, RISING TOWARD THE CIRCUMFERENCE

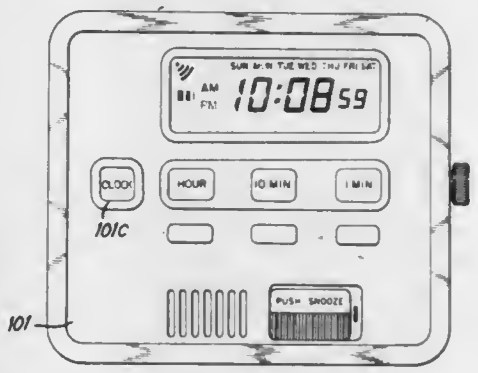
Louis A. M. Janssen, Apeldoorn, Netherlands, assignor to Nederlandse Centrale Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek, Netherlands
Filed Mar. 12, 1982, Ser. No. 357,656
Claims priority, application Netherlands, Mar. 17, 1981, 8101294
Int. Cl.^{3} B01F *7/26*
U.S. Cl. 366—169 **17 Claims**



1. A stirrer comprising a spindle with a drive therefor, a plate affixed to the spindle and perpendicular to the axis thereof; a plurality of stirring blades disposed on at least one side of said plate, said stirring blades lying substantially along radially directed axial planes, and having the form of substantially right-angled triangles, each having the longer base directed radially and the shorter perpendicular side, parallel to the axis of the spindle forming the extreme edge of the blade at the greatest distance from the axis, there being at least 8 of said stirring blades on said at least one side, the height of the extreme edge being in the range of from about 0.8 to about 1.25 times the perpendicular distance of the extreme end of one blade to the next blade, and the length of each blade, measured along its hypothenuse being at least twice the height thereof.

4,444,511
MODE SWITCHING DEVICE IN AN ELECTRONIC TIMEPIECE

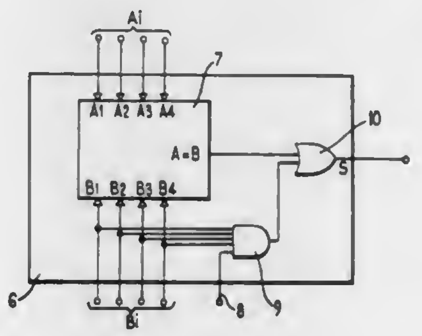
Masuo Ogihara; Nobuo Shinozaki; Tadashi Ishikawa, and Yoichi Seki, all of Shikawatashi, Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 4, 1981, Ser. No. 290,088
Claims priority, application Japan, Aug. 7, 1980, 55-108523
Int. Cl.^{3} G04B *19/30*
U.S. Cl. 368—69 **9 Claims**



1. In a multi-mode electronic timepiece operable in a plurality of different selectable clock function modes: manually rotatable mode selection means for selecting any one of the plurality of different clock function modes; first indicating means for indicating the clock function of the selected mode; adjusting means including a plurality of depressible push buttons operative when depressed to effect adjustment of the contents of indication of the first indicating means; and second indicating means cooperative with the mode selection means for indicating the function of each push button with respect to the selected mode, the second indicating means comprising a plurality of indication surfaces at least corresponding in number to the number of said push buttons, and each indication surface carrying thereon indicia which indicates the function of a corresponding one of the push buttons with respect to the selected mode.

4,444,512
METHOD AND CIRCUIT FOR COMPARING THE TIMEKEEPING STATE AND CONTENTS OF A REGISTER IN AN ELECTRONIC REMINDER GIVING TIMEPIECE

Christian Piguet, Neuchâtel, and Jean-Félix Perotto, Hauterive, both of Switzerland, assignors to Societe Suisse pour l'Industrie Horlogere Management Services S.A., Bienne, Switzerland
Filed Oct. 21, 1981, Ser. No. 313,516
Int. Cl.^{3} G04B *23/02*
U.S. Cl. 368—72 **5 Claims**



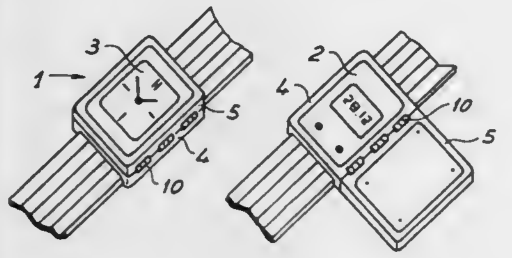
1. An actuating circuit for warning means in an electronic timepiece operable whenever at least certain counters within a divider chain arrive at a state corresponding to a predetermined storage state, comprising:
a programmable register having a plurality of stages each corresponding to a counter of said divider chain, each of

said stages being individually capable of being placed either in said storage state or in a validation state, said validation state comprising a state which the counter may never attain during normal operation;

a plurality of comparison circuits respectively associated with each of said stages whereby each said comparison circuit may generate an enabling signal whenever there is coincidence between the state of its associated stage and that of the corresponding counter or whenever the corresponding stage is in said validation state, each comparison circuit comprising a conventional N-bit comparator arranged to receive N number of bits respectively from a counter of the divider chain and the corresponding register stage, an associated OR gate the output of which constitutes an enabling input to a gate circuit means which actuates the warning means, said OR gate receiving an input whenever there is identity between the elements of the two sets of N bits, an associated AND gate arranged to receive the N bits from the register stage as well as an enabling signal and to provide an output whenever the N bits from said register stage represent the code of the validation stage, the output from said AND gate providing a further input to said OR gate; and,

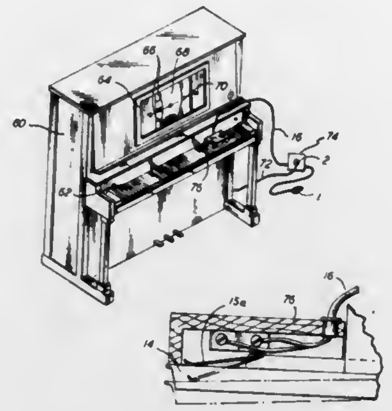
said gate circuit means being arranged to actuate said warning means whenever all comparators simultaneously generate said enabling signal.

4,444,513
DUAL DISPLAY WATCH
Claude-Daniel Proellochs, Neuchatel; Luigi Vignando, Meyrin-Geneve, and Claude Mouche, Bienne, all of Switzerland, assignors to Eterna S.A., Grenchen, Switzerland
Filed Sep. 21, 1981, Ser. No. 303,911
Claims priority, application Switzerland, Oct. 27, 1980, 7971/80
Int. Cl.^{3} G04B *19/00, 25/00*
U.S. Cl. 368—223 **16 Claims**



1. A watch comprising at least one electronic movement and a first and a second display means for displaying time information mounted in a case, characterized in that the said case comprises an upper part and a separate lower part, said lower part comprising said first display means, said upper part comprising said second display means, said first display means comprising a digital time display and said second display means comprising an analog time display, said upper part normally covering said lower part enabling only said analog time display means to be visible, means connecting said upper and lower separate parts to move said upper part away from said lower part to permit said digital time display means to be visible, said upper part returned to cover said lower part during normal wear such that said analog time display is visible during normal wear.

4,444,514
DEVICE TO PERMIT REPRODUCING OR PLAYER PIANOS TO SERVE AS MUSICAL CLOCKS
F. Cecil Grace, New York, N.Y., assignor to LYF Electronics Inc., New York, N.Y.
Filed Oct. 23, 1981, Ser. No. 314,663
Int. Cl.^{3} G04B *21/00*
U.S. Cl. 368—273 **8 Claims**



1. A modified player piano which is enabled, without significant structural alteration of the original player piano structure, to strike notes which represent the hour of the day, the modified player piano comprising:

record means for operating the piano, the record means providing a sequence of pre-recorded tone signals for causing the piano to strike notes which announce the hour, the sequence comprising a first group of one or more tone signals for striking a first hour, a second group of one or more tone signals for striking a second hour, and a predetermined tone signal, located between the first and second groups of tone signals, the predetermined tone signal corresponding to a note which is different from the notes which are struck by the tone signals in the first and second groups;

electric motor means providing power for moving the record means along a predetermined path;

sensor means adjacent to the predetermined path, the sensor means responding to the passage of each tone signal, including the predetermined tone signal, to provide a corresponding control signal;

action means comprising a plurality of cooperating elements which move in response to the predetermined control signal to strike a predetermined note;

switch means connecting the motor means to a source of electricity, the switch means responsive to one of a movement of the action means and the predetermined control signal to disconnect the motor means from the source of electricity, the switch means responsive to a switch signal to reconnect the switch means; and

timing means for supplying the switch signal to the switch means at a predetermined time.

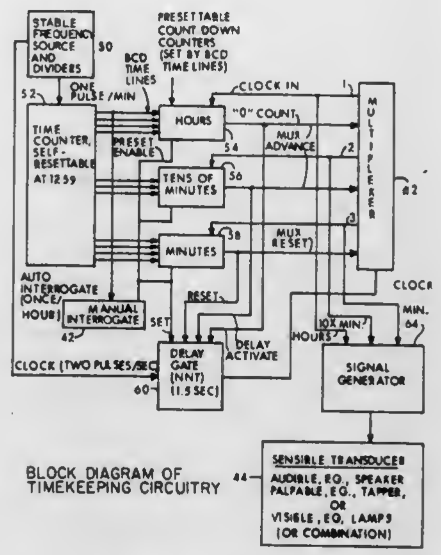
4,444,515
EARRING WATCH
Lloyd D. Clark, 15 Conrad St., San Francisco, Calif. 94131
Filed May 11, 1981, Ser. No. 262,223
Int. Cl.^{3} G04C *21/12, 19/00;* **G04B** *37/12*
U.S. Cl. 368—279 **7 Claims**

1. An earring watch comprising:

(a) an enclosure having affixing means thereon for removably affixing said enclosure to a human earlobe as an earring, said affixing means being electrically insulated from another part of said enclosure,

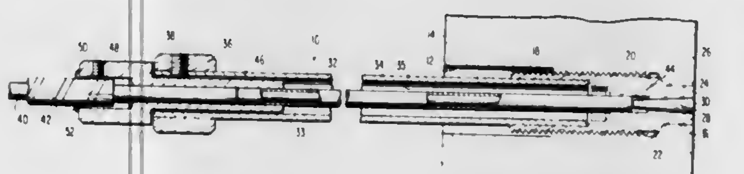
(b) timekeeping means, positioned within said enclosure and arranged to provide a time indication which is sensible to a wearer when said enclosure is worn as an earring, and

(c) an electronic circuit within said timekeeping means, said circuit containing a pair of input terminals and arranged so that when said input terminals are interconnected by less than a predetermined impedance twice within a given time interval, a readout of time is provided by said timekeeping means, one of said input terminals being connected to said affixing means and the other of said input terminals being connected to said other part of said enclosure,



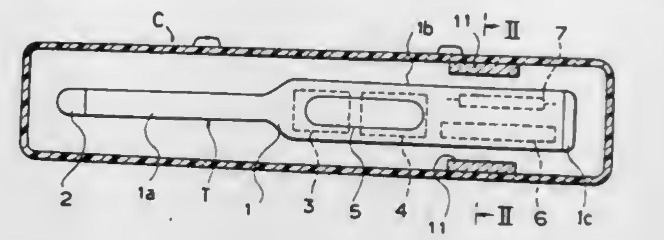
whereby a wearer of said earring can activate said watch to read out time by touching said other part of said enclosure twice within said given time interval but said watch will not readout the time if said otherpart of said enclosure is touched accidentally or inadvertently.

4,444,516
INFRARED TEMPERATURE PROBE FOR HIGH PRESSURE USE
Ashod S. Dostoomian, Stoughton; Joseph S. Lord, Walpole, and Jeffrey R. Davis, Weymouth, all of Mass., assignors to Vanzetti Infrared and Computer Systems, Inc., Stoughton, Mass.
Filed Feb. 2, 1982, Ser. No. 345,130
Int. Cl.^{3} G01J *5/00;* **G02B** *5/16*
U.S. Cl. 374—131 **5 Claims**



1. An infrared temperature probe for high pressure use comprising a hollow bolt means adapted to be threaded into a complimentary threaded aperture in the wall of a pressure vessel, said hollow bolt means being grometrically shaped so as to bring the end flush with the internal surface of the pressure vessel wall, an infrared transparent window comprised of a truncated sapphire cone sealingly secured in an end aperture in the end of sad hollow bolt means with the larger diameter surface thereof disposed adjacent said end of said bolt, means for supporting the conical surface of said cone over substantially the entire length thereof, a bundle of optical fibers secured within the opposite end of said hollow bolt means and a glass rod mounted within said hollow bolt means in operative relation to said window and to said optical fiber bundle for transmitting infrared radiation from said window to said optical fiber bundle.

4,444,517
ELECTRONIC CLINICAL THERMOMETER
Masakazu Murase, Fuji, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 14, 1982, Ser. No. 417,877
Claims priority, application Japan, Dec. 18, 1981, 56-205997
Int. Cl.^{3} G01K *5/00*
U.S. Cl. 374—188 **7 Claims**



1. An electronic clinical thermometer which comprises:

temperature sensing means for sensing body temperature and converting sensed body temperature into a corresponding electrical signal;

measuring means for converting said electrical signal into a digital signal;

arithmetic means for computing body temperature on the basis of said digital signal;

display means for displaying the computed body temperature;

a battery for supplying each of said previously mentioned means with electrical power;

a switch coupled between said battery and each of said previously mentioned means;

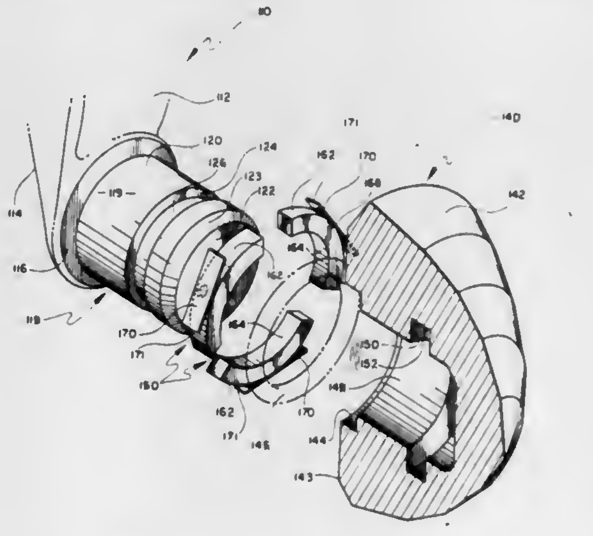
an enclosure for accommodating at least said measuring means, arithmetic means, display means, said battery and said switch;

a case for receiving said enclosure; and

a permanent magnet provided in said case at a prescribed location;

said switch comprising a magnetic reed switch which is open when placed in a magnetic field produced by said permanent magnet, and which is closed when withdrawn from said magnetic field.

4,444,518
ROCK BIT CONE RETENTION MEANS
Michael E. Schramm, El Toro, and Edward Vezirian, Irvine, both of Calif., assignors to Smith International, Inc., Newport Beach, Calif.
Filed Apr. 23, 1982, Ser. No. 371,360
Int. Cl.^{3} F16C *43/02;* **E21B** *10/22*
U.S. Cl. 384—96 **4 Claims**



1. A rotary rock bit comprising:

a main bit body having at least one leg extending therefrom, each leg having a journal bearing projecting substantially radially inwardly from said leg, said journal having a first base portion and a second end, said journal further forms a first annular groove in a bearing surface formed by said journal bearing, said groove is transverse to an axis of said journal,

a cutter cone adapted to be rotatively mounted on said journal bearing, each cone forming an inwardly facing bearing surface adapted to register with said journal bearing surface, said cone further forms a second annular groove in said cone bearing surface transverse to the axis of the cone, said second annular groove in said cone registers with said first annular groove in said journal when said cone is properly positioned on said journal,

two or more substantially annular cone retention segments, said segments are substantially square in cross section, said segments nest within complementary first and second grooves formed in said journal and cone, said segments when positioned within one of said grooves allow said cone to pass over said second end of said journal, and

segment biasing means to bias each of said two or more segments into the other of said grooves when said first and second annular grooves register with one another, said cone retention segment biasing means is a leaf spring adjacent each of said two or more cone retention segments, said leaf spring is adjacent said cone retention segments along an axial diametric surface formed by said segments, free ends of said leaf spring bias said segments into one of said annular grooves thus retaining said rotatable cone on said journal.

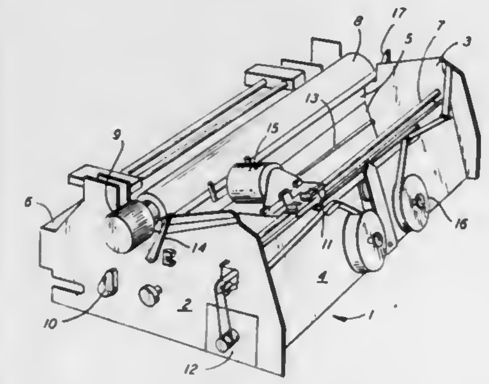
4,444,519
PRINTERS

Fred M. Howell, Amherst; Theodore J. Goodlander, 181 Coburn Woods, Nashua, N.H. 03063, and Duarte M. Brazao, Nashua, N.H., assignors to Theodore Jay Goldlander, Nashua, N.H.

Filed Mar. 9, 1982, Ser. No. 356,320

Int. Cl.³ B41J *3/54, 3/12, 1/30*

U.S. Cl. 400—82 **10 Claims**



1. Apparatus, for a printer, comprising a carriage adapted to provide for a solid character printing mode of operation and a dot matrix mode of operation, and a selector operable to select a desired said mode, said carriage incorporating a solid character printing element drive mechanism and mounting means for detachably mounting a dot matrix printhead, wherein said printing element drive mechanism is for a daisy wheel and said mounting means provides alternative detachable mounting of said printhead and a hammer solenoid, said hammer solenoid, when mounted in said mounting means, being positioned to operate with a daisy wheel, when mounted to said element drive mechanism, to produce solid character print at a desired location and said dot matrix printhead, when mounted in said mounting means, being positioned to print at said desired location.

4,444,520
INFORMATION OUTPUT DEVICE

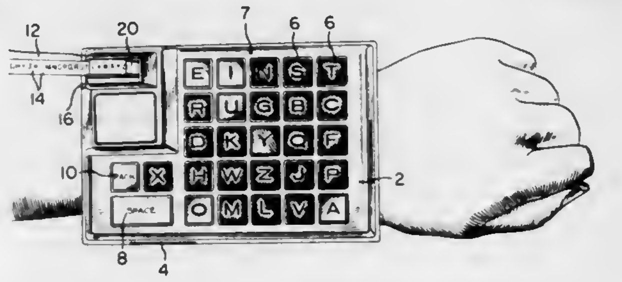
Takayoshi Hanakata, Yokohama, and Shiro Anzai, Yamato, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 197,591, Oct. 16, 1980, abandoned, which is a division of Ser. No. 920,796, Jun. 30, 1978, Pat. No. 4,253,774, which is a continuation of Ser. No. 763,086, Jan. 27, 1977, abandoned, which is a continuation of Ser. No. 551,396, Feb. 20, 1975, abandoned. This application Oct. 15, 1982, Ser. No. 434,495

Claims priority, application Japan, Feb. 22, 1974, 49-21680; Feb. 22, 1974, 49-21681; Feb. 22, 1974, 49-21835[U]; Feb. 22, 1974, 49-21836

Int. Cl.³ B41J *29/02*

U.S. Cl. 400—88 **14 Claims**



1. An information output device comprising:

character output means for visibly outputting at least one of a plurality of characters such as letters, numbers, symbols, etc.;

a keyboard on which keys corresponding to said characters are disposed for the selection of said characters;

a body for housing said character output means and on one side of which is disposed said keyboard, said body including a cover movable between open and closed positions and in the open position thereof providing access to the interior of said body so that objects may be inserted thereinto, said cover being disposed on that side of body which is opposite the side thereof on which said keyboard is disposed;

a belt provided with said body and adapted to be secured about the wrist of the user, said belt being disposed on that side of said body which is opposite the side thereof on which said keyboard is disposed; and

a mechanism provided with each of said cover and said belt for mounting said body and said belt removably with respect to each other, said mechanism including means associated with one of said cover and said belt defining a groove, and a engaging member associated with the other of said cover and said belt for engaging said groove, and a resilient member mounted in at least a portion of said groove for securing said engagement of said engaging member and said groove.

4,444,521
PRINT MEDIUM ADVANCING MECHANISM INCLUDING PRINT HEAD RETRACTION

Bruce W. Rickard, Kettering, and Bernard Fisher, Englewood, both of Ohio, assignors to United Systems Corporation, Dayton, Ohio

Filed Aug. 2, 1982, Ser. No. 404,095

Int. Cl.³ B41J *3/20*

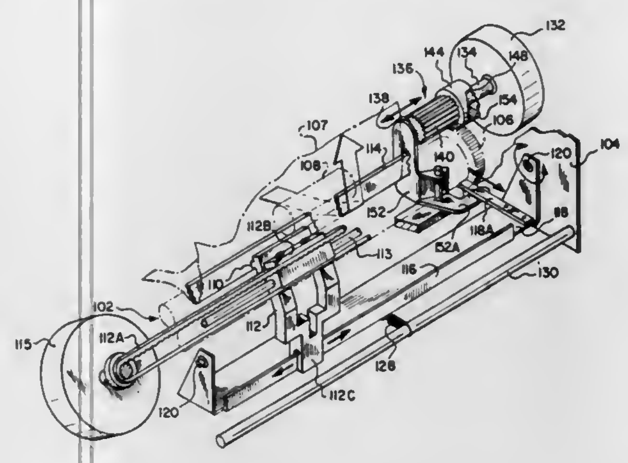
U.S. Cl. 400—120 **11 Claims**

1. In printing apparatus including printing means for recording information on a continuous web of recording material, material control means for engaging said recording material to move said recording material before said printing means, and printing control means for selectively positioning said printing means against said material for printing thereon and away from said material for movement thereof, the improvement comprising:

a stepper motor;

drive means for engaging and controlling said material control means and said printing control means; and

coupling means interposed between said stepper motor and



said drive means for imparting linear motion to said drive means for activating said printing control means and for imparting rotational motion to said drive means for activating said material control means.

4,444,522
PAPER CLAMP DEVICE FOR A PRINTER

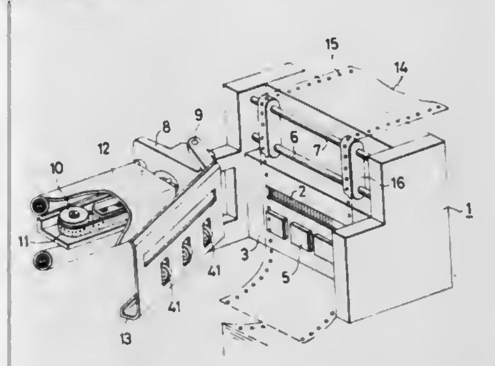
Teruo Suzuki; Tsuneki Kobayashi, and Masao Miyasaka, all of Ibaraki, Japan, assignors to Hitachi Koki Co. Ltd., Tokyo, Japan

Filed Jun. 22, 1982, Ser. No. 391,036

Claims priority, application Japan, Jul. 8, 1981, 56-107268

Int. Cl.³ B41J *1/20*

U.S. Cl. 400—146 **6 Claims**



1. A paper clamp device for a printer having a character carrier driven along a printing line direction, a ribbon shield and a hammer cover, wherein a printing paper travels between said shield and said hammer cover during printing, comprising:

a plurality of sideways-slippage preventing rollers;

means for mounting said preventing rollers to said ribbon shield so that said preventing rollers are rotatably mounted, peripheral surfaces of said preventing rollers extending from a front face of a wall of said ribbon shield opposite said hammer cover into an area through which said printing paper travels, said preventing rollers being capable of rotating in a direction in which said printing paper travels, each preventing roller having a ring fixed to said peripheral surface thereof, said rings having a large coefficient of friction;

a plurality of pressing plates located on said hammer cover opposite respective preventing rollers, said printing paper traveling between said preventing rollers and said pressing plates;

means for biasing said pressing plates and said preventing rollers towards one another;

said plurality of preventing rollers, rings, pressing plates and said biasing means being provided along a line substantially perpendicular to said direction in which said printing paper travels, a number of said preventing rollers being equal to a number of said pressing plates;

said preventing rollers, rings, pressing plates and said biasing means inhibiting movement of said paper parallel to said printing line direction so as to oppose a sideways force imparted to said paper by said character carrier which tends to move said paper parallel to said printing line direction.

4,444,523
DEVICE FOR CONNECTING PLATES AND/OR RODS

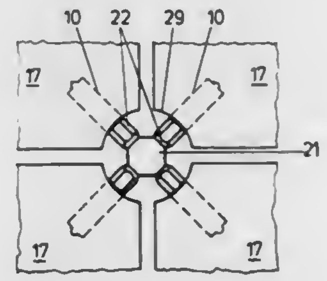
Walter J. Stumpf, Hochberg, Fed. Rep. of Germany, assignor to Mero-Raumstruktur GmbH & Co. Wurzburg, Wurzburg, Fed. Rep. of Germany

Filed Nov. 23, 1981, Ser. No. 324,018

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1980, 8030908[U]

Int. Cl.³ F16B *7/00*

U.S. Cl. 403—173 **6 Claims**



1. Device for connecting plates and rods, in particular light construction plates and rods made of wood, plastic or the like, with junction pieces which have numerous threaded holes whose axes intersect at the center of each junction piece, and with tap bolts disposed in the area of the plate corners and the rod extremities so they can rotate and slide axially in the planes of the plates and along the axes of the rods, said tap bolts being receivable in the threaded holes of the junction pieces, characterized in that the tap bolts (**16**) are mounted in dowel-like shells (**10**) which have at their outer end an abutment (**14**) for each tap bolt, that the shells (**10**) are fixedly secured in boreholes (**19**, **20**) in the area of the plate corners (**17**) and the extremities of the rods (**18**), that a drive-collar (**22**) is mounted on the shank portion (**23**) of the tap bolts (**16**) protruding from the shells (**10**) and that the corners of the plates (**17**) are cut out so as to accommodate the shank portion (**23**) of the tap bolts (**16**) carrying the drive-collar (**22**).

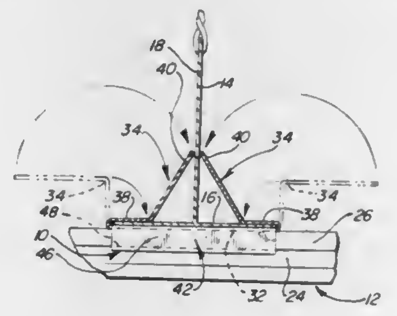
4,444,524
MOUNTING CLIP FOR TONGUE AND GROOVE PANELS

Melvin W. Cook, Dover, and Rodney S. Campbell, Akron, both of Ohio, assignors to Masonite Corporation, Chicago, Ill.

Filed Jan. 14, 1983, Ser. No. 457,980

Int. Cl.³ B25G *3/36;* **F16B** *1/00*

U.S. Cl. 403—387 **10 Claims**



1. A mounting clip for supporting a tongue and groove panel from a flange of an elongated support member, comprising:

a body formed of thin, flat sheet metal having a pair of deflectable wings along opposite sides adapted to be folded around opposite longitudinal edges of said flange for securing said body on said flange, at least one of said wings including a first leg normal to said body and joined thereto by a folding edge and a second leg integrally joined therewith extending outwardly of said body adapted to facilitate manual deflection of said wing for folding said first leg into a position overlying said flange, with said folding edge, first leg, and flange proportioned to allow said first leg to be folded into a position generally parallel to said body, and

a panel support element between said wings including a tongue member spaced from said body adapted to engage a tongue or groove of a panel for holding said panel in position against said support member extending transversely thereof.

4,444,525

JOINT FOR DOOR FRAMES AND OTHER SIMILAR SECTIONS

Kaarina Alander, Larin Kyostintie 13 C 7, 00650 Helsinki 65, Finland

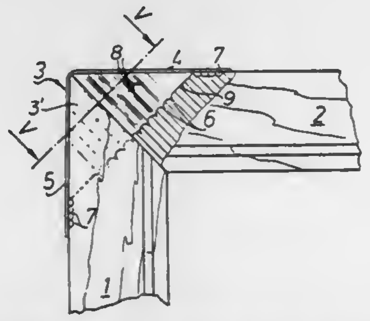
PCT No. PCT/FI81/00011, 371 Date Oct. 8, 1981, 102(e) Date Oct. 8, 1981, PCT Pub. No. WO81/02440, PCT Pub. Date Sep. 3, 1981

PCT Filed Feb. 20, 1981, Ser. No. 314,087

Claims priority, application Finland, Feb. 21, 1980, 800514

Int. Cl.^{3} B25G *3/36;* E04G *7/00*

U.S. Cl. 403—402 **2 Claims**



1. A joint forming arrangement for a door frame, comprising:

a pair of adjacent frame sections (**1,2**) arranged to form an angle with each other, each frame section having an outer surface adjacent the angle and at least one junction plate insertion groove (**51**) extending into each frame section from its outer surface, said grooves of said frame section communicating with each other across the angle;

a junction plate (**3**) disposed at least partly in and extending across said grooves;

said junction plate comprising a sheet metal plate having a pair of arms (**4,5**) arranged at an angle to each other corresponding to the angle formed between said adjacent frame sections (**1,2**) and each disposed against said outer surface of one of said frame sections, said junction plate further having at least one sheet metal insertion portion connected to said arms and inserted into said grooves, said insertion portion having a plurality of corrugations (**8**) engaged in said grooves, said corrugations providing said insert portion with an effective thickness which is greater than a width of said communicating grooves, said insertion portion further having a groove-engaging inner edge pressed into a bottom of said grooves, said inner edge having a plurality of teeth (**6**) engaging the bottom of said grooves;

whereby said junction plate forms a joint between said adjacent sections with said sheet metal insertion portion being pressed into said grooves sufficiently to place said arms against said outer surfaces of said adjacent sections and said corrugations into engagement with sides of said grooves as well as said teeth at said inner edge of said insertion portion into engagement with the bottom of said grooves.

4,444,526

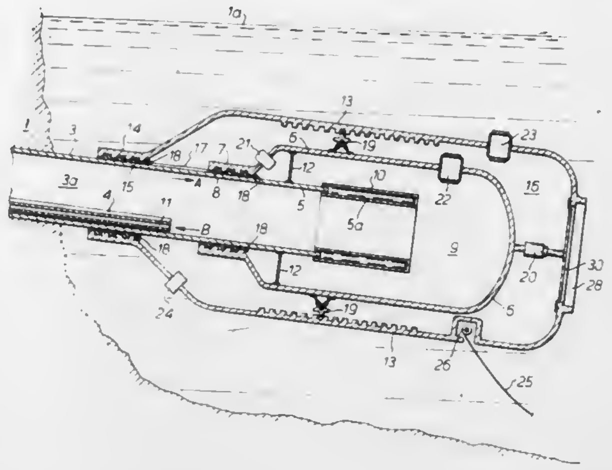
SUBMERGED TUNNEL AND A METHOD OF AND MEANS FOR CONSTRUCTING A SUBMERGED TUNNEL

Dimitris Foundoukos, Kedron 24, Ekali, Athens, Greece, and Anthony D. Blee, 4 Canonbury Pl., London, N. 1, England, assignors to Dimitris Foundoukos, Athens, Greece and Anthony David Blee, London, England

Filed Mar. 2, 1981, Ser. No. 239,211

Int. Cl.^{3} E01G *4/04*

U.S. Cl. 405—136 **22 Claims**



1. A method of constructing a submerged tunnel in situ which comprises providing a longitudinally extending substantially cantilevered tunnel section with two chamber units mounted on the free end thereof with one chamber unit located wholly within the other chamber unit so that the inner chamber unit and bore of the tunnel section provide a first working chamber and the outer chamber unit provides with the exterior of the inner unit a second working chamber within which there is access to the exterior of the tunnel section; lengthening the longitudinal extent of the tunnel section within the inner chamber unit, and displacing the inner and outer chamber units longitudinally relative to the tunnel section over the lengthened part thereof to permit further lengthening of the tunnel section within the chamber units.

4,444,527

COLLAR FORMING MACHINE FOR SUBMERGED PIPELINES

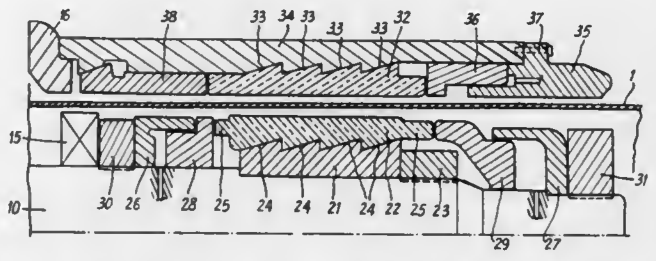
Rene Fournie, Pau, and Francois Besnard, Lescar, both of France, assignors to Societe Nationale ELF Aquitaine (Prod.), Courbevoie, France

Filed Jun. 3, 1982, Ser. No. 384,555

Claims priority, application France, Jun. 9, 1981, 81 11286

Int. Cl.^{3} F16L *35/00*

U.S. Cl. 405—170 **15 Claims**



1. A machine for forming collars serving for the repair of submerged pipelines transporting fluids, by means of a mechanical coupling, characterized in that it comprises a collar forming module having a central shaft (**10**) passing through the body (**12**) of a main jack, a piston (**18**) of the jack sliding on the shaft and carrying at its end a forming punch (**13**) whose angle is adapted to the slope desired for the collar to be formed on a tube, the shaft (**10**) carrying internal locking means (**14**) to be forcefully applied to the inner face of the wall of the tube (**1**) and capable of transferring the forming force to the tube itself, and further comprising external locking means (**17**) having a clamping means applied to the external face of the wall of the tube opposite the internal locking means (**14**) so as to avoid deformation of a portion of the tube adjacent the collar to be formed.

4,444,528

METHOD AND APPARATUS FOR RECOVERING SUBMERGED PIPELINE

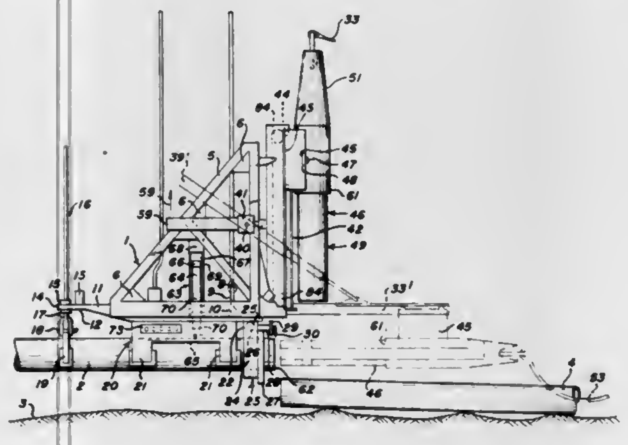
Ambrogio Scodino, S. Donato Mi., and Adalberto Raimondi, Nerviano, both of Italy, assignors to Saipem, S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 195,732, Oct. 10, 1980, abandoned, which is a continuation of Ser. No. 29,108, Apr. 11, 1979, abandoned, which is a continuation of Ser. No. 770,859, Feb. 22, 1977, abandoned. This application Apr. 27, 1981, Ser. No. 257,970

Claims priority, application Italy, Feb. 25, 1976, 20563 A/76

Int. Cl.^{3} F16L *1/04*

U.S. Cl. 405—173 **27 Claims**



1. Apparatus for use in recovering a submerged pipeline comprising support means having clamping means for clamping the support means on a pipeline to be recovered; a cutter mounted on the support means and arranged to cut through the pipeline when the support means is clamped on the pipeline, to afford a pipeline end; a recovery header, releasably mounted on said support means; drive means connected to said support means for moving said header relatively to said support means between a rest position and an inserted position in which, when said support means are clamped on the pipeline, said header is inserted in the pipeline in the region of the cut pipeline end; retaining means for retaining said header in the inserted position; and means connected to said header and support means adapted to release said header with the retained pipeline from said support means and remove said header and retained pipeline therefrom.

4,444,529

BOLT-LIKE FIXING ASSEMBLY FOR REINFORCING ROCK STRUCTURE

Tapio Kallio; Tauno Korhonen; Veikko Leiviskä; Jorma Pulkkinen, all of Porvoo, and Kalevi Salo, Hamari, all of Finland, assignors to Neste Oy, Finland

Filed Apr. 20, 1982, Ser. No. 370,275

Claims priority, application Finland, Apr. 22, 1981, 811252

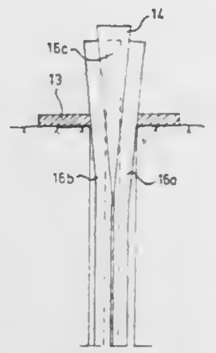
Int. Cl.^{3} E21D *21/00*

U.S. Cl. 405—259 **8 Claims**

1. In a bolt-like fixing assembly for use in reinforcing rock structure including an elongate structure having a pair of opposite ends, one of said ends being adapted to be fixed within a blind bore formed within a rock, and means for fixing the other of said ends of said elongate structure at the surface of the rock, the improvement comprising:

said elongate structure is constituted by at least two substantially adjacent rod-like elements adapted to be inserted within the bore, said rod-like elements having lengths such that upon initial insertion of said rod-like elements into the bore formed in the rock outer end regions of said rod-like elements protrude beyond the rock surface; and

said fixing means are constituted by a bearing member having an opening formed therethrough of a size sufficient to permit passage of said outer end regions of said rod-like elements therethrough and a bearing surface adapted to



engage the rock surface with said outer end regions of said rod-like elements passing through said opening, and wedge-shaped means adapted to be driven between said outer end regions of said rod-like elements to urge the same apart and into engagement with edges defining said opening in said bearing member, whereby said other end of said elongate structure is fixed at the rock surface.

4,444,530

DEVICE AND METHOD FOR CONTROLLING TIME DEPENDENT PARAMETER VARIABILITY

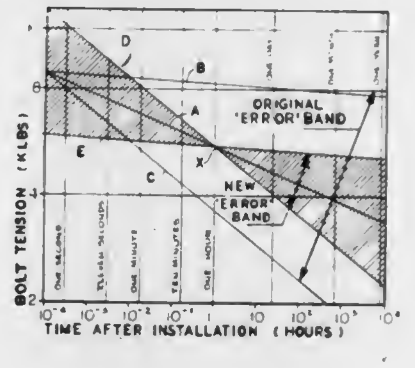
Carel J. H. Brest van Kempen, 4920 Emigration Canyon, Salt Lake City, Utah 84104

Division of Ser. No. 144,987, Apr. 30, 1982, Pat. No. 4,352,600.

This application Jul. 21, 1982, Ser. No. 400,441

Int. Cl.^{3} E21D *21/00*

U.S. Cl. 405—303 **9 Claims**



1. A device for controlling long term variability of tension among members of a population of mechanically anchored, tensioned mine roof bolts, comprising in combination:

roof bolt tightening means;

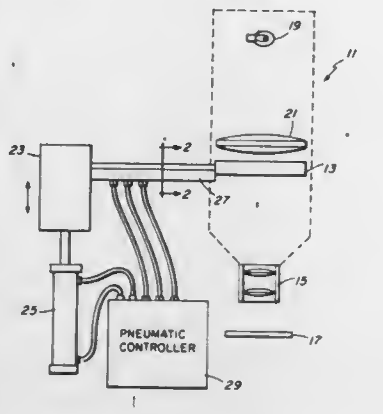
roof bolt tension measurement means;

means to measure exponential bolt tension decay;

means to impose a final installation tension on each mine roof bolt, related to said measured roof bolt tension decay measurement in such fashion as to cause bolt tensions in a population of mine roof bolts to generally converge in time to a certain value of bolt tension at a certain time after bolt installation even though bolt tension may decay at a different rate on each individual roof bolt in said population.

4,444,531
AIR TRACK APPARATUS

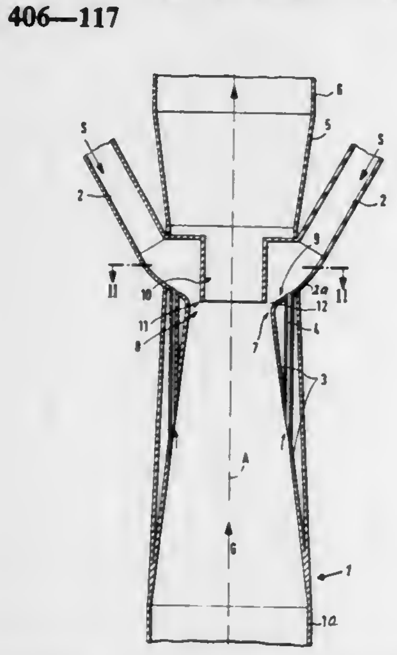
Charles C. Baker, Wilmington; Perry S. Banks, Somerville, both of Mass., and Patrick F. Raduazzo, Milford, N.H., assignors to GCA Corporation, Bedford, Mass.
Filed Dec. 1, 1981, Ser. No. 326,399
Int. Cl.³ B65G *51/02*
U.S. Cl. 406—88 **3 Claims**



1. Air track apparatus for transporting articles having at least one peripheral flat surface, said apparatus comprising:
air track bed means providing a flat horizontal surface including ports for introducing an air flow to establish an air cushion under articles to be transported;
a rail extending along one side edge of said bed means providing an essentially vertical flat surface adjacent said track; and
spaced at intervals along the interface between said bed means and said rail, a series of air jet forming means directed vertically to provide air jets flowing in close proximity across said vertical flat surface.

4,444,532
METHOD OF, AND APPARATUS FOR, CHARGING PARTICULATE MATTER INTO A GAS STREAM

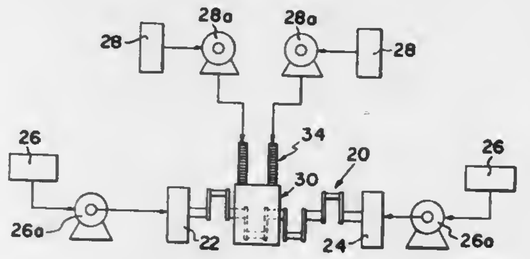
Erich Hackler, Essen-Kettwig; Joachim Meckel, Heiligenhaus; Dietrich Wagener, and Manfred Galow, both of Essen, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH and Didier Engineering GmbH, both of Essen, Fed. Rep. of Germany
Continuation of Ser. No. 190,822, Sep. 25, 1980, abandoned. This application Sep. 20, 1982, Ser. No. 421,116
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1979, 2939029
Int. Cl.³ B65G *53/42*
U.S. Cl. 406—117 **1 Claim**



1. Apparatus for charging particulate material into a stream of gas, for drying and preheating coal in a flight stream tube, comprising means for confining a stream of gas to a predetermined flow path; means for feeding pourable particulate material towards said flow path in a direction inclined and generally counter to the flow direction of said stream of gas and under the influence of gravity, said feeding means including wall means bounding a feeding path and having an inclined wall portion provided with a discharge section which communicates with said flow path, said discharge section having a discharge lip over which the particulate material slides towards said flow path, said lip extending substantially horizontally; and means for fluidizing the particulate material, said fluidizing means including a plurality of fluidizing gas conduits branched off said means for confining a stream of gas and extending towards said discharge section and communicating therewith so as to supply fluidizing gas to and fluidize the particulate material immediately prior to entry thereof into said flow path, so as to enhance the entrainment of the particulate material and facilitate its uniform distribution throughout the cross-section of the stream of gas, said fluidizing gas conduits having outlets which open at said discharge lip of said discharge section, and inlets communicating with said flow path upstream of said inclined wall portion, so that some of the gas of said stream of gas is diverted into said fluidizing gas conduits and at said discharge lip of said discharge section, said confining means including wall means surrounding said flow path over a part of the length thereof and converging toward said discharge lip from a location upstream of said discharge lip, said inlets communicating with said part of the flow path.

4,444,533
METHODS AND APPARATUS FOR MACHINING CRANKSHAFTS

Kenneth E. Riley, Sterling Heights, and Carl Micek, Dearborn, both of Mich., assignors to Saginaw Machine Systems, Inc., Troy, Mich.
Filed Oct. 26, 1981, Ser. No. 314,995
Int. Cl.³ B23B *5/22*; B23C *1/18*
U.S. Cl. 409—132 **7 Claims**



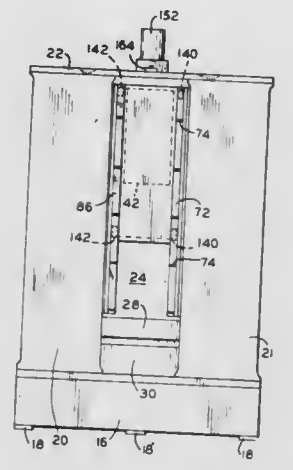
1. The method of milling at least a portion of a crankshaft pin to a finished radius r_p comprising, reciprocating a rotating internal milling cutter having a plurality of uniformly spaced teeth lying at a cutting radius r_c from the axis of rotation of the cutter along a straight line path normal to and intersecting the main axis of the crankshaft to maintain the cutting path of the cutter teeth in substantially tangential relationship with an imaginary cylindrical surface of radius r_p centered on the pin axis while rotating the crankshaft through one complete revolution about its main axis from a predetermined start position, the pin axis being displaced from the main axis of the crankshaft by a radial distance r_t; said cutter radius $r_c > r_p + r_t$ driving the cutter at a constant rate of rotation and driving said crankshaft at a variable rate of rotation

$$\frac{dS}{dt} = \frac{C\sqrt{(r_c - r_p)^2 - (r_t \sin S)^2}}{r_p\left[r_t \cos S + \sqrt{(r_c - r_p)^2 - (r_t \sin S)^2}\right]}$$

where S is the angular displacement of the crankshaft from its start position and C is a constant representative of that constant rate of rotation of the pin about its pin axis such that successive teeth of the cutter engage the pin at points on the pin periphery which are spaced from each other by a selected uniform angular displacement about the pin axis and the chips removed from said pin by said teeth are of substantially uniform length and thickness throughout the complete revolutionary cycle of said crankshaft.

4,444,534
VERTICAL AND HORIZONTAL MACHINE TOOLS

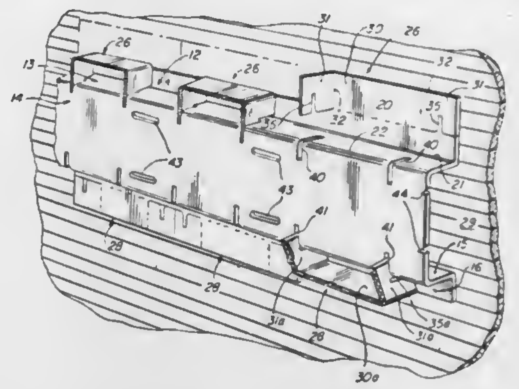
Raymond A. Bergman, 107 E. Second St., Minster, Ohio 45865
Filed Apr. 27, 1981, Ser. No. 257,989
Int. Cl.³ B23C *1/06, 1/14*
U.S. Cl. 409—164 **25 Claims**



1. An apparatus for machining parts comprising:
a base,
a bifurcated column structure rigidly connected to said base and extending generally upwardly therefrom, said column structure having spaced apart sides,
an arm captured between the spaced apart sides of said column structure and including a spindle and extending forwardly from said column structure, said arm including an upper end and a lower end each received between the spaced apart sides of the column structure,
spindle means connected to said arm spindle end for selectively engaging and rotating a variety of tools,
three vertical primary ways on said column structure, one of said primary ways being orthogonally related to the other two primary ways,
three vertical secondary ways on said column structure in opposed relation respectively to said primary ways, one of said secondary ways being orthogonally related to the other two secondary ways,
a plurality of first linear bearing means connected to and carried by said arm and being positioned respectively between said upper end and said ways and bearing against said ways for guiding said arm vertically on said ways, and a plurality of second linear bearing means connected to and carried by said arm and being positioned respectively between said arm lower end and said ways and bearing against said ways for guiding said arm on said ways,
means connected to said arm for moving said arm vertically in said column structure, and
fluid pressure preload means acting against each first and second linear bearing means connected between a secondary way and said arm for urging said arm in a direction normal to the respective opposite primary way to preload the bearing means bearing against the primary ways both during movement of said arm in said column structure and when said arm is at rest.

4,444,535
DUNNAGE PLUGS

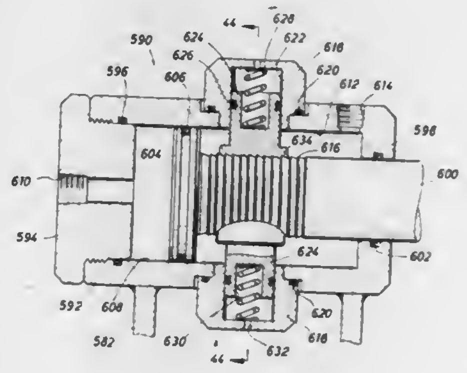
Steve VanMersbergen, 8508 W. 45th Pl., #2-C, Lyons, Ill. 60534
Filed Jan. 14, 1981, Ser. No. 225,072
Int. Cl.³ B63B *25/24*
U.S. Cl. 410—121 **17 Claims**



1. A blank for a dunnage plug comprising:
a unitary, substantially rectangular sheet of material;
primary support channel means on said sheet defining a central web portion and pair of side members extending from opposing sides thereof and adapted to be folded into a channel-like structure;
said opposing side members each in addition comprising a mounting strip extending substantially the length of said side member adjacent a boundary of said side member and opposite a juncture between said central web and said side member, said mounting strip being foldable relative the remainder of said side member for adapting said plug, when formed, to be mounted on a substantially flat external surface;
a plurality of secondary support means, including at least a base extending from said primary support channel means and a leg member extending from said base; and
said leg member being foldable transversely across portions of said primary support channel means in retaining engagement therewith for forming box-like structures having substantial strength against compression.

4,444,536
HIGH SPEED WELL WORKING APPARATUS

Joe R. Brown, P.O. Box 19310, Houston, Tex. 77024
Continuation-in-part of Ser. No. 35,933, May 4, 1979, abandoned. This application Apr. 30, 1981, Ser. No. 258,923
Int. Cl.³ E21B *19/00*
U.S. Cl. 414—22 **17 Claims**



1. Apparatus for gripping pipe members comprising:
a. gripping means selectively movable generally transversely to such pipe member between a retracted configuration in which said gripping means may grippingly engage such pipe member, and an extended configuration in which said gripping means is released from gripping engagement with such pipe member; and
b. propulsion means connected to said gripping means, and including fluid pressure means comprising piston means

and cylinder means selectively operable in response to fluid pressure for so selectively moving said gripping means between said retracted and extended configurations, and lock means comprising at least one locking piston carried by said piston means, movable generally laterally relative to said piston means to selectively grippingly engage the corresponding cylinder means for releasably locking said fluid pressure means whereby said gripping means may be locked in said retracted configuration.

4,444,537

DEVICE FOR RECEIVING AND TRANSPOSING OF PLATES, IN PARTICULAR, GLASS PLATES

Johannes Werner, Schmidtheimerstrasse 1, D-5308 Rheinbach-Ramershoven, Fed. Rep. of Germany

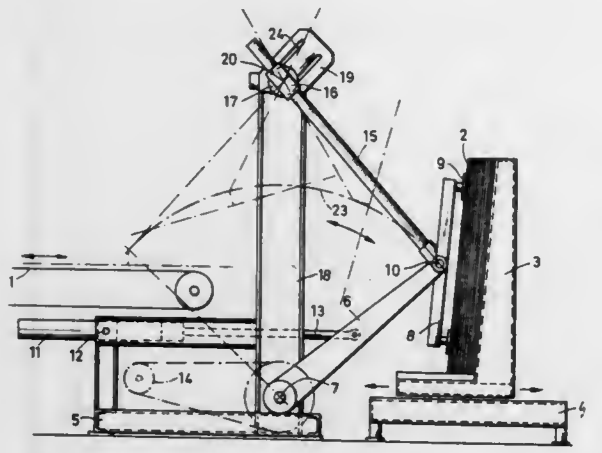
PCT No. PCT/EP81/00116, 371 Date Apr. 13, 1982, 102(e) Date Apr. 13, 1982, PCT Pub. No. WO82/00628, PCT Pub. Date Mar. 4, 1982

PCT Filed Aug. 7, 1981, Ser. No. 373,484

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1980, 3031135

Int. Cl.³ B65G *49/06, 57/08*

U.S. Cl. 414—107 **9 Claims**



1. Apparatus for receiving and transporting of plates, in particular glass plates, comprising: a pivot arm, pivotable around a horizontal axis along a pre-determined pivot radius between a first position, in which the plates are in substantially vertical position, and a second position, in which the plates are in a substantially horizontal position, the pivot arm being arranged at an angle of 45 degrees, with respect to the horizontal axis in the first and second positions and having a pivotable end; a support frame mounted to the pivotable end and being pivotable around a further horizontal axis for receiving and transporting a respective one of the plates between the first and second positions, the support frame being pivotable around the further horizontal axis at an angle smaller than 90 degrees upon pivoting of the pivot arm between the first and second positions; a guide rod rigidly connected with the support frame for accurately guiding the support frame between the first and second positions; and a guide bushing for guiding the guide rod in a longitudinal direction thereof; the guide bushing being pivotably mounted around a still further horizontal axis beyond the pivot radius of the pivot arm.

4,444,538

AUTOMATIC LOG FEEDER

Jerry Manley, 1820 Ohio St., Chesapeake, Va. 23324

Filed Jul. 12, 1982, Ser. No. 397,408

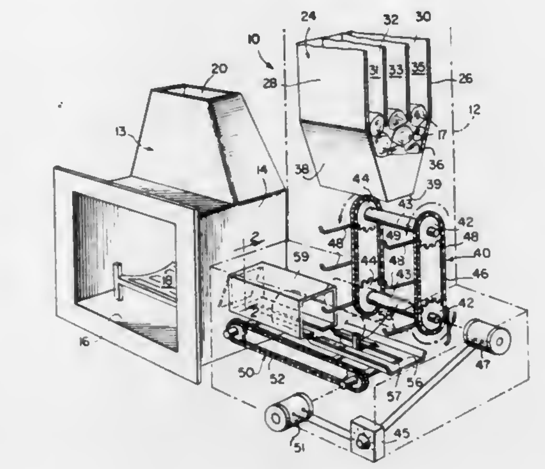
Int. Cl.³ F23K *3/00*

U.S. Cl. 414—176 **6 Claims**

1. An automatic log feeder comprising:

(a) a hopper for retaining a plurality of logs, said hopper having a plurality of generally parallel, vertically arranged compartments separated by a plurality of dividers, each compartment comprising means for holding a single row of individual logs, said hopper having a log entry opening at an upper portion thereof and having a chute at a lowermost portion thereof for dispensing individual logs;

(b) a first, generally vertically arranged conveyor for receiving logs from said chute and for conducting them downwardly in substantially vertical fashion, said conveyor comprising a pair of endless chains driven by a motor and a plurality of sprocket wheels, and a plurality of pairs of brackets which are foldably connected to said chains, each of said bracket pairs comprising means for retaining only a single log from said chute; and



(c) a second, generally horizontally arranged conveyor adapted to transfer individual logs in a generally horizontal direction to a woodburning apparatus, said second conveyor comprising motor-driven means for pushing each log in a horizontal fashion and a conduit for guiding said logs into the entrance of said woodburning apparatus, said conduit comprising at least one hingedly attached entrance door which is adapted to be pivoted upon engagement with a log being fed into said woodburning apparatus.

4,444,539

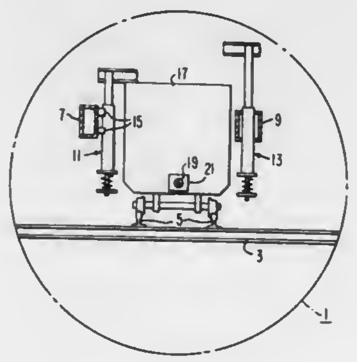
APPARATUS FOR CLAMPING A RAILROAD CAR IN A ROTARY CAR DUMPER

Cornel Muhoray, Bay Village, Ohio, assignor to Dravo Corporation, Pittsburgh, Pa.

Filed Apr. 6, 1982, Ser. No. 365,907

Int. Cl.³ B65G *67/54*

U.S. Cl. 414—360 **7 Claims**



1. Apparatus for clamping a railroad car in a rotary car dumper which includes a rotatable frame supporting a section of track, said apparatus comprising:

a cylindrical guide pipe member mounted on said frame immovably fixed to the frame in a position generally perpendicular to the plane formed by the tracks and laterally spaced from the tracks;

a cylindrical clamp pipe member having one end telescopically mated with said guide pipe member for longitudinal movement with respect thereto, and having a clamping jaw member extending laterally from the other end thereof;

means for extending and retracting said clamp pipe member axially with respect to said guide pipe member to permit free movement of a car along the tracks when extended and to clamp the car to the tracks respectively when retracted; and

releasable coupling means between said pipe members which permits free longitudinal movement of said pipe members relative to each other but which resists rotational movement therebetween, said means being oriented such that with said releasable means engaged said jaw member extends laterally in the direction toward and generally transverse to said tracks and being releasable to allow said clamp pipe member to rotate relative to the guide pipe member and rotate the jaw member toward a position generally parallel to the tracks without damage to the pipe members, the extending and retracting means or the jaw member when a force having a component of a predetermined magnitude in a direction generally parallel to said tracks is applied to said jaw member.

4,444,540

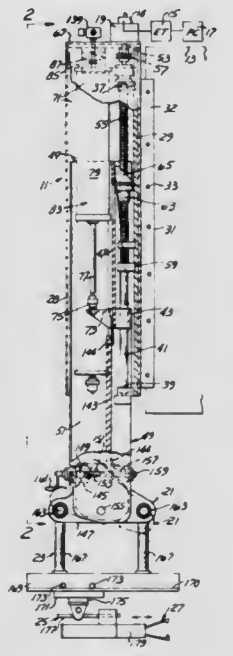
AUTOMATION LIFT UNIT

Leland F. Blatt, and John A. Blatt, both of 31915 Groesbeck Hwy., Fraser, Mich. 48026

Filed Jul. 29, 1981, Ser. No. 287,765

Int. Cl.³ F16H *1/04;* **B65G** *57/20*

U.S. Cl. 414—589 **10 Claims**



1. A lift unit mountable upon a press or machine tool comprising an upright housing including a backplate;

a pair of upright parallel spaced guide rods within said housing mounted upon and spaced forwardly of said backplate;

an upright feed screw mounted upon and spaced forwardly of said backplate;

a carriage including an upright carriage plate guidably mounted upon said rods for reciprocal movements thereon threadably engaging said feed screw;

a top plate on said housing;

a DC motor mounted upon said top plate having a drive shaft aligned with and coupled to said feed screw;

said carriage extending below said housing;

an adjustable support cradle mounted upon and depending from said carriage adapted to mount a workpiece gripper tool;

and an electronic encoder mounted upon said motor for controlling the direction and number of rotations of its drive shaft for effecting a programmed repetitive cycle of predetermined feed movements of said carriage.

4,444,541

AIR FLOAT POWER TRANSLATION AND ROTATION SYSTEM

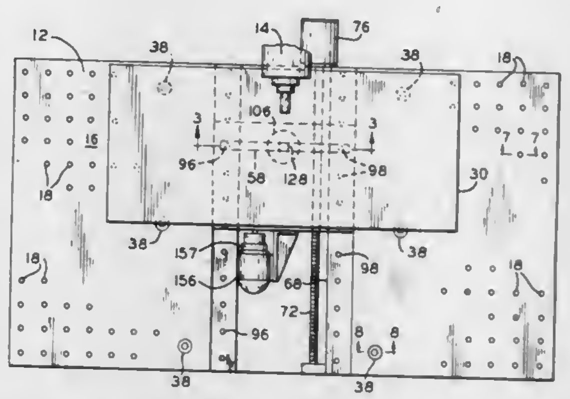
Raymond A. Bergman, 107 E. Second St., Minster, Ohio 45865

Filed Dec. 18, 1981, Ser. No. 332,106

The portion of the term of this patent subsequent to Nov. 3, 1998, has been disclaimed.

Int. Cl.³ B23Q *7/00*

U.S. Cl. 414—676 **32 Claims**



1. A pressurized fluid support system comprising:

a support table having a generally flat upper surface and being adapted for supporting a workpiece fixture thereon,

means for supplying a cushion of fixture supporting pressurized fluid to said upper surface of said support table whereby a workpiece fixture may be floatingly supported thereon,

keying element means translatably and rotatably mounted within said table and having a portion thereof extending upwardly from said table upper surface, said portion of said keying element means extending from said table upper surface having a non-circular cross-sectional shape within a plane parallel to said table upper surface whereby said keying element means is capable of keying to an overlying workpiece fixture,

means within said table for translating said keying element means therealong, and

means within said table for rotating said keying element means about an axis normal to said table upper surface.

4,444,542

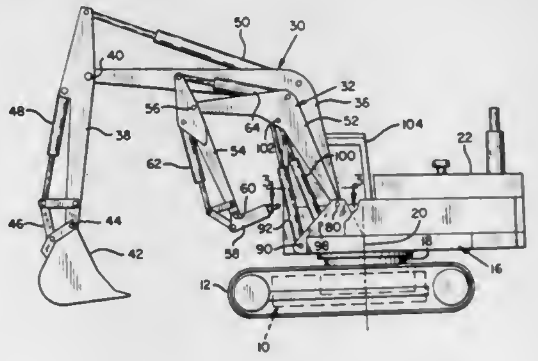
VEHICLE WITH DOUBLE BOOMS

Douglas A. Shaw, 323 NW. Hill, and Stephen D. Barclay, 20636 Nandi Ct., both of Bend, Oreg. 97701

Filed May 22, 1981, Ser. No. 266,492

Int. Cl.³ E02F *3/32*

U.S. Cl. 414—694 **3 Claims**



1. A mobile earth-working vehicle comprising:

a vehicle frame and ground-travelling means supporting the vehicle frame for movement over the ground,

a turntable including a turntable frame disposed over said vehicle frame and means rotatably mounting the turntable on said vehicle frame with the turntable rotatable about an upright axis, a pair of articulated booms, each including a tip section and a base section and the base section of each boom having a bottom end and an opposite end,

boom mounting means pivotally mounting the bottom end of the base sections in said booms on said turntable frame with the two booms disposed side by side and the base sections of the booms constrained by said mounting means to pivotal movement in parallel vertically disposed planes,

said boom mounting means comprising a pair of upstanding laterally spaced and opposed plates secured to the turntable frame, pin means spanning said plates and mounted thereon pivotally supporting the bottom end of the base section of one boom, a third upstanding plate laterally spaced to one side of said pair of plates secured to the turntable frame, and pin means spanning said third plate and the plate of said pair of plates adjacent said third plate pivotally supporting the bottom end of the base section of the other boom,

the tip section of each boom being pivotally mounted at one end on the opposite end of the base section in the boom for pivotal movement in the plane in which the base section of the boom is moveable, and

an operator's station mounted on said turntable disposed laterally of the planes in which the base sections of the booms move.

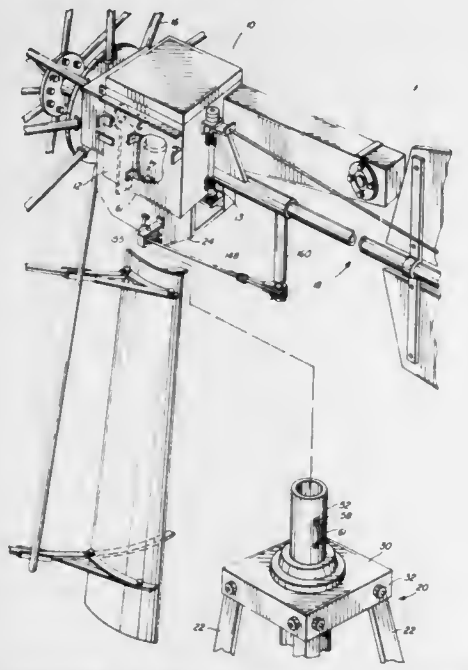
4,444,543

WINDMILL

John E. Wilks, P.O. Box 929, Lebec, Calif. 92343, and Jesse E. Hawley, Phoenix, Ariz., assignors to John E. Wilks, Lebec, Calif.

Filed Jan. 5, 1981, Ser. No. 222,698
Int. Cl.³ F03D *11/04*

U.S. Cl. 416—170 R **5 Claims**



1. A unitized mounting assembly for a windmill, said windmill including a transmission on a turntable base, a tail and a rotatable wheel, said unitized assembly positioned on a tower having a cap and a subjacent truing center, said mounting assembly including:

(a) a vertically extending mast pipe having an upper and lower end, said upper end being secured to said turntable base;

(b) self-centering alignment means interposed between the upper end of said mast pipe and said base wherein said aligning means comprises a tapered collar about said mast pipe engageble in a cooperating socket on said tower cap;

(c) a mast housing extending vertically about said mast pipe having an upper and lower end, said housing being secured to said tower;

(d) first antifriction bearing means interposed between said mast housing and mast pipe adjacent said upper end of said mast housing to permit rotation of said mast pipe; and

(e) second antifriction bearing means interposed between said mast housing and mast pipe at a location spaced apart from said first bearing means whereby said windmill and mast pipe are rotatable as a unit relative to said tower and mast housing and whereby said bearings absorb axial and radial loads, said first and second antifriction bearing means being independent of said self-centering alignment means.

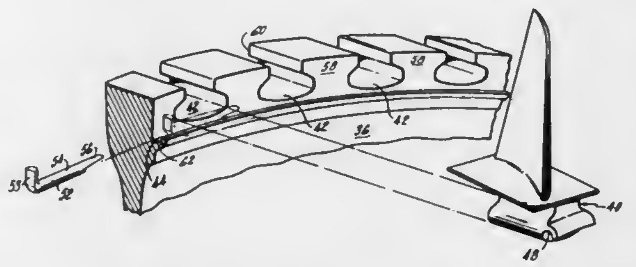
4,444,544

LOCKING OF ROTOR BLADES ON A ROTOR DISK

Robert L. Rowley, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 19, 1980, Ser. No. 218,240
Int. Cl.³ F01D *5/32*

U.S. Cl. 416—221 **3 Claims**



1. A rotor assembly of the type adapted for use in an axial flow rotary machine having a working medium flow path, the rotor assembly including a rotor disk having an upstream side facing in an upstream direction, a downstream side facing in a downstream direction, a plurality of blade attachment slots extending in a generally axial direction across the disk between the sides of the disk, and a projection on the disk extending from one of said sides which has a first groove extending in a lateral direction with respect to each attachment slot and facing in a generally outward direction, the rotor assembly further including a plurality of rotor blades, one blade extending from each of said attachments slots, each rotor blade having a root which engages the attachment slot, a base on said root and a second groove extending in a lateral direction with respect to the root in alignment with and facing said groove in the disk, and a pin engaging the rotor disk and the rotor blade at the first and second grooves respectively to trap the rotor blade in one direction on the disk, the improvement comprising:

a rotor disk having a first groove bounded by the projection and said side of the disk, the groove extending across each attachment slot;

a rotor blade having a second groove extending across the base of the blade;

a pin extending across said base and between said base and said disk to retain the rotor blade on the disk against movement in the upstream and downstream direction and to block the leakage of working medium gases through the attachment slot between the base of the blade and the attachment slot.

4,444,545

PUMP CONTROL SYSTEM

David F. Sanders; James R. Aspinwall, and Garry A. Armbruster, all of 5485 NW. 22nd Ave., Fort Lauderdale, Fla. 33309

Filed Apr. 8, 1982, Ser. No. 366,500
Int. Cl.³ F04B *41/06*

U.S. Cl. 417—8 **19 Claims**

7. In a liquid pumping system for use with a liquid reservoir, said system having:

two motor-driven pumps operatively arranged to pump liquid relative to said reservoir;

a first binary sensor operative to a first binary state when the liquid reaches a predetermined first condition in the reservoir and operative to the opposite binary state when the liquid in the reservoir no longer reaches said first condition;

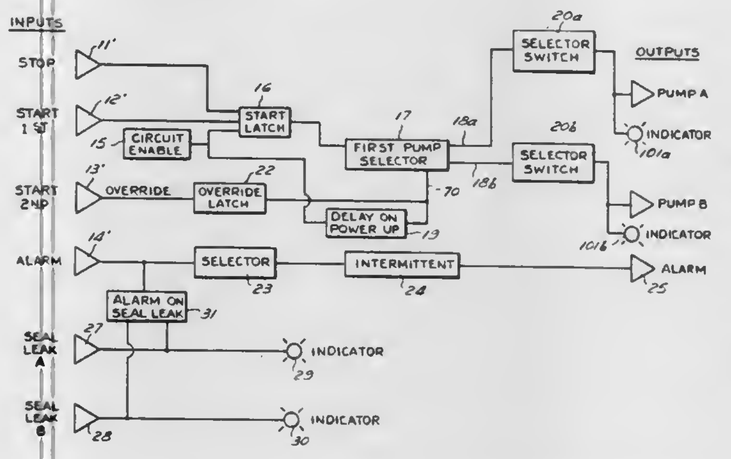
a second binary sensor operative to a first binary state when the liquid reaches a predetermined second condition in the reservoir and operative to the opposite binary state when the liquid in the reservoir no longer reaches said second condition;

and a third binary sensor operative to a first binary state when the liquid reaches a predetermined third condition in the reservoir and operative to the opposite binary state when

the liquid in the reservoir no longer reaches said third condition;

the improvement which comprises:

a start latch circuit operatively connected between said first and second sensors and said pumps to turn on one of said pumps in response to operation of said first sensor to its first binary state followed by operation of said second sensor to its first binary state;



and an override latch circuit operatively connected between said first and third sensors and said pumps to turn on the other of said pumps in response to operation of said third sensor to its first binary state following operation of said first sensor to its first binary state;

said first sensor being operatively connected to said override latch cir;cuit to turn off said other pump in response to operation of said first sensor to its opposite binary state following operation of said third sensor to its opposite binary state;

and said first sensor being operatively connected to said start latch circuit to turn off said one pump in response to operation of said first sensor to its opposite binary state following operation of said second sensor to its opposite binary state.

8. A pumping system according to claim 7, and further comprising:

a pump selector circuit operatively connected between said start and override latch circuits and said pumps to reverse the sequence in which the pumps turn on in the next cycle of operation occurring after said first sensor has been operated again to its first binary state.

4,444,546

OCCLUSION DETECTION APPARATUS AND METHOD

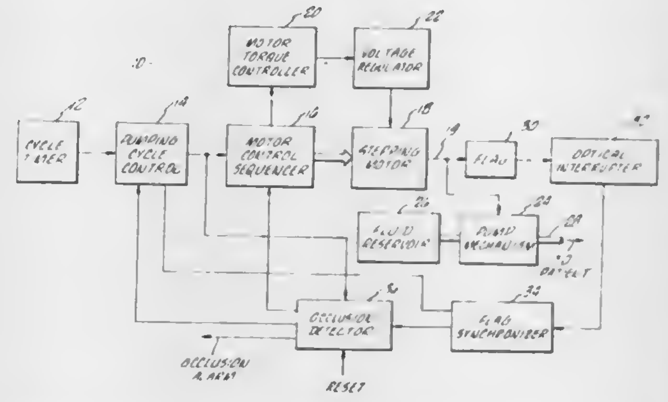
Vytas V. Pazemenas, Sunnyvale, Calif., assignor to Oximetrix, Inc., Mountain View, Calif.

Filed Sep. 19, 1980, Ser. No. 188,618
Int. Cl.³ A61M *5/00*

U.S. Cl. 417—12 **15 Claims**

1. An occlusion detection apparatus for use in a pumping apparatus wherein said pumping apparatus includes a motor for accuating pumping means through a pumping cycle to provide pumping of a fluid through fluid delivery means, comprising

first means for energizing the motor to operate the motor at a first torque for a predetermined time period at the beginning of the pumping cycle and for subsequently operating the motor at a second torque less than the first torque, and



second means for determining if the pumping cycle is not completed within a second predetermined time period to thereby indicate an occlusion within the fluid delivery means.

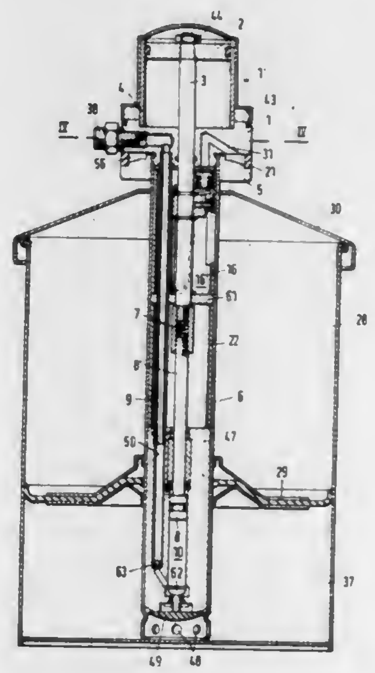
4,444,547

AIR PRESSURE OPERATED LUBRICATING GUN

Hermann Stolz, Muehlheim am Main, Fed. Rep. of Germany, assignor to MATO Maschinen-und Metallwarenfabrik Curt Matthaei GmbH & Co. KG, Offenbach, Fed. Rep. of Germany

Filed Apr. 9, 1981, Ser. No. 252,393
Claims priority, application Austria, May 2, 1980, A 2359/80
Int. Cl.³ F04B *17/00*

U.S. Cl. 417—46 **10 Claims**



1. An air pressure operated lubricating apparatus comprising housing means, main pipe means (**6, 16, 22**) having a longitudinal central axis in said housing means, high pressure pump means (**8, 10**) operatively held in said main pipe means, air pressure operated motor means (**1′**) including a piston (**2**) and a piston rod (**3**) operatively connected to said high pressure pump means (**8, 10**), air pressure chamber means (**16′**) located in said main pipe means above said high pressure pump means, lubricant riser pipe means (**9**) operatively arranged also in said main pipe means off-center relative to said longitudinal central axis, and air pressure supply control means (**11** to **19, 34**) including slide valve means (**12**) located in said air pressure chamber means (**16′**) inside said main pipe means (**6**) and operatively connected to said air pressure operated motor means (**1′, 2, 3**) for automatically reversing the back and forth movement of said air pressure operated motor means, said apparatus

further comprising a head piece (**1**), said air pressure motor means (**1′**) being mounted on said head piece (**1**) on one side thereof so that said piston rod extends centrally through said head piece, said head piece having an inlet port (**20**) for pressurized air and a lubricant outlet port (**38**) for discharging lubricant, said riser pipe means being connected to said lubricant outlet port (**38**) in said head piece (**1**), said head piece (**1**) further having air duct means (**26, 31, 33**) operatively connecting said inlet port (**20**) to said air pressure chamber means (**16′**), said slide valve means (**12**) being arranged in said air pressure chamber means (**16′**) for cooperation with said air duct means in said head piece for controlling the operation of said air pressure operated motor means (**1′**), whereby the length of said air duct means is short and the slide valve means assure a precise motor control, said apparatus further comprising actuating lever means (**13, 17**) for said slide valve means (**12**), said actuating lever means including guide roller means (**18**), said air pressure supply control means further comprising guide tongue means (**19**) operatively positioned in said main pipe means, and spring means (**14, 15**) operatively arranged in said main pipe means for urging said guide roller means (**18**) against said guide tongue means (**19**) whereby the shifting of said slide valve means (**12**) takes place in response to said back and forth movement of said air pressure motor means each time when said guide roller means (**18**) passes around an end of said guide tongue means.

4,444,548

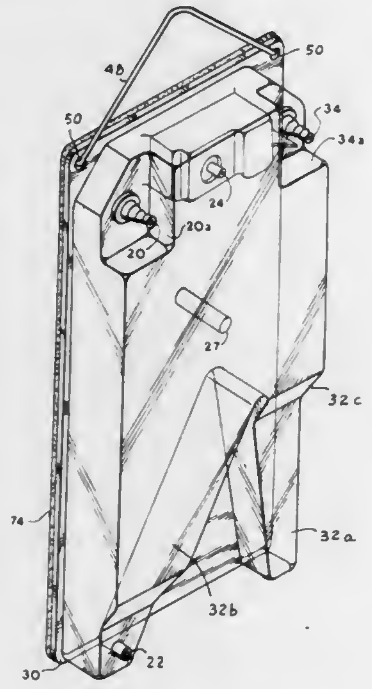
SUCTION APPARATUS

Harold W. Andersen; Charles H. Harrison, both of Oyster Bay, and Melvin H. Worth, Jr., Staten Island, all of N.Y., assignors to University Testing Service Inc., Oyster Bay, N.Y.

Filed Aug. 8, 1980, Ser. No. 176,387

Int. Cl.³ F04B *21/00*

U.S. Cl. 417—63 **17 Claims**



1. Suction pump apparatus comprising a housing having an imperforate base member and an imperforate closure member dimensioned and configured for superimposing upon said base member in sealing relationship therewith to define a vacuum chamber therebetween, said housing defining a vacuum chamber at least a portion of which serves as a storage compartment for aspirated fluid, said closure member being configured so as to define in combination with said base member a first larger vacuum chamber section and at least one second smaller vacuum chamber section communicating with and extending from said first chamber section, said second chamber section becoming narrower towards the end thereof remote from said first chamber section, an inlet in said housing for the introduction of aspirated fluid into said storage compartment, an outlet in said housing for the discharge of fluid therefrom, and a vacuum pump carried by said housing in communication with said vacuum chamber for maintaining a predetermined vacuum therein, whereby aspirated fluid is drawn into said storage compartment through said inlet.

6. Suction pump apparatus according to claim **1**, inlcuding a graduated scale associated with at least one of said second chamber sections for indicating the quantity of accumulated fluid therein.

4,444,549

REFRIGERANT COMPRESSOR

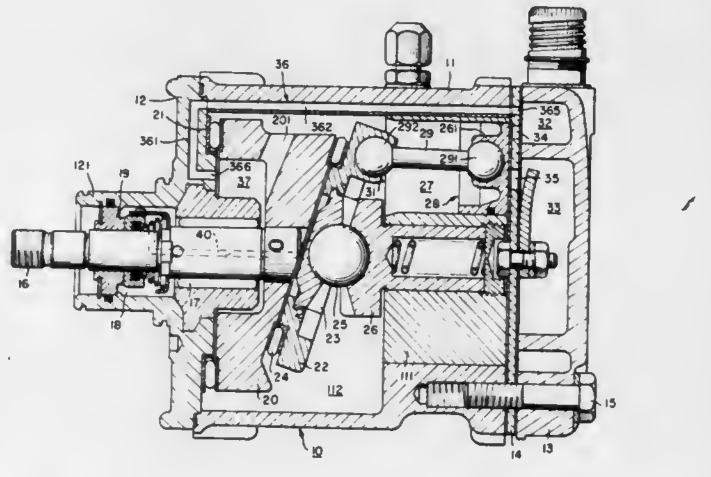
Haruo Takahashi, and Shogo Kimura, both of Gunma, Japan, assignors to Sanden Corporation, Japan

Filed Jul. 24, 1981, Ser. No. 286,592

Claims priority, application Japan, Aug. 4, 1980, 55-109730[U]

Int. Cl.³ F04B *1/18, 39/02*

U.S. Cl. 417—269 **5 Claims**



1. In a refrigerant compressor including a compressor housing having a cylinder block provided with a plurality of cylinders and a crank chamber adjacent said cylinder block, a piston slidably fitted within each of said cylinders and reciprocated by means of a wobble plate means driven by an input rotor means and an input shaft means connected with said rotor means, a front end plate means on said housing including a bearing means for rotatably supporting said input shaft, a cylinder head means at the opposite end of said housing including a refrigerant suction and discharge chamber, and a balance hole means for communicating said crank chamber and said suction chamber, the improvement wherein said input rotor is formed with a hollow portion at the axial end surface thereof which faces the inner surface of said front end plate means and at least one opening for communicating said hollow portion with said crank chamber, said balance hole means includes at one end thereof a first fluid passageway in said end plate means which opens as a port facing said hollow portion through the inner surface of said front end plate means, and the other end of said balance hole means opens into said suction chamber.

4,444,550

PERMANENT MAGNET MOLD APPARATUS FOR INJECTION MOLDING PLASTIC BONDED MAGNETS

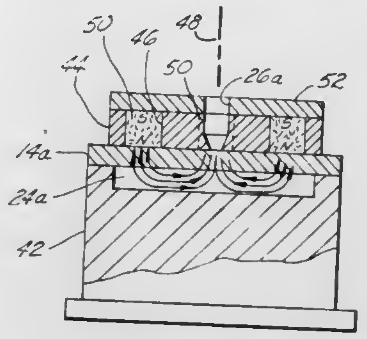
Robert J. Loubier, 5122 Chippewa Ct., Fort Wayne, Ind. 46804

Filed Oct. 20, 1982, Ser. No. 435,473

Int. Cl.³ B29F *1/00*

U.S. Cl. 425—3 **12 Claims**

1. Mold apparatus for injection molding plastic bonded magnets comprising body means having a molding cavity and gate for said cavity therein, said body means including a magnetizing device which includes a support of non-magnetic material having a permanent magnet contained therein and a non-magnetic wall portion interposed between said magnet and said cavity, said wall portion defining at least a portion of said cavity and said permanent magnet being disposed relative to said cavity such that at least a portion of the magnetic field thereof enters said cavity through said wall portion, said support being of a strength to withstand the pressure of molten plastic in said cavity without said permanent magnet being present therein, and said permanent magnet itself being of a physical strength inadequate to withstand said pressure.



4,444,551

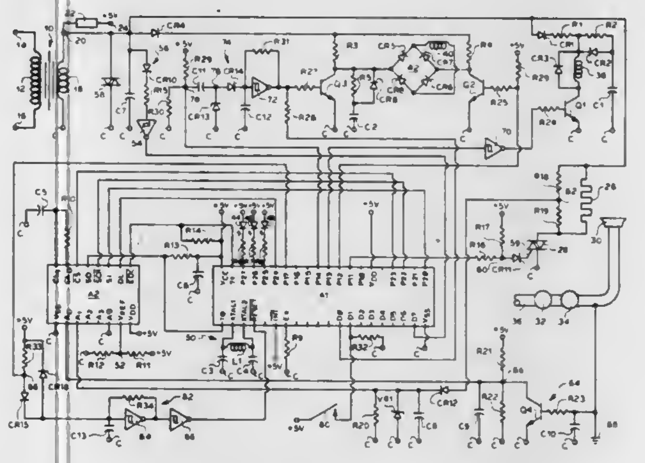
DIRECT IGNITION GAS BURNER CONTROL SYSTEM

Carl J. Mueller; Bernard T. Brown, both of St. Louis County, Mo.; Dennis M. Rippelmeyer, Waterloo, Ill., and John S. Haefner, Jefferson County, Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Aug. 27, 1981, Ser. No. 296,818

Int. Cl.³ F23Q *23/00*

U.S. Cl. 431—25 **5 Claims**



1. In a gas burner control system,

a burner;

electrically operated valve means for controlling flow of gas to said burner;

circuit means for controlling operation of said valve means;

an electrical igniter positioned in close proximity to said burner;

gate-controlled solid state switch means connecting said igniter across a power source;

flame-detect circuit means for generating voltage values indicative of absence and presence of current flow through a burner flame; and

a microcomputer connected to said circuit means for controlling operation of said valve means, to said switch means, and to said flame-detect circuit means,

said microcomputer being effective to control conduction of said switch means so as to effect energizing of said igniter to gas ignition temperature, to subsequently effect energizing of said valve means so as to cause flow of gas to said burner and ignition thereof, and to detect, store, and compare said voltage values generated by said flame-detect circuit means so as to effect immediate de-energizing of said igniter when said current flow through a burner flame appears, and to enable continued flow of gas to said burner so long as said burner flame is sustained,

said valve means including a valve,

said circuit means for controlling operation of said valve means including an electrical winding, a capacitor, and first and second controlled solid state switches,

said switches being controlled by signals from said microcomputer and from an oscillator circuit,

said switches being connected in circuit so as to enable said capacitor to charge when both said switches are non-conductive and to discharge through said winding and said first switch when said first switch is conductive and said second switch is non-conductive,

said discharging of said capacitor being effective to open said valve.

4,444,552

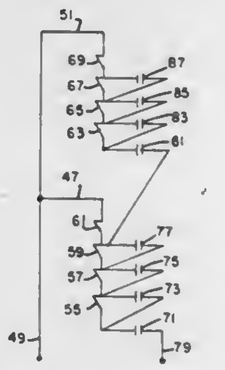
SUBMINIATURE ARRAY CIRCUITRY

Boyd G. Brower, Williamsport, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Apr. 2, 1982, Ser. No. 365,057

Int. Cl.³ F21K *5/00*

U.S. Cl. 431—359 **10 Claims**



1. A miniaturized multilamp photoflash array having a support member with a printed circuit on the inner surface thereof and a plurality of flashlamps each having a pair of electrically conductive leads affixed to said printed circuit, said array characterized by the improvement wherein a plurality of flashlamps are connected to a common conductor by a continuous strip of switching material forming a plurality of series-connected normally-closed switches.

4,444,553

HEAT TREATING A PARTICULATE COMMODITY

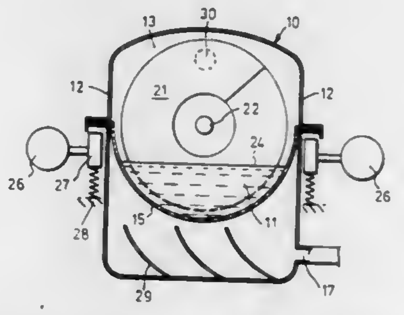
Spyros D. Christodoulou, New Barnet, England, assignor to Din Engineering Limited, London, England

Filed Apr. 13, 1982, Ser. No. 368,066

Claims priority, application United Kingdom, Apr. 16, 1981, 8112190

Int. Cl.³ F27B *15/00, 9/14, 9/16;* **A23L** *3/00*

U.S. Cl. 432—15 **12 Claims**



1. An apparatus for heat treating a particulate commodity, said apparatus comprising:

(i) an enclosure defined in part by a lower wall comprising a concave perforate deck;

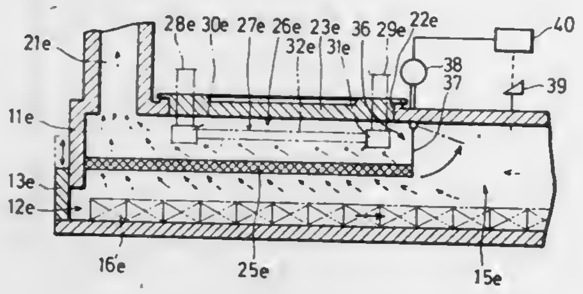
(ii) supply means for supplying fluid under pressure through the perforate deck to said enclosure;

(iii) temperature control means for controlling a temperature of said fluid supply under pressure through the perforate

deck, whereby a bed of particles in said enclosure can be fluidised and heat treated;
- (iv) transfer means disposed during fluidisation at least partially within the bed and operable to controlledly move said particles continuously or stepwise along said deck, said transfer means being adapted to control a dwell time of the particles in said enclosure while simultaneously improving conditions of fluidisation within the bed by substantially eliminating stagnant areas and reducing bubble formation; and
- (v) vibratory means operable to vibrate the deck with a component of vertical motion, whereby fluidisation of the particle bed is further enhanced.

4,444,554
HEATING METHOD AND APPARATUS

Ryozo Echigo, Tokyo, and Takaaki Noda, Aichi, both of Japan, assignors to Daidotokushuko Kabushikikaisha, Japan
Filed May 13, 1982, Ser. No. 377,874
Claims priority, application Japan, May 13, 1981, 56-72483
Int. Cl.³ F27D *17/00;* **F27B** *9/00;* **F24H** *1/00*
U.S. Cl. 432—28 **7 Claims**



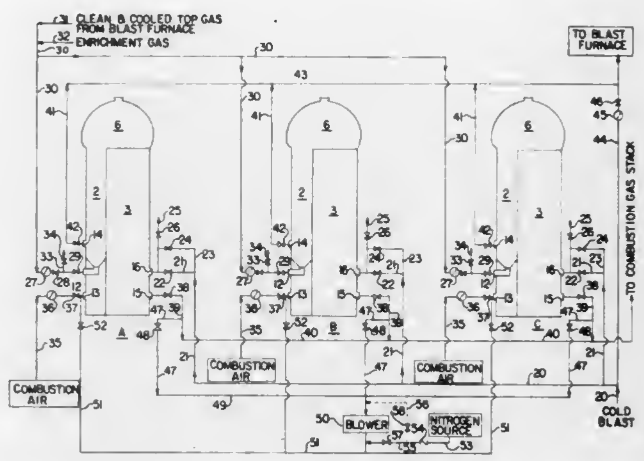
1. A method for heating materials such as metal rods comprising the steps of supplying high-temperature gases into a heating furnace, heating the material by the gases in a heating chamber of the furnace, and discharging the gases used for heating into a flue connected to and opened into the furnace, the gas-discharge step including the sub-steps of:
- (a) providing a gas-permeable partition having plural gas flow passages for allowing gases to flow from one side of said partition to the other side thereof,
- (b) bending said gas flow passages,
- (c) providing a flue, a space between said partition and said flue, and a recuperator in said space,
- (d) passing the gases through said gas-permeable partition separating said flue from said heating chamber of the furnace;
- (e) allowing the gases having passed through said partion to enter said space between said partition and flue; and
- (f) allowing the gases having entered said space to come into said flue.

4,444,555
METHOD FOR REDUCING STRESS CORROSION CRACKING IN HIGH-TEMPERATURE REGENERATIVE AIR HEATERS

Horace B. Edwardsen, Pittsburgh, and Donald J. Shellenberger, Bethel Park, both of Pa., assignors to Koppers Company, Inc., Pittsburgh, Pa.
Filed Apr. 26, 1982, Ser. No. 371,977
Int. Cl.³ F24H *7/00;* **C21B** *13/00*
U.S. Cl. 432—30 **23 Claims**

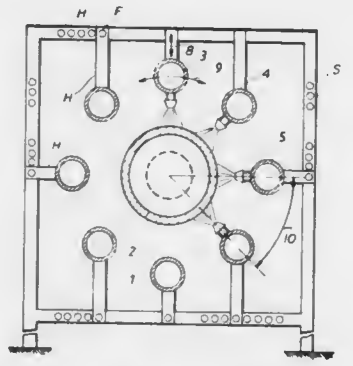
1. A method for reducing stress-corrosion cracking in metallic interior portions of a high-temperature regenerative air heater operating in heat-transferring modes comprising alternately extracting heat from a heat-surrendering gas stream and delivering heat to a heat-absorbing air stream, the method comprising:

storing within a heated regenerative air heater a gas charge substantially devoid of free oxygen, during a period of time between heat transferring modes, whereby the concentration of nitrogen-containing oxides is maintained at a level sufficient to alleviate stress-corrosion cracking in the metallic interior portions of the regenerative air heater.



4,444,556
COOLING APPARATUS

Conny Andersson, Västerås, Sweden, assignor to ASEA Aktiebolag, Västerås, Sweden
Filed May 12, 1982, Ser. No. 377,570
Claims priority, application Sweden, May 14, 1981, 8103029
Int. Cl.³ F27D *15/02;* **F25D** *17/02;* **C21D** *1/62*
U.S. Cl. 432—85 **4 Claims**



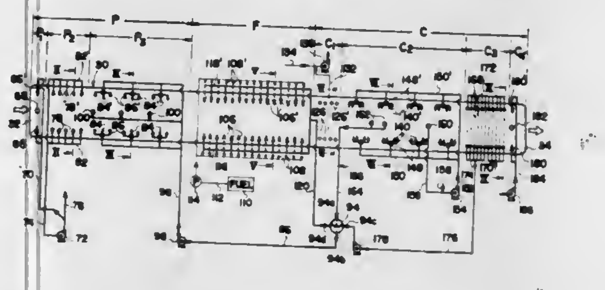
1. A cooling apparatus of the type wherein a hot metal tube or the like is caused to travel axially through a path extending through cooling fluid shower nozzles encircling and pointing towards the path, said apparatus comprising a plurality of individual tubes, positioning means for positioning the tubes arranged as a tubular cluster surrounding said path with the tubes extending longitudinally with respect to the path, the tubes each having a supply means for individually supplying it with the cooling fluid, and the tubes each having a longitudinally extending series of interspaced discharge means for discharging the fluid towards said path.

4,444,557
CONTINUOUS COMBUSTION FURNACE

Kensaku Kimura, Matsudo, and Toshio Watanabe, Kita-Kyushu, both of Japan, assignors to Kurosaki Furnace Industries Company Limited, Kita-Kyushu, Japan
Filed Dec. 18, 1981, Ser. No. 332,240
Int. Cl.³ F27B *9/00, 9/26*
U.S. Cl. 432—136 **29 Claims**

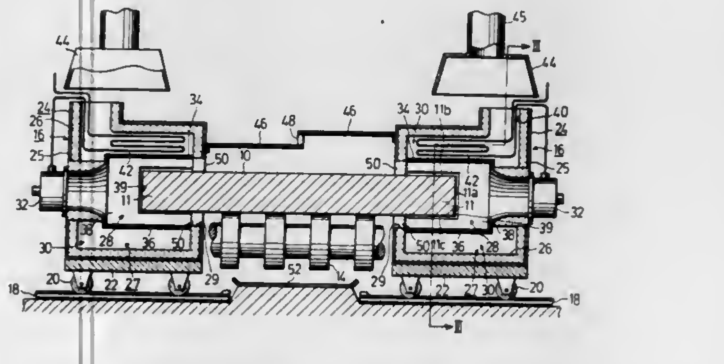
1. A continuous combustion furnace comprising a tunnel kiln elongated between an open entrance end and an open exit end and having a pair of side walls spaced apart substantially in parallel laterally of the kiln and longitudinally extending between the entrance and exit ends of the kiln and an upper wall bridging the side walls throughout the length of the kiln for forming a tunnel longitudinally extending between the entrance and exit ends of the kiln, each of said side walls of the

kiln being formed with a plurality of hot-gas injection ports and a plurality of suction ports, which are located closer to said entrance end than to said exit end and which are open to the tunnel in the kiln in lateral directions of the kiln, said suction ports respectively communicating with said hot-gas injection ports, the hot-gas injection ports in each of the side walls being formed in alternately upper and lower portions of the side wall and in vertically staggered relationship to the hot-gas injection ports in the other side wall, the suction ports in communication with the hot-gas injection ports in the upper and lower portions of each side wall being located in lower and upper portions, respectively, of the side wall; a plurality of burner chambers and a plurality of flame ports, which are located between said exit end of the kiln and the longitudinal coverage of said hot-gas injection ports and said suction ports, the flame ports being open to the tunnel in the kiln in lateral directions of the kiln and respectively communicating with said burner chambers, the burner chambers and the flame ports in each of the side walls being formed in alternately upper and lower portions of the side walls longitudinally of the kiln and in vertically staggered relationship to the burner chambers and the flame ports, respectively, in the other side wall longitudinally of the kiln; and a plurality of vertical cooling-gas injection chambers, a number of cooling-gas outlet slots and a number of cooling-gas circulation ports, which are located between said exit end of the kiln and the longitudinal coverage of said burner chambers and said flame ports, the cooling-gas outlet slots and the cooling-gas circulation ports being open to the tunnel in the kiln in lateral directions of the kiln, the cooling-gas injection chambers being arranged in staggered relationship to the cooling-gas injection chambers in the other of the side walls longitudinally of the kiln, said cooling-gas outlet slots being formed in a plurality of groups in a lower portion of each side wall and open to the tunnel in the kiln in lateral directions of the kiln, and said cooling-gas circulation ports being formed in a plurality of groups in an upper portion of each of the side walls, each of said cooling-gas injection chambers in each of the side walls providing communication from each group of said cooling-gas circulation ports to each group of said cooling-gas outlet slots.



4,444,558
SYSTEM FOR HEATING BROADWISE-END PORTIONS OF METAL MATERIAL

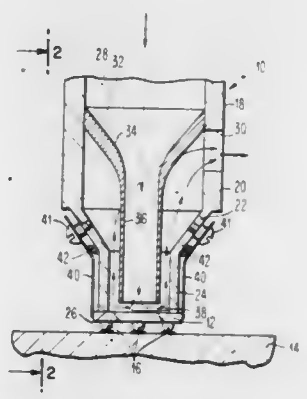
Koichiro Kinto, Mie, Japan, assignor to Daidotokushuko Kabushikikaisha, Japan
Filed Sep. 29, 1982, Ser. No. 426,502
Int. Cl.³ F27B *9/22, 14/14*
U.S. Cl. 432—225 **7 Claims**



1. A system for heating the broadwise-end portions of metal plate which comprises (a) a means for conveying a metal material and (b) a pair of heater blocks spaced apart from each other with a predetermined line of conveyance for the metal material extending therebetween and each adapted to heat one of the broadwise-end portions of the material and is characterized in that each said heater block includes:
- (i) a casing which is provided with a space to receive said broadwise-end portion of the material and an opening to allow said broadwise-end portion of the material to enter said space and is located in such a position as allows said broadwise-end portion of the material to pass through said space when the material is conveyed along said conveyance line;
- (ii) a burner connected to said casing for blowing high-temperature gases against the broadwise-end surface of said broadwise-end portion of the material;
- (iii) a horizontal partition means disposed directly above the upper surface of said broadwise-end portion of the material in conveyance so as to allow a portion of said high-temperature gases blown against said broadwise-end surface of the material to flow along said upper surface of broadwise-end portion of the material; and
- (iv) a horizontal partition means disposed directly below the lower surface of said broadwise-end portion of the material in conveyance so as to allow the other portion of said high-temperature gases blown against said broadwise-end surface of the material to flow along said lower surface of broadwise-end portion of the material.

4,444,559
PROCESS AND APPARATUS FOR UNSOLDERING SOLDER BONDED SEMICONDUCTOR DEVICES

Karl Schink, Wappingers Falls, and Herbert Wenskus, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 28, 1982, Ser. No. 392,905
Int. Cl.³ F24J *3/00*
U.S. Cl. 432—226 **4 Claims**



1. An apparatus for removing solder bonded integrated circuit semiconductor devices from a substrate leaving the solder pads on the substrate with only a thin solder layer in condition for replacement of the device comprising

a hollow housing element having an open end with a seating portion adapted to engage the flat back side of a semiconductor device, an inlet for admitting heated gases to the interior of said housing, and an outlet for heated gases,

a baffle within said housing having an annular upper portion in engagement with the inside surface of said hollow housing element below said inlet, and a lower portion of constricted size with a cross-sectional area less than the cross-sectional area of said housing element, and an end portion recessed from said seating portion of said housing, said baffle adapted in use to direct heated gases downwardly against the back side surface of a semiconductor device in engagement with said seating portion of said housing, outwardly from the center of said lower portion of said baffle and upwardly, and to subsequently direct the heated gases out said outlet, a clamping means on said housing adjacent said open end to secure a semiconductor device in a seated sealed relation on said seating portion,

a means to selectively activate said clamping means from holding and releasing engagement with a device when seated on said seating portion.

4,444,560
DENTAL INSTRUMENT-PDL SYRINGE

John Jacklich, 102 Western Court, Santa Cruz, Calif. 95060
Continuation of Ser. No. 320,551, Nov. 12, 1981, abandoned.
This application May 20, 1983, Ser. No. 495,732
Int. Cl.^{3} A61M *1/00*
U.S. Cl. 604—224 **20 Claims**

1. A high pressure dental syringe comprising in combination:

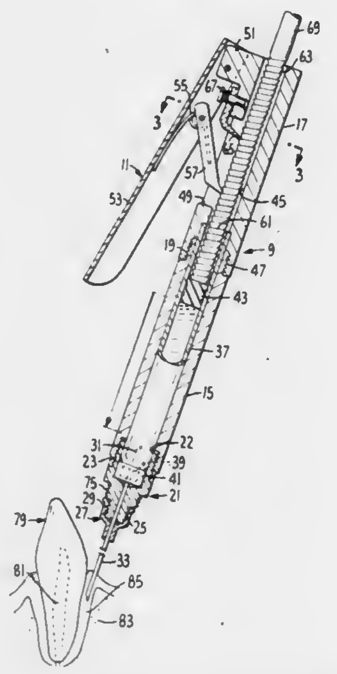
a. an elongated cylindrical chamber without a holding handle for receiving a carpule containing a medication, said elongated cylindrical chamber having two separable main body parts, each body part being of at least carpule length and having connecting means at one end thereof for positively securing the two parts together at the mid-area of said elongated cylindrical chamber after said carpule has been inserted completely into one of said two parts;

b. actuating means arranged so that the elongated cylindrical chamber can be held in the palm of a user's hand and be operated by the user's thumb and/or fingers including an operating handle pivotably mounted on the other of said two parts of said cylinder, the free end of said operating handle directed towards the area of said connecting means for said two parts of said cylindrical chamber and being biased outwardly to a first position at an acute angle to said chamber and being movable to a second position parallel to said chamber;

c. an elongated one-piece piston rod without any projections thereon movable within said chamber for directly engaging one end of said carpule, said one-piece rod having a plurality of ratchet teeth thereon;

d. A ratchet pivoted to said operating handle and extending into said chamber in operative relationship to engage said ratchet teeth and to force said piston rod toward the distal end of said cylindrical chamber;

e. means biased into said ratchet teeth to permit said piston rod to move in said cylindrical chamber for exerting force on said carpule but to prevent reverse motion of said piston rod and thus release of the force on said carpule;



f. a cannula extending from the distal end of said cylindrical chamber whereby:

g. movement of said operating handle will force said piston rod against the carpule to discharge liquid from said carpule out through said cannula at high pressure.

CHEMICAL

4,444,561
COPOLYMERS WHICH CONTAIN BASIC GROUPS AND ARE USED AS ANTIREDEPOSITION AGENTS IN WASHING AND AFTER-TREATING TEXTILE GOODS CONTAINING SYNTHETIC FIBERS

Walter Denzinger, Speyer; Wolfgang Trieselt, Ludwigshafen; Johannes Perner, Neustadt, and Heinrich Hartmann, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany
Filed Feb. 17, 1983, Ser. No. 467,443
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1982, 3206883
Int. Cl.^{3} B08B *3/04*
U.S. Cl. 8—137 **2 Claims**

1. A process for washing and after-treating textile goods containing synthetic fibers, wherein, as an antiredeposition agent, a copolymer is employed which contains, as copolymerized monomers,

(a) from 50 to 90% by weight of one or more vinyl esters of C_1–C_4 aliphatic carboxylic acids,

(b) from 5 to 35% by weight of one or more N-vinyllactams,

(c) from 1 to 20% by weight of one or more monomers containing basic groups, or of salts or quaternization products of these monomers, and

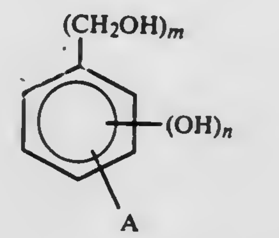
(d) from 0 to 20% by weight of one or more further monomers which are copolymerizable with monomers (a), (b) and (c) and are free from carboxyl and basic groups, the percentages in each case being based on the sum of the monomers, with the proviso that the percentages sum to 100.

4,444,562
LIGNIN-BASED DISPERSANTS ESPECIALLY ADAPTED FOR THERMOSOL DYEING

Stephen Y. Lin, Wausau, Wis., assignor to Reed Lignin, Inc., Greenwich, Conn.
Continuation-in-part of Ser. No. 123,696, Feb. 22, 1980, Pat. No. 4,308,203. This application Oct. 2, 1981, Ser. No. 308,119
Int. Cl.^{3} C07G *1/00;* C09K *3/00;* D06P *67/00*
U.S. Cl. 8—528 **41 Claims**

1. In a method for the production of a lignin adduct, the steps comprising:

forming an aqueous reaction mixture of a sulfonated lignin material and a methylol hydroxybenzene compound, said mixture containing about 0.05 to 4.0 millimoles of said compound per gram of the lignin moiety in said lignin material, said compound having the general formula:



wherein "m" and "n" are both integers from 1 to 3, the total value of "m" and "n" does not exceed 4, and "A" is a one- to four-carbon alkyl group optionally present therein;

establishing in said mixture a temperature in the range of at least 105° to about 180° Centigrade and a pH of about 3 to 12 to effect reaction between said lignin material and said compound; and

maintaining said mixture at a temperature in said range and at a pressure above atmospheric for a period of from about 5 minutes to 8 hours to substantially convert said lignin material and said compound to a lignin adduct.

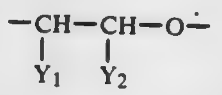
4,444,563
DYEING ASSISTANT AND USE THEREOF IN DYEING OR PRINTING SYNTHETIC POLYAMIDE FIBRE MATERIALS

Heinz Abel, Reinach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Sep. 2, 1982, Ser. No. 414,103
Claims priority, application Switzerland, Sep. 7, 1981, 5752/81
Int. Cl.^{3} D06P *1/62*
U.S. Cl. 8—588 **20 Claims**

1. A dyeing assistant which comprises at least

(A) an alkylsulfonate, alkylbenzenesulfonate or alkylnaphthalenesulfonate, the straight or branched alkyl chain of which contains 3 to 22 carbon atoms, and

(B) a quaternary ammonium compound which contains at least one basic nitrogen atom to which are attached at least one polyglycol ether chain and at least one aliphatic radical of 10 to 22 carbon atoms, said polyglycol ether chain containing at least one grouping of the formula



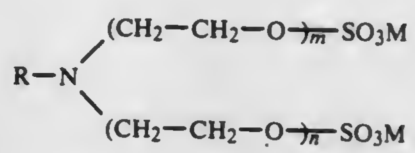
$$-\underset{Y_1}{\underset{|}{CH}}-\underset{Y_2}{\underset{|}{CH}}-O- \qquad (1)$$

wherein one of Y_1 and Y_2 is hydrogen and the other is the phenyl radical.

4,444,564
PROCESS FOR DYEING FIBER MATERIAL MADE OF NATURAL POLYAMIDES WITH ANIONIC WOOL DYES AT pH 4.5 TO 5.5 IN THE PRESENCE OF A DYEING ASSISTANT

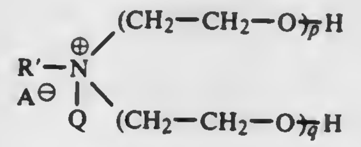
Heinz Salathé, Bretzwil, Switzerland; Hermann Flensberg, Weil am Rhein, and Harry Schaetzer, Wehr, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Mar. 11, 1983, Ser. No. 474,352
Claims priority, application Switzerland, Mar. 12, 1982, 1556/82
Int. Cl.^{3} D06P *1/60, 3/06*
U.S. Cl. 8—588 **23 Claims**

1. A process for the non-skittery and level dyeing of fibre material made of natural polyamides with dyes or mixtures of dyes in the presence of a mixture of dyeing assistants, which comprises using for dyeing said material an aqueous liquor which contains at least one anionic wool dye which, under the dyeing conditions defined below, at 1/1 standard depth, exhausts to at least 95%, and a dyeing assistant mixture containing an anionic compound of the formula



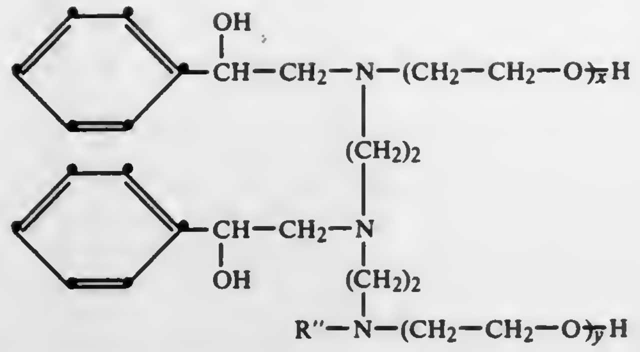
$$R-N\begin{array}{l}\diagup (CH_2-CH_2-O)_m-SO_3M\\ \diagdown (CH_2-CH_2-O)_n-SO_3M\end{array} \qquad (1)$$

in which R is an alkyl or alkenyl radical having 12 to 22 carbon atoms, M is hydrogen, an alkali metal or ammonium, and m and n are integers such that the sum of m and n is 2 to 14, a quaternary compound of the formula



$$\begin{array}{l}R'-\overset{\oplus}{\underset{\underset{Q}{|}}{N}}\begin{array}{l}\diagup (CH_2-CH_2-O)_pH\\ \diagdown (CH_2-CH_2-O)_qH\end{array}\\ A^{\ominus}\end{array} \qquad (2)$$

in which R' is an alkyl or alkenyl radical having 12 to 22 carbon atoms, A is an anion, Q is a substituted or unsubstituted alkyl radical, and p and q are integers such that the sum of p and q is 20 to 50, and a non-ionic compound of the formula



(3)

in which R″ is an alkyl or alkenyl radical having 12 to 22 carbon atoms, and x and y are integers such that the sum of x and y is 80 to 140, and which liquor can also contain an ammonium or alkali metal salt, and finishing the dyeing regardless of its depth at pH 4.5–5.5 and at a temperature of 95° to 105° C.

4,444,565
METHOD AND FUEL COMPOSITION FOR CONTROL OF OCTANE REQUIREMENT INCREASE

Michael C. Croudace, Huntington Beach, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Dec. 20, 1982, Ser. No. 451,279

Int. Cl.³ C01L ***1/18***

U.S. Cl. 44—68 **39 Claims**

1. A method for operating a spark ignition internal combustion engine which comprises introducing with the combustion intake charge to said engine an octane-requirement-increase inhibiting amount of (a) an oil-soluble iron compound and (b) an oil soluble oxygen-containing compound selected from the group consisting of mono carboxylic acids having from 2 to 10 carbon atoms and ester derivatives thereof derived from said monocarboxylic acid and a tertiary alkyl alcohol having from 1 to 8 carbon atoms.

4,444,566
STABILIZED MIDDLE DISTILLATE FUEL COMPOSITION

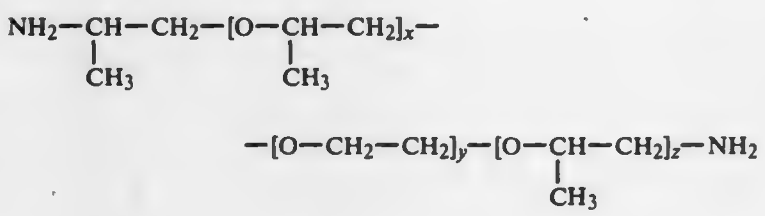
Wheeler C. Crawford, Houston, Tex.; William M. Sweeney, Wappingers Falls, and Rodney L. Sung, Fishkill, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 4, 1982, Ser. No. 432,505

Int. Cl.³ C10L ***1/22***

U.S. Cl. 44—72 **10 Claims**

1. A middle distillate fuel composition comprising a mixture of hydrocarbons boiling in the range from about 300° F. to about 750° F. and an effective sediment inhibiting amount of a alpha omega diamino poly(oxypropylene) poly(oxyethylene) poly(oxypropylene) having the following formula:



$$NH_2-\underset{\displaystyle CH_3}{\underset{|}{CH}}-CH_2-[O-\underset{\displaystyle CH_3}{\underset{|}{CH}}-CH_2]_x-$$
$$-[O-CH_2-CH_2]_y-[O-\underset{\displaystyle CH_3}{\underset{|}{CH}}-CH_2]_z-NH_2$$

wherein x and z each has an approximate value ranging from 1 to 3 and the sum of x plus z ranges from 3 to 4 and y has an approximate value ranging from 10 to 16 and a solubilizing agent effective for solubilizing the diamino poly(oxyalkylene) in the hydrocarbon mixture comprising a C_1 to C_4 alkanol and an alkylated benzene having one or two alkyl substituents wherein the alkyl substituents has from 1 to 2 carbon atoms.

4,444,567
MOTOR FUEL COMPOSITION CONTAINING AN ASHLESS ANTIKNOCK AGENT

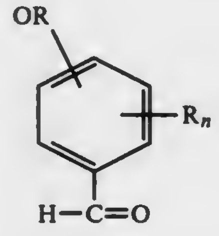
Lyle D. Burns, and Robert M. Parlman, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 394,214, Jul. 1, 1982, abandoned. This application Mar. 31, 1983, Ser. No. 480,962

Int. Cl.³ C10L ***1/18***

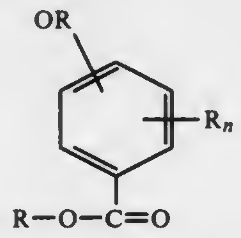
U.S. Cl. 44—78 **17 Claims**

1. An internal combustion fuel composition comprising a liquid hydrocarbon motor fuel containing a small but effective amount, sufficient to impart reduced knocking tendencies to said motor fuel, of at least one ashless antiknock additive characterized by the formulae:



(a)

and



(b)

wherein each R can be the same or different and is a straight or branched chain alkyl substituent having from 1 to 4, inclusive, carbon atoms and n is 0, 1, or 2.

4,444,568
METHOD OF PRODUCING FUEL GAS AND PROCESS HEAT FRON CARBONACEOUS MATERIALS

Hans Beisswenger, Bad Soden; Georg Daradimos, Maintal; Martin Hirsch, Friedrichsdorf; Ludolf Plass, Kronberg, and Harry Serbent, Hanau, all of Fed. Rep. of Germany, assignors to Metallgesellschaft, Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Mar. 26, 1982, Ser. No. 362,266

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1981, 3113993

Int. Cl.³ C10J ***3/54***

U.S. Cl. 48—197 R **13 Claims**

1. A method of generating a fuel gas and process heat from a carbonaceous material which comprises:

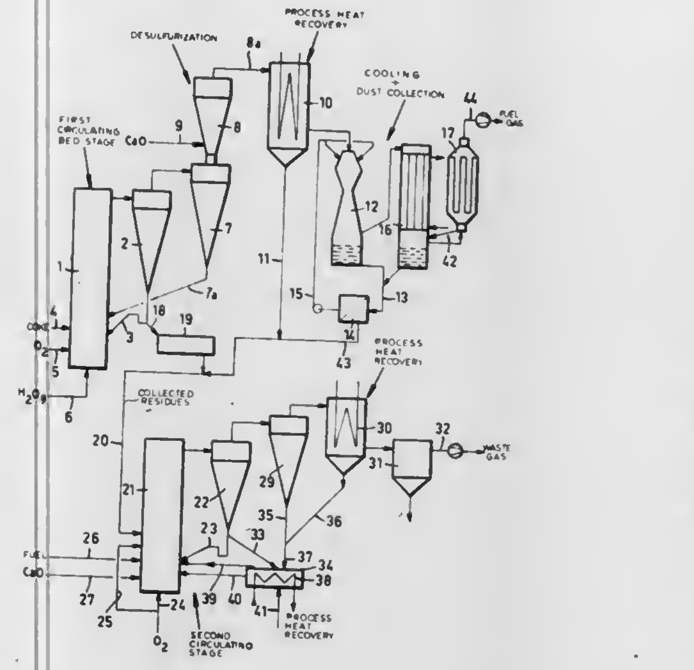
(a) reacting said carbonaceous material with oxygen-containing gases in the presence of steam in a circulating fluidized bed of a fluidized bed reactor at a temperature of 800° C. to 1100° C. in a first fluidized bed stage in which solids are entrained by gases from the fluidized bed, separating the entrained solids from the gas phase and recycling at least a portion of the separated solids to the fluidized bed to react 40 to 80% of the carbon contained in said material and produce a fuel gas therefrom contained in said gas phase;

(b) contacting thereafter said gas phase at a temperature of 800° C. to 1000° C. with particles of a sulfur-trapping solid which are fluidized in said gas phase thereby removing sulfur therefrom;

(c) recovering sulfur-trapping particles from the gas phase following step (b);

(d) cooling the gas phase following the recovery of the sulfur-trapping particles therefrom and subjecting the cooled gas phase to at least one dust collection step to obtain said fuel gas and collect dust from the cooled gas phase; and

(e) feeding solids withdrawn from said first circulating fluidized bed stage, the dust collected in step (d), the particles recovered in step (c), and aqueous condensate, to a second circulating fluidized bed stage and burning combustible constituents therein with an oxygen excess of 5 to 40% to produce a waste gas which is discharged to the atmosphere after process heat recovery.



4,444,569
GASIFICATION PROCESS FOR CARBONACEOUS MATERIALS

John C. Haas, El Sobrante, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jan. 14, 1983, Ser. No. 457,855

Int. Cl.³ C10J ***3/46, 3/54***

U.S. Cl. 48—197 R **7 Claims**

1. A method for gasification of carbonaceous material comprising:

(a) introducing a carbonaceous material into a lower portion of a vertically elongated reaction vessel having a lower portion and an upper portion, wherein the effective diameter of the upper portion of said vessel is larger than the effective diameter of the lower portion of said vessel, wherein said reaction vessel has a means for substantially impeding vertical backmixing of vertically moving solids in said vessel;

(b) introducing a solid heat-transfer material into the upper portion of said vessel, the physical characteristics of said heat-transfer material and said carbonaceous material differing such that a superficial velocity of a fluid flowing upwardly through the lower portion of said vessel is greater than the minimum fluidizing velocity of the heat-transfer material and the terminal velocity of the carbonaceous material, but is less than the terminal velocity of the heat-transfer material;

(c) passing a gasification agent upwardly through said vessel at a rate sufficient to fluidize the heat-transfer material and entrain the carbonaceous material in the lower portion of said vessel to maintain substantially countercurrent vertical flow of the heat-transfer material and carbonaceous material in the said vessel without substantial top-to-bottom backmixing of the heat-transfer material and the carbonaceous material in the lower portion of said vessel; whereby the gasification agent reacts with the carbonaceous material to form a hot char and a gaseous product, wherein the heat necessary for this reaction is supplied by the heat-transfer material; whereby the heat-transfer material substantially flows downwardly in the reaction vessel, through the upper portion of said vessel and in a fluidized state through the lower portion of said vessel; whereby the carbonaceous material substantially flows upwardly in the reaction vessel, in an entrained state through the lower portion of said vessel and in a fluidized state through the upper portion of said vessel;

(d) removing the heat-transfer material from the lower portion of said vessel at a temperature substantially lower than the temperature at which the heat-transfer material was introduced into said vessel;

(e) removing the hot char and the gaseous product from said vessel; and

(f) separating the hot char from the gaseous product.

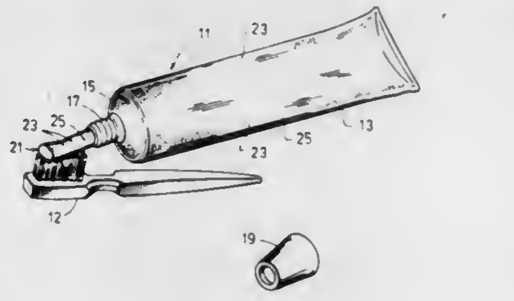
4,444,570
FUNCTIONAL AGGLOMERATED SPECKLES AND METHOD FOR MANUFACTURE THEREOF

Jordan Barth, East Brunswick, and James Norfleet, Plainfield, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 307,273, Sep. 30, 1981, Pat. No. 4,376,763. This application Aug. 30, 1982, Ser. No. 413,187

Int. Cl.³ C09K ***3/14***

U.S. Cl. 51—302 **11 Claims**



1. Functional agglomerated speckles, for incorporation in dentifrices, which comprise agglomerates of a water insoluble powdered functional dental material and water insoluble, ethanol soluble ethyl cellulose.

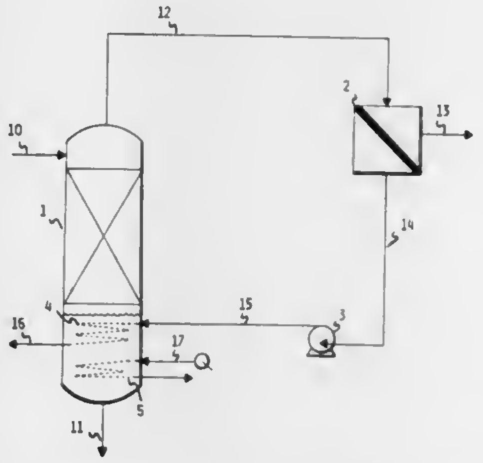
4,444,571
ENERGY-EFFICIENT PROCESS FOR THE STRIPPING OF GASES FROM LIQUIDS

Stephen L. Matson, Bend, Oreg., assignor to Bend Research, Inc., Bend, Oreg.

Filed Mar. 7, 1983, Ser. No. 472,713

Int. Cl.³ B01D ***53/22***

U.S. Cl. 55—16 **23 Claims**



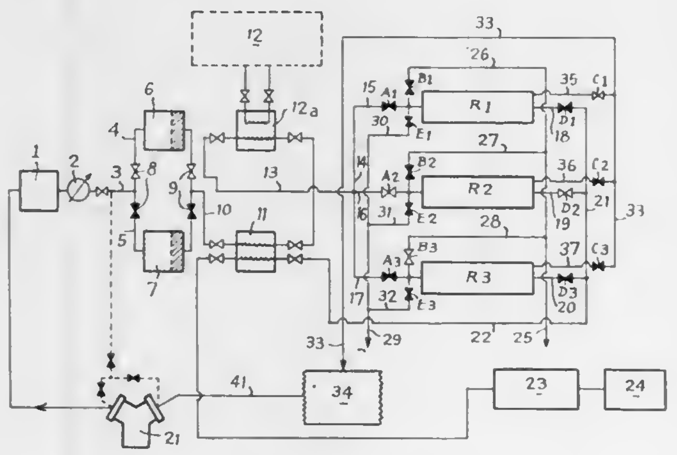
1. In a process for stripping noncondensable or high-vapor-pressure gases from a liquid by contacting said liquid with a stripping vapor and thereby producing an overhead mixture of gas and stripping vapor, the improvement comprising:

(a) separating said stripping vapor in said overhead mixture by passing it through a membrane that is substantially

permeable to said separated stripping vapor and substantially impermeable to said gas;
(b) compressing and condensing said separated stripping vapor; and
(c) recovering said separated, condensed stripping vapor and the sensible and latent heat thereof.

4,444,572
PROCESS AND INSTALLATION FOR PURIFICATION OF THE HELIUM CONTAINED IN A MIXTURE OF GAS

Michel F. Avon, Carry-le-Rouet, and Gérard R. Markarian, Marseille, both of France, assignors to Societe Anonyme dite: Compagnie Maritime d'Expertises S.A., France
Filed Jul. 27, 1982, Ser. No. 402,335
Claims priority, application France, Jul. 28, 1981, 81 14809
Int. Cl.^{3} B01D *53/04*
U.S. Cl. 55—26 **11 Claims**

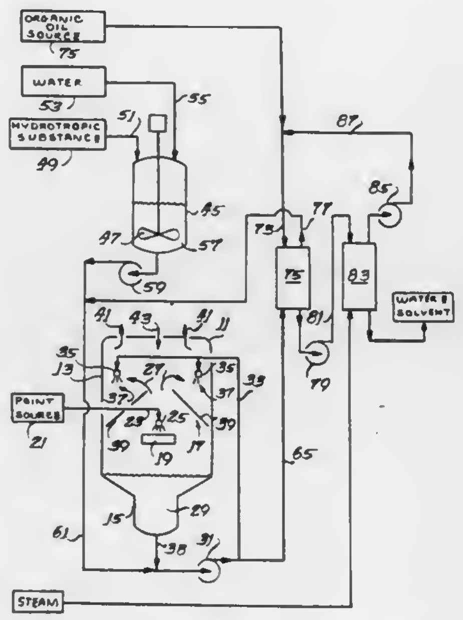


1. A process for purification of the helium contained in a mixture of gases and other impurities, employing a pre-treatment unit to retain the impurities such as water, carbon dioxide gas and heavy organic compounds, and at least one chromatographic reactor located downstream of said pre-treatment unit, said process comprising the following steps:
adjusting the pressure of the mixture of gas at the inlet to the reactor until the working pressure of the phase of adsorption of the reactor is obtained, this pressure being between 10 and 30 bars;
adjusting the temperature of the mixture of gas at the inlet to the reactor until the temperature is between −15° C. and 35° C.; and
sending the mixture of gas into the reactor and passing it through an adsorbent, which comprises a microporous charcoal whose pores are of dimensions less than or equal to 20 A.

9. An installation for purifying the helium contained in a hyperbaric mixture of respiratory gas, comprising a pre-treatment unit comprising at least one filter containing an adsorbent and/or an absorbent, at least one chromatographic reactor for accepting at the inlet thereof the gas from the filter and from the outlet of which purified helium is sent to a booster, and a high pressure storage unit for accepting the purified helium, wherein the mixture of compressed gas issuing from the pre-treatment unit is sent into an exchanger device comprising an economizer and a cooler, itself connected to a refrigerating unit, which device is located downstream of said pre-treatment unit and upstream of said reactor to place the mixture of gas at the working temperature of the adsorption phase of the reactor, which temperature is in the range −15° C. to −35° C.

4,444,573
HYDROTROPES AND USES THEREOF

David R. Cosper, Downers Grove, and Gretchen L. McKay, Addison, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.
Filed Jun. 21, 1982, Ser. No. 390,294
Int. Cl.^{3} B01D *47/00*
U.S. Cl. 55—37 **9 Claims**



1. A method for using an aqueous hydrotrope solution to recover continuously at least a portion of an organic solvent from a stream of air containing the solvent, the method comprising the steps of: (a) continuously introducing the stream of air containing the solvent into a scrubber and simultaneously adding thereinto the aqueous hydrotrope solution while simultaneously contacting the stream of air containing the solvent with the aqueous hydrotrope solution, thereby continuously producing a first scrubber product stream containing scrubbed air and a second scrubber product stream containing the aqueous hydrotrope solution and the solvent; (b) then continuously introducing the second scrubber product stream into an extractor while simultaneously adding thereinto an organic oil, thereby producing a first extractor product stream containing a recovered form of the aqueous hydrotrope solution, the solvent thereby having been removed substantially from the first extractor product stream, and a second extractor product stream containing the organic oil and the solvent; and (c) then continuously introducing the second extractor product stream into a stripper while simultaneously adding thereinto a sufficient amount of steam for producing a first stripper product stream containing a recovered form of the organic oil, the solvent thereby having been removed substantially from the first stripper product stream, and a second stripper product stream containing the solvent.

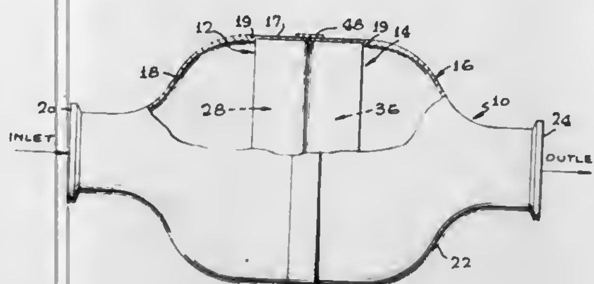
4,444,574
PARTIALLY-CARBONIZED POLYACRYLONITRILE FILTER

George Tradewell, Rte. 903, Jim Thorpe, Pa. 18229, and W. Novis Smith, 135 S. 18th St., Philadelphia, Pa. 19103
Filed Oct. 6, 1982, Ser. No. 433,154
Int. Cl.^{3} B01D *46/04*
U.S. Cl. 55—96 **13 Claims**

1. A method for filtering pollutants from combustion exhaust, comprising the steps of:
placing a filter bag of polyacrylonitrile fibers, oxidized and carbonized to approximately 61% carbon, in a path defined by the exhaust, the exhaust passing through the filter bag, and periodically removing accumulation of pollutants from the filter bag.

4,444,575
FILTER SYSTEM

Frank H. Miller, Downey, and David V. Hull, Fountain Valley, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.
Filed Aug. 31, 1982, Ser. No. 413,309
Int. Cl.^{3} B01D *50/00*
U.S. Cl. 55—316 **10 Claims**

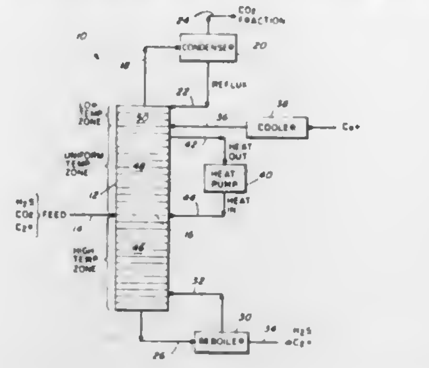


1. A filter system for removal of particulate, aerosol and vapor contaminants from air, which comprises:
an outer shell having an inlet cap connected to one end of said outer shell, said inlet cap including a first contaminated air inlet, and an outlet cap connected to said outer shell at the other end thereof, said outlet cap including a first clean air outlet;
a plurality of filter units mounted axially in said shell, each comprising two containers, one of said containers having a particle/aerosol filter element therein and the other of said containers having a vapor filter element therein, said two containers of each filter unit being positioned in contiguous relation;
a passage from one container to said other container of each said filter unit;
said containers having a diameter smaller than the inside diameter of said shell and positioned therein to define an annulus between the outer periphery of said containers and the inner surface of said shell;
a plurality of elongated inlet conduits in said annulus, each of said respective conduits defining an inlet passage to said one container of each of said filter units; and
a plurality of elongated outlet conduits in said annulus, each of said outlet conduits defining an outlet passage from said other container of each of said filter units;
said inlet conduits communicating with said inlet cap and said outlet conduits communicating with said outlet cap.

4,444,576
ENERGY-SAVING DISTILLATIVE SEPARATION USING LOW-TEMPERATURE HEAT INPUT

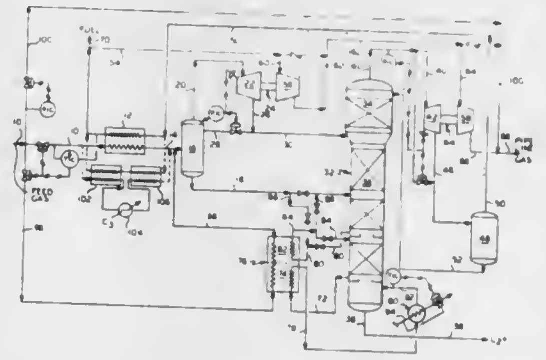
James M. Ryan, Weston, and John V. O'Brien, Shrewsbury, both of Mass., assignors to Koch Process Systems, Inc., Westboro, Mass.
Filed Nov. 1, 1982, Ser. No. 438,179
Int. Cl.^{3} B01D *3/40*
U.S. Cl. 62—20 **24 Claims**

21. In a method for the distillation of a feed stream containing carbon dioxide and C_2+ alkanes in a distillative column, containing a plurality of vapor-liquid contact devices therein, into an enriched carbon-dioxide overhead product stream and into an enriched C_2+ bottom product stream, and which includes introducing a liquid C_3–C_6 alkane additive into the distillative column above the feed inlet of the feed stream, to provide a relatively uniform constant temperature zone in the column, the upper and lower portions of the zone not varying in temperature greater than about 10° F., the improvement which comprises:
(a) extracting heat from the upper portion of the uniform temperature zone; and
(b) introducing substantially all of the heat so extracted into the lower portion of the uniform temperature zone, the heat introduced approximately at or above the feed inlet of the feed stream to said column, to reduce the energy requirement of the distillation, the extracting and introducing of heat carried out by an indirect heat exchange system.



4,444,577
CRYOGENIC GAS PROCESSING

Ethelwolbo P. Perez, London, England, assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Sep. 9, 1982, Ser. No. 416,202
Int. Cl.^{3} F25J *3/02*
U.S. Cl. 62—30 **25 Claims**

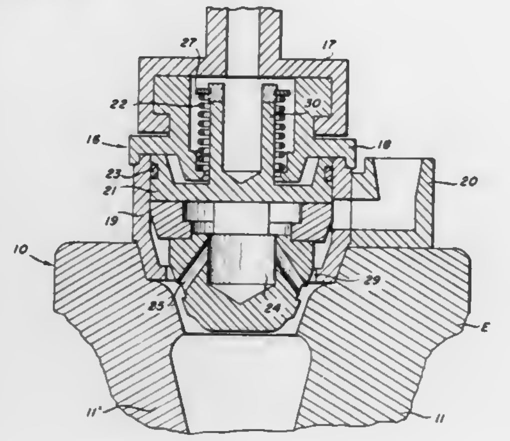


1. A method for separating ethane and higher molecular weight hydrocarbons from a natural gas feed, predominating in methane and containing significant amounts of ethane and higher molecular weight hydrocarbons and carbon dioxide, having a first pressure substantially above atmospheric pressure and a first temperature substantially below atmospheric temperature and at which first pressure and first temperature said feed comprises both vapor and liquid phases, comprising:
(a) separating said feed, in a separation zone, to separate the vapor phase of said feed, as a first vapor phase, and the liquid phase of said feed, as a first liquid phase;
(b) expanding at least a part of said first vapor phase to reduce the pressure thereof to a second lower pressure and reduce the temperature thereof to a second lower temperature and produce a first expanded fluid stream;
(c) fractionally distilling said first expanded fluid stream, any unexpanded remaining portion of said first vapor phase and said first liquid phase, in a fractionation zone, to produce a second vapor phase, significantly enriched in methane and carbon dioxide, and a second liquid phase, predominating in ethane and higher molecular weight hydrocarbons and containing insignificant amounts of methane;
(d) expanding at least a portion of said second vapor phase to reduce the pressure thereof to a third lower pressure and reduce the temperature thereof to a third lower temperature and produce a second expanded fluid stream, as a third vapor phase, predominating in methane, significantly enriched in carbon dioxide and containing insignificant amounts of ethane in higher molecular weight hydrocarbons, and a third liquid phase;
(e) separating said second expanded fluid stream, in a separation zone, to separate said third vapor phase and said third liquid phase;
(f) recycling said third liquid phase to said fractionation zone, as a reflux;
(g) recovering said third vapor phase as a product; and

(h) recovering said second liquid phase as a product;
(i) maintaining the temperature and pressure at all times throughout the process substantially within the liquid range of carbon dioxide.

4,444,578
PARISON MOLD AND BAFFLE SYSTEM FOR AN AUTOMATIC MOLDING MACHINE

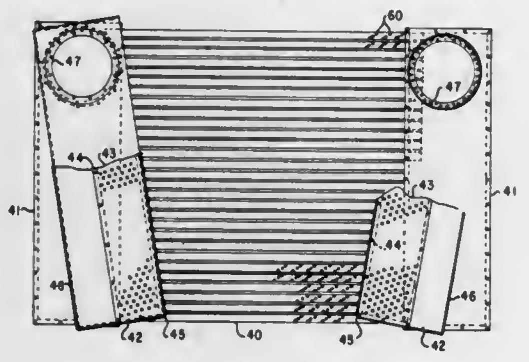
Elio G. Marroquin, Monterrey, Mexico, assignor to Vitro Tec Fideicomiso, Monterrey, Mexico
Filed Sep. 29, 1982, Ser. No. 426,647
Int. Cl.^{3} C03B *9/36*
U.S. Cl. 65—209 **5 Claims**



1. In an automatic glass molding machine of the I-S type, a two part split parison mold includes, at the bottle bottom end, an integral funnel for shaping and guiding a molten glass gob into the mold;
- a baffle and blow-down head including a piston and cylinder assembly, the lower outer wall of said cylinder conforming to the upper inner wall of said mold, said piston when said cylinder and mold are in engagement being normally biased to a position out of engagement with the inner surface of said funnel for performing the blow-down operation; and
- means for moving said piston into engagement with the inner wall of said funnel and closing the bottle bottom end of the mold during blow-back final shaping of the parison.

4,444,579
APPARATUS FOR TEMPERING GLASS SHEETS OF DIFFERENT SIZES AND SHAPES

Robert E. Dunn, Pittsburgh, and Samuel L. Seymour, Oakmont, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed Nov. 10, 1982, Ser. No. 440,488
Int. Cl.^{3} C03B *27/04*
U.S. Cl. 65—351 **15 Claims**

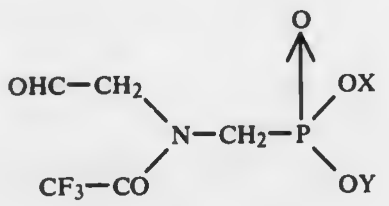


1. Apparatus for tempering glass sheets having different patterns that include flat or bent patterns having different lengths and different curvatures including end portions bent relative to a main portion about axes of bending that extend normal or oblique to the length of the glass sheet and parallel or oblique to the width of the glass sheet, said apparatus comprising an upper set of nozzle boxes and a lower set of nozzle boxes spaced from said upper set, a space between said sets, means for supporting a glass sheet within said space, each set of nozzle boxes comprising open-ended centrally disposed nozzle boxes and end nozzle boxes having apertured walls facing said space, means to impart relative movement between said supported bent glass sheet and said nozzle box sets and means to apply tempering medium to said nozzle boxes for discharge through said apertured walls under pressure, each of said nozzle boxes of each set having an apertured wall facing an apertured wall of a corresponding nozzle box of said other set, elongated nozzles extending from the centrally disposed nozzle boxes of each set of nozzle boxes, at least some of said elongated nozzles being readily removable from said apertured walls of said centrally disposed nozzle boxes and means for moving said end nozzle boxes relative to said centrally disposed nozzle boxes to interpose an inner portion of said end nozzle boxes between selected end portions of said centrally disposed nozzle boxes from which said elongated nozzles are removed and said space to change the length of said space faced by the centrally disposed nozzle boxes.

4,444,580
N-SUBSTITUTED N-(PHOSPHONOMETHYL)AMINOETHANAL DERIVATIVES AS HERBICIDES

Rajendra K. Singh, Maryland Heights, Mo., assignor to Monsanto Company, St. Louis, Mo.
Filed Nov. 1, 1982, Ser. No. 437,985
Int. Cl.^{3} A01N *57/20;* C07F *9/40*
U.S. Cl. 71—86 **7 Claims**

1. An N-(phosphonomethyl)aminoethanal derivative having the formula:



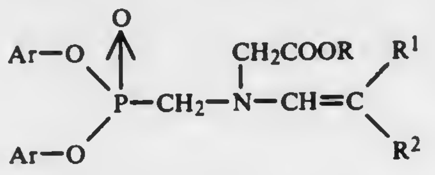
wherein X and Y are each individually selected from the group consisting of C_6 to C_{10} aryl and alkaryl radicals and halogen-substituted equivalents of the same radicals.

4. A method of controlling broadleaf weeds which comprises applying to the weeds a herbicidally effective amount of an N-(phosphonomethyl)aminoethanal derivative according to claim 1.

4,444,581
ENAMINE DERIVATIVES OF PHOSPHONIC ACID ESTERS AS HERBICIDES

Rajendra K. Singh, Maryland Heights, Mo., assignor to Monsanto Company, St. Louis, Mo.
Filed Dec. 13, 1982, Ser. No. 449,049
Int. Cl.^{3} A01N *57/22;* C07F *9/40*
U.S. Cl. 71—086 **9 Claims**

1. A compound having the formula:



wherein the groups Ar are each individually selected from the group consisting of phenyl, halophenyl, and C_1–C_4 alkoxyphenyl radicals; R is a C_1 to C_4 alkyl group; R^1 is selected from the group consisting of —COOR and —COR^3 wherein R^3 is a C_1 to C_4 alkyl or haloalkyl group; and R^2 is selected from hydrogen and R^1.

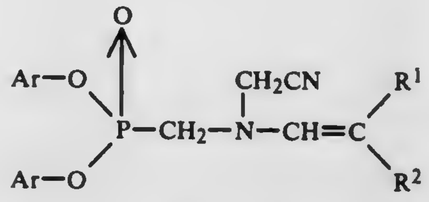
6. A herbicidal composition comprising from 5 to 95% by weight of a compound according to claim 1 and from 95 to 5% of adjuvant material.

8. A herbicidal method which comprises applying to a plant a herbicidally effective amount of a composition according to claim 6.

4,444,582
ENAMINE DERIVATIVES OF PHOSPHONIC ACID ESTERS AS HERBICIDES

Rajendra K. Singh, Maryland Heights, Mo., assignor to Monsanto Company, St. Louis, Mo.
Filed Dec. 13, 1982, Ser. No. 449,050
Int. Cl.^{3} A01N *57/22;* C07F *9/40*
U.S. Cl. 71—86 **9 Claims**

1. A compound having the formula:



wherein the groups Ar are each individually selected from the group consisting of phenyl, halophenyl, and C_1–C_4 alkoxyphenyl radicals; R^1 is selected from the group consisting of —COOR wherein R is a C_1 to C_4 alkyl group, and —COR^3 wherein R^3 is a C_1 to C_4 alkyl or haloalkyl group; and R^2 is selected from hydrogen and R^1.

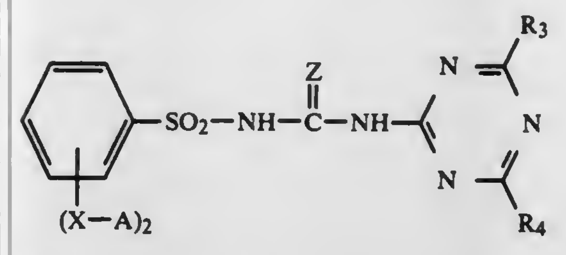
6. A herbicidal composition comprising from 5 to 95% by weight of a compound according to claim 1 and from 95 to 5% of adjuvant material.

8. A herbicidal method which comprises applying to a plant a herbicidally effective amount of a composition according to claim 6.

4,444,583
N-PHENYLSULFONYL-N'-TRIAZINYLUREAS

Willy Meyer, Riehen, and Werner Föry, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Continuation-in-part of Ser. No. 282,779, Jul. 13, 1981, abandoned. This application Jan. 17, 1983, Ser. No. 458,691
Claims priority, application Switzerland, Jul. 17, 1980, 5481/80; Nov. 5, 1980, 8216/80; Jun. 17, 1981, 3991/81
Int. Cl.^{3} C07D *251/42, 251/44, 251/46;* A01N *43/66*
U.S. Cl. 71—93 **12 Claims**

1. A compound selected from the group consisting of an N-phenylsulfonyl-N'-triazinyl-urea of the formula:



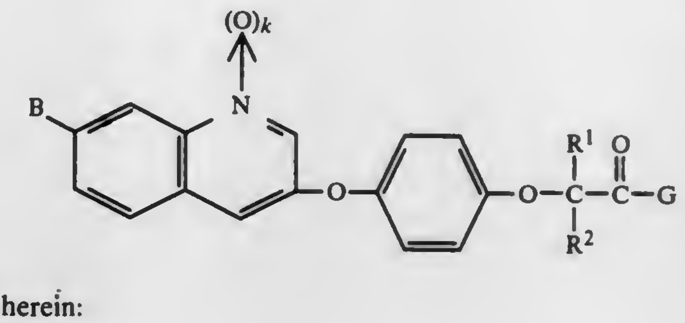
and the amine, alkali metal and alkaline earth metal salts thereof
wherein
- A is difluoromethyl or 1,1,2,2-tetrafluoroethyl,
- X is oxygen, sulfur, sulfinyl or sulfonyl,
- Z is oxygen or sulfur and
- each of R_3 and R_4, independently of the other, is hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms, haloalkyl of 1 to 4 carbon atoms, halo or alkoxyalkyl of at most 4 carbon atoms.

10. A method of suppressing plant growth, which method comprises applying thereto or to the locus thereof an effective amount of a compound according to claim 1.

4,444,584
ETHYL 2[4-(7-CHLOROQUINOLIN-3-YLOXY)PHENOXY]PROPIONATE, THE N-OXIDE, AND HERBICIDAL COMPOSITIONS AND METHODS EMPLOYING THEM

Alexander Serban, Doncaster, and Keith G. Watson, Box Hill North, both of Australia, assignors to ICI Australia Limited, Melbourne, Australia
Filed Oct. 29, 1980, Ser. No. 201,979
Claims priority, application Australia, Nov. 19, 1979, PE1379; Nov. 20, 1979, PE1398
Int. Cl.^{3} A01N *43/42;* C07D *215/20*
U.S. Cl. 71—94 **5 Claims**

1. A compound of formula



wherein:
- B is chloro;
- R^1 is methyl;
- R^2 is hyrogen;
- G is ethoxy; and
- k is chosen from 0 to 1.

2. A herbicidal composition comprising an active ingredient a compound as defined according to claim 1 and an agriculturally acceptable carrier therefor.

3. A process for severely damaging or killing unwanted plants which process comprises applying to said plants, or to the growth medium of said plants, an effective amount of a compound as defined according to claim 1.

4,444,585
PROCESS FOR PRODUCING METALS IN A VERY HIGH STATE OF PURITY IN RESPECT OF EUTECTIC ELEMENTS

Jean Plateau, Grenoble, France, assignor to Pechiney, France
Filed Mar. 25, 1983, Ser. No. 478,785
Claims priority, application France, Mar. 31, 1982, 82 05895
Int. Cl.^{3} C22B *7/00*
U.S. Cl. 75—63 **10 Claims**

1. A process for separating a purified metal from a eutectic-containing metal containing the metal to be purified and at least one first eutectic element, wherein the purified metal is separated by melting the eutectic-containing metal, cooling at least a portion of the molten eutectic-containing metal to form small metal crystals and a molten metal containing concentrated impurities, compacting the small metal crystals to form large purified metal crystals, and separating the large purified metal crystals from the metal containing concentrated impurities, the improvement comprising adding at least one second eutectic element to said eutectic-containing metal prior to formation of the small metal crystals.

4,444,586
METHOD OF MELTING COPPER IN A HEARTH MELT-DOWN FURNACE WITH ROOF BURNER SYSTEM

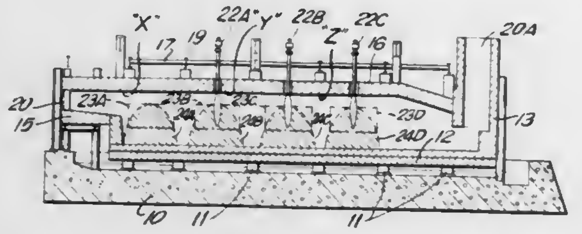
John S. Bienus, Englishtown; Konstantin G. Theofilos, So. Plainfield; John N. Carris, Mountainside, and Ernest M. DeLeo, Parlin, all of N.J., assignors to AMAX Inc., Greenwich, Conn.
Filed Dec. 1, 1982, Ser. No. 445,870
Int. Cl.^{3} C22B *15/04*
U.S. Cl. 75—65 R **5 Claims**

1. In a method for melting copper in a reverberatory furnace

comprised of a longitudinally extending hearth, a roof, side and end walls, and having a burner system at one end wall thereof to provide at least one flame extending longitudinally through said furnace for heating the hearth thereof and wherein metallic copper is charged to said furnace in the form of a plurality of unit portions disposed along said hearth, the improvement which comprises,

charging a plurality of unit portions of metallic copper along said hearth in spaced relationship,

melting said charge of copper by additionally using at least two oxygen lances extending downwardly from the roof of said furnace with the flame of each lance in head-on contact with a corresponding unit portion of copper disposed directly below said oxygen lance, and continuing the melting of said charge of copper using said oxygen lances,



whereby the time in said furnace starting with the charging of said unit portions of copper to the complete melting, treatment, and casting thereof is greatly reduced, as compared to the melting of the copper using the end burner system alone, and whereby the efficiency of said furnace is markedly improved in terms of less fuel consumed per ton of copper processed, in terms of increased production rate and in terms of increased furnace life as compared to the same furnace using the end burner system alone.

4,444,587

BRAZING ALLOY

Thomas J. Kelly, Suffern, N.Y., assignor to Huntington Alloys, Inc., Huntington, W. Va.

Filed Feb. 3, 1983, Ser. No. 462,781

Int. Cl.^{3} C22C *38/06*

U.S. Cl. 75—124 **3 Claims**

1. A chromium-nickel-manganese-iron alloy, the alloy especially useful for brazing iron-based alloys and exhibiting high-temperature corrosion resistance and stress rupture strength, the alloy consisting essentially of (in weight %) about 19–25% chromium, up to about 15% nickel, about 15–25% manganese, up to about 3% silicon, up to about 1.5% boron, up to about 0.3% carbon, up to about 5% aluminum and the balance iron.

4,444,588

FREE MACHINING, COLD FORMABLE AUSTENITIC STAINLESS STEEL

Ronald P. Ney, Sr., Reading, Pa., assignor to Carpenter Technology Corporation, Reading, Pa.

Filed Jan. 26, 1982, Ser. No. 342,848

Int. Cl.^{3} C22C *38/16*

U.S. Cl. 75—125 **16 Claims**

1. A free machining cold formable austenitic stainless steel alloy consisting essentially in weight percent of about

	w/o
Carbon	0.15 Max.
Manganese	2 Max.
Chromium	14–20
Nickel	8–12
Copper	1.3–2.4
Nitrogen	0.2 Max.

at least one element as a free machining additive in an amount of about 0.02–0.14 w/o, and the balance essentially iron, said alloy by being limited to the stated amount of copper being characterized by good machinability as measured by surface finish and when subjected to at least about 63% cold reduction in the hereinbefore described strain controlled compression test said alloy has improved cold workability as evidenced by being essentially free from edge checking.

4,444,589

HEAT RESISTANT ALLOY EXCELLENT IN BENDING PROPERTY AND DUCTILITY AFTER AGING AND ITS PRODUCTS

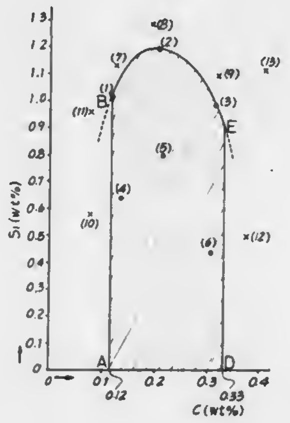
Junichi Sugitani, and Makoto Takahashi, both of Hirakata, Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Apr. 21, 1982, Ser. No. 370,197

Claims priority, application Japan, Apr. 27, 1981, 56-64550; Apr. 27, 1981, 56-64551

Int. Cl.^{3} C22C *39/22, 39/26*

U.S. Cl. 75—128 G **4 Claims**



1. A heat resistant alloy having excellent property of bending and high ductility after aging, consisting essentially of the following components in the following proportions in terms of % by weight:

C	0.12–0.33
O < Si ≦ 1.2	
O < Mn ≦ 1.5	
Cr	23–25
Ni	37–40
Nb	0.5–1.8
N	0.04–0.15

the balance being substantially Fe and unavoidable impurities, with the mutual relationship of C and Si contents being represented by the region surrounded by the points A, B, E and D, and indicated by hatching in FIG. 1.

4,444,590

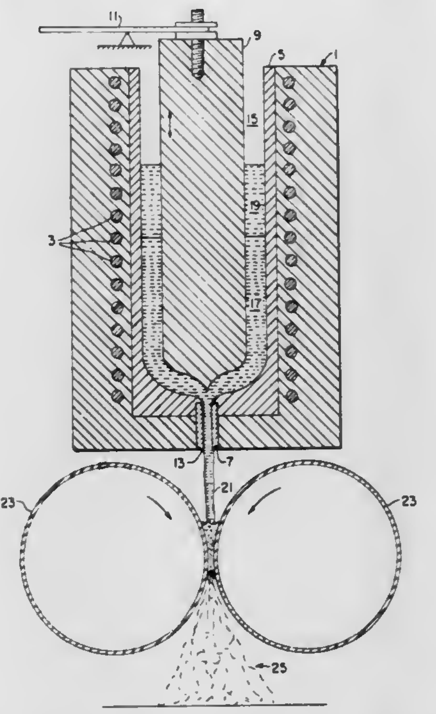
CALCIUM-SLAG ADDITIVE FOR STEEL DESULFURIZATION AND METHOD FOR MAKING SAME

Douglas C. Lee, Pittsburgh, and Leon A. Luyckx, New Castle, both of Pa., assignors to ESM Incorporated, Valencia, Pa.

Filed Mar. 28, 1983, Ser. No. 479,129

Int. Cl.^{3} C22B *9/10*

U.S. Cl. 75—257 **11 Claims**



1. A solid calcium-slag for use in the desulfurization of molten steel consisting essentially of 10–25% by weight calcium metal, 30–50% by weight CaF_2, 1O–30% by weight Al_2O_3 and 10–30% by weight CaO.

4,444,591

CHROMOGENIC COMPOUNDS AND THE USE THEREOF AS COLOR FORMER IN COPYING OR RECORDING MATERIALS

Hajime Kawai, Jyoyo; Katsuhiko Tsunemitsu, Kyoto; Yoshiharu Fujino, and Yoji Shimizu, both of Kyoto, all of Japan, assignors to Yamada Chemical Co., Ltd., Kyoto, Japan

Continuation-in-part of Ser. No. 929,724, Jul. 31, 1978, abandoned. This application Feb. 23, 1982, Ser. No. 351,600

Claims priority, application Japan, Aug. 8, 1977, 52-92270

Int. Cl.^{3} C07D *497/10;* C09D *3/00*

U.S. Cl. 106—21 **2 Claims**

1. A chromogenic compound selected from the group consisting of 3-(N-ethyl-N-iso-amyl)-amino-6-methyl-7-anilinofluoran, 3-(N-methyl-N-n-hexyl)-amino-6-methyl-7-anilinofluoran and 3-(N-ethyl-N-n-hexyl)-amino-6-methyl-7-anilinofluoran.

2. A color developing composition suitable for use in heat-sensitive copying material, comprising at least one of the chromogenic compounds of claim 1 as color former, an electron-accepting substance, and a binder.

4,444,592

PIGMENT COMPOSITIONS AND PROCESSES THEREFOR

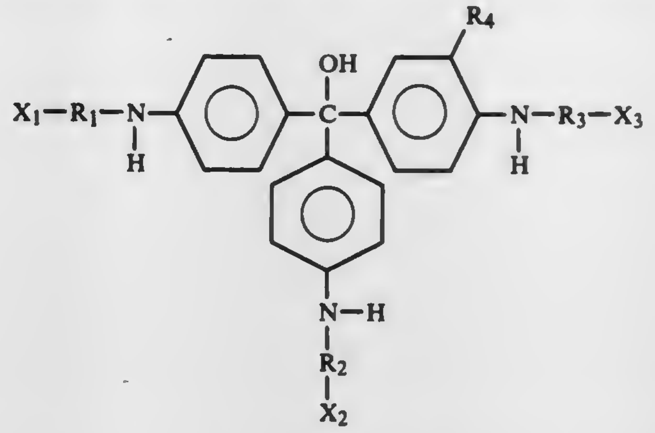
Thomas E. Ludwig, Chicago Heights, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 269,441, Jun. 2, 1981, abandoned, which is a continuation of Ser. No. 66,907, Aug. 16, 1979, abandoned. This application Nov. 15, 1982, Ser. No. 441,840

Int. Cl.^{3} C09D *11/00*

U.S. Cl. 106—23 **25 Claims**

1. Blue pigments which comprise the reaction product obtained by dissolving and/or dispersing an essentially water-insoluble aryl pararosaniline in an effective amount of at least one acid solvent and reacting with an approximately chemically equivalent amount of at least one heteropoly acid containing molybdenum and/or tungsten; wherein said aryl pararosaniline has the following structure in its carbinol form:



wherein R_1, R_2 and R_3 are direct linkages, phenyl, or napthyl groups; R_4 is hydrogen or methyl; X_1, X_2 and X_3 are hydrogen, halogen, nitro, alkyl of 1 to 4 carbons or alkoxy of 1 to 4 carbons; provided that at least one of R_1, R_2 and R_3 is not a direct linkage and provided that X_1, X_2 or X_3 is hydrogen when the corresponding R_1, R_2 or R_3 is a direct linkage.

4,444,593

RAPID SETTING ACCELERATORS FOR CEMENTITIOUS COMPOSITIONS

Raymond J. Schutz, Sedalia, Colo., assignor to Protex Industries, Inc., Denver, Colo.

Continuation-in-part of Ser. No. 317,008, Nov. 2, 1981, abandoned. This application Feb. 2, 1983, Ser. No. 463,259

Int. Cl.^{3} C04B *7/35*

U.S. Cl. 106—89 **6 Claims**

1. An improved process for shotcreting comprising:

(1) hydrating a dry mixture consisting essentially of (a) cement and (b) set accelerators comprising an alkali metal carbonate and an inorganic salt of ferric iron other than ferric phosphate, said set accelerators being sufficiently dispersed in the cement mixture to sustantially prevent them from reacting with each other by causing them to react with components of the cement;

(2) within at most 10 minutes after said hydration, affixing the hydrated mixture into the desired conformation.

4,444,594

ACID CURED INORGANIC BINDER COMPOSITIONS WHICH ARE COMPATIBLE WITH MINERAL WOOL

Gary W. Paddison, York; Thelma J. Brackbill, Manheim, and Larry L. Line, Lancaster, all of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Dec. 9, 1982, Ser. No. 448,312

Int. Cl.^{3} C04B *9/02, 9/04*

U.S. Cl. 106—105 **8 Claims**

1. An acid cured inorganic binder composition that is compatible, in its curing state, to mineral wool, said composition being the reaction product of magnesium oxide and an acid phosphate, sulfate or chloride salt in the presence of water, at least one inorganic filler, and a liquid amino alcohol acid attack control agent.

4,444,595

CEMENTITIOUS COATING COMPOSITION

John E. Baines; Thomas A. Pilgrim; Albert W. Thornhill, and Malvern J. T. Tedds, all of Nottingham, England, assignors to BPB Industries Limited, London, England

Continuation of Ser. No. 289,088, Jul. 31, 1981, abandoned. This application Jan. 17, 1983, Ser. No. 458,616

Claims priority, application United Kingdom, Aug. 1, 1980, 80 25158

Int. Cl.^{3} C04B *7/14, 11/00, 31/10*

U.S. Cl. 106—109 **14 Claims**

1. A method of utilizing gypsum surface covering compositions containing sulphide-containing components for building structures without the emission of hydrogen sulphide from the covered structure, which method comprises:

incorporating in said composition at least one zinc compound capable of reacting with hydrogen sulphide in an amount of from about 0.01 to about 0.2% of the dry solid components of said composition to prevent the emission of hydrogen sulphide from the covering.

4,444,596

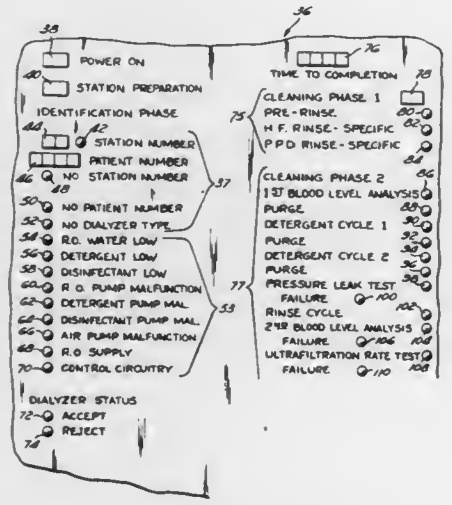
AUTOMATED CLEANING METHOD FOR DIALYZERS

Norman Gortz, 4985 Paseo De Vega, Irvine, Calif. 92715; Andrew S. Huson, 13841 E. Tustin Dr., Apt. 74, Tustin, Calif. 92680, and Robert M. MacIntyre, 2421 E. Ball Rd., Apt. 49, Anaheim, Calif. 92806

Division of Ser. No. 126,522, Mar. 3, 1980, Pat. No. 4,332,264. This application May 3, 1982, Ser. No. 373,873

Int. Cl.^{3} B08B *7/04, 3/04*

U.S. Cl. 134—18 **25 Claims**



1. A method of cleaning dialyzers having blood and dialysate sides comprising:

identifying the particular dialyzer to be cleaned;

identifying the particular patient who used a particular dialyzer in a treatment;

storing the dialyzer and patient identification in a memory at the time of cleaning;

storing a predetermined sequence of cleaning procedures designed to clean said dialyzers and to measure indicia of reusability of a dialyzer being cleaned;

automatically machine sequencing said procedures;

selectively controlling the sequencing of said procedures subsequent to a test procedure in response to the dialyzers measured indicia of reusability.

4,444,597

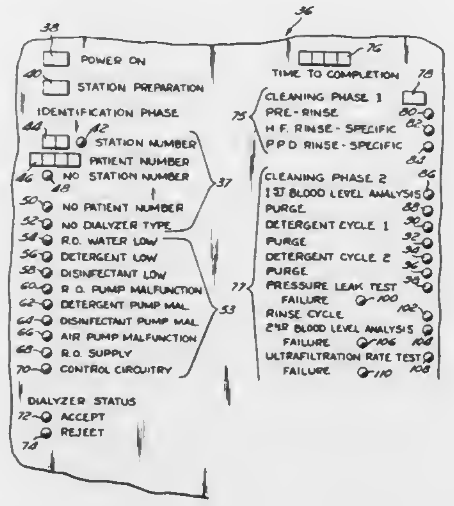
AUTOMATED CLEANING METHOD FOR DIALYZERS

Norman Gortz, 4985 Paseo De Vega, Irvine, Calif. 92715; Andrew S. Huson, 13841 E. Tustin Dr., Tustin, Calif. 92680, and Robert M. MacIntyre, 2421 E. Ball Rd., Anaheim, Calif. 92806

Division of Ser. No. 126,522, Mar. 3, 1980, Pat. No. 4,332,264. This application Apr. 30, 1982, Ser. No. 373,336

Int. Cl.^{3} B08B *7/04, 3/04*

U.S. Cl. 134—18 **11 Claims**



1. A method for cleaning dialyzers which have been used by patients in a dialysis treatment comprising:

predetermining a sequence of cleaning procedures;

identifying the particular dialyzer being cleaned;

storing said dialyzer identification in machine memory;

automatically counting the number of times said dialyzer identification has been stored;

automatically machine sequencing said cleaning procedures;

sensing whether said dialyzer identification has been stored before cleaning;

inhibiting said automatic machine sequencing if said dialyzer identification has not bee stored; and

automatically indicating the result of said counting step at the time of cleaning.

4,444,598

METHOD FOR WASHING REACTION TUBE

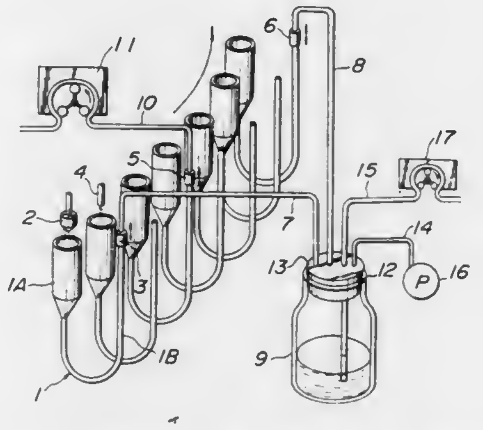
Toshio Sakagami, Chofu, Japan, assignor to Olympus Optical Company Limited, Japan

Filed Oct. 18, 1982, Ser. No. 434,872

Claims priority, application Japan, Oct. 19, 1981, 56-165629

Int. Cl.^{3} B08B *9/02*

U.S. Cl. 134—22.12 **7 Claims**



1. A method for washing a reaction tube for use in an automatic analyzer comprising the steps of

supplying a washing liquid into said reaction tube like shower and simultaneously discharging said washing liquid out of said reaction tube at a first rate;

supplying the washing liquid again into said reaction tube to fill the test tube with the washing liquid; and

discharging said washing liquid out of said test tube at a second rate which is smaller than the first rate to such an extent that a drop of the washing liquid does not remain on the inner wall of the test tube.

4,444,599

METHOD FOR PREVENTING HYDROGEN EMBRITTLEMENT OF METALS AND ALLOYS

Motoji Ikeya, Ube, Japan, assignor to Yamaguchi University, Yamaguchi, Japan

Filed Jun. 1, 1982, Ser. No. 384,099

Claims priority, application Japan, Jun. 9, 1981, 56-87551

Int. Cl.^{3} B01J *1/10*

U.S. Cl. 148—4 **3 Claims**

x200

1. The method of treating a hydrogen-charged metal or alloy specimen to minimize hydrogen embrittlement thereof, said method comprising the steps of

supporting said specimen within a shielded container;

radiating said specimen with an ionizing radiation having a magnitude sufficient to diffuse the hydrogen therein and cause its emission from the specimen without disturbing the surface of said specimen, said ionizing radiation being x-rays having a magitude of approximately 10^5 rads per hour; and

removing said specimen from said container.

4,444,600

PROCESS FOR MAKING A SELECTIVE ABSORBER FOR A SOLAR COLLECTOR AND SELECTIVE ABSORBER OBTAINED

Lucien Aries, Montgiscard, and Jean-Pierre Traverse, Ramonville-Saint-Agne, both of France, assignors to Agence Nationale de Valorisation de la Recherche (A.N.V.A.R.), Paris, France

PCT No. PCT/FR82/00113, 371 Date Mar. 3, 1983, 102(e) Date Mar. 3, 1983, PCT Pub. No. WO83/00169, PCT Pub. Date Jan. 20, 1983

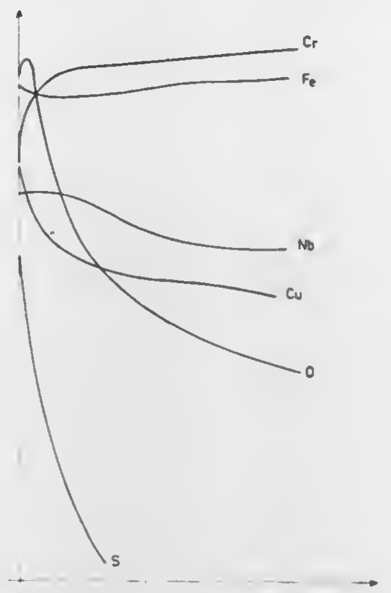
PCT Filed Jul. 2, 1982, Ser. No. 486,959

Claims priority, application France, Jul. 8, 1981, 81 13815

Int. Cl.^{3} C23F *7/24*

U.S. Cl. 148—6.24 **11 Claims**

1. A process for making a selective absorber for a solar collector for obtaining a collector surface for solar radiation having high absorptivity and low emissivity comprising providing a collector surface of iron containing chromium alloyed therewith, providing an acid bath containing oxygen atoms and at least one metalloid substance based on sulfur, selenium and/or tellurium dissolved in said bath, adjusting the state of the collector surface so that the natural corrosion potential of the collector surface in the presence of said bath is less than the primary passivation potential for raising the surface to the active state, and contacting said collector surface with said bath so as to cause migration of the metal atoms from the collector and to cause migration of the metalloid atoms from the bath and to thereby bring about interface reactions between said metal atoms and said metalloid atoms at the surface of said collector.



4,444,601

METAL ARTICLE PASSIVATED BY A BATH HAVING AN ORGANIC ACTIVATOR AND A FILM-FORMING ELEMENT

Joseph L. Greene, New Hudson, Mich., assignor to Richardson Chemical Company, Des Plaines, Ill.

Continuation of Ser. No. 278,010, Jun. 26, 1981, abandoned, which is a division of Ser. No. 72,988, Sep. 6, 1979, Pat. No. 4,298,404. This application Jan. 11, 1983, Ser. No. 457,440

Int. Cl.^{3} C23F *9/00*

U.S. Cl. 148—31.5 **23 Claims**

1. An article having a passivated metallic surface comprising a thin adherent and coherent hydrophobic coating, said coating being a passive film integral with the metallic surface, said coating including a passivation reaction product between the metallic surface of the article and one or more film-forming agents, said metallic surface being a zinc surface, said passivation reaction product having been formed in a substantially chloride-free bath in the presence of a bath soluble organic activating agent selected from the group consisting of polyhydroxy carboxylic acids, polycarboxylic acids, derivatives thereof, and combinations thereof, at least one of said film-forming agents being a chromium-free film forming agent selected from the group consisting of flouride salts, oxalate salts, malonate salts, succinate salts, and combinations thereof, said chromium-free film-forming agent including a non-chromium film-forming element selected from the group consisting of aluminum, silicon, titanium, vanadium, iron, cobalt, molybdenum, cerium, and combinations thereof, said organic activating agent, whether added as said film-forming agent, as said organic activating agent, or as any other bath additive, is present at a concentration up to about 0.3 weight percent, expressed as oxalic acid, per volume, based on the total bath volume, and said bath includes a strong acid and has an operative pH range between values high enough to avoid chemical polishing and etching of the zinc metal surface and low enough to maintain a desired rate of passivation reaction.

4,444,602

METHOD OF MANUFACTURING AMORPHOUS MAGNETIC ALLOY RIBBON AND USE FOR MAGNETOSTRICTION DELAY LINES

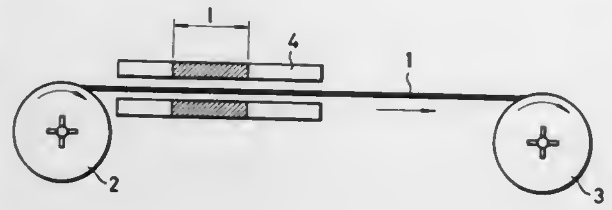
Yoshimi Makino; Yoshitaka Ochiai; Koichi Aso; Satoru Uedaira, all of Yokohama; Masatoshi Hayakawa, Chigasaki, and Kazuhide Hotai, Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 22, 1982, Ser. No. 350,578

Claims priority, application Japan, Feb. 23, 1981, 56-25053

Int. Cl.^{3} H01F *1/00*

U.S. Cl. 148—121 **6 Claims**



1. A method of manufacturing an amorphous magnetic alloy ribbon for a magnetostriction delay line comprising the steps of:

providing an amorphous magnetic alloy ribbon having a negative magnetostriction constant;

annealing said ribbon at a temperature lower than the crystallization temperature of said alloy under a tension enough to keep said ribbon substantially straight between the both ends thereof;

cooling said ribbon to room temperature to produce an amorphous magnetic alloy ribbon having a uniform propagation speed of magnetostrictive vibration through said ribbon; and

inserting the resulting ribbon into a magnetostriction delay line.

4,444,603

ALUMINUM ALLOY REINFORCED WITH SILICA ALUMINA FIBER

Kohji Yamatsuta, and Ken-ichi Nishio, both of Shiga, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Aug. 31, 1982, Ser. No. 413,253

Claims priority, application Japan, Sep. 1, 1981, 56-138046; Dec. 2, 1981, 56-194126

Int. Cl.^{3} C22C *1/09*

U.S. Cl. 148—127 **10 Claims**

1. A process for preparing a fiber-reinforced metal composite material of high mechanical strength which comprises (1) combining an inorganic fiber comprising alumina as the main component and silica as the secondary component with an aluminum alloy containing a metal selected from the group consisting of copper, silicon, magnesium, zinc and mixtures thereof at a temperature of not lower than the melting point of said alloy to make a composite, (2) retaining the composite at a temperature of not lower than 400° C. and lower than the solid phase line of the aluminum alloy for a period of about 1 to 30 hours and (3) cooling the thus treated composite at a rate of 300° C./min or more to 200° C.

4,444,604

METHOD OF PREVENTING DISTORTION OF A HEATED WORKPIECE DURING COOLING

Wayne A. Martin, Pittsburgh, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Mar. 7, 1983, Ser. No. 472,703

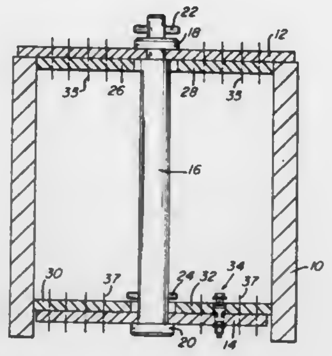
Int. Cl.^{3} C21D *9/08*

U.S. Cl. 148—131 **6 Claims**

1. A method for preventing distortion of a cylindrical metal workpiece during heat treatment, said method comprising:

(a) heating said workpiece to an elevated temperature,

(b) placing a fixture substantially at room temperature into the heated workpiece, said fixture having a plurality of axially spaced holder plates, means connecting said holder plates fixing the spacing therebetween, a plurality of shoe members slidably mounted on each holder plate for abutting a wall of the workpiece at spaced locations on the inner periphery thereof, and a plurality of tapered pin assemblies located in mateable tapered holes in said shoe members and holder plates for securing said shoe members to a fixed initial position so that outer peripheries of the shoe members define the desired cold shape of said workpiece,



(c) cooling said workpiece with the fixture in place therein,

(d) partially withdrawing said tapered pin assemblies from said holes after cooling the workpiece so as to permit slidable movement of the shoe members in a radially inward direction on the holder plates, and then

(e) removing said fixture from the workpiece.

4,444,605

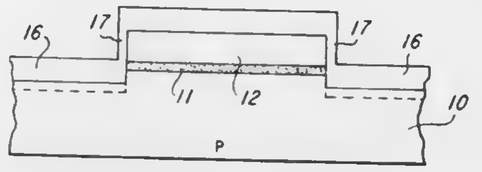
PLANAR FIELD OXIDE FOR SEMICONDUCTOR DEVICES

Christopher Slawinski, Katy, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 27, 1982, Ser. No. 412,324

Int. Cl.^{3} H01L *21/308*

U.S. Cl. 148—187 **10 Claims**



1. A method of making field oxide for semiconductor devices comprising the steps of:

applying a pattern of thick mask areas on a face of a semiconductor body,

etching said face to create recessed field areas in said face where not covered by the mask areas,

depositing field oxide on said face and on top of the thick mask by a process which provides little coverage of the sidewalls of said thick mask areas,

etching the field oxide from the sidewalls but leaving thick field oxide in said field areas about level with the original surface of said face, and

removing said thick mask and the field oxide thereon, leaving a substantialy planar surface.

4,444,606

PROCESS FOR THE MANUFACTURE OF FINE PROPELLANT POWDERS BY GRANULATION, AND POWDERS THUS OBTAINED

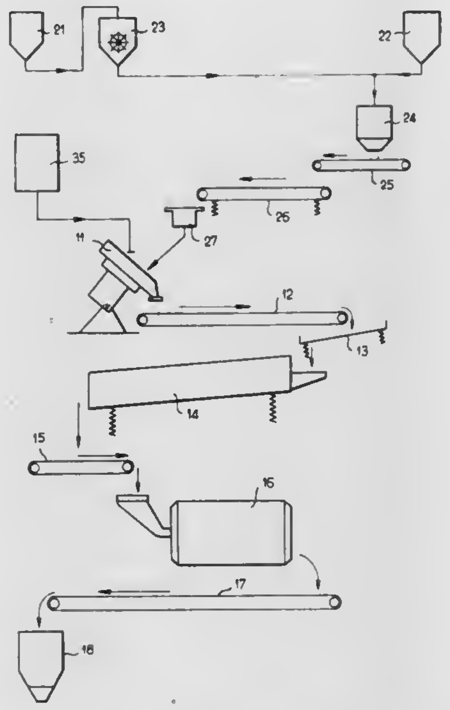
Yves Bertrand, Versailles; Remy Favrot, Pont de Buis; Pierre Gaudilliere, Livry Gargan; Jean-Charles Perennou, Le Relecq Kerhuon, and Bernard Wiedemann, Angouleme, all of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Nov. 13, 1981, Ser. No. 321,096

Claims priority, application France, Nov. 14, 1980, 80 24187

Int. Cl.^{3} C06B *45/00*

U.S. Cl. 149—2 **14 Claims**



1. Process for the manufacture of fine granular, completely gelatinized porous propellant powders from at least one solid base material which consists of an energy producing material, wherein said base material is ground to a particle size of less than 300 microns, containing about 20% water, is disintegrated, fed into a rotating apparatus while a solvent for said at least one solid base is sprayed thereon, the solvent being insoluble or little soluble in water, whereby the material is agglomerated and formed into granules, the granules thus obtained are subjected to a first partial drying at room temperature, the product is again shaped in a rotating apparatus, the total wetting level in respect of the solvent is between 60% and 140% with respect to the weight of the dry base material and the granules are dried.

4,444,607

METHOD OF MAKING A SIGHT MODEL

Stephen Lash, Parma; Charles W. Roberts, Akron, and Samuel P. Landers, Uniontown, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 25, 1982, Ser. No. 362,011

Int. Cl.^{3} B44C *3/00*

U.S. Cl. 156—58 **2 Claims**

1. A process for preparing a three-dimensional tire tread sight model having raised areas separated by valleys; where said raised areas are raised from said valleys by at least 0.6 centimeter, and where said raised areas have a variation in height in that some raised areas are at least 0.8 centimeter higher than other raised areas said process comprising the following steps:

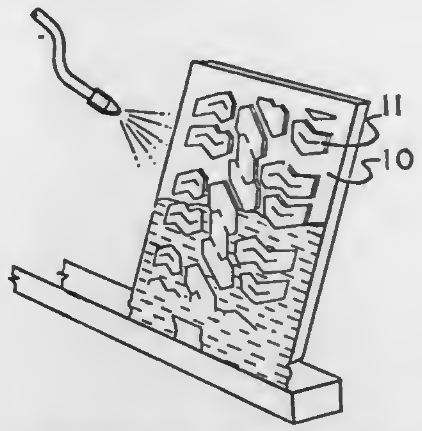
(a) generating electronically a line drawing of said model and electronically displaying said drawing;

(b) photographing said drawing to form a photographic transparency;

(c) providing a layer of liquid photopolymer;

(c-1) initially providing a short actinic light exposure to said photopolymer to provide an initial thickness of said photopolymer

(d) positioning said transparency over the layer of photopolymer and exposing said photopolymer through said transparency to a variable actinic light to set the exposed portion of the photopolymer to a height of at least 0.8 centimeter higher than other levels of the set photopolymer; and



(e) removing the liquid from the set photopolymer to form a three-dimensional model having the appearance of said drawing.

4,444,608

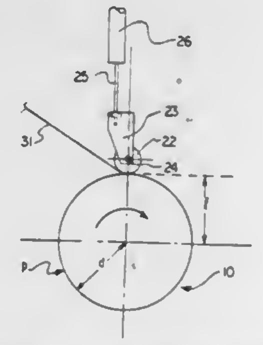
METHOD FOR FORMING A TIRE EMPLOYING A BELT APPLICATION ROLLER

Robert F. Jones, Westfield Center, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 183,597, Sep. 2, 1980, Pat. No. 4,366,019. This application Aug. 23, 1982, Ser. No. 410,149

Int. Cl.^{3} B29H *17/02, 17/26*

U.S. Cl. 156—130 **7 Claims**



1. A method for forming a tire having at least one circumferential belt on a carcass, and a tread overlaid on said belt, comprising:

(a) supporting said carcass on bead flanges,

(b) displacing said bead flanges longitudinally axially away from each other to an open bead flange spacing sufficient to seat the beads of the carcass on the bead flanges,

(c) inflating said carcass so as to lift it into a toroidal shape and provide an air cushion within the carcass,

(d) displacing said bead flanges longitudinally towards each other to a tire-building bead flange spacing so as to impart a toroidal shape to said carcass while maintaining said air cushion, and to position a point on the circumference of the toroidal carcass at a predetermined inflated distance from the longitudinal axis of said carcass,

(e) positioning said belt upon the toroidal carcass,

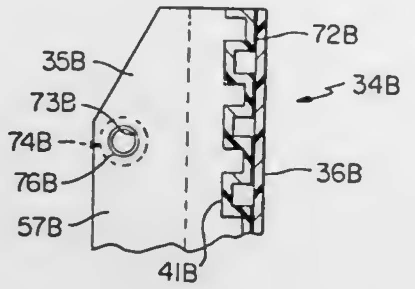
(f) contacting said belt with a roller means prior to biasing said belt against said carcass,

(g) confining said belt and carcass within a predetermined radial fixed printing distance between said roller means and the longitudinal axis of said carcass over a segment of the circumference of said carcass, which segment is defined by a radial angle of less than 5°, so that biasing of said

carcass and belt is resisted by said air cushion, said printing distance being less than said inflated distance,
(h) releasing said belt and carcass from under said roller means to assume an unconfined configuration after confinement within said fixed printing distance, and
(i) securing said tread to said belt.

4,444,609
WEAR MEMBER FOR RAILWAY VEHICLE AND METHOD OF MAKING SAME

Julien C. Mathieu, Waynesville, N.C., assignor to Dayco Corporation, Dayton, Ohio
Division of Ser. No. 235,498, Feb. 19, 1981. This application Sep. 27, 1982, Ser. No. 424,683
Int. Cl.^{3} B21D *53/10;* **B31F** *1/20*
U.S. Cl. 156—210 **6 Claims**



1. A method of making a wear member for a railway vehicle wherein said vehicle comprises a pair of relatively movable components and said wear member is adapted to be supported by one of said components and protects said components from wear during relative movement thereof, said method comprising the steps of, forming a U-shaped support having a bight and two leg portions which are adapted to be attached to said one component, and supporting polymeric material on the bight of said support, said polymeric material having a smooth anti-friction outer wear surface which is adapted to engage said other component, said polymeric material comprising an ultra high molecular weight polymeric material, the improvement in said method wherein said forming step comprises, providing a structural material of substantially uniform thickness throughout and defining a plurality of corrugations in at least a portion of the bight of said structural material, with each corrugation having said uniform thickness throughout substantially its entire configuration and having an end surface spaced from and coplanar with the end surfaces of the corrugations adjacent thereto, said corrugations providing structural strength to said portion, said polymeric material being supported by certain of said corrugations at just the adjacent and coplaner end surfaces thereof.

6. A method as set forth in claim 1 in which said forming step comprises forming said support of a structural plastic material and comprising the further step of adhesively fixing said polymeric material against said support.

4,444,610
METHOD AND APPARATUS FOR PROVIDING PIERCING TABS ON THE LIDS OF CONTAINERS

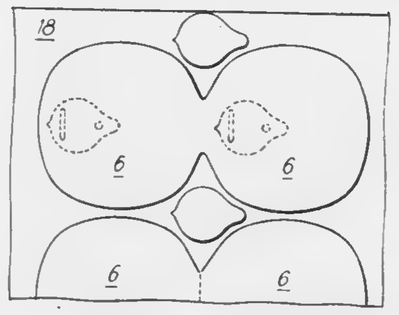
Roland Torterotot, Longvilliers, and Jean C. Hautemont, Gif sur Yvette, both of France, assignors to S.A.R.L. Eroa Holding, Les Ulis, France
Filed Mar. 26, 1982, Ser. No. 362,513
Claims priority, application France, Mar. 27, 1981, 81 06252; May 29, 1981, 81 10727
Int. Cl.^{3} B32B *31/04;* **B65D** *41/32*
U.S. Cl. 156—264 **8 Claims**

1. A method for providing with piercing tabs the lids of containers which are thermoshaped from a thermoplastic strip and closed by said lids, said lids being produced from a lid strip of a supple and tearable material which is superimposed on said thermoplastic strip of containers and thermobonded on the rims of said containers, said thermoplastic strip having container-shaping areas and free areas outside said shaping areas, and said tabs piercing said lids by a leverage effect, which method comprises the steps of:

cutting substantially plane rigid tabs, from said free areas of said thermoplastic strip used for the production of said thermo-shaped containers;

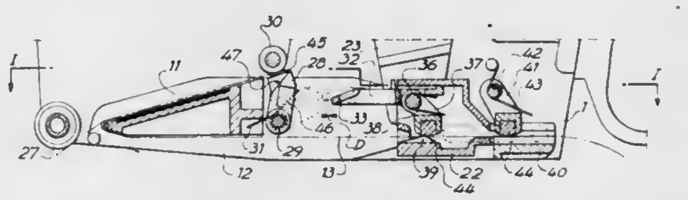
providing on said tabs pivoting axes which divide said tabs into a piercing arm and a handling arm; and

securing said pivoting axes on said lids when said lids are in a closing position on said containers.



4,444,611
PORTABLE LABELING MACHINE

Werner Becker, Hirschhorn, Fed. Rep. of Germany, assignor to Esselte Pendaflex Corporation, Garden City, N.Y.
Filed Feb. 25, 1982, Ser. No. 352,372
Claims priority, application Switzerland, Mar. 4, 1981, 1441/81
Int. Cl.^{3} B65C *11/02*
U.S. Cl. 156—384 **6 Claims**



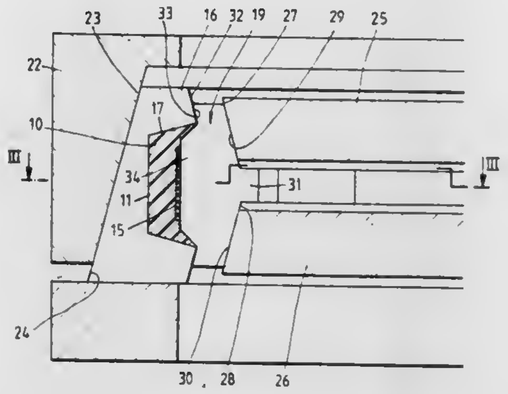
1. In a portable labelling machine comprising, a housing provided with an operating handle, a printing unit and a print table arranged in said housing and adapted to meet each other for the typing of selected characters, a step-by-step drive device for the driving of a continuous strip bearing self-adhesive labels along an internal circuit passing over the print table and comprising a transport chassis for said continuous strip, a lever-shaped trigger connected on the one hand to the printing unit to cause upon each pull thereof the typing of the selected characters on a label of the continuous strip and on the other hand to the transport chassis to cause upon each release thereof the advance of said continuous strip by one step corresponding to the length of one label, a device for separating the labels from the continuous strip and dispensing the said labels towards the outside of the housing to permit adhesive attachment thereof on items to be labelled, and a periodically acting device for the retention of the continuous strip of labels between its successive movements of advance, which periodically acting device is arranged on the said circuit of the strip of labels before the print table and the separating and dispensing device and comprises a brake shoe movable towards and away from said continuous strip of labels and a spring permanently urging said brake shoe against said continuous strip of labels, the improvement comprising:

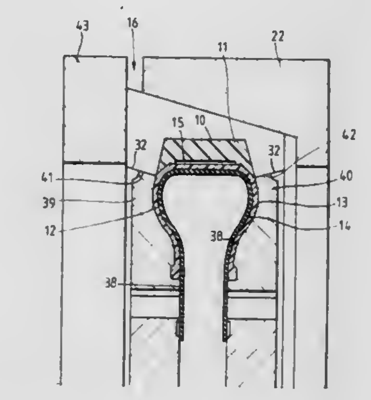
a gripping and release means controlled by the trigger for:
(a) initial movement in a first direction towards said brake shoe upon trigger pull and gripping the said brake shoe without any displacement thereof at the end of said trigger pull;
(b) subsequent movement in a second direction opposite to said first direction upon trigger release and simultaneously

drawing said brake shoe away from said continuous strip of labels against the bias of said permanently urging spring; and
(c) release of said brake shoe for spring urged return thereof against said continuous strip of labels at the end of said trigger release, whereby trigger pull is without any effect on said brake shoe.

4,444,612
METHOD AND APPARATUS FOR THE INJECTION MOLDING AND VULCANIZATION OF VEHICLE TIRES

Lothar Fink, Achim-Baden, Fed. Rep. of Germany, assignor to Klockner-Werke AG, Duisburg, Fed. Rep. of Germany
Filed Mar. 16, 1981, Ser. No. 244,400
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1980, 3011199
Int. Cl.^{3} B29H *5/02, 17/36*
U.S. Cl. 156—394.1 **13 Claims**

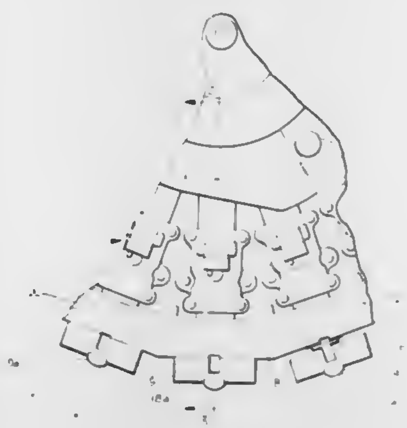




1. A combination injection molding and vulcanizing apparatus for the manufacture of vehicle tires, comprising:
means for injection molding a crown portion of a tire in an annular cavity (**17**), said injection molding means including an annular outer mold (**16**) having an annular recess in its inner periphery, a removable mold core (**19**) Comprising a plurality of circumferentially abutting, radially movable segments (**20, 21**) radially insertable within an area enclosed by said outer mold and in curcumferential abutment therewith, and pressing means (**22, 25, 26**) for urging said removable mold core and said outer mold radially toward one another to mold said crown portion after a rubber crown portion building material has been injected into said annular cavity; and
a replaceable core assembly (**38, 39, 40**), said replaceable core assembly being inserted into said enclosed area defined by said outer mold after said crown portion has been injection molded and said removable mold core has been removed from said enclosed area, a preformed annular tire carcass (**14**) and side walls (**12, 13**) being disposed around said replaceable core assembly, said replaceable core assembly and said outer mold defining a vulcanization chamber therebetween for said tire crown portion, carcass, and side walls.

4,444,613
APPARATUS FOR PRODUCING TUBULAR PLASTIC SLEEVES FOR APPLICATION TO CONTAINERS

Robert J. Burmeister, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed May 17, 1982, Ser. No. 378,564
Int. Cl.^{3} B23K *3/02*
U.S. Cl. 156—446 **1 Claim**



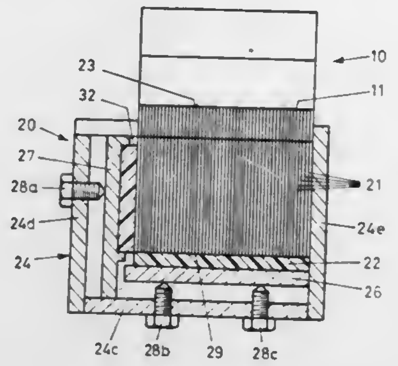
1. In apparatus of the rotary turret type for forming tubular sleeves of heat-shrinkable thermoplastic material on a series of equi-spaced rotary, cylindrical mandrels mounted at circumferentially spaced intervals on said turret with an annular heated metal ring mounted interiorly of said mandrels and wherein reciprocated heat sealing bars corresponding in number to the number of mandrels are mounted on said turret with actuating means connected thereto extending through openings in said metal ring, said heat sealing bars being held in physical engagement with said ring to be conductively heated thereby when retracted out of sealing engagement with sleeves on the mandrels, the improvement in said annular metal ring comprising a plurality of spaced-apart vertical apertures extending through said ring adjacent the exterior face thereof, an electrical cartridge heater mounted in each said aperture and extending substantially the full height thereof, a source of electrical power connected to said heaters, and wherein said annular metal ring comprises an aluminum alloy having a coating of electro-less nickel over at least its exteriorly-facing surfaces to form a heat sink for surface-to-surface conductive heating of said sealing bars.

4,444,614
ULTRASONIC WELDING DEVICE

Bernhard Krayer, Schaffhausen, Switzerland, assignor to SIG-Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland
Filed Oct. 19, 1982, Ser. No. 435,337
Claims priority, application Switzerland, Nov. 2, 1981, 6996/81
Int. Cl.^{3} B29C *27/08*
U.S. Cl. 156—580.2 **13 Claims**

1. In an ultrasonic welding device including a sonotrode emitting vibratory energy and an anvil having a work face cooperating with the sonotrode for supporting a workpiece positioned for welding between the sonotrode and the anvil; the improvement in said anvil comprising
(a) a housing means having a support base;
(b) a plurality of laminae individually shiftably supported in said housing means in a face-to-face relationship for forming a lamina stack; each lamina having a first edge face at a side of the lamina stack; the first edge faces together

constituting said work face of said anvil; each lamina having a second edge face situated opposite the first edge face; each lamina being of a resilient material and having a slot to define a springing lamina portion containing said second edge face; said springing lamina portion engaging said support base with said second edge face; and



(c) force-exerting means for imparting individually to each said lamina a force oriented towards said sonotrode for individually urging each said lamina outwardly of said housing means in the direction of said sonotrode; said springing lamina portion forming part of said force-exerting means.

4,444,615

METHOD FOR PRODUCING A SINGLE CRYSTAL

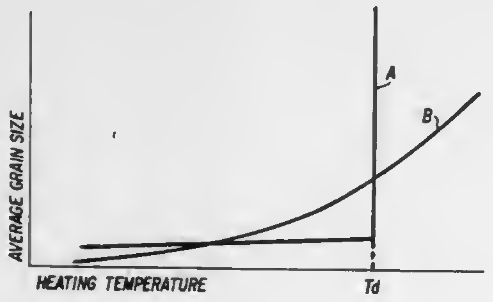
Soichiro Matsuzawa, Kuwana, and Syunzo Mase, Aichi, both of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Nov. 19, 1981, Ser. No. 322,757

Claims priority, application Japan, Nov. 28, 1980, 55-166645

Int. Cl.^{3} C30B *1/10*

U.S. Cl. 156—603 **8 Claims**



1. A method for producing a single crystal, comprising:

forming a polycrystal which has a macrocrystal grain therein or thereon, said polycrystal having the property of a discontinuous crystal grain growth which noticeably increases the crystal growing rate at a given temperature in the course of heating, said macrocrystal grain having substantially the same crystal structure as crystal grains comprising said polycrystal;

heating said polycrystal having said macrocrystal grain to a temperature lower than the temperature causing discontinuous crystal grain growth of the polycrystal, said heating causing growth of said macrocrystal grain; and during said heating, integrating said macrocrystal grain with the crystal grains of said polycrystal so that a single crystal is grown.

4,444,616

METHOD FOR EXPOSURE OF CHEMICALLY MACHINABLE LIGHT-SENSITIVE GLASS

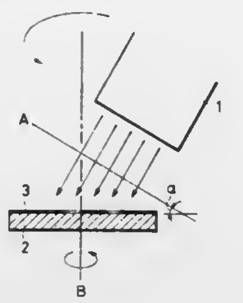
Yoshimi Fujita, and Toshiharu Yamashita, both of Tokyo, Japan, assignors to Hoya Corporation, Tokyo, Japan

Filed Jun. 1, 1982, Ser. No. 384,111

Claims priority, application Japan, Jun. 2, 1981, 56-83843

Int. Cl.^{3} B44C *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—628 **8 Claims**



1. A method for irradiating a chemically machinable light-sensitive glass plate with a parallel bundle of ultraviolet rays, comprising the steps of:

mounting a mask having an opening therein on a surface of said glass plate;

mounting a light source capable of generating said parallel bundle of ultraviolet rays above said mask so that an angle formed between a plane which is perpendicular to said parallel bundle of ultraviolet rays and a plane which is parallel to said surface of said glass plate is equal to a desired taper angle;

irradiating said plate with said parallel bundle of ultraviolet rays; and

rotating said glass plate about a center axis thereof.

4,444,617

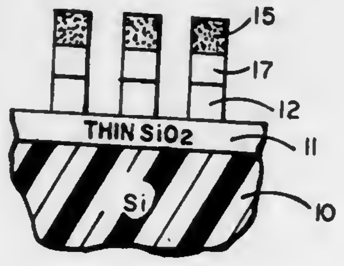
REACTIVE ION ETCHING OF MOLYBDENUM SILICIDE AND N+ POLYSILICON

Eugene C. Whitcomb, Mission Viejo, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jan. 6, 1983, Ser. No. 456,183

Int. Cl.^{3} H01L *21/306;* **B44C** *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—643 **14 Claims**



1. An anisotropic etching processing for fabricating a solid state device on a substrate comprising the steps of:

providing a layer of silicon on said substrate;

depositing a layer of molysilicide on said silicon layer;

masking portions of said molysilicide layer to define a pattern thereon; and

etching through the unmasked portions of said molysilicide layer using a plasma etch gas mixture consisting essentially of a mixture of CF_4, C_2F_6, O_2 in percent by volume in the range:

CF_4	76–94%
C_2F_6	4–16%
O_2	2–8%

4,444,618

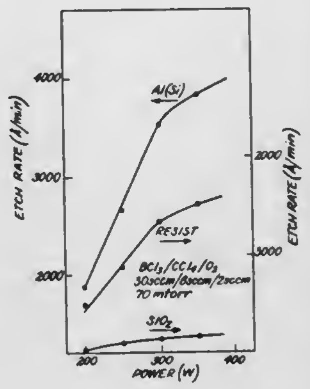
PROCESSES AND GAS MIXTURES FOR THE REACTIVE ION ETCHING OF ALUMINUM AND ALUMINUM ALLOYS

Richard J. Saia, Scotia, and Bernard Gorowitz, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 3, 1983, Ser. No. 471,617

Int. Cl.^{3} C23F *1/02;* **B44B** *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—643 **21 Claims**



3. A method for the reactive ion etching of predetermined patterns in masked thin films of aluminum and aluminum alloys which comprises producing reactive species including ions from a gas mixture comprising by volume, 2–6% O_2 and 15–25% CCl_4 with the balance being BCl_3 and directionally etching the masked thin film with said respective species including ions to selectively remove the unmasked portion of said thin film thereby forming said predetermined pattern as the remaining masked aluminum or aluminum alloy thin film.

4,444,619

METHOD OF PRODUCING PRINTED CIRCUITS

James B. O'Hara, Angeles, Hammersley Lane, Penn, Buckinghamshire, England (HP10 8HF)

Filed Dec. 30, 1982, Ser. No. 454,540

Claims priority, application United Kingdom, Dec. 31, 1981, 8139141

Int. Cl.^{3} C23F *1/02;* **B44C** *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—645 **11 Claims**

1. A method of producing a printed circuit having an overlayer that allows both solder and gold plate to be directly bonded to the circuit, the method including the steps of

placing an electrically conductive layer of material on at least one accessible side of a substrate,

printing a plating resist onto the surface of the conductive material to leave exposed track areas on the surface to which electrical components or connectors are to be joined,

electroplating over the track areas a palladium/nickel alloy to which both solder and gold plate are directy bondable to provide a high reliability joint for said electrical components or connectors, said alloy having a melting point that is higher than that of the solder,

removing the plating resist, and

etching away the layer of electrically conductive material from the non-track areas to leave behind a printed circuit that has good solderability and which will provide a base for gold plate.

4,444,620

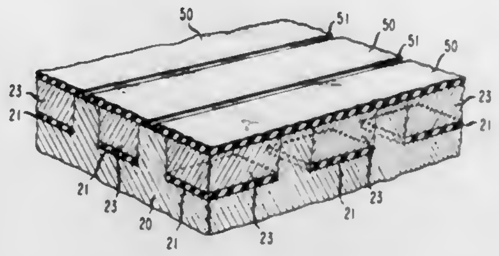
GROWTH OF ORIENTED SINGLE CRYSTAL SEMICONDUCTOR ON INSULATOR

Terrence Kovacs, North Plainfield, and Loren N. Pfeiffer, Harding Township, Morris County, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 12, 1983, Ser. No. 531,353

Int. Cl.^{3} B05D *5/12;* **B44C** *1/22;* **C03C** *15/00;* **H01L** *21/306*

U.S. Cl. 156—657 **18 Claims**



7. Method for producing a semiconductor device, the method comprising producing a body comprising a single crystal substrate consisting substantially of a first semiconductor material, the substrate having a major surface, the method comprising

(a) forming an insulator first layer on at least a part of the major surface,

(b) providing at least one major surface region that is not covered by the first layer, the region to be referred to as the "seed" region,

(c) forming a second layer, consisting substantially of the first semiconductor material, on at least a part of the first layer and at least a part of the seed region,

(d) forming a capping third layer on at least a part of the second layer,

(e) heating the semiconductor second layer to melt at least a part of the second layer, and

(f) solidifying the molten part of the second layer,

characterized in that

(g) the capping third layer is patterned, the pattern adapted for providing means for accommodating a volume change of the solidifying material.

4,444,621

PROCESS AND APPARATUS FOR THE DERESINATION AND BRIGHTNESS IMPROVEMENT OF CELLULOSE PULP

Jonas A. I. Lindahl, Domsjo, Sweden, assignor to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Continuation-in-part of Ser. No. 208,909, Nov. 21, 1980, which is a continuation-in-part of Ser. No. 186,037, Sep. 11, 1980, abandoned. This application Dec. 3, 1981, Ser. No. 326,866

Int. Cl.^{3} D21B *1/04*

U.S. Cl. 162—26 **20 Claims**

1. A process for reducing the resin content of bleached and unbleached cellulose pulps while improving their brightness, which comprises adjusting the pulp concentration to within the range from about 15 to about 35%; mixing the cellulose pulp with alkali in a sufficient amount to adjust the amount of alkali, calculated as NaOH, within the range from about 0.5 to about 17 g/kg of water; adding sufficient oxidizing bleaching agent to the pulp to bring the amount of oxidizing bleaching agent to within the range from about 0.2 to about 22 g/kg of water; subjecting the pulp to a mild mechanical treatment in the bite of twin interdigitated rotating screws at an input energy of from 8 to 100 kWh per ton of pulp; and then removing and reacting the cellulose pulp at substantially the same pulp consistency with the added alkali and bleaching agent for from about 0.1 to about 5 hours.

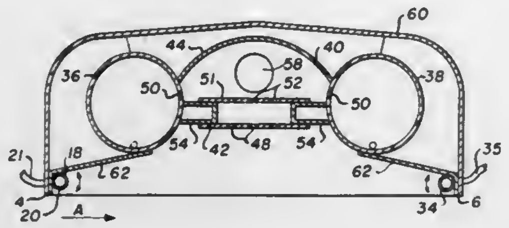
4,444,622
STEAM DISTRIBUTION

Norman F. Dove, North Vancouver, Canada, assignor to Devron Engineering Ltd., Canada

Continuation of Ser. No. 191,373, Sep. 29, 1980, abandoned, which is a continuation-in-part of Ser. No. 144,303, Apr. 28, 1980, abandoned, which is a continuation of Ser. No. 924,399, Jul. 14, 1978, abandoned. This application Jun. 4, 1982, Ser. No. 384,792

Int. Cl.³ D21F *5/00*

U.S. Cl. 162—207 13 Claims



9. In a method of applying steam to a paper sheet from a steam distributor positioned above and spaced from the sheet, the distributor having a leading edge spaced from the sheet and a trailing edge spaced from the sheet relative to the movement of the paper sheet, the improvement that comprises directing steam downwardly from the leading edge of the distributor in the form of a steam curtain to prevent air from being conveyed into the distributor by the paper sheet.

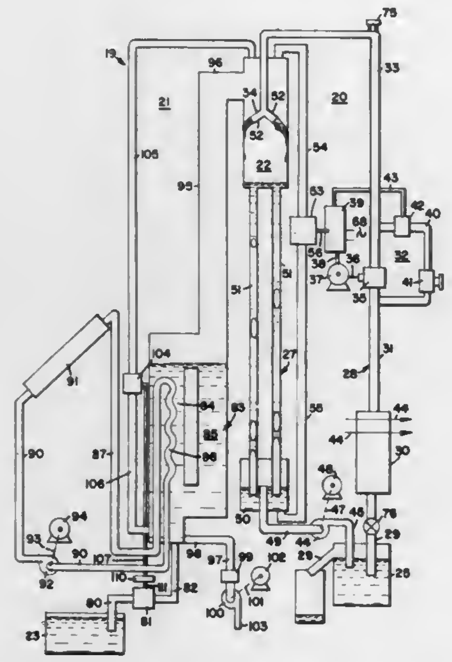
4,444,623
DISTILLING APPARATUS

Philip G. Youngner, 919 18th St., SE., St. Cloud, Minn. 56301

Continuation-in-part of Ser. No. 195,662, Oct. 9, 1980, abandoned. This application Nov. 9, 1981, Ser. No. 319,461

Int. Cl.³ B01D *3/10, 5/00*

U.S. Cl. 202—185 A 12 Claims



1. Distilling apparatus comprising, in combination:

input apparatus including a boiling chamber and means for supplying raw liquid to said boiling chamber at a predetermined level;

a closed condensation chamber above said predetermined level connected to the top of said boiling chamber and communicating therewith so as to receive therefrom only vapor from said raw liquid;

output apparatus including a liquid collection container below said condensation chamber and communicating therewith to receive liquid from said condensation chamber, and liquid circulating means moving liquid from said container, cooling the liquid, discharging it within said condensation chamber, and allowing the liquid to drain from said condensation chamber with liquid condensed from said raw liquid vapor so as to entrain bubbles of gas therein and provide a pressure head in said output apparatus as said liquids drain to said container, wherein said condensation chamber is cooled by liquid from said container and a subambient pressure is created within said boiling and condensation chambers;

circulation and vacuum creation augmentation pump means interposed in said output apparatus to further facilitate creation of said subambient pressure in said boiling and condensation chambers;

a second closed chamber interposed in said output apparatus below said condensation chamber;

a plurality of conduits extending downward from said condensation chamber into said second closed chamber; and

an inlet conduit from said pump means extending into said second closed chamber, and having an inlet port in said second closed chamber,

the tops of said plurality of conduits being level with the bottom of said condensation chamber,

and the bottoms of said plurality of conduits being below said inlet port of said inlet conduit in said second closed chamber.

4,444,624
PROCESS FOR SEPARATING ACETONE FROM CARBONYLATION MIXTURES

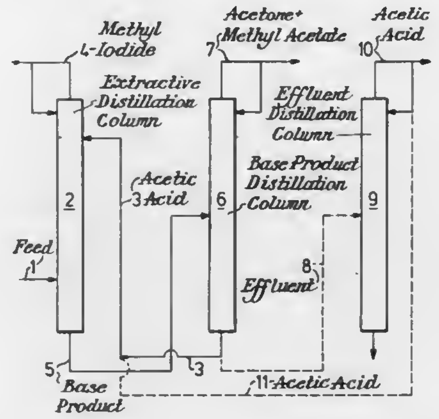
Heinz Erpenbach, Cologne; Klaus Gehrmann; Winfried Lork, both of Erftstadt, and Peter Prinz, Hürth, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 27, 1982, Ser. No. 412,225

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1981, 3136027

Int. Cl.³ B01D *3/40;* C07C *45/83*

U.S. Cl. 203—61 10 Claims



1. A process for separating acetone from a reaction mixture originating from the carbonylation reaction of at least one substance selected from the group consisting of methyl acetate and dimethylether with a coreactant comprising carbon monoxide in the presence of a catalyst solution containing carbonyl complexes of noble metals belonging to Group VIII of the Periodic System of the elements, acetic acid, an organophosphorus or organonitrogen compound and methyl iodide, which comprises: subjecting a said reaction mixture containing acetic anhydride, acetic acid, ethylidene diacetate, methyl iodide, acetone and methyl acetate, which has been distilled off from the catalyst solution, to an extractive distillation step with acetic acid as extractant, thereby forming an acetic acid extract base product and distilling off essentially pure methyl iodide; distilling off an acetone/methyl acetate-mixture from the acetic acid extract base product and separating said mixture and recycling the acetic acid extractant remaining in the base product into said extractive distillation step after separation of the reaction products of the caronbylation reaction comprised of acetic anhydride, ethylidene diacetate and acetic acid.

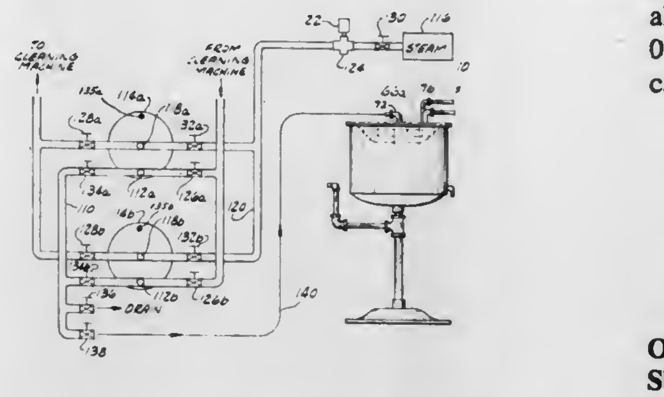
4,444,625
METHOD AND APPARATUS FOR RECLAIMING DRYCLEANING FLUID

Robert G. Smith, Chesterfield, Mo., assignor to Kleen-Rite, Inc., St. Louis, Mo.

Continuation of Ser. No. 277,199, Jun. 25, 1981, abandoned, which is a division of Ser. No. 170,277, Jul. 18, 1980, Pat. No. 4,283,279. This application Apr. 18, 1983, Ser. No. 485,724

Int. Cl.³ B01D *3/38, 3/40*

U.S. Cl. 203—95 2 Claims



1. A method of reclaiming residual drycleaning fluid from spent filter elements positioned in filter tanks comprising the steps of:

draining excess drycleaning fluid from the filter elements while the filter elements remain in the filter tanks;

injecting steam through the filter elements in such tanks so as to vaporize residual drycleaning fluid to form a steam/-drycleaning fluid mixture;

removing said fluid mixture from such tanks to a condenser through a closed system;

condensing said mixture in a condenser to form liquid water and liquid drycleaning fluid; and

separating said water from said drycleaning fluid;

said separating being performed without permitting drycleaning fluid vapors to escape into the environment.

4,444,626
ELECTROCHROMIC PRINTING

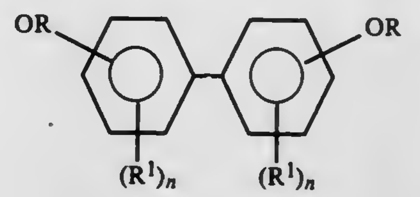
William E. Bernier, Endicott; Francis Emmi, Binghamton, both of N.Y.; Edmond O. Fey, Vestal, N.Y.; Paul L. Gendler, and Robert J. Twieg, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

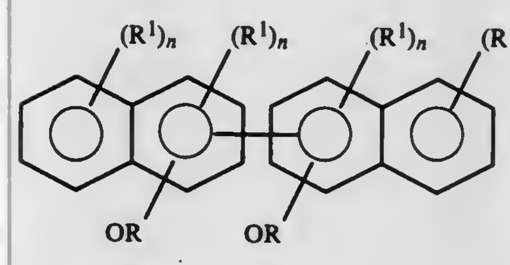
Filed Jan. 21, 1983, Ser. No. 459,929

Int. Cl.³ G01D *15/06*

U.S. Cl. 204—2 24 Claims

1. An electrochromic printing medium which comprises a substrate coated on at least one surface thereof with at least one compound selected from the group of:





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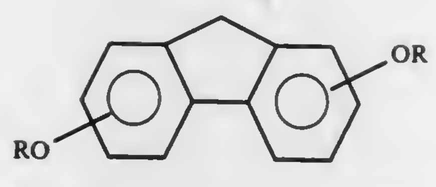


mixtures thereof, or inorganic acid salts thereof; wherein each R individually is selected from the group of H, alkyl, or acyl; each R^1 individually is selected from the group of alkanoyl or alkyl being 1 to 4 atoms; and n is a whole number integer from 0 to 5; and coated with a bromide in an amount sufficient to catalyze an electrooxidation of said compound.

4,444,627
PREVENTION OF POLYMER BUILDUP IN POLYMERIZATION REACTORS USING THIN ORGANIC COATINGS BY ELECTROLYSIS OF PHENOL

Shung-Chung Liau; Wei-Min Cheng, and Uen-Long Young, all of Kaohsiung, Taiwan, assignors to Formosa Plastics Corporation, Taiwan

Filed Feb. 25, 1982, Ser. No. 352,101

Int. Cl.³ B01D *3/00;* C07B *5/00*

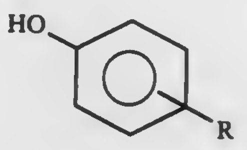
U.S. Cl. 204—26 15 Claims

1. A method for substantially preventing the buildup of polymers on the internal surfaces of a polymerization reactor which comprises the steps of:

(a) connecting the polymerization reactor to an electric source whereby it will function as an anode;

(b) inserting a cathode which is connected to an electric source into the reactor;

(c) introducing into the reactor a solution comprising a phenolic compound having the structural formula:



wherein R is selected from the group consisting of hydrogen, halide and alkyl; a Lewis base; and a non-aqueous solvent;

(d) activating the electric source connected to the cathode and anode;

(e) electrolyzing the solution in the reactor; and

(f) electrochemically forming an oxidized phenolic polymer on the inner surface of the anode.

4,444,628
PROCESS FOR TREATING AL ALLOY CASTING AND DIE CASTING

Shichiro Furukawa, Osaka; Yutaka Nakagishi, Ueno, and Shigeru Yamato, Osaka, all of Japan, assignors to Okuno Chemical Industry Co., Ltd., Osaka, Japan

Filed Aug. 24, 1983, Ser. No. 526,025

Claims priority, application Japan, Aug. 26, 1982, 57-148745

Int. Cl.³ C25D *11/16, 11/18*

U.S. Cl. 204—29 39 Claims

1. A process for treating an aluminum alloy casting or an aluminum alloy die casting, the process comprising the steps of chemically polishing the casting with a bath containing phosphoric acid, processing the chemically polished casting by tumbling and/or by blasting and subjecting successively the casting to degreasing, anodic oxidation, dyeing and sealing.

4,444,629

ZINC-IRON ALLOY ELECTROPLATING BATHS AND PROCESS

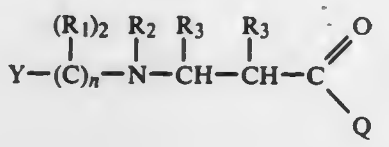
Sylvia Martin, Utica, Mich., assignor to OMI International Corporation, Warren, Mich.

Continuation-in-part of Ser. No. 381,089, May 24, 1982, Pat. No. 4,401,526, and Ser. No. 381,090, May 24, 1982, Pat. No. 4,397,718. This application Aug. 5, 1983, Ser. No. 520,082

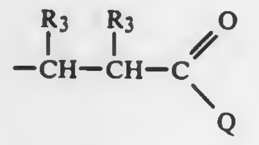
Int. Cl.^{3} C25D *3/56*

U.S. Cl. 204—43 Z **15 Claims**

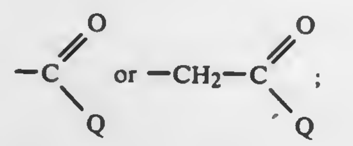
1. An aqueous zinc/iron alloy electroplating bath having a pH of from about 0 up to about 6.5 and comprising a conductive aqueous solution containing zinc ions, iron ions, and a brightening amount of a brightening additive selected from the group consisting of a monomer of the following general formula and polymers thereof:



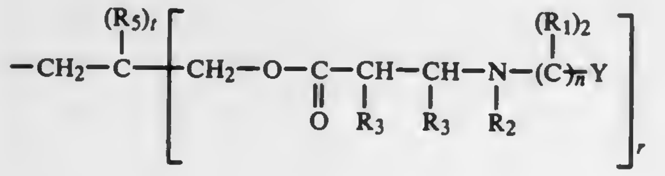
wherein:
- n is from 1 to about 6;
- Y is —OX, —NX_2, —SO_3H, —SO_3M, —COOH, —COOM, —SX, or —CN;
- X is H, or an alkanol, alkamine, sulfoalkyl, carboxyalkyl, hydroxyaryl, sulfoaryl, carboxyaryl, or aminoaryl having from 1 to about 10 carbon atoms;
- M is H, Li, Na, K, Be, Mg or Ca;
- Q is —OR_4, —$N(R_4)_2$, —OZ, —OM, or halogen;
- Z is an aryl group or a substituted aryl group having from about 6 to about 14 carbon atoms;
- R_1 is H or an alkyl group having from 1 to about 4 carbon atoms;
- R_2 is H or an alkyl, alkanol, or alkamine group having from 1 to about 4 carbon atoms or



- R_3 is H or an alkyl group having from 1 to about 4 carbon atoms, phenyl, substituted-phenyl, or



- R_4 is H or an alkyl, alkenyl, alkynyl, alkanol, alkenol, alkynol, keto alkyl, keto alkynyl, keto alkenyl, alkamine, alkoxy, polyalkoxyl, sulfoalkyl, carboxyalkyl, mercapto alkyl, or nitriloalkyl group having from 1 to about 12 carbon atoms, phenyl or substituted phenyl or



$$-CH_2-\overset{(R_5)_t}{\overset{|}{C}}-\left[CH_2-O-\underset{O}{\underset{\|}{C}}-\underset{R_3}{\underset{|}{CH}}-\underset{R_3}{\underset{|}{CH}}-\underset{R_2}{\underset{|}{N}}-(\overset{(R_1)_2}{\overset{|}{C}})_n-Y\right]_r$$

- R_5 is H, —OH, or a hydroxyalkyl group having from 1 to about 4 carbon atoms;
- r is 1 to about 3;
- t is 0 to 2;
- t+r is an integer equal to 3;

and mixtures thereof.

4,444,630

ACID BRIGHT ZINC PLATING

Carl Steinecker, Westland, Mich., assignor to Richardson Chemical Company, Des Plaines, Ill.

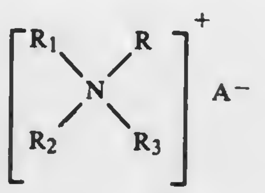
Continuation of Ser. No. 197,163, Oct. 15, 1980, abandoned, which is a continuation of Ser. No. 79,168, Sep. 26, 1979, abandoned, which is a continuation of Ser. No. 904,379, May 10, 1978, abandoned, which is a continuation of Ser. No. 814,337, Jul. 11, 1977, Pat. No. 4,089,755. This application Nov. 30, 1981, Ser. No. 326,006

The portion of the term of this patent subsequent to May 16, 1995, has been disclaimed.

Int. Cl.^{3} C25D *3/22*

U.S. Cl. 204—55 R **10 Claims**

1. In an aqueous bath for producing bright zinc electroplated deposit having a pH of from 4.0 to 6.5, containing a zinc ion source and secondary addition agents which function as brighteners and grain refiners, the improvement comprising including in said bath, as a primary addition agent, an effective amount of a cationic quaternary ammonium surfactant of the formula



wherein R, R_1 and R_3 are lower alkyl radicals, R_2 is a polyoxypropylene radical and A is selected from the group consisting of halogen, sulfate and sulfamate, said quaternary ammonium surfactant having a molecular weight of from 500 to 3000, and an effective amount of an alkyl substituted naphthalene sulfonic acid or water soluble salt thereof wherein the alkyl groups contain from 1 to 4 carbon atoms.

4,444,631

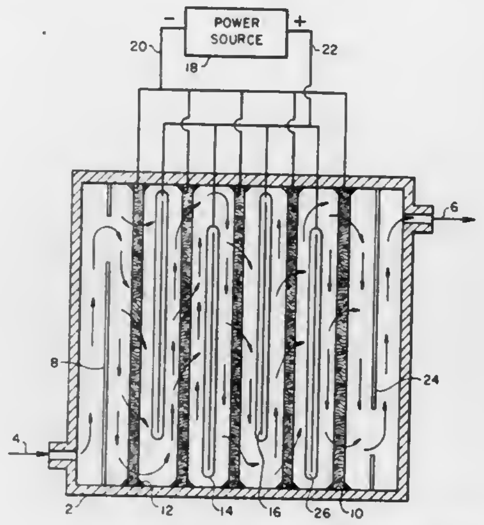
ELECTROCHEMICAL PURIFICATION OF CHLOR-ALKALI CELL LIQUOR

Tilak V. Bommaraju, and Charles G. Rader, both of Grand Island, N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 262,375, May 11, 1981, abandoned. This application Jul. 29, 1981, Ser. No. 287,967

Int. Cl.^{3} C25B *1/26, 9/00, 11/03, 11/08*

U.S. Cl. 204—95 **20 Claims**



19. A method for electrochemically removing alkali metal chlorate from chlor-alkali cell catholyte liquor comprising:
   - (a) withdrawing catholyte liquor from a chlor-alkali cell,
   - (b) feeding said catholyte liquor into the cathode compartment of an electrochemical cell containing at least one anode, at least one cathode fabricated from compressed filaments or wires of a ferrous material, and at least one ion exchange membrane disposed between said anode and cathode and defining said cathode compartment and an anode compartment,
   - (c) electrolyzing said catholyte liquor, and
   - (d) removing catholyte liquor having a reduced content of sodium chlorate from said cathode compartment.

4,444,632

ELECTROLYSIS CELL

Oronzio deNora, Milan, Italy, assignor to Oronzio deNora Impianti Elettrochimici S.p.A., Milan, Italy

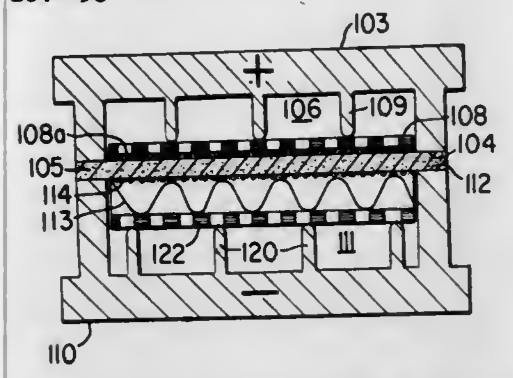
Division of Ser. No. 151,346, May 19, 1980, which is a continuation-in-part of Ser. No. 102,629, Dec. 11, 1979, Pat. No. 4,340,452. This application May 27, 1982, Ser. No. 382,690

Claims priority, application Italy, Aug. 3, 1979, 24919 A/79; Jan. 28, 1980, 19592 A/80

The portion of the term of this patent subsequent to Jul. 20, 1999, has been disclaimed.

Int. Cl.^{3} C25B *1/34, 9/00*

U.S. Cl. 204—98 **18 Claims**



7. An electrolytic cell comprising a flexible ion permeable diaphragm having opposed electrodes on opposite sides thereof, at least one of said electrodes comprising a compressible resilient, electrolyte-permeable mat open to gas and electrolyte flow and conductive polarized electrode surface associated therewith and means slideable with respect to the mat for compressing the mat against the diaphragm and means on the opposite side of the diaphragm to support the diaphragm.

4,444,633

PRODUCTION OF SODIUM HYDROXIDE AND BORIC ACID BY THE ELECTROLYSIS OF SODIUM BORATE SOLUTIONS

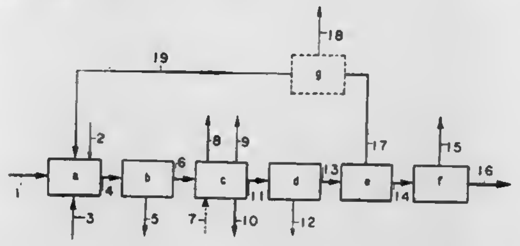
Rasit Tolun, Erenköy; Bedri D. Emir, Etiler; Ismail E. Kalafatoglu; Sidika Kocakusak, both of Erenköy, and Nuran Yalaz, Kiziltoprak, all of Turkey, assignors to Turkiye Bilimsel ve Teknik Arastirma Kurumu, Turkey

Filed Dec. 20, 1982, Ser. No. 451,241

Claims priority, application Turkey, Dec. 18, 1981, 118584

Int. Cl.^{3} C25B *1/16, 1/22*

U.S. Cl. 204—98 **17 Claims**



1. An economical process for the production of sodium hydroxide and boric acid from borax, including the steps:
   - (a) mixing borax with water to form an aqueous solution of borax;
   - (b) introducing said aqueous solution of borax into an electrolysis cell having cathode and anode compartments;
   - (c) applying a current across said cell to effect electrolysis;
   - (d) maintaining the Na_2O/B_2O_3 ratio between about 0.15 and about 0.05 at the anode compartment outlet during electrolysis;
   - (e) collecting sodium hydroxide solution from said cathode compartment;
   - (f) collecting boric acid solution which contains a small amount of borax from said anode compartment.

2. The process as recited in claim 1 which includes the further step of maintaining said aqueous borax solution at a temperature between about 60°C. and 100°C. during electrolysis.

4,444,634

POLYADDUCT/POLYCONDENSATE WHICH CONTAINS BASIC NITROGEN GROUPS, AND ITS USE AS ELECTRODEPOSITABLE COATING

Fritz E. Kempter, Mannheim, and Eberhard Schupp, Schwetzingen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 15, 1982, Ser. No. 388,517

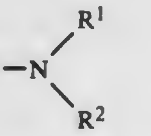
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1981, 3123968

The portion of the term of this patent subsequent to Jul. 20, 1999, has been disclaimed.

Int. Cl.^{3} C25D *13/06, 13/07*

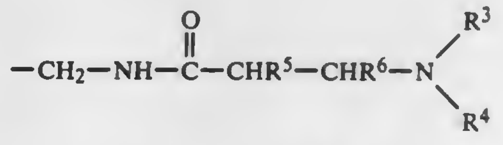
U.S. Cl. 204—181 C **9 Claims**

1. A polyadduct/polycondensate which can be diluted with water when protonated with an acid, contains basic nitrogen groups, and has been obtained by the polyaddition reaction of
   - (A) from 5 to 90% by weight of a Mannich base obtained from
     - (a) a monophenol or polyphenol or a mixture of a monophenol and a polyphenol,
     - (b) one or more dialkylamines of the formula



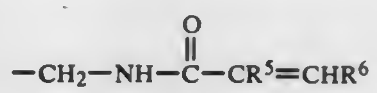
where R^1 and R^2 are identical or different and are each alkyl or alkoxyalkyl of 1 to 9 carbon atoms, or are linked to one another to form a 5-membered or 6-membered ring, and

   - (c) formaldehyde or a formaldehyde donor, with
   - (B) from 10 to 95% by weight of one or more epoxy resins, wherein the polyadduct/polycondensate of (A) with (B) contains groups, which are bonded to aromatic rings, of the formula (I)



(I)

and may or may not contain groups of the formula (II)



$$-CH_2-NH-\overset{O}{\overset{\|}{C}}-CR^5{=}CHR^6 \qquad \text{(II)}$$

where R^3 and R^4 are identical or different and are each alkyl of 1 to 9 carbon atoms, or hydroxyalkyl or alkoxyalkyl, each of 2 to 10 carbon atoms, or are linked to one another to form a 5-membered or 6-membered ring, and R^5 and R^6 are identical or different and are each hydrogen or methyl.

4,444,635

FILM FORMING METHOD

Shigeru Kobayashi, Tokyo; Nobuo Nakagawa, Yokohama; Katsuo Abe, Yokosuka; Tsuneaki Kamei, Kanagawa, and Kazuyuki Fujimoto, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 21, 1982, Ser. No. 400,258

Claims priority, application Japan, Jul. 22, 1981, 56-113660; May 17, 1982, 57-81457

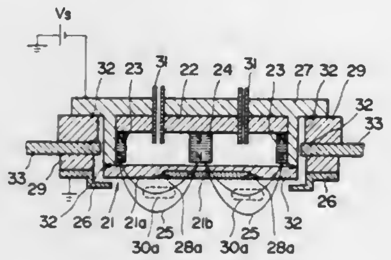
Int. Cl.^{3} C23C *15/00*

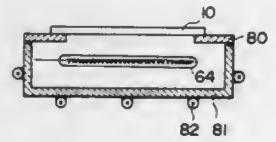
U.S. Cl. 204—192 R **16 Claims**

1. A film forming method for forming a film on a substrate comprising the steps of:

preparing a target plate having at least a center region and a second region around said center region of different materials, and

forming a plasma above said target plate for sputtering said materials out of said target plate and depositing onto said substrate, and





controlling excitation current flowing in a solenoid to shift said plasma across a boundary between said two regions in a planar magnetron sputtering structure whereby said film is provided with desired composition of said materials.

4,444,636

SYSTEM FOR THE GALVANIC DEPOSITION OF METALS SUCH AS ALUMINUM

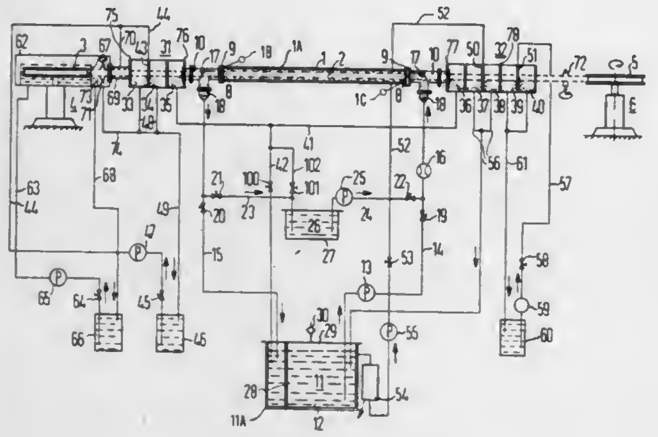
Richard Doetzer; Klaus Stoeger, both of Nuremberg; Paul Hini, Kosbach, and Johann Gehring, Spardorf, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 3, 1981, Ser. No. 270,129

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1980, 3023827

Int. Cl.^{3} C25D *17/02, 7/06*

U.S. Cl. 204—206 **18 Claims**



1. Apparatus for the continuous galvanic deposition of aluminum onto elongated material in the form of wire, strips, tubing, and the like from an aprotic organo-aluminum liquid electrolyte which is free from oxygen and water, said apparatus coamprising:

a generally elongated cell having generally tubular side walls, and having opposed outermost end portions, said cell being adapted for the passage longitudinally therethrough of said elongated material,

a pair of connecting components, each one being associated with a different respective end portion of said elongated cell, each one of said connecting components further including:

a longitudinally extending generally tubular portion and a generally transversely extending generally tubular portion which is abuttingly interengaged at one end thereof with a mid portion of said longitudinally extending portion to define an entrance therebetween,

guide means associated with at least a longitudinally outermost end portion of said longitudinally extending portion,

said guide means having longitudinally extending therethrough a passageway for the passage therethrough longitudinally of said elongated material,

said guide means further having a longitudinally innermost terminal face that extends angularly across said longitudinally extending generally tubular portion,

said terminal face being adapted to deflect flow of said electrolyte angularly relative to said longitudinally extending generally tubular portion,

a pair of airlocks means, each one being associated with said longitudinally outermost end portion of a different one of said pair of connecting components, each one of said airlock means further including transversely extending diaphragm means having diaphragm channel means defined therein for the passage therethrough longitudinally of said elongated materials, said channel means being adapted to substantially prevent air from entering into said cell as said elongated material moves therethrough,

an electrolyte closed circulation means, including an electrolyte reservoir container means, a pump means, and conduit means interconnecting said reservoir means with said generally transversely extending generally tubular portion for circulating said electrolyte through said elongated cell, and through said conecting means,

electrode means, insulation means and conduction supply means therefor associated with said elongated cell and arranged to provide an electric field in said cell when filled with said electrolyte and said elongated material is so passed therethrough.

4,444,637

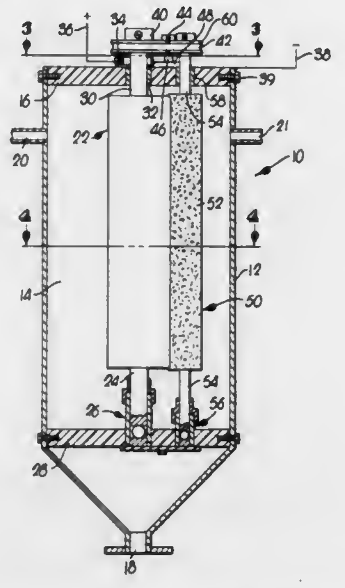
ELECTRICAL TREATING APPARATUS HAVING ELECTRODE CLEANER

Arthur S. King, 8021 Cherokee La., Leawood, Kans. 66206

Filed Apr. 28, 1983, Ser. No. 489,333

Int. Cl.^{3} B03C *5/02*

U.S. Cl. 204—212 **6 Claims**



1. Apparatus for electrically treating liquids comprising:

a container for liquid to be treated;

oppositely chargeable electrode means associated with said container, including an electrically conductive member received within the container in disposition for immersion within liquid to be treated;

means for connecting said electrode means across a source of electrical potential for oppositely charging the same and for producing an electric field within the container to which liquid to be treated may be exposed,

said electrode means being so connected across said source of electrical potential as to cause said conductive member to function as a sacrificial anode when liquid to be treated is present in the container;

a scrubbing element mounted within said container in contacting engagement with said conductive member; and

means for effecting relative rotation between said scrubbing element and said conductive member so as to progressively expose different portions of the surface of said member to said scrubbing element for removal of any deposits on the member tending to inhibit anodic sacrificial action.

4,444,638

ELECTROCHEMICAL CELL

Daniel E. Maloney, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 225,639, Jan. 16, 1981, Pat. No. 4,349,422. This application May 5, 1982, Ser. No. 374,969

Int. Cl.^{3} C25B *9/00, 13/08*

U.S. Cl. 204—252 **10 Claims**

1. An electrochemical cell which comprises an anode compartment, an anode situated within said anode compartment, a cathode compartment, a cathode situated within said cathode compartment, and, separating said compartments, a cation-exchange membrane which comprises at least a first layer, said first layer being of a first fluorinated polymer having carboxylic functional groups in ion-exchange form and having an equivalent weight in the range of 1000 to 1100, said first layer having a first exposed surface which has a roughness in the range of 0.4 to 1.3 microns, said membrane having a second exposed surface which has a roughness in the range of 1.3 to 13 microns, provided that said first exposed surface is smoother than said second exposed surface, wherein said membrane is disposed so that said first exposed surface faces toward said cathode compartment.

4,444,639

ELECTROLYZER

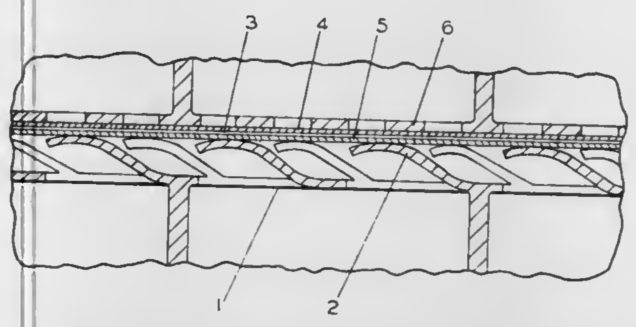
Helmuth Schurig, Holzwickede, and Helmut Schmitt, Dortmund, both of Fed. Rep. of Germany, assignors to UHDE GmbH, Dortmund, Fed. Rep. of Germany

Filed Jul. 27, 1982, Ser. No. 402,306

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1981, 3132947

Int. Cl.^{3} C25B *9/02, 13/02;* **C25C** *7/04*

U.S. Cl. 204—257 **2 Claims**



1. In an electrolyzer of the type having a cell housing, facilities for feeding the electrolyte and withdrawing the electrolysis products, means for conducting electric current and at least one cathode and anode assembly consisting of an anode and a cathode separated by a membrane permeable to ions, the improvement comprising: said anode and said cathode each consisting of a flat element permeable to gas and liquid; a rigid pressure plate disposed along one side of said anode and cathode assembly; and a flexible pressure plate disposed along the other side of said anode and cathode assembly, said flexible pressure plate comprising a conductive metal plate including a number of rows of alternately spaced contact pads pressed and bent to one side for producing surfaces contacting said other side of said cathode and anode assembly, the contacting surfaces of said contact pads covering 30 to 70% of said other side of said anode and cathode assembly and the contacting surface of each said contacting pad being plane-parallel to said other side of said cathode and anode assembly, whereby said anode and said cathode are biased towards each other to produce a full surface contact between said anode, said membrane and said cathode.

4,444,640

DIMENSIONALLY STABLE ASBESTOS-POLYTETRAFLUOROETHYLENE DIAPHRAGMS FOR CHLORALKALI ELECTROLYTIC CELLS

Shan-Pu Tsai; Leo L. Benezra, both of Mentor; Lewis R. Horvat, Painesville, and John P. Hazzard, Mentor, all of Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 189,036, Sep. 22, 1980, abandoned. This application Mar. 29, 1982, Ser. No. 362,865

Int. Cl.^{3} C25B *11/03, 13/06, 13/08;* **B05D** *5/12*

U.S. Cl. 204—283 **8 Claims**

1. A process for making polytetrafluoroethylene fibrid and asbestos fiber containing diaphragm for an electrolytic cell, comprising:

forming an aqueous slurry of asbestos fibers and polytetrafluoroethylene fibrids, wherein said polytetrafluoroethylene fibrids comprise from about 1 to about 10 grams/liter of said slurry, and wherein said polytetrafluoroethylene fibrids before shrinking are between about 0.1 microns to 100 microns in diameter, by dissolving a solid, granular, inert material intimately admixed with polytetrafluoroethylene fibrids and mixing same with asbestos fiber, said dissolving occurring before or after said mixing;

depositing said slurry of asbestos fibers and polytetrafluoroethylene fibrids on a foraminous electrically conductive substrate to form a mat for a diaphragm while removing the majority of the dissolved solid, granular, inert material; and

heating said deposited slurry to dry said mat, and thereafter heating said dry mat to temperatures about 290° C., to shrink and/or fuse said polytetrafluoroethylene fibrids in said dried mat to form a matrix holding said asbestos fibers in a polytetrafluoroethylene fibrid and asbestos fiber containing diaphragm, said fused deposit containing polytetrafluoroethylene fibrids comprising from about 5 to about 25 percent by weight of said diaphragm.

8. A diaphragm for an electrolytic cell containing polytetrafluoroethylene fibrids and asbestos fibers made by the process of claims **1** or **4**.

4,444,641

ELECTRODE

Yoshio Oda; Hiroshi Otouma, and Eiji Endoh, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Jul. 2, 1981, Ser. No. 279,754

Claims priority, application Japan, Jul. 11, 1980, 55-93867

Int. Cl.^{3} C25B *11/02, 13/00*

U.S. Cl. 204—286 **6 Claims**

1. An electrode consisting essentially of a thin net type sheet having 50 to 3 mesh and a wire diameter of 0.15 to 2 mm and an elastic deformation factor of up to 1 mm under a load of 1 Kg/cm^2 which is covered with an electrochemically active material and said mesh electrode is supported by a foraminous planar electrode support having a higher overvoltage than that of said thin net type sheet with which said thin net is closely brought into contact.

5. The electrode according to claim 1 wherein said electrode is used in an electrolytic cell equipped with a cation exchange membrane, an asbestos diaphragm or a composite of asbestos diaphragm and a resin.

4,444,642

DIMENSIONALLY STABLE COATED ELECTRODE FOR ELECTROLYTIC PROCESS, COMPRISING PROTECTIVE OXIDE INTERFACE ON VALVE METAL BASE, AND PROCESS FOR ITS MANUFACTURE

Jean M. Hinden, Chambésy, Switzerland, and Henri B. Beer, Heide Kalmthout, Belgium, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Aug. 17, 1981, Ser. No. 293,382

Claims priority, application United Kingdom, Aug. 18, 1980, 8026831; Apr. 6, 1981, 8110759

Int. Cl.^{3} C25B *11/16, 11/10*

U.S. Cl. 204—290 F **9 Claims**

1. A method of manufacturing an anode for use in an electrolytic process, comprising a valve metal base and an outer coating of lead dioxide or manganese dioxide characterized by the steps of:

(a) converting valve metal in the surface of said valve metal base into a protective layer of electrically conducting mixed oxide integrated with said surface by:

(i) applying to said surface a solution containing 0.14 to 3.0 moles per liter of hydrogen chloride and 0.02 to 0.10 mole per liter noble metal chloride selected from chlorides of iridium, rhodium and ruthenium, said concentrations being selected to provide a molar ratio of hydrogen chloride to noble metal chloride of between about 3:1 and about 30:1;

(ii) drying said solution on said surface slowly to achieve substantial reaction between said hydrogen chloride and said surface, thereby forming on said surface an intimate mixture of the valve metal chloride and the noble metal chloride in proportions consonant with said molar ratio;

(iii) heating the thus treated valve metal base from (ii) in an oxidizing atmosphere at 400° C. to 600° C. until said intimate mixture has been converted into an electrically conducting mixed oxide integrated with the surface of said base;

(iv) repeating this sequence of steps (i) through (iii) until enough of said conductive mixed oxide has been integrally grown on said surface to provide a protective layer for said valve metal base; and

(b) applying an outer coating of lead dioxide or manganese dioxide onto said protective layer of electrically conducting mixed oxide.

4. The method of claim 1, 2, or 3, characterized in that said outer coating is electrodeposited in an amount corresponding to at least 100 grams per square meter of the valve metal base surface.

4,444,643

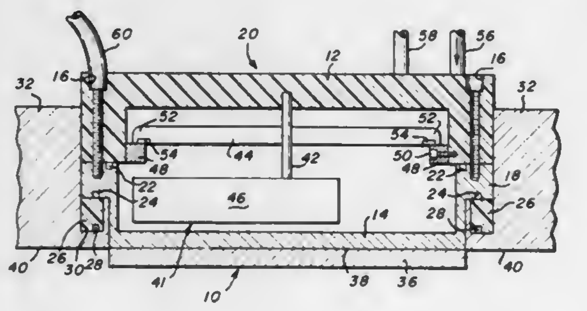
PLANAR MAGNETRON SPUTTERING DEVICE

Charles B. Garrett, San Jose, Calif., assignor to Gartek Systems, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 414,649, Sep. 3, 1982, abandoned. This application Jun. 16, 1983, Ser. No. 504,598

Int. Cl.^{3} C23C *15/00*

U.S. Cl. 204—298 **14 Claims**



1. A planar magnetron sputtering device, comprising in combination:

a low pressure inert gas chamber including means for positioning an object of having a surface to be coated;

means within said chamber for providing a source of coating material wherein, said source of coating material has a planar target surface, and

a magnetic source means positioned behind said target surface and comprising a plurality of permanent magnets radially oriented within a magnetically permeable ring encased in a corrosion resistant material and which is connected to a drive shaft driven by vanes adapted to be struck by a flow of coolant to cause movement of the magnetic source means with respect to the source of coating material such that the lines of magnetic flux created sweep the target surface of the source of coating material;

whereby the coating material may be transferred from the source of coating material to the surface to be coated and the motion of the magnetic source can deplete the source of coating material uniformly and coat the surface to be coated uniformly.

4,444,644

PH ELECTRODE

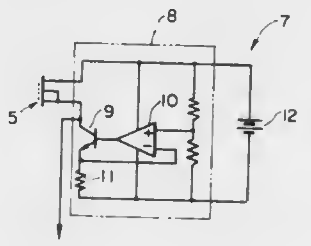
Junichi Hiramoto, and Shinichi Ohkawa, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Feb. 16, 1982, Ser. No. 348,885

Claims priority, application Japan, Feb. 17, 1981, 56-21953

Int. Cl.^{3} G01N *27/30, 27/56*

U.S. Cl. 204—406 **2 Claims**



1. A PH detecting apparatus, comprising; an electrode including an ion-sensitive field-effect transistor (ISFET) for providing a potential difference according to a PH value of an electrolyte solution under measurement, said electrode including an operating DC source connected to the source of said ISFET, said electrode further comprising, a circuit comprising an operational amplifier in parallel with said DC source, a resistor connected in series to one side of said DC source, said ISFET connected in series to the other side of said DC source, and a transistor having its emitter connected to said resistor, its base connected to said amplifier and its collector connected to said ISFET, an output being taken from the junction of a collector of said transistor and a drain of said ISFET, said electrode forming one input to a potential difference type PH apparatus, and a reference electrode forming a second input to said potential difference apparatus.

4,444,645

MEASURING APPARATUS FOR THE ANALYTICAL DETERMINATION OF A GAS PARTIAL PRESSURE

Jacques Deprez, Frechen; Eckard Drope; Peter Greif, both of Cologne, and Gabriele Soth-Haas, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 12, 1982, Ser. No. 397,618

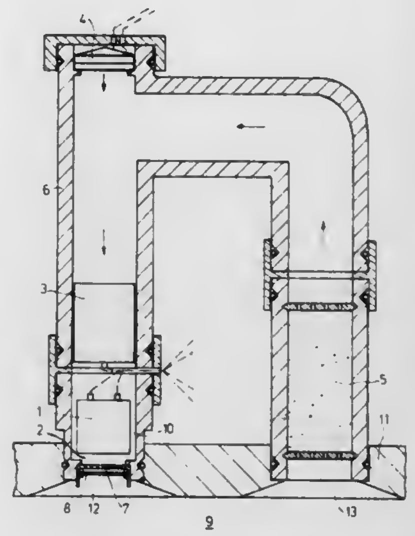
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1981, 3129680

Int. Cl.^{3} G01N *27/46*

U.S. Cl. 204—409 **6 Claims**

1. In a measuring apparatus for the analytical determination of a gas component, having an electrochemical sensor for

producing an electrical signal representative of the concentration of a gas component, a cavity adjacent to the sensor surface and through which the gas diffuses to the sensor surface, the improvement comprising: pumping means connected to the cavity for flowing a given gas therein which is free of the gas component to be sensed, and means for controlling the pumping means in response to the electrical signal produced by the sensor to reduce the concentration of the gas component at the sensor surface upon an indication by the electrical signal of an increase in concentration of the gas component.



4,444,646

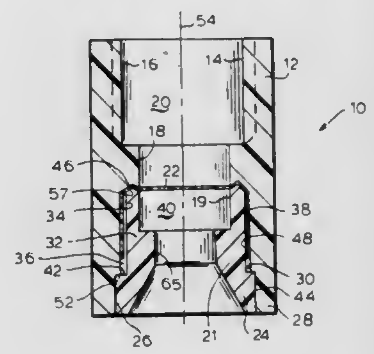
MEMBRANE CAP ASSEMBLY FOR OXYGEN MONITORS

Louis G. Metzger, Closter, N.J., and Albert H. Brand, Briarcliff Manor, N.Y., assignors to Becton, Dickinson and Company, Paramus, N.J.

Filed Apr. 29, 1983, Ser. No. 490,052

Int. Cl.^{3} G01N *27/46*

U.S. Cl. 204—415 **6 Claims**



1. Membrane cap assembly apparatus for oxygen monitors, comprising

(a) a cap assembly body;

(b) an electrode body receiving bore positioned in one end of said assembly body;

(c) cooperating attaching means in said bore for attachment to an electrode body; the improvement characterized by

(d) a counterbore in said assembly body at the end thereof opposite said bore;

(e) a secondary counterbore in said assembly bore extending from said counterbore;

(f) the diameter of said secondary counterbore being less than said counterbore;

(g) an annular retainer inserted into said counterbore and said secondary counterbore;

(h) cooperating means on the opposed surfaces of said counterbore and said annular retainer for maintaining said retainer in said counterbore;

(i) the opposed surfaces of said secondary counterbore and said annular retainer being spaced from each other to define an annular membrane retaining space;

(j) a flat membrane extending across said annular retainer at the end thereof adjacent said secondary counterbore;

(k) the outer edges of said membrane retained in said annular membrane retaining space;

(l) the upper annular edge of said annular retainer being spaced from the opposed surfaces of said cap assembly bore to form an annular membrane receiving gap; and

(m) the width of said gap being less than the width of said membrane receiving space.

4,444,647

PROCESS FOR THE OIL EXTRACTION FROM OIL SAND BY USING CYCLODEXTRIN

Koki Horikoshi, Tokyo, Japan, and Ichiro Shibanai, No. 6-10-6-312, Akasaka, Minato-ku, Tokyo, Japan, assignors to Rikagaku Kenkyusho and Ichiro Shibanai, both of Wako, Japan

Filed Jan. 18, 1982, Ser. No. 340,501

Claims priority, application Japan, Feb. 22, 1981, 56-8412

Int. Cl.^{3} C10G *1/00*

U.S. Cl. 208—11 LE **17 Claims**

1. A process for the oil extraction from oil sand comprising: mixing oil sand, cyclodextrin and water with one another to prepare a suspension, leaving the suspension to stand or centrifuging it to separate into an oil, a water and a sand layer, then collecting the oil layer and wherein the cyclodextrin is used in an amount of from 0.5 to 10% by weight based on oil sand.

4,444,648

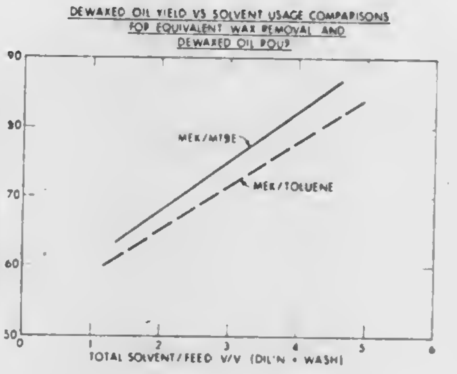
SOLVENT DEWAXING WITH METHYL TERTIARY BUTYL ETHER

Theodore H. West, Sarnia, Canada, assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Mar. 8, 1982, Ser. No. 356,092

Int. Cl.^{3} C10G *73/06*

U.S. Cl. 208—33 **11 Claims**



1. In a solvent dewaxing process wherein a waxy hydrocarbon oil is mixed with a dewaxing solvent and chilled to form a slurry comprising solid particles of wax and a mixture of dewaxed oil and solvent, the improvement which comprises using as the dewaxing solvent methyl tertiary butyl ether.

4,444,649

ANTIFOULANT FOR HIGH TEMPERATURE HYDROCARBON PROCESSING

Louis M. Dvoracek, Brea, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Nov. 15, 1982, Ser. No. 441,666

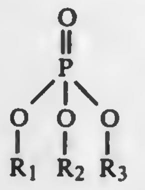
Int. Cl.^{3} C10G *9/16*

U.S. Cl. 208—48 AA **22 Claims**

1. A substantially anhydrous hydrocarbon oil composition comprising a substantially anhydrous hydrocarbon oil having dissolved therein at least one tri-substituted phosphate in a concentration of about 5 ppmw to about 500 ppmw, said composition having a reduced tendency for fouling at elevated

temperatures as compared to that of said anhydrous hydrocarbon oil.

12. A method for reducing fouling of heated surfaces contacted with a hydrocarbon oil during refinery processing thereof, said method comprising the step of contacting a substantially anhydrous hydrocarbon oil with said heated surfaces during said refinery processing, said substantially anhydrous hydrocarbon oil containing a foulant-inhibiting amount in a concentration of about 5 ppmw to about 500 ppmw, of an additive comprising at least one tri-substituted phosphate, said tri-substituted phosphate being characterized by the formula:



$$O{=}P(OR_1)(OR_2)(OR_3)$$

where R_1, R_2 and R_3 are selected from the group consisting of an alkyl, aryl, alkaryl, cyloalkyl, alkenyl, and aralkyl radical.

4,444,650

PROCESS FOR COKING HIGH-BOILING AROMATIC HYDROCARBON MIXTURES TO FORM CARBON MATERIALS HAVING CONSTANT PROPERTIES

Herbert Glaser, Gladbeck; Karl-Heinz Koch, Castrop-Rauxel; Rolf Marrett, Castrop-Rauxel, and Manfred Meinbreckse, Friedrichsdorf, all of Fed. Rep. of Germany, assignors to Rutgerswerke Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Sep. 4, 1981, Ser. No. 299,434

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1980, 3035593

Int. Cl.^{3} C10G *9/42*

U.S. Cl. 208—106 **12 Claims**

1. A process for the coking of a high-boiling aromatic hydrocarbon mixture to form carbon materials having constant properties which comprises heating and coking said hydrocarbon mixture in layers up to 100 mm thickness according to a defined temperature/time program whereby the functional relationship between layer thickness and optimum coking time which applies to that program is determined for the particular hydrocarbon mixture used by means of a preliminary experiment which comprises heating and coking a small quantity of said hydrocarbon mixture under standardized conditions, determining the minimum coking temperature thereof by observing the first meso-phases therein, determining the coking time and final coking temperature taken to the solidification of the meso-phase to green coke and calculating said temperature/-time program from the values thus determined wherein the coking time δ in minutes is a function of the layer thickness δ in mm determined by the formula:

$$\tau = a \cdot \delta^X$$

wherein the proportionality factor a is ascertained from the coking time in said preliminary experiment and ranges between 3 and 9 and the temperature-dependent exponent X results from the final coking temperature θ_E ascertained in the preliminary experiment, and from the graph in the drawing in which an exponent X of 0.9 has been empirically ascertained for a final coking temperature θ_E of 450° C., an X of 0.8 for $\theta_E=500°$ C. and an X of 0.5 for $\theta_E=530°$ C.

4,444,651

CARBO-METALLIC OIL CONVERSION WITH CONTROLLED CO:CO_2RATIO IN MULTISTAGE REGENERATION

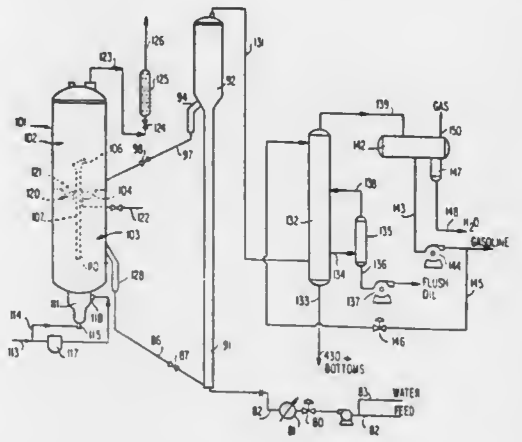
George D. Myers, and Lloyd E. Busch, both of Ashland, Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Division of Ser. No. 94,091, Nov. 14, 1979, Pat. No. 4,299,687. This application Nov. 9, 1981, Ser. No. 319,570

The portion of the term of this patent subsequent to Nov. 10, 1998, has been disclaimed.

Int. Cl.^{3} C10G *11/05, 11/18*

U.S. Cl. 208—120 **136 Claims**



1. A process for converting the residue from partially distilling a hydrocarbonaceous material to lighter products, comprising:

I. providing a distillation bottoms oil containing 650° F.+ material, said 650° F.+ material being characterized by a carbon residue on pyrolysis of at least about 1 and by containing at least about 4 parts per million of Nickel Equivalents of heavy metal(s);
II. bringing said converter feed together with cracking catalyst bearing substantially more than 600 ppm Nickel Equivalents of heavy metal to form a stream comprising a suspension of said catalyst in said feed and causing the resultant stream to flow through a progressive flow type reactor having an elongated reaction chamber which is at least in part vertical or inclined for a vapor riser residence time in the range of about 0.5 to about 10 seconds at a temperature of about 900° to about 1400° F. and under a pressure of about 10 to about 50 pounds per square inch absolute sufficient for causing a conversion per pass in the range of about 50% to about 90% while producing coke in amounts in the range of at least about 6 by weight based on fresh feed, and laying down coke on the catalyst in amounts in the range of about 0.3 to about 3% by weight;
III. separating said catalyst from the resultant cracking products;
IV. stripping said separated catalyst;
V. regenerating said metals-bearing, coked catalyst by burning the coke in a two-stage regeneration zone with oxygen-containing combustion-supporting gas while forming combustion product gases comprising CO and/or CO_2 and a sulfur oxide, maintaining the CO:CO_2 molar ratio of the combustion product gases formed from the burning of at least the major weight portion of the coke at a level of at least about 0.25 while such gases are in heat exchange contact with the catalyst, burning sufficient coke to reduce the weight of carbon on catalyst to about 0.1% or less while limiting the amount of combustion-supporting gas supplied to the regeneration operation as a whole to less than the stochiometric amount which would be required to burn all of the carbon in the coke to CO_2, to burn all of the H_2 in the coke to H_2O and to burn any other combustibles which may be present in the coke to their respective combustion products, and restricting the combined free oxygen mole % of all gases resulting from the entire, completed combustion of coke in said two-stage regeneration zone to zero or an amount substantially less than 2%; and
VI. recycling the regenerated catalyst to the reactor for contact with fresh feed.

4,444,652

UPGRADING GASOLINE DERIVED FROM SYNTHESIS GAS

Christopher J. Brown, Tadworth, and Antony H. P. Hall, Cobham, both of England, assignors to The British Petroleum Company Limited, London, England

Filed Oct. 14, 1981, Ser. No. 311,465

Claims priority, application United Kingdom, Oct. 17, 1980, 8033510

Int. Cl.^{3} C10G *35/06*

U.S. Cl. 208—135 **9 Claims**

1. A process for upgrading a feedstock comprising low grade gasoline made from synthesis gas, wherein said low grade gasoline has a RON of less than 50, contains substantial quantities of C_5–C_{12} unsaturated hydrocarbons with a bromine number of 35–40 and also contains oxygenated compounds, characterised in that the feedstock is brought into contact in the vapor phase with a catalyst composition comprising an aluminosilicate having a gallium compound deposited thereon and/or an aluminosilicate in which cations have been exchanged with gallium ions, said aluminosilicates having a silica to alumina molar ratio of at least 5:1.

4,444,653

PROCESS AND DEVICE FOR WITHDRAWING SOLID PARTICLES AND INTRODUCING A LIQUID CHARGE AT THE LOWER PART OF A CONTACT ZONE

Jean-Paul Euzen, Dardilly, and Yves Jacquin, Sevres, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

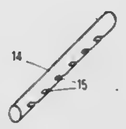
Filed Feb. 2, 1983, Ser. No. 463,183

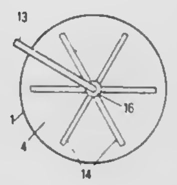
Claims priority, application France, Feb. 2, 1982, 82 01765

The portion of the term of this patent subsequent to Jul. 12, 2000, has been disclaimed.

Int. Cl.^{3} C10B *31/02, 31/12*

U.S. Cl. 208—152 **13 Claims**





1. A process for withdrawing granulated solid particles from a generally confined space and introducing into said space a charge of fluid consisting at least of a liquid, said generally confined space having substantially the shape of an elongate volume of revolution, substantially vertical, the solid particles being introduced at the upper part of the enclosure after having downwardly progressed through said enclosure, whereas the fluid charge is introduced at least in major part at the lower portion of said enclosure and is withdrawn from the upper portion after having upwardly progressed through said enclosure, and said process comprising withdrawing the solid particles from the lower end of a flared zone having the shape of an overturned cone or pyramid whose apex is oriented downwardly, said apex being provided with at least one opening of a sufficient size for the discharge of the solid particles, the surface of the walls of said flared zone being substantially continuous, and the process further comprising injecting at least a portion of the fluid charge in the lower part of said enclosure through at least two orifices located above said walls, each injection orifice being at a distance from said walls at least equal to the average size of a solid particle and at most equal to about 500 times the average size of a solid particle.

4,444,654

METHOD FOR THE RESOLUTION OF ENHANCED OIL RECOVERY EMULSIONS

Virgil H. Cargle, Houston, and Donald L. Shaw, Kingwood, both of Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 1, 1983, Ser. No. 528,394

Int. Cl.^{3} C10G *33/00, 33/04;* E21B *43/00*

U.S. Cl. 208—188 **4 Claims**

1. In a process for recovering crude oil from an oil-in-water emulsion of crude oil, water and hydrophilic surface active agents produced from a reservoir wherein the emulsion is contacted with an emulsion breaking reagent, the improvement comprising a first step consisting essentially of heating the emulsion until it separates into a surfactant laden water layer and an oil-rich emulsion layer, a second step of thereafter removing the water layer from the oil-rich emulsion layer and finally adding said emulsion breaking reagent to said oil-rich emulsion layer while treating said layer with from 20 to 40 volume percent of water.

4,444,655

HYDROTREATMENT OF HEAVY HYDROCARBON OILS CONTAINING ASPHALTENES, AND CATALYSTS THEREFOR

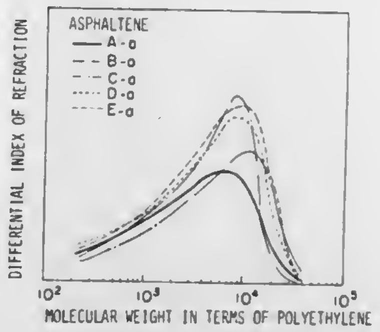
Yoshimi Shiroto, Yokohama; Takeo Ono, Kawasaki; Sachio Asaoka, and Munekazu Nakamura, both of Yokohama, all of Japan, assignors to Chiyoda Chemical Engineering & Construction Co., Ltd., Yokohama, Japan

Division of Ser. No. 210,059, Nov. 24, 1980. This application Sep. 30, 1982, Ser. No. 428,796

Claims priority, application Japan, Feb. 19, 1980, 55-19596

Int. Cl.^{3} C10G *45/04*

U.S. Cl. 208—210 **15 Claims**



1. A process for hydrotreating a heavy hydrocarbon oil containing asphaltenes, said process comprising the step of:

reacting the heavy hydrocarbon oil with hydrogen at a temperature of between 300° and 500° C., a hydrogen pressure of between 50 and 250 atm. and a liquid space velocity of between 0.1 and 10 hour^{-1} in the presence of a catalyst comprising:
a porous carrier composed of one or more inorganic oxides of at least one member selected from the group consisting of the elements belonging to Groups II, III and IV of the Periodic Table; and
one or more catalytic metal components composited with said carrier, the metal of said catalytic metal components being selected from the group consisting of the metals belonging to groups VB, VIB, VIII and IB of the Periodic Table, said catalytic metal components being present in an amount of between about 0.1% and about 30% in terms of metal oxide based on the total weight of said catalyst, said catalyst having the following pore characteristics (a)–(c) with regard to its pores having a diameter of 75 Å or more:

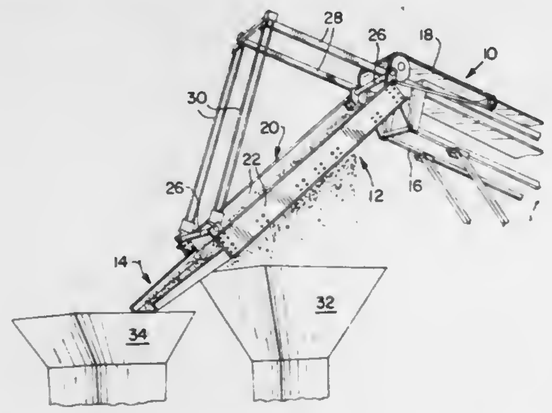
(a) an average pore diameter APD being between about 180 and about 500 Å,
(b) a total pore volume PV in terms of cc/g being at least a value X calculated according to the following equation:

$$X = \frac{0.46}{1 - \left(\frac{100}{APD}\right)^2}$$

the volume of pores with a diameter of between about 180 and about 500 Å being at least about 0.35 cc/g, the volume of pores with a diameter of at least 1500 Å being not greater than about 0.03 cc/g, and
(c) a total surface area SA being at least about 104 m^2/g, said catalyst having an average catalyst diameter ACD of at least about 0.6 mm.

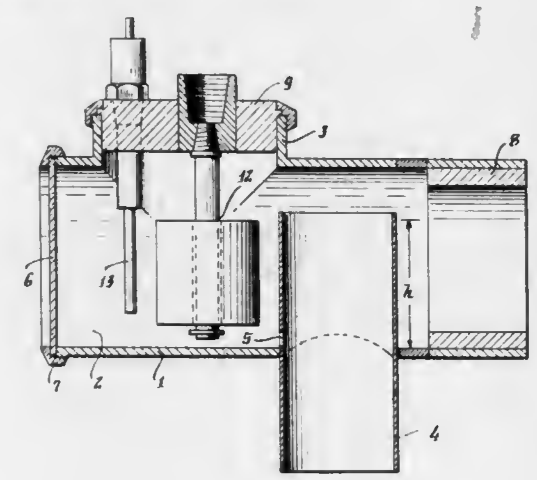
9. A process as set forth in any one of claims **1** through **4**, further comprising the step of:
(b) reacting at least a part of the product from step (a) with hydrogen at a temperature of between 300° and 500° C., a hydrogen pressure of between 50 and 250 atm. and a liquid space velocity of between 0.1 and 10 hours^{-1} in the presence of a catalyst including a porous carrier containing alumina and having composited therewith a combination of first and second catalytic metal components, the metal of said first catalytic metal component being at least one member selected from the group consisting of the metals belonging to Group VIB of the Periodic Table, the metal of said second catalytic metal component being at least one member selected from the group consisting of the metals belonging to Group VIII of the Periodic Table, said catalyst having, with regard to its pores with a diameter of 75 Å or more, the properties of: an average pore diameter being between about 80 and about 250 Å a total pore volume being between about 0.4 and about 1.5 cc/g, and a total surface area being between about 100 and about 400 m^2/g.

4,444,656
CLASSIFYING APPARATUS AND METHODS
Ronald W. Nelson, and Robert D. Nelson, both of Princeton, Ill., assignors to Production Engineered Products, Inc., Walnut, Ill.
Filed Feb. 3, 1982, Ser. No. 345,213
Int. Cl.³ B07B *1/34*
U.S. Cl. 209—347 **20 Claims**



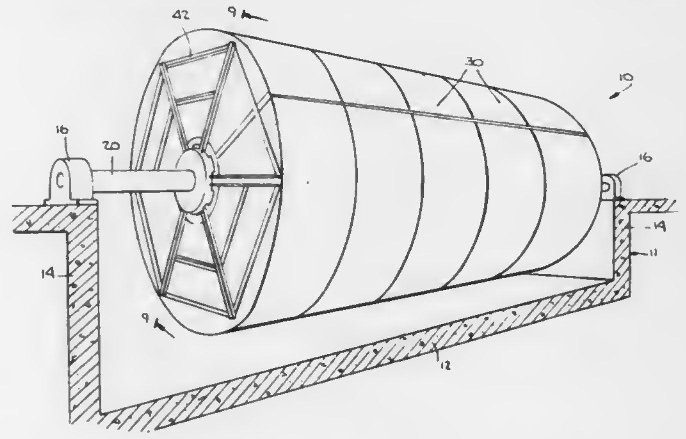
15. A method of classifying solids from each other comprising the steps of:
mounting screen means on an incline on a deck including a frame,
introducing the solids to be classified to the inclined screen means adjacent an inlet end thereof,
continuously contacting said screen means to support said screen means by a plurality of vibration inducing means,
vibrating said screen means by said vibration inducing means independently of the deck at at least two locations spaced from the inlet and discharge ends of the screen means, and
varying at least one of the frequency and amplitude of the vibrations of said screen means at at least one of said locations relative to the other location.

4,444,657
BREAKOVER DETECTOR FOR CENTRIFUGES
Stephen Fenton, Peterborough, Canada, assignor to Alfa-Laval, Inc., Poughkeepsie, N.Y.
Filed May 26, 1983, Ser. No. 498,483
Int. Cl.³ B04B *11/00*
U.S. Cl. 210—95 **9 Claims**



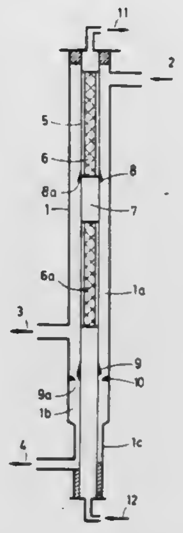
1. A breakover detection device for a centrifugal separator, said device comprising a hollow body forming a main chamber, a float in said chamber, said body having a liquid inlet and a liquid outlet for said chamber, said inlet and outlet being so arranged that small volumes of liquid trickle from the inlet to the outlet without substantially raising the float and large volumes of liquid at least partly fill the chamber to raise the float to an operating position, normally inactivated means including electrodes in said chamber and operable when activated to discriminate between different liquids in which the electrodes are immersed, and a switch operable to activate said discriminating means in response to raising of the float to said operating position.

4,444,658
ROTATING BIOLOGICAL CONTACTOR APPARATUS
Robert W. Hankes, Downington, Pa., and Lloyd H. Parker, Winona, Ohio, assignors to Crane Co., New York, N.Y., a part interest
Filed Aug. 10, 1981, Ser. No. 291,723
Int. Cl.³ C02F *3/08*
U.S. Cl. 210—150 **8 Claims**



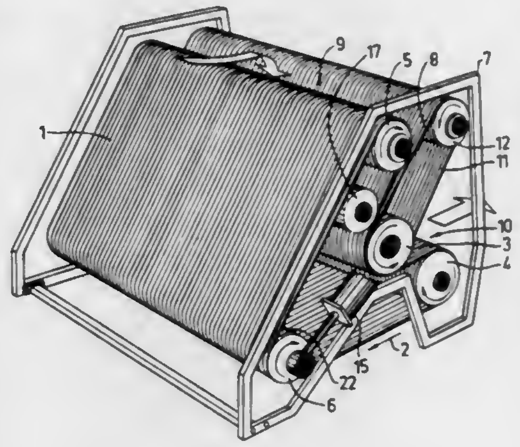
1. A biological water treatment apparatus, comprising:
a tank;
a shaft being mounted for rotation in said tank, said shaft having a plurality of circumferential rows of bayonette lugs;
a plurality of contactor media packs;
a plurality of frames each supporting a separate one of said plurality of contactor media packs thereon, each frame including:
(1) a collar adapted to fit about and be removably secured to one of said plurality of rows of bayonette lugs, each collar having an inner surface with a plurality of recesses, wherein when a collar is secured to said shaft the recesses of said collar and said shaft define flow passages along said shaft;
(2) a plurality of spokes each having one end removably secured to said collar; and
(3) a plurality of axially disposed tubes each removably secured to the other end of a separate one of said plurality of spokes, for supporting a contactor media pack thereon; and
first means for securing each collar to the respective one row of bayonette lugs and spokes.

4,444,659
MAGNETIC SEPARATOR WITH DIRECT WASHING
Günther Beelitz, Christian-Rötzel-Allee 11, and Siegfried Andre, Josefstrasse 71, both of D-4054 Nettetal 1, Fed. Rep. of Germany
Filed Sep. 3, 1982, Ser. No. 414,856
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1981, 3134861
Int. Cl.³ B01D *35/06*
U.S. Cl. 210—222 **8 Claims**



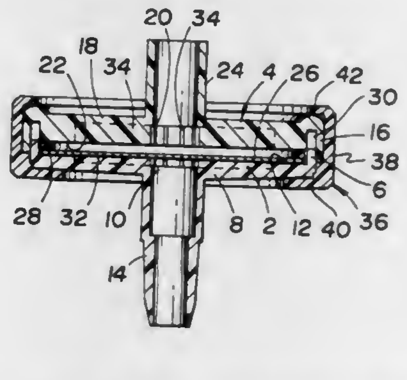
1. A magnetic separator for the separation of ferromagnetic solid particles, and nonmagnetic particles which may be interlocked therewith, from liquid media, comprising a casing which encloses a separation chamber traversed by the medium and having an inlet opening for the medium to be separated and an outlet opening for separated medium, and at least one magnetic member arranged in the separation chamber and surrounded by means for isolating said particles at all times from said magnetic member including an elongated stationary nonmagnetic shell, there being a dirt chamber (**1***b*) following the separation chamber (**1***a*) in the direction of flow of the liquid media, the dirt chamber having a drain (**4**) for separated dirt, said shell (**5**) extending into the dirt chamber (**1***b*) and means to move the magnetic member (**6**, **6***a*) lengthwise within and relative to the shell (**5**) from an operating position in the separation chamber (**1***a*) into a washing position and vice versa, said magnetic member (**6**, **6***a*) being partially in the separation chamber (**1***a*) and partially in the dirt chamber (**1***b*) in said washing position, and at least one blocking means (**9**) on the shell (**5**) and encompassing the shell, said blocking means passable by solid particles moving along the shell (**5**) in the direction of the dirt chamber (**1***b*) during an advancing movement of the magnetic member (**6**, **6***a*) into the washing position, and the solid particles being retained by said blocking means (**9**) during the reverse movement of the magnetic member (**6**, **6***a*) into the operating position.

4,444,660
DEVICE AT PRESSES FOR DEWATERING MATERIALS
Einar L. Karlsson, Åbyn 1203, Burträsk, Sweden (S-937 00)
Filed Apr. 16, 1981, Ser. No. 254,747
Claims priority, application Sweden, Apr. 18, 1980, 8002927
Int. Cl.³ B01D *33/14*
U.S. Cl. 210—386 **7 Claims**



1. Apparatus for dewatering mixtures containing solid material and water comprising at least one endless belt trained over a plurality of end rolls and at least one press roll located between the end rolls, part of the circumference of the press roll being arranged to be enclosed by the belt so as to form a feed opening for said mixtures and so as to expose mixtures introduced into the feed opening and between belt and roll to press pressure, characterized in that said belt includes a plurality of separate belt elements lying beside each other, each with a cross sectional form decreasing from the side facing said press roll thereby forming a groove between each belt element and the adjacent belt element, each belt element having an internal longitudinal reinforcement between its edge portions close to its side facing said press roll, means for maintaining the edge portions at the greatest cross section of the belt elements in contact with each other, said edge portions being non-rigid and elastic, said edge portions contacting said press roll forming openings between said edge portions and through said grooves for discharge of water pressed out of said mixtures.

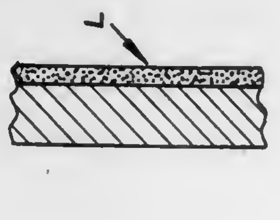
4,444,661
FILTER DEVICE
Mark E. Jackson; Monty E. Vincent, both of Ann Arbor, and Attila Vadnay, Saline, all of Mich., assignors to Gelman Sciences Inc., Ann Arbor, Mich.
Filed Apr. 16, 1982, Ser. No. 369,320
Int. Cl.³ B01D *25/00*
U.S. Cl. 210—446 **4 Claims**



1. A disposable filter device comprising a housing which includes two organic plastic moldings, each of said moldings having a cylindrical side wall and an end wall with a fluid opening adjacent the center thereof and with an annular sur-

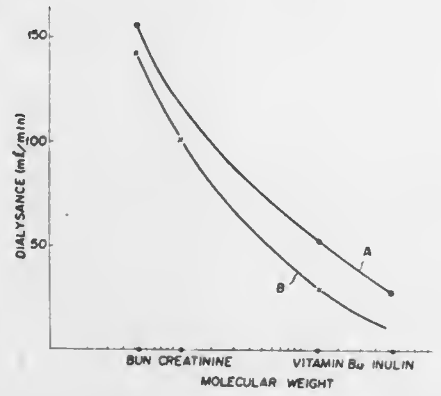
face adjacent the periphery thereof and concentric with said cylindrical side wall, the cylindrical side walls of said two moldings being in abutting telescoped relationship; a filter disc with the periphery thereof positioned between said annular surfaces of said two moldings; a resilient seal ring between the periphery of said filter disc and one of said annular surfaces; and an annulus of organic plastic surrounding the telescoped end walls of said moldings and maintaining said moldings in assembled relationship with the side walls thereof telescoped together sufficiently to compress and seal the periphery of the filter disc and seal ring between said annular surfaces, said annulus being unbonded to said organic plastic moldings and having at least one circumferential portion of reduced cross-section thereby to render the annulus deformable such that the annulus can be deformed for removal thereof from said plastic moldings whereby said moldings can be disassembled for removal of the filter disc therefrom.

4,444,662
MICROPOROUS LAMINATE
Stephen P. Conover, Minneapolis, Minn., assignor to Applied Membrane Technology, Inc., Minnetonka, Minn.
Filed Oct. 22, 1979, Ser. No. 87,227
Int. Cl.^{3} B01D *31/00*
U.S. Cl. 210—500.2 10 Claims



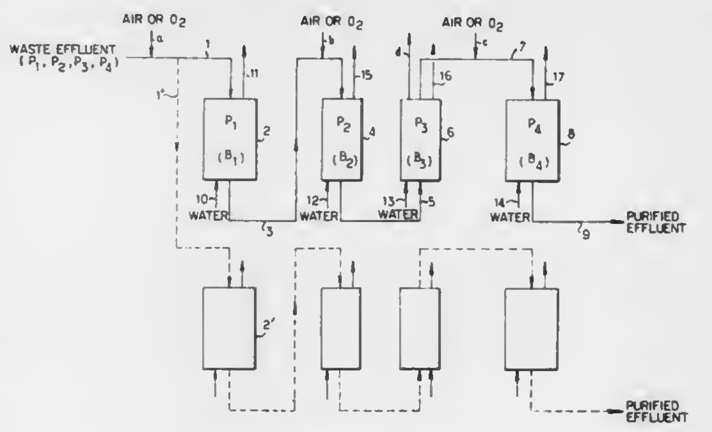
1. A laminate consisting of:
a. a two phase block copolymer;
b. a microporous substrate;
c. said two phase block copolymer coating said substrate on only one side thereof; and, d. said microporous substrate having pores smaller than 5,000 angstroms.

4,444,663
MEMBRANE AND METHOD FOR MANUFACTURE THEREOF
Juuro Aoyagi, Naritanishi; Kazuhiko Suzuki, Yamato, and Kazuaki Takahara, Tokyo, all of Japan, assignors to Terumo Corporation, Tokyo, Japan
Filed Sep. 14, 1981, Ser. No. 302,214
Claims priority, application Japan, Sep. 16, 1980, 55-127158; Sep. 16, 1980, 55-127159
Int. Cl.^{3} B01D *39/00*
U.S. Cl. 210—500.2 19 Claims



1. A method for the manufacture of a permeable membrane, which comprises the steps of shaping a liquid composition comprising the reaction product of a cuprammonium cellulose with an ammonium or alkali metal salt of a polymer, said polymer salt being present in an amount of from 2 to 30 parts by weight based on 100 parts by weight of said cuprammonium cellulose, said polymer salt containing 10 to 70 equivalent percent of a carboxyl group and having a number-average molecular weight in the range of from 500 to 200,000 in the form of a shaped article comprising a film formed from said reaction product, immersing said shaped article in a dilute sulfuric acid solution to coagulate and regenerate the shaped article, subsequently immersing the shaped article in an aqueous strong alkali solution to remove said ammonium or alkali metal salt of the polymer from said reaction product containing film which has been coagulated and regenerated to form said permeable membrane having fine pores in spaces from which said salt of the polymer was expelled.

4,444,664
PROCESS FOR THE BIOLOGICAL TREATMENT OF A LIQUID EFFLUENT ON AN ADSORBING MATERIAL BED
Georges M. Treyssac, Marcq-en-Baroeul, France, assignor to Societe Anonyme d'Etudes, de Recherches et de Productions d'Agents Chimiques-E.R.P.A.C., France
Filed Nov. 30, 1979, Ser. No. 98,986
Claims priority, application France, Dec. 7, 1978, 73 34490
Int. Cl.^{3} C02F *3/04*
U.S. Cl. 210—605 9 Claims

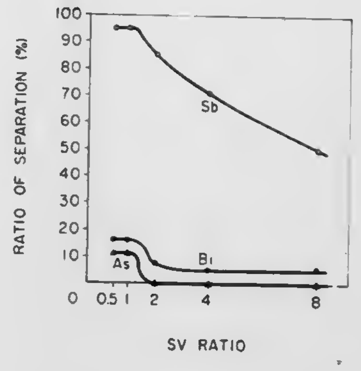


1. A process for treating a liquid effluent containing biodegradable organic materials in solution and/or in suspension which consists in causing this effluent to flow over an adsorbing material previously seeded with microbian flora and on which said organic materials spread out depending on their ease of adsorption while thus defining successive layers characterized in that the adsorbing material is in the form of as many independent beds as there are layers, these beds being disposed in series.

4,444,665
TREATED MINERAL AND METHOD FOR PURIFYING LIQUIDS THEREWITH
Steven J. Hildebrandt, Kendall Park, N.J., assignor to Engelhard Corporation, Menlo Park, N.J.
Division of Ser. No. 326,720, Dec. 2, 1981, Pat. No. 4,386,010, which is a continuation of Ser. No. 183,619, Sep. 2, 1980, abandoned. This application Feb. 22, 1983, Ser. No. 468,093
Int. Cl.^{3} C02F *1/42, 1/28*
U.S. Cl. 210—660 3 Claims

1. A method of purifying an aqueous liquid from contaminants comprising contacting said liquid with a solid particulate composition comprising particles of attapulgite clay calcined to a volatile matter content of 10 percent by weight or less at a temperature in the range of about 200° to 550° C. and having a surface area of about 80 to 140 m^2/g. as determined by the standard B.E.T. method using nitrogen, a pore volume of about 0.5 to 0.8 cc./g., and a cationic exchange capacity in the range of 10 to 40 meq./100 g., said calcined attapulgite clay having been treated with at least one organic substituted quaternary cationic surfactant selected from the group consisting of ammonium, phosphonium and mixtures thereof having at least one organic group of at least four carbon atoms in the amount within the range of about 5 to 50 meq./100 g. of clay.

4,444,666
METHOD OF REMOVING ANTIMONY FROM AN ANTIMONY-CONTAINING COPPER ELECTROLYTE
Hiroshi Sato, Niihama, Japan, assignor to Sumitomo Metal Mining Company Limited, Tokyo, Japan
Filed Sep. 17, 1982, Ser. No. 419,193
Int. Cl.^{3} B01D *15/00*
U.S. Cl. 210—670 8 Claims



1. A method for the preferential removal of antimony from a copper electrolyte which contains nickel, antimony, arsenic and bismuth impurities, the method including the step of contacting said copper electrolyte with activated carbon whereby the antimony becomes associated with the activated carbon.

4,444,667
FLOCCULANT FOR SLUDGES
Hans Burkert, Ludwigshafen; Friedrich Brunnmueller, Limburgerhof; Karl-Heinz Beyer, Frankenthal; Michael Kroener, Mannheim, and Hans Mueller, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany
Filed Jul. 12, 1982, Ser. No. 397,235
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1982, 3213873
Int. Cl.^{3} C02F *11/14, 1/56*
U.S. Cl. 210—735 3 Claims

1. A process for flocculating sewage sludge or sludge from communal or industrial treatment plants which comprises (a) adding to the sludge a flocculant in sufficient amount to flocculate said sludge wherein said flocculant is a polymer having a Fikentscher K value of about 80 to 200 and prepared by homopolymerization of a compound of the formula $CH_2{=}CH{-}NH{-}CHO$ (n-vinylformamide) in the presence of a free-radical polymerization initiator to give a poly-N-vinylformamide, followed by hydrolysis of from 10 to 90% of the formyl groups in the poly-N-vinylformamide, and then (b) separating the flocculated sludge from the residual watery liquid.

4,444,668
WELL COMPLETION FLUID COMPOSITIONS
Michael L. Walker, Duncan, and Joe W. Johnson, Jr., Marlow, both of Okla., assignors to Halliburton Company, Duncan, Okla.
Continuation of Ser. No. 336,220, Dec. 31, 1981, abandoned. This application Oct. 4, 1983, Ser. No. 538,836
Int. Cl.^{3} E21B *43/00*
U.S. Cl. 252—8.55 R 8 Claims

1. A method of completing a well penetrating a subterranean formation comprising:

contacting said well at sufficient hydrostatic pressure to control the well with a composition having a density in the range of from about 9.0 pounds to about 21.5 pounds per gallon of composition and comprising:
(a) water;
(b) a salt selected from the group consisting of aluminum chloride, aluminum bromide, aluminum iodide, ammonium chloride, ammonium bromide, ammonium iodide, sodium chloride, sodium bromide, sodium iodide, potassium chloride, potassium bromide, potassium idodide, calcium chloride, calcium bromide, calcium iodide, zinc chloride, zinc bromide, zinc iodide and mixtures thereof;
(c) An inhibitor comprising:
  I. a mixture comprising:
    (1) about 56 percent by volume crude quaternized quinoline;
    (2) about 21 percent by volume propargyl alcohol;
    (3) about 1300 percent by volume ethyl octynol;
    (4) about 10 percent by volume of an ingredient comprising 15 moles of ethylene oxide adduct of nonyl phenol; and,
  II. about 0.024 grams of Cu_2I_2 per milliter of said mixture.

4,444,669
METHOD FOR CONTINUOUS MANUFACTURE OF HIGH DROPPING POINT LITHIUM COMPLEX SOAP GREASE
Arnold C. Wittse, Jr., Port Neches; Don A. Carley, Houston, both of Tex., and Richard L. Coleman, deceased, late of Beaumont, Tex. (by Donald B. Moye, administrator), assignors to Texaco Inc., White Plains, N.Y.
Filed Jun. 7, 1982, Ser. No. 386,128
Int. Cl.^{3} C10M *5/14*
U.S. Cl. 252—41 30 Claims

1. A continuous process for preparing a high dropping point lithium complex soap grease which comprises continuously introducing a reaction mixture, comprising a C_2 to C_{12} dicarboxylic acid and a C_{12} to C_{24} hydroxy fatty acid in a mole ratio ranging from about 1:10 to 1:0.5 respectively, a lithium base and a lubricating oil into a reaction zone wherein said mixture is heated to a temperature from about 250°to 350° F. under a pressure sufficient to maintain the water in the liquid state and under turbulent mixing conditions sufficient to obtain adequate contact between the reactants for a period of time sufficient to obtain a substantially complete reaction to form a lithium complex soap, continuously withdrawing a product stream from said reaction zone, introducing additional lubricating oil into said product stream to give said grease mixture enough fluidity for circulation, continuously introducing said grease mixture into a dehydration zone maintained at a temperature ranging from about 325° to 425° F. under a pressure ranging from about atmospheric to about 10 inches of mercury vacumn and circulating said mixture from the bottom to the top of said dehydration zone through a recycle line and a shear valve having a pressure drop across said valve of from 10 to 150 lbs. per square inch continuously withdrawing a product stream from said dehydration zone and cooling said product stream to provide a finished grease composition.

4,444,670
METHOD OF MANUFACTURING MAGNETIC, PLASTIC-BONDED MOLDED BODIES
Manfred Moslener, Tangstedt, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 140,941, Apr. 16, 1980, abandoned, which is a continuation of Ser. No. 938,212, Aug. 30, 1978, abandoned. This application Sep. 3, 1981, Ser. No. 299,257
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1977, 2743972
Int. Cl.^{3} G11B *5/78*
U.S. Cl. 252—62.54 9 Claims

1. A method of manufacturing magnetic, plastic bonded

molded bodies having different respective values of saturation magnetization but having the same physical dimensions, said method comprising the steps of:

A. providing a first preselected quantity by volume of a plastic binder material prepared for mixing with a material to be bonded;
B. providing a second preselected quantity by volume of a material to be bonded;
C. mixing the plastic binder and the material to be bonded to obtain a mixture; and
D. processing the mixture obtained in step C into completed molded bodies by using a single shaping tool;

characterized in that the material to be bonded consists of a powdered magnetic material and an inorganic nonmagnetic filler having substantially the same shrinkage behavior, the volume ratio between the magnetic material and the nonmagnetic filler being varied from one mixture to the next to obtain different values of saturation magnetization in the completed molded bodies produced from different mixtures.

4,444,671
ARC EXTINGUISHING MATERIAL

Bernard M. Wiltgen, Jr., Villa Park, Ill., assignor to S&C Electric Company, Chicago, Ill.

Filed Mar. 29, 1976, Ser. No. 671,319
Int. Cl.^{3} H01H *9/30*

U.S. Cl. 252—63.2 **26 Claims**

1. An arc quenching composition comprising:
an effective amount of hexamethylenetetramine, and
a material selected from the group consisting of a thermoplastic resin, a thermosetting resin, and elastomeric compound, and an inorganic binder.

4,444,672
PROCESS OF MAKING CALCIUM ACETATE DEICING AGENTS AND PRODUCT

Alan B. Gancy, 265 Robineau Rd., Syracuse, N.Y. 13207
Continuation-in-part of Ser. No. 476,702, Mar. 18, 1983, which is a division of Ser. No. 333,037, Dec. 21, 1981, Pat. No. 4,337,488. This application Apr. 20, 1983, Ser. No. 486,857
The portion of the term of this patent subsequent to Mar. 22, 2000, has been disclaimed.
Int. Cl.^{3} C09K *3/18;* C07C *51/41;* C01F *11/00*

U.S. Cl. 252—70 **14 Claims**

1. In a process of making a deicing agent of 5–95 percent by weight of calcium acetate having good anti-slip properties, the steps comprising:

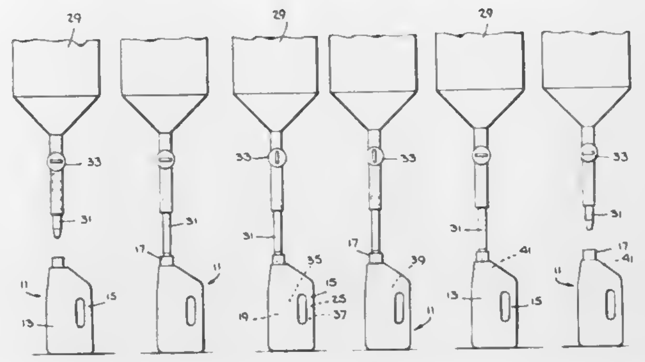
a. mixing calcium acetate with an inert solid material having good anti-slip properties.

4,444,673
BOTTLE PARTICULATE DETERGENT

David Joshi, Piscataway, N.J., and Richard Klingaman, Houston, Tex., assignors to Colgate-Palmolive Company, New York, N.Y.
Division of Ser. No. 171,325, Jul. 23, 1980, Pat. No. 4,351,740, which is a continuation of Ser. No. 964,037, Dec. 21, 1978, Pat. No. 4,269,722, which is a continuation-in-part of Ser. No. 727,838, Sep. 29, 1976, abandoned. This application Jan. 11, 1982, Ser. No. 338,546
Int. Cl.^{3} C11D *17/06*

U.S. Cl. 252—90 **13 Claims**

1. A bottled particulate laundry detergent which comprises a transparent bottle having a neck portion for dispensing detergent from the bottle, the bottle being made of a thin-walled synthetic organic polymeric plastic which is essentially moisture proof, the neck being located at the top of the bottle and having a passageway therethrough with a cross-sectional area of less than 40% of the average cross-sectional area of the bottle, wherein said neck passageway has a cross-sectional area of about from 2 to 40 sq. cm., the bottle being provided further with an integral hollow handle located on the side of the bottle, wherein the interior of said handle communicates with other interior portions of the bottle, and said handle has an internal cross-sectional area in the range of about 1 to 10 sq. cm., said neck being located nearer the side of the bottle opposite that of the handle, and a free-flowing particulate detergent in said bottle, pourable through said neck and handle, the composition of which comprises from about 2 to 50% by weight of a synthetic organic detergent selected from the group consisting of nonionic detergents and mixtures of said nonionic detergents with anionic detergents, wherein said nonionic detergent is a normally tacky ethoxylated detergent, and from about 50 to 90% by weight of builders for said detergent, wherein said builders are selected from the group consisting of ion exchanging clays, organic builders and sodium salts of at least one of bicarbonates, borates, carbonates, phosphates, and silicates, said particles sized such that at least 90% thereof pass through an 8 mesh screen and are retained on a 200 mesh screen (U.S. Sieve Series), are of a bulk density of at least 0.5 g/cc., are of a flowability sufficiently high so that said particulate detergent flows through the neck and handle of said bottle and are substantially dust-free so that after pouring some of said composition from said bottle the bottle and the contained volume above the level of the particulate detergent return to a transparent condition, and a resealable cap for said neck portion.



4,444,674
GRANULAR BLEACH ACTIVATOR COMPOSITIONS AND DETERGENT COMPOSITIONS CONTAINING THEM

Ian Gray, Newcastle upon Tyne, England, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Continuation of Ser. No. 316,478, Oct. 30, 1981, abandoned. This application Mar. 17, 1983, Ser. No. 476,439
Claims priority, application United Kingdom, Nov. 6, 1980, 8035709; Oct. 23, 1981, 8132013
Int. Cl.^{3} C11D *7/38, 11/00*

U.S. Cl. 252—95 **20 Claims**

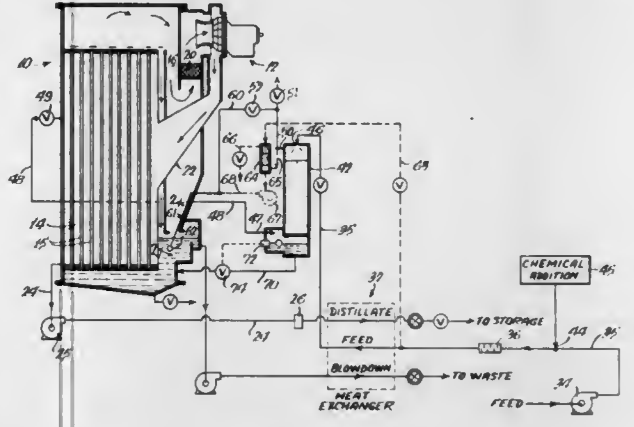
1. A granular bleach activator composition in the form of an agglomerate comprising by weight thereof:

(a) at least 75% of finely-divided organic peroxy acid bleach precursor,
(b) from 8% to 15% of water-soluble or water-dispersible organic binding agent for the bleach precursor, the binding agent having a melting point of no more than 40° C. and being selected from the group consisting of ethoxylated primary or secondary alcohols having an average degree of ethoxylation from 3–12 inclusive and an average HLB in the range from 9.5 to 13.5,
(c) from 1.2% to 2.1% of finely-divided water-insoluble natural or synthetic silica or silicate as a surface-coating agent for the agglomerate, the weight ratio of the bleach precursor binding agent to surface-coating agent being 10:1 or less.

4,444,675
ALKALINE SCALE ABATEMENT

Richard W. Goeldner, Fort Walton Beach, Fla., assignor to Mechanical Equipment Company, Inc., New Orleans, La.
Continuation-in-part of Ser. No. 283,939, Jul. 16, 1981, abandoned. This application Feb. 18, 1982, Ser. No. 350,004
Int. Cl.^{3} C02F *5/02*

U.S. Cl. 252—175 **44 Claims**



1. A method of reducing or substantially eliminating alkaline scale formation on process equipment surfaces which are in contact with evaporating alkaline brine which contains at least one high-temperature chemical scale control additive, which additive effects threshold alkaline scale inhibition, said method comprising the step of dissolving in said brine subsequent to or simultaneously with evaporation thereof an amount of carbon dioxide sufficient to substantially reduce bicarbonate ion decomposition in said brine, yet insufficient to result in substantial amounts of chemically uncombined carbon dioxide in said brine, such that the pH of the brine is maintained at about 8.7 or above as measured at room temperature, and the concentration of chemically uncombined carbon dioxide in the brine is maintained at less than about 1 ppm, whereby corrosive conditions and alkaline scale formation are avoided.

4,444,676
STABILIZED POLYOXYALKYLENE POLYETHER POLYOLS AND POLYURETHANE FOAMS PREPARED THEREFROM

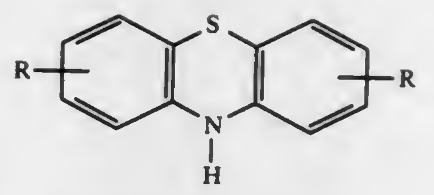
Gary L. Statton, West Chester, and James M. Gaul, Exton, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Apr. 1, 1983, Ser. No. 481,215
Int. Cl.^{3} C08G *18/14;* C07L *41/12*

U.S. Cl. 252—182 **10 Claims**

1. A method for the stabilization of a polyoxyalkylene polyether polyol against oxidative degradation which comprises incorporating in said polyoxyalkylene polyether polyol from about 0.10 to 5 percent by weight of a synergistic stabilizing composition containing

(a) from about 9 to about 95 percent by weight of a mixture of butylated phenols consisting of from 25 to 85 percent by weight of 2-tertiary butyl phenol, 10 to 65 percent by weight of methyl 3,5-ditertiary butyl-4-hydroxyhydrocinnamate and 5 to 25 percent by weight of 1,6-hexamethylene bis(3,5-di-tertiary butyl-4-hydroxyhydrocinnamate) or tetrakis [methylene (3,5-di-tertiary butyl-4-hydroxyhydrocinnamate)]methane, and
(b) from about 9 to 95 percent by weight of a p,p'-dialkyldiphenylamine wherein said alkyl contains between 3 and 18 carbon atoms and
(c) from about 0.0010 to 15 percent by weight of a phenothiazine compound of the formula



wherein R is independently hydrogen or an alkyl group having from 1 to 12 carbon atoms.

4,444,677
GENERAL PURPOSE LIQUID SCINTILLATION COMPOSITION

Harold Edelstein, Fair Lawn, and Daniel Koetters, Butler, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Nov. 29, 1982, Ser. No. 444,967
Int. Cl.^{3} G01T *1/167*

U.S. Cl. 252—301.17 **7 Claims**

1. A general purpose scintillation cocktail comprising:

(a) an aromatic liquid capable of capturing energy from radiation,
(b) at least one fluor compound, and
(c) a nonionic liquid surfactant comprised of polyethoxylated polyoxypropylene in which the weight percent of the polyoxyethylene in the molecule exceeds about 40 and in which the molecular weight of the polyoxypropylene portion of the molecule exceeds about 1450.

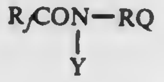
4,444,678
STABLE GAS-CARRYING COMPOSITIONS

Robert E. Moore, Wilmington, Del., assignor to Lester Laboratories, Inc., Atlanta, Ga.

Filed Mar. 19, 1982, Ser. No. 360,039
Int. Cl.^{3} A61K *31/025;* B01J *13/00*

U.S. Cl. 252—312 **19 Claims**

1. A gas transporting composition comprising a stable, uniform, aqueous dispersion of a non-aromatizable perfluorinated C_9–C_{18} polycyclic hydrocarbon containing at least two bridgehead carbon atoms linked through a bridge containing at least one carbon, atom, said dispersion containing an effective for dispersion of the perfluorinated hydrocarbon, of an amidoamine oxide surfactant of the formula

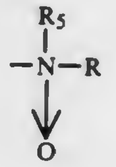


$$R_fCON(Y){-}RQ$$

wherein R_f is a perfluoroalkyl radical of 4 to about 25 carbon atoms or a polyfluoroalkoxyalkyl radical wherein the alkoxy group contains 3 to about 40 carbon atoms of which at least a major portion thereof are perfluorinated and the alkyl group contains 2 to about 40 carbon atoms, fluorinated or unfluorinated; Y is hydrogen or alkyl of 1 to 6 carbon atoms; R is a straight- or branched-chain alkylene radical of the formula

$$—C_zH_{2z}—$$

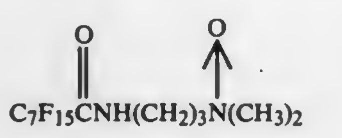
wherein z is an integer of 1 to 6; and Q is an aliphatic amine oxide radical of the formula:



$$-N(R_5)(\rightarrow O)-R$$

wherein R_5 and R_6 are each alkyl radicals of 1 to 6 carbon atoms or hydroxy-terminated alkyl radicals of 2 to 6 carbon atoms; said composition exhibiting at 25±2° C. an average particle size of not over 0.1 micron initially and less than 0.3 micron after about one year.

18. The composition of claim 1 wherein the surfactant is



$$C_7F_{15}\overset{\overset{O}{\|}}{C}NH(CH_2)_3\overset{\overset{O}{\uparrow}}{N}(CH_3)_2$$

and the perfluorinated polycyclic hydrocarbon is a mixture of F-dimethyladamantane and F-trimethylbicyclononane.

4,444,679
BLOWING AGENT COMPOSITIONS

Donald G. Rowland, Woodbridge, and Rhomie L. Heck, III, Naugatuck, both of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed Jul. 19, 1982, Ser. No. 399,518
Int. Cl.^{3} C09K *3/00*
U.S. Cl. 252—350 **9 Claims**

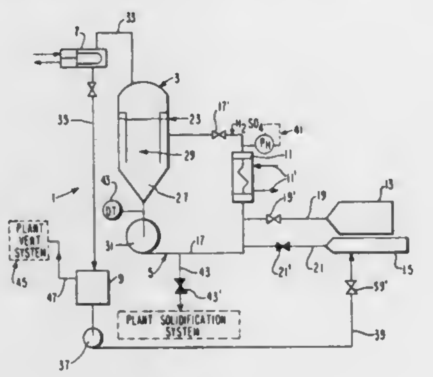
1. A masterbatched blowing agent composition for foaming a polymeric composition consisting essentially of:
   (a) azodicarbonamide;
   (b) zinc oxide, zinc carbonate or a zinc salt of C_1–C_4 organic acid; and
   (c) an aromatic sulfinic acid or a metal salt of an aromatic sulfinic acid,

wherein for each 100 parts by weight of (a), (b) is 0.25–25 parts by weight and (c) is from 1–2000 parts by weight per 100 parts of (b) and the total of (b)+(c) is from 2–25 parts by weight and substantially in the absence of the polymeric composition to be foamed.

4,444,680
PROCESS AND APPARATUS FOR THE VOLUME REDUCTION OF PWR LIQUID WASTES

Arnold S. Kitzes, Pittsburgh, Pa., and Erich W. Tiepel, Littleton, Colo., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 26, 1981, Ser. No. 277,579
Int. Cl.^{3} G21F *9/08*
U.S. Cl. 252—632 **18 Claims**



1. A process for the volume reduction of a hot radioactive liquid waste solution containing a solute selected from the group consisting of boric acid and sodium sulfate in a crystallization unit comprising a cylindrical vessel with a bottom conical portion and a cylindrical baffle spaced from the wall of the intermediate portion of the vessel, said process comprising the steps of:
   adjusting the temperature of an initial charge of the hot solution to within a few degrees of saturation by passing it through a heat exchanger;
   introducing said initial charge of solution into said cylindrical vessel to fill said vessel to a predetermined level within the range of said baffle;
   applying a vacuum to said solution in said vessel to evaporatively cool it to at least the saturation temperature;
   circulating said solution from the bottom of the vessel through the heat exchanger and reintroducing it into said vessel tangentially to the inner surface of the cylindrical baffle below said predetermined level;
   introducing additional hot solution upstream of the heat exchanger to adjust the temperature thereof to within a few degrees of saturation and to maintain said predetermined level of solution in said vessel;
   adjusting the rate of evaporation and circulation such that a quiescent zone is formed between said baffle and the vessel wall and so that as the solution becomes saturated crystals form in the quiescent zone and fall toward the conical bottom of the vessel rather than accumulating at the liquid vapor interface;
   terminating circulation of said solution through the heat exchanger when the concentration of crystals reaches a predetermined value and allowing the crystals to fall to the conical bottom of the vessel to form there a crystalline slurry; and
   removing the crystalline slurry from the conical bottom of the vessel.

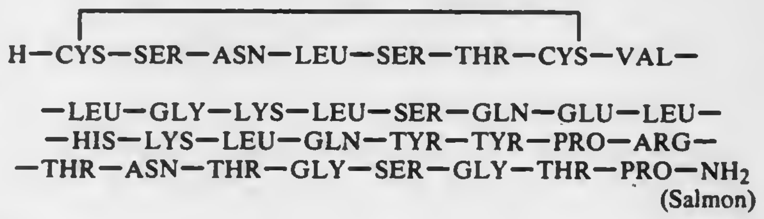
4,444,681
L-TYROSINE^{21} CALCITONIN

Glenn L. Stahl, Bradley, and Ronald C. Orlowski, Frankfort, both of Ill., assignors to Armour Pharmaceutical Company, Tarrytown, N.Y.

Filed Sep. 24, 1982, Ser. No. 422,999
Int. Cl.^{3} C07C *103/52*
U.S. Cl. 260—112.5 T **5 Claims**

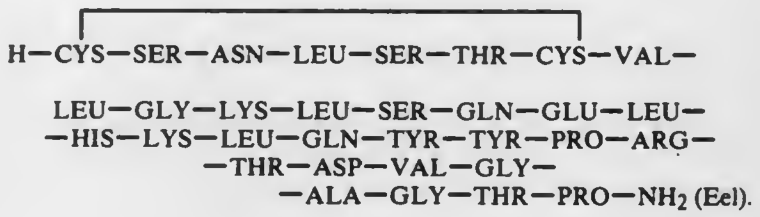
1. [Tyrosine]^{21} Calcitonin wherein the Calcitonin is salmon, eel, bovine, porcine, ovine, or human.

2. A peptide having the structure:



H—CYS—SER—ASN—LEU—SER—THR—CYS—VAL—
—LEU—GLY—LYS—LEU—SER—GLN—GLU—LEU—
—HIS—LYS—LEU—GLN—TYR—TYR—PRO—ARG—
—THR—ASN—THR—GLY—SER—GLY—THR—PRO—NH_2
(Salmon)

or



H—CYS—SER—ASN—LEU—SER—THR—CYS—VAL—
LEU—GLY—LYS—LEU—SER—GLN—GLU—LEU—
—HIS—LYS—LEU—GLN—TYR—TYR—PRO—ARG—
—THR—ASP—VAL—GLY—
—ALA—GLY—THR—PRO—NH_2 (Eel).

4,444,682
METHOD OF SULFATION

Jean E. F. Rivier, La Jolla, Calif., and Botond Penke, Budapest, Hungary, assignors to The Salk Institute for Biological Studies, San Diego, Calif.

Filed Nov. 4, 1982, Ser. No. 439,312
Int. Cl.^{3} C07C *103/52, 149/20, 147/02, 149/40*
U.S. Cl. 260—112.5 R **18 Claims**

1. A method for sulfating a hydroxy amino acid or a residue of such an amino acid in a peptide, which method comprises reacting the amino acid or the peptide with a reagent which is a tertiaryammonium salt of acetylsulfuric acid having the formula

$$[CH_3COOSO_3]^-[R]^+$$

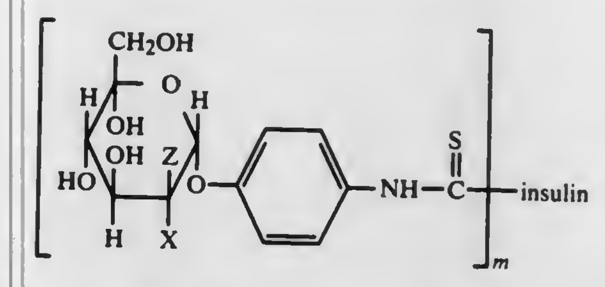
wherein R is triethylamine, ethyldiisopropylamine, pyridine, 4-methylmorpholine or 4-N,N-dimethylaminopyridine.

4,444,683
GLYCOSYLATED INSULIN DERIVATIVES

Wan S. Kim; Seo Y. Jeong, and James C. McRea, all of Salt Lake City, Utah, assignors to University of Utah, Salt Lake City, Utah

Filed Nov. 17, 1982, Ser. No. 442,362
Int. Cl.^{3} C07C *103/52;* A61K *37/26*
U.S. Cl. 260—112.7 **3 Claims**

1. A glycosylated insulin having the formula



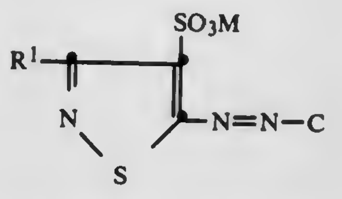
wherein Z and X are different and are selected from the group consisting of —H and —OH, and m is an integer of 1 to 3 and wherein each glycosyl group is attached to the insulin by a thioamide linkage through one or more of the α-amino groups of the A-1 glycine, B-1 phenylalanine or ε-amino group of the B-29 lysine moieties of the insulin molecule.

4,444,684
AZO DYES CONTAINING A DIAZOTIZED 5-AMINO ISOTHIAZOL MOIETY HAVING THEREON A SULFONIC ACID OR SALT GROUP

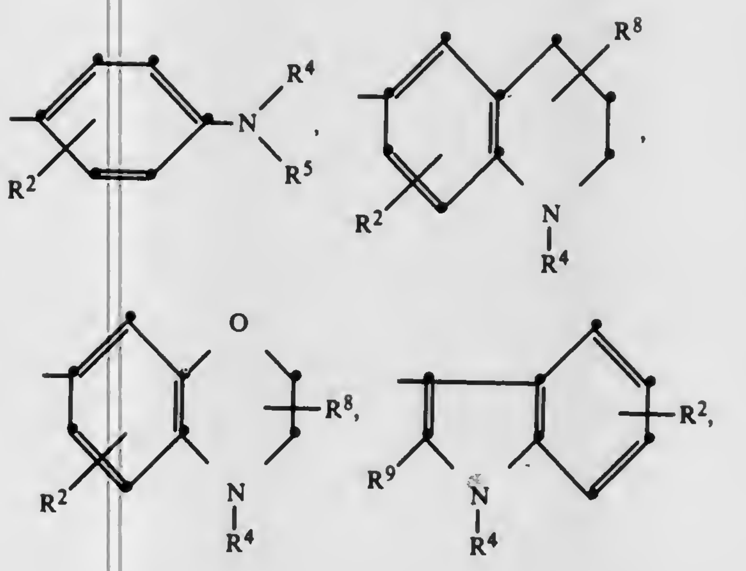
Max A. Weaver, Kingsport, and Bill A. Eller, Gray, both of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 5, 1982, Ser. No. 345,989
Int. Cl.^{3} C09B *29/039, 29/09, 29/36, 29/44*
U.S. Cl. 260—155 **15 Claims**

1. A dye of the formula:



wherein R^1 is hydrogen or alkyl; M is H^+, Na^+, Li^+, K^+ or NH_4^+; and C is a coupler selected from



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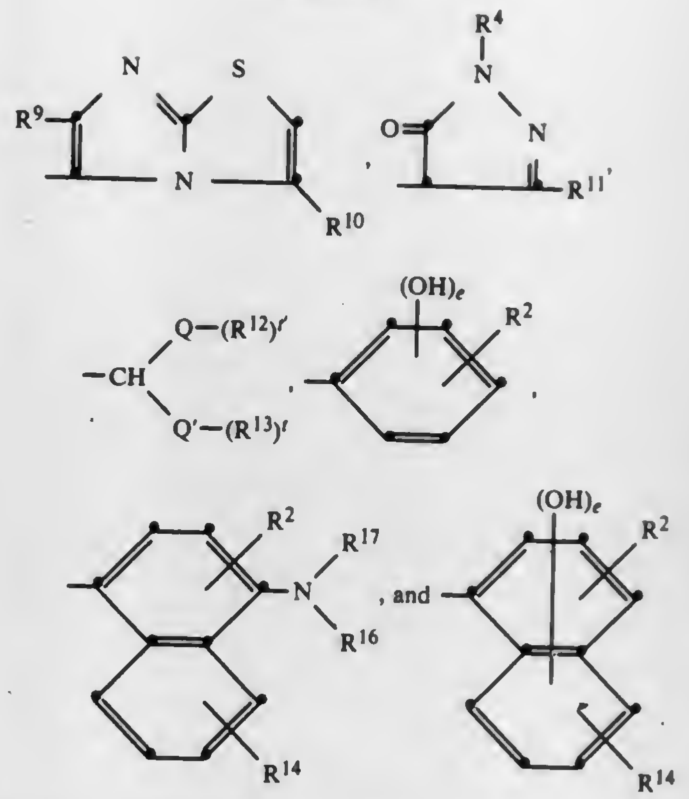
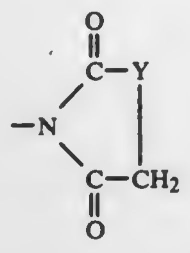
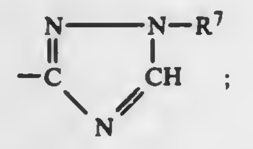


wherein R^2 and R^{14} each independently represents hydrogen or 1–3 substituents selected from fluorine, chlorine, bromine, alkyl, cycloalkyl, alkoxy, phenoxy, alkylthio, arylthio, and radicals having the formula —NH—X—R^3 in which X is —CO—, —COO—, or —SO_2— and R^3 is selected from alkyl and alkyl substituted with halogen, hydroxy, phenoxy, aryl, cyano, cycloalkyl, alkylsulfonyl, alkylthio, alkanoyloxy, and alkoxy, and when X is —CO—, R^3 also is selected from hydrogen, amino, alkylamino, alkylcarbamoyl, dialkylamino, arylamino, aryl, and furyl;
   R^4 and R^5 are each selected from hydrogen, alkyl, aryl, cycloalkyl, and R^4 and R^5 combined as —$CH_2CH_2CH_2CH_2CH_2$—, —$CH_2CH_2OCH_2CH_2$—, —CH_2CH_2—S—CH_2CH_2—, or —CH_2CH_2—SO_2—CH_2CH_2—;
   R^8 is one or two groups each selected from hydrogen, alkyl and alkyl substituted with —CN, alkoxy, alkoxycarbonyl, alkoxycarbonyloxy, phenyl, cyclohexoxy, —OH, —Cl and Br;
   R^9, R^{10} and R^{11} are each selected from hydrogen, alkyl, phenyl, phenyl substituted with 1–3 substituents selected from Cl, Br, alkyl and alkoxy, alkylthio, benzylthio, cyclohexylthio, and phenylthio;
   Q and Q′ are each selected from —CO—, —SO_2, and —CN;
   R^{12} and R^{13} are each selected from hydrogen, alkyl, hydroxyalkyl, alkoxy, alkoxycarbonylamino, trifluoromethyl, phenyl, phenyl substituted with 1–3 substituents selected from Cl, Br, alkyl and alkoxy, alkoxycarbonylalkyl, cyanoalkyl, amino, haloalkyl, alkylamino, alkylthio, benzylthio, cyclohexylthio, phenylthio, and R^{12} and R^{13} combined as an alkylene bridge of 2 or 3 carbons or as an arylene or cycloalkylene radical of 5–6 carbons connecting Q and Q′;
   R^{16} and R^{17} are selected from hydrogen, cycloalkyl, aryl, alkyl, alkyl substituted with alkoxy, hydroxy, alkoxyalkoxy, hydroxyalkoxy, carbamoyl, sulfamoyl, acylamido, or alkylsulfonyl, and aryl substituted with hydroxyalkyl; e is 1 or 2; t and t′ are each 1 or zero and when t or t′ is zero, the corresponding Q or Q′ group is —CN;
and wherein each of the aliphatic portions of the above alkyl, cycloaliphatic, alkoxy, alkanoyl, aryl and aryloxy groups are unsubstituted or substituted with 1–3 of the following: hydroxy; halogen; cyano; succinimido; glutarimido; phthalimido; 2-pyrrolidono; cyclohexyl; phenyl; phenyl substituted with alkyl, alkoxy, halogen, alkanoylamino, cyano or alkoxycarbonyl; alkanoylamino;

vinylsulfonyl; acrylamido; phthalimidinyl; benzoylsulfonicimidyl; alkylsulfonamido; phenylsulfonamido; alkoxycarbonylamino; alkylcarbamoyloxy; alkoxycarbonyl; alkoxycarbonyloxy;



wherein Y is —NH—, —NH—alkyl—, —O—, —S—, or —CH_2O—; —S—R^6 wherein R^6 is alkyl, phenyl, phenyl substituted with halogen, alkyl, alkoxy, alkanoylamino, cyano, or alkoxycarbonyl, pyridyl, pyrimidinyl, benzoxazolyl, benzimidazolyl, benzothiazolyl, or



;

—OXR^3; —NH—X—R^3; —X—R^3; —$CONR^7R^7$; —$SO_2NR^7R^7$; wherein R^3 and X are as defined above and each R^7 is selected from H and R^3; alkoxy; alkoxy substituted with hydroxy, cyano, alkanoyloxy, or alkoxy; phenoxy or phenoxy substituted with one or more of alkyl, alkoxy or halogen.

4,444,685

STEREOSPECIFIC SYNTHESIS OF THIENAMYCIN FROM PENICILLIN

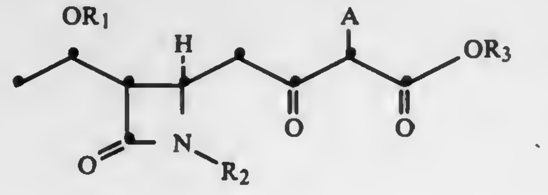
Joseph S. Amato, Brooklyn, N.Y.; Sandor Karady, Mountainside, and Leonard M. Weinstock, Belle Mead, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 257,695, Apr. 27, 1981, abandoned. This application Jun. 22, 1982, Ser. No. 391,032

Int. Cl.^{3} C07D *205/08, 487/04;* **C07F** *7/04*

U.S. Cl. 260—239 A **9 Claims**

1. A process for preparing a compound of the formula



wherein

- R_1 is a hydroxy protecting group selected from the group consisting of trimethylsilyl, t-butyldimethylsilyl, triethylsilyl, benzyl, diphenylmethyl, p-nitrobenzyl, methoxymethyl, formyl, acetyl, benzyloxycarbonyl and p-nitrobenzyloxycarbonyl;
- R_2 is hydrogen or a nitrogen protecting group selected from the group consisting of R_1;
- R_3 is a member selected from the group consisting of trimethylsilyl, t-butyldimethylsilyl, triethylsilyl, methyl, benzyl, p-nitrobenzyl; and A is H_2 or $=N_2$;

which comprises the steps of

(a) treating 6-APA with sodium nitrite in the presence of p-toluenesulfonic acid to obtain 6-diazopenicillanate;

(b) treating the 6-diazopenicillanate with excess acetaldehyde and a catalytic amount of Lewis acid to obtain 6-acetylpenicillanate;

(c) reducing the 6-acetylpenicillanate with an amine borane selected from the group consisting of diethylamine borane, diisopropylamine borane, diphenylamine borane and dicyclohexylamine borane, and a chelating agent selected from magnesiumtrifluoroacetate trifluoroacetic acid solvate and Lewis acid derivatives which are salts of Al, B, Fe and Zn with trifluoroacetic acid, acetic acid, hydrochloric acid, hydrobromic acid, methylsulfonic acid phenylsulfonic acid in order to obtain 6-(1-hydroxyethyl)-penicillanate;

(d) treating the alcohol with a hydroxy protecting group;

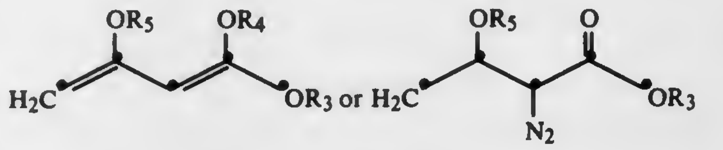
(e) treating the hydroxy protected alcohol with an alkylating agent selected from methylbromoacetate, methyliodide and benzyl bromide and a strong base to open the thiazoline ring;

(f) subjecting the azetidin-2-one intermediate to permanganate oxidation to obtain the β-lactam intermediate;

(g) N-protecting the β-lactam intermediate;

(h) treating the N-protected intermediate by halogenolysis with Cl_2, Br_2, I_2 or sulfonyl chloride in carbon tetrachloride to obtain the 6-halo β-lactam intermediate; and

(i) reacting the equimolar quantities of the 6-halo compound with a synthon selected from the group consisting of a compound of the formula:



wherein R_4 and R_5 are the same or different members of the R_3 group as defined above, in the presence of acetonitrile and a Lewis acid and recovering the β-ketoester.

4,444,686

CRYSTALLINE PENICILLIN ESTER INTERMEDIATE

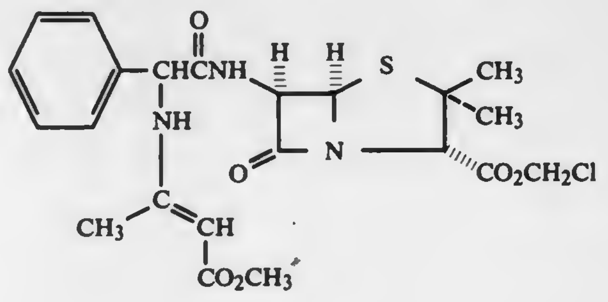
Vytautas J. Jasys, New London, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 341,081, Jan. 25, 1982, Pat. No. 4,381,263. This application Oct. 14, 1982, Ser. No. 434,290

Int. Cl.^{3} C07D *499/32*

U.S. Cl. 260—239.1 **1 Claim**

1. A crystalline compound of the formula



4,444,687

2β-CHLOROMETHYL-2α-METHYLPENAM-3α-CARBOXYLIC ACID SULFONE METHYLENE DIOL MIXED ESTERS

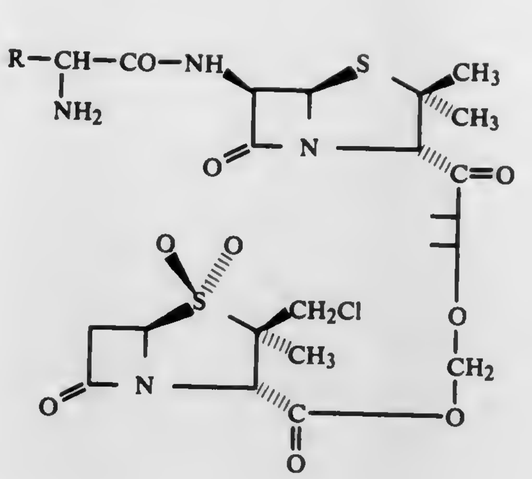
William J. Gottstein, Fayetteville, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 271,744, Jun. 8, 1981, Pat. No. 4,380,512, which is a continuation-in-part of Ser. No. 214,831, Dec. 11, 1980, abandoned, which is a continuation-in-part of Ser. No. 113,894, Jan. 21, 1980, abandoned. This application Apr. 12, 1983, Ser. No. 484,350

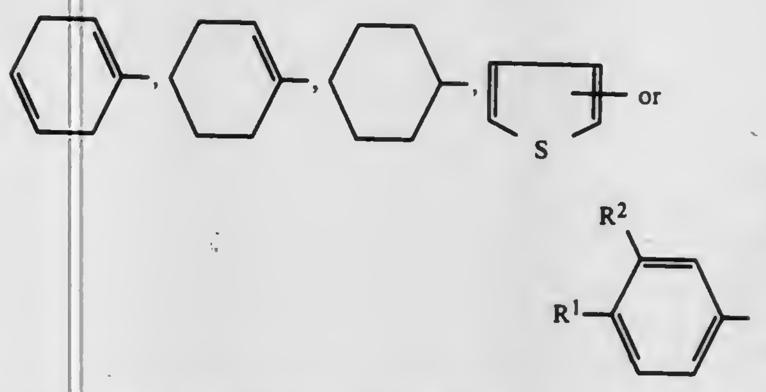
Int. Cl.^{3} C07D *499/32*

U.S. Cl. 260—239.1 **8 Claims**

1. An ester having the formula



wherein R is



wherein R^1 is hydrogen or hydroxy and R^2 is hydrogen, hydroxy, methyl, methoxy or chloro or a nontoxic, pharmaceutically acceptable acid addition salt of said ester.

4,444,688

IMIDAZOBENZOTHIADIAZEPINES

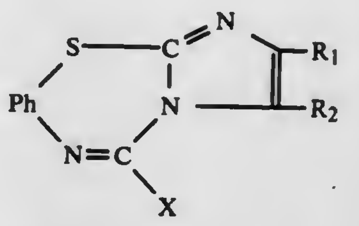
Isidoros Vlattas, Summit, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 259,261, May 11, 1981, Pat. No. 4,391,808, which is a continuation-in-part of Ser. No. 158,671, Jun. 12, 1980, abandoned. This application Aug. 9, 1982, Ser. No. 406,822

Int. Cl.^{3} C07D *513/04*

U.S. Cl. 260—245.6 **7 Claims**

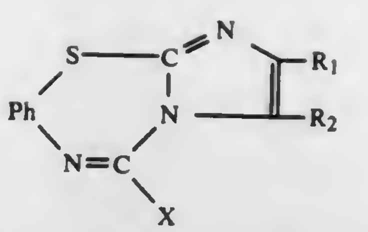
1. A compound of the formula



(III)

wherein each of R_1 and R_2 is hydrogen, lower alkyl or alkanoyl, halogeno, cyano, carboxy, lower carbalkoxy, carbamoyl, sulfamoyl, mono- or di-lower alkyl-(carbamoyl or sulfamoyl); Ph is 1,2-phenylene, unsubstituted or substituted by up to two members selected from lower alkyl, lower alkoxy, lower alkylthio, halogeno, trifluoromethyl, sulfamoyl, mono- or di-lower alkylsulfamoyl; and X is hydroxy or sulfhydryl; or a tautomer thereof.

5. A compound of the formula



(III)

wherein each of R_1 and R_2 is hydrogen, lower alkyl or alkanoyl, halogeno, cyano, carboxy, lower carbalkoxy, carbamoyl, sulfamoyl, mono- or di-lower alkyl-(carbamoyl or sulfamoyl); Ph is 1,2-phenylene, unsubstituted or substituted by up to two members selected from lower alkyl, lower alkoxy, lower alkylthio, halogeno, trifluoromethyl, sulfamoyl, mono- or di-lower alkylsulfamoyl; and X is halogeno, lower alkylthio or thiocyanato.

4,444,689

17α-ACYLOXY-5β-CORTICOIDS AND 17α-ACYLOXY-5α-CORTICOIDS

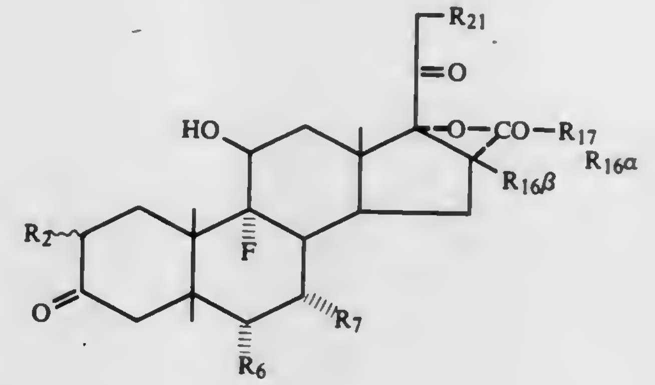
Donald E. Ayer, and Carl A. Schlagel, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 117,401, Jan. 31, 1980, Pat. No. 4,318,853. This application Sep. 3, 1981, Ser. No. 298,984

Int. Cl.^{3} C07J *5/00*

U.S. Cl. 260—397.45 **15 Claims**

1. A 5β-steroid of the formula



(I')

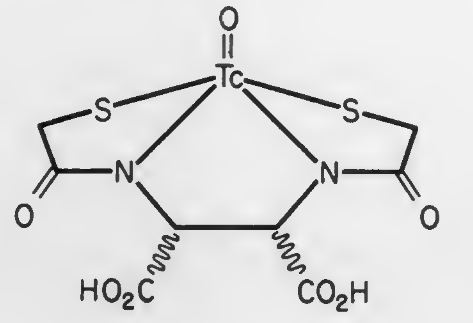
where

- R_2 is a hydrogen, fluorine or chlorine atom or methyl group;
- R_6 is a hydrogen, fluorine or chlorine atom or methyl group;
- R_7 is a hydrogen, fluorine or chlorine atom;
- R_9 is a hydrogen, fluorine or chlorine atom;
- R_{11} is a chlorine or oxygen atom or hydroxyl group; when $R1_1$ is a chlorine atom or hydroxyl group the------between R_{11} and C_{11} is a single bond in the β configuration and when R_{11} is an oxygen atom the------between R_{11} and C_{11} is a double bond;
- $R_{16\alpha}$ is a hydrogen, fluorine or chlorine atom or methyl group;
- $R_{16\beta}$ is a hydrogen atom or methyl group with the proviso that one of $R_{16\alpha}$ or $R_{16\beta}$ is a hydrogen atom;
- R_{17} is alkyl of 1 through 6 carbon atoms, phenyl, p-methylphenyl, p-carboxyphenyl or p-carboalkoxyphenyl;
- R_{21} is a hydrogen, fluorine, chlorine or bromine atom or a —$OR_{21\alpha}$ or —OSO_2CH_3 group;
- $R_{21\alpha}$ is a hydrogen atom, —$COR_{21\beta}$ or —$PO(OH)_2$ and pharmaceutically acceptable salts thereof;
- $R_{21\beta}$ is alkyl of 1 through 6 carbon atoms, phenyl, p-methylphenyl, or p-carboxyphenyl, p-carboalkoxyphenyl, —CH_2CH_2COOH and pharmaceutically acceptable salts thereof;
- ------ is a single or double bond; and
- ～ indicates the attached group can be in either the α or β configuration.

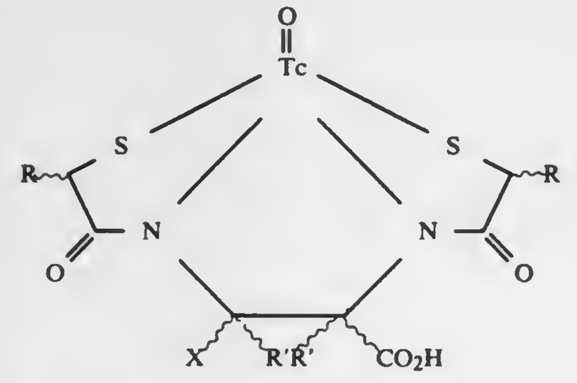
4,444,690
TECHNETIUM CHELATES

Alan R. Fritzberg, Denver, Colo., assignor to University Patents, Inc., Norwalk, Conn.

Filed Feb. 25, 1982, Ser. No. 352,140
Int. Cl.^{3} C07F *13/00*
U.S. Cl. 260—429 J **8 Claims**



1. A compound of the formula



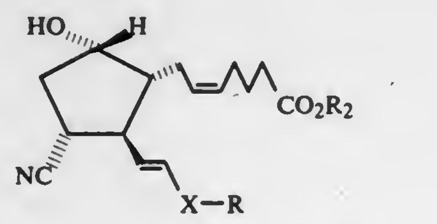
wherein X is carboxyl or hydrogen, R and R′ are hydrogen or lower alkyl and the Tc is Tc-99m, and water-soluble salts thereof.

4,444,691
11-CYANO-PROSTAGLANDINS OF THE F-SERIES

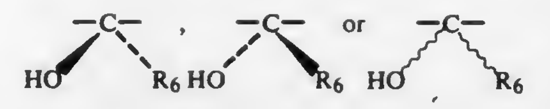
Charles V. Grudzinskas, Garnerville, N.Y., and Martin J. Weiss, Oradell, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 142,560, Apr. 21, 1980, abandoned, which is a division of Ser. No. 885,526, Mar. 10, 1978, Pat. No. 4,219,496, which is a division of Ser. No. 776,445, Mar. 10, 1977, Pat. No. 4,218,565, which is a division of Ser. No. 552,403, Feb. 24, 1975, Pat. No. 4,057,571, which is a continuation-in-part of Ser. No. 274,559, Jul. 24, 1972, Pat. No. 4,141,914. This application Feb. 24, 1982, Ser. No. 351,884
Int. Cl.^{3} C07C *121/46, 121/70*
U.S. Cl. 260—465 D **5 Claims**

1. A compound selected from the group consisting of an optically active compound of the formula:



and a racemic compound of that formula and the mirror image thereof wherein R is selected from the group consisting of $CF_2CH_2CH_2CH_2CH_3$, m-trifluoromethylphenoxymethyl, p-fluorophenoxymethyl and m-chlorophenoxymethyl, R_2 is hydrogen or C_1-C_{12} alkyl, and X is a divalent moiety of the formula



wherein R_6 is H or lower alkyl; and the nontoxic cationic salts thereof when R_2 is hydrogen.

4,444,692
PROCESS FOR MAKING HYDROXYL TERMINATED LIQUID POLYMERS

Yoshihisa Okamoto, Sagamore Hills, Ohio, assignor to The B. F. Goodri,h Company, Arkon, Ohio

Filed May 18, 1981, Ser. No. 264,886
Int. Cl.^{3} C07C *121/28, 121/38, 67/26, 67/48*
U.S. Cl. 260—465.4 **10 Claims**

1. Process for preparing a hydroxyl terminated reactive liquid polymer product comprising reacting undried and unrefined carboxyl terminated liquid polymer with a sufficient amount of ethylene oxide in the presence of a tertiary amine catalyst to convert the carboxyl liquid polymer to the hydroxyl terminated liquid polymer, followed by refining the hydroxyl terminated liquid polymer, wherein the said carboxyl terminated liquid polymer is selected from the group consisting of carboxyl terminated polyethylene, polybutadiene, polyisoprene, poly(butadiene-acrylonitrile), poly(butadiene-styrene), poly(butadiene-acrylonitrile-acrylic acid), poly(ethyl acrylate), poly(ethyl acrylate-n-butyl acrylate), poly(n-butyl acrylate-acrylonitrile), and poly(butyl acrylate-styrene), said product showing less than 10% increase in viscosity when kept at 60° C. for one month and wherein said carboxy terminated liquid polymer has a molecular weight in the range of about 400 to 8,000 and a viscosity in the range of about 500 to 1,000,000 cps.

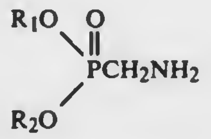
4,444,693
METHOD FOR PREPARATION OF N-PHOSPHONOMETHYLGLYCINE

Raymond A. Felix, Richmond, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Sep. 7, 1982, Ser. No. 415,083
Int. Cl.^{3} C07F *9/38*
U.S. Cl. 260—502.5 F **7 Claims**

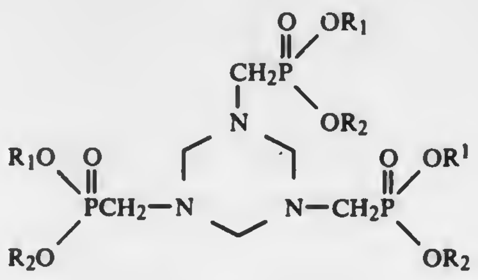
1. A method of preparing N-phosphonomethylglycine comprising

(a) reacting O,O-dialkylaminomethylphosphonate having the formula



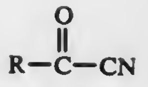
$$(R_1O)(R_2O)\overset{O}{\overset{\|}{P}}CH_2NH_2$$

wherein R_1 and R_2 are both aromatic or aliphatic groups with at least one mole of formaldehyde at a temperature between about 0° C. to about 100° C. to produce a triazine compound of the formula



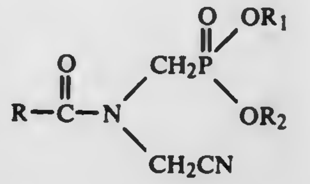
wherein R_1 and R_2 are as described above;

(b) reacting the triazine formed in step (a) with an acyl cyanide compound of the formula



$$R-\overset{O}{\overset{\|}{C}}-CN$$

wherein R is an aliphatic or aromatic group at a temperature between about 0° C. to about 150° C. to form the O,O-dialkyl-N-phosphonomethyl-N-cyanomethyl amide, which has the formula



wherein R, R_1 and R_2 are as defined, and

(c) hydrolyzing the amide formed in step (b) in the presence of a strong acid to yield N-phosphonomethylglycine.

4,444,694
PREPARATION OF 2-AMINOALKANESULFONIC ACID

Hsin H. Hsieh, Baton Rouge, La., assignor to The Dow Chemical Company, Midland, Mich.

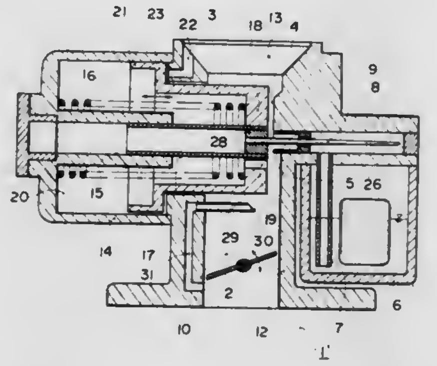
Filed Apr. 22, 1983, Ser. No. 487,478
Int. Cl.^{3} C07C *143/02*
U.S. Cl. 260—513 B **17 Claims**

1. A process for the preparation of the metal salt of 2-aminoalkanesulfonic acid which comprises contacting a 2-oxazolidinone with a water-soluble metal sulfite or a water-soluble metal hydrogen sulfite in aqueous solution or in a mixed solvent system comprising water and a water-miscible solvent, under conditions such that a metal salt of 2-aminoethanesulfonic acid is prepared.

4,444,695
VARIABLE VENTURI CARBURETOR

Norihiko Nakamura, and Takaaki Ito, both of Mishima, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Mar. 11, 1982, Ser. No. 357,205
Cliims priority, application Japan, Aug. 27, 1981, 56-133308
Int. Cl.^{3} F02M *9/06*
U.S. Cl. 261—44 C **3 Claims**

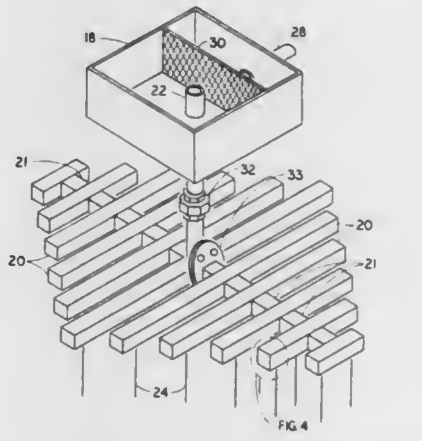


1. In a variable venturi carburetor wherein a suction chamber is disposed side by side with a venturi portion formed between an air horn at the upstream side of a barrel and a throttle valve at the downstream side of said barrel, and a suction piston is slidably received in said suction chamber to open or close said venturi portion, said piston having an extended metering needle movable forward or rearward with respect to a metering jet, the improvement comprising a fuel receiving trough extending into a mixing chamber between said suction piston and said throttle valve, said fuel receiving trough being open toward the lower surface of said suction piston along the path of movement of said piston and being disposed to receive unatomized fuel and to conduct said fuel through a path extending along the inner wall of said barrel to an opening at a position downstream of said throttle valve.

4,444,696
ULTRA-LOW-FLOWRATE LIQUID DISTRIBUTOR SYSTEM

Stephen M. Harper, Lake Jackson, and Bobby G. Hawkins, Freeport, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 12, 1982, Ser. No. 348,481
Int. Cl.^{3} B01F *3/04*
U.S. Cl. 261—97 **8 Claims**



1. A liquid distributor system in a vertical liquid-vapor contact tower wherein feed to the liquid distributor contains a liquid phase, and at least some occasional solid debris being of a different density than the liquid, and wherein the liquid to be distributed by the distributor is required to be distributed in a substantially uniform pattern across an imaginary horizontal plane located immediately beneath the distributor at a very low flowrate of less than 0.8 gallons per minute per square foot of said horizontal plane, which distributor system is comprised of: an array of substantially horizontal, spaced distributor tubes; transfer lines to maintain said tubes in fluid communication with one another; a liquid feed means to feed pressurized liquid to the array of distributor tubes; and a plurality of substantially vertical, spaced hollow pipelets inserted through the bottoms of said array of distributor tubes;

said array of tubes being enclosed hollow tubes except for the openings provided in said tubes for said pipelets, said connecting transfer lines, and said pressurized liquid feed means,

said pipelets, transfer lines, and feed means being sealably connected into said openings in a fashion such that all flow of liquid into said array of tubes is through the feed means and such that the flow of liquid out of said array of tubes is through said pipelets, and the flow of liquid between tubes in the array of tubes is through the transfer lines so that a substantially uniform pressure can be maintained in the liquid feed throughout the interior of said tubes with said pressure being greater than the pressure in the tower immediately outside the tube array,

said array of tubes being in fluid communication with each other through said feed and pressure transfer lines which connect the tubes into a connected array;

said pressurized liquid feed means being connected to the array of tubes in a manner so that it can feed a liquid to be distributed into the array of tubes at a substantially constant flowrate and at a substantially constant pressure which is greater than the pressure immediately outside and around said array of tubes;

said plurality of substantially vertical, spaced, hollow pipelets being sealably fitted into the bottoms of the horizontal tubes of the array and pipelets and extending into said tubes sufficiently to avoid being plugged by heavier debris washing along the bottom of the tubes but not extending close enough to the top of said tubes to be plugged by debris floating in the top of liquid in the tubes, which liquid is to be uniformly distributed from the array of tubes by flowing downwardly from the tubes through and out of said hollow pipelets into the tower;

the size of the openings through the hollow pipelets, the length of the pipelets, the size of the tubes and conduits all being coordinated in size with respect to the desired flowrate of the liquid to be distributed and so located so that a liquid fed into the distributor will emerge from the bottom ends of the pipelets at the desired slow flowrate in the tower while maintaining a positive pressure differential in the liquid in the tubes with respect to the environment immediately outside the tubes in order to minimize effects of non-levelness of the distributor's liquid outlets, the bottoms of said pipelets being so spaced from one another as to produce at least a substantially uniform pattern of liquid distribution in the tower across an imaginary horizontal planar section of the tower located directly beneath the pipelets' lower ends in the tower.

4,444,697

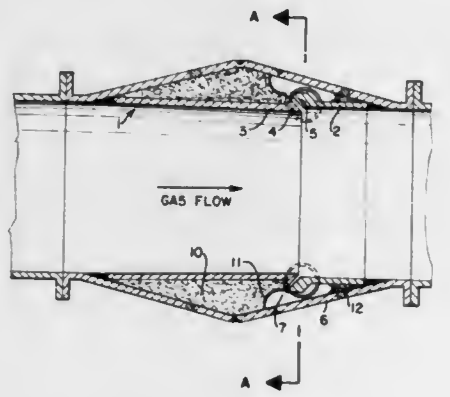
METHOD AND APPARATUS FOR COOLING A CRACKED GAS STREAM

Roger A. Gater, Dover, and Herbert D. Michelson, Fort Lee, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 18, 1981, Ser. No. 264,223

Int. Cl.^{3} B01F *3/04*

U.S. Cl. 261—118 **13 Claims**



1. A method of quenching a cracked hydrocarbon gas which comprises passing a cracked gas stream axially through a pipe and injecting a liquid coolant into said pipe through a plurality of circumferentially arranged slots in a swirling manner, the weight ratio of the flow rate of the coolant to the flow rate of the gas stream being in the range of about 2 to about 15 whereby the centrifugal force of the thus injected coolant causes a portion thereof to contact the inner surface of the pipe, another portion thereof being entrained by the gas stream to effectively cool the same.

5. Apparatus for quenching a cracked gas stream from a hydrocarbon cracking furnace which comprises:

a pipe for flow of the cracked gas stream axially therethrough;

said pipe containing a plurality of circumferentially disposed slots which are slanted away from the center of the pipe to impart a swirling motion to liquid coolant injected into the pipe through the slots; the number of slots and size of the slots being large enough relative to the pipe diameter to allow a portion of liquid coolant to contact the inner surface of the pipe and another portion thereof to be entrained by the gas stream to effectively cool the same; and a plenum chamber external to the pipe and enclosing the slots, which is in open communication with the slots and with a source of liquid coolant, for injecting liquid coolant under pressure through the slots.

4,444,698

SPECIAL HEAT EXCHANGE FOR COAL LIQUEFACTION SYSTEM

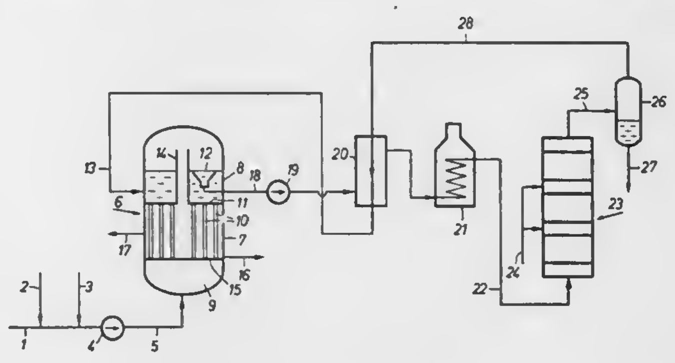
Udo Lang, Munich; Ullrich Hildebrandt, Pullach; Walter Schramm, and Berndt Hoerner, both of Munich, all of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Division of Ser. No. 204,990, Nov. 10, 1980, abandoned. This application Nov. 30, 1981, Ser. No. 325,936

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1979, 2945352

Int. Cl.^{3} F02M *31/00*

U.S. Cl. 261—157 **8 Claims**



1. Apparatus for heating a flowable mixture of particulate coal and a liquid hydrocarbon stream at high pressure by heat exchange with reaction products of a coal hydrogenation and liquefaction process which are obtained in the gaseous phase under reaction conditions, comprising direct heat exchange means and indirect heat exchange means combined into a single structural unit, and being devoid of liquid spray means, said single structural unit containing an upper zone separated from a lower zone, said unit being housed in a pressure vessel, and further comprising feed means for viscous material, said feed means comprising a header at the bottom part of the housing and being in communication with said indirect heat exchange means, said indirect heat-exchange means being equipped with a feed means and a discharge means for a heat exchange fluid, said direct heat-exchange means arranged above said indirect heat exchange means and being provided with discharge means for heated viscous material, feed means for heat exchange fluid for said direct heat exchange, and discharge means for the latter heat exchange fluid communicating with said indirect heat-exchange means, thereby resulting in apparatus wherein essentially the same fluids are employed for heat exchange purposes for both the indirect and direct heat exchange means.

4,444,699

CAPSULE MANUFACTURE

Donald E. Hayford, Appleton, Wis., assignor to Appleton Papers Inc., Appleton, Wis.

Filed Apr. 20, 1982, Ser. No. 370,323

Int. Cl.^{3} B01J *13/02*

U.S. Cl. 264—4.7 **11 Claims**

1. A process for manufacturing minute capsules, en masse, in an aqueous manufacturing vehicle, comprising:

establishing an agitating aqueous system comprising

(A) melamine and formaldehyde;

(B) monomeric methylol melamine or a low molecular weight polymer thereof; or

(C) monomeric methylated methylol melamine or a low molecular weight polymer thereof as a starting material or mixtures of any of said starting materials, about 0.4 to about 15 percent by weight, based on the weight of aqueous manufacturing vehicle, of a system modifier material selected from the group consisting of poly(ethylene-co-maleic anhydride), poly(methyl vinyl ether-co-maleic anhydride), poly(acrylic acid), poly(-propylene-co-maleic anhydride), poly(butadiene-co-

maleic anhydride), poly(vinyl acetate-co-maleic anhydride) and poly(styrene-co-maleic anhydride), about 1 to about 10 percent by weight, based on the weight of aqueous manufacturing vehicle, of a salt selected from the group consisting of Periodic Group IA cations and tertiary and quaternary ammonium cations and chloride, sulfate, phosphate, nitrate, polyphosphate, citrate, maleate and fumarate anions, and particles of an intended capsule core material substantially insoluble in the system, in which agitating system the modifier is present prior to the addition of said particles, whereby said starting material polycondenses to form a condensation polymer resulting in

(i) liquid-liquid phase separation of the resulting condensation polymer above a molecular weight to be soluble in the system; and

(ii) continued polycondensation of the separated polymerization product to give solid capsule wall material individually surrounding particles of the dispersed intended capsule core wherein said salt is present in the aqueous manufacturing vehicle prior to the polycondensation, whereby increased capsule wall integrity and reduced capsule slurry viscosity are obtained.

4,444,700

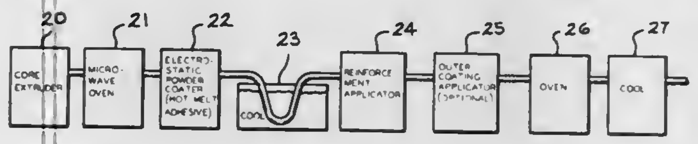
METHOD FOR MANUFACTURING REINFORCED HOSE

Bruce J. Fondren, Holland, Ohio, assignor to Champion Spark Plug Company, Toledo, Ohio

Filed Sep. 29, 1982, Ser. No. 426,322

Int. Cl.^{3} B29D *23/05*

U.S. Cl. 264—24 **4 Claims**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CORE EXTRUDER
MICRO-WAVE OVEN
ELECTRO-STATIC POWDER COATER (HOT MELT ADHESIVE)
COOL
REINFORCEMENT APPLICATOR
OUTER COATING APPLICATOR (OPTIONAL)
OVEN
COOL

1. A method for producing a reinforced hose comprising the steps of: extruding a tube from a vulcanizable rubber capable of being heated in a microwave oven; while the tube has its extruded shape and is still warm from extrusion at least partially curing said tube by heating in a microwave oven to at least a predetermined temperature; while said tube is at such predetermined temperature, electrostatically coating said tube with a powdered hot-melt adhesive having a melting temperature less than such predetermined temperature, the thermal energy level in said tube producing a fusion bond between said tube and said coating; cooling said coated tube; applying reinforcement to said coated tube in contact with said coating; and heating said coated tube and reinforcement to at least the melting temperature of said adhesive to bond said reinforcement to said tube.

4,444,701

MOLD RELEASE AGENT COMPOSITION AND IMPROVED MOLDING METHOD

Floyd L. Meguiar, P.O. Box 3171, South El Monte, Calif. 91733

Filed Jul. 21, 1982, Ser. No. 400,410

Int. Cl.^{3} B28B *14/00*

U.S. Cl. 264—40.1 **14 Claims**

1. In the method of molding articles of settable synthetic organic plastic against a molding surface having a mold release agent thereon, the steps of forming a mold release agent composition therefor by dispersing into a waxy mold release agent an effective amount of an indicator compound stable under plastic molding conditions, colorless under illumination in the visible light spectrum and colored under illumination in the nonvisible light spectrum, coating said molding surface with said composition, periodically exposing said coated molding surface to nonvisible light in indicator compound-illuminating relation, further coating said molding surface with said composition where the presence and extent of said composition is indicated to be incomplete or inadequate for release of said articles from said mold, and molding said settable plastic against said surface until set.

4,444,702

METHOD AND APPARATUS FOR PRODUCING EXTRUDED SECTIONS OF THERMOPLASTIC MATERIAL

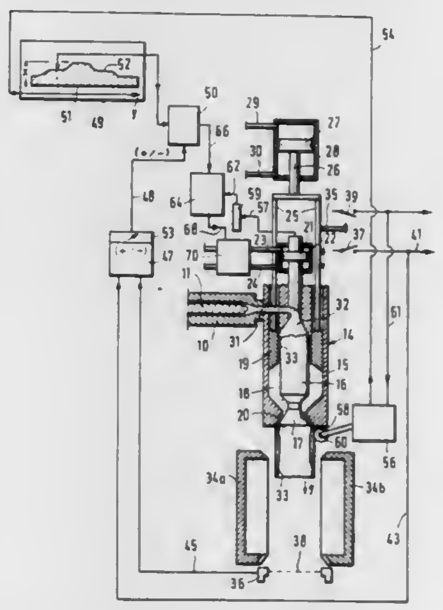
Alfred Thomas, Hennef-Dambroich, and Bruno Äpfelbach, Betzdorf, both of Fed. Rep. of Germany, assignors to Krupp Kautex Maschinenbau GmbH., Bonn, Fed. Rep. of Germany

Filed Apr. 9, 1982, Ser. No. 366,970

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1981, 3114371

Int. Cl.^{3} B29D *23/04;* B29C *17/07*

U.S. Cl. 264—40.1 **24 Claims**



1. In a method of producing an extruded section of thermoplastic material by extrusion through a discharge orifice of an extrusion head into which the plastic material passes through an inlet orifice from an extruder, the wall thickness of the extruded section being varied during extrusion in accordance with a given program, the improvement that the discharge length of the extruded section which passes through the discharge orifice is detected and the variation in wall thickness produced in accordance with said program is additionally controlled in dependence on said discharge length.

16. Apparatus for producing an extruded section of thermoplastic material comprising an extrusion head having an inlet orifice and a discharge orifice, a programming means for programming in respect of the wall thickness of the extruded section, and first measuring means for measuring the discharge speed of the extruded section on leaving the extrusion head, said measuring means being connected to the programming means, thereby additionally to vary the wall thickness of the extruded section.

4,444,703

REINFORCED REACTION INJECTION MOLDED ELASTOMERS

Richard J. G. Dominguez, and Doris M. Rice, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 185,826, Sep. 10, 1980, abandoned. This application Mar. 8, 1982, Ser. No. 355,939

Int. Cl.^{3} B29D *27/00*

U.S. Cl. 264—45.3 **21 Claims**

1. In a method for making inert filler reinforced reaction injection molded polyurethane elastomers of at least 53 pounds per cubic foot average density and ranging from about 0.05 to 0.25 inches in thickness wherein two streams are reacted with one another, one stream containing polyisocyanate and the other stream containing active hydrogen containing materials,

the improvement which comprises placing all of an inert filler material in the isocyanate containing stream prior to mixing and reaction with the active hydrogen containing stream.

4,444,704

PROCESS FOR PRODUCING INTEGRAL SKIN POLYURETHANE FOAM

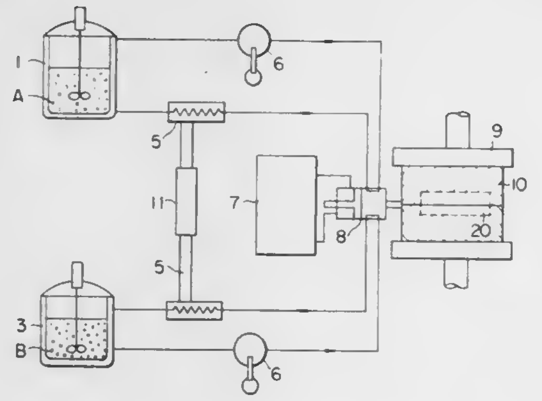
Yasuo Hira, Fujisawa; Susumu Tsuzuku, Tokyo; Masao Gotoh, Yokosuka; Hitoshi Yokono, Katsuta, and Reishi Naka, Tochigi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 19, 1982, Ser. No. 340,657

Claims priority, application Japan, Jan. 26, 1981, 56-9033; May 29, 1981, 56-81016

Int. Cl.³ B29D *27/00*

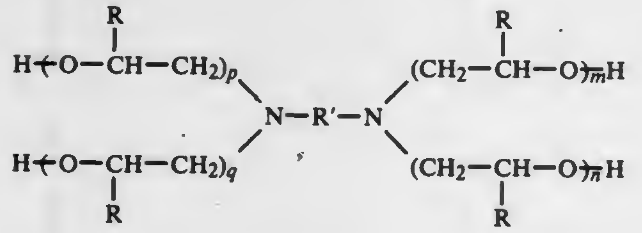
U.S. Cl. 264—45.5 **22 Claims**



1. A process for producing an integral skin polyurethane foam which comprises:

impingement mixing at least two solutions, one of which comprises polyols containing:

(a) at least one polyol of an alkylene oxide adduct of an aromatic amine having the formula:



$$\left.\begin{matrix}\mathrm{H}\!\left(\mathrm{O-\overset{\displaystyle R}{\overset{|}{C}H}-CH_2}\right)_p \\ \mathrm{H}\!\left(\mathrm{O-\underset{\displaystyle R}{\underset{|}{C}H}-CH_2}\right)_q\end{matrix}\right\rangle \mathrm{N-R'-N} \left\langle\begin{matrix}\left(\mathrm{CH_2-\overset{\displaystyle R}{\overset{|}{C}H}-O}\right)_m\mathrm{H} \\ \left(\mathrm{CH_2-\underset{\displaystyle R}{\underset{|}{C}H}-O}\right)_n\mathrm{H}\end{matrix}\right. \qquad (I)$$

wherein R is hydrogen or a lower alkyl group; R′ is an aromatic residue; and m, n, p and q are independently an integer of 1 or more, in an amount of 20 to 80 parts by weight,

(b) at least one polyol of an alkylene oxide adduct of aliphatic amine in an amount of 5 to 70 parts by weight, and

(c) at least one polyether polyol or polyester polyol in an amount of 0 to 50 parts by weight,

a blowing agent and as a catalyst at least one tertiary amine salt having a hetero ring in the molecule, and another solution of which comprises one or more polyisocyanates in an amount of 0.95/1 to 1.30/1 in terms of isocyanate index,

injecting the resulting impingement mixed solution into a closed mold, and

conducting foaming and curing in the closed mold.

4,444,705

METHOD OF MANUFACTURING A CEILING STRUCTURE OF A VEHICLE

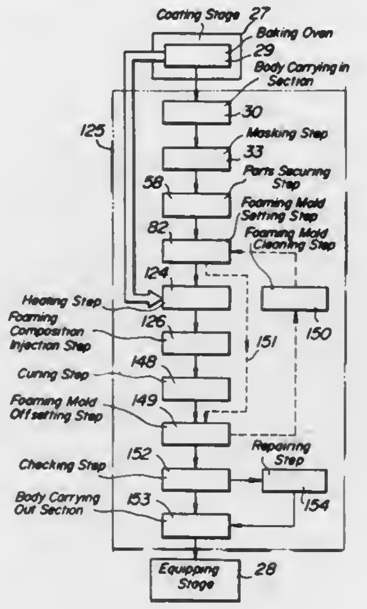
Hideyuki Kumasaka, Yokohama; Motoyuki Hiraoka, Tokyo; Tomokazu Ishidate, Kamakura, and Hiroshi Hattori, Yokohama, all of Japan, assignors to Nissan Motor Company, Ltd., Yokohama, Japan

Division of Ser. No. 107,530, Dec. 27, 1979, abandoned. This application Jan. 30, 1981, Ser. No. 230,295

Claims priority, application Japan, Dec. 29, 1978, 53/164228

Int. Cl.³ B29D *27/00*

U.S. Cl. 264—46.5 **9 Claims**



1. A method of manufacturing a ceiling structure of a vehicle and substantially simultaneously attaching said structure to a preexisting roof panel already secured to a body of said vehicle, wherein said body includes a roof bow mounted to said roof panel and pillars mounted to said roof panel, said pillars having inner panels, and wherein said roof panel has an inner periphery with a rail member which forms a gap with the remainder of said roof panel and forms a linear joint with said pillar inner panels, said roof panel including holes for securing parts to each rail, and wherein a room lamp body is mounted to said roof bow, the method comprising: a step of closing off by masking said gap formed between said roof rail member and the remainder of said roof panel, said linear joint portion between said roof rail and said pillar inner panels, and said holes for securing parts on said roof rail except an opening in said roof bow for mounting said room lamp body; a step of securing a wire harness assembly including a room lamp wire harness and an overhead console wire harness at given positions and securing a lining skin member of said roof panel by fitting welts provided around the periphery of said lining skin member to the roof panel in order to fit said lining skin member to the vehicle body resulting in an attachment of the ceiling structure to the vehicle body upon completion of the ceiling structure and to close the space between the lining skin member and the roof panel except at an opening in the roof bow; a step of mounting a foaming mold having a mold surface with the same shape as a final shape of the lining skin member for molding a foamed material to said roof panel from the compartment side of the vehicle; a step of preheating the lining skin member to a given temperature by a heating member embedded in the foaming mold and exhausting air existing between the lining skin member and the foaming mold through exhaust holes provided in the foaming mold in order to cause the lining skin member to take its final shape and to form a space to be filled with foaming material between said roof panel and said lining skin member; a step of heating said space to be filled with foaming material, said roof panel and said lining skin member and said foaming mold to obtain a temperature suitable for a self-reaction of a foaming composition by totally heating the vehicle body in a furnace in which heat discharged from a coating and baking oven is guided through an exhaust duct; a step of injecting a urethane foaming composition into said space formed between the roof panel and the lining skin member through the opening provided in said room lamp body; a step of curing the lining skin member and the urethane foaming composition, and a step of removing the foaming mold from the vehicle body after foaming.

4,444,706

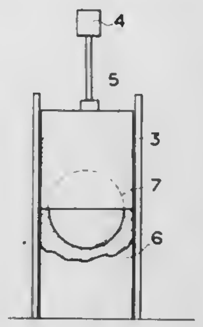
METHOD OF FORMING BALL CORE

Jinryo Itakura, Oamishirasato, Japan, assignor to Yugen Gaisha Itakura Ball, Chiba, Japan

Filed Jul. 9, 1982, Ser. No. 396,745

Int. Cl.³ B28B *1/08*

U.S. Cl. 264—71 **1 Claim**



1. A method of forming the core of a ball, comprising:

(a) soaking a mass of wool fiber with an aqueous solution,

(b) packing said wet wool through a guide tube into a lower concave mold half having a hemispherical cavity therein,

(c) moving downwardly an upper mold half having an opposed hemispherical mating cavity therein to compress said wool between said mold halves, wherein said mold halves are heated to a temperature of 100°/200° C.,

(d) subjecting said upper mold half to a controlled vibration during the downward movement thereof to cause intertwining of said wool fiber,

(e) maintaining said wool within said heated mold halves for 20–25 minutes to shrink and form said wool mass into a spherical shape within the spherical cavity of the closed mold halves, and

(f) opening said mold halves and removing said formed ball core.

4,444,707

METHOD FOR THE MANUFACTURE OF HIGH-PRESSURE HOSES

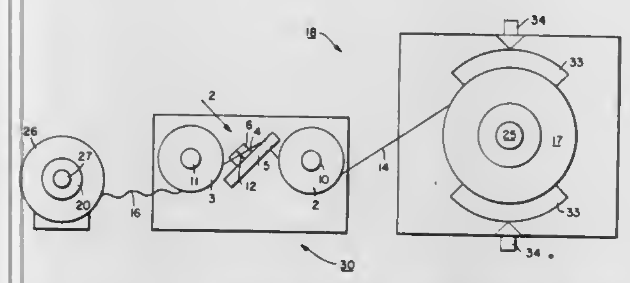
Hans G. Schwarz, Weinheim-Waid, Fed. Rep. of Germany, assignor to Polyflex Schwarz GmbH & Co., Hüttenfeld, Fed. Rep. of Germany

Filed May 24, 1982, Ser. No. 381,648

Claims priority, application Fed. Rep. of Germany, May 23, 1981, 3120688

Int. Cl.³ B32B *1/08*

U.S. Cl. 264—103 **8 Claims**



1. A method of manufacturing high-pressure hoses composed of a plastic core and a plurality of layers of helically wound pressure-resisting members, comprising the steps of: forming a plurality of pressure resisting members of wires of high tensile strength which are rewound in a rewinding device from a supply reel onto several working spools; and applying an intermediate winding formed of yarn between every two helically wound pressure-resisting wire layers.

4,444,708

FLEXIBLE PRODUCTION OF HEATING ELEMENTS

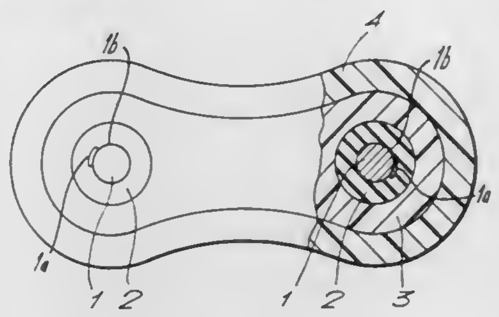
George M. Gale, Shrewsbury; David I. James, Wem, and John V. B. Meyer, Salford, all of England, assignors to Sunbeam Corporation, Oak Brook, Ill.

Division of Ser. No. 148,378, May 9, 1980, Pat. No. 4,348,584. This application Jun. 17, 1982, Ser. No. 389,311

Claims priority, application United Kingdom, May 10, 1979, 7916273

Int. Cl.³ H05B *3/34, 3/54*

U.S. Cl. 264—105 **6 Claims**



1. A process for producing a flexible heating element of the type including two flexible electrical conductors spaced apart by a PTC material, an amorphous highly conductive rubber compatible with said PTC material and adhered to each conductor being interposed between said PTC material and said conductors whereby in use current passes from one conductor to another through the PTC material via the said highly conductive rubber which comprises extruding said amorphous highly conductive rubber to cover each said flexible electrical conductor and subsequently or simultaneously extruding the PTC material to cover the amorphous highly conductive rubber.

4,444,709

PROCESS FOR CONTINUOUSLY PRODUCING A POLYMERIC LAMINATE TAPE HAVING A PLURALITY OF METAL WIRES EMBEDDED THEREWITHIN

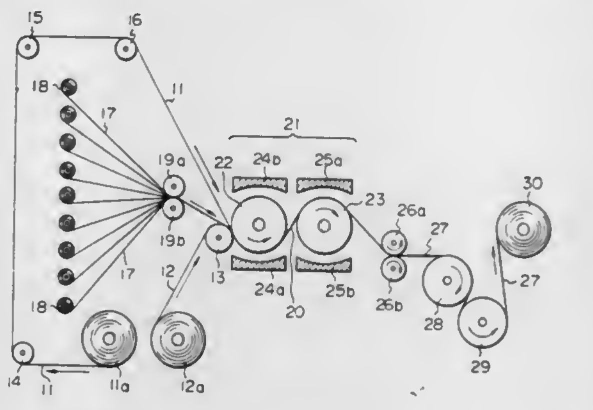
Masumi Hayashi; Kazuo Ogawa; Katsumi Kimura; Hiroshi Ishii, and Satoshi Bandai, all of Ichihara, Japan, assignors to UBE Industries, Ltd.

Filed Mar. 4, 1982, Ser. No. 354,543

Claims priority, application Japan, Mar. 12, 1981, 56-34566

Int. Cl.³ B29F *3/10*

U.S. Cl. 264—174 **13 Claims**



1. A process for continuously producing a polymeric laminate tape having a plurality of metal wires embedded therewithin, comprising the continuous steps of:

superimposing a pair of primary tapes, comprising an electro-insulating thermoplastic polymer which has been cross-linked, on each other along the longitudinal axes thereof under tension, while a plurality of metal wires are interposed, in parallel to each other, between said primary tapes along the longitudinal axes of said primary tapes, under tension, to provide a precursory laminate tape;

heating said precursory laminate tape up to a temperature of from 10° to 120° C. above the melting point of corresponding electro-insulating thermoplastic polymer which is not cross-linked; and

pressing said heated precursory laminate tape by using a pair of pressing rolls each having an elastic peripheral surface layer thereof, whereby said primary tapes are heat-bonded to each other to form a body of laminate matrix within which said metal wires are embedded.

4,444,710

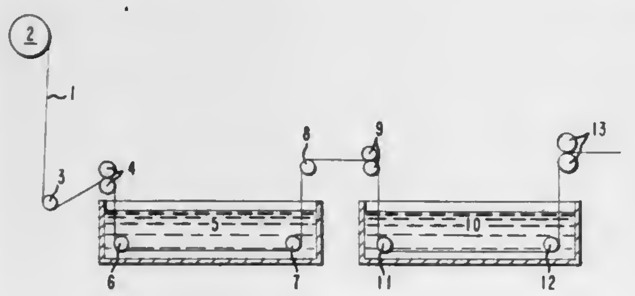
PROCESS FOR INCREASING VOID VOLUME OF HOLLOW FILAMENTS

Elmer E. Most, Jr., Kinston, N.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 19, 1982, Ser. No. 350,346

Int. Cl.³ D01D *5/24*

U.S. Cl. 264—209.5 **12 Claims**



1. A process for increasing the percent void of hollow polyester filaments which comprises melt spinning a hollow polyester filament, and while the filament is still substantially amorphous contacting the filament with water at a temperature at least about 92° C. for at least about 3 seconds.

4,444,711

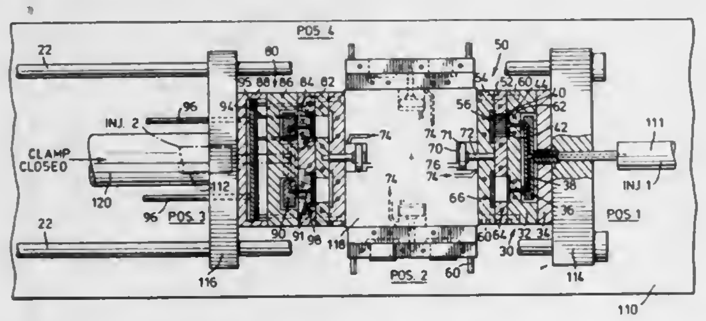
METHOD OF OPERATING A TWO-SHOT INJECTION-MOLDING MACHINE

Robert D. Schad, Toronto, Canada, assignor to Husky Injection Molding Systems Ltd., Bolton, Canada

Filed Dec. 21, 1981, Ser. No. 333,426

Int. Cl.³ B29F *1/14;* B29C *5/08*

U.S. Cl. 264—243 **18 Claims**



1. A method of operating a two-shot injection-molding machine to produce composite articles each having one part of a relatively flexible modified rubber with a tendency to cling to a mold cavity during an extended hardening period and further having another part of a relatively rigid and more rapidly hardening plastic material adjoining said one part, comprising the steps of:

(a) injecting said modified rubber into a first cavity formed at one station of the machine between a primary mold portion and a secondary mold portion juxtaposed with each other, thereby producing a first workpiece section;

(b) retaining said first workpiece section on said primary mold portion while removing said secondary mold portion therefrom to expose a major surface of said first workpiece section while letting same cool;

(c) juxtaposing a tertiary mold portion at another station of the machine with said primary mold portion to form a second cavity bounded by said major surface of the first workpiece section;

(d) injecting said relatively rigid plastic material into said second cavity to produce a second workpiece section adhering to said first workpiece section along said major surface;

(e) allowing said second workpiece section to cool with further cooling of said first workpiece section;

(f) thereafter separating said tertiary mold portion from said primary mold portion; and

(g) gradually pulling said second workpiece section away from said primary mold portion at a controlled rate slow enough to maintain the coherence of the entire workpiece.

4,444,712

PROCESS FOR THE PRODUCTION OF SLIDING-THROUGH GUIDE BANDS

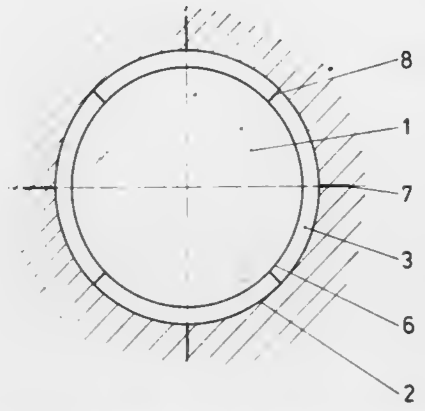
Klaus Hagedorn, Würselen, Fed. Rep. of Germany, assignor to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Oct. 15, 1980, Ser. No. 197,259

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1979, 2941920

Int. Cl.³ B29F *1/10;* B29D *31/00;* F42B *31/00*

U.S. Cl. 264—267 **4 Claims**



1. A process for producing guide bands of deformable material for flight-stabilized projectiles, which guide band is mounted in an annular groove of the projectile and is adapted to slide through the gun barrel when the projectile is propelled therethrough, which process comprises the following steps:

fixing the projectile in an injection molding device by contacting relatively small contact surfaces of the projectile;

directly injecting in to the space defined between the injection molding device and the annular groove synthetic material for forming the guide band, said injection molding device having a plurality of injection molding gates which are evenly spaced around the injection molding device, through which the synthetic material is injected; and

adjusting and maintaining a temperature gradient between the projectile and injection molding device by having a heat insulating layer disposed between the projectile and the injection molding device for fixing the projectile therein, so that the injection molding device is substantially colder than the projectile.

4,444,713

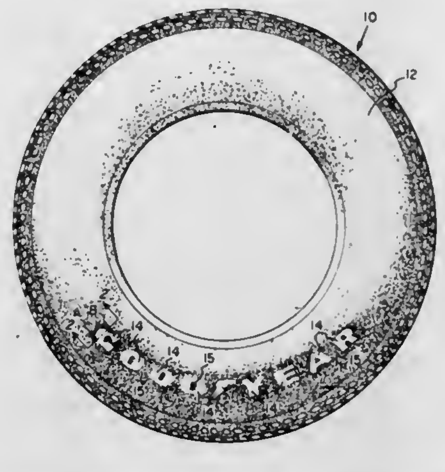
DECORATIVE ORNAMENTATION FOR A RUBBER ARTICLE AND METHOD OF MAKING SAME

William E. Egan, Tallmadge; Samuel P. Landers, Uniontown, both of Ohio, and Stephen Lash, Birmingham, Mich., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 9, 1982, Ser. No. 406,743

Int. Cl.³ B29H *5/02*

U.S. Cl. 264—326 **6 Claims**



1. The method of providing an indicium on the surface of an article made of a vulcanizable material comprising:

placing an unvulcanizable article in a mold, said mold having a first surface area of a first surface finish for forming said indicium and a second surface area of a second surface finish different from said first surface finish which substantially surrounds said indicium;

vulcanizing said article by applying heat and pressure so as to force the article against said mold thereby imparting to said article an indicium having a first surface finish and the area substantially surrounding said indicium having a second finish, said first and second finishes of said article being visually distinguishable from each other, said first and second finishes of said article being less than or equal to two hundred fifty (250) microinches.

4,444,714

METHOD OF COLORING RESIN PRODUCTS

Irvin W. Martenson, Brea, Calif., assignor to American Organics Corporation, Placentia, Calif.

Division of Ser. No. 191,320, Aug. 26, 1980, Pat. No. 4,341,565. This application Jun. 24, 1982, Ser. No. 391,488

The portion of the term of this patent subsequent to Jul. 27, 1999, has been disclaimed.

Int. Cl.³ B29B *1/00;* B29F *1/00*

U.S. Cl. 264—328.18 **4 Claims**

1. In a method of injection molding of a plastic product wherein a solid, synthetic molding resin is injection molded into said product, the improved method of incorporating a powdered, solid colorant into said resin which comprises:

(a) dispersing said powdered solid colorant into a plasticizer for said molding resin and selected from the class consisting of esters of saturated monobasic and dibasic alcohols having from 2 to about 20 carbons and a dibasic or tribasic saturated aliphatic acid or aromatic acid having from 3 to about 12 carbons, or phosphoric acid to form a liquid gel colorant composition; and

(b) admixing said colorant, plasticizer and from 1 to 5 percent by weight of an organophilic, expanding lattice clay exchanged with alkyl quaternary ammonium ions; and

(c) injecting said liquid gel colorant composition into said mixture with said molding resin during said injection molding.

4,444,715

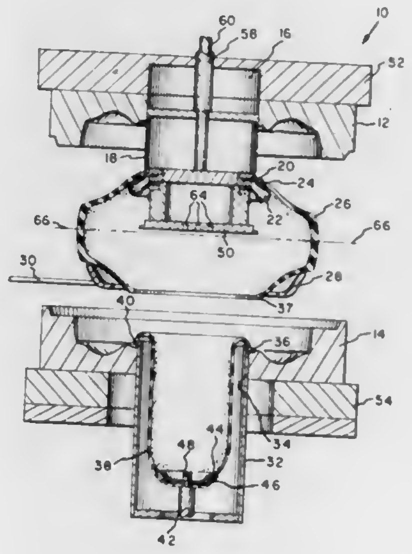
METHOD OF MAKING TIRES

Bryan E. Nixon, Akron; George M. Stoila, Kent, and Stephen L. Williams, Doylestown, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 480,713, Mar. 31, 1983, abandoned. This application Jun. 27, 1983, Ser. No. 508,277

Int. Cl.³ B29H *5/02, 5/08*

U.S. Cl. 264—501 **24 Claims**



1. A method of vulcanizing an uncured tire in a tire press having an upper mold section with an upper bead ring for engaging an upper bead of said tire, a lower mold section with a lower bead ring for engaging a lower bead of said tire, a lower center mechanism on said lower mold section for containing a curing bladder, an axially movable upper center mechanism on said upper mold section for gripping and centering said upper bead on said upper bead ring and for suspending said tire from said upper mold section comprising:

(a) opening said tire press providing a space between said upper mold section and said lower mold section for said tire;

(b) positioning said tire between said lower mold section and said upper mold section;

(c) lowering said upper center mechanism relative to said upper mold section to grip and center said upper bead of said tire on said upper bead ring; and

(d) suspending said tire by said upper bead ring at a position spaced from said upper mold section and said lower mold section to insure orientation of the tire components in the built condition of the tire and centering of said lower bead over said lower bead ring.

4. A method of vulcanizing an uncured tire in a tire press having an upper mold section with an upper bead ring for engaging an upper bead of said tire, a lower mold section with a lower bead ring for engaging a lower bead of said tire, comprising:

(a) opening said tire press providing a space between said upper mold section and said lower mold section for said tire;

(b) positioning said tire in said space with said upper bead positioned under said upper bead ring and said lower bead positioned over said lower bead ring to provide an annular tire cavity;

(c) injecting a fluid under pressure into said tire cavity to inflate said tire; and then

(d) inserting a curing bladder into said tire cavity.

4,444,716

METHOD FOR MANUFACTURE OF HOLLOW FIBER

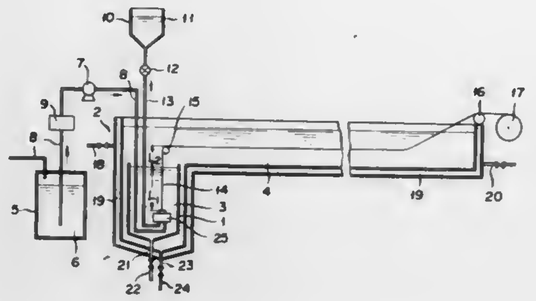
Juuro Aoyagi; Kazuaki Takahara, both of Tokyo, and Yukio Seita, Fujinomiya, all of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed May 25, 1982, Ser. No. 381,857

Claims priority, application Japan, Jun. 1, 1981, 56-82555

Int. Cl.^{3} B29D *27/00*

U.S. Cl. 264—561 **20 Claims**



1. A method of producing a hollow fiber having a substantially circular cross-section, said method comprising:

(a) extruding a metal ammonia cellulose containing spinning dope through an annular spinning nozzle directly into a lower layer of a two-layer bath, said lower layer containing a first non-coagulating liquid selected from the group consisting of halogenated hydrocarbons and said bath further comprising an upper layer containing a coagulating liquid to thereby form a tubular extruded thread, wherein the height of the first non-coagulating liquid of the lower layer measured from the annular spinning nozzle to the interface of the first non-coagulating liquid and the upper layer is between 50 and 250 mm, and simultaneously introducing into the tubular hollow of said tubular extruded thread a second non-coagulating liquid; and

(b) passing said tubular extruded thread containing said second non-coagulating liquid upwardly into and through said upper layer containing said coagulating liquid to thereby form said hollow fiber.

4,444,717

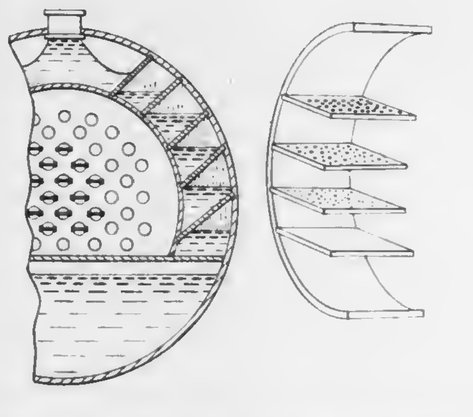
APPARATUS FOR REMOVING ENERGY

Anne de Breze, Laguna Niguel, Calif., assignor to Philip A. Putman, Huntington Beach, Calif.

Continuation-in-part of Ser. No. 177,572, Aug. 13, 1980, abandoned, which is a continuation-in-part of Ser. No. 974,117, Dec. 28, 1978, abandoned. This application Apr. 26, 1982, Ser. No. 372,075

Int. Cl.^{3} G21G *1/10*

U.S. Cl. 376—194 **4 Claims**



1. Apparatus for removing energy produced by nuclear reactions comprising: a proton accelerator for producing a beam of protons, a reaction chamber in alignment with said proton beam, said reaction chamber having graphite walls and an aperture in one of said walls allowing entry of said proton beam, a target plate, the target plate positioned inside said reaction chamber in alignment with said aperture in position perpendicular to said proton beam, said target plate having a plurality of spaced-apart holes therein, with said holes having carbon-containing targets positioned therein, means for causing said proton beam to strike said targets to produce nuclear reactions, said nuclear reaction chamber having therein a blanket structure for removing said produced energy, said blanket structure comprising a shell-like structure positioned around a major portion of said graphite walls, the space between said shell-like structure and said graphite walls being divided into a series of trough-like chambers by means of a plurality of substantially horizontally extending perforated graphite plates, each of said graphite plates having one end attached to the graphite wall, each of said substantially horizontally extending perforated graphite plates being inclined upwardly towards and cooperating with the inner surface of said shell-like structure to form said series of trough-like chambers, means for pumping a liquid blanket material to the top of said shell-like structure for subsequent downward flow through said series of trough-like chambers by means of the perforations in said perforated graphite plates, the number and size of said perforations in each said perforated graphite plate being sufficient to insure that the liquid blanket material in each of said trough-like chambers will completely cover the outer surface of said major portion of said graphite walls, said liquid blanket material flowing through a circuit which includes said pump, a heat exchanger and the space between said graphite walls and said shell-like structure.

4,444,718

METHOD OF MAKING A HIGH CURRENT DENSITY CATHODE

Bernard Smith, Wayside, and Gerard L. Freeman, Freehold, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 19, 1982, Ser. No. 360,013

Int. Cl.^{3} B22F *1/00*

U.S. Cl. 419—37 **6 Claims**

1. Method of making an active porous high purity tungsten pellet, said method including the steps of:

(A) mixing tungsten powder with about 1 to 5 percent by weight of the mixture of an activator powder selected from the group consisting of zirconium hydride, hafnium hydride, scandium oxide, yttrium oxide and aluminum oxide and compacting the powders at a pressure of about 35 tons per square inch to form a pellet,

(B) sintering the pellet in a non-oxidizing atmosphere at about 1800 degrees for about 1½to 3½ hours to the desired porosity,

(C) filling the porous pellet with a methyl methacrylate filler material,

(D) machining to the desired size and shape, and

(E) removing the filler material.

4,444,719

GOLD SOLDERS

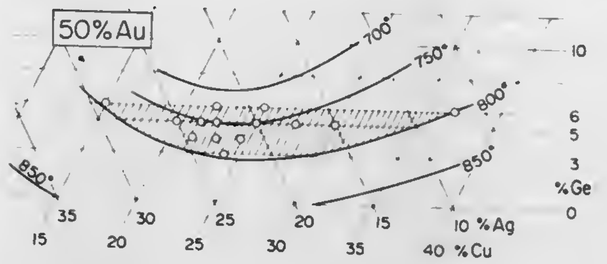
Yôsuke Sakakibara, Higashimurayama; Takao Kasai, Tokorozawa, and Tsuneji Takasugi, Hanno, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Feb. 16, 1983, Ser. No. 466,902

Claims priority, application Japan, Mar. 5, 1982, 57-33942

Int. Cl.^{3} C22C *5/02*

U.S. Cl. 420—511 **8 Claims**



1. A gold solder consisting of 50 to 67% by weight gold, 3 to 6% by weight germanium, 5 to 40% by weight copper and the balance silver.

4,444,720

DEVICE FOR THE OUTPUT OF A DEODORIZING SUBSTANCE INTO AN AIR STREAM PARTICULARLY IN VAPOR EXHAUST HOODS IN KITCHENS

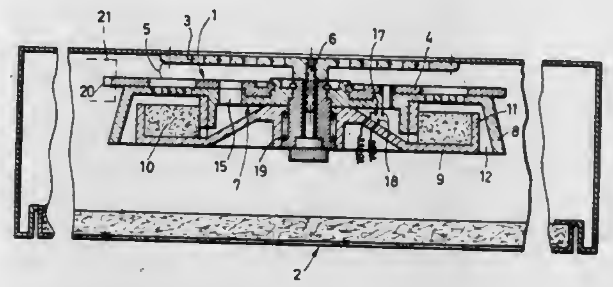
Horst Mayer, Wagenbergstr. 33, 5760 Arnsberg 1, Fed. Rep. of Germany

Filed Dec. 30, 1981, Ser. No. 335,842

Claims priority, application Fed. Rep. of Germany, Jan. 8, 1981, 3100320

Int. Cl.^{3} A61L *9/04, 9/12*

U.S. Cl. 422—119 **1 Claim**



1. In a device for the release of an odor-destroying substance into an air stream, such as for kitchen vapor exhaust hoods, comprising a vapor exhaust hood having a vapor inlet side and a vapor outlet side, a suction grid located in the vapor outlet side of said vapor exhaust hood, wall means for forming a reservoir for an odor-destroying substance located within said vapor exhaust hood in the path of air flowing from the vapor inlet side to the vapor outlet side of said hood, said reservoir being open on the side thereof facing toward the vapor outlet side of said hood, wherein the improvement comprises means forming a support for said reservoir and defining a central axis extending generally perpendicularly of said suction grid for supporting said reservoir within said hood, said wall means comprises an annular trough forming the reservoir and encircling said central axis and having an open side facing toward said vapor outlet side and being closed on the side facing said vapor inlet side, said annular trough having a closed wall defining the radially outer boundary thereof, a felt filling located within said trough for receiving the odor-destroying substance, a hood-shaped wall extending over the open side of said annular trough and including a flat plate extending generally parallel to and spaced from said suction grid within said hood, and an annular edge extending from said flat plate toward said vapor inlet side and spaced radially outwardly from said closed wall of said annular trough forming in combination with said closed wall an annular flow channel so that air can flow from the vapor inlet side of said hood over the open side of said annular trough, said flat plate having flow openings therethrough located opposite said annular trough, a cover disk in contact with the side of said flat plate closer to said suction grid and being concentric relative to said central axis, said cover disk having openings therethrough and being movable about said central axis relative to said flat plate for selectively opening and closing the flow openings in said flat plate, said cover disk being adjustably spaced from said suction grid and forming in combination with said suction grid an adjustable space therebetween whereby air flowing over the open side of said trough passes through the flow openings in said flat plate and the openings in said cover disk into the adjustable space and then through said suction grid, means located within said wall means for providing an indication of the level of the odor-destroying substance within said annular trough, said means for indicating the level includes electric switching contacts disposed in spaced apart relation when the odor-destroying substance within said annular trough is above a certain level, said annular trough containing the odor-destroying substance is arranged to act in the direction of gravity based on the amount of odor-destroying substance located within said trough, and a spring located within said wall means and acting against the force of gravity for effecting the closing of said electric switching contacts when the odor-destroying substance within said annular trough falls below a certain level, said cover disk has a filling opening therein for filling odor-destroying substance into said felt filling in said annular trough, and said flat plate has a corresponding filling opening therethrough and said filling opening in said cover disk is movable into and out of alignment with said filling opening in said flat plate.

4,444,721

RESILIENT SUPPORTING MEMBER FOR EXHAUST GAS CATALYTIC CONVERTER

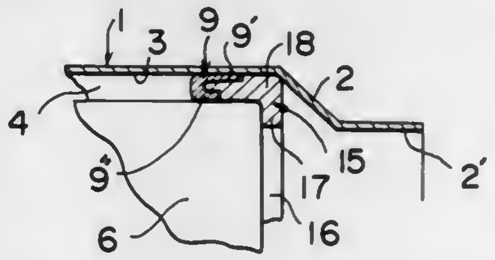
Ichizo Ohkata, Yokohama, Japan, assignor to Kato Hatsujo Kaisha, Ltd., Yokohama, Japan

Filed Mar. 29, 1982, Ser. No. 362,851

Claims priority, application Japan, Nov. 24, 1981, 56-188205

Int. Cl.^{3} F01N *3/10*

U.S. Cl. 422—179 **9 Claims**



4. A resilient supporting member for an exhaust gas catalytic converter, comprising:

a thin plate of ceramic fiber; and

a looped fabric unit of knitted metallic fine wires folded about said thin plate, the supporting member having a base and a leg section in an L-shaped cross section, with said thin plate forming a U-shape at the end of said leg section opposite said base and being open toward said base.

4,444,722

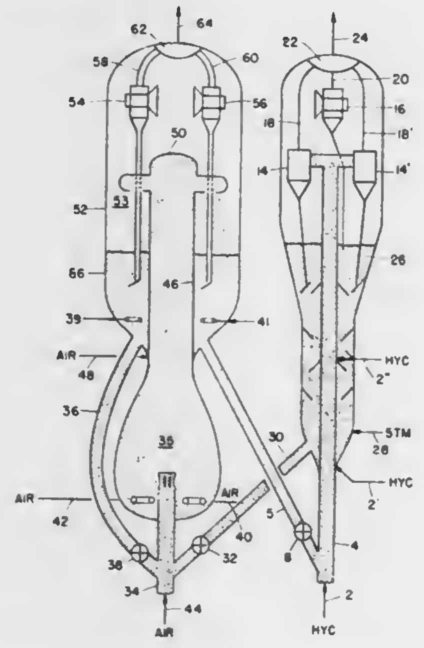
SYSTEM FOR REGENERATING FLUIDIZABLE CATALYST PARTICLES

Hartley Owen, Belle Mead, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 742,806, Nov. 18, 1976, abandoned, which is a continuation-in-part of Ser. No. 479,726, Jun. 17, 1974, abandoned. This application Nov. 20, 1979, Ser. No. 96,105

Int. Cl.^{3} B01J *8/26, 8/32*

U.S. Cl. 422—144 **4 Claims**



1. Apparatus for effecting the regeneration of fluid catalyst particles which comprises,

a first riser means of larger diameter in the lower bottom portion thereof than the portion thereabove,

a second riser means terminating in the said lower bottom portion of said first riser means, said second riser means being capped at its upper end and provided with a plurality of vertical elongated adjacent slots in the upper periphery thereof,

said first riser means extending upwardly into and discharging into an enlarged catalyst collecting chamber, open ended first conduit means provided with valve means extending from a bottom portion of said catalyst collecting chamber to a bottom portion of said second riser means, second conduit means connected to the bottom portion of said second riser means for transfer of coke contaminated catalyst particles thereto, third conduit means for withdrawing regenerated catalyst from a bottom portion of said catalyst collecting chamber, and cyclonic separating means positioned in an upper portion of said catalyst collecting chamber in open communication with means for withdrawing gasiform material from an upper portion of said catalyst collecting chamber.

4,444,723

DENITRATION SYSTEMS

Kenichi Matsumaru, Tokyo; Hirobumi Oshima, Tokai, and Masaaki Hirayama, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa and Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, both of, Japan

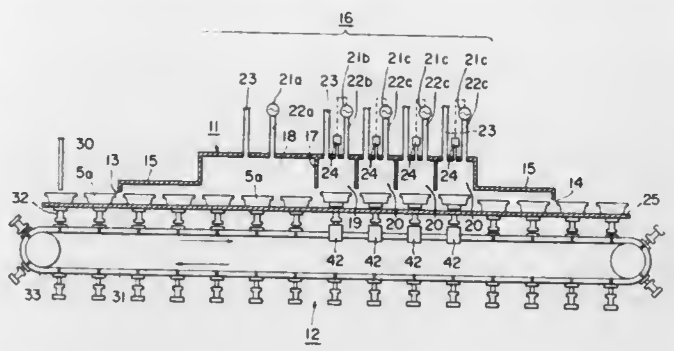
Filed Apr. 9, 1982, Ser. No. 367,055

Claims priority, application Japan, Apr. 16, 1981, 56-57308

Int. Cl.^{3} G21G *5/00*

U.S. Cl. 422—159 **6 Claims**

1. A system for denitrating a starting nitric acid solution of plutonium nitrate, uranyl nitrate, or mixture thereof by microwave heating thereby to obtain oxide products of said solution, comprising means for receiving said starting solution, oven means having a generally rectangular configuration and provided with a bottom plate on which said receiving means is put, conveying means located below said bottom plate of said oven means for continuously conveying said receiving means on said bottom plate throughout said oven means, and heating means operatively connected to said oven means for generating microwaves to irradiate the content in said receiving means when it passes through said oven means.



4,444,724

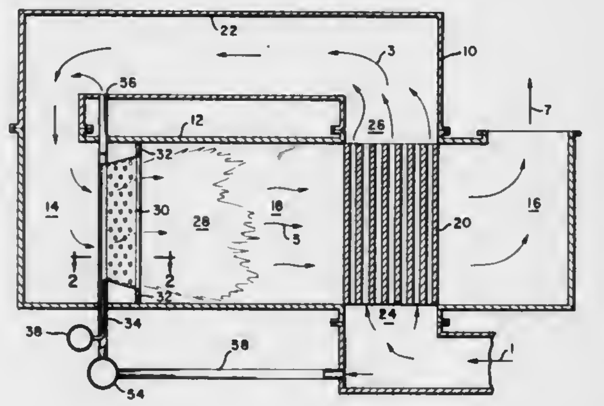
FUME INCINERATOR WITH GAS COOLED BURNER

George W. Goetschius, Wellsville, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed Apr. 5, 1982, Ser. No. 365,122

Int. Cl.^{3} F01N *3/02*

U.S. Cl. 422—173 **1 Claim**



1. A fume incinerator for eliminating obnoxious fumes from a process gas stream comprising:

a. a housing defining therein a gas inlet plenum, a gas outlet plenum, and a combustion chamber therebetween;

b. heat exchange means disposed within said gas outlet plenum for passing the process gas containing the obnoxious fumes to be incinerated in indirect heat exchange relationship with the incinerated process gas leaving the combustion chamber so as to preheat the process gas being supplied to the incinerator, said heat exchange means having an inlet for receiving the process gas being supplied from a process gas supply means to the incinerator, a core through which the process gas being supplied to the incinerator is passed in heat exchange relationship with the incinerated process gas leaving the combustion chamber, and an outlet for exhausting the preheated process gas being supplied to the incinerator;

c. duct means interconnecting the outlet of said heat exchange means with said gas inlet plenum for providing a flow passage through which the preheated process gas passes from the outlet of said heat exchange means to said inlet plenum;

d. a plurality of burner assemblies disposed between said inlet plenum and said combustion chamber for incinerating the preheated process gas flowing from said inlet plenum into said combustion chamber, each of said plurality of burner assemblies comprising:

i. a first axially elongated conduit defining a fuel gas supply passage and having a major axis lying transverse to the direction of the flow of the process gas stream and an elongated forward wall facing downstream with respect to the flow of the process gas stream, said wall having fuel gas injection port means at a series of points along its length;

ii. mixing plate means extending forward from adjacent the sides of the fuel gas supply conduit in spaced relationship along opposite sides of the fuel gas injection ports and thence extending obliquely forward and outward in divergent relationship at an acute angle so as to define a forwardly mixing plate means extending forward from adjacent the sides of the fuel gas supply conduit in spaced relationship along opposite sides of the fuel gas injection ports and thence extending obliquely forward and outward in divergent relationship at an acute angle so as to define a forwardly widening trough-spaced mixing space therebetween adjacent and immediately downstream of the fuel gas injection ports, said mixing plate means having a plurality of apertures therein through which process gas flowing past the burner assembly is directed into the trough-shaped mixing space adjacent and immediately downstream of the fuel gas injection ports; and

iii. a second axially elongated conduit disposed in spaced relationship with the first conduit and having a major axis lying parallel to the major axis of the first conduit so as to define therebetween a cooling gas flow passage along the length the fuel gas supply conduit whereby the fuel gas traversing the gas supply conduit is shielded from the high temperature process gas stream flowing past the burner assembly;

e. means for supplying fuel gas to the fuel gas supply conduit of each of said plurality of burner assemblies;

f. means connected to the process gas supply means upstream of the process gas inlet to said heat exchanger for supplying process gas from a point upstream of the inlet to said heat exchange means to the cooling gas flow passage of each of said plurality of burner assemblies; and

g. means for exhausting the process gas supplied to the cooling gas flow passage of each of said plurality of burner assemblies including exit means connected to said gas inlet plenum for supplying said exhausted process gas to said gas inlet plenum upstream of said plurality of burner assemblies for subsequent incineration in the combustion chamber.

4,444,725

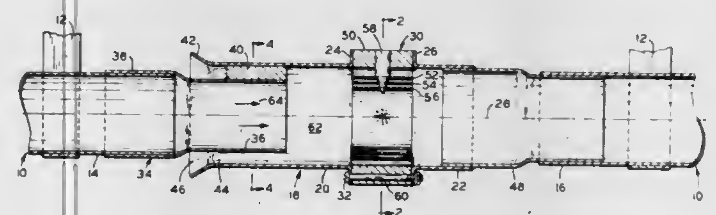
CATALYTIC BOOSTER DEVICE FOR VEHICULAR EXHAUST SYSTEMS AND METHOD OF INSTALLING

Donavon L. Feaster, 9 Oliver's La., Mattapoisett, Mass. 02739

Filed Jul. 8, 1982, Ser. No. 396,432

Int. Cl.^{3} F01N *3/10*

U.S. Cl. 422—180 **1 Claim**



1. A catalytic booster-type converter for insertion into the exhaust pipe of a vehicular exhaust system comprising an elongated conduit device, said conduit device being in separate length portions, a catalytic converter element interposed between said length portions, and means for removably securing said length portions together with said element therebetween, said means including said converter element being secured between adjacent ends of said length portions and removable therefrom in a direction transverse to the longitudinal axis of said conduit device, said length portions being spaced apart with the adjacent ends juxtaposed, said means including said catalytic element and threaded fasteners securing said element to said ends, said ends having outwardly extending flanges, respectively, said length portions being cylindrical and said element being cylindrical and of a diameter substantially coextensive of that of said flanges, said threaded fasteners passing through said flanges and said element to secure them rigidly together, said element including a rigid tubular outer portion through which said threaded fasteners pass, a plurality of tubular catalytic elements coaxially disposed within said tubular outer portion in radially spaced relation, circumferentially spaced radially inwardly extending pin elements, each of said pin elements having contiguous portions of successively decreasing diameter in a radially inward direction and defining shoulders therebetween, said coaxially disposed catalytic elements being radially and longitudinally supported by said shoulders and said contiguous portions, respectively, the lengths of said tubular elements being no longer than that of and being disposed in said tubular portion whereby the spacing between said flanges is coextensive with the length of said tubular portion whereby said catalytic converter element can be replaced by movement thereof laterally with respect to said conduit device.

4,444,726

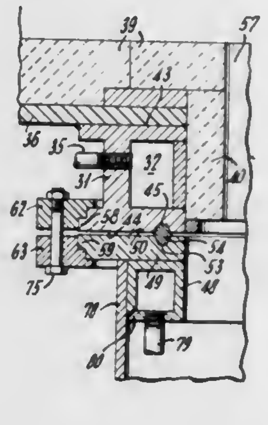
QUENCH RING AND DIP TUBE ASSEMBLY FOR A REACTOR VESSEL

Joseph M. Crotty, Jr., Long Beach, and John M. Veillon, Covina, both of Calif., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 27, 1982, Ser. No. 453,426

Int. Cl.^{3} F28D *21/00*

U.S. Cl. 422—207 **8 Claims**



1. Improved quench ring and dip tube assembly in combination with a reactor vessel having a refractory lined reactor chamber with a bottom outlet and a floor to support said lining, comprising

a first annular conduit for carrying a first supply of cooling water therein and adapted for mounting against said bottom outlet and said floor,

a second annular conduit for carrying a second supply of cooling water therein and adapted for mounting beneath said first annular conduit,

said first and second annular conduits are mounted in said reactor such that the cooling water carried by said first and second annular conduits do not contact one another in said reactor vessel,

a dip tube for carrying hot gas and for directing molten slag from said outlet into a bath of quench water therebeneath, said dip tube extending into the quench water to form a liquid seal, and

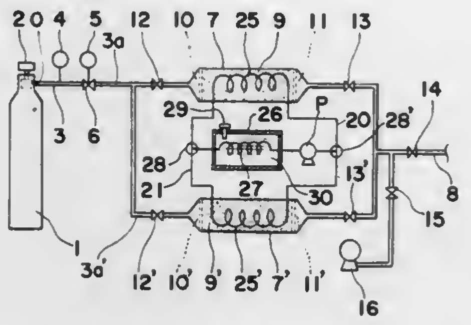
means for mounting said dip tube surrounding said second annular conduit for receiving cooling water therefrom and directed against the inside of said dip tube to prevent said slag from sticking thereto.

4,444,727

HYDROGEN GAS PURIFICATION APPARATUS

Nobuyuki Yanagihara, Hirakata; Takaharu Gamo, Fujiidera; Yoshio Moriwaki, Hirakata, and Tsutomu Iwaki, Yahata, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Continuation of Ser. No. 215,384, Dec. 11, 1980, abandoned.
This application Jun. 21, 1982, Ser. No. 390,626
Claims priority, application Japan, Dec. 18, 1979, 54-165037
Int. Cl.³ B01J *23/90*
U.S. Cl. 422—223 **7 Claims**



1. A hydrogen gas purification apparatus which consists of:

at least one set of two hydrogen purification containers each including a heat exchanger coupled to each other through heat exchanging means for transferring only heat produced during hydrogen absorption in one of said containers to the other of said containers, each of said hydrogen purification containers containing a hydrogen absorbing alloy, said heat exchanging means comprising a heat storage container means for storing heat during the selective hydrogen absorption and desorption for causing the selective desorption and absorption of hydrogen gas to take place through heat exchanging of said stored heat,

inlet means for introducing hydrogen gas to be purified into each of said containers, and

outlet means for withdrawing purified hydrogen gas from each of said containers,

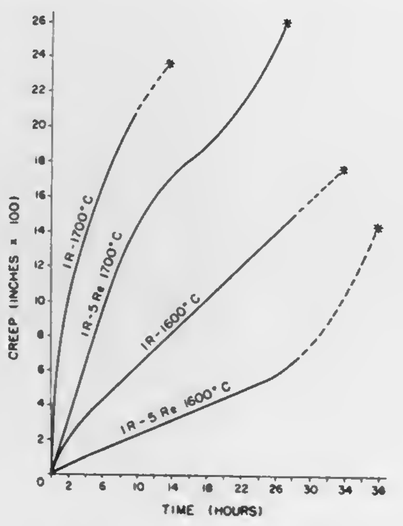
said hydrogen gas purification containers being so arranged so as to cause hydrogen gas to be desorbed from the hydrogen absorbing alloy only by heat produced when hydrogen gas is absorbed into said hydrogen absorbing alloy.

4,444,728

IRIDIUM-RHENIUM CRUCIBLE

Richard D. Lanam, Westfield; Allen R. Robertson, Edison, and Edward D. Zysk, Livingston, all of N.J., assignors to Engelhard Corporation, Iselin, N.J.

Filed Jan. 21, 1982, Ser. No. 341,422
Int. Cl.³ C30B *15/10*
U.S. Cl. 422—249 **5 Claims**



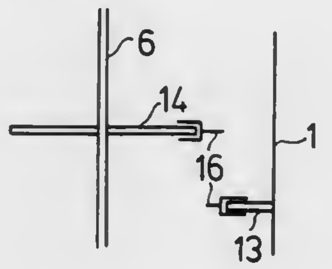
1. A crucible for growing crystal, said crucible consisting essentially of an iridium-rhenium alloy wherein said alloy is comprised of from about 85 to about 99 parts by weight of iridium and from about 1 to about 15 parts by weight of rhenium.

4,444,729

MULTISTAGE COLUMN FOR COUNTERCURRENT EXTRACTION OF LIQUIDS

Reinhard Gradl, Hürth, and Günther Schimmel, Erftstadt, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 30, 1982, Ser. No. 393,695
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1981, 3126598
Int. Cl.³ B01N *11/04*
U.S. Cl. 422—257 **8 Claims**



1. A multistage column for countercurrent extraction of two liquids of different specific density, comprising:

a housing in upright position provided at its upper end with an upper inlet and upper outlet and, at its lower end, with a lower inlet and lower outlet, the upper inlet and lower outlet permitting specifically denser liquid to be introduced into the column and to be taken therefrom, and the lower inlet and upper outlet permitting specifically less dense liquid to be introduced into the column and to be taken therefrom;

a plurality of annular stator collars secured to the inside wall of the housing, the individual stator collars being arranged downstream of, and speced apart from, each other;

a rotatable shaft arranged centrally within the housing so as to extend vertically downward therein, said shaft terminating freely above the housing's bottom portion;

a plurality of stirring means spaced apart from each other, the individual stirring means being perpendicularly secured to the shaft; a plurality of disks with a diameter sufficient to cover the inner free area of the respective stator collar, at least one such disk being secured to each stirring means at at least one point thereof;

a lifting cylinder permitting the shaft and the attached the stirring means to be lifted for starting operation and during operation, or lowered during standstill so that the disk-provided stirring means and stator collars, respectively, are vertically movable relative to each other to a predetermined spacing;

and a plurality of encircling packing means permitting the disk and stator collars to be sealed, each sealably related disk and stator collar combination having at least one such packing means placed at least at one position therebetween, the specifically denser liquid and specifically less dense liquid undergoing phase separation during standstill within limited regions only.

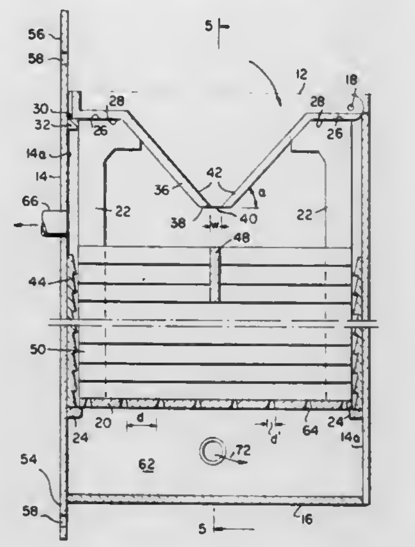
4,444,730

DETERGENT DISPENSER

Gerard Renders, Jupille; Jean-Pierre Denis, Thimister, and Lucien Gryglewicz, ANS, all of Belgium, assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Jun. 7, 1982, Ser. No. 385,639
Int. Cl.³ B01D *11/02*
U.S. Cl. 422—264 **18 Claims**

1. A container for providing water-added detergent solutions comprising top, bottom and connecting sidewall portions, said top portion being pivotally mounted to said sidewall portion for movement to open and closed positions, a support member disposed substantially horizontally within said container for receiving a plurality of apertures for distributing an aqueous medium upwardly of said member, said support member in combination with said sidewall portion defining a detergent retaining zone thereabove, water inlet means positioned to initiate low pressure percolating water flow upwardly through said apertures, outlet means positioned above said detergent retaining zone for discharging aqueous, solubilized detergent from said container and adapted to removably engage conduit means for external transport of said discharged liquid, switch control means responsive to movement of said top portion for blocking water flow to said container when said top portion is removed from a fully closed position and means for attaching said container to an external supporting surface.

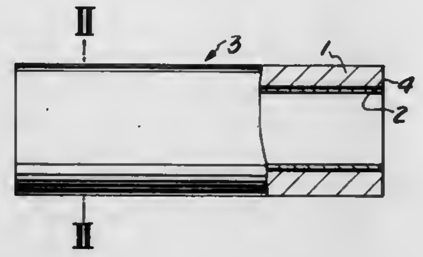


4,444,731

TUBE FOR THERMAL CRACKING OR REFORMING HYDROCARBON

Keizo Konoki, Tokyo; Takanobu Shinohara; Ikuyoshi Kochi, both of Chiba; Keiichi Shibata, Mobara; Hisakatsu Nishihara, Hirakata; Toshiaki Morichika, Hirakata; Junichi Sugitani, Hirakata, and Koji Tsuchida, Hirakata, all of Japan, assignors to Kubota Ltd., Osaka and Toyo Engineering Corporation, Tokyo, both of, Japan

Filed Feb. 25, 1982, Ser. No. 352,270
Claims priority, application Japan, Feb. 25, 1981, 56-28089
Int. Cl.³ B01J *19/02*
U.S. Cl. 422—310 **10 Claims**



1. A hydrocarbon reforming or thermally cracking reactor tube comprising:

a tube member made of Ni-containing heat resisting material and having enhanced mechanical strength afforded by a large wall thickness,

another tube member made of heat resisting material free from Ni or with a low Ni content, the tube member having a small wall thickness and being fitted to the inner or outer surface of the first-mentioned tube member defining a reaction zone for the hydrocarbon, and a thin coating of Ni-P solid solution provided between the two tube members,

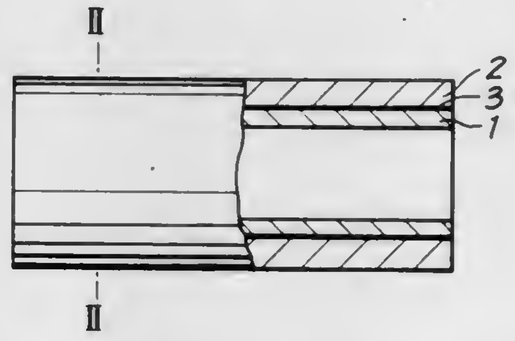
the two tube members being bonded together by a diffusion treatment.

4,444,732

TUBE FOR THERMAL CRACKING OR REFORMING OF HYDROCARBON

Keizo Konoki, Tokyo; Takanobu Shinohara; Ikuyoshi Kochi, both of Chiba; Toshio Anzai, Mobara; Hisakatsu Nishihara, Hirakata; Junichi Sugitani, Hirakata, and Koji Tsuchida, Hirakata, all of Japan, assignors to Kubota Ltd, Osaka and Toyo Engineering Corporation, Tokyo, both of, Japan

Filed Dec. 20, 1982, Ser. No. 451,393
Claims priority, application Japan, May 14, 1982, 57-82181
Int. Cl.³ B01J *19/02*
U.S. Cl. 422—310 **12 Claims**



1. A reactor tube for thermally cracking or reforming hydrocarbons characterized by:

a reacting layer to be in contact with hydrocarbons and made of Fe-Cr-Mn-Nb heat resisting steel comprising the following components in the following proportions in terms of % by weight,

C 0.3 to 1.5
Si up to 3
Mn 6 to 15
Cr 20 to 30
Nb up to 3
N up to 0.15,

the balance being substantially Fe; and a covering layer which covers the said reacting layer and is fused therewith at a boundary therebetween and made of Fe-Cr-Ni heat resisting steel comprising the following components in the following proportion in terms of % by weight,

C 0.1 to 0.6
Si up to 2.5
Mn up to 2
Cr 20 to 30
Ni 18 to 40
N up to 0.15,

the balance being substantially Fe.

4,444,733

PROCESS FOR RECOVERING MOLYBDENUM AND COPPER FROM SULFIDE CONCENTRATES

John M. Laferty, Wheat Ridge; Dale K. Huggins, and John D. Bruno, both of Golden, all of Colo., assignors to Amax Inc., Greenwich, Conn.

Filed Feb. 28, 1983, Ser. No. 470,339
Int. Cl.³ C01G *3/00, 39/00*
U.S. Cl. 423—24 **12 Claims**

1. A hydrometallurgical process for the recovery of molybdenum values from a molybdenum disulfide concentrate containing copper which comprises:

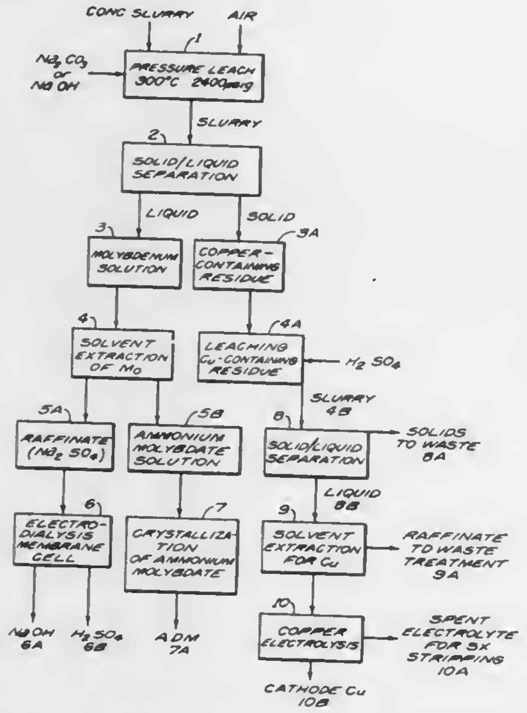
forming an aqueous slurry of finely divided molybdenum concentrate with an alkali metal compound selected from the group consisting of carbonates and hydroxides of alkali metals,

the amount of alkali metal compound being sufficient to react with all of the sulfur and molybdenum present and sufficient excess to provide a terminal pH of at least about 8,

pressure leaching said slurry in the presence of oxygen at an elevated temperature and pressure and for a time sufficient to effect conversion of said molybdenum values and provide a pregnant liquor of alkali metal molybdate and a residue containing copper oxide,

separating said pregnant liquor from the residue,

adjusting the pH of the pregnant liquor with H_2SO_4 to a range of about 7 to 9,



filtering said pH-adjusted pregnant liquor to remove impurities therefrom and provide a purified filtrate,

reducing the pH of said filtrate to a range of about 2.2 to 4.5,

subjecting said filtrate to a solvent extraction step to remove the molybdenum values therefrom,

and then stripping said molybdenum values from said solvent with an ammonium hydroxide solution of concentration sufficient to recover the molybdenum values therefrom as ammonium molybdate.

4,444,734

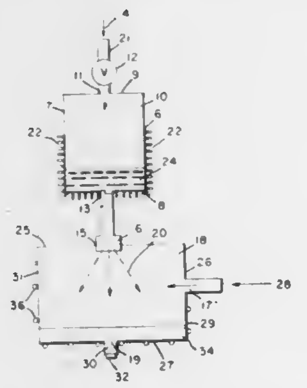
PROCESS FOR PUMPING GASES USING A CHEMICALLY REACTIVE AEROSOL

Frithjof N. Mastrup, Palos Verdes Peninsula, and Leonard J. Marabella, Torrance, both of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Continuation of Ser. No. 960,681, Nov. 13, 1978, abandoned. This application Jul. 28, 1980, Ser. No. 172,749

Int. Cl.³ B01D *53/34*

U.S. Cl. 423—210 **8 Claims**



1. A process for pumping a selected gaseous material to remove it from a container which comprises:

(a) providing a chosen highly reactive substance in solid form;

(b) heating said solid highly reactive substance at a predetermined elevated temperature sufficient to change said solid to a liquid;

(c) causing said liquid to flow through a means for dispersing said liquid into aerosol particles; and

(d) mixing said aerosol particles with said gaseous material in a reaction chamber to cause a chemical reaction therebetween of the type sufficient to form a solid, nonvolatile reaction product and to thereby generate a partial vacuum in said chamber and provide the pumping of said gaseous material from said container.

4,444,735

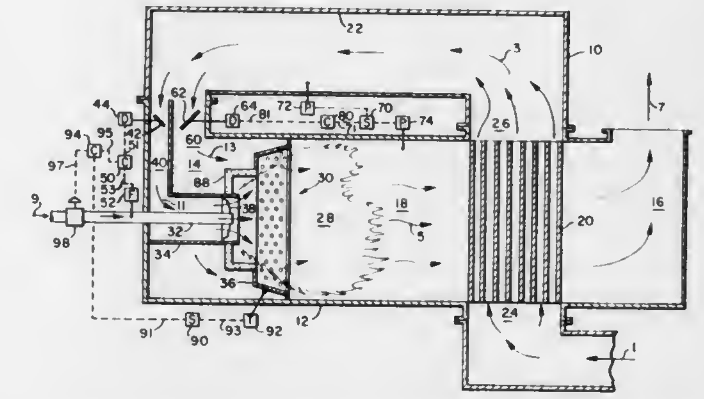
THERMAL OXIDIZER AND METHOD FOR OPERATING SAME

James W. Birmingham, Wellsville, and Craig R. Johnson, Cuba, both of N.Y., assignors to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed Sep. 15, 1982, Ser. No. 418,498

Int. Cl.³ B01D *53/34;* F23G *7/06*

U.S. Cl. 423—210 **7 Claims**



5. In a fume incinerator for eliminating combustible fumes from an oxygen bearing process gas stream of the type having a housing defining wherein a gas inlet plenum, a gas outlet plenum, and a combustion chamber; and a burner assembly including an axially disposed fuel pipe for feeding auxiliary fuel to the combustion chamber, a primary air conduit surrounding the fuel pipe and opening into the combustion chamber, and a perforated mixing plate means disposed about the primary air conduit between the inlet plenum and the combustion chamber; a method of operating said incinerator comprising:

a. feeding auxiliary fuel to the combustion chamber through the fuel pipe of the burner assembly;

b. splitting the process gas stream to be incinerated into a first and a second portion;

c. mixing the first portion of the process gas stream with the fuel passing into the combustion chamber thereby establishing a flame therein;

d. passing the second portion of the process gas stream into the combustion chamber from the gas inlet plenum through the perforated mixing plate means;

e. controlling the flow rate of the first portion of the process gas stream in response to fuel feed rate; and

f. controlling the flow rate of the second portion of the process gas stream in response to the difference in gas pressure between a location in the process gas stream prior to splitting the process stream and a location in the combustion chamber so as to maintain a constant static pressure differential therebetween.

4,444,736

PROCESS FOR REMOVING SO_2 AND NO_x FROM GASES

Edward Shapiro, Pittsburgh, Pa., assignor to Pittsburgh Environmental Systems Incorporated, Pittsburgh, Pa.

Filed Jun. 28, 1982, Ser. No. 392,546

Int. Cl.³ C01B *21/00, 17/00*

U.S. Cl. 423—235 **5 Claims**

1. A process for removing sulfur dioxide from gases comprises the steps for:

(a) scrubbing said gases in a scrubber with a water slurry of ferrous sulfide in the presence of dissolved $FeSO_4$ and Na_2SO_4 under conditions which capture the SO_2 by the following reaction:

$$3FeS+2SO_2 \rightarrow FeSO_4+2FeS_2$$

with minimal formation of Fe_2O_3 and sulfur;

(b) separating the substantially insoluble FeS_2 and a portion of the dissolved $FeSO_4$ and Na_2SO_4 as a wet filter cake from a filtrate including the remainder of the $FeSO_4$ and Na_2SO_4;

(c) heating the wet filter cake in a reducing atmosphere at a temperature between about 650° and 900° C. to form FeS_2 and Na_2S and sulfur, which sulfur is gaseous thereby being separated from the solid sulfides;

(d) mixing the sulfide products of the heating step with the filtrate from the separating step and makeup water such that the Na_2S reacts with $FeSO_4$ to form FeS and Na_2SO_4; and

(e) recycling the mixture of step (d) to the scrubber to scrub additional sulfur dioxide,

whereby the quantity of $FeSO_4$ passed in the wet filter cake to the heating step is reduced and FeS of increased reactivity is passed to the scrubber and the iron oxide formed in the reducing step is diminished.

2. A process for removing sulfur dixode and nitrogen oxide from gases comprises the steps for:

(a) scrubbing said gases in a scrubber with a water slurry of ferrous sulfide in the presence of dissolved $FeSO_4$ and Na_2SO_4 under conditions which capture the SO_2 by the following reaction:

$$3FeS+2SO_2 \rightarrow FeSO_4+2FeS_2$$

with minimal formation of Fe_2O_3 and sulfur and under conditions wherein nitrogen oxides are converted to N_2 with a corresponding increase in $FeSO_4$;

(b) separating the substantially insoluble FeS_2 and a portion of the dissolved $FeSO_4$ and Na_2SO_4 as a wet filter cake from a filtrate including the remainder of the $FeSO_4$ and Na_2SO_4;

(c) heating the wet filter cake in a reducing atmosphere at a temperature between about 650° and 900° C. to form FeS_2 and Na_2S and sulfur, which sulfur is gaseous thereby being separated from the solid sulfides;

(d) mixing the sulfide products of the heating step with the filtrate from the separating step and makeup water such that the Na_2S reacts with $FeSO_4$ to form FeS and Na_2SO_4; and

(e) recycling the mixture of step (d) to the scrubber to scrub additional sufur dioxide and nitrogen oxide,

whereby the quantity of $FeSO_4$ passed in the wet filter cake to the heating step is reduced and FeS of increased reactivity is passed to the scrubber and the iron oxide formed in the reducing step is diminished.

4,444,737

PROCESS FOR SEPARATING AND RECOVERING HYDROGEN ISOTOPE

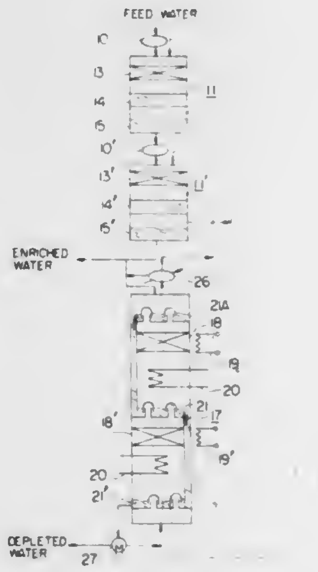
Hiroyuki Tsuchiya; Yamato Asakura; Teiji Suzuki, and Makoto Kikuchi, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 7, 1981, Ser. No. 251,765

Claims priority, application Japan, Apr. 7, 1980, 55-44719

Int. Cl.³ B01D *59/33*

U.S. Cl. 423—249 **12 Claims**



1. A process for separating and recovering hydrogen isotopes by a dual temperature process using a cool reactor and a hot reactor, which comprises:

(1) a first step of at least one stage, each comprising contacting mists of a feed liquid containing a hydrogen isotope species desired to be recovered together with a first reacting gas cocurrently with an isotope exchange reaction catalyst at a low temperature, thereby carrying out an isotope exchange reaction between the mists and the first reacting gas, separating the mist from the first reacting gas, and recovering the mist as a liquid enriched in the desired hydrogen isotope species, and

(2) a second step of a plurality of stages, each comprising contacting a portion of the liquid enriched in the desired hydrogen isotope species from the first step with a first vapor of the liquid and a second reacting gas in a gas-liquid contact means, thereby carrying out an isotope exchange reaction between the liquid and the first vapor of the liquid, while a second vapor of the liquid and a third reacting gas are contacted cocurrently with an isotope exchange reaction catalyst at a high temperature before the gas-liquid contact in the gas-liquid contact means, thereby carrying out isotope exchange reaction between the vapors of the liquid and the third reacting gas, and introducing the liquid after the gas-liquid contact in the gas-liquid contact means into another gas-liquid means in another stage, thereby repeating the gas-liquid contact, while contacting the vapor of the liquid and another reacting gas before the gas-liquid contact in the gas-liquid contact means with an isotope exchange reaction catalyst in another stage, thereby repeating the isotope exchange reaction between the vapors of the liquid and the another reacting gas.

4,444,738

PROCESS FOR PRODUCING CRYSTALLINE ALUMINOSILICATES

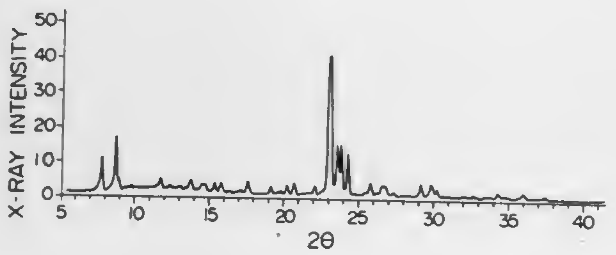
Takashi Suzuki; Shoichiro Hashimoto, and Rieko Nakano, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Japan

Filed Nov. 23, 1981, Ser. No. 323,989

Claims priority, application Japan, Dec. 3, 1980, 55-170649

Int. Cl.³ C01B *33/28*

U.S. Cl. 423—329 **14 Claims**



1. A process for producing a crystalline aluminosilicate which comprises hydrothermally reacting a starting mixture composed of a silicon compound, an aluminum compound, an alkali metal compound, a compound capable of releasing an organic cation in water, and water to form a crystalline aluminosilicate in which each of the crystals is constituted by an integrated mass of many small but distinguishable heterogeneous portions having different silicon/aluminum atomic ratios, wherein said starting mixture comprises at least two types of colloids having different silicon/aluminum atomic ratios, said two types of colloids being two members selected from the group consisting of a gel having the following composition in mole ratio:

SiO_2/Al_2O_3: $\geqq 25$
Organic cation/SiO_2: $\geqq 0.01$
Alkali metal cation/SiO_2: 0.05–0.8
H_2O/SiO_2: $\geqq 10$
and a sol having the following composition in mole ratio:
SiO_2/Al_2O_3: $\geqq 25$
Organic cation/SiO_2: 0–1.0
Alkali metal cation/SiO_2: 0–2.0
H_2O/SiO_2: $\geqq 10$.

4,444,739

PROCESS FOR THE PRODUCTION OF CYANOGEN CHLORIDE FROM HYDROCYANIC ACID AND CHLORINE

Heinrich Königshofen, Bergisch-Gladbach; Dieter W. Brück, Cologne; Alfred Nierth, Leverkusen; Marko Zlokarnik, and Hans-Jörg Uhlmann, both of Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

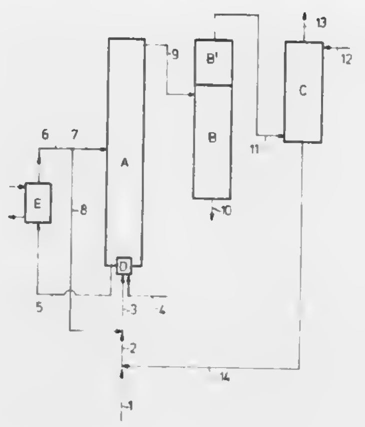
Filed Apr. 12, 1982, Ser. No. 367,538

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1981, 3117054

Int. Cl.³ C01B *21/18*

U.S. Cl. 423—371 **14 Claims**

1. In a process for the production of cyanogen chloride by contacting hydrocyanic acid and chlorine in an aqueous medium, the improvement wherein liquid hydrocyanic acid and gaseous chlorine are fed into a bubble column via at least one two component nozzle concurrently with water and the reaction mixture comprising cyanogen chloride, hydrochloric acid and water is removed from the head of said bubble column and worked up to separate therefrom gaseous cyanogen chloride and aqueous hydrochloric acid.



4,444,740

METHOD FOR THE RECOVERY OF FLUORIDES FROM SPENT ALUMINUM POTLINING AND THE PRODUCTION OF AN ENVIRONMENTALLY SAFE WASTE RESIDUE

John B. Snodgrass, and Edward L. Cambridge, both of Tucson, Ariz., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Feb. 14, 1983, Ser. No. 466,159

Int. Cl.³ C01F *7/04*

U.S. Cl. 423—483 **17 Claims**

1. A method for producing a product capable of use as a feed material to a reduction cell used in the manufacture of aluminum by electrolytic reduction by recovering fluoride values from spent potlining of said cell comprising:

(a) reducing a carbon-containing spent potlining to a fine particle size;
(b) incinerating said fine particles of potlining to destroy any cyanides which may be present in said potlining and form an ash residue, said carbon providing a substantial portion of the fuel required for incineration;
(c) leaching said ash residue to remove fluorides therefrom;
(d) treating said flurorides to form a hydrogen fluoride gas;
(e) feeding said hydrogen fluoride gas to an alumina dry scrubber to produce a product; and
(f) using said product as feed material to a reduction pot used to produce aluminum.

4,444,741

CATALYST AND PROCESS FOR OXIDIZING HYDROGEN SULFIDE

Robert H. Hass, Fullerton, and John W. Ward, Yorba Linda, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 191,864, Sep. 29, 1980, and a continuation-in-part of Ser. No. 27,033, Apr. 4, 1979. This application Dec. 30, 1981, Ser. No. 336,011

Int. Cl.³ C01B *23/14, 17/52;* **B01J** *23/14, 29/16*

U.S. Cl. 423—542 **42 Claims**

1. A process for oxidatively removing H_2S from a feed gas stream, said process comprising:

(1) contacting said feed gas stream in admixture with an oxidant gas comprising oxygen or SO_2 with a catalyst comprising vanadium and bismuth active catalytic components in a first reaction zone wherein a substantial proportion of said H_2S is converted to elemental sulfur at temperatures between about 250° and 475° F., but a residual proportion of H_2S remains; and
(2) contacting at least a portion of said residual H_2S, in admixture with an oxidizng gas comprising sufficient oxygen to provide an excess thereof for the conversion to SO_2, with a catalyst in a second reaction zone maintained at a temperature between about 250° and 900° F., said catalyst in said second reaction zone comprising vanadium and bismuth active catalytic components on a carrier material, said vanadium and bismuth catalytic components each being present in a proportion above about 5 percent by weight, calculated as V_2O_5 and Bi_2O_3, respectively, and said contacting in said second reaction zone being such that at least 90% of the residual H_2S contacted in said second reaction zone is converted to SO_2 without the formation of a substantial amount of SO_3.

4,444,742

CATALYST AND PROCESS FOR OXIDIZING HYDROGEN SULFIDE

Robert H. Hass, Fullerton, and John W. Ward, Yorba Linda, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 191,864, Sep. 29, 1980, which is a continuation-in-part of Ser. No. 27,033, Apr. 4, 1979, Pat. No. 4,314,983. This application Apr. 1, 1982, Ser. No. 364,416

Int. Cl.³ C01B *17/20, 17/52;* **B01J** *23/14, 29/16*

U.S. Cl. 423—573 G **96 Claims**

1. In a process for oxidizing H_2S to elemental sulfur in the gas phase by contact of H_2S with a catalyst in the presence of oxygen or SO_2 at an elevated temperature, the improvement wherein said catalyst comprises vanadium and bismuth components and said oxidizing results in a substantial conversion to sulfur, with at least some conversion to sulfur taking place at a temperature below about 475° F.

4,444,743

RADIOACTIVE DIAGNOSTIC AGENT AND ITS PREPARATION

Akira Yokoyama, Otsu; Hisashi Tanaka, Ashiya; Akira Yamada, and Yasushi Arano, both of Kyoto, all of Japan, assignors to Nihon Medi-Physics Co., Ltd., Hyogo, Japan

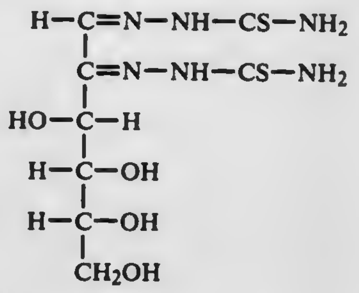
Filed Sep. 15, 1981, Ser. No. 302,563

Int. Cl.³ A61K *43/00, 49/00*

U.S. Cl. 424—1.1 **13 Claims**

7. A method for imaging body organs, comprising the step of:

administering to said body a composition comprising a radioactive diagnostic agent chelate compound which includes a non-radioactive carrier having as an essential component glucosone-bis(thiocarbazone) of the formula:



$$\begin{array}{l} \mathrm{H-C{=}N-NH-CS-NH_2} \\ \quad\;\; | \\ \quad\;\; \mathrm{C{=}N-NH-CS-NH_2} \\ \quad\;\; | \\ \mathrm{HO-C-H} \\ \quad\;\; | \\ \mathrm{H-C-OH} \\ \quad\;\; | \\ \mathrm{H-C-OH} \\ \quad\;\; | \\ \quad\;\; \mathrm{CH_2OH} \end{array}$$

and a radioactive element; and a pharmaceutically acceptable carier therefor; and imaging said body organs.

4,444,744

TUMOR LOCALIZATION AND THERAPY WITH LABELED ANTIBODIES TO CELL SURFACE ANTIGENS

Milton D. Goldenberg, 636 Lakeshore Dr., Lexington, Ky. 40502

Continuation-in-part of Ser. No. 126,262, Mar. 3, 1980, abandoned. This application Sep. 3, 1982, Ser. No. 414,729

Int. Cl.³ A61K *43/00, 49/00*

U.S. Cl. 424—1.1 **28 Claims**

1. A method for detecting and localizing a tumor having on its cell surface a tumor-associated or tumorspecific antigen, which comprises injecting a human subject parenterally with an antibody specific to said antigen and radiolabeled with a pharmacologically inert radioisotope capable of detection using a photoscanning device, and with indifferent immunoglobulin from the same or different species as that used to prepare said specific antibody, said indifferent immunoglobulin being radiolabeled with a different pharmacologically inert radioisotope emitting at an energy capable of independent detection using said photoscanning device, the radiolabeling being so effected that the kinetics and distribution of the radiolabeled specific antibody and indifferent immunoglobulin in said subject are substantially the same during the time period required for scanning; and scanning the subject with said photoscanning device, the level of activity of the labeled indifferent immunoglobulin being used to determine the distribution of background activity due to non-targeted specific antibody, said background activity being subtracted from the total activity of specific antibody, whereby the activity of substantially only the targeted tumor-localized specific antibody is determined and said tumor is thereby detected and localized.

4,444,745

AEROSOL SOLUTIONS OF 1-NAPHTHYLMETHYLCARBAMATE

Norman A. Jacobson, and Clayton W. Yoho, both of Racine, Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Mar. 7, 1983, Ser. No. 472,896

Int. Cl.³ A01N *47/10*

U.S. Cl. 424—45 **2 Claims**

1. A composition comprising a solution of 1-naphthylmethylcarbamate in dimethyl ether wherein the weight ratio of 1-naphthylmethylcarbamate to dimethyl ether is within the range of 1:200 to 1:5, wherein the composition is packaged within a pressurized aerosol container.

4,444,746

VISUALLY CLEAR LAKE COLORED DENTIFRICE

Kenneth Harvey, Wilmslow, and Harry Hayes, Warrington, both of England, assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Nov. 24, 1982, Ser. No. 444,099

Claims priority, application United Kingdom, Nov. 24, 1981, 8135326

Int. Cl.³ A61K *7/16, 7/18*

U.S. Cl. 424—49 **6 Claims**

1. A visually clear lake colored dentifrice comprising a liquid vehicle having a refractive index between about 1.36 and 1.47, up to about 10% by weight of a gelling agent, about 5–50% by weight of a polishing material having a refractive index similar to that of that of the said liquid vehicle, such that the said dentifrice is visually clear in appearance when the said polishing material is dispersed in the said liquid vehicle and about 0.004–1% by weight of a lake pigment insoluble in water and in the said liquid vehicle, the said lake pigment containing an inherently colorless insoluble base or substrate comprising alumina, zirconia, titania or a mixture thereof having precipitated and extended thereon 10–40% of a water-soluble D & C or FD & C color dye, said lake essentially providing the color to said visually clear dentifrice by dispersion throughout the dentifrice medium which is thereby colored and without dissolution of said water-soluble dye, said color imparted by the insoluble lake pigment remaining stable longer upon storage of said dentifrice than color imparted by water-soluble dye.

4,444,747

EXTRUDABLE DENTAL CREAM

Harry Hayes, Thelwall; Anthony J. Morton, Ashton-Under-Lyne, and Kenneth Harvey, Wilmslow, all of England, assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Mar. 28, 1983, Ser. No. 479,528

Int. Cl.^{3} A61K *7/16, 7/18*

U.S. Cl. 424—52 **8 Claims**

1. A dental cream which is smooth and free from extensional rheology during filling and upon extrusion including absence of formation of a tail comprising about 20–75% by weight of a polishing material, at least about half of which is hydrated alumina and about 20–80% by weight based on the weight of the dental cream of a liquid phase containing water, humectant or mixture thereof and about 0.5–5% by weight based on the weight of the dental cream of a gelling agent consisting essentially of hydroxyethyl cellulose having a viscosity in a range the average of which is at least about 24000 cps, determined on a Brookfield viscometer in 2% by weight water:glycerine (1:1.56) solution at 20° C. with a No. 6 spindle at 20 rpm.

4,444,748

USE OF TARTRATES IN TREATMENT OF HERPES

Rudolf E. Noble, 1867 Broadway, San Francisco, Calif. 94109

Filed Nov. 16, 1982, Ser. No. 442,132

Int. Cl.^{3} A61K *31/19*

U.S. Cl. 424—317 **7 Claims**

1. A method for treating herpes virus lesions, comprising applying an effective amount of a composition including potassium bitartrate mixed with an oily carrier medium topically to the affected area commencing soon after prodrome is felt.

4,444,749

COSMETIC COMPOSITIONS FOR THE HAIR

Jean M. Rouet, 1, Avenue Normandie-Niemen, Le Blanc-Mesnil (Seine et Oise), France

Continuation of Ser. No. 869,099, Jan. 13, 1978, which is a continuation of Ser. No. 695,373, Jun. 14, 1976, abandoned, which is a continuation of Ser. No. 592,271, Jul. 1, 1975, abandoned, which is a continuation of Ser. No. 279,725, Aug. 10, 1972, abandoned, which is a continuation-in-part of Ser. No. 824,683, May 14, 1969, abandoned, which is a continuation-in-part of Ser. No. 365,483, May 6, 1964, abandoned. This application Dec. 29, 1978, Ser. No. 974,446

Int. Cl.^{3} A61K *7/06, 31/74*

U.S. Cl. 424—70 **4 Claims**

1. A shampoo comprising an aqueous solution of an anionic detergent and an effective amount of the reaction product resulting from the reaction in an aqueous medium of (i) a polymer of maleic anhydride and an ethylenically unsaturated monomer with (ii) a primary-tertiary polyamine or a secondary-tertiary polyamine.

4,444,750

METHOD OF CONDITIONING HAIR

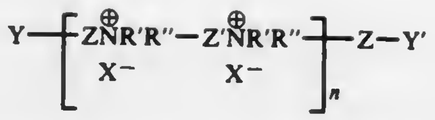
Harold A. Green, Havertown, Pa.; John J. Merianos, Middletown, and Alfonso N. Petrocci, Glen Rock, both of N.J., assignors to Millmaster Onyx Group, Inc., New York, N.Y.

Division of Ser. No. 206,997, Nov. 17, 1980, Pat. No. 4,374,244, Continuation-in-part of Ser. No. 29,778, Apr. 13, 1979, Pat. No. 4,304,910, Continuation-in-part of Ser. No. 902,894, May 4, 1978, Pat. No. 4,190,644, Continuation-in-part of Ser. No. 744,617, Nov. 24, 1976, Pat. No. 4,089,977. This application Jun. 21, 1982, Ser. No. 390,296

Int. Cl.^{3} A61K *7/06*

U.S. Cl. 424—70 **9 Claims**

1. A method of conditioning the hair which comprises applying a hair conditioning effective amount to the hair of a compound or mixture of compounds having the structure:



$$Y-\left[Z\overset{\oplus}{\underset{X^-}{N}}R'R''-Z'\overset{\oplus}{\underset{X^-}{N}}R'R''\right]_n-Z-Y'$$

wherein (I)R′ and R″ may be the same of different alkyl groups of from 1 to 18 carbon atoms, optionally substituted by from 1 to 2 hydroxyl groups or, (II) when taken together, will form a saturated or unsaturated ring of from 5 to 7 atoms, or (III) when taken together with N and an oxygen atom form the N-morpholino group; wherein Z is $—CH_2CH{=}CHCH_2—$ when Z′ is $—CH_2CHOHCH_2—$ or Z is $—CH_2CHOHCH_2—$ when Z′ is $—CH_2CH{=}CHCH_2—$; wherein X is a halogen of atomic weight greater than 30; wherein Y and Y′ may be either the same or different and may be either X or —NR′R″; and wherein n is an integer of from 2 to 20.

4,444,751

NEUTRALIZING COMPOSITION FOR STING VENOMS

Raymond A. Cripps, Newport News, Va., assignor to Vannguard of Hampton, Inc., Hampton, Va.

Filed Sep. 14, 1981, Ser. No. 301,631

Int. Cl.^{3} A61K *37/48*

U.S. Cl. 424—94 **6 Claims**

1. A composition for neutralizing sting venom of plant or animal origin comprising a sting venom neutralization amount of papainase, gallic acid and methyl salicylate, and a carrier suitable for topical application to the skin.

4,444,752

METHOD FOR TREATING PROGRESSIVE SYSTEMIC SCLEROSIS

John F. Prudden, Upper Nyack, N.Y., assignor to Lescarden Ltd., New York, N.Y.

Filed Sep. 13, 1982, Ser. No. 417,493

Int. Cl.^{3} A61K *35/60, 35/32, 35/56*

U.S. Cl. 424—95 **14 Claims**

1. A method of treating progressive systemic sclerosis in a patient afflicted with progressive systemic sclerosis which comprises orally administering to said patient an effective amount for treating progressive systemic sclerosis a finely divided cartilage extract.

4,444,753

PHARMACEUTICAL COMPOSITION COMPRISING EXTRACT FROM POISON POUCH CONTENTS OF BEE

Isamu Saikawa; Takashi Yasuda; Shohachi Murakami, all of Toyama; Toyoo Maeda, Kanazawa; Akira Yotsuji, Toyama; Masahiro Takahata, Toyama; Hisatsugu Tsuda, Toyama; Hidetada Mikami; Hiroshi Sakai, both of Takaoka, and Toshinori Ohashi, Hitachi, all of Japan, assignors to Toyama Chemical Company, Ltd., Tokyo, Japan

Division of Ser. No. 147,530, May 7, 1980, Pat. No. 4,370,316. This application Sep. 30, 1982, Ser. No. 431,563

Claims priority, application Japan, May 10, 1979, 54-57461

Int. Cl.^{3} A61K *35/58, 35/56*

U.S. Cl. 424—98 **10 Claims**

1. An antibacterial agent comprising an effective amount of a component obtained by deproteinizing an extract from the poison pouch contents of bee and an antibacterial substance.

4,444,754

DERIVATIVES OF CLAVULANIC ACID, A PROCESS FOR THEIR PREPARATION AND THEIR USE

Irene Stirling, Reigate, and Brian P. Clarke, Kingswood, both of England, assignors to Beecham Group Limited, England

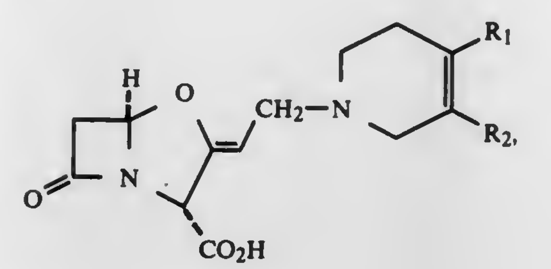
Division of Ser. No. 68,646, Aug. 22, 1979, Pat. No. 4,301,168. This application Mar. 10, 1981, Ser. No. 242,364

Claims priority, application United Kingdom, Sep. 9, 1978, 36268/78

Int. Cl.^{3} A61K *35/00*

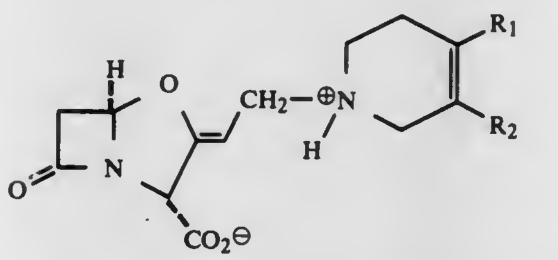
U.S. Cl. 424—114 **128 Claims**

1. A pharmaceutical composition useful for treating bacterial infections in mammals including humans, which comprises a synergistically effective amount of a compound of the formula I



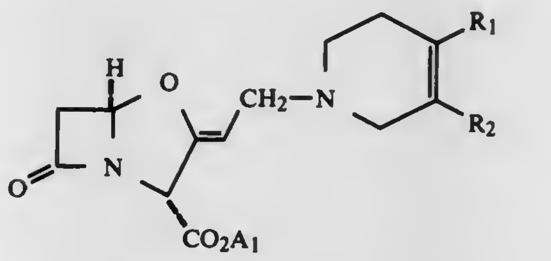
(I)

a zwitterion of the formula (II)



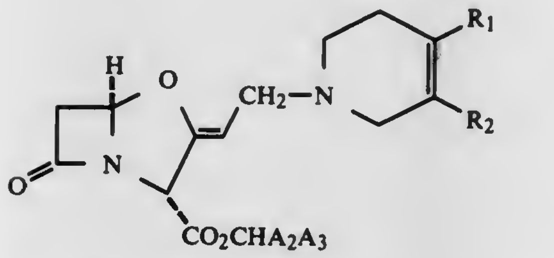
(II)

or an ester thereof, or an acid addition salt of such an ester of the formula (III) or (IV):



(III)

or



(IV)

wherein R_1 is lower alkyl or phenyl and R_2 is hydrogen or R_2 together with R_1 and the carbon atoms to which they are attached form a benzene ring, A_1 is alkyl or 1 to 6 carbon atoms unsubstituted or substituted by alkoxyl or alkanoyloxy of 1 to 7 carbon atoms; phthalidyl, tetrahydropyranyl; or tetrahydrofuranyl; A_2 is alkenyl or alkynyl of up to 5 carbon atoms or phenyl unsubstituted or substituted by fluoro, chloro, bromo, nitro, alkyl of up to 4 carbon atoms or alkoxyl of up to 4 carbon atoms; and A_3 is hydrogen, alkyl of up to 4 carbon atoms, or phenyl unsubstituted or substituted by fluoro, chloro, bromo, nitro, alkyl of up to 4 carbon atoms or alkoxyl of up to 4 carbon atoms, and an antibacterially effective amount of a penicillin, in combination with a pharmaceutically acceptable carrier.

4,444,755

TREATMENT FOR SKIN DISORDERS

David F. Horrobin, Montreal, Canada, assignor to Efamol Limited, London, England

Continuation-in-part of Ser. No. 89,293, Oct. 30, 1979, Pat. No. 4,302,447, which is a continuation-in-part of Ser. No. 4,924, Jan. 19, 1979, Pat. No. 4,273,763. This application Jun. 10, 1981, Ser. No. 272,081

Int. Cl.^{3} A61K *33/30, 31/54, 31/20, 31/315*

U.S. Cl. 424—145 **13 Claims**

1. A method of treating psoriasis, acne, dandruff, eczema, ichthyosis or scleroderma comprising administering to a person suffering therefrom an effective amount of from about 0.05 to about 10 g (calculated as γ-linolenic acid) daily of γ-linolenic acid or physiologically functional derivative thereof and/or dihomo-γ-linolenic acid or physiologically functional derivative thereof.

4,444,756

IODINE CONTAINING DISINFECTANTS

Hans-Joachim Schlüssler, Haan, and Ferdinand Koch, Hilden, both of Fed. Rep. of Germany, assignors to Henkel KGaA, Duesseldorf, Fed. Rep. of Germany

Filed May 3, 1982, Ser. No. 374,342

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1981, 3137339

Int. Cl.^{3} A61L *13/00;* **A61K** *33/18*

U.S. Cl. 424—150 **14 Claims**

1. An aqueous concentrate, useful in the preparation of disinfecting solutions, consisting essentially of
   (a) from about 0.1 to about 3% by weight of I_2;
   (b) from about 0.2 to about 6% by weight of either
      (i) potassium iodide, (ii) sodium iodide, or
      (iii) a mixture of potassium iodide and sodium iodide;
   (c) from about 1 to about 15% by weight of phosphoric acid; and
   (d) from about 0.1 to about 3% by weight of a phosphonic acid having the ability to complex calcium ions.

4,444,757

USE OF THYMOSIN AS AN ANTI-DIABETES AND ANTI-HYPERTENSIVE DISEASE AGENT

Helen R. Strausser, Roseland, N.J., assignor to Research Corporation, New York, N.Y.

Filed Nov. 16, 1981, Ser. No. 321,783

Int. Cl.^{3} A61K *37/00*

U.S. Cl. 424—177 **3 Claims**

1. A method of treating hypertension in a mammal in need of such treatment which comprises administering to said mammal an anti-hypertensive effective amount of thymosin.

2. A method of treating diabetes in a mammal in need of such treatment which comprises administering to said mammal an anti-diabetic effective amount of thymosin.

4,444,758

NONAPEPTIDE FOR TREATING ADDICTIVE DRUG WITHDRAWAL CONDITIONS

Richard R. Scberschlicht, Inzlingen, Fed. Rep. of Germany, and René Tissot, Chene-Bourg, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed May 17, 1982, Ser. No. 379,162

Claims priority, application Switzerland, May 21, 1981, 3306/81

Int. Cl.^{3} A61K *37/00*

U.S. Cl. 424—177 **17 Claims**

1. A method for treating addictive drug withdrawal conditions of a subject, which method comprises administering to

the subject a pharmaceutically effective amount of a nonapeptide of the formula

Trp—Ala—Gly—Gly—Asp—Ala—Ser—Gly—Glu

or a pharmaceutically acceptable salt thereof.

4,444,759
GNRH ANTAGONISTS II

Jean E. F. Rivier, and Wylie W. Vale, Jr., both of La Jolla, Calif., assignors to The Salk Institute for Biological Studies, San Diego, Calif.

Filed Jul. 26, 1982, Ser. No. 402,117
Int. Cl.^{3} C07C *103/52;* A61K *37/02*

U.S. Cl. 424—177 **20 Claims**

1. A peptide or a nontoxic salt thereof, said peptide having the formula:

X-β-D-2NAL-R_2-D-Trp-Ser-R_5-R_6-R_7-Arg-Pro-R_{10}

wherein X is hydrogen or an acyl group having 7 or less carbon atoms; R_2 is Cl-D-Phe, F-D-Phe, NO_2-D-Phe, Cl_2-D-Phe or Br-D-Phe; R_5 is Tyr or 2-Cl-Phe; R_6 is 4-NH_2-D-Phe or D-Arg; R_7 is Leu or NαMe-Leu; and R_{10} is Gly-NH_2, $NHCH_2CH_3$ or D-Ala-NH_2.

4,444,760
PURIFICATION AND CHARACTERIZATION OF A PROTEIN FIBROBLAST GROWTH FACTOR

Kenneth A. Thomas, Jr., Cranford, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 17, 1983, Ser. No. 505,553
Int. Cl.^{3} C07G *7/00;* C07C *103/52;* A61K *37/36*

U.S. Cl. 424—177 **8 Claims**

1. An acidic brain fibroblast growth factor in substantially pure form with molecular mass of 16,600 or 16,800 daltons and an amino acid composition of:

Amino Acid	Units
Aspartic Acid Asparagine	14
Threonine	9
Serine	10
Glutamic Acid Glutamine	16
Proline	7
Glycine	14
Alanine	5
Cysteine	4
Valine	5
Methionine	1
Isoleucine	6
Leucine	19
Tyrosine	7
Phenylalanine	7
Histidine	5
Lysine	13
Arginine	6
Tryptophan	1

4,444,761
CELLULOSE/CARBOXYMETHYL CELLULOSE MIXTURES USEFUL FOR CONTROLLING FECAL OUTPUT, AND METHODS EMPLOYING THEM

Gene A. Spiller, Los Altos, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed May 4, 1981, Ser. No. 260,230
Int. Cl.^{3} A61K *31/70*

U.S. Cl. 424—180 **16 Claims**

1. A method for controlling fecal output in a human subject, which method comprises administering orally to said subject a daily dosage of between about 50 and 300 milligrams of a mixture of purified cellulose and carboxymethylcellulose (CMC) in a weight ratio of between about 2:1 and 10:1; cellulose:CMC, per kilogram body weight.

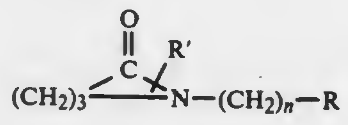
4,444,762
VEHICLE COMPOSITION CONTAINING 1-SUBSTITUTED AZACYCLOPENTAN-2-ONES

Vithal J. Rajadhyaksha, Mission Viejo, Calif., assignor to Nelson Research & Development Company, Irvine, Calif.

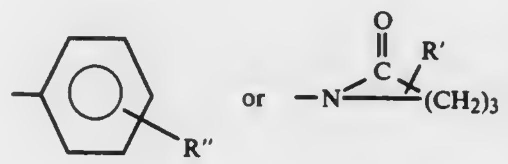
Division of Ser. No. 137,248, Apr. 4, 1980, which is a division of Ser. No. 725,490, Oct. 28, 1976, abandoned, which is a continuation-in-part of Ser. No. 588,247, Jun. 19, 1975, Pat. No. 3,989,816. This application Dec. 7, 1981, Ser. No. 327,999
Int. Cl.^{3} A61K *31/30, 31/70, 31/71, 31/505*

U.S. Cl. 424—180 **16 Claims**

1. A composition comprising an effective amount of a physiologically active agent and a non-toxic, effective penetrating amount of a compound having the structural formula



wherein R′ is H or a lower alkyl group having 1–4 carbon atoms, n is 0–17 and R is —CH_3,



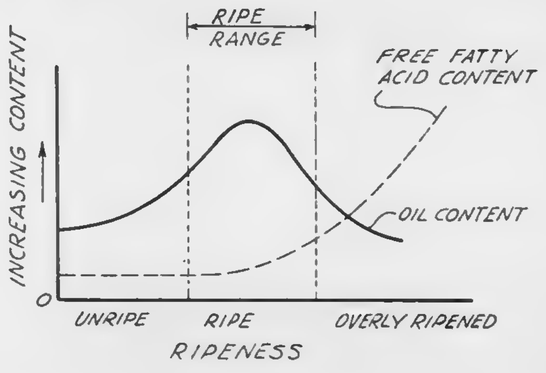
wherein R″ is H or halogen; with proviso that if R is —CH_3, then n is not 0–6.

4,444,763
EXTRACTION OF AVOCADO OIL FROM AVOCADOS

Richard H. Davis, Valley Center, Calif., assignor to Paino Avocado Company, Inc., Temecula, Calif.

Filed Apr. 28, 1982, Ser. No. 372,529
Int. Cl.^{3} A61K *35/78*

U.S. Cl. 424—195 **13 Claims**



1. A process for extracting avocado oil from avocados, comprising:

a. selecting ripe whole avocados;
b. macerating and heating said avocados to reduce them to a fine consistency and removing a substantial portion of their water content;
c. adding herbaceous silicious plant material, having a silica content in excess of about 5% weight, to the product of step b, in such proportion as significantly to improve the recovery and clarity of avocado oil as compared with identical processing without said herbaceous plant material, and continuing to heat it while mixing in said plant material to form a substantially uniform mass; and
d. pressing the mass produced in step c to extract raw avocado oil from it, the temperature to which the avocados and plant material is heated, being sufficiently elevated to encourage the vaporization of water, but insufficiently elevated to significantly degrade the avocado oil.

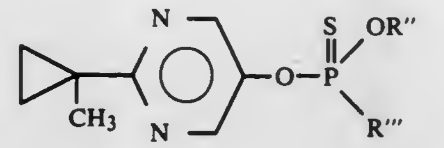
4,444,764
PHOSPHORUS ESTERS OF ALKYLCYCLOALKYL-5-PYRIMIDINOLS AND CONTROL OF CORN ROOTWORM AND WESTERN SPOTTED CUCUMBER BEETLE WITH THEM

Walter Reifschneider, Walnut Creek, Calif., and Larry L. Larson, Omaha, Nebr., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 64,218, Aug. 6, 1979, abandoned, and Ser. No. 172,593, Jul. 28, 1980, abandoned. This application Mar. 23, 1981, Ser. No. 246,500
Int. Cl.^{3} A01N *57/16, 57/24;* C07F *9/65*

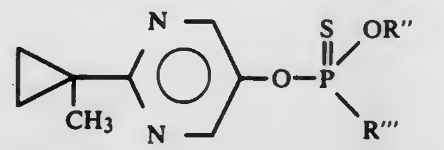
U.S. Cl. 424—200 **18 Claims**

1. A compound having the formula:



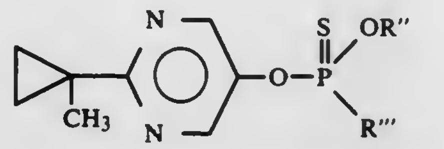
wherein R″ is alkyl having 1 to 4 carbon atoms and R‴ is alkyl of 1 to 2 carbons, alkoxy having 1 to 4 carbon atoms or phenyl.

5. A composition for controlling corn rootworm and western spotted cucumber beetle comprising an inert agricultural carrier in admixture with an insecticidally effective amount of a pyrimidinyl phosphate having the formula:



wherein R″ is alkyl having 1 to 4 carbon atoms and R‴ is alkyl of 1 to 2 carbons, alkoxy having 1 to 4 carbon atoms or phenyl.

12. A method for controlling insects from the group consisting of corn rootworm and western spotted cucumber beetle which comprises applying to said insects, their habitats or food an insecticidally effective amount of a pyrimidinyl phosphate having the formula:



wherein R″ is alkyl having 1 to 4 carbon atoms and R‴ is alkyl of 1 to 2 carbons, alkoxy having 1 to 4 carbon atoms or phenyl in admixture with an inert agricultural carrier.

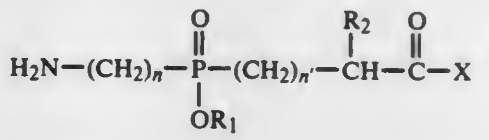
4,444,765
AMINO AND SUBSTITUTED AMINO PHOSPHINYLALKANOYL COMPOUNDS USEFUL FOR TREATING HYPERTENSION

Donald S. Karanewsky, Princeton Junction, and Edward W. Petrillo, Jr., Pennington, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jul. 14, 1982, Ser. No. 398,052
Int. Cl.^{3} A61K *31/675;* C07F *9/65*

U.S. Cl. 424—200 **13 Claims**

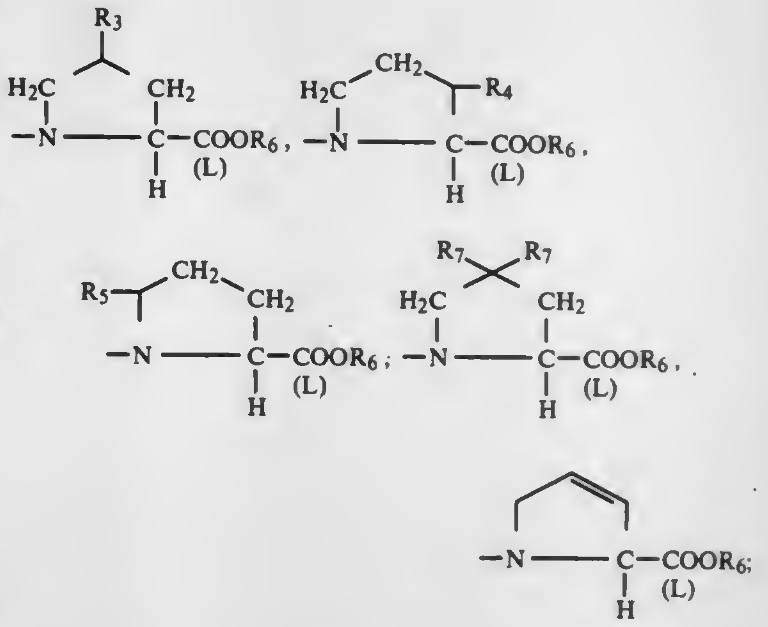
1. A compound of the formula



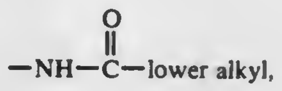
$$H_2N-(CH_2)_n-\underset{\underset{OR_1}{|}}{\overset{\overset{O}{\|}}{P}}-(CH_2)_{n'}-\overset{\overset{R_2}{|}}{CH}-\overset{\overset{O}{\|}}{C}-X$$

wherein

X is an imino acid of the formula

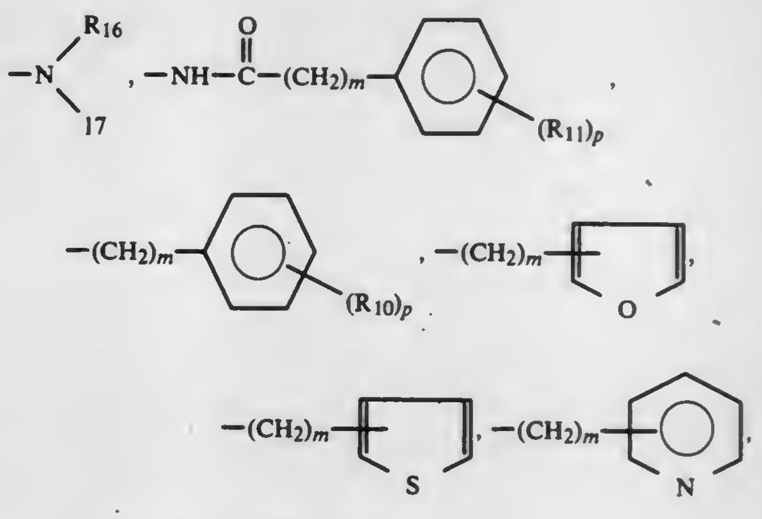


R_3 is hydrogen, lower alkyl, halogen, keto, hydroxy,

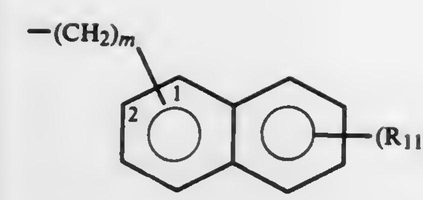


$$-NH-\overset{\overset{O}{\|}}{C}-\text{lower alkyl},$$

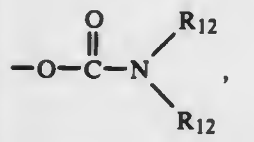
azido, amino,



a 1- or 2-naphthyl of the formula

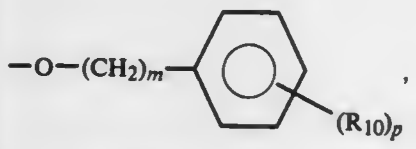


—(CH$_2$)$_m$-cycloalkyl,

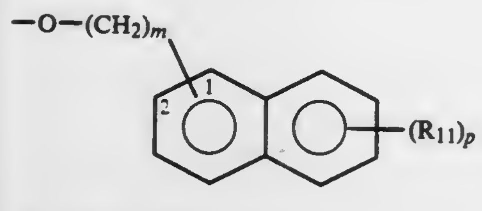


$$-O-\overset{\overset{O}{\|}}{C}-N\begin{smallmatrix}R_{12}\\ R_{12}\end{smallmatrix},$$

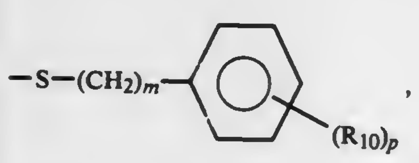
—O—lower alkyl,



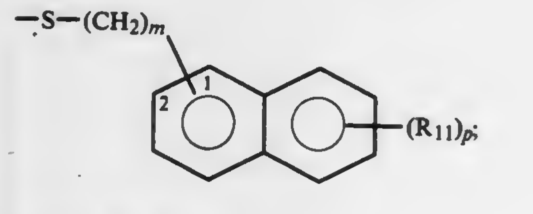
a 1- or 2-naphthyloxy of the formula



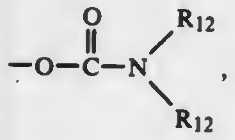
—S—lower alkyl,



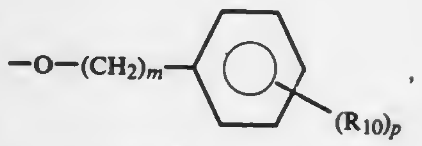
or a 1- or 2-naphthylthio of the formula



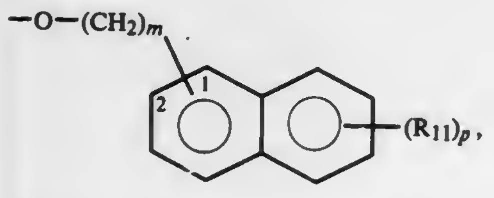
R$_4$ is keto, halogen,



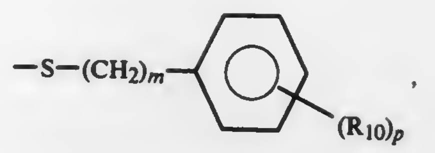
$$-O-\overset{\overset{O}{\|}}{C}-N\begin{smallmatrix}R_{12}\\ R_{12}\end{smallmatrix},$$



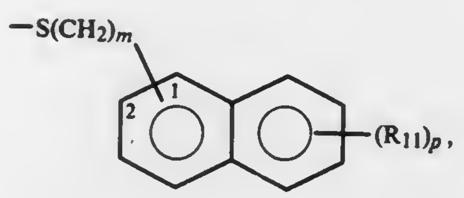
—O—lower alkyl, a 1- or 2-naphthyloxy of the formula



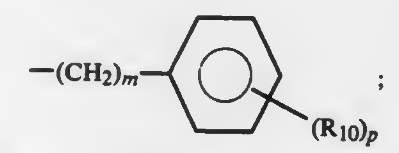
—S—lower alkyl,



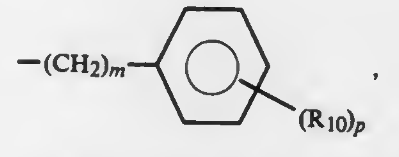
or a 1- or 2-naphthylthio of the formula



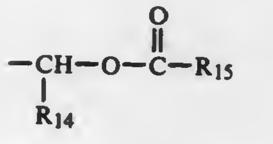
R$_5$ is keto or



R$_7$ is halogen or —Y—R$_{13}$;
R$_{10}$ is hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, bromo, fluoro, trifluoromethyl, hydroxy, phenyl, phenoxy, phenylthio, or phenylmethyl; .
R$_{11}$ is hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, bromo, fluoro, trifluoromethyl, or hydroxy;
m is zero, one, two or three;
p is one, two or three provided that p is more than one only if R$_{10}$ or R$_{11}$ is hydrogen, methyl, methoxy, chloro, or fluoro;
R$_{12}$ is hydrogen or lower alkyl of 1 to 4 carbons;
Y is oxygen or sulfur;
R$_{13}$ is lower alkyl of 1 to 4 carbons,



or the R$_{13}$ groups join to complete an unsubstituted 5- or 6-membered ring or said ring in which one or more of the carbons has a lower alkyl of 1 to 4 carbons or a di(lower alkyl of 1 to 4 carbons) substituent;
n is an integer of from 4 to 8;
n′ is zero or one;
R$_2$ is hydrogen, lower alkyl, halo substituted lower alkyl, benzyl or phenethyl;
R$_1$ and R$_6$ are independently selected from hydrogen, lower alkyl, benzyl, benzhydryl, or



$$-\underset{R_{14}}{\underset{|}{CH}}-O-\overset{\overset{O}{\|}}{C}-R_{15}$$

wherein R$_{14}$ is hydrogen, lower alkyl, cycloalkyl or phenyl, and R$_{15}$ is hydrogen, lower alkyl, lower alkoxy, phenyl, or R$_{14}$ and R$_{15}$ taken together are —(CH$_2$)$_2$—, —(CH$_2$)$_3$—, —CH═CH—, or

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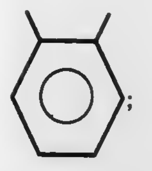


and when either or both of R$_1$ and R$_6$ are hydrogen a basic addition salt or an amino acid addition salt thereof.

12. A pharmaceutical composition useful for treating hypertension comprising a pharmaceutically acceptable carrier and one or more compounds of claim **1** or pharmaceutically acceptable salts thereof.

4,444,766

SULFUR-CONTAINING PHOSPHOLIPID COMPOUNDS AND THERAPEUTIC COMPOSITIONS

Elmar Bosies, Weinheim; Rudi Gall, Hirschberg; Günter Weimann, Weinheim-Lützelsachsen; Uwe Bicker, Lorsch, and Wulf Pahlke, Mannheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

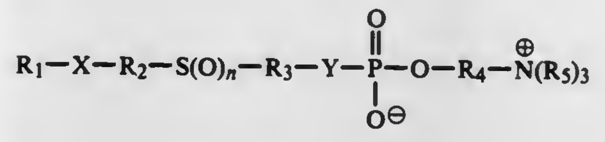
Filed Oct. 16, 1981, Ser. No. 311,830

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1980, 3039629; May 13, 1981, 3118965

Int. Cl.^{3} A61K ***31/095, 31/66;*** **C07F** ***9/09***

U.S. Cl. 424—211 **21 Claims**

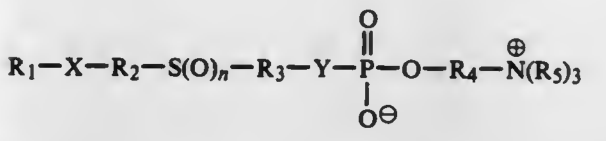
1. Alkanol phosphoric acid monoammonium alkyl ester compound of the formula



$$R_1-X-R_2-S(O)_n-R_3-Y-\underset{O^{\ominus}}{\underset{|}{\overset{\overset{O}{\|}}{P}}}-O-R_4-\overset{\oplus}{N}(R_5)_3$$

wherein
X is a valency bond, oxygen or sulfur,
Y is oxygen or sulfur,
R$_1$ is hydrogen, straight-chain or branched, saturated or unsaturated aliphatic hydrocarbon chain containing up to 18 carbon atoms,
R$_2$ is a straight-chained or branched, saturated or unsaturated aliphatic hydrocarbon chain containing up to 18 carbon atoms.
R$_3$ is C$_5$–C$_6$ cycloalkylene or a straight-chained or branched, saturated or unsaturated aliphatic hydrocarbon chain containing 2–8 carbon atoms, which is unsubstituted or substituted one or more times by hydroxyl, phenyl, alkoxy-carbonyl, alkylthio, acylated amino or by alkoxy which is unsubstituted or is substituted by phenyl or alkoxy,
R$_4$ is —CH$_2$—CH$_2$,
R$_5$ is a hydrogen atom or a lower alkyl radical and
n is 0, 1 or 2; and
the pharmacologically acceptable salts thereof.

20. Method of combating tumors which comprises administering to an afflicted subject an effective amount of an alkanol phosphoric acid monoammonium alkyl ester compound of the formula



$$R_1-X-R_2-S(O)_n-R_3-Y-\underset{O^{\ominus}}{\underset{|}{\overset{\overset{O}{\|}}{P}}}-O-R_4-\overset{\oplus}{N}(R_5)_3$$

wherein
X is a valency bond, oxygen or sulfur, a sulfinyl or sulfonyl group, aminocarbonyl, carbonylamino or ureido group or a cycloalkylene or phenylene radical,
Y is oxygen or sulfur,
R$_1$ is hydrogen, straight chained or branched, saturated or unsaturated aliphatic hydrocarbon chain containing up to 18 carbon atoms, which can be substituted one or more times by aryl, halogen, lower alkoxy, alkylthio, alkoxycarbonyl, alkanesulphinyl or alkanesulphonyl,
R$_2$ is a straight-chained or branched, saturated or unsaturated aliphatic hydrocarbon chain containing up to 18 carbon atoms, which can be substituted one or more times by halogen, aryl, lower alkoxy, alkoxycarbonyl, alkylthio, alkanesulfinyl or alkanesulfonyl,
R$_3$ is a straight-chained or branched, saturated or unsaturated aliphatic hydrocarbon chain containing 2–8 carbon atoms, which can also be part of a cycloalkane ring and can be substituted one or more times by hydroxyl, halogen, nitrile, cycloalkyl, phenyl, alkoxycarbonyl, optionally alkylated carbamoyl, alkylthio, alkanesulfinyl, alkanesulfonyl, optionally acylated amino or by alkoxy which, in turn, can be substituted by aryl, alkylthio, alkanesulfinyl, alkanesulfonyl, optionally acylated amino, alkoxy-carbonyl, nitrile, hydroxyl, alkoxy or optionally alkylated carbamoyl,
R$_4$ is a straight-chained or branched alkylene containing 2 to 4 carbon atoms,
R$_5$ is a hydrogen atom or a lower alkyl radical and
n is 0, 1 or 2; and
the pharmacologically acceptable salts thereof.

4,444,767

DERIVATIVES OF 3-AMINO-PREGN-5-ENE

Vesperto Torelli, Maisons-Alfort; Josette Benzoni, Livry Gargan, and Roger Deraedt, Pavillons sous Bois, all of France, assignors to Roussel Uclaf, Paris, France

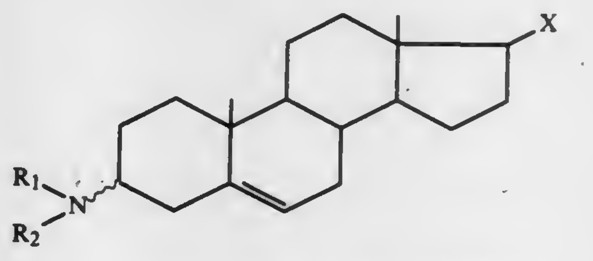
Filed Oct. 25, 1982, Ser. No. 436,524

Claims priority, application France, Oct. 27, 1981, 81 20135

Int. Cl.^{3} A61K ***31/56***

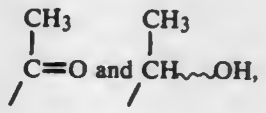
U.S. Cl. 424—238 **18 Claims**

1. A compound selected from the group consisting of 3-amino-Δ^5-pregnenes of the formula I:



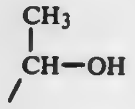
(I)

wherein X is selected from the group consisting of



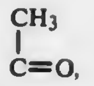
$$\underset{/}{\overset{CH_3}{\overset{|}{C}}}{=}O \text{ and } \underset{/}{\overset{CH_3}{\overset{|}{CH}}}\!\sim\!OH,$$

the wavy lines indicate that the group may be in the α- or β-position, R$_1$ is hydrogen, R$_2$ is selected from the group consisting of acyl of an α-amino-carboxylic acid or from a peptide of 2 to 3 amino acids of which amines may be either unsubstituted or mono- or disubstituted with alkyl of 1 to 5 carbon atoms with the proviso that if the 3-amino group is in the β-position, when X is



$$\underset{/}{\overset{CH_3}{\overset{|}{CH}}}-OH$$

and R$_1$ is hydrogen, R$_2$ is not ethoxycarbonyl,
the compound of the formula I wherein X is



$$\begin{array}{l} CH_3 \\ | \\ C{=}O, \end{array}$$

R_1 is hydrogen and R_2 is methyl, the 3-amino group is in the α-position,

and their non-toxic, pharmaceutically acceptable acid addition salts.

4,444,768

PYRIMIDO[1,6-A]INDOLES, PHARMACEUTICAL PREPARATIONS CONTAINING THEM, AND METHODS OF TREATING PAIN AND INFLAMMATION WITH THEM

Ulrich Renner, Riehen, and Knut A. Jaeggi, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

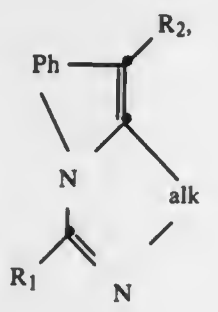
Continuation-in-part of Ser. No. 239,720, Mar. 2, 1981, abandoned. This application Jul. 1, 1982, Ser. No. 394,369

Claims priority, application Switzerland, Mar. 4, 1980, 1703/80; Aug. 3, 1981, 5004/81

Int. Cl.³ A61K *31/505;* C07D *487/04*

U.S. Cl. 424—246 **47 Claims**

1. N,N'-bridged carboxylic acid amidines of the general formula



(I)

in which R_1 represents phenyl optionally mono- or di-substituted by identical or different groups selected from lower alkyl, lower alkoxy, lower alkylthio, halogeno-lower alkylthio, lower alkanesulphinyl, halogeno-lower alkanesulphinyl, lower alkanesulphonyl, halogeno-lower alkanesulphonyl, sulphamoyl, N-mono- or N,N-di-lower alkylsulphamoyl and halogen, or represents pyrrolyl, furyl, thienyl, thiazolyl, pyridyl or pyrimidyl each optionally mono- or di-substituted by identical or different groups selected from lower alkyl, lower alkoxy and halogen, R_2 represents a group of the formula —CH(R_3)—R_2' in which R_2' is carboxy, phenyl- or pyridyl-lower alkoxycarbonyl optionally substituted by lower alkyl, lower alkoxy or halogen, hydroxy- or lower alkoxy-lower alkoxycarbonyl, lower alkoxycarbonyl, carbamoyl, N-hydroxycarbbamoyl, N-aminocarbamoyl, N-mono- or N,N-di-lower alkylcarbamoyl or -hydroxy-lower alkylcarbamoyl, or pyrrolidino-, piperidino-, morpholino-, thiomorpholino-, piperazino-, N-lower alkylpiperazinocarbonyl, R_3 represents hydrogen or lower alkyl, Ph represents 1,2-phenylene optionally mono- or di-substituted by identical or different groups selected from lower alkyl, lower alkoxy, halogen and trifluoromethyl, and alk represents lower alkylene separating the methine group from the imino group by 2 carbon atoms or lower alkenylene separating the methine group from the imino group by 2 carbon atoms, and their salts.

42. A compound of the formula I according to claim 1 being 7-methoxy-1-(2-picolinyl)-pyrimido[1,6-a]indole-5-acetic acid ethyl ester or a pharmaceutically acceptable salt thereof.

4,444,769

ANTIHYPERTENSIVE DIURETIC COMBINATION COMPOSITION AND ASSOCIATED METHOD

Cheryl D. Blume, and Paul H. Bonner, both of Morgantown, W. Va., assignors to Mylan Pharmaceuticals, Inc., Morgantown, W. Va.

Continuation-in-part of Ser. No. 402,279, Jul. 27, 1982, abandoned. This application Jan. 6, 1983, Ser. No. 456,311

Int. Cl.³ A61K *31/505, 31/54*

U.S. Cl. 424—246 **12 Claims**

1. A method of administering a solid antihypertensive diuretic medication to a patient composed of at least one hydrochlorothiazide-active thiazide ingredient and at least one triamterene-active pteridine ingredient which effectively inhibits and/or reverses benzothiadiazide-induced hypokalemia, and which consists essentially in forming a solid unit dose composition composed of, as active ingredients,

finely-divided particles of said benzothiadiazine ingredient which has been first separately admixed with at least one finely-divided pharmaceutically acingredient, and

finely-divided particles of said pteridine ingredient, which had been first separately admixed with at least one finely-divided pharmaceutically-acceptable ingredient including a non-toxic pharmaceutically acceptable inert carrier materials of the class including wicking agents, surfactants, disintegrants, lubricants, and compacting aids

with said relatively hydrophobic pteridine ingredient particles being substantially isolated from direct content with said benzothiadiazide ingredient particles in said composition, and

said composition exhibiting a sufficiently enhanced bioavailability of said pteridine ingredient, with respect to the bioavailability thereof in a solid composition having said finely divided active ingredients present in intimate admixture with each other, such that benzothiadiazide-induced hypokalemia is effectively resisted or reversed, at dose levels of said benzothiadiazide ingredient effective for antiphypertensive and diuretic control,

and administering said composition orally to said patient.

4,444,770

NEW IMIDAZOAZOLE-ALKENOIC ACID AMIDE COMPOUNDS, INTERMEDIATE PRODUCTS FOR THEIR PRODUCTION, THEIR PRODUCTION, AND THEIR MEDICINAL USE

Horst Meyer; Harald Horstmann; Eike Möller, all of Wuppertal, and Bernward Garthoff, Hilden, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

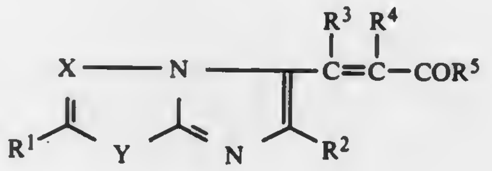
Filed May 13, 1981, Ser. No. 263,400

Claims priority, application Fed. Rep. of Germany, May 29, 1980, 3020421; Nov. 15, 1980, 3043158

Int. Cl.³ C07D *513/04, 277/60*

U.S. Cl. 424—248.5 **15 Claims**

1. A compound which is an imidazoazole-alkenoic acid amide of the formula



(I)

or a salt thereof, in which

X is N or CH,

Y is S, O, NH or N-alkyl with 1 to 4 carbon atoms,

R^1 is a hydrogen atom; a straight-chain, branched or cyclic alkyl, alkenyl or alkinyl radical which has up to 6 carbon atoms and is optionally substituted by phenyl, cyano, hydroxyl, fluorine, chlorine or bromine, the carbon chain of the alkyl radical optionally being interrupted by O, S, NH, N-alkyl with 1 to 4 carbon atoms or N-benzyl; a SO_n—C_1 to C_4 alkyl group, in which n is 0, 1 or 2; a radical of the formula

$$\begin{array}{l} \;\;R' \\ \;\;| \\ -N \\ \;\;| \\ \;\;R'' \end{array}$$

wherein R' and R'' are identical or different and each represent a hydrogen atom, a benzyl or phenyl radical or an alkyl radical with 1 to 6 carbon atoms, which is optionally interrupted by O, S or N-C_1 to C_4 alkyl, or in which R' and R'', together with the nitrogen atom, form a 5-membered to 7-membered ring, which optionally contains 1 or 2 identical or different hetero-atoms selected from oxygen, sulphur and nitrogen, the nitrogen optionally being substituted by hydrogen, alkyl with 1 to 4 carbon atoms, phenyl or benzyl; or a radical of the formula COR''', wherein R''' denotes a hydrogen atom, a hydroxyl, alkyl or alkoxy radical with in each case 1 to 6 carbon atoms, a phenoxy or benzyloxy radical, an alkenoxy radical with up to 4 carbon atoms or a radical of the formula

$$\begin{array}{l} \;\;R' \\ \;\;| \\ -N \\ \;\;| \\ \;\;R'' \end{array}$$

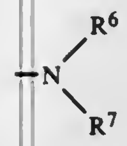
wherein R' and R'' have the immediate abovementioned meaning,

R^2 is hydrogen, a phenyl, naphthyl, furyl, thienyl, pyrimidyl, pyrazinyl, quinolyl, isoquinolyl or pyridyl radical which is optionally substituted by 1, 2 or 3 identical or different substituents selected from alkyl, alkoxy, halogen, nitro, trifluoromethyl and SO_n-alkyl, in which n is 0, 1 or 2, the alkyl and alkoxy radicals mentioned each containing 1 to 4 carbon atoms; or a straight-chain, branched or cyclic alkyl, alkenyl or alkinyl radical which has up to 6 carbon atoms,

R^3 represents a hydrogen atom, a trifluoromethyl radical or an alkyl radical with 1 to 4 carbon atoms,

R^4 is a hydrogen atom; a cyano group, a fluorine atom, an alkoxy radical with 1 to 4 carbon atoms; a straight-chain or branched alkyl, alkenyl or alkinyl radical with in each case up to 6 carbon atoms, the alkyl radical optionally being substituted by fluorine, chlorine, bromine or cyano and optionally being interrupted by O, S, NH, N-benzyl or N-C_1 to C_4 alkyl; or a radical of the formula COR''', wherein R''' has the meaning given above in the definition of R^1 and can be identical to or different from this substituent and

R^5 is an amino group of the formula



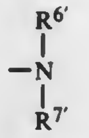
in which

(a) R^6 denotes a hydrogen atom, a phenyl radical or a straight-chain, branched or cyclic, saturated or unsaturated aliphatic hydrocarbon radical which has up to 10 carbon atoms and is optionally interrupted by O, S, N, N-C_1 to C_4 alkyl, NH, N-phenyl or N-benzyl and is optionally substitued by hydroxyl, alkoxy, alkyl, fluorine, chlorine, bromine, phenyl, alkoxycarbonyl or dialkylamino with in each case 1 to 4 carbon atoms in the alkyl and alkoxy radicals, the two alkyl radicals, with the N atom, optionally forming a 5-membered to 7-membered ring which is optionally interrupted by O, S, NH or N-C_1 to C_4 alkyl, and the abovementioned alkyl and phenyl radicals in turn optionally being substituted by fluorine, chlorine, bromine, trifluoromethyl, phenyl, benzyl, alkyl, alkoxy or SO_2-alkyl, with in each case 1 to 4 carbon atoms in the alkyl and alkoxy radicals, or

(b) R^6, together with R^7 and with the nitrogen atom, forms a 4-membered to 7-membered ring which optionally contains 1 further hetero-atom selected from oxygen, sulphur and nitrogen, the nitrogen optionally being substituted by hydrogen, C_1 to C_4 alkyl, phenyl or benzyl, this 4-membered to 7-membered ring being unsubstituted or substituted by 1 to 4 identical or different substituents selected from halogen, trifluoromethyl, phenyl, benzyl, alkyl, hydroxyalkyl, alkoxyalkyl and alkoxycarbonyl with in each case 1 to 4 carbon atoms in the alkyl and alkoxy radicals, this ring optionally being fused onto an aromatic ring which is optionally substituted by fluorine, chlorine, bromine, nitro or hydroxyl, and

(c) R^7 has the meaning of R^6 given immediately above under (a), R^7 and R^6 being identical or different or

(d) one of the two radicals R^6 or R^7 represents a group of the formula



$$\begin{array}{l} \;\;R^{6'} \\ \;\;| \\ -N \\ \;\;| \\ \;\;R^{7'} \end{array}$$

wherein the radicals $R^{6'}$ and $R^{7'}$ have the meanings of R^6 and R^7 given immediately above under (a) and (b) (hydrazines).

4,444,771

AZETO TRIAZOLO PYRAZINE β-LACTAM ANTIBACTERIAL AGENTS

Michael J. Pearson, and Clive L. Branch, both of Horsham, England, assignors to Beecham Group Limited, England

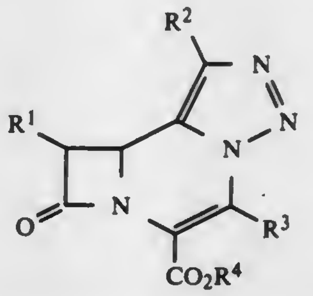
Filed Sep. 4, 1981, Ser. No. 299,629

Claims priority, application United Kingdom, Sep. 13, 1980, 8029660

Int. Cl.³ C07D *487/14, 205/08, 403/06;* A61K *31/495*

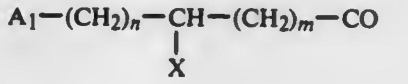
U.S. Cl. 424—250 **21 Claims**

1. A compound of the formula (I):



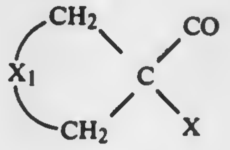
(I)

a pharmaceutically acceptable salt thereof or a pharmaceutically acceptable in-vivo hydrolyzable ester thereof wherein R^1 is amino, azido or a moiety of the formula R^5—CO—NH wherein R^5 is of the sub-formulae (a)-(d):



$$A_1-(CH_2)_n-\underset{\displaystyle X}{\underset{|}{CH}}-(CH_2)_m-CO \qquad (a)$$

$$A_2-CO \qquad (b)$$



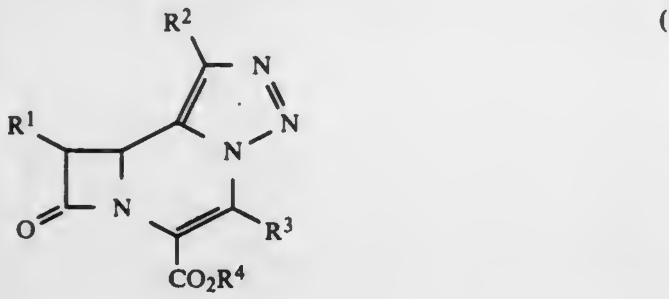
(c)

-continued

$A_2—X_2—(CH_2)_n—CO$ (d)

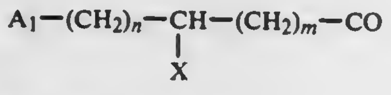
wherein n is 0, 1 or 2; m is 0, 1 or 2; A_1 is alkyl of 1 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, cyclohexenyl, cyclohexadienyl, phenyl, hydroxy-phenyl, thienyl or pyridyl; X is hydrogen, halo, carboxy, a pharmaceutically acceptable carboxyl ester moiety, azido, tetrazolyl, hydroxy, acyloxy, amino, ureido, guanidino or acylureido; A_2 is phenyl, 2,6-dimethoxyphenyl, 2-alkoxy-1-naphthyl, 3-phenylisoxazolyl or 3-phenyl-5-methylisoxazolyl; X_1 is CH_2OCH_2, CH_2SCH_2 or $(CH_2)_n$ wherein n is as above defined; and X_2 is an oxygen or sulphur atom; R^2 is hydrogen or alkyl of 1 to 4 carbon atoms; R^3 is hydrogen, alkyl of 1 to 4 carbon atoms unsubstituted or mono-substituted by carboxy, a pharmaceutically acceptable carboxyl ester moiety, hydroxy, alkyloxy of 1 to 4 carbon atoms, acyloxy or heterocyclylthio of the formula —S—Het wherein Het is diazolyl, triazolyl, tetrazolyl, thiazolyl, thiadiazolyl, thiatriazolyl, oxazolyl or oxadiazolyl unsubstituted or substituted with one or two substituents selected from the group consisting of alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, hydroxyalkyl of 1 to 6 carbon atoms, alkenyl of 1 to 6 carbon atoms, alkoxyalkyl of 1 to 6 carbon atoms in each of the alkoxy and alkyl moieties, carboxyalkyl of 1 to 6 carbon atoms, alkylsulphonyl of 1 to 6 carbon atoms, carbamoyl, carbamoylmethyl, trifluoromethyl, hydroxy and halo; and R^4 is hydrogen.

8. A pharmaceutical composition useful for treating bacterial infections in animals which comprises an antibacterially effective amount of a compound of the formula (I):



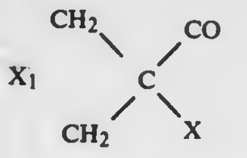
(I)

a pharmaceutically acceptable salt thereof or a pharmaceutically acceptable in-vivo hydrolyzable ester thereof wherein R^1 is amino, azido or a moiety of the formula $R^5—CO—NH$ wherein R^5 is of the sub-formulae (a)-(d):



$$A_1—(CH_2)_n—\underset{X}{\underset{|}{CH}}—(CH_2)_m—CO$$ (a)

$A_2—CO$ (b)



(c)

$A_2—X_2—(CH_2)_n—CO$ (d)

wherein n is 0, 1 or 2; m is 0, 1 or 2; A_1 is alkyl of 1 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, cyclohexenyl, cyclohexadienyl, phenyl, hydroxy-phenyl, thienyl or pyridyl; X is hydrogen, halo, carboxy, a pharmaceutically acceptable carboxyl ester moiety, azido, tetrazolyl, hydroxy, acyloxy, amino, ureido, guanidino or acylureido; A_2 is phenyl, 2,6-dimethoxyphenyl, 2-alkoxy-1-naphthyl, 3-phenylisoxazolyl or 3-phenyl-5-methylisoxazolyl; X_1 is CH_2OCH_2, CH_2SCH_2 or $(CH_2)_n$ wherein n is as above defined; and X_2 is an oxygen or sulphur atom; R^2 is hydrogen or alkyl of 1 to 4 carbon atoms; R^3 is hydrogen, alkyl of 1 to 4 carbon atoms unsubstituted or mono-substituted by carboxy, a pharmaceutically acceptable carboxyl ester moiety, hydroxy, alkyloxy of 1 to 4 carbon atoms, acyloxy or heterocyclylthio of the formula —S—Het wherein Het is diazolyl, triazolyl, tetrazolyl, thiazolyl, thiadiazolyl, thiatriazolyl, oxazolyl or oxadiazolyl unsubstituted or substituted with one or two substituents selected from the group consisting of alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, hydroxyalkyl of 1 to 6 carbon atoms, alkenyl of 1 to 6 carbon atoms, alkoxyalkyl of 1 to 6 carbon atoms in each of the alkoxy and alkyl moieties, carboxyalkyl of 1 to 6 carbon atoms, alkylsulphonyl of 1 to 6 carbon atoms, carbamoyl, carbamoylmethyl, trifluoromethyl, hydroxy and halo; and R^4 is hydrogen, in combination with a pharmaceutically acceptable carrier.

4,444,772

HISTAMINE H_1-ANTAGONISTS

George S. Sach, Welwyn, England, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

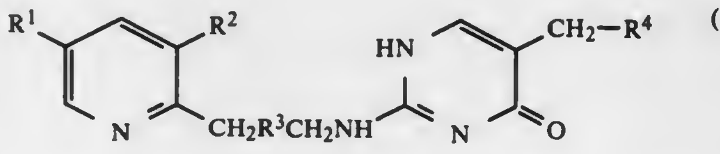
Filed Jun. 22, 1982, Ser. No. 391,077

Claims priority, application United Kingdom, Jun. 27, 1981, 8119906

Int. Cl.^{3} C07D *401/14;* A61K *31/505*

U.S. Cl. 424—251 **15 Claims**

1. A compound of formula (II):



(II)

or a pharmaceutically acceptable salt thereof; where R^1 is C_{1-4} alkyl, and R^2 is C_{3-4} alkoxy, halogen, or amino; R^3 is a C_{1-3} alkylene group; and R^4 is a 3-pyridyl, N-oxo-3-pyridyl, 6-methyl-3-pyridyl, N-oxo-6-methyl-3-pyridyl or 6-hydroxymethyl-3-pyridyl group.

4,444,773

SUBSTITUTED THIAZOLO[3,2-A]PYRIMIDINES AND PROCESS FOR THEIR PREPARATION

Gianfederico Doria, Milan; Carlo Passarotti, Gallarate; Giuliana Arcari, and Ada Buttinoni, both of Milan, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

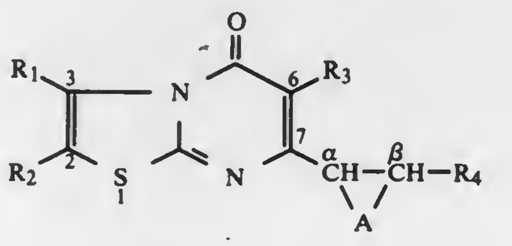
Filed Jul. 14, 1982, Ser. No. 398,302

Claims priority, application United Kingdom, Jul. 15, 1981, 8121979; Jan. 20, 1982, 8201621; Apr. 29, 1982, 8212430

Int. Cl.^{3} C07D *513/04;* A61K *31 /505*

U.S. Cl. 424—251 **14 Claims**

1. A compound having the following general formula (I)



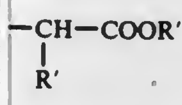
(1)

wherein

A completes a bond, thereby providing a double bond between the α- and β-carbon atoms, or

A represents a —CH_2—group, thereby providing a cyclopropane ring including the α- and β-carbon atoms;

each of R_1 and R_2 independently represents
- (a) a hydrogen or a halogen atom;
- (b) C_1-C_4 alkyl, cyano or trifluoromethyl;
- (c) thienyl, pyridyl, biphenyl or naphtyl;
- (d) a phenyl group, unsubstituted or substituted by 1 to 3 substituents chosen from halogen, C_1–C_4 alkyl, hydroxy, C_1–C_4 alkoxy, formyloxy, C_2–C_8 alkanoyloxy, trifluoromethyl, nitro, amino, formylamino, C_2–C_8 alkanoylamino;
- (e) a phenyl group substituted by one or two C_1–C_4 alkylenedioxy groups wherein the oxygen atoms are linked to two adjacent carbon atoms of the phenyl ring;
- (f) a group



$$—\underset{R'}{\underset{|}{CH}}—COOR'',$$

wherein each of R′ and R″ independently represents a hydrogen atom or a C_1–C_4 alkyl group;

R_3 represents:
- (a′) a hydrogen or halogen atom;
- (b′) C_1–C_4 alkyl;
- (c′) hydroxy, formyloxy or C_2–C_8 alkanoyloxy;
- (d′) C_1–C_4 alkoxy or C_3–C_4 alkenyloxy;

R_4 represents:

a pyridyl group, which may be unsubstituted or substituted by C_1–C_4 alkyl; and the pharmaceutically acceptable salts thereof.

4,444,774

7-HETEROARYL[1,2,4]TRIAZOLO[1,5-a]PYRIMIDINES

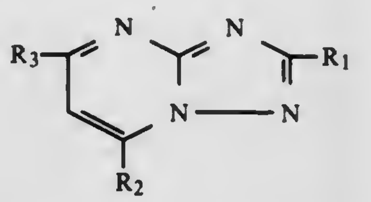
John P. Dusza, and Jay D. Albright, both of Nanuet, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jul. 29, 1982, Ser. No. 403,185

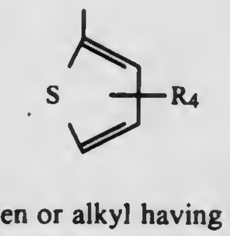
Int. Cl.^{3} C07D *487/04*

U.S. Cl. 424—251 **7 Claims**

1. A compound selected from the group consisting of those of the formula:



wherein R_1 is hydrogen or alkyl having up to 3 carbon atoms; R_2 is 3-pyridyl, 3-thienyl or a moiety of the formula:



wheren R_4 is hydrogen or alkyl having up to 3 carbon atoms; and R_3 is hydrogen, methyl or trifluoromethyl; and the pharmacologically acceptable acid-addition salts thereof.

7. The method of meliorating anxiety in a warm-blooded animal which comprises administering internally to said warm-blooded animal an effective anti-anxiety amount of a compound of claim 1.

4,444,775

SUBSTITUTED IMIDAZO[1,5-A]PYRIDINES

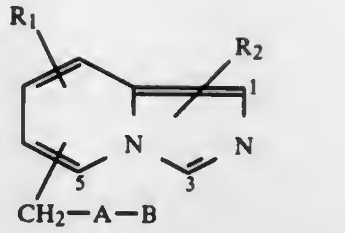
Neville Ford, University City, Mo., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 276,094, Jun. 22, 1981, abandoned. This application Jun. 1, 1982, Ser. No. 382,972

Int. Cl.^{3} A61K *31/41;* C07D *471/04*

U.S. Cl. 424—256 **16 Claims**

1. A compound of the formula



(I)

or a 5,6,7,8-tetrahydro derivative thereof, wherein R_1 and R_2 are hydrogen, halogen or lower alkyl; A is straight chain or branched alkylene of 1 to 12 carbon atoms, alkynylene, or alkenylene of 2 to 12 carbon atoms; B represents carboxy, lower alkoxycarbonyl, unsubstituted or mono- or di-(lower alkyl)carbamoyl, cyano or hydroxymethyl; or a pharmaceutically acceptable salt thereof.

4,444,776

DIPYRIDO (4,3-B) (3,4-F) INDOLES, PROCESS FOR OBTAINING THEM, THERAPEUTICAL USE AND PHARMACEUTICAL COMPOSITIONS

Emile Bisagni, Orsay; Claire Ducrocq, Les Ulis; Christian Rivalle, Villebon/Yvette; Pierre Tambourin, Orsay les Ulis; Francoise Wendling, Paris; Jean-Claude Chermann, Elancourt, and Luc Montagnier, Le Plessis-Robinson, all of France, assignors to Agence Nationale de Valorisation de la Recherche (A N V A R), Neuilly sur Seine, France

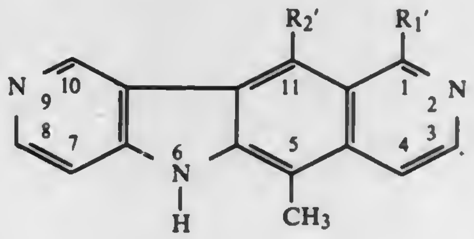
Division of Ser. No. 896,101, Apr. 13, 1978, Pat. No. 4,266,060. This application Nov. 21, 1980, Ser. No. 209,091

Claims priority, application France, Apr. 13, 1977, 77 11148

Int. Cl.^{3} A61K *31/47*

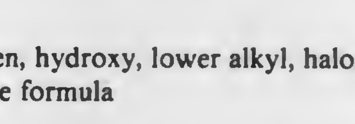
U.S. Cl. 424—258 **19 Claims**

1. A pharmaceutical composition comprising a pharmaceutically inert excipient and 0.2 to 10 μm of a dipyrido [4,3-b] [3,4-f] indole of the formula



in which

R'_1 is hydrogen, hydroxy, lower alkyl, halogen or an amino group of the formula



$$NH—\underset{R_6'}{\underset{|}{CH}}—(CH_2)_n—N\begin{matrix}R_4'\\R_5'\end{matrix}$$

wherein

n is an integer from 1 to 3,

R'_6 is hydrogen or lower alkyl,

R'_4 and R'_5 each independently is hydrogen or lower alkyl, and

R'_2 is hydrogen or lower alkyl, or a pharmaceutically acceptable salt thereof.

4,444,777

PHARMACEUTICAL COMPOSITIONS OF ANAGRELIDE AND SULFINPYRAZONE

James S. Fleming, Jr., Manlius, and Joseph P. Buyniski, Syracuse, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 409,736, Aug. 19, 1982, which is a division of Ser. No. 288,639, Jul. 30, 1981, Pat. No. 4,357,330. This application Aug. 5, 1983, Ser. No. 520,872

Int. Cl.^{3} A61K *31/47, 31/415*

U.S. Cl. 424—258 **5 Claims**

1. An oral pharmaceutical composition having an inhibitory activity on blood platelet aggregation consisting essentially of anagrelide and sulfinpyrazone, wherein the weight ratio of sulfinpyrazone to anagrelide is from about 262:1 to about 3013:1.

4,444,778

METHOD AND COMPOSITION FOR TREATING ATHEROSCLEROSIS

Shaun R. Coughlin, 130 Bowdoin St., Apt. 1006, Boston, Mass. 02108

Continuation-in-part of Ser. No. 297,076, Aug. 27, 1981, abandoned. This application Aug. 13, 1982, Ser. No. 407,960

Int. Cl.^{3} A61K *31/475*

U.S. Cl. 424—262 **31 Claims**

1. A method of inhibiting smooth muscle-cell proliferation in the blood vessel of an animal, which method comprises administering to the animal an effective serotonin-inhibiting amount of a serotonin-inhibiting agent which inhibits the action of platlet-released serotonin in the blood vessel.

4,444,779

THIAZOLIDINE DERIVATIVES

Yutaka Kawamatsu, Kyoto, and Takeshi Fujita, Takarazuka, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 396,093, Jul. 7, 1982, which is a division of Ser. No. 258,554, Apr. 29, 1981, Pat. No. 4,340,605, which is a division of Ser. No. 62,512, Jul. 27, 1979, Pat. No. 4,287,200. This application Mar. 15, 1983, Ser. No. 476,017

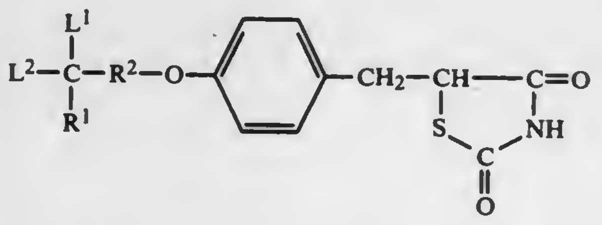
Claims priority, application Japan, Aug. 4, 1978, 53-95673

The portion of the term of this patent subsequent to Jul. 20, 1999, has been disclaimed.

Int. Cl.^{3} C07D *277/20;* **A61K** *31/425*

U.S. Cl. 424—263 **6 Claims**

1. A thiazolidine derivative of the formula:



wherein R^1 is a pyridyl group having 1 to 3 substituents selected from the group consisting of lower alkyls, halogens and hydroxyl on the ring, or a thiazolyl group having 1 to 3 substituents selected from the group consisting of lower alkyls, halogens and hydroxyl on the ring; R^2 means a bond or a lower alkylene group; L^1 and L^2 are the same or different and each is hydrogen, lower alkyl or L^1 and L^2 are combined to form an alkylene group.

4,444,780

METHOD FOR TREATING ATOPIC DERMATITIS

Robert J. Capetola, Doylestown, Pa., and Marvin E. Rosenthale, Princeton, N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Aug. 30, 1982, Ser. No. 412,670

Int. Cl.^{3} A61K *31/445*

U.S. Cl. 424—267 **6 Claims**

1. A method of treating a subject afflicted with atopic dermatitis which comprises topically administering to said subject an effective amount of cyproheptadine or its acid addition salt in a pharmaceutically acceptable carrier.

4,444,781

PROCESS FOR INDUCING HYPNOSIS

Jackson B. Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 251,623, Apr. 6, 1981, abandoned, which is a continuation of Ser. No. 124,040, Feb. 25, 1980, abandoned, which is a continuation of Ser. No. 26,878, Apr. 4, 1979, abandoned, which is a continuation of Ser. No. 910,409, May 30, 1978, abandoned, which is a continuation of Ser. No. 821,589, Aug. 4, 1977, abandoned, which is a continuation of Ser. No. 729,296, Oct. 4, 1976, abandoned, which is a continuation of Ser. No. 284,162, Aug. 28, 1972, abandoned. This application Dec. 6, 1982, Ser. No. 447,055

The portion of the term of this patent subsequent to Nov. 15, 2000, has been disclaimed.

Int. Cl.^{3} A61K *31/41*

U.S. Cl. 424—269 **4 Claims**

1. A process for inducing sleep comprising the administration to a human or animal subject in need of sleep, in unit dosage form, from about 0.001 mg. to about 0.01 mg./kg. body weight of 8-chloro-1-methanol-6-(o-chlorophenyl)-4H-s-triazolo[4,3-a][1,4]benzodiazepine or a pharmacologically acceptable acid addition salt, acetate or hydrogen succinate ester, or (5) N-oxide thereof in association with a pharmaceutical carrier.

4,444,782

2(4-TERT.-BUTYL-2,6-DICHLOROPHENYLIMINO)IMIDAZOLIDINE AND USE AS AN ANTI-HYPERTENSION AGENT

Robert M. DeMarinis, Ardmore, and J. Paul Hieble, Philadelphia, both of Pa., assignors to SmithKline Beckman Corporation, Philadelphia, Pa.

Filed Dec. 23, 1982, Ser. No. 452,676

Int. Cl.^{3} A61K *31/415;* **C07D** *233/50*

U.S. Cl. 424—273 R **5 Claims**

1. 2-(4-tert.-Butyl-2,6-dichlorophenylimino)imidazolidine or its pharmaceutically acceptable aid addition salts.

5. The method of inducing antihypertensive activity in a subject in need thereof without excess sedation comprising administering to said subject, orally, anally or parenterally, an antihypertensive, nontoxic quantity of a compound of claim 1.

4,444,783

β-LACTAM ANTIBACTERIAL AGENTS, A PROCESS FOR THE PREPARATION AND USE IN PHARMACEUTICAL COMPOSITIONS

Alfred J. Eglington, Betchworth, England, assignor to Beecham Group Limited, England

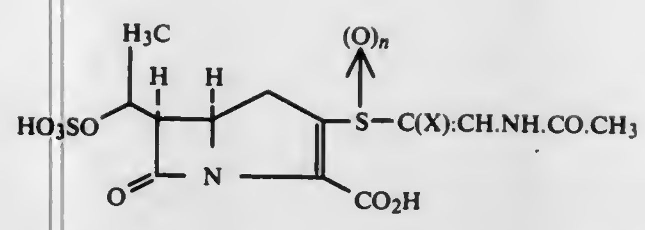
Continuation of Ser. No. 59,314, Jul. 20, 1979, abandoned. This application Oct. 1, 1981, Ser. No. 307,630

Claims priority, application United Kingdom, Aug. 2, 1978, 31991/78; Aug. 25, 1978, 43581/78

Int. Cl.^{3} C07D *487/04;* **A61K** *31/40*

U.S. Cl. 424—274 **77 Claims**

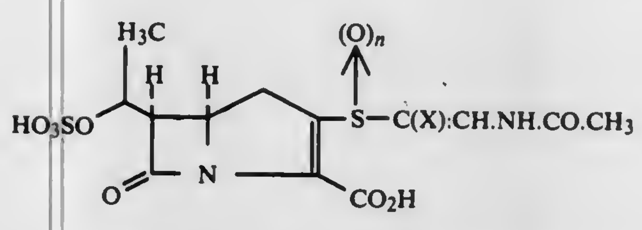
1. A compound of the formula (IV)



(IV)

a pharmaceutically acceptable salt thereof, a cleavable ester thereof or a pharmaceutically acceptable salt of a cleavable ester thereof wherein X is bromo or chloro and n is 0 or 1.

25. A pharmaceutical composition useful for treating bacterial infections in humans and animals which comprises an antibacterially effective amount of a compound of the formula (IV):



(IV)

a pharmaceutically acceptable salt thereof, a cleavable ester thereof or a pharmaceutically acceptable salt of a cleavable ester thereof wherein X is bromo or chloro and n is 0 or 1, in combination with a pharmaceutically acceptable carrier.

4,444,784

ANTIHYPERCHOLESTEROLEMIC COMPOUNDS

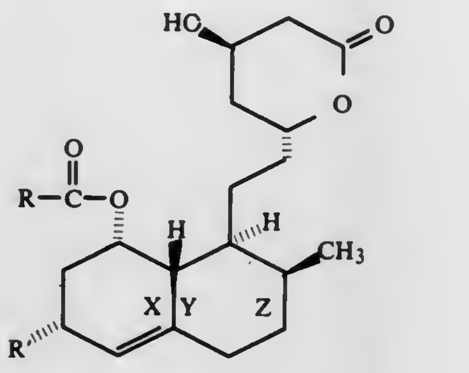
William F. Hoffman; Robert L. Smith, both of Lansdale, Pa., and Alvin K. Willard, Wilmington, DE, assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 175,460, Aug. 5, 1980, abandoned, which is a continuation-in-part of Ser. No. 118,051, Feb. 4, 1980, abandoned. This application Dec. 18, 1980, Ser. No. 217,640

Int. Cl.^{3} A61K *31/335;* **C07D** *309/30;* **C07C** *67/02*

U.S. Cl. 424—279 **18 Claims**

1. A compound of the formula:

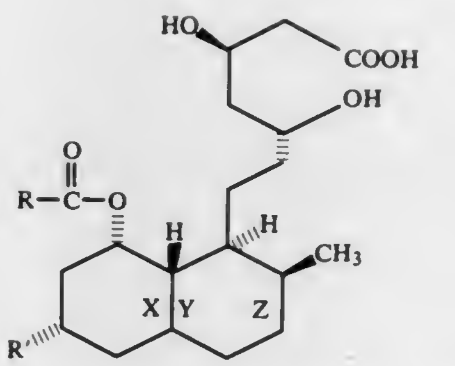


wherein R' is H or CH_3;

R is

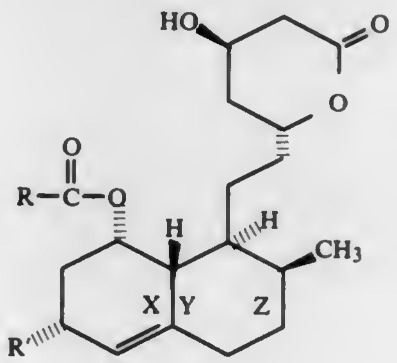
(1) 1,1-dimethylpropyl,
(2) C_{3-10}cycloalkyl,
(3) C_{2-10}alkenyl,
(4) $C_{1-10}CF_3$-substituted alkyl,
(5) phenyl,
(6) halophenyl,
(7) phenyl-C_{1-3}alkyl,
(8) substituted phenyl-C_{1-3}alkyl in which the substituent is halo, C_{1-3}alkyl or C_{1-3}alkoxy;

the dotted lines at X, Y and Z represent possible double bonds, said double bonds, when any are present, being either X and Z in combination or X, Y or Z alone; or the corresponding dihydroxy acid of the formula:



or a pharmaceutically acceptable salt of said acid, a C_{1-4}alkyl ester of said acid or a phenyl-, dimethylamino-, or acetylamino-substituted-C_{1-4}alkyl ester of said acid.

11. A method of treating hypercholesterolemia in a patient in need of such treatment which comprises administration of an antihypercholesterolemic effective amount of a compound of structural formula:

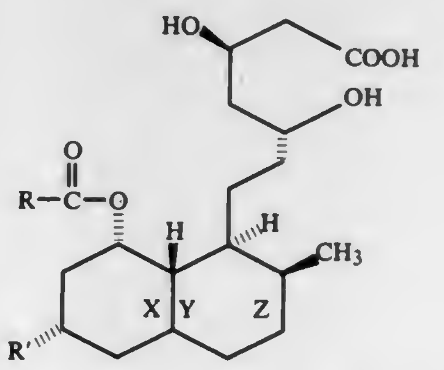


in which R' is H or CH_3;

R is

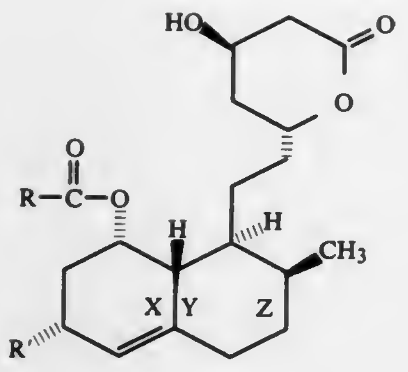
(1) 1,1-dimethylpropyl,
(2) C_{3-10}cycloalkyl,
(3) C_{2-10}alkenyl,
(4) $C_{1-10}CF_3$-substituted alkyl,
(5) phenyl,
(6) halophenyl,
(7) phenyl-C_{1-3}alkyl,
(8) substituted phenyl-C_{1-3}alkyl in which the substituent is halo, C_{1-3}alkyl or C_{1-3}alkoxy;

the dotted lines at X, Y and Z represent possible double bonds, said double bonds, when any are present, being either X and Z in combination or X, Y or Z alone; or the corresponding dihydroxy acid of the formula:



or a pharmaceutically acceptable salt of said acid, a C_{1-4}alkyl ester of said acid or a phenyl-, dimethylamino-, or acetylamino-substituted-C_{1-4}alkyl ester of said acid.

16. A compound of the formula:

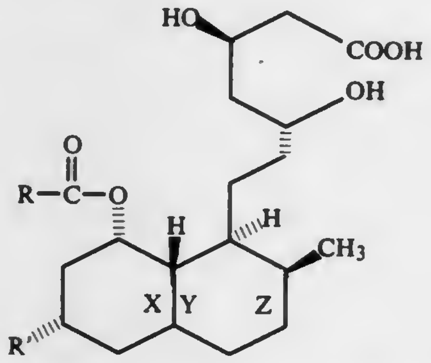


wherein R′ is H or CH_3;

R is

(1) C_{3-10}cycloalkyl,
(2) C_{2-10}alkenyl,
(3) $C_{1-10}CF_3$-substituted alkyl,
(4) phenyl,
(5) halophenyl,
(6) phenyl-C_{1-3}alkyl
(7) substituted phenyl-C_{1-3}alkyl in which the substituent is halo, C_{1-3}alkyl or C_{1-3}alkoxy;

the dotted lines at X, Y and Z represent possible double bonds, said double bonds, when any are present, being either X and Z in combination or X, Y or Z alone or the corresponding dihydroxy acid of the formula:



or a pharmaceutically acceptable salt of said acid, a C_{1-4}alkyl ester of said acid or a phenyl-, dimethylamino-, or acetylamino-substituted-C_{1-4}alkyl ester of said acid.

4,444,785

CONTACT LENS DISINFECTING AND PRESERVING SOLUTION

Lawrence D. Mandt, Fairport; Thomas M. Riedhammer, and Francis X. Smith, both of Rochester, all of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Division of Ser. No. 208,919, Nov. 21, 1980, Pat. No. 4,381,314. This application Jan. 19, 1983, Ser. No. 459,086

Int. Cl.^{3} A61K *31/305, 31/11, 31/19, 31/195*

U.S. Cl. 424—291 **3 Claims**

1. A method for preserving or disinfecting soft contact lenses comprising contacting said lenses with an aqueous solution having as the active antimicrobial agent 1,5pentanedial present in an amount from about 0.00001 to about 0.1 weight percent of said composition, said composition being buffered for eye comfort (pH compatible) with at least one buffer in an amount from about 0.05 to 2.5 weight percent wherein the 1,5-pentanedial in the amount from about 0.00001 to about 0.01 weight percent is combined with from about 0.0001 to about 0.5 weight percent of an enhancing agent selected from the group consisting of thimerosal, phenylmercuric salts, sorbic acid, ethylene-diaminetetraacetic acid and its salts and mixtures thereof.

4,444,786

CARBAMATE DERIVATIVES, INSECTICIDAL, MITICIDAL OR NEMATOCIDAL COMPOSITIONS CONTAINING THE SAME, AND PROCESS FOR PREPARING THE SAME

Takeshi Goto; Hisashi Takao; Norio Yasudomi; Norio Osaki, and Tadateru Murata, all of Tokushima, Japan, assignors to Otsuka Chemical Co., Ltd., Osaka, Japan

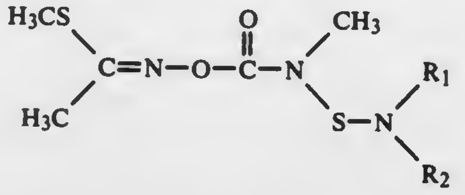
Filed Feb. 26, 1982, Ser. No. 352,927

Claims priority, application Japan, Nov. 27, 1981, 56-189989

Int. Cl.^{3} A01N *37/52;* **C07C** *119/18*

U.S. Cl. 424—298 **3 Claims**

1. An S-methyl N-[{N-methyl-N-(N,N-disubstituted aminosulfenyl)carbamoyl}oxy]thioacetamidate derivative represented by the formula (I):



(I)

wherein R_1 and R_2, which may be the same or different, each represents —X—$COOR_3$, in which X represents an alkylene group having 1 to 6 carbon atoms, and R_3 represents an alkyl group having 1 to 8 carbon atoms or a cycloalkyl group having 3 to 6 carbon atoms; R_2 further represents an alkyl group having 1 to 8 carbon atoms; a cycloalkyl group having 3 to 6 carbon atoms; a phenyl group which may be substituted with a halogen atom, an alkyl group having 1 to 3 carbon atoms or an alkoxy group having 1 to 3 carbon atoms; a benzyl group which may be substituted with a halogen atom, an alkyl group having 1 to 3 carbon atoms or an alkoxy group having 1 to 3 carbon atoms; or —Z—R_4, in which Z represents a carbonyl group or a sulfonyl group, and R_4 represents an alkyl group having 1 to 3 carbon atoms, an alkoxy group having 1 to 3 carbon atoms or a phenyl group which may be substituted with a lower alkyl group.

3. A method for controlling noxious insects, mites or nematodes by applying thereto an effective amount of the S-methyl N-[{N-methyl-N-(N,N-disubstituted aminosulfenyl)carbamoyl}-oxy]thioacetamidate derivative according to claim 1.

4,444,787

OPHTHALMIC TOPICAL USE OF COLLAGEN CROSS-LINKING INHIBITORS

Louise C. Moorhead, Houston, Tex., assignor to Board of Regents, University of Texas, Austin, Tex.

Filed Jul. 6, 1981, Ser. No. 280,870

Int. Cl.^{3} A61K *31/275*

U.S. Cl. 424—304 **5 Claims**

1. A method for treating wounded mammalian ocular tissue to reduce the cross-linking of collagen fibrils in said tissue, comprising: the topical application of a pharmacologically suitable composition comprising an admixture of a therapeutically effective amount of BAPN with a suitable topical vehicle.

4,444,788

PHARMACEUTICALLY ACTIVE 9-CHLOROPROSTAGLANDINS

Werner Skuballa; Bernd Raduechel; Helmut Vorbrueggen; Walter Elger; Olaf Loge, and Ekkehard Schillinger, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Marl, Fed. Rep. of Germany

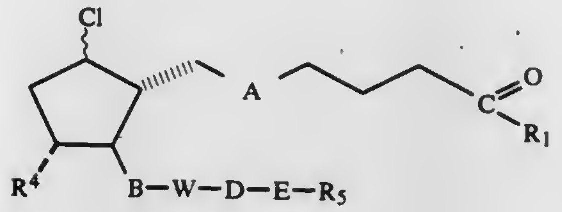
Continuation-in-part of Ser. No. 215,762, Dec. 10, 1980. This application Jun. 10, 1982, Ser. No. 387,140

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1979, 2950027

Int. Cl.^{3} C07C *177/00;* **A61K** *31/557*

U.S. Cl. 424—305 **50 Claims**

1. A 9-chloroprostane of the formula



wherein

the 9-chlorine atom can be in the α- or β-position,

R_1 is OR_2 wherein,

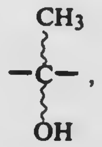
R_2 is H; C_{1-10}-alkyl; C_{1-10}-alkyl substituted by halogen, C_{1-4}-alkoxy, C_{6-10}-aryl or -aroyl, C_{6-10}-aryl or -aroyl substituted by the substituents defined below for the R_2 aryl groups, di-C_{1-4}-alkylamino, or tri-C_{1-4}-alkylammonium; C_{4-10} cycloalkyl; $_{4-10}$-cycloalkyl substituted by C_{1-4}-alkyl; C_{6-10}-aryl; C_{6-10}-aryl substituted by 1–3 halogen atoms, phenyl, 1–3 C_{1-4}-alkyl groups, or a chloromethyl, fluoromethyl, trifluoromethyl, carboxy, hydroxy or C_{1-4}-alkoxy group; or an aromatic heterocycle of 5- or 6-total ring atoms and 1–2 hetero N, O or S atoms, the remainder being carbon atoms;

or R_1 is NHR_3 wherein R_3 is H or the acyl group of a C_{1-15} hydrocarbon carboxylic or sulfonic acid;

A is —CH_2—CH_2— or cis—CH═CH—,

B is —CH_2—CH_2—, trans—CH═CH— or —C≡C—,

W is hydroxymethylene or



$$-\overset{CH_3}{\underset{OH}{C}}-,$$

wherein the OH— group in each case can be in the α- or β-position, and can be etherified or esterified by tetrahydropyranyl, tetrahydrofuranyl, α-ethoxyethyl, trimethylsilyl, dimethyl, tert-butylsilyl, tribenzylsilyl, acetyl, propionyl, butyryl or benzoyl;

D and E together represent a direct bond or

D is a straight-chain or branched alkylene group of 1–10 carbon atoms, optionally substituted by fluorine, and

E is oxygen or sulfur or a direct bond, and

R_4 is hydroxy or hydroxy etherified or esterified as defined for W above;

R_5 is a C_{1-10}-hydrocarbon aliphatic group substituted by aryl, or substituted aryl as defined for R_2 above; or cycloalkyl, substituted cycloalkyl, aryl, substituted aryl or aromatic heterocyclic, all as defined for R_2 above;

or a physiologically acceptable salt thereof with a base when R_1 is OH.

4,444,789

USE OF 8-ANILINO-1-NAPHTHALENESULFONATE AS A VAGINAL CONTRACEPTIVE

Milton J. Cormier, Bogart, Ga., assignor to University of Georgia Research Foundation, Inc., Athens, Ga.

Continuation-in-part of Ser. No. 155,800, May 27, 1980. This application Jul. 14, 1982, Ser. No. 398,848

Int. Cl.^{3} A61K *31/185*

U.S. Cl. 424—315 **8 Claims**

1. A method for preventing conception in a female which comprises: introducing an effective amount of the drug 8-anilino-1-naphthalenesulfonate into the vagina of the female.

4,444,790

QUATERNARY AMMONIUM DISINFECTANTS

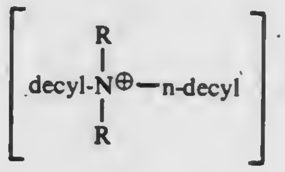
Harold A. Green, Havertown, Pa.; Alfonso N. Petrocci, Glen Rock, and Zdzislaw W. Dudzinski, Clifton, both of N.J., assignors to Millmaster Onyx Group, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 382,399, May 27, 1982. This application Aug. 25, 1982, Ser. No. 411,380

Int. Cl.^{3} C07C *87/30;* **A01N** *33/12*

U.S. Cl. 424—329 **23 Claims**

1. A quaternary ammonium compound having the structural formula:



$$\left[\text{decyl-}\overset{R}{\underset{R}{N^{\oplus}}}\text{—n-decyl}\right] X^-$$

wherein R is a lower alkyl group of from 1 to 4 carbon atoms and X is either a halogen having an atomic weight greater than 30, methosulfate or ethosulfate, the term “decyl” referring to a mixture of primary branched chain alkyl groups each of which has 10 carbon atoms and consists of a straight chain having at least two branches and the term “n-decyl” referring to the normal decyl group.

4,444,791

PHARMACEUTICAL COMPOSITION AND METHOD FOR TREATING CACHEXIA IN HUMANS DUE TO CANCER

Hector C. Simon, Orizaba, Veracruz, Mexico

Continuation-in-part of Ser. No. 195,080, Oct. 8, 1980, abandoned, which is a continuation of Ser. No. 64,587, Aug. 7, 1979, abandoned, which is a continuation of Ser. No. 852,960, Nov. 18, 1977, abandoned, which is a continuation of Ser. No. 700,150, Jun. 28, 1976, abandoned, which is a continuation-in-part of Ser. No. 521,410, Nov. 6, 1974, abandoned. This application May 21, 1982, Ser. No. 380,883

Int. Cl.^{3} A61K *31/32*

U.S. Cl. 424—331 **5 Claims**

1. A method for retarding and/or reducing cachexia in humans which comprises administering orally to an affected human a physiologically acceptable solution containing an amount of friedelan-3-one therapeutically sufficient to retard and/or reduce said cachexia.

4,444,792

FERMENTATION OF WHEY TO PRODUCE A THICKENING POLYMER

Robert D. Schwartz, Concord, and Elizabeth A. Bodie, El Cerrito, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Jul. 20, 1981, Ser. No. 284,422

The portion of the term of this patent subsequent to Aug. 16, 2000, has been disclaimed.

Int. Cl.^{3} A23C *21/02;* C12P *19/06;* C12R *1/64*

U.S. Cl. 426—41 **7 Claims**

1. A process for producing a functionalized dairy whey product comprising the steps of:

(a) forming a fermentation broth consisting essentially of unhdyrolyzed whey containing unhydrolyzed lactose and

(b) fermenting the broth with the organism *Xanthomonas campestris* ATCC 31923 to produce a functionalized dairy whey product containing a thickening polymer produced by the organism.

7. A biologically pure culture of the organism *Xanthomonas campestris* ATCC 31923 having the ability to grow on lactose as the sole source of carbon and energy.

4,444,793

FERMENTATION OF WHEY TO PRODUCE A THICKENING AGENT

Robert D. Schwartz, Concord, and Elizabeth A. Bodie, El Cerrito, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Aug. 7, 1981, Ser. No. 290,766

The portion of the term of this patent subsequent to Aug. 16, 2000, has been disclaimed.

Int. Cl.^{3} A23C *21/02;* C12P *19/04, 19/08;* C12N *1/20*

U.S. Cl. 426—41 **9 Claims**

1. A process for producing a functionalized dairy whey product comprising the steps of:

(a) forming a fermentation broth of whey, and sucrose; and

(b) fermenting the broth with the organism *Leuconostoc mesenteroides* ATCC 14935 to produce a functionalized dairy whey product containing a thickening polymer produced by the organism.

4,444,794

PRODUCTION OF ALKALI METAL GLUCOHEPTANATE FROM SWEET POTATOES

Brooks M. Whitehurst, 1983 Hoods Creek Dr., New Bern, N.C. 28560, and Donald F. Clemens, 1701 Sulgrave Rd., Greenville, N.C. 27834

Filed Jun. 8, 1982, Ser. No. 386,353

Int. Cl.^{3} A23K *1/14;* C12P *19/02, 19/14, 19/02*

U.S. Cl. 426—52 **1 Claim**

1. A method for production from sweet potatoes of an alkali metal glucoheptonate chelant suitable for use as a water conditioning chelant which comprises

(a) Harvesting sweet potatoes, reducing the sweet potatoes to particles of about 1/16 inch in size, slurrying the sweet potato particles to produce an acqueous slurry and adding α-amylase to the slurry to reduce the polymer size of starch molecules contained by the sweet potatoes;

(b) Boiling the slurry from step (a) and filtering the boiled slurry to separate a liquid syrup, and a protein-containing pulp residue suitable for animal food;

(c) Cooling the liquid syrup from step (b) and adding glucoamylase to convert polysaccharides in the liquid syrup to glucose;

(d) Boiling the liquid syrup containing glucose from step (c) for a time sufficient to obtain a liquid syrup having a density of about 1.14 g/ml to about 1.35 g/ml;

(e) Adding an alkali metal cyanide to the liquid syrup from step (d) and heating to produce an alkali metal glucoheptanate chelant.

4,444,795

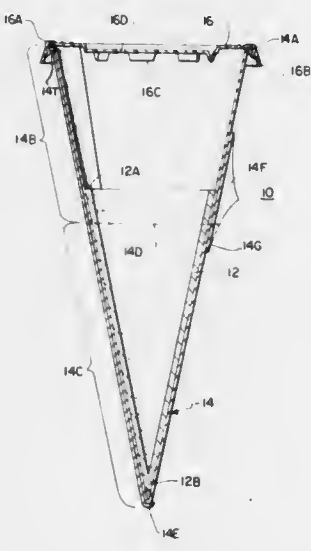
FROZEN CONFECTION AND PACKAGING MODULE

David Weinstein, Baltimore, Md., assignor to Maryland Cup Corporation, Owings Mills, Md.

Continuation of Ser. No. 246,180, Mar. 23, 1981, abandoned. This application Jan. 31, 1983, Ser. No. 462,188

Int. Cl.^{3} B65D *85/78*

U.S. Cl. 426—90 **11 Claims**



1. Receptacle means for receiving a confection comprising: an unfilled ice cream cone having open and closed ends; and conical wrapper means having open and closed ends and nestably receiving said ice cream cone in the closed end thereof, said wrapper means comprising:

overlapped wrapper portions extending generally from said open end to said closed end of said wrapper and comprising a first wrapper portion overlapped on the exterior of a second wrapper portion;

upper and lower separable sections joined together below said open end of said ice cream cone, said lower section having a conical configuration and said upper section having a frustoconical configuration;

separation means responsive to tearing force for separating said upper section from said lower section and from said ice cream cone for exposing at least a portion of said ice cream cone;

said upper section extending substantially beyond said open end of said ice cream cone;

means for bonding said first and second overlapped wrapper portions together in said upper section for preventing relative movement of said overlapped wrapper portions, for preventing escape of the confection from between said overlapped wrapper portions in said upper section, and for maintaining said frustoconical configuration of said upper section for facilitating consumption of the confection from said upper section by means of a utensil; and

annular bead means comprising a curled portion of said conical wrapper at the open end thereof for enhancing the rigidity of said upper section and for maintaining said frustoconical configuration thereof during consumption of the confection by means of a utensil, wherein substantially the entire uppermost edge portion of said first overlapped wrapper portion adjacent said open end does not extend into said annular bead means.

4,444,796

METHOD FOR PRODUCTION OF PET FOODS

Ryuzo Ueno, Nishinomiya; Toshio Matsuda, Itami; Shigeo Inamine, Kobe; Tatsuo Kanayama, Takarazuka, and Yatsuka Fujita, Nishinomiya, all of Japan, assignors to Kabushiki Kaisha Ueno Seiyaku Oyo Kenkyujo, Osaka, Japan

Continuation of Ser. No. 175,738, Aug. 6, 1980, abandoned. This application May 5, 1982, Ser. No. 375,293

Claims priority, application Japan, Sep. 14, 1979, 54-117320

Int. Cl.^{3} A23K *1/00*

U.S. Cl. 426—335 **8 Claims**

1. A method for producing a semi-moist pet food with good storage stability having a water content of 20 to 45 percent by weight and a pH of 6.0 or below, a sugar and/or sugar alcohol content of not more than 20 percent by weight and a propylene glycol content of not more than 3 percent by weight, which consists essentially of:

admixing, with pet food materials, 0.1% to 0.7% by weight of granules consisting essentially of a mixture of more than 60% by weight of a fine powder of sorbic acid having a particle size smaller than 250 Tyler's mesh and another ingredient selected from the group consisting of a binding agent, a mixture of a binding agent and a surfactant, and a mixture of a binding agent and an organic acid, acidic organic acid salt or acidic inorganic acid salt, said organic acid, acidic organic acid salt and acidic inorganic acid salt being solid at room temperature, to disperse the sorbic acid powder uniformly in said materials, said granules having a particle diameter of 300 to 1500 microns; and

heating the admixture simultaneously with the admixing.

4,444,797

HEAT TREATMENT OF PARTICULATE SOLID MATERIALS

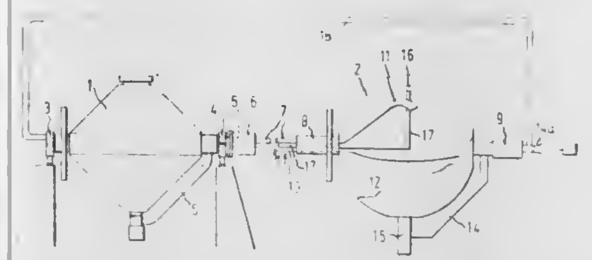
John E. Brittain, Beaconsfield, and Graham S. Cattell, Lingfield, both of England, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne

Filed Feb. 13, 1981, Ser. No. 234,377

Claims priority, application United Kingdom, Feb. 15, 1980, 8005182

Int. Cl.^{3} A23B *4/00;* A23L *3/18*

U.S. Cl. 426—399 **5 Claims**



1. A batch method for the heat sterilization treatment of particulate solid food materials, in which a batch of particulate solid material is heated in a rotary heat treatment vessel while the vessel is being rotated to impart a tumbling action to the particles of solid material, the heating being carried out at least partially while the vessel contains substantial quantities of liquid, transferring the solids and liquid under aseptic conditions to a second rotary vessel, separating the solid and liquid phases in the said second vessel and removing the liquid phase, introducing a different liquid to the second vessel and rotating the second vessel to tumble the solids and different liquid to blend them together.

4,444,798

PROCESS FOR REMOVING STIMULATING COMPOUNDS FROM COCOA

Danièle Magnolato, Blonay, and Alain Isely, Montherod, both of Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Jul. 14, 1982, Ser. No. 397,978

Claims priority, application Switzerland, Jul. 22, 1981, 4778/81

Int. Cl.^{3} A23G *1/00*

U.S. Cl. 426—422 **6 Claims**

1. A process for treating cocoa to remove theobromine and caffeine therefrom comprising:

(a) extracting green or roasted cocoa beans with water at a temperature of from 40° to 60° C. to form an aqueous extract containing theobromine, caffeine and other water soluble bean constituents;

(b) treating the aqueous extract with an adsorbent of desugared and activated carob particles to adsorb theobromine and caffeine;

(c) separating the adsorbent from the treated extract;

(d) concentrating the treated extract;

(e) drying the extracted beans;

(f) rehydrating the dried beans with the concentrated extract to reincorporate the other water soluble bean constituents into the beans; and then

(g) drying and roasting the rehydrated beans.

4,444,799

METHOD AND COMPOSITION FOR PRODUCING SOFT EDIBLE BAKED PRODUCTS AND AN EDIBLE FIRM GEL FOR USE THEREIN

Fred Vanderveer, Mahwah; Aloysius J. Knipper, Ringwood; Robert Straka, Pequannock, and Alex J. Squicciarini, Fairlawn, all of N.J., assignors to Nabisco, Inc., East Hanover, N.J.

Filed Aug. 18, 1981, Ser. No. 293,924

Int. Cl.^{3} A21D *10/00;* A23L *1/04*

U.S. Cl. 426—549 **18 Claims**

1. An edible firm gel composition capable of being ground for producing soft-textured baked products from a dough, said gel composition comprising a firm gel formed from a mixture or blend of:

(A) 100 weight parts of an edible viscous liquid;

(B) from 0.25 to 4.0 weight parts of an edible gum capable of being set by calcium ions;

(C) an effective amount up to 7 weight parts of a humectant-dispersing agent for said edible gum;

(D) from 1 to about 4 weight parts of a calcium ion source for setting said gum and

(E) an effective amount up to about 3 weight parts of a humectant-dispersing agent for said source of calcium ions;

the percentage set forth in subparagraphs B, C, D, and E, being based upon 100 parts by weight of said edible viscous liquid.

4,444,800

NON-CULTURED SIMULATED CHEESE CONTAINING RENNET CASEIN

Howard H. Bixby, Kewaunee, Wis.; William C. Haines, Manlius, N.Y., and Arnold W. Wickman, Green Bay, Wis., assignors to L.D. Schreiber Cheese Co., Inc., Green Bay, Wis.

Continuation of Ser. No. 122,512, Feb. 19, 1980, abandoned, which is a continuation of Ser. No. 877,071, Feb. 14, 1978, abandoned, which is a continuation-in-part of Ser. No. 777,567, Feb. 28, 1977, abandoned. This application Mar. 25, 1982, Ser. No. 361,564

Int. Cl.^{3} A23C *20/00;* A23J *1/20*

U.S. Cl. 426—582 **31 Claims**

1. A substantially homogeneous, aqueous, edible mass which comprises solvated edible rennet casein as the principal protein source prepared by solvation of dry particulate rennet casein in

water in the presence of an edible solvation agent at a temperature of about 190° F. to about 205° F. and under high shearing agitation at the temperature of solvation for a time period of about 2 minutes to about 4 minutes to provide a plastic body to said edible mass, said particulate rennet casein constituting at least 25 percent by weight of said edible mass, water, and said edible solvation agent being present in an amount of about 2 to about 12 percent by weight of the particulate rennet casein said edible solvation agent being selected from the group consisting of disodium phosphate, trisodium phosphate, sodium hexametaphosphate, sodium tripolyphosphate, tetrasodium phosphate, the sodium aluminum phosphates, dipotassium phosphate, monosodium diphosphate, trisodium diphosphate, tetrasodium diphosphate, monosodium citrate, disodium citrate, trisodium citrate and mixtures thereof, said edible mass being substantially free of discernible rennet casein particles.

4,444,801

METHOD AND APPARATUS FOR CORRECTING TRANSPARENT DEFECTS ON A PHOTOMASK

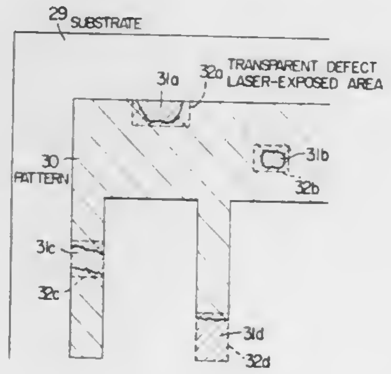
Mikio Hongo; Masao Mitani; Tateoki Miyauchi, all of Yokohama; Masaaki Okunaka, Fujisawa, and Katsuro Mizukoshi, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 12, 1982, Ser. No. 338,864

Claims priority, application Japan, Jan. 14, 1981, 56-3044; Jan. 14, 1981, 56-3045

Int. Cl.³ B23K *9/00;* **B05D** *3/06;* **G01D** *15/10, 9/42*

U.S. Cl. 427—10 **40 Claims**



1. A method of correcting a transparent defect on a photomask comprising the steps of:

(a) coating at least a transparent defect portion and its periphery on a photomask having a transparent defect portion with a film formed of a metal-organic solution;

(b) altering a portion of the metal-organic complex solution film corresponding to said transparent defect portion to a opaque and insoluble material by exposing said portion of metal-organic complex solution film to a visible ray or an ultraviolet ray until the quantity of light transmitted through said portion of metal-organic complex solution film and measured by an optical detection means falls below a predetermined level relative to the quantity of light when the exposure has started; and

(c) removing a non-altered portion of said metal-organic complex solution film from the photomask with a solvent and leaving the altered portion corresponding to the transparent defect portion.

4,444,802

WATER-BORNE FIRM COATING COMPOSITIONS AND PROCESSES THEREFOR

Jonathan K. Winters, Portsmouth, Ohio, and Fred B. Savell, III, Mobile, Ala., assignors to Ashland Oil, Inc., Ashland, Ky.

Filed May 3, 1982, Ser. No. 374,465

Int. Cl.³ B05D *1/00, 1/08, 1/28;* **C04B** *9/02*

U.S. Cl. 427—27 **35 Claims**

1. An anti-corrosive, storage stable, rapidly drying, emulsified oil in water and water reducible and dispersible coating composition, capable of application and flow on a solid substrate, comprising:

(a) about 0.5 to 35% by weight of organic wax components containing less than about 10% oil based on the weight of the wax and having a melting point above 70° C.;

(b) about 5 to 30% of a polyol ester derived from the polyester of one of:

stearic acid, isostearic acid, oleic acid, linoleic acid and lanolinic acid,

and a polyol selected from the group consisting of:

neopentyl glycol, trimethylol propane, pentaerythritol and dipentaerythritol;

(c) about 0.5 to 12% of surfactant;

(d) about 1 to 20% of a coupling agent comprising a C_5–C_{30} liquid hydrocarbon coupling component and a C_2–C_{20} alcohol in a ratio of between 1:1 and 10:1 respectively, and wherein said coupling agent is at least one of mineral spirits, ether alcohols and alcohol ether-esters selected from the group consisting of:

mineral spirits, ethylene glycol ether, propyl cellosolve, diethylene glycol monoethyl ether, ethylene glycol monopropyl ether, butyl cellosolve, ethyl cellosolve, ethylene glycol monoacetate, diethylene glycol monoproprionate, diethylene glycol monoacetate, propylene glycol monoacetate, ethanol, isopropanol and isobutanol;

(e) about 35 to 97% of water;

said percents being based on the weight of the total formulation except as noted.

4,444,803

WATER-BORNE SOFT COATING COMPOSITIONS AND PROCESSES THEREFOR

Jonathan K. Winters, Portsmouth, Ohio, and Fred B. Savell, III, Mobile, Ala., assignors to Ashland Oil, Inc., Ashland, Ky.

Filed May 3, 1982, Ser. No. 374,466

Int. Cl.³ B05D *1/28, 1/08;* **C04B** *9/02*

U.S. Cl. 427—27 **36 Claims**

1. An anti-corrosive, storage stable, rapidly drying, emulsified oil in water and water reducible and dispersible coating composition, capable of application and flow on a solid substrate, comprising:

(a) about 0.5 to 30% by weight of organic wax components having a melting point below 65° C.;

(b) about 1 to 30% of a polyol ester derived from the polyester of one of:

stearic acid, isostearic acid, oleic acid and lanolinic acids,

and a polyol selected from the group consisting of:

neopentyl glycol, trimethylol propane, pentaerythritol and dipentaerythritol;

(c) about 0.5 to 5% of surfactant;

(d) about 1 to 15% of a coupling agent selected from the group consisting of:

mineral spirits, ethylene glycol ether, butyl cellosolve, sorbitan diethylene glycol monoethyl ether, ethylene glycol monopropyl ether, propyl cellosolve, ethyl cellosolve, diethylene glycol monoethyl ether, ethylene glycol monoacetate, diethylene glycol monopropionate, diethylene glycol monoacetate, propylene glycol monoacetate, ethanol, isopropanol and isobutanol; and

(e) about 45 to 97% water.

4,444,804

FLAME SPRAYED COATINGS

Gregory P. Ferrari, Leavesden, England, assignor to Rolls-Royce Limited, London, England

Filed Feb. 4, 1983, Ser. No. 463,953

Claims priority, application United Kingdom, Mar. 6, 1982, 8206660

Int. Cl.³ B05D *1/00*

U.S. Cl. 427—34 **3 Claims**

1. A method of providing a flame sprayed metal or metal containing coating on a metal substrate comprising the subsequent steps of flame spraying finely divided metal particles or metal containing finely divided particles on to a metal substrate until a coating of the required thickness has been deposited thereon, cooling the coated substrate and applying to said coating an anaerobically curable sealant of a polymethacrylic ester with an amine catalyst and having a viscosity of up to 25 centipoises in such an amount as to saturate said coating, removing excess sealant from the surface of said coating and curing said sealant.

4,444,805

OPTICAL COATING

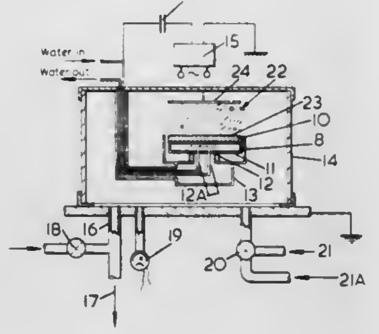
Richard T. Corbett, Cambuslang; Brian C. Monachan, and Alexander J. N. Hope, both of Glasgow, all of Scotland, assignors to Barr & Stroud Limited, Glasgow, Scotland

Filed Jun. 22, 1981, Ser. No. 276,259

Claims priority, application United Kingdom, Jul. 17, 1980, 8023435; Jun. 18, 1981, 8118713

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—38 **6 Claims**



1. A process for applying a carbonaceous coating to a surface by vacuum deposition of carbon derived from a hydrocarbon gas in plsma form, wherein the surface is coupled to an AC power supply operating at a frequency below 500 kHz at which the electrical impedance of the plasma is substantially non-varying during the deposition process.

4,444,806

PROCESS FOR FORMING AN EPOXY-ACRYLATE COATING

Charles R. Morgan, Brookeville, and David R. Kyle, Columbia, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

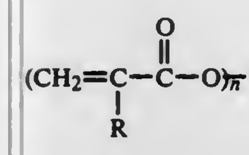
Division of Ser. No. 317,648, Nov. 2, 1981, Pat. No. 4,374,963. This application Oct. 26, 1982, Ser. No. 436,878

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—45.1 **4 Claims**

1. A process for forming a coating on a substrate which comprises admixing a heat curable composition comprising

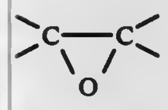
(a) a liquid, ethylenically unsaturated monomer, oligomer or prepolymer of the formula:



$$(CH_2{=}\underset{\substack{|\\ R}}{C}-\overset{\substack{O\\ \|}}{C}-O)_n R_1$$

wherein R is H or CH_3, R_1 is an organic moiety and n is at least 2,

(b) an epoxy resin containing at least two



groups, and

(c) a thermal initiator member of the group consisting of

(1) a BF_3 adduct in combination with a free radical initiator, and

(2) dicyandiamide in combination with a free radical initiator,

coating said admixture on a substrate and heating said coating in the range 80°-300° C. to affect curing.

4,444,807

METHOD FOR TREATING A SURFACE OF A POLYESTER FILM

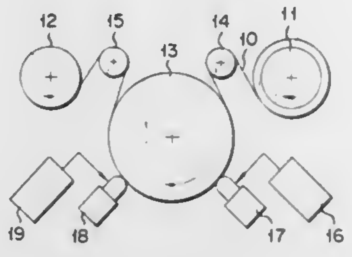
Yoshihiko Masakawa, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 28, 1983, Ser. No. 518,207

Claims priority, application Japan, Aug. 4, 1982, 57-136024

Int. Cl.³ B05D *5/12, 3/02*

U.S. Cl. 427—129 **13 Claims**



1. A surface treatment method for a thermoplastic polyester film, comprising:

bringing a monocarboxylic acid into contact with a surface of a thermoplastic polyester film which is sticky after having been heated and then contains hydroxy groups and carboxyl groups on said surface, at a temperature not more than about 150° C. but sufficient to cause a reaction thereof with said hydroxyl groups on the surface of said polyester film, so as to convert the hydroxyl groups into corresponding ester groups; and

bringing a monohydric alcohol into contact with the surface of said polyester film which is sticky, at a temperature not more than about 150° C. but sufficient to cause a reaction thereof with carboxyl groups on the surface of said polyester film, so as to convert the carboxyl groups into corresponding ester groups; thereby substantially eliminating the stickiness on the surface of said polyester film.

4,444,808

STENCIL PAPER FOR MIMEOGRAPHY AND PROCESS FOR MAKING STENCIL

Yoshiki Kikuchi; Haruhiko Moriguchi; Takashi Ohmori, and Katsuo Makino, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Sep. 7, 1982, Ser. No. 415,296

Claims priority, application Japan, Sep. 4, 1981, 56-138622; Sep. 4, 1981, 56-138623

Int. Cl.³ B41N *1/24*

U.S. Cl. 427—143 **21 Claims**

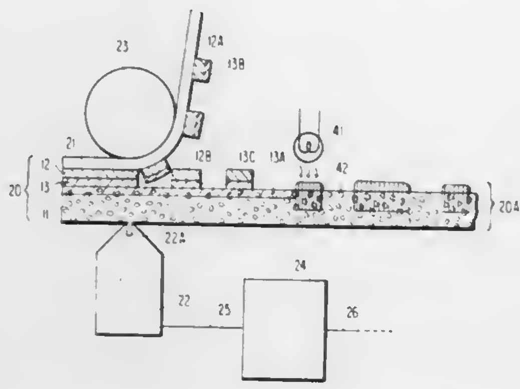
11. A process for making a stencil for mimeography comprising the steps of:

providing a stencil paper comprising a porous base permeable to mimeographic ink having on one surface thereof in sequence a layer comprised of a heat-sublimable material and an overcoat comprised of a heat-sensitive material that is solid at ordinary temperature but which liquefies upon heating;

providing a receiving medium in contact with the heat-sensitive layer;

selectively heating portions of the heat-sublimable layer and the heat-sensitive layer with a thermal head to an extent that the heated portions of the heat-sensitive layer are liquefied;

allowing the liquefied portions of the heat-sensitive layer to transfer to the receiving medium; and



uniformly heating the thus treated stencil paper to an extent that the heated portions of the heat-sublimable layer remaining on the base are sublimated.

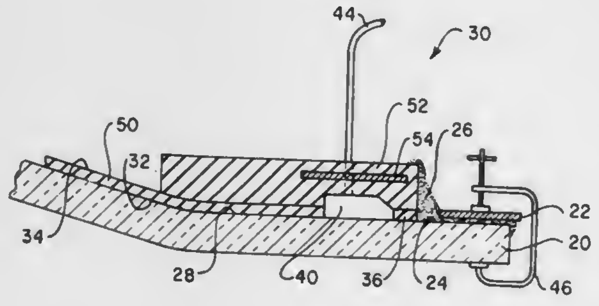
4,444,809
METHOD OF AND DEVICE FOR FABRICATING VISION PANELS

Robert B. Rau, Canyon City, Calif., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 15, 1981, Ser. No. 331,000

Int. Cl.³ B05D *5/06*

U.S. Cl. 427—163 **3 Claims**



1. A method of preventing the flow of an adhesive onto viewing area of a plastic aircraft vision panel from a contiguous second area of the panel to which the adhesive is to be applied, wherein the adhesive is of the type that (1) reacts with the plastic panel to bond reinforcing members thereto and (2) detrimentally affects optical characteristics of the viewing area, comprising the steps of:

biasing a member toward the contiguous second area of the panel, the member having an engaging surface which is substantially non-adherent to the surface of the plastic panel to which the adhesive is to be applied and to the adhesive, the member positionable over and conformable to at least portions of the viewing area adjacent the interface of the viewing area and the second area and having a fluid barrier means including a silicone rubber edge seal for engaging the panel surface to define portions of the boundary between the viewing area and the contiguous second area;

drawing a vacuum between portions of the member and the panel to urge the silicone rubber edge seal against the panel surface along the boundary between the viewing area and second contiguous area; and

applying the adhesive to the second contiguous area of the panel while the fluid barrier means prevents the flow of the adhesive from the second contiguous area onto the viewing area.

4,444,810
APPARATUS FOR TREATING GRANULAR MATERIAL BY DRYING, FILM-COATING OR COATING

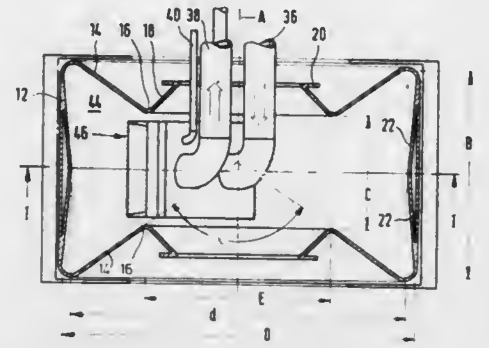
Herbert Huttlin, Lörracher Strasse 14, D-7853 Steinen, Fed. Rep. of Germany

Filed Jul. 14, 1982, Ser. No. 398,081

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1981, 3146536

Int. Cl.³ B05D *7/00*

U.S. Cl. 427—212 **20 Claims**



1. Apparatus for treating granular material by drying, film-coating, or coating, comprising:

a drum, which is rotatable about an at least approximately horizontal axis, having a shell and a pair of axially spaced end wall portions arranged at opposite ends of said shell;

inlet and outlet lines for supplying and removing, respectively, a gas for drying the material; and

an immersion body having a plurality of gas inlet and outlet openings communicating, respectively, with said inlet and outlet lines, said immersion body being disposed within said drum and arranged to be immersed in the granular material, and wherein said immersion body defines an interior portion containing at least some of said gas inlet and outlet openings, said interior portion including a tunnel through which the material can flow.

15. A method of treating granular material in a drum which is rotatable about an at least approximately horizontal axis, said drum having a shell and a pair of axially spaced end wall portions adjoining opposite ends of said shell, and an immersion body disposed within said drum and arranged to be immersed in the granular material, wherein said immersion body defines an interior portion including a tunnel through which the material can flow, comprising the steps of:

rotating said drum for causing said material to enter a forward end of said immersion body and to flow through said tunnel;

supplying gas to, and removing gas from, said interior portion of the immersion body, through a plurality of gas inlet and outlet openings in said interior portion, for drying said material.

4,444,811
FLUIDIZED BED SILICON DEPOSITION FROM SILANE

George Hsu, La Crescenta; Harry Levin, Woodland Hills; Richard A. Hogle, Arcadia; Ananda Praturi, Monrovia, and Ralph Lutwack, Sunland, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Division of Ser. No. 126,324, Mar. 3, 1980, Pat. No. 4,314,525. This application Dec. 3, 1981, Ser. No. 327,256

Int. Cl.³ C23C *13/08*

U.S. Cl. 427—213 **21 Claims**

1. A process for producing silicon comprising the steps of:

introducing fluidizing gas into a primary fluidized reactor zone in an amount sufficient to maintain a bed of silicon seed particles in a fluidized

introducing a silicon containing gas capable of gas phase thermal decomposition into said primary fluidized reactor zone;

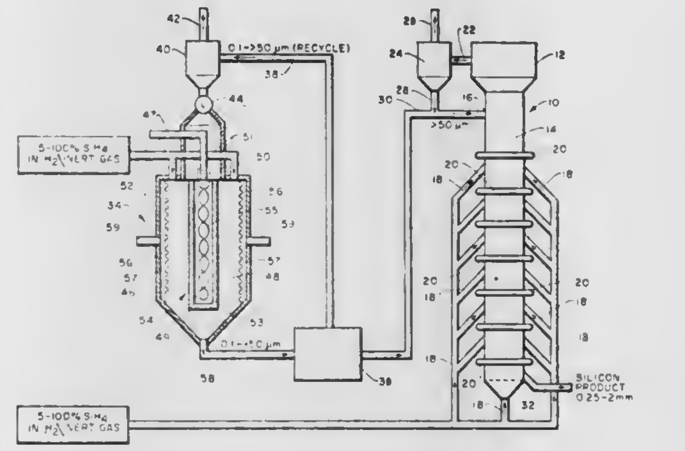
heating said primary fluidized reactor zone to a temperature sufficient to thermally decompose the silicon in said silicon containing gas to elemental silicon but not above the melting point temperature of silicon; depositing the elemental silicon formed by said thermally decomposed silicon containing gas on said suspended seed particles;

continuously removing said seed particles with elemental silicon deposited thereon from said primary fluidized reactor as silicon product;

removing excess fluidizing gas, unreacted silicon containing gas, reaction by-product gases and any entrained silicon particles therein from said primary fluidized reactor zone;

continuously reintroducing silicon seed particles into said primary fluidized reactor zone to replace silicon seed particles which are removed as silicon product; and

producing a continuous supply of said silicon seed particles for introduction into said primary fluidized reactor zone by thermally decomposing a seed generating gas containing silicon in a pyrolysis seed reactor zone to form precursor seed particles including the steps of;



introducing said seed generating gas into said seed reactor zone;

heating said pyrolysis seed reactor to a temperature sufficient to thermally decompose the silicon in said seed generating gas to form elemental silicon, but not above the melting point temperature of silicon;

passing a protective inert gas inwardly through porous reactor walls to form a protective inert gas boundary to prevent contact of silicon with the porous reactor walls;

thermally decomposing the silicon in said seed generating gas to form precursor silicon seed particles;

removing said precursor silicon seed particles from said pyrolysis seed reactor zone;

separating said precursor silicon seed particles into larger silicon seed particles for introducing into said primary fluidged reactor zone and smaller silicon particles which are recycled back to said pyrolysis seed reactor zone for further growth and introducing said separated larger precursor silicon seed particles into said primary fluidized reactor zone as the silicon seed particles.

4,444,812
COMBINATION GAS CURTAINS FOR CONTINUOUS CHEMICAL VAPOR DEPOSITION PRODUCTION OF SILICON BODIES

Henry W. Gutsche, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jul. 28, 1980, Ser. No. 172,509

Int. Cl.³ C23C *11/00, 13/00*

U.S. Cl. 427—255 **21 Claims**

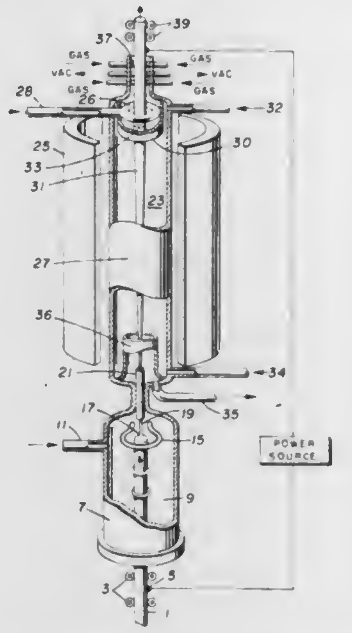
1. A continuous process for preparing crystalline bodies of silicon from gaseous compounds containing silicon comprising continuously:

a. forming a continuous virgin crystalline slim rod from a molten silicon source in a pulling chamber;

b. heating said slim rod in said pulling chamber to the decomposition temperature of a gaseous compound containing silicon;

c. feeding said heated slim rod directly from said pulling chamber into and through a chemical vapor deposition chamber in open communication with said pulling chamber;

d. introducing a first gas into said chemical vapor deposition chamber near the entry point of said heated slim rod in a manner to provide a gas curtain flowing along and isolating the inner surface of said chemical vapor deposition chamber in the direction of movement of said slim rod,



e. introducing a second gas into said chemical vapor deposition chamber near the exit point of said slim rod in a manner to provide a gas curtain flowing along and isolating the inner surface of said chemical vapor deposition chamber in a direction counter to the movement of said slim rod,

f. contacting said slim rod in said chemical vapor deposition chamber with said gaseous compound while maintaining a temperature sufficient to decompose said gaseous compound and deposit silicon in crystalline form onto the surface of said slim rod to enlarge said slim rod; and

g. withdrawing the resulting enlarge silicon body from said chemical vapor deposition chamber.

4,444,813
METHOD OF MAKING A SEALING GLASS SUSPENSION

Perry P. Pirooz, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Aug. 2, 1982, Ser. No. 404,204

Int. Cl.³ B32B *3/02;* **C08L** *1/18*

U.S. Cl. 427—284 **4 Claims**

4. A method of mixing a sealing glass paste including the steps of:

(a) introducing a weighed amount of a powdered particulate sealing glass composition into a cylindrical metallic container through a first opening in said container, said glass composition occupying less volume than that of said container,

(b) exposing the open container with the contents therein to ambient atmospheric conditions until the sealing glass composition has reached the desired moisture content,

(c) closing said first opening in said container so as to prevent the particulate sealing glass from escaping into the surrounding atmosphere from the confinement of said container,

(d) permitting the container and its contents to remain at constant moisture content during transportation,

(e) aligning a dispensing means with a second opening in said container,

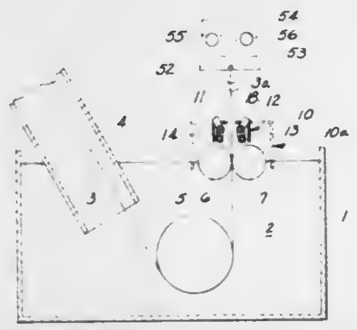
(f) injecting a metered amount of an organic vehicle, in the form of a blend of amyl-acetate and nitrocellulose which contains a titanium coupling agent in the amount ranging from 0.05 weight percent to 0.15 weight percent, into said container through said dispensing means,
(g) withdrawing said dispensing means from the vicinity of said container and closing said second opening,
(h) subjecting said container and the contents thereof to agitation so as to thoroughly mix the organic vehicle with the sealing glass,
(i) storing the sealing glass paste for a time period sufficient to permit a gel condition to form,
(j) transferring the mixed contents of said container to a sealing glass dispenser,
(k) depositing a bead of sealing glass paste on the edge of a glass substrate so that said substrate can be sealed to another glass part by the firing thereof.

4,444,814

FINISHING METHOD AND MEANS FOR CONVENTIONAL HOT-DIP COATING OF A FERROUS BASE METAL STRIP WITH A MOLTEN COATING METAL USING CONVENTIONAL FINISHING ROLLS

Charles Flinchum, Hamilton; Alan F. Gibson, Middletown, both of Ohio; Wayne G. Conley, Russell, and Gayle P. Fields, Ashland, both of Ky., assignors to Armco Inc., Middletown, Ohio

Filed Jun. 11, 1982, Ser. No. 387,375
Int. Cl.³ B05C *3/12*
U.S. Cl. 427—378 **25 Claims**



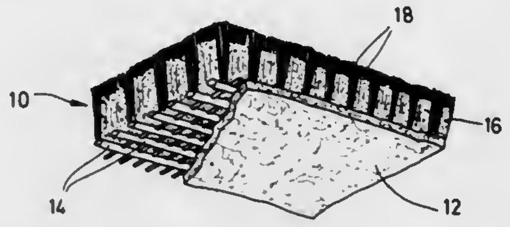
1. A finishing process for conventional continuous hot-dip, two-side coating of a ferrous base metal strip with a molten coating metal of the type wherein said ferrous base metal strip is caused to enter a bath of said molten coating metal contained in a coating pot, said ferrous base metal strip having been treated to bring it to a coating temperature sufficiently high to prevent casting of said coating metal thereon and low enough to prevent excess coating metal—base metal alloying and to render the surfaces of said strip clean and free of oxide as it passes through said molten coating metal bath, said ferrous base metal strip exiting said bath between a pair of conventional finishing rolls partially submerged in said bath and forming a molten coating metal meniscus to either side of said strip as it passes from between said finishing rolls, a portion of said coating metal at said menisci traveling upwardly with said strip and a portion of said coating metal at said menisci being returned to said bath by said finishing rolls, said finishing process comprising the steps of providing an enclosure which overlies at least said meniscus areas of said finishing rolls and said strip and having an exit slot for said strip, providing a pair of manifolds located to each side of said strip to introduce a non-oxidizing atmosphere into said enclosure and to direct said atmosphere toward said menisci where said portion of said coating metal travels upwardly with said strip and said portion of said coating metal returns to said bath, to shroud said menisci therewith, maintaining said atmosphere at a positive pressure within said enclosure, and withdrawing said strip from said enclosure.

4,444,815

WATER PERMEABLE GROUND COVERING FOR OPEN SPACES

Hans-Joachim Friedrich, Auenwald, Fed. Rep. of Germany, assignor to J. F. Adolff AG, Backnang, Fed. Rep. of Germany

Continuation of Ser. No. 367,519, Apr. 12, 1982, abandoned. This application Jun. 7, 1983, Ser. No. 502,045
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1981, 3116231
Int. Cl.³ B32B *3/02*
U.S. Cl. 428—17 **6 Claims**



1. A ground covering for open areas, and particularly adapted for use as a covering for sports and play areas, comprising a layer of artificial grass, having an underside, an upper surface of pile threads and a filling of granular material such as sand or the like disposed between said threads; the free ends of said pile threads projecting above said granular material in the normal position of covering use; said layer of artificial grass in said ground covering being water permeable and also comprising a gridlike web carrying said pile threads at its upper surface and defining open spaces for draining water reaching said upper surface therethrough; said web also having projections on its underside; bonding means at least partially coating said projections, and a filter mat formed of fleece or felt bonded to said coated projections by said bonding means; said filter mat having passageways through the thickness thereof for permitting ready passage of water therethrough; said filter mat preventing passage of said granular material of the artificial grass layer whereby said ground covering is water permeable and said granular material is retained by the filter mat.

4,444,816

RADIATION CROSS-LINKING OF POLYAMIDES

James A. Richards, Cupertino, and Ronald L. Dieck, Sunnyvale, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 212,483, Dec. 3, 1980, abandoned. This application Nov. 23, 1981, Ser. No. 324,222
Int. Cl.³ C08F *8/00, 283/04;* C08G *18/00;* C08L *77/00*
U.S. Cl. 428—36 **31 Claims**

1. A heat-recoverable article composed of a radiation cross-linked polymeric composition which has an M_{100} value above its melting point of at least 30 psi and which comprises
(a) a cross-linked organic polymer component which comprises at least 80% by weight of at least one polyamide consisting essentially of monomer units which are linked to each other through amide linkages, at least 25% by weight of said monomer units having the formula

$$-NH-(CH_2)_p-CO-$$

where p is 11 or 12; and
(b) the residue of an unsaturated radiation cross-linking agent used in the radiation cross-linking of said polymer component.

15. A tube according to claim 14 which has on its inner surface a coating of a material which flows at the recovery temperature of the article.

18. A process for the manufacture of a cross-linked polymeric article which comprises the steps of
(1) melt-shaping a polymeric composition comprising
(a) an organic polymer component which comprises at least 90% by weight of at least one polyamide consisting essentially of monomer units which are linked to each other through amide linkages, at least 25% by weight of said monomer units having the formula

$$-NH-(CH_2)_p-CO-$$

where p is 11 or 12; and
(b) an unsaturated radiation cross-linking agent for said polymer; and
(2) irradiating the shaped article prepared in step (1) to effect cross-linking thereof to a level such that the article has an M_{100} value above its melting point of at least 30 psi.

4,444,817

LAMINAR ARTICLES OF POLYOLEFIN AND A CONDENSATION POLYMER

Pallatheri M. Subramanian, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 241,051, Mar. 4, 1981, which is a continuation-in-part of Ser. No. 161,451, Jun. 20, 1980, abandoned, Division of Ser. No. 18,057, Mar. 6, 1979, abandoned. This application Sep. 29, 1982, Ser. No. 427,411
Int. Cl.³ D02G *3/00;* B32B *27/34, 27/08*
U.S. Cl. 428—36 **15 Claims**

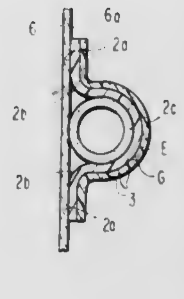
1. A laminar, shaped, article comprising a combination of polyolefin, a condensation polymer incompatible with the polyolefin, and an alkylcarboxyl-subsituted polyolefin wherein the polyolefin is present in the article as a continuous matrix phase and the condensation polymer is present in the article, as a discontinuous distributed phase in the form of a multitude of thin, substantially two-dimensional, parallel and overlapping layers of material embedded in the continuous phase and the alkylcarboxyl-substituted polyolefin is present between the layers and adheres the layers together.

4,444,818

REINFORCING ADHESIVE SHEETS

Takashi Tominaga; Toshihiko Ariyoshi, and Eishi Asoshina, all of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 31, 1983, Ser. No. 462,178
Claims priority, application Japan, Jan. 30, 1982, 57-13693
Int. Cl.³ B32B *5/20*
U.S. Cl. 428—36 **18 Claims**



1. A reinforcing adhesive sheet comprising a thermosetting resin sheet-shaped prepreg with a reinforcing material embedded therein, and a flattened tubular material provided on one side of the prepreg, said flattened tubular material being capable of nearly recovering the original tubular form on heating and being narrower in width than the prepreg.

4,444,819

THERMOSENSITIVE RECORDING MATERIAL

Keiichi Maruta, and Yukihiro Yuyama, both of Numazu, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 24, 1982, Ser. No. 352,605
Claims priority, application Japan, Mar. 5, 1981, 56-31457
Int. Cl.³ B41M *5/18*
U.S. Cl. 346—209 **19 Claims**

1. A thermosensitive recording material comprising, in successive layers:
a support material;
a thermosensitive coloring layer formed on the front side of said support material, said thermosensitive coloring layer comprising a leuco dye and an acidic material, said acidic material being capable of causing said leuco dye to become colored when heat is applied thereto; and
a protective layer formed on the front side of said thermosensitive coloring layer, said protective layer having a thickness of from 0.5 to 15 μm, said protective laye comprising polyvinyl alcohol having a saponification ratio in the range of from 70% to 85%.

4,444,820

HIGH DENSITY INFORMATION DISC LUBRICANTS

Pabitra Datta, Cranbury, and Eugene S. Poliniak, Willingboro, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 22, 1983, Ser. No. 468,587
Int. Cl.³ G11B *3/70;* B32B *3/02*
U.S. Cl. 428—64 **3 Claims**

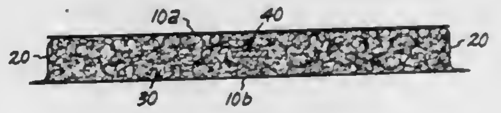
1. In a capacitive electronic disc having a methyl alkyl siloxane lubricant coating thereon, the improvement wherein said lubricant includes an effective amount of 9-phenylstearyl alcohol as a dopant.

4,444,821

VACUUM THERMAL INSULATION PANEL

James R. Young, Schenectady, N.Y., and Raymond M. Schreck, Louisville, Ky., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 1, 1982, Ser. No. 438,210
Int. Cl.³ B32B *1/04, 7/02*
U.S. Cl. 428—69 **9 Claims**

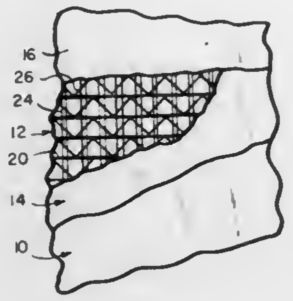


1. A thermal insulation panel comprising:
a first panel wall comprising a laminated structure of plastic and metal foil, said metal foil layer at least 0.7 mils thick, said first wall being substantially impermeable to atmospheric gases;
a second panel wall comprising a laminated structure of plastic and metal foil, said metal foil layer at least 0.7 mils thick, said second wall also being substantially impermeable to atmospheric gases, said first and second panel walls having approximately the same dimensions;
a plastic edge strip without metal foil, sealably joined to each of said first and second panel walls along the edges of said walls, said edge strip possessing a gas permeation barrier coating, the space between said edge strip and said panel walls being evacuated; and
an insulation material disposed within said volume and functioning to maintain such panel walls in a spaced apart relation under vacuum conditions within said volume.

4,444,822
SAILCLOTH

Brian P. Doyle, Natick, and John C. Sparkman, Charlestown, both of Mass., assignors to Howe & Bainbridge, Boston, Mass.

Filed Mar. 21, 1983, Ser. No. 477,154
Int. Cl.^{3} B32B *5/12*
U.S. Cl. 428—109 **17 Claims**



1. A sailcloth comprising at least two coextensive plies of flexible material united face-to-face throughout their entire interfaces by a layer of synthetic resin, wherein one ply comprises a system of two layers of spaced, parallel strands wherein the strands in one layer cross the strands in the other layer and wherein the strands in each layer are undeviating and unidirectional and a knit strand tying the crossing strands in the two layers to each other and wherein the other ply is a continuous film of dimensionally stable synthetic resin.

4,444,823
FIBER REINFORCED COMPOSITE ARTICLE USING MODIFIED POLYIMIDE ADHESIVE

John Gagliani, 6280 Lance Pl., San Diego, Calif. 92120, and John V. Long, 1756 Lexington Pl., El Cajon, Calif. 92021

Division of Ser. No. 423,801, Sep. 27, 1982. This application Jun. 10, 1983, Ser. No. 492,560
Int. Cl.^{3} B32B *5/12*
U.S. Cl. 428—113 **8 Claims**

1. A high strength fiber reinforced composite article produced from the method which comprises the steps of:
- preparing an adhesive mixture by mixing an aromatic tetracarboxylic acid dianhydride with an oxime in a mole ratio of oxime to tetracarboxylic acid dianhydride between about 0.01:1 and 1:1 to produce an N-substituted aliphatic imide, dissolving said imide in a solvent, adding thereto a diamine and adding to the mixture an aliphatic tetracarboxylic acid dianhydride either before or after the mixture is dissolved in said solvent, said solvent is a reactive solvent esterifying agent;
- soaking at least two woven fabric or mat sheets in said adhesive mixture;
- drying the soaked sheets of woven fabric or mat sheets at a temperature range of 100° to 150° f. to remove said solvent; and
- stacking said sheets in a mold and applying a pressure of about 5 to 100 psi at a temperature in the range of 300°–450° f. for 30 to 120 minutes.

4,444,824
PROTECTIVE PACKAGING MATERIAL

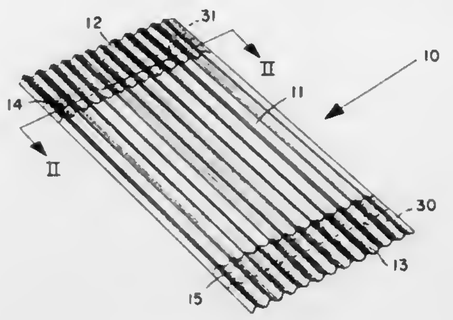
David S. Collingwood, 16 Simpson Rd., Ardmore, Pa. 19003

Filed Mar. 15, 1983, Ser. No. 475,547
Int. Cl.^{3} B32B *3/28, 3/02*
U.S. Cl. 428—161 **3 Claims**

1. A high strength protective packaging material for packaging an object comprising:

a. a sheet of multiple ply laminated formed paper board having a plurality of flutes said sheet having at least one edge substantially perpendicular to the direction of the flutes; and

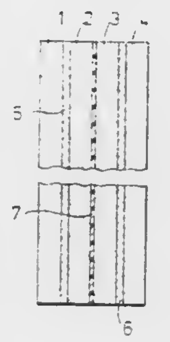
b. flexible sheet material, attached to and following the contours of the sheet of laminated formed paper board, extending beyond said at least one paper board sheet edge at a distance sufficient to tie off the flexible sheet material once the protective packaging material is positioned around the object said attachment being attained by means of a substantially continuous bonding layer.



4,444,825
FIRE-SCREENING PANEL

Robert Vanderstukken, Ransart, and Marcel De Boel, Chatelet, both of Belgium, assignors to Glaverbel, Brussels, Belgium

Filed Aug. 23, 1982, Ser. No. 410,861
Claims priority, application United Kingdom, Aug. 28, 1981, 8126343
Int. Cl.^{3} B32B *17/06*
U.S. Cl. 428—215 **34 Claims**



1. A fire-screening glazing panel comprising a plurality of sheets of vitreous material and at least two spaced layers of intumescent material each sandwiched between sheets of said vitreous material, with at least two of said plurality of vitreous sheets being internal vitreous sheets sandwiched between said at least two intumescent layers, said at least two internal vitreous sheets being laminated together without intervening intumescent material.

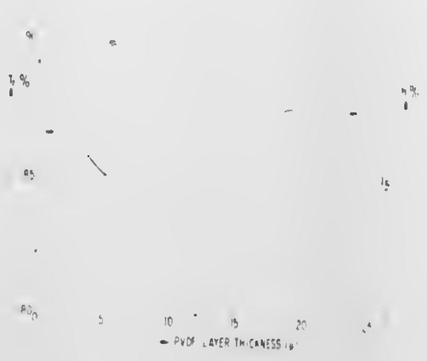
20. A method of manufacturing a fire-screening glazing panel, said method comprising: forming first panels each including an intumescent layer sandwiched between two vitreous sheets and bonding the first panels together to form a second panel, said bonding step including assembling and laminating together, without intervening intumescent material, exposed vitreous sheets of the first panels so that the laminated vitreous sheets become interior sheets of the resulting second panel.

4,444,826
EXTRUSION LAMINATED PRODUCT

Tohru Sasaki; Hiroyuki Endoh, and Takeshi Nakadai, all of Fukushima, Japan, assignors to Keueha Kagaku Kogyo K.K., Tokyo, Japan

Filed Mar. 1, 1982, Ser. No. 353,652
Claims priority, application Japan, Feb. 28, 1981, 56-27632
Int. Cl.^{3} B32B *27/00*
U.S. Cl. 428—216 **9 Claims**

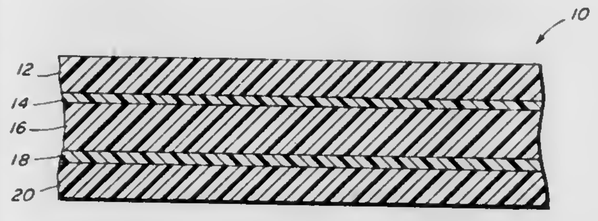
1. An extrusion laminated product comprising at least three layers, wherein at least one of the surface layers comprises polyvinylidene fluoride and has a thickness of from 0.5 to 13μ, and an adhesive layer having a thickness of from 4 to 20μ which is provided between the surface layer and other thermoplastic resin layers and comprises a polymer comprising at least one of methyl methacrylate and ethyl methacrylate as a major component or a composition containing said polymer as a major component and from 0.3 to 30 phr of an ultraviolet absorber.



4,444,827
OPAQUE LAMINATE SHEET STRUCTURE

Nareshwar Swaroop, Mount Vernon, Ohio, assignor to Ludlow Corporation, Needham Heights, Mass.

Filed Jun. 24, 1982, Ser. No. 391,525
Int. Cl.^{3} B32B *15/08, 27/08;* **B65D** *65/40*
U.S. Cl. 428—216 **7 Claims**



1. An opaque laminate sheet structure free of cross-lamination structure and comprising a rubber-modified polyolefin layer sandwiched between two carbon-black bearing layers of linear low density, or linear medium density, polyethylene wherein each layer of linear, low density polyethylene or linear, medium density polyethylene is laminated to said rubber-modified polyethylene with a coating of a laminating resin selected from the group of a low density polyethylene, a copolymer of polyethylene with vinyl acetate or acrylic acid, a two component thermosetting adhesive and a medium density polyethylene.

4,444,828
MULTILAYER TRASH BAG FILM

John Anthony, Downers Grove, and Jerome T. Horner, Indian Head Park, both of Ill., assignors to Union Carbide Corporation, Danbury, Conn.

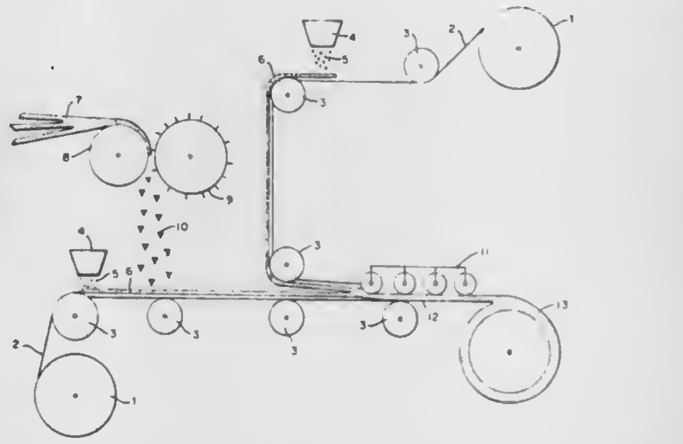
Filed Jan. 28, 1982, Ser. No. 343,549
Int. Cl.^{3} B32B *7/02, 27/08, 3/20*
U.S. Cl. 428—218 **16 Claims**

1. A multilayer film having a first outer layer consisting essentially of low pressure, low density polyethylene, a core layer consisting essentially of low pressure, low density polyethylene, and a second outer layer consisting essentially of high pressure, low density polyethylene, said low pressure, low density polyethylene having a melt index of between about 0.5 and about 3.0 decigrams per minute and a density of between about 0.916 and about 0.930 grams per cubic centimeter, and said high pressure, low density polyethylene having a melt index of between about 0.5 and about 5.0 decigrams per minute and a density of between about 0.916 and about 0.930 grams per cubic centimeter.

4,444,829
POLYAMIDE RELEASE FILM FOR SHEET MOLDING COMPOUND

P. Stuart Bollen, Alburn; Alfieri Degrassi, Pottsville, both of Pa., and William Sacks, Gillette, N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 83,502, Oct. 10, 1979, abandoned. This application Dec. 22, 1980, Ser. No. 218,888
Int. Cl.^{3} C08L *77/00*
U.S. Cl. 428—220 **10 Claims**



1. A polyamide film for use in the manufacture of sheet molding compound wherein said film is of low crystallinity and comprised of a blend of a polyamide selected from the class consisting of polyepsiloncaprolactam, polyhexamethylene adipamide, or mixtures thereof, the polyamide having a crystallinity of less than 35%, and about 10 to 30 weight percent of the blend of a polyolefin component, or copolymer thereof, the polyolefin having a crystallinity of less than 50%, wherein said film is about 0.5 to 5 mils thick and exhibits (a) a Graves tear strength of at least about 400 grams in the longitudinal direction, as determined by ASTM-D-1004-66; and (b) a styrene permeability of below about 200×10^{-9} g.-cm/cm^2-hr.

10. A polyamide film for use in the manufacture of sheet molding compound, said film comprising a blend of:

(a) polyepsiloncaprolactam, polyhexamethylene adipamide or mixtures thereof, having a crystallinity of between 10–25% and being present in an amount of 85–90 weight percent;

(b) an ethylene/vinyl acetate copolymer having a crystallinity of 20–50% and being present in concentrations of 10–15 weight percent; and

(c) titanium dioxide present in concentrations of between 0.5 and 1.5 weight percent of the blend; said film exhibiting: (i) a Graves tear strength of at least about 400 grams in the longitudinal direction, as determined by ASTM D-1004-66; (ii) a styrene permeability of below about 200×10^{-9} g.cm/cm^2-hr.; and (iii) a peelability such that after maintaining said sandwich structure at 26°–32° C. for 3 days, less than 5 percent of the contacting surface of said film has sheet molding compound adhered thereto, after peeling.

4,444,830
METHOD FOR PREPARING ABSORBENT FIBROUS FLUFF

Robert E. Erickson, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 4, 1982, Ser. No. 336,540
Int. Cl.^{3} D03D *3/00*
U.S. Cl. 428—246 **24 Claims**

1. A method for preparing a fibrous fluff of improved absorbency, said method comprising passing a base fluffing material through a zone wherein an aqueous solution of polymer which has been formulated into an absorbent composition is coated on the base fluffing material, the absorbent coated base fluffing material composite is then dried and finally disintegrated and

worked by mechanical means into a plurality of absorbent fluff fibers.

4,444,831

FLAME RETARDANT-SMOLDER RESISTANT TEXTILE BACKCOATING

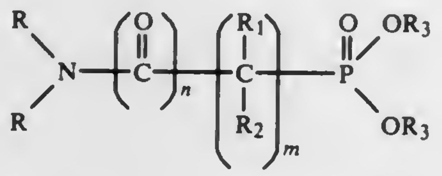
George J. Leitner, Peekskill, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 297,549, Aug. 31, 1981, Pat. No. 4,404,313. This application Apr. 25, 1983, Ser. No. 488,511

Int. Cl.³ B32B *7/00;* **B05D** *3/00;* **C08L** *61/28*

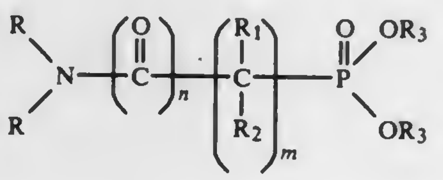
U.S. Cl. 428—262 **12 Claims**

1. A flame and smolder resistant textile article having a cured composition backcoated thereon, said composition comprising an effective amount of an amino-phosphonate ester of the formula:



in combination with a thermoset-nitrogen containing resin and a reactive latex copolymer compound wherein R is an alkyl, hydroxyalkyl or haloalkyl radical containing from 1 to 3 carbon atoms, R_1 and R_2 are alkyl radicals containing 1 to 6 carbon atoms or hydrogen, R_3 which may be the same or different is an alkyl, hydroxyalkyl, haloalkyl, alkoxyalkyl, or hydroxyalkoxyalkyl radical containing from 1 to 6 carbon atoms, the terminus of an alkylene forming a six-membered ring or halogenated analog, the terminus of an alkylene or alkyleneoxyalkylene bonded to a like phosphorus ester group, hydroxypolyoxyalkylene or hydroxy-substituted analogs thereof, n is an integer from 0–1 and m is an integer of 1–2.

7. A method of rendering textile material flame and smolder retardant comprising backcoating the material with a composition containing a thermosetting nitrogen-containing resin and a reactive latex copolymer compound in combination with an effective amount of an amino phosphonate ester having the formula:



wherein R is an alkyl or hydroxyalkyl radical containing from 1 to 2 carbon atoms, R_1 and R_2 are alkyl radicals containing 1 to 6 carbon atoms or hydrogen, R3 which may be the same or different is an alkyl, hydroxyalkyl, haloalkyl, alkoxyalkyl, or hydroxyalkoxyalkyl radical containing from 1 to 6 carbon atoms, the terminus of an alkylene or alkyleneoxyalkylene bonded to a like phosphorus ester group, hydroxypolyoxyalkylene or hydroxy-substituted analogs thereof, n is an integer from 0–1 and m if an integer of 1–2.

4,444,832

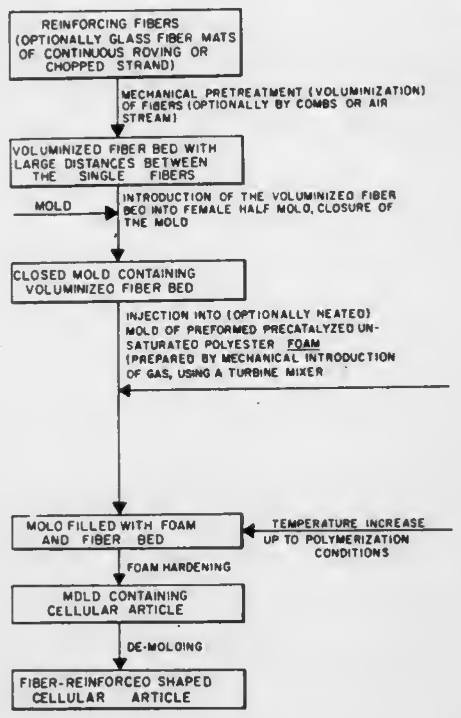
PROCESS FOR OBTAINING REINFORCED CELLULAR MATERIALS BASED ON UNSATURATED POLYESTER RESINS

Massimo Mazzola, Segni; Aldo Cipriani, Colleferro, and Giancarlo Carignani, Rome, all of Italy, assignors to Snia Viscosa S.p.A. - Societa' Nazionale Industria Applicazioni Viscosa, Milan, Italy

Continuation-in-part of Ser. No. 351,309, Feb. 22, 1982, abandoned, which is a continuatipn of Ser. No. 145,354, Apr. 30, 1980, abandoned. This application May 20, 1982, Ser. No. 380,129

Int. Cl.³ B29D *27/00*

U.S. Cl. 428—290 **13 Claims**


REINFORCING FIBERS (OPTIONALLY GLASS FIBER MATS OF CONTINUOUS ROVING OR CHOPPED STRAND)
MECHANICAL PRETREATMENT (VOLUMINIZATION) OF FIBERS (OPTIONALLY BY COMBS OR AIR STREAM)
VOLUMINIZED FIBER BED WITH LARGE DISTANCES BETWEEN THE SINGLE FIBERS
MOLD
INTRODUCTION OF THE VOLUMINIZED FIBER BED INTO FEMALE HALF MOLD, CLOSURE OF THE MOLD
CLOSED MOLD CONTAINING VOLUMINIZED FIBER BED
INJECTION INTO (OPTIONALLY HEATED) MOLD OF PREFORMED PRECATALYZED UNSATURATED POLYESTER FOAM (PREPARED BY MECHANICAL INTRODUCTION OF GAS, USING A TURBINE MIXER
MOLD FILLED WITH FOAM AND FIBER BED
TEMPERATURE INCREASE UP TO POLYMERIZATION CONDITIONS
FOAM HARDENING
MOLD CONTAINING CELLULAR ARTICLE
DE-MOLDING
FIBER-REINFORCED SHAPED CELLULAR ARTICLE

1. A method of producing reinforced cellular materials based on unsaturated polyester resins, said method comprising (1) injecting a fully mechanically preformed liquid foam of said polyester resin, obtained essentially by mechanical introduction of gas into said resin, into a closed mold containing reinforcing fibres, said fibers being voluminized to such an extent as to have in the mold not more than about 0.2 g of reinforcing fibers per cm³ of mold volume, the distance between the individual fibers being at least about 0.045 cm; and (2) subsequently cross-linking said foam in the mold, whereby a reinforced cellular material having a density of less than about 0.7 kg/l is obtained.

12. A cellular reinforced material of unsaturated polyester resin, produced by the process according to claim 1.

4,444,833

HEAT-TRANSFER RECORDING MEDIUM

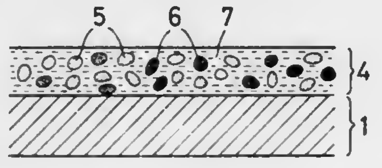
Haruhiko Moriguchi, and Takashi Ohmori, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 9, 1982, Ser. No. 356,542

Claims priority, application Japan, Mar. 13, 1981, 56-35247

Int. Cl.³ B41M *5/18*

U.S. Cl. 346—204 **12 Claims**



1. A heat-transfer recording medium, comprising: a substrate, and a two color transfer layer on the substrate, said two color transfer layer containing a solid heat-sensitive ink which melts or sublimates at a relatively low temperature and is transferred to a recording paper in a predetermined color, and a heat-sensitive color-forming ink dispersed in the solid heat-sensitive ink, which melts or sublimates at a relatively high temperature, and is transferred to the recording paper in a color different from said predetermined color, said color-forming ink comprising a colorless color former and a color developer wherein at least one of the color former and a color developer is encapsulated with microcapsules that melt at a relatively high temperature such that said microcapsules are transferred intact along with the melted or sublimated solid heat-sensitive ink when transfer takes place at said relatively low temperature.

4,444,834

LUBRICATED METALLIC SUBSTRATE

Addison B. Scholes, Muncie, Ind., and David L. Dollar, Greeneville, Tenn., assignors to Ball Corporation, Muncie, Ind.

Continuation of Ser. No. 661,436, Feb. 26, 1976, abandoned, which is a division of Ser. No. 570,346, Apr. 22, 1975, abandoned, which is a continuation-in-part of Ser. No. 382,980, Jul. 26, 1973, abandoned. This application Jan. 13, 1982, Ser. No. 339,093

Int. Cl.³ B32B *3/10, 15/20, 15/04*

U.S. Cl. 428—323 **5 Claims**

1. A new article of manufacture comprising:

an aluminum substrate havin two opposing metallic surfaces on respectively opposite sides thereof; and

substantially uniformly dispersed discrete particles of lubricating material having an average diameter of less than 10 microns, electrostatically spaced apart and distributed over at least one of said metallic surfaces so that from about 1 percent to about 15 percent of the surface is covered with lubricating material in an amount from 4 milligrams per square foot to about 24 milligrams per square foot by the process of forming the particles from a dielectric lubricating material, electrostatically charging said particles so that the charged particles mutually repel one another, maintaining a quiescent cloud of such charged particles adjacent said at least one of the metallic surfaces and depositing and distributing the particles on said surface while so charged substantially entirely by electrostatic forces.

4,444,835

MAGNETIC RECORDING MEDIUM

Fumio Togawa, Ohtsu, and Shigeo Aoyama, Ibaraki, both of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Filed Sep. 23, 1982, Ser. No. 422,139

Claims priority, application Japan, Sep. 24, 1981, 56-151469

Int. Cl.³ H01F *10/02*

U.S. Cl. 428—329 **2 Claims**

1. A magnetic recording medium which comprises a magnetic layer containing uniaxial anisotropic, acicular magnetic iron oxide particles having a particle size of not more than 0.3μ, said particles having a surface layer containing a major amount of cobalt formed thereon, said particles being oriented both in a vertical and a horizontal direction such that the residual magnetic flux of said magnetic recording medium is not less than 1000 gauss in both said vertical direction and said horizontal direction.

4,444,836

METAL PLATED POLYAMIDE ARTICLES

Ghazi M. A. Khattab, Succasunna, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 75,855, Sep. 17, 1979, which is a continuation-in-part of Ser. No. 935,044, Sep. 18, 1978, abandoned, which is a continuation-in-part of Ser. No. 849,146, Nov. 7, 1977, abandoned. This application Sep. 20, 1982, Ser. No. 420,431

Int. Cl.³ B32B *5/16*

U.S. Cl. 428—330 **10 Claims**

1. An article of manufacture comprising: a substrate having a surface, the substrate comprising a polyamide resin and about 5 to 60 weight percent, of a wollastonite filler, based on the total weight of the resin and filler, the wollastonite filler component which will not degrate thermal plastic resin and which is susceptible to attack by dilute acid solutions, there being minute anchors at or near the surface of the substrate, the anchors being 1–30 microns deep; and

a continuous layer of electrolessly platable metal adjacent to the surface of the substrate.

4,444,837

COATING METALS WITH PLASTISOLS HAVING CARBON DUST FILLERS

Rainer Blum, Ludwigshafen-Edigheim; Max Seitz, Münster-Wolbeck, and Friedrich Kaczinski, Münster, all of Fed. Rep. of Germany, assignors to BASF Farben + Fasern AG, Hamburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 106,859, Dec. 26, 1979, abandoned. This application Apr. 14, 1982, Ser. No. 368,309

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2855919

Int. Cl.³ B32B *9/00;* **C08F** *45/52*

U.S. Cl. 428—332 **5 Claims**

1. A method of coating untreated metals comprising applying to said untreated metals a plastisol comprising a dispersion of fine-particulate synthetic resin in plasticizers, said fine-particulate synthetic resin comprising a vinylchloride homopolymer, a coplymer of vinylchloride and another vinyl compound selected from the group consisting of vinylidene chloride, vinyl acetate or vinylpropionate and a mixture of said homopolymers and said copolymer, said plastisol having a specific gravity of about 1.1 to 1.3 and containing 9 to 90% by weight of a filler consisting essentially of coke dust, coal dust or mixtures thereof having a particle size of about 0.5 to 1000 microns and baking said plastisol at a temperature between 100° and 250° C.

4,444,838

MAGNETIC RECORDING MEDIUM

Yasuyuki Yamada; Goro Akashi; Nobuo Tsuji, and Yoshito Mukaida, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 10, 1982, Ser. No. 387,129

Claims priority, application Japan, Jun. 10, 1981, 56-89114

Int. Cl.³ G11B *5/70*

U.S. Cl. 428—336 **15 Claims**

1. A magnetic recording medium comprising:

a support base; and

a magnetic layer positioned on the support base, the magnetic layer comprising:

ferromagnetic fine powder; and

a binder in which the fine powder is dispersed, wherein the binder comprises (a) a cellulose derivative having residual OH groups in a proportion of 7.5 to 40% and a mean polymerization degree of 50–800, (b) a diolefin or olefin series synthetic rubber capable of exerting a plasticizing effect on the cellulose derivative and (c) a polyisocyanate compound.

4,444,839
WATER-SOLUBLE LABEL, A PROCESS FOR ITS PREPARATION AND ITS USE

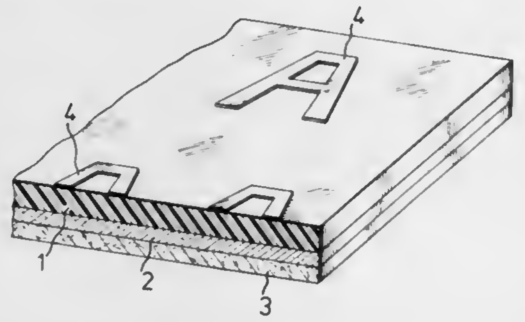
Joachim Dudzik; Winfried Dudzik, both c/o Hoechst Aktiengesellschaft, D-6230 Frankfurt am Main, Fed. Rep. of Germany; Wolfgang Zimmermann, Kelkheim, and Günther Pospich, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft; Joachim Dudzik and Winfried Dudzik, all of Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 2, 1981, Ser. No. 308,235

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1980, 3037640

Int. Cl.^{3} B32B *27/08;* **B41M** *3/12;* **C09J** *7/02;* **G09F** *3/00*

U.S. Cl. 428—336 **11 Claims**



1. A water-soluble label comprising
a top layer comprised of polyvinyl alcohol having a viscosity of from 4 to 70 mPa.s, an ester number of 10 to 250 mg KOH/g and a thickness of from 10 to 150 μm, said top layer adapted to be printed or inscribed thereon; and
a water-soluble adhesive layer which is adjacent said top layer is a vinyl polymer and has a weight per unit area of from 5 to 25 g/m^2.

4,444,840
CALENDERED AES FILM

John M. Wefer, Newtown, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed Aug. 9, 1982, Ser. No. 406,598

Int. Cl.^{3} B32B *27/32*

U.S. Cl. 428—339 **3 Claims**

1. A laminate comprising a thermoplastic substrate having on at least one surface a layer of calendered film having a thickness of from 4 to 50 mils, comprising a graft copolymer composition of resin forming material on an olefin copolymer rubber spine, the rubber content of the composition being from 25% to 40% by weight, and the composition containing 5% to 20% by weight of pigment, the said resin forming material being styrene and acrylonitrile and the said olefin copolymer rubber being ethylene-propylene copolymer or ethylene-propylene-non-conjugated diene terpolymer.

4,444,841
EXTRUDED AES FILM

Robert D. Wheeler, Fairfield, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed Aug. 9, 1982, Ser. No. 406,581

Int. Cl.^{3} B32B *15/08*

U.S. Cl. 428—339 **3 Claims**

1. A laminate comprising a cellulosic or metal base having on at least one surface a layer of blown extruded AES film, containing 18–28% rubber, having a thickness of from 1 to 10 mils.

4,444,842
MAGNETIC RECORDING MEDIUM

Nobutaka Yamaguchi; Nobuo Tsuji; Yasutoshi Okuzawa; Norio Nasu, and Masaaki Fujiyama, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 16, 1982, Ser. No. 358,564

Claims priority, application Japan, Mar. 19, 1981, 56-40156

Int. Cl.^{3} G11B *5/72*

U.S. Cl. 428—340 **8 Claims**

1. A magnetic recording medium, comprising:
a non-magnetic support base having a first and second side;
a magnetic layer positioned on said first side of said non-magnetic support base; and
a silicone oil layer consisting essentially of a high-viscosity silicone oil having a viscosity of at least 6,000 centistokes at 25° C., formed on said second surface of said non-magnetic support base.

4,444,843
SELF-BONDING MAGNET WIRES

Masayoshi Miyake; Isao Ueoka, and Munetaka Kawaguchi, all of Aichi, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jul. 26, 1982, Ser. No. 401,510

Claims priority, application Japan, Jul. 24, 1981, 56-116548

Int. Cl.^{3} B32B *27/00;* **H01B** *7/00*

U.S. Cl. 428—383 **4 Claims**

1. A self-bonding magnet wire, comprising:
an insulated conductor; and
a coating over said insulated conductor, the coating being formed by applying and baking an enamel composition consisting essentially of a polyhydroxyether polymer having a straight chain alkyl group of at least 21 carbon atoms connected to at least one molecule of the polymer at a terminal position or to a side chain of the polymer, said straight chain alkyl group being present in the polymer in an amount of from 0.3 to 3.5% by weight.

2. A self-bonding magnet wire, comprising:
an insulated conductor; and
a coating over said insulated conductor, the coating being formed by applying and baking an enamel composition consisting essentially of a sulfonated polyhydroxyether polymer having a straight chain alkyl group of at least 21 carbon atoms connected to at least one molecule of the resin at a terminal position or to a side chain of the polymer, said straight chain alkyl group being present in the polymer in an amount of from 0.3 to 3.5% by weight.

4,444,844
THERMOSENSITIVE RECORDING MATERIAL

Keishi Kubo, Yokohama, and Masayuki Shoshi, Numazu, both of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

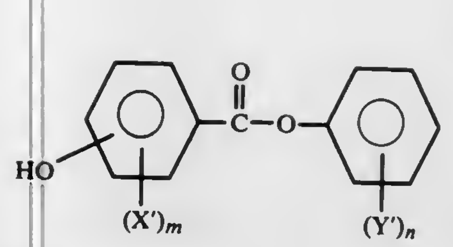
Filed Jun. 4, 1982, Ser. No. 385,246

Claims priority, application Japan, Jun. 10, 1981, 56-88117

Int. Cl.^{3} B41M *5/18*

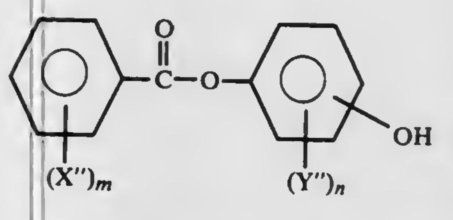
U.S. Cl. 346—208 **3 Claims**

1. A thermosensitive recording material comprising a substrate, a thermosensitive color-forming layer on said substrate, said thermosensitive color forming layer consisting essentially of a colorless or light-colored leuco-dye, at least one kind of developer selected from the group consisting of compounds represented by the following general formulas (A-1), (A-2) and (A-3), at least one kind of thermosensitivity promoter selected from the group consisting of compounds represented by the following general formulas (B-1;L) and (B-2), and a binder:



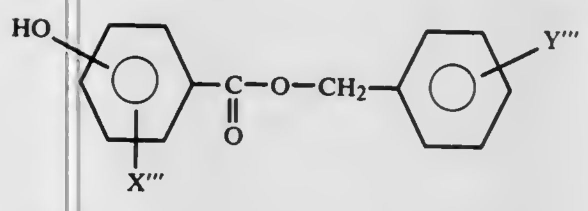
General formula (A-1)

wherein X′ represents halogen, nitro or hydrogen, Y′ represents hydrogen, lower alkyl, lower alkoxy, halogen, hydroxyl, benzyl, benzoyl, carboxyl, phenoxy, acetyl, allyl or nitro, and m and n each is an integer of 0, 1, 2 or 3,



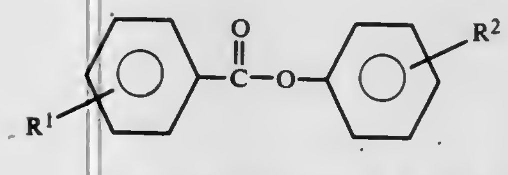
General formula (A-2)

wherein X″ represents hydrogen, nitro or hydroxyl, Y″ represents hydrogen, lower alkyl, lower alkoxy, halogen, nitro or hydroxyl, and m and n each is an integer of 0, 1, 2 or 3,



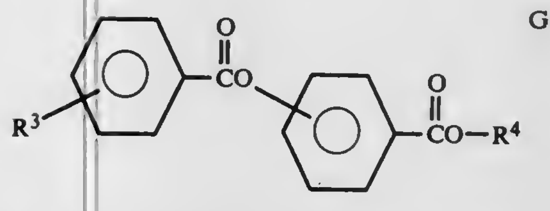
General formula (A-3)

wherein X‴ represents hydrogen, methyl, nitro or halogen, Y‴ represents hydrogen, methyl, nitro, hydroxyl or halogen,



General formula (B-1)

wherein R^1 represents hydrogen, alkyl, alkoxy, halogen, nitro, cyano, acetoxy, substituted or unsubstituted benzoyloxy, substituted or unsubstituted benzoxy, substituted or unsubstituted aralkyl or substituted or unsubstituted aralkyloxy, and R^2 represents hydrogen, alkyl, alkoxy, halogen, nitro, cyano, acetoxy, substituted or unsubstituted benzoyloxy, substituted or unsubstituted benzoxy, substituted or unsubstituted aralkyl, substituted or unsubstituted aralkyloxy, formyl, arylketone or aryl, and



General formula (B-2)

wherein R^3 represents hydrogen, alkyl, alkoxy or halogen, and R^4 represents alkyl, substituted or unsubstituted aralkyl, or substituted or unsubstituted phenyl.

4,444,845
PROCESS FOR THE PRODUCTION OF COATINGS AND THE USE OF N,N′,N″-TRIS-(2-HYDROXYETHYL)-ISOCYANURATE AS ADDITIVES FOR POLYURETHANE BASED WIRE LACQUERS

Willi Dünwald, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 13, 1982, Ser. No. 407,866

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1981, 3133571

Int. Cl.^{3} B32B *27/00;* **B05D** *3/02*

U.S. Cl. 428—422.8 **10 Claims**

1. A process for the production of a coating which comprises coating a heat-resistant substrate with a coating compound in which the binder is a two-component system comprising
  (i) a polyisocyanate component wherein at least about 50% of the isocyanate groups are blocked with blocking agents and
  (ii) a component mixture comprising compounds having isocyanate reactive groups,
at an equivalent ratio of blocked and unblocked isocyanate groups to isocyanate reactive groups of about 0.1:1 to 2.8:1, and hardening the resulting coating at elevated temperatures, characterized in that binder component (ii) contains about 0.1 to 60 equivalent percent, based on all the groups capable of undergoing an addition reaction with isocyanate groups, of N,N′,N″-tris-(2-hydroxyethyl)-isocyanurate.

2. The process according to claim **1**, wherein polyisocyanate component (i) comprises an organic polyisocyanate in the molecular weight range of from about 174 to 1000, not including the molecular weight of the blocking agent, and wherein the isocyanate groups are exclusively aromatically-bound and completely blocked with blocking agents for isocyanate groups.

6. The process of claim **1** or **2** wherein said substrate is a metal wire.

4,444,846
THERMALLY-RESPONSIVE POLYMERIC MATERIALS

Denis J. Zalucha, Waterford; Frederick H. Sexsmith, Erie; Dennis D. Howard, Girard, all of Pa., and Michael L. Nulph, Chula Vista, Calif., assignors to Lord Corporation, Erie, Pa.

Division of Ser. No. 326,628, Dec. 2, 1981, Pat. No. 4,409,383. This application Jul. 22, 1983, Ser. No. 516,061

Int. Cl.^{3} B32B *17/06, 27/06, 27/40*

U.S. Cl. 428—425.6 **3 Claims**

1. An article comprising a first and second optically clear substrate, said first and second substrates being the same or different material and each being selected from the group consisting of glass and organic plastic materials, there being disposed between said substrates a solid polymeric material containing at least 2 percent by weight of water, said solid polymeric material being transparent at a first temperature and less transparent at a second temperature, said second temperature being different from and higher than said first temperature, said solid polymeric material being capable of returning to its more transparent state when its temperature is adjusted to said first temperature, said solid polymeric material comprising the reaction product obtained by curing in the presence of moisture at least one first organic compound, having at least one reactive isocyanate group, said isocyanate group-containing compound being selected from the group consisting of, (1) such compounds having at least one hydrophilic center consisting essentially of ethylene oxide units having the structure $(CH_2CH_2O)_n$, wherein n is at least 2, (2) such compounds which do not contain such hydrophilic centers, and (3) mixtures of such compounds (1) and (2); providing that, when said first compound does not contain such hydrophilic centers, such first compound is cured in the presence of at least one second compound which is characterized by the presence of at least one hydrophilic center consisting essentially of ethylene

oxide units having the structure $(CH_2CH_2O)_n$, wherein n is at least 2.

4,444,847
ELECTROSTATIC RECORD MATERIAL

Hironari Fujioka, Takatsuki, and Hisanori Yagi, Nishinomiya, both of Japan, assignors to Kanzaki Paper Manufacturing Company, Limited, Tokyo, Japan

Filed Jun. 18, 1980, Ser. No. 160,675

Claims priority, application Japan, Jun. 25, 1979, 54/80481

Int. Cl.^{3} G01D *15/24, 15/26;* **G03G** *16/00;* **B32B** *27/30*

U.S. Cl. 428—522 **3 Claims**

1. An electrostatic record material consisting essentially of an electroconductive base sheet and a record layer formed on the base sheet and consisting essentially of an insulating resin, the record material being characterized in that the base sheet consists of a support, having coatings of (i) an electroconductive layer comprising an ionic-conductive substance as its main electroconductive component and having a surface resistivity of 10^5 to 10^{11} ohms under conditions of 10–80% RH (ii) an electroconductive layer comprising an electronic-conductive substance as its main electroconductive component said electronic-conductive substance having a specific resistivity of 10^{-2} to 10^{-3} ohm-cm, said electroconductive layers being between the support and record layer.

4,444,848
ADHERENT METAL COATINGS ON RUBBER-MODIFIED EPOXY RESIN SURFACES

Daniel J. Shanefield, Princeton Township, Mercer County, and Fred W. Verdi, Lawrence Township, Mercer County, both of N.J., assignors to Western Electric Co., Inc., New York, N.Y.

Filed Jan. 4, 1982, Ser. No. 337,054

Int. Cl.^{3} C23F *1/02*

U.S. Cl. 428—624 **6 Claims**

1. An article of manufacture comprising:
(a) a substrate having a surface of a rubber-modified epoxy resin, said surface having any weak boundary layer thereon essentially removed;
(b) a thin adherent base metal film selected from the group consisting of Cr, Ni, Ni-V alloy, Pd, Pt, or Ti on said surface, said metal having been vacuum deposited on the surface; and
(c) a thicker primary metal deposited over the base metal film said primary metal having a peel strength of at least 8 pounds/inch.

4,444,849
SCRATCH RESISTANT ANTISTATIC SOUND AND PICTURE CARRIER AND PROCESS FOR ITS PRODUCTION

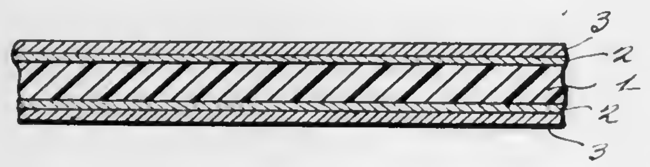
Axel Breuninger, Lorch; Richard Pollmann, and Peter Scheyrer, both of Schwabisch Gmund, all of Fed. Rep. of Germany, assignors to Gesellschaft fur Oberflachentechnik mbH, Gmund, Fed. Rep. of Germany

Filed Feb. 18, 1982, Ser. No. 349,824

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1981, 3106573; Feb. 21, 1981, 3106544

Int. Cl.^{3} H04N *1/28;* **B32B** *3/02*

U.S. Cl. 428—626 **21 Claims**



1. A scratch resistant, antistatic sound or picture carrier made of an inner synthetic resin layer and having applied to the surfaces thereof either (1) outer layers consisting of an iron-chromium-nickel alloy, containing 10 to 25 weight % chromium, 5 to 20 weight % nickel, balance iron or (2) having applied thereto intermediate layers consisting essentially of either (1) an iron-chromium-nickel alloy consisting of 10 to 25 weight % chromium, 5 to 20 weight % nickel, balance iron or (b) an iron-chromium alloy and outer layers consisting essentially of a noble metal or a noble metal alloy coating said intermediate layers, the outer layer in each of (1) or (2) having a thickness of 0.2 to 0.6μ.

4,444,850
MAGNETIC RECORDING MEDIUM WITH TITANATE COUPLING AGENT

Akihiro Matsufuji; Hideomi Watanabe, and Mashahi Aonuma, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 5, 1981, Ser. No. 308,720

Claims priority, application Japan, Oct. 3, 1980, 55-138427

Int. Cl.^{3} B32B *33/00*

U.S. Cl. 428—694 **6 Claims**

1. A magnetic recording medium, comprising:
a non-magnetic base; and
an overlying magnetic coating on said base, said coating comprising ferromagnetic particles dispersed in a binder, wherein said coating further contains a mono- or bifunctional titanate coupling agent, and wherein said ferromagnetic particles are reacted with a non-sulfur-containing titanate coupling agent prior to incorporation of said particles in said binder.

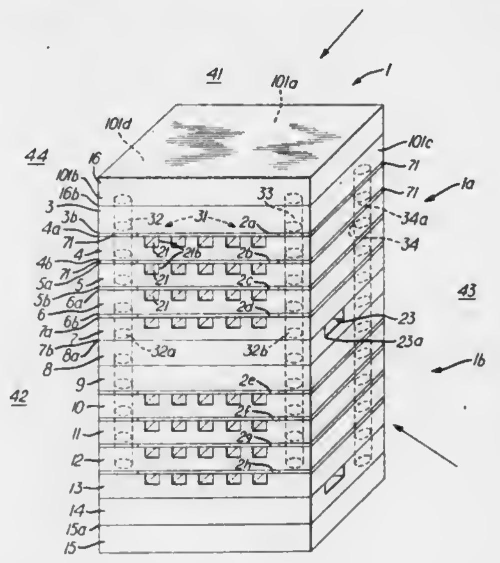
4,444,851
FUEL CELL STACK

Hansraj C. Maru, Brookfield Center, Conn., assignor to Energy Research Corporation, Danbury, Conn.

Filed Jun. 28, 1982, Ser. No. 392,779

Int. Cl.^{3} H01M *8/04*

U.S. Cl. 429—26 **30 Claims**



1. A fuel cell system comprising:
a fuel cell stack including:
a number of fuel cells, each including a first passage means having first input and output ports for conveying a first process gas through the cell and a second passage means having second input and output ports for conveying a second process gas through the cell, said first and second passage means being disposed in opposition to support countercurrent flow of said first and second process gases;
first manifolding means internal of said fuel cells and common to said first passages for conveying said first process gas.
a number of third passage means for conveying a cooling gas through said stack.

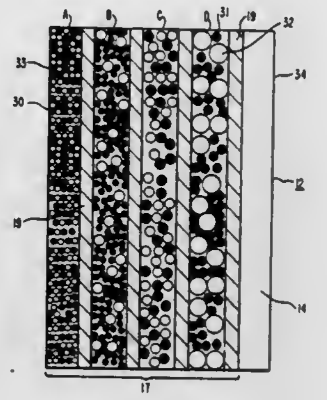
4,444,852
SIZE AND WEIGHT GRADED MULTI-PLY LAMINAR ELECTRODES

Chia-Tsun Liu, Monroeville; Brian G. Demczyk, Rostrover Township, Westmoreland County, and Irvin R. Rittko, Murrysville Borough, all of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 412,369, Aug. 27, 1982. This application Nov. 18, 1982, Ser. No. 442,706

Int. Cl.^{3} H01M *4/00*

U.S. Cl. 429—29 **13 Claims**



1. An electrode comprising:
(a) a porous backing sheet; and
(b) a catalytically active layer attached to said porous backing sheet having an electrolyte permeable side and a backing sheet contacting side, said catalytically active layer comprising catalyst and a mixture of hydrophobic agglomerates and hydrophilic agglomerates; wherein the particle size of the hydrophobic agglomerates and the hydrophilic agglomerates increases from the electrolyte permeable side to the backing sheet contacting side, and the weight percent of hydrophobic agglomerates increases from the electrolyte permeable side to the backing sheet contacting side.

13. In a metal/air battery comprising a metal electrode selected from the group consisting of iron, zinc cadmium, and aluminum, at least one air electrode spaced apart from said metal electrode, and an alkali electrolyte in contact with said metal and air electrode, the improvement consisting of the air electrode which comprises:
(a) a hydrophobic sheet; and
(b) a catalytically active layer laminated to said hydrophobic sheet having a highly electrolyte permeable side and a hydrophobic sheet contacting side, said catalytically active layer comprising a homogeneous mixture of active hydrophobic agglomerates and active hydrophilic agglomerates, with at least two porous metallic current collectors disposed therein; said active hydrophobic agglomerates comprising oxygen absorption/reduction carbon particles having a total surface area of from about 30 to about 300 square meters per gram; catalyst; low oxygen overvoltage material; and fluorocarbon bonding/nonwetting material, and said active hydrophilic agglomerates comprising oxygen absorption/reduction carbon particles having a total surface area of from about 30 to about 300 square meters per gram; catalyst; low oxygen overvoltage material; fluorocarbon bonding/nonwetting material; and an organic dispersion agent that is effective to reduce liquid surface tension between the hydrophilic agglomerates; wherein catalyst is disposed equally throughout the active layer, the particle size of the hydrophobic agglomerates and the hydrophilic agglomerates increases from the highly electrolyte permeable side to the hydrophobic sheet contacting side and the weight ratio of active hydrophilic material:active hydrophobic material varies from about 1:0.2 at the highly electrolyte permeable side to about 1:5 at the hydrophobic sheet contacting side.

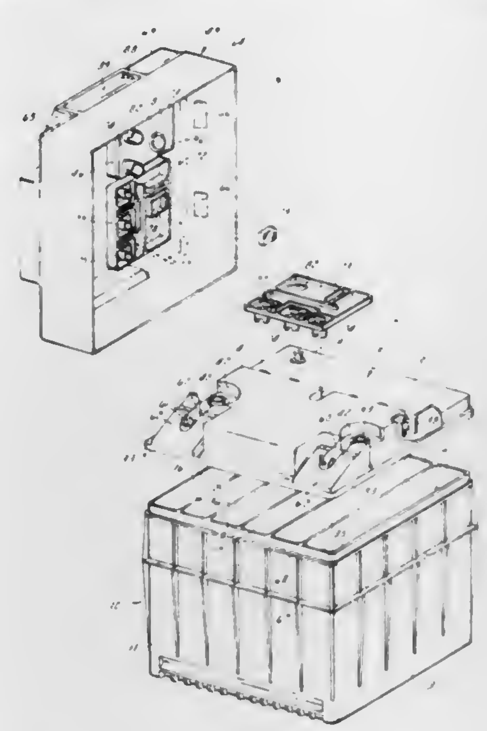
4,444,853
STORAGE BATTERY CONSTRUCTION

Vincent M. Halsall, River Hills, and Roy E. Hennen, Mequon, both of Wis., assignors to Globe-Union Inc., Milwaukee, Wis.

Filed Jul. 1, 1983, Ser. No. 510,175

Int. Cl.^{3} H01M *2/12*

U.S. Cl. 429—54 **17 Claims**



1. In a storage battery having a generally rectangular thermoplastic container defined by a pair of opposite side walls, a pair of opposite end walls and a bottom, a series of parallel partition walls extending between the side or end walls and dividing the container into a series of cells, an electrode stack within each cell including alternately disposed positive and negative plates with a separator between each adjacent pair of plates, the positive and negative plates having lugs extending upwardly and offset laterally from the midpoints of their upper edges with the positive and negative lugs disposed in two spaced parallel rows, the electrode stacks in adjacent cells disposed in opposite orientation such that each row of lugs includes alternate cell groups of positive and negative lugs, the lugs of each cell group of common polarity interconnected by a conductive strap, one conductive strap of each end cell group and both conductive straps of each intermediate cell group having a conductive intercell connection through a partition wall to the conductive strap of the adjacent cell group of opposite polarity, and the other conductive straps of the cell groups in each of the two end cells of the container being provided with integral upwardly extending intermediate terminal posts of opposite polarity; an improved cover, venting and terminal assembly comprising:
(a) a primary container cover including downwardly depending edge portions and intermediate ribs adapted to overlie the upper edges of the container walls and partition walls, respectively, and to be attached and uninterruptably sealed thereto;
(b) the primary cover including a substantially planar top surface portion adjacent the container wall opposite the intermediate terminal posts;
(c) a series of integral sleeves extending downwardly from the underside of the planar top surface portion, each sleeve adapted to provide access to a cell for filling the same with electrolyte and for allowing the egress of gases from the cell;
(d) a pair of exterior battery terminals;
(e) a pair of terminal bushings molded into the primary cover, each adapted to provide electrical connection between an intermediate terminal post and an exterior battery terminal;
(f) an outer secondary cover adapted to overlie the primary cover and to be attached to the container;

(g) vent means in the secondary cover in communication with the integral sleeves to provide for the egress of cell gases to atmosphere; and,

(h) terminal openings in the secondary cover for the exterior battery terminals.

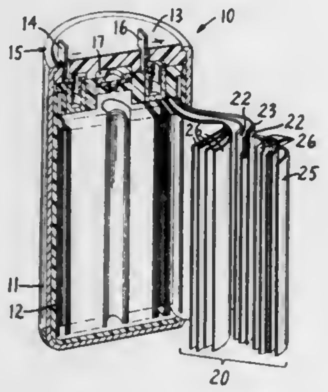
4,444,854
ELECTROCHEMICAL CELL HAVING INTERNAL SHORT INHIBITOR

John W. Hooke, Gainesville, Fla., assignor to General Electric Company, Gainesville, Fla.

Filed Sep. 14, 1981, Ser. No. 302,309

Int. Cl.^{3} H01M *2/14*

U.S. Cl. 429—94 **35 Claims**



1. In an improved lead-acid electrochemical cell including a positive electrode, a negative electrode, a porous electrically non-conductive separator disposed between said positive and negative electrodes and having a side facing said negative electrode, a housing containing said electrodes and separator, and an electrolyte disposed within the housing and in contact with said electrodes and said separator, the improvement comprising: an inert porous short-inhibitor member disposed only intermediate said negative electrode and said side and in contact with said negative electrode, said short inhibitor member being a fine mesh fabric formed from an acid and oxidation resistant polymer.

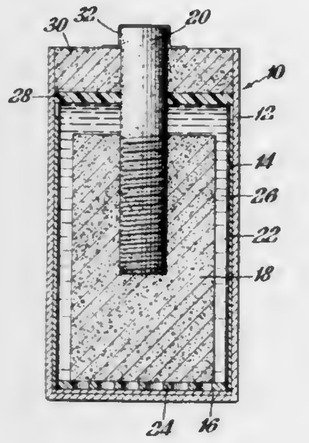
4,444,855
NON-AQUEOUS ELECTROCHEMICAL CELL

George E. Blomgren, Lakewood, and Marvin L. Kronenberg, Cleveland Heights, both of Ohio, assignors to Union Carbide Corporation, Danbury, Conn.

Filed May 29, 1974, Ser. No. 474,267

Int. Cl.^{3} H01M *6/14*

U.S. Cl. 429—105 **16 Claims**



1. A non-aqueous electrochemical cell comprising an anode, an inert cathode collector and a cathode-electrolyte, said cathode-electrolyte comprising an ionically conductive solution of a solute dissolved in a liquid halide solvent, said halide being at least one active cathode depolarizer selected from the group consisting of sulfur monochloride, sulfur monobromide, selenium tetrafluoride, selenium monobromide, thiophosphoryl chloride, thiophosphoryl bromide, vanadium pentafluoride, lead tetrachloride, titanium tetrachloride, disulfur decafluoride, tin bromide trichloride, tin dibromide dichloride and tin tribromide chloride.

4,444,856
BATTERY FOR VEHICLE

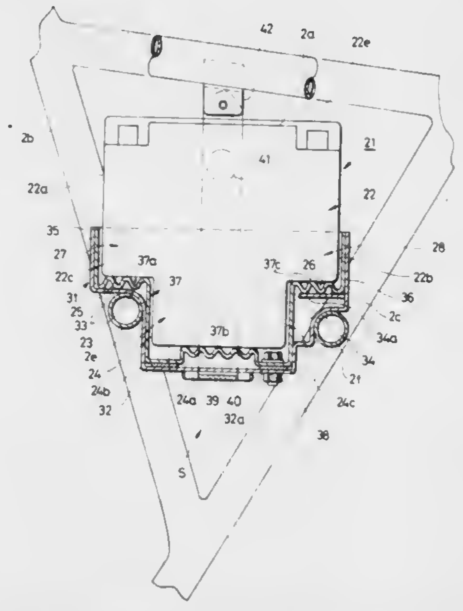
Mitsuru Uehara, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Saitama, Japan

Filed Aug. 20, 1982, Ser. No. 409,804

Claims priority, application Japan, Aug. 20, 1981, 56-123489[U]

Int. Cl.^{3} H01M *2/02*

U.S. Cl. 429—163 **8 Claims**



1. A battery for a vehicle comprising substantially planar side walls, a front wall, a rear wall, a top wall, and a bottom wall, said bottom wall having first and second spaced apart surfaces disposed in substantially the same plane and a third surface disposed between said first and second surfaces and located in the further plane displaced vertically from said plane of said first and second surfaces with said further plane being displaced further away from said top wall than said plane of said first and second surfaces and front and rear substantially vertical bottom walls joining said first surface and said second surface to said third surface respectively.

4,444,857
ELECTROCHEMICAL CELL INCLUDING A SOLID ELECTROLYTE MADE FROM A CATION CONDUCTIVE VITREOUS COMPOUND

Jean-Pierre Duchange, Nouaille Maupertuis, and Jean-Paul Gabano, Poitiers, both of France, assignors to Societe Anonyme dite: GIPELEC, Levallois-Perret, France

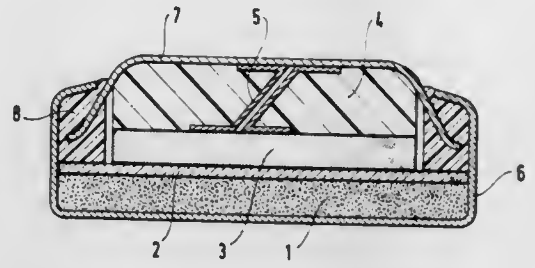
Filed Jun. 8, 1982, Ser. No. 386,228

Claims priority, application France, Jun. 17, 1981, 81 11902; Jun. 17, 1981, 81 11903

Int. Cl.^{3} H01M *6/18*

U.S. Cl. 429—191 **7 Claims**

1. An electrochemical cell having a lithium based negative active material, an electrolyte in the form of a vitreous cation conductive compound having a formula: aP_2S_5, bLi_2S, $cLiX$, where X stands for chlorine, bromine or iodine, and a, b, and c are numbers chosen in such a manner that $b/(a+b)$ lies in the range 0.61 to 0.70 and $c/(a+b+C)$ is less than or equal to the maximum solubility in the vitreous phase of LiX in the compound aP_2S_5, bLi_2S, and a positive active material, wherein the improvement comprises:



said positive active material is in the form of a compressed powder with particles of the electrolyte dispersed throughout said positive active material.

4,444,858
METHOD OF PREPARING A LITHOGRAPHIC PRINTING PLATE

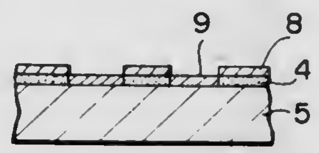
Satoshi Nishibu, Tokyo; Yasusuke Takahashi, Funabashi; Gentaro Nagamatsu, and Toshibumi Sakata, both of Tokyo, all of Japan, assignors to Fuji Chemicals Industrial Co., Ltd., Tokyo and Tokai University, Shibuya, both of, Japan

Continuation-in-part of Ser. No. 24,971, Mar. 29, 1979, abandoned. This application Oct. 27, 1980, Ser. No. 201,036

Claims priority, application Japan, May 1, 1978, 53-52586

Int. Cl.^{3} G03G *13/28*

U.S. Cl. 430—49 **10 Claims**



1. A method of making a lithographic printing plate comprising forming a toner image, coating a metal plate with a 0.5 to 10μ thick, electrically insulating, durable synthetic resin layer, transferring the toner image onto the surface of the layer of resin by a bias roll method, fixing the toner image on the resin layer to provide image areas on the surface of the resin to be protected by the toner from a subsequently applied organic solvent, removing the resin from the non-toner protected areas of the plate with said organic solvent, thereafter dissolving the toner without dissolving the remaining resin to leave said resin image areas, and performing a hydrophilic treatment on the non-resin-coated areas of the plate.

4,444,859
ELECTROPHOTOGRAPHIC PROCESS AND PHOTOSENSITIVE MEMBER FOR USE IN SAID PROCESS

Yoshiyuki Mimura, Hachioji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed May 27, 1982, Ser. No. 382,609

Claims priority, application Japan, May 30, 1981, 56-81848; May 30, 1981, 56-81849

Int. Cl.^{3} G03G *13/22, 13/24*

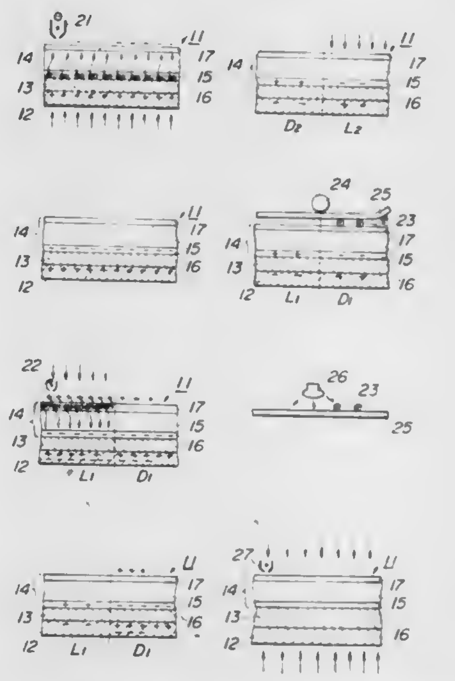
U.S. Cl. 430—54 **24 Claims**

1. An electrophotographic process for forming at least one copy of a document by means of an electrophotographic photosensitive member which comprises a transparent conductive substrate, a transparent insulating layer applied on the substrate and a photoconductive layer applied on the insulating layer and having surface charge generation layers and a charge transfer layer for transferring freely carriers of a predetermined polarity between the charge generation layers, comprising the steps of:

(a) effecting a primary charge for charging the photosensitive member in one polarity and a primary image exposure for exposing the photosensitive member to a positive image of a document from one side of the photosensitive member;

(b) effecting a secondary image exposure for exposing the photosensitive member to a negative image of the document from said one side of the photosensitive member;

(c) effecting a secondary charge for charging the photosensitive member in the other polarity and a tertiary image exposure for exposing the photosensitive member to the negative image of the document from the other side of the photosensitive member; and



(d) effecting a light exposure for exposing at least imagewise bright portion of the photosensitive member corresponding to a bright portion of the positive image of the document from the other side of the photosensitive member;

whereby photocarriers of said predetermined polarity of the charge transfer layer among photocarrier pairs generated in the surface charge generation layers are moved effectively through the bulk of said photoconductive layer so as to form an electrostatic latent image by charges trapped across the transparent insulating layer.

4,444,860
LAYERED PERSISTENT PHOTOCONDUCTIVE ELEMENT COMPRISES PIGMENT LAYER AND POLYMER LAYER CONTAINING POLYVINYL CARBAZOLE

Akitaka Yasujima; Sumitaka Nogami, both of Yokohama; Yoshiharu Kitahama, Kawasaki, and Isamu Iwami, Zushi, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

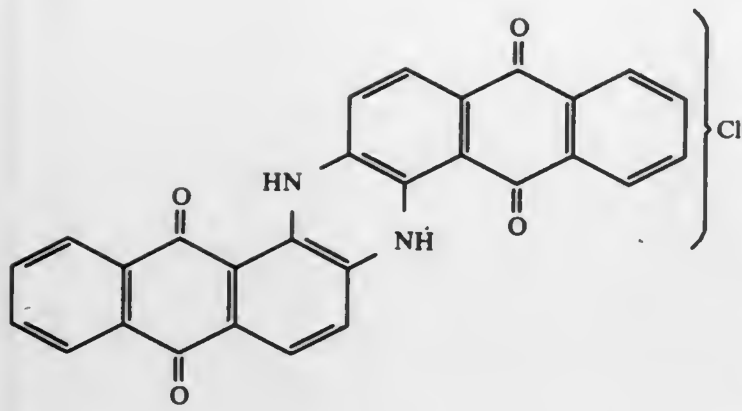
Filed Dec. 3, 1982, Ser. No. 446,668

Claims priority, application Japan, Jul. 12, 1981, 56-195586; Sep. 12, 1981, 56-196959; Sep. 30, 1982, 56-169601; Sep. 30, 1982, 57-169602

Int. Cl.^{3} G03G *5/024, 5/07*

U.S. Cl. 430—57 **8 Claims**

1. A persistent photoconductive element comprising an electroconductive support, a pigment layer formed on said support and composed mainly of a phthalocyanine pigment or Indanthrene Blue GCD of the formula:



and a polymer layer formed on said pigment layer and composed mainly of a polyvinyl carbazole, said polymer layer containing at least one member selected from the group consisting of aliphatic halogenated hydrocarbons, halogenated acyl compounds, halogenated keto compounds and hydrogen donor compounds.

4,444,861

PHOTO SENSITIVE ARTICLE FOR ELECTROPHOTOGRAPHY CONTAINING CHARGE TRANSFER MATERIAL

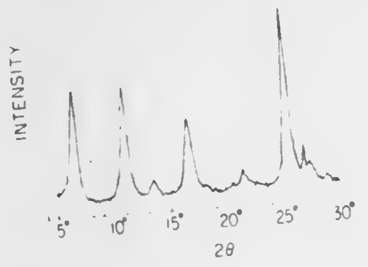
Sumitaka Nogami, Yokohama; Yoshiharu Kitahama, Kawasaki, and Isamu Iwami, Zushi, all of Japan, assignors to Ashai Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 10, 1982, Ser. No. 448,605

Claims priority, application Japan, Dec. 15, 1981, 56-201942; Dec. 15, 1981, 56-201943; Dec. 15, 1981, 56-201944; Jun. 1, 1982, 57-92122; Jun. 1, 1982, 57-92123; Jun. 1, 1982, 57-92124

Int. Cl.^{3} G03G *5/07*

U.S. Cl. 430—58 **17 Claims**



1. An electrophotographic sensitive article, comprising an electroconductive substrate and a photoconductive layer formed on said substrate and composed of an electric charge generating substance and an electric charge transfer substance, which sensitive article is characterized by said electric charge transfer substance having as an active component thereof a polyester obtained from a diol component consisting preponderantly of 2,6-dimethoxy-9,10-anthracene diol and a dicarboxylic acid component consisting preponderantly of α,ω-dicarboxylic acid.

4,444,862

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MATERIALS HAVING LAYER OF ORGANIC METAL COMPOUND

Shigeru Yagi; Koichi Yamamoto, and Yasutoshi Okugawa, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jul. 28, 1982, Ser. No. 402,700

Claims priority, application Japan, Jul. 28, 1981, 56-117108; Jul. 28, 1981, 56-117110; Oct. 8, 1981, 56-159420

Int. Cl.^{3} G03G *5/14*

U.S. Cl. 430—67 **27 Claims**

1. An electrophotographic photosensitive material, comprising:

a conductive support having a surface;
a photoconductive layer formed on the surface;
an interlayer formed on the photoconductive layer by curing a coating solution of an organic metal compound as its main component; and
a low-resistance protective layer positioned over the interlayer.

4,444,863

PHOTOCONDUCTIVE COMPOSITION AND ELECTROPHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL USING SAID COMPOSITION

Kenji Sano; Syunichi Kondo, and Hideo Sato, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 15, 1982, Ser. No. 434,695

Claims priority, application Japan, Oct. 15, 1981, 56-165260

Int. Cl.^{3} G03G *5/09*

U.S. Cl. 430—83 **14 Claims**

1. A photoconductive composition comprising an organic photoconductive material and a sensitizing amount of an urea compound.

4,444,864

METHOD FOR EFFECTING DEVELOPMENT BY APPLYING AN ELECTRIC FIELD OF BIAS

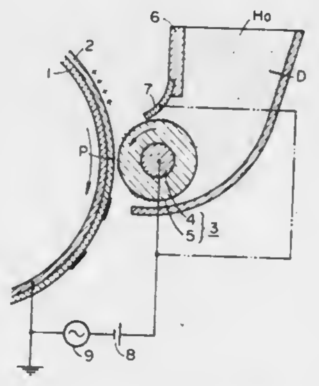
Tohru Takahashi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 167,195, Jul. 9, 1980, abandoned. This application Dec. 29, 1981, Ser. No. 335,462

Claims priority, application Japan, Jul. 16, 1979, 54-91168

Int. Cl.^{3} G03G *13/08*

U.S. Cl. 430—120 **19 Claims**



1. A process of developing a latent image by the use of particulate developer comprising the steps of:

coating an insulative toner on a developer supporting member to form a toner layer;
moving said supporting member with the insulative toner layer placed thereon to bring the insulative toner layer into and then out of contact with both the image and non-image areas of a latent image bearing member; and
applying a cyclical voltage to produce an electric field of cyclic displacement between the developer supporting member and the latent image bearing member which electrical field gradually reduces in strength toward the end of toner contact, said applied voltage satisfying the following relations:

$V_{Max} > V_D$

$V_{Min} < V_L$

where V_{Max} is the maximum value of the applied electric voltage, V_{Min} is the minimum value of the applied electric voltage, V_D is the maximum image area potential and V_L is the minimum non-image area potential;
wherein said electric field is such that at least toward the end of toner contact, at an image area, the electric field in a direction so as to remove the toner which has once attached to the image bearing member, is smaller than the threshold required to actually remove such developer from the image bearing member and, at a non-image area, the electric field in a direction of attaching the developer to the image bearing member to produce fog, is smaller than a threshold required to actually produce fog.

4,444,865

BLENDED GRAIN DIRECT-POSITIVE EMULSIONS AND PHOTOGRAPHIC ELEMENTS AND PROCESSES FOR THEIR USE

Robert A. Silverman, and Harry A. Hoyen, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 320,903, Nov. 12, 1981, abandoned. This application Sep. 15, 1982, Ser. No. 418,314

Int. Cl.^{3} G03C *1/02, 1/36, 7/00*

U.S. Cl. 430—217 **35 Claims**

1. A radiation-sensitive emulsion particularly adapted to forming a direct-positive image comprised of

a dispersing medium,
a first, core-shell silver halide grain population having a coefficient of variation of less than 20%, and
a second silver halide grain population capable of internally trapping photolytically generated electrons and substantially incapable of forming a surface latent image within the direct-positive exposure latitude of the first grain population,
said second grain population having an average diameter less than 70% that of said first grain population, and
said first and second silver halide grain populations being present in a weight ratio of from 5:1 to 1:5.

4,444,866

PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL WITH FORCED OXIDIZED CARBON BLACK

Takeo Sakai; Mitsugu Tanaka; Shigetoshi Ono; Seiji Suzuki, and Hirohisa Suzuki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 258,343, Apr. 28, 1981, abandoned. This application Mar. 3, 1983, Ser. No. 471,918

Claims priority, application Japan, Apr. 28, 1980, 55-56424

Int. Cl.^{3} G03C *7/00, 1/84, 1/72, 1/02*

U.S. Cl. 430—220 **12 Claims**

2. A photographic light-sensitive material comprising:

a transparent support;
an image-receiving layer on said support;
a silver halide emulsion layer on said support, said silver halide emulsion layer being associated with a dye image-providing compound and a pressure-rupturable container retaining a processing solution;
a layer containing carbon black force-oxidized in liquid phase positioned between said image-receiving layer and said silver halide emulsion layer, said carbon black having a particle size of 0.03μ to 0.12μ and a dispersibility of at least 4.

4,444,867

PHOTOGRAPHIC RECORDING MATERIAL FOR DIFFUSION PROCESSES AND NEW NON-DIFFUSING SULFILIMINE COMPOUNDS SUITABLE FOR USE THEREIN

Hans-Heinrich Credner, Hohenschaeftlarn, Fed. Rep. of Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

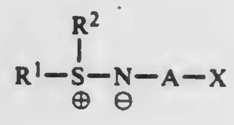
Filed Apr. 18, 1983, Ser. No. 486,110

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1982, 3215834

Int. Cl.^{3} G03C *1/40, 5/54, 1/10, 1/48*

U.S. Cl. 430—223 **6 Claims**

1. In a photographic recording material comprising at least one photosensitive silver halide emulsion layer and a non-diffusing sulfilimine compound associated therewith which is capable of releasing a diffusible photographically active compound by reduction under photographic development conditions the improvement according to which the sulfilimine compound corresponds to the following formula I:



$$R^1-\overset{\overset{\displaystyle R^2}{|}}{\underset{\oplus}{S}}-\underset{\ominus}{N}-A-X \qquad \text{I}$$

wherein

R^1 and R^2 represents the same or different aryl radicals, at least one of which contains at least one electron-attracting group in the o- or p-position, and at least one of which contains a ballast group;
A represents a linking member between N and X, consisting of a benzene ring which is directly joined to N at the 1-position, an electron-attracting group at the 2-position of the benzene ring and at least one other electron-attracting group at the 4- or 6-position of the benzene ring; and
X represents an integrating radical which is released from the sulfilimine compound together with A and N as a diffusible photographically active compound corresponding to the formula $H_2N—A—X$.

6. A recording material as claimed in claim 1 which is composed as an integral instant color image unit and contains in the sequence given at least:

(a) a photosensitive element comprising at least one photosensitive negative silver halide emulsion layer and a non-diffusing reducible color-providing sulfilimine compound within formula I of claim 1 associated therewith;
(b) an alkali-permeable light-reflecting layer; and
(c) an image-receiving layer.

4,444,868

PHOTOSENSITIVE COMPOSITION

Kunihiro Ichimura, Yatabemachi, Japan, assignor to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

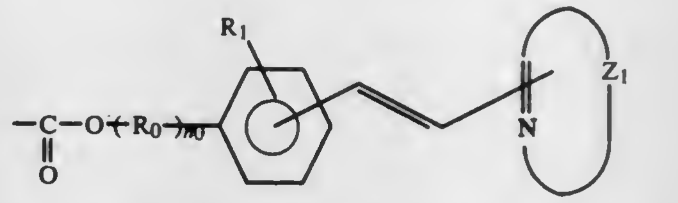
Filed Aug. 3, 1982, Ser. No. 404,719

Claims priority, application Japan, Aug. 6, 1981, 56-123231; Aug. 6, 1981, 56-123232

Int. Cl.^{3} G03C *1/72;* **C08F** *299/00*

U.S. Cl. 430—285 **4 Claims**

1. A photo-insolubilizable composition, comprising a photo-insolubilizable resin containing at least 0.2 mol% of a nitrogen-containing heterocyclic residue represented by the general formula:



wherein, n_0 is 0 or 1, R_0 denotes a divalent organic residue, R_1

denotes one member selected from the class consisting of a hydrogen atom and an alkoxy group and Z_1 denotes an atomic group forming an aromatic heterocyclic ring and 0.5 to 10 moles, per mole of said residue of said resin, of at least one member selected from the group consisting of organic acids and inorganic acids.

4,444,869

PROCESS FOR USING POSITIVE-WORKING RESIST MATERIALS TO FORM NEGATIVE RESIST PATTERN ON SUBSTRATE

Tsunehiro Chonan, Yokosuka, and Akira Morishige, Yamato, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 182,673, Aug. 29, 1980, abandoned. This application Nov. 25, 1981, Ser. No. 324,687

Claims priority, application Japan, Aug. 31, 1979, 54-110226

Int. Cl.³ G03F *7/08, 7/26*

U.S. Cl. 430—325 **10 Claims**

1. A process for forming a negative resist with a desired pattern on a substrate, comprising the steps of:

(1) coating on the substrate a resist material consisting of a mixture of a positive-working resist resin which is napthoquinonediazide or benzoquinonediazide and at least one spiropyran compound which is:

1,3,3-trimethyl-6′-nitrospiro(indoline-2,2′-benzopyran),
1,3,3-trimethyl-6′-nitro-8′-methoxyspiro(indoline-2,2′-benzopyran),
1,3,3-trimethyl-5′-chloro-6′-nitrospiro(indoline-2,2′-benzopyran),
1,3,3-trimethyl-6′-bromo-8′-bromospiro(indoline-2,2′-benzopyran),
1,3,3-trimethyl-6′-methoxy-8′-nitrospiro(indoline-2,2′-benzopyran),
1,3,3-trimethyl-5′-nitro-8′-methoxy-spiro(indoline-2,2′-benzopyran),
1,3,3-trimethyl-8′-carboxyspiro(indoline-2,2′-benzopyran),
1,3,3-trimethyl-6′-nitro-8′-hydroxyspiro(indoline-2,2′-benzopyran),
1,3,3-trimethyl-6′-hydroxyspiro(indoline-2,2′-benzopyran),
1′, 3′, 3′-trimethyl-6′-hydroxyspiro(2H-1-benzopyran-2,2′-indoline),
1′,3′,3′-trimethyl-6′-nitrospiro(2H-1-benzopyran-2,2′-indoline), or
1′, 3′, 3′-trimethyl-6′-nitro-8′-hydroxy-spiro(2H-1-benzopyran-2,2′-indoline),

wherein said at least one spiropyran compound is mixed with the positive-working resist resin in an amount of 1 through 4 parts by weight of said at least one spiropyran compound per 100 parts by weight of the positive-working resist resin;

(2) prebaking the coated resist material;

(3) exposing the coated resist material to radiation with said desired pattern, so as to allow the exposed part to be selectively hardened in a subsequent heating step;

(4) subsequently heating the coated resist material at a temperature of from 95° to 150° C. for time between 5 through 60 minutes, to provide said selective hardening of said exposed part of said coated resist material, so as to render said exposed part insoluble to an alkaline developer for said positive-working resist resin;

(5) subsequently subjecting the coated resist material to a blanket exposure by further radiation, so as to decompose the non-exposed part of said coated resist material; and

(6) subsequently developing the coated resist material by removing said non-exposed part of said coated resist material with said alkaline developer, so as to form said negative resist with said desired pattern.

4,444,870

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Tsumoru Hirano; Keiji Mihayashi, and Morio Yagihara, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 7, 1982, Ser. No. 415,295

Claims priority, application Japan, Sep. 7, 1981, 56-140667

Int. Cl.³ G03C *7/16*

U.S. Cl. 430—381 **27 Claims**

25. A method of forming a color image comprising developing an imagewise exposed silver halide color photographic light-sensitive material comprising a support having thereon a layer containing at least one copolymer coupler latex having a layered structure having an outer layer containing a polymer made from at least one monomer coupler capable of forming a dye upon coupling with an oxidation product of an aromatic primary amine developing agent and an inner layer which does not have the capability of forming a dye upon coupling with the oxidation product of an aromatic primary amine developing agent, and said developing is conducted using an alkaline aqueous solution containing an aromatic primary amine developing agent.

4,444,871

METHOD FOR FORMING A DIRECT POSITIVE COLOR IMAGE

Kazuyoshi Miyaoka, Akishima, and Shigeharu Koboshi, Sagamihara, both of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Sep. 30, 1982, Ser. No. 429,157

Claims priority, application Japan, Oct. 8, 1981, 56-161719

Int. Cl.³ G03C *7/16*

U.S. Cl. 430—378 **6 Claims**

1. A method for forming a direct positive color image in which an imagewise exposure is applied to a direct positive silver halide color photosensitive material comprising a support and at least one light-sensitive silver halide emulsion layer selected from the group consisting of a blue-sensitive, a green-sensitive and a red-sensitive silver halide emulsion layers containing respectively internal latent image type silver halide grains whose surfaces are not fogged and a fogging exposure is then applied and further a color development is made, wherein said fogging exposure is applied in a wet condition with a solution containing a fluorescent whitening agent.

4,444,872

METHOD AND MATERIAL FOR THE FORMATION OF SILVER HALIDE COLOR PHOTOGRAPHIC IMAGE

Katsunori Kato, Hachioji, and Ryosuke Sato, Hino, both of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

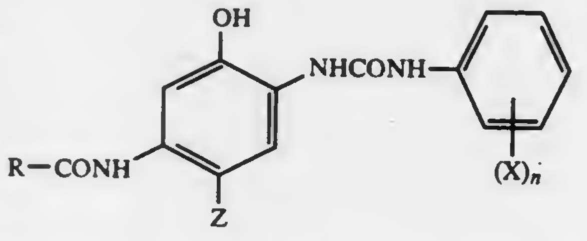
Filed Aug. 10, 1982, Ser. No. 406,945

Claims priority, application Japan, Aug. 20, 1981, 56-131312

Int. Cl.³ G03C *7/16, 7/26*

U.S. Cl. 430—384 **6 Claims**

1. A method for forming a silver halide color photographic image comprising the step of forming a dye image in the presence of a phenol cyan coupler, said phenol cyan coupler having the formula:



Formula (I)

wherein R is an alkyl, an aryl or a heterocyclic group; X is selected from the group consisting of an alkyl, acyloxy, acylamino, succinimide, piprolidine, piperidine and sulfoneamide moiety; Z is a hydrogen atom or a group capable of eliminating itself from said coupler during the coupling reaction thereof with the oxidized product of a color developing agent; and n is an integer from 1 to 3, wherein when n is 2 or 3, X may be the same or different.

4,444,873

COLOR PHOTOGRAPHIC PROCESSING

Takatoshi Ishikawa; Kiyoshi Imai; Mamoru Tashiro, and Junya Nakajima, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 29, 1982, Ser. No. 454,310

Claims priority, application Japan, Dec. 29, 1981, 56-213112

Int. Cl.³ G03C *7/00*

U.S. Cl. 430—393 **14 Claims**

1. A process for bleaching and fixing a color developed silver halide color photographic material, comprising the steps of:

processing the photographic material with an acid bleaching solution containing a ferric salt, an organic acid and a halide; and

processing the bleached photographic material with a fixing solution containing 5g/l to 50 g/l of polycarboxylic acids.

4,444,874

PHOTOGRAPHIC ELEMENTS CONTAINING DIRECT-POSITIVE EMULSIONS AND PROCESSES FOR THEIR USE

Robert A. Silverman, Rochester, and Harry A. Hoyen, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 15, 1982, Ser. No. 418,313

Int. Cl.³ G03C *5/24*

U.S. Cl. 430—409 **23 Claims**

1. A photographic element particularly adapted to forming a direct-positive image comprised of

a support and, located on said support,

a first, radiation-sensitive emulsion layer containing core-shell silver halide grain population having a coefficient of variation of less than 20%, and

a second silver halide emulsion layer substantially incapable of forming a surface latent image within the direct-positive exposure latitude of the first emulsion layer and containing a second grain population capable of internally trapping photolytically generated electrons,

said second grain population having an average diameter less than 70% that of said first grain population, and

said first and second silver halide grain populations being present in a weight ratio of from 5:1 to 1:5.

4,444,875

LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL

Toshiharu Nagashima, and Takeshi Habu, both of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Mar. 25, 1983, Ser. No. 478,902

Claims priority, application Japan, Apr. 5, 1982, 57-56838

Int. Cl.³ G03C *5/24, 1/06*

U.S. Cl. 430—445 **19 Claims**

1. A light-sensitive silver halide photographic material comprising a support and, coated thereon, a hydrophilic colloid layer or layers including a silver halide emulsion layer, at least one of said hydrophilic colloid layer or layers containing a 1H-tetrazolium compound.

4,444,876

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Yukio Maekawa, Kanagawa, and Tetsuo Takeuchi, Shizuoka, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

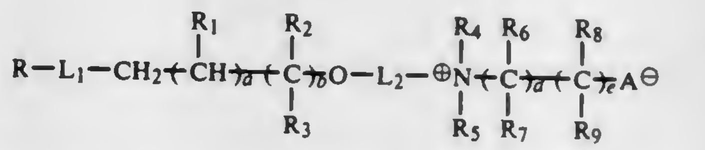
Filed Jul. 22, 1982, Ser. No. 401,047

Claims priority, application Japan, Jul. 22, 1981, 56-114588

Int. Cl.³ G03C *1/82*

U.S. Cl. 430—528 **18 Claims**

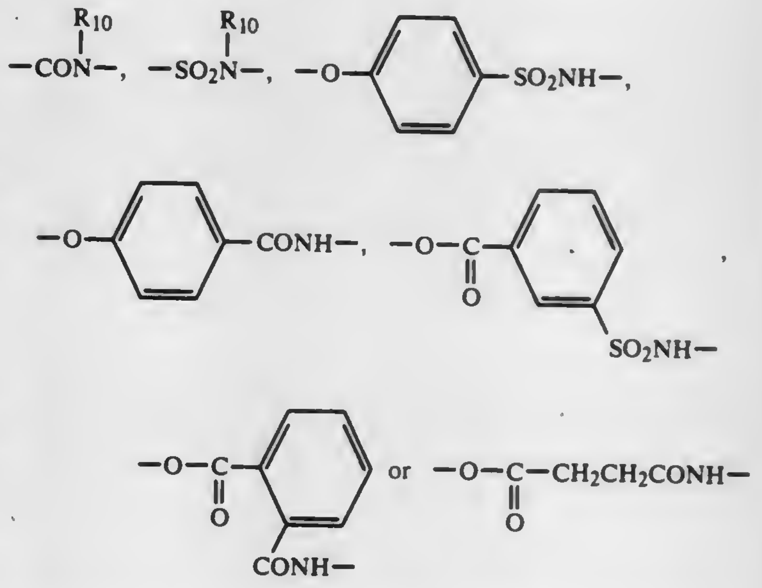
1. A silver halide photographic light-sensitive material containing an anionic surface active agent which comprises a support having thereon at least one constituting layer containing a compound represented by the following general formula (I):



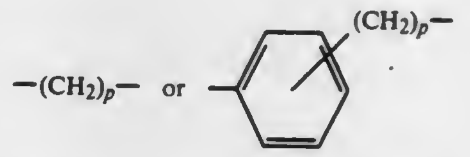
$$R-L_1-CH_2(\overset{R_1}{\overset{|}{CH}})_a(\overset{R_2}{\underset{R_3}{C}})_bO-L_2-{}^{\oplus}\overset{R_4}{\underset{R_5}{N}}(\overset{R_6}{\underset{R_7}{C}})_d(\overset{R_8}{\underset{R_9}{C}})_eA^{\ominus}$$

(I)

wherein R represents a saturated or unsaturated hydrocarbon group having from 3 to 20 carbon atoms; L_1 represents a divalent connecting group selected from



wherein R_{10} represents a hydrogen atom or a saturated or unsaturated hydrocarbon group having from 1 to 12 carbon atoms; L_2 represents a divalent connecting group selected from



wherein p represents an integer of 1 to 4; R_1, R_2, R_3, R_4, R_5, R_6, R_7, R_8 and R_9, which may be the same or different, each represents a hydrogen atom, a methyl group, an ethyl group or a propyl group; A represents —COO or —SO_3; and a, b, d and e each represents 0, 1 or 2.

4,444,877

LIGHT-SENSITIVE SILVER HALIDE EMULSION

Takeo Koitabashi; Yoshihiro Haga, and Syoji Matsuzaka, all of Hino, Japan, assignors to Konishiroku Photo Ind. Co., Ltd., Tokyo, Japan

Filed Feb. 9, 1982, Ser. No. 347,258

Claims priority, application Japan, Feb. 18, 1981, 56-23396

Int. Cl.³ G03C *1/02*

U.S. Cl. 430—567 **7 Claims**

1. A light-sensitive silver halide emulsion which comprises

silver halide grains composed of cores consisting essentially of silver halide containing silver iodide and shells covering said cores and consisting essentially of silver bromide, silver chloride or silver chlorobromide, each of said shells having a thickness of from 0.01 to 0.1μ.

4,444,878

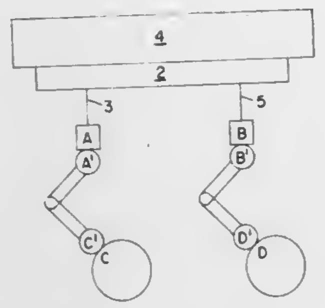
BISPECIFIC ANTIBODY DETERMINANTS

Henry P. Paulus, Boston, Mass., assignor to Boston Biomedical Research Institute, Inc., Boston, Mass.

Filed Dec. 21, 1981, Ser. No. 332,881

Int. Cl.^{3} G01N *33/54;* C12M *1/40, 1/34;* C12N *11/02, 11/12, 11/18, 9/96;* C12Q *1/26, 1/28, 1/34*

U.S. Cl. 435—7 **6 Claims**



1. A homogenous sample of identical bispecific antibody determinants, each said determinant comprising two L-H half-molecules linked by disulfide bonds, each said L-H half-molecule being specific for a different antigenic determinant, and comprising at least the F(ab') portion of a monoclonal IgG antibody,

one said antigenic determinant comprising an antigenic site on a solid matrix, whereby said bispecific antibody determinant is capable of being immobilized on said solid matrix by binding to said matrix at said antigenic site,

said sample comprising a multilamellar assembly wherein said antigenic site on said matrix is a site on a haptenic molecule attached to said matrix,

said bispecific antibody determinant is bonded to said haptenic molecule,

the other said antigenic determinant comprises a first antigenic site on a first protein molecule, said bispecific antibody determinant being bonded to said protein molecule, and

there is bonded to said first protein molecule, at a second antigenic site on said protein molecule, a second bispecific antibody determinant different from the determinant bonded to said haptenic molecule, each said second determinant comprising two L-H half molecules linked by disulfide bonds, each said L-H half molecule being specific for a different antigenic determinant, one said antigenic determinant being a second antigenic site on said first protein molecule, each said half-molecule comprising at least the F(ab') portion of a monoclonal IgG antibody.

4,444,879

IMMUNOASSAY WITH ARTICLE HAVING SUPPORT FILM AND IMMUNOLOGICAL COUNTERPART OF ANALYTE

Terry L. Foster, Abilene, and Raymond C. Casey, Baird, both of Tex., assignors to Science Research Center, Inc., Abilene, Tex.

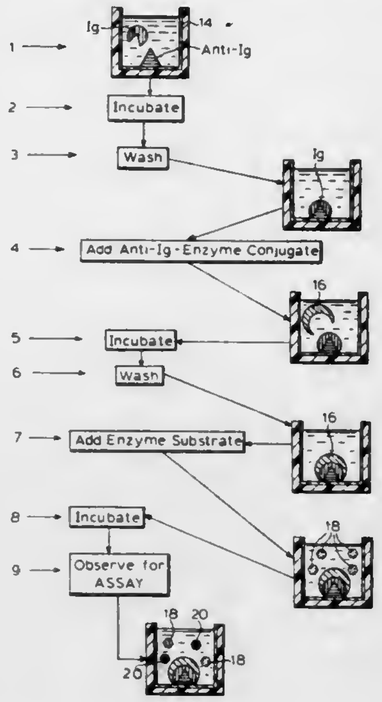
Filed Jan. 29, 1981, Ser. No. 229,448

Int. Cl.^{3} G01N *33/54, 33/58*

U.S. Cl. 435—7 **9 Claims**

1. An immunoassay of total immunoglobulin (Ig) in a biological fluid containing said Ig, which comprises;

extracting the Ig from the fluid by binding the Ig to an immobilized immunological counterpart of the Ig wherein the immunological counterpart of the Ig is immobilized by a covalent bonding to a dried film of a light-transparent, synthetic, polymeric resin having attached chemical groups capable of forming covalent bonds with the immunological counterpart; said film being a coating on a water-insoluble, light transparent synthetic, organic polymer article which is inert to chemical reaction with immunoglobulin (Ig);



complexing the bound Ig with enzyme-conjugated anti-Ig; mixing the complex with a chromogenic reagent capable of developing color in the presence of the enzyme; and observing the degree of color developed in the mixture.

4,444,880

PERIODATE REMOVAL OF ASCORBATE INTERFERENCE IN DIPSTICKS FOR IMMUNOASSAYS

Henry Tom, La Honda, Calif., assignor to Syva Company, Palo Alto, Calif.

Filed Jul. 27, 1982, Ser. No. 402,452

Int. Cl.^{3} G01N *33/54, 33/52, 33/58*

U.S. Cl. 435—7 **11 Claims**

1. In an immunoassay employing a bibulous support to which is attached a mip and the amount of a mip-peroxidase conjugate which binds to the mip on the support is related to the amount of analyte in a sample, where the peroxidase catalyzes the formation of a dye which binds to said support and ascorbate in said sample interferes with the production of said dye, the improvement which comprises:

impregnating said support with a sufficient amount of periodate to reduce said ascorbate interference to a level which does not interfere with the detection of said analyte.

4,444,881

RECOVERY OF ORGANIC ACIDS FROM A FERMENTATION BROTH

Branko Urbas, Darien, Ill., assignor to CPC International Inc., Englewood Cliffs, N.J.

Continuation-in-part of Ser. No. 314,627, Oct. 26, 1981, Pat. No. 4,405,717. This application Jun. 27, 1983, Ser. No. 507,812

Int. Cl.^{3} C12P *7/48, 7/52, 7/56*

U.S. Cl. 435—139 **19 Claims**

1. A process for the recovery of an organic acid selected from the group consisting of propionic acid, butyric acid, lactic acid and citric acid, from an aqueous solution of its calcium salt which comprises the steps of:

(a) adding a molar equivalent of a water-soluble tertiary amine carbonate to the calcium salt solution to form a trialkylammonium salt of the acid in solution and a precipitate of calcium carbonate;

(b) concentrating the trialkylammonium salt solution; and

(c) heating the concentrated trialkylammonium salt solution to obtain the acid and the tertiary amine.

4,444,882

PROCESS AND APPARATUS FOR CONTROLLING CULTIVATION OF MICROORGANISMS

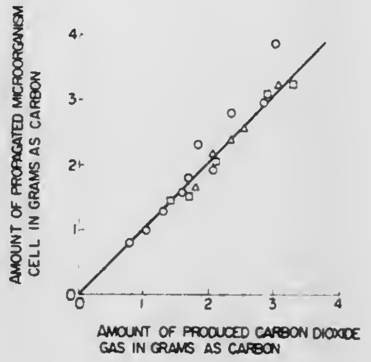
Norio Shimizu; Tetsuo Yamaguchi; Setsuo Saitou; Masao Ueno, and Yooji Odawara, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 24, 1981, Ser. No. 324,550

Claims priority, application Japan, Nov. 26, 1980, 55-165240; Jan. 21, 1981, 56-6332; Mar. 4, 1981, 56-29931

Int. Cl.^{3} C12Q *1/29*

U.S. Cl. 435—29 **8 Claims**



1. A process for controlling cultivation of microorganisms in culture medium in a cultivation tank comprising:

(a) measuring pressure within the tank during cultivation;

(b) measuring flow rate of effluent gas from the tank during cultivation;

(c) measuring concentration of carbon dioxide in the effluent during cultivation;

(d) calculating the partial pressure of carbon dioxide within the tank and the amount of carbon dioxide produced by microorganism growth based on measurements of (a), (b), and (c);

(e) calculating the amount of propagated microorganisms according to the following equation:

$$X_2 = X_1 + K\,\Delta CO_2$$

wherein

X_2 = amount of microorganisms in the cultivation tank at time t_2,

X_1 = amount of microorganisms in the cultivation tank at time t_1,

ΔCO_2 = amount of carbon dioxide gas produced during the period between t_1 and t_2, and

k = ratio of the amount of propagated microorganism cells to the amount of carbon dioxide gas produced, k being determined prior to the process by batch and continuous cultivation tests for each particular microorganism cultivated; and

(f) supplying additional medium in accordance with the amount calculated at (e).

4,444,883

METHOD FOR THE ISOLATION AND PRESUMPTIVE DIAGNOSIS OF *BACILLUS CEREUS* AND TELLURITE MEDIUM THEREFOR

Robert L. Brown, Irving, Tex., and Thomas B. Platt, Neshanic Station, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Aug. 9, 1982, Ser. No. 406,747

Int. Cl.^{3} C12Q *1/04;* C12R *1/085*

U.S. Cl. 435—34 **9 Claims**

1. A method for the isolation and presumptive diagnosis of *Bacillus cereus* which comprises preparing an agar medium for growth of *Bacillus cereus* which medium is free of egg yolk and comprises a tellurite salt, glycine and polymyxin, the tellurite salt, glycine and polymyxin being present in amounts which inhibit most organisms which grow and resemble *Bacillus cereus* on such medium, growing a sample on said medium employing said medium to isolate *Bacillus cereus,* determining the presence of *Bacillus cereus* whereby a presumptive diagnosis of *Bacillus cereus* can be made if an organism grows on the medium.

4,444,884

PROCESS FOR PREPARING STEROIDS

Charles J. Sih, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation-in-part of Ser. No. 382,011, May 25, 1982, abandoned. This application Sep. 21, 1982, Ser. No. 420,982

Int. Cl.^{3} C12P *33/16;* C12N *1/38*

U.S. Cl. 435—55 **12 Claims**

1. An improved process for preparing useful androstane steroids from phytosterols characterized by the presence of branched chains at C-24, which comprises selectively cleaving the 17-side chains of said phytosterols by exposing them to fermentative action of enzymes elaborated by a microorganism of the genus Nocardia, Mycobacterium, Arthrobacter or Corynebacterium characterized by the ability to cleave the 17-side chain of phytosterols and to respond to the HCO_3^- ion during the cleavage process, in the presence of a one carbon unit chemical compound which can be converted by the microorganisms to the bicarbonate ion, or CO_2, sufficient in amount to enhance the cleavage of the 17-side chain of the phytosterols but insufficient to adversely affect the elaboration of enzymes by the microorganism and recovering the desired androstane steroids.

4,444,885

PROCESS FOR PRODUCING L-PROLINE BY FERMENTATION

Toshihide Nakanishi, Hofu, and Hiroshi Hagino, Tokyo, both of Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 270,433, Jun. 4, 1981, abandoned. This application May 6, 1983, Ser. No. 492,092

Claims priority, application Japan, Jun. 5, 1980, 55-7492

Int. Cl.^{3} ; C12P *13/24*

U.S. Cl. 435—107 **9 Claims**

1. A process for producing L-proline by fermentation, comprising culturing a microorganism selected from the group consisting of Corynebacterium, Arthrobacter, Microbacterium and Saccharomyces in a culture medium containing at least one member selected from D-, L- and DL-pyrrolidonecarboxylic acid to accumulate L-proline in the cultured liquor, and recovering L-proline therefrom.

6. A process for producing L-proline by fermentation, comprising culturing a microorganism selected from the group consisting of Corynebacterium, Arthrobacter, Microbacterium and Saccharomyces in a culture medium containing glutamic acid without addition of a surfactant to accumulate L-proline in the cultured liquor, and recovering L-proline therefrom.

4,444,886

DIACETINASE FROM *BACILLUS SUBTILIS*

Theodore W. Esders, Webster; Charles T. Goodhue, Rochester, and Ohannes K. Esmerian, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 11, 1982, Ser. No. 407,213

Int. Cl.^{3} C12N *9/20, 9/18;* C12R *1/125*

U.S. Cl. 435—198 **4 Claims**

1. An enzyme which catalyzes the hydrolysis of glycerol esters and is specific for alkyl esters wherein the alkyl group or groups has from 1 to 4 carbon atoms inclusive, said enzyme being isolated from the microorganism *Bacillus subtilis* ATCC No. 31954.

4,444,887

PROCESS FOR MAKING HUMAN ANTIBODY PRODUCING B-LYMPHOCYTES

Michael K. Hoffmann, New York, N.Y., assignor to Sloan-Kettering Institute, New York, N.Y.

Continuation-in-part of Ser. No. 101,979, Dec. 10, 1979, abandoned. This application Mar. 12, 1981, Ser. No. 243,021

Int. Cl.^{3} C12N *5/00, 5/02;* **C12P** *21/00*

U.S. Cl. 435—240 **29 Claims**

1. Process for making antibody producing human B-lymphocytes which comprises culturing a human lymphoid cell suspension containing human B-lymphocytes and a cell concentration of about 1×10^6 to 5×10^6 cells/ml in a tissue culture medium containing:

(a) 0.3 to 0.003% antigen;

(b) helper signal producing agents consisting essentially of:

(i) monocytes or conditioned medium containing interleukin 1 derived from said monocytes in an amount to result in a concentration of 0.1 to 30% and

(ii) helper T-lymphocytes or helper T-lymphocyte replacing factor obtained from activated T-cells; and

(c) about 1–10% human serum;

and thereafter recovering the antibody producing human B-Lymphocytes from the medium.

4,444,888

MICROORGANISM FOR DECOLORIZING PULP AND PAPER MILL WASTEWATER

James E. Blair, and Lois T. Davis, both of Roanoke County, Va., assignors to Sybron Corporation, Rochester, N.Y.

Continuation of Ser. No. 51,296, Jun. 22, 1979, Pat. No. 4,266,035, which is a division of Ser. No. 8,215, Jan. 31, 1979, Pat. No. 4,199,444. This application Nov. 7, 1980, Ser. No. 205,022

The portion of the term of this patent subsequent to May 5, 1998, has been disclaimed.

Int. Cl.^{3} C12N *1/00*

U.S. Cl. 435—243 **1 Claim**

1. *Pseudomonas aeruginosa* having the identifying characteristics of ATCC 31482, said microorganism being capable upon culturing in pulp and paper mill wastewater of utilizing colorant substances in said wastewater as an assimilable source of carbon.

4,444,889

PREDICTING HYDROCARBON POTENTIAL OF AN EARTH FORMATION UNDERLYING A BODY OF WATER BY ANALYSIS OF SEEPS CONTAINING LOW CONCENTRATIONS OF CARBONACEOUS GASES

Gerard J. Demaison, Orinda, and Isaac R. Kaplan, Sherman Oaks, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 135,026, Mar. 28, 1980, abandoned. This application Apr. 8, 1982, Ser. No. 366,542

The portion of the term of this patent subsequent to Jul. 20, 1999, has been disclaimed.

Int. Cl.^{3} G01N *33/24*

U.S. Cl. 436—29 **4 Claims**

1. Method of on-site collection and examination of small concentrations of methane dissolved in water so as to predict hydrocarbon potential of an earth formation underlying a body of water, said formation being a source of said methane, said method comprising:

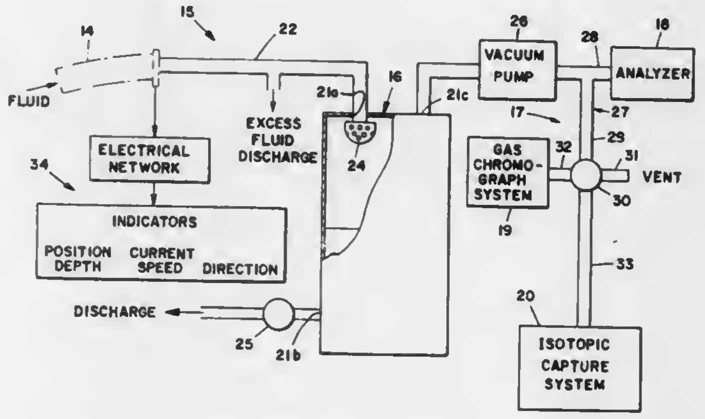
(i) at a known geographic location continuously sampling said water at a selected flow rate and at a selected depth;

(ii) continuously vacuum separating said water into liquid and gas phases;

(iii) quantitatively separating interfering gas species from said methane at a series of separating stations by conveying said separated gas phase of step (ii), via an air carrier vented to atmosphere and flowing at a known flow rate, in seriation to and through said separating stations;

(iv) quantitatively oxidizing said methane in the gas phase, at an oxidizing station without significant isotopic fractionation occurring;

(v) cryogenically trapping the gaseous oxidant of step (iv) in the form of carbon dioxide at a trapping station without significant isotopic fractionation occurring; and



(vi) isotopically analyzing said trapped oxidant of step (v) for carbon distribution so as to determine biogenic and/or thermogenic origin of said methane and thereby aid in the evaluation of the hydrocarbon potential of said earth formation.

4,444,890

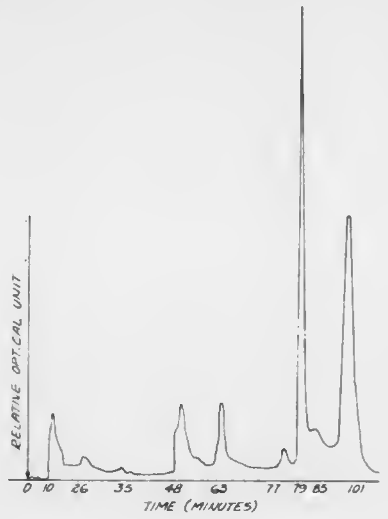
TESTING PROCEDURE TO AID DIAGNOSIS OF CANCER AND EVALUATE THE PROGRESS OF CANCER THERAPY

Stanislaw R. Burzynski, #5 Concord Cir., Houston, Tex. 77024

Filed Feb. 5, 1982, Ser. No. 346,291

Int. Cl.^{3} G01N *33/68*

U.S. Cl. 436—64 **47 Claims**



1. A method of diagnosing neoplastic disease in a subject suspected of having neoplastic disease comprising:

providing a test sample of physiological tissue or fluid obtained from the subject;

quantitatively determining the level of antineoplaston within the test sample;

comparing the level of antineoplaston of the test sample to a standard antineoplaston level assessed from like tissue or fluid samples obtained from normal subjects unaffected by neoplastic disease, a significant difference in the two levels being indicative of neoplastic disease.

4,444,891

METHOD FOR TESTING TOXICITY OF CHEMICAL SUBSTANCE BY USING NEMATODE

Johji Miwa, Gifu, and Mitsuru Furusawa, Nishinomiya, both of Japan, assignors to Duskin Franchise Co., Ltd., Osaka, Japan

Continuation of Ser. No. 149,722, May 14, 1980, abandoned. This application May 13, 1982, Ser. No. 377,786

Claims priority, application Japan, May 18, 1979, 54-6053

Int. Cl.^{3} G01N *33/48*

U.S. Cl. 436—2 **11 Claims**

6. A toxicity test method for chemical substances using a phylum Nematoda, which comprises culturing a phylum Nematoda that is a self-fertilizing hermaphrodite in a culture medium; treating the nematode with the chemical substance to be tested; allowing the treated nematode (F_0) to propagate; and examining at least one of the treated parental nematode (F_0), offspring in the first-filial generation (F_1) and offspring in the second-filial generation (F_2).

4,444,892

ANALYTICAL DEVICE HAVING SEMICONDUCTIVE ORGANIC POLYMERIC ELEMENT ASSOCIATED WITH ANALYTE-BINDING SUBSTANCE

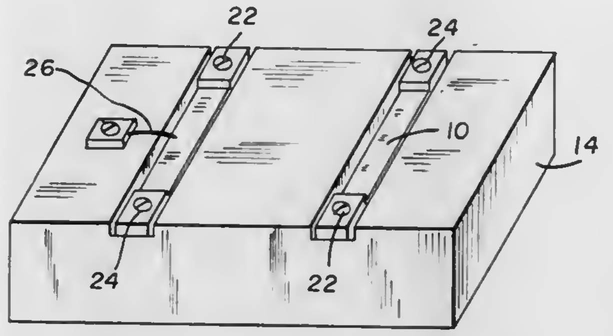
Mark K. Malmros, P.O. Box 106, Washington Crossing, Pa. 18977

Continuation-in-part of Ser. No. 198,782, Oct. 20, 1980, Pat. No. 4,334,880. This application May 17, 1982, Ser. No. 378,399

The portion of the term of this patent subsequent to Jun. 15, 1999, has been disclaimed.

Int. Cl.^{3} G01N *27/12, 33/54*

U.S. Cl. 436—528 **9 Claims**



6. A method of identifying the type and quantity of an analyte in a medium comprising the steps of:

(a) preparing an element of semiconductive organic polymer of polyacetylene

(b) treating the element with a specific binding substance,

(c) exposing the element to the medium,

(d) measuring the change in an electrical characteristic of the treated element.

4,444,893

HIGHLY REFRACTIVE, LOW DISPERSION, LOW DENSITY OPTICAL GLASS SUITABLE FOR CORRECTIVE LENSES

Karl-Heinz Mader, Clarks Summit, and Reinhard Kassner, Harding, both of Pa., assignors to Schott Glass Technologies, Inc., Duryea, Pa.

Filed Jun. 11, 1982, Ser. No. 387,635

Int. Cl.^{3} C03C *3/04, 3/10*

U.S. Cl. 501—72 **19 Claims**

1. An optical glass having a refractive index n_d of 1.590–1.605, an Abbe number V_d of 40.5–42.0, a density of 2.62–2.67 g cm^{-3}, and a coefficient of thermal expansion α of $78–90\times10^{-7}$ per °C., consisting essentially of in wt percent:

60–75 wt.% SiO_2

0–2 wt.% Li_2O

3–13 wt.% Na_2O

0–12 wt.% K_2O

10–15 wt.% total of Li_2O, Na_2O and K_2O

5–12 wt.% total of alkaline earth metal oxide MgO, CaO or SrO 12–18 wt.% of TiO_2 0–0.1 wt.% of a refining agent,

optionally, a coloring effective amount of a colorant conventional in optical glass, and

otherwise essentially free of Al_2O_3, B_2O_3 and oxides of elements having atomic weights greater than 90.

4,444,894

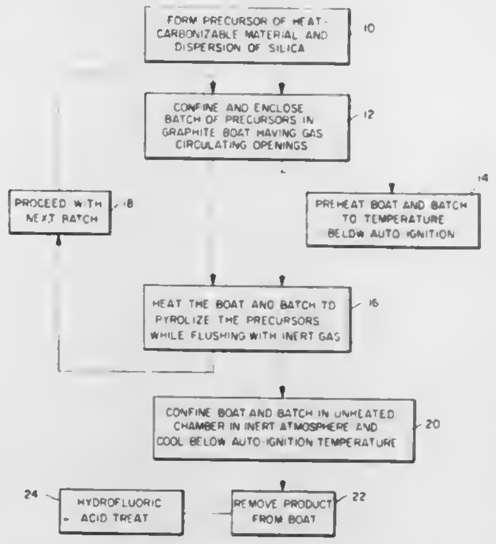
SILICON CARBIDE AND CARBON STRUCTURES AND METHOD OF MAKING

Robert G. Shaver, Springfield, Va., assignor to Versar Inc., Springfield, Va.

Filed Oct. 29, 1982, Ser. No. 437,658

Int. Cl.^{3} C04B *35/52, 35/56*

U.S. Cl. 501—90 **12 Claims**


FORM PRECURSOR OF HEAT-CARBONIZABLE MATERIAL AND DISPERSION OF SILICA
10
CONFINE AND ENCLOSE BATCH OF PRECURSORS IN GRAPHITE BOAT HAVING GAS CIRCULATING OPENINGS
12
PROCEED WITH NEXT BATCH
18
PREHEAT BOAT AND BATCH TO TEMPERATURE BELOW AUTO IGNITION
14
HEAT THE BOAT AND BATCH TO PYROLIZE THE PRECURSORS WHILE FLUSHING WITH INERT GAS
16
CONFINE BOAT AND BATCH IN UNHEATED CHAMBER IN INERT ATMOSPHERE AND COOL BELOW AUTO-IGNITION TEMPERATURE
20
24
HYDROFLUORIC ACID TREAT
REMOVE PRODUCT FROM BOAT
22

1. The process of manufacturing shaped structures comprising silicon carbide and carbon, including the steps of:

(a) collecting a batch of precursors of heat carbonizable synthetic resin material having dispersed therein siliceous material;

(b) heating a first chamber to a temperature within a range from 2000° F. to 3000° F., and maintaining the chamber at said temperature;

(c) enclosing a batch of said precursors within a graphite boat which substantially surrounds the precursors except for small openings sufficient to circulate gases through the boat;

(d) confining and heating the boat and the batch in the heated chamber while flushing the chamber and boat with inert gases and full carbonizing the synthetic resin material;

(e) converting at least 50% of the siliceous material to silicon carbide by continuing the heating of the boat and batch in the heated chamber for a time in the range of 4 to 24 hours to promote solid state reactions between the carbon formed from the resin material and the siliceous material, while continuously flushing the chamber and boat with inert gases;

(f) subsequently removing the heated boat containing the batch from the first chamber and immediately confining it in a second unheated chamber in the presence of an inert atmosphere until the boat and batch are cooled below the auto-ignition temperature of carbon in air; and

(g) recovering the shaped silicon carbide and carbon structures from the second chamber and boat.

4,444,895

REACTIVATION PROCESS FOR IRIDIUM-CONTAINING CATALYSTS USING LOW HALOGEN FLOW RATES

Shun C. Fung, Bridgewater; Walter Weissman, Berkeley Heights, and James L. Carter, Westfield, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed May 5, 1982, Ser. No. 374,976

Int. Cl.^{3} B01J *23/96, 23/46, 23/64;* **L10G** *35/085*

U.S. Cl. 502—37 **18 Claims**

1. A process for reactivating an agglomerated catalyst containing metallic iridium comprising the steps of:

(a) pretreating said catalyst by contact with a substantially elemental oxygen-free atmosphere comprising a halide-providing compound at elevated temperature for a sufficient time to provide about 1.3 weight percent and above halide to the catalyst, taken as the coke-free, dry catalyst; and

(b) redispersing the metallic iridium from step (a) while maintaining said 1.3 weight percent and above halide provided to the catalyst by contact with an atmosphere comprising elemental halogen and a redispersing aid selected from elemental oxygen or elemental oxygen and water wherein said halogen and oxygen are present in a halogen to oxygen volume ratio in the range of about 0.05 to 10, at elevated temperature, at a halogen mass flow rate of about one-tenth gram or less of elemental halogen per 100 grams of catalyst per hour for a total halogen amount of up to 0.5 gram halogen per 100 grams catalyst, for a time sufficient to effect about a 75 to 100 percent redispersion of said metallic iridium.

5. The process of claim **1** wherein said halide-providing compound is one which generates a hydrogen halide in the presence of hydrogen gas.

18. A process for reactivating a partially or completely decoked agglomerated platinum-iridium on alumina catalyst containing platinum and iridium oxides, comprising the steps of:

(a) contacting said agglomerated catalyst with a hydrogen atmosphere at a temperature in the range of about 300° to 540° C., and a pressure of about 0.1 to 2.0 MPa, for a sufficient time to substantially reduce said oxides of platinum and iridium to the respective metals;

(b) pretreating said catalyst from step (a) by contact with an elemental oxygen-free and elemental halogen-free atmosphere comprising hydrogen chloride at a temperature in the range of about 300° to 540° C. and a pressure of about 0.1 to 2.0 MPa for a sufficient time to saturate the catalyst with chloride; and

(c) redispersing the metallic iridium and platinum while maintaining a saturated catalyst chloride level with an atmosphere comprising elemental chlorine and elemental oxygen in a halogen to oxygen volume ratio of about 0.05 to 10 at a temperature in the range of about 500° to 540° C., a pressure of about 0.1 to 2.0 MPa, at a halogen mass flow rate of about 0.05 to 0.1 gram halogen per 100 grams catalyst per hour, for a total halogen amount of up to 0.5 gram halogen per 100 grams catalyst, for a sufficient time to effect about 75 to 100 percent redispersion of both metallic platinum and iridium.

4,444,896

REACTIVATION OF IRIDIUM-CONTAINING CATALYSTS BY HALIDE PRETREAT AND OXYGEN REDISPERSION

Shun C. Fung, Bridgewater, and Walter S. Kmak, Scotch Plains, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed May 5, 1982, Ser. No. 374,977

Int. Cl.^{3} B01J *23/96, 23/46, 23/64;* **C10G** *35/085*

U.S. Cl. 502—37 **22 Claims**

1. A process for reactivating an agglomerated catalyst containing metallic iridium comprising the steps of:

(a) pretreating said catalyst by contacting with a substantially elemental oxygen-free atmosphere comprising a halide-providing compound at an elevated temperature to provide about 1.6 weight percent and above halide to the catalyst, taken as the coke-free, dry catalyst; and

(b) redispersing the metallic iridium from step (a) while maintaining said 1.6 weight percent and above halide provided to the catalyst by contact with an atmosphere consisting essentially of elemental oxygen under static conditions or slow continuous flow conditions for a time sufficient to effect about 75 to 100 percent redispersion of said metallic iridium.

5. The process of claim **1** wherein said halide-providing compound is one which generates a hydrogen halide in the presence of hydrogen gas.

22. A process for reactivating partially or completely decoked agglomerated platinum-iridium on alumina catalyst comprising the steps of:

(a) contacting said agglomerated catalyst with a hydrogen atmosphere at a temperature in the range of about 300° to 540° C. and a pressure of about 0.1 to 2.0 MPa for a sufficient time to substantially reduce oxides of platinum and iridium to the respective metals;

(b) contacting said catalyst from step (a) with a substantially elemental oxygen-free atmosphere comprising hydrogen chloride at a temperature in the range of about 300° to 540° C. and a pressure of about 0.1 to 2.0 MPa to saturate the catalyst with chloride; and

(c) redispersing the metallic iridium and platinum while maintaining the catalyst chloride level at about 1.6 weight percent and above, by contact with an atmosphere consisting essentially of elemental oxygen at a temperature in the range of about 500° to 540° C. and a pressure of about 0.1–2 MPa and a space velocity of about 2 to 6 v/v/hr., for a sufficient time to effect about a 76 to 100 percent redispersion of metallic platinum and iridium on the alumina.

4,444,897

REACTIVATING IRIDIUM-CONTAINING CATALYSTS WITH HYDROGEN HALIDE AND OXYGEN

Shun C. Fung, Bridgewater; Walter Weissman, Berkeley Heights; James L. Carter, Westfield, and Walter S. Kmak, Scotch Plains, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed May 5, 1982, Ser. No. 374,978

Int. Cl.^{3} B01J *23/96, 23/46, 23/64;* **C10G** *35/085*

U.S. Cl. 502—37 **21 Claims**

1. A process for reactivating a partially or completely decoked agglomerated catalyst containing metallic iridium comprising the steps of:

(a) pretreating the catalyst by contact with a substantially elemental oxygen-free atmosphere comprising a halide-providing compound at elevated temperature to provide about 1.3 weight percent and above, halide to the catalyst, taken as the coke-free, dry catalyst; and

(b) redispersing the metallic iridium from step (a), while maintaining said 1.3 weight percent halide provided to the catalyst, by contact with an atmosphere comprising hydrogen halide and elemental oxygen at elevated temperature at an oxygen:hydrogen halide volume ratio of about 1:5 to 100:1 and a hydrogen halide partial pressure of about 0.00005 to 0.1 MPa for a time sufficient to effect a substantial redispersion of said metallic iridium.

17. The process of claim **1** wherein said catalyst further contains iridium oxide which is contacted with a reducing atmosphere at elevated temperature to substantially convert said iridium oxide to metallic iridium prior to or concurrently with step (a).

20. A process for reactivating partially or completely decoked agglomerated platinum-iridium on alumina catalyst containing platinum and iridium oxides comprising the steps of:

(a) contacting said agglomerated catalyst with a hydrogen atmosphere at a temperature in the range of about 300° to 540° C. and a pressure of about 0.1 to 2.0 MPa for a sufficient time to substantially convert said oxides of platinum and iridium to the respective metals;

(b) pretreating the catalyst from step (a) by contact with an elemental oxygen-free atmosphere comprising hydrogen chloride at a temperature in the range of about 300° to 540° C. and a pressure of about 0.1 to 2.0 MPa to saturate the catalyst with chloride; and

(c) redispersing the metallic platinum and iridium while maintaining a saturated catalyst chloride level by contact with an atmosphere comprising hydrogen chloride and elemental oxygen in an oxygen/hydrogen chloride volume ratio of about 4:1 to 20:1, at a temperature in the range of about 500° to 540° C. for a sufficient time to effect about a 75 to 100 percent redispersion of both metallic platinum and iridium.

21. A process for reactivating an agglomerated metallic platinum-iridium on alumina catalyst, which has been partially decoked by hydrogen gas, comprising the steps of:

(a) pretreating said catalyst by contact with an elemental oxygen-free atmosphere comprising hydrogen chloride at a temperature in the range of about 300° to 540° C. and a pressure of about 0.1 to 2.0 MPa to saturate the catalyst with chloride; and

(b) redispersing the metallic platinum and iridium while maintaining a saturated catalyst chloride level by contact with an atmosphere comprising hydrogen chloride and elemental oxygen in an oxygen/hydrogen chloride volume ratio of about 4:1 to 20:1, at a temperature in the range of about 500° to 540° C. for a sufficient time to effect about a 75 to 100 percent redispersion of both metallic platinum and iridium.

4,444,898

HETEROCATALYST SYSTEM

Jeffrey Schwartz, Princeton, N.J., and Tai-Nang Huang, New Haven, Conn., assignors to University Patents, Inc., Norwalk, Conn.

Filed Jan. 7, 1982, Ser. No. 336,821

Int. Cl.^{3} B01J *29/10*

U.S. Cl. 502—62 **45 Claims**

1. A process for preparation of a heterocatalyst system comprising the steps of: reacting at least one metal complex with an active —OH group of sufficient activity within a pore, aperture, channel, cage or cavity of a zeolite or molecular sieve, said metal complex being of a size capable of entering said pore, aperture, channel, cage or cavity of said zeolite or molecular sieve and reacting with an —OH group therein; forming of at least one metal—O—zeolite or metal—O—molecular sieve bond with said complex in said pore, aperture, channel, cage or cavity of said zeolite or molecular sieve, and recovering said reaction product of metal—O—zeolite or metal—O—molecular sieve as a catalyst.

3. The process as defined in claim **1** wherein the complex is substituted with an alkyl, allyl, alkenyl, alkynyl or aryl group, or mixtures of these groups, of 2 to 8 carbon atoms corresponding in number to the metal in its oxidation states.

8. The process as defined in claim **1** wherein the complex is of a Group VIII metal.

4,444,899

PROCESS FOR THE PRODUCTION OF LOW DENSITY ACTIVATED ALUMINA FORMED PRODUCT

Koichi Yamada, Niihama; Kunio Nakazato, Yokohama; Katsuzo Shiraishi, and Seiichi Hamano, both of Niihama, all of Japan, assignors to Sumitomo Aluminum Smelting Company, Limited, Osaka, Japan

Continuation of Ser. No. 254,449, Apr. 15, 1981, abandoned.

This application Apr. 1, 1983, Ser. No. 481,461

Claims priority, application Japan, Apr. 21, 1980, 55-53375

Int. Cl.^{3} B01J *21/04, 21/08, 21/12*

U.S. Cl. 502—64 **5 Claims**

1. A process for the production of a low density formed product of an activated alumina having a large macro-pore volume being about 0.03 cc/g or more of a pore volume of pore radius: 1,000 **521** or more and an excellent abrasion resistance, which comprises mixing about 10 to 100% by weight of a solid material selected from the group consisting of an alumina powder capable of being at least partially re-hydrated and a mixture of the alumina powder and a second material selected from the group consisting of α-alumina, silica, alumina hydrate, clay, talc, bentonite, diatomaceous earth, zeolite, cordierite, spodumene, titania, zirconia, silica sol, alumina sol, mullite, and silica-alumina with water, said solid material having an average particle size of 1 to about 35 microns and a quarter deviation of particle distribution of not more than about 1.5, forming the mixture of solid material and water, re-hydrating the formed product by keeping it under wetted atmosphere or in water, and calcining the resulting re-hydrated product.

4,444,900

ACTIVATION OF ZEOLITES

Clarence D. Chang, Princeton, and Joseph N. Miale, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed May 5, 1982, Ser. No. 375,076

Int. Cl.^{3} B01J *29/28*

U.S. Cl. 502—71 **11 Claims**

1. A method for enhancing the activity of a synthetic porous crystalline zeolite having a silica-to-alumina mole ratio greater than about 100, said zeolite having been synthesized from a reaction mixture containing a diamine as a cation source, which comprises the sequential steps of reacting the zeolite with a dilute aqueous solution of hydrogen fluoride of from about 0.1 to about 5 Normal at a temperature of from about 0° C. to about 30° C. for a time of less than about 60 minutes, contacting the hydrogen fluoride reacted zeolite with aluminum chloride vapor at a temperature of from about 100° C. to about 850° C., treating the aluminum chloride contacted zeolite by contact with an ammonium salt solution or ammonolysis, and calcining the resulting material at a temperature of from about 200° C. to about 600° C.

10. A method for enhancing the activity of a synthetic porous crystalline zeolite having the crystal structure of zeolite ZSM-48 and a silica-to-alumina mole ratio greater than about 100, said zeolite having been synthesized from a reaction mixture containing a diamine as a cation source, which comprises the sequential steps of reacting the zeolite with a dilute aqueous solution of hydrogen fluoride of from about 0.1 to about 5 Normal at a temperature of from about 0° C. to about 30° C. for a time of less than about 60 minutes, contacting the hydrogen fluoride reacted zeolite with aluminum chloride vapor at a temperature of from about 100° C. to about 850° C., treating the aluminum chloride contacted zeolite by contact with an ammonium salt solution or ammonolysis, and calcining the resulting material at a temperature of from about 200° C. to about 600° C.

11. A zeolite composition having enhanced activity prepared by the method of claim **10**.

4,444,901

CATALYST FOR UPGRADING SYNTHESIS GAS

Frederick A. Pesa, Aurora, and Anne M. Graham, Northfield, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 332,773, Dec. 21, 1981, Pat. No. 4,390,639.

This application Jan. 12, 1983, Ser. No. 457,331

Int. Cl.^{3} B01J *21/04, 21/12, 23/46, 23/52*

U.S. Cl. 502—80 **5 Claims**

1. A catalyst composition of the formula

$$RuO_x/Au^o_a$$

wherein

a = about 0.5 to about 1.5 and

x = number of oxygens needed to satisfy the valence requirements of the other elements.

4,444,902

ACTIVATION OF HIGH SILICA ZEOLITES

Clarence D. Chang, Princeton, and Joseph N. Miale, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 22, 1981, Ser. No. 333,370
Int. Cl.³ B01J *29/38, 29/06*

U.S. Cl. 502—86 **14 Claims**

1. A process for enhancing the acid activity of a crystalline zeolite having a silica-to-alumina mole ratio greater than about 100, which comprises calcining said crystalline zeolite at a temperature of from about 200° C. to about 600° C. for a period of time ranging from about 1 minute to about 48 hours, contacting said calcined zeolite with from about 0.1 to about 1 gram of solid aluminum fluoride per gram of crystalline zeolite at a temperature of from about 0° C. to about 650° C., treating said aluminum fluoride contacted zeolite with an ammonium salt solution and thereafter calcining said zeolite at a temperature of from about 200° C. to about 600° C. in order to obtain a crystalline zeolite having enhanced activity.

4,444,903

PROCESS FOR POLYMERIZING CONJUGATE DIOLEFINS, AND MEANS SUITABLE FOR THIS PURPOSE

Antonio Carbonaro, Milan; Domenico Ferraro, and Mario Bruzzone, both of S.Donato Milanese, all of Italy, assignors to Enoxy Chimica, S.p.A., Sassari, Italy

Filed Sep. 2, 1982, Ser. No. 413,982
Claims priority, application Italy, Sep. 25, 1981, 24160 A/81
Int. Cl.³ C08F *4/62*

U.S. Cl. 502—102 **7 Claims**

1. A catalytic system for conjugate diolefin polymerization or copolymerization, prepared from

(a) at least one carboxylate or alcoholate of a metal of Group IIIB of the Periodic System of elements having an atomic number of between 21 and 103;

(b) an organic halogen derivative of the formula:

$$\begin{array}{c} R' \\ | \\ R-C-X \\ | \\ R'' \end{array}$$

in which X is Cl or Br; R is H, alkyl, aryl, alkylaryl, chloro or bromo alkyl, alkoxy or epoxy; R' is alkyl, aryl, H, Cl or Br; R" is alkyl, aryl, vinyl, chloro or bromo alkyl; chloro or bromo aryl, Cl or Br; or R' + R" is oxygen, or saturated or unsaturated cycloalkyl; provided that if R=R'=H, then R" is only of aromatic nature.

(c) organometallic aluminum compounds not containing halide ions, of the formula:

$R^aR^bAl\,R^c$

in which R^a and R^b, which can be the same or different, are a saturated or unsaturated linear or branched alkyl residue containing from 1 to 18 carbon atoms, and R^c is hydrogen or an alkyl radical which can be the same as or different from R^a and R^b.

4,444,904

PROCESS FOR SYNTHESIZING A MULTICOMPONENT ACIDIC CATALYST COMPOSITION CONTAINING ZIRCONIUM BY AN ORGANIC SOLUTION METHOD

Ji-Yong Ryu, Ramsey, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 26, 1983, Ser. No. 498,516
Int. Cl.³ B01J *27/14, 21/02, 31/12*

U.S. Cl. 502—208 **26 Claims**

1. A process for preparing a catalyst composition which comprises:

(1) reacting in admixture at least one Metal Hydrocarboxide I, at least one Metal Hydrocarboxide II, at least one acidic phosphorus-oxygen containing compound, and water in the presence of at least one liquid organic medium comprising at least 50% by weight, based on the weight of said medium, of at least one member selected from the group consisting of organic aldehyde, organic ketone, and organic ether, said reaction being conducted in a manner sufficient to (a) avoid contact of Metal Hydrocarboxides I and II with water prior to contact of Metal Hydrocarboxide I and II with the acidic phosphorusoxygen containing compound, and (b) form a catalyst precursor composition;

(2) separating said catalyst precursor composition from said reaction admixture;

(3) calcining said catalyst precursor composition to form said catalyst composition;

wherein said process:

(i) the metal M^1, of said Metal Hydrocarboxide I comprises aluminum; and

(ii) metal, M^2, of said Metal Hydrocarboxide II comprises zirconium.

4,444,905

HYDROTREATING CATALYST PREPARATION AND PROCESS

George N. Pessimisis, Westchester, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Continuation of Ser. No. 188,708, Sep. 19, 1980, abandoned, which is a continuation of Ser. No. 63,582, Aug. 3, 1979, abandoned. This application Mar. 15, 1982, Ser. No. 358,522
Int. Cl.³ B01J *23/64, 27/14;* **C10G** *45/04, 45/00*

U.S. Cl. 502—211 **6 Claims**

1. A process of preparing a hydrotreating catalyst which consists essentially in the following steps:

(a) reacting molybdenum trioxide (MoO_3) and a carbonate of a Group VIII metal from the group consisting of nickel and cobalt by heating them in an aqueous slurry containing phosphoric acid, the quantity of MoO_3 being in the range of 120 g/l to 340 g/l, the molar ratio of Mo to Group VIII metal being approximately 3.15:1, and the P/Mo molar ratio being approximately 0.087, the heating being carried out until a clear solution "A" is obtained;

(b) separately preparing an aqueous solution of a compound of a Group VIII metal from the group consisting of nickel and cobalt by heating an aqueous slurry of a carbonate of a Group VIII metal from the group consisting of nickel and cobalt in the presence of citric acid until a clear solution "B" is obtained;

(c) impregnating hydrothermally, in a first stage, a hydrotreating catalyst carrier of alumina or alumina-silica containing a minor amount of silica with solution "A" and solution "B", the relative proportion of solution "A" being substantially greater than the proportion "B", the amount and time of impregnation being sufficient to produce in the first stage after calcination an impregnated catalyst carrier containing up to 17.0% by weight MoO_3, 2.85 to 4.55% by weight oxide of Group VIII metal and 0.50 to 0.93% by weight P_2O_5;

(d) filtering, semi-drying, forming and calcining the resultant product from said first stage;

(e) in a second stage, impregnating by dipping for an extended period of time the formed and calcined product from the first stage with solution "A", the amount and time of impregnation with said solution in said second stage being sufficient to produce, after drying and calcination, a catalyst containing by weight 21–30% MoO_3, 5–7% oxide of Group VIII metal, and 1.0–3.5% P_2O_5; and

(f) drying and calcining said catalyst.

4,444,906

METHOD FOR THE PREPARATION OF HIGH ACTIVITY PHOSPHOMOLYBDIC ACID BASED CATALYSTS

James L. Callahan, Wooster; Wilfrid G. Shaw, and Arthur F. Miller, both of Lyndhurst, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 271,458, Jun. 8, 1981, abandoned. This application Nov. 8, 1982, Ser. No. 439,952
Int. Cl.³ B01J *27/14*

U.S. Cl. 502—211 **20 Claims**

1. A method for the preparation of a second stage phosphomolybdic acid based catalysts comprising the steps of:

forming a solution of hydrated phosphomolybdic acid in a substantially anhydrous alkyl alcohol;

adding a base to said solution;

evaporating said solution to yield a catalyst powder; and

drying and calcining said powder to form the active catalyst.

4,444,907

METHACRYLIC ACID PRODUCTION CATALYST

Kyoji Ohdan; Toshihiko Hogami, and Masataka Fujinaga, all of Ube, Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

Filed Dec. 9, 1982, Ser. No. 448,059
Claims priority, application Japan, Dec. 24, 1981, 56-208110
Int. Cl.³ B01J *27/14*

U.S. Cl. 502—211 **5 Claims**

1. A method for preparing a heteropolyacid type catalyst containing, as catalyst constituent elements, phosphorus, molybdenum, copper, and arsenic and suitable for use in the production of methacrylic acid from methacrolein and molecular oxygen at an elevated temperature under a vapor phase, comprising the steps of:

(a) mixing molybdophosphoric acid and compounds containing the other constituent elements of the catalyst in the presence of water;

(b) concentrating or drying the resultant solution or slurry;

(c) adjusting the water content of the resultant concentrated or dried mixture to 5% to 20% by weight; and

(d) heat treating the mixture at a temperature of 100° C. to 300° C.

4,444,908

CATALYST AND PROCESS FOR OXIDIZING HYDROGEN SULFIDE

Robert H. Hass, Fullerton, and John W. Ward, Yorba Linda, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 191,859, Sep. 29, 1980, which is a continuation-in-part of Ser. No. 27,033, Apr. 4, 1979, Pat. No. 4,314,983. This application Apr. 1, 1982, Ser. No. 364,415
Int. Cl.³ B01J *23/14, 29/16;* **C01B** *17/20, 17/52*

U.S. Cl. 502—247 **22 Claims**

1. A catalyst composition comprising supported vanadium and bismuth components catalytically active for oxidizing H_2S in the gas phase, said catalyst comprising about 8 to about 20 weight percent bismuth components, calculated as Bi_2O_3, and at least about 7 weight percent vanadium components, calculated as V_2O_5, said catalyst being porous and having a mean pore diameter of at least 200 angstroms.

4,444,909

SYNTHESIS GAS CONVERSION TO OXYGENATES

Clarence D. Chang, Princeton, and William H. Lang, Pennington, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 137,943, Apr. 7, 1980, Pat. No. 4,344,868, which is a continuation-in-part of Ser. No. 65,821, Aug. 13, 1979, abandoned. This application Jan. 27, 1982, Ser. No. 343,062
Int. Cl.³ C07L *1/04, 27/06*

U.S. Cl. 518—716 **24 Claims**

1. A process for producing hydrocarbon and oxygenate-containing mixtures which are limited compositionally in being virtually free of $C_{11}+$ compounds which comprises contacting synthesis gas comprising hydrogen and carbon oxides with a catalyst at a temperature within the range of between about 500° F. and about 1000° F., a pressure within the range of between about 10 atmospheres and about 200 atmospheres and a gas hourly space velocity within the range of between about 100 and about 10,000, said catalyst comprising a zeolite which is virtually free of acid sites having an acid activity, as measured by the C.P.I. Index, of no greater than 50, and characterized by a silica to alumina mole ratio of at least about 12, a constraint index within the range of 1 to 12, having intimately combined therewith a metal selected from the group consisting of rhodium, platinum, palladium and iridium.

4,444,910

REACTION INJECTION MOLDED ELASTOMERS MADE USING A POLYURETHANE ORGANOMETALLIC CATALYST AMINE TERMINATED POLYETHERS AMINE TERMINATED CHAIN EXTENDER AND AROMATIC POLYISOCYANATE

Doris M. Rice; Richard J. G. Dominguez, and Rodney F. Lloyd, all of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Apr. 23, 1982, Ser. No. 371,376
Int. Cl.³ C08G *18/14*

U.S. Cl. 521—51 **22 Claims**

1. A reaction injection molded elastomer made by reacting in a closed mold ingredients comprising amine terminated polyethers of greater than 1,500 average molecular weight having greater than 50% of their active hydrogens in the form of amine hydrogens, an amine terminated chain extender, an aromatic polyisocyanate and an organometallic catalyst.

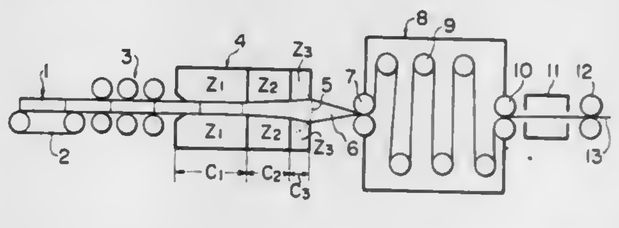
4,444,911

PNEUMATIC CELLULAR AROMATIC POLYAMIDE ARTICLES AND PROCESS FOR THE PREPARATION THEREOF

Susumu Norota, Osaka; Yasuhiko Segawa, Yamaguchi, and Shingo Emi, Osaka, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed May 19, 1983, Ser. No. 495,927
Claims priority, application Japan, May 19, 1982, 57-83238
Int. Cl.³ C08J *9/12*

U.S. Cl. 521—82 **3 Claims**



1. A process for the preparation of pneumatic cellular aromatic polyamide articles comprising heating the aromatic polyamide article, which

(i) is substantially composed of aromatic polyamide,

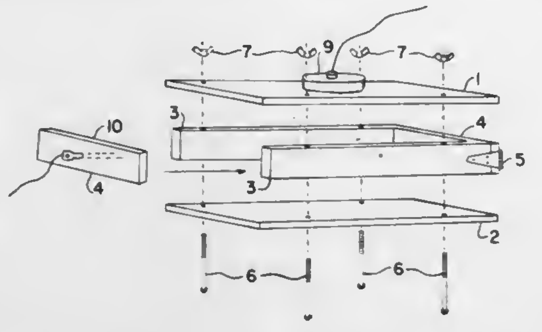
(ii) contains moisture at a percent moisture absorption of 2 to 30% by weight.

(iii) has an average thickness of 0.1 to 3 mm, and
(iv) has an X-ray crystallinity of 30% and below, at a temperature in the range between the softening point and the melting point of the aromatic polyamide while keeping the above-mentioned percent moisture absorption at least until the article is heated up to the softening point.

4,444,912
PHENOLIC FOAM AND COMPOSITION AND METHOD FOR PREPARING THE SAME

John D. Carlson, Bradford Woods; Edward W. Kifer, Trafford; Vincent J. Wojtyna, Lyndora, and James P. Colton, Monroeville, all of Pa., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 282,021, Jul. 10, 1981, abandoned. This application Jul. 9, 1982, Ser. No. 396,706
Int. Cl.^{3} C08J *9/14*
U.S. Cl. 521—121 **45 Claims**



1. An improved foamable phenolic resole composition containing at least about 5 percent by weight water comprising aqueous phenol formaldehyde resole, surfactant, blowing agent, and acid catalyst, wherein the improvement comprises a phenol formaldehyde resole having a molar ratio of formaldehyde to phenol of from about 1.7:1 to about 2.3:1, a weight average molecular weight greater than about 800, a number average molecular weight greater than about 350, and a dispersivity greater than about 1.7 and wherein the acid catalyst is an anhydrous aryl sulfonic acid having a pKa of less than about 2.0 and which reduces the compatibility of the phenolic resole with water sufficiently enough to prevent perforations and ruptures in cell walls of phenolic foam made from the composition and wherein the anhydrous aryl sulfonic acid is present in concentrations of at least about 6 percent by weight.

4,444,913
MODIFIED POLYISOCYANURATE FOAM AND METHOD OF PREPARATION

Stuart B. Smith, Conyers, Ga., assignor to Thermocell Development, Ltd., Knoxville, Tenn.

Filed Nov. 18, 1982, Ser. No. 442,563
Int. Cl.^{3} C08G *18/14*
U.S. Cl. 521—128 **19 Claims**

1. In a polyisocyanurate rigid foam prepared by the reaction of a methylene diisocyanate with a modifying amount of a hydroxy-containing compound, having a hydroxyl number of about 300 or less, the hydroxyl-containing compound selected from the group consisting of a saturated polyester resin prepared by the reaction of a dicarboxylic acid and an aliphatic dihydroxy alcohol, and a alkoxy polyalkylene glycol, the reaction carried out in the presence of a catalytic amount of a trimerization catalyst, a blowing amount of a blowing agent and a surfactant, the improvement which comprises:

adding to the reaction mixture a compressive-strength modifying amount of an alicyclic glycol compound.

4,444,914
SMOKE AND TOXIC GAS SUPPRESSANT SYSTEM

Derek A. Smith, 110 Frognal, London, NW3; Stephen J. Grayson, 8 Bennett Park, Blackheath, London SE3 9RB, and John Hume, 46 Boleyn Rd., Forest Gate, London E7 9QE, all of England

Filed Sep. 9, 1982, Ser. No. 416,311
Claims priority, application United Kingdom, Sep. 11, 1981, 8127549
Int. Cl.^{3} C08J *9/00;* **C08G** *18/02*
U.S. Cl. 521—130 **28 Claims**

1. A composition comprising a combustible material and an effective amount of a smoke and toxic gas (hereinafter STG) suppressant composition comprising (A) an STG suppressant component together with at least one component selected from components (B) and (C), component (B) being selected from components that are combustion rate-reducing, flame temperature-reducing, or both flame temperature- and combustion rate-reducing, component (C) being a charstablising component, at least two different chemical compounds being present to perform the functions of components A and B, A and C, or A, B and C.

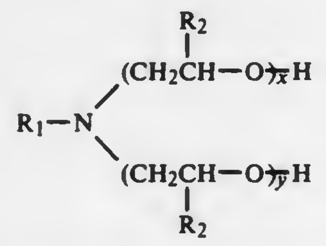
4. A composition as claimed in claim 1, which is in the form of a foam.

4,444,915
RIGID POLYISOCYANURATE FOAM

Louis L. Grube, Bound Brook, and Charles J. Horner, Jr., Piscataway, both of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Aug. 1, 1983, Ser. No. 519,274
Int. Cl.^{3} C08G *18/14*
U.S. Cl. 521—131 **20 Claims**

1. Rigid cellular polyisocyanurate foam comprising the post cured reaction product of reacting aromatic polyisocyanate with between about 0.1 and about 0.5 hydroxyl equivalent of polyol per equivalent of said polyisocyanate, said polyol comprising at least about 60 percent polyol mixture prepared by the transesterification with a glycol of molecular weight from about 60 to about 400 of a residue remaining after dimethyl terephthalate and methyl p-toluate have been removed from a dimethyl terephthalate esterified oxidate reaction product, the major portion of said residue comprising a mixture of methyl and benzyl esters of benzene and biphenyl di- and tricarboxylic acids, said reaction of polyisocyanate and polyol taking place in the presence of:
(a) isocyanate trimerization catalyst;
(b) fluorocarbon blowing agent; and
(c) between about 0.1 and about 15 wt% based on total polyol of alkoxylated alkyl amine of the formula



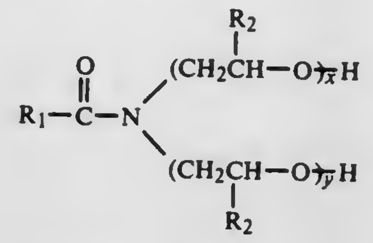
wherein R_1 is an alkyl group containing from 8 to about 30 carbon atoms, each R_2 is independently H or CH_3, and x+y is an integer from 2 to about 50.

4,444,916
POLYISOCYANURATE FOAM AND REACTION MIXTURE FOR MAKING SAME

Louis L. Grube, Bound Brook, and Charles J. Horner, Jr., Piscataway, both of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Aug. 1, 1983, Ser. No. 519,276
Int. Cl.^{3} C08G *18/14*
U.S. Cl. 521—131 **20 Claims**

1. Rigid cellular polyisocyanurate foam comprising the post cured reaction product of reacting aromatic polyisocyanate with between about 0.1 and about 0.5 hydroxyl equivalent of polyol per equivalent of said polyisocyanate, said polyol comprising at least about 60 percent polyol mixture prepared by the transesterification with a glycol of molecular weight from about 60 to about 400 of a residue remaining after dimethyl terephthalate and methyl p-toluate have been removed from a dimethyl terephthalate esterified oxidate reaction product, the major portion of said residue comprising a mixture of methyl and benzyl esters of benzene and biphenyl di- and tricarboxylic acids, said reaction of polyisocyanate and polyol taking place in the presence of:
(a) isocyanate trimerization catalyst;
(b) fluorocarbon blowing agent; and
(c) between about 0.1 and about 15 wt% based on total polyol of amine diol of the formula



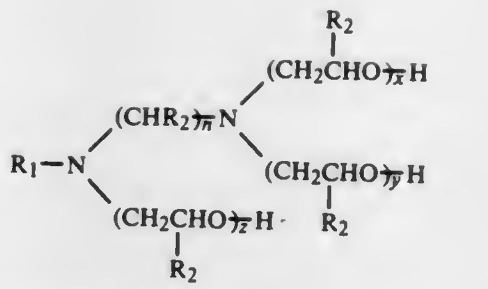
wherein R_1 is an alkyl group containing from 8 to about 30 carbon atoms, each R_2 is independently H or CH_3, and x+y is an integer from 2 to about 50.

4,444,917
POLYISOCYANURATE FOAM

Louis L. Grube, Bound Brook, and Charles J. Horner, Jr., Piscataway, both of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Aug. 1, 1983, Ser. No. 519,275
Int. Cl.^{3} C08G *18/14*
U.S. Cl. 521—131 **20 Claims**

1. Rigid cellular polyisocyanurate foam comprising the post cured reaction product of reacting aromatic polyisocyanate with between about 0.1 and about 0.5 hydroxyl equivalent of polyol per equivalent of said polyisocyanate, said polyol comprising at least about 60 percent polyol mixture prepared by the transesterification with a glycol of molecular weight from about 60 to about 400 of a residue remaining after dimethyl terephthalate and methyl p-toluate have been removed from a dimethyl terephthalate esterified oxidate reaction product, the major portion of said residue comprising a mixture of methyl and benzyl esters of benzene and biphenyl di- and tricarboxylic acids, said reaction of polyisocyanate and polyol taking place in the presence of:
(a) isocyanate trimerization catalyst;
(b) fluorocarbon blowing agent; and
(c) between about 0.1 and about 15 wt% based on total polyol of amine triol of the formula



wherein R_1 is an alkyl group containing from 8 to about 30 carbon atoms, each R_2 is independently H or CH_3, n is 2 or 3 and x+y+z is an integer from 3 to about 50.

4,444,918
AROMATIC POLYOLS MADE FROM WASTE STREAMS FROM THE MANUFACTURE OF TEREPHTHALIC ACIDS, ALKYLENE GLYCOLS AND DIBASIC ACIDS

Michael E. Brennan, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Nov. 22, 1982, Ser. No. 443,779
The portion of the term of this patent subsequent to Mar. 27, 2001, has been disclaimed.
Int. Cl.^{3} C08G *18/14*
U.S. Cl. 521—131 **19 Claims**

1. A mixture of aromatic polyols having hydroxyl and ester functionalities for use in preparing rigid foams, being produced by the process comprising
a. esterifying a residue from dibasic acid manufacture which comprises one or more acids from the group consisting of glutaric acid, succinic acid and adipic acid, with an alkylene glycol to produce a polyester polyol and
b. transesterifying a terephthalic ester waste stream with the polyester polyol reaction product from the previous step.

4,444,919
USE OF POLYETHYLENE TEREPHTHALATE LIQUID WASTE STREAMS CONTAINING GLYCOLS AS RIGID POLYOL EXTENDERS

Michael E. Brennan, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Nov. 22, 1982, Ser. No. 443,848
Int. Cl.^{3} C08G *18/14*
U.S. Cl. 521—172 **3 Claims**

1. A method for producing a rigid polyisocyanurate foam comprising reacting in the presence of a blowing agent and a trimerization catalyst of polyisocyanurate formation, an organic polyisocyanate and a polyol component which comprises a liquid waste stream from polyethylene terephthalate manufacture which consists essentially of polyethylene terephthalate oligomers, monoethylene glycol, diethylene glycol and triethylene glycol.

4,444,920
AROMATIC POLYOLS MADE FROM ALKYLENE GLYCOLS AND WASTE STREAMS FROM THE MANUFACTURE OF DIMETHYL TEREPHTHALATE CONTAINING METHYL P-FORMYLBENZOATE

Michael E. Brennan, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Mar. 18, 1983, Ser. No. 476,457
Int. Cl.^{3} C08G *18/14, 18/32, 18/66;* **C09K** *3/00*
U.S. Cl. 521—173 **19 Claims**

1. A mixture of aromatic polyols having hydroxyl and ester functionalities for use in preparing rigid foams, being produced by the process comprising
(a) reacting a dimethyl terephthalate waste stream which contains from about 40 to 60 mole percent of methyl p-formylbenzoate over a metal alkoxide catalyst and
(b) subsequently transesterifying the product from step (a)

with a polyalkylene glycol by applying heat in the range from about 150° to 250° C.

18. A rigid polyurethane foam obtained by reacting in the presence of a blowing agent and a catalyst of polyurethane formation, an organic polyisocyanate and a polyol blend comprising

- (a) from about 5 to 100 percent by weight of a mixture of aromatic polyols having ester functionalities which is the reaction product from
  - (1) reacting a dimethyl terephthalate waste stream which contains from about 40 to 60 mole percent of methyl p-formylbenzoate over a metal alkoxide catalyst and
  - (2) subsequently transesterifying the product from step (1) with a polyalkylene glycol by applying heat in the range from about 150° to 250° C., and
- (b) from about 95 to 0 percent by weight of a nitrogen-containing polyol which is the reaction product from
  - (1) reacting one mole of phenol or nonylphenol with one to two moles of diethanolamine and formaldehyde to give a Mannich reaction product, and
  - (2) subsequently reacting one mole of the Mannich reaction product with 2 to 3 moles of propylene oxide.

4,444,921
COATED CALCIUM CARBONATE IN POLYESTER/RUBBER MOLDING COMPOUND
Aubrey South, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 24, 1982, Ser. No. 423,384
Int. Cl.³ C08K *3/26*
U.S. Cl. 523—200 **25 Claims**

1. A composition comprising
- (a) an unsaturated polyester prepared by reacting an unsaturated dicarboxylic acid and a polyol;
- (b) a rubber, said rubber being present in an amount so as to give a weight ratio of (a) to (b) within the range of 15:1 to 0.5:1;
- (c) a vinyl monomer, the total amount of vinyl monomer being within the range of 15 to 300 parts by weight of vinyl monomer per 100 parts by weight of said polyester plus said rubber;
- (d) a catalyst; and
- (e) 25 to 800 parts by weight per 100 parts by weight of said polyester plus rubber of calcium carbonate, at least 10 percent of which is coated with 0.1 to 5 weight percent of a fatty acid or fatty acid salt based on the weight of said calcium carbonate.

4,444,922
LOW ENERGY POLYMER-SOLVENT SEPARATIONS
Timothy G. Gutowski, Newton, and Nam P. Suh, Sudbury, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Sep. 8, 1981, Ser. No. 299,744
Int. Cl.³ C08L *9/00;* **C08J** *3/10;* **C08K** *5/01*
U.S. Cl. 523—339 **18 Claims**

1. A method for processing a conjugated diene polymer solution, the conjugated diene chosen from the group of polybutadiene and isoprene, the method comprising the steps of:
- (a) rapidly changing the thermodynamic state of said solution so as to produce a first phase having a relatively low polymer concentration and a second phase having a relatively high polymer concentration, said thermodynamic state being sufficiently changed that said first and said second phases are formed by spinodal decomposition;
- (b) permitting said second phase to separate physically from said first phase; and
- (c) removing said separated second phase.

4,444,923
PROCESS FOR PREPARING AQUEOUS COATINGS COMPRISING DISPERSIBLE EPOXY RESIN-ACID POLYMER ESTER
William H. McCarty, Whitehouse Station, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 30, 1982, Ser. No. 454,817
Int. Cl.³ C09D *3/58*
U.S. Cl. 523—406 **15 Claims**

1. A process for preparing an aqueous dispersion composition comprising:
- A. copolymerizing a monomer mixture which includes at least 30 percent by weight of carboxyl-containing monomer to form a carboxyl containing copolymer in the presence of an epoxy resin containing aliphatic carbon atoms and 1,2-epoxy groups in which said epoxy resin constitutes at least 40 weight percent of the solids in the resulting composition;
- B. reacting the composition obtained in A under esterification conditions in the presence of a tertiary amine esterification catalyst wherein the equivalents of 1,2-epoxy groups in said epoxy resin are in excess of the equivalents of tertiary amine, to obtain a product substantially free of epoxy groups and containing hydroxy ester groups from the reaction between said carboxyl group and at least 5 percent of said 1,2-epoxy groups; and
- C. dispersing said composition in water with the addition of ammonia or amine neutralizing agent; in which a polymer different from said carboxyl containing copolymer of step A is prepared in situ prior to dispersing the mixture in water in step C.

4,444,924
HIGH STRENGTH CARBONATE CONTAINING RESIN COMPOSITION AND ITS METHOD OF MANUFACTURE
Rudolf Grimmer, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 28, 1982, Ser. No. 425,905
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1981, 3141946
Int. Cl.³ C08L *63/04, 63/02, 63/00*
U.S. Cl. 523—445 **16 Claims**

1. A filled resin composition comprising an epoxy resin interbonded with an anhydride hardener, a multibasic hydroxyorganic, organic or inorganic acid adhesive, and a carbonate salt filler wherein the hardened resin and the filler are interbonded by the adhesive and the adhesive is present in an amount of about 0.1 to 3 percent by weight relative to the filler weight.

4,444,925
FLOOR COMPOSITION
Joseph G. Feldman, Fall River, Mass., assignor to Gyp-Crete Corporation, Hamel, Minn.

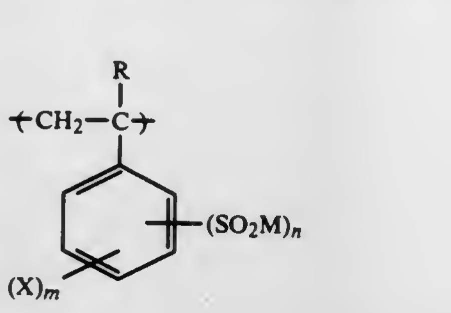
Filed Dec. 16, 1982, Ser. No. 450,332
Int. Cl.³ C08K *3/00*
U.S. Cl. 524—4 **4 Claims**

1. A flooring mix which consists essentially of:
- (a) a composition comprising calcium sulfate hemihydrate admixed with 0.005625 parts ±50% of a compound selected from the group consisting of water soluble polyvinyl alcohol and calcium stearate;
- (b) sand in an amount of from 1.8 to 2.5 parts by weight based on one part by weight of the calcium sulfate hemihydrate; and
- (c) water in an amount of from 0.6 to 0.9 parts by weight based on one part by weight of the calcium sulfate hemihydrate, the mix when set characterized by a dust free surface.

4,444,926
METHOD OF HARDENING GELATIN AND PHOTOGRAPHIC MATERIALS PRODUCED THEREBY
Masasi Ogawa; Kunio Ishigaki, and Kiyotaka Hori, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 10, 1981, Ser. No. 320,028
Claims priority, application Japan, Nov. 10, 1980, 55-157947
Int. Cl.³ G03C *1/30;* **C08L** *89/00;* **B01J** *13/02*
U.S. Cl. 524—23 **52 Claims**

1. A method of hardening gelatin which uses (1) a polymer containing at least 0.01 mol% of a repeating unit represented by formula (I)

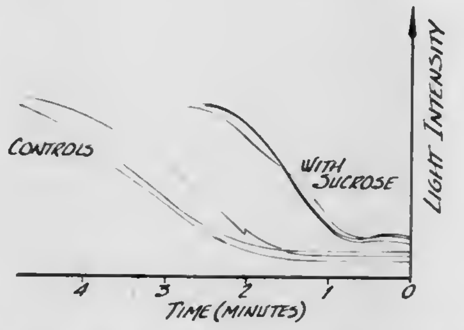


(I)

wherein R represents a hydrogen atom, an alkyl group having from 1 to 6 carbon atoms, or a halogen atom, M represents a hydrogen atom, an alkali metal atom, an alkaline earth metal atom, or an organic base, X represents an alkyl group having from 1 to 6 carbon atoms, an alkoxy group having from 1 to 6 carbon atoms, an alkylamino group having from 1 to 6 carbon atoms, or a halogen atom, m represents 0, 1 or 2, and n represents 1 or 2, (2) a polyvalent alcohol having at least two hydroxy groups, and (3) a hardener having an active vinyl group.

4,444,927
SUCROSE AND/OR LACTOSE NUCLEATING AGENTS FOR THE CRYSTALLIZATION OF POLYDIOXANONE
Emil Borysko, Somerville, N.J., assignor to Ethicon, Inc., Somerville, N.J.

Filed Sep. 13, 1982, Ser. No. 417,780
Int. Cl.³ C08L *5/00;* **A61L** *17/00*
U.S. Cl. 524—56 **8 Claims**



1. Process for fabricating absorbable shaped articles of polydioxanone which comprises heating a mixture of polydioxanone with a small amount of a finely divided sucrose or lactose nucleating agent, to a temperature above the crystalline melting point of the polydioxanone, which temperature is below the melting temperature of the nucleating agent, shaping the molten polymer/nucleating agent mixture, and then cooling the mixture below the crystalline melting point of the polydioxanone, whereby an absorbable shaped article is formed containing the nucleating agent dispersed throughout the polymer.

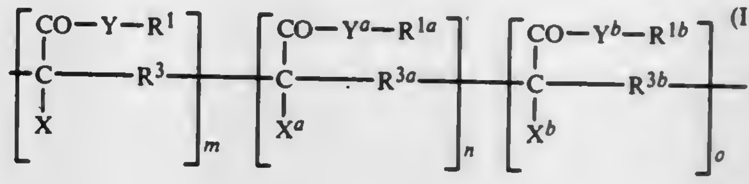
5. An absorbable shaped article comprising polydioxanone containing a small amount of a finely divided sucrose or lactose nucleating agent dispersed throughout said article.

4,444,928
POLYMERIC MALONIC ACID DERIVATIVES
Friedrich Karrer, Zofingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 4, 1982, Ser. No. 405,114
Claims priority, application Switzerland, Aug. 14, 1981, 5264/81
Int. Cl.³ C08K *5/34;* **C07D** *211/30, 211/36, 401/00*
U.S. Cl. 524—99 **4 Claims**

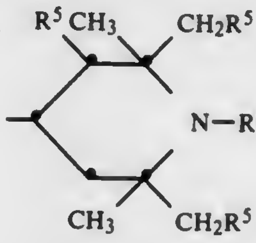
1. A polymer or oligomeric compound of the general formula I

(I)

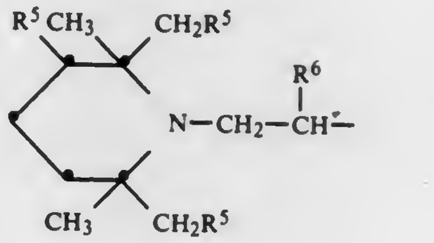


$$\left[-\overset{\overset{\displaystyle CO-Y-R^1}{|}}{\underset{\underset{\displaystyle X}{|}}{C}}-R^3-\right]_m\left[-\overset{\overset{\displaystyle CO-Y^a-R^{1a}}{|}}{\underset{\underset{\displaystyle X^a}{|}}{C}}-R^{3a}-\right]_n\left[-\overset{\overset{\displaystyle CO-Y^b-R^{1b}}{|}}{\underset{\underset{\displaystyle X^b}{|}}{C}}-R^{3b}-\right]_o \quad (I)$$

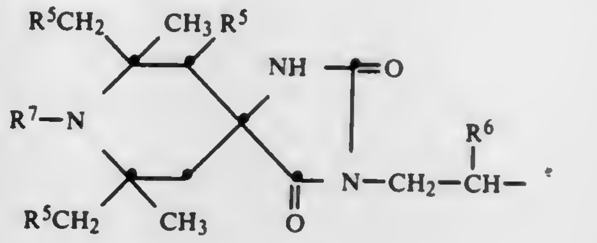
and its salts, in which X is —CO—Y—R^2 or —CN, X^a is —CO—Y^a—R^{2a} or —CN, and X^b is —CO—Y^b—R^{2b} or —CN, Y, Y^a and Y^b independently of one another are —O— or —NR^{10}—, R^1, R^{1a} and R^{1b} independently of one another are a group of the formulae II, III, IV, V or VI



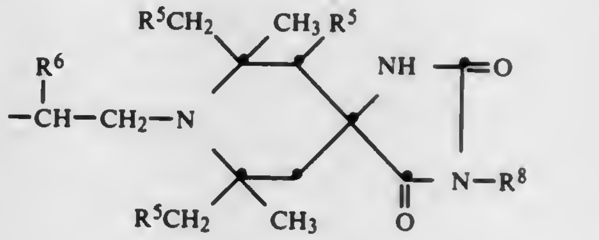
(II)



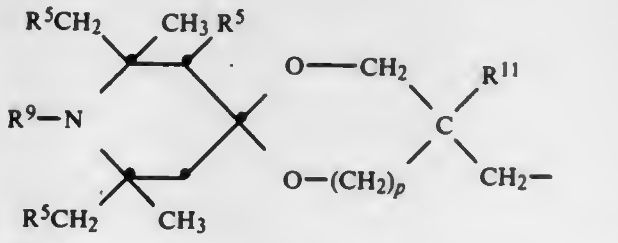
(III)



(IV)



(V)



(VI)

and R^{1a} is also C_1–C_{18}-alkyl, R^2 is identical to R^1 or is H, C_1–C_{18}-alkyl, C_3–C_7-alkenyl or C_7–C_{11}-aralkyl, R^{2a} is identical to R^{1a} or is H, C_1–C_{18}-alkyl, C_3–C_7-alkenyl or C_7–C_{11}-aralkyl, and R^{2b} is identical to R^{1b} or is H, C_1–C_{18}-alkyl, C_3–C_7-alkenyl or C_7–C_{11}-aralkyl, R^3, R^{3a} and R^{3b} independently of one another are C_2–C_{36}-alkylene, C_4–C_{18}-alkenylene, C_8–C_{20}-arylene-dialkylene, C_8–C_{12}-cycloalkylene-dialkylene or C_4–C_{20}-monooxa-alkylene or polyoxa-alkylene, R^4 is hydrogen, C_1–C_{18}-alkyl, C_3–C_{18}-alkenyl, C_3–C_5-alkynyl, C_2–C_{18}-alkanoyl, C_3–C_5-alkenoyl, benzoyl, unsubstituted or C_1–C_4-alkyl-substituted C_7–C_{11}-aralkyl, cyanomethyl, a group —CH-2—CH(OH)—R^6, OH, O.(oxyl oxygen), —COOC_1–C_4-alkyl or —CON(R^{12}) (R^{13}), R^5 is hydrogen or C_1–C_4-alkyl, R^6 is hydrogen, C_1–C_4-alkyl, phenyl, C_1–C_4-alkoxy-methyl, phenoxymethyl or C_1–C_4-alkyl-phenoxymethyl, R^7 is hydrogen, C_1–C_{18}-alkyl, C_3–C_{18}-alkenyl, C_3–C_5-alkynyl, C_2–C_{18}-alkanoyl, C_3–C_5-alkenoyl, unsubstituted or C_1–C_4-alkyl-substituted C_7–C_{11}-aralkyl, O. or cyanomethyl, R^8 is C_1–C_{18}-alkyl, C_3–C_{18}-alkenyl, C_3–C_5-alkynyl or C_7–C_{11}-aralkyl, R^9 has one of the definitions given for R^7, R^{10} is hydrogen, C_1–C_{18}-alkyl, C_3–C_{12}-alkenyl, cyclohexyl or unsubstituted or C_1–C_4-alkyl-substituted C_7–C_{11}-aralkyl or C_6–C_{12}-aryl, R^{11} is hydrogen or C_1–C_4-alkyl, R^{12} is C_1–C_{12}-alkyl, C_3–C_5-alkenyl, C_5–C_8-cycloalkyl, phenyl or benzyl, and R^{13} is hydrogen, C_1–C_{12}-alkyl, C_3–C_5-alkenyl, C_5–C_8-cycloalkyl or benzyl, or R^{12} and R^{13}, together with the N atom to which they are bonded, form a 5–7-membered heterocyclic ring, m, n and o independently of one another are zero or a number from 1 to 100, the sum of m+n+o being at least 3, and p is zero or 1.

4,444,929

UNSYMMETRICAL PHOSPHITE-PHENOLIC ISOCYANURATE STABILIZER COMBINATIONS

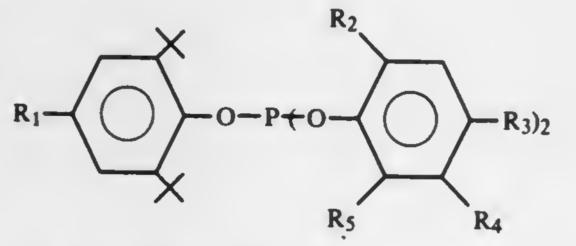
Dwight W. Chaser, Northfield, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Nov. 24, 1982, Ser. No. 444,281

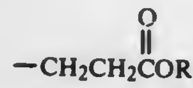
Int. Cl.³ C08K *5/34, 5/52*

U.S. Cl. 524—101 **18 Claims**

1. Stabilizer compositions for organic materialS comprising (1) 4-substituted-2,6-di-t-butylphenyl bis(substituted phenyl)-phosphites having the general formula

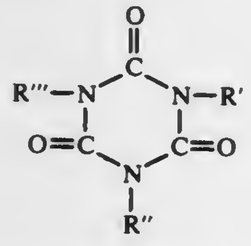


wherein: is t-butyl; R^1 is a primary or secondary alkyl radical containing 1 to 4 carbon atoms, a t-alkyl radical containing 4 to 8 carbon atoms, or a

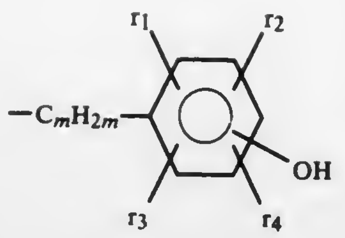


$$-CH_2CH_2\overset{\overset{\displaystyle O}{\|}}{C}OR_6$$

group, wherein R_6 is methyl or ethyl, R_2 is methyl or t-butyl; R_3 is hydrogen, methyl or t-butyl; R_4 is hydrogen or methyl; and R_5 is hydrogen or methyl; and (2) hydroxyphenylalkyleneyl isocyanurates of the formula



wherein R' is a hydroxyphenylalkyleneyl radical of the formula



where m is 1 to 4, r_1 is an alkyl radical having 1 to 18 carbon atoms and is positioned immediately adjacent to the hydroxy group on the ring; r_2, r_3, and r_4 are hydrogen or an alkyl radical containing 1 to 18 carbon atoms; and R'' and R''' are hydrogen, an alkyl radical containing 1 to 18 carbon atoms, or are the same as R'.

4,444,930

FIRE-RESISTANT SYNTHETIC RESIN COMPOSITION CONTAINING A POLYCARBONATE, A PHOSPHOROUS FIREPROOFING ADDITIVE, AND POSSIBLY OTHER ADDITIVES AND/OR FILLERS, AND ARTICLES MADE FROM THIS COMPOSITION

Bernard Guerin, Bures/Yvette; Pierre Poisson, Bernay, and Georges Sturtz, Brest, all of France, assignors to Ato Chimie, Courbevoie, France

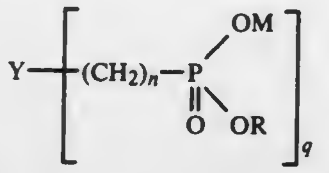
Filed Aug. 24, 1982, Ser. No. 411,046

Claims priority, application France, Aug. 26, 1981, 81 16332

Int. Cl.³ C07F *9/40;* **C08K** *5/53*

U.S. Cl. 524—125 **14 Claims**

1. A fire-resistant synthetic resin composition, containing a polycarbonate, a non-reactive fireproofing additive derived from phosphonic acid, and possibly other additives and/or fillers, and characterized by the fact that the fireproofing additive has the general formula



$$Y\!\left[(CH_2)_n-\underset{\underset{\displaystyle O}{\|}}{P}\begin{matrix}\diagup OM\\ \diagdown OR\end{matrix}\right]_q$$

where Y is a q-valent organic radical, derived, by the loss of q hydrogen atoms, from one of the group consisting of cycloalkanes containing 6 to 8 carbon atoms, benzene hydrocarbons containing 6 to 12 carbon atoms, di- or trinuclear aromatic hydrocarbons with enchained nuclei containing 12 to 20 carbon atoms, di- or trinuclear aromatic hydrocarbons with condensed nuclei containing 10 to 20 carbon atoms, aromatic compounds with the formula Ar-Z-Ar, in which Ar is a monovalent aryl radical containing 6 to 12 carbon atoms, and Z represents —S—, —O—, —SO_2—, —SO—, —CO—, and brominated or chlorinated derivatives of such aromatic hydrocarbons and compounds; q is a number equal to 1, 2, 3; n is a number equal to 0, 1, 2; R is an alkyl radical containing 1 to 6 carbon atoms, a phenyl radical or a cyclohexyl radical; and M is an atom of an alkaline metal belonging to the group comprising Li, Na and K, the concentration of this additive in the polycarbonate being between 0.01 and 0.4 weight%.

4,444,931

POLYESTER BLENDS

Shau-Zou Lu, Whitehouse Station, and Melvin Druin, West Orange, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 175,564, Aug. 6, 1980, Pat. No. 4,351,758. This application Jul. 7, 1982, Ser. No. 396,077

The portion of the term of this patent subsequent to Feb. 17, 1998, has been disclaimed.

Int. Cl.³ C08L *67/02*

U.S. Cl. 524—227 **14 Claims**

1. A thermoplastic polyester molding composition, comprising an intimate admixture of:

(a) a blend of polyethylene terephthalate and polybutylene terephthalate in a weight ratio of from about 1:1 to about 9:1, respectively; and

(b) from about 0.1 to about 20% by weight of the total composition of a nucleating agent selected from the group consisting of sodium carbonate, potassium carbonate, sodium bicarbonate, potassium bicarbonate, and mixtures thereof.

4,444,932

MOLDABLE COMPOSITIONS HAVING IMPROVED SURFACE GLOSS

Peter S. Francis, Rose Valley, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jun. 1, 1982, Ser. No. 383,436

Int. Cl.³ C08K *5/20*

U.S. Cl. 524—232 **9 Claims**

1. A moldable composition comprising a high molecular weight molding grade non-equimolar copolymer of an ethylenically unsaturated dicarboxylic acid moiety and at least one monomer selected from the group consisting of monovinyl aryl monomers, unsaturated nitriles and acrylic monomers, and a surface gloss enhancing agent selected from the group consisting of amides or N,N-dimethyl amides of linear, saturated or unsaturated fatty acids containing at least 16 carbon atoms and low molecular copolymers of styrene and maleic anhydride, the amount of surface gloss enhancing agent employed being sufficient to enhance the surface gloss of the resulting molded compositions as compared to the surface gloss of the molded composition in the absence of the surface gloss enhancing agent.

4,444,933

ADHESIVE CYANOACRYLATE COMPOSITIONS WITH REDUCED ADHESION TO SKIN

Peter S. Columbus, Whitestone, and John Anderson, Douglaston, both of N.Y., assignors to Borden, Inc., Columbus, Ohio

Filed Dec. 2, 1982, Ser. No. 446,254

Int. Cl.³ C08L *51/00, 27/06, 31/04, 35/02*

U.S. Cl. 524—292 **23 Claims**

1. An adhesive composition comprising:

from about 55 to about 92 percent by weight of a 2-cyanoacrylate ester;

from about 4 to about 30 percent by weight of a vinyl chloride/vinyl acetate copolymer dissolved in said 2-cyanoacrylate ester, said copolymer having a molecular weight of at least about 8000 and containing a major proportio by weight of vinyl chloride and a minor proportion, but not less than 5% by weight, of vinyl acetate; and

not more than about 25 percent by weight of a plasticizer.

4,444,934

HEAT RESISTANT THERMOPLASTICS RESIN COMPOSITION EXCELLENT IN PROCESSING FLOWABILITY

Hideo Kasahara, Yokohama; Yukihisa Mizutani, Kawasaki, and Kunio Fukuda, Chigasaki, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 1, 1982, Ser. No. 446,027

Int. Cl.³ C08G *65/00;* **C08K** *5/10, 5/11*

U.S. Cl. 524—310 **7 Claims**

1. A thermoplastic resin composition which comprises (a) 100 parts by weight of a member selected from the group of an aromatic polyether and mixed resin comprising 20 to 80% by weight of an aromatic polyether and 80 to 20% by weight of a styrene resin and (b) 0.1 to 10 parts by weight of a compound which is a fatty acid ester of polyhydric alcohol which has at least one —OH group.

4,444,935

COMPOSITIONS COMPRISING A THERMOPLASTIC RESIN AND AN ACRYLATE MOLD RELEASE AGENT

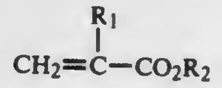
Kenneth F. Miller, and Garland G. Lee, both of Mt. Vernon, Ind., assignors to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 15, 1982, Ser. No. 449,982

Int. Cl.³ C08L *69/00*

U.S. Cl. 524—315 **10 Claims**

1. A composition comprising a thermoplastic resin selected from the group consisting of aromatic polycarbonate, polyester, polysulfone, polyethersulfone, polyamide, polysulfide, polyurethane, polyolefin, polyvinylhalide, acrylonitrile butadiene styrene, butadiene styrene, and methacrylate butadiene styrene in admixture with a mold release effective amount of a compound of the formula



$$CH_2{=}\overset{\overset{\displaystyle R_1}{|}}{C}-CO_2R_2$$

wherein R_1 is hydrogen or alkyl of one to about four carbon atoms, inclusive; and R_2 is alkyl of about ten to about thirty six carbon atomes, inclusive.

4,444,936

BIS-(SILYLETHYL)-OLIGOSULPHIDES AND PROCESS FOR THEIR PRODUCTION

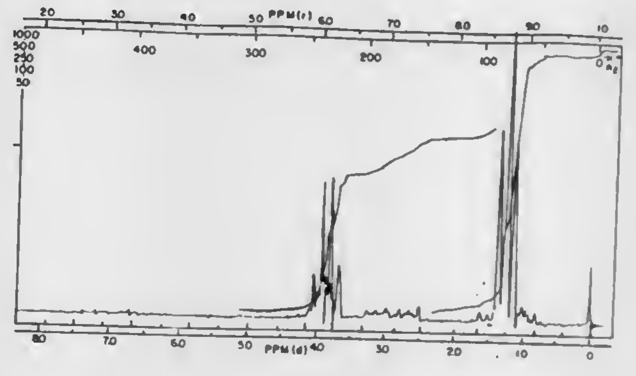
Rudolf Schwarz, Alzenau-Wasserlos; Peter Kleinschmit, Hanau; Christa Liedtke, Bruchköbel, and Siegfried Wolff, Bornheim-Merten, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Hanau, Fed. Rep. of Germany

Division of Ser. No. 282,949, Jul. 13, 1981, Pat. No. 4,384,132, which is a division of Ser. No. 106,862, Dec. 26, 1979, Pat. No. 4,408,064. This application Jan. 27, 1983, Ser. No. 461,432

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1978, 2856229

Int. Cl.³ C08K *5/06*

U.S. Cl. 524—393 **20 Claims**



1. In a rubber composition comprising a cross-linkable rub-

ber, a siliceous filler and a bis-(silylethyl)-oligosulphide, the improvement comprising having present as the oligosulphide a bis-(silyethyl)-oligosulphide corresponding to the following average formula:

$$R_{4-(m+n)}R_n{}^1Si[CH_2CH_2]_m\,2^{S}mx \qquad I$$

in which R represents chlorine, bromine, iodine, C_1–C_3-alkoxy, 2-methoxy ethoxy, 2-ethoxy ethoxy or hydroxy, R^1 represents C_1–C_3-alkyl, phenyl or C_5–C_7-cycloalkyl, n=0, 1 or 2, m=1 or 2, m+n=1, 2 or 3, and x=2.0 to 8.0 by reacting a vinyl silane corresponding to the following formula:

$$(CH_2{=}CH)_m{-}SiR_n{}^1R_{4-(m+n)} \qquad II$$

in which R, R^1, n and m are as defined above, with sulphur and, optionally, hydrogen sulphide in molar ratios of vinyl silane to sulphur of from 1:2.5 to 1:10 and vinyl silane to hydrogen sulphide of from 1:0 to 1:5 at a temperature in the range from about 100° to 210° C., under a pressure of from 1 to 25 bars (total pressure at the reaction temperature) and in the presence of a sulphidation catalyst or a bis-(silylethyl)-oligosulphide prepared by at least partially hydrolyzing the R group of the oligosulphide of formula I.

4,444,937
LONG LIFE PAINT

Darrell J. Badertscher, Washougal, Wash., assignor to Burke's Paint Company, Inc., Washougal, Wash.

Continuation of Ser. No. 290,583, Aug. 6, 1981, abandoned. This application Apr. 22, 1983, Ser. No. 487,111

Int. Cl.³ C08K *3/26, 3/34, 3/08;* **C08J** *3/02*

U.S. Cl. 524—425 **5 Claims**

1. A long-lasting corrosion-resistant paint, comprising:

(a) about 10 to 12 weight percent water;

(b) an aqueous emulsion of a first acrylic resin, equivalent to "Rhoplex MV-9" in an amount of said emulsion providing said first acrylic resin in the amount available in 38 to 46 weight percent of an aqueous emulsion including about 45.5 percent of said first acrylic resin and about 54.5 percent water;

(c) about 17.5 to 22 weight percent flaked 316L stainless steel having an average particle size no greater than about 325 mesh;

(d) about 3.5 to 4.3 weight percent powdered mica having an average particle size no greater than about 325 mesh;

(e) about 7 to 9 weight percent calcium carbonate powder;

(f) about 1 to 1.4 weight percent powdered zinc oxide;

(g) an aqueous emulsion of a second acrylic resin in an amount providing said second acrylic resin equivalent to "Rhoplex AC-61" in the amount available in 9.5 to 11.5 weight percent of an aqueous emulsion containing about 46.5 percent of said second acrylic resin and about 53.5 percent water; and

(h) additional ingredients to result in a total of 100 weight percent.

4,444,938
PHENYLTETRALYLBUTANE AS VINYL PLASTICIZER

Eugene L. Coggins, Malvern, and William D. Vanderwerff, West Chester, both of Pa., assignors to Sun Tech, Inc., Philadelphia, Pa.

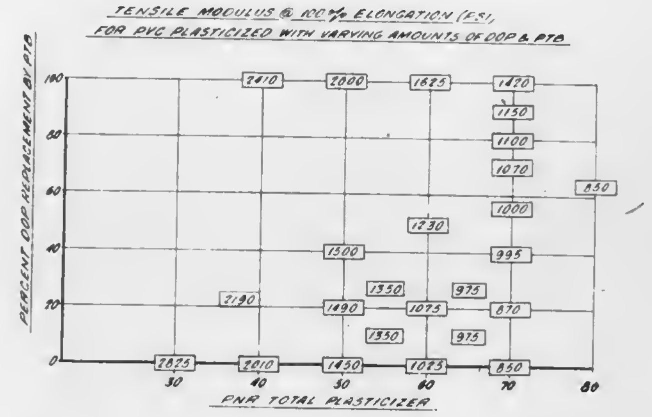
Filed Jun. 7, 1982, Ser. No. 385,958

Int. Cl.³ C08K *5/01*

U.S. Cl. 524—476 **10 Claims**

1. In the process of plasticizing polyvinylchloride the improvement of using phenyltetralylbutane as plasticizer.

2. In the process of plasticizing polyvinylchloride using primary and secondary plasticizers, the improvement of using phenyltetralylbutane as the secondary plasticizer.



3. The process of claim 2 wherein the primary plasticizer is di(2-ethyl)hexyl phthalate.

4,444,939
PHOTOCHROMIC PAINT

Stephen R. Postle, Brentwood, and Samuel B. Kingston, Doddinghurst, both of England, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Mar. 2, 1983, Ser. No. 471,553

Claims priority, application United Kingdom, Mar. 11, 1982, 8207064

Int. Cl.³ C08K *3/40*

U.S. Cl. 524—494 **7 Claims**

1. Photochromic paint which comprises a latex of an acrylate and/or a methacrylate polymer, the polymer particles of which constitute 30 to 50% by weight of the latex and which has been prepared using a copolymerisable alkali metal salt of a vinyl or styryl sulphonate there being dispersed in the latex photochromic glass beads of from 0.05 to 1.00 u m in size and which comprises from 10 to 30% by weight of the latex, the total solids content of the latex being 40 to 60% by weight.

7. An article paint with the photochromic paint according to claim 1.

4,444,940
HIGH STRENGTH, HEAT CURABLE POLYORGANOSILOXANE ELASTOMER COMPOSITIONS AND METHOD FOR PREPARING SAME

Keith E. Polmanteer, Weidman, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Jun. 23, 1983, Ser. No. 507,264

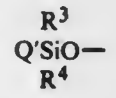
Int. Cl.³ C08L *57/02*

U.S. Cl. 524—500 **17 Claims**

1. A heat curable polyorganosiloxane composition comprising

100 parts by weight of a first polydiorganosiloxane (A) having a viscosity of at least 10 Pa·s at 25° C. and no detectable concentration of pendant ethylenically unsaturated hydrocarbon radicals;

a second polydiorganosiloxane (B) having an average degree of polymerization of from 2 to 400, two diorganoalkenylsiloxy terminal groups per molecule and no detectable concentration of pendant ethylenically unsaturated hydrocarbon radicals, wherein said diorganoalkenylsiloxy terminal groups are represented by the formula



$$Q'\overset{R^3}{\underset{R^4}{Si}}O{-}$$

where R^3 and R^4 each contain from 1 to 8 carbon atoms and are individually selected from the group consisting of alkyl, haloalkyl, cycloalkyl, phenyl, phenylalkyl, and alkylphenyl, Q' is vinyl or allyl, and the relative concentration of polydiorganosiloxane B is such that from 0.2 to 2 of said diorganoalkenylsiloxy groups are present per 100 diorganosiloxy units present in polydiorganosiloxane A;

from 10 to 80 parts by weight of a reinforcing or nonreinforcing filler;

and a catalytically effective amount of an organic peroxide.

4,444,941
LOW TEMPERATURE CURE LATEXES

David A. Borovicka, Sr., Parma; Kenneth G. Hahn, Jr., Hinckley, and John T. Tupa, Broadview Heights, all of Ohio, assignors to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 264,419, May 18, 1981, abandoned. This application Sep. 1, 1982, Ser. No. 413,728

Int. Cl.³ C08L *75/00*

U.S. Cl. 524—507 **11 Claims**

1. A stabilized aqueous thermosetting low temperature curable composition containing a polymeric composition dispersed in water, comprising on a weight basis:

between 5% and 55% of methylolated glycoluril containing between 1 and 4 groups of methylol, and between 45% and 95% emulsion polymer wherein said emulsion polymer comprises polymerized ethylenically unsaturated monomers selected from between 0.5% and 10% carboxylic acid monomer, between 1% and 20% acrylamide or methacrylamide monomer, between 2% and 20% alkylhydroxy monomer, and the balance being other ethylenically unsaturated monomer, whereby said emulsion polymer contains reactive carboxyl and hydroxyl groups for crosslinking by reaction with said glycoluril.

4,444,942
BATH COMPOSITION FOR CATAPHORETIC ELECTROCOATING

Fritz E. Kempter, Mannheim; Eberhard Schupp, Schwetzingen, and Günther Sabelus, Lambsheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

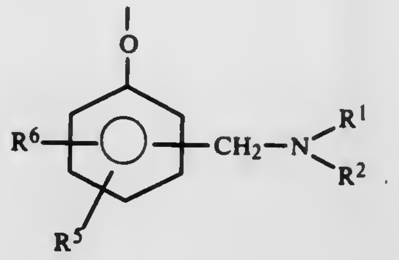
Filed Jun. 15, 1982, Ser. No. 388,515

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1981, 3124088

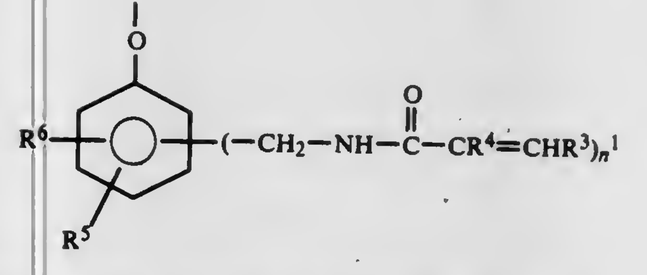
Int. Cl.³ C08G *14/06*

U.S. Cl. 524—596 **6 Claims**

1. A bath composition for cataphoretic electrocoating, containing, in addition to water and conventional assistants and additives, one or more coating agents which have been rendered soluble or dispersible with acid and contain basic nitrogen groups, wherein the coating agent or agents carries or carry groups of the formulae (I) and (II)

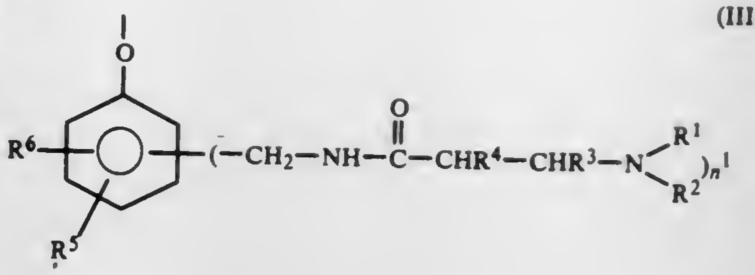


(I)

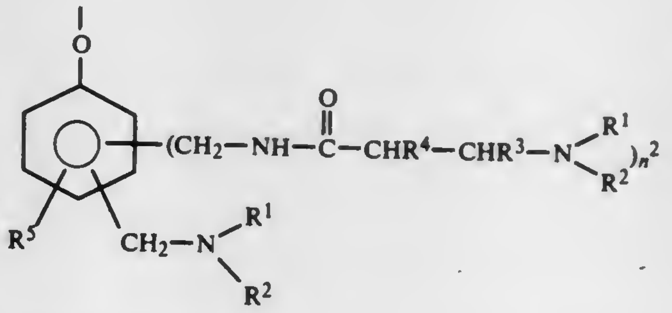


(II)

and optionally, groups of the formulae (III) or (IV)

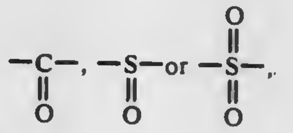


(III)



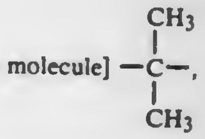
(IV)

where R^1 and R^2 are identical or different and are each alkyl of 1 to 9 carbon atoms, or hydroxyalkyl or alkoxyalkyl, each of 2 to 10 carbon atoms, R^3 and R^4 are identical or different and each is hydrogen or methyl, R^5 and R^6 are identical or different and each is hydrogen, alkyl of 1 to 13 carbon atoms, alkenyl of 10 to 18 carbon atoms or a methylene, ethylene, isopropylidene or aralkylene radical of 7 to 15 carbon atoms which is bonded to a phenol or phenol ether, where these radicals are bridged to form fused-on rings, or —O—,



$$-\underset{\|}{\overset{}{C}}-,\ -\underset{\|}{S}-\text{or}\ -\overset{\|}{\underset{\|}{S}}-,\quad (\text{C}{=}\text{O},\ \text{S}{=}\text{O},\ \text{O}{=}\text{S}{=}\text{O})$$

or [the radical of a polymer molecule]



$$-\overset{CH_3}{\underset{CH_3}{C}}-,$$

n^1 is 1, 2 or 3 and n^2 is 1 or 2, and where the oxygen bonded to the phenyl radical is a component either of a hydroxyl group or of an ether group.

4,444,943
COATING COMPOSITIONS FOR PROVIDING WATER AND BLISTER RESISTANCE TO INK-RECEPTIVE PAPER

Shigenao Kawakami, Nara; Terumasa Saka, Osaka; Hisao Takagishi, Kyoto; Shigeru Ura, Nara, and Mikio Iwata, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 13, 1982, Ser. No. 449,334

Claims priority, application Japan, Dec. 11, 1981, 56-200684; Jan. 19, 1982, 57-7255

Int. Cl.³ C08L *61/22*

U.S. Cl. 524—598 **20 Claims**

1. A paper coating composition containing a pigment and an aqueous binder as major components, and further containing a thermosetting resin in aqueous solution, obtained by reacting or mixing (Y) a water-soluble resin obtained by reacting urea, polyalkylenepolyamine, and dibasic carboxylic acid to form a polyamidopolyurea and reacting the resulting polyamidopolyurea with formaldehyde, (a) at least one alkylenediamine or polyalkylenepolyamine, and (b) epihalohydrin, or the reaction product between (Y) and (b) with (a).

4,444,944

THERMALLY CONDUCTIVE SILICONE RUBBER COMPOSITION

Takao Matsushita, Kisarazu, Japan, assignor to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Jun. 13, 1983, Ser. No. 503,919

Claims priority, application Japan, Jun. 14, 1982, 57-101897

Int. Cl.^{3} C08K *3/22*

U.S. Cl. 524—786 **5 Claims**

1. A thermally conductive silicone rubber composition consisting essentially of

(a) 100 parts by weight of a polyorganosiloxane having a viscosity at 25° C. of from 0.1 to 100 Pa·s and having an average unit formula

$$R_aR_b'SiO_{(4-a-b)/2}$$

wherein each R represents a monovalent hydro-carbon radical free of aliphatic unsaturation or a halogenated monovalent hydrocarbon radical free of aliphatic unsaturation, each R′ represents a monovalent aliphatically unsaturated hydrocarbon radical, a has a value from 1.90 to 2.05, b has a value from 0.0005 to 0.1, and the sum of $a+b$ has a value from 1.91 to 2.06,

(b) a polyorganohydrogensiloxane having a viscosity at 25° C. of 0.0007 to 5 Pa·s and having an average unit formula

$$R_cH_dSiO_{(4-c-d)/2}$$

wherein R is defined above, the sum of $c+d$ has a value of 1.001 to 3, there is at least two silicon-bonded hydrogen atoms per molecule, and said polyorganohydrogensiloxane is present in an amount such that there are 0.5 to 10 equivalents of silicon-bonded hydrogen atoms per equivalent of aliphatically unsaturated hydrocarbon radical in (a),

(c) from 100 to 500 parts by weight of alumina powder having an average particle size of 2μ to 10μ and an oil absorption of $\geqq 15$ mL/g, and

(d) a catalytic quantity of a platinum-group compound as a catalyst.

4,444,945

LOW-SALT CONTAINING AQUEOUS SOLUTIONS OF MELAMINE-FORMALDEHYDE RESIN

George E. Sheldrick, North Oxford, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Feb. 15, 1983, Ser. No. 466,748

Int. Cl.^{3} C08L *61/32*

U.S. Cl. 524—843 **5 Claims**

1. A process for preparing a solution of resinous products containing sulfonate groups, which comprises:

(a) dissolving sodium bisulfite in formaldehyde and water such that the formaldehyde to sodium bisulfite mole ratio is 2–3 to 1,
(b) adjusting the pH to 8 to 10,
(c) adding melamine such that the mole ratio of melamine to sodium bisulfite is 1 to 0.8–1.2,
(d) heating to atmospheric reflux for 1 to 5 hours,
(e) cooling the mixture to below 90° C.,
(f) adjusting the pH to 6 to 7,
(g) heating to atmospheric reflux for 2 to 6 hours,
(h) cooling the solution and
(i) adjusting the pH to 7 to 9.

4,444,946

STABLE, ORGANIC MULTI-COMPONENT DISPERSIONS

Heinrich Alberts; Hans Friemann; Hans-Heinrich Moretto, all of Cologne, and Hans Sattlegger, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 29, 1982, Ser. No. 344,083

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1981, 3105499

Int. Cl.^{3} C08L *83/06, 83/10*

U.S. Cl. 525—29 **2 Claims**

1. A process for the preparation of a dispersion approximately comprising by weight

I. 10–90% of at least one diorganopolysiloxane,

II. 5–85% of at least one aliphatic or mixed aliphatic-/aromatic polycondensation product or polyaddition product, polyether, or vinyl polymer with a glass temperature T_G of up to 40° C. and/or a vinyl monomer-grafted derivative thereof,

and

III. 5–85% of at least one organopolysiloxane modified by grafting with at least one vinyl monomer and comprising
  (A) 10–90% of a diorganopolysiloxane,
  (B) 10–90% of polymerized units of at least one vinyl compound, and
  (C) 0–80% of at least one aliphatic or mixed aliphatic-/aromatic polycondensation product or poly-addition product, polyether, or vinyl polymer with a glass temperature T_G of up to 40° C., comprising mechanically agitating, until a largely homogeneous composition which does not separate again has formed,

(a) at least one organopolysiloxane modified by grafting with at least one vinyl monomer and comprising
  (i) at least one organopolysiloxane with trimethylsilyl end groups,
  (ii) polymerized units of at least one vinyl compound, and
  (iii) at least one aliphatic or mixed aliphatic/aromatic polycondensation product or polyaddition product, polyether, or vinyl polymer with a glass temperature T_G of up to 40° C.,

(b) at least one organopolysiloxane with OH or trimethylsilyl end groups, and

(c) at least one aliphatic or mixed aliphatic/aromatic polycondensation product or polyaddition product, polyether or vinyl polymer with a glass temperature T_G of up to 40° C. and/or a vinyl monomer-grafted derivative thereof, (i), (ii), (iii), (a), (b) and (c) being combined in the necessary proportions to produce a dispersion of the indicated composition.

4,444,947

CHEMICALLY MODIFIED HIGH OIL ASPHALT

Edward R. Harrington, Naperville, Ill.; William E. Uffner, Newark, Ohio, and Richard T. Janicki, Oak Lawn, Ill., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Aug. 12, 1982, Ser. No. 407,373

Int. Cl.^{3} C08F *289/00;* **C08G** *83/00;* **C08H** *5/00*

U.S. Cl. 525—545 **6 Claims**

1. In a composition which comprises the reaction product of asphalt, a vinyl aromatic monomer and an elastomer which is homopolymer of a conjugated diene or a copolymer of a conjugated diene and at least one ethylenic monomer copolymerizable therewith, the improvement comprising a composition having increased resistance to thermal degradation and improved low temperature fluctural strength and wherein said asphalt is an air blown high oil asphalt having a viscosity factor of at least about 120 and a viscosity of about 550 cps to about 700 cps at 260° F.

4,444,948

MANUFACTURE OF INSULATED ELECTRIC CONDUCTORS

Ulrich Hochstrasser, Ecublens, and Eberhard Kertscher, Romanel-sur-Lausanne, both of Switzerland, assignors to Maillefer, S.A., Canton of Vaud, Switzerland

Continuation of Ser. No. 134,634, Mar. 27, 1980, Pat. No. 4,351,790. This application Mar. 12, 1982, Ser. No. 357,608

Claims priority, application Switzerland, Apr. 3, 1979, 3101/79

The portion of the term of this patent subsequent to Sep. 28, 1999, has been disclaimed.

Int. Cl.^{3} B29D *23/01*

U.S. Cl. 525—61 **1 Claim**

1. A tubular element of cross-linked plastic material, particularly an insulating covering for an electric conductor, produced by the method wherein a polymer capable of being cross-linked by the use of a hydrolyzable unsaturated silane is fed, together with metered quantities of additives including a free-radical generator and a silanol condensation catalyst, to a screw-type extruder divided into a heating zone, a plasticizing zone, and a homogenizing zone; a metered quantity of a hydrolyzable unsaturated silane is added separately to the extruder; the foregoing substances are actively stirred in the extruder until a homogeneous mass is obtained; the homogenized mass is extruded; and cross-linking of the product is carried out in the presence of moisture, wherein

among said additives is an agent capable of reducing the rate of crystallization of said polymer to enhance penetration of said moisture into said extruded mass, thus increasing the speed of said cross-linking, said agent drawn from the group consisting of vinyl acetate, vinyl acrylate, butyl acrylate and polymers thereof in a proportion of 0.5% to 15% by weight relative to said polymer capable of being cross-linked by the use of a hydrolyzable unsaturated silane, and

carrying out said cross-linking in a moist air atmosphere, said moist air atmosphere exhibiting a relative humidity of at least 60% and a temperature of at least 20° C.

4,444,949

COMPOSITION OF A POLYCARBONATE, A BUTADIENE-STYRENE COPOLYMER AND A (METH)ACRYLATE INTERPOLYMER

Ping Y. Liu, Naperville, Ill., assignor to General Electric Company, Mt. Vernon, Ind.

Continuation-in-part of Ser. No. 238,643, Feb. 26, 1981, abandoned. This application Feb. 25, 1982, Ser. No. 352,382

The portion of the term of this patent subsequent to Apr. 21, 1998, has been disclaimed.

Int. Cl.^{3} C08L *69/00, 9/06*

U.S. Cl. 525—67 **10 Claims**

1. A composition which comprises in admixture

(a) an aromatic carbonate polymer,
(b) a butadiene-styrene copolymer, and
(c) from about two to about fifteen weight percent of the composition of an multiphase composite interpolymer comprising a C_{1-5} acrylate and a C_{1-5} methacrylate, the said C_{1-5} acrylate being about 57 to 95 weight percent of the said acrylate copolymer.

4,444,950

THERMOPLASTIC RESIN COMPOSITION

Hajime Sakano, Hirakata; Akitoshi Ito, Nabari; Motoichi Yano, Settsu, and Yasuhiro Honda, Toyonaka, all of Japan, assignors to Sumitomo Naugatuck Co., Ltd., Osaka, Japan

Filed Mar. 1, 1983, Ser. No. 471,105

Claims priority, application Japan, Mar. 15, 1982, 57-41489; Mar. 29, 1982, 57-51768

Int. Cl.^{3} C08L *69/00*

U.S. Cl. 525—67 **7 Claims**

1. A thermoplastic resin composition having improved weld strength which comprises a blend of (A) a polycarbonate resin and (B) a rubber modified copolymer prepared by polymerizing at least two kinds of monomers chosen from the group consisting of aromatic vinyl compounds, vinyl cyanides and alkyl esters of unsaturated carboxylic acids in the presence of a rubber, with (C) an epoxy group-containing olefin copolymer comprising a copolymer of at least one unsaturated epoxy compound and at least one olefin, wherein (B) comprises (b-1) a graft copolymer comprising units of the monomers and units of the rubber and (b-2) a copolymer comprising units of the monomers, and wherein the content of (b-1) is at least 10% by weight.

4,444,951

POLYBLENDS OF THERMOPLASTIC POLYNORBORNENE NITRILE POLYMERS, STYRENEMALEIC ANHYDRIDE POLYMERS AND ACRYLONITRILE-BUTRADIENE-STYRENE POLYMERS

Robert A. Mendelson, South Hadley, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Apr. 11, 1983, Ser. No. 484,000

Int. Cl.^{3} C08L *51/00*

U.S. Cl. 525—74 **15 Claims**

1. A polyblend comprising:

A. from 3 to 90% by weight of a thermoplastic polynorbornene nitrile polymer wherein the polynorbornene nitrile polymer is prepared by the ring opening polymerization of a 5-substituted norbornene-2 wherein one of the 5-substituents is a nitrile group and the other 5-substituent is chosen from the group consisting of hydrogen and C_1 to C_6 alkyls;

B. from 5 to 70% by weight of a polymer of a vinylaromatic monomer and an unsaturated dicarboxylic acid anhydride monomer and optionally a termonomer, selected from the group consisting of C_1 to C_3 acrylates and methacrylates and unsaturated nitriles, wherein the relative amounts by weight of the monomers in the polymer are 50 to 85% of the vinylaromatic monomer, 15 to 35% of the dicarboxylic acid anhydride and 0 to 20% of the termonomer; and wherein the monomers are polymerized in the presence of 0 to 35% by weight of a rubber having a glass transition temperature below 0° C.;

C. from 5 to 70% by weight of at least one polymer selected from the group consisting of (1) a grafted polymer composition comprising a matrix copolymer and a rubber substrate grafted with a superstrate copolymer wherein the copolymer consists of from 20 to 40 parts by weight of a monomer selected from the group consisting of methyl methacrylate and acrylonitrile and 80 to 60 parts by weight of a vinyl aromatic monomer, wherein the substrate rubber has a glass transition temperature below 0° C., wherein the monomers are polymerized in the presence of and grafted onto the substrate rubber, wherein the weight percent of the rubber is in the range from 5 to 50% by weight based on the weight of the grafted polymer composition; and (2) a polymer consists of of a vinylaromatic monomer and an unsaturated nitrile in a weight ratio of 80:20 to 60:40 respectively;

and wherein the weight percent for Components (A), (B), and (C) is based on the total amount of Components (A), (B), and (C) in the polyblend.

4,444,952

THERMOPLASTIC MOLDING COMPOSITION

Stewart Feinberg, Exton, and Harold Nicholson, West Chester, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Aug. 23, 1982, Ser. No. 410,743

Int. Cl.^{3} C08L *53/00*

U.S. Cl. 525—93 **3 Claims**

1. A thermoplastic molding composition comprising at least one thermoplastic polymer and an impact modifying substance

wherein the impact modifying substance is a styrene/butadiene star block thermoplastic elastomer having at least about 5 arms, said impact modifying substance comprising from 20 to 55 percent by weight styrene and being employed in an amount sufficient to provide from about 10 to about 20 percent by weight butadiene in the molding composition.

4,444,953

ASSYMETRIC BLOCK COPOLYMERS AND CORRESPONDING ADHESIVE FORMULATIONS

David J. St. Clair, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 320,233, Nov. 12, 1981, Pat. No. 4,391,949. This application Apr. 18, 1983, Ser. No. 485,768

Int. Cl.³ C08L *9/00*

U.S. Cl. 525—98 **10 Claims**

1. An adhesive composition comprising a block copolymer having the star-shaped, asymmetrical structure

$(A—B)_xY(C)_z$

where A is a polymer block of a monoalkenyl arene, B is a polymer block of a conjugated diene, C is a polymer block of a conjugated diene, Y is the residue of a multifunctional coupling agent, the sum of x plus z is greater than 6 and less than about 25, the ratio of x is z is between about 5 to 1 and about 1 to 5, the molecular weight of each block A is between about 3,000 and about 30,000, the molecular weight of each block B is between about 15,000 and about 100,000, and the molecular weight of each block C is between about 15,000 and about 100,000 and a tackifying resin.

4,444,954

WATER REDUCIBLE QUATERNARY AMMONIUM SALT CONTAINING POLYMERS

Sherman J. Mels, Oak Forest; Brian C. Petrie, Chicago, and Richard J. Pokusa, Crestwood, all of Ill., assignors to The Sherwin-Williams Company, Cleveland, Ohio

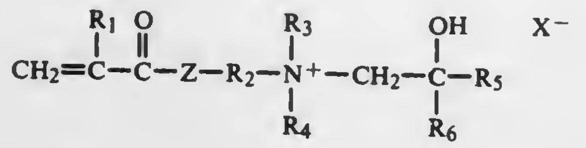
Filed Sep. 30, 1982, Ser. No. 431,980

Int. Cl.³ C08L *75/08, 33/12*

U.S. Cl. 525—124 **14 Claims**

1. A water reducible coating composition which comprises:

(i) an acrylic polymer which comprises the free radical addition product of (a) at least one quaternary ammonium salt containing unsaturated monomer having the structure:



$$CH_2{=}\overset{\overset{R_1}{|}}{C}-\overset{\overset{O}{\|}}{C}-Z-R_2-\underset{\underset{R_4}{|}}{\overset{\overset{R_3}{|}}{N^+}}-CH_2-\underset{\underset{R_6}{|}}{\overset{\overset{OH}{|}}{C}}-R_5 \qquad X^-$$

wherein R_1 is H or alkyl of 1 to 3 carbons, Z is N—H or O; R_2 is a divalent methylene radical $—(CH_2)_n—$ wherein n is an integer from 1 to about 10; R_3 and R_4 can be the same or different and are alkyl, substituted alkyl, aryl, or substituted aryl, and R_5 and R_6 can be the same or different and are hydrogen, alkyl, substituted alkyl, aryl or substituted aryl; and X^- is an anion; and (b) at least one active hydrogen functional unsaturated monomer; and (c) at least one other ethylenically unsaturated monomer; and

(ii) a blocked polyisocyanate which is stable in the presence of the acrylic polymer at room temperature but reactive with the acrylic polymer at elevated temperatures.

4,444,955

WATER REDUCIBLE QUATERNARY AMMONIUM SALT CONTAINING POLYMERS

Sherman J. Mels, Oak Forest; Brian C. Petrie, Chicago, and Richard J. Pokusa, Crestwood, all of Ill., assignors to The Sherwin-Williams Company, Cleveland, Ohio

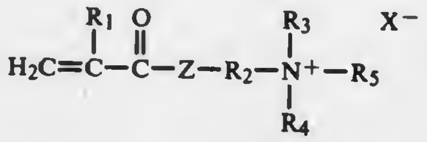
Filed Sep. 30, 1982, Ser. No. 431,995

Int. Cl.³ C08L *75/08, 33/12*

U.S. Cl. 525—124 **18 Claims**

1. A water dispersible coating composition which comprises:

(i) an acrylic polymer which comprises the free radical addition product of: (a) at least one quaternary ammonium salt containing unsaturated monomer having the structure:



$$H_2C{=}\overset{\overset{R_1}{|}}{C}-\overset{\overset{O}{\|}}{C}-Z-R_2-\underset{\underset{R_4}{|}}{\overset{\overset{R_3}{|}}{N^+}}-R_5 \qquad X^-$$

wherein R_1 is H or alkyl of 1 to 3 carbons; Z is N—H or O; R_2 is a divalent methylene radical $—(CH_2)_n—$ wherein n is from 1 to about 10; R_3, R_4 and R_5 can be the same or different and are alkyl, substituted alkyl, aryl or substituted aryl, with the proviso that R_3, R_4 and R_5 cannot be hydroxy functional; and X^- is an anion; and (b) at least one active hydrogen functional unsaturated monomer; and (c) at least one other ethylenically unsaturated monomer; and

(ii) a blocked polyisocyanate which is stable in the presence of the acrylic polymer at room temperature but reactive with the acrylic polymer at elevated temperatures.

4,444,956

PROCESS FOR PREPARATION OF MANNICH CONDENSATION PRODUCT

John G. Schaffhausen, Naperville Township, DuPage County, and Adel B. Abdul-Malek, Naperville, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Nov. 8, 1982, Ser. No. 439,863

Int. Cl.³ C08G *12/06;* **C08F** *8/34*

U.S. Cl. 525—164 **13 Claims**

1. A process for the preparation of an oil-soluble condensation product which comprises:

(a) reacting at least one amine selected from the group consisting of primary and secondary aliphatic amines having from 1 to about 24 carbon atoms, aliphatic diamines of the formula $H_2N(CH_2)_xNH_2$ wherein x is an integer from 3 to about 10, and polyamines of the formula $H_2N(A—NH)_yH$ wherein A is a divalent alkylene radical of from 2 to about 6 carbon atoms and y is an integer from 1 to about 10, with at least one sulfur-containing material selected from the group consisting of oil-soluble sulfonic acids and their ammonium salts, wherein the ratio of equivalents of said sulfur-containing material to equivalents of said amine is from about 0.05 to about 10; and

(b) reacting the product of (a) with formaldehyde or a formaldehyde-yielding reagent and an oxidized polymer wherein said oxidized polymer is derived from an amorphous olefin polymer and has a number average molecular weight of at least about 3,000.

4,444,957

REACTION PRODUCTS OF A DIFUNCTIONAL COMPOUND AND AN ORGANO TITANATE AND THE USE THEREOF IN THE PREPARATION OF CURED PRODUCTS BASED ON ALKYLENE-ALKYL ACRYLATE COPOLYMERS

Michael J. Keogh, Bridgewater, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 106,502, Dec. 26, 1979, Pat. No. 4,351,926. This application Aug. 3, 1982, Ser. No. 402,981

The portion of the term of this patent subsequent to Sep. 28, 1999, has been disclaimed.

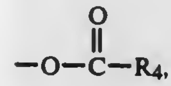
Int. Cl.³ C08F *8/42*

U.S. Cl. 525—370 **15 Claims**

1. A curable mixture comprising an alkylene-alkyl acrylate copolymer and a crosslinking agent which is the reaction product of a mixture containing a difunctional compound having the formula:

$R_1—R_2—R_3$

wherein R_1 and R_3 are independently selected from the group consisting of —OH, —SH, and



$$—O—\overset{\overset{O}{\|}}{C}—R_4,$$

wherein R_4 is C_1 to C_{20} hydrocarbon; R_2 is a divalent organic radical terminated with other than aryl and from 5 to 1000 parts by weight, based on 100 parts by weight of said difunctional compound, of an organo titanate.

4,444,958

FILLED NYLONS

Richard C. Gilles, Sinking Spring, Pa., assignor to The Polymer Corporation, Reading, Pa.

Continuation of Ser. No. 225,789, Jan. 16, 1981, abandoned. This application Apr. 14, 1982, Ser. No. 368,230

Int. Cl.³ C08G *69/48;* **C08L** *77/00*

U.S. Cl. 525—432 **3 Claims**

1. A method for the manufacture of a nylon shape that incorporates a particulate filler and in which the filler particles are not fully wet out by the nylon but instead are held in small clusters within the nylon matrix, the improvement comprising:

melt mixing at least 90 percent by weight of nylon with less than 10 percent by weight of a heat-reactive polyimide,

partially curing the polyimide to form an easily ground composite,

grinding the composite into a molding powder,

mechanically mixing the particulate filler with the molding powder,

melt forming the nylon shape from the mechanical mixture, and

completing the cure of the heat-reactive polyimide.

4,444,959

WATER-SOLUBLE BENZYLATED POLYAMIDOAMINES

Guenter Frey, Dannstadt-Schauernheim; Werner Streit, Bobenheim; Rolf Fikentscher, Ludwigshafen; Hans-Juergen Degen, Lorsch, and Wolf Guender, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 19, 1982, Ser. No. 350,407

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1981, 3111713

Int. Cl.³ C08G *69/48*

U.S. Cl. 525—435 **6 Claims**

1. A water-soluble benzylated polyamidoamine which contains from 0.1 to 0.9 mole of benzyl groups per equivalent of nitrogen and onto which from 20 to 400 parts by weight of ethyleneimine or propyleneimine have been grafted per 100 parts by weight of a polyamidoamine which is the reaction product of a dicarboxylic acid of 4–10 carbon atoms with a polyalkylenepolyamine of 3–10 basic nitrogen atoms per molecule.

4,444,960

POLYMER BLENDS WITH IMPROVED HYDROLYTIC STABILITY

Gideon Salee, Williamsville, and Jerold C. Rosenfeld, Tonawanda, N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Continuation of Ser. No. 921,026, Jun. 30, 1980, abandoned. This application Nov. 3, 1980; Ser. No. 203,765

Int. Cl.³ C08L *67/02, 81/08*

U.S. Cl. 525—534 **21 Claims**

1. A thermoplastic polymeric composition comprising a solid solution polyblend of (a) a linear aromatic polyester of components comprising a bisphenol and a dicarboxylic acid and (b) a linear aromatic polysulfonate of components comprising a bisphenol and a disulfonic acid.

4,444,961

PROCESS AND APPARATUS FOR PREPARING UNIFORM SIZE POLYMER BEADS

Edward E. Timm, Coleman, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No 283,779, Jul. 16, 1981, abandoned, which is a continuation-in-part of Ser. No. 202,265, Oct. 30, 1980, abandoned. This application Jul. 14, 1982, Ser. No. 398,007

Int. Cl.³ C08F *2/56*

U.S. Cl. 526—88 **33 Claims**

1. A method for preparing spheroidal polymer beads, said method comprising the steps of forming a monomer jet of a monomer phase comprising a polymerizable monomer having laminar flow characteristics by flowing the monomer phase through an opening into a continuous phase comprising a liquid immiscible with the polymerizable monomer or monomer phase and a stabilizing amount of a suspending agent; vibratorily exciting the jet to form a plurality of monomer droplets suspended in said continuous phase, transfering said suspended monomer droplets into a polymerization reaction vessel without significant coalescence or additional dispersion thereof, and substantially without the polymerization thereof, and subsequently polymerizing the monomer in suspension at conditions which do not cause significant coalescence or additional dispersion thereof.

4,444,962

POLYMERIZATION PROCESS USING CATALYSTS WITH ACID GELLED ALUMINUM PHOSPHATE BASE

Max P. McDaniel, and Marvin M. Johnson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 221,747, Dec. 31, 1980, Pat. No. 4,364,854. This application Sep. 27, 1982, Ser. No. 423,599

Int. Cl.³ C08F *4/02, 4/20, 4/24*

U.S. Cl. 526—95 **17 Claims**

1. A polymerization process comprising:

contacting at least one mono-1-olefin having 2 to 8 carbon atoms per molecule in a reaction zone under polymerization conditions with a catalyst produced by a process comprising:

combining a source of aluminum ions with a source of phosphate ions in a concentrated mass, combining said concentrated mass with a neutralizing agent, said neutralizing agent being used in an amount insufficient to cause immediate gelation, aging until gelation occurs to form a hydrogel, removing water from said hydrogel to produce a xerogel, thereafter activating at an elevated temperature in an oxidizing ambient, and wherein 0.001

to 10 weight percent chromium or vanadium based on the weight of the xerogel is introduced prior to said activating; and

recovering a polymer.

4,444,963

POLYMERIZATION PROCESS USING CATALYSTS COMPRISING CHROMIUM ON SILICA/PHOSPHATE SUPPORT

Max P. McDaniel, and Marvin M. Johnson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 221,746, Dec. 31, 1980, Pat. No. 4,364,839. This application Sep. 27, 1982, Ser. No. 423,595

Int. Cl.^{3} C08F *4/02, 4/24, 4/62*

U.S. Cl. 526—100 **23 Claims**

1. A polymerization process comprising:

contacting at least one mono-1-olefin having 2 to 8 carbon atoms per molecule under polymerization conditions in a polymerization zone with a catalyst system comprising:

(a) a catalyst comprising a chromium component on a silica/phosphate support, said phosphate being selected from at least one of aluminum phosphate and boron phosphate;

(b) a cocatalyst selected from organoaluminum compounds and organoboron compounds; and

recovering a polymer.

4,444,964

POLYMERIZATION PROCESS USING PHOSPHATE SUPPORTED CHROMIUM CATALYST

Max P. McDaniel, and Marvin M. Johnson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 221,877, Dec. 31, 1980, Pat. No. 4,364,842. This application Sep. 27, 1982, Ser. No. 423,596

Int. Cl.^{3} C08F *4/02, 4/24, 4/78*

U.S. Cl. 526—105 **20 Claims**

1. A polymerization process comprising:

contacting at least one mono-1-olefin having 2 to 8 carbon atoms per molecule with a catalyst system comprising:

(a) a catalyst comprising a chromium compound on a predominantly amorphous aluminum phosphate containing xerogel base which catalyst has been activated in an oxidizing ambient;

(b) a cocatlyst comprising a boron compound selected from trihydrocarbyl boron compounds, boron alkoxides, and mixtures thereof; and

recovering a polymer.

16. A process according to claim **1** wherein said cocatalyst contains in addition an aluminum, zinc or magnesium alkyl.

20. A polymerization process comprising:

contacting at least one mono-1-olefin having 2 to 8 carbon atoms per molecule in a reaction zone under polymerization conditions with a catalyst comprising;

an oxidized chromium compund on a predominantly amorphous aluminum phosphate base prepared by combining a melt of an aluminum salt and a source of phosphate ions and neutralizing with a base so as to case gellation; and

recovering a polymer.

4,444,965

OLEFIN POLYMERIZATION USING CHROMIUM ON AN ALUMINUM PHOSPHATE PRODUCED FROM A CONCENTRATED MASS

Max P. McDaniel, and Marvin M. Johnson, both of Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 221,753, Dec. 31, 1980, Pat. No. 4,364,855. This application Sep. 27, 1982, Ser. No. 423,585

Int. Cl.^{3} C08F *4/02, 4/22, 4/68*

U.S. Cl. 526—105 **20 Claims**

1. A polymerization process comprising:

contacting at least one mono-1-olefin having 2 to 8 carbon atoms per molecule in a reaction zone under polymerization conditions with a catalyst produced by a process comprising:

combining an aluminum salt with a source of orthophosphate ions in a concentrated mass containing 40 weight percent or less water based on the weight of said aluminum salt, gelling to form a hydrogel, and removing water to form a xerogel, wherein 0.001 to 10 weight percent chromium based on the weight of the xerogel is introduced at or prior to the xerogel stage, and thereafter activating at an elevated temperature in an oxidizing ambient; and

recovering a polymer.

18. A polymerization process comprising:

contacting at least one mono-1-olefin having 2 to 8 carbon atoms per molecule in a reaction zone under polymerization conditions with a catalyst on a support produced by a process comprising:

combining an aluminum salt with a source of orthophosphate ions in a concentrated mass containing 40 weight percent or less water based on the weight of said aluminum salt, combining the resulting composition with a base to form aluminum phosphate hydrogel still in a concentrated mass containing 40 percent or less water based on the weight of said aluminum salt, and removing water from said hydrogel to produce a xerogel; and

recovering a polymer.

19. A polymerization process comprising:

contacting at least one mono-1-olefin having 2 to 8 carbon atoms per molecule in a reaction zone under polymerization conditions with a catalyst produced by a process comprising:

combining an aluminum salt with a source of phosphate ions in a concentrated mass containing 40 weight percent or less water based on the weight of said aluminum salt, gelling to form a hydrogel and removing water to form a xerogel and activating at an elevated temperature, the thus activated aluminum phosphate containing in addition 0.001 to 10 weight percent vanadium based on the weight of the xerogel; and

recovering a polymer.

20. A polymerization process comprising:

contacting at least one mono-1-olefin having 2 to 8 carbon atoms per molecule in a reaction zone under polymerization conditions with a catalyst produced by a process comprising:

combining an aluminum salt with a source of orthophosphate ions in a concentrated mass containing 40 weight percent or less water based on the weight of said aluminum salt, gelling to form a hydrogel and removing water to form a xerogel, activating at an elevated temperature and introducing a zerovalent chromium compound under anhydrous conditions; and

recovering a polymer.

4,444,966

POLYMERIZATION USING PHOSPHATED ALUMINA OR ALUMINUM PHOSPHATE CHROMIUM CATALYST

Max P. McDaniel, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 375,156, May 5, 1982, Pat. No. 4,397,765, which is a continuation-in-part of Ser. No. 221,878, Dec. 31, 1980, abandoned. This application Apr. 4, 1983, Ser. No. 481,955

Int. Cl.^{3} C08F *4/02, 4/24*

U.S. Cl. 526—106 **24 Claims**

1. A polymerization process comprising contacting at least one mono-1-olefin having 2 to 8 carbon atoms per molecule under polymerization conditions with a catalyst system prepared by a process comprising:

(a) treating a separately prepared alumina gel with a phosphating agent to give a surface treatment and activating the thus treated gel in an oxidizing atmosphere at an elevated temperature, said gel either having a chromium compound coprecipitated therewith or having a chromium compound added thereto prior to said activating; and

(b) combining a cocatalyst with the thus activated catalyst; and

recovering a polymer.

9. A polymerization process comprising contacting at least one mono-1-olefin having 2 to 8 carbon atoms per molecule with a catalyst prepared by treating an alumina gel with a phosphating agent and activating the thus treated gel in an oxidizing atmosphere at an elevated temperature, said gel either having a chromium compound coprecipitated therewith or having a chromium compound added thereto prior to said activating, and recovering a polymer.

15. A process according to claim **9** wherein said mono-1-olefin comprises ethylene and 0.001 to 0.3 mole percent comonomer.

4,444,967

SUBSTANTIALLY AGGLOMERATION-FREE CATALYST COMPONENT

Gregory G. Arzoumanidis; Richard F. Gold, both of Stamford, Conn., and Christian G. Michel, Ossining, N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 13,864, Feb. 22, 1979, abandoned, which is a division of Ser. No. 739,896, Nov. 11, 1976, Pat. No. 4,142,991, which is a continuation-in-part of Ser. No. 643,438, Dec. 22, 1975, abandoned. This application Mar. 21, 1983, Ser. No. 477,565

Int. Cl.^{3} C08F *4/64, 10/00*

U.S. Cl. 526—114 **11 Claims**

1. A process for polymerizing alpha-olefins in the presence of a catalyst comprising an (1) alkyl aluminum compound and (2) a catalyst component of the type formed by grinding a titanium trichloride material with an effective amount of an electron donor compound for improving the stereospecificity and activity of the catalyst component wherein said component has a tendency to agglomerate, the improvement comprising making an essentially agglomeration-free finely divided component by performing said grinding in the presence of an effective amount of an agglomeration control compound comprising a dialkyl phosphoric acid of the formula $(RO)_2P(O)OH$ where R is a C_1–C_6 alkyl group for substantially preventing agglomeration in the catalyst component, wherein the above agglomeration control compound is a polarizable compound which when attached to particles in the composition hinders contact of the said particles.

4,444,968

OLEFIN POLYMERIZATION WITH PHOSPHATE SUPPORTED ZEROVALENT CHROMIUM

Max P. McDaniel, and Marvin M. Johnson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 221,759, Dec. 31, 1980, Pat. No. 4,364,841. This application Sep. 27, 1982, Ser. No. 424,803

Int. Cl.^{3} C08F *4/02, 4/62*

U.S. Cl. 526—129 **27 Claims**

1. A process comprising:

contacting at least one mono-1-olefin having 2 to 8 carbon atoms per molecule in a reaction zone under polymerization conditions with a catalyst system comprising:

(a) a catalyst comprising a zerovalent chromium compound on a phosphate-containing support;

(b) a cocatalyst selected from organoboron and organoaluminum compounds; and

recovering a polymer.

27. A polymerization process comprising

introducing at least one mono-1-olefin having 2 to 8 carbon atoms per molecule into a polymerization reactor;

separately introducing a zerovalent chromium compound and an aluminum phosphate; and

recovering a polymer.

4,444,969

FIRE RETARDANT COPOLYMER FROM BIS(HYDROCARBYL)VINYL PHOSPHONATE

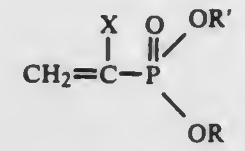
Usama E. Younes, Newtown Square, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Aug. 23, 1982, Ser. No. 410,742

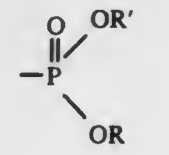
Int. Cl.^{3} C08F *26/06, 30/02*

U.S. Cl. 526—262 **10 Claims**

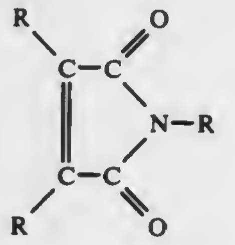
1. A solid copolymer comprising recurring segments from: (1) a bis(hydrocarbyl) vinylphosphonate having the formula:



wherein X is selected from the group consisting of hydrogen, halogen, cyano, aryl, C_1–C_{18} alkyl, alkenyl, cycloalkyl, cyclo alkenyl, and



wherein R and R' hydrocarbyl and hydrocarbyl groups with substituents which do not interfere with the polymerization of the vinylphosphonate, the hydrocarbyl groups and substituted hydrocarbyl groups consisting essentially of hydrogen and carbon and containing up to about 18 carbon atoms inclusive with the proviso that R and R' may be the same, different or conjoint; (2) a monovinyl substituted aryl hydrocarbon monomer containing 8 to 20 carbon atoms; and, (3) an imide derivative of an unsaturated cyclic anhydride having the formula:



wherein each R separately represents hydrogen, a C_1 to C_{20}

alkyl group, a phenyl or a substituted phenyl group, or a cycloalkyl or substituted cycloalkyl group.

4,444,970
PROCESS FOR PREPARING POLYACETYLENES AND SUBSTITUTED POLYACETYLENES PRODUCED THEREBY

Gert Weddigen, Heidelberg, Fed. Rep. of Germany, assignor to Brown, Boveri & Cie Aktiengesellschaft, Mannheim, Fed. Rep. of Germany

Filed Aug. 30, 1982, Ser. No. 413,165

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1981, 3134529

Int. Cl.^{3} C08F *238/02*

U.S. Cl. 526—285 **1 Claim**

1. A process for preparing a substituted polyacetylene by catalytic polymerization which comprises copolymerizing acetylene gas and phenylacetylene in the presence of tungsten pentachloride at a temperature of about 20° C. or greater wherein about 0.5 to 25% of the hydrogen atoms in the copolymer chains are replaced by phenyl groups, thereby producing an interchain distance between adjacent copolymer chains sufficient to hinder oxidative crosslinking therebetween.

4,444,971
ACRYLIC AND METHACRYLIC QUATERNARY CHLOROMETHYL AMMONIUM CHLORIDE CATIONIC MONOMERS AND POLYMERS THEREOF

Edward E. McEntire, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Jul. 25, 1983, Ser. No. 517,165

Int. Cl.^{3} C08F *120/60, 120/22, 220/22;* **C07C** *69/52*

U.S. Cl. 526—292.2 **13 Claims**

9. A polymer of a compound having the formula:

$$CH_2{=}CR_1COX(CH_2)_nN^{\oplus}R_3R_4CH_2Cl \quad Cl^{\ominus} \qquad (1)$$

where

$R_1=H, CH_3$
$X=O, NR_2$ where $R_2=H$, lower alkyl
$n=2\text{-}6$
$R_3, R_4=$independently C_1 to C_4 alkyl

4,444,972
CARBORANYLMETHYLENE-SUBSTITUTED PHOSPHAZENES AND POLYMERS THEREOF

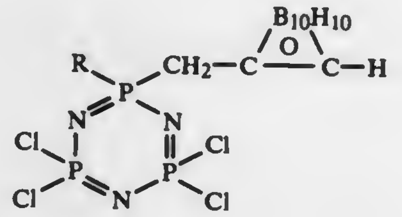
Harry R. Allcock, State College, and Angelo G. Scopelianos, Secane, both of Pa., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 3, 1983, Ser. No. 491,125

Int. Cl.^{3} C08G *79/04, 79/08*

U.S. Cl. 528—6 **12 Claims**

1. A carboranylmethylene-substituted cyclophosphazene of the formula



where R is CH_3, C_2H_5 or n-C_3H_7.

4,444,973
COATINGS FOR THERMOPLASTICS

Manfred Schönfelder, and Helmut Steinberger, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 26, 1982, Ser. No. 411,751

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1981, 3135184

Int. Cl.^{3} C08G *77/04*

U.S. Cl. 528—28 **3 Claims**

1. A coating composition consisting of approximately

(A) 10–40% by weight, relative to the total weight of the coating composition, of a partially hydrolyzed, siloxane compound which is obtained by hydrolysis in water at about 50°–80° C. for a period of about 1 to 12 hours of at least one of (a), (b), (c) or (d), wherein

(a) is a hydrocarbon trialkoxysilane of the formula

$$R'Si(OR'')_3,$$

wherein

R′ denotes an alkyl group having 1 to 4 carbon atoms, a phenyl group or vinyl group and

R″ denotes an alkyl group having 1 to 4 carbon atoms,

(b) is a co-condensation product of (a) and 1 to 40% of a phenyltrialkoxysilane or vinyltrialkoxysilane, wherein the alkoxy group contains 1 to 4 carbon atoms,

(c) is a co-condensation product of 1 mol of (a) and 0.05 to 1 mol of a tetraalkoxysilane, wherein the alkoxy group contains 1 to 4 carbon atoms, and

(d) is a co-condensation product of 1 mol of (a) and 0.05 to 1 mol of a dialkyldialkoxysilane, wherein the alkyl and alkoxy groups contain 1 to 4 carbon atoms,

(B) 0 to 40% by weight, relative to the total weight of the coating compositions, of an aqueous dispersion of colloidal silicon dioxide.

(C) 0 to 5% by weight, relative to the total weight of the coating agent, of an etherified methylolmelamine,

(D) 0.05 to 15% by weight, relative to the total weight of the coating composition, of a blocked polyisocyanate,

(E) 0.5 to 30% by weight, relative to the total weight of the coating composition, of acetic acid, and

(F) 0.05 to 4% by weight, relative to the total weight of the coating composition, of a polysiloxane which is terminated by hydroxyl group, has an average chain length of between 1 to 25 and a molecular weight of 150 to 1800, and

(G) an inert organic solvent as the remainder.

4,444,974
ROOM TEMPERATURE CURING COMPOSITION

Junji Takase; Toshifumi Hirose, and Katsuhiko Isayama, all of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

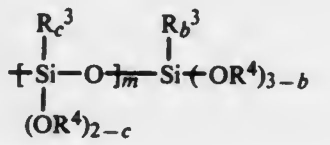
Filed Dec. 6, 1982, Ser. No. 446,976

Int. Cl.^{3} C08G *77/04*

U.S. Cl. 528—33 **8 Claims**

1. A room temperature curing composition comprising (A) a polyoxyalkylene polymer having a silicon-containing hydrolyzable group and (b) a hydrolyzable silicon compound,

wherein said polyoxyalkylene polymer (A) has substantially a structural unit of the formula: —R′O—, wherein R′ is an alkylene group having 1 to 4 carbon atoms, with said silicon-containing hydrolyzable group of the general formula:



$$\left[\overset{R_c^3}{\underset{(OR^4)_{2-c}}{Si}}-O\right]_m-\overset{R_b^3}{Si}\left(OR^4\right)_{3-b}$$

wherein R^3 is a substituted or unsubstituted monovalent organic group having 1 to 20 carbon atoms or an organosiloxy group, R^4 is a substituted or unsubstituted monovalent hydrocarbon group having 1 to 20 carbon atoms, b is 0, 1 or 2; c is 0, 1 or 2; and m is 0 or an integer of 1 to 18, and

wherein said hydrolyzable silicon compound (B) is a member selected from the group consisting of compounds of the general formula:

$$R_n\text{-}Si\text{-}X_{4-n}$$

wherein R is a monovalent organic group having 1 to 12 carbon atoms, X is a halogen, an alkoxyl group, an acyloxy group, a ketoxymate group, an amino group, an aminoxy group, an amide group, a mercapto group or an alkenyloxy group, and n is 0 or an integer of 1 to 3, and condensed partial hydrolysis products thereof.

4,444,975
WIRE COATING COMPOSITION FOR RESTORATION OF POLYETHYLENE INSULATION

Richard J. Pokorny, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 3, 1983, Ser. No. 520,079

Int. Cl.^{3} C08G *18/30*

U.S. Cl. 528—49 **20 Claims**

1. A polyurethane composition comprising the reaction product of an admixture of:

(a) an aliphatic or cycloaliphatic polyisocyanate containing at least 2 isocyanate groups,

(b) 0.2 to 0.6 equivalents, based on the isocyanate groups, of a monofunctional alcohol having a molecular weight in the range of 200 to 1500,

(c) 0.8 to 0.4 equivalents, based on the isocyanate groups, of a tri- or tetra-functional aliphatic or cycloaliphatic polyol having a molecular weight in the range of 100 to 900, and

(d) up to about 5 percent by weight of said admixture of at least one catalyst capable of promoting a reaction between said isocyanate compound and said monofunctional alcohol and said polyol compounds;

wherein said isocyanate compound is present in sufficient quantity to provide an NCO/OH ratio of from about 0.95 to 1.05 in said admixture.

4,444,976
SAG RESISTANT TWO COMPONENT ADHESIVE AND SEALANT

Thomas G. Rabito, Ashland, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 20, 1982, Ser. No. 450,826

Int. Cl.^{3} C08G *18/32*

U.S. Cl. 528—60 **6 Claims**

1. A two component adhesive composed of a polyurethane prepolymer component having free NCO and a curative component, said curative component being comprised of a mixture of 5 to 15 mols of a reactive hydrogen containing material having 2 to 5 hydroxyls of 100 to 3000 molecular weight and 0.5 to 3.0 mols of a secondary diamine having a molecular weight less than 325 said adhesive being characterized when the components are mixed at a ratio of 4:1 on a weight basis of being sag resistant immediately after mixing and exhibiting a gel time at 24° C. of at least two minutes.

4,444,977
CURABLE OXIRANE FORMULATIONS

Kiyoshi I. Aikawa, Matsudo, Japan, and Ritchie A. Wessling, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 7, 1983, Ser. No. 472,695

Int. Cl.^{3} C08G *59/62, 59/40, 59/42*

U.S. Cl. 528—109 **8 Claims**

1. An oxirane formulation comprising the reaction product of an oxirane and a cross-linking amount of 3-hydroxythiophane and an organic acid having at least 2 acid moieties that have a dissociation constant, pK_a, less than 4.75.

4,444,978
THERMALLY STABLE CARBONATE POLYMER

Kevin F. Dick, and David R. Near, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 29, 1983, Ser. No. 518,774

Int. Cl.^{3} C08G *63/62, 79/04*

U.S. Cl. 528—167 **9 Claims**

1. A carbonate polymer with improved thermal stability having a thermally effective amount of a phosphorous modified phenolic oligomer copolymerized therewith wherein the oligomer has the formula

$$H—[O—R—O—P(OR_1)]_n—O—R—OH$$

where

R is the divalent residue of a dihydric mononuclear phenol or a dihydric polynuclear phenol,

R_1 is an alkyl, aralkyl or alkaryl group having 1 to 25 carbons, and n is a number having an average value of 1–200.

4,444,979
POLYPHENYLENE ETHERS WITH IMIDE LINKING GROUPS

Terry L. St. Clair, Poquoson, and Harold D. Burks, Newport News, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 25, 1983, Ser. No. 469,866

Int. Cl.^{3} C08G *73/10*

U.S. Cl. 528—172 **8 Claims**

1. A process for producing a solvent resistant, thermoplastic polymer comprising:

mixing 1.00 part by mole of a dianhydride containing phenylether moieties with 0.95 to 1.00 parts by mole of an aromatic diamine in a solvent selected from the group of aliphatic ether solvents consisting essentially of bis(2-methoxyethyl)ether, tetrahydrofuran, and dioxane, at atmospheric pressure and at a temperature from 10° C. to 30° C.;

stirring for one to two hours;

pouring the resulting viscous solution into a non-solvent selected from the group consisting of water, methanol and heptane, to precipitate an intermediate polymer having amide-acid linking units;

filtering to recover the intermediate polymer;

drying the recovered intermediate polymer for 12 to 18 hours at ambient conditions and then for one-half to two and one-half hours at 90° C. to 110° C. and atmospheric pressure;

imidizing the amide-acid units by subjecting the polymer to temperatures of 150° C. to 250° C. for one to five hours, such that the temperature exceeds the final polymer glass transition temperature, to yield a polyphenylene ether having imide linking groups in a fused glass state.

4,444,980
LIQUID CRYSTAL COPOLYESTERS

Oliver D. Deex, Clayton, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 354,568, Mar. 4, 1982, Pat. No. 4,377,681. This application Mar. 15, 1983, Ser. No. 475,579

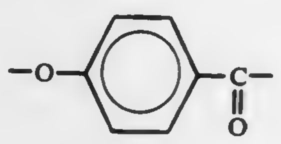
The portion of the term of this patent subsequent to Mar. 22, 2000, has been disclaimed.

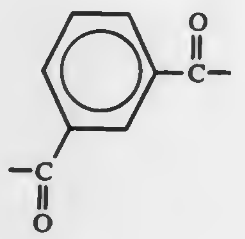
Int. Cl.^{3} C08G *63/60*

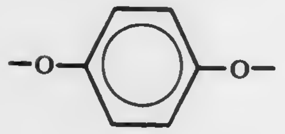
U.S. Cl. 528—193 **4 Claims**

1. A copolyester capable of forming a thermotropic melt phase at a temperature below about 340° C. and having a glass transition temperature of at least about 160° C. determined on a film of molded copolyester of 150 to 250 micron in thickness,

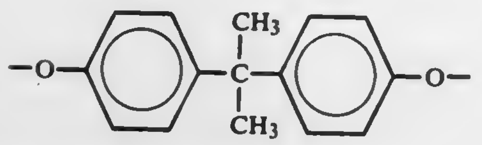
by means of a dynamic tensile instrument operated at a frequency of 11 hertz and a heating rate of 2° C. per minute and an inherent viscosity, determined at 30° C. with a solution of 0.5 gram of copolyester per 100 ml of a solvent composed of 60 parts by weight of phenol and 40 parts by weight of tetrachloroethane, of at least about 0.3, consisting essentially of the following divalent radicals:


(A)


(B)


(C)

and


(D)

wherein the range of radical A is from 10 to 40 mol percent of the copolyester and the range of radical C is from 82 to 95 mole percent of the total of radicals C and D.

4,444,981

10 OXO-4,5-DIHYDRO-10H-BENZO 5,6 CYCLOHEPH[1,2-B]PYRRYLS

Alexander C. Goudie, Harlow, England, assignor to Beecham Group Limited, England

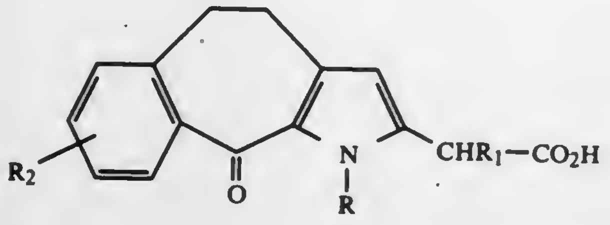
Filed Jul. 25, 1980, Ser. No. 172,473

Claims priority, application United Kingdom, Jul. 28, 1979, 7926402

Int. Cl.^{3} C07D *209/70;* A61K *31/40*

U.S. Cl. 548—427 **12 Claims**

1. A compound selected from the group consisting of a carboxylic acid of the formula:



wherein

R is alkyl of 1 to 4 carbon atoms;

R_1 is hydrogen or alkyl of 1 to 4 carbon atoms and

R_2 is hydrogen, halo, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or alkylthio of 1 to 4 carbon atoms; non-toxic in vivo hydrolysable esters and amides thereof and compounds of the said formula having its carboxylic acid group replaced by CHO or CH_2OH; and the pharmaceutically acceptable salts both of said carboxylic acids and the compounds having said replacements.

4,444,982

(+)- OR (−)-7-HYDROXYMETHYL-2,6,6-TRIMETHYLTRICYCLO[6,2,1,0^{1,5}]UNDECANE

Tsukasa Nagashima, Tokyo, and Toshio Yoshida, Kanagawa, both of Japan, assignors to Takasago Perfumery Co., Ltd., Tokyo, Japan

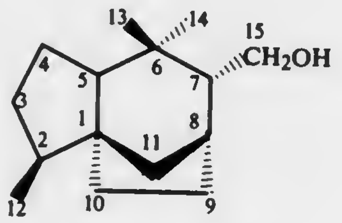
Filed Sep. 29, 1982, Ser. No. 427,345

Claims priority, application Japan, Nov. 5, 1981, 56-177480

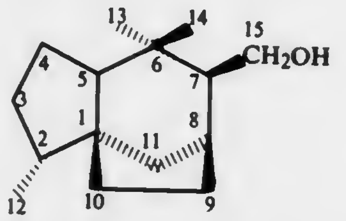
Int. Cl.^{3} C07C *35/22*

U.S. Cl. 568—817 **1 Claim**

1. (+)- or (−)-7-hydroxymethyl-2,6,6-trimethyltricyclo[6,2,1,0^{1,5}]undecane represented by the following formula (I) or (II):



(I)



(II)

4,444,983

PROCESS FOR THE NUCLEAR CHLORINATION OF TOLUENE

Ryoji Hattori; Yoshihiko Abe; Sueo Kanno, and Satoshi Maeda, all of Kooriyama, Japan, assignors to Hodogaya Chemical Co., Ltd., Tokyo, Japan

Filed Apr. 15, 1982, Ser. No. 368,759

Claims priority, application Japan, Apr. 21, 1981, 56-59101; Apr. 21, 1981, 56-59102

Int. Cl.^{3} C07C *17/12*

U.S. Cl. 570—209 **10 Claims**

1. In the process for the nuclear chlorination of toluene wherein toluene is reacted with chlorine gas in the presence of a Lewis acid as a catalyst, the improvement which consists of adding as a cocatalyst at least one phenoxthine derivative which is a member selected from the group consisting of 3,9-dimethyl-6,8-dichlorophenoxthine, 3,9-dimethyl-2,6,8-trichlorophenoxthine, 1,3,9-trimethyl-6,8-dichlorophenoxthine, 1,3,9-trimethyl-2,6,8-trichlorophenoxthine, 1,9-dimethyl-6,8-dichlorophenoxthine, 1,9-dimethyl-2,6,8-trichlorophenoxthine, 6,9-dimethyl-2,8-dichlorophenoxthine, 3,6,9-trimethyl-8-chlorophenoxthine, 1,3,6,9-tetramethyl-8-chlorophenoxthine, 1,6,9-trimethyl-8-chlorophenoxthine and highly chlorinated derivatives thereof obtained by chlorinating said phenoxthine derivatives.

4,444,984

METHANE CONVERSION

C. Andrew Jones, Newtown Square; John J. Leonard, Springfield, and John A. Sofranko, West Chester, all of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 412,655, Aug. 30, 1982. This application Aug. 12, 1983, Ser. No. 522,944

Int. Cl.^{3} C07C *2/00*

U.S. Cl. 585—500 **22 Claims**

1. A method for converting methane to higher hydrocarbon products which comprises contacting a gas comprising methane and a reducible oxide of tin at a temperature within the range of about 500° to 1000° C.

14. A method for synthesizing hydrocarbons from a methane source which comprises:

- (a) contacting a gas comprising methane with a solid comprising a reducible oxide of tin at a temperature within the range of about 500° to 1000° C. to form C_2+ hdyrocarbons, coproduct water, and solids comprising a reduced oxide of tin; and
- (b) recovering C_2+ hydrocarbons;
- (c) at least periodically contacting the solids comprising a reduced oxide of tin with an oxygen-containing gas to produce a solid comprising a reducible oxide of tin; and
- (d) contacting a gas comprising methane with the solids produced in step (c) as recited in step (a).

4,444,985

OLIGOMERIZATION OF PROPYLENE

Joseph Z. Pasky, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jul. 27, 1982, Ser. No. 402,489

Int. Cl.^{3} C07C *2/02*

U.S. Cl. 585—520 **3 Claims**

1. A process for the preparation of propylene oligomers having from 21 to 48 carbon atoms per molecule which comprises:

- (a) contacting propylene in a reaction zone with a hydrogen fluoride catalyst;
- (b) maintaining the temperature in the reaction zone between about 0° C. and −150° C.; and
- (c) maintaining the pressure in the reaction zone between about 0 psig and 400 psig.

4,444,986

SELECTIVE SORPTION BY ZEOLITES

Ralph M. Dessau, Edison, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 105,190, Dec. 19, 1979, Pat. No. 4,309,281. This application Sep. 30, 1981, Ser. No. 307,048

Int. Cl.^{3} C07C *7/12*

U.S. Cl. 585—828 **17 Claims**

1. A process for the selective separation of higher molecular weight hydrocarbon compounds in admixture with lower molecular weight hydrocarbon compounds, all of said hydrocarbon compounds being of the same homologous series and having a critical dimension not greater than 6.8 Angstrom units to be sorbed, which comprises contacting the mixture with a zeolite having a SiO_2/Al_2O_3 mole ratio of at least 12 and a Constraint Index of greater than 2 to about 12 to effect selective sorption of said higher molecular weight hydrocarbon compounds.

4,444,987

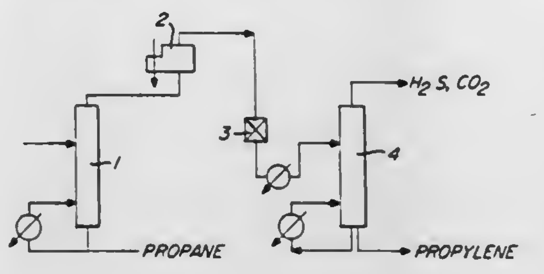
METHOD OF REMOVAL OF COS FROM PROPYLENE

George L. Brownell, Monroeville Boro, Pa.; Melba J. Collier, Houston; William E. Hall, LaPorte, both of Tex.; Howard H. Morgan, Jr., Monroeville Boro, and A. R. Snyder, Export Boro, both of Pa., assignors to U.S. Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 298,702, Sep. 1, 1981. This application Jul. 13, 1982, Ser. No. 397,945

Int. Cl.^{3} C01C *7/148;* B01D *53/34*

U.S. Cl. 585—850 **12 Claims**



1. In a method of removing carbonyl sulfide from propylene comprising passing the propylene containing carbonyl sulfide over a catalyst of platinum sulfide on alumina in the presence of water to hydrolyze the COS to H_2S and CO_2, the improvement comprising regenerating the catalyst by contacting the catalyst with a solvent for polypropylene under conditions such that any polypropylene on the catalyst will be readily dissolved.

4,444,988

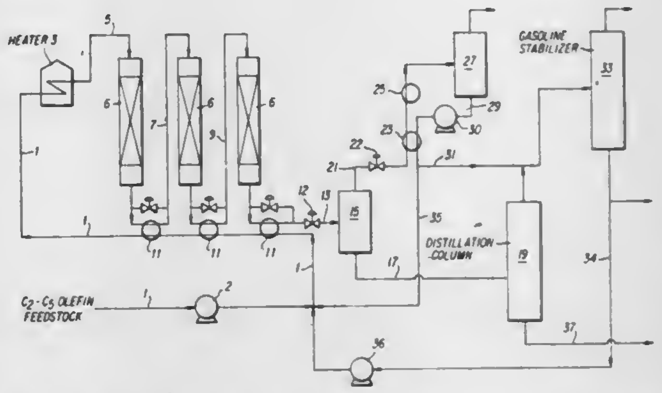
USE OF LIQUEFIED PROPANE AND BUTANE OR BUTANE RECYCLE TO CONTROL HEAT OF REACTION OF CONVERTING OLEFINS TO GASOLINE AND DISTILLATE

Leon M. Capsuto, Cherry Hill; Robert E. Holland, Mullica Hill; Henry R. Ireland, Woodbury, and Samuel A. Tabak, Wenonah, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 22, 1982, Ser. No. 400,828

Int. Cl.^{3} C07C *3/00, 3/03*

U.S. Cl. 585—415 **6 Claims**



1. A process for producing a hydrocarbon fuel boiling within the range of gasoline and distillate comprising

- (a) contacting a C_2–C_5-olefin, mixtures thereof or mixtures thereof with paraffins having from 1 to 5 carbon atoms with a crystalline zeolite selected from the group consisting of ZSM-5, ZSM-11, ZSM-12, ZSM-35 and ZSM-38 zeolites thereby producing a product stream comprising a liquid phase and a vapor phase;
- (b) separating said product stream of (a) into a liquid phase and a vapor phase;
- (c) fractionating said liquid phase of (b) into a desired gasoline fraction;
- (d) passing the vapor phase of (b) through a cooling zone thereby condensing at least a portion of the propane and butene product to a liquid and forming a two-phase vapor and liquid mixture;
- (e) separating the two-phase mixture of (d) into a liquid phase and a vapor phase;
- (f) flowing said liquid phase of (e) in a heat exchange relationship with the vapor phase of (b);
- (g) fractionating at least a portion of said liquid phase of (e) into a desired gasoline fraction; and (h) recycling a portion of said liquid phase of (e) into contact with said zeolite of (a).

4,444,989

METHYLATION OF TOLUENE TO PARA-XYLENE CATALYZED BY CRYSTALLINE SILICA

Frank E. Herkes, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 20, 1979, Ser. No. 32,001

Int. Cl.^{3} C07C *2/68*

U.S. Cl. 585—467 **19 Claims**

1. In a process for preparing paraxylene by the catalytic reaction of toluene and a methylating agent, the improvement which comprises employing a catalyst of crystalline silica and, as promoter therefor, a member of the group consisting of arsenic oxide, magnesium oxide, boron oxide, antimony oxide, amorphous silica, and mixtures thereof, said promoter being present at 0 to about 50% based on total weight of metal oxide in the catalyst.

4,444,990

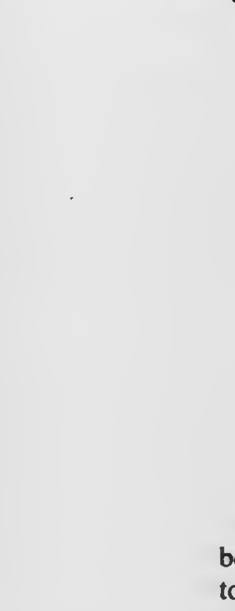
HEAT SENSING DEVICE

Luis F. Villar, Westbury, N.Y., assignor to Servo Corporation of America, Hicksville, N.Y.

Filed Sep. 8, 1982, Ser. No. 416,055

Int. Cl.^{3} H01L *35/28*

U.S. Cl. 136—221 **5 Claims**



1. A temperature sensing device comprising:
a housing formed of a heat conductive material; a cavity within said housing; an opening in said housing communicating with said cavity; a heat probe positioned for movement within said cavity and through said opening from (1) a first position wherein portions of said probe contact said heat conductive surface so as to establish a heat conductive path between said probe and said housing to (2) a second position wherein said probe is insulated from said housing and positioned to take a temperature reading.

4,444,991

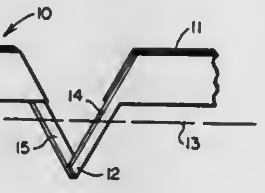
HIGH-EFFICIENCY THERMOPILE

Harry A. Beale, Columbus, Ohio, assignor to Omnimax Energy Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 358,176, Mar. 15, 1982. This application Jul. 26, 1982, Ser. No. 401,485

Int. Cl.^{3} H01L *35/28*

U.S. Cl. 136—225 **15 Claims**



1. A thermopile comprising a plurality of first legs and second legs, said legs being connected in series with said first and second legs alternating; the connection between adjacent legs constituting junctions; the cross-sectional area of every other junction being considerably larger than the cross-sectional area of the remaining junctions and the cross-sectional area of any of said legs.

4,444,992

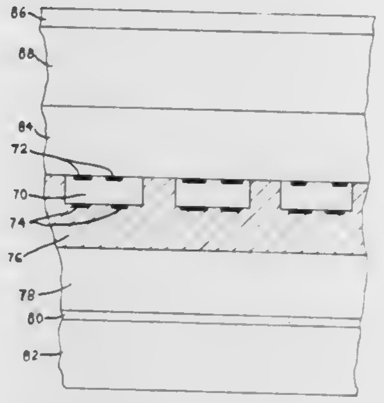
PHOTOVOLTAIC-THERMAL COLLECTORS

Charles H. Cox, III, Carlisle, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 206,326, Nov. 12, 1980, abandoned. This application Nov. 17, 1982, Ser. No. 442,338

Int. Cl.^{3} H01L *31/04*

U.S. Cl. 136—248 **10 Claims**



1. A solar cell construction comprising: a semi-conductor body having a p-n junction, a top surface of said semiconductor body being antireflective, a bottom surface of said semiconductor body being antireflective, a patterned electrode on each of said surfaces of said semi-conductor body, a heat-absorbing surface adapted to absorb light transmitted through said bottom surface and means for passing a heat-exchange fluid in heat-exchange relationship with said heat-absorbing surface.

10. A solar cell assembly which comprises a plurality of the semiconductor bodies of any one of claims 1 or 2 in spaced apart relationship, each having said antireflective surfaces and said patterned electrodes, said semiconductor bodies being housed within an encapsulant material, a heat absorbing surface adapted to absorb light transmitted through the bottom surfaces of said semiconductor bodies and through said encapsulant and means for passing a heat-exchange fluid in heat-exchange relationship with said heat absorbing surface.

4,444,993

PARTICLE TRAP TO SHEATH NON-BINDING CONTACT FOR A GAS-INSULATED TRANSMISSION LINE HAVING A CORRUGATED OUTER CONDUCTOR

William H. Fischer, Pittsburgh, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 4, 1982, Ser. No. 439,245

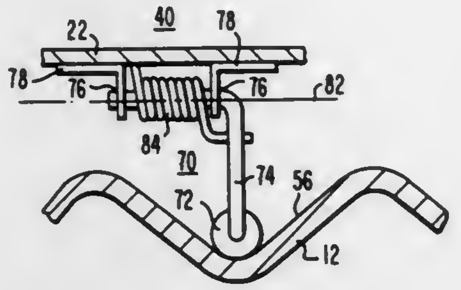
Int. Cl.^{3} H01B *9/06, 9/04;* **H02G** *5/02*

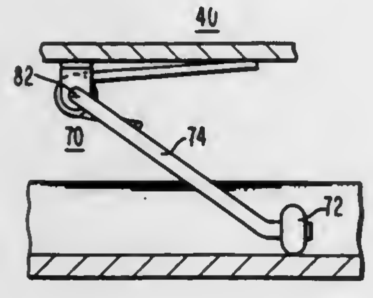
U.S. Cl. 174—14 R **3 Claims**

1. A gas-insulated transmission line, comprising:
(A) a corrugated outer conductor;
(B) an inner conductor adapted for connection to an energizing source and disposed interiorly in said outer conductor;
(C) an insulating gas disposed within the annular space between said outer and inner conductors;
(D) insulating means disposed between said outer and inner conductors for insulatingly supporting said inner conductor within said outer conductor;
(E) particle trapping means disposed proximate the inner periphery of said corrugated outer conductor for trapping particles, said particle trapping means having the capability of moving relative to said corrugated outer conductor;
(F) rotatable attachment means affixed to said particle trapping means in a disposition of electrical continuity therewith and having a rotatable portion thereof which is rotatable on a pivot support axis disposed parallel to the direction of travel of said inner conductor;
(G) a lever arm fixedly disposed upon said rotatable portion for being angularly moved in correspondence with rotation of said rotatable portion;

(H) a non-binding electrical contact piece disposed on said lever arm for making non-binding electrical contact with the inner surface of said corrugated outer conductor; and

(I) biasing means for biasing said electrical contact piece against said inner surface of said corrugated outer conductor to maintain electrical continuity between said corrugated outer conductor and said particle trapping means regardless of the axial position of said particle trapping means relative to the corrugations of said corrugated outer conductor.





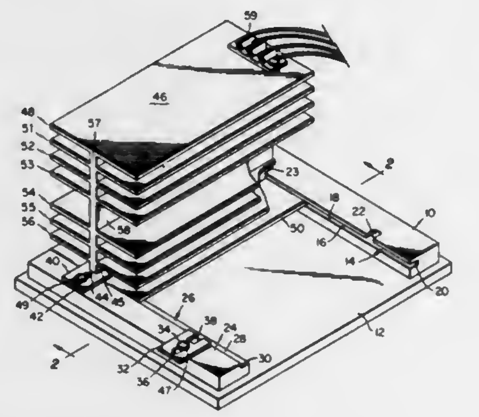
4,444,994
ELECTRICALLY INSULATED QUICK DISCONNECT HEAT SINK

James E. Baker, Garland, and T. Benjamin Allen, Plano, both of Tex., assignors to Varo, Inc., Garland, Tex.

Filed Jan. 29, 1982, Ser. No. 343,750

Int. Cl.^{3} H05K *7/20*

U.S. Cl. 174—16 HS **14 Claims**



1. A cooling apparatus, comprising:

a cooling member having a first tongue at one end thereof and a second tongue at the other end thereof;

a first stationary bracket having a first longitudinal groove along the edge thereof for receiving said first tongue;

a second stationary bracket having a notch along the edge thereof;

a clamping bracket for attachment to said second stationary bracket, said clamping bracket being adjustable such that the end portion of the lower surface thereof overlaps said notch to form a second longitudinal groove for receiving said second tongue;

first retaining means for preventing movement of said first tongue along the longitudinal axis of said first groove, the combination of said first retaining means and said first stationary bracket allowing movement of said cooling member in a first direction only, said first direction directed outward from said first longitudinal groove; and

second retaining means for preventing movement of said second tongue along the longitudinal axis of said second groove, the combination of said second retaining means, said second stationary bracket and said clamping bracket only allowing movement of said heat sink in a second direction that is opposite said first direction, said cooling member being retained when said clamping bracket is attached to form said second groove and said cooling member being removable when said clamping bracket is adjusted to allow movement of said second tongue in a direction perpendicular to both said second direction and the notch in said second bracket.

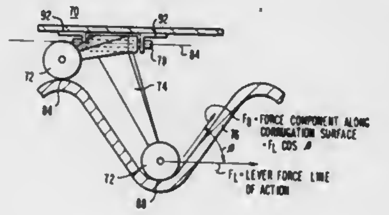
4,444,995
NON-BINDING CONDUCTOR LOAD BEARING ROLLER FOR A GAS-INSULATED TRANSMISSION LINE HAVING A CORRUGATED OUTER CONDUCTOR

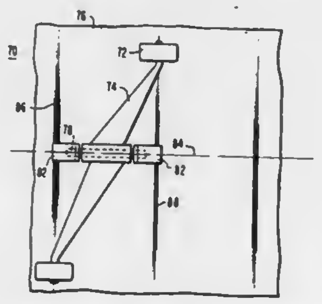
William H. Fischer, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 4, 1982, Ser. No. 439,248

Int. Cl.^{3} H01B *9/06, 9/04;* **H02G** *5/06*

U.S. Cl. 174—28 **2 Claims**


92
70
92
72
84
78
74
F_B = FORCE COMPONENT ALONG CORRUGATION SURFACE = F_L COS θ
76
θ
F_L = LEVER FORCE LINE OF ACTION
72
88



1. A gas-insulated transmission line, comprising:

(A) a corrugated outer conductor having an inner surface and corrugations;

(B) an inner conductor adapted for connection to an energizing source and disposed interiorly within said outer conductor;

(C) an insulating gas disposed within the space between said outer and inner conductors;

(D) insulating means disposed between said outer and inner conductors for insulatingly supporting said inner conductor within said outer conductor; and

(E) two movable support means supported on a common pivot lever, said pivot lever being rotatable about a pivot lever axis disposed parallel to the direction of travel of the inner conductor/insulating means assembly, said two movable support means being separated axially generally by a distance equal to the axial distance between the peaks and valleys of the corrugations and separated radially generally by a predetermined distance equal to the radial distance between the peaks and valleys of the corrugations, said pivot lever axis being disposed in cooperation with said insulating means and said movable support means being disposed in movable cooperation with said inner surface of said corrugated outer conductor for permitting axial movement of said inner conductor relative to said corrugated outer conductor without permitting substantial radial displacement of said inner conductor relative to said corrugated outer conductor.

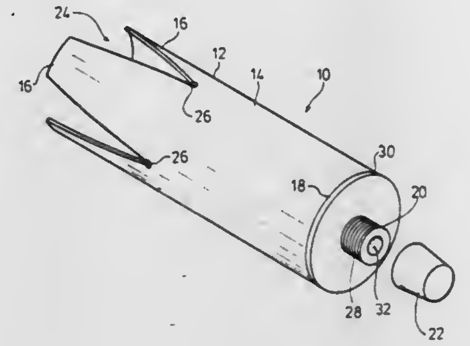
4,444,996
END CAPS FOR TELEPHONE CABLES AND METHOD FOR HERMETICALLY SEALING A CABLE END

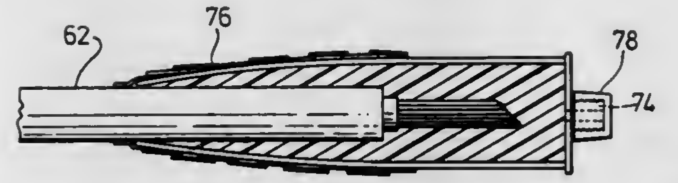
Thomas A. Robertson, Armdale, Canada, assignor to Plastics Maritime Ltd., Halifax, Canada

Filed Apr. 22, 1982, Ser. No. 370,685

Int. Cl.^{3} H02G *15/04, 1/14*

U.S. Cl. 174—74 A **11 Claims**





5. A method of sealing a cable end which comprises:

surrounding a terminal portion of the cable including the cable end with a capping member which comprises:

an elongate protective enclosure including a cylindrical, preformed main body portion, a plurality of inwardly deflectable elongate fingers extending from a first end of said body portion, and a closure wall at a second end of said body portion, remote from said fingers, and an injection port comprising a port member in said closure wall,

a space being defined between an inner wall of the capping member and the terminal portion of the cable,

deflecting the fingers of the capping member into contact with the cable at a position spaced inwardly from the cable end,

binding the deflected fingers to the cable, to secure said enclosure on said terminal portion and completely close openings to the interior of said capping member, defined between adjacent fingers,

injecting a solidifiable sealing material in a liquid state under pressure through the injection port of the capping member to occupy said space,

closing the injection port with a cap adapted to close said port member, and

allowing said sealing material to solidify to provide a hermetic seal.

10. A hermetically sealed cable end in which a terminal portion of a cable is surrounded by a capping member,

said capping member comprising an elongate protective enclosure including a cylindrical, preformed main body portion, a plurality of elongate fingers extending from a first end of said body portion, said fingers being deflected inwardly in contacting relationship with said cable, a closure wall at a second end of said body portion remote from said fingers, an injection port comprising a port member in said closure wall and a cap adapted to close said port member,

a plurality of turns of binding tape binding said fingers in said inwardly deflected configuration, said binding tape closing any access to the interior of said protective enclosure between the inwardly deflected fingers,

a space defined between said terminal portion and said capping member being filled with a solid sealing material, said solid sealing material being formed by a solidification of a liquid composition injected through said injection port under pressure.

4,444,997
DEVICE FOR GENERATING ELECTRIC SIGNALS REPRESENTING THE POSITION COORDINATES OF A STYLUS ON A REFERENCE SURFACE

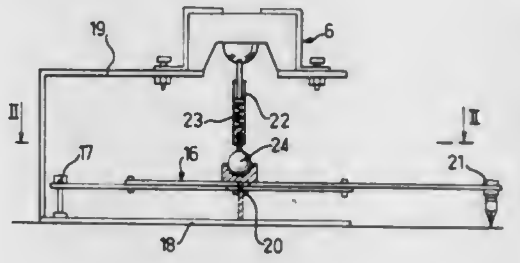
Sherif Danish, and Adel Danish, both of Paris, France, assignors to Polytel Computer Products Corp., Tulsa, Okla.

Filed Sep. 28, 1982, Ser. No. 425,452

Claims priority, application France, Aug. 18, 1982, 82 14288

Int. Cl.^{3} G08C *21/00*

U.S. Cl. 178—18 **11 Claims**



1. A device for generating electric signals representing the position coordinates of a stylus on a reference surface, characterized in that it comprises a signal generator (**6, 29**) that is fixed with respect to the reference surface and comprising a movable part (**5, 38**) which works in conjunction with at least two potentiometers generating the voltages representing the said coordinates, the stylus (**7, 21**) being a stylus for pointing on the reference surface, and mechanical linkage means being provided between this stylus and the said movable part so as to obtain a scaling down effect on the movements given to the stylus when they reach the potentiometers.

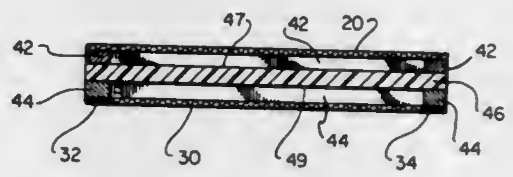
4,444,998
TOUCH CONTROLLED MEMBRANE FOR MULTI AXIS VOLTAGE SELECTION

V. Dean House, Orem, Utah, assignor to Spectra-Symbol Corporation, Salt Lake City, Utah

Filed Oct. 27, 1981, Ser. No. 315,374

Int. Cl.^{3} G08C *21/00*

U.S. Cl. 178—19 **10 Claims**



8. A touch controlled membrane device for defining any dual coordinate position in a two dimensional resistive field produced by an applied pressure, the device comprising:

a first member having a first electrically resistive surface for establishing a continuous voltage gradient in a first direction in said two dimensional resistive field in response to application of a first voltage thereto;

a second member having a second electrically resistive surface for establishing a continuous voltage gradient in a second direction in said two dimensional resistive field in response to application of a second voltage thereto;

means for providing a power source for generating said first and second voltages applied to said resistive field; and a third member having first and second conductive surfaces positioned substantially coextensive with and in close spaced relation to said first and second resistive surfaces, respectively, for providing first and second output voltages corresponding to any point of contact on said resistive field resulting from the applied pressure.

4,444,999

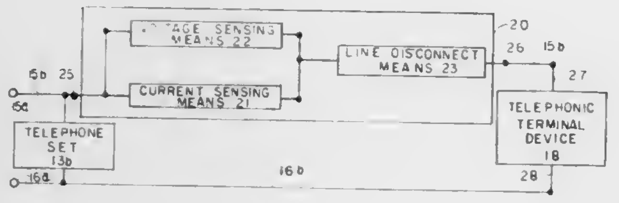
AUTOMATIC ELECTRONIC DISCONNECTOR FOR SUBSCRIBER TERMINAL EQUIPMENT

Frederic R. Sparrevohn, 143 Nieto, Apt. No. 1, Long Beach, Calif. 90803

Filed Aug. 23, 1982, Ser. No. 410,544

Int. Cl.³ H04M *1/64, 11/00*

U.S. Cl. 179—2 C **6 Claims**



1. An electronic disconnector circuit means for automatically disconnecting a subscriber's first telephonic terminal device from a subscriber's telephonic two wire loop circuit when a second subscriber's terminal device is taken off-hook with the first terminal device in an off-hook mode, said disconnector circuit means comprising:

a. an input terminal for connecting to a first line of the subscriber's two wire loop circuit and an output terminal for connecting to an input terminal of said first terminal device, said first terminal device having a first terminal device output terminal connected to a second line of said two wire loop circuit, said disconnecting circuit means and said first terminal device thereby being serially connected between said first and second lines of the two wire loop circuit,

b. a current sensing means connected serially with a line disconnecting means between said input and output terminals, and a voltage sensing means connected in parallel with said current sensing means, said voltage sensing means for detecting a voltage drop across the current sensing means and turning the current sensing means on at a predetermined voltage level thereby allowing current to flow through the current sensing means and the first terminal device from the loop circuit, said current sensing means for sensing and monitoring flow of current through the first terminal device and for activating the line disconnecting means to turn off current flow to the first terminal device when said current flow is reduced below a predetermined level resulting when said second terminal device is taken off-hook, said second terminal device being connected across from said first line to said second line and in parallel with said serially connected disconnector circuit means and said first terminal device, and when said second terminal device is returned to an on-hook mode, said current sensing means senses current flow and said first terminal device is again connected in the loop circuit.

4,445,000

AUTOMATIC TELEPHONE ANSWERING APPARATUS

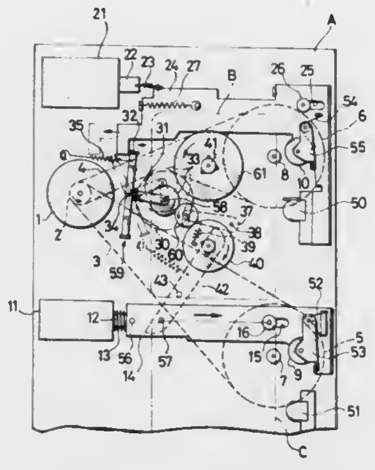
Kazuo Hashimoto, Tokyo, Japan, assignor to Hashimoto Corporation, Tokyo, Japan

Filed Dec. 31, 1981, Ser. No. 336,434

Claims priority, application Japan, Jan. 12, 1981, 56-2906

Int. Cl.³ H04M *1/64;* G11B *15/18*

U.S. Cl. 179—6.03 **6 Claims**



1. An automatic telephone answering apparatus having an outgoing message tape drive mechanism; an outgoing message tape switching mechanism for switching between operative and inoperative conditions of said outgoing message tape drive mechanism; an incoming message tape drive mechanism having a playback mechanism and a rewinding mechanism; an incoming message tape switching mechanism for switching said incoming message tape drive mechanism between the playback and rewinding operations; a single common motor driving said outgoing message tape drive mechanism and said incoming message tape drive mechanism; and an inhibiting mechanism for inhibiting the rewinding operation of an incoming message tape while said outgoing message tape drive mechanism is in operation, wherein said inhibiting mechanism has an escape mechanism interrupting transmission of rotational power from said common motor to said incoming message tape drive mechanism in mechanical cooperation with the operation of said outgoing message tape switching mechanism.

4,445,001

CIRCUIT ARRANGEMENT FOR IDENTIFYING TELEPHONE SUBSCRIBERS

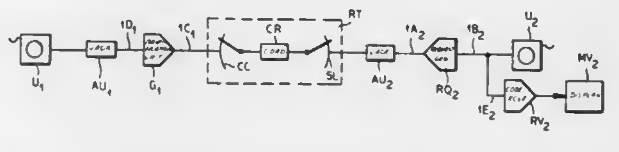
Ottavio Bertoglio, Turin, Italy, assignor to CELT Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Mar. 2, 1982, Ser. No. 354,069

Claims priority, application Italy, Mar. 3, 1981, 67289 A/81

Int. Cl.³ H04M *1/57;* H04Q *3/74*

U.S. Cl. 179—17 A **21 Claims**



1. In a telephone system wherein a multiplicity of subscriber stations are linked via signal paths including respective local lines to a common exchange having switching circuitry for establishing talking connections between calling and called stations,

the combination therewith of:

request-generating means switchable into an established talking connection;

identity-transmitting means including memory means for storing a characteristic code assigned to a local line associated with a subscriber station participating in such talking connection, said identity-transmitting means being responsive to a trigger signal sent out over the established talking connection by said request-generating means for sending back the characteristic code stored in said memory means;

integrating means in said identity-transmitting means for initiating an emission of the contents of said memory means only upon continuous presence of said trigger signal for a predetermined minimum period; and

identity-receiving means having access to an established talking connection for registering the characteristic code emitted by said identity-transmitting means in response to said trigger signal.

4,445,002

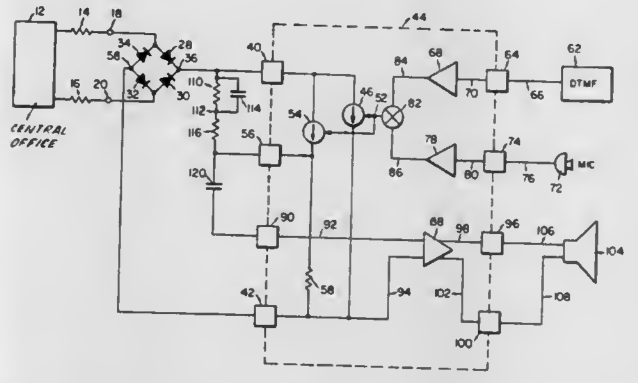
SIDETONE CIRCUIT

Michael B. Terry, Denton, Tex., assignor to Mostek Corporation, Carrollton, Tex.

Filed Dec. 28, 1981, Ser. No. 335,144

Int. Cl.³ H04M *1/58;* H04B *1/58*

U.S. Cl. 179—81 A **3 Claims**



1. A sidetone circuit for connecting to first and second terminals of a telephone line, receiving an audio input signal, generating an audio output signal and operating in conjunction with a plurality of external components, said sidetone circuit comprising:

a first current driver connected between said first and said second terminals and modulated by said audio input signal;

a second current driver connected between said first terminal and a balance node, said second current driver modulated by said audio input signal;

a resistor connected between said balance node and said second terminal;

at least one of said external components connected between said first terminal and said balance node;

at least one of said external components connected between said balance node and a second node, and

amplifier means having the input thereof connected to said second node, said amplifier means producing said audio output signal.

4,445,003

IMPROVED CONNECTION ARRANGEMENT FOR CONNECTING SERIES AND SHUNT UTILIZATION CIRCUIT TO A COMMUNICATIONS CHANNEL

Robert J. Alderman, 3406 G-7 Ranch Rd., Ruskin, Fla. 33570

Filed Sep. 30, 1982, Ser. No. 431,258

Int. Cl.³ H04M *1/00*

U.S. Cl. 179—81 R **2 Claims**

1. A circuit arrangement adapted to be connected to a telephone subscriber line comprising a first conductor and a second conductor between an office and a phone set for connecting a first utilization circuit in series with said phone set and a second utilization circuit shunting said phone set comprising:

a full wave bridge rectifier including a two terminal input port for connecting said full wave bridge rectifier in series with said first conductor and a polarized two terminal output port for connection to said first utilization circuit;

a four diode array connected in series between a positive terminal of said polarized two terminal output port and a negative terminal of said two terminal output port comprising:

a first diode, the anode of which is connected to said positive terminal and the cathode of which is connected to a first junction point; a second diode, the cathode of which is connected to said first junction point and the anode of which is connected to a second junction point; a third diode, the cathode of which is connected to said second junction point and the anode of which is connected to a third junction point; a fourth diode, the anode of which is connected to said third junction point and the cathode of which is connected to said negative terminal;

connection means for connecting said second utilization circuit between said first junction point and said third junction point and for connecting said second conductor ot said second junction point.

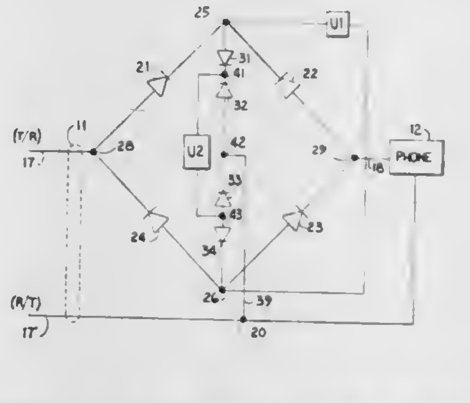
2. A circuit arrangement adapted to be connected to a telephone subscriber line comprising a first conductor and a second conductor between an office and a phone set for connecting a first utilization circuit in series with said phone set and a second utilization circuit shunting said phone set; a first rectifier means including a full wave bridge rectifier including two terminal input port for connecting said full wave bridge rectifier in series with said first conductor in a polarized two terminal output port comprising a positive output terminal and a negative output terminal for connection to said first utilization circuit;

a second rectifier means connected across said polarized two terminal output including a first diode for isolating said negative output terminal from a junction point;

a second diode for isolating said junction point from said positive output terminal;

means connecting said first and second diodes at said junction point;

means for connecting said positive terminal to said first lead of said second utilization circuit and for connecting said junction point and said second lead of said second utilization circuit to said second conductor.



4,445,004

KEY TELEPHONE LINE CIRCUIT WITH IMPROVED HOLD CIRCUIT

Paul Y. Ho, Calgary, Canada, assignor to Northern Telecom Limited, Montreal, Canada

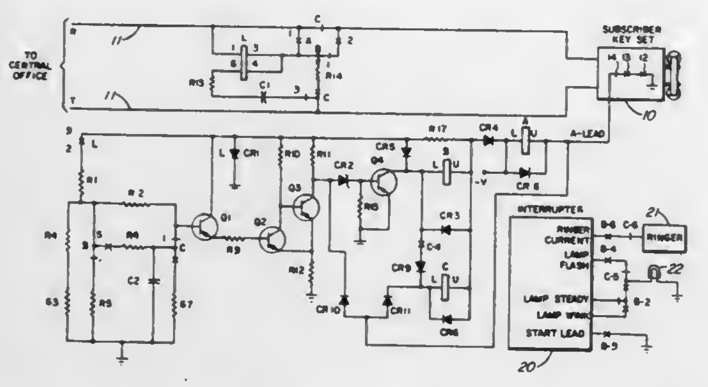
Filed May 24, 1982, Ser. No. 381,080

Int. Cl.³ H04Q *5/18*

U.S. Cl. 179—99 H **1 Claim**

1. A line circuit for use in a key telephone system comprising a ringing detection circuit, including a line relay, for detecting an incoming call; a busy state circuit, including a pair of relay B and C, responsive to the called station going off-hook for establishing a talking path between the subscriber loop input of the line circuit and the called station and for controlling the generation of audible and visual signals at the called station; and a hold circuit responsive to the depression of a hold key at the called station for terminating the subscriber loop with a holding bridge thereby insuring that the called station line is held in a seized condition and for generating at the called station a visual indication of such a condition; characterized in

that the hold circuit comprises, a reed relay (A) having a single pair of make contacts, the read relay being connected between a source of power and ground via an A-lead connected to switching contacts of a hold key and of the subscriber set, the reed relay being responsive to the operation of the hold key for causing the holding bridge to be connected across the subscriber loop, a first diode (CR10) connected between the A-lead and the control circuit of relay B for forcing it to release when the incoming call is answered, a second diode (CR9) connected between the B and C relays for holding the latter operated when the hold key is operated, and a third diode (CR11) connected between the A-lead and the C relay for holding it operated during the busy condition.



4,445,005
HEADPHONE

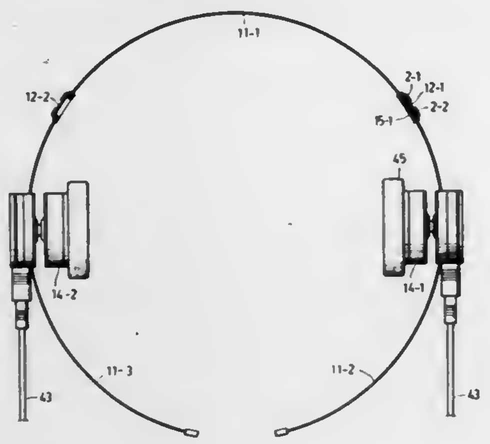
Satoru Furuhashi, Yao, Japan, assignor to Hosiden Electronics Co., Ltd., Osaka, Japan

Filed Apr. 30, 1981, Ser. No. 259,224

Claims priority, application Japan, May 7, 1980, 55-62953[U]; May 7, 1980, 55-62954[U]; May 8, 1980, 55-62768[U]

Int. Cl.³ A41D *21/00*

U.S. Cl. 179—156 R **6 Claims**



1. A headphone comprising:

an arcuate central band piece;

first and second arcuate side band pieces which are disposed respectively at the opposing ends of tne central band piece to form substantially a circle as a whole, the side band pieces having substantially the same curvature as the central band piece;

first and second coupling means for coupling the first and second side band pieces with the central band piece so that they can turn about axes lying in a plane formed by the circular arc of the central band piece;

first and second receivers each having incorporated therein a transducer for converting an electric signal into an acoustic signal; and

first and second mounting means for mounting said first and second receivers on said first and second arcuate side band pieces;

each of said first and second mounting means comprising a pair of substantially plate-like holding pieces having substantially the same shape and disposed in opposing relation to each other; pivot means disposed between said pair of holding pieces at substantially the center thereof so as to allow pivotal movement of said pair of holding pieces with respect to each other about said pivot means, said pair of holding pieces each having a through hole formed therein, and a U-shaped coupling spring inserted into said through holes of said pair of holding pieces so as to cause the leg portions of said coupling spring to press the outer surfaces of said pair of holding pieces inwardly whereby said pair of holding pieces are coupled together and resiliently pressed against each other;

each of said first and second receivers being attached to one of said pair of holding pieces of a corresponding one of said first and second mounting means by means of a pin which projects outwardly from the center of the rear surface of the receiver opposite from the sound emitting side of the receiver, said pin having a reduced diameter portion formed adjacent the free end of said pin, said one of said pair of holding pieces to which said receiver is attached including an engaging hole, spaced from the through hole in said one of said pair of holding pieces, for receiving the free end of said pin; one of the legs of said U-shaped coupling spring extending from said through hole in partially overlying relation to said engaging hole in said one of said pair of holding pieces, a slot in said one leg of said U-shaped coupling spring, said slot extending inwardly from the free end of said leg and having a width less than the diameter of said engaging hole, and said slot being positioned to overlie a portion of said engaging hole so as to rotatably engage the reduced diameter portion of said pin when the free end of said pin is inserted into said engaging hole, thereby to prevent said engaging pin from being removed in its axial direction from said engaging hole and to ensure that the receiver is attached to said one of said pair of holding pieces by said coupling spring; each of said pair of holding pieces having a recessed portion therein which recessed portions face one another to form a guide groove which extends through the mounting means formed by said pair of holding pieces in a direction parallel to the axis of pivotal movement of said pair of holding pieces, said guide groove slideably receiving therein a corresponding one of said first and second side band pieces.

4,445,006
FOUR-WIRE CONVERSION CIRCUIT FOR A TELEPHONE SUBSCRIBER LINE

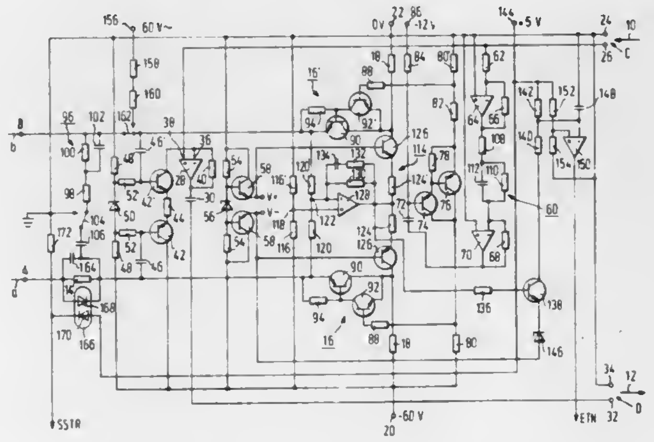
Peter Scholich, Schloss Neuhaus, Fed. Rep. of Germany, assignor to Nixdorf Computer AG, Fed. Rep. of Germany

Filed Apr. 6, 1981, Ser. No. 251,552

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1980, 3014187

Int. Cl.³ H04B *1/58*

U.S. Cl. 179—170 NC **5 Claims**



1. A two-wire to four-wire telephonic circuit arrangement comprising:

a pair of modulating input signal terminals (24,26);

a pair of output signal terminals (32,34);

a pair of subscriber terminals (a,b);

first and second normally balanced power sources (16,16′) having respective voltage level power supplies (20,22) and respective modulation signal inputs connected to one of the input signal terminals (24) and having respective outputs connected in the subscriber terminals (a,b);

an amplifier (28) having an output connected to one of the output signal terminals (32) and a first input connected to an input signal terminal (26) to receive the modulation signals;

control means connecting the subscriber terminals (a,b) to the second input of the amplifier (28) and comprising a pair of transistors (42,42′) of opposite phase conductivity having respective control electrodes connected through respective low frequency filter capacitors (46,46′) to respective subscriber terminals (a,b), the output of one of the transistors (42′) being connected to said other input of amplifier (28);

bias means (48,48′,50) connected to the control electrodes of said transistors (42,42′) for setting the operating point of said transistor (42,42′); and,

the other of said input signal terminals (24) being commonly connected to the other of said output signal terminals (34).

4,445,007
REMOTE TESTING OF SUBSCRIBER LINE INTERFACE CIRCUITS

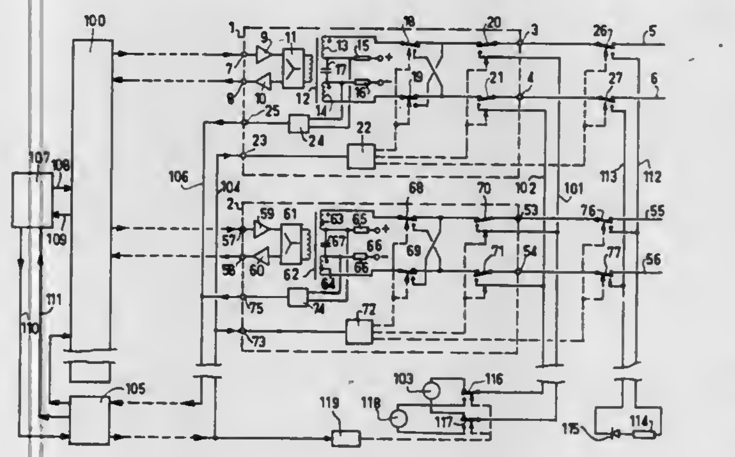
Alain Forestier, Lannion, France, assignor to Telecommunications Radioelectriquest et Telephoniques T.R.T., Paris, France

Filed Mar. 9, 1982, Ser. No. 356,605

Claims priority, application France, Mar. 18, 1981, 81 05408

Int. Cl.³ H04B *3/46*

U.S. Cl. 179—175.3 R **7 Claims**



1. A system for testing subscriber line interface circuits (1, 2) each having one end connected to a subscriber line and the other end connected, during a test, with a test apparatus (107) for transmitting test signals toward one of said interface circuits and receiving from another of said interface circuits signals corresponding to said test signals, comprising:

a test bus (112, 113) for a group of said interface circuits;

first change-over means (22, 26, 27 or 72, 76, 77) for disconnecting each interface circuit from its subscriber line and connecting it to said test bus; and

control means for causing said first change-over means to connect one interface circuit or two interface circuits to said test bus, depending upon the test to be effected.

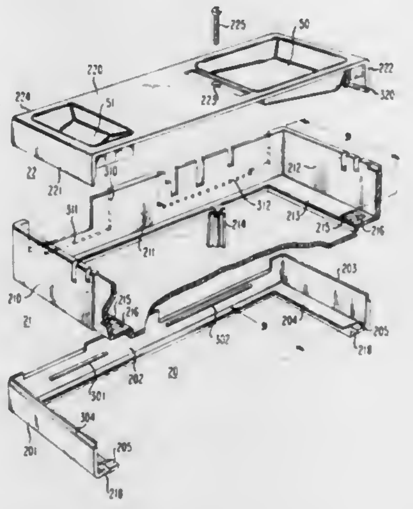
4,445,008
SNAP-TOGETHER HOUSING

Cosmo M. D. Rocca, Jackson, and Daniel W. Tyler, Middletown, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 19, 1981, Ser. No. 312,520

Int. Cl.³ H04M *1/02*

U.S. Cl. 179—179 **4 Claims**



1. A communication housing having a base, a lower section and an upper section,

said upper and lower sections cooperating with each other to form a shell around at least a portion of said base,

said lower section having at least one face and means projecting perpendicular to said one face, said projecting means adapted for rotatably mating with apertures in a bottom portion of said base thereby allowing said lower section to be rotated upward so that an inner surface of said lower section one face becomes positioned on the outside of a corresponding face of said base, said lower section including latch means located on the inner surface of said one face, said latch means adapted for mating with latch means located on said outside of said corresponding base face, said lower section latch means and said base latch means cooperating with each other when said lower section is rotated upward to inhibit said lower section from rotating downward without first being laterally separated from said base, and

said upper section having at least one face adapted to fit over said base, said upper section face having means for engaging said one face of said lower section so that when said upper and lower sections are engaged with each other said lower section is prevented from being laterally separated from said base.

4,445,009
STEP SWITCH

Masaru Suzuki, and Akira Ogawa, both of Aichi, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Oct. 20, 1981, Ser. No. 313,082

Claims priority, application Japan, Oct. 20, 1980, 55-146593; Oct. 20, 1980, 55-149464[U]

Int. Cl.³ H01H *9/00, 15/00*

U.S. Cl. 200—5 R **10 Claims**

1. A step switch comprising:

a body;

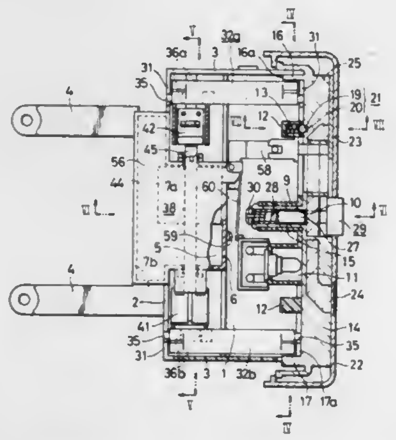
a rocking member pivotably mounted at a control portion thereof to said body, said rocking member being pivotable in either direction about a neutral position and about a pivoting axis located at a central portion thereof, said pivoting axis being substantially perpendicular to a longitudinal direction of said rocking member;

biasing means for biasing said rocking member towards its neutral position;

a pair of interlocking levers coupled to either end of said rocking member and mounted for pivotal movement with pivoting of said rocking memeber, said interlocking levers in their neutral positions being substantially perpendicular to said rocking member whereby free ends of said interlocking levers will move in a direction toward and away from said rocking member central portion;

a stepping control plate having either end coupled to said free ends of said interlocking levers;

means for moving said stepping control plate along the longitudinal direction of said rocking member and reciprocating said stepping control plate in a predetermined stroke in the longitudinal direction by said free ends in response to pivoting movement of said rocking member and in response to the return of said rocking member to its neutral position by said biasing means;



a pair of feed pawls at either end of said stepping control plate;

a slidable contact holder engaged by said pawls for movement in the longitudinal direction of said rocking member during pivoting of said rocking member from its neutral position but remaining substantially stationary during pivoting movement of said rocking member towards its neutral position; and

electrical switching means selectively actuated in accordance with the longitudinal position of said contact holder.

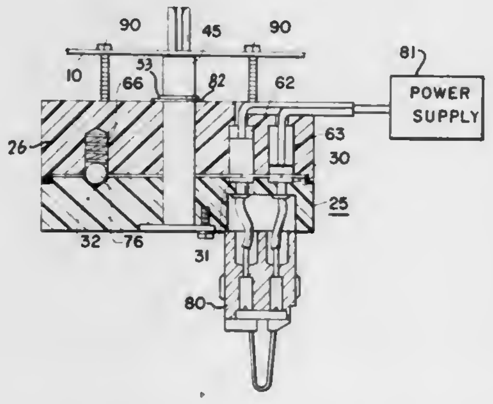
4,445,010
ROTARY SWITCH ASSEMBLY

Richard E. Feinbloom, and Melvin Levine, both of New York, N.Y., assignors to Designs for Vision, Inc., New York, N.Y.

Filed Sep. 20, 1982, Ser. No. 419,901

Int. Cl.^{3} H01H *19/58*

U.S. Cl. 200—11 R **8 Claims**



1. A rotary switch assembly for selecting any one of a plurality of lamps, comprising:

(a) a first plate having a plurality of lamp accommodating sockets located on a surface thereof, each of said sockets adapted to accommodate one of said lamps,

(b) at least one terminal located on each socket and electrically connected to an associated terminal area on the other surface of said plate, with said other surface further including detent recesses positioned between said terminals,

(c) a second plate positioned above and in alignment with said first plate and having on a surface thereof closest to said terminal area surface of said first plate, at least one spring loaded contact positioned to coact with any one of said terminal areas associated with said one socket, and first and second spring loaded detent means separated from said contact and positioned on an opposite side of said second plate from said contact and located to coact with two adjacent detent recesses positioned between said terminals.

(d) means coupled to said first plate for rotating said first plate with respect to said second plate to cause said spring loaded contact to coact with any selected terminal area associated with any one selected socket as determined by said spring loaded detent means coacting with a selected two of said detent recesses, with said spring loaded detent means exerting a force on said first plate to balance the force exerted by said spring loaded contact to thereby cause any socket selected to be properly optically aligned with respect to said first plate, with said exerted force of said spring loaded detent means balancing said force of said spring loaded contact due to the location of said detent means on the side of said plate opposite said spring loaded contact.

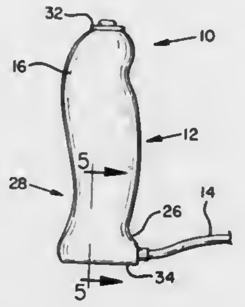
4,445,011
FREESTANDING MULTIDIRECTIONAL ELECTRICAL CONTROL DEVICE

Ronald E. Hansen, 918 River Bend Rd., NW., Salem, Oreg. 97304

Filed Oct. 13, 1981, Ser. No. 310,958

Int. Cl.^{3} H01H *25/00, 29/00, 35/00, 9/00*

U.S. Cl. 200—52 R **7 Claims**



1. A multidirectional control device for generating electrical control signals for a spatially controlled electrical apparatus, comprising:

a handle member having a nominal vertical axis defining a handle position such that the control device is not actuated;

a first gravity switch having a first switch axis positioned in said handle at an angle from the vertical axis such that tilting the handle member in a first direction away from said vertical axis and toward said first switch axis actuates said first switch;

a second gravity switch having a second switch axis positioned in said handle at an angle from the vertical axis such that tilting the handle member in a second direction away from said vertical axis and toward said second switch axis actuates said second switch;

a third gravity switch having a third switch axis positioned in said handle at an angle from the vertical axis such that tilting the handle oppositely of said first direction actuates said third switch; and

a fourth gravity switch having a fourth switch axis positioned in said handle at an angle from the vertical axis such that tilting the handle oppositely of said second direction actuates said fourth switch;

said switches each including an electrode electrically connected to a separate output signal line to said controlled apparatus and mutually-independent switch closure means operable for actuating each switch independently of the other;

said first and second switches having their axes extending at an angle to one another such that their output signal lines provide separate directional control signals to the controlled apparatus which correspond to X and Y variables in an X-Y plane and simultaneously provide both of said separate control signals when the handle is tilted in a direction angularly intermediate said first and second directions; and

said third and fourth switches having their axes positioned at an angle to one another such that their output signal lines provide separate directional control signals to the controlled apparatus which correspond to negative X and Y variables in said X-Y plane.

7. A controller according to claim 1 including a pushbutton switch means positioned atop the handle member for thumb manipulation, the pushbutton means being connected to a fifth output signal line to said controlled apparatus for providing a control signal thereto which is independent of the directional control signals.

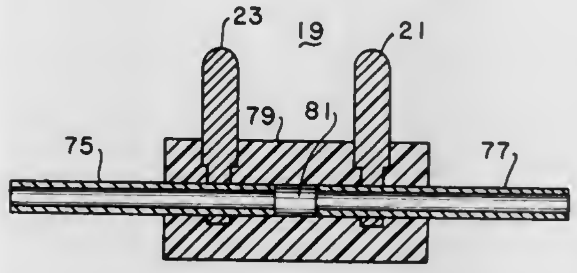
4,445,012
MOISTURE SENSOR FOR PURGING SYSTEM

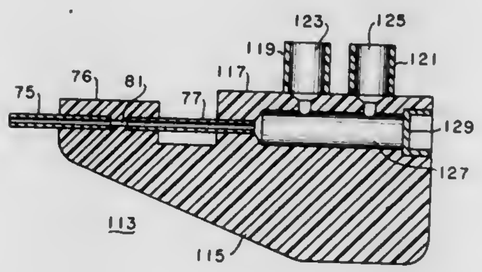
Wayne E. Blackburn; Max D. Liston, both of Irvine, and William A. Stark, Costa Mesa, all of Calif., assignors to Liston Scientific Corporation, Newport Beach, Calif.

Division of Ser. No. 927,372, Jul. 24, 1978, Pat. No. 4,270,564. This application Nov. 3, 1980, Ser. No. 203,119

Int. Cl.^{3} H01H *29/00*

U.S. Cl. 200—61.04 **8 Claims**





1. A moisture detector for sensing the presence of moisture in gas conduits, comprising:

a pair of gas conduits fabricated from electrically condutive material;

a pair of electrodes, each of which is electrically attached to one of said pair of gas conduits;

a coupling for mounting said pair of gas conduits end-to-end, said gas conduits being separated by an interconnecting passage forming a gap between the adjacent ends of said pair of gas conduits and electrically isolating said pair of electrodes from one another until a drop of moisture bridges said gap and electrically connects said adjacent ends of said pair of gas conduits; and

means for injecting a gas into said conduits for removing moisture from said gap and said conduits.

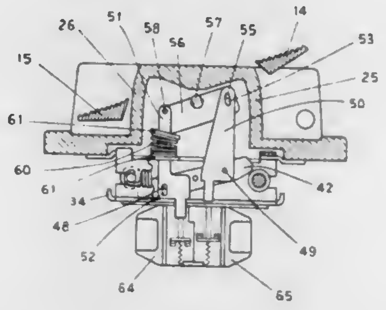
4,445,013
MOMENTARY-MAINTAINED LEVER OPERATED PUSHBUTTON

Frank J. Graninger, Milwaukee, and Gilbert A. Reichert, Greendale, both of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed May 23, 1983, Ser. No. 496,828

Int. Cl.^{3} H01H *15/18*

U.S. Cl. 200—77 **5 Claims**



1. A momentary-maintained operating assembly for an electrical switch comprising, in combination:

a support member defining an internal cavity therein, and a shaft receiving aperture therethrough;

a rotatable operating shaft having a portion extending internally of said support member through said aperture;

an external lever arm engaged with and arranged to rotatably operate said shaft;

a yoke plate member operably engaging and rotatable with said operating shaft;

a momentary and a maintained pushplate respectively pivotally supported and depending from said yoke plate member, and each pushplate respectively pivotally and operatively engaging a pivotably supported cambeam member, said cambeam member defining overcenter cam surfaces at opposite ends thereof;

stationary mounting means pivotally supporting said cambeam member, cam follower means operatively engaging the respective cam surfaces of said cambeam member and biased towards said cam surfaces to provide overcenter toggle operation of said cambeam member and the respective pushplates;

momentary biasing means for said momentary pushplate and biasing said momentary pushplate in a direction away from said stationary mounting means; and

a pair of contact blocks, one of said pair containing a stationary contact and a movable contact, biasing means biasing said movable contact towards normally closed position relative to said stationary contact, and an operator for said movable contact releasably engageable with said maintained pushplate, the other of said pair of contact blocks containing a stationary contact, a movable contact and means biasing said movable contact towards normally open position relative to said stationary contact, said movable contact releasably engageable with said momentary pushplate.

4,445,014

HIGH-VOLTAGE DISCONNECT SWITCH

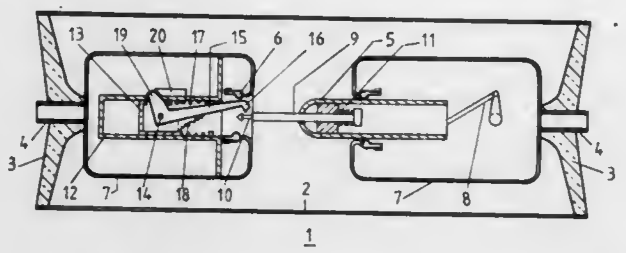
Werner Gruner, and Sreenivasan S. Kumar, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 28, 1982, Ser. No. 383,136

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1981, 3122442

Int. Cl.^{3} H01H *9/38*

U.S. Cl. 200—78 **5 Claims**



1. A high voltage disconnect switch comprising a grounded housing filled with an insulating medium of high dielectric strength, a pair of hollow cylindrical electrodes spaced apart in the housing, a hollow cylindrical contact disposed in each of the electrodes, at least one of the contacts being movably arranged in an electrode, a contact pin movably disposed in one of the contacts and a spring urging the contact pin to a predetermined position relative to the one contact, a ratchet device pivotally disposed in the other contact, the contact pin having a recess which is releasably engaged by the ratchet device when the movable contact is moved into contact with the other contact, means for pivoting the ratchet device causing the ratchet device to release the contact pin when the contacts are separated by a predetermined distance as the movable contact is moved away from the other contact, the spring retracting the contact pin into the hollow contact toward the predetermined position upon release thereof by the ratchet device at a velocity greater than the relative velocity between the contacts.

4,445,015

VACUUM SWITCHING TUBE WITH A RING TO GENERATE AN AXIAL MAGNETIC FIELD

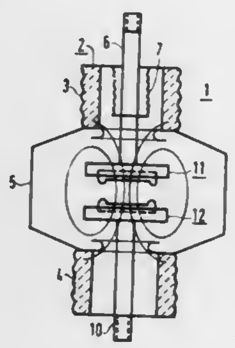
Karl Zueckler, Berlin, Fed. Rep. of Germany, assignor to Siemens AG, Berlin and Munich, Fed. Rep. of Germany

Filed Dec. 21, 1982, Ser. No. 451,909

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1981, 3151907

Int. Cl.^{3} H01H *33/66*

U.S. Cl. 200—144 B **5 Claims**



1. A vacuum switching tube comprising:

a first and a second switching member, said first switching member located adjacent said second switching member, and said first switching member comprising means for moving relative to said second switching member, each of said switching members comprising,

- (a) a bearing post to support said switching member,
- (b) a ring shaped field coil comprising, an annular member, and a first and a second inwardly radiating spoke, said first inwardly radiating spoke being in electrically conductive contact with said bearing post and with said annular member, said second inwardly radiating spoke being electrically insulated from said bearing post and from said first inwardly radiating spoke, and in electrically conductive contact with said annular member, said continuous electrically conductive path existing from said first inwardly radiating spoke around said annular member to said second inwardly radiating spoke, and,
- (c) a switching device, said switching device being substantially pot shaped with an outer diameter substantially equal to the inner diameter of said ring shaped field coil, said switching device further comprising a contact surface around the upper raised edge, and a bottom portion in electrically conductive contact with said second inwardly radiating spoke,

whereby said first and said second switching member can be brought into contact with each other so a continuous electrically conductive path exists from said bearing post of said first switching member to said bearing post of said second switching member.

4,445,016

VACUUM SWITCHING TUBE WITH METAL CAP

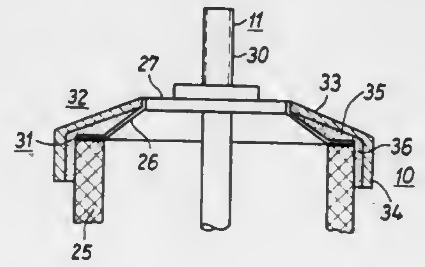
Günther Sinnecker, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Feb. 26, 1982, Ser. No. 352,532

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1981, 3107821

Int. Cl.^{3} H01H *33/66*

U.S. Cl. 200—144 B **5 Claims**



1. In a vacuum switching tube, for an electrical circuit breaker, of the type comprising an insulating tubular body, a metal cap, a joint joining the metal cap at its periphery to one end of the tubular body and a current conducting bolt passing coaxially through the cap, the current conducting bolt being used in supporting the vacuum switching tube or in driving a movable contact of the vacuum switching tube, the improvement comprising a reinforcing body formed and positioned so as to extend around the periphery of said metal cap and cover said joint, said reinforcing body being fixed to the tubular body and the metal cap by a bonding agent disposed between the metal cap and the reinforcing body such that the joint between the metal cap and the tubular body is covered, and thereby reinforced, by said reinforcing body and said bonding agent.

4,445,017

ELECTRICAL SWITCHGEAR

John S. Stewart, Nottingham, and George A. Hodkin, Leicester, both of England, assignors to Brush Switchgear Limited, Loughborough, England

Filed Oct. 16, 1981, Ser. No. 311,922

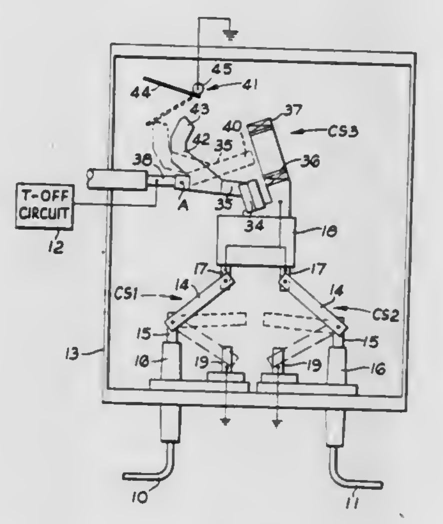
Claims priority, application United Kingdom, Jan. 24, 1981, 8102210

Int. Cl.^{3} H01H *33/18*

U.S. Cl. 200—144 A **10 Claims**

1. Electrical switchgear comprising:

- (a) a first contact set composed of a first contact pivotable about a pivot axis and a second contact, said first and second contacts being relatively movable between a closed position wherein a load current can be passed therethrough and an open position;
- (b) an arcing electrode, and arc being formed between said arcing electrode and said first contact during movement of said first and second contacts from said closed position to said open position;
- (c) a field coil connected in series with said arcing electrode and operative in response to a current caused by the arc flowing therethrough to produce a magnetic field which causes the arc to rotate and become extinguished, said field coil having a major axis with respect to which said pivot axis is disposed transversely, whereby an end portion of said first contact moves transversely to and inwardly of said major axis when said first and second contacts are moved to said open position;
- (d) a second contact set operable to earth said first contact set when said first and second contacts are in said open position, said second contact set including first and second contact members, said second contact member being carried by said first contact of said first contact set, and said first contact member being movable into engagement with said second contact member; and
- (e) a housing in which said first and second contacts sets are commonly disposed, said housing containing an electrically insulating fluid.



4,445,018

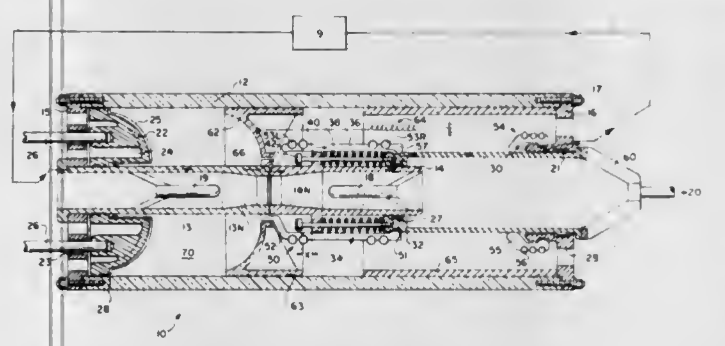
ENERGY EFFICIENT FLOATING HEAD PUFFER INTERRUPTER

Nils V. Holmgren, Greendale, Wis., assignor to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Jan. 7, 1982, Ser. No. 337,907

Int. Cl.^{3} H01H *33/88*

U.S. Cl. 200—148 A **16 Claims**



1. A puffer interrupter, comprising:

- a. a housing carrying therein a first electrical contact;
- b. a pressurization chamber defined by said housing and said first electrical contact and adapted to be filled with an arc extinguishing fluid;
- c. a second electrical contact disposed within said housing and free to move into and out of engagement with said first electrical contact so as to form an electrical switch, said contacts defining a switch gap when said switch is open;
- d. switching means, operatively connected to said second electrical contact, for opening and closing said switch, said switch contacts drawing an arc there between when said switch is opened with current passing there through;
- e. pressurization means, operated by said switching means between a first position and a second position, for pressurizing the fluid within said pressurization chamber and for discharging pressurized fluid from said pressurization chamber into said switch gap when opening said switch, thereby facilitating the extinguishing of the arc thereformed, said first position and said second position defining the stroke of said pressurization means; and
- f. volume control means, carried within said housing in fluid communication with said pressurization chamber and operated in response to the movement of said second electrical contact, for maintaining the pressure across said switch contacts generally uniform at the beginning of the stroke of said pressurization means and for rapidly releasing the pressure within said pressurization chamber at tne end of said stroke when opening said switch by moderating the rate at which the volume of said pressurization chamber is pressurized as compared to the rate of pressurization which would be achieved by said pressurization means alone,

whereby energy is more uniformly expended by said switching means in operating said pressurization means to open said switch.

4,445,019

COMPRESSED-GAS SWITCH

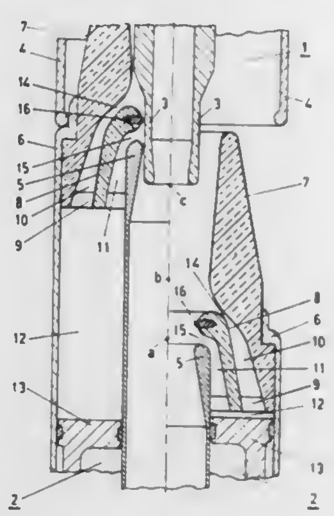
Osvin Gaupp, Wettingen; Thomas Gysel, Veltheim, and Georg Köppl, Birr, all of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Nov. 30, 1982, Ser. No. 445,759

Claims priority, application Switzerland, Dec. 3, 1981, 7731/81

Int. Cl.^{3} H01H *33/88*

U.S. Cl. 200—148 A **4 Claims**



1. A compressed-gas switch having two switching parts which are movable with respect to one another, comprising a first switching part provided with a burn-off contact of hollow construction and connected to a nozzle of insulating material, a burn-off contact of a second switching part fitting into the constriction of the nozzle, a blow duct being provided in the nozzle and being connected to a space containing compressed quenching gas and to an annular element of insulating material, the annular element subdividing the blow duct into an inner and an outer annular inlet duct with differing minimum flow cross-sections, the minimum flow cross-section of the outer inlet duct being smaller than the minimum flow cross section of the inner inlet duct, and a conductive ring attached at the

narrowest point of the annular element, a clear width of the conductive ring being smaller than the clear width of the annular element.

4,445,020

CIRCUIT INTERRUPTER

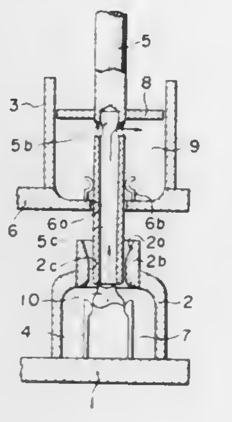
Yoshihiro Ueda; Hiroyuki Sasao; Suenobu Hamano, and Suichiro Okuda, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 152,179, May 22, 1980, abandoned. This application Apr. 4, 1983, Ser. No. 479,920

Claims priority, application Japan, May 25, 1979, 54-66005; May 25, 1979, 54-66007; May 28, 1979, 54-66364; May 28, 1979, 54-66365; May 29, 1979, 54-68634; May 29, 1979, 54-68637; Jun. 25, 1979, 54-80903; Jun. 25, 1979, 54-80904; Jun. 25, 1979, 54-80905; Jun. 25, 1979, 54-80906; Jun. 25, 1979, 54-80907; Jul. 23, 1979, 54-93920

Int. Cl.^{3} H01H *33/88*

U.S. Cl. 200—148 A **4 Claims**



1. A circuit interrupter which comprises:
a stationary casing;
a first contact formed in said stationary casing;
a second contact which is movably fitted to said stationary casing to be detachable to said first contact;
a cylinder-piston type negative pressure device comprising a suction chamber formed by a cylinder and a piston wherein said second contact is connected to said piston to form a negative pressure depending upon detaching operation of said first and second contact;
a gas storage chamber containing low pressure gas formed by said stationary casing and said first and second contacts in the closed state of said first and second contacts;
a suction guide formed by an opening formed in said second contact for connecting said storage chamber to said negative pressure device;
a discharge guide formed by the exterior of said second contact and by an interior wall of said stationary casing for closing and opening a path into and out of said storage chamber depending upon the detaching operation of said first and second contacts wherein said interior wall of said stationary casing which forms a portion of said discharge guide further comprises a tapered part distal to said gas storage chamber in order to form an enlarged portion of said discharge guide which portion of said discharge guide is larger than a portion of said discharge guide proximal to said gas storage chamber in order to provide for increased flow of gas out of said storage chamber when the distance between said first and second contacts reaches a predetermined value in the detaching operation.

4,445,021

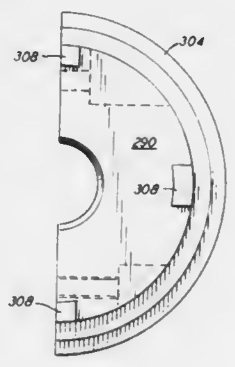
HEAVY DUTY PLASMA SPRAY GUN

Gary C. Irons, Sea Cliff; John F. Klein, Port Washington; Richard D. Lander, Lloyd Harbor; Henry C. Thompson, Huntington Bay, and Richard D. Trapani, New York, all of N.Y., assignors to Metco, Inc., Westbury, N.Y.

Filed Aug. 14, 1981, Ser. No. 292,763

Int. Cl.^{3} B23K *9/00*

U.S. Cl. 219—121 PM **9 Claims**



1. A plasma spray gun comprising, in the combination:
a gun nozzle located close enough to said electrode so that an arc can be formed between said electrode and said nozzle;
a source of gas;
a gas distribution member disposed between said source of gas and the region where said arc is formed;
means to cool said gun and said electrode;
said cooling means comprising a cooling passage surrounding said nozzle and being bounded by said nozzle and a passage forming means;
said cooling means further comprising at least two sealing means disposed between said cooling passage and the region where said arc is formed to prevent coolant from entering the region where said arc is formed; and
means disposed between said two sealing means to vent coolant to the exterior of the gun and away from the region where said arc is formed if one said sealing means fails.

4,445,022

ARC WELDING ROBOT CONTROL SYSTEM

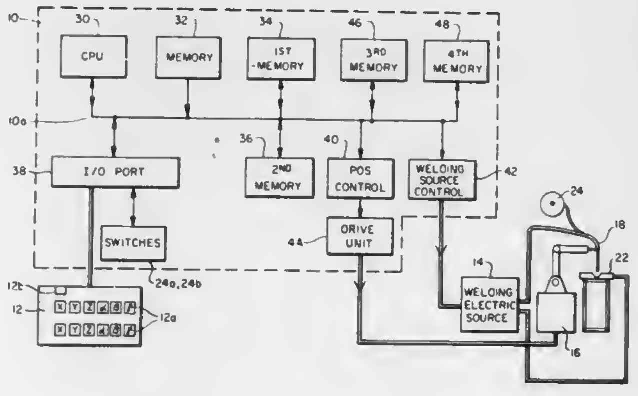
Shunji Mori, Nagoya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 8, 1982, Ser. No. 356,152

Claims priority, application Japan, Mar. 9, 1981, 56-33679; Mar. 9, 1981, 56-33683

Int. Cl.^{3} B23K *9/12*

U.S. Cl. 219—125.1 **4 Claims**



1. An arc welding robot control system for automatically moving a robot from one to another of a plurality of stored points, and comprising a robot driving means for driving a main body of a robot, a positioning control means for controlling said robot driving means, a welding source control means for controlling an electric source of arc welding power, a first memory for storing therein coordinates of positions of a plurality of taught points, an input means for delivering welding conditions corresponding to each of said points, a second memory for storing therein said welding conditions delivered from said input means, a welding suspending input means for delivering a suspending signal for stopping said robot when said robot is automatically being moved in the order of said coordinates of said points stored in said first memory, a third memory which is responsive to the entry of said suspending signal from said welding suspending input means so as to store coordinates of a position of a suspension point therein, a fourth memory for storing therein interpolation coefficients, coordinates of a current position of said robot, and coordinates of a next succeeding position of said robot, a welding restarting input means for delivering a restarting signal for restarting the welding after said suspending signal suspends the welding, and a central processing unit which is responsive to the entry of said suspending signal from said welding suspending input means so as to read out a stored welding condition from said second memory, said stored welding condition corresponding to that of said system upon the completion of the welding, and to apply corresponding signals to said welding source control means and said positioning control means, said central processing unit being responsive to the entry of said restarting signal from said welding restarting input means so as to read out said coordinates of said position of said suspension point from said third memory and compare the read coordinates with said coordinates of said current position of said robot read out from said fourth memory so as to deliver a displacement signal for said robot to said positioning control means.

4,445,023

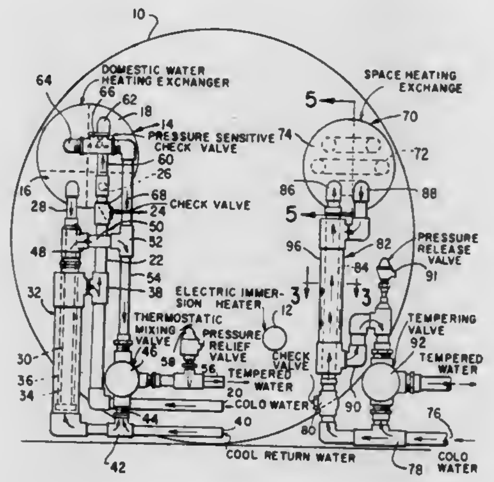
ELECTRIC THERMAL STORAGE HEATER SYSTEM FOR HEATING FLUIDS

James L. McKenney, Plymouth, Mass., assignor to Vapor Corporation, Chicago, Ill.

Filed Jul. 31, 1980, Ser. No. 174,204

Int. Cl.^{3} H05B *3/00;* **F28C** *3/06;* **F24H** *7/04;* **F28D** *7/06*

U.S. Cl. 219—326 **12 Claims**



1. A thermal storage heater system for heating fluid to be used for heating and consumption comprising:
means for storing a quantity of liquid capable of being heated to a high temperature;
means for heating the stored liquid to a high temperature to store heat in the stored liquid;
first and second heat exchange means in said storing means for transferring heat from said high temperature liquid to a fluid to be heated, each said heat exchange means including an inlet and outlet, a source of fluid to be heated in communication with said inlets and a point of use in communication with said outlets;
a first fluid circuit in fluid communication with the outlet of said first heat exchange means for supplying heated fluid to said point of use;
a second fluid circuit in fluid communication with the outlet of said second heat exchange means for supplying heated fluid to said point of use; and
pressure sensitive valve means located in said second fluid circuit responsive to first fluid circuit pressure for regulating the flow of said fluid through said second fluid circuit and second heat exchange means in response to a change in pressure indicative of insufficient heating of the fluid by the first heat exchange means.

4,445,024

ELECTRIC KILN

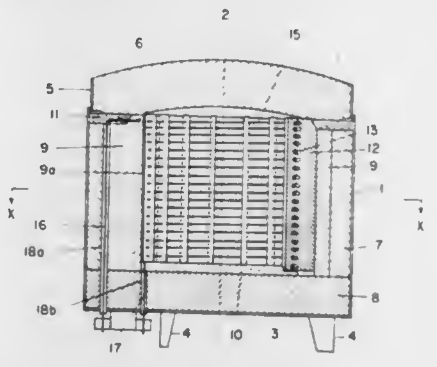
Peter O. Carden, Canberra, Australia, assignor to Research Technology Canberra Pty. Ltd., Canberra, Australia

Filed Mar. 16, 1982, Ser. No. 358,596

Claims priority, application Australia, Mar. 24, 1981, PE8091

Int. Cl.^{3} F27B *5/14;* **F27D** *11/00*

U.S. Cl. 219—390 **8 Claims**



1. An electric kiln comprising:
a frame including a removable door frame element and means for locating said door frame element within said frame;
a heating chamber contained and supported by said frame, said heating chamber being constructed of thermal insulation part of whose internal wall surface approximates the surface of a cylinder part of said heating chamber being contained and supported by said door frame element to form a removable access door;
a plurality of pillars made of electrically insulating material and disposed about the inner surface of said heating chamber, said pillars having elongated holes through which the wire of a heating element passes;
an electric heating element formed from a continuous length of unspiralled wire, said element comprising two relatively short terminal sections and a helical section shaped in the form of a helix of helix diameter slightly less than the diameter of the cylindrical wall surface of the heating chamber, said helical section being supported free from said cylindrical wall surface by said pillars, said pillars and wire thereby forming a sub-assembly which is fitted as a unit within the wall of the heating chamber, said sub-assembly being constructed by screwing a wire helix into said pillars while said pillars are located temporarily in a jig, the thickness of said wire being sufficiently large as to enable the curvature of each turn of said wire helix to be substantially retained when stressed to levels up to the elastic limit of the material of the wire at ambient temperature by application of perturbing forces; and
means for controlling the electric power applied to said heating element.

4,445,025

LOW MASS FLEXIBLE HEATING MEANS

Bruce E. Metz, Wilmington, Del., assignor to Athena Controls Inc., Conshohocken, Pa.

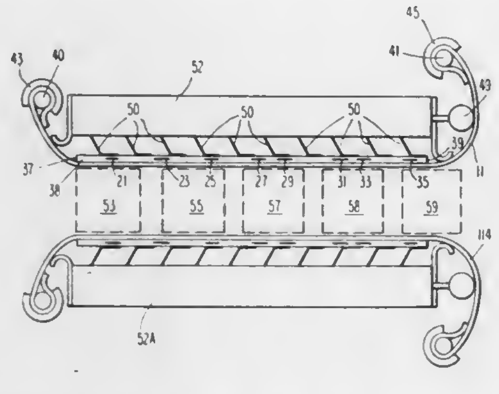
Filed Nov. 1, 1982, Ser. No. 438,053

Int. Cl.^{3} H05B *3/06*

U.S. Cl. 219—530 **5 Claims**

1. A flexible zoned heating means comprising in combina-

tion: flexible heat transfer means formed of a low mass metal strip having first and second sides; a plurality of electrical resistance means, each formed into a meandering path and each formed to have independent terminal means; flexible electrical insulating means formed to substantially encase each of said plurality of electrical resistance means and formed to leave each of said terminal means available for connection to a different source of electrical current, said flexible electrical insulating means secured to said second side of said flexible heat transfer means whereby each electrical resistance means defines a heatable zone on said first side of said flexible heat transfer means; a plurality of electrical current generating means with each connected to a different one of said plurality of electrical resistance means to transmit electrical current thereto to cause heat to be generated, whereby when each of two of said electrical current generators transmits a different amount of electrical current to its connected electrical resistance means, the heat generated along said heat transfer means, through its first side, is different for each zone defined by said electrical resistance means conducting different valued electrical currents.



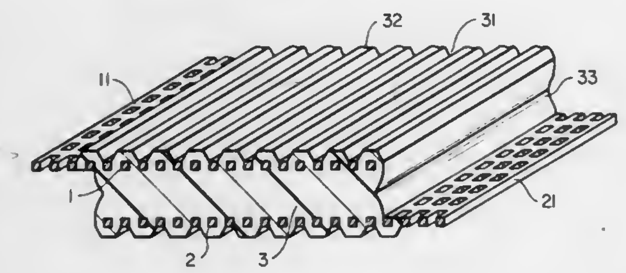
4,445,026
ELECTRICAL DEVICES COMPRISING PTC CONDUCTIVE POLYMER ELEMENTS

Jack M. Walker, Portola Valley, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 41,071, May 21, 1979, Pat. No. 4,272,471. This application Jul. 10, 1980, Ser. No. 167,364

Int. Cl.^{3} H05B ***3/10***

U.S. Cl. 219—553 **8 Claims**



1. An electrical device which comprises
(a) a layer of a conductive polymer composition which exhibits PTC behavior;
(b) a first sheet electrode which contacts one face of said layer; and
(c) a second sheet electrode which contacts the other face of said layer;

wherein at least a part of each of said electrodes extends to a side of said layer which is concave adjacent the electrodes so that the angle between each electrode and the side of the layer is less than 80°.

4,445,027
ELECTRONIC APPARATUS

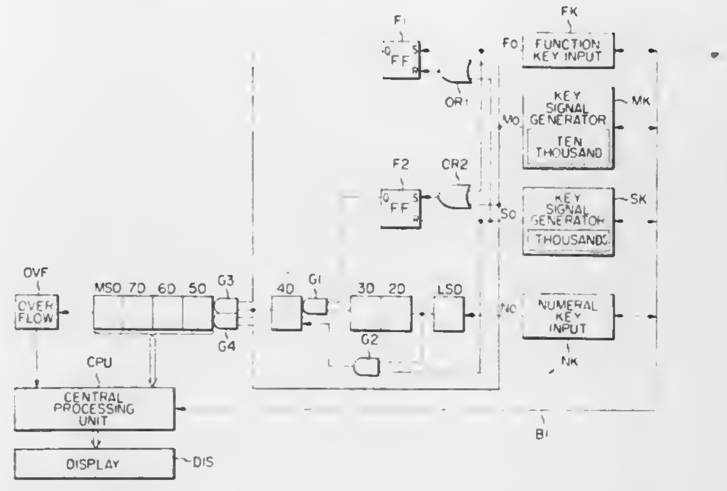
Ichiro Sado, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 212,447, Dec. 3, 1980, abandoned. This application Apr. 11, 1983, Ser. No. 483,417

Claims priority, application Japan, Dec. 20, 1979, 54-164808

Int. Cl.^{3} G06C ***9/60***

U.S. Cl. 235—430 **2 Claims**



1. An electronic apparatus comprising:
a plurality of numerical input keys for entering numerical data;
a plurality of monetary unit input keys for entering monetary unit data;
a first memory means for storing numerical data entered by said numerical input keys;
a second memory means for storing numerical data which overflows from said first memory means when monetary unit data is erroneously entered by at least one of said monetary unit input keys; and
alarm means connected to said second memory means for generating an alarm signal in response to erroneous entry by at least one of said monetary unit input keys, causing numerical data to overflow into said second memory means, the alarm signal informing an operator of the erroneous input.

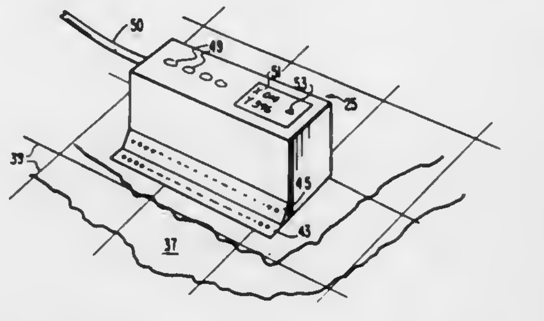
4,445,028
UNIDIRECTIONAL CODE FOR INTERACTIVE MAP SYSTEM

William A. Huber, Sea Girt, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 10, 1982, Ser. No. 386,865

Int. Cl.^{3} G06K ***7/10***

U.S. Cl. 235—472 **8 Claims**



1. Apparatus capable of easily plotting and reading data points onto and from maps, comprising; maps which are divided into a plurality of map elements or mels, with each mel being coded to indicate the x and y coordinates thereof, each said mel being divided into a further plurality of sub mels, to which x and y sub mel coordinates are applied, each said mel being divided into three coding zones, two of which include digital machine readable bar codes to indicate the x and y mel coordinates of that mel and a third coding zone used to indicate a first of the two coordinates of the sub mel coding within said mel by means of machine readable bar codes, all of said bar codes comprising arrays of bars all extending in one direction; and a stylus adapted to be moved over the surface of said map and to read said bar codes by means of a single linear array of code sensors extending normal to the direction of said bar codes, said stylus further including a template attached thereto with a linear array of holes therein, said template adapted to plot or read the second of said two coordinates of the sub mel coding within said mel.

4,445,029
DISTANCE DETECTOR USING A PHOTOPOTENTIOMETER AND A CONTINUOUS DETECTING SYSTEM

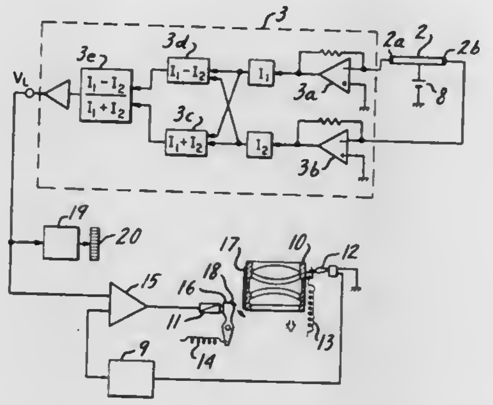
Shinji Nagaoka, and Koji Satoh, both of Yotsukaido, Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 28, 1981, Ser. No. 258,517

Claims priority, application Japan, Jun. 16, 1980, 55-81254

Int. Cl.^{3} G01J ***1/20***

U.S. Cl. 250—201 **9 Claims**



1. A distance detector for use with a camera having a movable photographing lens movable during a focusing operation to focus an image of an object to be photographed to an image plane, the distance detector comprising: a light emission element and an optical system both disposed on a first optical axis for radiating an object to be photographed, a condensing optical system and a semiconductor position detector both disposed on a second optical axis which is separate from said first optical axis by a base length and parallel to said first optical axis, the semiconductor position detector comprising a photodiode operable to continually produce during the focusing operation a continuous electrical output signal proportional to the spot at which the light impinges thereon which is reflected by the object along the second optical axis, and a signal processing circuit connected to continuously receive the continuous electrical output signal from said semiconductor position detector and operative to develop therefrom during the focusing operation a continuous electrical object distance signal representative of the distance between the distance detector and the object.

4,445,030
TRACKING ARRANGEMENT FOR A SOLAR ENERGY COLLECTING SYSTEM

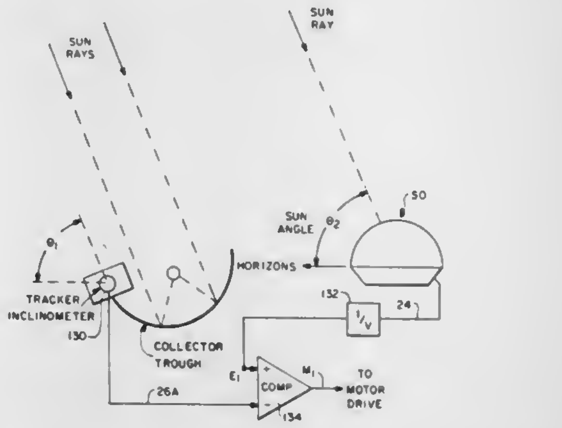
Richard J. Carlton, Santa Clara, Calif., assignor to Acurex Corporation, Mountain View, Calif.

Filed Dec. 31, 1981, Ser. No. 336,499

Int. Cl.^{3} G01J ***1/20***

U.S. Cl. 250—203 R **30 Claims**

1. A tracking type of solar energy collecting system, comprising:
(a) means including a panel member for collecting solar energy, said panel member being mounted for movement along a tracking path in order to maintain a predetermined, fixed orientation with the sun as the latter moves across the sky from an initial position following sunrise to a final position immediately preceding sunset;
(b) actuator means for moving said panel member along said tracking path;
(c) local control means in close proximity to said panel member and actuator means and adapted to receive alternatively different frequency characterized inputs for operating said actuator means and thereby moving or stopping movement of said panel member in response to and dependent on the particular input received;
(d) remote control means positioned substantially further from said panel member and actuator means than said local control means for producing a single output signal having a frequency which is responsive to and depends upon any one of a number of different signals received at its input, said last-mentioned signals respectively corresponding to the presence or absence of a number of different conditions intended to affect the operation of said actuator means and therefore the movement of said panel member; and
(e) means for applying the frequency characterized output signal from said remote control means to the input of said local control means so as to serve as a frequency characterized input thereto.



4,445,031
LEADER TAPE DETECTING CIRCUIT

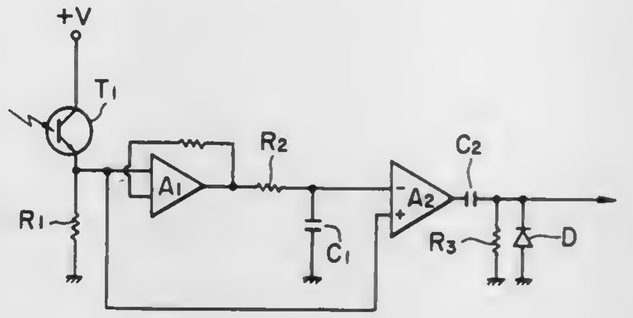
Tetsuzo Kamoshida, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 6, 1981, Ser. No. 232,273

Claims priority, application Japan, Feb. 8, 1980, 55-15424[U]

Int. Cl.^{3} G01N ***21/86***

U.S. Cl. 250—214 RC **6 Claims**



1. A leader tape detecting circuit comprising:
a light receiving element operatively disposed for detecting a quantity of light one of passing through and reflected by a cassette tape;
an integrator circuit coupled to an output of said light receiving element; and
a comparator directly connected to said output of said light receiving element and said integrator circuit for detecting

a difference between an output of said integrator circuit and said output of said light receiving element.

4,445,032

METHOD OF DETERMINING THE BULK STRENGTH OF STRATA

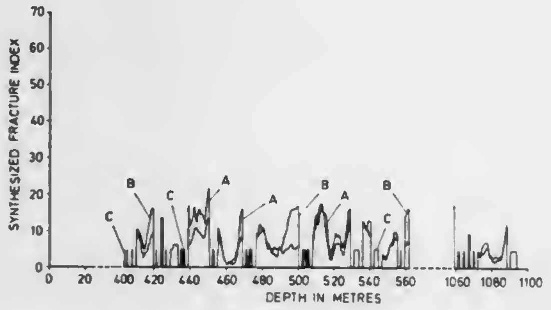
Anthony Halker, Stoke-on-Trent; David W. Mellor, Congleton; Keith R. Whitworth, Castle Bank, and Nicholas J. Kuszner, Audlem, all of England, assignors to Coal Industry (Patents) Limited, London, England

Filed Oct. 20, 1981, Ser. No. 313,427

Claims priority, application United Kingdom, Oct. 21, 1980, 80/33883; May 15, 1981, 81/14912

Int. Cl.^{3} G01V ***5/00***

U.S. Cl. 250—256 **23 Claims**



1. A method of determining the bulk strength of strata including the steps of drilling a borehole in strata, moving an instrument along the borehole and determining a Hydrogen Index log of the strata through which the instrument passes, determining for the strata surrounding the hole the lithology of the strata, progressively modifying the Hydrogen Index by a predetermined mathematical function referred to as the calibration constants for each lithology group encountered in the borehole to produce a modified Hydrogen Index log to produce a Bulk Rock Strength log which is an indication of the bulk strengths of the strata through which the borehole was drilled, the bulk rock strength log being expressed algebraically in the form

$$z = ax + b$$

where z = bulk rock strength, a and b = derived calibration constants for each lithological group of sub-division of a group and x = the Hydrogen Index.

4,445,033

METHODS AND APPARATUS FOR ENVIRONMENTAL CORRECTION OF THERMAL NEUTRON LOGS

William E. Preeg, and Hubert D. Scott, both of Ridgefield, Conn., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Sep. 14, 1981, Ser. No. 302,092

Int. Cl.^{3} G01V ***5/10***

U.S. Cl. 250—266 **24 Claims**

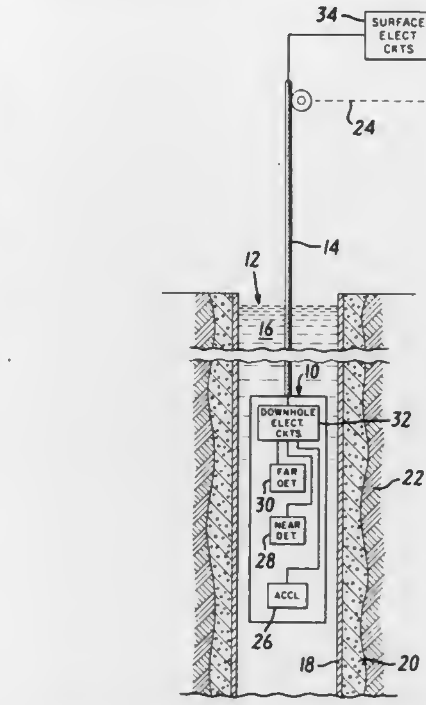
1. A method for deriving an environmentally-corrected measurement of the thermal neutron decay time of an earth formation traversed by a borehole, comprising:

irradiating the earth formation with discrete bursts of high-energy neutrons from a source located within the borehole to produce therein between bursts a population of thermal neutrons;

detecting indications of the change in the thermal neutron population with time between neutron bursts at each of first and second locations within the borehole, said first location being spaced closer to the neutron source than said second location;

deriving first and second measurements of the thermal neutron decay time of the formation from said first and second detected indications, respectively; and

combining said first and second thermal neutron decay time measurements in accordance with a previously established empirical relationship, including a correction coefficient for correcting for the effects of neutron diffusion and a correction coefficient for correcting for the effects of borehole capture cross section, to provide a corrected measurement of the thermal neutron decay time of the formation.



4,445,034

COMPOUND INFRARED DETECTOR

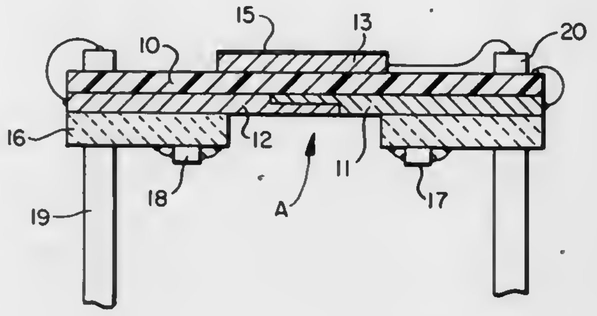
Katsuhiko Tomita; Ken Katsuki, and Toshiyuki Kuritani, all of Kyoto, Japan, assignors to Horiba, Ltd., Kyoto, Japan

Filed Dec. 16, 1981, Ser. No. 331,469

Claims priority, application Japan, Dec. 20, 1980, 55-180634

Int. Cl.^{3} G01J ***1/00***

U.S. Cl. 250—338 **2 Claims**



1. A compound infrared detector, comprising a thermopile detector which is fabricated on one face of a two faced pyroelectric insulating thin film and a pyroelectric detector which is fabricated by providing electrodes on both of said faces of said insulating thin film in opposite relationship to an infrared ray responsive portion thereof.

4,445,035

EMISSION COMPUTED TOMOGRAPHY HAVING RADIAL POSITION CONTROL OF RADIATION DETECTOR

Akihide Ueyama, Tochigi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 19, 1981, Ser. No. 265,243

Claims priority, application Japan, Aug. 28, 1980, 55-118964

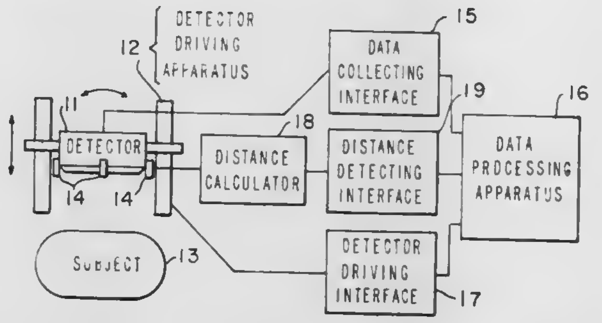
Int. Cl.^{3} G01T ***1/20***

U.S. Cl. 250—363 S **6 Claims**

1. An emission computed tomography wherein a radiation detector is rotated around a subject to detect radiation emitted

from radioisotopes distributed in the subject and a distributing image of the radioisotopes in any section of the subject is reconstructed on the basis of the detected data, the emission computed tomography comprising:

detector-driving means for moving the detector to or from the subject as the radiation detector is rotated around the subject;


12
DETECTOR DRIVING APPARATUS
15
DATA COLLECTING INTERFACE
11
19
16
18
DETECTOR
DISTANCE CALCULATOR
DISTANCE DETECTING INTERFACE
DATA PROCESSING APPARATUS
14
14
SUBJECT
13
DETECTOR DRIVING INTERFACE
17

distance-measuring means for measuring the distance between the detector and the subject at every rotative position of the detector; and

means responsive to said distance-measuring means for controlling said detector-driving means in order to adjust the radial distance between the detector and the subject.

4,445,036

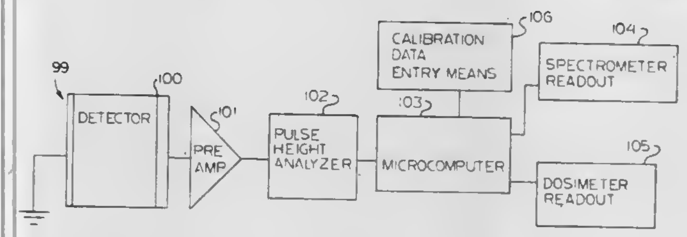
SOLID STATE FAST-NEUTRON SPECTROMETER/DOSIMETER AND DETECTOR THEREFOR

Wade E. Selph, Del Mar, Calif., assignor to IRT Corporation, San Diego, Calif.

Filed Apr. 21, 1981, Ser. No. 256,018

Int. Cl.^{3} G01T ***1/22, 3/00***

U.S. Cl. 250—370 **8 Claims**



1. A solid state fast-neutron detection system comprising:

a substrate of organic semiconductor material;

a conductive cathodic coating on one surface of said substrate, said cathodic coating being of a nuclearly inert metal having a Fermi level greater than the Fermi level of the material of the substrate, said cathodic coating being applied so that a rectifying barrier is established at the junction between said substrate and said cathodic coating to develop a depletion region within said substrate;

a conductive anodic coating of metal on an opposing surface of said substrate;

electronic means coupled to said anodic and cathodic coatings for producing electrical pulses of magnitude systematically related to ionization produced in said depletion region by incident radiation; and

pulse height discrimination means for discrimination in favor of such electrical pulses corresponding to ionization occasioned by proton recoil upon incident fast neutron radiation and against lesser electrical pulses.

4,445,037

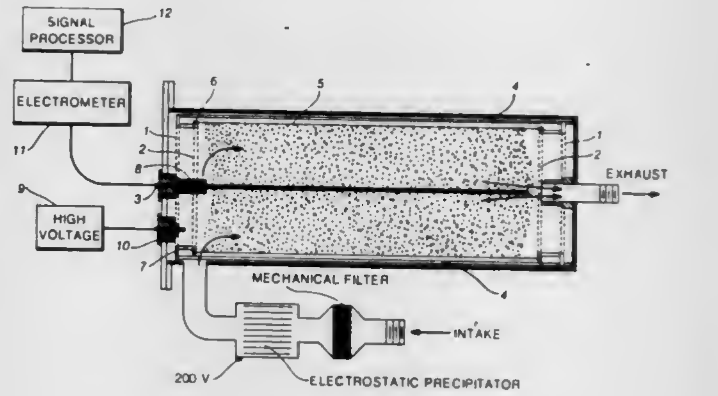
APPARATUS FOR MONITORING TRITIUM IN TRITIUM CONTAMINATING ENVIRONMENTS USING A MODIFIED KANNE CHAMBER

David F. Anderson, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 27, 1981, Ser. No. 229,024

Int. Cl.^{3} H01J ***47/02***

U.S. Cl. 250—380 **7 Claims**



1. Apparatus for detection and monitoring of radioactive gases comprising:

(a) means to reduce sensitivity to contaminants, said means comprising an open wire high voltage cylindrical electrode which includes equally spaced wires supported in a substantially parallel manner to the cylindrical axis of said high voltage electrode, said wires forming the surface of said high voltage electrode:

(b) a solid metal collector electrode located along said axis of said high voltage electrode, electrically isolated therefrom, said collector electrode being supported from one of its ends;

(c) means for supporting said high voltage electrode and said collector electrode such that said collector electrode and said high voltage electrode are electrically isolated from each other and from any nearby surfaces;

(d) a grounded cylindrical chamber which encloses said high voltage electrode, said collector electrode, and said supporting means, said chamber being gas impermeable, and electrically isolated from said high voltage electrode and said collector electrode, said high voltage electrode and collector electrode being the sole electrodes in said chamber;

(e) means for introducing and removing gas samples from said chamber;

(f) means for filtering and deionizing said gas samples before their introduction into said chamber;

(g) means for applying a high voltage to said high voltage electrode;

(h) means for extracting signal currents appearing on said collector electrode arising from radioactive decompositions within the region between said high voltage electrode and said collector electrode;

(i) means for amplifying, processing and analyzing said signal currents; and

(j) means for shielding said supported end of said collector electrode from radioactive decompositions and subsequent ionizations occurring on said means for support and said chamber.

4,445,038

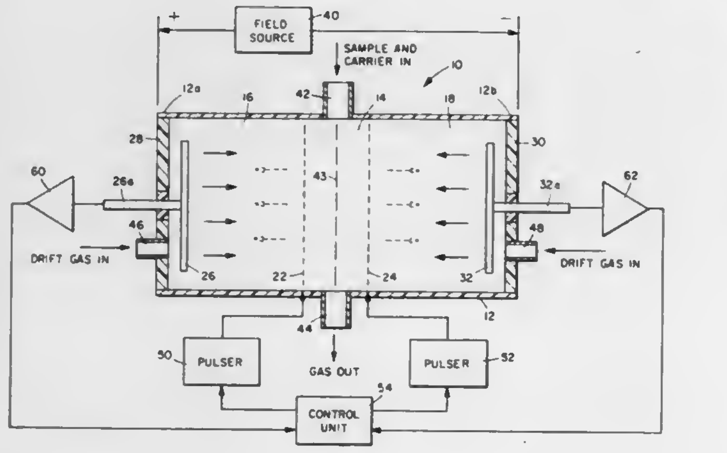
APPARATUS FOR SIMULTANEOUS DETECTION OF POSITIVE AND NEGATIVE IONS IN ION MOBILITY SPECTROMETRY

Glenn E. Spangler, Lutherville, and John F. Wroten, Jr., Towson, both of Md., assignors to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 80,888, Oct. 1, 1979. This application May 21, 1981, Ser. No. 265,745

Int. Cl.^{3} G01N *27/66*

U.S. Cl. 250—382 **2 Claims**



1. In means for characterizing the mobility of ions by measuring the drift time of ions urged by a field gradient through a drift region containing non-ionized gas whose molecules have a mean free path many times smaller than said drift region, an improvement for characterizing the mobility of both negative and positive ions from a common sample mixed with a carrier gas comprising:

- a first drift region;
- a second drift region;
- a reaction region centrally located between said first and second drift regions;
- a first shutter grid separating said reaction region from said first drift region and normally biased to prevent positive ions from passing therethrough;
- a second shutter grid separating said reaction region from said second drift region and normally biased to prevent negative ions from passing therethrough;
- entrance means for allowing molecules of said sample and carrier to enter said reaction region;
- means primarily ionizing the molecules of said carrier in said reaction region, the molecules of said sample being secondarily ionized within said reaction region by collisions with the ionized carrier molecules whereby said ionized carrier molecules are deionized;
- first ion detector means in said first drift region opposite said first shutter grid for deionizing positive ions arriving thereat and providing an output signal indicative of said deionized positive ions;
- second ion detector means in said second drift region opposite said second shutter grid for deionizing negative ions arriving thereat and providing an output signal indicative of said deionized negative ions;
- means for impressing a field gradient from said first means to said second means whereby positive ions are urged toward said first means and negative ions toward said second means;
- means for momentarily biasing said first shutter grid to allow positive ions to pass therethrough from said reaction region into said first drift region and for momentarily biasing said second shutter grid to allow negative ions to pass therethrough from said reaction region into said second drift region whereby positive ions are urged by said field gradient through said first drift region to said first ion detector means where they are detected and whereby negative ions are urged by said field gradient through said second drift region to said second ion detector means where they are detected; and
- means noting the elapsed time between the biasing of said first shutter grid and the detection of positive ions at said first means for characterizing the mobility of said positive ions and for noting the elapsed time between the biasing of said second shutter grid and the detection of negative ions at said second means for characterizing the mobility of said negative ions.

4,445,039

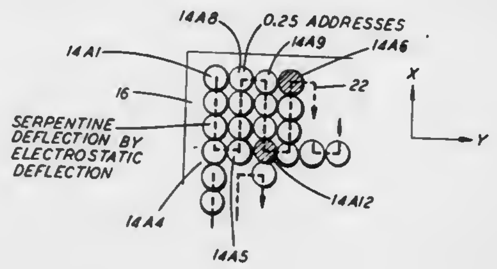
HIGH THROUGHPUT/HIGH RESOLUTION PARTICLE BEAM SYSTEM

Nelson C. Yew, Hillsborough, Calif., assignor to The Perkin-Elmer Corp., Norwalk, Conn.

Filed Jul. 6, 1981, Ser. No. 280,416

Int. Cl.^{3} A01J *37/26*

U.S. Cl. 250—492.2 **10 Claims**



1. In a raster scan particle beam system for selectively irradiating a radiation sensitive resist layer located on a continuously moving stage the throughput of which system is determined by a selected spot size diameter and beam deflection length together with the movement of the particle beam in rows in raster scan fashion as the stage moves at a given speed at a right angle to the direction of movement of said beam, means for improving the throughput thereof, comprising,

- means for sequentially scanning a particle beam of lesser diameter than said first mentioned spot size diameter in a serpentine path to define a stripe, and
- means for intensity modulating said particle beam in accordance with a selected specified pattern.

4,445,040

SHAPING APERTURE FOR A CHARGED PARTICLE FORMING SYSTEM

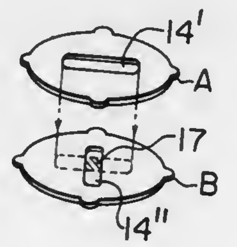
Teruo Iwasaki, Hachioji; Norio Saitou, Iruma, and Akira Yanagisawa, Ome, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 241,071, Mar. 6, 1981, abandoned. This application Jul. 18, 1983, Ser. No. 514,352

Claims priority, application Japan, Mar. 7, 1980, 55/28137

Int. Cl.^{3} A61K *27/02*

U.S. Cl. 250—452.2 **13 Claims**



1. A shaping aperture used in a charged particle forming system and provided with a slit for shaping the cross section of a charged particle beam emitted, comprising:

- at least two thin plates, each provided with a through-hole for passing said charged particle beam therethrough, said thin plates being piled and fixed in contact with each other so as to form a shaping slit of a desired form defined exclusively by linear edge portions of the thin plates bounding said through-holes.

4,445,041

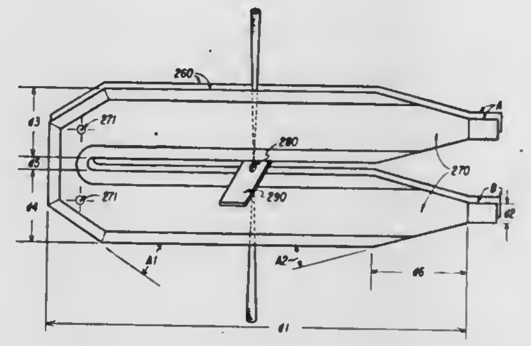
ELECTRON BEAM BLANKER

John Kelly, Palo Alto; Huei P. Kuo, San Jose; Bernard M. Oliver; Jack D. Foster, both of Los Altos, and Wayne C. Haase, Mt. View, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 2, 1981, Ser. No. 269,170

Int. Cl.^{3} H01J *37/09*

U.S. Cl. 250—505.1 **8 Claims**



1. A beam blanking device for selectively interrupting the flow of electrons in an electron beam, said beam having an initial beam direction defined by the direction of the beam before entering the beam blanking device, comprising:

- focusing means for focusing the electron beam, providing an undeflected beam cross-over at an image plane which is substantially orthogonal to the initial beam direction;
- electromagnetic field means for providing an electromagnetic field to deflect electrons in the electron beam from the initial beam direction, said electromagnetic field means having at least two parallel, spaced-apart, conducting plates with an orientation such that the electron beam traverses a path therebetween, said said plates substantially parallel to said initial beam direction, and said electromagnetic field means further comprising slow-wave transmission line means, of which said plates are a portion thereof, for providing an average phase velocity of said electromagnetic field which is approximately the same as the velocity of the electrons in the electron beam;
- knife-edge means, located substantially within said image plane for stopping the flow of those electrons deflected sufficiently far to impinge on said knife-edge means;
- said plates arranged such that an electron which is deflected but is not stopped by said knife-edge means, exits said plates with a velocity vector substantially proportional to its position vector relative to said undeflected beam crossover.

8. In a beam blanking device for interrupting the flow of electrons in an electron beam, a knife-edge for stopping the flow of electrons deflected sufficiently far to impinge on said knife-edge, comprising:

- a semiconductor chip having an etched tapered hole defining at least one sharp, straight-edge on said chip;
- said semiconductor chip coated with a conductor.

4,445,042

RADIATION-SHIELDING TRANSPORT AND STORAGE CONTAINER

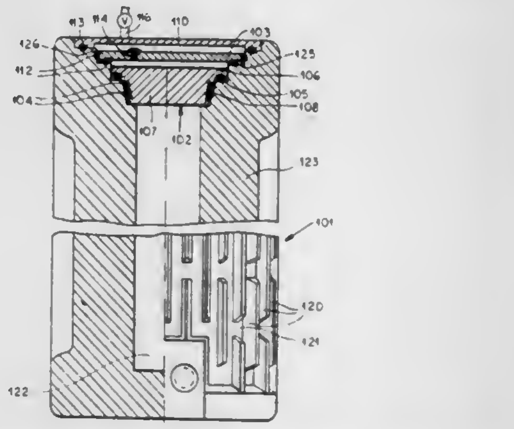
Henning Baatz, and Dieter Rittscher, both of Essen, Fed. Rep. of Germany, assignors to GNS Gesellschaft für Nuklear-Service mbH, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 120,108, Feb. 8, 1980, Pat. No. 4,274,007. This application Mar. 13, 1981, Ser. No. 243,562

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1980, 3010518

Int. Cl.^{3} G21F *5/00*

U.S. Cl. 250—506.1 **4 Claims**



1. A transport-storage container for radioactive materials, comprising:

- a radiation-shielding vessel open at the end thereof and adapted to receive said material;
- a plug-type radiation-shielding cover received in said open end and having a block-forming portion juxtaposed with a complementary seat portion of said vessel and a flange portion extending outwardly beyond said block portion;
- elastically deformable first seal means between said plug portion and said seat portion for obstructing escape from the interior of said vessel;
- second seal means forming a metal seal between said flange portion and said vessel;
- a safety cover spaced above said radiation-shielding cover to define the first control compartment therewith;
- third seal means forming a metal seal between said vessel and said safety cover, said third seal means including adjacent annular lips of said vessel and said safety cover, and a weld seam bridging said lips;
- a control cover spaced above said safety cover to define a second control compartment therewith; and
- fourth seal means sealing said control cover to said vessel, said fourth seal means comprises a lip formed on said control cover and a lip formed on said vessel and a weld seam joining said lips of said fourth seal means.

4,445,043

METHOD OF MAKING AN OPTOCOUPLER

Lawrence R. Hill, Mesa, Ariz., assignor to General Instrument Corporation, New York, N.Y.

Filed Jan. 28, 1982, Ser. No. 343,430

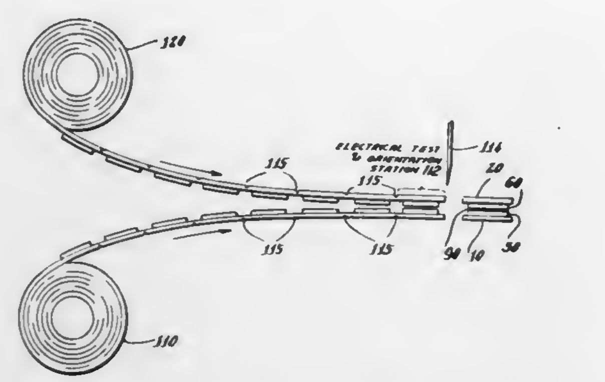
Int. Cl.^{3} G06K *7/015*

U.S. Cl. 250—557 **11 Claims**

1. A process for manufacturing an optocoupler having an emitter element properly oriented with respect to a receiver element, said process comprising the steps of:

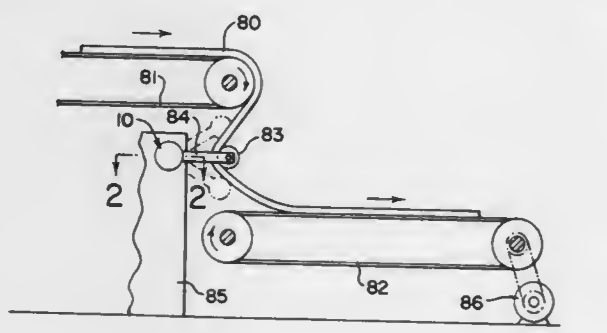
- fastening an emitter element to an emitter carrier;
- fastening a receiver element to a receiver carrier;
- positioning said emitter carrier adjacent said receiver carrier with said emitter and receiver elements situated in operative relation;

electrically monitoring the combined operation of said emitter and receiver elements; and



adjusting the position of said carriers with respect to one another, until a proper orientation between said emitter and receiver elements has been achieved.

4,445,044
ANGULAR POSITION TRANSDUCER HAVING A BIPOLAR ANALOG OUTPUT SIGNAL
Laverne E. Buess, Tallmadge, Ohio, assignor to L. E. Buess, Inc., Tallmadge, Ohio
Filed Jul. 2, 1981, Ser. No. 279,783
Int. Cl.^{3} G01V *9/04*
U.S. Cl. 250—561 **12 Claims**



1. A device for providing an indication of the position of a material within a conveyor system, comprising:

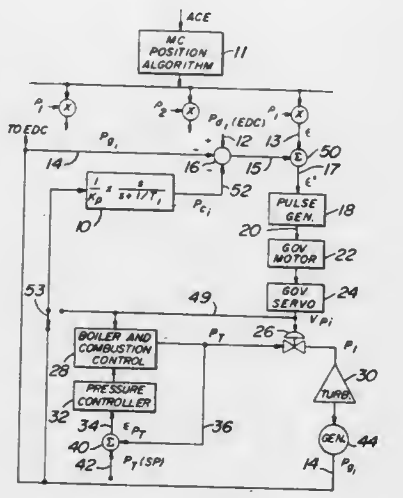
dancer roller means for engaging the material and bidirectionally varying its angular position relative to a preselected axis; and,

transducer means operatively connected to said dancer roller means for generating a bipolar electrical signal having an electrical characteristic whose magnitude is continuously proportional to said angular deviation of said dancer roller means from said preselected axis and whose polarity is dependent upon the direction of said angular deviation relative to said preselected axis; said transducer means including a plurality of light sensor means aligned with a plurality of light generating means whereby said plurality of light sensor means generate electrical output signals in proportion to the light incident thereupon and further including a plurality of light cam means for continuously adjusting the light incident upon said plurality of light sensor means proportional to said angular deviation of said dancer roller.

4,445,045
UNIT CONTROLLER FOR MULTIPLE-UNIT DISPATCH CONTROL
Charles W. Ross, Lansdale, Pa., assignor to General Signal Corporation, Stamford, Conn.
Filed Aug. 30, 1982, Ser. No. 412,619
Int. Cl.^{3} F01D *17/04*
U.S. Cl. 290—40 B **4 Claims**

1. A control system for controlling the distribution of load among a plurality of generators to be regulated, said plurality including both fast and slow responding units, comprising:

a source of first signals representative of the desired generation established for each of the units in accordance with an economic division of the total load in the area supplied by said plurality of generators;



means for providing a second signal for each of said plurality of generators which is indicative of the output of the generators;

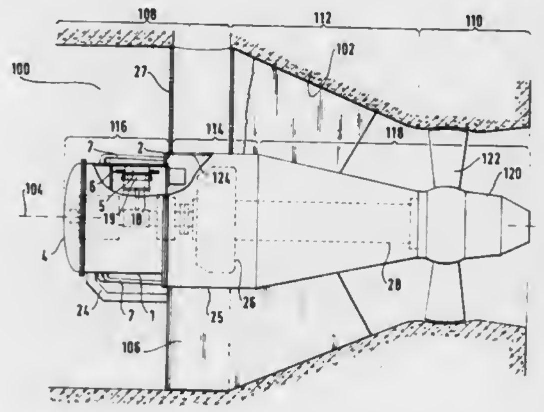
means for producing for each slow responding generator of said plurality a third signal which is a function of a quantity indicative of the actual generation, said function being expressable by the Laplace transform

$$\frac{1}{K_p} \times \frac{s}{s + 1/T_i};$$

means for producing a unit error signal representing a predetermined fraction of an area control error, said fraction representing the units' share in the regulation of the area;

control means responding to the unit error with said response being modified in accordance with a signal which is calculated as the difference between the first and second signals plus the third signal.

4,445,046
HIGH POWER IMMERSED TURBO-GENERATOR SET HAVING A GEAR BOX AND EXTERNAL COOLING
Jean Allegre, Cravanche, and Michel Olivier, Danjoutin, both of France, assignors to Alsthom-Atlantique, Paris, France
Filed Jun. 30, 1982, Ser. No. 394,010
Claims priority, application France, Jun. 30, 1981, 81 12869
Int. Cl.^{3} F01D *5/08;* **F03B** *13/08, 13/10;* **H02K** *9/12*
U.S. Cl. 290—52 **4 Claims**



1. A high power immersed turbo-generator set having external cooling and being a gear box, wherein the generator set comprises:

an elongated external housing having a longitudinal axis and immersed in a water duct;

a turbine mounted on the rear portion of said housing on a shaft extending along the housing axis, the turbine having blades that project radially outwardly from said housing to be rotated by a flow of water along said duct;

a gear box housed in an intermediate portion of said housing, driven by the turbine shaft, and driving an alternator shaft at higher speed than the turbine shaft, the alternator shaft extending into a front portion of the housing;

an alternator rotor mounted on said alternator shaft in a front portion of said housing;

an alternator exciter mounted on the alternator shaft to provide excitation current to the rotor; and

an alternator stator surrounding the rotor and including windings, a magnetic circuit and a supporting casing which surrounds the magnetic circuit and is in contact therewith;

said stator casing constituting a portion of the housing whereby a portion of the heat generated in the magnetic circuit is directly dumped into the water flowing along the duct;

the alternator constituted by said rotor, said exciter and said stator being provided with a gas cooling circuit through which a cooling gas is made to flow;

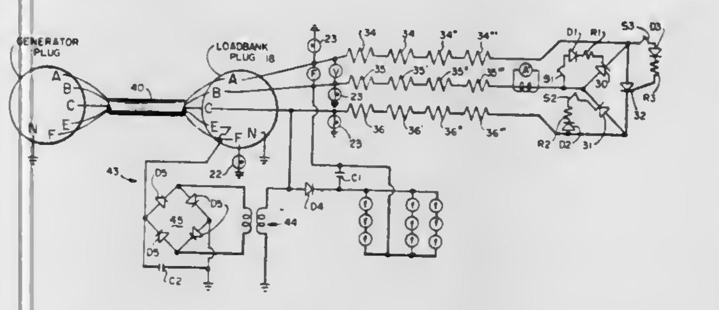
said cooling circuit including external cooling tubes disposed outside the housing to enable the cooling gas to be cooled by the water flowing in the duct, each of said tubes running from a front end orifice in the housing to a rear end orifice in the housing; the improvement comprising:

the front end orifices being arranged in a staggered configuration occupying two different transverse drilling planes in front of the alternator stator, the longitudinal distance separating said transverse drilling planes being at least equal to the diameter of the orifices to avoid excessively weakening the mechanical strength of the housing in the vicinity of said drilling planes;

an access tube being provided between the intermediate portion of the housing and the outside wall of the surrounding water duct to provide access to the inside of the housing from outside the duct; and

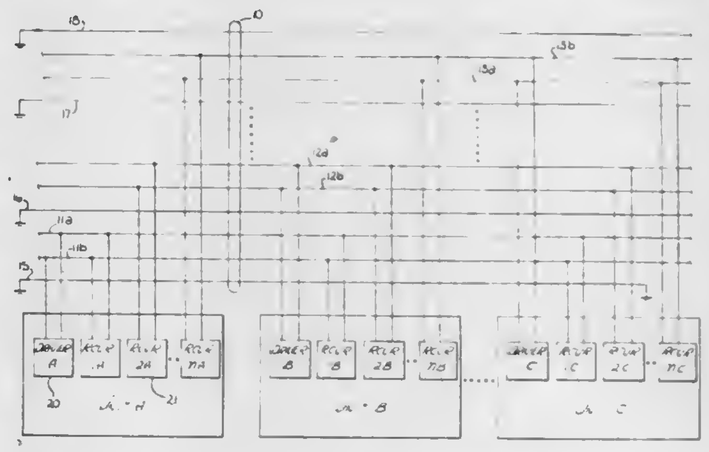
wherein the front and the intermediate portions of the housing are of different diameters and are interconnected by a flange having an inside diameter equal to the diameter of the front portion and an outside diameter equal to the diameter of the intermediate portion, with the rear end orifices of the cooling tubes passing through said flange.

4,445,047
LOAD BANK
Charles S. Cannon, 8070 Johnson Rd., Palmetto, Ga. 30268
Filed Mar. 22, 1983, Ser. No. 477,627
Int. Cl.^{3} G01R *31/00, 31/02*
U.S. Cl. 307—31 **12 Claims**



7. A load bank for loading an a.c. generator during a generator test, and with the load bank comprising a housing to which a plug is mounted having first, second and third terminals; a first low resistance conductor mounted within said housing and electrically connected with said first terminal; a second low resistance conductor mounted within said housing and electrically connected with said second terminal; a third low resistance conductor mounted within said housing and electrically connected with said third terminal; and switching network means for selectively connecting together said first and second conductors through first unidirectional current carrying means, and said second and third conductors through second unidirectional current carrying means, and said first and third conductors through third unidirectional current carrying means, whereby the generator may be loaded at three discrete levels with the full load level being on a full duty cycle basis.

4,445,048
HIGH SPEED RIBBON CABLE BUS
Martin H. Graham, Berkeley, Calif., assignor to Rolm Corporation, Santa Clara, Calif.
Continuation of Ser. No. 137,309, Apr. 4, 1980, abandoned. This application May 2, 1983, Ser. No. 488,008
Int. Cl.^{3} H04B *3/00*
U.S. Cl. 307—42 **11 Claims**



1. A high speed bus for interconnecting and asynchronously transmitting data between a plurality (n) of electrical units, comprising:

a ribbon cable having a plurality of conductor pairs;

a plurality of driver circuits for transmitting signals serially, each of said driver circuits coupled to one of said electrical units and coupled to a different conductor pair of said cable;

a plurality of receivers coupled to each of said electrical units for receiving said signals, each of said electrical units having at least n-1 receivers, each receiver being coupled to a different conductor pair of said cable;

at least one resistor coupled in series between each of said receivers and said conductor pairs for reducing the capacitive coupling between said cable between said cable and said receivers;

a plurality of low capacitance connector means, one for each of said units for providing said coupling to said conductor pairs for said receivers, each of said connector means comprising:

at least a first and a second electrical connector for engaging said cable, each electrical connector having a plurality of spaced apart pins for receiving signals from said cable, said pins of said first connector arranged to receive signals from a first conductor pair, said pins of said second connector arranged to receive signals from a second conductor pair separated from said first conductor pair;

whereby the capacitive coupling of said receivers to said cable is reduced, and said electrical units may simultaneously and asynchronously transmit and receive data on said cable at high speed.

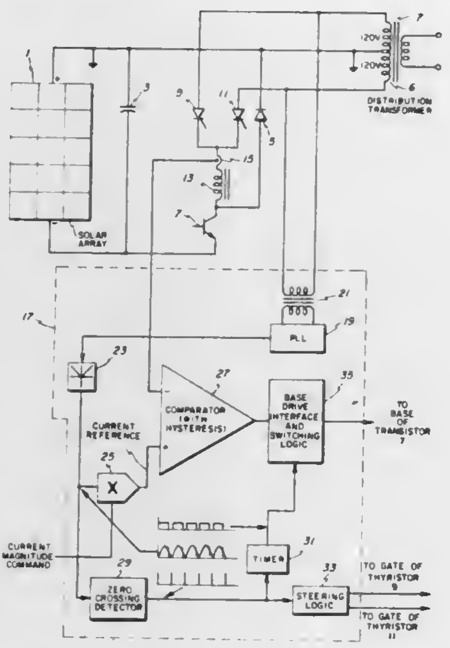
4,445,049
INVERTER FOR INTERFACING ADVANCED ENERGY SOURCES TO A UTILITY GRID

Robert L. Steigerwald, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 28, 1981, Ser. No. 334,844

Int. Cl.^{3} H02J *3/38*

U.S. Cl. 307—45 **10 Claims**



1. A dc-to-ac inverter for injecting a sinusoidal current waveform into an ac utility grid from a dc source comprising:

gate controllable chopping switch means in series with said dc source;

at least two steering switch means for connecting said gate controllable switch means to opposite sides of said load;

means for alternately gating said two steering switch means at the fundamental frequency of the desired sinusoidal waveform to alternately provide current flow in a first direction through said load and a second direction opposite to the first; and

means for pulse width modulating the gate controllable switch means to achieve sinusoidal current delivered to said utility grid at near unity power factor, said pulse width modulating means having means for sensing current supplied to said utility grid, means for generating a sinusoidal current reference waveform, and comparator means having hysteresis for comparing current supplied to said utility grid to said sinusoidal current reference waveform, and supplying switching pulses to said gate controllable switching means to confine the current supplied to the utility grid to a predetermined band about said sinusoidal current reference waveform.

4,445,050
DEVICE FOR CONVERSION OF LIGHT POWER TO ELECTRIC POWER

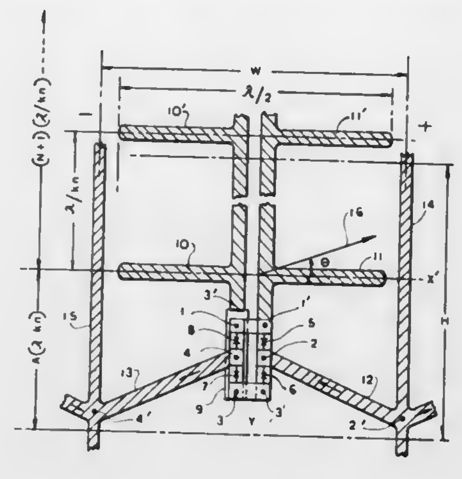
Alvin M. Marks, Bigelow Rd., Athol, Mass. 01331

Filed Dec. 15, 1981, Ser. No. 330,791

Int. Cl.^{3} H02M *7/02*

U.S. Cl. 307—145 **12 Claims**

1. In a light/electric energy converter an insulating sheet, a dipole antenna on said sheet to intercept light photons and convert the resolved electric vector of the alternating electromagnetic energy of said photons to an alternating current in said dipole antenna, a first pair of conducting leads connected to the center of said dipole antenna, an alternating current to a direct current rectifier connected to said leads, a second pair of leads from said rectifier, a pair of output terminals connected to a load, said second pair of leads being connected to said terminals to provide DC power to the said load.



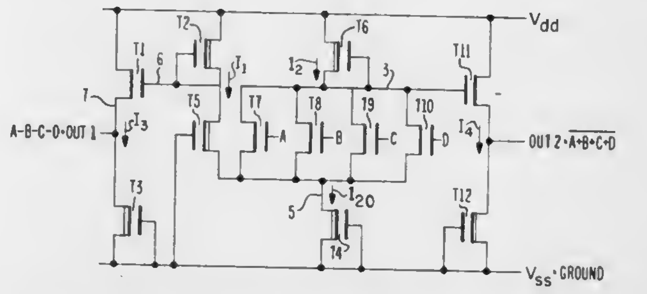
4,445,051
FIELD EFFECT CURRENT MODE LOGIC GATE

Mohamed I. Elmasry, Waterloo, Canada, assignor to Burroughs Corporation, Detroit, Mich.

Filed Jun. 26, 1981, Ser. No. 277,629

Int. Cl.^{3} H03K *19/094, 19/20*

U.S. Cl. 307—450 **11 Claims**



1. A field effect current mode logic gate comprised of:

a field effect current source means for supplying a constant current;

a field effect differential amplifier means having first and second branches coupled between said current source means and a power source means for passing respective portions of said constant current;

said first branch including a plurality of parallel coupled enhancement field effect transistors having a positive threshold voltage and having respective gates for receiving respective input logic signals; and

said second branch including a depletion field effect transistor having a negative threshold voltage and a grounded gate, whereby the magnitudes of said current portions in said first and second branches are representative of the magnitude of said input logic signals relative to said positive threshold voltage plus the absolute value of said negative threshold voltage.

4,445,052
TTL INPUT CURRENT REDUCTION CIRCUIT

Norikuni Higashi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 5, 1980, Ser. No. 184,362

Claims priority, application Japan, Sep. 7, 1979, 54-114999

Int. Cl.^{3} H03K *19/088, 19/20*

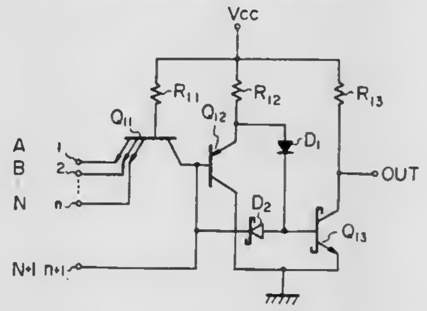
U.S. Cl. 307—456 **21 Claims**

5. A semiconductor, multi-input, logic circuit device comprising:

an electrical source terminal operatively connected to receive an external electric source potential;

input means, having a plurality of first terminals for receiving logic input signals, having a second terminal operatively connected to the electric source terminal, and having a third terminal;

regulating means, having a first terminal operatively connected to said third terminal of said input means, having a second terminal connected to the electrical source terminal, and having a third terminal operatively connected to ground, for providing an output from said second terminal responsive to said logic input signals;



level shift means, having a first terminal operatively connected to said second terminal of said regulating means to receive a voltage and having a second terminal, for providing a voltage at said second terminal responsive to said output of said regulating means and lower than said voltage received at said first terminal; and

output means being activated by said level shift means, having a first terminal operatively connected to said second terminal of said level shift means, having a second terminal operatively connected to said electrical source terminal, and having a third terminal operatively connected to ground, for supplying output signals at said second terminal responsive to said voltage at said second terminal of said level shift means.

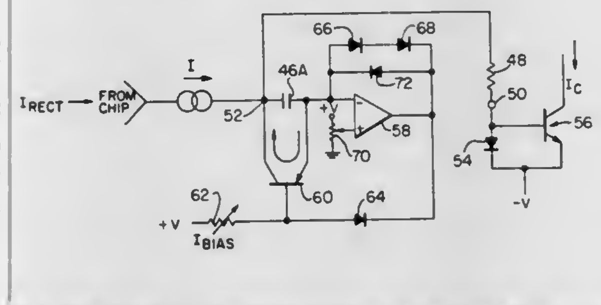
4,445,053
SQUARE LAW CHARGER

C. René Jaeger, So. Lyndeborough, N.H., and Joseph B. Seale, Waltham, Mass., assignors to DBX, Inc., Newton, Mass.

Filed Jun. 16, 1977, Ser. No. 807,234

Int. Cl.^{3} G06G *7/12, 7/20*

U.S. Cl. 307—490 **19 Claims**



1. In a system for charging a charge storage device with an input current due to an input signal, the improvement comprising:

a current conducting loop coupled between the output and input of said charge storage device and means for varying the loop current in said current conducting loop so that said charge storage device is charged by said input current and loop current substantially in accordance with a function of the square of said input current.

4,445,054
FULL-WAVE RECTIFYING CIRCUIT

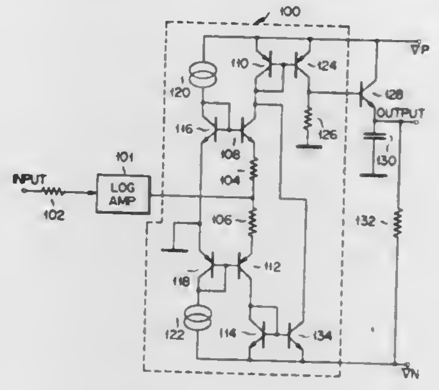
Jun Ishii, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 24, 1981, Ser. No. 305,355

Claims priority, application Japan, Sep. 29, 1980, 55-135518

Int. Cl.^{3} H03K *5/08, 5/13;* **G06G** *7/20*

U.S. Cl. 307—555 **11 Claims**



1. A full-wave rectifying circuit comprising:

an input terminal for receiving an input signal;

a reference potential terminal;

a first current conducting path, connected to said input terminal, with means for conducting a first current corresponding to a signal component of a first polarity of said input signal;

a first resistor coupled at one end thereof to said reference potential terminal;

a second current conducting path, connected to said input terminal, with means for conducting a second current corresponding to a signal component of a second polarity opposite to said first polarity, of the input signal; and

a first current mirror circuit having a first current mirror path coupled to said first and second current connecting paths and a second current mirror path coupled to the other end of said resistor for causing a current flow in said resistor equal to the absolute value of the combined currents flowing through said first and second connecting paths.

4,445,055
CIRCUIT ARRANGEMENT FOR CONTROLLING A POWER FIELD-EFFECT SWITCHING TRANSISTOR

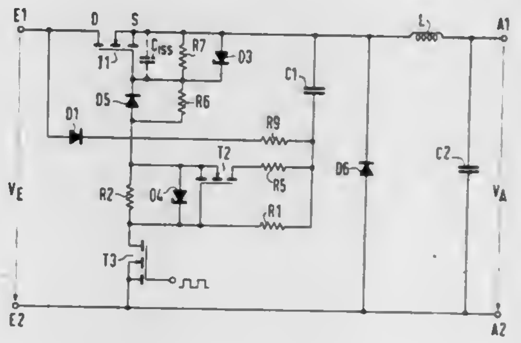
Manfred Bete, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Feb. 22, 1982, Ser. No. 351,150

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1981, 3108385

Int. Cl.^{3} H03K *17/687*

U.S. Cl. 307—571 **9 Claims**



1. A circuit arrangement for driving an N-channel type power field-effect switching transistor, the arrangement having a first input terminal connected via the drain-source path of the N-channel type power field-effect switching transistor to a

first output terminal, the circuit arrangement further having a second input terminal connected to a second output terminal, the arrangement comprising:

series circuit means connected in shunt across the drain-source path of the N-channel type power field-effect switching transistor, said series circuit means having a diode, said diode having anode and cathode terminals and being connected in series with a capacitor, said anode terminal of said diode being connected to a first input terminal of the circuit arrangement, said first input terminal being adapted for receiving a voltage of positive polarity with respect to a second input terminal of the circuit arrangement;

auxiliary transistor means for interconnecting a junction node between said diode and said capacitor to a gate electrode of the N-channel type power field-effect switching transistor;

first resistor means for connecting a control terminal of said auxiliary transistor means to said junction node between said diode and said capacitor;

driver transistor means for connecting said control terminal of said auxiliary transistor means to said second input terminal of the circuit arrangement; and

second resistor means for connecting said control terminal of said auxiliary transistor means to a junction node of a control path of said auxiliary transistor means with the gate terminal of the N-channel type power field-effect switching transistor.

4,445,056

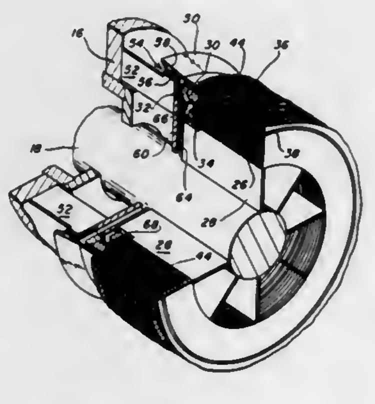
MEANS FOR IMPROVING THE OPERATION OF LIQUID FILLED ELECTRIC MOTORS

David F. Gaylord, Hales Corners, Wis., assignor to Litton Industrial Products, Inc., Beverly Hills, Calif.

Filed Nov. 2, 1981, Ser. No. 316,788

Int. Cl.³ H02K *9/00*

U.S. Cl. 310—54 **10 Claims**



1. In an electric motor operating with a liquid filled housing and having a shaft mounted rotor rotating in the bore of a concentric stator and spaced therefrom by a radial gap, improved means for reducing losses while improving heat removal from the motor comprising:

first collar means mounted on at least one end of the stator coaxially therewith;

means operatively associated with the stator positioning a second collar means in proximity to said first collar means, said positioning means having an annular plate extending from said second collar means, said annular plate facing an end of the rotor and being spaced from the end of the rotor and from the rotor shaft; and means operatively associated with said rotor for providing a surface opposing said annular plate, said collar means and plate forming a liquid turbulence reducing shroud for the end of said rotor and the opposing surfaces of said annular plate and means operatively associated with the rotor moving liquid outwardly toward the stator bore, said collar means directing the liquid into the radial gap for heat removal purposes.

4,445,057

ROTATING THYRISTOR EXCITATION APPARATUS

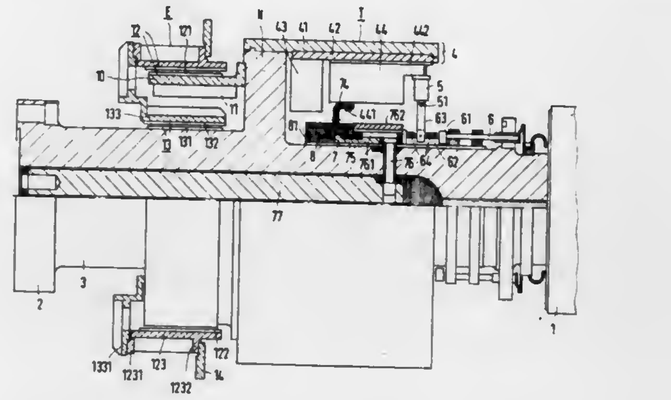
Heinrich Küter, deceased, late of Bochum, Fed. Rep. of Germany (by Gerda Küter, Marlies Küter, Albert Küter, Rudolf Küter, heirs), and Jürgen Klaar, Neukirchen, Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Feb. 22, 1983, Ser. No. 468,553

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1982, 3206388

Int. Cl.³ H02K *11/00*

U.S. Cl. 310—68 D **20 Claims**



1. Rotating thyristor excitation apparatus combined with an electrical machine, comprising a shaft, a driving collar lying at ground potential and being rotationally fixed relative to said shaft, a first and a second shrouding ring each having inner peripheral surfaces and being disposed on said driving collar, said first shrouding ring having a given axial range, structural thyristor units, heat sinks and protective wiring being disposed on said inner peripheral surface of said first shrouding ring, control units being disposed on said inner peripheral surface of said second shrouding ring and being spatially separated from said structural thyristor units, heat sinks and protective wiring by said driving collar, a direct current collecting ring being attached to and insulated from said shaft within said given axial range of said first shrouding ring, radially inwardly disposed direct current terminals of said structural thyristor units, and radially aligned connecting conductors respectively connected from said direct current terminals to said direct current collecting ring.

4,445,058

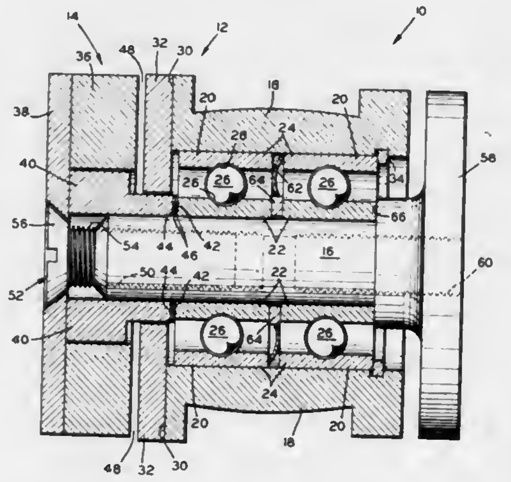
HYSTERESIS TENSIONING DEVICE

Gunnar H. Janson, Dudley, Mass., assignor to Dana Corporation, Toledo, Ohio

Filed Jun. 21, 1982, Ser. No. 390,010

Int. Cl.³ H02K *49/00*

U.S. Cl. 310—103 **10 Claims**



1. In a tensioning device for maintaining a constant torque

on a pulley assembly, said pulley assembly including a hysteresis ring, said assembly being rotatably mounted on a bearing having an inner race supported on an axially disposed pulley shaft, said race including a first radially extending surface, the tensioning device further including a magnet assembly having a magnet disposed in an axially spaced relationship with the hysteresis ring to define an air gap between said magnet and said ring; an improvement comprising:

a. said magnet assembly including an axially extending member supported on said shaft, the member having a second radially extending surface, said first and second surfaces being axially spaced apart,

b. spacing means for holding said surfaces in spaced relationship,

c. said pulley shaft including an axial bore therethrough, and

d. said magnet assembly having means cooperating with said bore for retaining said axially extending member against said spacing means to hold a setting of said air gap.

4,445,059

ELECTRIC MOTOR, IN PARTICULAR A SMALL MOTOR

Rainer Corbach, Lüdinghausen, and Kurt Zimmermann, Bietigheim, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

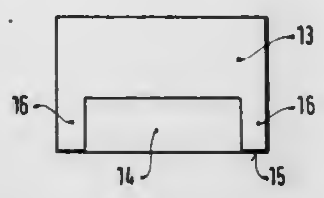
PCT No. PCT/DE81/00192, 371 Date Jun. 7, 1982, 102(e) Date Jun. 7, 1982, PCT Pub. No. WO82/02802, PCT Pub. Date Aug. 19, 1982

PCT Filed Nov. 6, 1981, Ser. No. 387,877

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1981, 3103475

Int. Cl.³ H02K *21/26*

U.S. Cl. 310—154 **3 Claims**



1. In an electric motor, particularly a small motor, having an armature including

an armature core (10) defining an axial length (l_A), and an armature winding (11) on the core,

a field magnet structure having

at least two permanent field magnets (12) facing the armature, the permanent magnets having an axial length (l_M) greater than the axial length of the armature core and protruding axially beyond the armature core at both ends;

each magnet including

at least a first section (13) of a highly remanent magnetic material (1) having a portion extending in axial direction over the armature core, and

at least one second section (14) of a highly coercive magnetic material (2) disposed at least at one circumferential end portion of the magnet,

wherein the highly remanent magnetic material (1) has a higher remanence in comparison to the highly coercive magnetic material (2), but a lower limiting coercive field strength,

wherein

the at least one second section (14) of highly coercive magnetic material (12) extends over essentially only the axial length (l_A) of the armature core (10);

the first section of highly remanent magnetic material includes

two protruding portions (16) adjoining the second section (14) at both axial ends of the second section, said protruding portions protruding beyond the axial dimension of the armature core (10); and said protruding poritons (16) of the first section (13) of highly remanent magnetic material are unitary with said portion extending in axial direction over the armature core (10).

4,445,060

ELECTRIC STARTER MOTOR WITH HOLDER FOR PERMANENT MAGNETS

Walter Rühle, Korntal, and Kurt Zimmerman, Bietigheim, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

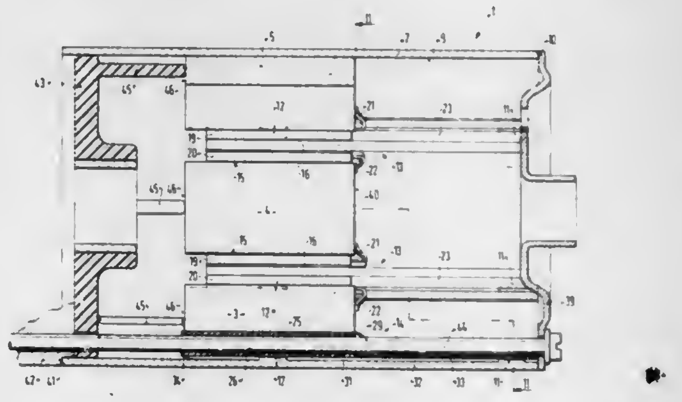
PCT No. PCT/DE81/00183, 371 Date Aug. 11, 1982, 102(e) Date Aug. 11, 1982, PCT Pub. No. WO82/02288, PCT Pub. Date Jul. 8, 1982

PCT Filed Oct. 31, 1981, Ser. No. 413,333

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1980, 3048337

Int. Cl.³ H02K *15/00, 21/26*

U.S. Cl. 310—154 **19 Claims**



1. In an electric motor, especially starter motor for an automotive-type internal combustion engine,

wherein the motor has an essentially cylindrical housing shell (2);

an end cap (39) closing off the shell at one end (10);

a plate-like means (43) positioned transversely of the shell at an axial position remote from said one end;

a plurality of bowed or arched permanent magnets (3-8) having part-cylindrical configuration fitted into the housing shell and having curved inner and outer walls, essentially radially directed side walls (37, 38) and axially transversely extending end faces (40, 46),

a magnet holding arrangement comprising

abutment means (45) located radially inwardly of the housing shell and extending axially, bearing against one of the end faces of the permanent magnets (3-8) for providing a counter and locating surface;

a plurality of elongated strip-like holder elements (13; 14, 47) fitted between said part-cylindrical arched permanent magnets (3-8) and engaging neighboring side walls of respective neighboring permanent magnets,

said strip-like elements comprising

a spacer portion (23, 32) supported with one end against the end cap (39) and extending from the other end faces (40) of the permanent magnets towards said end cap;

circumferentially positioned oppositely directed spring flaps (21, 22; 29, 30; 48) projecting from said strip-like elements at a position to resiliently engage said other of the end faces (40) of the permanent magnets and press axially against said other end faces to thereby resiliently press said one end face of said magnets in engagement with the abutment means;

wherein the strip-like elements are hollow, define an axially extending opening, and are formed, at least in the region between said magnets, with circumferentially resilient deflectable side walls, resiliently pressing against the neighboring side walls of neighboring permanent magnets;

and axially extending tension bolts (44) extending through said openings and connected to the end cap (39).

4,445,061

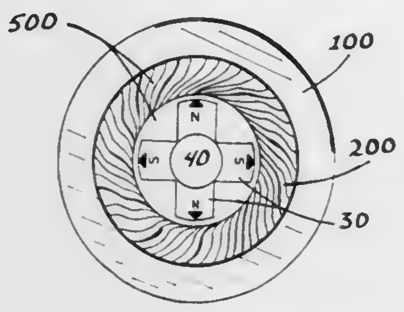
WIDE AIR GAP PERMANENT MAGNET MOTORS

John T. Jackson, Jr., St. Paul, Oreg., assignor to Synetron Corporation, Portland, Oreg.

Continuation-in-part of Ser. No. 160,315, Jun. 17, 1980, abandoned, which is a continuation-in-part of Ser. No. 55,266, Jul. 6, 1979, abandoned. This application Jul. 23, 1982, Ser. No. 401,134

Int. Cl.^{3} H02K *21/12*

U.S. Cl. 310—156 **4 Claims**



1. In an electrical machine comprising a permanent magnet having a predetermined remanent flux density, a core separated from said permanent magnet by a gap, said magnet, said core and said gap forming a magnetic circuit in which said magnet is at a magnetic flux density and a magnetic field intensity determined by the size of said gap, the product of said flux density and said field intensity corresponding to an energy product, said magnet having a predetermined maximum energy product which occurs at a flux density lower than said remanent flux density, an electrically-conductive winding interposed within said gap between said permanent magnet and said core, and means for permitting relative motion between said permanent magnet and said winding, the improvement which comprises:

(a) means for substantially maximizing the energy product of said magnet by making the size of said gap sufficiently large to limit the flux density of said magnet to a flux density substantially nearer to that corresponding to said predetermined maximum energy product than to said remanent flux density;

(b) said magnet having an effective magnetization curve of a slope corresponding substantially to the slope of the effective magnetization curve of any one of barium ferrite, strontium ferrite and rare earth permanent magnets; and

(c) said gap being virtually filled with said winding.

4,445,062

ROTOR ASSEMBLY HAVING ANCHORS WITH UNDULATING SIDES

Jerry Glaser, Playa del Rey, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Dec. 26, 1978, Ser. No. 973,345

Int. Cl.^{3} H02K *21/12*

U.S. Cl. 310—156 **4 Claims**

1. A rotor comprising:

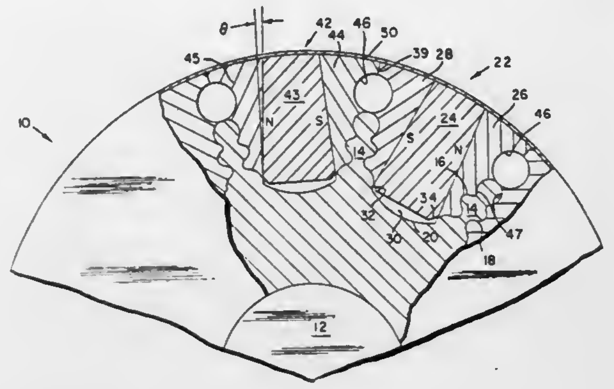
a hub having radially extending tongues with undulating sides equally spaced around the outer periphery of said hub;

a plurality of wedge-shaped permanent magnets having outwardly converging sides and radially disposed around the outer periphery of said hub;

a plurality of inwardly converging wedge-shaped support members, one support member being affixed to each of the sides of said permanent magnets;

one side of each of said support members having an undulating groove into which the tongues of said hub interlock;

said sides of said magnets forming an angle within the range of 2 to 9 degrees with a plane parallel to a central radius through said magnet such that the magnets are locked in place after said rotor ceases to rotate and the magnets will not fracture due to excessive compressive forces applied to the sides of said magnets.



4,445,063

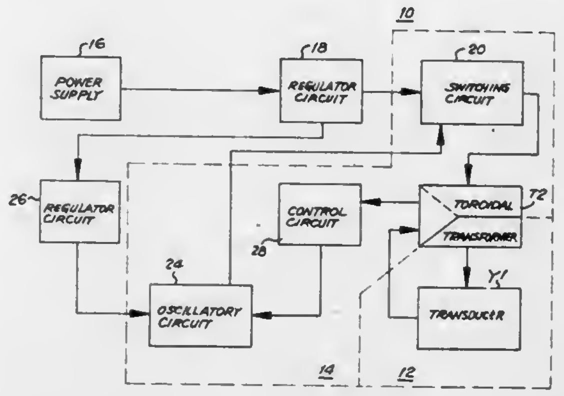
ENERGIZING CIRCUIT FOR ULTRASONIC TRANSDUCER

Robert J. Smith, Lynnwood, Wash., assignor to Solid State Systems, Corporation, Lynnwood, Wash.

Filed Jul. 26, 1982, Ser. No. 401,914

Int. Cl.^{3} H01L *41/08*

U.S. Cl. 310—316 **19 Claims**



1. An energizing system for automatically driving an electronic transducer at its resonant frequency, comprising:

(a) resonant circuit means for applying an electrical signal of the desired frequency to the transducer, the transducer constituting a capacititve element of said resonant circuit means; and

(b) driver circuit means operably associated with said resonant circuit means, comprising:

control circuit means responsive to the magnitude and the frequency of the electrical signal applied to said transducer for producing a control signal at a level related to the difference between the vibrating frequency of the transducer and its resonant frequency;

oscillatory circuit means operably coupled with said control circuit means for producing an oscillating switching signal at the resonant frequency of said transducer in response to the level of the control signal; and

switching circuit means connected between a power supply and said resonant circuit means, said switching circuit means actuated by said switching signal to modulate said power supply to drive said resonant circuit means at the resonant frequency of the transducer.

4,445,064

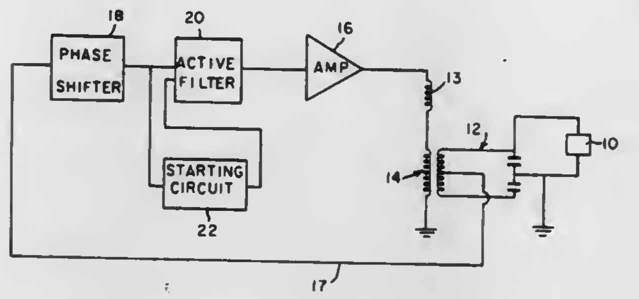
SELF RESONANT POWER SUPPLY FOR ELECTRO-ACOUSTICAL TRANSDUCER

David C. Bullis, Kennett Square, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 25, 1983, Ser. No. 488,374

Int. Cl.^{3} H01L *41/08*

U.S. Cl. 310—316 **3 Claims**



1. In a circuit for energizing by means of a motional bridge circuit an electro-acoustical transducer coupled to a load for transferring acoustic energy thereto including, a power amplifier circuit coupled to the motional bridge circuit for supplying an alternating cutrrent output for establishing a current flow to said transducer, and a feedback circuit connecting the motional bridge circuit to the power amplifier circuit for applying thereto an alternating current signal, the improvement comprising: an active filter, in said feedback circuit connected between said motional bridge circuit and said power amplifier circuit, said active filter being in a mode suppressant state; and a starting circuit coupled to said active filter for raising the Q of the active filter until it reverts from said mode suppressant state to a self-oscillating state when said alternating current signal is not present and for lowering the Q of said active filter until it reverts back to said mode suppressant state when said alternating current signal is present.

4,445,065

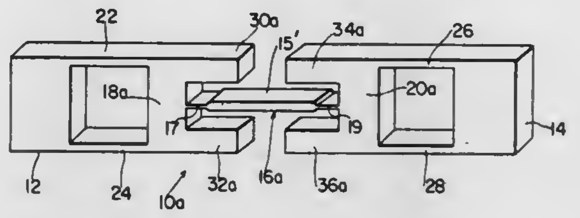
NON-PRISMAL BEAM RESONATOR

William C. Albert, Boonton, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Sep. 14, 1981, Ser. No. 301,623

Int. Cl.^{3} H01L *41/08*

U.S. Cl. 310—321 **8 Claims**



1. In a force transducer, an isolator structure generally shaped like a tuning fork for supporting a beam having a longitudinal axis and adapted to vibrate in a plane including the axis, the isolator structure comprising:

a thickened support element secured to each end of the beam and extending in both directions transversely of said axis of the beam;

a pair of end mounts;

a pair of thin spaced isolator springs extending between each mount and a corresponding support element for transmitting axial forces from the end mounts to the beam along the axis thereof; and

a pair of cantilevered parallel spaced shortened isolator masses secured at first ends thereof to each support element;

wherein the isolator structure supporting the beam behaves as a rigid body and raises the "tuning fork" resonant frequency of the isolator structure far above the beam resonant frequency thereby preventing interference of the latter resonant frequency.

4,445,066

ELECTRODE STRUCTURE FOR A ZINC OXIDE THIN FILM TRANSDUCER

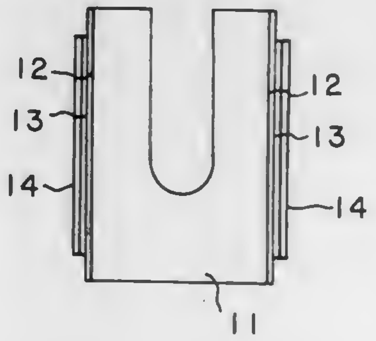
Hiroshi Nishiyama, Mukoh, and Takeshi Nakamura, Uji, both of Japan, assignors to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

Filed Jun. 29, 1983, Ser. No. 509,028

Claims priority, application Japan, Jun. 30, 1982, 57-114446; Jun. 30, 1982, 57-114447; Jun. 30, 1982, 57-114448; Jun. 30, 1982, 57-114449; Jun. 30, 1982, 57-114450; Jun. 30, 1982, 57-114451

Int. Cl.^{3} H01L *41/08*

U.S. Cl. 310—364 **6 Claims**



1. An electrode structure for a zinc oxide thin film comprising an Al electrode and an intermediate layer between the surface of the zinc oxide thin film and the Al electrode, wherein said intermediate layer is selected from the group consisting of V_2O_3, Ta, V, Cu, Ni and Ti.

4,445,067

HIGH PRESSURE METAL VAPOR DISCHARGE LAMP WITH RADIOACTIVE MATERIAL IMPREGNATED IN CERAMIC

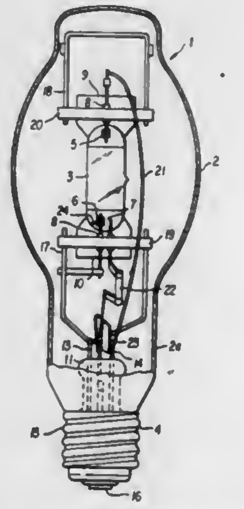
Akihiro Inoue, Chigasaki; Tadao Kanoh, Fujisawa; Taketo Kamei; Akihiro Kamiya, both of Yokosuka; Toshihiko Ishigami, Yokohama; Akira Kohno, and Hiroki Sasaki, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 20, 1981, Ser. No. 265,675

Claims priority, application Japan, Jun. 18, 1980, 55-82415; Jun. 18, 1980, 55-82416

Int. Cl.^{3} H01J *65/08*

U.S. Cl. 313—54 **2 Claims**



1. A high pressure metal vapor discharge lamp comprising:

an arc tube having a pair of main electrodes mounted at opposed ends of the arc tube, said arc tube provided with a fill including mercury and a starting gas;

a radioactive source material including a ceramic material impregnated with a radioactive substance having a half-life less than 1×10^4 years sealed in said arc tube;
an outer tube enclosing said arc tube; and
a circuit for starting said arc tube.

4,445,068
LOW-PRESSURE MERCURY VAPOR DISCHARGE LAMP WITH INTERNAL GLASS FIBERS

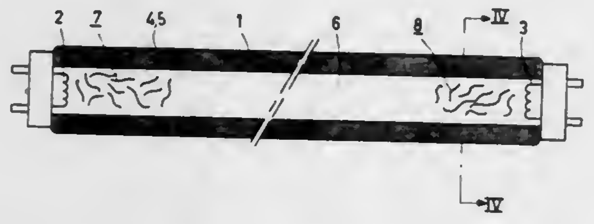
Martinus J. M. van Heel, and Petrus J. M. Willemsen, both of Roosendaal, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 205,067, Nov. 10, 1980, abandoned. This application Dec. 22, 1982, Ser. No. 452,341

Claims priority, application Netherlands, Dec. 12, 1979, 7908924

Int. Cl.³ H01J *5/16, 61/067, 61/44*

U.S. Cl. 313—113 **2 Claims**



1. A low-pressure mercury vapor discharge lamp for reproduction purposes having a tubular discharge vessel, said vessel having an inner wall on which is disposed a reflective layer in which a longitudinal gap is left, said vessel being sealed in a vacuum tight manner, said vessel containing mercury and rare gas, electrodes between which a discharge takes place being located at respective ends of said discharge vessel, said vessel further containing first and second thinly-distributed bodies of insulating filamentary material, said bodies being disposed proximate to each of said electrodes and collectively extending longitudinally over not more than one third of the distance intermediate said electrodes.

4,445,069
LOW-PRESSURE DISCHARGE LAMP

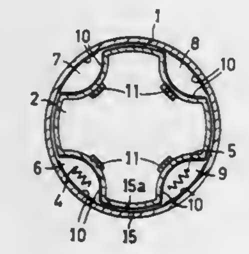
Antonius C. van Amstel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 178,227, Aug. 14, 1980, abandoned. This application Dec. 14, 1982, Ser. No. 449,805

Claims priority, application Netherlands, Aug. 15, 1979, 7906202

Int. Cl.³ H01J *17/04, 61/04*

U.S. Cl. 313—610 **3 Claims**



1. A low-pressure discharge lamp comprising a hollow glass inner member which is closely surrounded by a predominantly cylindrical glass outer member, one end of each member being closed and the two members being sealed together at their other ends, the lamp also comprising two electrodes between which a discharge takes place during operation of the lamp, said discharge being present in a discharge path formed by a groove in the wall of at least one of the two members, said groove being serpentine shaped, characterized in that in order to cause the discharge to flow solely through the groove during operation, the wall of at least one of the members is provided proximate to the region of the groove with an electrically conductive layer which is electrically connected to one of said electrodes, the length of the conductive layer being substantially equal to the length of the discharge path, the conductive layer being provided on the wall surface of the inner member remote from the discharge path.

4,445,070
ELECTRON GUN FOR PRODUCING SPIRAL ELECTRON BEAMS AND GYROTRON DEVICES INCLUDING SAME

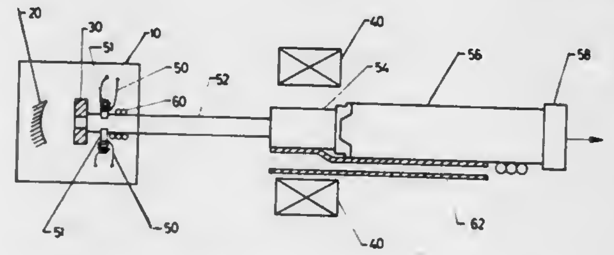
Jonathan M. Wachtel, Rechovot, Israel, assignor to Elta Electronics Industries Ltd., Ashdod, Israel

Filed Nov. 12, 1981, Ser. No. 320,838

Claims priority, application Israel, Dec. 18, 1980, 61759

Int. Cl.³ H01J *25/00*

U.S. Cl. 315—4 **10 Claims**



1. An electron gun producing a spiral electron beam, including a cathode providing a source of electrons, an apertured anode for drawing the electrons therethrough in the form of a beam, and means for imparting a spiral motion to said beam drawn through the anode; characterized in that said latter means comprises:

(1) axial field-producing means for producing an axial magnetic field propagating the beam axially beyond the anode, and

(2) separate transverse field-producing means for producing a transverse "kicker" field beyond the anode and perpendicular to the magnetic propagation field such as to apply a transverse impulse of short duration, imparting a transverse motion, to the electrons to cause them to spiral as they are propagated axially beyond the anode; said "kicker" field applying said transverse impulse to the electrons for a period of time less than that required to produce a complete rotation of the electrons within the spiral beam.

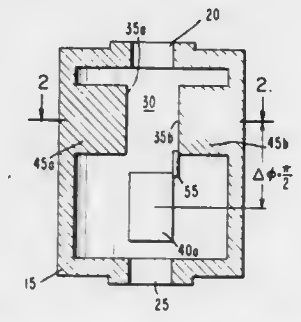
4,445,071
CIRCULAR BEAM DEFLECTION IN GYROCONS

Tore Wessel-Berg, Trondheim, Norway, and Ivo Tammaru, Rancho Palos Verdes, Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Apr. 28, 1982, Ser. No. 372,520

Int. Cl.³ H01J *25/00*

U.S. Cl. 315—4 **1 Claim**



1. A deflection arrangement for a gyrocon comprising:
a housing defining a deflection cavity and a pair of openings at the respective ends of said housing to enable an electron beam to pass through said cavity along the longitudinal axis thereof;
a first pair of deflection plates disposed parallel to one another on opposite sides of said axis at a first longitudinal location in said cavity;
a second pair of deflection plates disposed parallel to one another and perpendicular to said first pair of plates on opposite sides of said axis at a second longitudinal location in said cavity spaced from said first longitudinal location;
a first electrical conductor disposed within said cavity for directly electrically connecting one of said first pair of plates with one of said second pair of plates, a second electrical conductor disposed within said cavity for directly electrically connecting the other of said first pair of plates with the other of said second pair of plates; and
the distance between the midplanes of said first and second pairs of plates corresponding electrically to 90° at a preselected operating voltage and frequency for said gyrocon.

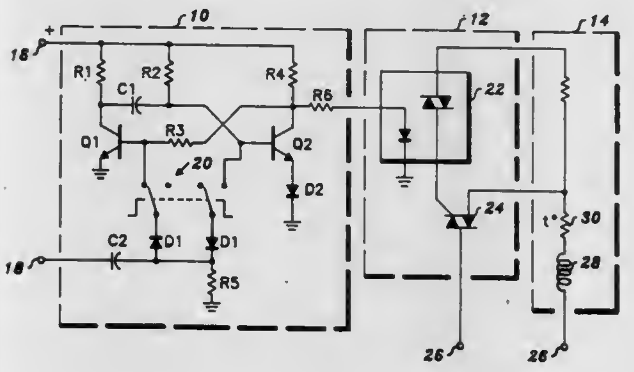
4,445,072
CRT DEGAUSSING SYSTEM

Robert Fredres, Aurora, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 29, 1982, Ser. No. 426,574

Int. Cl.³ H01F *13/00*

U.S. Cl. 315—8 **5 Claims**



1. A degaussing system in a CRT device and comprising:
an input means for receiving a trigger signal;
a control circuit coupled to the input means for providing a control signal pulse of a predetermined length in response to the trigger signal and including a multibrator circuit coupled to be triggered by a predetermined level change in the trigger signal and which will automatically reset itself for being retriggered by a repeat of the predetermined level change;
a degaussing circuit including in series a degaussing coil and a resistance element having a high positive temperature co-efficient; and
a power circuit coupled to the control circuit for supplying power to the degaussing circuit in response to the control signal.

4,445,073
INTIMATE CONTACT STARTING AID FOR ARC LAMPS

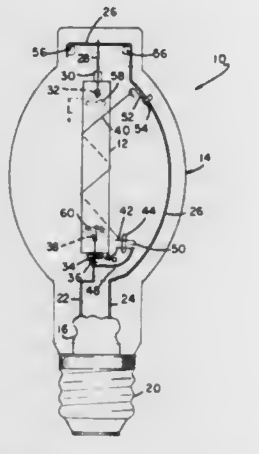
Elliot F. Wyner, Peabody, Mass., and Timothy Gehling, Hampton, N.H., assignors to GTE Products Corporation, Stamford, Conn.

Filed Mar. 22, 1982, Ser. No. 360,278

Int. Cl.³ H01J *7/44, 17/34, 19/78, 29/96*

U.S. Cl. 315—56 **3 Claims**

1. A high pressure sodium discharge lamp comprising: an elongated, hermetically sealed arc tube; a first electrode sealed in one end of said arc tube and extending thereinto; and a second electrode sealed into the opposite end of said arc tube and extending thereinto; said arc tube containing effective amounts of mercury, sodium and xenon at a pressure of above 75 torr to provide an effective light output when said lamp is operated; and a starting aid in the form of a wire helically wrapped about said arc tube, said starting aid being detachably electrically connected to said first electrode and making a first intimate contact with said arc tube adjacent said first electrode and a last intimate contact with said arc tube adjacent said second electrode, said last intimate contact occuring at a given axial spacing from the internal terminus of said second electrode, said given axial spacing being sufficient to enhance starting in an aged lamp.



4,445,074
STARTING CIRCUITS FOR DISCHARGE LAMPS

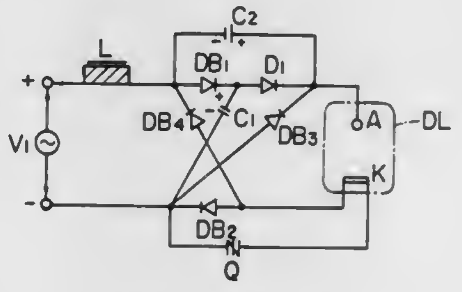
Yoshio Watanabe, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 4, 1981, Ser. No. 318,110

Claims priority, application Japan, Nov. 7, 1980, 55-158581[U]

Int. Cl.³ H05B *41/14, 41/16*

U.S. Cl. 315—205 **16 Claims**



1. A starting circuit for discharge lamps, comprising: a discharge lamp operated on direct current and including one preheat type hot cathode and at least one anode; a full wave rectifier circuit having its d.c. output terminal connected between said anode and said cathode; a current limit device connected between the a.c. input terminal of said full wave rectifier circuit and the input terminal of an a.c. power source; a Cockcroft-Walton's circuit formed by adding capacitors and a rectifier to one of the rectifiers which form said full wave rectifier circuit; and circuit means for preheating said cathode, said preheating circuit means including at least one other of the rectifiers which form said full wave rectifier circuit.

4,445,075
VALVE ACTUATORS

Jeremy J. Fry, Bath, England, assignor to Rotork Controls Limited, England

Filed Apr. 20, 1982, Ser. No. 370,059

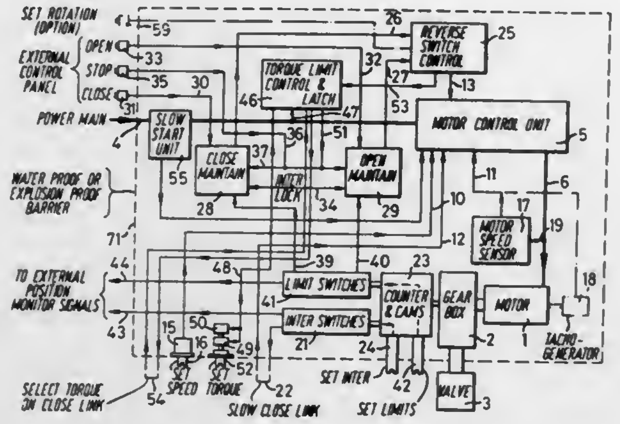
Claims priority, application United Kingdom, Apr. 30, 1981, 8113310; Mar. 12, 1982, 8207297

Int. Cl.³ H02K *27/30*

U.S. Cl. 318—434 **20 Claims**

1. A valve actuator comprising (i) a variable speed motor, (ii) a speed control circuit for controlling the motor speed said speed control circuit including speed selector means enabling

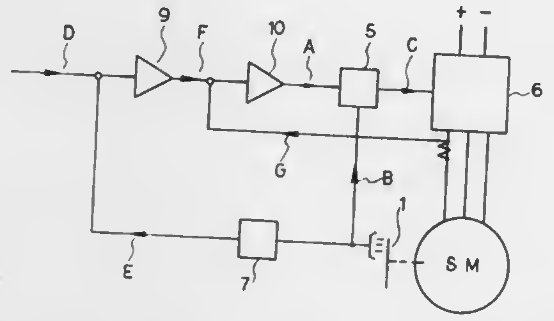
the desired motor speed can be set to different values and first adjustment means for adjusting said speed selector means and (iii) a torque limit control circuit including a torque sensor providing a measure of torque from one or more torque-related electrical parameters of the motor, second adjustment means for setting a torque limit, and means operative to stop the motor at least for one rotational direction of said motor when the torque sensed by said sensor exceeds the torque limit set by said second adjustment means.



4,445,076
CONTROL SYSTEM FOR SYNCHRONOUS MOTOR EMPLOYED AS SERVOMOTOR

Katsuo Kobari, Tokyo, Japan, assignor to Fanuc Ltd., Tokyo, Japan

Filed Jul. 16, 1982, Ser. No. 398,891
Claims priority, application Japan, Jul. 17, 1981, 56-110761
Int. Cl.^{3} G05B *11/12*
U.S. Cl. 318—690 **4 Claims**



1. A control system for a synchronous motor employed as a servomotor comprising:

a pulse coder having a first pulse coder element which has at least one train of angular portions of which the cumulative angle corresponds to one pair of the field poles of said synchronous motor and each of which is produced by splitting the cumulative angle of said angular portions to predetermined portions utilizing a code system to enable each of said angular portions to represent the absolute angular positions thereof, said first pulse coder element generating signals representing the absolute angular position of one of said field poles with respect to a reference angular position determined following the windings of the stator of said synchronous motor, and having a second pulse coder element which has a train of smaller angular portions of which the cumulative angle covers each of said angular portions of said train of said first pulse coder element and each of which is produced by splitting the cumulative angle of said smaller angular portions to predetermined portions, said second pulse coder element generating incremental pulses corresponding to each of said smaller angular portions,

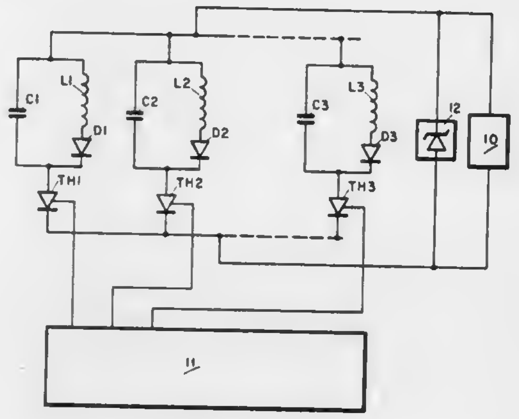
an arithmetic unit comprising a means to recognize said signals generated by said first pulse coder element, a counter to count said incremental pulses generated by said second pulse coder element, said counter being triggered by a change of said signals generated by said first pulse coder element, a means to detect the absolute angular position of one of said field poles with respect to said reference angular position determined following the windings of the stator of said synchronous motor at a scale corresponding to the interval of said incremental pulses, and a means to generate a first trigonometrical function signal following said absolute angular position of one of said field poles with respect to said reference angular position determined following the windings of the stator of said synchronous motor and at least one other trigonometrical function signal having a predetermined amount of phase difference with respect to said first trigonometrical function signal, and

an alternating current voltage generator which is triggered by said first trigonometrical function signal and said at least one other trigonometrical function signal generated in said arithmetic unit and which generates a poly-phase alternating current voltage of which each component varies the frequency from zero to a predetermined amount but which maintains a predetermined amount of phase difference with respect to said absolute angular position of one of said field poles of the stator of said synchronous motor, whereby said synchronous motor is allowed to run maintaining a predetermined amount of internal phase angle regardless of the rotation speed thereof.

4,445,077
DRIVE CIRCUIT FOR STEP MOTOR

Klaus P. Kirschner, Nuremberg, Fed. Rep. of Germany, assignor to Philips Kommunikations Industrie AG, Nuremberg, Fed. Rep. of Germany

Filed Jan. 25, 1982, Ser. No. 342,648
Int. Cl.^{3} H02K *29/02*
U.S. Cl. 318—696 **3 Claims**



1. A drive circuit for a step motor comprising

a constant current power supply;

stator windings of the step motor;

diodes each connected in series to a corresponding winding; capacitors each connected in parallel to a corresponding series of a diode connected to the winding and also connected on one side to one terminal of the constant current power supply;

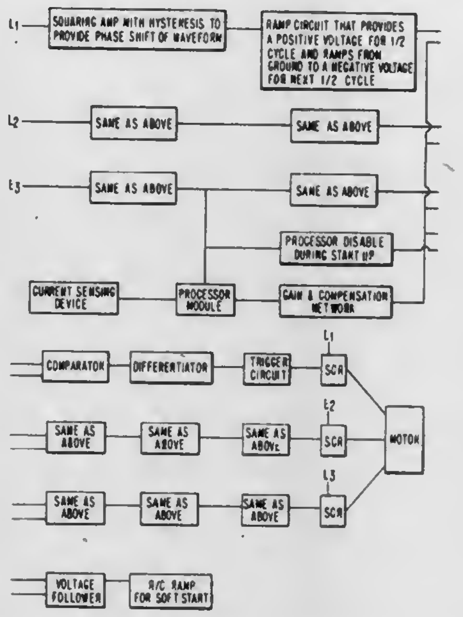
thyristors each connected to a corresponding capacitor on the side not connected to the constant current power supply and connected to the second terminal of the constant current power supply; and

a control device connected to the gate inputs of the thyristors.

4,445,078
PROCESSOR MODULE FOR POWER FACTOR CONTROLLER

Philip E. Lange, Dayton, Ohio, assignor to Energy Vent, Inc., Dayton, Ohio

Continuation of Ser. No. 243,495, Mar. 13, 1981, abandoned. This application Aug. 23, 1983, Ser. No. 525,422
Int. Cl.^{3} H02P *5/40*
U.S. Cl. 318—729 **6 Claims**


L1
SQUARING AMP WITH HYSTERESIS TO PROVIDE PHASE SHIFT OF WAVEFORM
RAMP CIRCUIT THAT PROVIDES A POSITIVE VOLTAGE FOR 1/2 CYCLE AND RAMPS FROM GROUND TO A NEGATIVE VOLTAGE FOR NEXT 1/2 CYCLE
L2
SAME AS ABOVE
SAME AS ABOVE
L3
SAME AS ABOVE
SAME AS ABOVE
PROCESSOR DISABLE DURING START UP
CURRENT SENSING DEVICE
PROCESSOR MODULE
GAIN & COMPENSATION NETWORK
COMPARATOR
DIFFERENTIATOR
TRIGGER CIRCUIT
SCR
L1
L2
L3
SAME AS ABOVE
MOTOR
VOLTAGE FOLLOWER
R/C RAMP FOR SOFT START

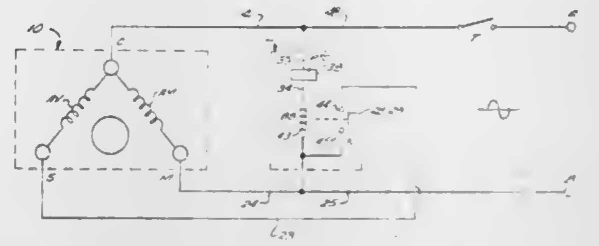
1. In a motor control circuit for an electric motor connected to a source of voltage, means for producing a first waveform signal representative of the voltage, means for producing a second waveform signal representative of the motor current, sample and hold means responsive to said first and second waveform signals for producing a voltage signal proportional to the phase difference between said first and second waveform signals and for holding said voltage signal, said sample and hold means including an analog switch having a gate portion and a switch portion, said sample and hold means further including capacitance means connected to said switch portion for responding to the voltage of, and thus sampling, said second waveform signal only when said switch portion is conductive, means for applying said first waveform signal to said gate portion, means for applying said second waveform signal to said switch portion, differentiating means for periodically ramping said first waveform signal to ground, said switch portion comprising means becoming conductive only when said first waveform signal has been ramped to ground, and means responsive to the voltage held by said capacitance means for controlling the firing of a solid state switch in circuit with said source.

4,445,079
ELECTROMAGNETIC RELAYS

Pietro DeFilippis, Caserta; Amedeo Salvatore, Naples; Ciro Calenda, Aversa, and Giuseppe Notaro, Pomigliano D'Arco, all of Italy, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 19, 1981, Ser. No. 322,827
Claims priority, application Italy, Nov. 19, 1980, 50204 A/80
Int. Cl.^{3} H02P *1/42*
U.S. Cl. 318—792 **10 Claims**

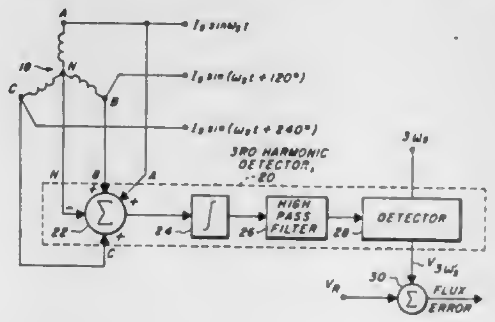
1. Electromagnetic relay with controlled time of activation comprising magnetic circuit means energizable for performing a control function, an exciting winding for energizing said magnetic circuit, and means for activating said winding from a power source for a predetermined time and for thereafter deactivating the winding, said means comprising an element of positive temperature coefficient of resistivity (PTC) connected in series between said winding and the electric power source, characterized in that first and second conductive elements are connected to respective line terminals of said power source and in that said exciting winding includes a wire coil having one bared end of said coil wire wound on said first conducting element to be electrically connected to the source of electrical power, having an opposite bared end of said wire, and having means resiliently engaged with said opposite bared end of the wire connecting the opposite wire end with said second conducting element to be electrically connected to said source of electric power.



4,445,080
SYSTEM FOR INDIRECTLY SENSING FLUX IN AN INDUCTION MOTOR

William P. Curtiss, Winthrop, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Nov. 25, 1981, Ser. No. 324,769
Int. Cl.^{3} H02P *5/40*
U.S. Cl. 318—798 **18 Claims**



1. An indirect flux sensor for an n phase AC motor system having a rotor and a stator with stator windings energized by a variable frequency n phase power source, comprising

means connected to said stator windings for detecting a characteristic of the voltage waveform across the windings indicative of flux saturation,

wherein said detecting means includes means for detecting a substantial increase in the level of the third harmonic of the fundamental voltage waveform across at least one of the windings characteristic of flux saturation,

wherein said means for detecting an increase in the level of the third harmonic includes summing means connected to the windings for producing the algebraic sum of the voltages across each of the windings such that the fundamental voltage waveforms cancel and the third harmonics are reinforced due to their phase relationship,

wherein said means for detecting an increase in the level of the third harmonic further includes means for making the output amplitude of said summing means independent of frequency.

4,445,081
LEADING POWER FACTOR INDUCTION MOTOR DEVICE

Gabor Kalman, Palos Verdes, and Graham W. McLean, Torrance, both of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Dec. 15, 1981, Ser. No. 331,108
Int. Cl.^{3} H02P *5/40*
U.S. Cl. 318—832 **13 Claims**

1. An induction motor drive system comprising:

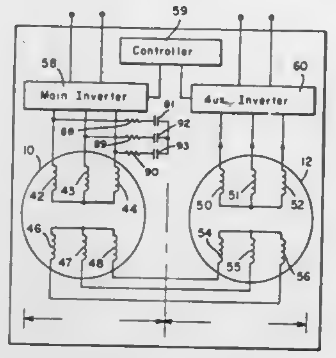
a machine housing;

a main machine mounted within said machine housing, said main machine including a main stator assembly and a main rotor assembly;

a main inverter connected to said main stator assembly for supplying electric current thereto;

an auxiliary machine mounted within said machine housing said auxiliary machine including an auxiliary stator assembly and an auxiliary rotor assembly, said auxiliary rotor assembly being connected to said main rotor assembly to permit electric current to flow therebetween; and

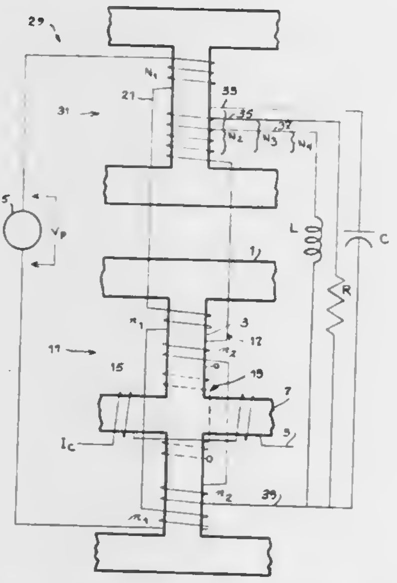
an auxiliary inverter connected to said auxiliary stator for supplying electric current thereto whereby an electric current is induced in said auxiliary rotor, said induced current flowing from said auxiliary rotor assembly to said main rotor assembly to produce a voltage for line-commutating said main inverter.



4,445,082
VARIABLE RATIO TRANSFORMER AND STATIC BALANCE COMPENSATOR

Gerald Roberge, Repentigny, and Léonard Bolduc, Ste-Julie, both of Canada, assignors to Hydro Quebec, Montreal, Canada

Filed Sep. 19, 1980, Ser. No. 188,619
Claims priority, application Canada, Sep. 19, 1979, 335971
Int. Cl.^{3} H01F *29/14*
U.S. Cl. 323—206 **8 Claims**



1. A variable ratio transformer comprising:

a conventional transformer including a primary winding of N_1 turns and a secondary winding of N_2 turns; and

a control transformer comprising:

a first closed magnetic circuit comprising a first ferromagnetic core through which an alternating current magnetic field circulates;

primary and secondary windings supported by said first ferromagnetic core, said primary winding having n_1 turns and said secondary winding having n_2 turns;

a second closed magnetic circuit commprising a second ferromagnetic core through which an adjustable direct current magnetic field circulates;

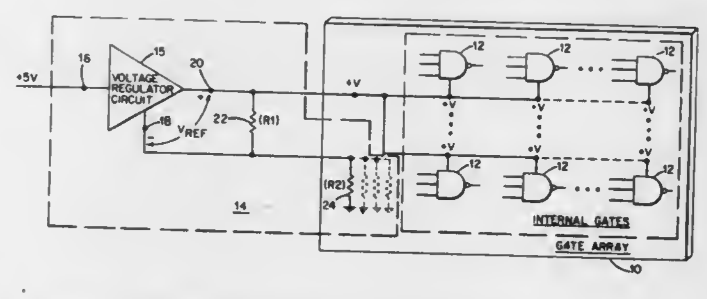
wherein said first and second magnetic circuits are located with respect to each other so as to define at least two common magnetic spaces in which the respective alternating and direct current magnetic fields are superposed orthogonally so as to orient the magnetic dipoles of said common spaces along a direction determined by the amplitude of said direct current magnetic field of the second circuit and for controlling the permeability of said first alternating magnetic circuit to said alternating field; and

wherein said primary winding of said control transformer is connected in series with said primary winding of said conventional transformer and said secondary winding of said control transformer is connected in series with the secondary winding of said conventional transformer, said primary and secondary windings of said conventional and control transformers being chosen such that the ratio (N_2/N_1) is different from the ratio (n_2/n_1), said primary and secondary windings forming together the primary and secondary windings of said variable ratio transformer, said ratio being controlled by said direct current forming said direct current magnetic field.

4,445,083
INTEGRATED CIRCUIT COMPENSATORY REGULATOR APPARATUS

John A. DeFalco, Marlboro, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Aug. 26, 1981, Ser. No. 296,382
Int. Cl.^{3} G05F *1/56;* H01L *27/02*
U.S. Cl. 323—273 **30 Claims**



1. Voltage control apparatus comprising:

a semiconductor chip containing a plurality of bipolar transistor transistor logic circuits arranged to form a gate array, each of said bipolar transistor transistor logic circuits connected to be powered by a low power supply voltage and propagate input signals within a predetermined time period;

voltage regulator circuit means for adjusting the value of an input voltage, said circuit means having an input terminal, an adjustment terminal, and an output terminal, said input terminal being connected to receive said input voltage and said output terminal being connected to apply said low power supply voltage to each of said bipolar transistor logic circuits;

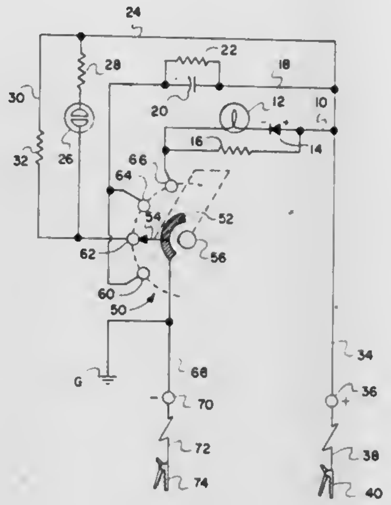
first resistive means being connected between said output and adjustment terminals of said regulator circuit means; and,

second resistive means being included on said chip, one end of said second resistive element being connected to a common reference potential of said chip and the other end of said second resistive means being connected to said adjustment terminal, said voltage regulator circuit means being operative in response to changes in the resistance of said second resistive means to adjust said supply voltage so as to maintain said predetermined time period at a constant value.

4,445,084
CIRCUIT TESTER

Hubert L. Washington, 2 Whitecroft Pl., Islington, Ontario, Canada

Filed Sep. 22, 1982, Ser. No. 421,153
Int. Cl.^{3} G01R *31/02, 13/42*
U.S. Cl. 324—51 **3 Claims**



1. A circuit tester for use in association with a circuit to be tested comprising;

a low tension test circuit;

a high tension test circuit, and,

a capacitor test circuit, each of said test circuits defining a positive side and a negative side;

each of one of said sides being electrically connected to define a first terminal of said circuit tester, the other said side of any selected one of said test circuits defining a second terminal;

first connection means releasably interengageable with the circuit to be tested and being connectable to one said terminal, and,

second connection means releasably interengageable with the circuit to be tested and being connectable to the other said terminal;

wherein said low tension test circuit includes a low tension lamp means, a diode means connected in series with said low tension lamp means and a first resistance means connected in parallel with said diode means and said low tension lamp means, said low tension test circuit being operable to indicate the polarity and the acceptability of the circuit to be tested according to the illumination of the said low tension lamp means;

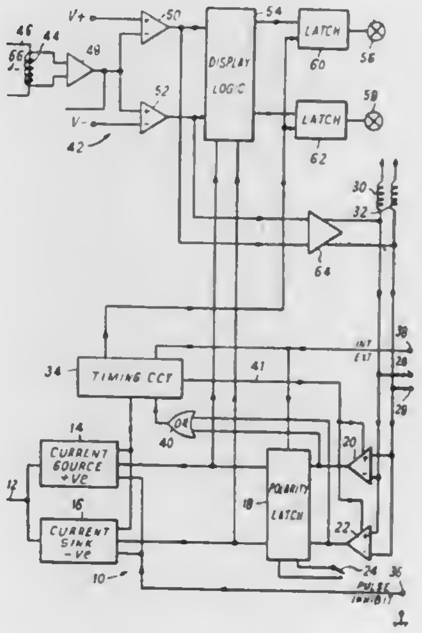
wherein said high tension test circuit includes a high tension lamp means responsive to high tension voltage across said high tension test circuit, a second resistance means connected in series with said high tension lamp means, and a third resistance means connected in parallel with said second resistance means and said high tension lamp means, said high tension test circuit being operable to indicate the acceptability of the circuit to be tested according to the illumination of the said high tension test means, and,

wherein said capacitor test circuit is operable to test a capacitor included in said circuit to be tested, said capacitor test circuit including a reference capacitor means and a fourth resistance means connected in parallel with said reference capacitor, said capacitor test circuit being operable by substitution of said reference capacitor for said capacitor to be tested and whereby the acceptability of the operation of the said circuit to be tested, having said reference capacitor substituted for said capacitor to be tested, indicates the acceptability of said capacitor to be tested.

4,445,085
FAULT LOCATION METHODS AND APPARATUS USING CURRENT PULSE INJECTION

Eric Metcalf, Ropley; Jack Woollven, Hawley; Stephen N. Spens, Farnham, and Brian L. A. Kett, Lower Parkstone, all of England, assignors to Membrain Limited, Wimborne, England

Division of Ser. No. 161,485, Jun. 20, 1980, Pat. No. 4,377,782. This application Dec. 14, 1982, Ser. No. 449,705
Claims priority, application United Kingdom, Jun. 23, 1979, 7921940
Int. Cl.^{3} G01R *31/08, 31/28*
U.S. Cl. 324—52 **8 Claims**



4. Apparatus for locating a fault in a powered electronic circuit, the apparatus comprising:

means arranged to apply to a conductor of said circuit a pulse of current of predetermined sense and having an approximately triangular waveform with a relatively steep leading edge and a relatively less steep trailing edge;

means arranged to sense magnetic field changes induced adjacent to said conductor by said leading edge of said pulse; and

means responsive to the sense of said magnetic field changes to produce a signal indicative of the direction of flow of said current pulse along said conductor, whereby to permit the determination of the direction of said fault relative to the point on said conductor at which said pulse is applied.

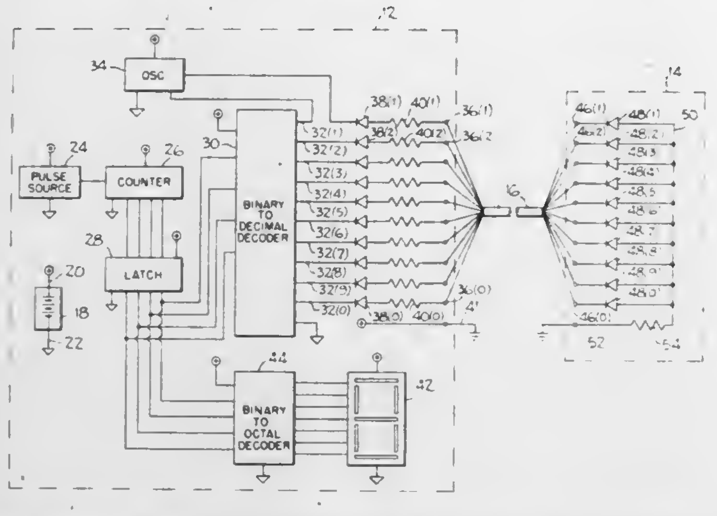
4,445,086
MULTICONDUCTOR CABLE TESTER

Jose G. Bulatao, Santa Clara, Calif., assignor to The Boeing Company, Seattle, Wash.

Filed Feb. 22, 1982, Ser. No. 350,426
Int. Cl.^{3} G01R *19/00*
U.S. Cl. 324—66 **10 Claims**

1. Apparatus for testing for shorts and continuity in a multiconductor cable having a first terminus and a second terminus remote from the first terminus comprising a transmitter having plural transmitter connectors for effecting individual connection of every conductor at said first terminus, a receiver having plural receiver connectors for effecting individual connection of every conductor at said second terminus, means for establishing a common path between said transmitter and said receiver independent of the cable, a power source disposed in said transmitter for providing power thereto, said power source being connected to said common path for providing power to said receiver, said transmitter having a signal source for producing a test signal and sequencer means for applying the test signal in a sequence to respective said transmitter connectors at a predetermined repetition rate, said signal

source including means for applying to a first transmitter connector a unique test signal different from the other test signals to afford identification of a conductor connected to said first transmitter connector, said receiver having a plurality of signal detectors for detecting said test signal and unique test signal, and means connecting each of said detectors to a respective one of said receiver connectors, said receiver having means for establishing a connection to said common path so as to be supplied with power from said power source in said transmitter thereby affording excitation of a detector associated with a receiver connector to which is connected a conductor having a test signal applied thereto by said transmitter, said detectors producing visually perceptible outputs and being disposed in said receiver in a spatial array to afford visual correlation with said receiver connectors and the conductors connected thereto.



4,445,087
PROCESS AND AN APPARATUS FOR MEASURING THE ANGULAR VELOCITY OF A ROTATING MEMBER

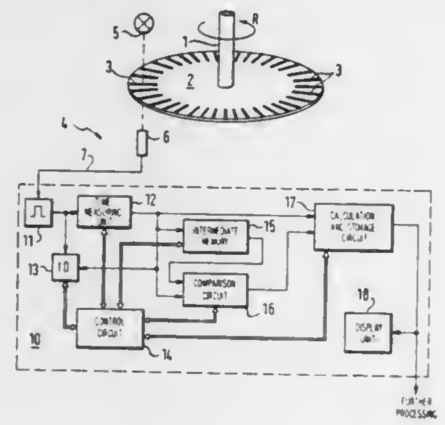
Walter Mehnert, Grillparzerstr. 6, D-8012 Ottobrunn, Fed. Rep. of Germany

Filed May 1, 1981, Ser. No. 259,554

Claims priority, application Fed. Rep. of Germany, May 14, 1980, 3018528

Int. Cl.^{3} G01P *3/36*

U.S. Cl. 324—175 **53 Claims**



1. A process for measuring the instantaeous angular velocity of a rotating member wherein the rotation of said member is translated into the relative rotation of a mark carrier, on which is disposed a scale having a plurality of marks spaced apart in the direction of rotation, and a sensing device, wherein the passing of said marks causes the emission of a series of signals each of which corresponds to one mark, comprising the steps of

(a) rotating said mark carrier with a constant known speed in at least one calibrating run during which at least one pair of marks is identified by means of their corresponding sensed signals, and the time distance between the sensed signals of said at least one pair of identified marks is measured, calculating from said time distance at said constant speed a calibration value corresponding to the absolute value of the angular distance between said at least one pair of identified marks, and thereafter storing said calibrating value,

(b) thereafter when said mark carrier rotates with an arbitrary speed measuring the instantaneous time distance of the sensed signals between said at least one pair of identified marks, and

(c) calculating the instantaneous angular velocity of said mark carrier by comparing the instantaneous time distance with the stored calibrating value.

4,445,088
METHOD AND ARRANGEMENT FOR EVALUATING A DEFECT SIGNAL BY COMPARING THE RATIO OF MAXIMUM SIGNAL RISE AND MAXIMUM SIGNAL MAGNITUDE TO A PREDETERMINED VALUE

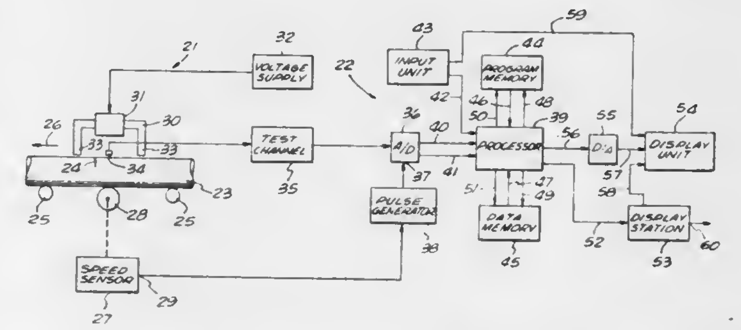
Winfried Schübel, Pliezhausen, Fed. Rep. of Germany, assignor to Institut Dr. Friedrich Förster Prüfgerätebau, In Laisen, Fed. Rep. of Germany

Filed Apr. 27, 1981, Ser. No. 257,763

Claims priority, application Fed. Rep. of Germany, May 10, 1980, 3017979

Int. Cl.^{3} G01N *27/82*

U.S. Cl. 324—238 **4 Claims**



4. An arrangement for determining the location of a defect in a test piece relative to the surface of the test piece in which a probe generates a signal responsive to stray field flux of the defect, comprising:

an analog-to-digital converter having input, output and control terminals having its input being connected to the defect signal voltage of the stray flux probe;

a pulse generator connected to the control input of the analog-to-digital converter to supply pulse signals for the generation of digital values at the output of the analog-to-digital converter as a function of the defect signal voltage; and

computer means connected to the output of the digital-to-analog converter for forming a ratio of the maximum defect signal rise with the maximum defect signal and comparing said ratio with a predetermined threshold value, said computer means having at least one storage means, input unit, and an output unit, said storage means serves to buffer and store instantaneous values of the defect signal voltage obtained prior to the time when the threshold value has been exceeded.

4,445,089
DETECTION OF SURFACE CRACKS NEAR A WORKPIECE FASTENER HOLE BY MEANS OF A ROTATABLE PROBE

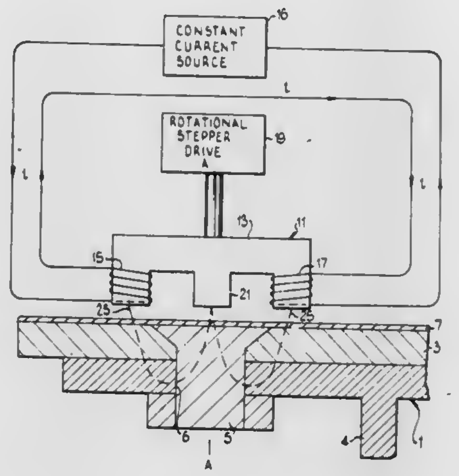
David J. Harrison, Farnham, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Continuation of Ser. No. 68,392, Aug. 21, 1979, abandoned. This application Mar. 2, 1982, Ser. No. 354,041

Claims priority, application United Kingdom, Aug. 21, 1978, 33980/78

Int. Cl.^{3} G01R *33/12;* G01N *27/82*

U.S. Cl. 324—238 **7 Claims**



1. Apparatus for the detection of cracks near the surface of a workpiece and adjacent to a fastener hole therein comprising:

a magnetic probe including a magnetic core having a coil mounted thereon, the core having two arms forming magnetic poles and a link portion between them, said coil being mounted on a first one of said arms, said arms and said link portion having a cross-sectional thickness perpendicular to its axis which is small compared to the spacing between said arms, whereby in operation with the surface of the workpiece adjacent to said poles a magnetic field extends between said poles and penetrates said workpiece, said magnetic field being concentrated in the region of both of said poles, the lateral spread of said magnetic field being restricted by the cross-sectional thickness of said arms and said line portion to a width which is small compared to the spacing between said poles;

a rotational stepping drive arrangement for rotating said probe in a stepwise manner about an axis of rotation substantially parallel to said arms and displaced from said first arm which axis may in use be made coincident with the axis of said fastener hole, whereby said first arm and said coil are rotationally stepped about said axis of rotation;

means for energizing said coil;

detection circuit means for generating at the end of each step of said stepped rotation a first signal representative of the energy of said magnetic field dissipated in said workpiece by detecting the energy supplied to said coil;

reference signal generator means for generating a second signal representative of the energy dissipated in the defect free regions of said workpiece;

comparator means for comparing said first and second signals and for providing a third signal representing any difference between said first and second signals;

an analog-to-digital converter for digitizing said third signal,

a digital store for storing said third signal in digital form while said probe is rotating; and

a display, having an input from said store, for displaying a graphical plot of the variation of said third signal with the rotational position of said probe.

4,445,090
VOLTAGE LEVEL MONITORING AND INDICATING APPARATUS

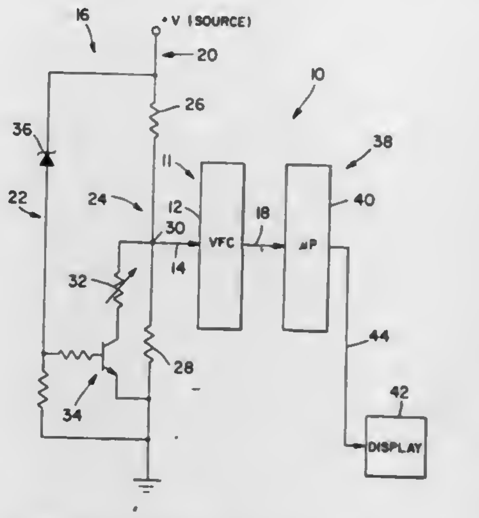
Grant C. Melocik, Chardon, Ohio, and Steven E. Blight, Peoria, Ill., assignors to Towmotor Corporation, Mentor, Ohio

PCT No. PCT/US81/01152, 371 Date Aug. 26, 1981, 102(e) Date Aug. 26, 1981, PCT Pub. No. WO83/00740, PCT Pub. Date Mar. 3, 1983

PCT Filed Aug. 26, 1981, Ser. No. 303,254

Int. Cl.^{3} G01N *27/46*

U.S. Cl. 324—433 **14 Claims**



10. Apparatus (10) for monitoring a voltage source, comprising:

means (20) for receiving a source voltage signal from said voltage source;

means (22) for automatically modifying said source voltage signal and forming a predetermined output voltage signal in response to said source voltage signal being either of a first and second predetermined magnitude;

means (11) for converting said output voltage signal to a frequency signal in response to receiving said output voltage signal;

means (38) for controllably delivering a respective one of a predetermined set of digital control signals in response to receiving said frequency signal; and,

means (42) for displaying predetermined data in response to receiving respective ones of said digital control signals.

4,445,091
METHOD FOR DETERMINING THE PH VALUE OF DEIONIZED WATER

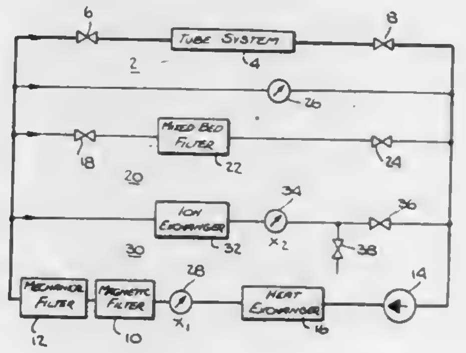
Walter Küsebauch, Erlangen, and Theodor Renner, Nuremberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 30, 1981, Ser. No. 279,201

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1980, 3027306

Int. Cl.^{3} G01N *27/56*

U.S. Cl. 324—438 **8 Claims**



2. A method for determining a pH of basic deionized water

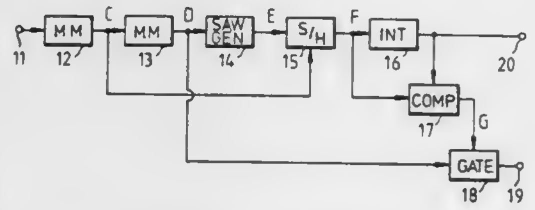
in a cooling water system for an electrical device comprising diverting a portion of the water through a cation exchanger loop in parallel with the system; measuring a first electric conductivity X_1 of the water before the exchanger; measuring a second electric conductivity X_2 of the water after the exchanger; determining the water temperature; obtaining a mean cation mobility l_k, a mean anion mobility l_a, a hydroxide ion mobility l_{OH}, a hydrogen ion mobility l_H and a water ionicity Kw at said temperature by reference to a standard table of ion mobilities in aqueous solution and a table of water ionicity as a function of temperature; and using a computing means to solve an equation for the pH, which equation is:

$$pH = -\log\left[\frac{(l_k + l_{OH})}{1000} K_w\right] + \log\left[X_1 - X_2\left(\frac{l_k + l_a}{l_a + l_H}\right)\right]$$

and produce the pH value.

4,445,092
PERIODIC PULSE FORMING CIRCUIT

Tadaaki Yoshinaka, Hadano, and Takashi Takayama, Sagamihara, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Sep. 21, 1981, Ser. No. 303,991
Claims priority, application Japan, Sep. 30, 1980, 55-136849
Int. Cl.^{3} H03K *5/08, 5/00*
U.S. Cl. 328—139 **13 Claims**

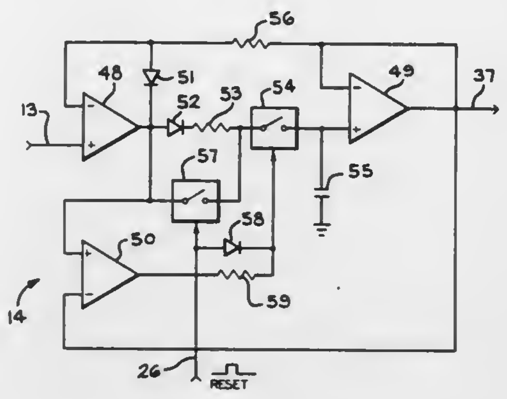


1. A circuit for separating periodic pulses from a series of pulses, comprising: means for generating a first signal having successive portions each of which has an amplitude corresponding to a respective time interval between successive pulses of said series of pulses; means for sampling said first signal at times corresponding to the occurrence of each of said successive pulses and producing a sampled signal therefrom; means for producing an average amplitude signal from said sampled signal, averaged over a selected period of time; comparing means for comparing said average amplitude signal with at least one reference level and for producing a gate signal having a state which is determined by the amplitude of said average amplitude signal in relation to said at least one reference level; and means for gating said series of pulses by said gate signal so as to separate said periodic pulses therefrom.

4,445,093
PRESS CYCLE MONITOR

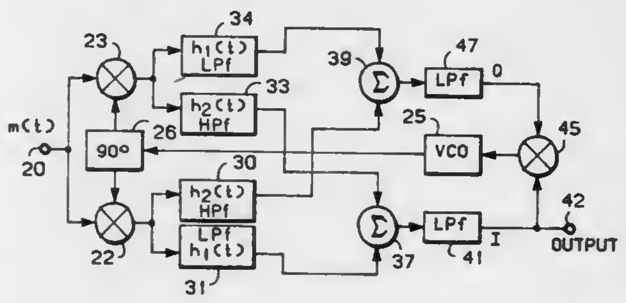
Robert D. Kohler, Temperance, Mich., assignor to Toledo Transducers, Inc., Toledo, Ohio
Continuation of Ser. No. 79,048, Sep. 26, 1979, abandoned. This application Sep. 14, 1981, Ser. No. 302,147
Int. Cl.^{3} H03K *5/153*
U.S. Cl. 328—151 **12 Claims**

1. A cycle monitor for measuring the peak force exerted by a machine in each of a series of operating cycles comprising means for generating a first analog signal having a magnitude proportional to the force exerted by the machine, resettable peak detector means responsive to such first signal for establishing a second signal having a magnitude proportional to the highest magnitude of such first signal occurring after said peak detector means is reset, the highest magnitude of such second signal being a measure of the peak force exerted by the machine in an operating cycle, means for detecting when such first signal initially exceeds a predetermined low threshold level in each machine operating cycle, and means responsive to said detecting means for resetting said peak detector means to establish such second signal at a low magnitude in preparation for establishing a new peak second signal for the current machine cycle.



4,445,094
SMSK AND MSK DEMODULATOR

Carl R. Ryan, Gilbert, Ariz., assignor to Motorola Inc., Schaumburg, Ill.
Filed May 29, 1981, Ser. No. 268,412
Int. Cl.^{3} H04L *27/14*
U.S. Cl. 329—50 **8 Claims**



1. A demodulation system for demodulating input minimum-shift keyed and serial minimum-shift keyed signals comprising:

(a) a variable reference oscillator having an output with a reference signal thereon offset from an apparent carrier of the input signals and a control input for controlling the frequency of the reference signal;

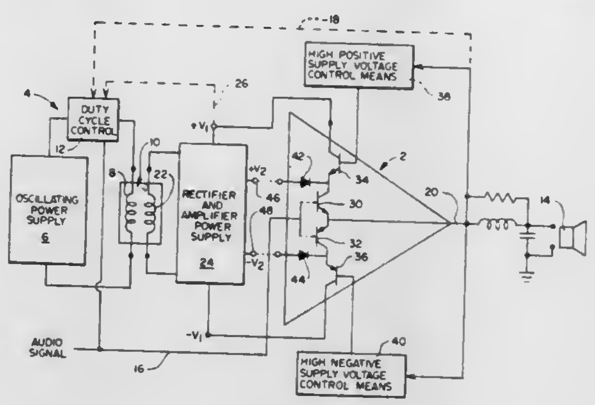
(b) in-phase and quadrature demodulators connected to receive input signals and quadrature reference signals from said reference oscillator, said demodulators providing outputs in in-phase and quadrature arms of the system;

(c) in-phase filtering means quadrature filtering means in the in-phase and quadrature arms providing a demodulated frequency spectrum, each filtering means including high-pass circuits for providing a predetermined frequency response for the low side of the demodulated spectrum and low pass circuits for providing noise rejection for the high side of the demodulated spectrum; and

(d) combining means having first and second inputs coupled to the in-phase and quadrature filtering means and an output coupled to the control input of said variable reference oscillator, said combining means combining the output signals of the filtering means to produce a control signal for controlling said variable reference oscillator so that the output signal of the quadrature filtering means is substantially zero.

4,445,095
AUDIO AMPLIFIER

Robert W. Carver, P.O. Box 664, Woodinville, Wash. 98072
Continuation of Ser. No. 151,365, May 19, 1980, abandoned. This application Feb. 12, 1982, Ser. No. 348,283
Int. Cl.^{3} H03F *3/04;* H02M *7/00*
U.S. Cl. 330—297 **29 Claims**


18
HIGH POSITIVE SUPPLY VOLTAGE CONTROL MEANS
38
26
4
DUTY CYCLE CONTROL
+V1
12
10
8
22
OSCILLATING POWER SUPPLY
6
RECTIFIER AND AMPLIFIER POWER SUPPLY
24
+V2
42
34
2
46
48
30
20
14
32
36
-V2
44
-V1
AUDIO SIGNAL
16
40
HIGH NEGATIVE SUPPLY VOLTAGE CONTROL MEANS

1. An amplifying apparatus comprising:

a. power input terminal means adapted to be connected to a source of current,

b. a transformer with primary and secondary windings, said primary winding being connected to said power input means,

c. first switch means interconnected with said primary winding and said power input terminal means to cause current pulses from said power input terminal means to said primary winding,

d. circuit bypass means connected in parallel with said first switch means, said circuit bypass means comprising second switch means and capacitor means connected in series with one another,

e. an oscillating circuit means operatively connected to said first switch means to cause an oscillation in current pulses flowing through said first switch means,

f. amplifying means operatively connected to the secondary winding of the transformer so as to draw current therefrom,

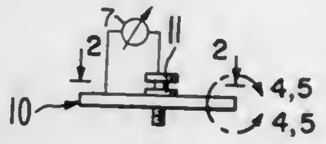
g. control means operatively connected to the first and second switch means in a manner to cause the first switch means to become conductive at successive periods of time to initiate successive current pulses through said first switch means and through said primary winding, and subsequently to cause said second switch means to be conductive at a time of lower current magnitude of oscillation in said current pulses to cause current through the primary winding to flow through the current bypass means and to cause said first switch means to be non-conductive, said control means causing said first switch means to be conductive in a manner to provide lower power pulses for lower power requirements of the amplifying means, and to become conductive in a manner to provide higher power pulses for higher power requirements of the amplifying means.

4,445,096
THERMALLY STABILIZED IMPATT OSCILLATOR

Kang W. Lee, San Jose, and Allen F. Podell, Palo Alto, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.
Continuation of Ser. No. 145,085, Apr. 30, 1980, abandoned. This application Feb. 22, 1983, Ser. No. 468,095
Int. Cl.^{3} H03B *9/14*
U.S. Cl. 331—107 DP **6 Claims**

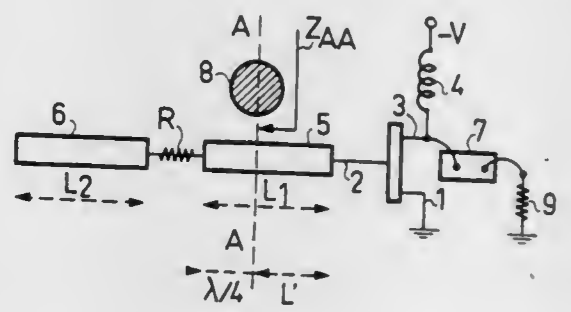
1. In an IMPATT oscillator which is temperature stabilized for pulsed operation by causing a heating current to flow across the junction of the IMPATT diode during interpulse periods when said IMPATT oscillator is not oscillating, the improvement comprising:

a modulator electrically connected to said IMPATT diode, said modulator impressing an operating voltage across the junction of said IMPATT diode during oscillating subperiods and impressing a constant bias voltage across the junction of said IMPATT diode during said interpulse periods when said IMPATT diode is not oscillating to thereby cause a variable heating current to flow during said interpulse periods, said heating current bearing an inverse relationship with the instantaneous temperature of the junction.



4,445,097
MICROSTRIP TRANSISTOR OSCILLATOR WITH DIELECTRIC RESONATOR STABILIZATION

Jean-Jacques Godart, and Bernard Le Clerc, both of Paris, France, assignors to Thomson-CSF, Paris, France
Filed Sep. 14, 1981, Ser. No. 302,123
Claims priority, application France, Sep. 16, 1980, 80 19917
Int. Cl.^{3} H03B *7/14*
U.S. Cl. 331—117 D **6 Claims**



1. A field effect transistor oscillator designed to operate at a predetermined frequency, comprising a field effect transistor whose gate is connected to a first microstrip line of given characteristic impedance and of length at least equal to one quarter wavelength of said frequency, said first line being coupled in the vicinity of a predetermined point along said first line to a dielectric resonator tuned to said frequency, the end of said first line opposite to the transistor being connected via an ohmic resistance equal to the characteristic impedance of said first line to a resonant circuit comprising a second microstrip line providing an infinite reactive impedance at said frequency when viewed from said resistance, the drain and source of said field effect transistor being decoupled from the resonator.

4,445,098
METHOD AND APPARATUS FOR FAST-SWITCHING DUAL-TOROID MICROWAVE PHASE SHIFTER

Thomas E. Sharon, Decatur, and Roger G. Roberts, Auburn, both of Ga., assignors to Electromagnetic Sciences, Inc., Norcross, Ga.
Filed Feb. 19, 1982, Ser. No. 350,418
Int. Cl.^{3} H01P *1/397, 1/11, 1/195*
U.S. Cl. 333—1.1 **79 Claims**

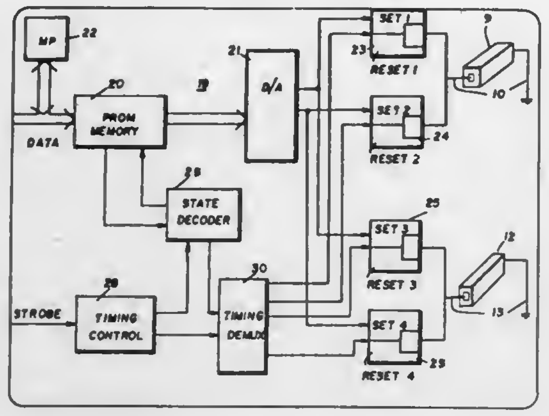
1. A fast-switching, dual toroid microwave phase shifter, comprising:

first and second toroids having ferrite cores and disposed in a microwave waveguide;

first means for controllably switching the ferrite in one of the toroids between a saturated state and a partially saturated state;

second means for controllably switching the ferrite in the other of said toroids between a saturated state and a partially saturated state; and

control means for controlling said first and said second means such that the ferrite in at least one of said toroids is maintained in the saturated state at any given time such



that any desired phase shift may be achieved with only one switching operation for each toroid.

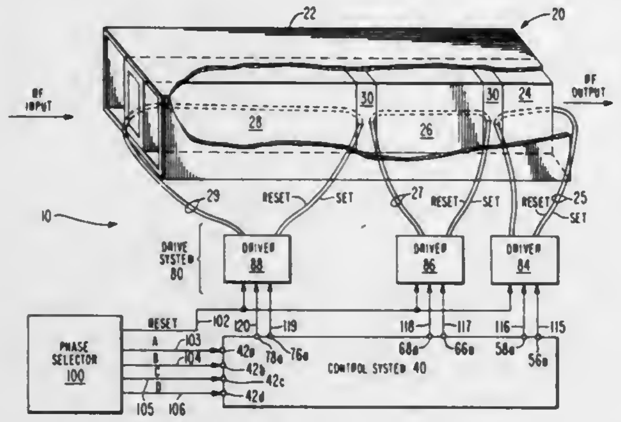
4,445,099
DIGITAL GYROMAGNETIC PHASE SHIFTER

Earl Dixon, Voorhees, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 20, 1981, Ser. No. 323,470

Int. Cl.^{3} H01P ***1/195***

U.S. Cl. 333—24.1 **7 Claims**



6. In a gyromagnetic phase shifter having N phase shifting elements, the improvement comprising:

means responsive to N+1 bit phase selection commands and providing N outputs each associated with one of said N elements for controlling the setting of that element to one of three different states, a zero phase shift state, a maximum phase shift state and an intermediate phase shift state whereby the resolution of said phase shifter is increased.

4,445,100
COUPLING BLOCK ASSEMBLY WITH BAND-REJECT FILTER

Frank Decker, Mountain Top, Pa., assignor to Electronics, Missiles & Communications, Inc., White Haven, Pa.

Filed Jan. 28, 1982, Ser. No. 343,544

Int. Cl.^{3} H01P ***1/202, 7/04, 5/04***

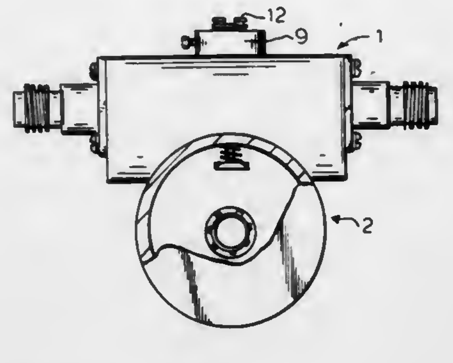
U.S. Cl. 333—207 **3 Claims**

1. A band-reject filter comprising:

a co-axial line assembly with a first connecting means, a second connecting means and an outer and an inner conductor, extending between said first and second connecting means, said inner conductor having a coupling hole; and said outer connector having an outer concave cavity

a co-axial resonator having a cylindrical shape, and disposed within said outer concave cavity said co-axial resonator having a resonator rod along its axis, said resonator rod having a length and an inductance wherein said inductance depends on the length of the resonator rod;

a coupling rod passing thru the coupling hole and having a first end which partially extends into the co-axial resonator to the vicinity of and perpendicular to the resonator rod; and



a coupling disc affixed to said first end of said coupling rod so that the coupling disc and the resonator rod define a capacitance.

4,445,101
DEFLECTING YOKE ASSEMBLY FOR MAKING A TRAPEZOIDAL RASTER

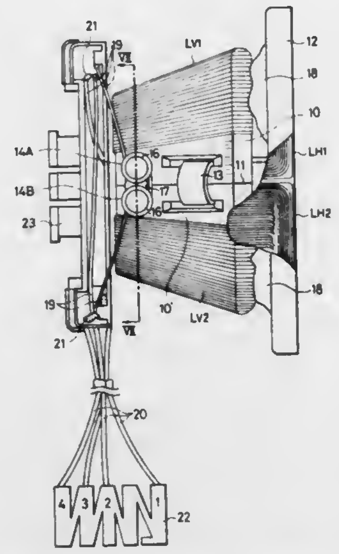
Toshio Kobayashi, Noda, and Hideo Hishiki, Iwai, both of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Jul. 19, 1982, Ser. No. 399,697

Claims priority, application Japan, Jul. 21, 1981, 56-108351[U]

Int. Cl.^{3} H01F ***7/00***

U.S. Cl. 335—210 **9 Claims**



1. A deflecting yoke assembly for making a trapezoidal raster, comprising:

(a) a deflecting yoke having a pair of vertical deflecting coils and a pair of horizontal deflecting coils; and

(b) a pair of saturable reactors each having a core positioned so that leakage flux from said vertical deflecting coils is applied thereinto, means for magnetically biasing said core in a predetermined direction, and at least one coil wound around said core, the coils of said pair of saturable reactors being connected in series such that their winding directions are opposite to each other, the series connected coils of said saturable reactors being connected in series with said pair of horizontal deflecting coils so that the horizontal deflecting current flowing through the pair of horizontal deflecting coils is modulated by a change in inductance of said saturable reactors in response to vertical deflecting current flowing through said vertical deflecting coils.

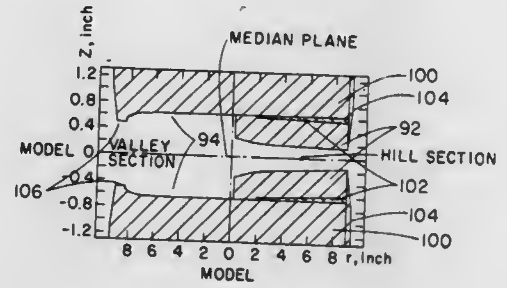
4,445,102
MAGNET POLE TIPS

Craig E. Thorn, Wading River; Chellis Chasman, Setauket, and Anthony J. Baltz, Coram, all of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 19, 1981, Ser. No. 323,150

Int. Cl.^{3} H01F ***3/00***

U.S. Cl. 335—297 **10 Claims**



1. A magnet having reduced fringing and improved stability comprising a pair of spaced, opposed, magnetic poles, said poles being symmetrical about the mid-plane of the gap between them, each of said poles further comprising a pole root formed from a low reluctance material and a pole tip also formed from a low reluctance material, said pole tips being attached to the central portion of said pole roots, whereby said pole tips define the gap between said poles and at least one portion of said pole tips being separated from said pole roots, said separation beginning at a predetermined distance from the center of said pole and the amount of said separation being an increasing function of radial distance and independent of azimuth within said portion.

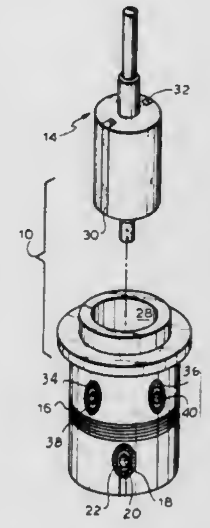
4,445,103
ROTARY DIFFERENTIAL TRANSFORMER WITH CONSTANT AMPLITUDE AND VARIABLE PHASE OUTPUT

Jacob Chass, Rego Park, N.Y., assignor to Pickering & Company, Inc., Plainview, N.Y.

Filed Aug. 10, 1983, Ser. No. 522,050

Int. Cl.^{3} H01F ***21/06***

U.S. Cl. 336—135 **8 Claims**



1. A differential transformer comprising:

(a) a cylindrical bobbin;

(b) a transformer secondary winding comprising a coil extending circumferentially about a segment of said bobbin;

(c) a non-magnetic rotor disposed within and coaxial with said bobbin;

(d) first and second magnet pole pieces extending along radii of said bobbin cylinder;

(e) transformer first and second primary windings disposed respective about said pole pieces;

(f) first and second magnetic core segments of said rotor, each of said core segments being disposed to couple a portion of one of said primary windings to said secondary winding whereby when said primary windings are excited by AC voltage sources 90° out of phase with each other the phase of the secondary winding output voltage will vary with the angular displacement of said rotor.

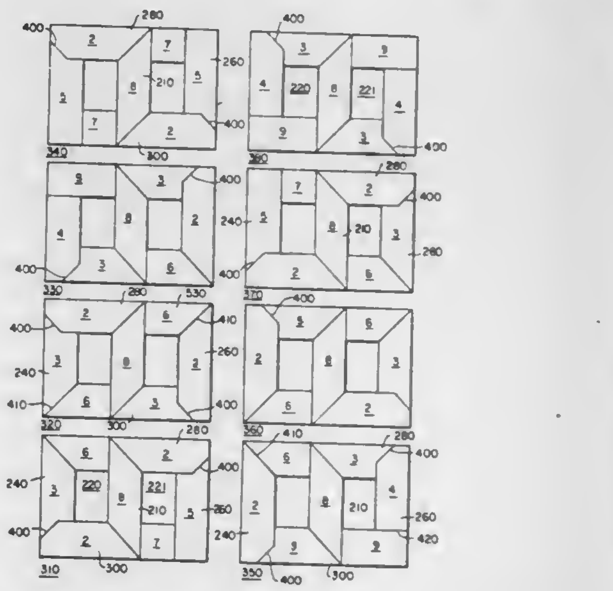
4,445,104
COMPACT STEP-LAP MAGNETIC CORE

Kou C. Lin, Hermitage, and Charles E. Burkhardt, Sharon, both of Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Dec. 3, 1980, Ser. No. 212,581

Int. Cl.^{3} H01F ***27/24, 41/02***

U.S. Cl. 336—217 **38 Claims**



1. A stacked magnetic core comprising:

a plurality of layers of laminations formed from a magnetic strip material, each of said layers including at least two side leg and two yoke laminations assembled around a core window forming four outer corners, each of said side leg and yoke laminations having a half of one end thereof sheared diagonally with respect to the longitudinal dimension of said strip material with the other half of said one end sheared substantially perpendicular to said longitudinal dimension, the adjoining ends of said side leg and yoke laminations in each of said layers being substantially aligned to form joints therebetween wherein said one end of said side leg and yoke laminations form half straight and half diagonal joints, the corresponding ends of successive layers of said side leg and yoke laminations arranged in step relation to one another about the outer corners of said core, the ends of said side leg and yoke laminations in one layer overlapping the ends of said side leg and yoke laminations in the next adjacent layer to present a step-lap joint joining the ends of said side leg and yoke laminations.

4,445,105
THERMOSTAT

Glenn E. Wehl, North Canton, Ohio, assignor to Portage Electric Products, Inc., North Canton, Ohio

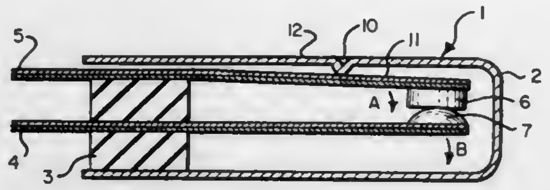
Filed Jun. 28, 1982, Ser. No. 392,527

Int. Cl.^{3} H01H ***61/08***

U.S. Cl. 337—94 **7 Claims**

1. In a thermostatic device having a casing with an open end, a first bimetallic arm cantilever supported by an insulating member mounted in said open end of said casing, said first bimetallic arm having, at the end opposite the insulating member a first movable contact, and a second bimetallic arm supported by said insulating member and having, at the end opposite the insulating member a second movable contact, said first bimetallic arm and said second bimetallic arm being so formed as to provide, at appropriate temperatures, for electrical and

mechanical contact between said movable contact members, the improvement which comprises biasing said second bimetallic arm toward a wall of said casing, and providing on the inner portion of said casing, intermediate the insulating member and the second movable contact, a fulcrum bearing against said second bimetallic arm, said second bimetallic arm being biased away from said first bimetallic arm.



4,445,106

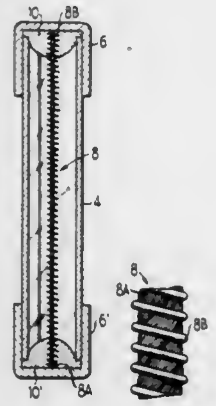
SPIRAL WOUND FUSE BODIES

Nitin Shah, Taylor, Mich., assignor to Littelfuse, Inc., Des Plaines, Ill.

Filed Oct. 7, 1980, Ser. No. 194,778

Int. Cl.^{3} H01H *85/04*

U.S. Cl. 337—163 **4 Claims**



1. A slow blowing fuse body comprising a limp spiral wound core of insulating material around which is spirally wound a conductive fuse wire, said core of insulating material being an initially limp and substantially dead yarn made of twisted together strands of insulating filaments substantially devoid of any sizing or other filament binding mateial which will form a conductive path under fuse blowing conditions.

4,445,107

THERMOSTATIC SWITCH FOR ELECTRICALLY HEATED DEVICES

Walter Hollweck, Nuremberg, Fed. Rep. of Germany, assignor to Inter Control Hermann Köhler Elektrik GmbH & Co. KG, Nuremberg, Fed. Rep. of Germany

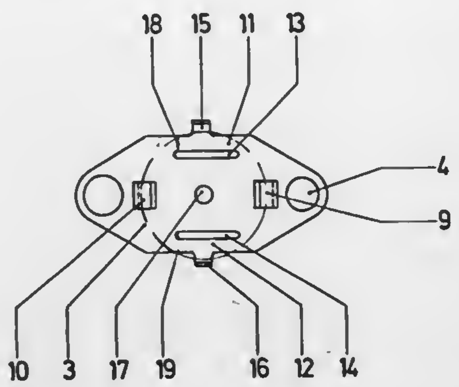
Filed Jul. 14, 1982, Ser. No. 398,245

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1981, 3127852

Int. Cl.^{3} H01H *37/74*

U.S. Cl. 337—343 **1 Claim**

1. A thermostatic switch for controlling an electrically heated device, comprising: an insulating body carrying a countercontact; a bimetal disc; and a contact spring having a first end secured to said body, a second end which is movable relative to said first end and which carries a contact located to cooperate with said countercontact, means mounting said bimetal disc for controlling the movement of said contact as a function of temperature, said contact spring presenting longitudinal edges extending between said ends, and closed slits adjacent said longitudinal edges; wherein said mounting means comprise angled extension portions extending from said longitudinal edges of said spring for restraining movement of said disc in the direction transverse to said edges and L-shaped holding portions projecting from said spring, spaced apart in the longitudinal direction of said spring, and having free edges directed toward one another, said holding portions being arranged to retain the ends of said disc.



4,445,108

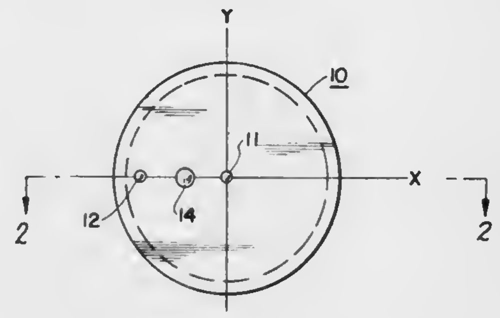
PIEZORESISTIVE TRANSDUCERS EMPLOYING THE SPREADING RESISTANCE EFFECT

Joseph R. Mallon, Franklin Lakes; Anthony D. Kurtz, Englewood, and Timothy A. Nunn, Ridgewood, all of N.J., assignors to Kulite Semiconductor Products, Inc., Ridgefield, N.J.

Filed Sep. 28, 1982, Ser. No. 425,244

Int. Cl.^{3} G01L *1/22*

U.S. Cl. 338—4 **12 Claims**



1. A spreading resistance piezoresistive transducer comprising:

a planar semiconductor diaphragm member having disposed on a surface thereof at least two contact areas adapted to receive a biasing potential to cause current flow between said first contact and said second contact with the current flow being primarily limited by spreading resistance of the first contact with the magnitude of said resistance varying according to the value of a force applied to said semiconductor member, with one contact having a substantially greater area than said other contact and with both contacts being of a substantially smaller area than the area of said planar diaphragm.

4,445,109

TEMPERATURE SENSING DEVICE

Masanori Naganoma; Norio Maehara, both of Kariya; Masao Sakurai, Oobu; Minoru Hashimoto, Kariya, and Kiyoshi Usami, Oobu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 4, 1982, Ser. No. 345,796

Claims priority, application Japan, Feb. 11, 1981, 56-18368[U]

Int. Cl.^{3} H01C *7/10*

U.S. Cl. 338—22 R **2 Claims**

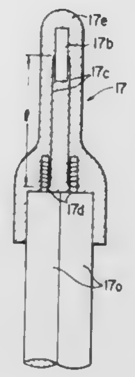
1. A temperature sensing device, comprising:

a temperature sensing part including a microchip thermistor in the form of a very small thin piece having a volume not greater than 2 mm^3;

first lead wires formed by fine wires of a diameter not greater than 0.5 mm and having one end of each thereof connected to said microchip thermistor in said temperature sensing part;

second lead wires having ends thereof connected respectively to the other ends of said first lead wires, thereby connecting said temperature sensing part to an external electric circuit; and

an integral coating of resin applied in part to said microchip thermistor, said fine lead wires and said external circuit connection lead wires.



4,445,110

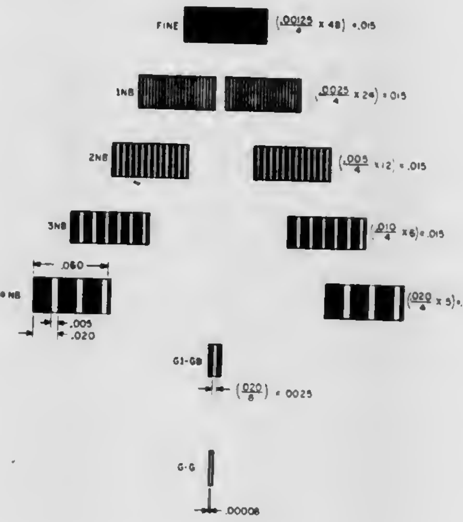
ABSOLUTE OPTICAL ENCODER SYSTEM

Donald H. Breslow, Framingham, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Jul. 28, 1980, Ser. No. 173,219

Int. Cl.^{3} H03K *13/18*

U.S. Cl. 340—347 P **1 Claim**



1. An optical angular encoder system including a code disc having a plurality of concentric optical code tracks thereon, illuminating means for illuminating the code tracks, detecting means for detecting illumination which passes through the code tracks and decoding circuitry for providing an angular output in response to the output of the detecting means, the system characterized by:

the code tracks comprising a fine code track, at least one more significant track encoded for a natural binary output, and at least two most significant coarse tracks encoded for Gray code output;

a plurality of illuminators associated with respective groups of code tracks, each illuminator being optically isolated from those code tracks with which it is not associated;

means for sequentially enabling at least some of the illuminators to optically multiplex code track signals, common detector outputs associated with groups of multiplexed code tracks, and decoder circuitry for demultiplexing the common detector outputs;

multiplier circuitry for providing a multi-bit digital output from sinusoidal outputs of the fine track by deriving a family of phase shifted sinusoids in parallel circuits, converting the family of sinusoids to square waves and logically combining the square waves from parallel circuits, the multiplier circuitry being designed to provide a multibit digital output directly from the sinusoidal detector outputs only through one of a plurality of segments of the fine track cycle, there being means for selectively modifying the sinusoidal inputs to the multiplier circuitry such that those inputs are identical though each of said segments of the fine track cycle:

the detecting means associated with the more significant tracks including at least a lead detector and a lag detector, the locations of which are phased with respect to signals from said fine track, and which generate signals which, respectively, lead and lag the signal of the next lower order track, and the decoding circuitry associated with those tracks including means to select either the lead or the lag detector output as a function of the logic state of the next lower order track signal to synchronize each track to the preceding track; and

the decoding circuitry associated with the most significant Gray code tracks including means to synchronize those tracks to the natural binary tracks.

4,445,111

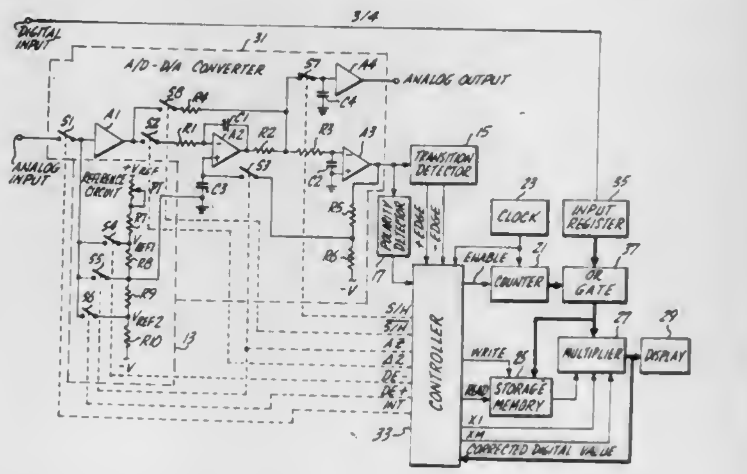
BI-POLAR ELECTRONIC SIGNAL CONVERTERS WITH SINGLE POLARITY ACCURATE REFERENCE SOURCE

Steven D. Swift; Jonathan J. Parle, both of Seattle, and David A. Gunderson, Everett, all of Wash., assignors to John Fluke Mfg. Co., Inc., Everett, Wash.

Filed Sep. 15, 1980, Ser. No. 187,442

Int. Cl.^{3} H03K *13/02*

U.S. Cl. 340—347 CC **7 Claims**



1. In a bi-polar electronic conversion system including reference sources of opposite polarity for use in converting electronic signals from one form to another form, the improvement comprising:

(a) an accurate reference source of one polarity;

(b) an inaccurate reference source of polarity opposite to the polarity of said accurate reference source; and,

(c) electronic means for:

(1) comparing said accurate and said inaccurate reference sources to determine the inaccuracy of said inaccurate reference source; and,

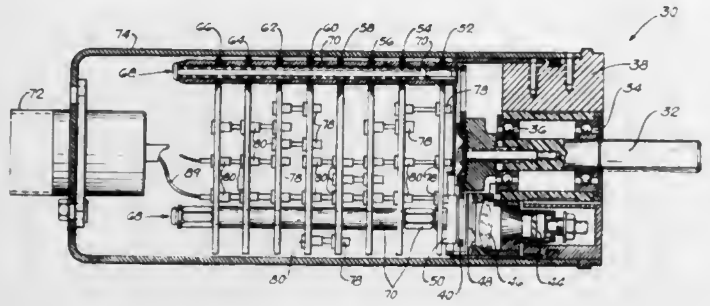
(2) using the results of said comparison to correct electronic signals, converted from one form to another form using said inaccurate reference source, during the conversion of said electronic signals from said one form to said other form.

4,445,112

POSITIONAL ENCODERS WITH PLUG-TOGETHER MODULES

George D. Haville, Santa Barbara, Calif., assignor to BEI Electronics, Inc., San Francisco, Calif.

Filed Dec. 12, 1980, Ser. No. 216,069
Int. Cl.^{3} G08C *9/06*
U.S. Cl. 340—347 P **7 Claims**



1. An optical encoder, comprising
a housing,
light source means in said housing,
an optical code member movably mounted in said housing and having a multiplicity of tracks for modulating the light from said light source means,
multitrack photocell means for receiving the modulated light from said code member,
said photocell means having a multiplicity of signal channels for supplying a multiplicity of electrical signals indicating the movement of said code member,
at least first and second circuit boards mounted on said housing in successively stacked relation,
said circuit boards including processing means for processing the signals from said photocell means,
and a multiplicity of sockets and pins mounted on said boards and plugged into one another for establishing electrical connections between the successive boards,
each of said boards having a multiplicity of matching positions for selectively receiving said sockets and pins,
said boards having a common connection group comprising a plurality of said positions for receiving sockets and pins for establishing certain electrical connections extending in common to all of said stacked boards,
said common connection group including electrical connections for supplying electrical power to said stacked boards,
said boards including at least first and second signal channel groups of said positions for receiving sockets and pins for transmitting the multiplicity of electrical signals of the signal channels between successive boards,
said circuit boards including certain of said circuit boards including input connections to said processing means thereon afforded by mated sockets and pins in positions of one of said first and second signal channel groups and including additional mated sockets and pins in positions of the other of said first and second signal channel groups affording output connections from said last mentioned processing means whereby said first and second signal channel groups are employed alternately.

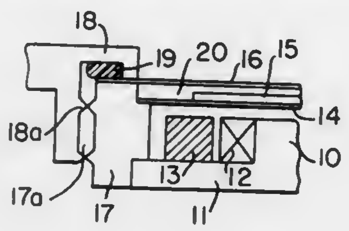
4,445,113

SMALL TYPE ACOUSTIC DEVICE

Shigeo Mori; Fumikazu Murakami; Yoshiaki Hara; Ichiro Horikoshi, and Susumu Fujita, all of Tokyo, Japan, assignors to Seiko Instruments & Electronics Ltd., Tokyo, Japan

Continuation of Ser. No. 191,409, Sep. 29, 1980, abandoned, which is a continuation of Ser. No. 973,955, Dec. 28, 1978, abandoned. This application Oct. 15, 1981, Ser. No. 311,559
Claims priority, application Japan, Dec. 30, 1977, 52-160385
Int. Cl.^{3} G08B *3/00*
U.S. Cl. 340—384 R **8 Claims**

1. In a small type acoustic device having a housing, a first vibrating plate electrically actuatable as a vibrating element of a sound generator, and driving means for electrically actuating the first vibrating plate at a selected driving frequency, the improvement comprising: a second vibrating plate; means mounting the second vibrating plate on the housing including water-proofing means disposed between the housing and one surface of the second vibrating plate to form an airtight chamber with said one surface of the second vibrating plate exposed to the atmosphere; and means mounting the first vibrating plate in the airtight chamber to form a first air chamber between the two vibrating plates and a second air chamber including therein a portion of said driving means; and wherein the selected driving frequency of the driving means is substantially equal to the resonant frequency of the first vibrating plate, whereby the sound pressure of the acoustic device is independent of temperature change.

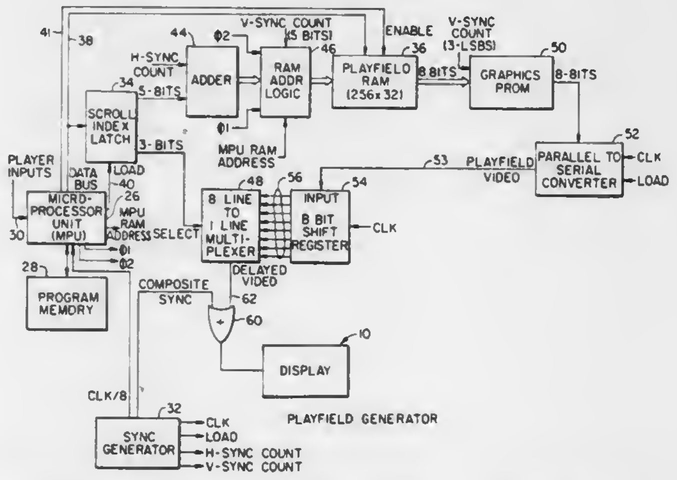


4,445,114

APPARATUS FOR SCROLLING A VIDEO DISPLAY

David R. Stubben, Milpitas, Calif., assignor to Atari, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 3,447, Jan. 15, 1979. This application Oct. 3, 1980, Ser. No. 193,699
Int. Cl.^{3} G09G *1/16*
U.S. Cl. 340—726 **19 Claims**



1. Apparatus for controlling the display of symbols on a raster type display comprising:
timing means for generating timing signals;
means for providing an index command indicative of a desired offset in the positioning of said symbols on said raster-type display;
first memory means for storing graphics data representative of said symbols to be displayed and communicating selected elements of the graphics data to said display in response to received address data;
second memory means for storing addresses corresponding to said symbols, and for communicating to the first memory means a selected sequence of said addresses, said sequence selected in response to an offset address;
address means for deriving the offset address from the timing signals and an offset determined by a first portion of the index command and for communicating the offset address to the second memory means; and
delay means coupled to the address means for receiving a second portion of the index command to selectively delay communication of the graphics data in the first memory means to said display in response to the second portion of the index command

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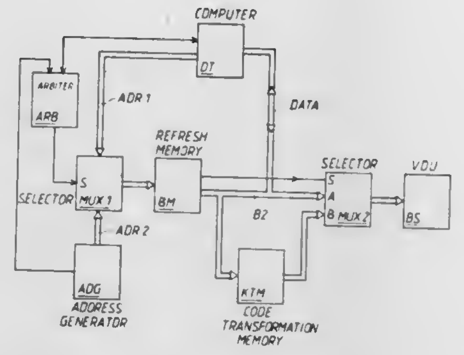
4,445,115

DISPLAY CONTROL UNIT HAVING MEANS FOR SYMBOLIC REPRESENTATION OF GRAPHICAL SYMBOLS

Ingemar Rudgard, Västeras, Sweden, assignor to ASEA Aktiebolag, Västeras, Sweden

Filed Sep. 11, 1981, Ser. No. 301,256
Claims priority, application Sweden, Sep. 29, 1980, 8006799
Int. Cl.^{3} G09G *1/16*
U.S. Cl. 340—745 **3 Claims**



1. A control unit for a display member which presents information in the form of a dot pattern, the information comprising predetermined symbols and being divided into modules, each of which consists of a dot matrix, the control unit comprising:
a refresh memory, each address of which corresponds to a module and where each address contains either the dot matrix of a module or a symbol code and control information which indicates if the contents at any particular address is the dot matrix of a module or a symbol code,
a code transformation memory connected to be supplied with the information read out from the refresh memory and to translate each symbol code into a respective dot matrix, and
a selector connected to be supplied with the information read out from the refresh memory and the code transformation memory and in response to said control information to select and forward to the display member the dot matrix from the refresh memory if the control information indicates that the read-out word contains a dot matrix, and the dot matrix from the code transformation memory, if the control information indicates that the read-out word is a symbol code.

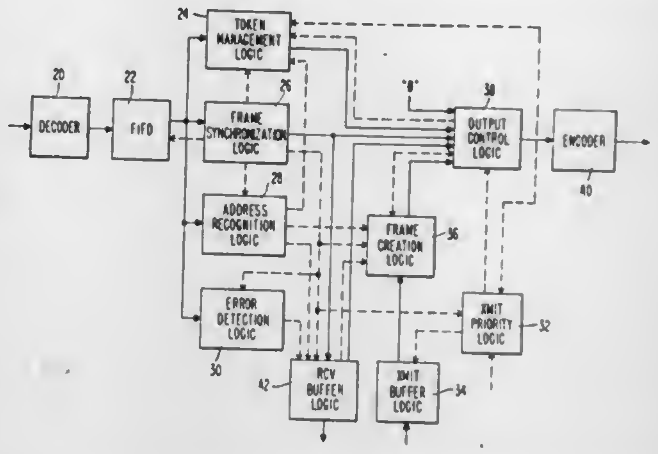
4,445,116

METHOD FOR ALLOCATING BANDWIDTH BETWEEN STATIONS IN A LOCAL AREA NETWORK

Robert M. Grow, Newtown, Conn., assignor to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 355,021, Mar. 5, 1982, Pat. No. 4,404,557. This application Sep. 3, 1982, Ser. No. 414,783
Int. Cl.^{3} H04Q *9/00*
U.S. Cl. 340—825.05 **23 Claims**

1. A method of allocating bandwidth in a loop communications network, said network including a loop-connected set of stations providing data flow unidirectionally from one of said stations to the next, each of said stations being capable of passing data through itself along the loop, extracting data from the loop or injecting data into the loop, each of said stations having associated with it at least one identifier address, each of said stations being assigned a Class 1 priority, a Class 2 priority, or both of said Class 1 and Class 2 priorities, the right of each of said stations to source new data into the network controlled by passing a write token from one of said stations to another, said method comprising the steps of:
allocating to the set of stations including all of said Class 1 priority stations a first portion (ALLOC) of the bandwidth available on said loop; and
reserving for each one of said Class 1 stations that desires to reserve bandwidth for itself a portion of the first portion (ALLOC) of bandwidth, the reservation of portions of the first portion (ALLOC) of bandwidth done in accordance with a bandwidth allocation procedure, wherein the sum of the bandwidth reserved by all of said Class 1 stations does not exceed the first portion (ALLOC) of the bandwidth.

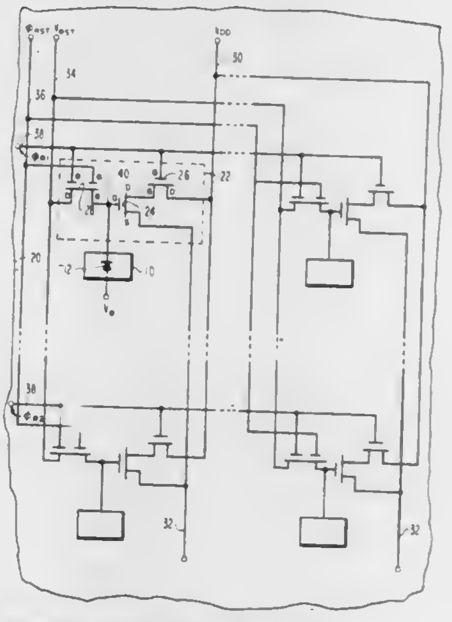


4,445,117

TRANSISTORIZED FOCAL PLANE HAVING FLOATING GATE OUTPUT NODES

Steven D. Gaalema, and Michael D. Jack, both of Carlsbad, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 28, 1981, Ser. No. 335,131
Int. Cl.^{3} H04Q *9/00;* **H04N** *3/12;* **H04J** *40/14*
U.S. Cl. 340—825.91 **9 Claims**

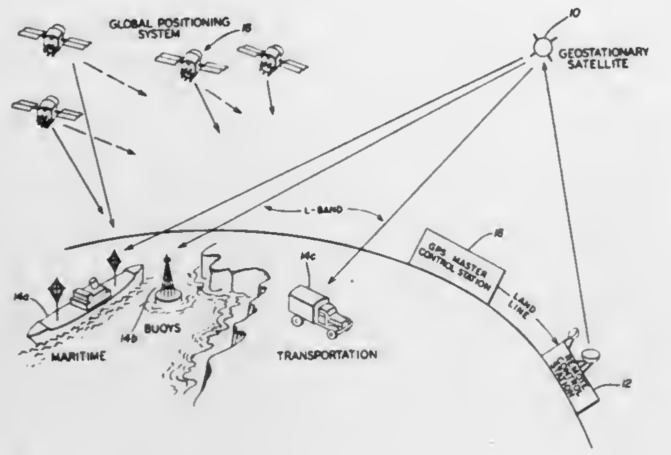


1. A focal plane array, comprising:
a semiconductive substrate;
a plurality of photodetectors formed on said semiconductive substrate;
a plurality of transistorized output circuits formed on said substrate, each of said output circuits comprising at least one metal oxide semiconductor field effect transistor formed on said semiconductive substrate adjacent a corresponding one of said detectors, a floating output node connected to said transistor and said corresponding one detector, means for periodically resetting the potential of said floating node, and a voltage output terminal having a voltage at least periodically determined by the corresponding one of said detectors.

4,445,118
NAVIGATION SYSTEM AND METHOD

Ralph E. Taylor, Silver Spring, Md., and James W. Sennott, Bloomington, Ill., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 22, 1981, Ser. No. 266,253
Int. Cl.^{3} H04B *7/185*
U.S. Cl. 343—357 **24 Claims**

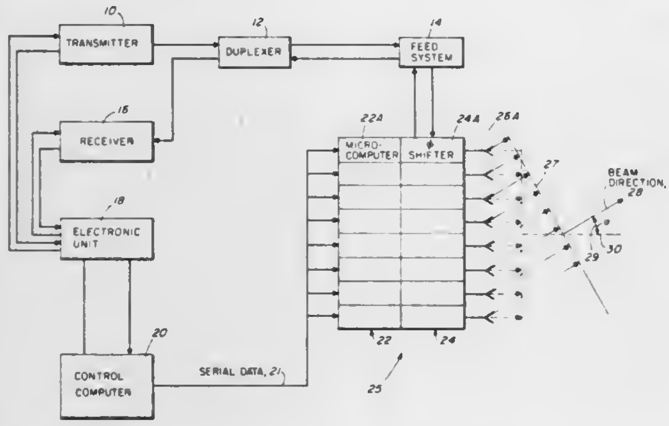


1. A system for determining the position of a user terminal comprising:
means remote from said user terminal for transmitting a signal containing information indicative of the location of the signal transmitting means, almanac data, timing and synchronization data (epoch) and clock correction data; and
means remote from said signal transmitting means and said user terminal for receiving said transmitted signal and converting said transmitted signal to an aiding signal containing information which identifies said signal transmitting means as well as the spatial coordinate data and predicted Doppler data for said signal transmitting means, said receiving means transmitting said aiding signal to said user terminal;
said signal transmitting means also transmitting said signal to said user terminal.

4,445,119
DISTRIBUTED BEAM STEERING COMPUTER

George A. Works, Stow, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Apr. 30, 1981, Ser. No. 259,291
Int. Cl.^{3} H04B *7/00*
U.S. Cl. 343—377 **31 Claims**

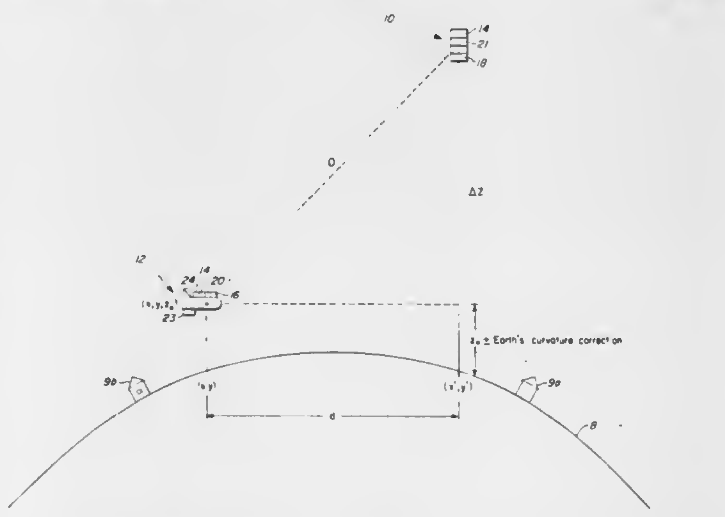


1. In combination:
a plurality of array elements for providing a directed beam of electromagnetic energy;
each of said array elements comprising a microcomputer, a phase shifter coupled to said microcomputer, and an antenne element;
a source of said electromagnetic energy;
means for feeding said electromagnetic energy to said plurality of antenna elements through the plurality of phase shifters;
means for coupling common phase shift data to each microcomputer in said array elements for determining an amount of phase shift for said beam; and
each microcomputer comprising means for calculating said amount of phase shift for each of said antenna elements in accordance with the position of each antenna element in said array and said phase shift data.

4,445,120
RADIOSONDE

David A. Rosenthal, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 7, 1981, Ser. No. 251,806
Int. Cl.^{3} G01S *3/02*
U.S. Cl. 343—462 **3 Claims**



1. An altitude measuring system for a radiosonde comprising:
means for identifying the exact geographic location of said radiosonde, said geographic location consisting of the latitude and longitude of said radiosonde;
means for transmitting a timing signal from a reference station of known geographic location and known altitude to said radiosonde;
means for returning said timing signal from said radiosonde back to said transmitting means;
means for receiving said returned signal located with said transmitting means at said reference station;
means for communicating said radiosonde's geographic position from said identification means to said reference station;
a computer connected to receive said transmitted signal, said return signal, and said radiosonde's geographic position, the timc difference between said transmitted signal and said return signal proportional to twice the distance D between said radiosonde and said remote reference station said computer programmed such that the distance D is determined and the height ΔZ of said radiosonde above or below said reference station according to the equation

$$\Delta Z = \pm\sqrt{D^2 - X^2 - Y^2}$$

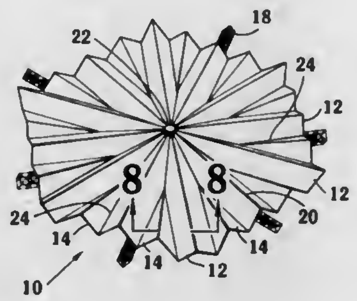
is determined where
ΔZ = the difference in altitude between the reference station and the radiosonde.
D = the distance between the radiosonde and the reference station,
ΔX = the difference in latitude between the reference station and the radiosonde, and
ΔY = the difference in longitude between the reference station and radiosonde; and

means for sensing motion are connected to said computer to evaluate whether ΔZ is positive or negative.

4,445,121
SINGLE MEMBRANE LENS FOR SPACE RADAR USING MICROSTRIP ANTENNA RADIATING ELEMENTS

Joseph P. Hancock, and Robert R. Henry, both of San Diego, Calif., assignors to General Dynamics Corporation/Convair Div., San Diego, Calif.

Filed Dec. 18, 1981, Ser. No. 332,132
Int. Cl.^{3} H01Q *1/28, 1/38*
U.S. Cl. 343—700 MS **15 Claims**

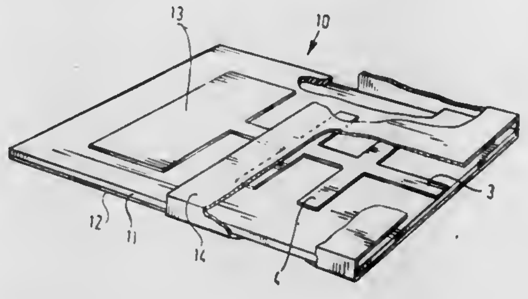


1. A lightweight single layer microstrip membrane antenna for space applications comprising;
a plurality of thin lightweight gore sections adapted to act as an RF ground plane and configured to be furled into a stowed position;
a plurality of metal mesh members positioned between the gore section's and secured thereto, said metal mesh members adapted to be folded without creasing along the fold when said antenna is furled into a stowed condition and to cooperate with said gore sections when the antenna is deployed to provide a tensioned unitary single plane membrane antenna, and
a plurality of transmit/receive modules integrated into each gore section, each module having at least one radiator coupled thereto, and adapted to be supplied by appropriate prime power sources to provide a single lens membrane for a space radar.

4,445,122
BROAD-BAND MICROSTRIP ANTENNA

Hugo F. Pues, Herent, Belgium, assignor to Leuven Research & Development v.z.w., Belgium

Filed Mar. 30, 1981, Ser. No. 248,841
Int. Cl.^{3} H01Q *1/38*
U.S. Cl. 343—700 MS **4 Claims**

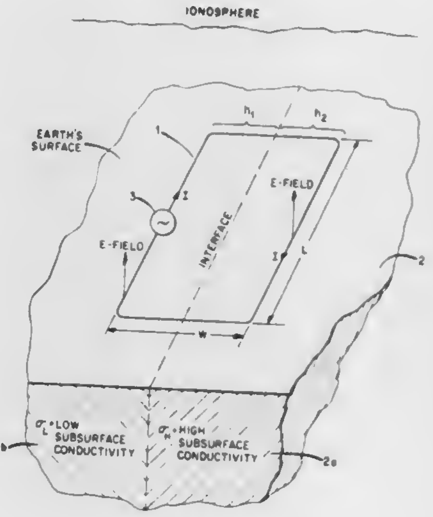


1. An antenna for the reception of electro-magnetic radiation, comprising a receiving member including at least one receiving element having an insulating substrate plate with a conductive plate applied to one surface thereof, a flat, conductive rectangular pattern applied to the other surface thereof, at least one connecting terminal for coupling said conductive plate and said conductive pattern, an impedance matching circuit including at least two parallel conductive strips connected between the conductive pattern and the at least one connecting terminal for increasing the bandwidth of said antenna.

4,445,123
METHOD FOR ESTABLISHING A VERTICAL E-FIELD ANTENNA INSTALLATION

Windsor D. Wright, Sherborn, Mass., assignor to GTE Products Corporation, Waltham, Mass.

Filed Mar. 4, 1982, Ser. No. 354,849
Int. Cl.^{3} H01Q *7/00, 1/04*
U.S. Cl. 343—719 **18 Claims**

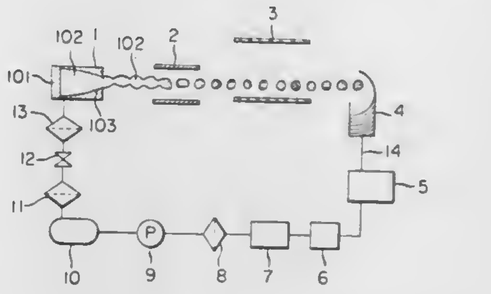

IONOSPHERE
EARTH'S SURFACE
1
3
I
E-FIELD
INTERFACE
E-FIELD
I
L
W
2
σL = LOW SUBSURFACE CONDUCTIVITY
σH = HIGH SUBSURFACE CONDUCTIVITY
2b
2a

1. A method for establishing a vertical E-field transmitting antenna installation comprising the steps of:
ascertaining a land region having first and second contiguous areas of widely differing values of subsurface conductivity; and
positioning a closed loop wire antenna having a transmitter associated therewith in a generally horizontal plane over the interface of the first and second contiguous areas.

4,445,124
INK JET RECORDING PROCESS

Tadashi Fujii, Yokohama, and Tomoyuki Yamaguchi, Chiba, both of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed May 6, 1982, Ser. No. 375,527
Claims priority, application Japan, May 15, 1981, 56-72932
Int. Cl.^{3} G01D *15/18*
U.S. Cl. 346—75 **15 Claims**



1. In an ink jet printing process in which droplets of an aqueous ink are emitted from a nozzle, some of said droplets of said aqueous ink are deposited on a recording medium to record visible symbols thereon and the unused droplets of said aqueous ink are collected to form a stream and the stream of said aqueous ink is recirculated through a recirculation system and thence is fed to said nozzle for reuse, the improvement which comprises: in said recirculation system, flowing said stream of said aqueous ink in contact with an ion-exchange resin effective to remove dissolved metals and metal oxides from said stream of said aqueous ink.

4,445,125

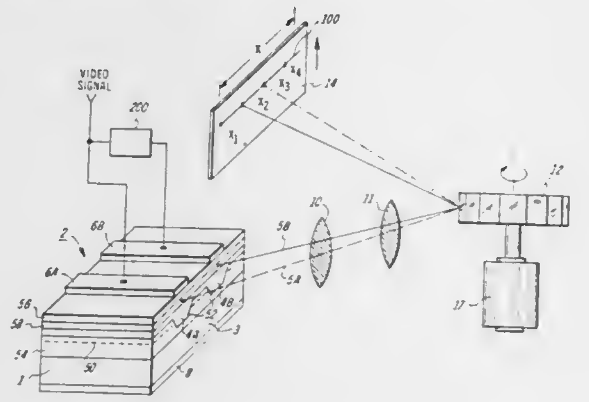
DIODE LASER ARRAY SYSTEM FOR PRINTING AND COPYING APPLICATIONS

Donald R. Scifres, Los Altos, and William Streifer, Palo Alto, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 19, 1982, Ser. No. 369,455

Int. Cl.^{3} G01D *9/42;* G03B *17/04;* H04N *1/22*

U.S. Cl. 346—108 **4 Claims**



1. A light scanning system comprising:
a photosensitive surface;
a semiconductor diode laser array including a plurality of linearly aligned diode lasers on a common semiconductor substrate;
first means for supplying a video drive signal;
second means for supplying said drive signal to at least some of said plurality of lasers of said array to provide for emission of a plurality of light beams from said array with each of said beams modulated in accordance with said drive signal information;
optical means for focusing said plurality of light beams at said photosensitive surface; and
scanning means for scanning said plurality of light beams across linear portions of said photosensitive surface;
wherein said array is oriented relative to said scanning means and said photosensitive surface such that each of said plurality of light beams scans the same data spots of at least one linear portion of said photosensitive surface.

4,445,126

IMAGE FORMING APPARATUS

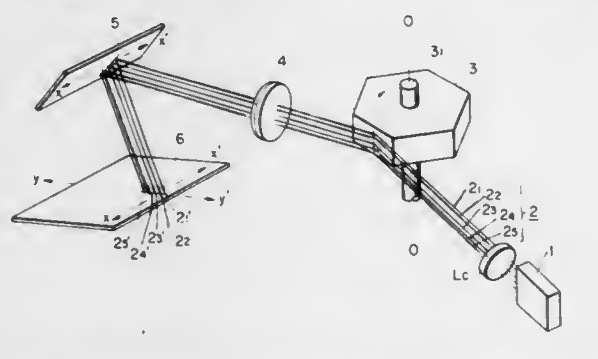
Masaharu Tsukada, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 4, 1982, Ser. No. 336,851

Claims priority, application Japan, Jan. 12, 1981, 56-2144

Int. Cl.^{3} G01D *9/42*

U.S. Cl. 346—108 **21 Claims**



1. An image forming apparatus for scanning a recording medium by plural light beams, comprising:
beam generating means for generating plural light beams;
scanning means for scanning with said plural light beams;
optical means for achieving a constant-speed scanning with said plural light beams on the recording medium; and
reflective optical means for reducing the distance between said plurality light beams on the recording medium, said plural light beams being disposed in a direction perpendicular to the direction of beam scanning on the recording medium.

4,445,127

PRINTING-NEEDLES DEVICE

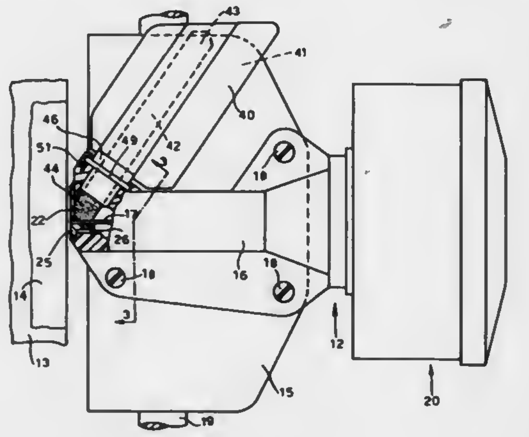
Paolo Prevignano, and Armando Peretti, both of Ivrea, Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed May 28, 1982, Ser. No. 383,180

Claims priority, application Italy, Jun. 4, 1981, 67768 A/81

Int. Cl.^{3} G01D *15/16*

U.S. Cl. 346—140 A **5 Claims**



1. A printing-needles device to write on a registration support alphanumeric characters and graphic symbols according to a dot matrix, comprising a plurality of printing needles each one having a writing end, a guiding structure for guiding said needles, and inking means for directly inking all the writing ends of said needles, the improvement wherein said inking means comprises a container for containing ink, a coth-fibres cable having a first end permanently dipped into ink inside said container and a second end opposite to said first end and external with respect to said container, and means for removably mounting said container on said guiding structure for bringing said second each of said cable into contact with all the writing ends of said needles.

4,445,128

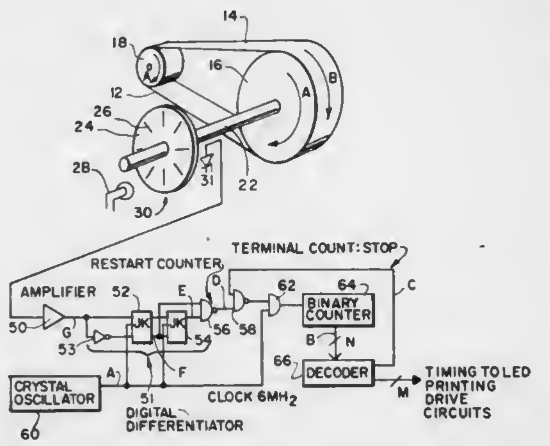
METHOD AND APPARATUS FOR COMPENSATING FOR IRREGULAR MOTION

Donald T. Dolan, Ridgefield, and Henry Stalzer, Danbury, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Apr. 2, 1982, Ser. No. 364,834

Int. Cl.^{3} G01D *15/14*

U.S. Cl. 346—160 **7 Claims**



3. A non-impact printer comprising a moving photoreceptor having a charged photoconductive surface thereon, means for providing an image information containing data signal, means for selectively discharging localized areas of the photoreceptor to form a latent image thereon according to a predetermined timing cycle in response to the data signal, means for generating a timing signal representative of the motion of the photoreceptor and means for varying the time of input of the data signal to the discharging means in response to variations in the timing signal whereby actuation of the discharge cycle is synchronized with motion of the photoreceptor without changing the internal timing of the predetermined cycle.

4,445,129

SEMICONDUCTOR DEVICE WITH A GRAY TIN LAYER AND A METHOD OF MAKING THE SAME

Colin H. L. Goodman, Loughton, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Sep. 18, 1981, Ser. No. 303,337

Claims priority, application United Kingdom, Sep. 18, 1980, 8030268

Int. Cl.^{3} H01L *29/161*

U.S. Cl. 357—16 **13 Claims**

1. A semiconductor device comprising a substrate having an active surface and a crystal lattice closely matched to that of α-tin at least at said active surface; and vapor-phase epitaxially grown active layer of at least α-tin on said active surface of said substrate.

4,445,130

HETEROJUNCTION PHOTOTRANSISTOR CONSTRUCTED IN PLANAR TECHNOLOGY

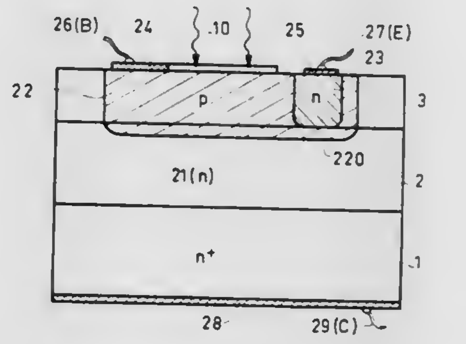
Pierre Poulain; Baudouin de Cremoux, and Pierre Hirtz, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Nov. 9, 1981, Ser. No. 319,401

Claims priority, application France, Nov. 12, 1980, 80 24036

Int. Cl.^{3} H01L *27/14*

U.S. Cl. 357—16 **5 Claims**



1. A heterojunction phototransistor of the type comprising:
a substrate constituted by a first semiconductor material heavily doped in a first conductivity type;
a first semiconductor layer constituted by a second semiconductor material having a forbidden gap which is so determined as to absorb a radiation of predetermined wavelength;
a second semiconductor layer constituted by a third semiconductor material having a forbidden band of greater width than that of said second material;
wherein said phototransistor has the following distinctive features:
the first layer has a lower dopant concentration than the substrate but is of the same conductivity type in a first region in contact with the substrate and is of opposite conductivity type in a second region located further away from the substrate than said first region and thus having a pn or np junction;
the second layer has a third region of the same conductivity type as the substrate and occupying the entire thickness of the second layer and a relatively small portion of its width, said third region being surrounded by a fourth region of opposite conductivity type which is joined to the second region of the first layer.

4,445,131

PHOTOCONDUCTIVE IMAGE PICK-UP TUBE TARGET

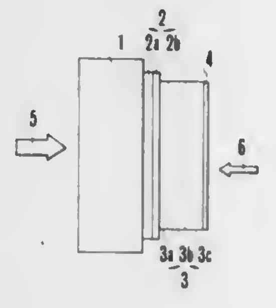
Yasuhiko Nonaka, Mobara; Keiichi Shidara, Tama, and Naohiro Goto, Machida, all of Japan, assignors to Hitachi, Ltd. and Nippon Hoso Kyokai, both of Tokyo, Japan

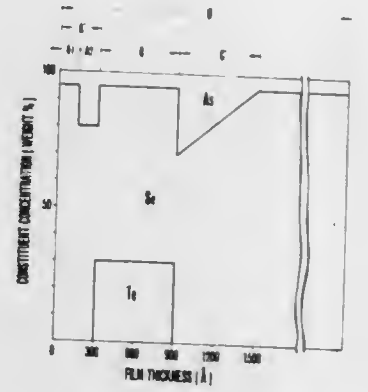
Filed Nov. 9, 1981, Ser. No. 319,796

Claims priority, application Japan, Nov. 10, 1980, 55-157086

Int. Cl.^{3} H01L *27/14*

U.S. Cl. 357—31 **2 Claims**





1. In a photoconductive image pick-up tube target comprising an N-type semiconductor film formed on a transparent substrate, and a P-type photoconductive film in rectifying contact with said N-type semiconductor film and containing Se and As and also Te as sensitizers the improvement wherein said P-type photoconductive film includes a front layer, a Te-containing layer and a rear layer between said front layer and said Te-containing layer, said front layer being located between said N-type semiconductor film and said rear layer and wherein said rear layer has an As concentration distribution which is greater than the As concentration in said front layer.

4,445,132

LED MODULE FOR A FLAT PANEL DISPLAY UNIT

Osamu Ichikawa, and Tetsuo Sadamasa, both of Tokyo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 3, 1981, Ser. No. 270,030

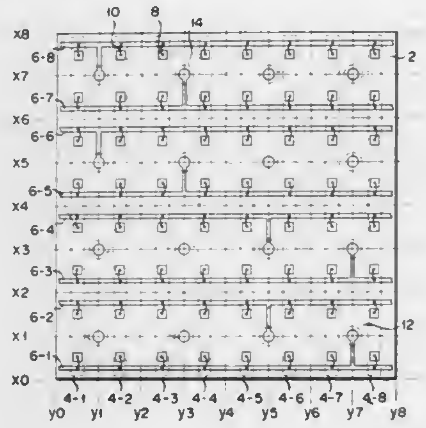
Claims priority, application Japan, Jun. 13, 1980, 55-78938

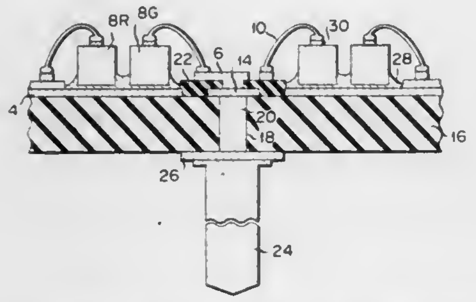
Int. Cl.^{3} G01T *1/24;* H01L *27/14, 31/00, 33/00*

U.S. Cl. 357—32 **13 Claims**

1. An LED module for a flat panel display unit, comprising:
a rectangular flat substrate having first and second opposed surfaces, wherein said first surface is uniformly divided into a matrix of plural unit areas arranged in rows and columns, each unit area including four picture element areas defining rows and columns of a 2×2 matrix within the matrix of said unit areas;
plural first column electrodes formed on the substrate, each first column electrode extending along a column of said element areas;
plural first row electrodes insulated from said first column electrodes, each first row electrode extending along a row of said element areas;
plural first LED pellets each arranged in a respective ele-

ment area and each electrically connected to a respective first column electrode and a respective first row electrode;
plural connecting pads each arranged on a respective unit area, each pad being spaced apart from the LED pellets arranged on the four picture element areas defining its respective unit area; and
plural connecting pins each secured to the second surface of said substrate to project therefrom, each connecting pin connected electrically to a respective connecting pad.





4,445,133
SEMICONDUCTOR DEVICE

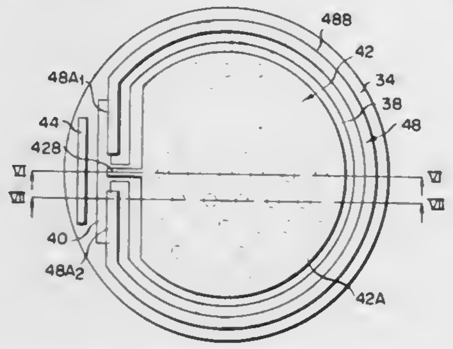
Youichi Araki, and Toshio Ogawa, both of Kawasaki, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 20, 1981, Ser. No. 294,750

Claims priority, application Japan, Aug. 22, 1980, 55-115391

Int. Cl.^{3} H01L *29/74, 27/02, 23/48*

U.S. Cl. 357—38 **10 Claims**



1. A semiconductor device comprising:
a semiconductor body having a first semiconductor layer of a first conductivity type, second and third semiconductor layers of a second conductivity type formed contacting with both major surfaces of said first semiconductor layer, and first and second semiconductor regions of the first conductivity type formed in said second layer;
a cathode electrode having first and second portions provided on said first region;
a gate electrode provided on said second layer;
an anode electrode provided on said third layer;
an auxiliary electrode consisting of two first portions and one second portion connected at ends respectively to the first portions, said first portions being formed on said second region and having free ends spaced from each other, and said second portion formed on said second layer and extending along the periphery of the first portion of said cathode electrode; and
said second portion of said cathode electrode and said first portions of said auxiliary electrode being disposed in an area between said gate electrode and said cathode electrode where a gate current flows.

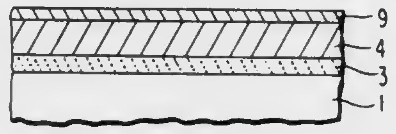
4,445,134
CONDUCTIVITY WSI$_2$ FILMS BY PT PREANNEAL LAYERING

Robert J. Miller, Yorktown Heights, N.Y., assignor to IBM Corporation, Armonk, N.Y.

Division of Ser. No. 214,170, Dec. 8, 1980, Pat. No. 4,322,453. This application Nov. 4, 1981, Ser. No. 318,181

Int. Cl.^{3} H01L *23/48, 29/46, 29/62, 29/64*

U.S. Cl. 357—71 **4 Claims**



4. A microelectronic device comprising; a semiconductor substrate having a conductive tungsten silicide layer with platinum atoms distributed therein.

4,445,135
SYNCHRONIZING SYSTEM FOR TELEVISION SIGNALS

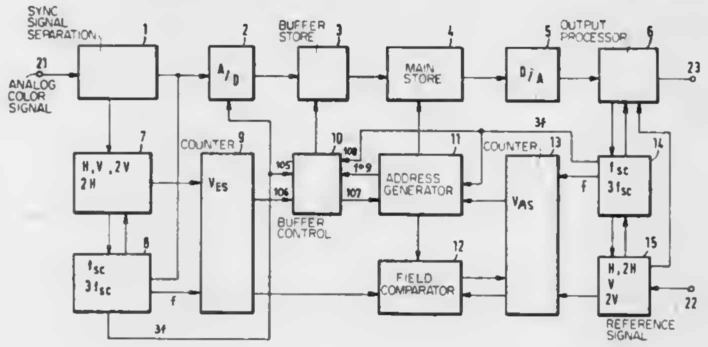
Jürgen Heitmann, Seeheim, and Hans-Peter Maly, Bergisch-Gladbach, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 2, 1981, Ser. No. 317,421

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1980, 3041898

Int. Cl.^{3} H04N *9/46, 5/04*

U.S. Cl. 358—19 **15 Claims**



1. A synchronization system for television signals in which the frequency and phase position of an input signal are brought into synchronsim with a reference signal, the system comprising
a digital main store (4) having a capacity corresponding to one field;
a digital buffer store (3) of substantially lower capacity associated with the main store,
means controlling the buffer store for compensating frequency differences between the input signal and the reference signal, and means controlling the main store for compensating phase differences between the input signal and the reference signal,
including means (9) for deriving a vertical frequency starting signal from the input signal and means (13) for deriving a vertical frequency starting signal from the reference signal,
the starting signal (V_{ES}) derived from the input signal initiating the writing and reading of the buffer store (3) and the writing of the main store (4), and
the starting signal (V_{AS}) derived from the reference signal initiating the reading of the main store;
means (8) for deriving a first clock signal ($3f_{sc}$) from the input signal to control the writing into the buffer store (3);
and means (14) for deriving a second clock signal from the reference signal to control the reading of the buffer store (3) and the writing and reading of the main store;
means ($106–V_{ES}$) to reset the buffer store (3) at the start of each field of the input signal;
and means (101, 102, 103, 104) for supplying the second clock signal to the buffer store (3) for reading-out the buffer store only until the buffer store is approximately half full.

4,445,136
TELEVISION CAMERA HAVING AN OPTICAL LOWPASS FILTER

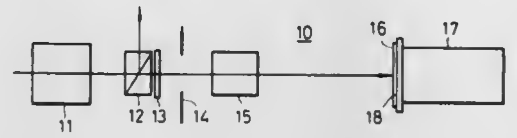
Takashi Shinozaki, Yokohama; Yoshichi Ohtake, Kamakura, and Shinsuke Ono, Yokosuka, all of Japan, assignors to Victor Company of Japan, Ltd., Kanagawa, Japan

Filed Dec. 11, 1981, Ser. No. 329,694

Claims priority, application Japan, Dec. 16, 1980, 55-180649

Int. Cl.^{3} H04N *9/10*

U.S. Cl. 358—55 **9 Claims**



1. A television camera having an optical system including an iris, a master lens, and a color stripe filter, said television camera further comprising:
an optical lowpass filter provided within an effective light path of an afocal system which reaches said master lens through said iris,
said optical lowpass filter having a shape to partially produce an optical lowpass filter effect with respect to a part of a beam in said effective light path.

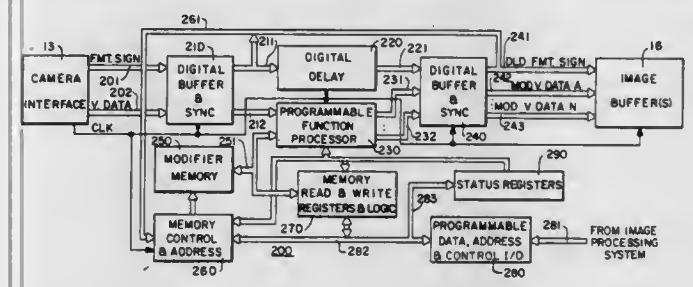
4,445,137
DATA MODIFIER APPARATUS AND METHOD FOR MACHINE VISION SYSTEMS

Edward F. Panofsky, Woodside, Calif., assignor to Machine Intelligence Corporation, Sunnyvale, Calif.

Filed Sep. 11, 1981, Ser. No. 301,428

Int. Cl.^{3} H04N *7/18*

U.S. Cl. 358—101 **22 Claims**



1. In an image data processing system, in combination:
imaging means for producing a serial image data stream corresponding to an array of pixels having a preselected relationship to a scene viewed thereby and producing a separate format signal stream accompanying said image data stream;
image data modification means including multistage digital delay means for separately delaying said image data stream and said accompanying format signal stream in a synchronous manner, means for withdrawing at least a portion of said image data stream from at least one stage of said delay means, means for processing said withdrawn image data stream portion in accordance with a preselected algorithmic function to produce a modified image data stream, and means for reinserting said modified image data stream into a subsequent stage of said delay means; and
image utilization means coupled to said image data modifier means for utilizing said modified image data stream.

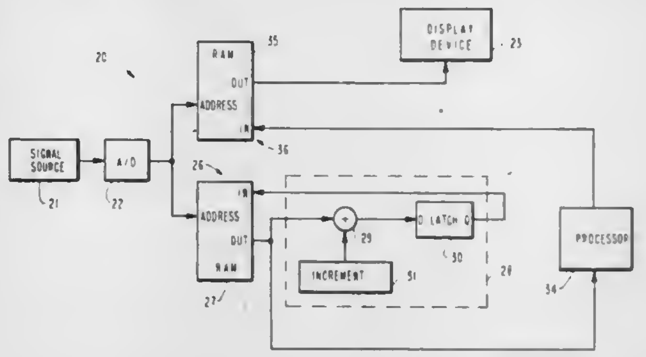
4,445,138
REAL TIME DYNAMIC RANGE COMPRESSION FOR IMAGE ENHANCEMENT

Robert Zwirn, and William D. Farwell, both of Los Angeles, Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Dec. 21, 1981, Ser. No. 332,588

Int. Cl.^{3} H04N *5/14*

U.S. Cl. 358—166 **15 Claims**



1. Apparatus which processes applied signals having a first set of intensity values and provides output signals having a second set of intensity values, said first set being greater than said second set, said apparatus comprising:
histogram generation means for generating a histogram indicative of the number of occurrences of first time period applied signals at each intensity value in said first set received during a first time period;
processing means coupled to said histogram generation means for selecting said second set of intensity values from said histogram which occur more often than other intensity values, and for generating mapping signals which are determination of said respectively selected intensity values from said second set of intensity values to which subsets of the remaining intensity values from said first set are assigned; and
mapping means coupled to said processing means for providing said output signals during a second time period in response to second time period applied signals received during said second time period, said output signals having said second set of intensity values, the particular intensity value of each of said output signals being determined by said mapping signals.

4,445,139
DEVICE FOR THE ELECTRONIC SCANNING OF IMAGES

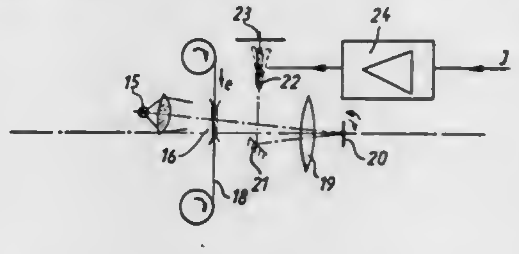
Otto Stemme; Wolfgang Ruf, both of Munich, and Eduard Wagensonner, Aschheim, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 25, 1980, Ser. No. 124,789

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1979, 2908533

Int. Cl.^{3} H04N *3/36*

U.S. Cl. 358—214 **20 Claims**



1. An electronic image scanner for scanning images and generating high-resolution video signals therefrom, comprising:
an elongated image sensor upon which successive frame

lines of images can be projected, the image sensor scanning frame lines in such images and generating in response to each frame line projected onto the elongated image sensor a frame line signal containing the image information of the projected frame line;

a signal processor responsive to the frame line signals generated by the elongated image sensor and generating a full-frame video signal which includes a first field and a second field; and

control means controlling the signal processors and controlling the projection of successive frame lines of an image onto the image sensor and operation in a manner that during production by said signal processor of the first field during a first reproduction phase a first subset of alternating frame lines of an image are consecutively projected onto the elongated image sensor, and during production by said signal processor of the second field during a subsequent second reproduction phase, a second subset of alternating frame lines of an image are consecutively projected onto the elongated image sensor.

4,445,140

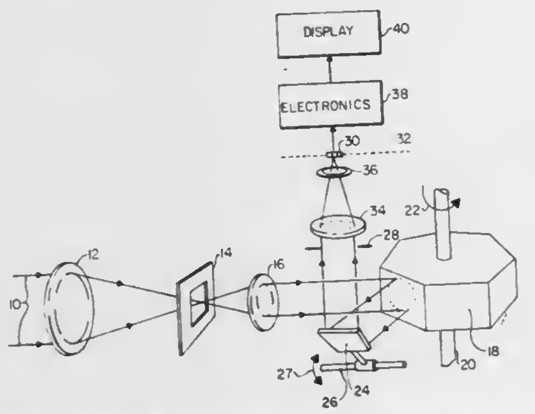
ELECTRONIC IMAGE STABILIZATION SYSTEM

Yishay Netzer, Billerica, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 29, 1981, Ser. No. 335,414

Int. Cl.^{3} H04N *5/00*

U.S. Cl. 358—222 **10 Claims**



1. Image stabilization apparatus comprising:
A. imaging optics for receiving information;
B. a scanning mirror coupled to receive said information along a first viewing axis;
C. an image plane;
D. detector means disposed on said image plane, said detector means coupled to receive said information;
E. wherein the respective spatial positions of said optics, mirror, plane and detector means define a line of sight;
F. means for generating an output composite video signal including video information derived from said information seen by said optics, and including line synchronization pulses and field synchronization pulses;
G. first means for moving said line of sight along said first viewing axis, said first means for moving including first means for modulating the position of said scanning mirror; and
H. second means for moving said line of sight along a second viewing axis, said second means for moving including second means for modulating the time delay between said video information and said line synchronization pulses.

4,445,141

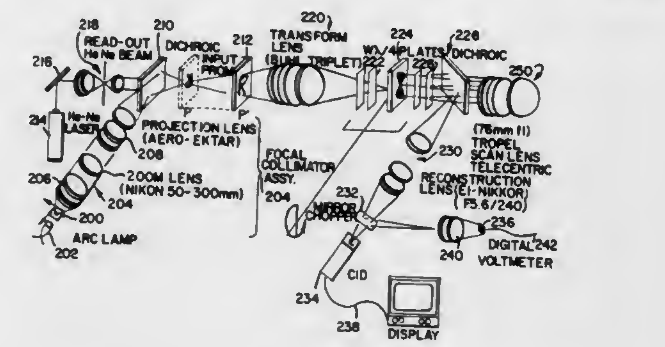
HYBRID OPTICAL/DIGITAL IMAGE PROCESSOR

John R. Benton, Annandale, Va.; Francis J. Corbett, Weymouth, and Richard A. Tuft, Bolton, both of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 4, 1980, Ser. No. 231,563

Int. Cl.^{3} H04N *1/02;* G02B *5/18*

U.S. Cl. 358—294 **32 Claims**



1. An optical processor comprising:
a. means for radiating a coherent light image along an optical axis including
   (1) input PROM means responsive to light,
   (2) means for projecting a non-coherent light image onto said input PROM means; and
   (3) means for illuminating said input PROM means with a coherent light;
b. means disposed along said optical axis for providing the Fourier transform of said coherent light image;
c. first linear polarizer means disposed along said optical axis for linear polarizing said Fourier transform;
d. first $\lambda/4$ plate means disposed along said optical axis for circular polarizing the linear polarized Fourier transform;
e. means disposed along said optical axis for spatially filtering said circular polarized Fourier transform;
f. second $\lambda/4$ plate means disposed along said optical axis for converting said circular polarized filtered Fourier transform back to linear polarized form;
g. second linear polarizer means disposed along said optical axis for analyzing said linearly polarized filtered Fourier transform;
h. means for reconstructing said linear polarized filtered Fourier transform to produce a filtered image;
i. optical sensor means for generating an output signal in accordance with said filtered image; and
j. means for rotating about said optical axis said first $\lambda/4$ plate means, said means for spatially filtering and said second $\lambda/4$ plate means.

4,445,142

METHOD AND APPARATUS FOR FREQUENCY CHARACTERISTIC COMPENSATION OF TELEVISION SIGNALS REPRODUCED FROM A TAPE RECORD WITH REFERENCE TO POSITION OF SYNCHRONIZING SIGNALS ON THE TAPE

Winfried Horstmann, Griesheim, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Fed. Rep. of Germany

Filed Dec. 8, 1980, Ser. No. 214,406

Int. Cl.^{3} H04N *4/941*

U.S. Cl. 358—318 **3 Claims**

1. Method of correcting rapid periodic errors in frequency response related to the mechanical magnetic pick-up operation in the playback of color television signals magnetically recorded on adjacent parallel track segments running obliquely on a magnetic tape whereby the synchronizing to track segment with reference to the edge of the tape, comprising the steps of:

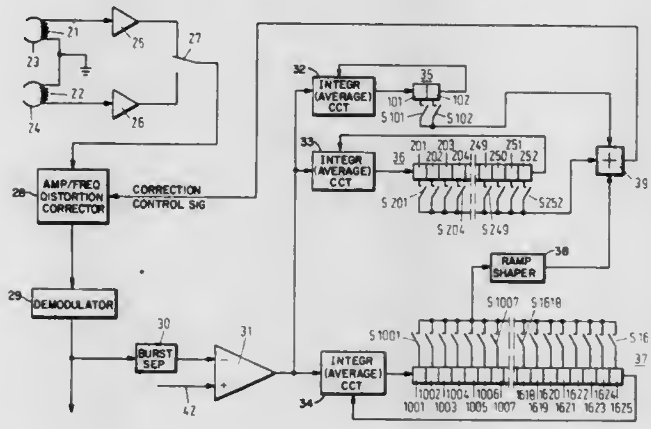
comparing with a reference voltage the picked up amplitude of each color burst color-carrier synchronizing signal;

storing each result of the comparison step for a picture frame interval and also, separately, for a track segment interval and for the tape scan period of the active pick-up head;

retrieving the stored comparison results during scan of the tape by each pick-up head in a sequence interleaving results from the previous track scans of the same head during the preceding picture frame interval in the order of increasing distance of the color burst record from the tape edge defining the beginning of a track scan;

producing a continuous correction signal from retrieved comparison results;

simultaneously with said storing step, averaging each comparison result with the stored comparison result most closely corresponding thereto in the last previous picture frame to provide a first average signal, also averaging each comparison result with the stored comparison result for the same track segment position in the last previous track segment to provide a second average signal, and averaging each comparison result with the stored comparison result of the last previous period of the active pick-up head to provide a third average signal;



modifying said correction signal by additively combining it with said first, second and third average signals, and thereafter

utilizing said correction signal to correct the frequency response of picked-up television signals.

4,445,143

MEANS FOR COMPATIBLY REPRODUCING VIDEO DISCS RECORDED ACCORDING TO DIFFERENT BROADCAST STANDARDS

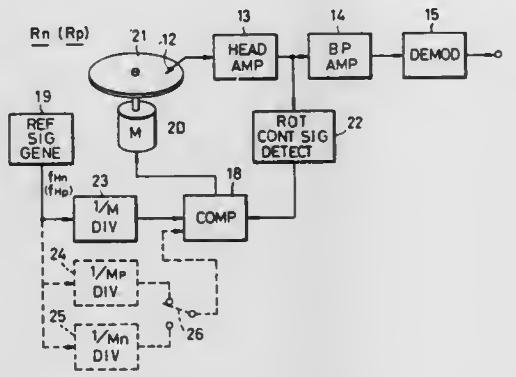
Toyotaka Machida; Hitoshi Aoike; Toshimasa Kumazaki; Yasuaki Watanabe, and Yuichi Ikemura, all of Yokohama, Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed May 6, 1981, Ser. No. 260,589

Claims priority, application Japan, May 10, 1981, 56-61998

Int. Cl.^{3} H04N *9/491, 9/44*

U.S. Cl. 358—322 **8 Claims**



1. A rotary recorded medium which has a video signal pre-recorded thereon in any of at least two formats, both of said formats being reproducible on a reproducing system designed around any of said formats, a first of said formats being a medium pre-recorded at a first rotational speed with a first video signal which is compatible with a television receiver of a first television broadcasting standard, said first format having a first horizontal scanning frequency f_{H1} and a first frame frequency, a second of said formats being a medium pre-recorded at a second rotational speed with a second video signal which is compatible with a television receiver of a second television broadcasting standard, said second format having a second horizontal scanning frequency f_{H2} and a second frame frequency, a first system reproducing apparatus primarily designed for use with the television receiver of said first television broadcasting standard comprising first means for rotating said first format recorded medium at said first rotational speed for reproducing the first video signal having said first horizontal scanning frequency f_{H1} for the television receiver of said first television broadcasting standard, the first rotating means in said first system reproducing apparatus rotating said second format recorded medium to reproduce said second video signal at a scanning frequency equal to said first horizontal scanning frequency f_{H1} for the television receiver of said first television broadcasting standard, a second system reproducing apparatus primarily designed for use with the television receiver of said second television broadcasting standard comprising second means for rotating said second format recorded medium at the second rotational speed for reproducing the second video signal having said second horizontal scanning frequency f_{H2} for the television receiver of said second television broadcasting standard, the second rotating means in said second system reproducing apparatus rotating said first format recorded medium to reproduce said first video signal at a scanning frequency equal to said second horizontal scanning frequency f_{H2} for the television receiver of said second television broadcasting standard, said first format recorded medium having a first carrier chrominance signal pre-recorded thereon, said first carrier chrominance signal having a first chrominance subcarrier frequency f_{c1} equal to kf_{H1}, where k is a real number, and said second format recorded medium having a second carrier chrominance signal pre-recorded thereon, said second carrier chrominance signal having a second chrominance subcarrier frequency f_{c2} equal to kf_{H2} so that both the first and second format recorded mediums are playable on both said first and second system reproducing apparatuses.

4,445,144

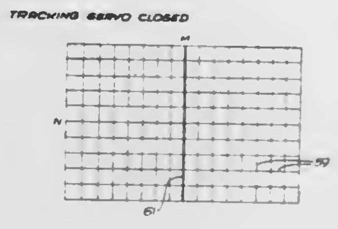
METHOD FOR DETECTING ECCENTRICITY IN A VIDEO DISC AND IN A VIDEO DISC PLAYER

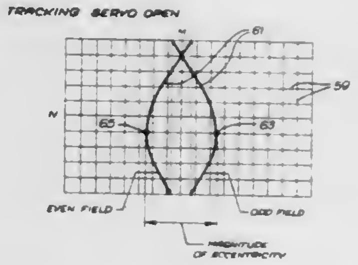
Gary M. Giddings, Laguna Hills, Calif., assignor to Discovision Associates, Costa Mesa, Calif.

Filed Dec. 21, 1981, Ser. No. 333,237

Int. Cl.^{3} A04N *5/85;* G11B *21/10*

U.S. Cl. 358—342 **11 Claims**





1. A method for detecting eccentricity in a video disc and in a player apparatus for playing the video disc, the player appa-

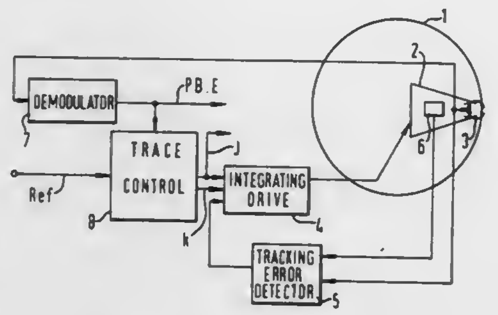
ratus including means for rotating the disc at a prescribed constant rate, information recovery means for scanning the rotating disc with a radiant energy beam to recover a video signal recorded on it, and a tracking servo for controllably directing the beam to impinge continuously on a selected recording track on the disc, the tracking servo being operable in conventional closed loop and open loop conditions, the method comprising steps of:

recording a prescribed video signal on a set of adjacent recording tracks on the video disc, each video frame of the signal being recorded on a separate one of the successive tracks, the video signal representing a test pattern giving the effect of a prescribed movement of at least a part of the test pattern on successive frames;

scanning the set of adjacent recording tracks using the information recovery means while operating the tracking servo in the open loop condition, any eccentricity in the video disc or in the player apparatus causing the information recovery means to scan cyclically across a plurality of tracks and successively recover segments of the video signal recorded on each track; and

displaying the signal recovered by the information recovery means, wherein the shape of the displayed video picture indicates the presence of eccentricity in the video disc or in the player apparatus.

4,445,145
VIDEO SIGNAL REPRODUCING APPARATUS
Ryusuke Moriya, Hadano, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Nov. 3, 1981, Ser. No. 317,906
Claims priority, application Japan, Nov. 7, 1980, 55-157267
Int. Cl.^{3} H04N *5/782;* G11B *21/08*
U.S. Cl. 360—10.2 **5 Claims**



1. A video signal reproducing apparatus comprising:

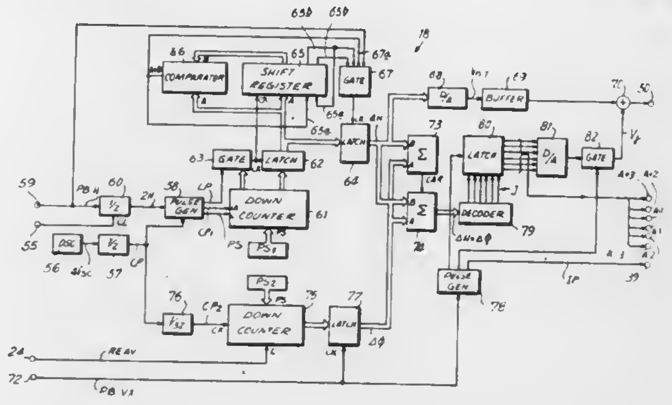
head position control means for controlling the position of a rotary magnetic reproducing head in the traverse direction of a skew recorded track formed on a magnetic tape;

trace control means for supplying a jump signal to said head position control means which causes said magnetic head to jump to the beginning of a track to be tracked next on completion of each tracing, during reproduction at a speed different than that for recording;

memory means for storing an output signal from said magnetic reproducing head corresponding to at least one said tracing; and

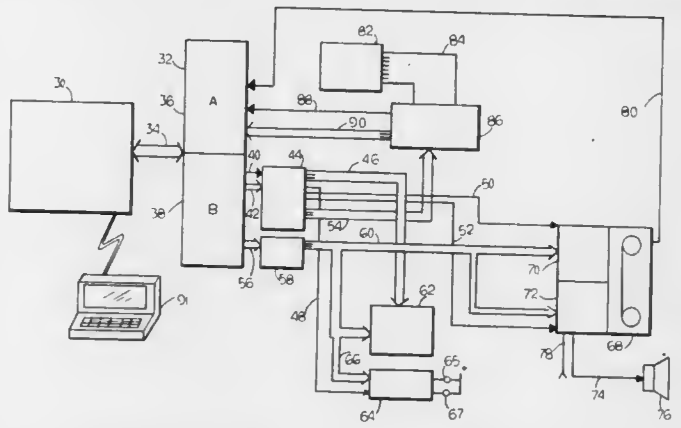
memory reading and writing control means for writing said output signal into said memory means only when said trace control means does not supply said jump signal to said head position control means during slow-motion or still-picture reproduction when said reproduction speed is lower than that used for recording, and for repetitively reading said stored output signal out of said memory means.

4,445,146
DIGITAL TRACKING CONTROL SYSTEM FOR VIDEO TAPE REPRODUCING APPARATUS
Hitoshi Sakamoto, Zama, and Daijiro Okihara, Hadano, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Feb. 10, 1982, Ser. No. 347,486
Claims priority, application Japan, Feb. 14, 1981, 56-20387
Int. Cl.^{3} H04N *5/78;* G11B *21/10*
U.S. Cl. 360—10.3 **21 Claims**



1. An apparatus for reproducing video signals recorded in successive parallel tracks formed obliquely on a record tape comprising: a rotary head movable across the tape in a direction generally along the tracks for reproducing the signals recorded therein; means for advancing the tape at a selected speed during said reproducing of the recorded signals; head deflecting means responsive to an electrical drive signal for deflecting the head in a direction transverse to said direction along the tracks; first detecting means for detecting a deviation of the tape speed during reproducing from a normal speed therefor and providing a corresponding first output; second detecting means for detecting a phase deviation of a sync signal included in the reproduced signals in respect to a reference sync signal and providing a corresponding second output; means digitally adding said first and second outputs of the first and second detecting means for providing a digitally expressed added output comprised of a plurality of bits; and decoding means responsive to only upper bits of said added output for providing therefrom a respective jump signal which is included in said drive signal applied to said head deflecting means at the completion of the scanning of a track by said head for determining the next track to be scanned thereby.

4,445,147
MERCHANDISING DEVICE HAVING RECORDING SELECTION AND DISPLAY
Loren P. Kessman, P.O. Box 95, Hamel, Ill. 62046, and John W. Hawkins, 1190 Linden, Florissant, Mo. 63031
Filed Jul. 27, 1981, Ser. No. 287,514
Int. Cl.^{3} G11B *5/00, 15/18*
U.S. Cl. 360—12 **36 Claims**



1. A recording-playback device for playing portions of works recorded on a recording medium in a predetermined sequence comprising:

playback means for playing the works recorded sequentially on the recording medium;

control means for controlling said playback means such that the works on said recording medium are played continuously in the predetermined sequence;

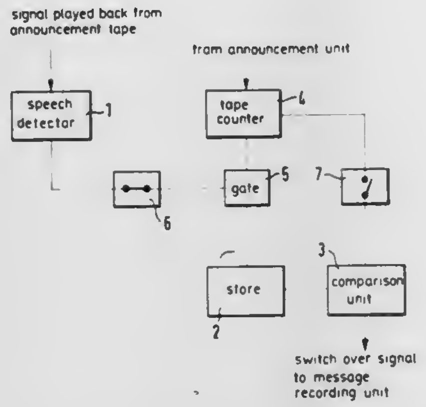
selection means operable for selecting for playback out of sequence at least one of the works recorded in sequence on the recording medium;

interruption means responsive to operation of said selection means operable for interrupting the sequential playing of the works on the recording medium by said control means;

locating means responsive to operation of said selection means for locating the selected work on the recording medium whereby said selected work is played by said playback means out of said predetermined sequence, and,

means to return the recording medium to the place on the recording medium where the interruption occurred so that the playing in sequence of the recorded works can be resumed after the interruption.

4,445,148
AUTOMATIC TELEPHONE ANSWERING APPARATUS
Otto G. Bahle, Gauting, Fed. Rep. of Germany, assignor to Compur-Electronic GmbH, Munich, Fed. Rep. of Germany
Filed Dec. 17, 1981, Ser. No. 331,733
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1980, 3047918
Int. Cl.^{3} H04M *1/64*
U.S. Cl. 360—12 **14 Claims**


signal played back from announcement tape
from announcement unit
speech detector
tape counter
gate
store
comparison unit
switch over signal to message recording unit
1
2
3
4
5
6
7

1. A method for automatic changeover from announcement text playback to recording a message of a caller in an automatic telephone answering apparatus having an announcement unit with an announcement tape and a message recording unit with a message recording tape for recording incoming messages, the invention residing in the steps of:

recording a first announcement text pause of defined length on the announcement tape after a first information part and before a conclusion part of the announcement text;

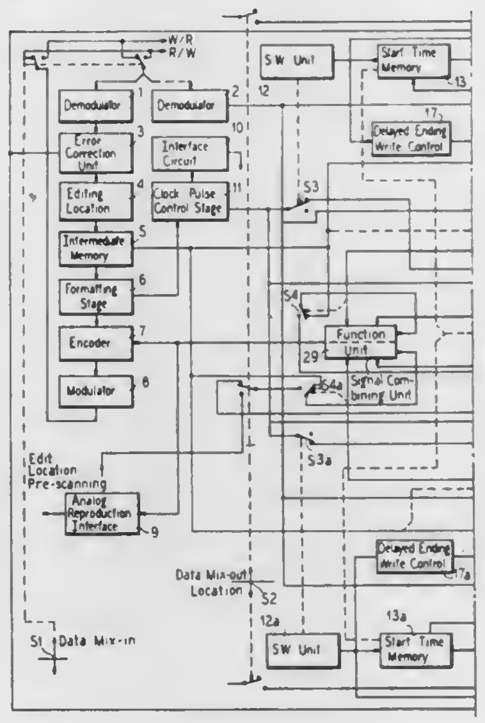
detecting on playback of the announcement tape for review purposes said first pause of defined length with a speech detector;

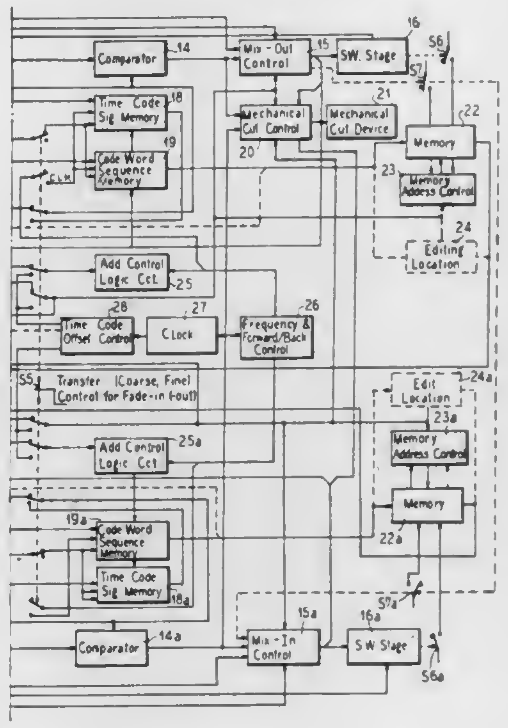
storing the start location of the detected pause;

comparing on playback of the announcement text on receipt of an incoming call the transport of the anouncement tape with the start location of the first pause; and

switching over for message recording when values for tape transport and for the stored start location of the first pause are the same.

4,445,149
METHOD FOR THE JOINING, OR MIXING-IN OR FADE-IN OF TWO AUDIO DIGITAL SIGNAL SEGMENTS, FREE OF INTERFERING SIGNALS
Bjoern Bluethgen, Celle, Fed. Rep. of Germany, assignor to Polygram GmbH, Fed. Rep. of Germany
Filed Mar. 6, 1980, Ser. No. 127,812
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1979, 2912481
Int. Cl.^{3} G11B *27/02, 5/00*
U.S. Cl. 360—13 **5 Claims**





1. In a method for the joining, mixing-in, fading-in and fading-out of first and second audio program segments which are stored on respective magnetic tape sections as digitally coded audio signals including error correction codes, along with assigned time codes, in which the digitally coded audio sequences and time codes are read and monitored to determine interference-free locations which may be joined as a single edit location, the improvement therein comprising the steps of:

reading each of the digitally coded audio signals and the assigned time codes of the first and second audio program segments from the respective magnetic tape sections;

converting the digitally coded audio signals of the first audio program signal segment into first code word sequenced and storing the same along with the assigned time codes;

converting the digitally coded audio signal of the second audio program signal segment into second code word sequence and storing the same along with their associated time codes;

circulating the stored first and second code word sequences, along with their time codes, relative to one another while monitoring the same by reading and converting the same into audio signals, until an interference-free location of comparable program is determined for each of the audio program segments; and

joining the second code word sequence to the first code word sequence at a common edit location identified by the respective time codes of the interference-free locations.

4,445,150

RECORDING IN A SINGLE TRACK VISUAL SIGNALS ASSOCIATED WITH AUDIO SIGNALS RECORDED IN OPPOSED DIRECTIONS IN PLURAL TRACKS

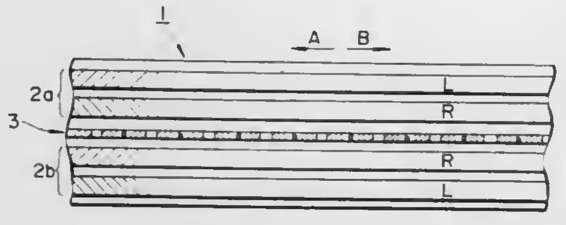
Heitaro Nakajima; Kenkichi Umeda, both of Tokyo; Youichi Kodera, Yokohama; Noriaki Naito, Tokyo; Hiroyuki Yamauchi, Sagamihara; Isao Matsumoto, Fujisawa; Shouichi Nakamura, Tokyo; Katsuo Takada, Yokohama; Ken Shiga, Tokyo, and Yoshihito Yamamoto, Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 17, 1981, Ser. No. 322,367

Claims priority, application Japan, Nov. 18, 1980, 55-162513

Int. Cl.³ G11B *15/02, 5/43*

U.S. Cl. 360—18 **8 Claims**



1. A method of recording a plurality of primary signals and a corresponding plurality of secondary signals in parallel tracks on a record medium, said method comprising the steps of:

recording a first primary signal in at least one first primary track;

recording a second primary signal in at least one second primary track which is parallel to said at least one first primary track; and

alternately recording a first secondary signal corresponding to said first primary signal and a second secondary signal corresponding to said second primary signal in a single secondary track which is parallel to said at least one first primary track and said at least one second primary track and which is positioned between at least one first primary track and at least one second primary track, said step of alternately recording including recording said first secondary signal between a start signal and an end signal in each of a plurality of first information blocks in said secondary track and recording said second secondary signal between a start signal and an end signal in each of a plurality of second information blocks in said secondary track in an alternating relation with said first information blocks, the relative positions of said start signal and end signal in each of said first information block being reversed with respect to the positions of said start signal and end signal in each of said second information blocks.

4,445,151

VIDEO TAPE RECORDER WITH AUDIO MODE RECORDING

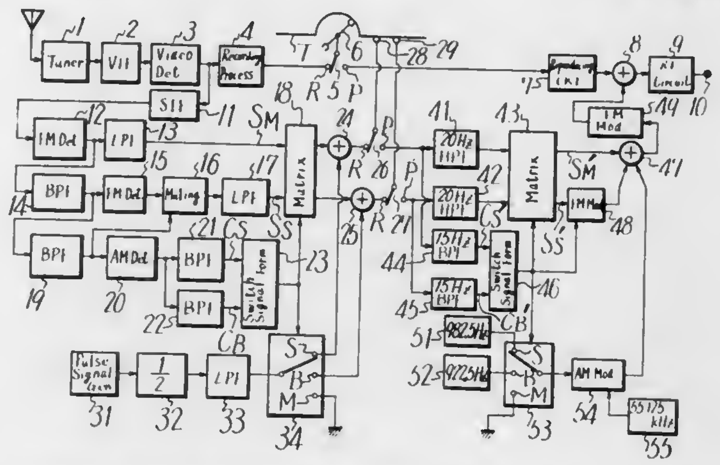
Takashi Kinoshita, Yamato; Yoshiki Shirochi, Urayasu, and Noboru Motoyoshi, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 15, 1981, Ser. No. 330,874

Claims priority, application Japan, Dec. 17, 1980, 55-178212; Jun. 15, 1981, 56-91956; Jun. 15, 1981, 56-91957

Int. Cl.³ H04N *5/782*

U.S. Cl. 360—27 **19 Claims**



1. Apparatus for recording a television signal having multiplex audio signals of any one of a stereophonic mode, a bilingual mode and a monaural mode on a tape having at least two audio tracks extending longitudinally therealong for the recording of audio signals therein and video tracks separate from said audio tracks for the recording therein of video components of said television signal; said apparatus comprising means for producing a pilot signal to be recorded in at least one of said audio tracks, means for detecting the mode of the audio signals included in the television signal to be recorded, and means responsive to the detected mode of the audio signals for recording said pilot signal in a first one only of said at least two audio tracks when said means for detecting detects audio signals of a stereophonic mode, for recording the same pilot signal in a second one only of said at lest two audio tracks when said means for detecting detects audio signals of a bilingual mode, and for preventing recording of said pilot signal in said first and second ones of said at least two audio tracks when said means for detecting detects audio signals of a monaural mode.

4,445,152

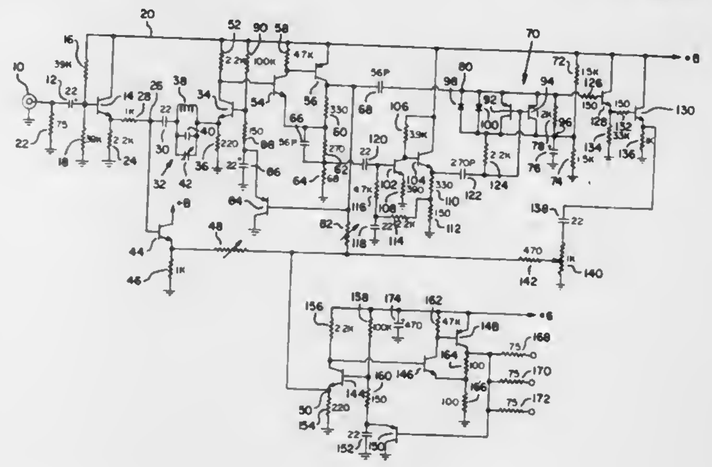
VIDEO DETAIL ENHANCING CIRCUIT

James A. Karlock, 3311 NE. 35th Ave., Portland, Oreg. 97212

Continuation of Ser. No. 183,400, Sep. 2, 1980, abandoned. This application Jul. 25, 1983, Ser. No. 516,436

Int. Cl.³ H04N *5/785, 5/14, 5/21, 9/491*

U.S. Cl. 360—33.1 **20 Claims**



1. Circuitry for enhancing detail in video signals used in video tape recorders, said circuitry comprising:

means for providing a video signal,

means responsive to transitions in said video signal for providing control signals corresponding in time to said transitions,

clipping means for receiving at least high frequency components of said video signal, said clipping means being responsive to given control signals for suppressing its input signal for a predetermined time,

a common base connected transistor having an input current summing junction at the emitter terminal thereof for receiving said video signal from said means for providing a video signal and receiving the output of said clipping means,

an emitter follower output stage driven from the collector of said common base connected transistor,

and a feedback clamping circuit including a clamping capacitor coupled to the base of said common base connected transistor and a unidirectionally conducting semiconductor device for charging said capacitor from the output stage.

4,445,153

METHOD OF CORRECTING TRACK MISALIGNMENT OF FLOPPY DISC AND APPARATUS THEREFOR

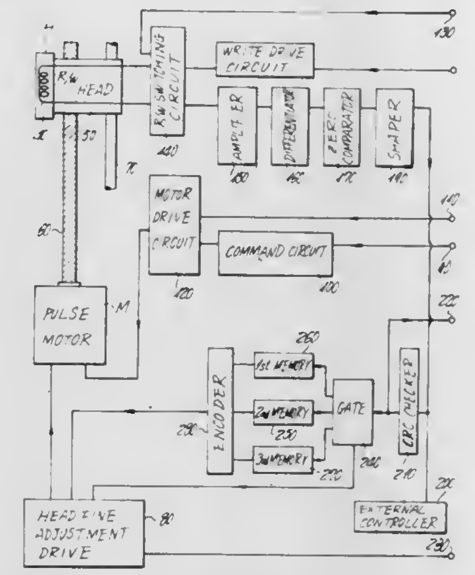
Sakae Fujimoto, Tokyo, and Masahiro Hatsuno, Kanagawa, both of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Mar. 4, 1981, Ser. No. 240,412

Claims priority, application Japan, Mar. 7, 1980, 55-028865; Nov. 19, 1980, 55-162814

Int. Cl.³ G11B *5/56, 21/10*

U.S. Cl. 360—77 **2 Claims**



2. For use with a floppy disc drive unit including support means for rotatably supporting a floppy disc, a read/write head for writing information onto and reading information from a track formed on the surface of a floppy disc as the latter rotates, and head feed means for moving the read/write head in a direction transverse to the track and for stopping it at a location over a desired track; an apparatus for correcting a track misalignment of a floppy disc comprising

a plurality of memory means each to store data information read from a data track by said head;

comparison and retrieval means to determine the optimum head position based upon the stored data information retrieved from said memory means;

a disc-shaped cam having a cam surface which acts on the read/write head to move it, the cam having its central portion pivotally mounted, and

an intermittent feed mechanism controlled by said comparison and retrieval means for causing an incremental movement of the cam through a given angle,

the intermittent feed mechanism comprising a drive lever having its one end pivotally mounted on a plunger associated with a solenoid and having its another part pivotally mounted on a stationary member, a feed pawl pivotally mounted on the drive lever, a pawl member having its own pawl adapted to engage the feed pawl and connected to the cam, and detent means having a detent pawl adapted to engage the pawl of the pawl member.

4,445,154

MAGNETIC RECORDING AND/OR REPRODUCING APPARATUS

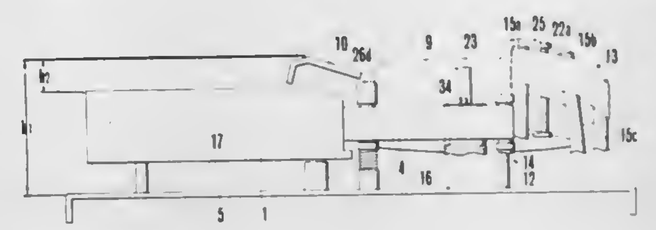
Nobutoshi Kihara, Tokyo; Yoshiharu Matsumoto, and Kazuo Yamazaki, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 154,524, May 29, 1980. This application May 13, 1982, Ser. No. 377,986

Claims priority, application Japan, May 31, 1979, 54-67790

Int. Cl.³ G11B *15/66, 23/04*

U.S. Cl. 360—85 **12 Claims**

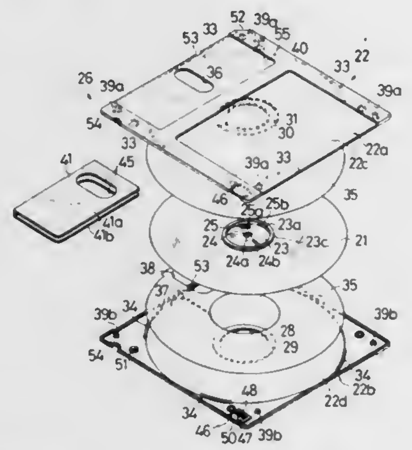


1. In a magnetic tape recording and/or reproducing apparatus having a cylindrical tape guide drum having at least one rotary magnetic head moved in a circular path substantially coinciding with the circumferential surface of said drum, tape supply means containing magnetic tape, holder means spaced from said tape guide drum for receiving and positioning said tape supply means at a relatively lower level with respect to said tape guide drum and wherein the axis of said tape guide drum is inclined at an angle with respect to a plane passing through said tape in said tape supply means; the improvement comprising first tape engaging means for drawing tape from said tape supply means and movable from a first position adjacent said tape supply means to a second position adjacent said tape guide drum in a diagonally upward direction to the axis of said drum and a second tape engaging means movable from a first position adjacent said tape supply means to a second position spaced outwardly from said tape supply means in a plane substantially parallel to said plane passing through said tape in said tape supply means and in a direction opposite to the direction of movement of said first tape engaging means thereby to helically wrap a portion of said tape about at least a portion of the circumferential surface of said tape guide drum, said first tape engaging means including a plurality of tape guide pins which are closely spaced to each other and within the confines of the tape supply means when said first tape engaging means is in its said first position and which move in an arcuate path when said first tape engaging means is moving from its said first position to its said second position and whereby said plurality of tape guide pins are disposed about the periphery of said tape guide drum and spaced from each other to a greater degree when said first tape engaging means is in said second position to enable the first tape engaging means to be placed in the same horizontal plane as said tape supply means.

4,445,155

FLEXIBLE MAGNETIC DISK CASSETTE AND A RECORDING AND/OR REPRODUCING APPARATUS FOR THE SAME

Kiyoshi Takahashi, Machida, and Nobuhiko Tsukahara, Atsugi, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Aug. 13, 1981, Ser. No. 292,448
Claims priority, application Japan, Aug. 14, 1980, 55-111969
Int. Cl.^{3} G11B *5/012, 5/016, 5/82;* **G01D** *15/24*
U.S. Cl. 360—99 **20 Claims**



1. A flexible magnetic disk cassette comprising:

(a) a flexible magnetic disk;

(b) a cover containing said flexible magnetic disk, said cover having a driving hole means for driving said flexible disk therethrough;

(c) a center core disk rigidly and nonmovably secured at a center of said flexible magnetic disk, said center core disk having a center aperture means with first and second converging centering sides for receiving a center positioning pin of a drive device, the aperture means being larger than the positioning pin, and a driving and positioning aperture means having a positioning edge means and separate driving edge means for receiving a spring-biased driving pin of said drive device;

(d) the positioning edge means being structured to cooperate with the driving pin for moving the disk so that the first and second centering sides about the center pin as a result of a radial force exerted by the driving pin on the positioning edge means; and

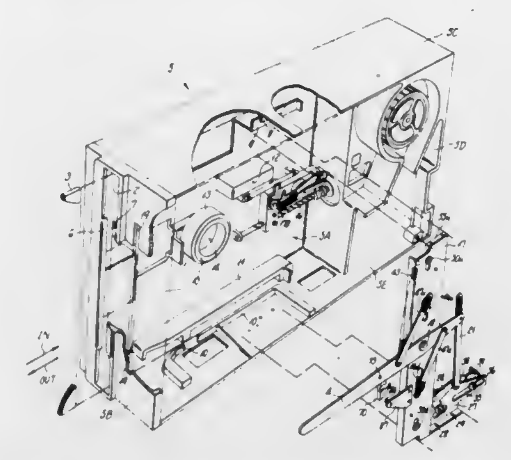
(e) the driving edge means being structured to cooperate with the driving pin for moving the disc in a circumferential direction of the disc.

4,445,156

FLOPPY DISC DRIVE UNIT

Sakae Fujimoto, Chofu, Japan, assignor to Ricob Company, Ltd., Japan
Filed Aug. 11, 1981, Ser. No. 291,993
Claims priority, application Japan, Aug. 14, 1980, 55-112181[U]; Aug. 14, 1980, 55-112182; Aug. 14, 1980, 55-115548[U]
Int. Cl.^{3} G11B *17/04, 5/016, 23/04*
U.S. Cl. 360—99 **79 Claims**

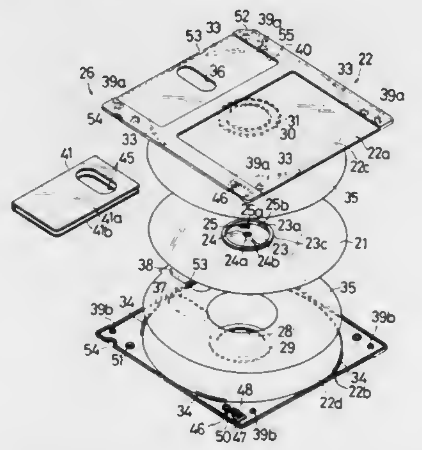
1. A floppy disc drive including a rotatable member having an abutment surface and also including a clamp member which is movable toward or away from the abutment surface and in which a floppy disc is held between the abutment surface and the clamp member for rotation together with the rotatable member for purpose of information recording and retrieval, comprising an operating lever which is oscillatable in a plane located within the disc drive and parallel to the plane of a floppy disc which is mounted in place, motion transmitting means responsive to the oscillation of the operating lever to cause a reciprocating movement of the clamp member in a direction perpendicular to the plane of the floppy disc, and lock/unlock means for locking the operating lever at a given position and for unlocking it therefrom, wherein the disc drive includes a frame having a substrate mounted thereon or integrally connected therewith, and said lock/unlock means is disposed intermediate the substrate and the operating lever and locks or unlocks the operating lever adjacent to the end of the forward stroke of the clamp member.



4,445,157

FLEXIBLE MAGNETIC DISK CASSETTE

Kiyoshi Takahashi, Machida, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Aug. 13, 1981, Ser. No. 292,447
Claims priority, application Japan, Aug. 14, 1980, 55-115305[U]
Int. Cl.^{3} G11B *23/02, 5/82, 5/012, 5/016*
U.S. Cl. 360—133 **24 Claims**



4. A flexible magnetic disk cassette comprising:

(a) a flexible magnetic disk;

(b) a pan-shaped one-piece center core disk of magnetic material having a center hollow and raised fringe, said center core disk being attached at a center of said flexible magnetic disk by said raised fringe; and

(c) a cassette cover having an upper half and lower half containing said flexible magnetic disk with said center core disk, said lower half having a driving aperture larger than an outer diameter of said center hollow of said center core disk.

4,445,158

CLEANING HEAD ASSEMBLY FOR A CASSETTE CLEANER

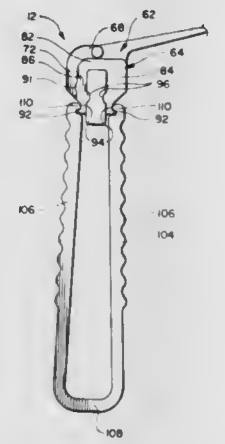
Eivind Clausen, and James D. Allsop, both of Bellingham, Wash., assignors to Allsop, Inc., Bellingham, Wash.
Filed Jan. 7, 1982, Ser. No. 337,772
Int. Cl.^{3} G11B *5/10, 5/41;* **A47K** *7/02;* **A47L** *1/06*
U.S. Cl. 360—137 **13 Claims**

1. A cleaning head assembly adapted to be mounted to a cleaning arm of a cleaning apparatus and to be placed in cleaning engagement with a component of a player and/or recording unit, set assembly comprising:

(a) a mounting member adapted to be connected to said arm and comprising first and second side portions providing a forwardly opening first recess defined by first and second side surfaces of said two side portions,

(b) a retaining member having first and second side walls and a rear wall connecting said two side walls and adapted to fit into said first recess, said side and rear walls defining a forwardly facing second recess, said side walls being resiliently connected to said rear wall so as to be adapted to resiliently engage said side surfaces,

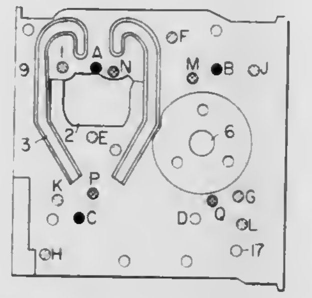
(c) a cleaning pad adapted to be mounted in said second recess in a cleaning position with a forward cleaning portion of said pad extending forwardly of said second recess.



4,445,159

CHASSIS FOR VIDEO TAPE RECORDER

Masanori Nemoto, Ibaraki, and Hideki Asano, Mito, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Nov. 24, 1981, Ser. No. 324,670
Claims priority, application Japan, Nov. 29, 1980, 55-168247; Dec. 10, 1980, 55-174839
Int. Cl.^{3} G11B *19/00, 5/08, 5/008;* **B29F** *1/00*
U.S. Cl. 360—137 **20 Claims**

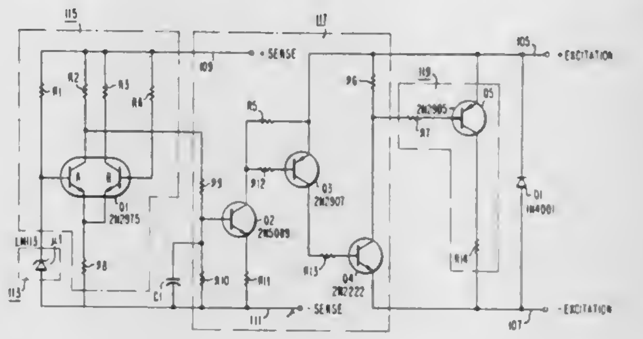


1. In a chassis for a video tape recorder comprising a lamellar part for carrying a magnetic tape cassette, a guide drum with magnetic head, a capstan roller and a mechanism for drawing out the magnetic tape from said magnetic tape cassette and loading it around said magnetic head and said capstan roller, said lamellar part having a first hole for installing said guide drum with magnetic head and a second hole for installing said capstan roller, the improvement wherein said chassis is molded integrally with a fiber-reinforced plastic composition and further provided with two guide grooves and/or guide walls encompassing said first hole and designed to guide a sliding movement of said loading mechanism and a reinforcing rib along a boundary between a first region including said guide grooves or guide walls and a second region including said second hole.

4,445,160

FAULT-POWERED LOW-LEVEL VOLTAGE CLAMP CIRCUIT

John T. Gordon, Ambridge, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Mar. 30, 1982, Ser. No. 363,758
Int. Cl.^{3} H02H *9/04*
U.S. Cl. 361—91 **5 Claims**



1. A low-level voltage clamp circuit which provides protective, low-level clamping action across a first and a second terminal of a main DC circuit when the voltage of said DC circuit exceeds a predetermined limit indicating a fault condition, comprising:

a reference means operatively connected to said main DC circuit and sensitive to voltages in excess of said predetermined limit, said reference means having a first state when said circuit voltage is below said predetermined limit and a second state when said circuit voltage exceeds said predetermined limit;

a comparator means responsive to said reference means and generating a changing output signal when said reference means is in said second state, said changing output signal reflecting the amount of voltage exceeding said predetermined limit;

an amplifier means responsive to said comparator means output signal and increasing said comparator output signal by a predetermined amount of gain; and

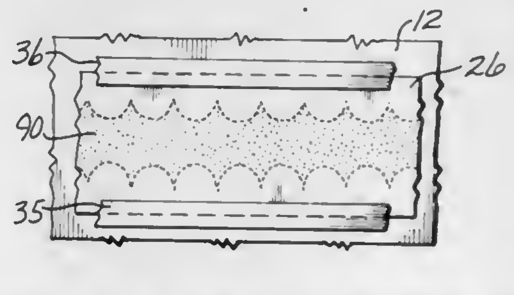
an output stage means responsive to said amplified comparator means output for effecting the clamping of the main circuit voltage to said predetermined level; wherein

said low-level voltage clamp utilizes said main DC circuit voltage as a source of control voltage for its components when clamping is being effected and wherein the voltage across said first and second terminals of said main DC circuit remains present throughout the clamping action at a level no greater than said predetermined limit.

4,445,161

IONIZATION-TYPE LIGHTNING DIVERTER STRIP STRUCTURES

Rowan O. Brick, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Jun. 7, 1982, Ser. No. 385,758
Int. Cl.^{3} H02H *3/22*
U.S. Cl. 361—218 **6 Claims**



1. A lightning diverter structure for an aircraft external surface comprising in combination therewith:

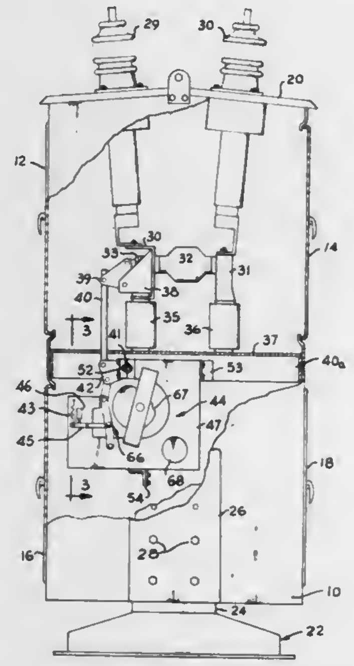
a strip-like layer of dielectric material of generally rectangular cross section having a lower surface adapted to be applied to the aircraft external surface, said strip-like layer of dielectric material of generally rectangular cross section having an upper surface area opposite said lower surface; and

a strip-like layer of binder on said upper surface containing a conductive metal powder of finely divided metallic particles deposited in said binder, said strip-like layer of binder having a predetermined width and thickness, and extending generally colinearly with respect to the length of said strip-like layer of dielectric material, said predetermined width in a plane parallel to said upper surface area being less than the width in a plane parallel to said upper surface area of said strip-like layer of dielectric material.

4,445,162

COMPACT CHASSIS PLATE FOR SWITCHGEAR ENCLOSURE

Sidney R. Hamm, Brandon, Miss., and Thomas E. Young, Irmo, S.C., assignors to Siemens-Allis, Inc., Atlanta, Ga.
Filed Sep. 2, 1981, Ser. No. 298,774
Int. Cl.^{3} H02B *1/04*
U.S. Cl. 361—334 **9 Claims**



1. A housing structure for circuit interrupting apparatus, comprising a generally planar platform disposed horizontally within the housing and dividing the interior of the housing into upper and lower compartments,

said platform comprising a horizontal, planar plate and a plurality of generally parallel bracing plates depending from the underside thereof;

a plurality of interrupters disposed upon said plate;

an interrupter operating mechanism disposed beneath said platform and depending vertically therefrom, said operator mechanism including a generally planar frame and a linkage comprising a plurality of links disposed in the plane of said frame;

a cross shaft for simultaneously operating said interrupters, said cross shaft being disposed beneath said plate and extending generally perpendicularly to said bracing plates, said cross shaft being rotatably journaled in said operating mechanism, the journal comprising a support point for said mechanism;

bearing means rotatably locating said cross shaft, said bearing means being secured to at least two of said bracing plates;

an opening spring having first and second ends, said first end abutting said platform, said second end being coupled to said cross shaft for rotating said cross shaft in a first direction;

first linkage means coupling said cross shaft to said interrupters for causing said interrupters to open or close as said cross shaft rotates in a first or a second direction;

second linkage means coupling said cross shaft to said operator mechanism for causing said cross shaft to rotate in response to actuation of said operating mechansism; and

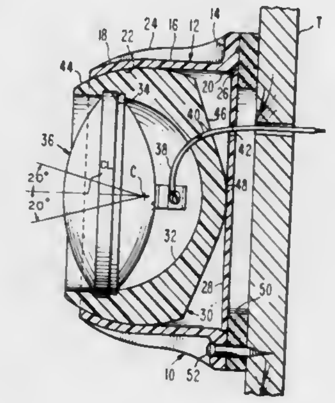
means rigidily coupling said operating mechanism to said platform for transmitting forces produced by the actuation of said mechanism directly to said platform;

whereby substantially all forces produced by the opening and closing of said interrupters are confined to said platform.

4,445,163

BOAT LIGHT, ESPECIALLY FOR TRANSOM MOUNTING

Theodore Ziaylek, Jr., 140 Riverview Dr., Yardley, Pa. 19067
Continuation-in-part of Ser. No. 204,449, Nov. 6, 1980, Pat. No. 4,360,859, which is a continuation-in-part of Ser. No. 872,522, Jan. 26, 1978, Pat. No. 4,245,281. This application Apr. 26, 1982, Ser. No. 371,903
Int. Cl.^{3} F21V *17/06, 31/02;* F21S *1/02*
U.S. Cl. 362—287 **9 Claims**



1. A boat light, especially adapted for mounting on the transom of a boat, comprising:

(a) a housing including a skirt having a curved inner surface;
(b) a shield closing the housing at one end;
(c) a lamp unit holder in the other end of the housing, said holder having an outer surface curved correspondingly to and movably contacting the inner surface of the housing, whereby said holder may be adjusted to selected angular positions relative to the housing;
(d) a lamp unit carried by the holder; and
(e) means for affixing the housing to the hull of a boat, the shield engaging the holder against movement from each position to which the holder is adjusted, the holder being formed, at least in the area in which it is engaged by the shield, of a material adapted to be compressibly deformed into a tight frictional contact with the shield.

4,445,164

LIGHTED KEY MODULE ASSEMBLY

John T. Giles, III, Kenosha, Wis., and Mark Hansen, Gurnee, Ill., assignors to Cherry Electrical Products Corporation, Waukegan, Ill.
Filed May 5, 1982, Ser. No. 374,968
Int. Cl.^{3} F21V *3/02*
U.S. Cl. 362—311 **8 Claims**

1. In a lighted key assembly having a housing with a base, wall means extending upwardly from said base, and ledge means, adjacent said wall means, the improvement comprising:

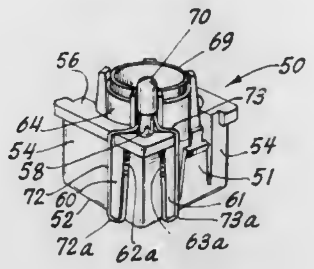
lamp means supported on said ledge means outside said housing for illuminating at least a portion of the key assembly;

ridge means disposed outside said housing along a portion of said wall means and having a lower end surface adjacent to said base;

electrical lead means extending from said lamp means along the contour of said ridge means, an intermediate portion of

the lead means extending over said end surface of the ridge means and below said base; and

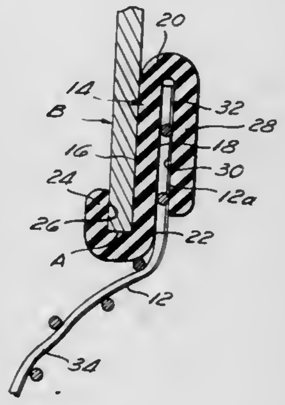
circuit means abutting said base for supporting said housing, the circuit means including an electrically conducting and substantially flat contact pad means disposed beneath and pressing against said intermediate portion of the lead means in solderless conductive contact with the intermediate portion when the housing is supported on the circuit means in aligned relation with the contact pad means, the contact pad means and lead means cooperating to energize and illuminate said lamp means,



4,445,165

MOUNTING MEANS FOR HEADLIGHT-PROTECTIVE SCREENS

Bert J. Sherwood, 510 Warner Ave., Los Angeles, Calif. 90024, and Fenton A. Liffick, 12449 Carol Pl., Granada Hills, Calif. 91344
Filed Feb. 11, 1982, Ser. No. 347,939
Int. Cl.^{3} F21V *15/00*
U.S. Cl. 362—376 **8 Claims**



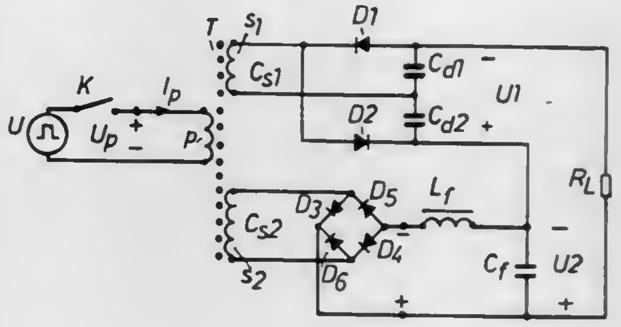
1. A unitary grommet, generally annular-shaped, comprised of resilient material, adapted to enable secure mounting therein of a cover for protecting a vehicle headlight, which cover includes a peripheral generally annular flange portion, and further adapted to enable mounting thereof in a portion of a vehicle bumper spaced forwardly of a headlight in the front end of the vehicle body, which vehicle bumper portion defines an opening aligned with the headlight for enabling light from the headlight to project therethrough, comprising:

(a) a first portion, extending in a first axial direction from the center of the grommet, adapted to receive the flange portion of the headlight protecting cover for securely mounting the headlight protecting cover therein; and
(b) a second portion, extending in a second axial direction from the center of the grommet opposite from the first axial direction of the first portion, adapted to enable secure mounting of the grommet in the opening-defining portion of the vehicle bumper.

4,445,166

HIGH VOLTAGE CONVERTER

Lars-Ake Berglund, Gothenburg, and Carl-Gunnar Andersson, Hisingsbacka, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden
Filed Apr. 8, 1982, Ser. No. 366,606
Claims priority, application Sweden, Apr. 28, 1981, 8102674
Int. Cl.^{3} H02M *1/14*
U.S. Cl. 363—48 **3 Claims**



1. A high voltage converter containing a voltage source (U) alternatingly sending positive and negative pulses, at least one controllable switching member (K) for pulse width regulation of said pulses from the voltage source, a high voltage transformer (T) with a primary winding (p) and two secondary winding section (s1, s2) as well as a rectifier means connected to both secondary winding sections, the primary winding (p) of the transformer being connected to said switching member (K) for transforming up the pulse width-regulated pulses, characterized in that the rectifier means comprises a voltage multiplying circuit containing capacitors (Cd1, Cd2) connected in parallel with said one secondary winding section (s1), and also comprising a full wave rectifier (D3–D6) containing a smoothing filter (L, C) connected to the second secondary winding section (s2), one output terminal of the smoothing filter being connected to one output terminal of the voltage multiplier circuit, and the remaining output terminal of the multiplier circuit and smoothing filter, respectively, forming the high voltage converter output.

4,445,167

INVERTER SYSTEM

Chihiro Okado, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan
Filed Sep. 22, 1982, Ser. No. 421,346
Claims priority, application Japan, Oct. 5, 1981, 56-157400; Nov. 18, 1981, 56-184684
Int. Cl.^{3} H02H *7/122*
U.S. Cl. 363—56 **8 Claims**

1. A PWM voltage type inverter system comprising:

a rectifier connected to an AC power source to receive an AC power therefrom and convert it into a DC power,

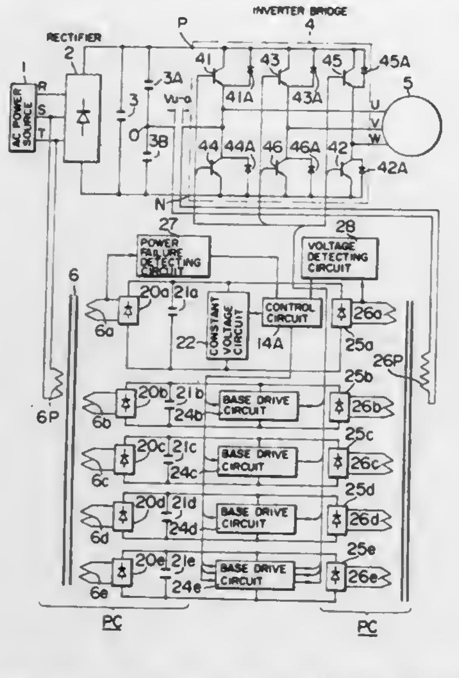
an inverter bridge connected to receive the DC power from the rectifier and converting it into an AC power of a variable frequency to supply it to an AC motor,

a conduction control circuit for controlling the conduction of arms of the inverter bridge normally in a first mode wherein it operates at a frequency determined by a frequency reference signal,

a control power circuit connected to receive the power from the AC power source and the regenerative AC power from the motor and to supply a constant voltage DC power to the conduction control circuit,

power failure detecting means for detecting the power failure of the AC power source, and

switching means responsive to the power failure detecting means for switching, when power failure is detected, the conduction control circuit to a second mode, wherein it

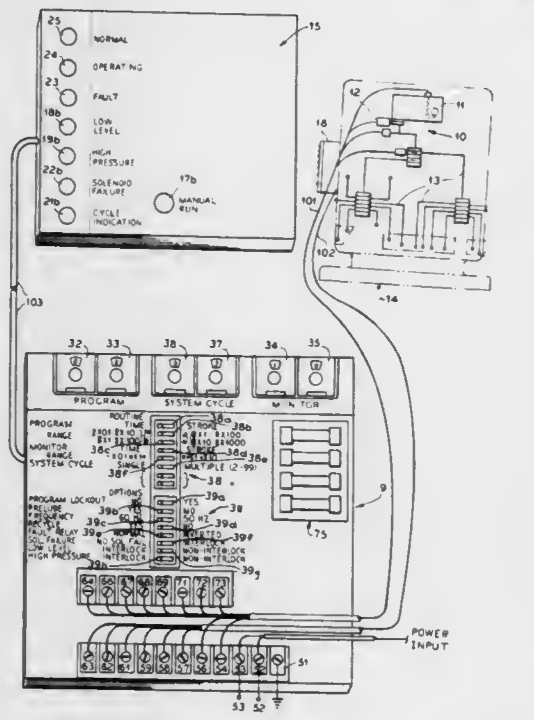


operates in such a manner as to maintain the regenerative voltage at a predetermined value.

4,445,168
APPARATUS AND METHOD FOR MICRO-COMPUTER CONTROL OF LUBRICATION SYSTEM

William W. Petryszyn, Cleveland, Ohio, assignor to Houdaille Industries, Inc., Fort Lauderdale, Fla.

Filed Jun. 24, 1981, Ser. No. 276,961
Int. Cl.³ G06F ***15/46;*** **G05B** ***19/10***
U.S. Cl. 364—140 **15 Claims**

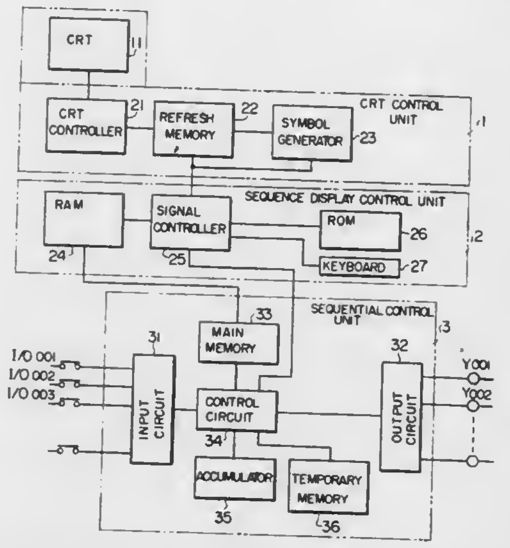


1. A system for control of a lubrication system for an operating apparatus which requires lubrication, responsive to conditions of the lubrication system, a micro-computer connected to receive an output of said means responsive to conditions of the lubrication system and connected to said lubrication system to operate it, a means for setting parameters of said lubrication system connected to supply inputs to said micro-computer, a machine control means connected to the output of said micro-computer and connected to said operating apparatus to stop it so as to prevent machine damage, and wherein said means for setting parameters of said lubrication system comprises program, system cycle, monitor, and control switch means for allowing different programs for the lubrication system to be selected.

4,445,169
SEQUENCE DISPLAY APPARATUS AND METHOD

Tadayoshi Wakita, Ichihara; Minoru Suzuki, Kamakura; Sadao Yanada, Hitachi, and Sigeru Sibata, Iwaki, all of Japan, assignors to The Tokyo Electric Co., Inc.; Hitachi Engineering Ltd and Hitachi, Ltd., all of Tokyo, Japan

Filed Jun. 12, 1981, Ser. No. 273,037
Claims priority, application Japan, Jun. 13, 1980, 55-78971; Jun. 13, 1980, 55-78972
Int. Cl.³ G06F ***15/46, 9/00***
U.S. Cl. 364—147 **13 Claims**



12. In a sequence display apparatus comprising a sequence control unit for performing a logical operation between input signals in accordance with a logical operation program to deliver a control signal in accordance with the result of said logical operation, a cathode ray tube control unit for displaying a diagram representing a function corresponding to said logical operation program on the display surface of a cathode ray tube, and a sequence display control unit for converting said logical operation program into data for displaying said logical circuit on said display surface, and for converting data from a keyboard into said logical operation program, the improvement comprising:

means for displaying on the display surface of the cathode ray tube a signal name displaying column including the names of input signals collectively and a symbol displaying region for displaying logic symbols;

the sequence display control unit including a first and a second storage table for determining a position of a logic symbol to be displayed in accordance with the position of the name of a signal, said first storage table storing a state of the display in said signal name displaying column, said second storage table storing therein the position on said display surface of an output line of each of the names of the input signals and the position on said display surface of an output line of the name of each output signal, said names of said input signals and said name of said output signal having been displayed on said display surface, said name of said output signal being the name of the output signal from the logic circuit corresponding to said logic symbol.

4,445,170
COMPUTER SEGMENTED MEMORY MANAGEMENT TECHNIQUE WHEREIN TWO EXPANDABLE MEMORY PORTIONS ARE CONTAINED WITHIN A SINGLE SEGMENT

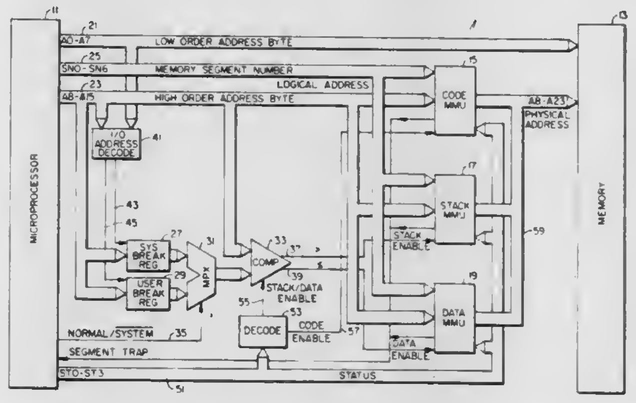
Ronald P. Hughes, Santa Clara; Douglas G. Swartz, Cupertino, and Bruce E. Weiner, Palo Alto, all of Calif., assignors to Zilog, Inc., Campbell, Calif.

Filed Mar. 19, 1981, Ser. No. 245,483
Int. Cl.³ G06F ***3/00***
U.S. Cl. 364—200 **11 Claims**

1. In a computer system that includes a central processing

unit characterized by specifying an address of one of a plurality of memory segments on a segment bus and a particular memory location within the designated memory segment on an address bus, a system for managing physical memory of said computer system, comprising:

first and second memory management units each having an input connected to said segment bus and to at least a most significant portion of the address bus, each of said memory management units being characterized by generating at an output connected to a memory a distinct stored physical memory segment starting address for at least one segment number received on said segment bus and generating an offset address within each of said physical segments according to the address of the address bus, each of said memory management units further being characterized by controlling the size of said at least one logical memory segment actually used in accordance with the damands of the system, said first memory management unit connected to operate from a lower end of said at least one logical memory segment and expand toward a higher end thereof, said second memory management until connected to operate from said higher end of said at least one logical memory segment and expand toward said lower end, and



means responsive to said address bus and connected to said first and second memory management units for enabling only one of said first and second memory management units at a time, said enabling means operating to enable said first memory management unit when the address carried by said address bus is on one side of a break value intermediate of said lower and said higher ends of said at least one logical memory segment, and to enable said second memory management unit when the address carried by said address bus is on the other side of said break value, whereby two variable size physical segments of memory can be controlled within a single logical memory segment.

4,445,171
DATA PROCESSING SYSTEMS AND METHODS

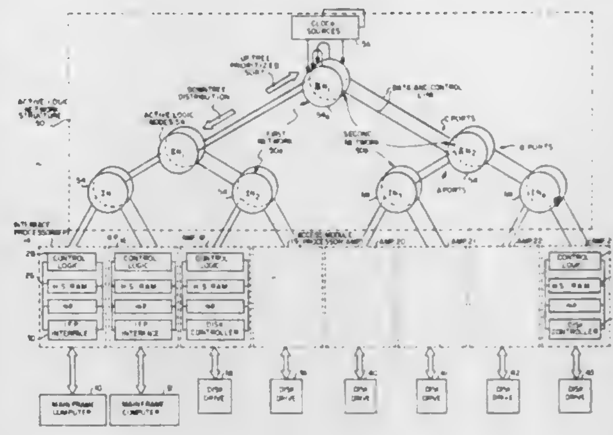
Philip M. Neches, Los Angeles, Calif., assignor to Teradata Corporation, Inglewood, Calif.

Filed Apr. 1, 1981, Ser. No. 250,094
Int. Cl.³ G06F ***3/04, 7/00, 15/20***
U.S. Cl. 364—200 **44 Claims**

1. A computing apparatus comprising:

a plurality of processor modules, each processor module including means for generating concurrent message packets; and

an intercommunication network coupled to receive and transfer the message packets from and to the processor modules, comprising a plurality of interconnected active logic decision means each including at least means for granting priority based on data content between contending message packets received from the processor modules, the decision means also including means for transferring message packets to which priority has been granted and the network including means for coupling the decision means in a converging array such that all concurrent message packets from the processor modules are placed in contention during transfer through the network and final priority decision is made within the network so that a

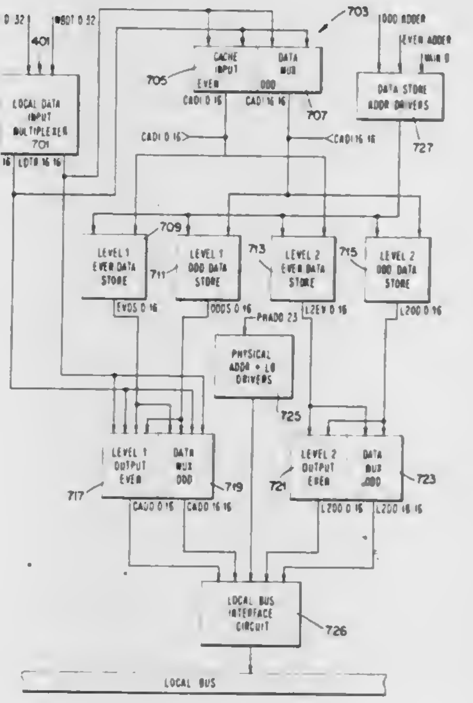


single or common message packet is transferred to the processor modules.

4,445,172
DATA STEERING LOGIC FOR THE OUTPUT OF A CACHE MEMORY HAVING AN ODD/EVEN BANK STRUCTURE

Arthur Peters, Sudbury, and Philip E. Stanley, Westboro, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 31, 1980, Ser. No. 221,853
Int. Cl.³ G06F ***13/00***
U.S. Cl. 364—200 **6 Claims**



1. In a data processing system wherein data words are stored in a system memory including a plurality of storage locations and each of the storage locations in associated with either an odd or even address number and wherein one of a plurality of system elements requests the transfer of a pair of successively addressed data words by supplying in a memory request the address number associated with the first of the pair of data words, a cache memory comprising:

memory means for storing a subset of said data words stored in said system memory, said memory means having an odd memory module for storing data words associated with odd address numbers and an even memory module for storing data words associated with even address numbers, said memory means for selectively outputting said pair of requested data words including a first data word associated with an even address number and a second data word associated with an odd address number;

means for controlling said memory means to output said first and second data words;

means for transferring said outputted pair of data words from said cache memory to said one of said system elements; and

means for selectively supplying said outputted pair of data words to said transferring mean such that the first and second data words in said pair of data words to be simultaneously transferred by said transferring means comprise either said first and second outputted data words, respectively, or said second and first outputted data words, respectively,

wherein said odd memory moduel includes a first odd random access memory having a first odd data storing portion including a first plurality of odd addressable memory locations and a first set of odd address input terminals for receiving an address number representative of a said odd address number and for addressing one of said first odd memory locations in said first data storing portion in accordance with said address number representative of a said odd address number received by said first odd address input terminals to output said second data word from said first odd data storing portion, and

a second odd random access memory having a second odd data storing portion including a econd plurality of odd addressable memory locations and a second set of odd address input terminals for receiving said address number representative of a said odd address number to address one of said second odd memory locations in said second odd data storing portion in accordance with said address number representative of a said odd address number received by said second odd address input terminals and for outputting said second data word from said second odd data storing portion,

wherein said even memory module includes a first even random access memory having a first even data storing portion and including a first plurality of even addressable memory locations and a first set of even address input terminals for receiving an address number representative of a said even address number and for addressing one of said first even memory locations in said first even data storing portion in accordance with said address number representative of said received even address number to output said first data word from said first even data storing portion, and

a second even random access memory having a second even data storing portion including a second plurality of addressable even memory locations and a second set of even address input terminals for receiving said address number representative of a said even address number to address one of said second even memory locations in said second even data storing portion in accordance with said address number representative of a said even address number received by said second even address input terminals and for outputting said first data word from said second even data storing portion,

wherein said first data word and said second data word are outputted from said first even data storing portion and said first odd data storing portion, respectively, or from said second even data storing portion and said second odd data storing portion, respectively.

4,445,173

IMPROVED SYSTEM FOR SAVING AND RESTORING STATE IN CALL AND RETURN OPERATIONS

John F. Pilat, Raleigh, and Douglas M. Wells, Chapel Hill, both of N.C., assignors to Data General Corporation, Westboro, Mass.

Filed Sep. 11, 1981, Ser. No. 302,262
Int. Cl.^{3} G06F *9/42*
U.S. Cl. 364—200 **11 Claims**

1. In an improved digital computer system including

(A) memory means for performing memory operations including storing and providing items of data including instructions in response to memory commands, each one of said memory commands specifying one said memory operation and an address of one of said items of data in said memory means, and

(B) processor means connected to said memory means for providing said memory commands in response to operation codes in said instructions,

and wherein

said processor means performs executions of sequences of said instructions,

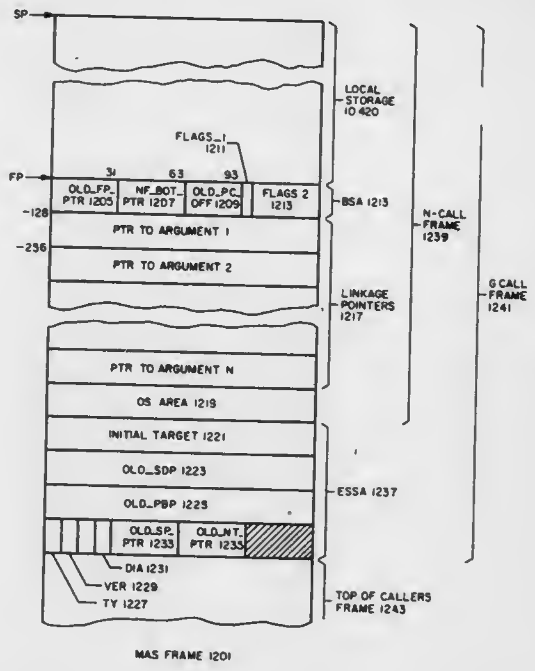
said processor means contains internal state stored in internal registers of said processor means for said execution currently being performed by said processor means, said internal state including

(a) basic internal state which changes each time any said execution is commenced or terminated and

(b) extended internal state which changes only when certain ones of said executions are commenced or terminated,

said items include a frame item associated with each unterminated said execution,

said instructions include call instructions containing call operation codes of said operation codes and return instructions containing return operation codes of said operation codes,



said processor means includes call-return execution means for performing a call operation in response to said call instructions, said call operation including creating a new said frame item, storing said internal state of said current execution in said new frame item, setting said internal state as required to commence a new said current execution, and commencing said new current execution and for performing a return operation in response to said return instructions, said return operation including terminating said current execution by restoring said internal state from said frame item associated with said current execution,

improved means for saving and restoring said internal state comprising:

(1) a plurality of said call operation codes,

(2) a single one of said return operation codes;

(3) a basic frame item of said frame items and an extended frame item of said frame items, said basic frame item and said extended frame item both containing

(a) a frame type indicating whether said frame item is said basic frame item or said extended frame item and

(b) a basic state item containing said stored basic internal state and said extended frame item further containing

(c) an extended state item containing said stored extended internal state;

(4) state saving means in said call-return execution means responsive to said plurality of call operation codes including

(a) extended state saving means responsive to a first certain call operation code of said plurality of call operation codes for storing said extended state in said extended state item in said new frame item, storing said basic state in said basic state item in said new frame item, and setting said frame type item to indicate that said new frame item is one of said extended frame items and

(b) basic state saving means responsive to a second certain call operation code of said plurality of call operation codes for storing said basic state in said basic state item and setting said frame type item to indicate that said new frame item is one of said basic frame items; and

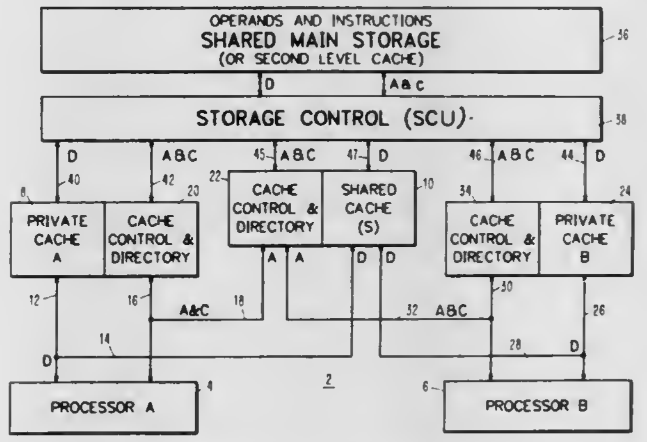
(5) state restoration means in said call-return means responsive to said return operation code and to said frame type item for restoring said basic internal state from said basic state item and said extended internal state from said extended state item in response to said return operation code when said frame type item specifies said extended frame item and otherwise restoring only said basic internal state from said basic state item.

4,445,174

MULTIPROCESSING SYSTEM INCLUDING A SHARED CACHE

Robert P. Fletcher, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 31, 1981, Ser. No. 249,526
Int. Cl.^{3} G06F *13/00*
U.S. Cl. 364—200 **15 Claims**



4. A data processing system comprising:

a main storage means for storing a plurality of instructions and operands at addressable locations;

at least first and second processing means;

said first and second processing means each including a private high speed storage means associated therewith for storing a predetermined number of instructions only, previously transferred from said main storage means to said private high speed storage means, including means for directly accessing said private high speed storage means by its associated processor;

a shared directly accessible high speed storage means, associated with each of said first and second processing means, for storing a predetermined number of instructions and operands previously transferred from said main storage to said shared high speed storage means, including means for directly accessing said shared high speed storage means by each processor.

each of said processing means including means for providing a local address signal identifying an instruction or operand in said main storage means, with said local address signal being provided by one of said first and second processing means in a predetermined sequence to:

(a) said private high speed storage means of one of said first and second processing means directly if the local address signal identifies an instruction,

(b) said shared high speed storage means directly if the local address signal identifies an instruction or operand,

(c) said main storage if the local address signal identifies an instruction or operand, and including means operative with said means for providing a local address signal to determine the first storage means in the sequence that indicates the identified instruction or operand is stored therein, with the identified instruction or operand being fetched from said first storage means in the sequence to the processing means which provided said local address signal.

6. A method of operating a multiprocessor system comprised of at least first and second processors, a private cache storage device associated with each processor, which is directly accessible by its associated processor, a shared cache storage device which is shared by each processor, which is directly accessible by each processor, and a main memory storage device which is shared by each processor, with information being referenced with respect to addressable locations in said main memory storage device, said method comprising the steps of:

storing slected pieces of information from said main memory storage device in each of said private cache storage devices;

transferring pieces of information, that have been or are about to be updated with respect to the main memory storage copy of the information in the private cache storage device of one of said first and second processors, and is subsequently requested by the other one of said first and second processors, to said shared cache storage device for storage therein, and

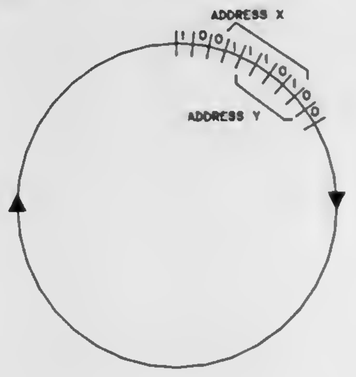
accessing a selected piece of information by a given processor in response to interrogating each of said private cache directly, said shared cache directly and said main memory storage device in a predetermined sequence.

4,445,175

SUPERVISORY REMOTE CONTROL SYSTEM EMPLOYING PSEUDORANDOM SEQUENCE

Yitzhak Cohen, Yahud, Israel, assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 14, 1981, Ser. No. 301,695
Int. Cl.^{3} G06F *13/00*
U.S. Cl. 364—200 **9 Claims**



1. A supervisory remote control system comprising:

a plurality of remote units each having a predetermined number of status points, each status point having a respective status point address, said remote units being selectively responsive to reception of respective status point addresses, for transmitting status information pertaining to an addressed status point, respectively;

a central control means, coupled to said plurality of remote units via respective communication paths, for addressing the status point addresses of said remote units and for receiving transmitted status information from said remote units;

said control means including status point address generating means for generating and transmitting to said remote units a cyclically continuous bit sequence, one bit at a time, having a plurality of successive cycles wherein each cycle exhibits an identical cyclic bit sequence having a cycle length of 2^n-1 bits as does any other cycle, wherein n is the number of bits in each of said status point addresses, said cyclic bit sequence in each of said cycles being arranged such that 2^n-1 distinct status point addresses, each comprised of n contiguous bits, are contained therein;

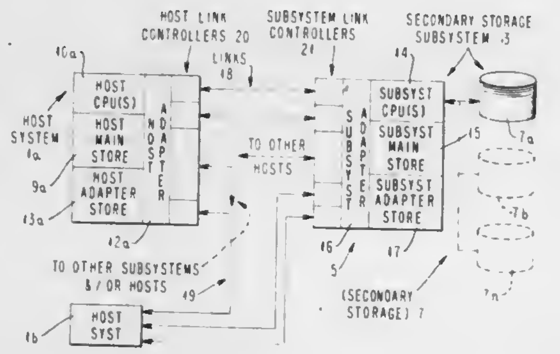
each of said remote units including detecting means for detecting, after each successive bit in each cycle, whether a just received bit completes a respective status point address with $n-1$ contiguous bits immediately preceding said just received bit in said cyclically continuous bit sequence having a plurality of cycles, such that collectively said just received bit and said $n-1$ preceding bits comprise n contiguous bits constituting a status point address in said cyclically continuous bit sequence having a plurality of cycles,

each of said remote units including response means, coupled to said detecting means, responsive to each detection by said detecting means of the completion of a respective status point address for transmitting indicia of the status of a status point, the address of which is detected as being completed by said just received bit, back to said control means during the next bit immediately following said just received bit, respectively.

4,445,176
BLOCK TRANSFERS OF INFORMATION IN DATA PROCESSING NETWORKS

John L. Burk, Poughkeepsie; Roger L. Cormier, Pleasant Valley, both of N.Y.; Michael H. Hartung, Tucson, Ariz.; Ray A. Larner, Georgetown, Tex.; Donald J. Lucas, Poughkeepsie, N.Y.; Kenneth R. Lynch, Rhinebeck, N.Y.; Brian B. Moore, Poughkeepsie, N.Y.; Howard L. Page, Charlotte, N.C.; David H. Wansor, Hyde Park, and Carl Zeitler, Jr., Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1979, Ser. No. 107,806
Int. Cl.^{3} G06F *13/00*
U.S. Cl. 364—200 **13 Claims**



1. In a data processing system including a host system and a secondary storage subsystem, a method of transferring information between said host system and subsystem comprising, in sequence:

providing a pool of multiple storage spaces in said host system for use exclusively in controlling transfers of information between said host system and said subsystem;

in preparation for transfers of messages to said subsystem, allocating for each message an integral number of spaces in said pool on a temporary basis;

forming said messages, each message containing a plurality of commands, each command of a message specifying an operation to be performed at the initiative of said subsystem as part of a series of related operations;

forming information for controlling the transfers of the associated messages and storing said information in said allocated spaces for the associated message;

transferring each of said messages to said subsystem in a single continuous signalling operation while controlling each said transfer by means of said information pre-stored in the associated allocated space;

transferring subchannel identifiers in association with certain of said messages for identifying the associated space;

storing said messages and the associated subchannel identifiers in said subsystem;

initiating operations in said subsystem specified by the commands in said transferred messages;

transferring a representation of one of said subchannel identifiers associated with one of said certain messages from said subsystem to host system;

transferring data specified by a command in said one of said certain messages between said subsystem and said host system in association with said representation of said one subchannel identifier;

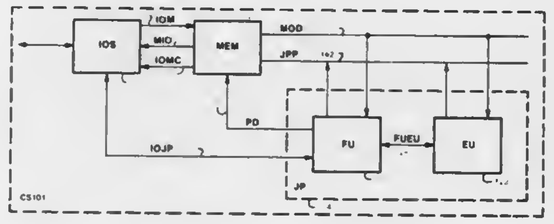
location the allocated space in said host system pool associated with said one of said certain messages by means of said one subchannel identifier; and

controlling the transfer handling of said data within said host system while using control information stored in said space associated with said one message.

4,445,177
DIGITAL DATA PROCESSING SYSTEM UTILIZING A UNIQUE ARITHMETIC LOGIC UNIT FOR HANDLING UNIQUELY IDENTIFIABLE ADDRESSES FOR OPERANDS AND INSTRUCTIONS

Richard G. Bratt, Wayland, Mass.; Stephen I. Schleimer, Chapel Hill; John F. Pilat, Raleigh, both of N.C.; Richard A. Belgard, Saratoga, Calif.; Steven J. Wallach, Saratoga, Calif.; Gerald F. Clancy, Saratoga, Calif.; Craig J. Mundie, Cary, N.C.; David H. Bernstein, Ashland; Edward S. Gavrin, Lincoln, both of Mass.; Thomas M. Jones, Chapel Hill, N.C., and Brett L. Bachman, Boston, Mass., assignors to Data General Corporation, Westboro, Mass.

Filed May 22, 1981, Ser. No. 266,411
Int. Cl.^{3} G06F *9/22*
U.S. Cl. 364—200 **3 Claims**



1. In a digital computer system including processor means for performing operations upon operands, memory means for storing said operands and instruction for directing said operations, selected combinations of operands and instructions being identifiable as objects for containing said selected combinations of operands and instructions, bus means for conducting operands and instructions between said memory means for conducting operands between said digital computer system and devices external to said digital computer system, said processor means comprising:

ALU means connected from said bus means for performing said operations,

addressing means connected to said bus means for providing addresses for controlling the transfer of operands and instructions between said memory means and said processor means, each one of said addresses comprising

an object field for identifying a corresponding one of said objects,

an offset field for specifying a first number of information bits of offset relative to the start of said corresponding one of said objects, and

a length field for specifying a second number of information bits of said corresponding one of said objects following said first number of information bits to be transferred between said memory means and said processor means, and

microcode control means for storing sequences of microinstructions for controlling at least said processor means, said microcode control means connected to said bus means and responsive to said instructions for providing said sequences of microinstructions to said processor means,

said ALU means including

general register file means connected from said bus means for storing said operands and said addresses,

said general register file means comprising a plurality of vertically ordered registers vertically divided into three parallel-operating and addressed parts,

a first part of said general register file means comprising first register file means for storing object fields of said addresses,

a second part of said general register file means comprising second register file means for storing offset fields of said addresses and operands, and

a third part of said general register file means comprising third register file means for storing length fields of said addresses,

address ALU means connected to said general register file means and to said bus means and responsive to said sequences of microinstructions for performing operations on said addresses, and

string transfer ALU means for providing strings of successive addresses for controlling transfer of successive segments of said operands between said memory means and said processor means,

said second number of information bits of each of said operands being greater than the width of said bus means,

each one of said strings of successive addresses corresponding to one of said operands,

each one of said successive addresses corresponding to a successive segment of said corresponding one of said operands, and

each one of said segments including a said second number of information bits equal to or less than said width of said bus means.

4,445,178
FISHING AID APPARATUS AND METHOD

Harold L. Scheer, 7216 Shoreline Dr.; Tom L. Jenkins, 6484 Sterling Dr., both of Oklahoma City, Okla. 73132; Robert M. Kimmell, 3529 NW. 19th, Oklahoma City, Okla. 73107, and Michael E. Holloway, 1822 Wind Hill Ave., Edmond, Okla. 73034

Filed Aug. 18, 1981, Ser. No. 293,852
Int. Cl.^{3} G06F *15/20*
U.S. Cl. 364—400 **22 Claims**

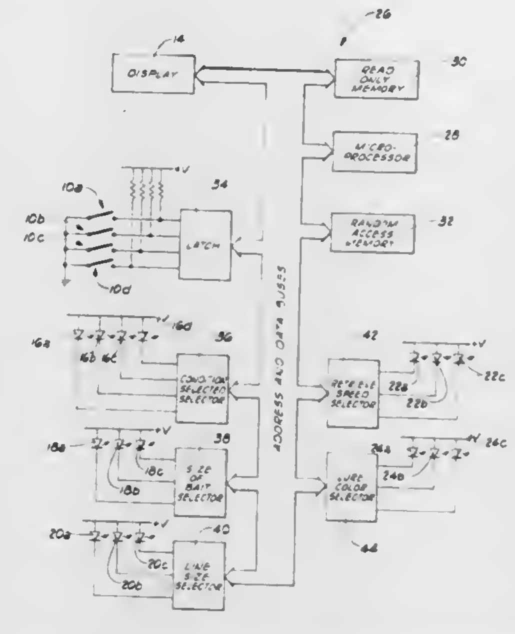
5. An apparatus for selecting a desirable fishing bait from a plurality of fishing baits, comprising:

means for specifying a plurality of general environmental conditions affecting fish habitats, each of said general environmental conditions being defined to include a plurality of specific environmental indentifiers;

data entry means for selecting one of said specific environmental identifiers for each of said general environmental conditions;

means for determining which specific environmental identifiers have been entered by said data entry means and for accumulating for each bait respective predetermined values corresponding to the entered specific environmental identifiers;

comparison means for effectively comparing the accumulated value for each respective one of the plurality of fishing baits with the accumulated value for each other respective one of the plurality of fishing baits and for selecting the desirable fishing bait based upon the comparison; and

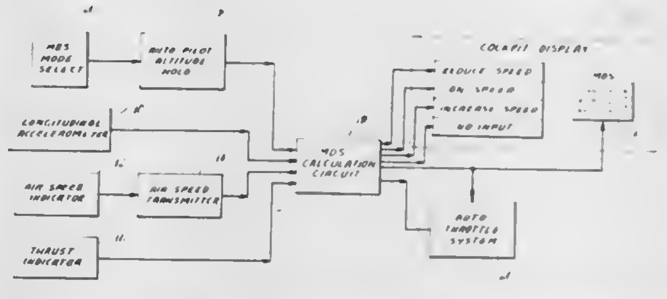


display means, responsive to said comparison means, for displaying the desirable fishing bait.

4,445,179
AIRCRAFT MINIMUM DRAG SPEED SYSTEM

Paul E. Michelotti, P.O. Box 607, 5 Woods Way, Woodbury, Conn. 06798

Continuation-in-part of Ser. No. 128,107, Mar. 7, 1980, abandoned. This application Jun. 18, 1981, Ser. No. 274,731
Int. Cl.^{3} G06F *15/20*
U.S. Cl. 364—431.07 **2 Claims**



2. A method for obtaining minimum fuel consumption per unit of time in an operating aircraft in flight, utilizing a computer with a memory and comparator, and input means representing longitudinal acceleration, airspeed, and engine thrust comprising the steps of:

(1) Establishing the aircraft in level flight;
(2) Adjusting airspeed to a reference value, said value being in excess of the minimum drag speed range of the given aircraft;
(3) Adjusting thrust to a reference value, said value being less than the minimum flight sustaining thrust for the given aircraft;
(4) Sensing a first current longitudinal acceleration and corresponding airspeed;
(5) Storing the acceleration and airspeed values sensed in Step 4;
(6) Repeating Steps 4 and 5 at predetermined time intervals;
(7) Comparing acceleration values stored in Steps 5 and 6 until it is determined that a diminished acceleration value or diminishing series of values has been succeeded by an increased acceleration value or increasing series of values;
(8) Determining the airspeed value corresponding to the last diminished acceleration value compared in Step 7;
(9) Adjusting thrust to maintain the airspeed value determined in Step 8;
(10) Sensing the thrust value established in Step 9;
(11) Storing the thrust value sensed in Step 10;

(12) Increasing airspeed by a predetermined increment above the airspeed value determined in Step 8;
(13) Reducing thrust by a predetermined increment below the thrust value stored in Step 11;
(14) Repeating Steps 4 through 9; and
(15) Periodically repeating Steps 10 through 15.

4,445,180

PLANT UNIT MASTER CONTROL FOR FOSSIL FIRED BOILER IMPLEMENTED WITH A DIGITAL COMPUTER

Guy E. Davis, Martinez, Calif., and Jack R. Smith, Pittsburgh, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

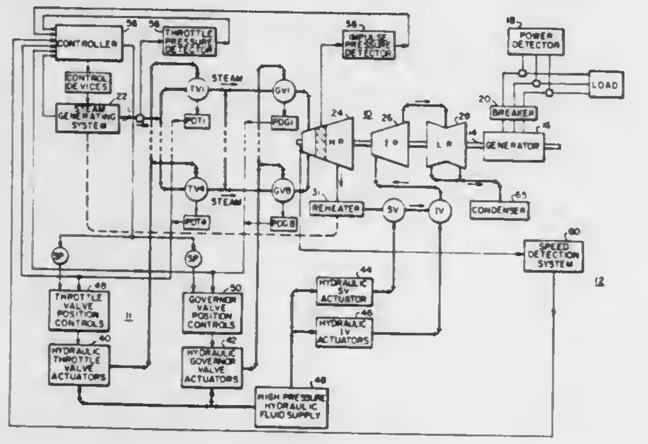
Filed Nov. 6, 1973, Ser. No. 413,291

Int. Cl.^{3} G06F *15/46;* **G05B** *15/00;* **F01D** *17/02*

U.S. Cl. 364—494 **30 Claims**

MICROFICHE APPENDIX INCLUDED

(4 Microfiche, 344 Pages)


CONTROLLER
THROTTLE PRESSURE DETECTOR
IMPULSE PRESSURE DETECTOR
POWER DETECTOR
CONTROL DEVICES
STEAM GENERATING SYSTEM
STEAM
TV1
GV1
LOAD
BREAKER
GENERATOR
REHEATER
CONDENSER
SPEED DETECTION SYSTEM
THROTTLE VALVE POSITION CONTROLS
GOVERNOR VALVE POSITION CONTROLS
HYDRAULIC IV ACTUATORS
HYDRAULIC THROTTLE VALVE ACTUATORS
HYDRAULIC GOVERNOR VALVE ACTUATORS
HIGH PRESSURE HYDRAULIC FLUID SUPPLY

1. A system for controlling the operation of a fossil fired boiler-steam turbine plant, said system comprising:

(a) boiler control means responsive to an electrical representation of load demand reference for operating the fossil fired boiler to meet the load demand reference;

(b) an electrohydraulic control system for operating the turbine valves to direct steam from the fossil fired boiler to the turbine;

(c) turbine control means responsive to the electrical representation of the load demand reference for controlling the operation of said electrohydraulic control system to direct steam into the turbine so that the turbine meets the plant load reference;

(d) coordinated control means for providing the electrical representation of load demand reference in parallel to said turbine control means and to said boiler control means whereby coordinated control of the fossil fired boiler and steam turbine is achieved;

(e) means for generating electrical representations of throttle pressure and generated power; and

(f) said coordinated control means including first and second, distinct control loops responsive to the representations of throttle pressure and generated power, respectively, and each including an integrating controller responsive to the difference between its one representation and a corresponding reference value to modify the load demand reference applied to said boiler control means, and a third control loop including an integrating controller, responsive to the difference between the representation of throttle pressure and a throttle pressure reference for modifying the load demand reference applied to said turbine control means, said integrating controllers capable of processing its input difference signal with varying constants dependent upon the system mode of operation.

4,445,181

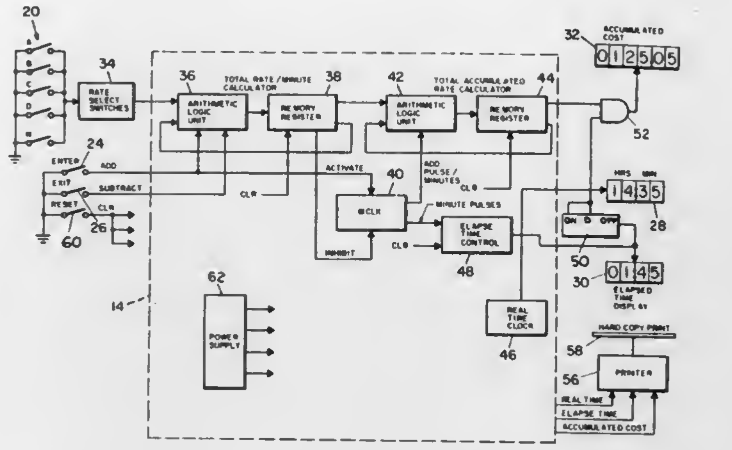
MEETING COST CALCULATOR AND/OR TIMER

Teoman Yatman, 11627 Amigo Ave., Northridge, Calif. 91326

Filed Jun. 2, 1981, Ser. No. 269,471

Int. Cl.^{3} G06F *15/20*

U.S. Cl. 364—464 **17 Claims**



1. A device for calculating the cost and time of a meeting and displaying the cost thereof, comprising:

input means for selecting the time based compensation rate of each meeting attendee;

memory means connected to said input means for accumulating the instantaneous selected compensation rates of all meeting attendees;

timing means for timing the meeting,

said timing means selectively enabled by said input means and operative to activate said memory means for accumulating the selected compensation rates of all meeting attendees over a time period initiated by said input means; and

display means connected to said memory means for displaying the accumulated selected rates of said attendees.

4,445,182

METHOD OF CONTROL OF NC MACHINE TOOLS

Eiichi Morita, Osaka; Yoshihisa Kato; Koichi Takeda, both of Takarazuka, and Takuya Oku, Ikeda, all of Japan, assignors to Daihatsu Motor Company, Limited, Osaka, Japan

PCT No. PCT/JP80/00214, 371 Date Apr. 2, 1981, 102(e) Date Apr. 2, 1981, PCT Pub. No. WO81/01061, PCT Pub. Date Apr. 16, 1981

PCT Filed Sep. 24, 1980, Ser. No. 253,854

Claims priority, application Japan, Oct. 2, 1979, 54-127593; Oct. 9, 1979, 54-130543

Int. Cl.^{3} G06F *15/46;* **G05B** *19/18*

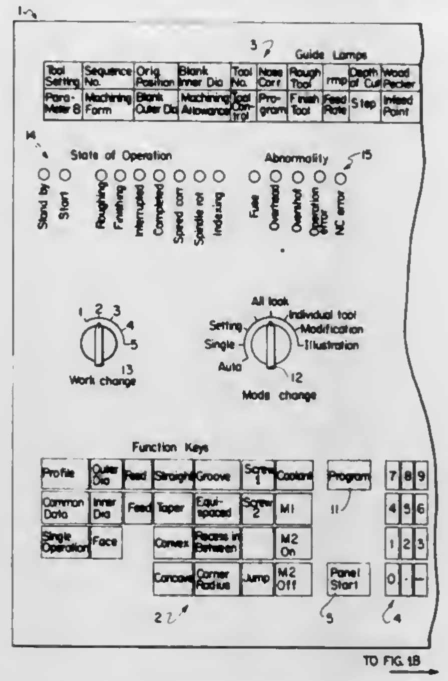
U.S. Cl. 364—474 **6 Claims**

1. A method of control of NC machine tools of the type wherein all control data necessary for preparing machining data is inputted into a computer control device by key switches provided on an operating control panel, said control device having a memory means divided into a plurality of input buffers each associated with a different workpiece and a single machining buffer assembly, said method comprising the steps of:

inputting into said input buffers common data necessary for machining workpieces and machining step data necessary for computing the paths of movement of tools;

successively computing the data necessary for machining any selected workpiece on the basis of the data stored in the input buffer associated with the selected workpiece; and

transferring the results of the computations to said machining buffer assembly for use in controlling the machining of the workpiece, such that the workpiece is machined to a predetermined shape on the basis of said computed data.



4,445,183

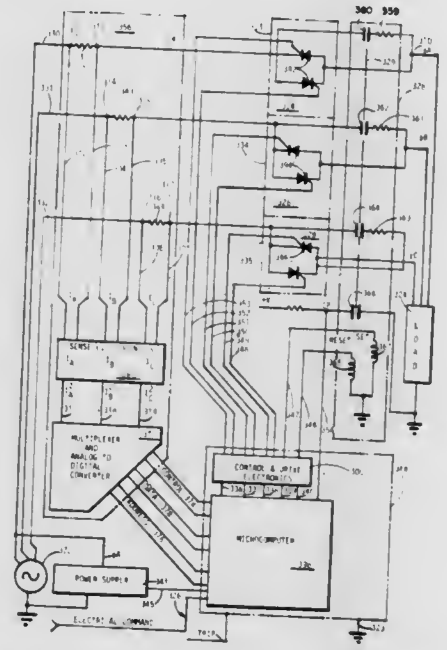
ELECTRICAL SWITCH

Patrick E. McCollum, Santa Ana, Calif., and William A. McFall, Palm Harbor, Fla., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 23, 1981, Ser. No. 334,002

Int. Cl.^{3} G01R *19/00, 21/00*

U.S. Cl. 364—483 **36 Claims**


380
350
SENSE
MULTIPLEXER AND ANALOG TO DIGITAL CONVERTER
CONTROL & INPUT ELECTRONICS
MICROCOMPUTER
POWER SUPPLY
ELECTRICAL COMMAND
RESET
SET
LOAD

1. An electrical switch for controlling the application of an alternating source voltage to a load under the control of a command electrical signal, resulting in the development of a load current in response to said command electrical signal comprising:

a semiconductor switching means having a predetermined non-bounce switching characteristic, being responsive to a semiconductor switching means operating signal for connecting said load to said source voltage,

an electromechanical switching means having a low voltage drop in a conducting condition being responsive to an electromechanical switching means operating signal and being connected in parallel with said semiconductor switching means for connecting said load to said source voltage,

control means having a microcomputer following a predetermined program and being responsive to said command electrical signal for providing said semiconductor switching means operating signal and said electromechanical switching means operating signal,

means responsive to said alternating source voltage crossing zero voltage for providing a control X signal to correspond with said alternating source voltage crossing zero voltage having a first predetermined sequence of polarity change, said control means being responsive to said control X signal,

said control means being responsive to the concurrence of said command electrical signal and a predetermined control X signal to provide said semiconductor switching means operating signal and said electromechanical switching means operating signal, said semiconductor switching means being responsive to said semiconductor switching means operating signal to provide a first conduction path from said alternating source voltage to said load corresponding with a first predetermined sequence of alternating source voltage polarity change and said electromechanical switching means being responsive to said electromechanical switching means operating signal to provide a second conduction path having a low voltage drop in shunt with said first conduction path and

said control means also being responsive to interruption of said command electrical signal to provide said semiconductor switching means operating signal, said semiconductor switching means being responsive to said semiconductor switching means operating signal provides a first conduction path from said alternating source voltage to said load in parallel with said closed load contacts, said control means interrupting said electromechanical switching means operating signal to open said load contacts,

said control means being further adapted to interrupt said semiconductor switch means operating signal subsequent to said load contact opening,

interruption of said semiconductor switch means operating signal occuring a predetermined time before said source voltage crosses zero voltage having a predetermined sequence of polarity change,

said semiconductor switch means being responsive to interruption of said semiconductor switching means operating signal to interrupt said first conduction path in synchronization with said alternating source voltage crossing zero voltage having a first predetermined sequence of polarity change;

whereby, said invention electrical switch provides a bounce-free closure of said conduction path from said alternating source voltage to said load in response to said command electrical signal, said closure corresponding with a first predetermined sequence of alternating source voltage crossing zero voltage having a first predetermined sequence of polarity change; and

said invention electrical switch interrupts the conductive path to said load without contact bounce, associated arcing and in a manner, minimizing the DC component of source voltage applied to said load in response to interruption of said command electrical signal, said interruption of said conductive path being synchronized with said alternating source voltage crossing zero having a first predetermined sequence of polarity change.

4,445,184

ARTICULATED ROBOT

Fumio Noguchi, Takarazuka, Japan, assignor to Shin Meiwa Industry Co., Ltd., Nishinomiya, Japan

Filed Jul. 13, 1981, Ser. No. 283,117

Claims priority, application Japan, Jul. 19, 1980, 55-99179; Mar. 27, 1981, 56-45824; Apr. 11, 1981, 56-54780

Int. Cl.^{3} G06F *15/46;* **G05B** *19/42;* **B25J** *9/00*

U.S. Cl. 364—513 **18 Claims**

1. An articulated robot including at least two arms for con-

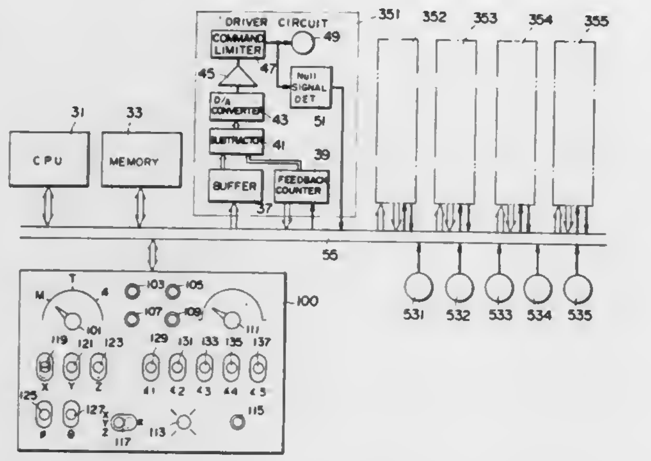
trolling the position or attitude of an object associated with one of said arms,

wherein an articulation angle defined by said at least two arms can assume at least two different states for the same position or attitude of said object

said robot comprising:

teaching means comprising state information teaching means for teaching information representing one of said two states, and operating means for teaching information which is changeable for said two states upon controlling of said object by means of at least said operating means and includes data concerning said position or attitude said teaching means further comprising switch means for reversing said state, said switch means being enabled when the state of a previous teaching is in a predetermined state, and

articulation angle controlling means comprising means responsive to said state information taught by said teaching means for controlling said articulation angle to said one of said two states.



4,445,185

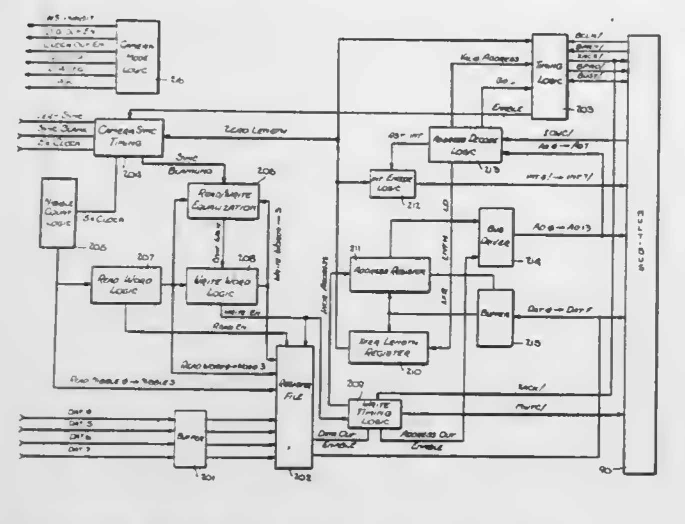
VIDEO INSPECTION SYSTEM

Ray E. Davis, Jr., Old Lyme; Richard J. Becker, Madison; Robert G. Foster, Clinton; Michael J. Westkamper, Oakdale; Earle J. Timothy, Clinton, and Richard H. Johnson, Ivoryton, all of Conn., assignors to Chesebrough-Pond's Inc., Greenwich, Conn.

Division of Ser. No. 148,451, May 8, 1980, Pat. No. 4,344,146. This application Mar. 22, 1982, Ser. No. 360,174

Int. Cl.^{3} G06F *15/20*

U.S. Cl. 364—514 **4 Claims**



1. A digital interface between a source of digital video picture elements and a memory, each picture element comprising at least four bits, said interface comprising:

(a) means connected to said source for receiving and storing data groups comprising at least the four most significant bits of data corresponding to each video picture element and for forming said data groups into words;

(b) means for performing a direct memory address transfer of said words to said memory;

(c) means for monitoring the number of data groups received from said source and the number of data groups transferred to said memory during a predetermined period of time; and

(d) means for ensuring that the number of data groups received from said source equals the number of data groups transferred to said memory during said predetermined period.

4,445,186

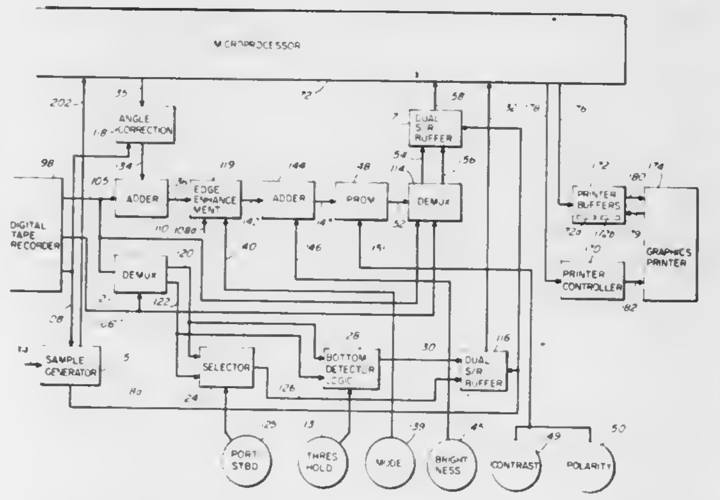
UNDERWATER MAPPING APPARATUS AND METHOD

Roger L. Caron, Westford, Mass.; Peter J. Clifford, Barrington, R.I., and Francis R. Germain, Winchester, Mass., assignors to EG&G, Inc., Wellesley, Mass.

Division of Ser. No. 896,474, Apr. 14, 1978, Pat. No. 4,232,380. This application Jul. 2, 1980, Ser. No. 165,234

Int. Cl.^{3} G01D *9/00*

U.S. Cl. 364—521 **2 Claims**



1. a display apparatus for displaying successive lines of data comprising

storage means for storing each successive line of data,

means for forming a line count associated with each line of data,

means for storing said formed line count, and

means for displaying each successive line of data in a number of successive lines of said display, said number corresponding to said stored line count.

4,445,187

VIDEO GAMES WITH VOICE DIALOG

Robert M. Best, 16016 9th N.E., Seattle, Wash. 98155

Continuation of Ser. No. 159,141, Jun. 13, 1980, Pat. No. 4,333,152, which is a continuation-in-part of Ser. No. 136,100, Mar. 31, 1980, Pat. No. 4,305,131, which is a continuation of Ser. No. 9,533, Feb. 5, 1979, abandoned. This application May 13, 1982, Ser. No. 377,861

The portion of the term of this patent subsequent to Jun. 1, 1999, has been disclaimed.

Int. Cl.^{3} G11B *31/00;* G06F *15/44;* G10L *1/00*

U.S. Cl. 364—521 **8 Claims**

1. A video apparatus for simulating a voice conversation between a human viewer of the apparatus and a talking video character, the apparatus comprising:

first means for reading video frames from a record carrier means to provide a first video frame sequence associated with a plurality of alternative second video frame sequences;

second means for reading video frames from a record carrier means to provide access to at least one of said alternative second video frame sequences before the end of said first video frame sequence;

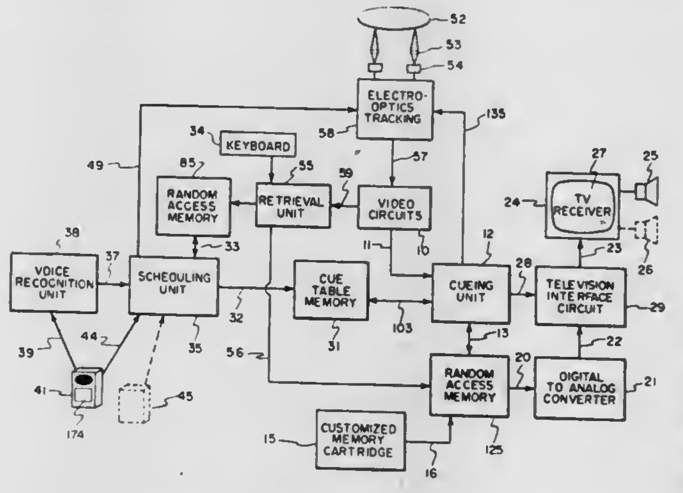
means for displaying said first and second video frame sequences including a simulated image of said talking character accompanied by corresponding voice sounds, thereby providing one side of a simulated voice conversation;

means for communicating to said human viewer during said first video frame sequence a plurality of alternative verbal responses corresponding to said alternative second video frame sequences;

means for receiving from said human viewer a response signal corresponding to a selected verbal response in said plurality of alternative verbal responses, thereby selecting a corresponding secod video frame sequence;

means for generating voice sounds electronically including words in said selected verbal response, thereby simulating the viewer's side of the voice conversation; and

means for switching at the end of said first video frame sequence between the video frames from said first reading means to the video frames from said second reading means to provide said selected second video frame sequence accompanied by voice sounds corresponding to said selected second video frame sequence, thereby simulating a voice conversation between the talking character and the human viewer.



4,445,188

MEDIA DISTRIBUTION OF HEAD CONTACT WEAR ON A DISC

Peter M. Barrett, Blairgowrie, Scotland, assignor to Burroughs Corporation, Detroit, Mich.

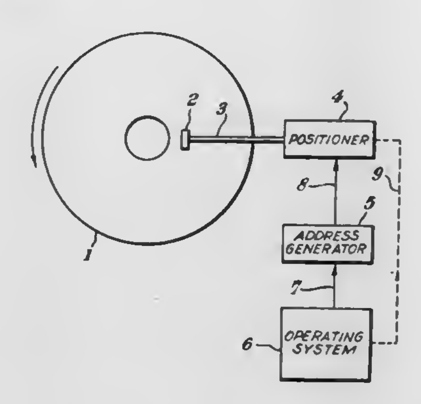
PCT No. PCT/GB80/00118, 371 Date Mar. 26, 1981, 102(e) Date Mar. 26, 1981, PCT Pub. No. WO81/00479, PCT Pub. Date Feb. 19, 1981

PCT Filed Jul. 11, 1980, Ser. No. 253,763

Claims priority, application United Kingdom, Aug. 2, 1979, 7926894

Int. Cl.^{3} G11B *21/02, 5/55*

U.S. Cl. 364—550 **22 Claims**



1. A disc data store using a flexible rotary storage medium including, a transducer in contact with the storage medium, a positioner for responding to single address command signals to position said transducer, and an operating system operating in a first state to select a data track and provide address command signals to enable the transducer to be positioned over the selected track to read or write, the disc data store further having apparatus for operating in a second state to move said transducer continuously across said flexible rotary storage medium to reduce wear comprising:

state decoding logic in said operating system for examining the state of operation of said disc data store and for providing an indication than said disc data store is in said second state;

an address generator responding to the second state of said state decoding logic to generate a succession of address commands and provide said address commands to said positioner to move said transducer in a track-to-track movement across the rotary storage medium repeatedly to allow attritional wear between said flexible rotary storage medium and said transducer to be distributed across said flexible rotary storage medium.

4,445,189

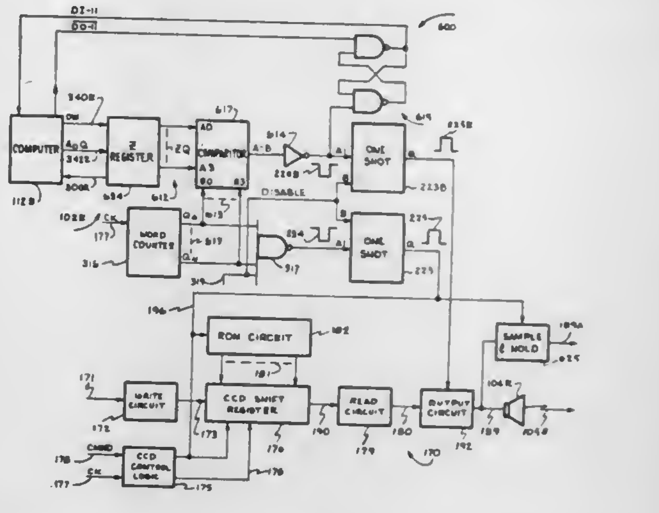
ANALOG MEMORY FOR STORING DIGITAL INFORMATION

Gilbert P. Hyatt, P.O. Box 4584, Anaheim, Calif. 92803

Continuation-in-part of Ser. No. 889,301, Mar. 23, 1978, Pat. No. 4,322,819, Ser. No. 860,278, Dec. 13, 1977, Ser. No. 849,812, Nov. 9, 1977, Ser. No. 844,765, Oct. 25, 1977, Ser. No. 812,235, Jul. 1, 1977, Pat. No. 4,371,953, Ser. No. 801,879, May 13, 1977, Pat. No. 4,144,582, Ser. No. 752,240, Dec. 20, 1976, abandoned, Ser. No. 754,660, Dec. 27, 1976, Ser. No. 730,756, Oct. 7, 1976, abandoned, Ser. No. 727,330, Sep. 27, 1976, abandoned, Ser. No. 550,231, Feb. 14, 1975, Pat. No. 4,209,843, Ser. No. 522,559, Nov. 11, 1974, Pat. No. 4,209,852, Ser. No. 476,743, Jun. 5, 1974, Pat. No. 4,364,110, Ser. No. 490,816, Jul. 22, 1974, Pat. No. 4,029,853, Ser. No. 402,520, Oct. 1, 1973, Ser. No. 339,817, Mar. 9, 1973, Pat. No. 4,034,276, Ser. No. 366,714, Jun. 4, 1973, Pat. No. 3,986,922, Ser. No. 325,941, Jan. 22, 1973, Pat. No. 4,060,848, Ser. No. 325,933, Jan. 22, 1973, Pat. No. 4,016,540, Ser. No. 302,771, Nov. 1, 1972, Ser. No. 291,394, Sep. 22, 1972, Pat. No. 4,396,976, Ser. No. 288,247, Sep. 11, 1972, Pat. No. 4,121,284, Ser. No. 246,867, Apr. 24, 1972, Pat. No. 4,310,878, Ser. No. 232,459, Mar. 7, 1972, Pat. No. 4,370,720, Ser. No. 230,872, Mar. 1, 1972, Ser. No. 229,213, Apr. 13, 1972, Pat. No. 3,820,894, Ser. No. 135,040, Apr. 19, 1971, Ser. No. 134,958, Apr. 19, 1971, and Ser. No. 101,881, Dec. 28, 1970, abandoned. This application Jun. 19, 1980, Ser. No. 160,871

Int. Cl.^{3} G06J *1/00;* G11C *27/00*

U.S. Cl. 364—600 **79 Claims**



1. A memory system comprising:

a charge transfer device for storing analog signals, said charge transfer device including means for shifting the stored analog signals, wherein the stored analog signals are degraded in response to the shifting thereof;

refresh means for reducing degradation of the stored analog signals;

a digital processor for processing digital signals in response to the analog signals stored in said charge transfer device; and

means for storing an analog signal in said charge transfer device in response to the processing of digital signals with said digital processor.

4,445,190

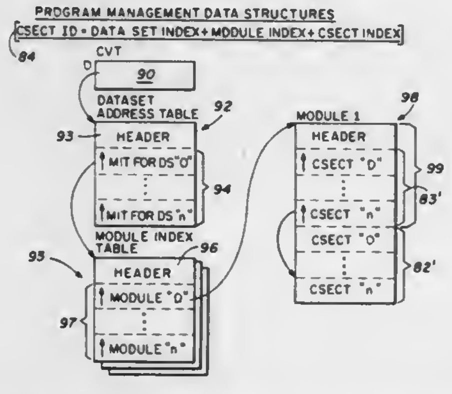
PROGRAM IDENTIFICATION ENCODING

Barbara R. Pierschalla; Kenneth L. Jeffries; Kenneth M. Herrington, and Robert F. Daugherty, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 16, 1981, Ser. No. 274,353

Int. Cl.^{3} G06F *7/22, 15/40*

U.S. Cl. 364—900 **6 Claims**



1. A method of efficiently referencing individual programs of a program data set of an electronic signal processing system, comprising the steps of:

recognizing a character program name within a program;

encoding said character program name into a unique control section identification to identify said program, said control section identification formed by a combination of a control section number defining the relative position of a control section within a module, a module number defining the position of said module within the data set, and a data set number defining the data set which contains the module; and

utilizing said control section identification as an index to locate the invoked control section in the program data set.

4,445,191

DATA WORD HANDLING ENHANCEMENT IN A PAGE ORIENTED NAMED-DATA HIERARCHICAL MEMORY SYSTEM

Kenneth L. York, Huntingdon Valley, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 65,990, Aug. 13, 1979. This application Jul. 29, 1981, Ser. No. 288,079

Int. Cl.^{3} G06F *9/00, 7/00*

U.S. Cl. 364—900 **1 Claim**

1. A named-data page-oriented storage system wherein each page in a plurality of pages is individually identified by a unique page name, said named-data page-oriented storage system and wherein the detection and control logic functions to store only the data words in a page which contain actual data and to operate each level as a storage queue for the next lower level thereby eliminating the requirement and associated time delay of prefetching a page from the lower level before storage of any data words therein at the higher level comprising:

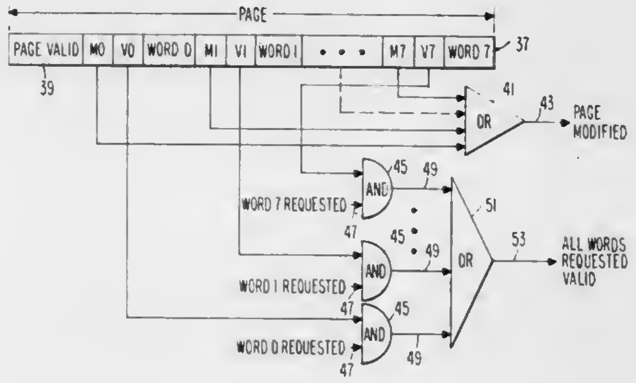
data array means for addressably storing temporarily said plurality of data pages, each data page therein comprising a plurality of data words, each data word therein having a presence flag associated therewith indicating the actual presence of data in the associated data word location of the page;

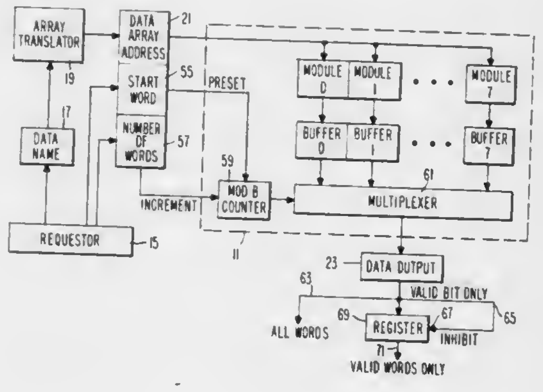
addressing means coupled to said data array means for addressing in parallel all data words in a data page in said plurality thereof, said addressing means including means for receiving a data page name, means for translating said received data page name into the address wherein the data page identified by said received data page name is stored, and means for providing said translated address to said data array means;

accessing means coupled to said data array means for accessing serially on a word-by-word basis a plurality of contiguous data words in said data page addressed by said addressing means;

said accessing means including:

means for starting said accessing at a particular data word in said data page addressed by said addressing means; and





means for continuing said accessing on a word-by-word basis for a particular number of contiguous words;

means for reading out of said data array means only those data word locations addressed by said addressing means which are indicated as containing data by their individually associated presence flags;

said means for reading including:

a register for receiving in parallel one data word at a time from said data array means, said register having an inhibit control monitoring said data presence flag associated with each said received data word for passing through said register only those words indicated as containing actual data by their said associated presence flags.

4,445,192

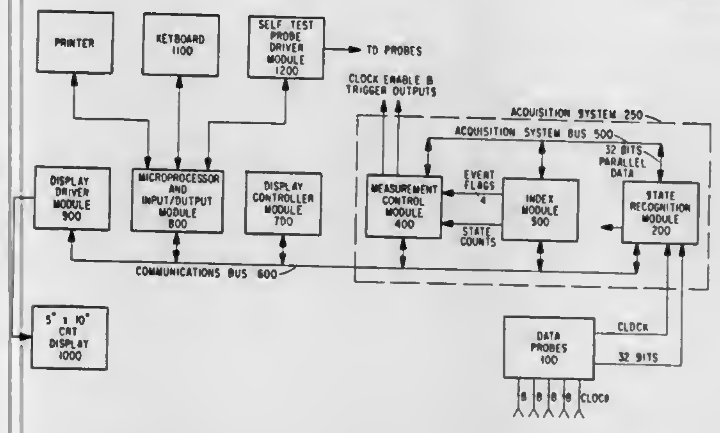
LOGIC STATE ANALYZER WITH TIME AND EVENT COUNT MEASUREMENT BETWEEN STATES

George A. Haag, Colorado Springs; O. Douglas Fogg, Loveland; Gordon A. Greenley; Steve A. Shepard, both of Colorado Springs, all of Colo., and F. Duncan Terry, Meridan, Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 210,462, Nov. 25, 1980, Pat. No. 4,373,193, which is a continuation of Ser. No. 75,787, Sep. 17, 1979, abandoned, which is a division of Ser. No. 828,138, Aug. 29, 1977, abandoned. This application Jan. 20, 1983, Ser. No. 459,425

Int. Cl.^{3} G06F *3/14, 7/00*

U.S. Cl. 364—900 **6 Claims**


PRINTER
KEYBOARD 1100
SELF TEST PROBE DRIVER MODULE 1200
TO PROBES
CLOCK ENABLE & TRIGGER OUTPUTS
ACQUISITION SYSTEM 250
ACQUISITION SYSTEM BUS 500
32 BITS PARALLEL DATA
DISPLAY DRIVER MODULE 900
MICROPROCESSOR AND INPUT/OUTPUT MODULE 800
DISPLAY CONTROLLER MODULE 700
MEASUREMENT CONTROL MODULE 400
EVENT FLAGS
4
STATE COUNTS
INDEX MODULE 500
STATE RECOGNITION MODULE 200
COMMUNICATIONS BUS 600
5" x 10" CRT DISPLAY 1000
DATA PROBES 100
CLOCK
32 BITS
8
8
8
8
CLOCK

1. Apparatus for selecting, storing and displaying a set of states occurring in a collection of digital signals, the apparatus comprising:

input means coupled to receive the collection of digital signals for performing signal conditioning thereon according to preselected thresholds to produce a collection of conditioned signals;

trace specification means for specifying state conditions in the collection of digital signals according to which the set of states to be stored and displayed is selected from among the states occurring in the collection of digital signals;

recognition means coupled to the collection of conditioned signals and responsive to the trace specification means for producing control signals indicative of whether or not a state is to be stored;

timer means for producing a collection of digital time signals indicative of the passage of time;

storage means coupled to the collections of conditioned signals and digital time signals and to the control signals for storing the set of states selected by the trace specification means and also for storing a time associated with each such selected state;

display means coupled to the storage means for displaying the set of stored states in correlated relation with their associated times.

4,445,193

BISYNCHRONOUS HOST/TERMINAL COMMUNICATION SYSTEM WITH NON-CLOCK-GENERATING MODEM & PLL GENERATED CLOCK SIGNAL

Mark W. Mueller, and Thomas S. Parker, both of Cedar Park, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 16, 1981, Ser. No. 274,296

Int. Cl.^{3} G06F *3/04, 3/00*

U.S. Cl. 364—900 **6 Claims**

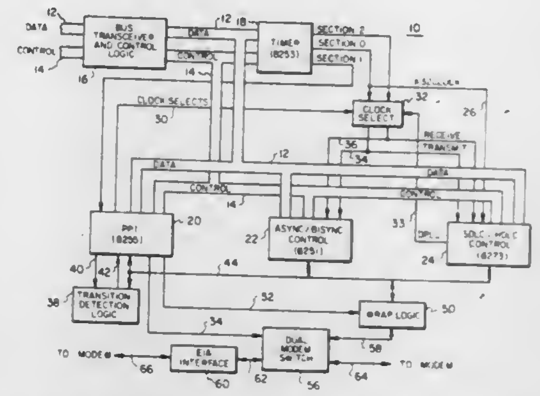
1. A bisynchronous protocol communication circuit for providing data transfer between a processor and a remote terminal under bisynchronous protocol, comprising:

a non-clock-generating modem;

means for generating a bit rate clock signal;

a digital phase locked loop circuit connected to receive a serial data stream from said modem and connected to receive said bit rate clock signal from said generating means for generating a data clock signal phase locked with said serial data stream, and

a bisynchronous communication control circuit connected for parallel data transfer with said processor, and connected to receive said serial data stream from said modem and said data clock signal, said bisynchronous communication control circuit for providing data transfer between said processor and said remote terminal through said modem under bisynchronous protocol.



4,445,194

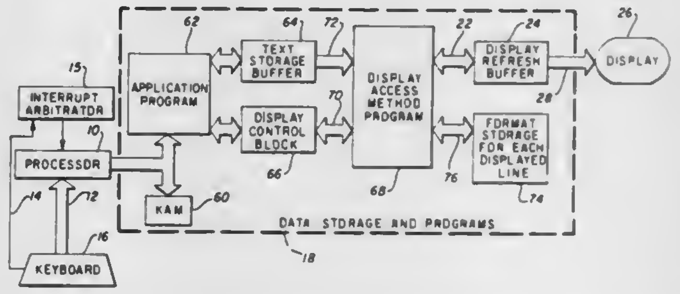
MULTIDIRECTIONAL CURSOR MOTION

William C. Cason, Austin; Ward A. Kuecker, Round Rock, and Susan D. LaPlant, Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 20, 1980, Ser. No. 208,568

Int. Cl.^{3} G06F *3/153*

U.S. Cl. 364—900 **20 Claims**



1. Apparatus for moving a cursor at an existing cursor spatial location on a display screen in horizontal and vertical directions in response to operator keystrokes, the display screen containing text and blank character spaces, comprising:

a text storage buffer for storing an unformatted data stream including text to be displayed on the display screen, said display screen having spatial locations each of which has a position in the text storage buffer,

means for processing a cursor keystroke into spatial cursor position data to identify a new cursor spatial location on the display screen where the cursor is to be moved,

means for searching the text storage buffer for a position of an existing contextual cursor corresponding to said existing cursor spatial location,

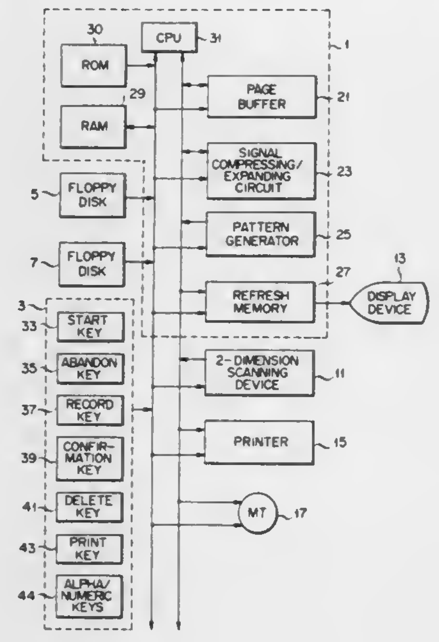
means for determining whether the new cursor spatial location identified by the spatial cursor position data corresponds to the position of the contextual cursor in te text storage buffer,

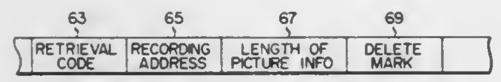
means for changing the position of the contextual cursor to correspond to the new cursor spatial location if the new cursor spatial location does not correspond to the position of the contextual cursor, and

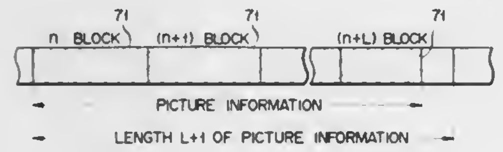
means for displaying the cursor at the new cursor spatial location on the display screen after the position of the contextual cursor has been changed.

4,445,195
RECORDING SYSTEM OF VARIABLE LENGTH PICTURE INFORMATION

Kazubiko Yamamoto, Yokosuka, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Oct. 29, 1981, Ser. No. 316,484
Claims priority, application Japan, Oct. 31, 1980, 55-153270
Int. Cl.^{3} G06F *7/00;* H04N *1/40*
U.S. Cl. 364—900 **8 Claims**





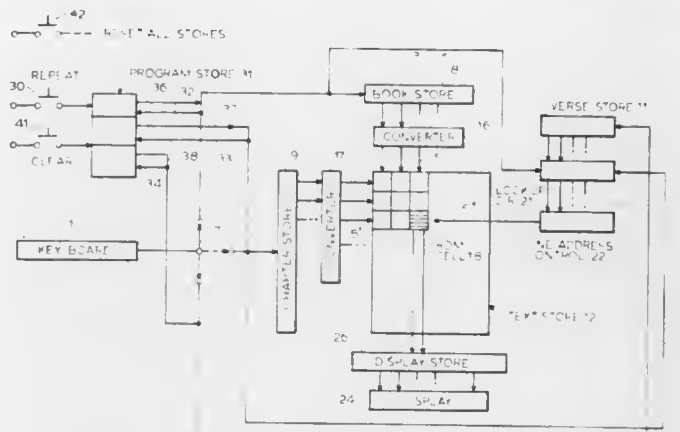


8. A recording system for variable length picture information which stores picture information in records having associated retrieval titles, each of said titles including a retrieval code for retrieving the title, a length field indicating the length of the record, and a delete mark field which represents that the record has been deleted when said delete mark is present, said system outputting picture information corresponding to an input retrieval code, said system including:

interface means for permitting a user to issue commands to said system and to input said input retrieval code;
picture information input means for converting picture information to electrical signals;
storage means for storing said electrical signals in records retrievable by said retrievable codes;
display means for displaying the picture information; and
control means for receiving commands and input retrieval codes from said interface means, and for retrieving titles of records with a delete mark, comparing the length of new picture information to be recorded with the length of a record stored on said storage means having a title with a mark in said delete mark field, and, if the record is not shorter than the new picture information, storing the new picture information to be recorded in that space of said storage means occupied by said record with said delete mark.

4,445,196
ELECTRONIC BIBLE

Helen G. Gonet, 72 Holyoke St., Lynn, Mass. 01901
Filed Apr. 2, 1981, Ser. No. 250,416
Int. Cl.^{3} G06F *15/02*
U.S. Cl. 364—900 **4 Claims**

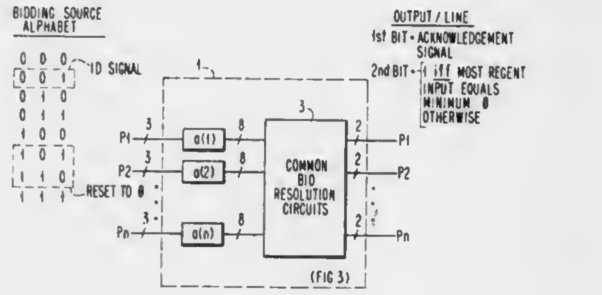


1. A hand-held electronic calculator for enhancing the learning and appreciation of passages from the Bible comprising:

a. character display means for generating visual characters in response to the application of electrically coded signals thereto;
b. biblical text storage means for storing electrically coded data manifesting biblical text therein;
c. biblical passage address keying means for enabling the application of selection command data manifesting selected book, chapter and verse of said passages to said biblical text storage means for in turn enabling generation of data indicative of particular selected passages from the text stored within said storage means; and,
d. display control circuitry coupled between said text storage means and said character display means for causing said display means to produce selected visual text in response to the application of said selection command data generated by said address keying means to said text storage means.
e. keying means coupled to said addressing means for entering selected book, chapter and verse data.

4,445,197
WEAK SYNCHRONIZATION AND SCHEDULING AMONG CONCURRENT ASYNCHRONOUS PROCESSORS

Raymond A. Lorie, and Hovey R. Strong, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 27, 1981, Ser. No. 315,568
Int. Cl.^{3} G06F *9/46*
U.S. Cl. 364—900 **5 Claims**


BIDDING SOURCE ALPHABET
OUTPUT / LINE
1st BIT - ACKNOWLEDGEMENT SIGNAL
2nd BIT - 1 IFF MOST RECENT INPUT EQUALS MINIMUM, 0 OTHERWISE
ID SIGNAL
P1
P2
Pn
a(1)
a(2)
a(n)
RESET TO 0
COMMON BID RESOLUTION CIRCUITS
(FIG 3)

1. A method for weakly synchronizing and externally scheduling a plurality of processors with reference to mutually exclusive access by one processor of the plurality to a shared resource, each processor executing tasks asynchronously with respect to the task execution by the other processors, each processor generating an associated numerically coded identity signal, comprising the steps of:

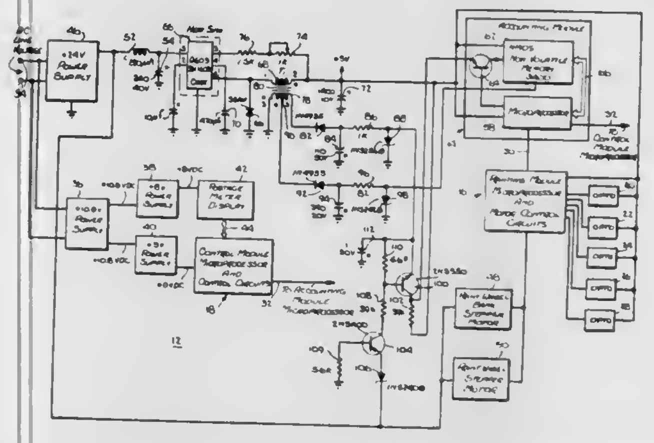
(a) selectively generating one of a first set of numerically coded signals by each processor and indicative of the processor's internal state (i.e. idle, busy, waiting);
(b) sensing the numerically coded signal from each processor, the sensed signals collectively constituting a second set of numerically coded signals, both the first and second sets of signals being well ordered in that there always exists at least one minimum valued signal in each set, each sensed signal also constituting a numerical bid for mutually exclusive access to the shared resource;
(c) providing external indication to each processor whether its sensed signal was the minimum valued signal in the second set of signals; and

at each processor, either

(d) executing a task including that portion requiring uninterrupted access to the shared resource upon indication that the corresponding sensed signal was minimum valued,
(e) deferring execution of a task until indication that its sensed signal is minimum valued is received, or
(f) responsive to the indication that its sensed signal was not minimum valued, selecting another task.

4,445,198
MEMORY PROTECTION CIRCUIT FOR AN ELECTRONIC POSTAGE METER

Alton B. Eckert, Norwalk, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.
Filed Sep. 29, 1981, Ser. No. 306,979
Int. Cl.^{3} G06F *1/00*
U.S. Cl. 364—900 **27 Claims**

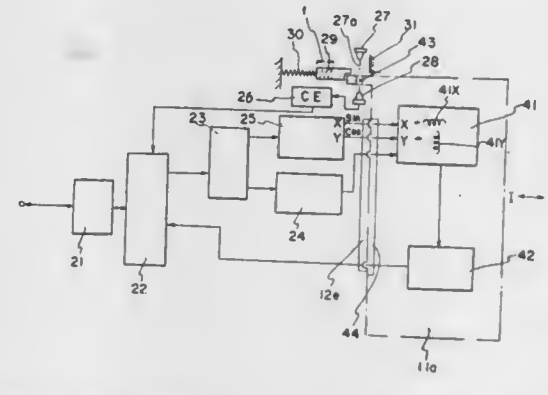


1. A memory protection circuit adapted to be energized by a power supply having a predetermined power condition, comprising:

nonvolatile memory means having a WRITE voltage terminal which when energized by a predetermined voltage enables said nonvolatile memory to have data written into memory locations;
computing means coupled to said nonvolatile memory means for writing data into said memory locations of said nonvolatile memory means;
means for generating a potential said predetermined voltage;
means for detecting said predetermined power condition; and
means coupled to said voltage generating means, said detecting means and said nonvolatile memory WRITE voltage terminal for applying said voltage to said WRITE voltage terminal during a predetermined power condition, and for removing said voltage to said nonvolatile memory WRITE voltage terminal when said predetermined power condition is not present, said applying and removing means being operable independent of the operation of said computing means.

4,445,199
PORTABLE BUBBLE MEMORY APPARATUS

Ryoji Imazeki, Hachioji; Hidetsugu Komiya, and Michiya Inoue, both of Hino, all of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan
Filed Jul. 10, 1981, Ser. No. 282,270
Claims priority, application Japan, Jul. 15, 1980, 55-96388
Int. Cl.^{3} G11C *19/08*
U.S. Cl. 365—1 **6 Claims**



2. A portable bubble memory apparatus which comprises:

a bubble memory cassette for accommodating a bubble memory element, said bubble memory cassette having a light-transmissive aperture through a portion thereof and extending in a direction different from that in which said bubble memory cassette moves;
a portable cassette adapter which includes a control circuit for being connected to said bubble memory cassette to execute an exchange of data therewith, said portable cassette adapter having a receptacle;
a light-emitting element provided in the proximity of said receptacle;
a light-receiving element provided in the proximity of said receptacle for receiving light emitted from said light-emitting element;
the light emitted from said light-emitting element impinging upon said light-receiving element through the light-transmissive aperture when said bubble memory cassette is in the loaded state within said receptacle; and
means for disabling the control circuit within said portable cassette adapter when the light impinging upon said light-receiving element is interrupted by movement of said bubble memory cassette from its correctly loaded position.

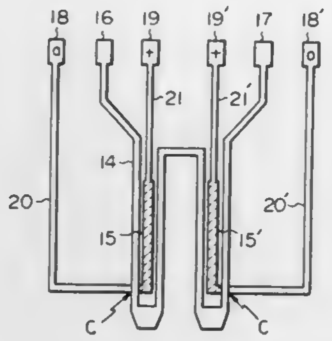
4,445,200
MAGNETIC BUBBLE MEMORY DETECTION METHOD AND DEVICE

Makoto Ohashi, Tokyo; Kazunari Komenou, Kawasaki; Tsutomu Miyashita, Kawasaki; Kazuo Matsuda, Kawasaki, and Yoshio Satoh, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Sep. 18, 1981, Ser. No. 303,588
Claims priority, application Japan, Sep. 20, 1980, 55-130082; Mar. 19, 1981, 56-38748; Mar. 27, 1981, 56-44116
Int. Cl.^{3} G11C *19/08*
U.S. Cl. 365—8 **7 Claims**

1. A method of bubble detection for a magnetic bubble memory device, said magnetic bubble memory device comprising: a bubble propagation pattern in which bubbles are written at least one bit apart and moved therealong successively bit by bit in response to a rotating drive field; and a stretcher detector, including: a stretch conductor associated with said propagation pattern; and a detecting element; said method comprising:

applying a bubble control current pulse which stretches and de-stretches the bubble to said stretch conductor in conjunction with at least two cycles of the rotating drive field and stretching a leading bubble which reaches the detection position; and detecting the stretched bubble by means of said detecting element;

said bubble control current pulse is applied to the stretch



conductor so that the leading bubble which reaches the detection position is, when detected, maintained stretched, even though a following bubble has moved one bit.

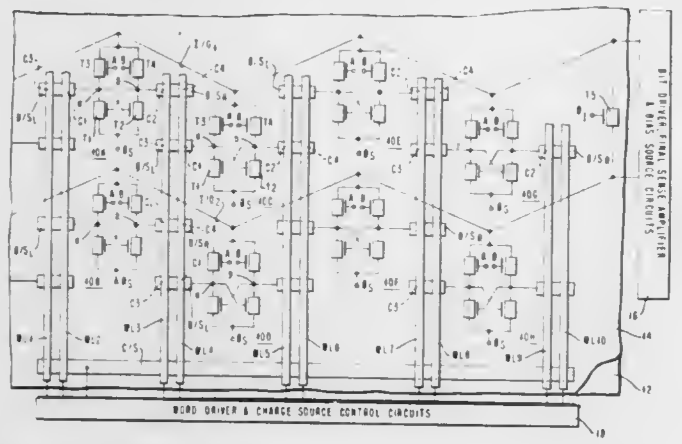
4,445,201
SIMPLE AMPLIFYING SYSTEM FOR A DENSE MEMORY ARRAY

Wilbur D. Pricer, Burlington, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 30, 1981, Ser. No. 325,697

Int. Cl.^{3} G11C *11/40*

U.S. Cl. 365—154 **19 Claims**



1. An amplifier comprising;

first and second cross-coupled transistors having a common node,

means for selectively applying a pulse to said node,

a third transistor serially connected with said first transistor forming a first common point therebetween,

a fourth transistor serially connected with said second transistor forming a second common point therebetween,

means for simultaneously applying a first signal to said first common point and a reference voltage to said second common point during a first period of time and for simultaneously applying a second signal to said second common point and a reference voltage to said first common point during a second period of time,

a common conductive line,

means for applying a first control pulse to said third transistor for transferring said first signal on said first common point to said common line during said first period of time, and

means for applying a second control pulse to said fourth transistor for transferring said second signal on said second common point to said common line during said second period of time.

4,445,202
ELECTRICALLY SWITCHABLE PERMANENT STORAGE

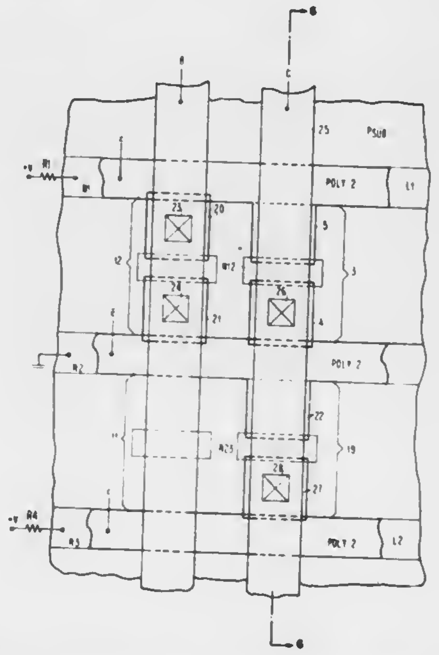
Volkmar Goetze, Grafenau; Ekkehard F. Miersch, Boeblingen, and Guenther Potz, Sindelfingen, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 2, 1981, Ser. No. 317,669

Claims priority, application European Pat. Off., Nov. 12, 1980, 80 10 6964.2

Int. Cl.^{3} G11C *13/00*

U.S. Cl. 365—182 **8 Claims**



1. A permanent storage array having at least two independently selectable logic functions comprising:

a matrix arrangement including a plurality of input and output lines forming crosspoints;

control lines for the selective activation of one of the at least two independently selectable functions;

coupling elements provided at said crosspoints which depending on their individual personalization selectively provide an electrically conductive path at a crosspoint, said coupling elements being formed of transistor structures with two gated electrodes and at least two gating electrodes, the associated circuit path between said two gated electrodes becoming conductive when a turn-on potential is applied to the at least two gating electrodes; and

connecting means connecting one of the gating electrodes of said coupling elements to the control line determinative of one of said selectable functions and the at least one remaining gating electrode of said coupling element to a corresponding input line for establishing connection in only one of said at least two independently selectable functions, said connecting means connecting all of the at least two gating electrodes of said coupling elements to the corresponding input lines for establishing connections in all of said at least two independently selectable functions.

4,445,203
MEMORY DEVICE

Hiroshi Iwahashi, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Sep. 21, 1981, Ser. No. 304,036

Claims priority, application Japan, Sep. 25, 1980, 55-133559

Int. Cl.^{3} G11C *11/40*

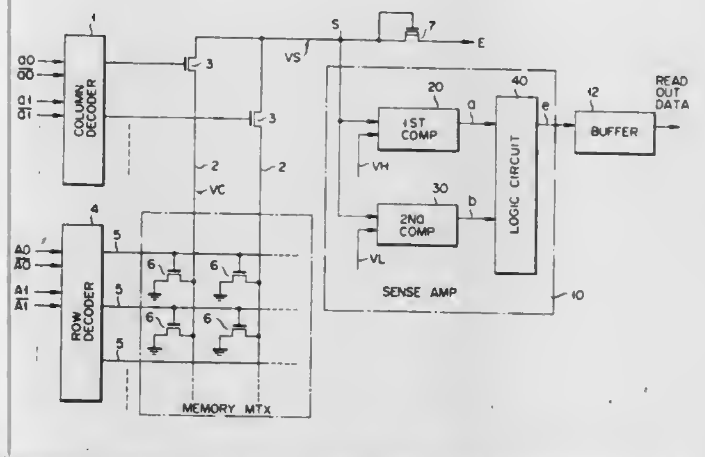
U.S. Cl. 365—189 **20 Claims**

9. A memory device comprising:

(a) memory cells containing stored data in a first or second state;

(b) a data line coupled to said memory cells for transferring data stored in said memory cells;

(c) decoder means coupled to said memory cells for selecting one of said memory cells to be coupled to said data line, the potential of said data line reflecting the state of the stored data of said selected memory cell; and



(d) sensor means coupled to said data line and responsive to the data line potential, for sensing the stored data of said selected memory cell from said data line potential, comparing said sensed stored data to a sense level and providing a read out output corresponding the sensed stored data, said sensor means including means responsive to the data stored in said selected memory cell for changing said sense level.

4,445,204
MEMORY DEVICE

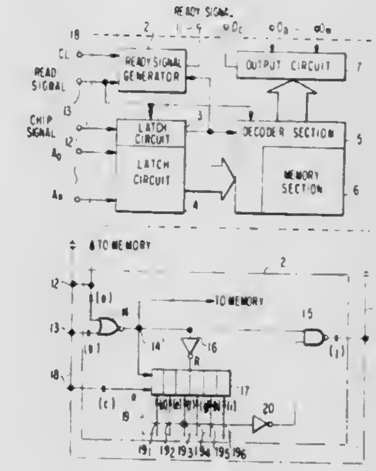
Yukihiro Nishiguchi, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 5, 1981, Ser. No. 308,645

Claims priority, application Japan, Oct. 3, 1980, 55-142125

Int. Cl.^{3} G11C *7/00*

U.S. Cl. 365—194 **12 Claims**



12. An integrated circuit comprising a memory circuit, first means for receiving an access request signal for requesting an access operation to said memory circuit, said memory circuit completing a memory operation after a predetermined period of time has elapsed from receipt of said access request signal, means for receiving a series of pulse signals, digital delay means operated by said pulse signals and generating a plurality of delay output signals having different values, means for starting delay operation of said digital delay means in response to the receipt of said access request signal, selection means having a plurality of programmable elements, said selection means selecting one of said delay output signals in accordance with a programmed state of said programmable elements, and means responsive to the selected delay output signal for generating a ready signal indicating the memory operation of said memory cell is completed.

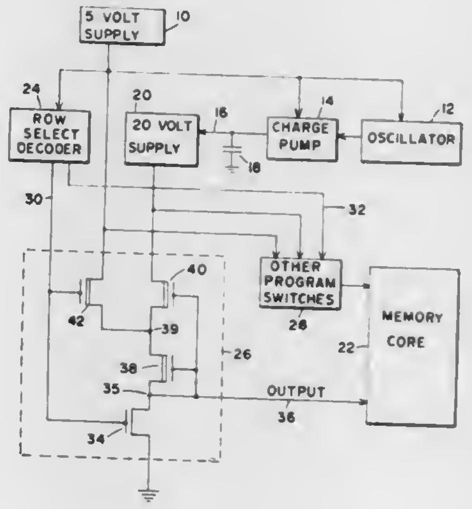
4,445,205
SEMICONDUCTOR MEMORY CORE PROGRAMMING CIRCUIT

Mark S. Ebel, Santa Clara, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Dec. 28, 1981, Ser. No. 334,695

Int. Cl.^{3} G11C *7/00*

U.S. Cl. 365—227 **8 Claims**



1. A switching circuit for producing a programming pulse on a selected program line in the core of an electrically alterable read-only semiconductor memory of the type that utilizes a low voltage supply and a high voltage supply comprising:

an input;

an output node connected to the program line;

first switching means connected between said output node and ground, operable in response to the reception of a first condition input signal from said input to connect said output node to ground, and further operable in response to the reception of a second condition input signal from said input to disconnect said output node from ground; and

second switching means connected to said output node and adapted to be connected to either the low voltage supply or the high voltage supply, said second switching means connected to said input such that said second switching means is operable in response to the reception of said first condition input signal to connect said output node only to the low voltage supply and is further operable in response to the reception of said second condition input signal to connect said output node only to said high voltage supply, the conductance of said first switching means being greater than the conductance of said second switching means so as to be able to hold said output node at ground potential when said second switching means connects the output node to the low voltage supply.

4,445,206
REMOTE ACOUSTIC MONITORING DEVICE WHICH IS TESTABLE BY VARIATION OF THE SUPPLY VOLTAGE

Bernard Audenard, Paris, France, assignor to CGR, Paris, France

Filed Jul. 6, 1981, Ser. No. 280,354

Claims priority, application France, Jul. 8, 1980, 80 15158

Int. Cl.^{3} H04R *29/00*

U.S. Cl. 367—13 **20 Claims**

1. A remote acoustic monitoring device comprising:

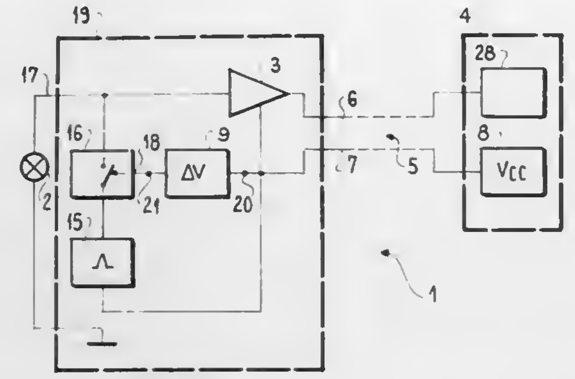
a transducer, capable of emitting and receiving, for providing surveillance of a predetermined area;

an amplifier, coupled to said transducer, for amplifying a signal therefrom;

a data acquisition unit, coupled to said amplifier, for processing a signal therefrom;

means for providing a supply voltage to said amplifier that is controllably variable;

testing means, coupled to said supply voltage means, and responsive to a voltage variation thereof, for providing a test signal to said transducer and to said amplifier simultaneously, whereby the data acquisition unit can determine the response of said transducer to said test signal by comparing a signal from said amplifier responsive to the test signal applied directly thereto from said testing means with a signal from said transducer responsive to the test signal applied to said transducer.



4,445,207

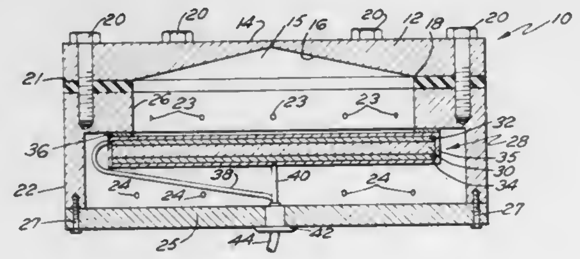
FREQUENCY INDEPENDENT ACOUSTIC ANTENNA

Robert L. Sternberg, Noank, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 4, 1977, Ser. No. 784,186

Int. Cl.³ H04B *13/00*

U.S. Cl. 367—150 **22 Claims**



1. An acoustic antenna comprising:
acoustic means for mechanically operating on an acoustic medium to produce a beam with a frequency independent beamwidth, over a continuous range of at least one octave of frequency, said acoustic means includes an acoustic filter plate operable in the acoustic medium; and
wide band transducer means arranged in signal communication with said acoustic means for converting acoustic signals applied to said wide band transducer means to electrical signals and vice versa.

4,445,208

SIGNAL DETECTING SYSTEM IN OPTICAL INFORMATION READING APPARATUS

Kimiaki Yamamoto, and Kenichi Ito, both of Hachiouji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

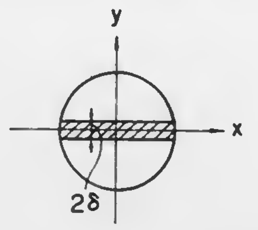
Filed Dec. 23, 1981, Ser. No. 333,697

Claims priority, application Japan, Dec. 27, 1980, 55-188796

Int. Cl.³ G11B *7/12*

U.S. Cl. 369—44 **3 Claims**

1. A signal detecting system in an optical information reading apparatus comprising a light source, an optical system which can focus a light pencil from said light source and project it onto a recording medium including a track having recorded information and a light receiving device which is set within a far field zone of said track and includes a plurality of detectors divided respectively in the direction along said track and the direction intersecting at right angles with it with the optical axis as a center to receive through said optical system a light pencil reflected from said recording medium and modulated by the information recorded in said track, a part of said light pencil being covered in a predetermined position within said far field zone to detect a tracking signal representing a lag in the direction intersecting at right angles with the direction along said track between the light pencil from said light source and said track and the direction of the lag and to control the bias fluctuation in said tracking signal and wherein at least a part of the light pencil passing through a band-shaped part in the direction along said track near the optical axis is covered within said far field zone in the light path leading to said recording medium.



4,445,209

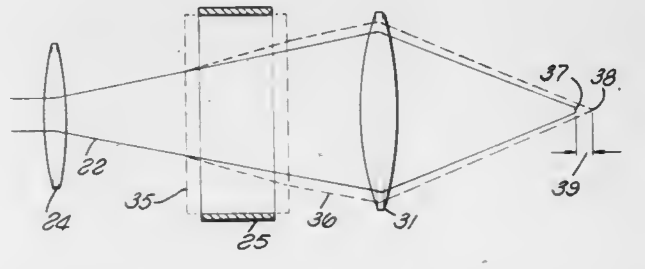
DITHERED FOCUSING SYSTEMS

Lee Mickleson, and Eric V. Olson, both of Long Beach, Calif., assignors to Discovision Associates, Costa Mesa, Calif.

Continuation of Ser. No. 70,063, Aug. 27, 1979, abandoned. This application Jan. 15, 1982, Ser. No. 339,800

Int. Cl.³ G11B *7/00*

U.S. Cl. 369—45 **12 Claims**



1. Apparatus for retrieving information stored in a plurality of optically readable information tracks formed in an information storage medium by an information recovery system, comprising:
a radiation source for generation of a coherent beam of radiation;
beam shaping means for directing the said beam of radiation to impinge upon the said information track in a reading beam spot;
read detecting means for deriving an information signal from an information track;
focusing means for indicating a vertical misalignment of the reading beam spot with respect to the information storage medium and for supplying a corresponding control signal indicative of the misalignment;
transducer means for moving the reading spot longitudinally along the axis of the said coherent beam of radiation;
means for generating an oscillatory dither signal for application to said transducer means; and
lens focusing means separate from said transducer means and responsive to the said control signal for maintaining the said beam of radiation at the optimum focused position above the information track for retrieving the maximum amount of reflected radiation from the information track;
and wherein:
the said transducer means is responsive to the said oscillatory dither signal, and includes a piezoelectric member having conductive contacts, positioned upon at least two opposing surfaces of said member,
said piezoelectric member functions as an optical element through which the coherent beam of radiation passes,
the said piezoelectric member is physically deformed in proportion to the electrical field intensity applied to the said member, and
the reading beam spot is removed longitudinally along the axis of the coherent beam of radiation as a direct result of the deformation of the said member and at a frequency determined by the said oscillatory dither signal.

4,445,210

TONE ARM MECHANISM FOR A RECORD PLAYER

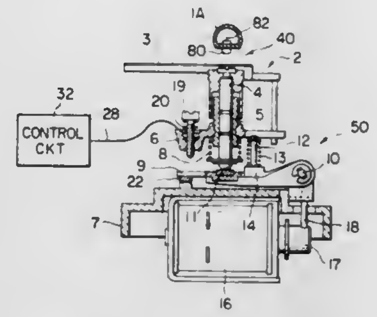
Kengo Adachi, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Jun. 15, 1981, Ser. No. 273,416

Claims priority, application Japan, Jun. 16, 1980, 55-82986[U]; Jun. 16, 1980, 55-82987[U]; Jun. 16, 1980, 55-82988[U]

Int. Cl.³ G11B *17/00*

U.S. Cl. 369—230 **24 Claims**



1. A tone arm mechanism for a record player, comprising:
(a) first means for raising and lowering a tone arm of a record player with respect to a stationary member to which said tone arm is movably attached, said first means having a member positioned below said tone arm and movable between first and second positions with respect to said stationary member;
(b) a first rotary lever rotatable at a first location about a shaft attached to said stationary member, and contactable with said first means at a point displaced from said first location by a first distance so that the rotation of said first rotary lever causes said first means to move between said first and second positions;
(c) a second rotary lever rotatable about said shaft, said second rotary lever having a long arm extending from said shaft in a direction substantially the same as that of said first lever when said first lever is in said first position, and a short arm, which is shorter than said long arm, extending from said shaft in a different direction from that of said long arm, said long arm being shorter than said first distance of said first lever;
(d) second means for transmitting the rotational force from said second rotary lever to said first rotary lever with a time delay, said second means having a spring operatively connected between said first lever and said long arm of said second rotary lever so that deformation of said spring transmits said rotational force to said first rotary lever with said time delay when said second rotary lever rotates in a given direction; and
(e) a solenoid having a plunger operatively linked with said short arm of said second rotary lever for driving said second rotary lever,
whereby displacement of said short arm of said second rotary lever is amplified by said second rotary lever and further amplified by said first rotary lever to provide amplified movement of said first means.

4,445,211

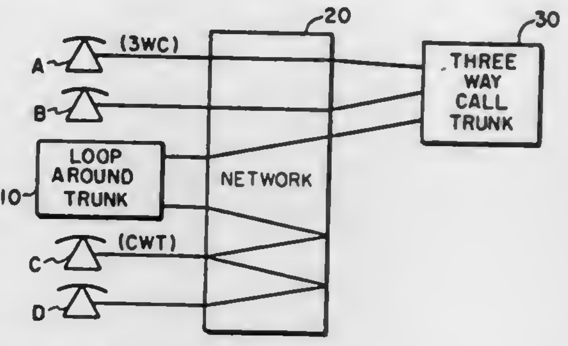
ARRANGEMENT FOR MULTIPLE CUSTOM CALLING

Robert C. Webber, Glendale, Ariz., assignor to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Oct. 29, 1981, Ser. No. 316,252

Int. Cl.³ H04Q *11/04*

U.S. Cl. 370—62 **4 Claims**



1. In a telephone switching office, an arrangement for multiple custom calling comprising:
a CPU;
a switching network connected to said CPU;
a plurality of telephone subscribers connected to said switching network including at least a first and second custom calling subscriber, each custom calling subscriber engaged in an active telephone call with a third and fourth telephone subscriber respectively;
means for detecting a request for a three way call from said first to said second custom calling subscriber, said means for detecting connected to said switching network and being operated to transmit said request to said CPU;
means for holding said first and second custom calling subscribers, said means for holding being connected between said first and second subscribers and said switching network and connected to said CPU and being operated in response to said request for said three way call;
means for alternately routing connected to said switching network and to said CPU, said means for alternately routing between operated in response to said CPU to connect said first and second custom calling subscriber with said third subscriber in said three way call;
means for connecting telephone subscribers within the same switching office, said means for connecting being connected to said means for alternately routing via said switching network and to said CPU, said means for connecting being operated in response to said means for alternately routing to provide for connecting said second custom calling subscriber with said first custom calling subscriber and said third subscriber while rendering each of said active telephone calls independently controlled.

4,445,212

ARRANGEMENT FOR MULTIPLE CUSTOM CALLING

Robert C. Webber, Glendale, Ariz., assignor to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Oct. 29, 1981, Ser. No. 316,255

Int. Cl.³ H04Q *11/04*

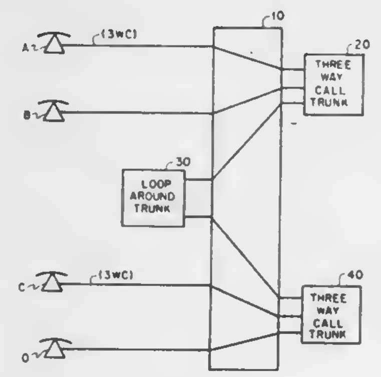
U.S. Cl. 370—62 **5 Claims**

1. In a telephone switching office, an arrangement for multiple custom calling comprising:
a CPU;
a switching network connected to said CPU;
a plurality of telephone subscribers connected to said switching network including at least a first and a second custom calling subscriber and a third and a fourth telephone subscriber:
first network means for connecting said first and second custom calling subscribers with said third telephone subscriber in a first active three way call initiated by said first custom calling subscriber, said first network means being connected to said switching network and to said CPU;
means for detecting a request for a second three way call

from said second custom calling subscriber to a fourth telephone subscriber, said means for detecting connected to said switching network and being operated to transmit said request to said CPU;

means for holding said second custom calling subscriber while maintaining said first active three way call between first custom calling subscriber and said third telephone subscriber, said means for holding being connected to said switching network and operated in response to said request to said CPU for said second three way call;

means for temporarily disconnecting said second custom calling subscriber from said first active three way call, said means for temporarily disconnecting being connected to said switching network and operated in response to said request to said CPU for said second three way call;



second network means for connecting said second custom calling subscriber to said fourth telephone subscriber and for connecting another subscriber to said second custom calling subscriber and to said fourth telephone subscriber in a second active three way call, said second network means being connected to said switching network and to said CPU; and

means for connecting telephone subscribers within the same switching office, said means for connecting being connected between said first and said second network means via said switching network, said means for connecting operated by said CPU in response to said means for temporarily disconnecting to provide for connecting said first network means with said second and fourth subscribers in said second active three way call, while rendering said first and second active three way telephone calls independently controlled.

4,445,213

COMMUNICATION LINE INTERFACE FOR CONTROLLING DATA INFORMATION HAVING DIFFERING TRANSMISSION CHARACTERISTICS

Charles R. Baugh, Lincroft, and Robert M. Smith, Holmdel, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 62,422, Jul. 31, 1979. This application Jan. 22, 1982, Ser. No. 341,840

Int. Cl.^{3} H04J *6/02*

U.S. Cl. 370—94 **14 Claims**

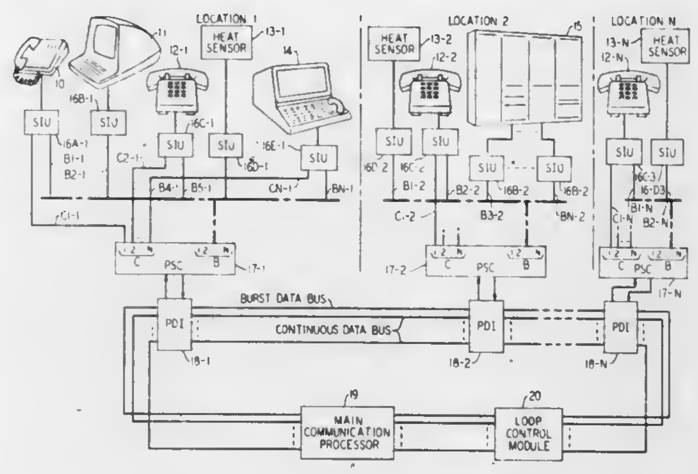
1. A communications system having controller connected to a digital network over a data link and wherein said controller has a number of input ports arranged to accept digital data for transmission over said data link, each input port arranged to accept data from individual transmission facilities having individual transmission data rates and characterstics, characterized in that said system comprises

means for establishing on said data link time frames for digital transmission over said data link, each time frame including at least first and second groups of time slots, each group having a predetermined number of time slots,

means for multiplexing digital data received from any input of a first group of said inputs, said data including address header bits as well as information bits,

means for interleaving said multiplexed data with input digital data received from at least one input of a second group of inputs, said second group of input data only including bits other than address header bits, and

means for arranging said interleaved data in said time frames such that said first group of time slots of each frame are dedicated to said multiplexed data while said second group of time slots of each frame are dedicated to data received from specific input of said second group of inputs.



4,445,214

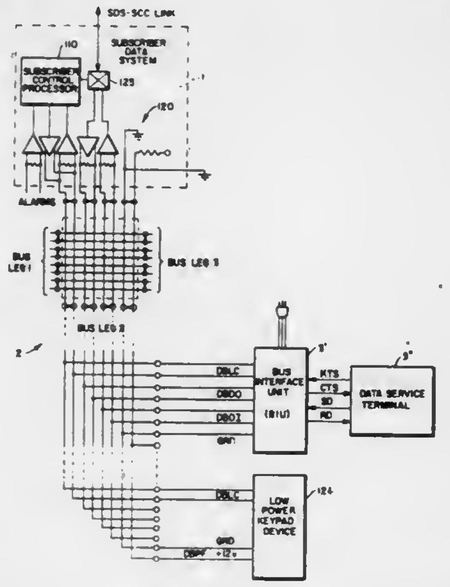
METHOD OF CONTROLLING MESSAGE TRANSMISSION SEQUENCE IN MULTI STATION COMMUNICATION SYSTEM

Christopher C. Reynolds, Satellite Beach; Earl J. Claire, Melbourne Beach, and John R. Ellis, West Melbourne, all of Fla., assignors to Harris Corporation, Melbourne, Fla.

Division of Ser. No. 154,825, May 30, 1980, Pat. No. 4,332,980. This application Apr. 22, 1982, Ser. No. 370,857

Int. Cl.^{3} H04J *6/00*

U.S. Cl. 370—94 **6 Claims**



1. A method of controlling the sequence of message transmission between processor-controlled stations in a communication system, where each message includes a header having at least a sequence bit indicating first and second binary states and an acknowledge bit and wherein the message may or may not be a data message, the steps comprising

storing in memory at each station a transmit sequence bit and a receive sequence bit;

inserting into the header of each message transmitted from a given station a sequence bit having the state of the transmit sequence bit stored at that station;

switching the state of the stored transmit sequence bit at a station upon receipt of a message having an acknowledge bit;

switching the state of the stored receive sequence bit at a station upon receipt of a data message having a sequence bit whose state corresponds to that of the stored receive sequence bit at that station and returning a message having an acknowledge bit;

retransmitting from a given station a message previously transmitted from that station when a message having an acknowledge bit is not received from the receiving station in a predetermined time after initial transmission; and

disregarding a message received at a station when the state of the sequence bit in the message is different from the state of the receive sequence bit stored at that station.

4,445,215

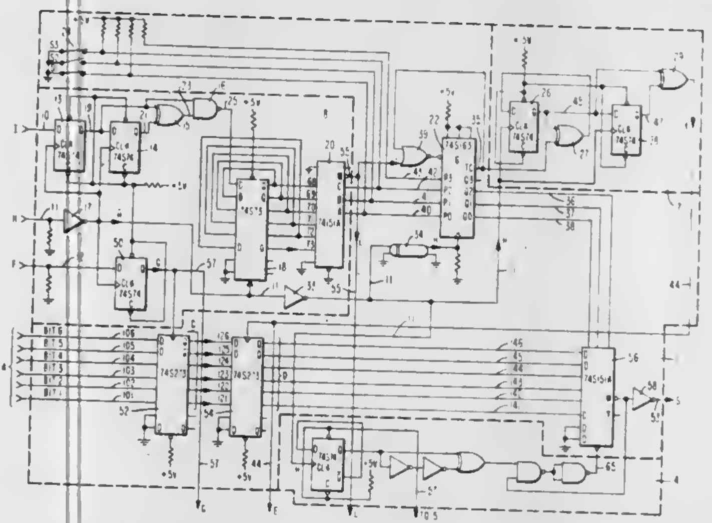
PROGRAMMABLE FREQUENCY RATIO SYNCHRONOUS PARALLEL-TO-SERIAL DATA CONVERTER

Gordon D. Svendsen, Belmont, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Mar. 5, 1982, Ser. No. 355,283

Int. Cl.^{3} H04J *3/06*

U.S. Cl. 370—100 **11 Claims**



1. A parallel-to-serial data converter circuit for synchronously converting parallel data bits into corresponding serial databits, said circuit having one or more data conversion channels and receiving a parallel clock signal having a frequency corresponding to and synchronous with that of the parallel data bits, each channel receiving a serial clock signal having an integral number multiple frequency with respect to said parallel clock signal and synchronous therewith said integral number corresponding to a number of parallel bits received by that particular channel or to an integral multiple of said number of parallel bits, respectively, each channel respectively comprising:

a storage means coupled to receive and store said number of parallel data bits and having an output coupled to apply thereto said stored bits in response to a first control signal;

a parallel-to-serial data encoder means having an input coupled to said output of said storage means for receiving said parallel data bits therefrom and to provide synchronously therewith a corresponding serial output data stream;

a programmable frequency ratio control means coupled to receive said serial clock signal and to provide synchronously therewith a respective second control signal having a frequency corresponding to said received clock signal, said control signal being coupled to said data encoder means to control the frequency and sequence of encoding said parallel data of that respective channel into a corresponding serial data stream; and

said data converter circuit further comprising a synchronization circuit which is common to all said channels and is coupled to receive one said serial clock signal and to provide synchronously therewith said first control signal coupled to a control input of each said storage means, said first control signal having a frequency corresponding to that of said parallel clock signal and synchronous therewith, said synchronization circuit being further coupled to receive a synchronizing signal having an integral frequency ratio with respect to said parallel clock signal and synchronous therewith and to provide a third control signal applied to synchronize said programmable frequency ratio control means of each said channel respectively, said third control signal having a frequency corresponding to that of said synchronizing signal received by said synchronization circuit and being synchronous therewith.

4,445,216

SYSTEM FOR DEFEATING ERRONEOUS CORRECTION IN A DIGITAL SIGNAL REPRODUCING APPARATUS

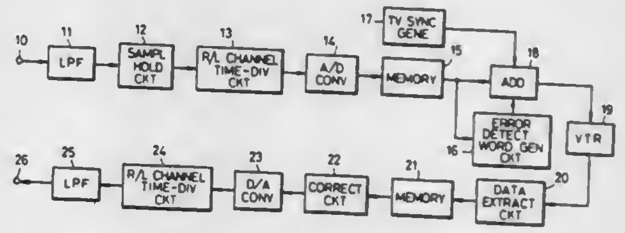
Harukuni Kobari, Yokohama; Yasuhiro Yamada, Fujisawa; Susumu Suzuki, and Chitoshi Hibino, both of Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Mar. 10, 1981, Ser. No. 242,293

Claims priority, application Japan, Mar. 10, 1980, 55-30133

Int. Cl.^{3} G06F *11/10*

U.S. Cl. 371—39 **2 Claims**



1. A system for defeating erroneous corrections in a digital signal reproducing apparatus, said system comprising, in combination:

reproducing means for reproducing a digital signal sequence from a recording medium, said recording medium having a sequence of digital signals recorded thereon in a plurality of blocks of data, each of said data blocks including a digital signal sequence and an error-detecting cyclical redundancy check word, said digital signal sequence including n m-bit information words W_1 through W_n and two error correcting words P and Q which satisfy the following equations:

$$P=W_1\oplus W_2\oplus W_3\oplus \ldots \oplus W_{n-1}\oplus W_n$$

$$\text{and } Q=T^n\cdot W_1\oplus T^{n-1}\cdot W_2\oplus \ldots \oplus T^2\cdot W_{n-1}\oplus T\cdot W_n$$

$$\text{or } Q=T\cdot W_1\oplus T^2\cdot W_2\oplus \ldots \oplus T^{n-1}\cdot W_{n-1}\oplus T^n\cdot W_n$$

and which are interleaved,

where: m and n are integers satisfying a relation $2^{m-1}>>n$, the symbol "⊕" indicates a modulo-2 addition, and T is a companion matrix of a polynomial $1+g_1x+g_2x^2+\ldots+g_{m-1}x^{m-1}+x^m$, said information words W_1 through W_n being a digital modulation responsive to an analog information signal and a resultant digital information signal divided into predetermined sections, said error-detecting cyclical redundancy check word indicating a number of erroneous words in each of said blocks made up of interleaved words;

memory circuit means for storing the digital signal sequence reproduced from said recording medium by said reproducing means, and for producing a digital signal sequence which includes the information words W_1 through W_n and the error correcting words P and Q which are de-interleaved and arranged in an original sequence;

correcting circuit means for carrying out adjacent error corrections with respect to the digital signal sequence produced from said memory circuit means by a use of error pointers, and for correcting errors of up to two words in each of a plurality of blocks made up of the de-interleaved words, said error pointers being formed from said error detecting cyclical redundancy check words and indicating erroneous words in each of said blocks made up of de-interleaved words; and

digital-to-analog converter means for converting a digital information signal obtained from said correcting circuit means into the original analog information signal,

said correcting circuit means calculating partial syndromes S_1, S_2, and S_{12} according to the following equations:

$$S_1=P\oplus W_1\oplus W_2\oplus \ldots \oplus W_{n-1}\oplus W_n$$

$$S_2=Q\oplus T^n\cdot W_1\oplus T^{n-1}\cdot W_2\oplus \ldots \oplus T^2\cdot W_{n-1}\oplus T\cdot W_n$$

$$\text{or } S_2=Q\oplus T\cdot W_1\oplus T^2\cdot W_2\oplus \ldots \oplus T^{n-1}\cdot W_{n-1}\oplus T^n\cdot W_n$$

$$\text{and } S_{12}=S_1\oplus T^{l-n-1}\cdot S_2$$

where: $l=1, 2, 3, \ldots, n$, and said correcting circuit means detecting the erroneous words in units of blocks, which are made up of the de-interleaved words, by use of said error pointers and for stopping said error correction when a number of detected erroneous words in one block, which is made up of the de-interleaved words, is equal to zero or one and all of the calculated partial syndromes S_1, S_2, and S_{12}, are not equal to , and continuing to stop said error correction (1) until the number of detected erroneous words becomes equal to zero and all of the partial syndromes S_1, S_2, and S_{12} become equal to or (2) until the number of detected erroneous words becomes equal to zero or one and at least one of the partial syndromes S_1, S_2, and S_{12} becomes equal to

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4,445,217

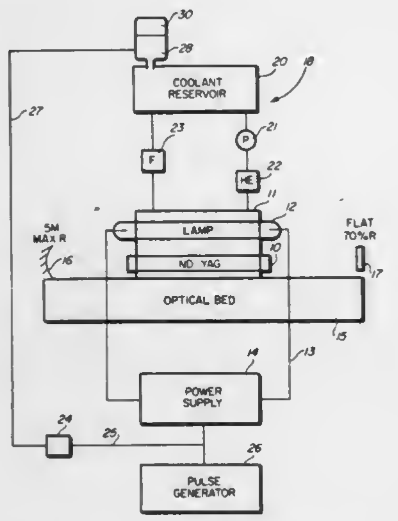
LASER APPARATUS AND METHOD

M. A. Acharekar, Orlando, and M. M. Kaplan, Winter Park, both of Fla., assignors to International Laser Systems, Inc., Orlando, Fla.

Filed Nov. 9, 1981, Ser. No. 319,182

Int. Cl.^{3} H01S *3/04*

U.S. Cl. 372—35 **17 Claims**



1. A cooling system for a laser comprising in combination:

a laser cooling system for circulating coolant fluid between a laser flashlamp and an active laser rod for cooling the flashlamp and laser rod;

the coolant fluid in said laser cooling system being selected to act as a transparent optical medium of predetermined refractive index between said flashlamp and laser rod, said coolant fluid including at least one fluorescent dye added therein;

means to measure the operating time of a laser being cooled by the laser cooling system; and

a dye additive means connected to said means to measure the operational time of said laser for adding fluorescent dye to said coolant upon lapse of a predetermined operation time of said laser, whereby decomposed dye is replaced by the added dye.

4,445,218

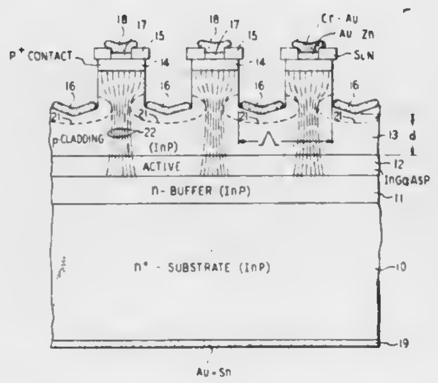
SEMICONDUCTOR LASER WITH CONDUCTIVE CURRENT MASK

Larry A. Coldren, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 28, 1981, Ser. No. 306,287

Int. Cl.^{3} H01S *3/19*

U.S. Cl. 372—44 **12 Claims**



1. In a semiconductor laser having an active region and at least two electrodes between which a potential can be established to cause a pump current to flow through said active region, the active region being disposed between the electrodes, characterized in that said semiconductor laser has at least one gating electrode for regulating light output from the semiconductor laser, said gating electrode being comprised of a conductive material and being disposed intermediate a space separating one of either of said two electrodes and said active region.

4,445,219

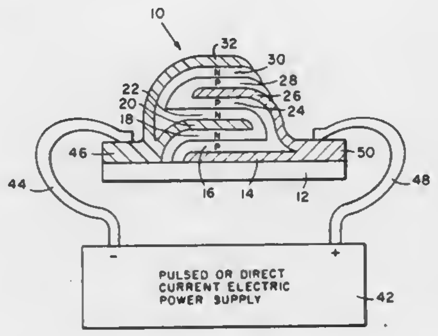
LAYERED SEMICONDUCTOR LASER

Leon H. Riley, 7707 Logan Dr., Huntsville, Ala. 35802

Filed Dec. 18, 1981, Ser. No. 332,264

Int. Cl.^{3} H01S *3/19*

U.S. Cl. 372—50 **6 Claims**



1. A layered semiconductor laser device comprising a semiconductor substrate material having a multiplicity of layers of N type and P type semiconductor material forming a multiplicity of laser junctions with electrical leads connected on opposite sides of each laser junction with the leads connected to the P type material being inner connected with each other for connecting to a positive source and the leads connected to the N type material being inner connected with each other for connection to a negative source, resonator means being provided by each layer of said junctions of N and P type materials and each of said junctions being of such close spacing relative to adjacent junctions as to reduce phase differences between lasing junctions such that light emitting from said junctions adds in phase to provide a uniform phase front as the emitted light leaves the junctions of semiconductor material.

4,445,220

COVER FOR CASTING LADLE

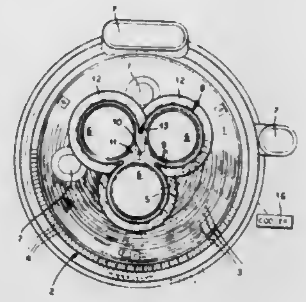
Herbert Kuhlmann, Bochum, Fed. Rep. of Germany, assignor to SIDEPAL S.A. Societe Industrielle de Participation Luxembourgeoise, Luxembourg, Luxembourg

Filed Feb. 24, 1982, Ser. No. 351,872

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1981, 3147337

Int. Cl.^{3} F27D *1/02, 1/12*

U.S. Cl. 373—74 **6 Claims**



1. A cover for a metallurgical vessel, said cover comprising:

a flat, generally circular, and normally horizontal array of tubes having an outer edge and forming a plurality of vertically throughgoing passages, said tubes extending mainly angularly of the center of said array;

respective pluralities of annular tubes at and extending around said passages and connected with each other at said center and with the tubes of said flat array;

an annular array of generally vertical tubes extending downward from said outer edge and connected with the tubes of said flat array;

respective partially circularly annular collars at said passages on said flat array and having inwardly directed closely juxtaposed ends;

means for connecting said collars and tubes together as a rigid assembly capable of supporting itself on the metallurgical vessel; and

means for circulating a coolant through said tubes.

4,445,221

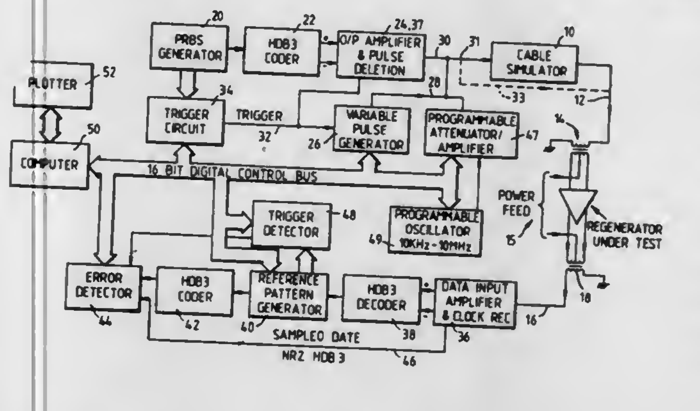
METHOD AND APPARATUS FOR MEASURING THE FREQUENCY RESPONSE OF AN ELEMENT OR ELEMENTS IN A DIGITAL TRANSMISSION PATH

Alastair S. Reynolds, 3 West View, Linlighrow Bridge, West Lothian, and Ivan R. Young, 45 Maitland Rd., Kirkliston, West Lothian, both of Scotland

Filed Jan. 4, 1982, Ser. No. 336,975

Int. Cl.^{3} H04B *17/00*

U.S. Cl. 375—10 **31 Claims**



1. A method of measuring relative frequency response of an element in a transmission path of a digital transmission system, the method comprising the steps of:

(a) providing a sequence of pulses along that path at the input of said element, at least one pulse in said sequence having a lower noise margin than the other pulses in said sequences;

(b) adding to said sequence a sinusoidal signal whose frequency f_s is such that at the successive said at least one pulse of lower noise margin, the phases of the said sinusoidal signal over a predetermined time interval effectively cover all possible phases;

(c) varying the amplitude of said sinusoidal signal to a level at which said at least one pulse with said sinusoidal signal added thereto can, as required, be detected as being of a state other than its normal state without the addition of said sinusoidal signal;

(d) changing the frequency of said sinusoidal signal as many times as required, and, for each change, repeating steps (a), (b) and (c) with each changed signal; and

(e) accumulating each amplitude with its corresponding frequency obtained from performing steps (a), (b), (c) and (d) to provide a measure of said frequency response.

4,445,222

COUPLING CIRCUIT FOR TRANSFERRING DATA SIGNALS AT A HIGH RATE

Asbjorn Smitt, Vedbaek, Denmark, assignor to Christian Rovsing A/S, Ballerup, Denmark

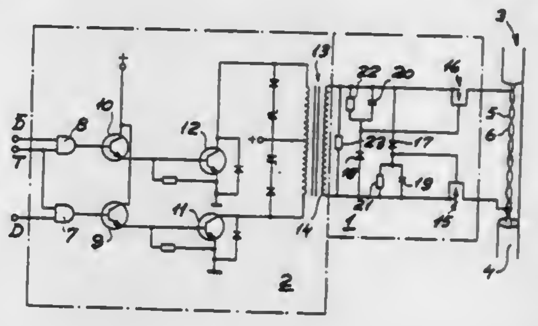
PCT No. PCT/DK79/00043, 371 Date Jun. 30, 1980, 102(e) Date Jun. 25, 1980, PCT Pub. No. WO80/01008, PCT Pub. Date May 15, 1980

PCT Filed Oct. 26, 1979, Ser. No. 194,451

Claims priority, application Denmark, Oct. 30, 1978, 4838/78

Int. Cl.^{3} H04L *5/16*

U.S. Cl. 375—36 **8 Claims**



1. A coupling circuit having a signal output for transferring a data signal at a high rate from a data transmitter to a bus common to several data transmitters, said circuit comprising separator means for galvanically separating said data transmitter from the bus and for providing said data signal via the signal output as an output signal, and switch means connected in series between the separator means and said signal output, and actuated and driven solely by the data signal from the data transmitter through the separator means, wherein said switch means comprises at least one switching transistor responsive to provision of said data signal by said data transmitter via said separator means for transferring said data signal via said signal output to said bus, and responsive to non-provision of said data signal by said data transmitter via said separator means for presenting a high impedance to said bus, said switch means further including a control circuit driven by said data signal via said separator means for controlling said at least one switching transistor to assume an on or an off state, whereby said data transmitter does not present a load to said bus when not providing said data signal.

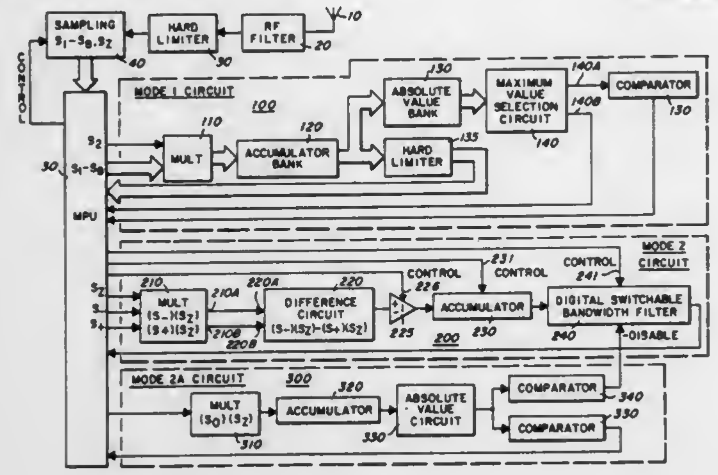
4,445,223

APPARATUS AND METHOD FOR DETERMINING THE PRESENCE AND FREQUENCY OF A PERIODIC SIGNAL

Steven C. Jasper, Schaumburg; Robert V. Janc, Palos Heights; David S. Robins, Buffalo Grove, and Michael H. Retzer, Schaumburg, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 5, 1981, Ser. No. 222,422
Int. Cl.³ H03K *3/78*

U.S. Cl. 375—96 **18 Claims**



1. Apparatus for determining the frequency of a first radio frequency signal comprising:

receiving means for receiving said first signal;

sampling means, coupled to said receiving means, for sampling said first signal at a first predetermined time and periodically thereafter to generate a plurality of first samples and for sampling said first signal at a plurality of times during each of the time intervals between first samples to generate a plurality of second samples thus forming second sample sets;

autocorrelation function generating means, coupled to said sample means, for generating the autocorrelation function value of the second samples of the second sample sets with respect to the first samples;

selecting means coupled to said autocorrelation function generating means, operative in a first mode for determining selected samples of said second sample sets which yield an autocorrelation function value of largest magnitude when autocorrelated with respective first samples by said autocorrelation function generating means, the time periods between said selected samples and respective first samples exhibiting indicia of the frequency of the first signal.

4,445,224

PULL-IN CIRCUIT FOR A DIGITAL PHASE LOCKED LOOP

Kuninosuke Ihira, Kawasaki; Shigeyuki Unagami, Zama, and Takashi Kaku, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 4, 1981, Ser. No. 327,730
Claims priority, application Japan, Dec. 9, 1980, 55-172672
Int. Cl.³ H03L *7/06*

U.S. Cl. 375—120 **12 Claims**

5. A fast pull-in digital phase locked loop circuit which obtains a phase difference between a single frequency signal and an output signal of said digital phase locked loop which is obtained by dividing the specified frequency with a dividing counter and pulls in the phase synchronization, comprising:

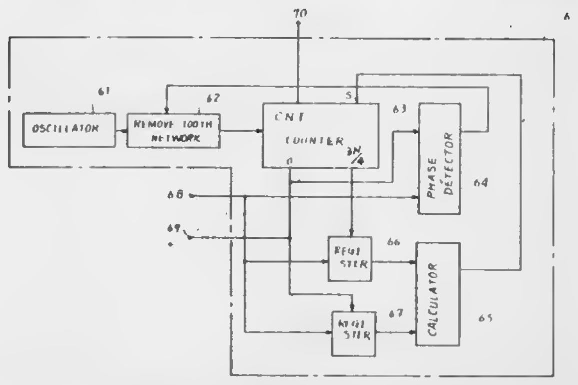
a sample circuit which obtains two sample values of said single frequency signal at two points based on said output signal of said digital phase locked loop corresponding to a phase difference of $\pi/2$ radians of said single frequency signal, said two sample values each having a sign;

a comparator circuit, operatively connected to said sample circuit, which obtains the relationship between absolute values of said two sample values;

an amplitude ratio circuit, operatively connected to said sample circuit, which obtains an amplitude ratio of said two sampled values;

conversion means, operatively connected to said sample circuit, said comparator circuit, said amplitude ratio circuit and said dividing counter, for obtaining a value corresponding to a supplementary angle of said phase difference from the signs of said two sample values, the relationship produced by said comparator circuit and the amplitude ratio produced by said amplitude ratio circuit, and said dividing counter stops operation for a period corresponding to said supplementary angle in accordance with the supplementary angle produced by said conversion table; and

pulse means, operatively connected to said dividing counter, for producing pulses in dependence upon a phase difference between said output signal and said single frequency signal.



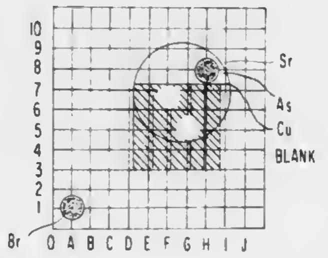
4,445,225

ENCODING SCHEME FOR ARTICLES

Roy H. White, Germantown, Md., assignor to Intex Inc., Bethesda, Md.

Filed Oct. 21, 1980, Ser. No. 199,376
Int. Cl.³ G01M *23/22*

U.S. Cl. 378—44 **9 Claims**



1. A method of decoding the code located on an article which comprises (i) irradiating said article with a primary beam composed of x-rays to locate a first material contained at an unknown predetermined position on said article, said first material containing a member of the class consisting of at least one element, at least one compound and a mixture thereof, said first material having a predetermined size of area of deposition on said article, and said first material having the property of emitting fluorescence x-rays when subjected to x-rays, (ii) detecting said emitted fluorescence x-rays by means of a detector which detects and measures the wavelength or wavelengths and intensity or intensities thereof for said first material, said wavelengths and said intensities being a predetermined coded indication of the location of a second material positioned on said article in or at a predetermined position (iii) irradiating the predetermined position on said article where said second material is located with a primary beam composed of x-rays, said second material containing a member of the class consisting of at least one element, at least one compound and a mixture thereof, said second material having a predetermined size of area of deposition on said article, and said second material having the property of emitting fluorescence x-rays when subjected to x-rays, and (iv) detecting said emitted fluorescence x-rays by means of a detector which detects and measures the wavelength or wavelengths and intensity or intensities thereof for said second material, said wavelengths and intensities being a predetermined identification or vertication code.

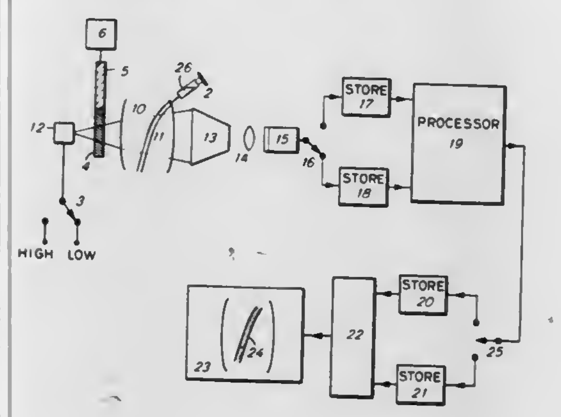
4,445,226

MULTIPLE-ENERGY X-RAY SUBTRACTION IMAGING SYSTEM

William R. Brody, Palo Alto, Calif., assignor to The Board of Trustees of the Leland Stanford Junior University, Calif.

Filed May 5, 1981, Ser. No. 260,694
Int. Cl.³ G03B *41/16*

U.S. Cl. 378—99 **6 Claims**



1. In a method for providing a projection image of an administered contrast material in a region of the body the steps of:

measuring the x-ray transmission through the region at a plurality of x-ray energy spectra prior to administering the contrast material;

administering the contrast material;

measuring the x-ray transmission through the region at the same plurality of x-ray spectra after administering the contrast material; and

processing the plurality of transmission measurements made before and after the administration of contrast material to provide an image of the contrast including:

combining functions of the plurality of measurements made prior to the contrast administration to provide a first data set having at least one material component of the region substantially eliminated;

combining functions of the plurality of measurements made after the contrast administration to provide a second data set having the same material components substantially eliminated; and

combining the first and second data sets to provide the image information of the contrast material.

4,445,227

LOUDSPEAKER HAVING IMPROVED DIRECTIONAL CHARACTERISTICS

David N. Leiendecker, Milford, Mich., and Wayne M. Schott, Concord, Tenn., assignors to Magnavox Consumer Electronics Company, New York, N.Y.

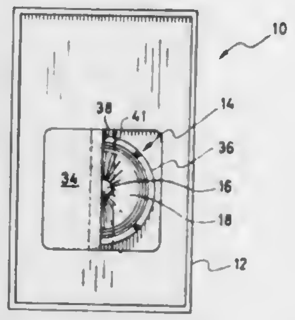
Filed Dec. 28, 1981, Ser. No. 335,089
Int. Cl.³ H04R *1/34, 5/02*

U.S. Cl. 381—24 **11 Claims**

1. A loudspeaker having improved directional and frequency characteristics for use in a sound system such as a stereo system having at least two speakers, said loudspeaker having an inboard and outboard side and comprising:

a driver for low frequencies and/or a full range of frequencies, said driver having a central portion and including an electroacoustic transducer unit and a sound radiating face including a baffle and a diaphragm, said sound radiating face being substantially symmetrical and defining an imaginary vertical center line; and

a dispersion control member comprising a layer of acoustically semi-transparent foam having a preselected cross-sectional outline, said dispersion control member being positioned on the inboard side of said speaker for overlaying said sound radiating face whereby said dispersion control member covers a preselected horizontal portion of said sound radiating face of said speaker.



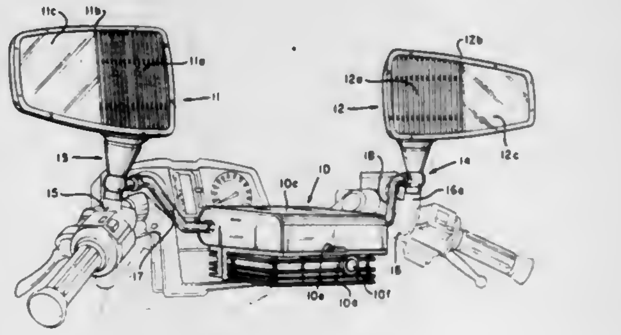
4,445,228

MOTORCYCLE AUDIO SYSTEM

James G. Bruni, Glendale, Calif., assignor to Yamaha Parts Distributors, Inc., Cypress, Calif.

Filed Nov. 1, 1982, Ser. No. 438,303
Int. Cl.³ H04B *1/08*

U.S. Cl. 381—24 **14 Claims**



1. In an audio system for motorcycles, a speaker-mirror assembly comprised of a speaker-mirror housing and both a speaker and a mirror supported by said speaker-mirror housing mounted on a handlebar of the motorcycle by a bracket assembly, said audio system further comprising a power amplifier and an audio program unit connected through said power amplifier to said speaker, wherein said speaker-mirror housing includes a board mounted in a front opening thereof and said speaker is supported by said board in a position within said housing at one end thereof, said board being slotted in the area over said speaker, and wherein said mirror is mounted over said board on the outside of said speaker-mirror housing at the other end thereof.

4,445,229

DEVICE FOR ADJUSTING A MOVABLE ELECTRO-ACOUSTIC SOUND TRANSDUCER

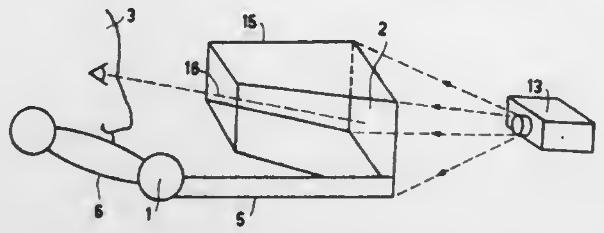
Manfred Tasto, Henstedt-Ulzburg; Michael Kuhn, Hamburg; Herbert Piotrowski, Oersdorf; Horst Tomaschewski, Stuvenhorn; Rudolf Geppert, and Hermann Ney, both of Hamburg, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 23, 1981, Ser. No. 237,053
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1980, 3009404
Int. Cl.³ H04M *1/00*

U.S. Cl. 381—110 **15 Claims**

9. A device for adjusting a movable electroacoustic sound

transducer to a specific reproducible position with respect to the mouth of a speaker comprising, an optical duct connected to the sound transducer and positioned between the speaker and an object such that the speaker can only fully visually observe the object via the optical duct when he is at a specific position in relation to the sound transducer such that a given reproducible frequency transfer function is maintained between the mouth of the speaker and the sound transducer for all separate uses of the device and for different speakers, and further comprising phase gratings or amplitude gratings arranged in the optical duct.



4,445,230

BAG WITH INTEGRAL CLOSURE TIE

Giorgio I. Spadaro, 221 Princeton Dr., Albuquerque, N. Mex. 87106

Filed Jan. 17, 1982, Ser. No. 389,214
Int. Cl.^{3} B65D *33/06*

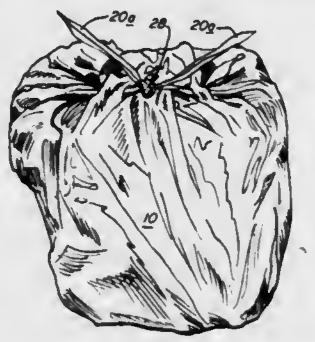
U.S. Cl. 383—7 **3 Claims**

1. A bag formed from an elongated tube of plastic film having a lateral and longitudinal extent and which has been flattened diametrically to provide only two, laterally spaced, diametrically opposed, longitudinal edges; said bag including two side walls, a bottom end, and an open top end;

said bottom end including (1) a lower edge defined by a lazy - U-shaped line of severance which extends diametrically across the entire lateral extent of the tube, and (2) a continuous, lazy -U-shaped heat-sealed seam which closes the bottom end of the bag and is congruent with, and spaced closely adjacent to, said line of severance,

said side walls, which have the same shape and size, lying against each other across the entire length and width of said bag and being bounded by said open top end, said longitudinal edges, and said line of severance,

said open top end of the bag being in the shape of a lazy -U which is congruent with the lowermost edge, thereby forming a pair of inverted tie gusset extensions, each of said extensions being bisected by one of said longitudinal edges such that, when the tie gusset extension is flattened and spread, it is in the shape of an isosceles triangle whose apex lies on its corresponding longitudinal edge,



said bag further including, adjacent its open top end, a plurality of perforations formed in and through both bag walls, with the perforations in each wall being laterally spaced from each other across the width of the bag, and with all said perforations being adapted to have at least one of the two tie gusset extensions threaded therethrough, to provide means integral with the bag for gathering together the open mouth of the bag, and the length of said tie gussets permitting the extended ends thereof to be tied together to provide only a single handle that functions for both closing the open mouth of the bag and for carrying the closed bag thereby.

DESIGN PATENTS

GRANTED APR. 24, 1984

ERRATA

For CLASS	See PATENT NO.
D21–102	273,554

DESIGNS

APRIL 24, 1984

273,529

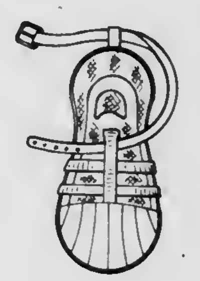
SANDAL

Scottie M. Morgan, 2420 Rivard St., Apt. #204, Windsor, Ontario, Canada M8T 2H2

Filed Oct. 6, 1981, Ser. No. 308,959

Term of patent 14 years

U.S. Cl. D2—293



273,530

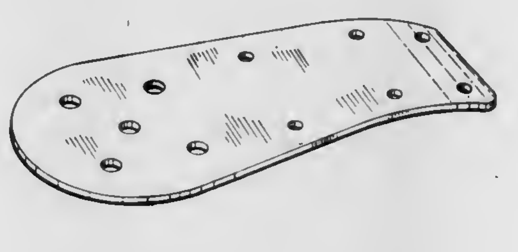
SHOE SHANK INSERT

Seigfried Felske, R.R. 2, Caledon, P.O. Box 352, Bolton, Ontario, Canada

Filed Jul. 6, 1981, Ser. No. 280,869

Term of patent 14 years

U.S. Cl. D2—314



273,531

SHOE SOLE

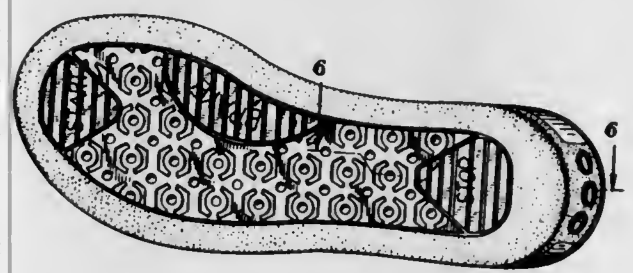
Pierre Bidegain, 1 Avenue Montilleul, 6400 Pau, France

Filed Sep. 3, 1981, Ser. No. 299,863

Claims priority, application France, Mar. 4, 1981, 81 0785

Term of patent 14 years

U.S. Cl. D2—320



273,532

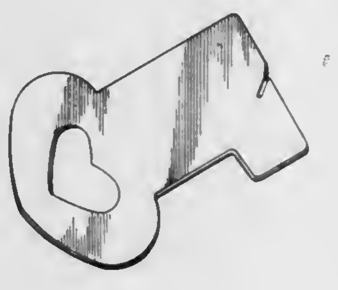
THREAD ORGANIZER

Sandra H. Autry, P.O. Box 241, Dawsonville, Ga. 30534

Filed Sep. 17, 1981, Ser. No. 303,150

Term of patent 14 years

U.S. Cl. D3—23



273,533

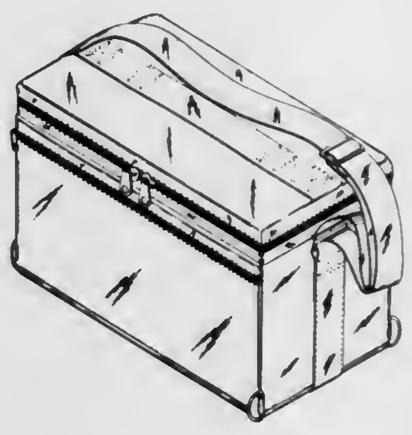
VIDEO CAMERA BAG

Robert Weinreb, 510 Broadway, New York, N.Y. 10012

Filed Apr. 7, 1982, Ser. No. 366,182

Term of patent 14 years

U.S. Cl. D3—33



273,534

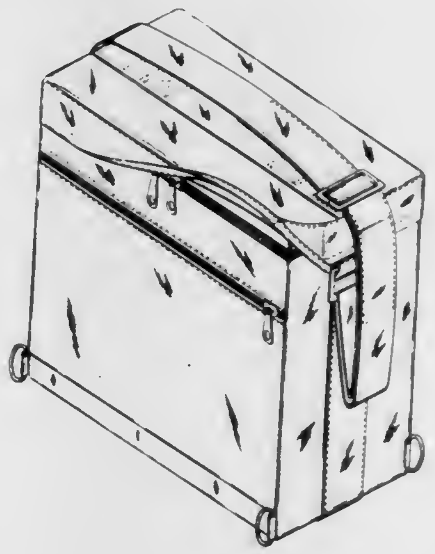
VIDEO RECORDER BAG

Robert Weinreb, 510 Broadway, New York, N.Y. 10012

Filed Apr. 7, 1982, Ser. No. 366,183

Term of patent 14 years

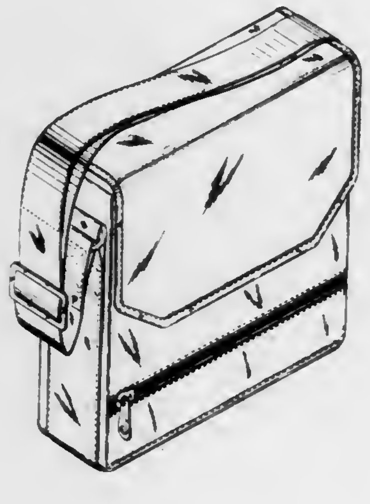
U.S. Cl. D3—33



273,535

CAMERA BAG

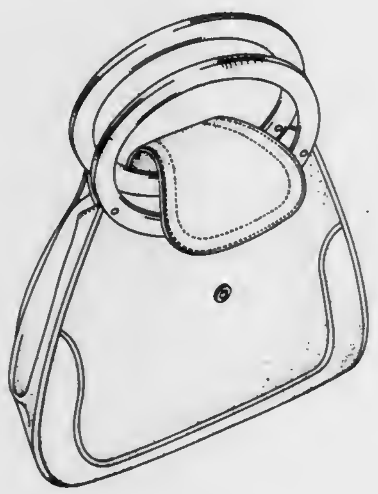
Robert Weinreb, 510 Broadway, New York, N.Y. 10012
Filed Apr. 7, 1982, Ser. No. 366,184
Term of patent 14 years
U.S. Cl. D3—33



273,536

HANDBAG

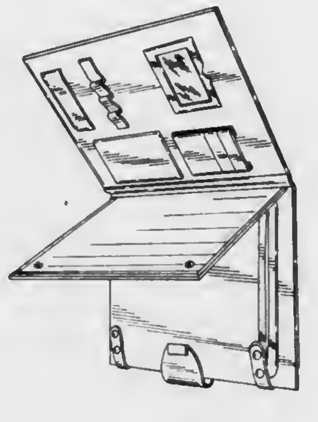
Otto K. Schimmel, Scottsdale, Ariz., assignor to AMBA Marketing Systems, Phoenix, Ariz.
Filed Apr. 5, 1982, Ser. No. 365,872
Term of patent 14 years
U.S. Cl. D3—52



273,537

PORTABLE DESK

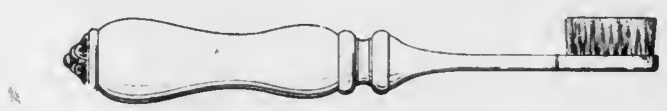
Edward L. Gerch, Chicago, Ill., assignor to Kingport Ltd., Evanston, Ill.
Filed Mar. 25, 1982, Ser. No. 361,624
Term of patent 14 years
U.S. Cl. D3—71



273,538

ORNAMENTAL TOOTHBRUSH

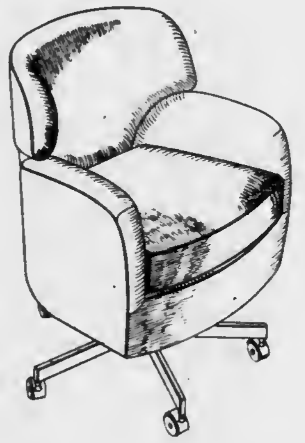
Robin T. Farnes, 274 S. Earlham St., Orange, Calif. 92667, and William C. Howatt, 191 Albert Pl., B, Costa Mesa, Calif. 92627
Filed Apr. 16, 1982, Ser. No. 369,098
Term of patent 14 years
U.S. Cl. D4—25



273,539

SWIVEL CHAIR

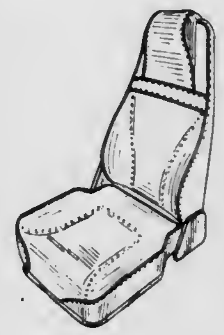
J. Thayer Coggin, High Point, N.C., assignor to Thayer Coggin Incorporated, High Point, N.C.
Division of Ser. No. 28,489, Apr. 9, 1979. This application Sep. 24, 1982, Ser. No. 423,474
Term of patent 14 years
U.S. Cl. D6—31



273,540

VEHICULAR SEAT OR SIMILAR ARTICLE

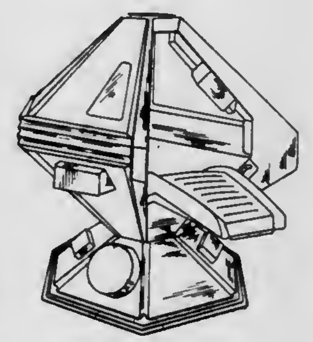
Ronald C. Wagner, Streator, Ill., and William Lochte, New Berlin, Wis., assignors to Knoedler Manufacturers, Inc., Streator, Ill.
Filed May 15, 1981, Ser. No. 264,035
Term of patent 14 years
U.S. Cl. D6—48



273,541

COMBINED LOUNGE SEAT AND ENTERTAINMENT MODULE

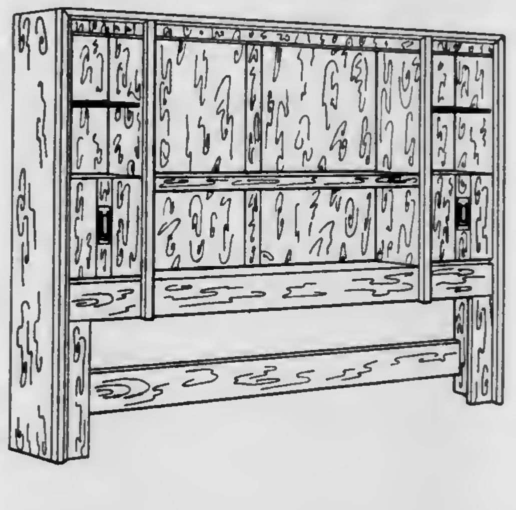
Alfred J. Powell, 2034 Swallow Hill Rd., Apt. 407, Pittsburgh, Pa. 15220
Filed Dec. 3, 1981, Ser. No. 326,942
Term of patent 14 years
U.S. Cl. D6—64



273,542

HEADBOARD

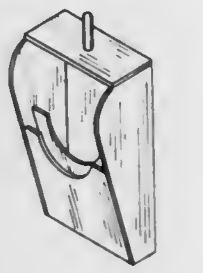
Haywood L. West, High Point, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.
Filed Dec. 16, 1981, Ser. No. 331,318
Term of patent 14 years
U.S. Cl. D6—80



273,543

COMBINATION BOOK RACK AND TISSUE DISPENSER

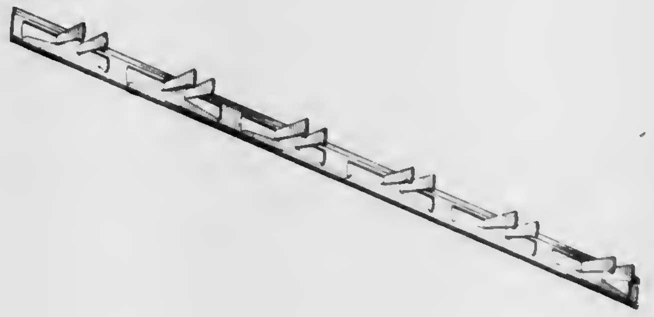
David Burton, 14384 Rutherford, Detroit, Mich. 48227
Filed Dec. 24, 1981, Ser. No. 334,114
Term of patent 14 years
U.S. Cl. D6—97



273,544

TOOL RACK

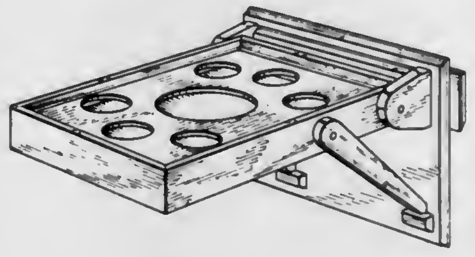
Steven J. Sheftel, Hingham, Mass., assignor to Crawford Products, Inc., West Hanover, Mass.
Filed Nov. 12, 1982, Ser. No. 440,941
Term of patent 14 years
U.S. Cl. D6—125



273,545

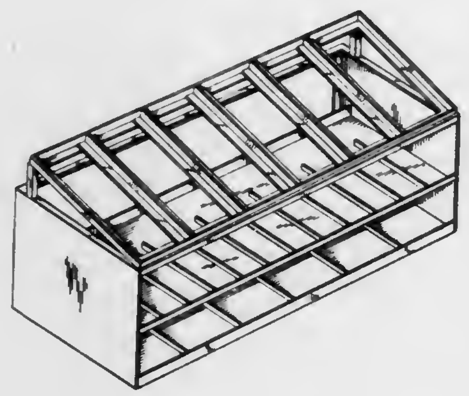
COLLAPSIBLE TABLE FOR USE PRIMARILY ON A BOAT

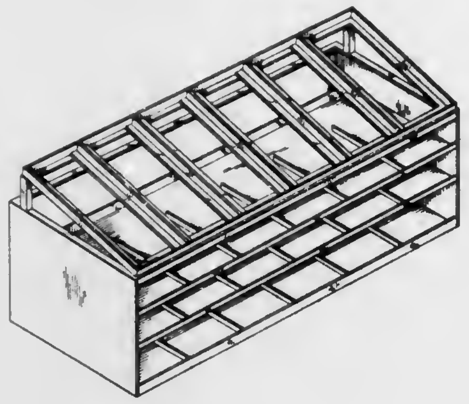
Jack T. Bowman, and Angelina Bowman, both of 612 Kean Ave., Antioch, Calif. 94509
Filed Dec. 24, 1981, Ser. No. 334,086
Term of patent 14 years
U.S. Cl. D6—128



273,546
RACK FOR SUPPORTING CHECK TRANSFER TRAYS

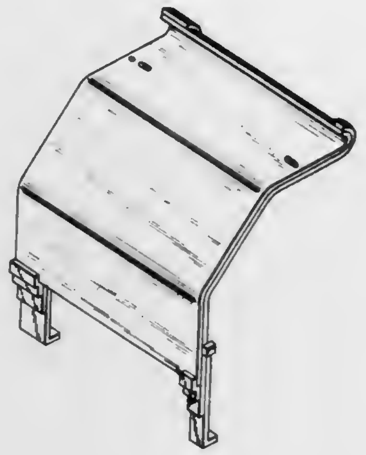
Elmer E. Ogg, Jr., Dayton, and William E. Wells, West Alexandria, both of Ohio, assignors to Systems Unlimited Inc., Dayton, Ohio
Filed Aug. 20, 1981, Ser. No. 294,754
Term of patent 14 years
U.S. Cl. D6—188





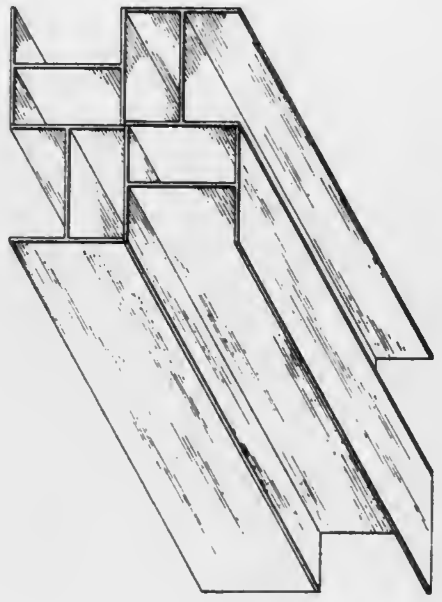
273,547
CANOPY FOR MERCHANDISE DISPLAY ASSEMBLY

Ronald H. Taub, Highland Park, Ill., assignor to Mars, Incorporated, McLean, Va.
Filed Nov. 2, 1981, Ser. No. 317,281
Term of patent 14 years
U.S. Cl. D6—191



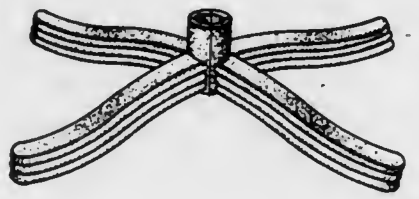
273,548
FURNITURE BASE OR SIMILAR ARTICLE

George Hollander, 320 W. 22nd St., New York, N.Y. 10011
Filed Nov. 2, 1981, Ser. No. 317,759
Term of patent 14 years
U.S. Cl. D6—194



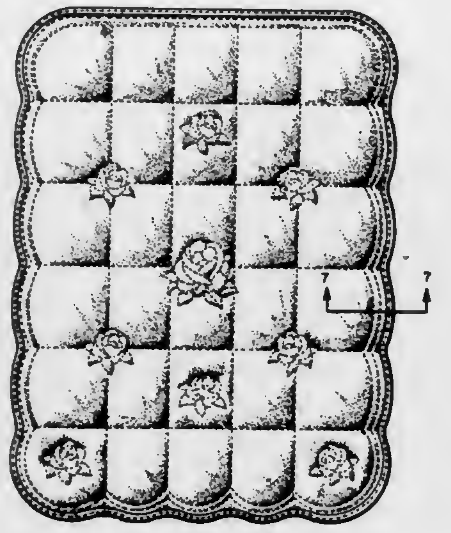
273,549
FURNITURE PEDESTAL

Donald C. Petitt, New York, N.Y., assignor to Hauserman, Inc., Int. Furniture & Textile Division, Norwalk, Conn.
Filed Apr. 15, 1981, Ser. No. 254,419
Term of patent 14 years
U.S. Cl. D6—196



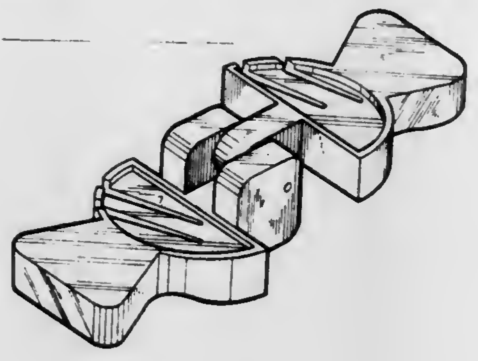
273,550
QUILTED BEDSPREAD

Ira Segal, Manhassett, N.Y., assignor to Carolina Creations, Inc., Greenville, S.C.
Filed Oct. 30, 1981, Ser. No. 316,872
Term of patent 14 years
U.S. Cl. D6—260



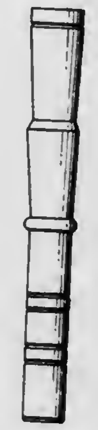
273,551
LEMON SQUEEZER

John M. Kirby, Rte. 7, Box 768-A, Lenoir, N.C. 28645
Filed Oct. 19, 1981, Ser. No. 312,549
Term of patent 14 years
U.S. Cl. D7—48



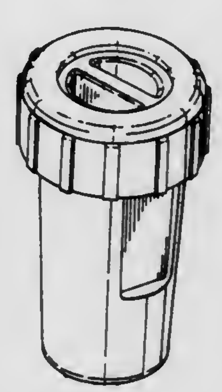
273,552
LIQUID MEASURING GAUGE FOR COOKING UTENSILS

James P. Eicher, 12033 Goshen, Brentwood, Calif. 90049, and K. Norman Matsubara, 1527 Grandville, Apt. 7, West Los Angeles, Calif. 90025
Filed Sep. 14, 1981, Ser. No. 302,229
Term of patent 14 years
U.S. Cl. D7—50



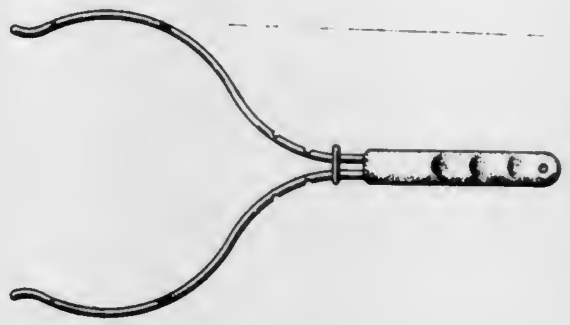
273,553
CULINARY PRESS FOR GARLIC OR SIMILAR MATERIALS

Thomas Bovet, Hong Kong, Hong Kong, assignor to Mike & Kremmel Limited, Kowloon, Hong Kong
Filed Oct. 1, 1981, Ser. No. 307,471
Claims priority, application United Kingdom, Apr. 2, 1981, 999763
Term of patent 14 years
U.S. Cl. D7—101



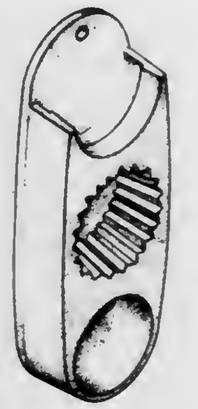
273,554
PLATE LIFTER OR SIMILAR ARTICLE

Robert S. Nester, Box 180, Rte. 2, New Ringgold, Pa. 17960
Filed Sep. 25, 1981, Ser. No. 305,599
Term of patent 14 years
U.S. Cl. D21—102



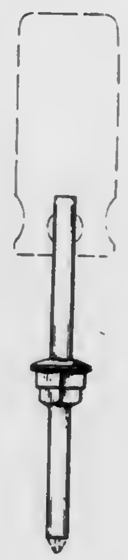
273,555
COMBINED BOTTLE OPENER AND RECAPPER

Robert D. Tanner, 600 Berkley, Plymouth, Ind. 46563
Filed Mar. 12, 1982, Ser. No. 357,426
Term of patent 14 years
U.S. Cl. D8—40



273,556
SCREW DRIVER SHAFT

Carl M. Henry, 1102 Westbrook, Toledo, Ohio 43623
Filed Jan. 3, 1981, Ser. No. 270,127
Term of patent 14 years
U.S. Cl. D8—86



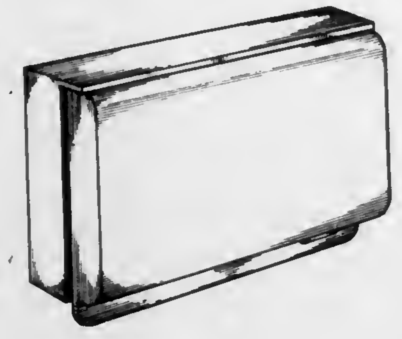
273,557
OUTDOOR ELECTRICAL RECEPTACLE COVER

Louis L. Mastro, Milford, and William C. Traylor, Birmingham, both of Mich., assignors to Square D. Company, Palatine, Ill.

Filed Nov. 16, 1981, Ser. No. 321,951

Term of patent 14 years

U.S. Cl. D8—353



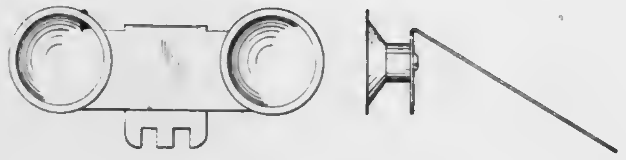
273,558
BRACKET FOR ATTACHMENT OF A VACUUM GAUGE OR THE LIKE

Robert T. Crew, 3674 San Viscaya Dr., Jacksonville, Fla. 32217

Filed Apr. 8, 1981, Ser. No. 252,018

Term of patent 14 years

U.S. Cl. D8—354



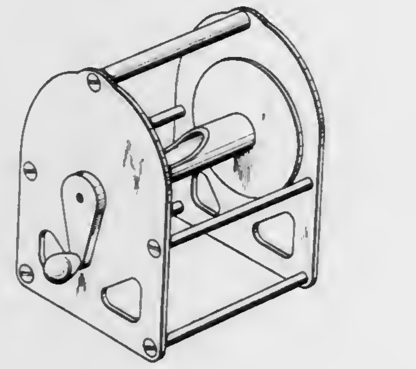
273,559
REEL FOR AN EXTENSION CORD

Bobby D. Butler, Rte. 8, Hendron Rd., Paducah, Ky. 42001

Filed Nov. 13, 1981, Ser. No. 320,921

Term of patent 14 years

U.S. Cl. D8—359



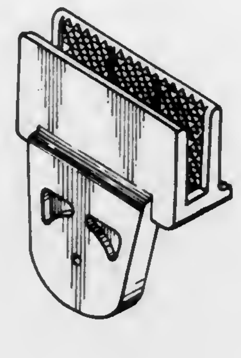
273,560
WINDOW PANE HOLDER OR SIMILAR ARTICLE

Moriji Akabane, Atsugi, Japan, assignor to Hori Glass Co., Ltd., Kanagawa, Japan

Filed Oct. 6, 1982, Ser. No. 433,169

Term of patent 14 years

U.S. Cl. D8—373



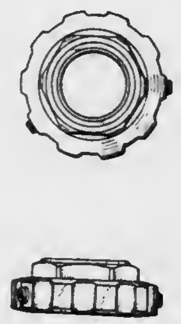
273,561
LOCK NUT FOR BICYCLE OR THE LIKE

Nobuo Ozaki, and Yoshimasa Kaneko, both of Osaka, Japan, assignors to Maeda Industries, Ltd., Osaka, Japan

Filed Oct. 21, 1981, Ser. No. 313,500

Term of patent 14 years

U.S. Cl. D8—397



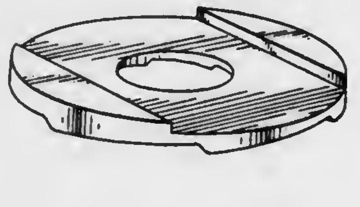
273,562
TRANSFER WASHER

Bengt O. Frieberg, 869 Picaacho Rd., La Habra Heights, Calif. 90631

Filed Jul. 19, 1982, Ser. No. 399,887

Term of patent 14 years

U.S. Cl. D8—399



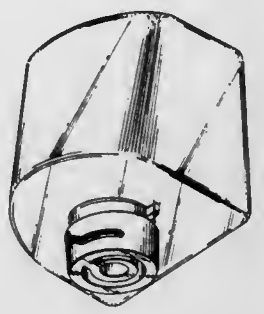
273,563
CONCENTRATE CONTAINER FOR A LIQUID DISPENSER

Robina E. Jeans, and Edward L. Jeans, both of Ledbury, England, assignors to Cadbury Schweppes Plc, London, England

Filed Nov. 2, 1981, Ser. No. 317,316

Term of patent 14 years

U.S. Cl. D9—367



273,564
PLASTIC BOTTLE

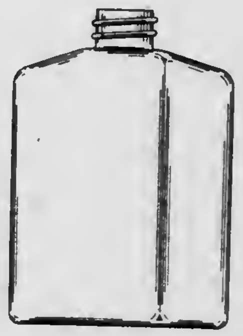
Peter Spielhoff, Dortmund, Fed. Rep. of Germany, assignor to Teroson G.m.b.H., Heidelberg, Fed. Rep. of Germany

Filed Dec. 9, 1981, Ser. No. 328,895

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1981, 42AR359/81

Term of patent 14 years

U.S. Cl. D9—413



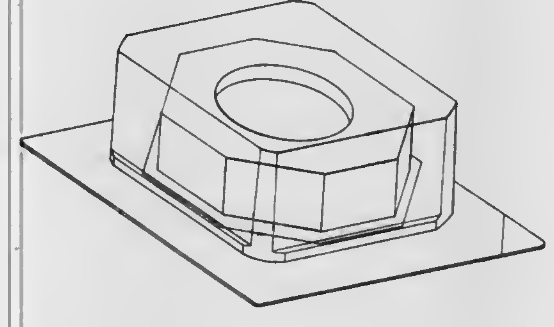
273,565
STERILE CONTAINER

Thomas D. Driskell, 6142 Northgate Rd., and D. Scott Metsger, 6193 Central Park Dr., both of Columbus, Ohio 43229

Filed Dec. 21, 1981, Ser. No. 332,678

Term of patent 14 years

U.S. Cl. D9—415



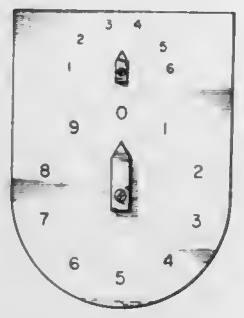
273,566
EUCHER SCORE KEEPER

John E. Patterson, 309 S. East St., Greensburg, Ind. 47240

Filed Mar. 10, 1982, Ser. No. 356,846

Term of patent 14 years

U.S. Cl. D10—46.1



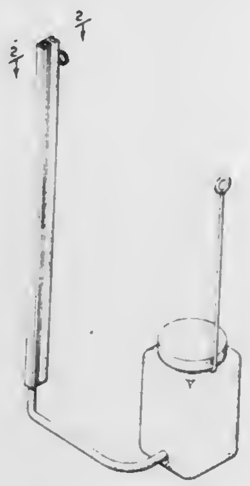
273,567
LEVEL INDICATOR OR THE LIKE

Patrick N. Byrd, Rte. 2, Box 160A, Laurel Hill, N.C. 28351, and Sam C. Reep, 101 McDonald Dr., Rockingham, N.C. 28379

Filed Nov. 19, 1981, Ser. No. 323,089

Term of patent 14 years

U.S. Cl. D10—69



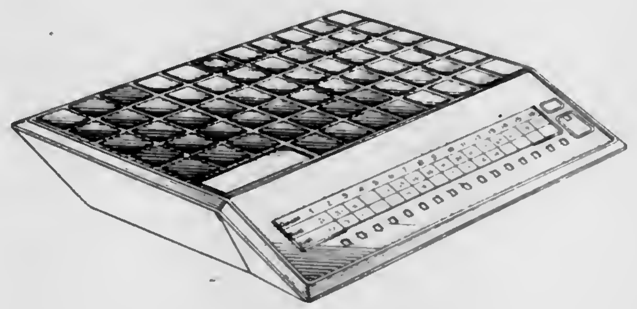
273,568
POSTAL SCALE

George H. Woods, Fairfield, and John G. Stewart, Old Greenwich, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Nov. 23, 1981, Ser. No. 324,329

Term of patent 14 years

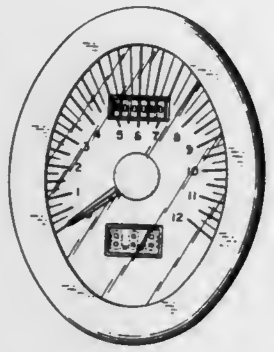
U.S. Cl. D10—91



273,569

COMBINED MARINE KNOTMETER, LOG AND DEPTH SOUNDER

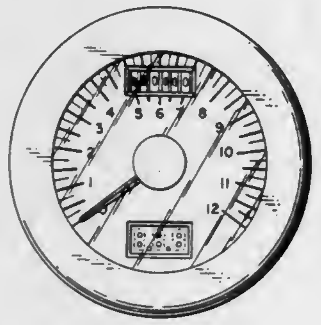
Ronald R. Overs, 96 Fox Hunt La., East Amherst, N.Y. 14051
Filed Jan. 26, 1982, Ser. No. 343,005
Term of patent 14 years
U.S. Cl. D10—98



273,570

COMBINED MARINE KNOTMETER, LOG AND DEPTH SOUNDER

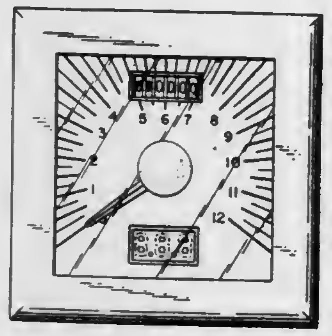
Ronald R. Overs, 96 Fox Hunt La., East Amherst, N.Y. 14051
Filed Jan. 26, 1982, Ser. No. 343,006
Term of patent 14 years
U.S. Cl. D10—98



273,571

COMBINED MARINE KNOTMETER, LOG AND DEPTH SOUNDER

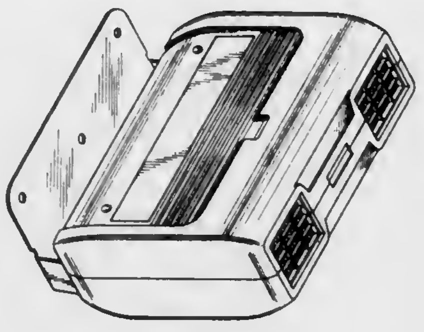
Ronald R. Overs, 96 Fox Hunt La., East Amherst, N.Y. 14051
Filed Jan. 26, 1982, Ser. No. 343,007
Term of patent 14 years
U.S. Cl. D10—98



273,572

ULTRA SONIC ALARM DETECTOR

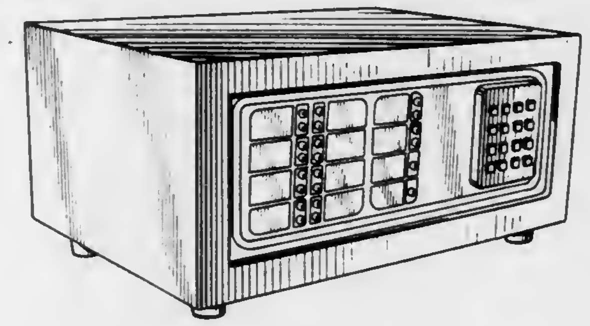
Seihei Wada, Yachiyo, and Kiyozumi Chino, Musashino, both of Japan, assignors to Uro Denshi Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 16, 1981, Ser. No. 302,812
Term of patent 14 years
U.S. Cl. D10—106



273,573

SECURITY SYSTEM CONSOLE

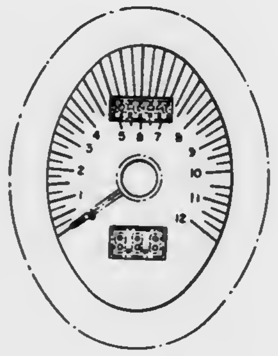
Michael R. Aulicino, Yonkers, N.Y., assignor to MRA Central Station Electronic Alarm Company, Inc., New York, N.Y.
Filed Aug. 11, 1981, Ser. No. 291,933
Term of patent 14 years
U.S. Cl. D10—106



273,574

INDICATOR AND DIAL FACE FOR MARINE KNOTMETER, LOG AND DEPTH SOUNDER

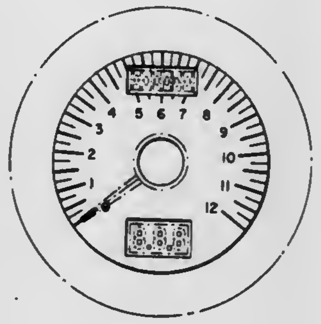
Ronald R. Overs, 96 Fox Hunt La., East Amherst, N.Y. 14051
Filed Jan. 26, 1982, Ser. No. 343,008
Term of patent 14 years
U.S. Cl. D10—126



273,575

INDICATOR AND DIAL FACE FOR MARINE KNOTMETER, LOG AND DEPTH SOUNDER

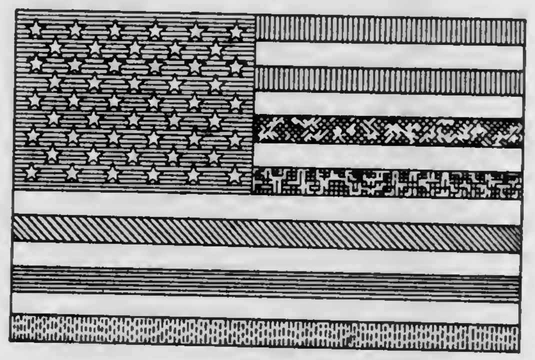
Ronald R. Overs, 96 Fox Hunt La., East Amherst, N.Y. 14051
Filed Jan. 26, 1982, Ser. No. 343,009
Term of patent 14 years
U.S. Cl. D10—126



273,576

FLAG

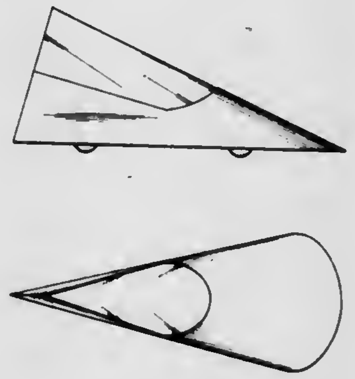
Gerard Millan-Perichon, 502 W. 44th St., New York City, N.Y. 10036
Filed Mar. 4, 1982, Ser. No. 354,804
Term of patent 14 years
U.S. Cl. D11—167



273,577

SINGLE PASSENGER VEHICLE

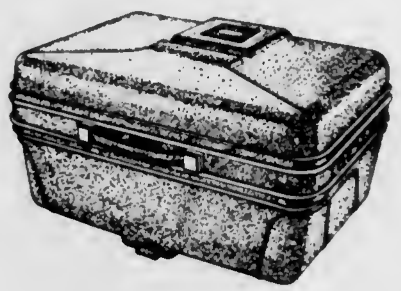
Gregg R. Fleishman, 6071 Hargis St., Los Angeles, Calif. 90034
Filed Sep. 17, 1982, Ser. No. 419,182
Term of patent 14 years
U.S. Cl. D12—85



273,578

DETACHABLE TOP LUGGAGE CASE FOR MOTORCYCLE

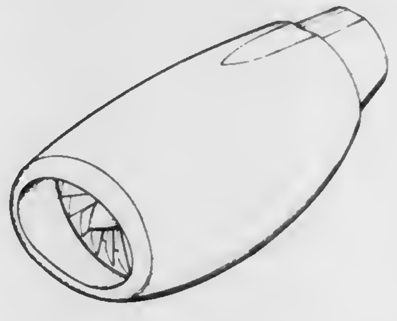
Shih-chen Hsu, 12-1, 12th Fl., No. 2, Fu Chin St., Taipei, Taiwan
Filed Oct. 5, 1981, Ser. No. 308,897
Term of patent 14 years
U.S. Cl. D12—158



273,579

AIRPLANE ENGINE NACELLE

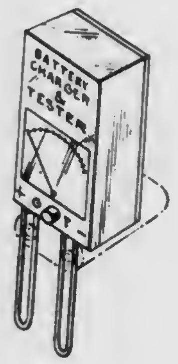
Robert D. Martin, Auburn, and James L. Sepstrup, Renton, both of Wash., assignors to The Boeing Company, Seattle, Wash. Continuation of Ser. No. 35,603, Mar. 31, 1980, abandoned. This application Mar. 3, 1982, Ser. No. 354,414
Term of patent 14 years
U.S. Cl. D12—345



273,580

COMBINATION BATTERY CHARGER AND TESTER

Conrad L. Riumbau, 79-11 41 Ave. #A617, Elmhurst, N.Y. 11373
Filed Aug. 28, 1981, Ser. No. 297,200
Term of patent 14 years
U.S. Cl. D13—5



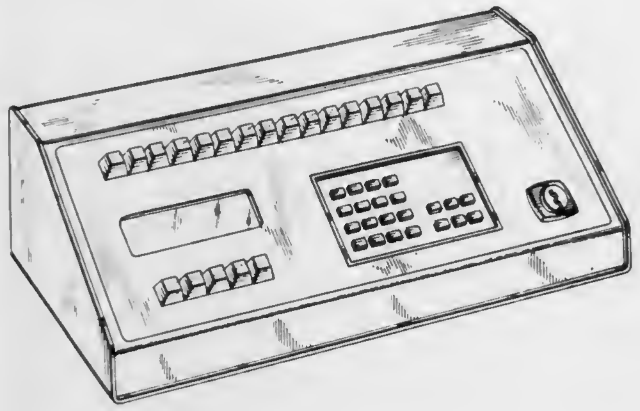
273,581
TIMED-ALERT MANUAL CONTROL UNIT

Saul Rosenbaum, East Meadow, and Gilbert Oster, New Hyde Park, both of N.Y., assignors to Leviton Manufacturing Company, Inc., Little Neck, N.Y.

Filed Nov. 19, 1981, Ser. No. 322,811

Term of patent 14 years

U.S. Cl. D13—12



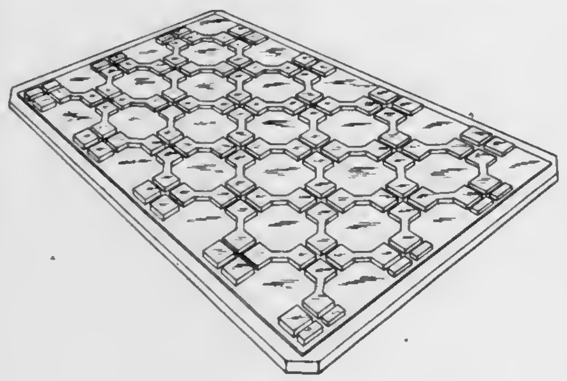
273,582
HOLDING PALLET FOR PC BOARDS

William S. Bolt, 1010 Cuyahoga Dr., Bartlett, Ill. 60103

Filed Sep. 8, 1981, Ser. No. 299,856

Term of patent 14 years

U.S. Cl. D13—99



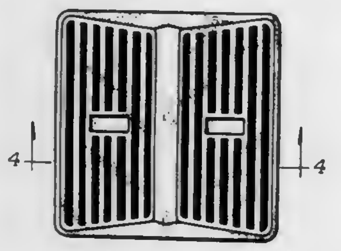
273,583
SPEAKER ENCLOSURE

Kenneth M. Hattori, Bensenville, Ill., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Filed Dec. 30, 1981, Ser. No. 335,746

Term of patent 14 years

U.S. Cl. D14—39



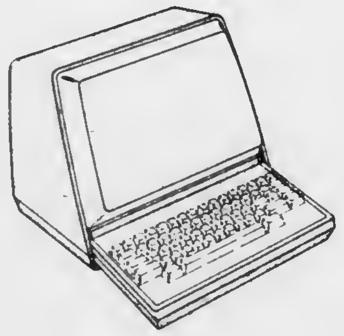
273,584
VIDEO DISPLAY

John N. McGarvey, Drexel Hill, Pa.; Terrance J. Paas; Terry B. Prince, both of Indianapolis, Ind., and Alvina R. Tilley, Red Bank, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 30, 1981, Ser. No. 335,854

Term of patent 14 years

U.S. Cl. D14—106



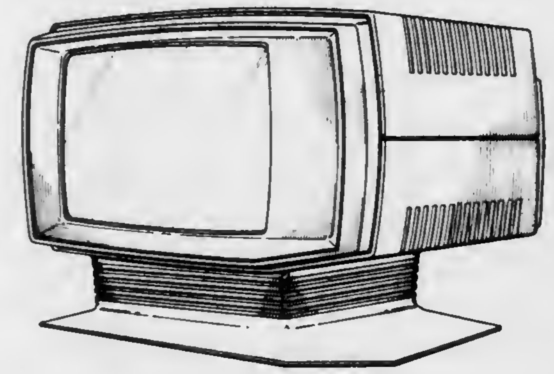
273,585
VIDEO DISPLAY TERMINAL OR SIMILAR ARTICLE

John W. Carroll, III, Pepperell; Can I. Gundogan, Boston; Peter K. Menkes, Westboro, and Arthur W. Chin, N. Grafton, all of Mass., assignors to Data General Corporation, Westboro, Mass.

Filed Mar. 25, 1981, Ser. No. 247,426

Term of patent 14 years

U.S. Cl. D14—113



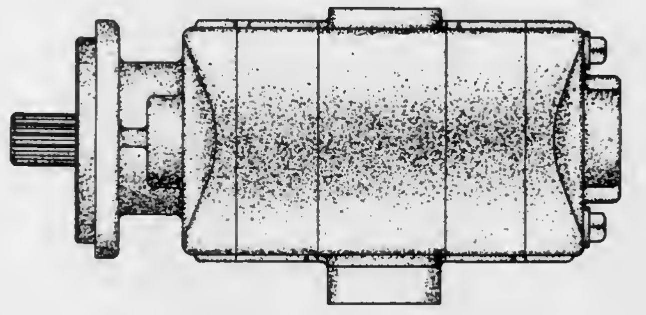
273,586
CONVERTABLE PUMP AND MOTOR

Robert F. Hodgson, Youngstown, Ohio, assignor to Commercial Shearing, Inc., Youngstown, Ohio

Filed Dec. 19, 1980, Ser. No. 218,110

Term of patent 14 years

U.S. Cl. D15—7



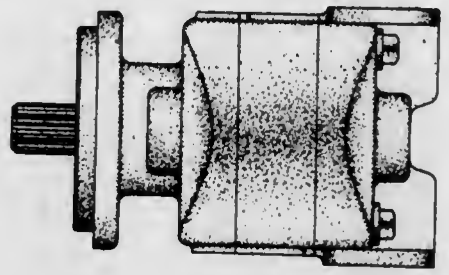
273,587
CONVERTABLE PUMP AND MOTOR

Robert F. Hodgson, Youngstown, Ohio, assignor to Commercial Shearing, Inc., Youngstown, Ohio

Filed Dec. 19, 1980, Ser. No. 218,121

Term of patent 14 years

U.S. Cl. D15—7



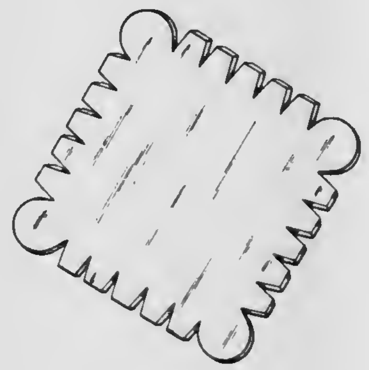
273,588
HAND LOOM OR SIMILAR ARTICLE

Marian K. Barrett, P.O. Box 804, Appleton, Wis. 54912

Filed Aug. 21, 1981, Ser. No. 295,097

Term of patent 14 years

U.S. Cl. D15—66



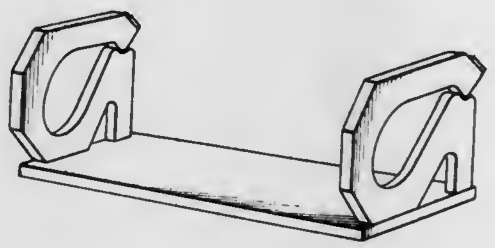
273,589
FRAME FOR PLEATING AND SMOCKING MACHINE

Dianne R. Durand, 6709 Glen Brook Dr., Knoxville, Tenn. 37919

Filed Apr. 22, 1981, Ser. No. 256,510

Term of patent 14 years

U.S. Cl. D15—78



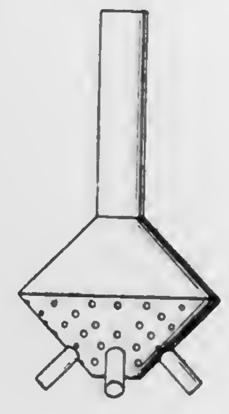
273,590
MAGNETIC PARTICLE REMOVING DRYER-SPREADER

Gary E. Thrasher, 117 S. Craig, Pasadena, Calif. 91107

Filed Nov. 28, 1980, Ser. No. 211,198

Term of patent 14 years

U.S. Cl. D15—199



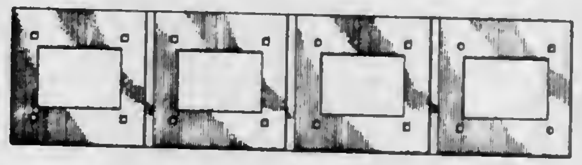
273,591
MULTIPLE SLIDE MOUNT

Samuel Freeman, 13 Birchwood Ct. East, Syosset, N.Y. 11791

Filed Oct. 15, 1980, Ser. No. 197,200

Term of patent 14 years

U.S. Cl. D16—38



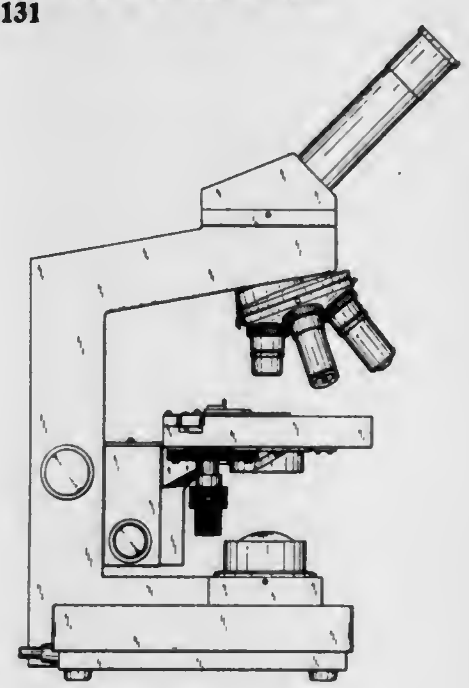
273,592
MICROSCOPE

John T. Armbruster, Niagara Falls, N.Y., assignor to Warner Lambert Technologies, Inc., Southbridge, Mass.

Filed Aug. 26, 1981, Ser. No. 296,404

Term of patent 14 years

U.S. Cl. D16—131



273,593

ELECTRONIC CALCULATOR

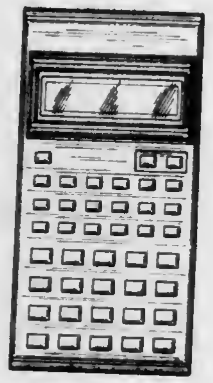
Harumi Sakamoto, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan

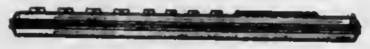
Filed Dec. 14, 1981, Ser. No. 330,189

Claims priority, application Japan, Jun. 26, 1981, 56-28314

Term of patent 14 years

U.S. Cl. D18—7





273,594

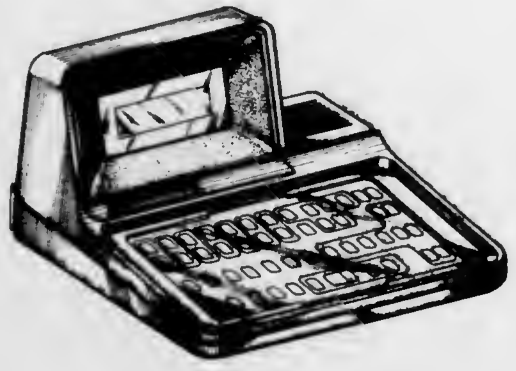
ELECTRONIC TEACHING AND ENTERTAINMENT HOUSING OR SIMILAR ARTICLE

Robert B. Lovejoy, Torrance, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Nov. 13, 1981, Ser. No. 321,138

Term of patent 14 years

U.S. Cl. D19—60



273,595

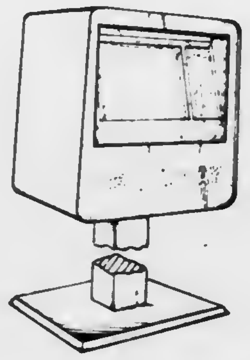
NEWSPAPER VENDING RACK OR SIMILAR ARTICLE

Fred M. Gore, Dallas, Tex., assignor to Gannett Co., Inc., Rochester, N.Y.

Filed May 12, 1982, Ser. No. 377,476

Term of patent 14 years

U.S. Cl. D20—6



273,596

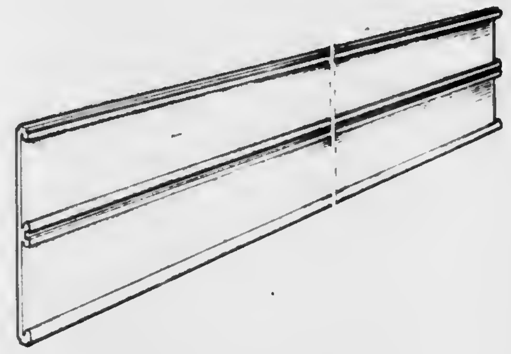
SIGN

Bo Waldecrantz, Nykvarn, Sweden, assignor to Nykvarns Skylt AB, Sweden

Filed Apr. 27, 1981, Ser. No. 257,935

Term of patent 14 years

U.S. Cl. D20—44



273,597

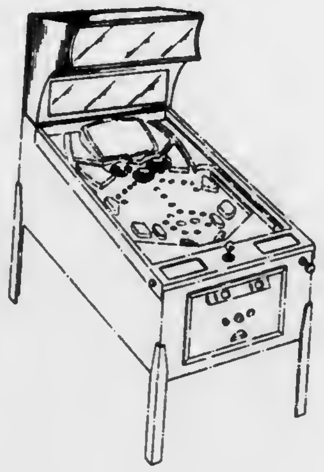
BACK CABINET FOR PINBALL GAME

John W. Buras, Chicago; Adolf Seitz, W. Chicago, and Algimantis J. Gabrius, Carol Stream, all of Ill., assignors to D. Gottlieb & Co., Northlake, Ill.

Filed Oct. 19, 1981, Ser. No. 312,502

Term of patent 14 years

U.S. Cl. D21—10



273,598

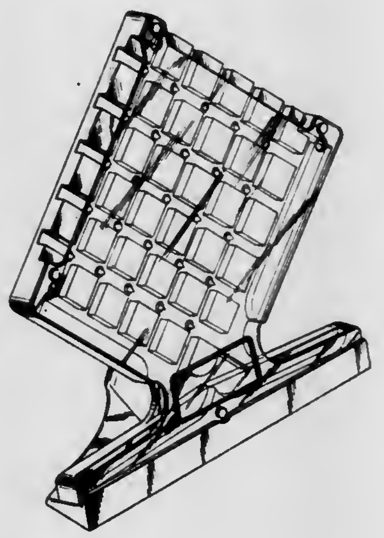
GAME BOARD

Mark A. Fowle, Beverly, Mass., assignor to Milton Bradley International, Inc., Springfield, Mass.

Filed Dec. 3, 1981, Ser. No. 327,221

Term of patent 14 years

U.S. Cl. D21—12



273,599

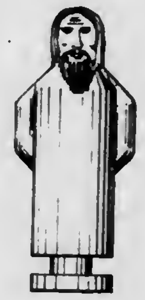
FIGURINE OR STATUETTE GAME PLAYING PIECE OR THE LIKE

Shawn D. Olfman, 17-165 Kennedy St., Winnipeg, Canada R3C 1S6 and Jerry A. Olfman, 70 Polson Ave., Winnipeg, Canada R2W 0M2

Continuation-in-part of Ser. No. 908,918, May 22, 1978, abandoned. This application Jul. 16, 1981, Ser. No. 283,963

Term of patent 14 years

U.S. Cl. D21—51



273,600

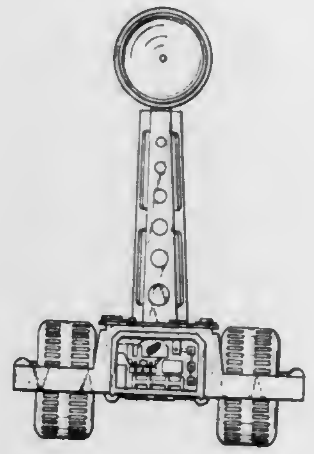
TOY VEHICLE

Kenneth R. Wilkes, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Feb. 4, 1982, Ser. No. 345,628

Term of patent 14 years

U.S. Cl. D21—128



273,601

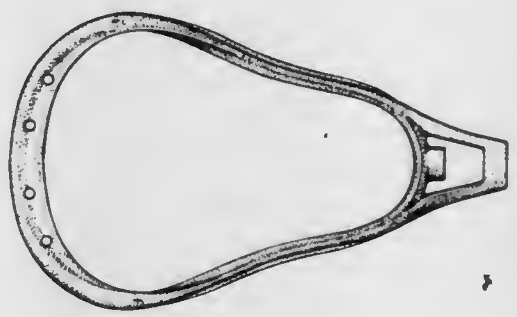
LACROSSE STICK HEAD

Fielding H. Lewis, Jr., Towson; Jackie L. Davis, Aberdeen; Richard B. C. Tucker, Baltimore, and Robert E. Griebe, Towson, all of Md., assignors to Wm. T. Burnett & Co., Inc., Baltimore, Md.

Filed Apr. 30, 1982, Ser. No. 373,697

Term of patent 14 years

U.S. Cl. D2—210



273,602

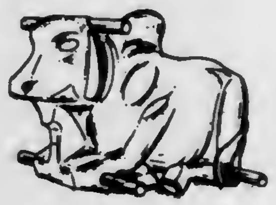
ROCKING BULL

James R. Smith, Mesquite, Tex., assignor to Gay Sales and Distributing Company, Inc., Mesquite, Tex.

Filed Nov. 2, 1981, Ser. No. 316,988

Term of patent 14 years

U.S. Cl. D21—247



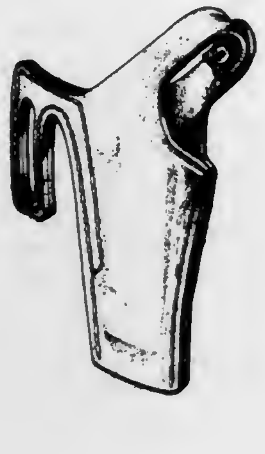
273,603
PISTON HOLSTER

Richard Seldeen, 222 Ramona Pl., Camarillo, Calif. 93010

Filed May 5, 1982, Ser. No. 374,990

Term of patent 14 years

U.S. Cl. D22—13



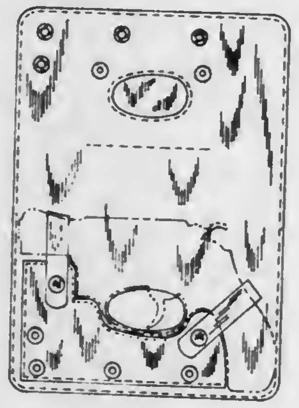
273,604
CONCEALABLE HOLSTER

Lawrence E. McMahan, 1200 Leader Bldg., Cleveland, Ohio 44114

Filed Jan. 28, 1982, Ser. No. 343,718

Term of patent 14 years

U.S. Cl. D22—14



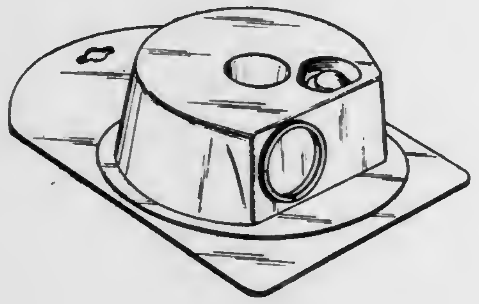
273,605
MOUSE TRAP

Charles G. D. Williams, Rolling Hills Estates, Calif., assignor to Environmentally Safe Products, Corp., Torrance, Calif.

Filed Apr. 19, 1982, Ser. No. 369,344

Term of patent 14 years

U.S. Cl. D22—18



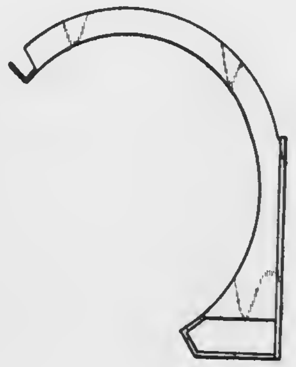
273,606
BRACKET FOR MOUNTING LIQUIFIED PETROLEUM GAS TANKS

George H. Landry, 4669 Pardee, Dearborn Heights, Mich. 48125

Filed Aug. 3, 1981, Ser. No. 289,475

Term of patent 14 years

U.S. Cl. D23—2



273,607
TOILET BOWL CLEANER AND DEODORIZER

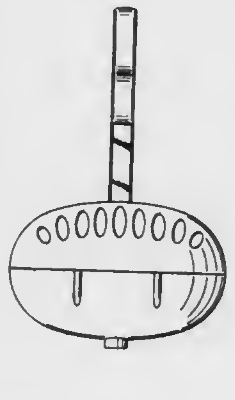
Yves Joyaux, Poitiers, and Jean-Pierre Mandon, Chasseneuil-du-Poitou, both of France, assignors to Airwick Industries, Inc., Carlstadt, N.J.

Filed Aug. 24, 1981, Ser. No. 295,927

Claims priority, application Switzerland, Mar. 3, 1981, 111 699

Term of patent 14 years

U.S. Cl. D23—3



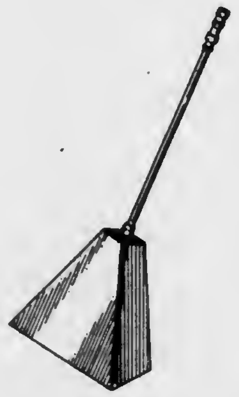
273,608
PORTABLE SPRAY ARM

Leon Kinder, P.O. Box AE, Denton, Tex. 76201

Filed Jun. 29, 1981, Ser. No. 278,176

Term of patent 14 years

U.S. Cl. D23—34



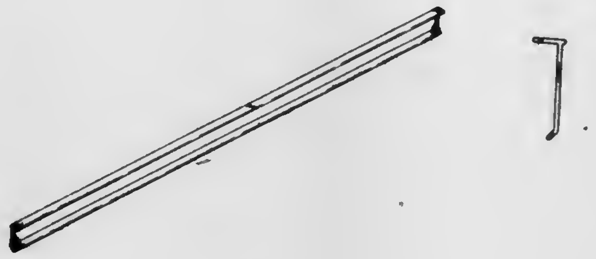
273,609
SHOWER SPLASH GUARD

Troy J. Huffington, Jr., 221 Surf Cir., Richardson, Tex. 75081

Filed Feb. 3, 1981, Ser. No. 231,245

Term of patent 14 years

U.S. Cl. D23—69



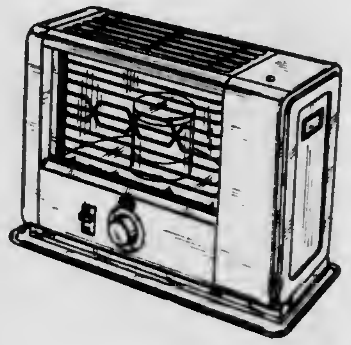
273,610
KEROSENE HEATER

Satoshi Hazama, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan

Filed Mar. 23, 1981, Ser. No. 246,615

Term of patent 14 years

U.S. Cl. D23—123



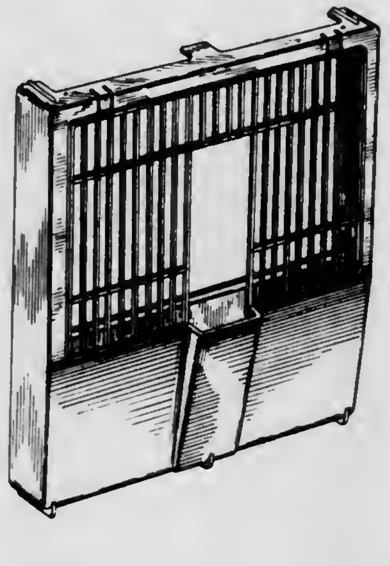
273,611
FRONT PANEL FOR A ROOM HUMIDIFIER

Sidney J. Shames, 57 Holly Pl., Briarcliff Manor, N.Y. 10510, and Harold Shames, 5 Agnes Cir., Ardsley, N.Y. 10502

Filed Oct. 8, 1981, Ser. No. 309,839

Term of patent 14 years

U.S. Cl. D23—146



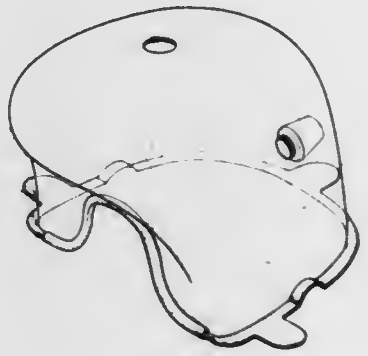
273,612
NEONATAL HOOD

Wallace E. Trammell, 840 N. 1200 East, Provo, Utah 84601; James E. Young, 2080 E. 4675 South, Salt Lake City, Utah 84117; James R. Chidester, 5780 W. 9600 North, and Ralph S. Walker, 9767 N. 6530 West, both of Highland, Utah 84003

Filed Jun. 15, 1981, Ser. No. 273,986

Term of patent 14 years

U.S. Cl. D24—1.1



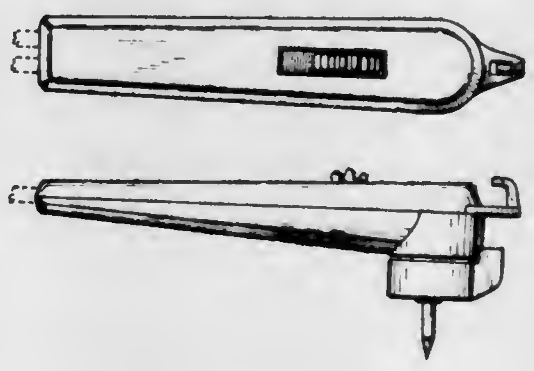
273,613
LIQUID TRANSFER DEVICE FOR MEDICAMENTS AND THE LIKE

Theodore D. Johnson, Glendale, and Sydney Hudspith, La Crescenta, both of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Jun. 29, 1981, Ser. No. 278,550

Term of patent 14 years

U.S. Cl. D24—55



273,614
EAR PROTECTOR PLUG

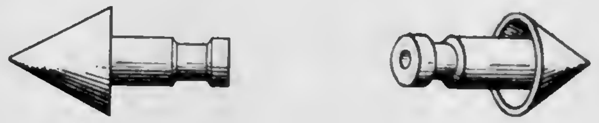
Jose S. Rolla, San Martin 709, 6706 Jaurequi, Buenos Aires, Argentina

Filed May 20, 1981, Ser. No. 265,408

Claims priority, application Argentina, Nov. 21, 1980, 40566

Term of patent 14 years

U.S. Cl. D24—67



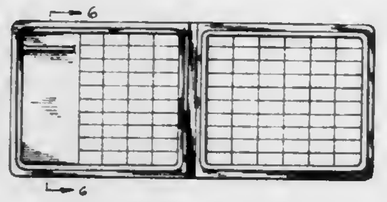
273,615
DISPOSABLE SURGICAL NEEDLE COUNTER

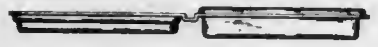
William B. Maskrey, Thiensville, Wis., assignor to Meridian Industries Inc., Milwaukee, Wis.

Filed Jul. 13, 1981, Ser. No. 282,380

Term of patent 14 years

U.S. Cl. D24—99





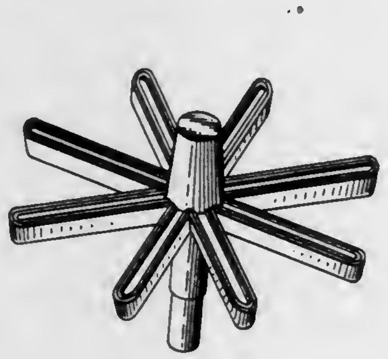
273,616
SPRUE AND RUNNER BARS FOR METAL CASTING

Hyman S. Levine, 74 Fifth Ave., New York, N.Y. 10011

Filed Jan. 7, 1982, Ser. No. 337,779

Term of patent 14 years

U.S. Cl. D24—99



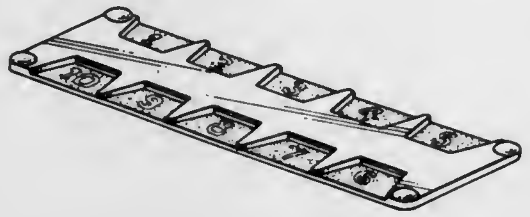
273,617
TRANSPARENT LABORATORY SLIDE

James E. Parker, Long Beach, Calif., assignor to ICL Scientific, Inc., Fountain Valley, Calif.

Filed Jan. 4, 1982, Ser. No. 336,677

Term of patent 14 years

U.S. Cl. D24—99



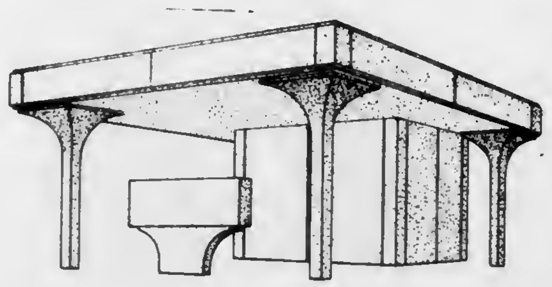
273,618
DRIVE-IN BANKING KIOSK

Randall L. Elliott, Oklahoma City, Okla., assignor to Liberty National Bank & Trust Co., Oklahoma City, Okla.

Filed Feb. 1, 1982, Ser. No. 344,765

Term of patent 14 years

U.S. Cl. D25—1



273,619
BEAM

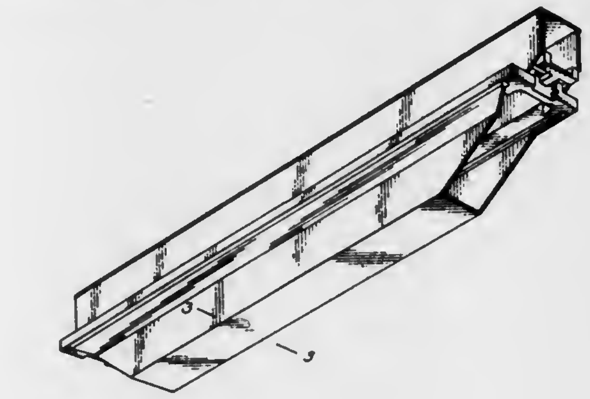
George B. A. Young, Sturmer, Nr. Haverhill, England, assignor to Acrow (Engineers) Limited, London, England

Filed Nov. 20, 1981, Ser. No. 323,452

Claims priority, application United Kingdom, Jun. 8, 1981, 1000860

Term of patent 14 years

U.S. Cl. D25—73



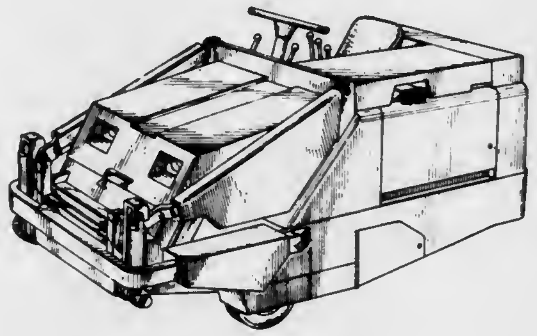
273,620
POWER SWEEPER

Paul W. Kimzey, Minneapolis; David W. Berg, Plymouth, and Warren L. Larson, Brooklyn Park, all of Minn., assignors to Tennant Company, Minneapolis, Minn.

Filed Aug. 30, 1982, Ser. No. 412,876

Term of patent 14 years

U.S. Cl. D32—16



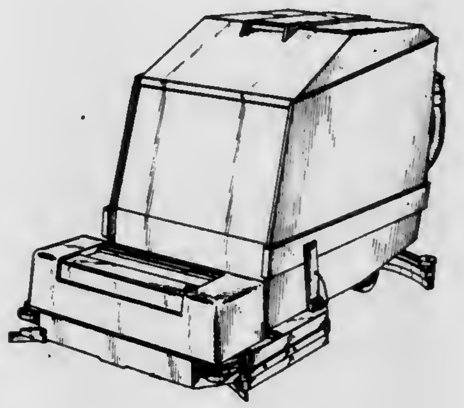
273,621
COMBINATION SWEEPER-SCRUBBER FLOOR MACHINE

Donald J. Haub, Champlin, and Alfred D. Carlson, Robbinsdale, both of Minn., assignors to Tennant Company, Minneapolis, Minn.

Filed Sep. 7, 1982, Ser. No. 416,159

Term of patent 14 years

U.S. Cl. D32—16



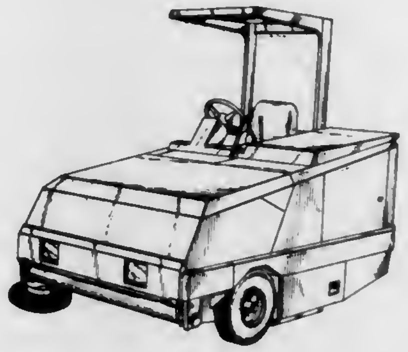
273,622
FLOOR MAINTENANCE MACHINE

Neil F. Brown, Minneapolis; Roger D. Star, Wayzata, and Logan W. Johnson, Edina, all of Minn., assignors to Tennant Company, Minneapolis, Minn.

Filed Sep. 10, 1982, Ser. No. 416,656

Term of patent 14 years

U.S. Cl. D32—16



273,623
VACUUM CLEANER ACCESS PLATE

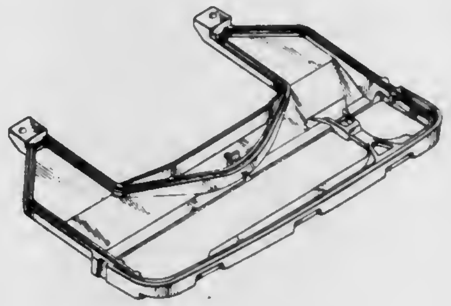
Don W. Vermillion, Anderson, S.C., assignor to The Singer Company, Stamford, Conn.

Filed Jul. 17, 1981, Ser. No. 284,032

The portion of the term of this patent subsequent to Sep. 22, 1995, has been disclaimed.

Term of patent 14 years

U.S. Cl. D32—31



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  - Rankin, Fred P.; and Goins, Buren L., 4,444,004, Cl. 57-22.000.
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- Abdul-Malek, Adel B.: *See—*
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- Abe, Katsuo: *See—*
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- Abe, Yoshihiko: *See—*
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- Acharekar, M. A.; and Kaplan, M. M., to International Laser Systems, Inc. Laser apparatus and method. 4,445,217, Cl. 372-35.000.
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- Agence Nationale de Valorisation de la Recherche (A.N.V.A.R.): *See—*
  - Aries, Lucien; and Traverse, Jean-Pierre, 4,444,600, Cl. 148-6.240.
  - Bisagni, Emile; Ducrocq, Claire; Rivalle, Christian; Tambourin, Pierre; Wendling, Francoise; Chermann, Jean-Claude; and Montagnier, Luc, 4,444,776, Cl. 424-258.000.
- Agency of Industrial Science & Technology: *See—*
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- Agfa-Gevaert Aktiengesellschaft: *See—*
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  - Credner, Hans-Heinrich, 4,444,867, Cl. 430-223.000.
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  - Goetschius, George W., 4,444,724, Cl. 422-173.000.
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  - Banerjee, Ratan, 4,444,016, Cl. 62-54.000.
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  - Hayashi, Masaharu; and Nakagawa, Makoto, 4,444,300, Cl. 192-58.00B.
  - Suzuki, Saburo, 4,444,431, Cl. 297-316.000.
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  - Horn, John D.; and Hodosh, Ralph J., 4,443,964, Cl. 43-118.000.
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  - Fenton, Stephen, 4,444,657, Cl. 210-95.000.
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- Allen, Alec G.: *See—*
  - Davies, Evan J.; and Allen, Alec G., 4,444,445, Cl. 339-5.00M.
- Allen-Bradley Company: *See—*
  - Graninger, Frank J.; and Reichert, Gilbert A., 4,445,013, Cl. 200-77.000.
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  - Whitefield, John T., 4,444,082, Cl. 84-1.210.
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  - Baker, James E.; and Allen, T. Benjamin, 4,444,994, Cl. 174-16.0HS.
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  - Bollen, P. Stuart; Degrassi, Alfieri; and Sacks, William, 4,444,829, Cl. 428-220.000.
  - Edelstein, Harold; and Koetters, Daniel, 4,444,677, Cl. 252-301.170.
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- Allis-Chalmers Corporation: *See—*
  - Enzmann, Michael H.; and Jensen, Lyle L., 4,444,000, Cl. 56-15.600.
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  - Clausen, Eivind; and Allsop, James D., 4,445,158, Cl. 360-137.000.
- Allsop, James D.: *See—*
  - Clausen, Eivind; and Allsop, James D., 4,445,158, Cl. 360-137.000.
- Aloka Co., Ltd.: *See—*
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- Alsthom-Atlantique: *See—*
  - Allegre, Jean; and Olivier, Michel, 4,445,046, Cl. 290-52.000.
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  - Holt, Ronald A.; and Whitesides, Robert B., 4,444,022, Cl. 62-238.600.
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  - Bienus, John S.; Theofilos, Konstantin G.; Carris, John N.; and DeLeo, Ernest M., 4,444,586, Cl. 75-65.00R.
  - Laferty, John M.; Huggins, Dale K.; and Bruno, John D., 4,444,733, Cl. 423-24.000.
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  - Dusza, John P.; and Albright, Jay D., 4,444,774, Cl. 424-251.000.
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- Ametek, Inc.: *See—*
  - Schaff, Alfred, Jr., 4,444,054, Cl. 73-708.000.
- AMP Incorporated: *See—*
  - Huber, John H., 4,444,450, Cl. 339-107.000.
  - Myers, Ronald W., 4,444,451, Cl. 339-154.00A.
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Nogami, Sumitaka; Kitahama, Yoshiharu; and Iwami, Isamu, 4,444,861, Cl. 430-58.000.

Ashland Oil, Inc.: *See—*
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Atago, Kazuo: *See—*
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Athena Controls Inc.: *See—*
Metz, Bruce E., 4,445,025, Cl. 219-530.000.

Atlan-Tol Industries, Inc.: *See—*
Gaskill, David M., Jr., 4,444,315, Cl. 206-449.000.

Atlantic Richfield Company: *See—*
Feinberg, Stewart; and Nicholson, Harold, 4,444,952, Cl. 525-93.000.
Francis, Peter S., 4,444,932, Cl. 524-232.000.
Jones, C. Andrew; Leonard, John J.; and Sofranko, John A., 4,444,984, Cl. 585-500.000.
Schmidt, Jerry W., 4,444,265, Cl. 166-295.000.
Snodgrass, John B.; and Cambridge, Edward L., 4,444,740, Cl. 423-483.000.
Statton, Gary L.; and Gaul, James M., 4,444,676, Cl. 252-182.000.
Younes, Usama E., 4,444,969, Cl. 526-262.000.

Atlas Copco Aktiebolag: *See—*
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Atlas Insulation Company, Inc.: *See—*
Coutu, Walter H., Sr., 4,443,988, Cl. 52-309.900.

Ato Chimie: *See—*
Guerin, Bernard; Poisson, Pierre; and Sturtz, Georges, 4,444,930, Cl. 524-125.000.

Audenard, Bernard, to CGR. Remote acoustic monitoring device which is testable by variation of the supply voltage. 4,445,206, Cl. 367-13.000.

Augat Inc.: *See—*
Wey, Robert A.; Roberts, Harold A.; and Dery, Roger, 4,444,461, Cl. 350-96.210.

Austin, Anderson. Anti-clog sink device. 4,443,897, Cl. 4-291.000.

Automotive Products Limited: *See—*
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Avco Corporation: *See—*
McMurray, John H.; and Miller, Jule, 4,444,353, Cl. 228-231.000.

Avon, Michel F.; and Markarian, Gerard R., to Societe Anonyme dite: Compagnie Maritime d'Expertises S.A. Process and installation for purification of the helium contained in a mixture of gas. 4,444,572, Cl. 55-26.000.

Ayer, Donald E.; and Schlagel, Carl A., to Upjohn Company, The. 17α-Acyloxy-5β-corticoids and 17α-acyloxy-5α-corticoids. 4,444,689, Cl. 260-397.450.

Aysta, James E.; Gibson, Geoffrey; and Tuukkanen, Rainer A., to Minnesota Mining and Manufacturing Company. Electrical connector. 4,444,449, Cl. 339-99.00R.

B. F. Goodrich Company, The: *See—*
Chaser, Dwight W., 4,444,929, Cl. 524-101.000.
Jones, Robert F., 4,444,608, Cl. 156-130.000.
Okamoto, Yoshihisa, 4,444,692, Cl. 260-465.400.

Baatz, Henning; and Rittscher, Dieter, to GNS Gesellschaft fur Nuklear-Service mbH. Radiation-shielding transport and storage container. 4,445,042, Cl. 250-506.100.

Babcock & Wilcox Company, The: *See—*
Chambers, Edwin G.; and Kraus, Albert J., 4,444,380, Cl. 269-87.000.

Bachman, Brett L.: *See—*
Bratt, Richard G.; Schleimer, Stephen I.; Pilat, John F.; Belgard, Richard A.; Wallach, Steven J.; Clancy, Gerald F.; Mundie, Craig J.; Bernstein, David H.; Gavrin, Edward S.; Jones, Thomas M.; and Bachman, Brett L., 4,445,177, Cl. 364-200.000.

Badertscher, Darrell J., to Burke's Paint Company, Inc. Long life paint. 4,444,937, Cl. 524-425.000.

Baer, Richard K. Invalid walker and transfer device. 4,443,902, Cl. 5-81.00B.

Bahle, Otto G., to Compur-Electronic GmbH. Automatic telephone answering apparatus. 4,445,148, Cl. 360-12.000.

Baines, John E.; Pilgrim, Thomas A.; Thornhill, Albert W.; and Tedds, Malvern J. T., to BPB Industries Limited. Cementitious coating composition. 4,444,595, Cl. 106-109.000.

Baker, Charles C.; Banks, Perry S.; and Raduazzo, Patrick F., to GCA Corporation. Air track apparatus. 4,444,531, Cl. 406-88.000.

Baker, Edward D.; Lang-Ree, Nils; and Brown, John S., to Taylor Freezer Company. Intermittent automatic grill for hamburger patties. 4,444,094, Cl. 99-327.000.

Baker International Corporation: *See—*
Fisher, Hiram H., Jr., deceased, 4,444,252, Cl. 166-134.000.
McStravick, David M.; and Chenoweth, David V., 4,444,420, Cl. 285-47.000.

Baker, James E.; and Allen, T. Benjamin, to Varo, Inc. Electrically insulated quick disconnect heat sink. 4,444,994, Cl. 174-16.0HS.

Baldwin Piano & Organ Company: *See—*
Jones, Edward M.; and Simmons, Carlton J., Jr., 4,444,081, Cl. 84-1.030.

Baliga, Bantval J.; and Adler, Michael S., to General Electric Company. Method of fabricating a semiconductor device with a base region having a deep portion. 4,443,931, Cl. 29-571.000.

Balkanli, Hayati. Compensating transducer digitizer. 4,444,055, Cl. 73-708.000.

Ball Corporation: *See—*
Scholes, Addison B.; and Dollar, David L., 4,444,834, Cl. 428-323.000.

Baltz, Anthony J.: *See—*
Thorn, Craig E.; Chasman, Chellis; and Baltz, Anthony J., 4,445,102, Cl. 335-297.000.

Bandai, Satoshi: *See—*
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Banerjee, Ratan, to Airco, Inc. Heat exchanger apparatus. 4,444,016, Cl. 62-54.000.

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Baker, Charles C.; Banks, Perry S.; and Raduazzo, Patrick F., 4,444,531, Cl. 406-88.000.

Bannister, Brian C., to Marler Haley Exposystems Limited. Device for interconnecting panels. 4,443,911, Cl. 16-354.000.

Bannister, Brian C., to Marler Haley Exposystems Ltd. Foldable device. 4,444,240, Cl. 160-135.000.

Barbini, Richard J.; and DeCicco, Matthew C., to BOC Group, Inc., The. Snow horns. 4,444,023, Cl. 62-330.000.

Barclay, Stephen D.: *See—*
Shaw, Douglas A.; and Barclay, Stephen D., 4,444,542, Cl. 414-694.000.

Barr & Stroud Limited: *See—*
Corbett, Richard T.; Monachan, Brian C.; and Hope, Alexander J. N., 4,444,805, Cl. 427-38.000.

Barrett, Peter M., to Burroughs Corporation. Media distribution of head contact wear on a disc. 4,445,188, Cl. 364-550.000.

Barrington, Burchus Q., to Halliburton Company. Tester valve with silicone liquid spring. 4,444,268, Cl. 166-373.000.

Barrus, Dwight M. Rough terrain cart. 4,444,405, Cl. 280-47.300.

Bartel, Siegfried; Biedermann, Ernst; Ermer, Wolfgang; and Nagel, Erich, to Agfa-Gevaert Aktiengesellschaft. Apparatus for influencing the color of copying light in photographic copying machines or the like. 4,444,489, Cl. 355-35.000.

Barth, Jordan; and Norfleet, James, to Colgate-Palmolive Company. Functional agglomerated speckles and method for manufacture thereof. 4,444,570, Cl. 51-302.000.

Basf Aktiengesellschaft: *See—*
Burkert, Hans; Brunnmueller, Friedrich; Beyer, Karl-Heinz; Kroener, Michael; and Mueller, Hans, 4,444,667, Cl. 210-735.000.
Denzinger, Walter; Trieselt, Wolfgang; Perner, Johannes; and Hartmann, Heinrich, 4,444,561, Cl. 8-137.000.
Frey, Guenter; Streit, Werner; Fikentscher, Rolf; Degen, Hans-Juergen; and Guender, Wolf, 4,444,959, Cl. 525-435.000.
Kempter, Fritz E.; and Schupp, Eberhard, 4,444,634, Cl. 204-181.00C.
Kempter, Fritz E.; Schupp, Eberhard; and Sabelus, Gunther, 4,444,942, Cl. 524-596.000.

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Bauer, Helmut; and Krob, Erwin, to TMC Corporation. Apparatus for facilitating an adjustment of front and/or rear jaws of ski bindings. 4,444,414, Cl. 280-633.000.

Baugh, Charles R.; and Smith, Robert M., to Bell Telephone Laboratories, Incorporated. Communication line interface for controlling data information having differing transmission characteristics. 4,445,213, Cl. 370-94.000.

Baugh, Hollis A., to Koomey, Inc. Underwater fluid connector. 4,444,218, Cl. 137-236.00S.

Baumann, Heinrich: *See—*
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Bausch & Lomb Incorporated: *See—*
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Bayer Aktiengesellschaft: *See—*
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Deprez, Jacques; Drope, Eckard; Greif, Peter; and Soth-Haas, Gabriele, 4,444,645, Cl. 204-409.000.
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Konigshofen, Heinrich; Bruck, Dieter W.; Nierth, Alfred; Zlokarnik, Marko; and Uhlmann, Hans-Jorg, 4,444,739, Cl. 423-371.000.
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Meyer, Horst; Horstmann, Harald; Moller, Eike; and Garthoff, Bernward, 4,444,770, Cl. 424-248.500.
Schonfelder, Manfred; and Steinberger, Helmut, 4,444,973, Cl. 528-28.000.

Bayer, Jack L.; and Breitkopf, Walter J. Machining center. 4,443,929, Cl. 29-568.000.

Bayerische Motoren Werke Aktiengesellschaft: *See—*
Gibisch, Hans; Hahn, Joachim; Henning, Richard; and Jende, Waldemar, 4,444,162, Cl. 123-198.00C.

Bazell, Seymour; and Goldberg, Edward M. Balloon catheter. 4,444,188, Cl. 128-348.100.

BBC Brown, Boveri & Company, Limited: *See—*
Gaupp, Osvin; Gysel, Thomas; and Koppl, Georg, 4,445,019, Cl. 200-148.00A.

Beale, Harry A., to Omnimax Energy Corporation. High-efficiency thermopile. 4,444,991, Cl. 136-225.000.

Beard, Walter. Tiltable valve employing a moveable cup. 4,444,339, Cl. 222-402.220.

Beck, Harold K., to Halliburton Company. Ball valve housing. 4,444,267, Cl. 166-330.000.

Beck, Jeffrey L., to Conoco Inc. Slurry concentration apparatus. 4,444,229, Cl. 141-1.000.

Becker, Richard J.: *See—*
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Becker, Werner, to Esselte Pendaflex Corporation. Portable labeling machine. 4,444,107, Cl. 101-288.000.

Becker, Werner, to Esselte Pendaflex Corporation. Portable labeling machine. 4,444,611, Cl. 156-384.000.

Beckman Instruments, Inc.: *See—*
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Ogle, David G.; and Taylor, John T., 4,444,066, Cl. 73-863.720.

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Becton, Dickinson and Company: *See—*
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Beecham Group Limited: *See—*
Eglington, Alfred J., 4,444,783, Cl. 424-274.000.
Goudie, Alexander C., 4,444,981, Cl. 548-427.000.
Pearson, Michael J.; and Branch, Clive L., 4,444,771, Cl. 424-250.000.
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- Beelitz, Gunther; and Andre, Siegfried. Magnetic separator with direct washing. 4,444,659, Cl. 210-222.000.
- Beer, Henri B.: *See*—
  - Hinden, Jean M.; and Beer, Henri B., 4,444,642, Cl. 204-290.00F.
- Beesley, Phillip G., to Howard Wall Limited. Spring retracted tape measure. 4,443,944, Cl. 33-138.000.
- Behm, Volker: *See*—
  - Redder, Manfred; Grundken, Dieter; and Behm, Volker, 4,444,304, Cl. 198-735.000.
- BEI Electronics, Inc.: *See*—
  - Haville, George D., 4,445,112, Cl. 340-347.00P.
- Beisswenger, Hans; Daradimos, Georg; Hirsch, Martin; Plass, Ludolf; and Serbent, Harry, to Metallgesellschaft, Aktiengesellschaft. Method of producing fuel gas and process heat fron carbonaceous materials. 4,444,568, Cl. 48-197.00R.
- Belgard, Richard A.: *See*—
  - Bratt, Richard G.; Schleimer, Stephen I.; Pilat, John F.; Belgard, Richard A.; Wallach, Steven J.; Clancy, Gerald F.; Mundie, Craig J.; Bernstein, David H.; Gavrin, Edward S.; Jones, Thomas M.; and Bachman, Brett L., 4,445,177, Cl. 364-200.000.
- Bell & Howell Company: *See*—
  - Stefannson; Rafn; and McManaman, Raymond M., 4,444,388, Cl. 271-293.000.
- Bell Telephone Laboratories, Incorporated: *See*—
  - Baugh, Charles R.; and Smith, Robert M., 4,445,213, Cl. 370-94.000.
  - Coldren, Larry A., 4,445,218, Cl. 372-44.000.
  - Kovacs, Terrence; and Pfeiffer, Loren N., 4,444,620, Cl. 156-657.000.
  - Rocca, Cosmo M. D.; and Tyler, Daniel W., 4,445,008, Cl. 179-179.000.
- Beloit Corporation: *See*—
  - Dahl, Carl B.; and Langdon, Roy A., 4,444,364, Cl. 242-68.300.
  - Karr, Gerald W., 4,444,362, Cl. 242-56.600.
- Benaquista, Florence. Palette box. 4,444,306, Cl. 206-1.700.
- Bend Research, Inc.: *See*—
  - Matson, Stephen L., 4,444,571, Cl. 55-16.000.
- Bendett, Raymond M.: *See*—
  - Schulien, Howard E.; Bendett, Raymond M.; and Lanni, Michael J., 4,443,952, Cl. 33-324.000.
- Bendix Corporation, The: *See*—
  - Kirby, Allan B.; and Johnson, Geoffrey P., 4,444,453, Cl. 339-177.00R.
  - Schulien, Howard E.; Bendett, Raymond M.; and Lanni, Michael J., 4,443,952, Cl. 33-324.000.
  - Spangler, Glenn E.; and Wroten, John F., Jr., 4,445,038, Cl. 250-382.000.
- Bendler, Hellmut, to Dynamit Nobel Aktiengesellschaft. Rotary power element. 4,444,010, Cl. 60-407.000.
- Benedetti, Alain; Laury, Luc; Legrand, Francis; Poubeau, Pierre; and Weisser, Bernard, to Societe Nationale Industrielle Aerospatiale. Equipment for storage of energy under kinetic form and recovery thereof in electric form and method of using such equipment. 4,444,444, Cl. 308-10.000.
- Benezra, Leo L.: *See*—
  - Tsai, Shan-Pu; Benezra, Leo L.; Horvat, Lewis R.; and Hazzard, John P., 4,444,640, Cl. 204-283.000.
- Bennett, John T.; and Goodman, Jack E. Liquid transfer device. 4,444,062, Cl. 73-863.320.
- Bentley Laboratories: *See*—
  - Heinemann, Stanley O., 4,444,498, Cl. 356-246.000.
- Benton, John R.; Corbett, Francis J.; and Tuft, Richard A., to United States of America, Army. Hybrid optical/digital image processor. 4,445,141, Cl. 358-294.000.
- Benzoni, Josette: *See*—
  - Torelli, Vesperto; Benzoni, Josette; and Deraedt, Roger, 4,444,767, Cl. 424-238.000.
- Berardo, Carmen R. Device for collection of animal wastes. 4,444,152, Cl. 119-95.000.
- Berggren, Artur E.: *See*—
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- Berglund, Lars-Ake; and Andersson, Carl-Gunnar, to Telefonaktiebolaget L M Ericsson. High voltage converter. 4,445,166, Cl. 363-48.000.
- Bergman, Raymond A. Vertical and horizontal machine tools. 4,444,534, Cl. 409-164.000.
- Bergman, Raymond A. Air float power translation and rotation system. 4,444,541, Cl. 414-676.000.
- Bergwerksverband GmbH: *See*—
  - Hackler, Erich; Meckel, Joachim; Wagener, Dietrich; and Galow, Manfred, 4,444,532, Cl. 406-117.000.
- Bernet, Alois; and Brodbeck, Eduard, to SIG Schweizerische Industrie-Gesellschaft. Bolt slot guard for a hand weapon. 4,443,962, Cl. 42-16.000.
- Bernier, William E.; Emmi, Francis; Fey, Edmond O.; Gendler, Paul L.; and Twieg, Robert J., to International Business Machines Corporation. Electrochromic printing. 4,444,626, Cl. 204-2.000.
- Bernklau, James W.: *See*—
  - Lynch, M. Dee; and Bernklau, James W., 4,444,357, Cl. 236-12.120.
- Bernstein, David H.: *See*—
  - Bratt, Richard G.; Schleimer, Stephen I.; Pilat, John F.; Belgard, Richard A.; Wallach, Steven J.; Clancy, Gerald F.; Mundie, Craig J.; Bernstein, David H.; Gavrin, Edward S.; Jones, Thomas M.; and Bachman, Brett L., 4,445,177, Cl. 364-200.000.
- Berry, Jack, to Qume Corporation. Sheet feeder. 4,444,385, Cl. 271-22.000.
- Bertoglio, Ottavio, to CELT Centro Studi e Laboratori Telecomunicazioni S.p.A. Circuit arrangement for identifying telephone subscribers. 4,445,001, Cl. 179-17.00A.
- Bertrand, Yves; Favrot, Remy; Gaudilliere, Pierre; Perennou, Jean-Charles; and Wiedemann, Bernard, to Societe Nationale des Poudres et Explosifs. Process for the manufacture of fine propellant powders by granulation, and powders thus obtained. 4,444,606, Cl. 149-2.000.
- Besnard, Francois: *See*—
  - Fournie, Rene; and Besnard, Francois, 4,444,527, Cl. 405-170.000.
- Bessho, Yoshinori: *See*—
  - Yanagi, Toshiaki; and Bessho, Yoshinori, 4,444,135, Cl. 112-121.120.
- Best, David E.; and Niedospial, John J., to Eastman Kodak Company. Photographic cassette and dispensing method. 4,444,484, Cl. 354-276.000.
- Best Lock Corporation: *See*—
  - Best, Walter E.; and Foshee, William R., 4,444,034, Cl. 70-369.000.
- Best, Robert M. Video games with voice dialog. 4,445,187, Cl. 364-521.000.
- Best, Walter E.; and Foshee, William R., to Best Lock Corporation. Pull-resistant lock core. 4,444,034, Cl. 70-369.000.
- Bete, Manfred, to Siemens Aktiengesellschaft. Circuit arrangement for controlling a power field-effect switching transistor. 4,445,055, Cl. 307-571.000.
- Bethlehem Steel Corp.: *See*—
  - Bramwell, Dwight W. S. A.; and Gilles, Herbert L., 4,444,495, Cl. 356-138.000.
- Beyer, Karl-Heinz: *See*—
  - Burkert, Hans; Brunnmueller, Friedrich; Beyer, Karl-Heinz; Kroener, Michael; and Mueller, Hans, 4,444,667, Cl. 210-735.000.
- Beynet, Pierre A.; and Hall, Johnce E., to Standard Oil Company. Carousel for vertically moored platform. 4,444,275, Cl. 175-7.000.
- Bicker, Uwe: *See*—
  - Bosies, Elmar; Gall, Rudi; Weimann, Gunter; Bicker, Uwe; and Pahlke, Wulf, 4,444,766, Cl. 424-211.000.
- Biedermann, Ernst: *See*—
  - Bartel, Siegfried; Biedermann, Ernst; Ermer, Wolfgang; and Nagel, Erich, 4,444,489, Cl. 355-35.000.
- Bienus, John S.; Theofilos, Konstantin G.; Carris, John N.; and DeLeo, Ernest M., to AMAX Inc. Method of melting copper in a hearth melt-down furnace with roof burner system. 4,444,586, Cl. 75-65.00R.
- Big Joe Manufacturing Company: *See*—
  - Montemurro, Thomas O., 4,444,284, Cl. 180-19.100.
- Bilane, Glenn B.; Rubin, Lawrence M.; Soffa, Albert; and Vilenski, Dan, to Kulicke & Soffa Industries, Inc. Wire bonding apparatus. 4,444,349, Cl. 228-102.000.
- Bille, Gunter, to Siemens Aktiengesellschaft. Track-bound electric motor vehicle. 4,444,120, Cl. 105-131.000.
- Birdsall, John D. Toy car. 4,443,966, Cl. 46-206.000.
- Birmingham, James W.; and Johnson, Craig R., to Air Preheater Company, Inc., The. Thermal oxidizer and method for operating same. 4,444,735, Cl. 423-210.000.
- Bisagni, Emile; Ducrocq, Claire; Rivalle, Christian; Tambourin, Pierre; Wendling, Francoise; Chermann, Jean-Claude; and Montagnier, Luc, to Agence Nationale de Valorisation de la Recherche (A N V A R). Dipyrido (4,3-B) (3,4-F) indoles, process for obtaining them, therapeutical use and pharmaceutical compositions. 4,444,776, Cl. 424-258.000.
- Bisping, Bernhard; Romer, Rudolf; Gerbach, Klaus; and Wallow, Peter, to Rheinmetall GmbH. Munitions round for barrel-type weapons. 4,444,114, Cl. 102-430.000.
- Bixby, Howard H.; Haines, William C.; and Wickman, Arnold W., to L.D. Schreiber Cheese Co., Inc. Non-cultured simulated cheese containing rennet casein. 4,444,800, Cl. 426-582.000.
- Bjork, Lars: *See*—
  - Widen, Sune; Jensen, Borge; and Bjork, Lars, 4,444,332, Cl. 220-306.000.
- Black, Thomas J., Jr.; and Stahl, Philip, to Ferrofluidics Corporation. Self-activating ferrofluid seal apparatus and method. 4,444,398, Cl. 277-1.000.
- Blackburn, Wayne E.; Liston, Max D.; and Stark, William A., to Liston Scientific Corporation. Moisture sensor for purging system. 4,445,012, Cl. 200-61.040.
- Blair, James E.; and Davis, Lois T., to Sybron Corporation. Microorganism for decolorizing pulp and paper mill wastewater. 4,444,888, Cl. 435-243.000.
- Blatt, John A.: *See*—
  - Blatt, Leland F.; and Blatt, John A., 4,444,540, Cl. 414-589.000.
- Blatt, Leland F.; and Blatt, John A. Automation lift unit. 4,444,540, Cl. 414-589.000.
- Blee, Anthony D.: *See*—
  - Foundoukos, Dimitris; and Blee, Anthony D., 4,444,526, Cl. 405-136.000.
- Blee, Anthony David: *See*—
  - Foundoukos, Dimitris; and Blee, Anthony D., 4,444,526, Cl. 405-136.000.
- Blight, Steven E.: *See*—
  - Melocik, Grant C.; and Blight, Steven E., 4,445,090, Cl. 324-433.000.
- Blomgren, George E.; and Kronenberg, Marvin L., to Union Carbide Corporation. Non-aqueous electrochemical cell. 4,444,855, Cl. 429-105.000.
- Blomgren, Rolf; and Johnson, Ove. Bicycle helmut. 4,443,891, Cl. 2-414.000.

- Bluethgen, Bjoern, to Polygram GmbH. Method for the joining, or mixing-in or fade-in of two audio digital signal segments, free of interfering signals. 4,445,149, Cl. 360-13.000.
- Blum, Rainer; Seitz, Max; and Kaczinski, Friedrich, to BASF Farben + Fasern AG. Coating metals with plastisols having carbon dust fillers. 4,444,837, Cl. 428-332.000.
- Blume, Cheryl D.; and Bonner, Paul H., to Mylan Pharmaceuticals, Inc. Antihypertensive diuretic combination composition and associated method. 4,444,769, Cl. 424-246.000.
- Board of Regents, University of Texas: *See*—
  - Moorhead, Louise C., 4,444,787, Cl. 424-304.000.
- BOC Group, Inc., The: *See*—
  - Barbini, Richard J.; and DeCicco, Matthew C., 4,444,023, Cl. 62-330.000.
- Bock, Gunther: *See*—
  - Wick, Georg; Bock, Gunther; and Schauenstein, K., 4,444,317, Cl. 209-3.100.
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- Boeing Company, The: *See*—
  - Brick, Rowan O., 4,445,161, Cl. 361-218.000.
  - Bulatao, Jose G., 4,445,086, Cl. 324-66.000.
  - Dunstan, Phillip E., 4,444,302, Cl. 198-334.000.
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  - Pearson, Michael J.; and Branch, Clive L., 4,444,771, Cl. 424-250.000.
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- Britt, James E.: *See*—
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- Brush Switchgear Limited: *See—*
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- Burgess, Warren C., Jr. Vibratory feeding work station module and system. 4,444,303, Cl. 198-345.000.
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  - Elmasry, Mohamed I., 4,445,051, Cl. 307-450.000.
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  - Tanaka, Kazuo, 4,444,472, Cl. 350-423.000.
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- Carley, Don A.: *See—*
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- Chang, Clarence D.; and Miale, Joseph N., to Mobil Oil Corporation. Activation of high silica zeolites. 4,444,902, Cl. 502-86.000.
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- Chap, John P., to Selfix, Inc. Stackable shelf unit. 4,444,320, Cl. 211-134.000.
- Charles Stark Draper Laboratory, Inc., The: *See—*
  - Curtiss, William P., 4,445,080, Cl. 318-798.000.
- Charron, Jean-Claude; and Mulsant, Philippe, to Societe Anonyme Saunier Duval Eau Chaude Chauffage. Sealed heat exchanger chamber with disposition of longitudinal water tubes concentrically disposed to a central burner. 4,444,155, Cl. 122-19.000.
- Chaser, Dwight W., to B. F. Goodrich Company, The. Unsymmetrical phosphite-phenolic isocyanurate stabilizer combinations. 4,444,929, Cl. 524-101.000.
- Chasman, Chellis: *See—*
  - Thorn, Craig E.; Chasman, Chellis; and Baltz, Anthony J., 4,445,102, Cl. 335-297.000.
- Chass, Jacob, to Pickering & Company, Inc. Rotary differential transformer with constant amplitude and variable phase output. 4,445,103, Cl. 336-135.000.
- Cheng, Wei-Min: *See—*
  - Liau, Shung-Chung; Cheng, Wei-Min; and Young, Uen-Long, 4,444,627, Cl. 204-26.000.
- Chenoweth, David V.: *See—*
  - McStravick, David M.; and Chenoweth, David V., 4,444,420, Cl. 285-47.000.
- Chermann, Jean-Claude: *See—*
  - Bisagni, Emile; Ducrocq, Claire; Rivalle, Christian; Tambourin, Pierre; Wendling, Francoise; Chermann, Jean-Claude; and Montagnier, Luc, 4,444,776, Cl. 424-258.000.
- Cherry Electrical Products Corporation: *See—*
  - Giles, John T., III; and Hansen, Mark, 4,445,164, Cl. 362-311.000.
- Chesebrough-Pond's Inc.: *See—*
  - Davis, Ray E., Jr.; Becker, Richard J.; Foster, Robert G.; Westkamper, Michael J.; Timothy, Earle J.; and Johnson, Richard H., 4,445,185, Cl. 364-514.000.
- Chevron Research Company: *See—*
  - Demaison, Gerard J.; and Kaplan, Isaac R., 4,444,889, Cl. 436-29.000.
  - Haas, John C., 4,444,569, Cl. 48-197.00R.
  - Mitchell, David S.; and Sageman, David R., 4,444,007, Cl. 60-39.020.
  - Pasky, Joseph Z., 4,444,985, Cl. 585-520.000.
  - Ploeg, Johan F.; and Oden, Arlo L., 4,444,263, Cl. 166-285.000.
- Chiyoda Chemical Engineering & Construction Co., Ltd.: *See—*
  - Matsumoto, Osamu; and Aoki, Ichizo, 4,444,015, Cl. 60-648.000.
  - Shiroto, Yoshimi; Ono, Takeo; Asaoka, Sachio; and Nakamura, Munekazu, 4,444,655, Cl. 208-210.000.
- Choice Vend Industries, Inc.: *See—*
  - Hughes, Albert L., Jr., 4,444,334, Cl. 221-75.000.
- Chonan, Tsunehiro; and Morishige, Akira, to Fujitsu Limited. Process for using positive-working resist materials to form negative resist pattern on substrate. 4,444,869, Cl. 430-325.000.
- Christensen, Jan. Device for tightening a rope, preferably an electric wire. 4,443,914, Cl. 24-115.00R.
- Christian, Gary K.: *See—*
  - Paul, Willard S.; and Christian, Gary K., 4,444,293, Cl. 187-87.000.
- Christian Rovsing A/S: *See—*
  - Smitt, Asbjorn, 4,445,222, Cl. 375-36.000.
- Christodoulou, Spyros D., to Din Engineering Limited. Heat treating a particulate commodity. 4,444,553, Cl. 432-15.000.
- Ciba-Geigy AG: *See—*
  - Freeman, Barrie A., 4,444,480, Cl. 354-329.000.
  - Postle, Stephen R.; and Kingston, Samuel B., 4,444,939, Cl. 524-494.000.
- Ciba-Geigy Corporation: *See—*
  - Abel, Heinz, 4,444,563, Cl. 8-588.000.
  - Ford, Neville, 4,444,775, Cl. 424-256.000.
  - Karrer, Friedrich, 4,444,928, Cl. 524-99.000.
  - Meyer, Willy; and Fory, Werner, 4,444,583, Cl. 71-93.000.
  - Renner, Ulrich; and Jaeggi, Knut A., 4,444,768, Cl. 424-246.000.
  - Salathe, Heinz; Flensberg, Hermann; and Schaetzer, Harry, 4,444,564, Cl. 8-588.000.
  - Vlattas, Isidoros, 4,444,688, Cl. 260-245.600.
- Cipriani, Aldo: *See—*
  - Mazzola, Massimo; Cipriani, Aldo; and Carignani, Giancarlo, 4,444,832, Cl. 428-290.000.
- Cities Service Company: *See—*
  - Peterson, Dewey L., Jr., 4,444,276, Cl. 175-61.000.
- Citizen Watch Co., Ltd.: *See—*
  - Sakakibara, Yosuke; Kasai, Takao; and Takasugi, Tsuneji, 4,444,719, Cl. 420-511.000.
- Claas OHG: *See—*
  - Leigers, Gunter, 4,443,999, Cl. 56-13.900.
- Claire, Earl J.: *See—*
  - Reynolds, Christopher C.; Claire, Earl J.; and Ellis, John R., 4,445,214, Cl. 370-94.000.
- Clancy, Gerald F.: *See—*
  - Bratt, Richard G.; Schleimer, Stephen I.; Pilat, John F.; Belgard, Richard A.; Wallach, Steven J.; Clancy, Gerald F.; Mundie, Craig J.; Bernstein, David H.; Gavrin, Edward S.; Jones, Thomas M.; and Bachman, Brett L., 4,445,177, Cl. 364-200.000.
- Clark, Edwin E.; Lock, William E.; Paiement, Paul E., deceased; and by Miles, Paula J., executrix, to Corning Glass Works. Self aligning doctor/applicator blade assembly. 4,444,102, Cl. 101-36.000.
- Clark, John S. Masonry guide. 4,443,954, Cl. 33-404.000.
- Clark, Lloyd D. Earring watch. 4,444,515, Cl. 368-279.000.
- Clark, William L.: *See—*
  - Roche, Joseph R.; and Clark, William L., 4,444,401, Cl. 277-30.000.
- Clarke, Brian P.: *See—*
  - Stirling, Irene; and Clarke, Brian P., 4,444,754, Cl. 424-114.000.
- Clausen, Eivind; and Allsop, James D., to Allsop, Inc. Cleaning head assembly for a cassette cleaner. 4,445,158, Cl. 360-137.000.
- Clemens, Donald F.: *See—*
  - Whitehurst, Brooks M.; and Clemens, Donald F., 4,444,794, Cl. 426-52.000.
- Clifford, Peter J.: *See—*
  - Caron, Roger L.; Clifford, Peter J.; and Germain, Francis R., 4,445,186, Cl. 364-521.000.
- Coal Industry (Patents) Limited: *See—*
  - Halker, Anthony; Mellor, David W.; Whitworth, Keith R.; and Kuszner, Nicholas J., 4,445,032, Cl. 250-256.000.
- Cockeram, Eugene A. Precision saw blade adjustment device. 4,443,950, Cl. 33-185.00R.
- Cody, Michael J.: *See—*
  - Marcus, Konrad H.; and Cody, Michael J., 4,444,344, Cl. 224-313.000.
- Coe, Mary E. B.: *See—*
  - Hwang, Thomas J.; Rogers, Steven H.; and Coe, Mary E. B., 4,443,930, Cl. 29-571.000.
- Coggins, Eugene L.; and Vanderwerff, William D., to Sun Tech, Inc. Phenyltetralylbutane as vinyl plasticizer. 4,444,938, Cl. 524-476.000.

Cohen, Yitzhak, to Motorola, Inc. Supervisory remote control system employing pseudorandom sequence. 4,445,175, Cl. 364-200.000.
Coldren, Larry A., to Bell Telephone Laboratories, Incorporated. Semiconductor laser with conductive current mask. 4,445,218, Cl. 372-44.000.
Colello, Joseph: *See—*
  Guida, Frank; and Guida, Bernice, 4,443,919, Cl. 29-10.000.
Colello, Michael: *See—*
  Guida, Frank; and Guida, Bernice, 4,443,919, Cl. 29-10.000.
Coleman, Richard L., deceased: *See—*
  Wittse, Arnold C., Jr.; Carley, Don A.; and Coleman, Richard L., deceased, 4,444,669, Cl. 252-41.000.
Colgate-Palmolive Company: *See—*
  Barth, Jordan; and Norfleet, James, 4,444,570, Cl. 51-302.000.
  Harvey, Kenneth; and Hayes, Harry, 4,444,746, Cl. 424-49.000.
  Hayes, Harry; Morton, Anthony J.; and Harvey, Kenneth, 4,444,747, Cl. 424-52.000.
  Joshi, David; and Klingaman, Richard, 4,444,673, Cl. 252-90.000.
  Renders, Gerard; Denis, Jean-Pierre; and Gryglewicz, Lucien, 4,444,730, Cl. 422-264.000.
Collier, Melba J.: *See—*
  Brownell, George L.; Collier, Melba J.; Hall, William E.; Morgan, Howard H., Jr.; and Snyder, A. R., 4,444,987, Cl. 585-850.000.
Collingwood, David S. Protective packaging material. 4,444,824, Cl. 428-161.000.
Collinsworth, John R. Spring/piston brake device. 4,444,295, Cl. 188-67.000.
Colonius, Ray E.; Vederko, John P.; and Cargill, Don A., to Cargill Detroit Corp. Sucker rod machining system. 4,443,927, Cl. 29-563.000.
Colton, James P.: *See—*
  Carlson, John D.; Kifer, Edward W.; Wojtyna, Vincent J.; and Colton, James P., 4,444,912, Cl. 521-121.000.
Columbus, Peter S.; and Anderson, John, to Borden, Inc. Adhesive cyanoacrylate compositions with reduced adhesion to skin. 4,444,933, Cl. 524-292.000.
Compagpie Francaise des Petroles: *See—*
  Lefebvre, Herve M.; and Gueuret, Francois C., 4,444,251, Cl. 166-105.000.
Compur-Electronic GmbH: *See—*
  Bahle, Otto G., 4,445,148, Cl. 360-12.000.
Conley, Wayne G.: *See—*
  Flinchum, Charles; Gibson, Alan F.; Conley, Wayne G.; and Fields, Gayle P., 4,444,814, Cl. 427-378.000.
Conoco Inc.: *See—*
  Beck, Jeffrey L., 4,444,229, Cl. 141-1.000.
  Boyd, Phil A.; and Stolhand, James E., 4,444,260, Cl. 166-267.000.
  Yoon, Heeyoung, 4,444,158, Cl. 123-1.00A.
Conover, Stephen P., to Applied Membrane Technology, Inc. Microporous laminate. 4,444,662, Cl. 210-500.200.
Continental Disc Corporation: *See—*
  Paul, Herman L., Jr., 4,444,214, Cl. 137-68.00R.
Continental White Cap, Inc.: *See—*
  Lecinski, Frank H., Jr., 4,444,325, Cl. 215-31.000.
Cook, Melvin W.; and Campbell, Rodney S., to Masonite Corporation. Mounting clip for tongue and groove panels. 4,444,524, Cl. 403-387.000.
Corbach, Rainer; and Zimmermann, Kurt, to Robert Bosch GmbH. Electric motor, in particular a small motor. 4,445,059, Cl. 310-154.000.
Corbett, Francis J.: *See—*
  Benton, John R.; Corbett, Francis J.; and Tuft, Richard A., 4,445,141, Cl. 358-294.000.
Corbett, Richard T.; Monachan, Brian C.; and Hope, Alexander J. N., to Barr & Stroud Limited. Optical coating. 4,444,805, Cl. 427-38.000.
Cordis Corporation: *See—*
  Gold, Philip, 4,444,195, Cl. 128-642.000.
  Gold, Philip, 4,444,206, Cl. 128-784.000.
  Robicsek, Francis, 4,444,207, Cl. 128-785.000.
Cormier, Milton J., to University of Georgia Research Foundation, Inc. Use of 8-anilino-1-naphthalenesulfonate as a vaginal contraceptive. 4,444,789, Cl. 424-315.000.
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  Burk, John L.; Cormier, Roger L.; Hartung, Michael H.; Larner, Ray A.; Lucas, Donald J.; Lynch, Kenneth R.; Moore, Brian B.; Page, Howard L.; Wansor, David H.; and Zeitler, Carl, Jr., 4,445,176, Cl. 364-200.000.
Cornell Research Foundation, Inc.: *See—*
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Corning Glass Works: *See—*
  Clark, Edwin E.; Lock, William E.; Paiement, Paul E., deceased; and Miles, Paula J., executrix, 4,444,102, Cl. 101-36.000.
Corno, Joel E.: *See—*
  Simon, Jacques F.; Bruneau, Didier R.; and Corno, Joel E., 4,444,476, Cl. 351-211.000.
Cosper, David R.; and McKay, Gretchen L., to Nalco Chemical Company. Hydrotropes and uses thereof. 4,444,573, Cl. 55-37.000.
Coughlin, Shaun R. Method and composition for treating atherosclerosis. 4,444,778, Cl. 424-262.000.
Coury, Arthur J.: *See—*
  Fogt, Eric J.; Norenberg, Marye S.; Untereker, Darrel F.; and Coury, Arthur J., 4,444,193, Cl. 128-632.000.
Coutu, Walter H., Sr., to Atlas Insulation Company, Inc. Insulated building panel. 4,443,988, Cl. 52-309.900.
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Cox, Charles H., III, to Massachusetts Institute of Technology. Photovoltaic-thermal collectors. 4,444,992, Cl. 136-248.000.
CPC International Inc.: *See—*
  Urbas, Branko, 4,444,881, Cl. 435-139.000.
Crane Co.: *See—*
  Hankes, Robert W.; and Parker, Lloyd H., 4,444,658, Cl. 210-150.000.
Crawford, Wheeler C.; Sweeney, William M.; and Sung, Rodney L., to Texaco Inc. Stabilized middle distillate fuel composition. 4,444,566, Cl. 44-72.000.
Credner, Hans-Heinrich, to Agfa-Gevaert Aktiengesellschaft. Photographic recording material for diffusion processes and new non-diffusing sulfilimine compounds suitable for use therein. 4,444,867, Cl. 430-223.000.
Cripps, Raymond A., to Vannguard of Hampton, Inc. Neutralizing composition for sting venoms. 4,444,751, Cl. 424-94.000.
Crislip, Paul F.; and Harrison, Frederick W., to Hycorr Machine Corporation. Rotary slotter sheet feeder. 4,444,383, Cl. 271-14.000.
Cronin, Francis S., to Edward Thompson (International) Limited. Belt-type printing machine. 4,444,103, Cl. 101-93.130.
Crotty, Joseph M., Jr.; and Veillon, John M., to Texaco Inc. Quench ring and dip tube assembly for a reactor vessel. 4,444,726, Cl. 422-207.000.
Croudace, Michael C., to Union Oil Company of California. Method and fuel composition for control of octane requirement increase. 4,444,565, Cl. 44-68.000.
Crown Metal Manufacturing Company: *See—*
  Varon, David; Dorner, Steven C.; and Siegal, Burton L., 4,443,979, Cl. 52-36.000.
Crummett, Donald L., to Halliburton Company. Method of manufacturing brake rods. 4,444,350, Cl. 228-112.000.
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Cummings, Ernest W.; and Valk, Nick, to Drain-All, Inc. Automatic drain trap. 4,444,217, Cl. 137-195.000.
Curtiss, William P., to Charles Stark Draper Laboratory, Inc., The. System for indirectly sensing flux in an induction motor. 4,445,080, Cl. 318-798.000.
Cyklop International Emil Hoffmann KG: *See—*
  Wehr, Hubert; Schlosser, Karl-Heinz; and Fritze, Rolf-Gunther, 4,444,097, Cl. 100-4.000.
Dadant & Sons, Inc.: *See—*
  Burgin, Ralph C., 4,443,892, Cl. 2-418.000.
Dahl, Carl B.; and Langdon, Roy A., to Beloit Corporation. Self-aligning core chuck. 4,444,364, Cl. 242-68.300.
Dahlgren, Harold P.; Gardiner, John W.; and Taylor, James E. Coating apparatus. 4,444,147, Cl. 118-261.000.
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  Imamoto, Tsunehiko; and Horiguchi, Satoru, 4,444,505, Cl. 356-380.000.
Daidotokushuko Kabushikikaisha: *See—*
  Echigo, Ryozo; and Noda, Takaaki, 4,444,554, Cl. 432-28.000.
  Kinto, Koichiro, 4,444,558, Cl. 432-225.000.
Daihatsu Motor Company, Limited: *See—*
  Morita, Eiichi; Kato, Yoshihisa; Takeda, Koichi; and Oku, Takuya, 4,445,182, Cl. 364-474.000.
Daimler-Benz AG: *See—*
  von der Ohe, Manfred, 4,444,415, Cl. 280-701.000.
Daimler-Benz Aktiengesellschaft: *See—*
  Gauffres, Ulrich-Joachim, 4,444,012, Cl. 60-602.000.
  Merkle, Hans, 4,444,009, Cl. 60-358.000.
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  Isono, Koichi; and Takagi, Tsuneo, 4,444,506, Cl. 356-404.000.
Dalbanne, Jacques. Method and device for swimming pool construction. 4,443,982, Cl. 52-169.700.
Dale, James L., Jr., to FMC Corporation. 4-Wheel alignment method and apparatus. 4,444,496, Cl. 356-155.000.
Dana Corporation: *See—*
  Janson, Gunnar H., 4,445,058, Cl. 310-103.000.
Dangschat, Holmer, to Dr. Johannes Heidenhain GmbH. Play-free precision drive apparatus. 4,444,069, Cl. 74-209.000.
Daniel Industries, Inc.: *See—*
  Geisow, Bernard H., 4,444,224, Cl. 138-44.000.
Danish, Adel: *See—*
  Danish, Sherif; and Danish, Adel, 4,444,997, Cl. 178-18.000.
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  Beisswenger, Hans; Daradimos, Georg; Hirsch, Martin; Plass, Ludolf; and Serbent, Harry, 4,444,568, Cl. 48-197.00R.
Data General Corporation: *See—*
  Bratt, Richard G.; Schleimer, Stephen I.; Pilat, John F.; Belgard, Richard A.; Wallach, Steven J.; Clancy, Gerald F.; Mundie, Craig J.; Bernstein, David H.; Gavrin, Edward S.; Jones, Thomas M.; and Bachman, Brett L., 4,445,177, Cl. 364-200.000.
  Pilat, John F.; and Wells, Douglas M., 4,445,173, Cl. 364-200.000.
Datascope Corporation: *See—*
  Wolvek, Sidney; Hanson, Bruce L.; and Lucas, John J., 4,444,186, Cl. 128-325.000.
Datta, Pabitra; and Poliniak, Eugene S., to RCA Corporation. High density information disc lubricants. 4,444,820, Cl. 428-64.000.

Daugherty, Robert F.: *See—*
  Pierschalla, Barbara R.; Jeffries, Kenneth L.; Herrington, Kenneth M.; and Daugherty, Robert F., 4,445,190, Cl. 364-900.000.
Dausch, Ladislao F. Device for theft-proving vehicles. 4,444,030, Cl. 70-209.000.
Davies, Evan J.; and Allen, Alec G., to National Research Development Corporation. Apparatus including electric current transfer. 4,444,445, Cl. 339-5.00M.
Davis, Guy E.; and Smith, Jack R., to Westinghouse Electric Corp. Plant unit master control for fossil fired boiler implemented with a digital computer. 4,445,180, Cl. 364-494.000.
Davis, Jeffrey R.: *See—*
  Dostoomian, Ashod S.; Lord, Joseph S.; and Davis, Jeffrey R., 4,444,516, Cl. 374-131.000.
Davis, Lois T.: *See—*
  Blair, James E.; and Davis, Lois T., 4,444,888, Cl. 435-243.000.
Davis, Ray E., Jr.; Becker, Richard J.; Foster, Robert G.; Westkamper, Michael J.; Timothy, Earle J.; and Johnson, Richard H., to Chesebrough-Pond's Inc. Video inspection system. 4,445,185, Cl. 364-514.000.
Davis, Richard H., to Paino Avocado Company, Inc. Extraction of avocado oil from avocados. 4,444,763, Cl. 424-195.000.
Dawes, Les A., to Industrial Financial Group. Recreational unit for vehicle beds. 4,444,429, Cl. 296-170.000.
Dayco Corporation: *See—*
  Mathieu, Julien C., 4,444,609, Cl. 156-210.000.
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De Boel, Marcel: *See—*
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de Brebisson, Michel X. M., to U.S. Philips Corporation. Utilizing multi-layer mask to define isolation and device zones in a semiconductor substrate. 4,443,933, Cl. 29-578.000.
de Breze, Anne, to Putman, Philip A. Apparatus for removing energy. 4,444,717, Cl. 376-194.000.
DeCicco, Matthew C.: *See—*
  Barbini, Richard J.; and DeCicco, Matthew C., 4,444,023, Cl. 62-330.000.
Decision Science, Inc.: *See—*
  Shafer, William A., 4,444,199, Cl. 128-691.000.
Decker, Frank, to Electronics, Missiles & Communications, Inc. Coupling block assembly with band-reject filter. 4,445,100, Cl. 333-207.000.
Deckert, Gary W. Cylinder assemblies for lock system and method of manufacture. 4,444,033, Cl. 70-364.00A.
de Cremoux, Baudouin: *See—*
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DeFalco, John A., to Honeywell Information Systems Inc. Integrated circuit compensatory regulator apparatus. 4,445,083, Cl. 323-273.000.
DeFilippis, Pietro; Salvatore, Amedeo; Calenda, Ciro; and Notaro, Giuseppe, to Texas Instruments Incorporated. Electromagnetic relays. 4,445,079, Cl. 318-792.000.
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Degussa Aktiengesellschaft: *See—*
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Deland, Francois. Extracting tool. 4,443,922, Cl. 29-254.000.
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Demaison, Gerard J.; and Kaplan, Isaac R., to Chevron Research Company. Predicting hydrocarbon potential of an earth formation underlying a body of water by analysis of seeps containing low concentrations of carbonaceous gases. 4,444,889, Cl. 436-29.000.
DeMarinis, Robert M.; and Hieble, J. Paul, to SmithKline Beckman Corporation. 2(4-tert.-Butyl-2,6-dichlorophenyl-imino)imidazolidine and use as an anti-hypertension agent. 4,444,782, Cl. 424-273.00R.
Demczyk, Brian G.: *See—*
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Demeter, Paul J. Tool for trimming lapping edge portions of sheet material. 4,443,942, Cl. 30-293.000.
Demirjian, John. Wire unwrapping tool. 4,444,228, Cl. 140-123.000.
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deNora, Oronzio, to Oronzio deNora Impianti Elettrochimici S.p.A. Electrolysis cell. 4,444,632, Cl. 204-98.000.
Denzinger, Walter; Trieselt, Wolfgang; Perner, Johannes; and Hartmann, Heinrich, to BASF Aktiengesellschaft. Copolymers which contain basic groups and are used as antiredeposition agents in washing and after-treating textile goods containing synthetic fibers. 4,444,561, Cl. 8-137.000.
Deprez, Jacques; Drope, Eckard; Greif, Peter; and Soth-Haas, Gabriele, to Bayer Aktiengesellschaft. Measuring apparatus for the analytical determination of a gas partial pressure. 4,444,645, Cl. 204-409.000.
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Dery, Roger: *See—*
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Deshaw, Walter R., to Keeler Corporation. Universal joint seal and vibration damper for remotely actuated pivotal devices. 4,444,466, Cl. 350-289.000.
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  Feinbloom, Richard E.; and Levine, Melvin, 4,445,010, Cl. 200-11.00R.
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  Arkharov, Alexei M.; Desyatov, Alexandr T.; Bondarenko, Vitaly L.; Pronko, Vladimir G., deceased; Pronko, Natalia D., heir; Krakovsky, Boris D.; Korsakov-Bogatkov, Sergei M.; Jushin, Viktor P.; Kopova, Alexandra M.; Gorodnov, Petr V.; Borisov, Julian Y.; Ermilov, Vadim V.; and Romanteev, Jury P., 4,444,019, Cl. 62-87.000.
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  - Herkes, Frank E., 4,444,989, Cl. 585-467.000.
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  - Esders, Theodore W.; Goodhue, Charles T.; and Esmerian, Ohannes K., 4,444,886, Cl. 435-198.000.
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  - Weaver, Max A.; and Eller, Bill A., 4,444,684, Cl. 260-155.000.
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  - Decker, Frank, 4,445,100, Cl. 333-207.000.
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  - Tolun, Rasit; Emir, Bedri D.; Kalafatoglu, Ismail E.; Kocakusak, Sidika; and Yalaz, Nuran, 4,444,633, Cl. 204-98.000.
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  - Maru, Hansraj C., 4,444,851, Cl. 429-26.000.
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  - Hildebrandt, Steven J., 4,444,665, Cl. 210-660.000.
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  - Arkharov, Alexei M.; Desyatov, Alexandr T.; Bondarenko, Vitaly L.; Pronko, Vladimir G., deceased; Pronko, Natalia D., heir; Krakovsky, Boris D.; Korsakov-Bogatkov, Sergei M.; Jushin, Viktor P.; Kopova, Alexandra M.; Gorodnov, Petr V.; Borisov, Julian Y.; Ermilov, Vadim V.; and Romanteev, Jury P., 4,444,019, Cl. 62-87.000.
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- Essex Group, Inc.: *See—*
  - Job, E. Gale, 4,444,369, Cl. 248-27.100.
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  - West, Theodore H., 4,444,648, Cl. 208-33.000.
  - Worley, Arthur C., 4,444,157, Cl. 122-510.000.
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  - Parker, Roy B.; and Beecher, Stephen P., 4,444,305, Cl. 198-844.000.
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- Gotzfried, Konrad, to Murata Machinery Ltd. Turbulent spinning apparatus for the production of yarn. 4,444,003, Cl. 57-5.000.
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  - Stowe, David W.; and Kopera, Paul M., 4,444,458, Cl. 350-96.150.
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- Granberry, Roger A. Mounting system for conveyor idlers. 4,444,301, Cl. 193-35.00R.
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- Gregory, Raymond S., to Medishield Corporation Limited, The. Anaesthetic vaporizer. 4,444,182, Cl. 128-204.140.
- Gregory, Stephen E. Handle for a drafting instrument. 4,443,953, Cl. 33-403.000.
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- Grenell, David J. Compartmented storage container. 4,444,324, Cl. 215-6.000.
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  - Brower, Boyd G., 4,444,552, Cl. 431-359.000.
  - Wright, Windsor D., 4,445,123, Cl. 343-719.000.
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  - Schumacher, Peter, 4,444,210, Cl. 131-84.00R.
- Hautemont, Jean C.: *See—*
  - Torterotot, Roland; and Hautemont, Jean C., 4,444,610, Cl. 156-264.000.
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  - Makino, Yoshimi; Ochiai, Yoshitaka; Aso, Koichi; Uedaira, Satoru; Hayakawa, Masatoshi; and Hotai, Kazuhide, 4,444,602, Cl. 148-121.000.
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  - Moroto, Shuzo; and Hayakawa, Yoichi, 4,444,073, Cl. 74-665.00G.
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- Hayashi, Isao, to Nissan Motor Company, Limited. Fuel tank mounting assembly for motor vehicle. 4,444,373, Cl. 248-544.000.
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- Hayashi, Masumi; Ogawa, Kazuo; Kimura, Katsumi; Ishii, Hiroshi; and Bandai, Satoshi, to UBE Industries, Ltd. Process for continuously producing a polymeric laminate tape having a plurality of metal wires embedded therewithin. 4,444,709, Cl. 264-174.000.
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- Hayford, Donald E., to Appleton Papers Inc. Capsule manufacture. 4,444,699, Cl. 264-4.700.
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- Heckendorn, David E. Hood. 4,444,183, Cl. 128-205.260.
- Hedgewick, Peter. Tight vial assembly with one-piece cap. 4,444,327, Cl. 215-211.000.
- Heinemann, Stanley O., to Bentley Laboratories. Apparatus and method for measuring blood oxygen saturation. 4,444,498, Cl. 356-246.000.
- Heismann, Richard A.; and Morse, Richard R., to Outboard Marine Corporation. Grass clipping catcher. 4,444,002, Cl. 56-202.000.
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  - Schlussler, Hans-Joachim; and Koch, Ferdinand, 4,444,756, Cl. 424-150.000.
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- Hepworth, Paul S.; and Whitehouse, Martin G., to Plas Plugs LImited. Tile parting devices. 4,444,174, Cl. 125-23.00T.
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  - Burkes, William M., Jr.; and Miller, William H., 4,444,006, Cl. 60-251.000.
  - Gifford, Lincoln S., Jr., 4,444,109, Cl. 102-200.000.
- Herkes, Frank E., to Du Pont de Nemours, E. I., and Company. Methylation of toluene to para-xylene catalyzed by crystalline silica. 4,444,989, Cl. 585-467.000.
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  - Pierschalla, Barbara R.; Jeffries, Kenneth L.; Herrington, Kenneth M.; and Daugherty, Robert F., 4,445,190, Cl. 364-900.000.
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  - Kelly, John; Kuo, Huei P.; Oliver, Bernard M.; Foster, Jack D.; and Haase, Wayne C., 4,445,041, Cl. 250-505.100.
- Hi-G Incorporated: *See—*
  - Horowitz, Alan I., 4,444,454, Cl. 339-177.00R.
- Hi-Sonic Co., Ltd.: *See—*
  - Yamagiwa, Tamio, 4,444,222, Cl. 137-393.000.
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- Hickey, John S., to General Electric Company. Method of assembling permanent magnet dc machines. 4,443,934, Cl. 29-593.000.
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  - DeMarinis, Robert M.; and Hieble, J. Paul, 4,444,782, Cl. 424-273.00R.
- Higashi, Norikuni, to Fujitsu Limited. TTL Input current reduction circuit. 4,445,052, Cl. 307-456.000.
- Hilbrandt, Martin; Ossenberg, Uwe; and Lusebrink, Wilhelm, to Leopold Kostal GmbH & Co. KG. Apparatus for central arrangement of electrical connector elements in motor vehicles. 4,444,452, Cl. 339-176.00M.

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- Hildebrandt, Steven J., to Engelhard Corporation. Treated mineral and method for purifying liquids therewith. 4,444,665, Cl. 210-660.000.
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- Hill, Lawrence R., to General Instrument Corporation. Method of making an optocoupler. 4,445,043, Cl. 250-557.000.
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  - Propst, Paul L.; Gzym, Larry P.; Murrel, Ralph; Richardson, Donald A.; and Hinrichs, Carl B., 4,443,986, Cl. 52-239.000.
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- Hippert, P., to Arbed S.A. Continuous casting apparatus. 4,444,245, Cl. 164-504.000.
- Hira, Yasuo; Tsuzuku, Susumu; Gotoh, Masao; Yokono, Hitoshi; and Naka, Reishi, to Hitachi, Ltd. Process for producing integral skin polyurethane foam. 4,444,704, Cl. 264-45.500.
- Hiramoto, Junichi; and Ohkawa, Shinichi, to Sumitomo Electric Industries, Ltd. PH Electrode. 4,444,644, Cl. 204-406.000.
- Hirano, Tsumoru; Mihayashi, Keiji; and Yagihara, Morio, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material. 4,444,870, Cl. 430-381.000.
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- Hirosuke, Onodera. Apparatus for cooling or heating articles carried on a spiral conveyor. 4,444,248, Cl. 165-120.000.
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- Hitachi Engineering Ltd: *See—*
  - Wakita, Tadayoshi; Suzuki, Minoru; Yanada, Sadao; and Sibata, Sigeru, 4,445,169, Cl. 364-147.000.
- Hitachi Koki Co. Ltd.: *See—*
  - Suzuki, Teruo; Kobayashi, Tsuneki; and Miyasaka, Masao, 4,444,522, Cl. 400-146.000.
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  - Hira, Yasuo; Tsuzuku, Susumu; Gotoh, Masao; Yokono, Hitoshi; and Naka, Reishi, 4,444,704, Cl. 264-45.500.
  - Hongo, Mikio; Mitani, Masao; Miyauchi, Tateoki; Okunaka, Masaaki; and Mizukoshi, Katsuro, 4,444,801, Cl. 427-10.000.
  - Iwasaki, Teruo; Saitou, Norio; and Yanagisawa, Akira, 4,445,040, Cl. 250-452.200.
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  - Kobayashi, Shigeru; Nakagawa, Nobuo; Abe, Katsuo; Kamei, Tsuneaki; and Fujimoto, Kazuyuki, 4,444,635, Cl. 204-192.00R.
  - Nemoto, Masanori; and Asano, Hideki, 4,445,159, Cl. 360-137.000.
  - Nonaka, Yasuhiko; Shidara, Keiichi; and Goto, Naohiro, 4,445,131, Cl. 357-31.000.
  - Sakai, Seiichi; Gange, Toshihiko; Sugawara, Katuo; Tsukioka, Hideo; Tani, Ictitaro; Shiono, Shigeo; and Mori, Etsunori, 4,444,040, Cl. 73-19.000.
  - Shimizu, Norio; Yamaguchi, Tetsuo; Saitou, Setsuo; Ueno, Masao; and Odawara, Yooji, 4,444,882, Cl. 435-29.000.
  - Tsuchiya, Hiroyuki; Asakura, Yamato; Suzuki, Teiji; and Kikuchi, Makoto, 4,444,737, Cl. 423-249.000.
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  - Watanabe, Yoshio, 4,445,074, Cl. 315-205.000.
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- Hitchcock, Keith N., to Froude Consine Limited. Engine testing apparatus and methods. 4,444,049, Cl. 73-119.00A.
- Ho, Paul Y., to Northern Telecom Limited. Key telephone line circuit with improved hold circuit. 4,445,004, Cl. 179-99.00H.
- Hochstrasser, Ulrich; and Kertscher, Eberhard, to Maillefer, S.A. Manufacture of insulated electric conductors. 4,444,948, Cl. 525-61.000.
- Hodkin, George A.: *See—*
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- Hodogaya Chemical Co., Ltd.: *See—*
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- Hodosh, Ralph J.: *See—*
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  - Dudzik, Joachim; Dudzik, Winfried; Zimmermann, Wolfgang; and Pospich, Gunther, 4,444,839, Cl. 428-336.000.
  - Erpenbach, Heinz; Gehrmann, Klaus; Lork, Winfried; and Prinz, Peter, 4,444,624, Cl. 203-61.000.
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- Hoerner, Berndt: *See—*
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- Hofer, Gerald, to Robert Bosch GmbH. Fuel injection pump for internal combustion engines. 4,444,170, Cl. 123-382.000.
- Hoffman, William F.; Smith, Robert L.; and Willard, Alvin K., to Merck & Co., Inc. Antihypercholesterolemic compounds. 4,444,784, Cl. 424-279.000.
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  - Scherschlicht, Richard R.; and Tissot, Rene , 4,444,758, Cl. 424-177.000.
- Hoffmann, Michael K., to Sloan-Kettering Institute. Process for making human antibody producing B-lymphocytes. 4,444,887, Cl. 435-240.000.
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- Holland, Robert E.: *See—*
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- Hollenstein, Erwin B., to Wipf AG Verpackungen. Overpressure valve for packages with flexible walls. 4,444,219, Cl. 137-246.000.
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  - Scheer, Harold L.; Jenkins, Tom L.; Kimmell, Robert M.; and Holloway, Michael E., 4,445,178, Cl. 364-400.000.
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- Holmgren, Nils V., to McGraw-Edison Company. Energy efficient floating head puffer interrupter. 4,445,018, Cl. 200-148.00A.
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  - Isono, Tokio, 4,444,406, Cl. 280-277.000.
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  - Koga, Kiyoshi; Ikejiri, Kenichi; and Kawahara, Eiichiro, 4,444,093, Cl. 91-488.000.
  - Uehara, Mitsuru, 4,444,856, Cl. 429-163.000.
- Honda Motor Co., Ltd.: *See—*
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- Honda, Yasuhiro: *See—*
  - Sakano, Hajime; Ito, Akitoshi; Yano, Motoichi; and Honda, Yasuhiro, 4,444,950, Cl. 525-67.000.
- Honeywell Inc.: *See—*
  - De Witz, Gerhard H.; and Yaeger, Bernard W., 4,444,146, Cl. 114-222.000.
  - Kude, William B.; Pearman, A. Noel J.; and Youngbauer, Daniel L., 4,444,337, Cl. 222-139.000.
  - Netzer, Yishay, 4,445,140, Cl. 358-222.000.
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  - DeFalco, John A., 4,445,083, Cl. 323-273.000.
  - Peters, Arthur; and Stanley, Philip E., 4,445,172, Cl. 364-200.000.
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- Honsa, Horst L. A., to Sun Metal Products, Inc. Molded wheel center. 4,444,435, Cl. 301-63.0PW.
- Hooke, John W., to General Electric Company. Electrochemical cell having internal short inhibitor. 4,444,854, Cl. 429-94.000.
- Hope, Alexander J. N.: *See—*
  - Corbett, Richard T.; Monachan, Brian C.; and Hope, Alexander J. N., 4,444,805, Cl. 427-38.000.
- Hopkins, Thomas H., to FMC Corporation. Trigger release clamp. 4,444,379, Cl. 269-87.000.
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  - Ogawa, Masasi; Ishigaki, Kunio; and Hori, Kiyotaka, 4,444,926, Cl. 524-23.000.
- Horiba, Ltd.: *See—*
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- Horiguchi, Satoru: *See—*
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- Horner, Charles J., Jr.: *See—*
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  - Grube, Louis L.; and Horner, Charles J., Jr., 4,444,916, Cl. 521-131.000.
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- Horner, Jerome T.: *See—*
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- Horvat, Lewis R.: *See—*
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- Hosiden Electronics Co., Ltd.: *See—*
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- Hott, Ronald K. Attachment for a woodworking plane. 4,444,235, Cl. 145-20.000.
- Houdaille Industries, Inc.: *See—*
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- House, V. Dean, to Spectra-Symbol Corporation. Touch controlled membrane for multi axis voltage selection. 4,444,998, Cl. 178-19.000.
- Howard, Dennis D.: *See—*
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- Howard Wall Limited: *See—*
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- Howden, Ashley G.: *See—*
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- Howe & Bainbridge: *See—*
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- Howe Furniture Corporation: *See—*
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- Howell, Fred M.; Goodlander, Theodore J.; and Brazao, Duarte M., to Goldlander, Theodore Jay. Printers. 4,444,519, Cl. 400-82.000.
- Howeth, D. Franklin. Drill cuttings conveying apparatus with flexible duct for improved ground clearance. 4,444,280, Cl. 175-206.000.
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  - Silverman, Robert A.; and Hoyen, Harry A., 4,444,865, Cl. 430-217.000.
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- Hsu, George; Levin, Harry; Hogle, Richard A.; Praturi, Ananda; and Lutwack, Ralph, to California Institute of Technology. Fluidized bed silicon deposition from silane. 4,444,811, Cl. 427-213.000.
- Huang, Tai-Nang: *See—*
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- Huber, John H., to AMP Incorporated. Flat transmission cable connector and housing therefor. 4,444,450, Cl. 339-107.000.
- Huber, William A., to United States of America, Army. Unidirectional code for interactive map system. 4,445,028, Cl. 235-472.000.
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  - Hueftle, Nolan E.; and Hueftle, Karl N., 4,444,150, Cl. 119-27.000.
- Hueftle, Nolan E.; and Hueftle, Karl N. Animal restraining device. 4,444,150, Cl. 119-27.000.
- Huggins, Dale K.: *See—*
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- Hughes Aircraft Company: *See—*
  - Gaalema, Steven D.; and Jack, Michael D., 4,445,117, Cl. 340-825.910.
  - Mastrup, Frithjof N.; and Marabella, Leonard J., 4,444,734, Cl. 423-210.000.
  - Wessel-Berg, Tore; and Tammaru, Ivo, 4,445,071, Cl. 315-4.000.
  - Zwirn, Robert; and Farwell, William D., 4,445,138, Cl. 358-166.000.
- Hughes, Albert L., Jr., to Choice Vend Industries, Inc. Modular dispensing mechanism for vending machine. 4,444,334, Cl. 221-75.000.
- Hughes, Ronald P.; Swartz, Douglas G.; and Weiner, Bruce E., to Zilog, Inc. Computer segmented memory management technique wherein two expandable memory portions are contained within a single segment. 4,445,170, Cl. 364-200.000.
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  - Miller, Frank H.; and Hull, David V., 4,444,575, Cl. 55-316.000.
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  - Keithahn, Julian D.; Morrill, Charles D.; and Roche, Joseph R., 4,444,250, Cl. 166-84.000.
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  - Euzen, Jean-Paul; and Jacquin, Yves, 4,444,653, Cl. 208-152.000.
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  - Acharekar, M. A.; and Kaplan, M. M., 4,445,217, Cl. 372-35.000.
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  - Stern, Harold; and Suleiman, Elisabeth, 4,444,192, Cl. 128-491.000.
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  - Goodman, Colin H. L., 4,445,129, Cl. 357-16.000.
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  - Breslow, Donald H., 4,445,110, Cl. 340-347.00P.
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  - Romo, Edgar A., 4,444,056, Cl. 73-708.000.
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  - Reinartz, Hans-Dieter; Vatter, Waldemar; and Hinze, Peter, 4,444,052, Cl. 73-308.000.
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  - Friedrich, Hans-Joachim, 4,444,815, Cl. 428-17.000.
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  - Kaipf, Walter; and Ulmer, Herbert, 4,444,360, Cl. 242-56.00R.
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  - Harrington, Edward R.; Uffner, William E.; and Janicki, Richard T., 4,444,947, Cl. 525-545.000.
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  - Widen, Sune; Jensen, Borge; and Bjork, Lars, 4,444,332, Cl. 220-306.000.
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- Joelson, Karl E. Governing means for a hydraulic actuator. 4,444,090, Cl. 91-363.00R.
- John Fluke Mfg. Co., Inc.: *See—*
  - Swift, Steven D.; Parle, Jonathan J.; and Gunderson, David A., 4,445,111, Cl. 340-347.0CC.
- Johnson, Bruce K.; and Whiteside, George D., to Polaroid Corporation. Photographic system with slow burn flash bulb. 4,444,479, Cl. 354-413.000.
- Johnson, Bruce R., to Jandy Industries. Vacuum cleaning system for a therapeutic tub. 4,443,899, Cl. 4-490.000.
- Johnson, Craig R.: *See—*
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  - Kirby, Allan B.; and Johnson, Geoffrey P., 4,444,453, Cl. 339-177.00R.
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  - McDaniel, Max P.; and Johnson, Marvin M., 4,444,962, Cl. 526-95.000.
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- Johnson, Richard H.: *See—*
  - Davis, Ray E., Jr.; Becker, Richard J.; Foster, Robert G.; Westkamper, Michael J.; Timothy, Earle J.; and Johnson, Richard H., 4,445,185, Cl. 364-514.000.
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  - Arkharov, Alexei M.; Desyatov, Alexandr T.; Bondarenko, Vitaly L.; Pronko, Vladimir G., deceased; Pronko, Natalia D., heir; Krakovsky, Boris D.; Korsakov-Bogatkov, Sergei M.; Jushin, Viktor P.; Kopova, Alexandra M.; Gorodnov, Petr V.; Borisov, Julian Y.; Ermilov, Vadim V.; and Romanteev, Jury P., 4,444,019, Cl. 62-87.000.
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  - Tolun, Rasit; Emir, Bedri D.; Kalafatoglu, Ismail E.; Kocakusak, Sidika; and Yalaz, Nuran, 4,444,633, Cl. 204-98.000.
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  - Inoue, Akihiro; Kanoh, Tadao; Kamei, Taketo; Kamiya, Akihiro; Ishigami, Toshihiko; Kohno, Akira; and Sasaki, Hiroki, 4,445,067, Cl. 313-54.000.
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  - Kobayashi, Shigeru; Nakagawa, Nobuo; Abe, Katsuo; Kamei, Tsuneaki; and Fujimoto, Kazuyuki, 4,444,635, Cl. 204-192.00R.
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  - Yamai, Tadamasa; Sagehashi, Risaburo; Kameyama, Yoshio; and Shimomura, Takao, 4,444,399, Cl. 277-1.000.
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- Kan, Masanori; Okazaki, Takuya; and Sakashita, Tatsuo, to Toyo Rubber Industry Co., Ltd., The. Tire tread having low rolling resistance. 4,444,236, Cl. 152-209.00R.

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- Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
  - Takase, Junji; Hirose, Toshifumi; and Isayama, Katsuhiko, 4,444,974, Cl. 528-33.000.
- Kanno, Sueo: *See—*
  - Hattori, Ryoji; Abe, Yoshihiko; Kanno, Sueo; and Maeda, Satoshi, 4,444,983, Cl. 570-209.000.
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  - Fujioka, Hironari; and Yagi, Hisanori, 4,444,847, Cl. 428-522.000.
- Kaplan, Isaac R.: *See—*
  - Demaison, Gerard J.; and Kaplan, Isaac R., 4,444,889, Cl. 436-29.000.
- Kaplan, M. M.: *See—*
  - Acharekar, M. A.; and Kaplan, M. M., 4,445,217, Cl. 372-35.000.
- Karady, Sandor: *See—*
  - Amato, Joseph S.; Karady, Sandor; and Weinstock, Leonard M., 4,444,685, Cl. 260-239.00A.
- Karanewsky, Donald S.; and Petrillo, Edward W., Jr., to E. R. Squibb & Sons, Inc. Amino and substituted amino phosphinylalkanoyl compounds useful for treating hypertension. 4,444,765, Cl. 424-200.000.
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- Karlock, James A. Video detail enhancing circuit. 4,445,152, Cl. 360-33.100.
- Karlsson, Einar L. Device at presses for dewatering materials. 4,444,660, Cl. 210-386.000.
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- Karrer, Friedrich, to Ciba-Geigy Corporation. Polymeric malonic acid derivatives. 4,444,928, Cl. 524-99.000.
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  - Hattori, Tadashi; Ueno, Yoshiki; Kashima, Osamu; and Shibata, Masamichi, 4,444,043, Cl. 73-35.000.
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  - Mader, Karl-Heinz; and Kassner, Reinhard, 4,444,893, Cl. 501-72.000.
- Kato Hatsujo Kaisha, Ltd.: *See—*
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  - Tomita, Katsuhiko; Katsuki, Ken; and Kuritani, Toshiyuki, 4,445,034, Cl. 250-338.000.
- Kawaguchi, Munetaka: *See—*
  - Miyake, Masayoshi; Ueoka, Isao; and Kawaguchi, Munetaka, 4,444,843, Cl. 428-383.000.
- Kawahara, Eiichiro: *See—*
  - Koga, Kiyoshi; Ikejiri, Kenichi; and Kawahara, Eiichiro, 4,444,093, Cl. 91-488.000.
- Kawai, Hajime; Tsunemitsu, Katsuhiko; Fujino, Yoshiharu; and Shimizu, Yoji, to Yamada Chemical Co., Ltd. Chromogenic compounds and the use thereof as color former in copying or recording materials. 4,444,591, Cl. 106-21.000.
- Kawakami, Shigenao; Saka, Terumasa; Takagishi, Hisao; Ura, Shigeru; and Iwata, Mikio, to Sumitomo Chemical Company, Limited. Coating compositions for providing water and blister resistance to ink-receptive paper. 4,444,943, Cl. 524-598.000.
- Kawamatsu, Yutaka; and Fujita, Takeshi, to Takeda Chemical Industries, Ltd. Thiazolidine derivatives. 4,444,779, Cl. 424-263.000.
- Kawanishi, Shozo, to Yamato Scale Company, Ltd. Combination weighing device. 4,444,282, Cl. 177-25.000.
- Kaye, Wilbur I., to Beckman Instruments, Inc. Narrow band rejection filter utilizing a liquid crystal cell. 4,444,469, Cl. 350-347.00E.
- Kearney, Avery L.: *See—*
  - Groteke, Daniel E.; and Kearney, Avery L., 4,444,377, Cl. 266-227.000.
- Kearney & Trecker Corporation: *See—*
  - Kielma, Ervin J., 4,443,928, Cl. 29-568.000.
- Keeler Corporation: *See—*
  - Deshaw, Walter R., 4,444,466, Cl. 350-289.000.
- Keeton, John H. Cloth pickup and folding head. 4,444,384, Cl. 271-18.300.
- Keith, Laura E.; Smyth, Marie T.; and Whiteside, George D., to Polaroid Corporation. Hybrid camera arrangement. 4,444,478, Cl. 354-417.000.
- Keithahn, Julian D.; Morrill, Charles D.; and Roche, Joseph R., to Hydril Company. Flow diverter. 4,444,250, Cl. 166-84.000.
- Keller & Co., Aktiengesellschaft: *See—*
  - Schulthess, Hans, 4,443,974, Cl. 49-505.000.
- Kelly, John; Kuo, Huei P.; Oliver, Bernard M.; Foster, Jack D.; and Haase, Wayne C., to Hewlett-Packard Company. Electron beam blanker. 4,445,041, Cl. 250-505.100.
- Kelly, Thomas J., to Huntington Alloys, Inc. Brazing alloy. 4,444,587, Cl. 75-124.000.
- Kemper, James M.: *See—*
  - Tilly, Lynn K.; and Kemper, James M., 4,444,121, Cl. 105-165.000.
- Kempter, Fritz E.; and Schupp, Eberhard, to BASF Aktiengesellschaft. Polyadduct/polycondensate which contains basic nitrogen groups, and its use as electrodepositable coating. 4,444,634, Cl. 204-181.00C.
- Kempter, Fritz E.; Schupp, Eberhard; and Sabelus, Gunther, to BASF Aktiengesellschaft. Bath composition for cataphoretic electrocoating. 4,444,942, Cl. 524-596.000.
- Keogh, Michael J., to Union Carbide Corporation. Reaction products of a difunctional compound and an organo titanate and the use thereof in the preparation of cured products based on alkylene-alkyl acrylate copolymers. 4,444,957, Cl. 525-370.000.
- Kern, Eckhard, to VDO Adolf Schindling A.G. Apparatus for determining the fuel consumption of injection internal combustion engines. 4,444,047, Cl. 73-114.000.
- Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See—*
  - Forster, Seigfried, 4,444,126, Cl. 110-238.000.
- Kertscher, Eberhard: *See—*
  - Hochstrasser, Ulrich; and Kertscher, Eberhard, 4,444,948, Cl. 525-61.000.
- Kessler, Juergen; and Melzer, Harry, to Hilti Aktiengesellschaft. Drilling tool. 4,444,279, Cl. 175-202.000.
- Kessman, Loren P.; and Hawkins, John W. Merchandising device having recording selection and display. 4,445,147, Cl. 360-12.000.
- Ketels, Gerardus H. J., to Procom B. V. Method and apparatus for removing solid particles from a pasty mass. 4,443,912, Cl. 17-1.00G.
- Kett, Brian L. A.: *See—*
  - Metcalf, Eric; Woollven, Jack; Spens, Stephen N.; and Kett, Brian L. A., 4,445,085, Cl. 324-52.000.
- Keueha Kagaku Kogyo K.K.: *See—*
  - Sasaki, Tohru; Endoh, Hiroyuki; and Nakadai, Takeshi, 4,444,826, Cl. 428-216.000.
- Khattab, Ghazi M. A., to Allied Corporation. Metal plated polyamide articles. 4,444,836, Cl. 428-330.000.
- Kiel, Bernd-Joachim: *See—*
  - Fauck, Gerhard; Kiel, Bernd-Joachim; Pohl, Wolfgang; and Ulrich, Helmut, 4,444,439, Cl. 303-22.00R.
- Kielma, Ervin J., to Kearney & Trecker Corporation. Multiple-spindle tool changer. 4,443,928, Cl. 29-568.000.
- Kifer, Edward W.: *See—*
  - Carlson, John D.; Kifer, Edward W.; Wojtyna, Vincent J.; and Colton, James P., 4,444,912, Cl. 521-121.000.
- Kihara, Nobutoshi; Matsumoto, Yoshiharu; and Yamazaki, Kazuo, to Sony Corporation. Magnetic recording and/or reproducing apparatus. 4,445,154, Cl. 360-85.000.
- Kikuchi, Makoto: *See—*
  - Tsuchiya, Hiroyuki; Asakura, Yamato; Suzuki, Teiji; and Kikuchi, Makoto, 4,444,737, Cl. 423-249.000.
- Kikuchi, Tetsuro, to Nippon Soken, Inc. Seat belt connecting device. 4,444,432, Cl. 297-476.000.
- Kikuchi, Toshihiko: *See—*
  - Iwasaki, Yasutaka; Tanaka, Mitsuru; Yasuda, Akihiko; Kinugasa, Munetaka; Kikuchi, Toshihiko; and Maruyama, Masao, 4,444,156, Cl. 122-20.00B.
- Kikuchi, Yoshiki; Moriguchi, Haruhiko; Ohmori, Takashi; and Makino, Katsuo, to Fuji Xerox Co., Ltd. Stencil paper for mimeography and process for making stencil. 4,444,808, Cl. 427-143.000.
- Kim, Wan S.; Jeong, Seo Y.; and McRea, James C., to University of Utah. Glycosylated insulin derivatives. 4,444,683, Cl. 260-112.700.
- Kimberly-Clark Corporation: *See—*
  - Nuttall, David A., 4,444,361, Cl. 242-65.000.
- Kimmell, Robert M.: *See—*
  - Scheer, Harold L.; Jenkins, Tom L.; Kimmell, Robert M.; and Holloway, Michael E., 4,445,178, Cl. 364-400.000.
- Kimura, Katsumi: *See—*
  - Hayashi, Masumi; Ogawa, Kazuo; Kimura, Katsumi; Ishii, Hiroshi; and Bandai, Satoshi, 4,444,709, Cl. 264-174.000.
- Kimura, Kensaku; and Watanabe, Toshio, to Kurosaki Furnace Industries Company Limited. Continuous combustion furnace. 4,444,557, Cl. 432-136.000.
- Kimura, Shogo: *See—*
  - Takahashi, Haruo; and Kimura, Shogo, 4,444,549, Cl. 417-269.000.
- King, Arthur S. Electrical treating apparatus having electrode cleaner. 4,444,637, Cl. 204-212.000.
- Kingston, Samuel B.: *See—*
  - Postle, Stephen R.; and Kingston, Samuel B., 4,444,939, Cl. 524-494.000.
- Kinoshita, Takashi; Shirochi, Yoshiki; and Motoyoshi, Noboru, to Sony Corporation. Video tape recorder with audio mode recording. 4,445,151, Cl. 360-27.000.
- Kinsell, Robert C.; and Noe, James C., to Garrett Corporation, The. Heat pump systems for residential use. 4,444,018, Cl. 62-87.000.

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- Kinto, Koichiro, to Daidotokushuko Kabushikikaisha. System for heating broadwise-end portions of metal material. 4,444,558, Cl. 432-225.000.
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  - Iwasaki, Yasutaka; Tanaka, Mitsuru; Yasuda, Akihiko; Kinugasa, Munetaka; Kikuchi, Toshihiko; and Maruyama, Masao, 4,444,156, Cl. 122-20.00B.
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  - Motta, Vincent C.; and Kiraly, Ernest F., 4,443,939, Cl. 30-49.000.
- Kirby, Allan B.; and Johnson, Geoffrey P., to Bendix Corporation, The. Electrical connector. 4,444,453, Cl. 339-177.00R.
- Kirchmayer, Hermann. Apparatus for converting solar energy into heat. 4,444,177, Cl. 126-437.000.
- Kirisawa, Tadashi; Yamauchi, Teruo; and Oyama, Yoshishige, to Hitachi, Ltd. Air-fuel ratio controlling device for internal combustion engines. 4,444,169, Cl. 123-344.000.
- Kirk, Brian R.: *See—*
  - Francis, John F.; Kirk, Brian R.; and Terry, John C., 4,443,940, Cl. 30-50.000.
- Kirschner, Klaus P., to Philips Kommunikations Industrie AG. Drive circuit for step motor. 4,445,077, Cl. 318-696.000.
- Kitahama, Yoshiharu: *See—*
  - Nogami, Sumitaka; Kitahama, Yoshiharu; and Iwami, Isamu, 4,444,861, Cl. 430-58.000.
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- Kitzes, Arnold S.; and Tiepel, Erich W., to Westinghouse Electric Corp. Process and apparatus for the volume reduction of PWR liquid wastes. 4,444,680, Cl. 252-632.000.
- Klaar, Jurgen: *See—*
  - Kuter, Heinrich, deceased; and Klaar, Jurgen, 4,445,057, Cl. 310-68.00D.
- Klawitter, Jerome J., to Hemex, Inc. Heart valve with dog-leg pivot. 4,443,894, Cl. 3-1.500.
- Klazar, Jaroslav, to GLP Industrial Property Bureau. Creel. 4,443,913, Cl. 19-159.00A.
- Kleen-Rite, Inc.: *See—*
  - Smith, Robert G., 4,444,625, Cl. 203-95.000.
- Klein, John F.: *See—*
  - Irons, Gary C.; Klein, John F.; Lander, Richard D.; Thompson, Henry C.; and Trapani, Richard D., 4,445,021, Cl. 219-121.0PM.
- Klein, Konrad; Dinkelmann, Friedrich; and Guttler, Hermann, to Zinser Textilmaschinen GmbH. Stop motion for spinning frame. 4,444,005, Cl. 57-80.000.
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  - Schwarz, Rudolf; Kleinschmit, Peter; Liedtke, Christa; and Wolff, Siegfried, 4,444,936, Cl. 524-393.000.
- Klier, Lothar: *See—*
  - Kreuer, Karl D.; and Klier, Lothar, 4,444,508, Cl. 366-139.000.
- Klingaman, Richard: *See—*
  - Joshi, David; and Klingaman, Richard, 4,444,673, Cl. 252-90.000.
- Klingstedt, Holger E.: *See—*
  - Klingstedt, Ingvar; Klingstedt, Holger E.; and Berggren, Artur E., 4,444,372, Cl. 248-317.000.
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- Klockner-Werke AG: *See—*
  - Fink, Lothar, 4,444,612, Cl. 156-394.100.
- Kmak, Walter S.: *See—*
  - Fung, Shun C.; and Kmak, Walter S., 4,444,896, Cl. 502-37.000.
  - Fung, Shun C.; Weissman, Walter; Carter, James L.; and Kmak, Walter S., 4,444,897, Cl. 502-37.000.
- Knab, Rochus: *See—*
  - Bonitz, Jorg; Entenmann, Robert; Knab, Rochus; Rohde, Siegfried; and Schramm, Herbert, 4,444,042, Cl. 73-35.000.
- Knipper, Aloysius J.: *See—*
  - Vanderveer, Fred; Knipper, Aloysius J.; Straka, Robert; and Squicciarini, Alex J., 4,444,799, Cl. 426-549.000.
- Knirck, Jeffrey G.: *See—*
  - Tucker, Hartwell F.; Tucker, Jeffrey R.; Ross, Dennis; and Knirck, Jeffrey G., 4,443,906, Cl. 15-50.00R.
- Knox, Kibourne H., to Tempco Engineering, Inc. Power-manual brake system. 4,444,438, Cl. 303-13.000.
- Kobari, Harukuni; Yamada, Yasuhiro; Suzuki, Susumu; and Hibino, Chitoshi, to Victor Company of Japan, Ltd. System for defeating erroneous correction in a digital signal reproducing apparatus. 4,445,216, Cl. 371-39.000.
- Kobari, Katsuo, to Fanuc Ltd. Control system for synchronous motor employed as servomotor. 4,445,076, Cl. 318-690.000.
- Kobayashi, Robert J.; and Byrne, Joe L., to Garrett Corporation, The. Control arrangement for an hydraulic assist turbocharger. 4,444,014, Cl. 60-608.000.
- Kobayashi, Shigeru; Nakagawa, Nobuo; Abe, Katsuo; Kamei, Tsuneaki; and Fujimoto, Kazuyuki, to Hitachi, Ltd. Film forming method. 4,444,635, Cl. 204-192.00R.
- Kobayashi, Takumi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Film detecting device in automatic film winding type camera. 4,444,482, Cl. 354-173.100.
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- Kobayashi, Tsuneki: *See—*
  - Suzuki, Teruo; Kobayashi, Tsuneki; and Miyasaka, Masao, 4,444,522, Cl. 400-146.000.
- Koberstein, Kurt: *See—*
  - Donaldson, James R.; and Koberstein, Kurt, 4,444,422, Cl. 292-169.000.
- Koboshi, Shigeharu: *See—*
  - Miyaoka, Kazuyoshi; and Koboshi, Shigeharu, 4,444,871, Cl. 430-378.000.
- Kocakusak, Sidika: *See—*
  - Tolun, Rasit; Emir, Bedri D.; Kalafatoglu, Ismail E.; Kocakusak, Sidika; and Yalaz, Nuran, 4,444,633, Cl. 204-98.000.
- Koch, Ferdinand: *See—*
  - Schlussler, Hans-Joachim; and Koch, Ferdinand, 4,444,756, Cl. 424-150.000.
- Koch, Josef: *See—*
  - Amsler, Bruno; Voney, Daniel; Koch, Josef; and Frei, Alfred, 4,444,242, Cl. 160-172.000.
- Koch, Karl-Heinz: *See—*
  - Glaser, Herbert; Koch, Karl-Heinz; Marrett, Rolf; and Meinbreckse, Manfred, 4,444,650, Cl. 208-106.000.
- Koch Process Systems, Inc.: *See—*
  - Ryan, James M.; and O'Brien, John V., 4,444,576, Cl. 62-20.000.
- Kochi, Ikuyoshi: *See—*
  - Konoki, Keizo; Shinohara, Takanobu; Kochi, Ikuyoshi; Shibata, Keiichi; Nishihara, Hisakatsu; Morichika, Toshiaki; Sugitani, Junichi; and Tsuchida, Koji, 4,444,731, Cl. 422-310.000.
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- Kodera, Youichi: *See—*
  - Nakajima, Heitaro; Umeda, Kenkichi; Kodera, Youichi; Naito, Noriaki; Yamauchi, Hiroyuki; Matsumoto, Isao; Nakamura, Shouichi; Takada, Katsuo; Shiga, Ken; and Yamamoto, Yoshihito, 4,445,150, Cl. 360-18.000.
- Koetters, Daniel: *See—*
  - Edelstein, Harold; and Koetters, Daniel, 4,444,677, Cl. 252-301.170.
- Koga, Kiyoshi; Ikejiri, Kenichi; and Kawahara, Eiichiro, to Honda Giken Kogyo Kabushiki Kaisha. Slant plate type hydraulic device. 4,444,093, Cl. 91-488.000.
- Kogane, Mikio, to Fuji Photo Film Co., Ltd. Photographic printing apparatus. 4,444,485, Cl. 355-29.000.
- Kohl, Douglas A. Steering apparatus for boats with multiple rudders. 4,444,145, Cl. 114-163.000.
- Kohler, Robert D., to Toledo Transducers, Inc. Press cycle monitor. 4,445,093, Cl. 328-151.000.
- Kohno, Akira: *See—*
  - Inoue, Akihiro; Kanoh, Tadao; Kamei, Taketo; Kamiya, Akihiro; Ishigami, Toshihiko; Kohno, Akira; and Sasaki, Hiroki, 4,445,067, Cl. 313-54.000.
- Koitabashi, Takeo; Haga, Yoshihiro; and Matsuzaka, Syoji, to Konishiroku Photo Ind. Co., Ltd. Light-sensitive silver halide emulsion. 4,444,877, Cl. 430-567.000.
- Kolin, Ivo, to Dudley, Grace. Hot gas engine. 4,444,011, Cl. 60-517.000.
- Komenou, Kazunari: *See—*
  - Ohashi, Makoto; Komenou, Kazunari; Miyashita, Tsutomu; Matsuda, Kazuo; and Satoh, Yoshio, 4,445,200, Cl. 365-8.000.
- Komiya, Hidetsugu: *See—*
  - Imazeki, Ryoji; Komiya, Hidetsugu; and Inoue, Michiya, 4,445,199, Cl. 365-1.000.
- Kondo, Syunichi: *See—*
  - Sano, Kenji; Kondo, Syunichi; and Sato, Hideo, 4,444,863, Cl. 430-83.000.
- Konigshofen, Heinrich; Bruck, Dieter W.; Nierth, Alfred; Zlokarnik, Marko; and Uhlmann, Hans-Jorg, to Bayer Aktiengesellschaft. Process for the production of cyanogen chloride from hydrocyanic acid and chlorine. 4,444,739, Cl. 423-371.000.
- Konishiroku Photo Ind. Co., Ltd.: *See—*
  - Koitabashi, Takeo; Haga, Yoshihiro; and Matsuzaka, Syoji, 4,444,877, Cl. 430-567.000.
- Konishiroku Photo Industry Co., Ltd.: *See—*
  - Fujii, Yozo; Murakami, Kazuo; and Sakaguchi, Hirofumi, 4,444,488, Cl. 355-11.000.
  - Kato, Katsunori; and Sato, Ryosuke, 4,444,872, Cl. 430-384.000.
  - Miyaoka, Kazuyoshi; and Koboshi, Shigeharu, 4,444,871, Cl. 430-378.000.
  - Nagashima, Toshiharu; and Habu, Takeshi, 4,444,875, Cl. 430-445.000.
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- Lester Laboratories, Inc.: *See—*
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  - Pues, Hugo F., 4,445,122, Cl. 343-700.0MS.
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- Lord, Joseph S.: *See—*
  - Dostoomian, Ashod S.; Lord, Joseph S.; and Davis, Jeffrey R., 4,444,516, Cl. 374-131.000.
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  - Erpenbach, Heinz; Gehrmann, Klaus; Lork, Winfried; and Prinz, Peter, 4,444,624, Cl. 203-61.000.
- Loubier, Robert J. Permanent magnet mold apparatus for injection molding plastic bonded magnets. 4,444,550, Cl. 425-3.000.
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- Lu, Shau-Zou; and Druin, Melvin, to Celanese Corporation. Polyester blends. 4,444,931, Cl. 524-227.000.
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  - Farr, Glyn P. R., 4,444,440, Cl. 303-50.000.
  - Mortimer, Ivan, 4,444,437, Cl. 303-6.00C.
- Lucas, John J.: *See—*
  - Wolvek, Sidney; Hanson, Bruce L.; and Lucas, John J., 4,444,186, Cl. 128-325.000.
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  - Mitard, Luc; and Cabanel, Claude, 4,444,116, Cl. 102-476.000.
- Ludlow Corporation: *See—*
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  - Hilbrandt, Martin; Ossenberg, Uwe; and Lusebrink, Wilhelm, 4,444,452, Cl. 339-176.00M.
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- Luyckx, Leon A.: *See—*
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  - Panofsky, Edward F., 4,445,137, Cl. 358-101.000.
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- Mackenzie, Angus B.: *See—*
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  - Saikawa, Isamu; Yasuda, Takashi; Murakami, Shohachi; Maeda, Toyoo; Yotsuji, Akira; Takahata, Masahiro; Tsuda, Hisatsugu; Mikami, Hidetada; Sakai, Hiroshi; and Ohashi, Toshinori, 4,444,753, Cl. 424-98.000.
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- Maeshiba, Sozaburo. Structure for prevention of mixing of different kinds of oils for oil-feeding couplings. 4,444,419, Cl. 285-12.000.
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  - Leiendecker, David N.; and Schott, Wayne M., 4,445,227, Cl. 381-24.000.
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- Manley, Jerry. Automatic log feeder. 4,444,538, Cl. 414-176.000.
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  - Tattersall, Edward G.; and Ruler, Jack, 4,444,143, Cl. 114-67.00A.
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  - Avon, Michel F.; and Markarian, Gerard R., 4,444,572, Cl. 55-26.000.
- Markem Corporation: *See—*
  - Jenness, Peter, III, 4,444,108, Cl. 101-305.000.
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- Markwardt, Terrance L., to Minnesota Mining and Manufacturing Company. Electrical wire connector. 4,444,447, Cl. 339-98.000.
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  - Bannister, Brian C., 4,443,911, Cl. 16-354.000.
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- Marrett, Rolf: *See—*
  - Glaser, Herbert; Koch, Karl-Heinz; Marrett, Rolf; and Meinbreckse, Manfred, 4,444,650, Cl. 208-106.000.
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  - Miller, Joel S.; and Marsh, Dana G., 4,444,487, Cl. 355-3.0FU.
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Martin, Wayne A., to United States Steel Corporation. Method of preventing distortion of a heated workpiece during cooling. 4,444,604, Cl. 148-131.000.

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Maru, Hansraj C., to Energy Research Corporation. Fuel cell stack. 4,444,851, Cl. 429-26.000.

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    Suwabe, Isaku, 4,444,274, Cl. 173-134.000.

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    Cook, Melvin W.; and Campbell, Rodney S., 4,444,524, Cl. 403-387.000.

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    Cox, Charles H., III, 4,444,992, Cl. 136-248.000.
    Gutowski, Timothy G.; and Suh, Nam P., 4,444,922, Cl. 523-339.000.

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    Stolz, Hermann, 4,444,547, Cl. 417-46.000.

Matson, Stephen L., to Bend Research, Inc. Energy-efficient process for the stripping of gases from liquids. 4,444,571, Cl. 55-16.000.

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    Yanagihara, Nobuyuki; Gamo, Takaharu; Moriwaki, Yoshio; and Iwaki, Tsutomu, 4,444,727, Cl. 422-223.000.

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    Elsasser, Claus; Ross, Gunther; and Schwarz, Volker, 4,443,951, Cl. 33-203.130.
    Hoffmann, Dietrich; and Gunther, Oswin, 4,444,118, Cl. 102-518.000.

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McCarty, William H., to Mobil Oil Corporation. Process for preparing aqueous coatings comprising dispersible epoxy resin-acid polymer ester. 4,444,923, Cl. 523-406.000.

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McEntire, Edward E., to Texaco Inc. Acrylic and methacrylic quaternary chloromethyl ammonium chloride cationic monomers and polymers thereof. 4,444,971, Cl. 526-292.200.

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McKenney, James L., to Vapor Corporation. Electric thermal storage heater system for heating fluids. 4,445,023, Cl. 219-326.000.

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McPhaul, Jack L. Intramedullary pin cutting instrument. 4,443,941, Cl. 30-241.000.

McPherson, Larry T. Ladder accessory. 4,444,291, Cl. 182-214.000.

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    Kim, Wan S.; Jeong, Seo Y.; and McRea, James C., 4,444,683, Cl. 260-112.700.

McStravick, David M.; and Chenoweth, David V., to Baker International Corporation. Insulating tubular conduit apparatus. 4,444,420, Cl. 285-47.000.

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    Goeldner, Richard W., 4,444,675, Cl. 252-175.000.

Meckel, Joachim: *See—*

    Hackler, Erich; Meckel, Joachim; Wagener, Dietrich; and Galow, Manfred, 4,444,532, Cl. 406-117.000.

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    Hoffman, William F.; Smith, Robert L.; and Willard, Alvin K., 4,444,784, Cl. 424-279.000.
    Thomas, Kenneth A., Jr., 4,444,760, Cl. 424-177.000.
    Wood, William E.; and Rosen, Roy A., 4,444,335, Cl. 222-43.000.

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    Stumpf, Walter J., 4,444,523, Cl. 403-173.000.

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    Perlin, Alfred R., 4,444,187, Cl. 128-346.000.

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    Chang, Clarence D.; and Miale, Joseph N., 4,444,900, Cl. 502-71.000.
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Michel, Christian G.: *See—*

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Michelotti, Paul E. Aircraft minimum drag speed system. 4,445,179, Cl. 364-431.070.

Michelson, Herbert D.: *See—*

    Gater, Roger A.; and Michelson, Herbert D., 4,444,697, Cl. 261-118.000.

Mickleson, Lee; and Olson, Eric V., to Discovision Associates. Dithered focusing systems. 4,445,209, Cl. 369-45.000.

Micro Motion: *See—*

    Smith, James E., 4,444,059, Cl. 73-861.370.

Miersch, Ekkehard F.: *See—*

    Goetze, Volkmar; Miersch, Ekkehard F.; and Potz, Guenther, 4,445,202, Cl. 365-182.000.

Mieyal, David F., to Donn, Incorporated. Demountable partition structure. 4,443,991, Cl. 52-729.000.

Mihayashi, Keiji: *See—*

    Hirano, Tsumoru; Mihayashi, Keiji; and Yagihara, Morio, 4,444,870, Cl. 430-381.000.

Mikami, Hidetada: *See—*

    Saikawa, Isamu; Yasuda, Takashi; Murakami, Shohachi; Maeda, Toyoo; Yotsuji, Akira; Takahata, Masahiro; Tsuda, Hisatsugu; Mikami, Hidetada; Sakai, Hiroshi; and Ohashi, Toshinori, 4,444,753, Cl. 424-98.000.

Mikami, Yoshiharu, to Kabushiki Kaisha Ishida Koki Seisakusho. Collecting chute for a combinatorial weighing apparatus. 4,444,283, Cl. 177-59.000.

Miles, Paula J., executrix: *See—*

    Clark, Edwin E.; Lock, William E.; Paiement, Paul E., deceased; and Miles, Paula J., executrix, 4,444,102, Cl. 101-36.000.

Miljotakmontage AB: *See—*

    Klingstedt, Ingvar; Klingstedt, Holger E.; and Berggren, Artur E., 4,444,372, Cl. 248-317.000.

Miller, Arthur F.: *See—*

    Callahan, James L.; Shaw, Wilfrid G.; and Miller, Arthur F., 4,444,906, Cl. 502-211.000.

Miller, Donald; and Bowers, Clark A., to United States of America, Navy. Cylindrical object recovery device. 4,444,425, Cl. 294-88.000.

Miller, Dorothy W.: *See—*

    Miller, Fred L. B., 4,444,233, Cl. 144-220.000.

Miller, Frank H.; and Hull, David V., to Rockwell International Corporation. Filter system. 4,444,575, Cl. 55-316.000.

Miller, Fred L. B., to Miller, Dorothy W. Knife holder in woodworking machine. 4,444,233, Cl. 144-220.000.

Miller, Joel S.; and Marsh, Dana G., to Xerox Corporation. Multiple-flash fuser. 4,444,487, Cl. 355-3.0FU.

Miller, Jule: *See—*

    McMurray, John H.; and Miller, Jule, 4,444,353, Cl. 228-231.000.

Miller, Kenneth F.; and Lee, Garland G., to General Electric Company. Compositions comprising a thermoplastic resin and an acrylate mold release agent. 4,444,935, Cl. 524-315.000.

Miller, Robert J., to International Business Machines Corporation. Conductivity WSi_2 films by Pt preanneal layering. 4,445,134, Cl. 357-71.000.

Miller, William H.: *See—*

    Burkes, William M., Jr.; and Miller, William H., 4,444,006, Cl. 60-251.000.

Millmaster Onyx Group, Inc.: *See—*

    Green, Harold A.; Merianos, John J.; and Petrocci, Alfonso N., 4,444,750, Cl. 424-70.000.
    Green, Harold A.; Petrocci, Alfonso N.; and Dudzinski, Zdzislaw W., 4,444,790, Cl. 424-329.000.

Mimura, Yoshiyuki, to Olympus Optical Company Limited. Electrophotographic process and photosensitive member for use in said process. 4,444,859, Cl. 430-54.000.

Ministry of International Trade & Industry: *See—*

    Ichimura, Kunihiro, 4,444,868, Cl. 430-285.000.

Minnesota Mining and Manufacturing Company: *See—*

    Aysta, James E.; Gibson, Geoffrey; and Tuukkanen, Rainer A., 4,444,449, Cl. 339-99.00R.
    Franck, Gerald R.; and Olsen, David B., 4,444,247, Cl. 165-119.000.
    Markwardt, Terrance L., 4,444,447, Cl. 339-98.000.
    Pokorny, Richard J., 4,444,975, Cl. 528-49.000.
    Silbernagel, Raymond A.; and Sjolander, Garry L., 4,444,448, Cl. 339-98.000.

Minolta Camera KK: *See—*

    Ishikawa, Takuma; and Matsui, Toshio, 4,444,382, Cl. 271-10.000.

Minolta Camera Kabushiki Kaisha: *See—*

    Kudo, Yoshinobu, 4,444,473, Cl. 350-467.000.

Minott, Peter O., to United States of America, National Aeronautics and Space Administration. Dual aperture multispectral Schmidt objective. 4,444,464, Cl. 350-172.000.

Mita Industrial Co., Ltd.: *See—*

    Koyama, Shigeo; Yamagata, Ryutaro; Kozuka, Nobuhiko; and Sakata, Hiromi, 4,444,494, Cl. 355-75.000.
    Murata, Naoaki; Yoshioka, Masahiro; Hayashi, Kiyoshi; and Tohi, Yasusuke, 4,444,386, Cl. 271-127.000.

Mitani, Masao: *See—*

    Hongo, Mikio; Mitani, Masao; Miyauchi, Tateoki; Okunaka, Masaaki; and Mizukoshi, Katsuro, 4,444,801, Cl. 427-10.000.

Mitard, Luc; and Cabanel, Claude, to Luchaire S.A. Missile such as hand grenade, notably for antitank fighting. 4,444,116, Cl. 102-476.000.

Mitchell, David S.; and Sageman, David R., to Chevron Research Company. Method for combined cycle electrical power generation. 4,444,007, Cl. 60-39.020.

Mitchell, Lawrence C., Jr., to Boeing Company, The. Stacked tube submunition dispenser. 4,444,117, Cl. 102-489.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*

    Ioka, Akio; and Kurahashi, Koichiro, 4,444,470, Cl. 350-358.000.
    Maruyama, Hisaichi; and Ohniwa, Kohichi, 4,444,134, Cl. 112-121.120.
    Mori, Shunji, 4,445,022, Cl. 219-125.100.
    Sekiya, Mutuo; Tanaka, Hideharu; Uchikawa, Fusaoki; and Ohata, Yasufumi, 4,444,288, Cl. 181-258.000.
    Ueda, Yoshihiro; Sasao, Hiroyuki; Hamano, Suenobu; and Okuda, Suichiro, 4,445,020, Cl. 200-148.00A.

Mitsubishi Gas Chemical Company, Inc.: *See—*

    Suzuki, Takashi; Hashimoto, Shoichiro; and Nakano, Rieko, 4,444,738, Cl. 423-329.000.

- Mitsuboshi Belting Ltd.: *See—*
  - Fujiki, Toshiaki; and Kano, Hikaru, 4,443,993, Cl. 52-746.000.
- Mitter, Mathias. Apparatus for applying a foamed treating medium to a substrate. 4,444,104, Cl. 101-119.000.
- Mitter, Mathias. Apparatus for applying ink to napped fabrics or the like. 4,444,105, Cl. 101-120.000.
- Mitutoyo Mfg. Co., Ltd.: *See—*
  - Takizawa, Kinji, 4,444,504, Cl. 356-374.000.
- Miwa, Johji; and Furusawa, Mitsuru, to Duskin Franchise Co., Ltd. Method for testing toxicity of chemical substance by using nematode. 4,444,891, Cl. 436-2.000.
- Miyake, Masayoshi; Ueoka, Isao; and Kawaguchi, Munetaka, to Sumitomo Electric Industries, Ltd. Self-bonding magnet wires. 4,444,843, Cl. 428-383.000.
- Miyaoka, Kazuyoshi; and Koboshi, Shigeharu, to Konishiroku Photo Industry Co., Ltd. Method for forming a direct positive color image. 4,444,871, Cl. 430-378.000.
- Miyasaka, Masao: *See—*
  - Suzuki, Teruo; Kobayashi, Tsuneki; and Miyasaka, Masao, 4,444,522, Cl. 400-146.000.
- Miyashita, Tsutomu: *See—*
  - Ohashi, Makoto; Komenou, Kazunari; Miyashita, Tsutomu; Matsuda, Kazuo; and Satoh, Yoshio, 4,445,200, Cl. 365-8.000.
- Miyauchi, Tateoki: *See—*
  - Hongo, Mikio; Mitani, Masao; Miyauchi, Tateoki; Okunaka, Masaaki; and Mizukoshi, Katsuro, 4,444,801, Cl. 427-10.000.
- Mizokami, Kazunori, to Olympus Optical Company Ltd. Exposure control circuit for a camera. 4,444,481, Cl. 354-401.000.
- Mizukawa, Suehiro. Automatic control system for operating the clutch of a car. 4,444,299, Cl. 192-0.055.
- Mizukoshi, Katsuro: *See—*
  - Hongo, Mikio; Mitani, Masao; Miyauchi, Tateoki; Okunaka, Masaaki; and Mizukoshi, Katsuro, 4,444,801, Cl. 427-10.000.
- Mizuno, Seiichiro: *See—*
  - Koyano, Akira; and Mizuno, Seiichiro, 4,444,197, Cl. 128-660.000.
- Mizutani, Yukihisa: *See—*
  - Kasahara, Hideo; Mizutani, Yukihisa; and Fukuda, Kunio, 4,444,934, Cl. 524-310.000.
- MML Computers, Inc.: *See—*
  - Stark, Gary; and Elkeles, Gidion, 4,444,490, Cl. 355-40.000.
- Mo och Domsjo Aktiebolag: *See—*
  - Lindahl, Jonas A. I., 4,444,621, Cl. 162-26.000.
- Mobil Oil Corporation: *See—*
  - Capsuto, Leon M.; Holland, Robert E.; Ireland, Henry R.; and Tabak, Samuel A., 4,444,988, Cl. 585-415.000.
  - Chang, Clarence D.; and Miale, Joseph N., 4,444,900, Cl. 502-71.000.
  - Chang, Clarence D.; and Miale, Joseph N., 4,444,902, Cl. 502-86.000.
  - Chang, Clarence D.; and Lang, William H., 4,444,909, Cl. 518-716.000.
  - Dessau, Ralph M., 4,444,986, Cl. 585-828.000.
  - Humphries, Curtis L.; Mathis, Melwyn L.; Schultz, Eddie F.; and Seal, Henry A., 4,444,044, Cl. 73-60.100.
  - Islip, Philip N., 4,444,261, Cl. 166-272.000.
  - McCarty, William H., 4,444,923, Cl. 523-406.000.
  - Owen, Hartley, 4,444,722, Cl. 422-144.000.
- Moller, Eike: *See—*
  - Meyer, Horst; Horstmann, Harald; Moller, Eike; and Garthoff, Bernward, 4,444,770, Cl. 424-248.500.
- Monachan, Brian C.: *See—*
  - Corbett, Richard T.; Monachan, Brian C.; and Hope, Alexander J. N., 4,444,805, Cl. 427-38.000.
- Monarch Knitting Machinery Corporation: *See—*
  - Moyer, Charles R., 4,444,140, Cl. 112-262.200.
- Monkelbaan, Edwin R., to Xerox Corporation. Three-roll cold pressure fuse for fixing toner images to copy substrates including an overskewed roll. 4,444,486, Cl. 355-3.0FU.
- Monro, Richard J. Heat generator. 4,444,128, Cl. 110-345.000.
- Monsanto Company: *See—*
  - Deex, Oliver D., 4,444,980, Cl. 528-193.000.
  - Gutsche, Henry W., 4,444,812, Cl. 427-255.000.
  - Mendelson, Robert A., 4,444,951, Cl. 525-74.000.
  - Sheldrick, George E., 4,444,945, Cl. 524-843.000.
  - Singh, Rajendra K., 4,444,580, Cl. 71-86.000.
  - Singh, Rajendra K., 4,444,581, Cl. 71-086.000.
  - Singh, Rajendra K., 4,444,582, Cl. 71-86.000.
- Montagnier, Luc: *See—*
  - Bisagni, Emile; Ducrocq, Claire; Rivalle, Christian; Tambourin, Pierre; Wendling, Francoise; Chermann, Jean-Claude; and Montagnier, Luc, 4,444,776, Cl. 424-258.000.
- Montemurro, Thomas O., to Big Joe Manufacturing Company. Control system. 4,444,284, Cl. 180-19.100.
- Montferme, Daniel; and Lemaire, Didier, to E. P. Remy et Cie. Variable configuration head for seizing and handling objects. 4,444,423, Cl. 294-87.00R.
- Moore, Brian B.: *See—*
  - Burk, John L.; Cormier, Roger L.; Hartung, Michael H.; Larner, Ray A.; Lucas, Donald J.; Lynch, Kenneth R.; Moore, Brian B.; Page, Howard L.; Wansor, David H.; and Zeitler, Carl, Jr., 4,445,176, Cl. 364-200.000.
- Moore, Robert E., to Lester Laboratories, Inc. Stable gas-carrying compositions. 4,444,678, Cl. 252-312.000.
- Moorhead, Louise C., to Board of Regents, University of Texas. Ophthalmic topical use of collagen cross-linking inhibitors. 4,444,787, Cl. 424-304.000.
- Morand, Michel: *See—*
  - Dominici, Jean P.; and Morand, Michel, 4,443,937, Cl. 29-874.000.
- Moreno, Jaime. Composite building construction comprising a combination of precast and poured-in-place concrete. 4,443,985, Cl. 52-236.800.
- Moretto, Hans-Heinrich: *See—*
  - Alberts, Heinrich; Friemann, Hans; Moretto, Hans-Heinrich; and Sattlegger, Hans, 4,444,946, Cl. 525-29.000.
- Morgan, Charles R.; and Kyle, David R., to W. R. Grace & Co. Process for forming an epoxy-acrylate coating. 4,444,806, Cl. 427-45.100.
- Morgan, Howard H., Jr.: *See—*
  - Brownell, George L.; Collier, Melba J.; Hall, William E.; Morgan, Howard H., Jr.; and Snyder, A. R., 4,444,987, Cl. 585-850.000.
- Mori, Etsunori: *See—*
  - Sakai, Seiichi; Gange, Toshihiko; Sugawara, Katuo; Tsukioka, Hideo; Tani, Ictitaro; Shiono, Shigeo; and Mori, Etsunori, 4,444,040, Cl. 73-19.000.
- Mori, Kei. Apparatus for collecting solar beams. 4,444,468, Cl. 350-294.000.
- Mori, Shigeo; Murakami, Fumikazu; Hara, Yoshiaki; Horikoshi, Ichiro; and Fujita, Susumu, to Seiko Instruments & Electronics Ltd. Small type acoustic device. 4,445,113, Cl. 340-384.00R.
- Mori, Shunji, to Mitsubishi Denki Kabushiki Kaisha. Arc welding robot control system. 4,445,022, Cl. 219-125.100.
- Morichika, Toshiaki: *See—*
  - Konoki, Keizo; Shinohara, Takanobu; Kochi, Ikuyoshi; Shibata, Keiichi; Nishihara, Hisakatsu; Morichika, Toshiaki; Sugitani, Junichi; and Tsuchida, Koji, 4,444,731, Cl. 422-310.000.
- Moriguchi, Haruhiko; and Ohmori, Takashi, to Fuji Xerox Co., Ltd. Heat-transfer recording medium. 4,444,833, Cl. 346-204.000.
- Moriguchi, Haruhiko: *See—*
  - Kikuchi, Yoshiki; Moriguchi, Haruhiko; Ohmori, Takashi; and Makino, Katsuo, 4,444,808, Cl. 427-143.000.
- Morinari, Ryosuke; and Koseki, Mitsuru, to Shin-Kobe Electric Machinery Co., Ltd. Process of producing grids for a battery. 4,443,918, Cl. 29-3.000.
- Morishige, Akira: *See—*
  - Chonan, Tsunehiro; and Morishige, Akira, 4,444,869, Cl. 430-325.000.
- Morita, Eiichi; Kato, Yoshihisa; Takeda, Koichi; and Oku, Takuya, to Daihatsu Motor Company, Limited. Method of control of NC machine tools. 4,445,182, Cl. 364-474.000.
- Moriwaki, Yoshio: *See—*
  - Yanagihara, Nobuyuki; Gamo, Takaharu; Moriwaki, Yoshio; and Iwaki, Tsutomu, 4,444,727, Cl. 422-223.000.
- Moriya, Ryusuke, to Sony Corporation. Video signal reproducing apparatus. 4,445,145, Cl. 360-10.200.
- Moroto, Shuzo; and Hayakawa, Yoichi, to Aisin Warner Kabushiki Kaisha. Torque transfer mechanism with hydraulic control system for a four wheel drive vehicle. 4,444,073, Cl. 74-665.00G.
- Morrill, Charles D.: *See—*
  - Keithahn, Julian D.; Morrill, Charles D.; and Roche, Joseph R., 4,444,250, Cl. 166-84.000.
- Morris, Arthur J., to Camco, Incorporated. Thermal and/or corrosion seal for a well tool. 4,444,403, Cl. 277-228.000.
- Morse, Richard R.: *See—*
  - Heismann, Richard A.; and Morse, Richard R., 4,444,002, Cl. 56-202.000.
- Morsucci, Juan C.: *See—*
  - Silvestrini, Jesus A.; and Morsucci, Juan C., 4,444,096, Cl. 99-585.000.
- Mortimer, Ivan, to Lucas Industries public limited company. Deceleration-sensing modulator valve assembly for vehicle braking systems. 4,444,437, Cl. 303-6.00C.
- Morton, Anthony J.: *See—*
  - Hayes, Harry; Morton, Anthony J.; and Harvey, Kenneth, 4,444,747, Cl. 424-52.000.
- Morton, William D., Jr., to Bourns, Inc. Carrier for a leadless integrated circuit chip. 4,444,309, Cl. 206-329.000.
- Moslener, Manfred, to U.S. Philips Corporation. Method of manufacturing magnetic, plastic-bonded molded bodies. 4,444,670, Cl. 252-62.540.
- Most, Elmer E., Jr., to Du Pont de Nemours, E. I., and Company. Process for increasing void volume of hollow filaments. 4,444,710, Cl. 264-209.500.
- Mostek Corporation: *See—*
  - Terry, Michael B., 4,445,002, Cl. 179-81.00A.
- Motorla, Inc.: *See—*
  - Mastroianni, Sal; and Krolikowski, Walter F., 4,443,932, Cl. 29-576.00W.
- Motorola, Inc.: *See—*
  - Cohen, Yitzhak, 4,445,175, Cl. 364-200.000.
  - Fredres, Robert, 4,445,072, Cl. 315-8.000.
  - Jasper, Steven C.; Janc, Robert V.; Robins, David S.; and Retzer, Michael H., 4,445,223, Cl. 375-96.000.
  - Ryan, Carl R., 4,445,094, Cl. 329-50.000.
- Motoyoshi, Noboru: *See—*
  - Kinoshita, Takashi; Shirochi, Yoshiki; and Motoyoshi, Noboru, 4,445,151, Cl. 360-27.000.
- Motta, Vincent C.; and Kiraly, Ernest F., to Warner-Lambert Company. Flexible razor blade cartridge. 4,443,939, Cl. 30-49.000.
- Mouche, Claude: *See—*
  - Proellochs, Claude-Daniel; Vignando, Luigi; and Mouche, Claude, 4,444,513, Cl. 368-223.000.

- Moye, Donald B., administrator: *See—*
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- Moyer, Charles R., to Monarch Knitting Machinery Corporation. Method of making panty hose and apparatus to make same. 4,444,140, Cl. 112-262.200.
- Mueller, Carl J.; Brown, Bernard T.; Rippelmeyer, Dennis M.; and Haefner, John S., to Emerson Electric Co. Direct ignition gas burner control system. 4,444,551, Cl. 431-25.000.
- Mueller, Hans: *See—*
  - Burkert, Hans; Brunnmueller, Friedrich; Beyer, Karl-Heinz; Kroener, Michael; and Mueller, Hans, 4,444,667, Cl. 210-735.000.
- Mueller, Mark W.; and Parker, Thomas S., to International Business Machines Corporation. Bisynchronous host/terminal communication system with non-clock-generating modem & PLL generated clock signal. 4,445,193, Cl. 364-900.000.
- Muhoray, Cornel, to Dravo Corporation. Apparatus for clamping a railroad car in a rotary car dumper. 4,444,539, Cl. 414-360.000.
- Mukaida, Yoshito: *See—*
  - Yamada, Yasuyuki; Akashi, Goro; Tsuji, Nobuo; and Mukaida, Yoshito, 4,444,838, Cl. 428-336.000.
- Mulry, Lawrence S. Paper ejection attachment for cutting die. 4,444,075, Cl. 83-128.000.
- Mulsant, Philippe: *See—*
  - Charron, Jean-Claude; and Mulsant, Philippe, 4,444,155, Cl. 122-19.000.
- Mundie, Craig J.: *See—*
  - Bratt, Richard G.; Schleimer, Stephen I.; Pilat, John F.; Belgard, Richard A.; Wallach, Steven J.; Clancy, Gerald F.; Mundie, Craig J.; Bernstein, David H.; Gavrin, Edward S.; Jones, Thomas M.; and Bachman, Brett L., 4,445,177, Cl. 364-200.000.
- Murakami, Fumikazu: *See—*
  - Mori, Shigeo; Murakami, Fumikazu; Hara, Yoshiaki; Horikoshi, Ichiro; and Fujita, Susumu, 4,445,113, Cl. 340-384.00R.
- Murakami, Kazuo: *See—*
  - Fujii, Yozo; Murakami, Kazuo; and Sakaguchi, Hirofumi, 4,444,488, Cl. 355-11.000.
- Murakami, Shohachi: *See—*
  - Saikawa, Isamu; Yasuda, Takashi; Murakami, Shohachi; Maeda, Toyoo; Yotsuji, Akira; Takahata, Masahiro; Tsuda, Hisatsugu; Mikami, Hidetada; Sakai, Hiroshi; and Ohashi, Toshinori, 4,444,753, Cl. 424-98.000.
- Murase, Masakazu, to Terumo Kabushiki Kaisha. Electronic clinical thermometer. 4,444,517, Cl. 374-188.000.
- Murata Machinery Ltd.: *See—*
  - Gotzfried, Konrad, 4,444,003, Cl. 57-5.000.
- Murata Manufacturing Co., Ltd.: *See—*
  - Nishiyama, Hiroshi; and Nakamura, Takeshi, 4,445,066, Cl. 310-364.000.
- Murata, Naoaki; Yoshioka, Masahiro; Hayashi, Kiyoshi; and Tohi, Yasusuke, to Mita Industrial Co., Ltd. Cassette casing with pivoting sheet stops for an electrostatic copying apparatus. 4,444,386, Cl. 271-127.000.
- Murata, Tadateru: *See—*
  - Goto, Takeshi; Takao, Hisashi; Yasudomi, Norio; Osaki, Norio; and Murata, Tadateru, 4,444,786, Cl. 424-298.000.
- Murdoch, Henry W.: *See—*
  - Schumacher, Percy W., Jr.; Jones, Kenneth W.; Murdoch, Henry W.; and Pastusek, Paul E., 4,444,281, Cl. 175-336.000.
- Murrel, Ralph: *See—*
  - Propst, Paul L.; Gzym, Larry P.; Murrel, Ralph; Richardson, Donald A.; and Hinrichs, Carl B., 4,443,986, Cl. 52-239.000.
- Musel, Robert J., to Wheaton Industries. Child-resistant container closure. 4,444,326, Cl. 215-209.000.
- Mutzhas, Maximilian F. Device for the phototherapeutic treatment of hyperbilirubinemia. 4,444,190, Cl. 128-396.000.
- Myers, George D.; and Busch, Lloyd E., to Ashland Oil, Inc. Carbometallic oil conversion with controlled CO:CO$_2$ratio in multistage regeneration. 4,444,651, Cl. 208-120.000.
- Myers, John H.; and Waleck, Edward, to Federal Paper Board Co., Inc. Metering device and method. 4,443,995, Cl. 53-443.000.
- Myers, Ronald W., to AMP Incorporated. Modular plug-dual modular jack adaptor. 4,444,451, Cl. 339-154.00A.
- Mylan Pharmaceuticals, Inc.: *See—*
  - Blume, Cheryl D.; and Bonner, Paul H., 4,444,769, Cl. 424-246.000.
- Nabisco, Inc.: *See—*
  - Vanderveer, Fred; Knipper, Aloysius J.; Straka, Robert; and Squicciarini, Alex J., 4,444,799, Cl. 426-549.000.
- Nagamatsu, Gentaro: *See—*
  - Nishibu, Satoshi; Takahashi, Yasusuke; Nagamatsu, Gentaro; and Sakata, Toshibumi, 4,444,858, Cl. 430-49.000.
- Naganoma, Masanori; Maehara, Norio; Sakurai, Masao; Hashimoto, Minoru; and Usami, Kiyoshi, to Nippondenso Co., Ltd. Temperature sensing device. 4,445,109, Cl. 338-22.00R.
- Nagaoka, Shinji; and Satoh, Koji, to Seiko Koki Kabushiki Kaisha. Distance detector using a photopotentiometer and a continuous detecting system. 4,445,029, Cl. 250-201.000.
- Nagashima, Toshiharu; and Habu, Takeshi, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide photographic material. 4,444,875, Cl. 430-445.000.
- Nagashima, Tsukasa; and Yoshida, Toshio, to Takasago Perfumery Co., Ltd. (+)- Or (−)-7-hydroxymethyl-2,6,6-trimethyltricyclo[6,2,1,0^{1,5}]undecane. 4,444,982, Cl. 568-817.000.
- Nagel, Erich: *See—*
  - Bartel, Siegfried; Biedermann, Ernst; Ermer, Wolfgang; and Nagel, Erich, 4,444,489, Cl. 355-35.000.
- Nagel, Rudolf: *See—*
  - Sellmaier, Franz; Boning, Bernward; Nagel, Rudolf; and Bone, Rainer, 4,444,172, Cl. 123-425.000.
- Naito, Noriaki: *See—*
  - Nakajima, Heitaro; Umeda, Kenkichi; Kodera, Youichi; Naito, Noriaki; Yamauchi, Hiroyuki; Matsumoto, Isao; Nakamura, Shouichi; Takada, Katsuo; Shiga, Ken; and Yamamoto, Yoshihito, 4,445,150, Cl. 360-18.000.
- Naka, Hiromitsu, to Kabushiki Kaisha Naka Gijutsu Kenkyusho. Access door and framing apparatus for the access door's framework. 4,443,973, Cl. 49-381.000.
- Naka, Reishi: *See—*
  - Hira, Yasuo; Tsuzuku, Susumu; Gotoh, Masao; Yokono, Hitoshi; and Naka, Reishi, 4,444,704, Cl. 264-45.500.
- Nakadai, Takeshi: *See—*
  - Sasaki, Tohru; Endoh, Hiroyuki; and Nakadai, Takeshi, 4,444,826, Cl. 428-216.000.
- Nakagawa, Makoto: *See—*
  - Hayashi, Masaharu; and Nakagawa, Makoto, 4,444,300, Cl. 192-58.00B.
- Nakagawa, Nobuo: *See—*
  - Kobayashi, Shigeru; Nakagawa, Nobuo; Abe, Katsuo; Kamei, Tsuneaki; and Fujimoto, Kazuyuki, 4,444,635, Cl. 204-192.00R.
- Nakagishi, Yutaka: *See—*
  - Furukawa, Shichiro; Nakagishi, Yutaka; and Yamato, Shigeru, 4,444,628, Cl. 204-29.000.
- Nakajima, Heitaro; Umeda, Kenkichi; Kodera, Youichi; Naito, Noriaki; Yamauchi, Hiroyuki; Matsumoto, Isao; Nakamura, Shouichi; Takada, Katsuo; Shiga, Ken; and Yamamoto, Yoshihito, to Sony Corporation. Recording in a single track visual signals associated with audio signals recorded in opposed directions in plural tracks. 4,445,150, Cl. 360-18.000.
- Nakajima, Junya: *See—*
  - Ishikawa, Takatoshi; Imai, Kiyoshi; Tashiro, Mamoru; and Nakajima, Junya, 4,444,873, Cl. 430-393.000.
- Nakajima, Yukio, to Olympus Optical Company, Ltd. Control circuit for power supply associated with an electronic flash unit. 4,444,483, Cl. 354.1-128.000.
- Nakamura, Munekazu: *See—*
  - Shiroto, Yoshimi; Ono, Takeo; Asaoka, Sachio; and Nakamura, Munekazu, 4,444,655, Cl. 208-210.000.
- Nakamura, Norihiko; and Ito, Takaaki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Variable venturi carburetor. 4,444,695, Cl. 261-44.00C.
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- Nakamura, Takeshi: *See—*
  - Ichikawa, Kimio; Arakawa, Hiroshi; and Nakamura, Takeshi, 4,444,226, Cl. 139-452.000.
  - Nishiyama, Hiroshi; and Nakamura, Takeshi, 4,445,066, Cl. 310-364.000.
- Nakamura, Yoshiki: *See—*
  - Terai, Kenji; Sudo, Katsuto; and Nakamura, Yoshiki, 4,444,076, Cl. 83-316.000.
- Nakanishi, Toshihide; and Hagino, Hiroshi, to Kyowa Hakko Kogyo Kabushiki Kaisha. Process for producing L-proline by fermentation. 4,444,885, Cl. 435-107.000.
- Nakano, Rieko: *See—*
  - Suzuki, Takashi; Hashimoto, Shoichiro; and Nakano, Rieko, 4,444,738, Cl. 423-329.000.
- Nakazato, Kunio: *See—*
  - Yamada, Koichi; Nakazato, Kunio; Shiraishi, Katsuzo; and Hamano, Seiichi, 4,444,899, Cl. 502-64.000.
- Nalco Chemical Company: *See—*
  - Cosper, David R.; and McKay, Gretchen L., 4,444,573, Cl. 55-37.000.
  - Pessimisis, George N., 4,444,905, Cl. 502-211.000.
- Namdari, Bahram. Apparatus for vacuum collection and compacting of leaves and grass clippings. 4,443,997, Cl. 56-13.300.
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- Nasu, Norio: *See—*
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- National Research Development Corporation: *See—*
  - Davies, Evan J.; and Allen, Alec G., 4,444,445, Cl. 339-5.00M.
  - Norman, William S., 4,444,400, Cl. 277-9.000.
  - Spillman, John J., 4,444,367, Cl. 244-199.000.
- National Semiconductor Corporation: *See—*
  - Ebel, Mark S., 4,445,205, Cl. 365-227.000.
- Naumann, Johannes: *See—*
  - Frenzel, Werner; Naumann, Johannes; Rudolph, Otfried; Peter, Gunter; Fischer, Karlheinz; Schott, Alfred; and Tappert, Hans-Jurgen, 4,444,106, Cl. 101-183.000.
- NCR Corporation: *See—*
  - Hwang, Thomas J.; Rogers, Steven H.; and Coe, Mary E. B., 4,443,930, Cl. 29-571.000.
- NDM Corporation: *See—*
  - Burcham, Larry R., 4,444,194, Cl. 128-641.000.
- Near, David R.: *See—*
  - Dick, Kevin F.; and Near, David R., 4,444,978, Cl. 528-167.000.

- Neches, Philip M., to Teradata Corporation. Data processing systems and methods. 4,445,171, Cl. 364-200.000.
- Nederlandse Centrale Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek: *See—*
  - Janssen, Louis A. M., 4,444,510, Cl. 366-169.000.
- Negishi, Chiaki: *See—*
  - Kaburagi, Hisashi; Hayamizu, Seiji; Negishi, Chiaki; and Ozawa, Yoshiaki, 4,444,397, Cl. 273-411.000.
- Nelson Research & Development Company: *See—*
  - Rajadhyaksha, Vithal J., 4,444,762, Cl. 424-180.000.
- Nelson, Robert D.: *See—*
  - Nelson, Ronald W.; and Nelson, Robert D., 4,444,656, Cl. 209-347.000.
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- Neste Oy: *See—*
  - Kallio, Tapio; Korhonen, Tauno; Leiviska, Veikko; Pulkkinen, Jorma; and Salo, Kalevi, 4,444,529, Cl. 405-259.000.
- Netzer, Yishay, to Honeywell Inc. Electronic image stabilization system. 4,445,140, Cl. 358-222.000.
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- Newkirk, Mark C., to Paul Technology Corporation. Profile control for shear mechanism. 4,444,079, Cl. 83-600.000.
- Newman, James T., to Canmaster, Inc. Can crushing machine. 4,444,100, Cl. 100-157.000.
- Newton, Charles. Picture-hanging template. 4,443,949, Cl. 33-180.00R.
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  - Tasto, Manfred; Kuhn, Michael; Piotrowski, Herbert; Tomaschewski, Horst; Geppert, Rudolf; and Ney, Hermann, 4,445,229, Cl. 381-110.000.
- Ney, Ronald P., Sr., to Carpenter Technology Corporation. Free machining, cold formable austenitic stainless steel. 4,444,588, Cl. 75-125.000.
- NGK Insulators, Ltd.: *See—*
  - Matsuzawa, Soichiro; and Mase, Syunzo, 4,444,615, Cl. 156-603.000.
- NHK Spring Co., Ltd.: *See—*
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- Nicholson, Harold: *See—*
  - Feinberg, Stewart; and Nicholson, Harold, 4,444,952, Cl. 525-93.000.
- Nico-Pyrotechnik Hanns-Juergen Diederichs KG: *See—*
  - Luebbers, Willi, 4,444,111, Cl. 102-360.000.
- Niedospial, John J.: *See—*
  - Best, David E.; and Niedospial, John J., 4,444,484, Cl. 354-276.000.
- Nielsen, Carl P., to Burns, Philp & Company, Ltd. Dispensing unit. 4,444,336, Cl. 222-129.400.
- Niemeyer, Remmelt C., to Verosol B.V. Cord locking device for a sun-blind or the like. 4,443,915, Cl. 24-132.00R.
- Nierth, Alfred: *See—*
  - Konigshofen, Heinrich; Bruck, Dieter W.; Nierth, Alfred; Zlokarnik, Marko; and Uhlmann, Hans-Jorg, 4,444,739, Cl. 423-371.000.
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- Nihon Medi-Physics Co., Ltd.: *See—*
  - Yokoyama, Akira; Tanaka, Hisashi; Yamada, Akira; and Arano, Yasushi, 4,444,743, Cl. 424-1.100.
- Nilsson, Anders H.: *See—*
  - Karden, Karl G.; and Nilsson, Anders H., 4,444,272, Cl. 173-12.000.
- Nippon Electric Co., Ltd.: *See—*
  - Nishiguchi, Yukihiro, 4,445,204, Cl. 365-194.000.
- Nippon Hoso Kyokai: *See—*
  - Nonaka, Yasuhiko; Shidara, Keiichi; and Goto, Naohiro, 4,445,131, Cl. 357-31.000.
- Nippon Kokan Kabushiki Kaisha: *See—*
  - Akita, Shinji; Hatanaka, Masayuki; and Uemura, Akira, 4,444,035, Cl. 72-100.000.
  - Noguchi, Harumi; Atago, Kazuo; Sakurai, Katsumi; and Ono, Tatsuo, 4,444,376, Cl. 266-117.000.
- Nippon Seiko Kabushiki Kaisha: *See—*
  - Ueda, Takeo, 4,444,417, Cl. 280-804.000.
- Nippon Soken, Inc.: *See—*
  - Hattori, Tadashi; Ueno, Yoshiki; Kashima, Osamu; and Shibata, Masamichi, 4,444,043, Cl. 73-35.000.
  - Kikuchi, Tetsuro, 4,444,432, Cl. 297-476.000.
- Nippon Steel Corporation: *See—*
  - Terai, Kenji; Sudo, Katsuto; and Nakamura, Yoshiki, 4,444,076, Cl. 83-316.000.
- Nippondenso Co., Ltd.: *See—*
  - Hattori, Tadashi; Ueno, Yoshiki; Kashima, Osamu; and Shibata, Masamichi, 4,444,043, Cl. 73-35.000.
  - Matsumura, Toshimi; and Omori, Norio, 4,444,168, Cl. 123-339.000.
  - Naganoma, Masanori; Maehara, Norio; Sakurai, Masao; Hashimoto, Minoru; and Usami, Kiyoshi, 4,445,109, Cl. 338-22.00R.
- Nishibu, Satoshi; Takahashi, Yasusuke; Nagamatsu, Gentaro; and Sakata, Toshibumi, to Fuji Chemicals Industrial Co., Ltd.; and Tokai University. Method of preparing a lithographic printing plate. 4,444,858, Cl. 430-49.000.
- Nishiguchi, Yukihiro, to Nippon Electric Co., Ltd. Memory device. 4,445,204, Cl. 365-194.000.
- Nishihara, Hisakatsu: *See—*
  - Konoki, Keizo; Shinohara, Takanobu; Kochi, Ikuyoshi; Shibata, Keiichi; Nishihara, Hisakatsu; Morichika, Toshiaki; Sugitani, Junichi; and Tsuchida, Koji, 4,444,731, Cl. 422-310.000.
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- Nishikawa, Mitsuru: *See—*
  - Ono, Kimizo; Nishiwaki, Yoshikazu; Tsuno, Koichi; Iwai, Tohru; and Nishikawa, Mitsuru, 4,444,462, Cl. 350-96.250.
- Nishio, Ken-ichi: *See—*
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- Nishiwaki, Yoshikazu: *See—*
  - Ono, Kimizo; Nishiwaki, Yoshikazu; Tsuno, Koichi; Iwai, Tohru; and Nishikawa, Mitsuru, 4,444,462, Cl. 350-96.250.
- Nishiyama, Hiroshi; and Nakamura, Takeshi, to Murata Manufacturing Co., Ltd. Electrode structure for a zinc oxide thin film transducer. 4,445,066, Cl. 310-364.000.
- Nissan Motor Company, Limited: *See—*
  - Hayashi, Isao, 4,444,373, Cl. 248-544.000.
  - Kumasaka, Hideyuki; Hiraoka, Motoyuki; Ishidate, Tomokazu; and Hattori, Hiroshi, 4,444,705, Cl. 264-46.500.
  - Yamaki, Kiyoshi; and Suzuki, Hidetaka, 4,444,051, Cl. 73-304.00C.
  - Yanai, Tokiyoshi, 4,444,070, Cl. 74-422.000.
  - Yoshida, Youki; and Ichikawa, Kenji, 4,444,430, Cl. 297-284.000.
- Nitschke, Werner; Schulz, Alfred; Glockler, Klaus; Baumann, Heinrich; Dilger, Peter; and Venzke, Wilfried, to Robert Bosch GmbH. Apparatus for detecting malfunction in cyclically repetitive processes in an internal combustion engine. 4,444,048, Cl. 73-117.300.
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  - Tominaga, Takashi; Ariyoshi, Toshihiko; and Asoshina, Eishi, 4,444,818, Cl. 428-36.000.
- Nixdorf Computer AG: *See—*
  - Scholich, Peter, 4,445,006, Cl. 179-170.0NC.
- Nixon, Bryan E.; Stoila, George M.; and Williams, Stephen L., to Goodyear Tire & Rubber Company, The. Method of making tires. 4,444,715, Cl. 264-501.000.
- Noble, Rudolf E. Use of tartrates in treatment of herpes. 4,444,748, Cl. 424-317.000.
- Noda, Takaaki: *See—*
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- Noe, James C.: *See—*
  - Kinsell, Robert C.; and Noe, James C., 4,444,018, Cl. 62-87.000.
  - Kinsell, Robert C.; and Noe, James C., 4,444,021, Cl. 62-95.000.
- Nogami, Sumitaka; Kitahama, Yoshiharu; and Iwami, Isamu, to Ashai Kasei Kogyo Kabushiki Kaisha. Photo sensitive article for electrophotography containing charge transfer material. 4,444,861, Cl. 430-58.000.
- Nogami, Sumitaka: *See—*
  - Yasujima, Akitaka; Nogami, Sumitaka; Kitahama, Yoshiharu; and Iwami, Isamu, 4,444,860, Cl. 430-57.000.
- Noguchi, Fumio, to Shin Meiwa Industry Co., Ltd. Articulated robot. 4,445,184, Cl. 364-513.000.
- Noguchi, Harumi; Atago, Kazuo; Sakurai, Katsumi; and Ono, Tatsuo, to Nippon Kokan Kabushiki Kaisha. Multi-pipe type quenching apparatus. 4,444,376, Cl. 266-117.000.
- Nonaka, Yasuhiko; Shidara, Keiichi; and Goto, Naohiro, to Hitachi, Ltd.; and Nippon Hoso Kyokai. Photoconductive image pick-up tube target. 4,445,131, Cl. 357-31.000.
- Norenberg, Marye S.: *See—*
  - Fogt, Eric J.; Norenberg, Marye S.; Untereker, Darrel F.; and Coury, Arthur J., 4,444,193, Cl. 128-632.000.
- Norfleet, James: *See—*
  - Barth, Jordan; and Norfleet, James, 4,444,570, Cl. 51-302.000.
- Norgate, Robert B., to Hunter Douglas Industries B.V. Manufacture of roofing or cladding tiles. 4,444,037, Cl. 72-177.000.
- Norman, William S., to National Research Development Corporation. Seal assemblies and corrugated metal packer members therefor. 4,444,400, Cl. 277-9.000.
- Norota, Susumu; Segawa, Yasuhiko; and Emi, Shingo, to Teijin Limited. Pneumatic cellular aromatic polyamide articles and process for the preparation thereof. 4,444,911, Cl. 521-82.000.
- Northern Telecom Limited: *See—*
  - Ho, Paul Y., 4,445,004, Cl. 179-99.00H.
- Notaro, Giuseppe: *See—*
  - DeFilippis, Pietro; Salvatore, Amedeo; Calenda, Ciro; and Notaro, Giuseppe, 4,445,079, Cl. 318-792.000.
- Novotny, Raymond J.; and Ihlein, Henry J., to Abex Corporation. Snubber having unitary elastic body. 4,443,957, Cl. 37-118.00R.
- Nulph, Michael L.: *See—*
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- Nunn, Timothy A.: *See—*
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- Nuttall, David A., to Kimberly-Clark Corporation. Vertically-oriented, closely-coupled, two-drum reel calender. 4,444,361, Cl. 242-65.000.
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  - Svoboda, Josef; and Oberleitner, Gerhard, 4,444,411, Cl. 280-611.000.
- O'Brien, John V.: *See—*
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- Occidental Chemical Corporation: *See—*
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  - Salee, Gideon; and Rosenfeld, Jerold C., 4,444,960, Cl. 525-534.000.

- Occidental Oil Shale, Inc.: *See—*
  - Ricketts, Thomas E., 4,444,433, Cl. 299-2.000.
- Occidental Research Corporation: *See—*
  - Shen, Jian C., 4,444,256, Cl. 166-259.000.
- Ochiai, Yoshitaka: *See—*
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- Oda, Yoshio; Otouma, Hiroshi; and Endoh, Eiji, to Asahi Glass Company Ltd. Electrode. 4,444,641, Cl. 204-286.000.
- Odawara, Yooji: *See—*
  - Shimizu, Norio; Yamaguchi, Tetsuo; Saitou, Setsuo; Ueno, Masao; and Odawara, Yooji, 4,444,882, Cl. 435-29.000.
- Oddenino, Manrico, to ITW Fastex Italia, S.p.A. Plastic snap-hook. 4,443,917, Cl. 24-239.000.
- Odell, Robert, to Becton, Dickinson and Company. Segmented multiproduct package assembly. 4,444,310, Cl. 206-366.000.
- Oden, Arlo L.: *See—*
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- Ogawa, Akira: *See—*
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- Ogawa, Kazuo: *See—*
  - Hayashi, Masumi; Ogawa, Kazuo; Kimura, Katsumi; Ishii, Hiroshi; and Bandai, Satoshi, 4,444,709, Cl. 264-174.000.
- Ogawa, Masasi; Ishigaki, Kunio; and Hori, Kiyotaka, to Fuji Photo Film Co., Ltd. Method of hardening gelatin and photographic materials produced thereby. 4,444,926, Cl. 524-23.000.
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  - Fujisaki, Iwao; Kosuge, Shuichi; Ogawa, Syuu; Sato, Kimihiko; and Soeda, Toshimi, 4,444,200, Cl. 128-706.000.
- Ogawa, Toshio: *See—*
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- Ogihara, Masuo; Shinozaki, Nobuo; Ishikawa, Tadashi; and Seki, Yoichi, to Seiko Koki Kabushiki Kaisha. Mode switching device in an electronic timepiece. 4,444,511, Cl. 368-69.000.
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- O'Hara, James B. Method of producing printed circuits. 4,444,619, Cl. 156-645.000.
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  - Saikawa, Isamu; Yasuda, Takashi; Murakami, Shohachi; Maeda, Toyoo; Yotsuji, Akira; Takahata, Masahiro; Tsuda, Hisatsugu; Mikami, Hidetada; Sakai, Hiroshi; and Ohashi, Toshinori, 4,444,753, Cl. 424-98.000.
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  - Sekiya, Mutuo; Tanaka, Hideharu; Uchikawa, Fusaoki; and Ohata, Yasufumi, 4,444,288, Cl. 181-258.000.
- Ohdan, Kyoji; Hogami, Toshihiko; and Fujinaga, Masataka, to Ube Industries, Ltd. Methacrylic acid production catalyst. 4,444,907, Cl. 502-211.000.
- Ohkata, Ichizo, to Kato Hatsujo Kaisha, Ltd. Resilient supporting member for exhaust gas catalytic converter. 4,444,721, Cl. 422-179.000.
- Ohkawa, Shinichi: *See—*
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- Ohmori, Takashi: *See—*
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  - Moriguchi, Haruhiko; and Ohmori, Takashi, 4,444,833, Cl. 346-204.000.
- Ohniwa, Kohichi: *See—*
  - Maruyama, Hisaichi; and Ohniwa, Kohichi, 4,444,134, Cl. 112-121.120.
- Ohtake, Yoshichi: *See—*
  - Shinozaki, Takashi; Ohtake, Yoshichi; and Ono, Shinsuke, 4,445,136, Cl. 358-55.000.
- Okado, Chihiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Inverter system. 4,445,167, Cl. 363-56.000.
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- Okihara, Daijiro: *See—*
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- Okon, David L.: *See—*
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- Oku, Takuya: *See—*
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- Okuda, Suichiro: *See—*
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- Okugawa, Yasutoshi: *See—*
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- Okunaka, Masaaki: *See—*
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- Okuno Chemical Industry Co., Ltd.: *See—*
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- Okuzawa, Yasutoshi: *See—*
  - Yamaguchi, Nobutaka; Tsuji, Nobuo; Okuzawa, Yasutoshi; Nasu, Norio; and Fujiyama, Masaaki, 4,444,842, Cl. 428-340.000.
- Olin Corporation: *See—*
  - Casberg, John M., 4,444,316, Cl. 206-524.400.
  - Olson, Richard H., 4,444,088, Cl. 89-25.000.
- Oliver, Bernard M.: *See—*
  - Kelly, John; Kuo, Huei P.; Oliver, Bernard M.; Foster, Jack D.; and Haase, Wayne C., 4,445,041, Cl. 250-505.100.
- Oliver, John P. Method of manufacturing a gate valve body. 4,443,920, Cl. 29-157.10R.
- Olivier, Michel: *See—*
  - Allegre, Jean; and Olivier, Michel, 4,445,046, Cl. 290-52.000.
- Olsen, David B.: *See—*
  - Franck, Gerald R.; and Olsen, David B., 4,444,247, Cl. 165-119.000.
- Olson, Eric V.: *See—*
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- Olson, Richard H., to Olin Corporation. Auto-fire assembly for industrial shotgun. 4,444,088, Cl. 89-25.000.
- Olympus Optical Co., Ltd.: *See—*
  - Masakawa, Yoshihiko, 4,444,807, Cl. 427-129.000.
  - Mimura, Yoshiyuki, 4,444,859, Cl. 430-54.000.
  - Mizokami, Kazunori, 4,444,481, Cl. 354-401.000.
  - Nakajima, Yukio, 4,444,483, Cl. 354.1-128.000.
  - Sakagami, Toshio, 4,444,598, Cl. 134-22.120.
  - Yamamoto, Kimiaki; and Ito, Kenichi, 4,445,208, Cl. 369-44.000.
- Omac, Inc.: *See—*
  - Heuberger, Lawrence K., 4,444,365, Cl. 244-48.000.
- OMI International Corporation: *See—*
  - Martin, Sylvia, 4,444,629, Cl. 204-43.00Z.
- Omnimax Energy Corporation: *See—*
  - Beale, Harry A., 4,444,991, Cl. 136-225.000.
- Omori, Norio: *See—*
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- Ono, Kimizo; Nishiwaki, Yoshikazu; Tsuno, Koichi; Iwai, Tohru; and Nishikawa, Mitsuru, to Sumitomo Electric Industries, Ltd. Picture image observation system. 4,444,462, Cl. 350-96.250.
- Ono, Shigetoshi: *See—*
  - Sakai, Takeo; Tanaka, Mitsugu; Ono, Shigetoshi; Suzuki, Seiji; and Suzuki, Hirohisa, 4,444,866, Cl. 430-220.000.
- Ono, Shinsuke: *See—*
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  - South, Aubrey, Jr., 4,444,921, Cl. 523-200.000.
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Lynch, M. Dee; and Bernklau, James W., 4,444,357, Cl. 236-12.120.
Queen's University at Kingston: *See—*
Bryant, John T.; Ashworth, Michael; and Saunders, Gerald, 4,444,204, Cl. 128-781.000.
Wevers, Henk S.; Sorbie, Charles; and Saunders, Gerald A. B., 4,444,181, Cl. 128-92.00D.
Qume Corporation: *See—*
Berry, Jack, 4,444,385, Cl. 271-22.000.
R.S.D. Investments Inc. DBA Proto: *See—*
Richardson, Robert S., 4,444,074, Cl. 82-4.00R.
Rabito, Thomas G., to Goodyear Tire & Rubber Company, The. Sag resistant two component adhesive and sealant. 4,444,976, Cl. 528-60.000.
Rader, Charles G.: *See—*
Bommaraju, Tilak V.; and Rader, Charles G., 4,444,631, Cl. 204-95.000.
Raduazzo, Patrick F.: *See—*
Baker, Charles C.; Banks, Perry S.; and Raduazzo, Patrick F., 4,444,531, Cl. 406-88.000.
Raduechel, Bernd: *See—*
Skuballa, Werner; Raduechel, Bernd; Vorbrueggen, Helmut; Elger, Walter; Loge, Olaf; and Schillinger, Ekkehard, 4,444,788, Cl. 424-305.000.
Ragen, Peter D. Hanger assembly. 4,444,371, Cl. 248-225.310.
Raimondi, Adalberto: *See—*
Scodino, Ambrogio; and Raimondi, Adalberto, 4,444,528, Cl. 405-173.000.
Raineri, Giuseppe, to Pietro Laverda S.p.A. Combine harvester. 4,444,208, Cl. 130-27.00R.
Rajadhyaksha, Vithal J., to Nelson Research & Development Company. Vehicle composition containing 1-substituted azacyclopentan-2-ones. 4,444,762, Cl. 424-180.000.
Randolph, Joe G. Plant dauber. 4,443,970, Cl. 47-1.500.
Rankin, Fred P.; and Goins, Buren L., to A. B. Carter, Inc. Hand-held traversable yarn splicer. 4,444,004, Cl. 57-22.000.
Rasmussen, Robert R. Door, window, and partition casing arrangement for dry wall partitions. 4,443,984, Cl. 52-213.000.
Rathburn, Lloyd C. Slip assembly for hydraulic pipe testing. 4,444,254, Cl. 166-216.000.
Rathmann, Klaus: *See—*
Stier, Bernhard; and Rathmann, Klaus, 4,444,032, Cl. 70-264.000.
Ratier-Figeac: *See—*
Gaiani, Robert, 4,443,977, Cl. 51-146.000.
Ratigan, Joe L., to United States of America, Energy. Method and apparatus for determining tensile strength. 4,444,058, Cl. 73-834.000.
Rau, Robert B., to PPG Industries, Inc. Method of and device for fabricating vision panels. 4,444,809, Cl. 427-163.000.
Ray, Frank L., to Wilson, Gretchen L. Seed planting machine. 4,444,130, Cl. 111-1.000.
Raychem Corporation: *See—*
Richards, James A.; and Dieck, Ronald L., 4,444,816, Cl. 428-36.000.
Walker, Jack M., 4,445,026, Cl. 219-553.000.
Raytheon Company: *See—*
Works, George A., 4,445,119, Cl. 343-377.000.
RCA Corporation: *See—*
Datta, Pabitra; and Poliniak, Eugene S., 4,444,820, Cl. 428-64.000.
Dixon, Earl, 4,445,099, Cl. 333-24.100.
Redder, Manfred; Grundken, Dieter; and Behm, Volker, to Gewerkschaft Eisenhutte Westfalia. Scraper chain conveyor channel section. 4,444,304, Cl. 198-735.000.
Reed, Eldridge J. Split wheel assembler/disassembler tool. 4,444,237, Cl. 157-1.200.
Reed Lignin, Inc.: *See—*
Lin, Stephen Y., 4,444,562, Cl. 8-528.000.
Reed Rock Bit Company: *See—*
Schumacher, Percy W., Jr.; Jones, Kenneth W.; Murdoch, Henry W.; and Pastusek, Paul E., 4,444,281, Cl. 175-336.000.
Reedy, Wayne R.: *See—*
Briccetti, Mario F.; and Reedy, Wayne R., 4,444,017, Cl. 62-84.000.
Reese, Alma C., executrix: *See—*
Reese, Thurston F., deceased; Reese, Alma C., executrix; and Reese, John F., executor, 4,444,378, Cl. 266-237.000.
Reese, John F., executor: *See—*
Reese, Thurston F., deceased; Reese, Alma C., executrix; and Reese, John F., executor, 4,444,378, Cl. 266-237.000.
Reese, Thurston F., deceased; by Reese, Alma C., executrix; and by Reese, John F., executor. Apparatus for separating slag from a molten metal. 4,444,378, Cl. 266-237.000.
Reeves, Richard. Internal geometry tool. 4,443,948, Cl. 33-178.00E.
Reichert, Gilbert A.: *See—*
Graninger, Frank J.; and Reichert, Gilbert A., 4,445,013, Cl. 200-77.000.
Reifschneider, Walter; and Larson, Larry L., to Dow Chemical Company, The. Phosphorus esters of alkylcycloalkyl-5-pyrimidinols and control of corn rootworm and western spotted cucumber beetle with them. 4,444,764, Cl. 424-200.000.
Reimbert, Andre . Vessel for the storage of powdered or granular products. 4,444,338, Cl. 222-149.000.
Reinartz, Hans-Dieter; Vatter, Waldemar; and Hinze, Peter, to ITT Industries, Inc. Compensating brake fluid reservoir. 4,444,052, Cl. 73-308.000.
Reinsch, Arnold Otto W. Flash jet coolant circulation system. 4,444,246, Cl. 165-104.220.
Reiss, Morton M. Golf club. 4,444,395, Cl. 273-171.000.
Remeyer, Willijan P. Hydrotherapy tank. 4,443,900, Cl. 4-492.000.
Remington, Richard C., to Presto Lock, Inc. Combination lock with anti-pick feature. 4,444,029, Cl. 70-25.000.
Renders, Gerard; Denis, Jean-Pierre; and Gryglewicz, Lucien, to Colgate-Palmolive Company. Detergent dispenser. 4,444,730, Cl. 422-264.000.
Renishaw Electrical Limited: *See—*
McMurtry, David R., 4,443,946, Cl. 33-174.00L.
Renner Manufacturing Company: *See—*
Voelz, Richard F., 4,444,287, Cl. 180-252.000.
Renner, Theodor: *See—*
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Renner, Ulrich; and Jaeggi, Knut A., to Ciba-Geigy Corporation. Pyrimido[1,6-a]indoles, pharmaceutical preparations containing them, and methods of treating pain and inflammation with them. 4,444,768, Cl. 424-246.000.
Repetto, Silvio, to S.p.A. Luigi Rizzi & C. Machine for splitting skins. 4,444,028, Cl. 69-13.000.
Research Corporation: *See—*
Strausser, Helen R., 4,444,757, Cl. 424-177.000.
Research Technology Canberra Pty. Ltd.: *See—*
Carden, Peter O., 4,445,024, Cl. 219-390.000.
Resonant Technology Company: *See—*
Gurries, Raymond A., 4,444,434, Cl. 299-14.000.
Retzer, Michael H.: *See—*
Jasper, Steven C.; Janc, Robert V.; Robins, David S.; and Retzer, Michael H., 4,445,223, Cl. 375-96.000.
Revett, Lowell W., to Halliburton Company. Freepoint indicator. 4,444,050, Cl. 73-151.000.
Rex Industries Co., Ltd.: *See—*
Maruyama, Masaaki, 4,443,943, Cl. 30-94.000.
Reynolds, Alastair S.; and Young, Ivan R. Method and apparatus for measuring the frequency response of an element or elements in a digital transmission path. 4,445,221, Cl. 375-10.000.
Reynolds, Christopher C.; Claire, Earl J.; and Ellis, John R., to Harris Corporation. Method of controlling message transmission sequence in multi station communication system. 4,445,214, Cl. 370-94.000.
Reynolds, Howard S. Convection heated secondary oven. 4,444,175, Cl. 126-21.00R.
Rheinmetall GmbH: *See—*
Bisping, Bernhard; Romer, Rudolf; Gerbach, Klaus; and Wallow, Peter, 4,444,114, Cl. 102-430.000.
Hagedorn, Klaus, 4,444,712, Cl. 264-267.000.
Romer, Rudolf; Winkelmann, Jurgen; and Sabinski, Horst, 4,444,115, Cl. 102-431.000.
Rias, Jean-Claude, to Isover Saint-Gobain. Multi-roll package of compressible materials. 4,444,311, Cl. 206-391.000.
Rice, Doris M.; Dominguez, Richard J. G.; and Lloyd, Rodney F., to Texaco Inc. Reaction injection molded elastomers made using a polyurethane organometallic catalyst amine terminated polyethers amine terminated chain extender and aromatic polyisocyanate. 4,444,910, Cl. 521-51.000.
Rice, Doris M.: *See—*
Dominguez, Richard J. G.; and Rice, Doris M., 4,444,703, Cl. 264-45.300.
Richards, James A.; and Dieck, Ronald L., to Raychem Corporation. Radiation cross-linking of polyamides. 4,444,816, Cl. 428-36.000.
Richardson Chemical Company: *See—*
Greene, Joseph L., 4,444,601, Cl. 148-31.500.
Steinecker, Carl, 4,444,630, Cl. 204-55.00R.
Richardson, Donald A.: *See—*
Propst, Paul L.; Gzym, Larry P.; Murrel, Ralph; Richardson, Donald A.; and Hinrichs, Carl B., 4,443,986, Cl. 52-239.000.
Richardson, Robert S., to R.S.D. Investments Inc. DBA Proto. Method and apparatus for resurfacing steel tires. 4,444,074, Cl. 82-4.00R.
Richert, Manfred; and Jungkind, Roland, to Marker-Patentverwertungsgesellschaft mbH. Heelholder for safety ski bindings. 4,444,413, Cl. 280-632.000.
Rickard, Bruce W.; and Fisher, Bernard, to United Systems Corporation. Print medium advancing mechanism including print head retraction. 4,444,521, Cl. 400-120.000.
Ricketts, Thomas E., to Occidental Oil Shale, Inc. Method for forming an in situ oil shale retort in differing grades of oil shale. 4,444,433, Cl. 299-2.000.
Ricoh Co., Ltd.: *See—*
Fujii, Tadashi; and Yamaguchi, Tomoyuki, 4,445,124, Cl. 346-75.000.
Fujimoto, Sakae; and Hatsuno, Masahiro, 4,445,153, Cl. 360-77.000.
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Kubo, Keishi; and Shoshi, Masayuki, 4,444,844, Cl. 346-208.000.
Maruta, Keiichi; and Yuyama, Yukihiro, 4,444,819, Cl. 346-209.000.
Rider, Billie F., to Rockwell International Corporation. Sensor assembly for strapped-down attitude and heading reference system. 4,444,053, Cl. 73-504.000.
Riedhammer, Thomas M.: *See—*
Mandt, Lawrence D.; Riedhammer, Thomas M.; and Smith, Francis X., 4,444,785, Cl. 424-291.000.
Rikagaku Kenkyusho: *See—*
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Riley, Kenneth E.; and Micek, Carl, to Saginaw Machine Systems, Inc. Methods and apparatus for machining crankshafts. 4,444,533, Cl. 409-132.000.

Riley, Leon H. Layered semiconductor laser. 4,445,219, Cl. 372-50.000.
Rinehart, Stephen A.; Britt, James E.; Laskowski, Kenneth W.; Sisson, Jeffrey L.; and Buddendeck, Gerald A., to Xerox Corporation. Very high speed duplicator with finishing function. 4,444,491, Cl. 355-50.000.
Rippelmeyer, Dennis M.: *See—*
Mueller, Carl J.; Brown, Bernard T.; Rippelmeyer, Dennis M.; and Haefner, John S., 4,444,551, Cl. 431-25.000.
Ristvedt-Johnson, Inc.: *See—*
Ristvedt, Victor G.; and Johnson, Roy B., 4,444,212, Cl. 133-3.00A.
Ristvedt, Victor G.; and Johnson, Roy B., to Ristvedt-Johnson, Inc. Coin handling machine. 4,444,212, Cl. 133-3.00A.
Ritter, Gerhard: *See—*
Gott, Hans; Ritter, Josef; Ritter, Klaus; and Ritter, Gerhard, 4,444,227, Cl. 140-105.000.
Ritter, Josef: *See—*
Gott, Hans; Ritter, Josef; Ritter, Klaus; and Ritter, Gerhard, 4,444,227, Cl. 140-105.000.
Ritter, Klaus: *See—*
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Liu, Chia-Tsun; Demczyk, Brian G.; and Rittko, Irvin R., 4,444,852, Cl. 429-29.000.
Rittscher, Dieter: *See—*
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Bisagni, Emile; Ducrocq, Claire; Rivalle, Christian; Tambourin, Pierre; Wendling, Francoise; Chermann, Jean-Claude; and Montagnier, Luc, 4,444,776, Cl. 424-258.000.
Rivier, Jean E. F.; and Penke, Botond, to Salk Institute for Biological Studies, The. Method of sulfation. 4,444,682, Cl. 260-112.50R.
Rivier, Jean E. F.; and Vale, Wylie W., Jr., to Salk Institute for Biological Studies, The. GnRH Antagonists II. 4,444,759, Cl. 424-177.000.
Roberge, Gerald; and Bolduc, Leonard, to Hydro Quebec. Variable ratio transformer and static balance compensator. 4,445,082, Cl. 323-206.000.
Robert Bosch GmbH: *See—*
Bonitz, Jorg; Entenmann, Robert; Knab, Rochus; Rohde, Siegfried; and Schramm, Herbert, 4,444,042, Cl. 73-35.000.
Corbach, Rainer; and Zimmermann, Kurt, 4,445,059, Cl. 310-154.000.
Heitmann, Jurgen; and Maly, Hans-Peter, 4,445,135, Cl. 358-19.000.
Hofer, Gerald, 4,444,170, Cl. 123-382.000.
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Nitschke, Werner; Schulz, Alfred; Glockler, Klaus; Baumann, Heinrich; Dilger, Peter; and Venzke, Wilfried, 4,444,048, Cl. 73-117.300.
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Sellmaier, Franz; Boning, Bernward; Nagel, Rudolf; and Bone, Rainer, 4,444,172, Cl. 123-425.000.
Roberts, Charles W.: *See—*
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Roberts, Harold A.: *See—*
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Roberts, Roger G.: *See—*
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Robertson, Allen R.: *See—*
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Robertson, Thomas A., to Plastics Maritime Ltd. End caps for telephone cables and method for hermetically sealing a cable end. 4,444,996, Cl. 174-74.00A.
Robicsek, Francis, to Cordis Corporation. Method of anchoring a temporary cardiac pacing lead. 4,444,207, Cl. 128-785.000.
Robins, David S.: *See—*
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Rocca, Cosmo M. D.; and Tyler, Daniel W., to Bell Telephone Laboratories, Incorporated. Snap-together housing. 4,445,008, Cl. 179-179.000.
Rocchetti, Frankie. Rotatable drilling head. 4,444,278, Cl. 175-108.000.
Roche, Joseph R.; and Clark, William L., to Hydril Company. Flow diverter seal with respective oblong and circular openings. 4,444,401, Cl. 277-30.000.
Roche, Joseph R.: *See—*
Keithahn, Julian D.; Morrill, Charles D.; and Roche, Joseph R., 4,444,250, Cl. 166-84.000.
Rockwell International Corporation: *See—*
McCollum, Patrick E.; and McFall, William A., 4,445,183, Cl. 364-483.000.
Miller, Frank H.; and Hull, David V., 4,444,575, Cl. 55-316.000.
Rider, Billie F., 4,444,053, Cl. 73-504.000.
Whitcomb, Eugene C., 4,444,617, Cl. 156-643.000.
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Ford, John W., Jr.; Rogers, Howard G.; and Thomas, Christy P., 4,444,471, Cl. 350-423.000.
Rogers, Steven H.: *See—*
Hwang, Thomas J.; Rogers, Steven H.; and Coe, Mary E. B., 4,443,930, Cl. 29-571.000.
Rohde, Siegfried: *See—*
Bonitz, Jorg; Entenmann, Robert; Knab, Rochus; Rohde, Siegfried; and Schramm, Herbert, 4,444,042, Cl. 73-35.000.
Rolls-Royce Limited: *See—*
Cantwell, Hugh F., 4,444,008, Cl. 60-39.281.
Ferrari, Gregory P., 4,444,804, Cl. 427-34.000.
Rolm Corporation: *See—*
Graham, Martin H., 4,445,048, Cl. 307-42.000.
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Arkharov, Alexei M.; Desyatov, Alexandr T.; Bondarenko, Vitaly L.; Pronko, Vladimir G., deceased; Pronko, Natalia D., heir; Krakovsky, Boris D.; Korsakov-Bogatkov, Sergei M.; Jushin, Viktor P.; Kopova, Alexandra M.; Gorodnov, Petr V.; Borisov, Julian Y.; Ermilov, Vadim V.; and Romanteev, Jury P., 4,444,019, Cl. 62-87.000.
Romer, Rudolf; Winkelmann, Jurgen; and Sabinski, Horst, to Rheinmetall GmbH. Cartridge-type munition having a destructible or partially combustible casing. 4,444,115, Cl. 102-431.000.
Romer, Rudolf: *See—*
Bisping, Bernhard; Romer, Rudolf; Gerbach, Klaus; and Wallow, Peter, 4,444,114, Cl. 102-430.000.
Romo, Edgar A., to ITT Corporation. Temperature compensated circuit. 4,444,056, Cl. 73-708.000.
Rosen, Roy A.: *See—*
Wood, William E.; and Rosen, Roy A., 4,444,335, Cl. 222-43.000.
Rosenfeld, Jerold C.: *See—*
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Rosenthal, David A., to United States of America, Navy. Radiosonde. 4,445,120, Cl. 343-462.000.
Rosenthale, Marvin E.: *See—*
Capetola, Robert J.; and Rosenthale, Marvin E., 4,444,780, Cl. 424-267.000.
Ross, Charles W., to General Signal Corporation. Unit controller for multiple-unit dispatch control. 4,445,045, Cl. 290-40.00B.
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Tucker, Hartwell F.; Tucker, Jeffrey R.; Ross, Dennis; and Knirck, Jeffrey G., 4,443,906, Cl. 15-50.00R.
Ross, Gunther: *See—*
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Rotork Controls Limited: *See—*
Fry, Jeremy J., 4,445,075, Cl. 318-434.000.
Rouet, Jean M. Cosmetic compositions for the hair. 4,444,749, Cl. 424-70.000.
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Torelli, Vesperto; Benzoni, Josette; and Deraedt, Roger, 4,444,767, Cl. 424-238.000.
Rowland, Donald G.; and Heck, Rhomie L., III, to Uniroyal, Inc. Blowing agent compositions. 4,444,679, Cl. 252-350.000.
Rowley, Robert L., to United Technologies Corporation. Locking of rotor blades on a rotor disk. 4,444,544, Cl. 416-221.000.
Rubin, Howard; and Weinerman, Brent. Breathing exerciser. 4,444,202, Cl. 128-725.000.
Rubin, Lawrence M.: *See—*
Bilane, Glenn B.; Rubin, Lawrence M.; Soffa, Albert; and Vilenski, Dan, 4,444,349, Cl. 228-102.000.
Ruby, Glenn E. Torque control system for catheads. 4,444,273, Cl. 173-12.000.
Rudgard, Ingemar, to ASEA Aktiebolag. Display control unit having means for symbolic representation of graphical symbols. 4,445,115, Cl. 340-745.000.
Rudolph, Otfried: *See—*
Frenzel, Werner; Naumann, Johannes; Rudolph, Otfried; Peter, Gunter; Fischer, Karlheinz; Schott, Alfred; and Tappert, Hans-Jurgen, 4,444,106, Cl. 101-183.000.
Ruf, Wolfgang: *See—*
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Ruhle, Walter; and Zimmerman, Kurt, to Robert Bosch GmbH. Electric starter motor with holder for permanent magnets. 4,445,060, Cl. 310-154.000.
Ruler, Jack: *See—*
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Rutgerswerke Aktiengesellschaft: *See—*
Glaser, Herbert; Koch, Karl-Heinz; Marrett, Rolf; and Meinbreckse, Manfred, 4,444,650, Cl. 208-106.000.
Ryan, Carl R., to Motorola Inc. SMSK And MSK demodulator. 4,445,094, Cl. 329-50.000.
Ryan, James M.; and O'Brien, John V., to Koch Process Systems, Inc. Energy-saving distillative separation using low-temperature heat input. 4,444,576, Cl. 62-20.000.
Ryu, Ji-Yong, to Exxon Research & Engineering Co. Process for synthesizing a multicomponent acidic catalyst composition containing zirconium by an organic solution method. 4,444,904, Cl. 502-208.000.
S.A.R.L. Eroa Holding: *See—*
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S&C Electric Company: *See—*
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S. C. Johnson & Son, Inc.: *See—*
Jacobson, Norman A.; and Yoho, Clayton W., 4,444,745, Cl. 424-45.000.
Sabelus, Gunther: *See—*
Kempter, Fritz E.; Schupp, Eberhard; and Sabelus, Gunther, 4,444,942, Cl. 524-596.000.
Sabinski, Horst: *See—*
Romer, Rudolf; Winkelmann, Jurgen; and Sabinski, Horst, 4,444,115, Cl. 102-431.000.

Sach, George S., to Smith Kline & French Laboratories Limited. Histamine H_1-antagonists. 4,444,772, Cl. 424-251.000.

Sacks, William: *See—*

Bollen, P. Stuart; Degrassi, Alfieri; and Sacks, William, 4,444,829, Cl. 428-220.000.

Sadamasa, Tetsuo: *See—*

Ichikawa, Osamu; and Sadamasa, Tetsuo, 4,445,132, Cl. 357-32.000.

Sado, Ichiro, to Canon Kabushiki Kaisha. Electronic apparatus. 4,445,027, Cl. 235-430.000.

Sagehashi, Risaburo: *See—*

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Saginaw Machine Systems, Inc.: *See—*

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Saia, Richard J.; and Gorowitz, Bernard, to General Electric Company. Processes and gas mixtures for the reactive ion etching of aluminum and aluminum alloys. 4,444,618, Cl. 156-643.000.

Saikawa, Isamu; Yasuda, Takashi; Murakami, Shohachi; Maeda, Toyoo; Yotsuji, Akira; Takahata, Masahiro; Tsuda, Hisatsugu; Mikami, Hidetada; Sakai, Hiroshi; and Ohashi, Toshinori, to Toyama Chemical Company, Ltd. Pharmaceutical composition comprising extract from poison pouch contents of bee. 4,444,753, Cl. 424-98.000.

St. Clair, David J., to Shell Oil Company. Assymetric block copolymers and corresponding adhesive formulations. 4,444,953, Cl. 525-98.000.

St. Clair, Terry L.; and Burks, Harold D., to United States of America, National Aeronautics and Space Administration. Polyphenylene ethers with imide linking groups. 4,444,979, Cl. 528-172.000.

Saipem, S.p.A.: *See—*

Scodino, Ambrogio; and Raimondi, Adalberto, 4,444,528, Cl. 405-173.000.

Saitou, Norio: *See—*

Iwasaki, Teruo; Saitou, Norio; and Yanagisawa, Akira, 4,445,040, Cl. 250-452.200.

Saitou, Setsuo: *See—*

Shimizu, Norio; Yamaguchi, Tetsuo; Saitou, Setsuo; Ueno, Masao; and Odawara, Yooji, 4,444,882, Cl. 435-29.000.

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Sakagami, Toshio, to Olympus Optical Company Limited. Method for washing reaction tube. 4,444,598, Cl. 134-22.120.

Sakaguchi, Hirofumi: *See—*

Fujii, Yozo; Murakami, Kazuo; and Sakaguchi, Hirofumi, 4,444,488, Cl. 355-11.000.

Sakai, Hiroshi: *See—*

Saikawa, Isamu; Yasuda, Takashi; Murakami, Shohachi; Maeda, Toyoo; Yotsuji, Akira; Takahata, Masahiro; Tsuda, Hisatsugu; Mikami, Hidetada; Sakai, Hiroshi; and Ohashi, Toshinori, 4,444,753, Cl. 424-98.000.

Sakai, Seiichi; Gange, Toshihiko; Sugawara, Katuo; Tsukioka, Hideo; Tani, Ictitaro; Shiono, Shigeo; and Mori, Etsunori, to Hitachi, Ltd.; and Shikoku Electric Power Company, Inc. Method and apparatus for detecting gas components in oil in oil-filled device. 4,444,040, Cl. 73-19.000.

Sakai, Takeo; Tanaka, Mitsugu; Ono, Shigetoshi; Suzuki, Seiji; and Suzuki, Hirohisa, to Fuji Photo Film Co., Ltd. Photographic light-sensitive material with forced oxidized carbon black. 4,444,866, Cl. 430-220.000.

Sakakibara, Yosuke; Kasai, Takao; and Takasugi, Tsuneji, to Citizen Watch Co., Ltd. Gold solders. 4,444,719, Cl. 420-511.000.

Sakamoto, Hitoshi; and Okihara, Daijiro, to Sony Corporation. Digital tracking control system for video tape reproducing apparatus. 4,445,146, Cl. 360-10.300.

Sakano, Hajime; Ito, Akitoshi; Yano, Motoichi; and Honda, Yasuhiro, to Sumitomo Naugatuck Co., Ltd. Thermoplastic resin composition. 4,444,950, Cl. 525-67.000.

Sakashita, Tatsuo: *See—*

Kan, Masanori; Okazaki, Takuya; and Sakashita, Tatsuo, 4,444,236, Cl. 152-209.00R.

Sakata, Hiromi: *See—*

Koyama, Shigeo; Yamagata, Ryutaro; Kozuka, Nobuhiko; and Sakata, Hiromi, 4,444,494, Cl. 355-75.000.

Sakata, Toshibumi: *See—*

Nishibu, Satoshi; Takahashi, Yasusuke; Nagamatsu, Gentaro; and Sakata, Toshibumi, 4,444,858, Cl. 430-49.000.

Sakurai, Katsumi: *See—*

Noguchi, Harumi; Atago, Kazuo; Sakurai, Katsumi; and Ono, Tatsuo, 4,444,376, Cl. 266-117.000.

Sakurai, Masao: *See—*

Naganoma, Masanori; Maehara, Norio; Sakurai, Masao; Hashimoto, Minoru; and Usami, Kiyoshi, 4,445,109, Cl. 338-22.00R.

Salathe, Heinz; Flensberg, Hermann; and Schaetzer, Harry, to Ciba-Geigy Corporation. Process for dyeing fiber material made of natural polyamides with anionic wool dyes at pH 4.5 to 5.5 in the presence of a dyeing assistant. 4,444,564, Cl. 8-588.000.

Salee, Gideon; and Rosenfeld, Jerold C., to Occidental Chemical Corporation. Polymer blends with improved hydrolytic stability. 4,444,960, Cl. 525-534.000.

Salk Institute for Biological Studies, The: *See—*

Rivier, Jean E. F.; and Penke, Botond, 4,444,682, Cl. 260-112.50R.

Rivier, Jean E. F.; and Vale, Wylie W., Jr., 4,444,759, Cl. 424-177.000.

Salo, Kalevi: *See—*

Kallio, Tapio; Korhonen, Tauno; Leiviska, Veikko; Pulkkinen, Jorma; and Salo, Kalevi, 4,444,529, Cl. 405-259.000.

Salvatore, Amedeo: *See—*

DeFilippis, Pietro; Salvatore, Amedeo; Calenda, Ciro; and Notaro, Giuseppe, 4,445,079, Cl. 318-792.000.

Sanden Corporation: *See—*

Takahashi, Haruo; and Kimura, Shogo, 4,444,549, Cl. 417-269.000.

Sanders, David F.; Aspinwall, James R.; and Armbruster, Garry A. Pump control system. 4,444,545, Cl. 417-8.000.

Sangamo Weston Limited: *See—*

Snowden, David C.; Osborne, Joseph J.; Thomas, David E.; and Simms, David W., 4,444,063, Cl. 73-862.340.

Sano, Kenji; Kondo, Syunichi; and Sato, Hideo, to Fuji Photo Film Co., Ltd. Photoconductive composition and electrophotographic light-sensitive material using said composition. 4,444,863, Cl. 430-83.000.

Sasaki, Hiroki: *See—*

Inoue, Akihiro; Kanoh, Tadao; Kamei, Taketo; Kamiya, Akihiro; Ishigami, Toshihiko; Kohno, Akira; and Sasaki, Hiroki, 4,445,067, Cl. 313-54.000.

Sasaki, Tohru; Endoh, Hiroyuki; and Nakadai, Takeshi, to Keueha Kagaku Kogyo K.K. Extrusion laminated product. 4,444,826, Cl. 428-216.000.

Sasao, Hiroyuki: *See—*

Ueda, Yoshihiro; Sasao, Hiroyuki; Hamano, Suenobu; and Okuda, Suichiro, 4,445,020, Cl. 200-148.00A.

Sato, Hideo: *See—*

Sano, Kenji; Kondo, Syunichi; and Sato, Hideo, 4,444,863, Cl. 430-83.000.

Sato, Hiroshi, to Sumitomo Metal Mining Company Limited. Method of removing antimony from an antimony-containing copper electrolyte. 4,444,666, Cl. 210-670.000.

Sato, Kimihiko: *See—*

Fujisaki, Iwao; Kosuge, Shuichi; Ogawa, Syuu; Sato, Kimihiko; and Soeda, Toshimi, 4,444,200, Cl. 128-706.000.

Sato, Ryosuke: *See—*

Kato, Katsunori; and Sato, Ryosuke, 4,444,872, Cl. 430-384.000.

Satoh, Koji: *See—*

Nagaoka, Shinji; and Satoh, Koji, 4,445,029, Cl. 250-201.000.

Satoh, Yoshio: *See—*

Ohashi, Makoto; Komenou, Kazunari; Miyashita, Tsutomu; Matsuda, Kazuo; and Satoh, Yoshio, 4,445,200, Cl. 365-8.000.

Sattlegger, Hans: *See—*

Alberts, Heinrich; Friemann, Hans; Moretto, Hans-Heinrich; and Sattlegger, Hans, 4,444,946, Cl. 525-29.000.

Saunders, Gerald: *See—*

Bryant, John T.; Ashworth, Michael; and Saunders, Gerald, 4,444,204, Cl. 128-781.000.

Saunders, Gerald A. B.: *See—*

Wevers, Henk S.; Sorbie, Charles; and Saunders, Gerald A. B., 4,444,181, Cl. 128-92.00D.

Savell, Fred B., III: *See—*

Winters, Jonathan K.; and Savell, Fred B., III, 4,444,802, Cl. 427-27.000.

Winters, Jonathan K.; and Savell, Fred B., III, 4,444,803, Cl. 427-27.000.

Schad, Robert D., to Husky Injection Molding Systems Ltd. Method of operating a two-shot injection-molding machine. 4,444,711, Cl. 264-243.000.

Schaetzer, Harry: *See—*

Salathe, Heinz; Flensberg, Hermann; and Schaetzer, Harry, 4,444,564, Cl. 8-588.000.

Schaff, Alfred, Jr., to Ametek, Inc. Temperature compensation for diffused semiconductor strain devices. 4,444,054, Cl. 73-708.000.

Schaffhausen, John G.; and Abdul-Malek, Adel B., to Standard Oil Company (Indiana). Process for preparation of Mannich condensation product. 4,444,956, Cl. 525-164.000.

Schauenstein, K.: *See—*

Wick, Georg; Bock, Gunther; and Schauenstein, K., 4,444,317, Cl. 209-3.100.

Scheer, Harold L.; Jenkins, Tom L.; Kimmell, Robert M.; and Holloway, Michael E. Fishing aid apparatus and method. 4,445,178, Cl. 364-400.000.

Schering Aktiengesellschaft: *See—*

Skuballa, Werner; Raduechel, Bernd; Vorbrueggen, Helmut; Elger, Walter; Loge, Olaf; and Schillinger, Ekkehard, 4,444,788, Cl. 424-305.000.

Scherschlicht, Richard R.; and Tissot, Rene , to Hoffmann-La Roche Inc. Nonapeptide for treating addictive drug withdrawal conditions. 4,444,758, Cl. 424-177.000.

Scheyrer, Peter: *See—*

Breuninger, Axel; Pollmann, Richard; and Scheyrer, Peter, 4,444,849, Cl. 428-626.000.

Schiffner, Gerhard, to Siemens Aktiengesellschaft. Ring interferometer with a mode diaphragm. 4,444,503, Cl. 356-350.000.

Schillinger, Ekkehard: *See—*

Skuballa, Werner; Raduechel, Bernd; Vorbrueggen, Helmut; Elger, Walter; Loge, Olaf; and Schillinger, Ekkehard, 4,444,788, Cl. 424-305.000.

Schimmel, Gunther: *See—*

Gradl, Reinhard; and Schimmel, Gunther, 4,444,729, Cl. 422-257.000.

Schink, Karl; and Wenskus, Herbert, to International Business Machines Corporation. Process and apparatus for unsoldering solder bonded semiconductor devices. 4,444,559, Cl. 432-226.000.

Schlagel, Carl A.: *See—*

Ayer, Donald E.; and Schlagel, Carl A., 4,444,689, Cl. 260-397.450.

Schleimer, Stephen I.: *See—*

Bratt, Richard G.; Schleimer, Stephen I.; Pilat, John F.; Belgard, Richard A.; Wallach, Steven J.; Clancy, Gerald F.; Mundie, Craig J.; Bernstein, David H.; Gavrin, Edward S.; Jones, Thomas M.; and Bachman, Brett L., 4,445,177, Cl. 364-200.000.

Schlosser, Karl-Heinz: *See—*

Wehr, Hubert; Schlosser, Karl-Heinz; and Fritze, Rolf-Gunther, 4,444,097, Cl. 100-4.000.

Schlumberger Technology Corporation: *See—*

Preeg, William E.; and Scott, Hubert D., 4,445,033, Cl. 250-266.000.

Schlussler, Hans-Joachim; and Koch, Ferdinand, to Henkel KGaA. Iodine containing disinfectants. 4,444,756, Cl. 424-150.000.

Schmidt, Gottfried: *See—*

Bolldorf, Kurt; and Schmidt, Gottfried, 4,444,133, Cl. 112-103.000.

Schmidt, Jerry W., to Atlantic Richfield Company. Drain hole drilling. 4,444,265, Cl. 166-295.000.

Schmitt, Helmut: *See—*

Schurig, Helmuth; and Schmitt, Helmut, 4,444,639, Cl. 204-257.000.

Schneider, Gerhard; and Peterson, Lars G. B., to Aktiebolaget Stille-Werner. Surgical instrument for engaging a bony part of the human body and guiding a drill bit into a specific location in the bony part. 4,444,180, Cl. 128-92.0EB.

Schneider, Hartmut; and Weidinger, Friedrich, to Siemens Aktiengesellschaft. Glass fibers with transverse openings and methods of their production. 4,444,463, Cl. 350-96.330.

Scholes, Addison B.; and Dollar, David L., to Ball Corporation. Lubricated metallic substrate. 4,444,834, Cl. 428-323.000.

Scholich, Peter, to Nixdorf Computer AG. Four-wire conversion circuit for a telephone subscriber line. 4,445,006, Cl. 179-170.0NC.

Schonfelder, Manfred; and Steinberger, Helmut, to Bayer Aktiengesellschaft. Coatings for thermoplastics. 4,444,973, Cl. 528-28.000.

Schott, Alfred: *See—*

Frenzel, Werner; Naumann, Johannes; Rudolph, Otfried; Peter, Gunter; Fischer, Karlheinz; Schott, Alfred; and Tappert, Hans-Jurgen, 4,444,106, Cl. 101-183.000.

Schott Glass Technologies, Inc.: *See—*

Mader, Karl-Heinz; and Kassner, Reinhard, 4,444,893, Cl. 501-72.000.

Schott, Marcel, to Messier-Hispano-Bugatli (SA). Hydraulic pump. 4,444,092, Cl. 91-486.000.

Schott, Wayne M.: *See—*

Leiendecker, David N.; and Schott, Wayne M., 4,445,227, Cl. 381-24.000.

Schramm, Herbert: *See—*

Bonitz, Jorg; Entenmann, Robert; Knab, Rochus; Rohde, Siegfried; and Schramm, Herbert, 4,444,042, Cl. 73-35.000.

Schramm, Michael E.; and Vezirian, Edward, to Smith International, Inc. Rock bit cone retention means. 4,444,518, Cl. 384-96.000.

Schramm, Walter: *See—*

Lang, Udo; Hildebrandt, Ullrich; Schramm, Walter; and Hoerner, Berndt, 4,444,698, Cl. 261-157.000.

Schreck, Raymond M.: *See—*

Young, James R.; and Schreck, Raymond M., 4,444,821, Cl. 428-69.000.

Schubel, Winfried, to Institut Dr. Friedrich Forster Prufgeratebau. Method and arrangement for evaluating a defect signal by comparing the ratio of maximum signal rise and maximum signal magnitude to a predetermined value. 4,445,088, Cl. 324-238.000.

Schulien, Howard E.; Bendett, Raymond M.; and Lanni, Michael J., to Bendix Corporation, The. Gyroscopic apparatus. 4,443,952, Cl. 33-324.000.

Schulthess, Hans, to Keller & Co., Aktiengesellschaft. Door having a frame comprising sections glued to each other. 4,443,974, Cl. 49-505.000.

Schultz, Eddie F.: *See—*

Humphries, Curtis L.; Mathis, Melwyn L.; Schultz, Eddie F.; and Seal, Henry A., 4,444,044, Cl. 73-60.100.

Schulz, Alfred: *See—*

Nitschke, Werner; Schulz, Alfred; Glockler, Klaus; Baumann, Heinrich; Dilger, Peter; and Venzke, Wilfried, 4,444,048, Cl. 73-117.300.

Schulz, Helmut, to Grapha-Holding AG. Tool for making rows of perforations in paper webs or the like. 4,444,080, Cl. 83-660.000.

Schumacher, Percy W., Jr.; Jones, Kenneth W.; Murdoch, Henry W.; and Pastusek, Paul E., to Reed Rock Bit Company. Combination drag and roller cutter drill bit. 4,444,281, Cl. 175-336.000.

Schumacher, Peter, to Hauni-Werke Korber & Co. KG. Apparatus for reciprocating the rod guide in the cutoff of a cigarette rod making or like machine. 4,444,210, Cl. 131-84.00R.

Schupp, Eberhard: *See—*

Kempter, Fritz E.; and Schupp, Eberhard, 4,444,634, Cl. 204-181.00C.

Kempter, Fritz E.; Schupp, Eberhard; and Sabelus, Gunther, 4,444,942, Cl. 524-596.000.

Schurig, Helmuth; and Schmitt, Helmut, to UHDE GmbH. Electrolyzer. 4,444,639, Cl. 204-257.000.

Schutz, Raymond J., to Protex Industries, Inc. Rapid setting accelerators for cementitious compositions. 4,444,593, Cl. 106-89.000.

Schwall, Joseph A. Apparatus and method for purging hydrogen sulfide gases from well water. 4,444,259, Cl. 166-265.000.

Schwartz, Jeffrey; and Huang, Tai-Nang, to University Patents, Inc. Heterocatalyst system. 4,444,898, Cl. 502-62.000.

Schwartz, Robert D.; and Bodie, Elizabeth A., to Stauffer Chemical Company. Fermentation of whey to produce a thickening polymer. 4,444,792, Cl. 426-41.000.

Schwartz, Robert D.; and Bodie, Elizabeth A., to Stauffer Chemical Company. Fermentation of whey to produce a thickening agent. 4,444,793, Cl. 426-41.000.

Schwarz, Hans G., to Polyflex Schwarz GmbH & Co. Method for the manufacture of high-pressure hoses. 4,444,707, Cl. 264-103.000.

Schwarz, Rudolf; Kleinschmit, Peter; Liedtke, Christa; and Wolff, Siegfried, to Degussa Aktiengesellschaft. Bis-(silylethyl)-oligosulphides and process for their production. 4,444,936, Cl. 524-393.000.

Schwarz, Volker: *See—*

Elsasser, Claus; Ross, Gunther; and Schwarz, Volker, 4,443,951, Cl. 33-203.130.

Schwiesow, Ronald L., to United States of America, Commerce. Stabilization mechanism for optical interferometer. 4,444,501, Cl. 356-346.000.

Science Research Center, Inc.: *See—*

Foster, Terry L.; and Casey, Raymond C., 4,444,879, Cl. 435-7.000.

Scifres, Donald R.; and Streifer, William, to Xerox Corporation. Diode laser array system for printing and copying applications. 4,445,125, Cl. 346-108.000.

SCM Corporation: *See—*

Borovicka, David A., Sr.; Hahn, Kenneth G., Jr.; and Tupa, John T., 4,444,941, Cl. 524-507.000.

Scodino, Ambrogio; and Raimondi, Adalberto, to Saipem, S.p.A. Method and apparatus for recovering submerged pipeline. 4,444,528, Cl. 405-173.000.

Scopelianos, Angelo G.: *See—*

Allcock, Harry R.; and Scopelianos, Angelo G., 4,444,972, Cl. 528-6.000.

Scott, Hubert D.: *See—*

Preeg, William E.; and Scott, Hubert D., 4,445,033, Cl. 250-266.000.

Scribner, Albert W. Pneumatic feeder for punch presses. 4,444,346, Cl. 226-162.000.

Seal, Henry A.: *See—*

Humphries, Curtis L.; Mathis, Melwyn L.; Schultz, Eddie F.; and Seal, Henry A., 4,444,044, Cl. 73-60.100.

Seale, Joseph B.: *See—*

Jaeger, C. Rene; and Seale, Joseph B., 4,445,053, Cl. 307-490.000.

Sealright Co., Inc.: *See—*

MacEwen, George E., 4,444,308, Cl. 206-249.000.

Segawa, Yasuhiko: *See—*

Norota, Susumu; Segawa, Yasuhiko; and Emi, Shingo, 4,444,911, Cl. 521-82.000.

Seger, Fritz O., to Willis Division of Smith International, Inc. High pressure valve. 4,444,220, Cl. 137-312.000.

Seiko Instruments & Electronics Ltd.: *See—*

Mori, Shigeo; Murakami, Fumikazu; Hara, Yoshiaki; Horikoshi, Ichiro; and Fujita, Susumu, 4,445,113, Cl. 340-384.00R.

Seiko Koki Kabushiki Kaisha: *See—*

Nagaoka, Shinji; and Satoh, Koji, 4,445,029, Cl. 250-201.000.

Ogihara, Masuo; Shinozaki, Nobuo; Ishikawa, Tadashi; and Seki, Yoichi, 4,444,511, Cl. 368-69.000.

Seita, Yukio: *See—*

Aoyagi, Juuro; Takahara, Kazuaki; and Seita, Yukio, 4,444,716, Cl. 264-561.000.

Seitz, Max: *See—*

Blum, Rainer; Seitz, Max; and Kaczinski, Friedrich, 4,444,837, Cl. 428-332.000.

Seiverd, Paul J. Phototherapy booth. 4,444,189, Cl. 128-395.000.

Seki, Yoichi: *See—*

Ogihara, Masuo; Shinozaki, Nobuo; Ishikawa, Tadashi; and Seki, Yoichi, 4,444,511, Cl. 368-69.000.

Sekiya, Mutuo; Tanaka, Hideharu; Uchikawa, Fusaoki; and Ohata, Yasufumi, to Mitsubishi Denki Kabushiki Kaisha. Muffler for internal combustion engine. 4,444,288, Cl. 181-258.000.

Selfix, Inc.: *See—*

Chap, John P., 4,444,320, Cl. 211-134.000.

Selleri, Narciso: *See—*

Possati, Mario; Golinelli, Guido; and Selleri, Narciso, 4,443,947, Cl. 33-178.00E.

Sellmaier, Franz; Boning, Bernward; Nagel, Rudolf; and Bone, Rainer, to Robert Bosch GmbH. Internal combustion engine knock sensing system. 4,444,172, Cl. 123-425.000.

Selph, Wade E., to IRT Corporation. Solid state fast-neutron spectrometer/dosimeter and detector therefor. 4,445,036, Cl. 250-370.000.

Sennott, James W.: *See—*

Taylor, Ralph E.; and Sennott, James W., 4,445,118, Cl. 343-357.000.

Senoh Kabushiki Kaisha: *See—*

Fujisaki, Iwao; Kosuge, Shuichi; Ogawa, Syuu; Sato, Kimihiko; and Soeda, Toshimi, 4,444,200, Cl. 128-706.000.

Kaburagi, Hisashi; Hayamizu, Seiji; Negishi, Chiaki; and Ozawa, Yoshiaki, 4,444,397, Cl. 273-411.000.

Seragnoli, Enzo, to G.D Societa' per Azioni. Web guide device. 4,444,209, Cl. 131-60.000.

Serban, Alexander; and Watson, Keith G., to ICI Australia Limited. Ethyl 2[4-(7-chloroquinolin-3-yloxy)phenoxy]propionate, the N-oxide, and herbicidal compositions and methods employing them. 4,444,584, Cl. 71-94.000.

Serbent, Harry: *See—*

Beisswenger, Hans; Daradimos, Georg; Hirsch, Martin; Plass, Ludolf; and Serbent, Harry, 4,444,568, Cl. 48-197.00R.

Servo Corporation of America: *See—*

Villar, Luis F., 4,444,990, Cl. 136-221.000.

Sevenson Company: *See—*
Steiner, Marvin B.; and Steiner, Roy I., 4,444,509, Cl. 366-157.000.
Sexsmith, Frederick H.: *See—*
Zalucha, Denis J.; Sexsmith, Frederick H.; Howard, Dennis D.; and Nulph, Michael L., 4,444,846, Cl. 428-425.600.
Seymour, Samuel L.: *See—*
Dunn, Robert E.; and Seymour, Samuel L., 4,444,579, Cl. 65-351.000.
Shafer, William A., to Shafer, William A.; and Decision Science, Inc. Method and apparatus for monitoring physiological characteristics of a subject. 4,444,199, Cl. 128-691.000.
Shah, Nitin, to Littelfuse, Inc. Spiral wound fuse bodies. 4,445,106, Cl. 337-163.000.
Shanefield, Daniel J.; and Verdi, Fred W., to Western Electric Co., Inc. Adherent metal coatings on rubber-modified epoxy resin surfaces. 4,444,848, Cl. 428-624.000.
Shapiro, Edward, to Pittsburgh Environmental Systems Incorporated. Process for removing SO_2 and NO_x from gases. 4,444,736, Cl. 423-235.000.
Sharber, Jerry L., to Sheller-Globe Corporation. Note paper retrieval tray. 4,444,319, Cl. 211-50.000.
Sharon, Thomas E.; and Roberts, Roger G., to Electromagnetic Sciences, Inc. Method and apparatus for fast-switching dual-toroid microwave phase shifter. 4,445,098, Cl. 333-1.100.
Shaver, Robert G., to Versar Inc. Silicon carbide and carbon structures and method of making. 4,444,894, Cl. 501-90.000.
Shaw, Donald L.: *See—*
Cargle, Virgil H.; and Shaw, Donald L., 4,444,654, Cl. 208-188.000.
Shaw, Douglas A.; and Barclay, Stephen D. Vehicle with double booms. 4,444,542, Cl. 414-694.000.
Shaw, Wilfrid G.: *See—*
Callahan, James L.; Shaw, Wilfrid G.; and Miller, Arthur F., 4,444,906, Cl. 502-211.000.
Shechter, Mordechai. Method of prefabricated construction, and building structure constructed in accordance with such method. 4,443,992, Cl. 52-745.000.
Sheldrick, George E., to Monsanto Company. Low-salt containing aqueous solutions of melamine-formaldehyde resin. 4,444,945, Cl. 524-843.000.
Shell Oil Company: *See—*
St. Clair, David J., 4,444,953, Cl. 525-98.000.
Shellenberger, Donald J.: *See—*
Edwardsen, Horace B.; and Shellenberger, Donald J., 4,444,555, Cl. 432-30.000.
Sheller-Globe Corporation: *See—*
Sharber, Jerry L., 4,444,319, Cl. 211-50.000.
Shen, Jian C., to Occidental Research Corporation. Method for inhibiting sloughing of unfragmented formation in an in situ oil shale retort. 4,444,256, Cl. 166-259.000.
Shepard, Steve A.: *See—*
Haag, George A.; Fogg, O. Douglas; Greenley, Gordon A.; Shepard, Steve A.; and Terry, F. Duncan, 4,445,192, Cl. 364-900.000.
Sherwin-Williams Company, The: *See—*
Ludwig, Thomas E., 4,444,592, Cl. 106-23.000.
Mels, Sherman J.; Petrie, Brian C.; and Pokusa, Richard J., 4,444,954, Cl. 525-124.000.
Mels, Sherman J.; Petrie, Brian C.; and Pokusa, Richard J., 4,444,955, Cl. 525-124.000.
Sherwood, Bert J.; and Liffick, Fenton A. Mounting means for headlight-protective screens. 4,445,165, Cl. 362-376.000.
Sherwood Corporation, The: *See—*
Zimmerman, Jon P., 4,443,901, Cl. 5-28.000.
Shibanai, Ichiro: *See—*
Horikoshi, Koki; and Shibanai, Ichiro, 4,444,647, Cl. 208-11.0LE.
Shibata, Keiichi: *See—*
Konoki, Keizo; Shinohara, Takanobu; Kochi, Ikuyoshi; Shibata, Keiichi; Nishihara, Hisakatsu; Morichika, Toshiaki; Sugitani, Junichi; and Tsuchida, Koji, 4,444,731, Cl. 422-310.000.
Shibata, Masaharu; and Furuyama, Tsutomu, to NHK Spring Co., Ltd. Method of forming a coil spring. 4,444,036, Cl. 72-138.000.
Shibata, Masamichi: *See—*
Hattori, Tadashi; Ueno, Yoshiki; Kashima, Osamu; and Shibata, Masamichi, 4,444,043, Cl. 73-35.000.
Shidara, Keiichi: *See—*
Nonaka, Yasuhiko; Shidara, Keiichi; and Goto, Naohiro, 4,445,131, Cl. 357-31.000.
Shiga, Ken: *See—*
Nakajima, Heitaro; Umeda, Kenkichi; Kodera, Youichi; Naito, Noriaki; Yamauchi, Hiroyuki; Matsumoto, Isao; Nakamura, Shouichi; Takada, Katsuo; Shiga, Ken; and Yamamoto, Yoshihito, 4,445,150, Cl. 360-18.000.
Shikoku Electric Power Company, Inc.: *See—*
Sakai, Seiichi; Gange, Toshihiko; Sugawara, Katuo; Tsukioka, Hideo; Tani, Ictitaro; Shiono, Shigeo; and Mori, Etsunori, 4,444,040, Cl. 73-19.000.
Shimadzu Corporation: *See—*
Akiyama, Osamu; and Ichikawa, Tetsuo, 4,444,499, Cl. 356-325.000.
Shimizu, Norio; Yamaguchi, Tetsuo; Saitou, Setsuo; Ueno, Masao; and Odawara, Yooji, to Hitachi, Ltd. Process and apparatus for controlling cultivation of microorganisms. 4,444,882, Cl. 435-29.000.
Shimizu, Yoji: *See—*
Kawai, Hajime; Tsunemitsu, Katsuhiko; Fujino, Yoshiharu; and Shimizu, Yoji, 4,444,591, Cl. 106-21.000.
Shimomura, Takao: *See—*
Yamai, Tadamasa; Sagehashi, Risaburo; Kameyama, Yoshio; and Shimomura, Takao, 4,444,399, Cl. 277-1.000.
Shin-Kobe Electric Machinery Co., Ltd.: *See—*
Morinari, Ryosuke; and Koseki, Mitsuru, 4,443,918, Cl. 29-3.000.
Shin Meiwa Industry Co., Ltd.: *See—*
Noguchi, Fumio, 4,445,184, Cl. 364-513.000.
Shinohara, Takanobu: *See—*
Konoki, Keizo; Shinohara, Takanobu; Kochi, Ikuyoshi; Shibata, Keiichi; Nishihara, Hisakatsu; Morichika, Toshiaki; Sugitani, Junichi; and Tsuchida, Koji, 4,444,731, Cl. 422-310.000.
Konoki, Keizo; Shinohara, Takanobu; Kochi, Ikuyoshi; Anzai, Toshio; Nishihara, Hisakatsu; Sugitani, Junichi; and Tsuchida, Koji, 4,444,732, Cl. 422-310.000.
Shinozaki, Nobuo: *See—*
Ogihara, Masuo; Shinozaki, Nobuo; Ishikawa, Tadashi; and Seki, Yoichi, 4,444,511, Cl. 368-69.000.
Shinozaki, Takashi; Ohtake, Yoshichi; and Ono, Shinsuke, to Victor Company of Japan, Ltd. Television camera having an optical lowpass filter. 4,445,136, Cl. 358-55.000.
Shiono, Shigeo: *See—*
Sakai, Seiichi; Gange, Toshihiko; Sugawara, Katuo; Tsukioka, Hideo; Tani, Ictitaro; Shiono, Shigeo; and Mori, Etsunori, 4,444,040, Cl. 73-19.000.
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Shugar, Martin A. Fiberoptic tracheotomy method. 4,444,185, Cl. 128-305.300.
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SIDEPAL S.A. Societe Industrielle de Participation Luxembourgeoise: *See—*
Kuhlmann, Herbert, 4,445,220, Cl. 373-74.000.
Siegal, Burton L.: *See—*
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Gruner, Werner; and Kumar, Sreenivasan S., 4,445,014, Cl. 200-78.000.
Kusebauch, Walter; and Renner, Theodor, 4,445,091, Cl. 324-438.000.
Preuss, Bernhard; and Zeuke, Reinhard, 4,444,067, Cl. 74-108.000.
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SIG Schweizerische Industrie-Gesellschaft: *See—*
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Silbernagel, Raymond A.; and Sjolander, Garry L., to Minnesota Mining and Manufacturing Company. Wire cutting electrical connector. 4,444,448, Cl. 339-98.000.
Silverman, Robert A.; and Hoyen, Harry A., to Eastman Kodak Company. Blended grain direct-positive emulsions and photographic elements and processes for their use. 4,444,865, Cl. 430-217.000.
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Silvestrini, Jesus A.; and Morsucci, Juan C., to IMDEC S.R.L. Fruit peeling rollers. 4,444,096, Cl. 99-585.000.
Silvey, Perry; and Bates, Ronald, to Lycan-Howard, Ltd. Dance floor construction. 4,443,989, Cl. 52-402.000.
Simmons, Carlton J., Jr.: *See—*
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Simon, Hector C. Pharmaceutical composition and method for treating cachexia in humans due to cancer. 4,444,791, Cl. 424-331.000.
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Singer Company, The: *See—*
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Marsh, Walter H. W.; Patricia, John; and Mack, Alfred, 4,444,139, Cl. 112-260.000.
Ponte, Gary W., 4,444,137, Cl. 112-226.000.
Singh, Rajendra K., to Monsanto Company. N-Substituted N-(phosphonomethyl)aminoethanal derivatives as herbicides. 4,444,580, Cl. 71-86.000.
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Rinehart, Stephen A.; Britt, James E.; Laskowski, Kenneth W.; Sisson, Jeffrey L.; and Buddendeck, Gerald A., 4,444,491, Cl. 355-50.000.
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Slawinski, Christopher, to Texas Instruments Incorporated. Planar field oxide for semiconductor devices. 4,444,605, Cl. 148-187.000.
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Hoffmann, Michael K., 4,444,887, Cl. 435-240.000.
Slomma, Heinz-Georg, to Maschinenfabrik Carl Zangs Aktiengesellschaft. Device for interrupting a needle bar drive. 4,444,136, Cl. 112-221.000.
Smalling, Ray K.: *See—*
Thurnau, Henry J.; Smalling, Ray K.; and Thurnau, Peter F., 4,444,001, Cl. 56-27.500.
Smith, A. Glen: *See—*
Smith, David A.; and Smith, Marvin D., 4,444,253, Cl. 166-191.000.
Smith, Bernard; and Freeman, Gerard L., to United States of America, Army. Method of making a high current density cathode. 4,444,718, Cl. 419-37.000.
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Smith, Derek A.; Grayson, Stephen J.; and Hume, John. Smoke and toxic gas suppressant system. 4,444,914, Cl. 521-130.000.
Smith, Francis X.: *See—*
Mandt, Lawrence D.; Riedhammer, Thomas M.; and Smith, Francis X., 4,444,785, Cl. 424-291.000.
Smith International, Inc.: *See—*
Schramm, Michael E.; and Vezirian, Edward, 4,444,518, Cl. 384-96.000.
Smith, Jack R.: *See—*
Davis, Guy E.; and Smith, Jack R., 4,445,180, Cl. 364-494.000.
Smith, James E., to Micro Motion. Oscillating tube mass flow rate meter. 4,444,059, Cl. 73-861.370.
Smith Kline & French Laboratories Limited: *See—*
Sach, George S., 4,444,772, Cl. 424-251.000.
Smith, Marvin D.: *See—*
Smith, David A.; and Smith, Marvin D., 4,444,253, Cl. 166-191.000.
Smith, Robert G., to Kleen-Rite, Inc. Method and apparatus for reclaiming drycleaning fluid. 4,444,625, Cl. 203-95.000.
Smith, Robert J., to Solid State Systems, Corporation. Energizing circuit for ultrasonic transducer. 4,445,063, Cl. 310-316.000.
Smith, Robert L.: *See—*
Hoffman, William F.; Smith, Robert L.; and Willard, Alvin K., 4,444,784, Cl. 424-279.000.
Smith, Robert M.: *See—*
Baugh, Charles R.; and Smith, Robert M., 4,445,213, Cl. 370-94.000.
Smith, Ryan M.; Stoller, David A., Sr.; Culler, William B.; and Wiesner, Paul E., to Portec, Inc. Curved roof hooper car. 4,444,123, Cl. 105-377.000.
Smith, Stuart B., to Thermocell Development, Ltd. Modified polyisocyanurate foam and method of preparation. 4,444,913, Cl. 521-128.000.
Smith, Trevor D., to Suxe Combustion Limited. Grateless furnace for solid fuel. 4,444,153, Cl. 122-2.000.
Smith, W. Novis: *See—*
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SmithKline Beckman Corporation: *See—*
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Smitt, Asbjorn, to Christian Rovsing A/S. Coupling circuit for transferring data signals at a high rate. 4,445,222, Cl. 375-36.000.
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Smyth, Marie T.: *See—*
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Snia Viscosa S.p.A. - Societa' Nazionale Industria Applicazioni Viscosa: *See—*
Mazzola, Massimo; Cipriani, Aldo; and Carignani, Giancarlo, 4,444,832, Cl. 428-290.000.
Snodgrass, John B.; and Cambridge, Edward L., to Atlantic Richfield Company. Method for the recovery of fluorides from spent aluminum potlining and the production of an environmentally safe waste residue. 4,444,740, Cl. 423-483.000.
Snowden, David C.; Osborne, Joseph J.; Thomas, David E.; and Simms, David W., to Sangamo Weston Limited. Torque measuring systems. 4,444,063, Cl. 73-862.340.
Snyder, A. R.: *See—*
Brownell, George L.; Collier, Melba J.; Hall, William E.; Morgan, Howard H., Jr.; and Snyder, A. R., 4,444,987, Cl. 585-850.000.
Snyder, Brian A.: *See—*
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S.p.A. Luigi Rizzi & C.: *See—*
Repetto, Silvio, 4,444,028, Cl. 69-13.000.
S.A. Des Etablissements Staubli: *See—*
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Societe Anonyme des Usines Chausson: *See—*
Allemandou, Michel A., 4,443,921, Cl. 29-157.30R.
Societe Anonyme d'Etudes, de Recherches et de Productions d'Agents Chimiques-E.R.P.A.C.: *See—*
Treyssac, Georges M., 4,444,664, Cl. 210-605.000.
Societe Anonyme dite: Compagnie Maritime d'Expertises S.A.: *See—*
Avon, Michel F.; and Markarian, Gerard R., 4,444,572, Cl. 55-26.000.
Societe Anonyme dite: GIPELEC: *See—*
Duchange, Jean-Pierre; and Gabano, Jean-Paul, 4,444,857, Cl. 429-191.000.
Societe Anonyme Saunier Duval Eau Chaude Chauffage: *See—*
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Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
Brittain, John E.; and Cattell, Graham S., 4,444,797, Cl. 426-399.000.
Magnolato, Daniele; and Isely, Alain, 4,444,798, Cl. 426-422.000.
Societe Nationale des Poudres et Explosifs: *See—*
Bertrand, Yves; Favrot, Remy; Gaudilliere, Pierre; Perennou, Jean-Charles; and Wiedemann, Bernard, 4,444,606, Cl. 149-2.000.
Societe Nationale ELF Aquitaine (Prod.): *See—*
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Societe Nationale Industrielle Aerospatiale: *See—*
Benedetti, Alain; Laury, Luc; Legrand, Francis; Poubeau, Pierre; and Weisser, Bernard, 4,444,444, Cl. 308-10.000.
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Piguet, Christian; and Perotto, Jean-Felix, 4,444,512, Cl. 368-72.000.
Soderstrom, Berry. Vehicle. 4,444,416, Cl. 280-763.100.
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Sofranko, John A.: *See—*
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Sokoly, Theodore O.: *See—*
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Solid State Systems, Corporation: *See—*
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Solomon, Steven P.; and Dunaway, James L. Rail lifting and cutting machine. 4,444,345, Cl. 225-96.500.
Soma Traders, Ltd.: *See—*
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Somfy: *See—*
Jacquel, Dominique; Plumer, Louis; and Giust, Henri, 4,444,363, Cl. 242-67.400.
Sony Corporation: *See—*
Kihara, Nobutoshi; Matsumoto, Yoshiharu; and Yamazaki, Kazuo, 4,445,154, Cl. 360-85.000.
Kinoshita, Takashi; Shirochi, Yoshiki; and Motoyoshi, Noboru, 4,445,151, Cl. 360-27.000.
Makino, Yoshimi; Ochiai, Yoshitaka; Aso, Koichi; Uedaira, Satoru; Hayakawa, Masatoshi; and Hotai, Kazuhide, 4,444,602, Cl. 148-121.000.
Moriya, Ryusuke, 4,445,145, Cl. 360-10.200.
Nakajima, Heitaro; Umeda, Kenkichi; Kodera, Youichi; Naito, Noriaki; Yamauchi, Hiroyuki; Matsumoto, Isao; Nakamura, Shouichi; Takada, Katsuo; Shiga, Ken; and Yamamoto, Yoshihito, 4,445,150, Cl. 360-18.000.
Sakamoto, Hitoshi; and Okihara, Daijiro, 4,445,146, Cl. 360-10.300.
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  - Yoshinaka, Tadaaki; and Takayama, Takashi, 4,445,092, Cl. 328-139.000.
- Sorbie, Charles: *See—*
  - Wevers, Henk S.; Sorbie, Charles; and Saunders, Gerald A. B., 4,444,181, Cl. 128-92.00D.
- Soteropulos, Gust S., to Deere & Company. Cylindrical baler with self-cleaning gate. 4,444,098, Cl. 100-88.000.
- Soth-Haas, Gabriele: *See—*
  - Deprez, Jacques; Drope, Eckard; Greif, Peter; and Soth-Haas, Gabriele, 4,444,645, Cl. 204-409.000.
- Souriau-Cluses (S.A.): *See—*
  - Dominici, Jean P.; and Morand, Michel, 4,443,937, Cl. 29-874.000.
- South, Aubrey, Jr., to Phillips Petroleum Company. Coated calcium carbonate in polyester/rubber molding compound. 4,444,921, Cl. 523-200.000.
- Spadaro, Giorgio I. Bag with integral closure tie. 4,445,230, Cl. 383-7.000.
- Spangler, Glenn E.; and Wroten, John F., Jr., to Bendix Corporation, The. Apparatus for simultaneous detection of positive and negative ions in ion mobility spectrometry. 4,445,038, Cl. 250-382.000.
- Sparkman, John C.: *See—*
  - Doyle, Brian P.; and Sparkman, John C., 4,444,822, Cl. 428-109.000.
- Sparrevohn, Frederic R. Automatic electronic disconnector for subscriber terminal equipment. 4,444,999, Cl. 179-2.00C.
- Spectra-Symbol Corporation: *See—*
  - House, V. Dean, 4,444,998, Cl. 178-19.000.
- Spens, Stephen N.: *See—*
  - Metcalf, Eric; Woollven, Jack; Spens, Stephen N.; and Kett, Brian L. A., 4,445,085, Cl. 324-52.000.
- Sperry Corporation: *See—*
  - Martin, E. Joel, 4,444,410, Cl. 280-512.000.
- Spiller, Gene A., to Syntex (U.S.A.) Inc. Cellulose/carboxymethyl cellulose mixtures useful for controlling fecal output, and methods employing them. 4,444,761, Cl. 424-180.000.
- Spillman, John J., to National Research Development Corporation. Aerofoil bodies. 4,444,367, Cl. 244-199.000.
- Spohn, Daniel M.; and Snyder, Brian A. Fluid reservoir and connector. 4,444,358, Cl. 239-284.00R.
- Spronz, Francis V., to Spronz Incinerator Corp. Incinerator. 4,444,127, Cl. 110-235.000.
- Spronz Incinerator Corp.: *See—*
  - Spronz, Francis V., 4,444,127, Cl. 110-235.000.
- Squicciarini, Alex J.: *See—*
  - Vanderveer, Fred; Knipper, Aloysius J.; Straka, Robert; and Squicciarini, Alex J., 4,444,799, Cl. 426-549.000.
- Staelgraeve, Daniel H. Tray with telescoping cover formed from identical blanks. 4,444,354, Cl. 229-23.0BT.
- Stahl, Glenn L.; and Orlowski, Ronald C., to Armour Pharmaceutical Company. L-Tyrosine^{21} calcitonin. 4,444,681, Cl. 260-112.50T.
- Stahl, Philip: *See—*
  - Black, Thomas J., Jr.; and Stahl, Philip, 4,444,398, Cl. 277-1.000.
- Stalzer, Henry: *See—*
  - Dolan, Donald T.; and Stalzer, Henry, 4,445,128, Cl. 346-160.000.
- Standard Oil Company: *See—*
  - Beynet, Pierre A.; and Hall, Johnce E., 4,444,275, Cl. 175-7.000.
  - Callahan, James L.; Shaw, Wilfrid G.; and Miller, Arthur F., 4,444,906, Cl. 502-211.000.
  - Pesa, Frederick A.; and Graham, Anne M., 4,444,901, Cl. 502-80.000.
- Standard Oil Company (Indiana): *See—*
  - Brown, Cloyce L.; and Tanner, Darrell, 4,444,292, Cl. 184-6.000.
  - Schaffhausen, John G.; and Abdul-Malek, Adel B., 4,444,956, Cl. 525-164.000.
- Stangroom, James E., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Viscous shear clutch. 4,444,298, Cl. 192-21.500.
- Stanley, Philip E.: *See—*
  - Peters, Arthur; and Stanley, Philip E., 4,445,172, Cl. 364-200.000.
- Stanley Works, The: *See—*
  - Jorgensen, Harry S., Jr., 4,444,091, Cl. 91-427.000.
- Stark, Gary; and Elkeles, Gidion, to MML Computers, Inc. Data storage system for storing documents and the like. 4,444,490, Cl. 355-40.000.
- Stark, William A.: *See—*
  - Blackburn, Wayne E.; Liston, Max D.; and Stark, William A., 4,445,012, Cl. 200-61.040.
- Statton, Gary L.; and Gaul, James M., to Atlantic Richfield Company. Stabilized polyoxyalkylene polyether polyols and polyurethane foams prepared therefrom. 4,444,676, Cl. 252-182.000.
- Stauffer Chemical Company: *See—*
  - Arzoumanidis, Gregory G.; Gold, Richard F.; and Michel, Christian G., 4,444,967, Cl. 526-114.000.
  - Felix, Raymond A., 4,444,693, Cl. 260-502.50F.
  - Leitner, George J., 4,443,903, Cl. 5-459.000.
  - Leitner, George J., 4,444,831, Cl. 428-262.000.
  - Schwartz, Robert D.; and Bodie, Elizabeth A., 4,444,792, Cl. 426-41.000.
  - Schwartz, Robert D.; and Bodie, Elizabeth A., 4,444,793, Cl. 426-41.000.
- Steele, Robert E., to General Motors Corporation. Energization indication control for diesel glow plug. 4,444,160, Cl. 123-179.00H.
- Stefannson, Rafn; and McManaman, Raymond M., to Bell & Howell Company. Stacking methods and apparatus. 4,444,388, Cl. 271-293.000.
- Stehlin, Bernhard: *See—*
  - Pietzsch, Ludwig; and Stehlin, Bernhard, 4,444,089, Cl. 89-36.00K.
- Steigerwald, Robert L., to General Electric Company. Inverter for interfacing advanced energy sources to a utility grid. 4,445,049, Cl. 307-45.000.
- Stein, Jay A., to Diagnostic Technology, Inc. Digital intravenous subtraction angiography. 4,444,196, Cl. 128-654.000.
- Steinberger, Helmut: *See—*
  - Schonfelder, Manfred; and Steinberger, Helmut, 4,444,973, Cl. 528-28.000.
- Steinecker, Carl, to Richardson Chemical Company. Acid bright zinc plating. 4,444,630, Cl. 204-55.00R.
- Steiner, Marvin B.; and Steiner, Roy I., to Sevenson Company. Feed mixing apparatus. 4,444,509, Cl. 366-157.000.
- Steiner, Roy I.: *See—*
  - Steiner, Marvin B.; and Steiner, Roy I., 4,444,509, Cl. 366-157.000.
- Stemme, Otto; Ruf, Wolfgang; and Wagensonner, Eduard, to Agfa-Gevaert Aktiengesellschaft. Device for the electronic scanning of images. 4,445,139, Cl. 358-214.000.
- Stern, Harold; and Suleiman, Elisabeth, to International Playtex, Inc. Brassiere. 4,444,192, Cl. 128-491.000.
- Sternberg, Robert L., to United States of America, Navy. Frequency independent acoustic antenna. 4,445,207, Cl. 367-150.000.
- Stewart, Charles F.; and Stewart, Jack K. Electro-mechanical propulsion system. 4,444,285, Cl. 180-65.400.
- Stewart, Jack K.: *See—*
  - Stewart, Charles F.; and Stewart, Jack K., 4,444,285, Cl. 180-65.400.
- Stewart, John S.; and Hodkin, George A., to Brush Switchgear Limited. Electrical switchgear. 4,445,017, Cl. 200-144.00A.
- Stier, Bernhard; and Rathmann, Klaus, to VDO Adolf Schindling AG. Device for the unlocking and locking of doors. 4,444,032, Cl. 70-264.000.
- Stine, Laurence O., to UOP Inc. Method for in situ conversion of hydrocarbonaceous oil. 4,444,257, Cl. 166-261.000.
- Stirling, Irene; and Clarke, Brian P., to Beecham Group Limited. Derivatives of clavulanic acid, a process for their preparation and their use. 4,444,754, Cl. 424-114.000.
- Stobb, Inc.: *See—*
  - Stobb, Walter J., 4,444,387, Cl. 271-189.000.
- Stobb, Walter J., to Stobb, Inc. Sheet stacker with a separator plate. 4,444,387, Cl. 271-189.000.
- Stoeger, Klaus: *See—*
  - Doetzer, Richard; Stoeger, Klaus; Hini, Paul; and Gehring, Johann, 4,444,636, Cl. 204-206.000.
- Stoila, George M.: *See—*
  - Nixon, Bryan E.; Stoila, George M.; and Williams, Stephen L., 4,444,715, Cl. 264-501.000.
- Stolhand, James E.: *See—*
  - Boyd, Phil A.; and Stolhand, James E., 4,444,260, Cl. 166-267.000.
- Stoller, David A., Sr.: *See—*
  - Smith, Ryan M.; Stoller, David A., Sr.; Culler, William B.; and Wiesner, Paul E., 4,444,123, Cl. 105-377.000.
- Stolz, Hermann, to MATO Maschinen-und Metallwarenfabrik Curt Matthaei GmbH & Co. KG. Air pressure operated lubricating gun. 4,444,547, Cl. 417-46.000.
- Storm-Tite Industries, Ltd.: *See—*
  - Donaldson, James R.; and Koberstein, Kurt, 4,444,422, Cl. 292-169.000.
- Stow/Davis Furniture Company: *See—*
  - Propst, Paul L.; Gzym, Larry P.; Murrel, Ralph; Richardson, Donald A.; and Hinrichs, Carl B., 4,443,986, Cl. 52-239.000.
- Stowe, David W.; and Kopera, Paul M., to Gould Inc. Substrate ruggedized optical fiber apparatus. 4,444,458, Cl. 350-96.150.
- Stowe, David W., to Gould Inc. Optical fiber apparatus including subtstrate ruggedized optical fibers. 4,444,460, Cl. 350-96.190.
- Straka, Robert: *See—*
  - Vanderveer, Fred; Knipper, Aloysius J.; Straka, Robert; and Squicciarini, Alex J., 4,444,799, Cl. 426-549.000.
- Strandli, Kaare R.; and Ostlie, Arne M., to A/S Raufoss Ammunisjonsfabrikker. Multi-capability projectile and method of making same. 4,444,112, Cl. 102-364.000.
- Strausser, Helen R., to Research Corporation. Use of thymosin as an anti-diabetes and anti-hypertensive disease agent. 4,444,757, Cl. 424-177.000.
- Streifer, William: *See—*
  - Scifres, Donald R.; and Streifer, William, 4,445,125, Cl. 346-108.000.
- Streit, Werner: *See—*
  - Frey, Guenter; Streit, Werner; Fikentscher, Rolf; Degen, Hans-Juergen; and Guender, Wolf, 4,444,959, Cl. 525-435.000.
- Strong, Hovey R.: *See—*
  - Lorie, Raymond A.; and Strong, Hovey R., 4,445,197, Cl. 364-900.000.
- Stubben, David R., to Atari, Inc. Apparatus for scrolling a video display. 4,445,114, Cl. 340-726.000.
- Studer, Urs-Peter, to Zumbach Electronic AG. Process and device for the production of a telecentric light beam and use of the process. 4,444,457, Cl. 350-6.800.
- Stumpf, Walter J., to Mero-Raumstruktur GmbH & Co. Wurzburg. Device for connecting plates and/or rods. 4,444,523, Cl. 403-173.000.
- Sturtz, Georges: *See—*
  - Guerin, Bernard; Poisson, Pierre; and Sturtz, Georges, 4,444,930, Cl. 524-125.000.

- Stutzle, Dietmar: *See—*
  - Lindner, Friedrich; Stutzle, Dietmar; and Argyrakis, Nikolaus, 4,444,110, Cl. 102-213.000.
- Subramanian, Pallatheri M., to Du Pont de Nemours, E. I., and Company. Laminar articles of polyolefin and a condensation polymer. 4,444,817, Cl. 428-36.000.
- Sudo, Katsuto: *See—*
  - Terai, Kenji; Sudo, Katsuto; and Nakamura, Yoshiki, 4,444,076, Cl. 83-316.000.
- Sugawara, Katuo: *See—*
  - Sakai, Seiichi; Gange, Toshihiko; Sugawara, Katuo; Tsukioka, Hideo; Tani, Ictitaro; Shiono, Shigeo; and Mori, Etsunori, 4,444,040, Cl. 73-19.000.
- Sugitani, Junichi; and Takahashi, Makoto, to Kubota, Ltd. Heat resistant alloy excellent in bending property and ductility after aging and its products. 4,444,589, Cl. 75-128.00G.
- Sugitani, Junichi: *See—*
  - Konoki, Keizo; Shinohara, Takanobu; Kochi, Ikuyoshi; Shibata, Keiichi; Nishihara, Hisakatsu; Morichika, Toshiaki; Sugitani, Junichi; and Tsuchida, Koji, 4,444,731, Cl. 422-310.000.
  - Konoki, Keizo; Shinohara, Takanobu; Kochi, Ikuyoshi; Anzai, Toshio; Nishihara, Hisakatsu; Sugitani, Junichi; and Tsuchida, Koji, 4,444,732, Cl. 422-310.000.
- Suh, Nam P.: *See—*
  - Gutowski, Timothy G.; and Suh, Nam P., 4,444,922, Cl. 523-339.000.
- Suleiman, Elisabeth: *See—*
  - Stern, Harold; and Suleiman, Elisabeth, 4,444,192, Cl. 128-491.000.
- Sulzer Brothers Limited: *See—*
  - Weber, Anton, 4,444,154, Cl. 122-4.00D.
- Sumitomo Aluminum Smelting Company, Limited: *See—*
  - Yamada, Koichi; Nakazato, Kunio; Shiraishi, Katsuzo; and Hamano, Seiichi, 4,444,899, Cl. 502-64.000.
- Sumitomo Chemical Company, Limited: *See—*
  - Kawakami, Shigenao; Saka, Terumasa; Takagishi, Hisao; Ura, Shigeru; and Iwata, Mikio, 4,444,943, Cl. 524-598.000.
  - Yamatsuta, Kohji; and Nishio, Ken-ichi, 4,444,603, Cl. 148-127.000.
- Sumitomo Electric Industries, Ltd.: *See—*
  - Hiramoto, Junichi; and Ohkawa, Shinichi, 4,444,644, Cl. 204-406.000.
  - Miyake, Masayoshi; Ueoka, Isao; and Kawaguchi, Munetaka, 4,444,843, Cl. 428-383.000.
  - Ono, Kimizo; Nishiwaki, Yoshikazu; Tsuno, Koichi; Iwai, Tohru; and Nishikawa, Mitsuru, 4,444,462, Cl. 350-96.250.
- Sumitomo Metal Mining Company Limited: *See—*
  - Sato, Hiroshi, 4,444,666, Cl. 210-670.000.
- Sumitomo Naugatuck Co., Ltd.: *See—*
  - Sakano, Hajime; Ito, Akitoshi; Yano, Motoichi; and Honda, Yasuhiro, 4,444,950, Cl. 525-67.000.
- Sun Metal Products, Inc.: *See—*
  - Honsa, Horst L. A., 4,444,435, Cl. 301-63.0PW.
- Sun Tech, Inc.: *See—*
  - Coggins, Eugene L.; and Vanderwerff, William D., 4,444,938, Cl. 524-476.000.
- Sunbeam Corporation: *See—*
  - Gale, George M.; James, David I.; and Meyer, John V. B., 4,444,708, Cl. 264-105.000.
- Sundstrand Corporation: *See—*
  - Hawkins, Royal R.; and Kuntz, Leland E., 4,444,286, Cl. 180-197.000.
- Sung, Rodney L.: *See—*
  - Crawford, Wheeler C.; Sweeney, William M.; and Sung, Rodney L., 4,444,566, Cl. 44-72.000.
- Suwabe, Isaku, to Maruzen Kogyo Company Limited. Liquid pressure striking device. 4,444,274, Cl. 173-134.000.
- Suxe Combustion Limited: *See—*
  - Smith, Trevor D., 4,444,153, Cl. 122-2.000.
- Suzuki, Hidetaka: *See—*
  - Yamaki, Kiyoshi; and Suzuki, Hidetaka, 4,444,051, Cl. 73-304.00C.
- Suzuki, Hirohisa: *See—*
  - Sakai, Takeo; Tanaka, Mitsugu; Ono, Shigetoshi; Suzuki, Seiji; and Suzuki, Hirohisa, 4,444,866, Cl. 430-220.000.
- Suzuki, Kazuhiko: *See—*
  - Aoyagi, Juuro; Suzuki, Kazuhiko; and Takahara, Kazuaki, 4,444,663, Cl. 210-500.200.
- Suzuki, Masaru; and Ogawa, Akira, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Step switch. 4,445,009, Cl. 200-5.00R.
- Suzuki, Masatoshi: *See—*
  - Inoue, Kazuo; Suzuki, Masatoshi; and Narisawa, Ryo, 4,444,013, Cl. 60-605.000.
- Suzuki, Minoru: *See—*
  - Wakita, Tadayoshi; Suzuki, Minoru; Yanada, Sadao; and Sibata, Sigeru, 4,445,169, Cl. 364-147.000.
- Suzuki, Saburo, to Aisin Seiki Kabushiki Kaisha. Locking mechanism for vehicle seats. 4,444,431, Cl. 297-316.000.
- Suzuki, Seiji: *See—*
  - Sakai, Takeo; Tanaka, Mitsugu; Ono, Shigetoshi; Suzuki, Seiji; and Suzuki, Hirohisa, 4,444,866, Cl. 430-220.000.
- Suzuki, Susumu: *See—*
  - Kobari, Harukuni; Yamada, Yasuhiro; Suzuki, Susumu; and Hibino, Chitoshi, 4,445,216, Cl. 371-39.000.
- Suzuki, Takashi; Hashimoto, Shoichiro; and Nakano, Rieko, to Mitsubishi Gas Chemical Company, Inc. Process for producing crystalline aluminosilicates. 4,444,738, Cl. 423-329.000.
- Suzuki, Teiji: *See—*
  - Tsuchiya, Hiroyuki; Asakura, Yamato; Suzuki, Teiji; and Kikuchi, Makoto, 4,444,737, Cl. 423-249.000.
- Suzuki, Teruo; Kobayashi, Tsuneki; and Miyasaka, Masao, to Hitachi Koki Co. Ltd. Paper clamp device for a printer. 4,444,522, Cl. 400-146.000.
- Suzuki, Yasushi: *See—*
  - Iwakura, Shinya; and Suzuki, Yasushi, 4,444,428, Cl. 296-154.000.
- Svendsen, Gordon D., to Ampex Corporation. Programmable frequency ratio synchronous parallel-to-serial data converter. 4,445,215, Cl. 370-100.000.
- Svoboda, Josef; and Oberleitner, Gerhard, to TMC Corporation. Safety ski binding. 4,444,411, Cl. 280-611.000.
- Swaroop, Nareshwar, to Ludlow Corporation. Opaque laminate sheet structure. 4,444,827, Cl. 428-216.000.
- Swartz, Douglas G.: *See—*
  - Hughes, Ronald P.; Swartz, Douglas G.; and Weiner, Bruce E., 4,445,170, Cl. 364-200.000.
- Sweeney, William M.: *See—*
  - Crawford, Wheeler C.; Sweeney, William M.; and Sung, Rodney L., 4,444,566, Cl. 44-72.000.
- Swift, Steven D.; Parle, Jonathan J.; and Gunderson, David A., to John Fluke Mfg. Co., Inc. Bi-polar electronic signal converters with single polarity accurate reference source. 4,445,111, Cl. 340-347.0CC.
- Sybron Corporation: *See—*
  - Blair, James E.; and Davis, Lois T., 4,444,888, Cl. 435-243.000.
- Synetron Corporation: *See—*
  - Jackson, John T., Jr., 4,445,061, Cl. 310-156.000.
- Syntex (U.S.A.) Inc.: *See—*
  - Spiller, Gene A., 4,444,761, Cl. 424-180.000.
- Syva Company: *See—*
  - Tom, Henry, 4,444,880, Cl. 435-7.000.
- T. Marttinen Ky: *See—*
  - Marttinen, Toivo, 4,444,131, Cl. 111-4.000.
- Tabak, Samuel A.: *See—*
  - Capsuto, Leon M.; Holland, Robert E.; Ireland, Henry R.; and Tabak, Samuel A., 4,444,988, Cl. 585-415.000.
- Takada, Katsuo: *See—*
  - Nakajima, Heitaro; Umeda, Kenkichi; Kodera, Youichi; Naito, Noriaki; Yamauchi, Hiroyuki; Matsumoto, Isao; Nakamura, Shouichi; Takada, Katsuo; Shiga, Ken; and Yamamoto, Yoshihito, 4,445,150, Cl. 360-18.000.
- Takagi, Tsuneo: *See—*
  - Isono, Koichi; and Takagi, Tsuneo, 4,444,506, Cl. 356-404.000.
- Takagishi, Hisao: *See—*
  - Kawakami, Shigenao; Saka, Terumasa; Takagishi, Hisao; Ura, Shigeru; and Iwata, Mikio, 4,444,943, Cl. 524-598.000.
- Takahara, Kazuaki: *See—*
  - Aoyagi, Juuro; Suzuki, Kazuhiko; and Takahara, Kazuaki, 4,444,663, Cl. 210-500.200.
  - Aoyagi, Juuro; Takahara, Kazuaki; and Seita, Yukio, 4,444,716, Cl. 264-561.000.
- Takahashi, Haruo; and Kimura, Shogo, to Sanden Corporation. Refrigerant compressor. 4,444,549, Cl. 417-269.000.
- Takahashi, Kihei, to Yoshida Kogyo K.K. Method of and apparatus for manufacturing a continuous slide fastener stringer chain with element-free space portions. 4,443,923, Cl. 29-408.000.
- Takahashi, Kiyoshi; and Tsukahara, Nobuhiko, to Sony Corporation. Flexible magnetic disk cassette and a recording and/or reproducing apparatus for the same. 4,445,155, Cl. 360-99.000.
- Takahashi, Kiyoshi, to Sony Corporation. Flexible magnetic disk cassette. 4,445,157, Cl. 360-133.000.
- Takahashi, Makoto: *See—*
  - Sugitani, Junichi; and Takahashi, Makoto, 4,444,589, Cl. 75-128.00G.
- Takahashi, Tohru, to Canon Kabushiki Kaisha. Method for effecting development by applying an electric field of bias. 4,444,864, Cl. 430-120.000.
- Takahashi, Yasusuke: *See—*
  - Nishibu, Satoshi; Takahashi, Yasusuke; Nagamatsu, Gentaro; and Sakata, Toshibumi, 4,444,858, Cl. 430-49.000.
- Takahata, Masahiro: *See—*
  - Saikawa, Isamu; Yasuda, Takashi; Murakami, Shohachi; Maeda, Toyoo; Yotsuji, Akira; Takahata, Masahiro; Tsuda, Hisatsugu; Mikami, Hidetada; Sakai, Hiroshi; and Ohashi, Toshinori, 4,444,753, Cl. 424-98.000.
- Takao, Hisashi: *See—*
  - Goto, Takeshi; Takao, Hisashi; Yasudomi, Norio; Osaki, Norio; and Murata, Tadateru, 4,444,786, Cl. 424-298.000.
- Takasago Perfumery Co., Ltd.: *See—*
  - Nagashima, Tsukasa; and Yoshida, Toshio, 4,444,982, Cl. 568-817.000.
- Takase, Junji; Hirose, Toshifumi; and Isayama, Katsuhiko, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Room temperature curing composition. 4,444,974, Cl. 528-33.000.
- Takasugi, Tsuneji: *See—*
  - Sakakibara, Yosuke; Kasai, Takao; and Takasugi, Tsuneji, 4,444,719, Cl. 420-511.000.
- Takayama, Takashi: *See—*
  - Yoshinaka, Tadaaki; and Takayama, Takashi, 4,445,092, Cl. 328-139.000.
- Takeda Chemical Industries, Ltd.: *See—*
  - Kawamatsu, Yutaka; and Fujita, Takeshi, 4,444,779, Cl. 424-263.000.

- Takeda, Koichi: *See—*
  - Morita, Eiichi; Kato, Yoshihisa; Takeda, Koichi; and Oku, Takuya, 4,445,182, Cl. 364-474.000.
- Takemura, Takehide; and Yamada, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Electric micrometer. 4,443,945, Cl. 33-166.000.
- Takeuchi, Tetsuo: *See—*
  - Maekawa, Yukio; and Takeuchi, Tetsuo, 4,444,876, Cl. 430-528.000.
- Takizawa, Kinji, to Mitutoyo Mfg. Co., Ltd. Displacement measuring instrument. 4,444,504, Cl. 356-374.000.
- Tambourin, Pierre: *See—*
  - Bisagni, Emile; Ducrocq, Claire; Rivalle, Christian; Tambourin, Pierre; Wendling, Francoise; Chermann, Jean-Claude; and Montagnier, Luc, 4,444,776, Cl. 424-258.000.
- Tammaru, Ivo: *See—*
  - Wessel-Berg, Tore; and Tammaru, Ivo, 4,445,071, Cl. 315-4.000.
- Tamura, Shuichi, to Canon Kabushiki Kaisha. Automatic focus adjusting device. 4,444,477, Cl. 354-403.000.
- Tanaka, Hideharu: *See—*
  - Sekiya, Mutuo; Tanaka, Hideharu; Uchikawa, Fusaoki; and Ohata, Yasufumi, 4,444,288, Cl. 181-258.000.
- Tanaka, Hisashi: *See—*
  - Yokoyama, Akira; Tanaka, Hisashi; Yamada, Akira; and Arano, Yasushi, 4,444,743, Cl. 424-1.100.
- Tanaka, Kazuo, to Canon Kabushiki Kaisha. Lens system having color separation optics. 4,444,472, Cl. 350-423.000.
- Tanaka, Mitsugu: *See—*
  - Sakai, Takeo; Tanaka, Mitsugu; Ono, Shigetoshi; Suzuki, Seiji; and Suzuki, Hirohisa, 4,444,866, Cl. 430-220.000.
- Tanaka, Mitsuru: *See—*
  - Iwasaki, Yasutaka; Tanaka, Mitsuru; Yasuda, Akihiko; Kinugasa, Munetaka; Kikuchi, Toshihiko; and Maruyama, Masao, 4,444,156, Cl. 122-20.00B.
- Tani, Ictitaro: *See—*
  - Sakai, Seiichi; Gange, Toshihiko; Sugawara, Katuo; Tsukioka, Hideo; Tani, Ictitaro; Shiono, Shigeo; and Mori, Etsunori, 4,444,040, Cl. 73-19.000.
- Tanner, Darrell: *See—*
  - Brown, Cloyce L.; and Tanner, Darrell, 4,444,292, Cl. 184-6.000.
- Tappert, Hans-Jurgen: *See—*
  - Frenzel, Werner; Naumann, Johannes; Rudolph, Otfried; Peter, Gunter; Fischer, Karlheinz; Schott, Alfred; and Tappert, Hans-Jurgen, 4,444,106, Cl. 101-183.000.
- Tashiro, Mamoru: *See—*
  - Ishikawa, Takatoshi; Imai, Kiyoshi; Tashiro, Mamoru; and Nakajima, Junya, 4,444,873, Cl. 430-393.000.
- Tasto, Manfred; Kuhn, Michael; Piotrowski, Herbert; Tomaschewski, Horst; Geppert, Rudolf; and Ney, Hermann, to U.S. Philips Corporation. Device for adjusting a movable electro-acoustic sound transducer. 4,445,229, Cl. 381-110.000.
- Tattersall, Edward G.; and Ruler, Jack, to Vosper Hovermarine Limited; and Marconi Avionics Limited. Marine vehicles. 4,444,143, Cl. 114-67.00A.
- Taylor, Frank J. P. Non-electric portable dishwasher. 4,444,213, Cl. 134-56.00D.
- Taylor Freezer Company: *See—*
  - Baker, Edward D.; Lang-Ree, Nils; and Brown, John S., 4,444,094, Cl. 99-327.000.
- Taylor, James E.: *See—*
  - Dahlgren, Harold P.; Gardiner, John W.; and Taylor, James E., 4,444,147, Cl. 118-261.000.
- Taylor, John T.: *See—*
  - Ogle, David G.; and Taylor, John T., 4,444,066, Cl. 73-863.720.
- Taylor, Ralph E.; and Sennott, James W., to United States of America, National Aeronautics and Space Administration. Navigation system and method. 4,445,118, Cl. 343-357.000.
- Taylor, Richard J. Locking device assembly of a lifting beam or spreader particularly for containers. 4,444,426, Cl. 294-81.0SF.
- Tedds, Malvern J. T.: *See—*
  - Baines, John E.; Pilgrim, Thomas A.; Thornhill, Albert W.; and Tedds, Malvern J. T., 4,444,595, Cl. 106-109.000.
- Teijin Limited: *See—*
  - Norota, Susumu; Segawa, Yasuhiko; and Emi, Shingo, 4,444,911, Cl. 521-82.000.
- Tektronix, Inc.: *See—*
  - Alexander, Donnald A., 4,444,318, Cl. 211-41.000.
- Telecommunications Radioelectriquest et Telephoniques T.R.T.: *See—*
  - Forestier, Alain, 4,445,007, Cl. 179-175.30R.
- Telefonaktiebolaget L M Ericsson: *See—*
  - Berglund, Lars-Ake; and Andersson, Carl-Gunnar, 4,445,166, Cl. 363-48.000.
- Tempco Engineering, Inc.: *See—*
  - Knox, Kibourne H., 4,444,438, Cl. 303-13.000.
- Teradata Corporation: *See—*
  - Neches, Philip M., 4,445,171, Cl. 364-200.000.
- Terai, Kenji; Sudo, Katsuto; and Nakamura, Yoshiki, to Nippon Steel Corporation. Rocking type flying shears with stationary shearing function. 4,444,076, Cl. 83-316.000.
- Teramachi, Hiroshi. Unlimited sliding ball bearing spline assembly. 4,444,443, Cl. 308-6.00C.
- Terry, F. Duncan: *See—*
  - Haag, George A.; Fogg, O. Douglas; Greenley, Gordon A.; Shepard, Steve A.; and Terry, F. Duncan, 4,445,192, Cl. 364-900.000.
- Terry, John C.: *See—*
  - Francis, John F.; Kirk, Brian R.; and Terry, John C., 4,443,940, Cl. 30-50.000.
- Terry, Michael B., to Mostek Corporation. Sidetone circuit. 4,445,002, Cl. 179-81.00A.
- Terumo Corporation: *See—*
  - Aoyagi, Juuro; Suzuki, Kazuhiko; and Takahara, Kazuaki, 4,444,663, Cl. 210-500.200.
- Terumo Kabushiki Kaisha: *See—*
  - Aoyagi, Juuro; Takahara, Kazuaki; and Seita, Yukio, 4,444,716, Cl. 264-561.000.
  - Kasai, Masaaki; and Ichikawa, Toshiji, 4,444,330, Cl. 215-247.000.
  - Murase, Masakazu, 4,444,517, Cl. 374-188.000.
- Texaco Inc.: *See—*
  - Brennan, Michael E., 4,444,918, Cl. 521-131.000.
  - Brennan, Michael E., 4,444,919, Cl. 521-172.000.
  - Brennan, Michael E., 4,444,920, Cl. 521-173.000.
  - Crawford, Wheeler C.; Sweeney, William M.; and Sung, Rodney L., 4,444,566, Cl. 44-72.000.
  - Crotty, Joseph M., Jr.; and Veillon, John M., 4,444,726, Cl. 422-207.000.
  - Dominguez, Richard J. G.; and Rice, Doris M., 4,444,703, Cl. 264-45.300.
  - Haskin, Helen K.; and Figdore, Phillip E., 4,444,262, Cl. 166-274.000.
  - McEntire, Edward E., 4,444,971, Cl. 526-292.200.
  - Rice, Doris M.; Dominguez, Richard J. G.; and Lloyd, Rodney F., 4,444,910, Cl. 521-51.000.
  - Wittse, Arnold C., Jr.; Carley, Don A.; and Coleman, Richard L., deceased, 4,444,669, Cl. 252-41.000.
- Texas Instruments Incorporated: *See—*
  - DeFilippis, Pietro; Salvatore, Amedeo; Calenda, Ciro; and Notaro, Giuseppe, 4,445,079, Cl. 318-792.000.
  - Slawinski, Christopher, 4,444,605, Cl. 148-187.000.
- Textron Inc.: *See—*
  - Males, Robert E., 4,444,347, Cl. 227-88.000.
- Theofilos, Konstantin G.: *See—*
  - Bienus, John S.; Theofilos, Konstantin G.; Carris, John N.; and DeLeo, Ernest M., 4,444,586, Cl. 75-65.00R.
- Thermocell Development, Ltd.: *See—*
  - Smith, Stuart B., 4,444,913, Cl. 521-128.000.
- Thomas, Alfred; and Apfelbach, Bruno, to Krupp Kautex Maschinenbau GmbH. Method and apparatus for producing extruded sections of thermoplastic material. 4,444,702, Cl. 264-40.100.
- Thomas, Christy P.: *See—*
  - Ford, John W., Jr.; Rogers, Howard G.; and Thomas, Christy P., 4,444,471, Cl. 350-423.000.
- Thomas, David E.: *See—*
  - Snowden, David C.; Osborne, Joseph J.; Thomas, David E.; and Simms, David W., 4,444,063, Cl. 73-862.340.
- Thomas, Kenneth A., Jr., to Merck & Co., Inc. Purification and characterization of a protein fibroblast growth factor. 4,444,760, Cl. 424-177.000.
- Thompson, Henry C.: *See—*
  - Irons, Gary C.; Klein, John F.; Lander, Richard D.; Thompson, Henry C.; and Trapani, Richard D., 4,445,021, Cl. 219-121.0PM.
- Thomson-CSF: *See—*
  - Godart, Jean-Jacques; and Le Clerc, Bernard, 4,445,097, Cl. 331-117.00D.
  - Poulain, Pierre; de Cremoux, Baudouin; and Hirtz, Pierre, 4,445,130, Cl. 357-16.000.
- Thorn, Craig E.; Chasman, Chellis; and Baltz, Anthony J., to United States of America, Energy. Magnet pole tips. 4,445,102, Cl. 335-297.000.
- Thornhill, Albert W.: *See—*
  - Baines, John E.; Pilgrim, Thomas A.; Thornhill, Albert W.; and Tedds, Malvern J. T., 4,444,595, Cl. 106-109.000.
- Thurnau, Henry J.; Smalling, Ray K.; and Thurnau, Peter F. Tobacco harvester. 4,444,001, Cl. 56-27.500.
- Thurnau, Peter F.: *See—*
  - Thurnau, Henry J.; Smalling, Ray K.; and Thurnau, Peter F., 4,444,001, Cl. 56-27.500.
- Tiemann, James P. Latching devices. 4,443,916, Cl. 24-664.000.
- Tiepel, Erich W.: *See—*
  - Kitzes, Arnold S.; and Tiepel, Erich W., 4,444,680, Cl. 252-632.000.
- Tilly, Lynn K.; and Kemper, James M., to AMSTED Industries Incorporated. Single wheelset railway truck rigid transom connected sideframes. 4,444,121, Cl. 105-165.000.
- Timm, Edward E., to Dow Chemical Company, The. Process and apparatus for preparing uniform size polymer beads. 4,444,961, Cl. 526-88.000.
- Timothy, Earle J.: *See—*
  - Davis, Ray E., Jr.; Becker, Richard J.; Foster, Robert G.; Westkamper, Michael J.; Timothy, Earle J.; and Johnson, Richard H., 4,445,185, Cl. 364-514.000.
- Tippins Machinery Company, Inc.: *See—*
  - Ginzburg, Vladimir B., 4,444,038, Cl. 72-234.000.
- Tissot, Rene : *See—*
  - Scherschlicht, Richard R.; and Tissot, Rene , 4,444,758, Cl. 424-177.000.
- TMC Corporation: *See—*
  - Bauer, Helmut; and Krob, Erwin, 4,444,414, Cl. 280-633.000.
  - Svoboda, Josef; and Oberleitner, Gerhard, 4,444,411, Cl. 280-611.000.
- Togawa, Fumio; and Aoyama, Shigeo, to Hitachi Maxell, Ltd. Magnetic recording medium. 4,444,835, Cl. 428-329.000.
- Tohi, Yasusuke: *See—*
  - Murata, Naoaki; Yoshioka, Masahiro; Hayashi, Kiyoshi; and Tohi, Yasusuke, 4,444,386, Cl. 271-127.000.

- Tokai University: *See—*
  - Nishibu, Satoshi; Takahashi, Yasusuke; Nagamatsu, Gentaro; and Sakata, Toshibumi, 4,444,858, Cl. 430-49.000.
- Tokico Ltd.: *See—*
  - Koshimizu, Naganori, 4,444,436, Cl. 303-6.00C.
- Tokyo Electric Co., Inc., The: *See—*
  - Wakita, Tadayoshi; Suzuki, Minoru; Yanada, Sadao; and Sibata, Sigeru, 4,445,169, Cl. 364-147.000.
- Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
  - Araki, Youichi; and Ogawa, Toshio, 4,445,133, Cl. 357-38.000.
  - Ichikawa, Osamu; and Sadamasa, Tetsuo, 4,445,132, Cl. 357-32.000.
  - Ikeda, Yoshio, 4,444,027, Cl. 68-23.600.
  - Inoue, Akihiro; Kanoh, Tadao; Kamei, Taketo; Kamiya, Akihiro; Ishigami, Toshihiko; Kohno, Akira; and Sasaki, Hiroki, 4,445,067, Cl. 313-54.000.
  - Ishii, Jun, 4,445,054, Cl. 307-555.000.
  - Itoh, Ayao, 4,444,201, Cl. 128-716.000.
  - Iwahashi, Hiroshi, 4,445,203, Cl. 365-189.000.
  - Matsumaru, Kenichi; Oshima, Hirobumi; and Hirayama, Masaaki, 4,444,723, Cl. 422-159.000.
  - Okado, Chihiro, 4,445,167, Cl. 363-56.000.
  - Ueyama, Akihide, 4,445,035, Cl. 250-363.00S.
  - Yamamoto, Kazuhiko, 4,445,195, Cl. 364-900.000.
- Toledo Transducers, Inc.: *See—*
  - Kohler, Robert D., 4,445,093, Cl. 328-151.000.
- Tolun, Rasit; Emir, Bedri D.; Kalafatoglu, Ismail E.; Kocakusak, Sidika; and Yalaz, Nuran, to Turkiye Bilimsel ve Teknik Arastirma Kurumu. Production of sodium hydroxide and boric acid by the electrolysis of sodium borate solutions. 4,444,633, Cl. 204-98.000.
- Tom, Henry, to Syva Company. Periodate removal of ascorbate interference in dipsticks for immunoassays. 4,444,880, Cl. 435-7.000.
- Tomaschewski, Horst: *See—*
  - Tasto, Manfred; Kuhn, Michael; Piotrowski, Herbert; Tomaschewski, Horst; Geppert, Rudolf; and Ney, Hermann, 4,445,229, Cl. 381-110.000.
- Tominaga, Takashi; Ariyoshi, Toshihiko; and Asoshina, Eishi, to Nitto Electric Industrial Co., Ltd. Reinforcing adhesive sheets. 4,444,818, Cl. 428-36.000.
- Tomita, Katsuhiko; Katsuki, Ken; and Kuritani, Toshiyuki, to Horiba, Ltd. Compound infrared detector. 4,445,034, Cl. 250-338.000.
- Tomy Kogyo Co., Inc.: *See—*
  - Kaga, Takashi; and Funakoshi, Yoshiaki, 4,444,391, Cl. 273-1.0GE.
- Toray Silicone Company, Ltd.: *See—*
  - Matsushita, Takao, 4,444,944, Cl. 524-786.000.
- Torelli, Vesperto; Benzoni, Josette; and Deraedt, Roger, to Roussel Uclaf. Derivatives of 3-amino-pregn-5-ene. 4,444,767, Cl. 424-238.000.
- Torterotot, Roland; and Hautemont, Jean C., to S.A.R.L. Eroa Holding. Method and apparatus for providing piercing tabs on the lids of containers. 4,444,610, Cl. 156-264.000.
- Towmotor Corporation: *See—*
  - Melocik, Grant C.; and Blight, Steven E., 4,445,090, Cl. 324-433.000.
- Toyama Chemical Company, Ltd.: *See—*
  - Saikawa, Isamu; Yasuda, Takashi; Murakami, Shohachi; Maeda, Toyoo; Yotsuji, Akira; Takahata, Masahiro; Tsuda, Hisatsugu; Mikami, Hidetada; Sakai, Hiroshi; and Ohashi, Toshinori, 4,444,753, Cl. 424-98.000.
- Toyo Engineering Corporation: *See—*
  - Konoki, Keizo; Shinohara, Takanobu; Kochi, Ikuyoshi; Shibata, Keiichi; Nishihara, Hisakatsu; Morichika, Toshiaki; Sugitani, Junichi; and Tsuchida, Koji, 4,444,731, Cl. 422-310.000.
  - Konoki, Keizo; Shinohara, Takanobu; Kochi, Ikuyoshi; Anzai, Toshio; Nishihara, Hisakatsu; Sugitani, Junichi; and Tsuchida, Koji, 4,444,732, Cl. 422-310.000.
- Toyo Rubber Industry Co., Ltd., The: *See—*
  - Kan, Masanori; Okazaki, Takuya; and Sakashita, Tatsuo, 4,444,236, Cl. 152-209.00R.
- Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
  - Nakamura, Norihiko; and Ito, Takaaki, 4,444,695, Cl. 261-44.00C.
- Tradewell, George; and Smith, W. Novis. Partially-carbonized polyacrylonitrile filter. 4,444,574, Cl. 55-96.000.
- Trapani, Richard D.: *See—*
  - Irons, Gary C.; Klein, John F.; Lander, Richard D.; Thompson, Henry C.; and Trapani, Richard D., 4,445,021, Cl. 219-121.0PM.
- Traverse, Jean-Pierre: *See—*
  - Aries, Lucien; and Traverse, Jean-Pierre, 4,444,600, Cl. 148-6.240.
- Travis Handling Systems, Inc.: *See—*
  - Travis, Merton A., 4,444,323, Cl. 211-193.000.
- Travis, Merton A., to Travis Handling Systems, Inc. Retaining means for adjustable cantilever storage racks. 4,444,323, Cl. 211-193.000.
- Treyssac, Georges M., to Societe Anonyme d'Etudes, de Recherches et de Productions d'Agents Chimiques-E.R.P.A.C. Process for the biological treatment of a liquid effluent on an adsorbing material bed. 4,444,664, Cl. 210-605.000.
- Trident Surgical Corporation: *See—*
  - Zamba, Gene; and Foltz, Carl, 4,443,935, Cl. 29-622.000.
- Tridon Limited: *See—*
  - Chamberlain, Howard W., 4,443,907, Cl. 15-250.320.
- Trieselt, Wolfgang: *See—*
  - Denzinger, Walter; Trieselt, Wolfgang; Perner, Johannes; and Hartmann, Heinrich, 4,444,561, Cl. 8-137.000.
- Trippi, Anthony C. Orthopedic tongs. 4,444,179, Cl. 128-75.000.
- Tsai, Shan-Pu; Benezra, Leo L.; Horvat, Lewis R.; and Hazzard, John P., to Diamond Shamrock Corporation. Dimensionally stable asbestos-polytetrafluoroethylene diaphragms for chloralkali electrolytic cells. 4,444,640, Cl. 204-283.000.
- Tseng, Ching-Ho. Internal combustion rotary power plant system. 4,444,164, Cl. 123-237.000.
- Tseng, Ching-Ho. Internal combustion rotary power plant system. 4,444,165, Cl. 123-237.000.
- Tsuchida, Koji: *See—*
  - Konoki, Keizo; Shinohara, Takanobu; Kochi, Ikuyoshi; Shibata, Keiichi; Nishihara, Hisakatsu; Morichika, Toshiaki; Sugitani, Junichi; and Tsuchida, Koji, 4,444,731, Cl. 422-310.000.
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- Tsuchiya, Hiroyuki; Asakura, Yamato; Suzuki, Teiji; and Kikuchi, Makoto, to Hitachi, Ltd. Process for separating and recovering hydrogen isotope. 4,444,737, Cl. 423-249.000.
- Tsuda, Hisatsugu: *See—*
  - Saikawa, Isamu; Yasuda, Takashi; Murakami, Shohachi; Maeda, Toyoo; Yotsuji, Akira; Takahata, Masahiro; Tsuda, Hisatsugu; Mikami, Hidetada; Sakai, Hiroshi; and Ohashi, Toshinori, 4,444,753, Cl. 424-98.000.
- Tsuji, Nobuo: *See—*
  - Yamada, Yasuyuki; Akashi, Goro; Tsuji, Nobuo; and Mukaida, Yoshito, 4,444,838, Cl. 428-336.000.
  - Yamaguchi, Nobutaka; Tsuji, Nobuo; Okuzawa, Yasutoshi; Nasu, Norio; and Fujiyama, Masaaki, 4,444,842, Cl. 428-340.000.
- Tsukada, Masaharu, to Canon Kabushiki Kaisha. Image forming apparatus. 4,445,126, Cl. 346-108.000.
- Tsukahara, Nobuhiko: *See—*
  - Takahashi, Kiyoshi; and Tsukahara, Nobuhiko, 4,445,155, Cl. 360-99.000.
- Tsukioka, Hideo: *See—*
  - Sakai, Seiichi; Gange, Toshihiko; Sugawara, Katuo; Tsukioka, Hideo; Tani, Ictitaro; Shiono, Shigeo; and Mori, Etsunori, 4,444,040, Cl. 73-19.000.
- Tsunemitsu, Katsuhiko: *See—*
  - Kawai, Hajime; Tsunemitsu, Katsuhiko; Fujino, Yoshiharu; and Shimizu, Yoji, 4,444,591, Cl. 106-21.000.
- Tsuno, Koichi: *See—*
  - Ono, Kimizo; Nishiwaki, Yoshikazu; Tsuno, Koichi; Iwai, Tohru; and Nishikawa, Mitsuru, 4,444,462, Cl. 350-96.250.
- Tsuzuku, Susumu: *See—*
  - Hira, Yasuo; Tsuzuku, Susumu; Gotoh, Masao; Yokono, Hitoshi; and Naka, Reishi, 4,444,704, Cl. 264-45.500.
- Tucker, Hartwell F.; Tucker, Jeffrey R.; Ross, Dennis; and Knirck, Jeffrey G. Machine for floor maintenance. 4,443,906, Cl. 15-50.00R.
- Tucker, Jeffrey R.: *See—*
  - Tucker, Hartwell F.; Tucker, Jeffrey R.; Ross, Dennis; and Knirck, Jeffrey G., 4,443,906, Cl. 15-50.00R.
- Tuft, Richard A.: *See—*
  - Benton, John R.; Corbett, Francis J.; and Tuft, Richard A., 4,445,141, Cl. 358-294.000.
- Tupa, John T.: *See—*
  - Borovicka, David A., Sr.; Hahn, Kenneth G., Jr.; and Tupa, John T., 4,444,941, Cl. 524-507.000.
- Turkiye Bilimsel ve Teknik Arastirma Kurumu: *See—*
  - Tolun, Rasit; Emir, Bedri D.; Kalafatoglu, Ismail E.; Kocakusak, Sidika; and Yalaz, Nuran, 4,444,633, Cl. 204-98.000.
- Tuukkanen, Rainer A.: *See—*
  - Aysta, James E.; Gibson, Geoffrey; and Tuukkanen, Rainer A., 4,444,449, Cl. 339-99.00R.
- Twieg, Robert J.: *See—*
  - Bernier, William E.; Emmi, Francis; Fey, Edmond O.; Gendler, Paul L.; and Twieg, Robert J., 4,444,626, Cl. 204-2.000.
- Tyler, Daniel W.: *See—*
  - Rocca, Cosmo M. D.; and Tyler, Daniel W., 4,445,008, Cl. 179-179.000.
- Tyson, Travis C. Storage, shipping, display and dispensing package of roll material. 4,444,313, Cl. 206-397.000.
- UBE Industries, Ltd.: *See—*
  - Hayashi, Masumi; Ogawa, Kazuo; Kimura, Katsumi; Ishii, Hiroshi; and Bandai, Satoshi, 4,444,709, Cl. 264-174.000.
  - Ohdan, Kyoji; Hogami, Toshihiko; and Fujinaga, Masataka, 4,444,907, Cl. 502-211.000.
- Uchikawa, Fusaoki: *See—*
  - Sekiya, Mutuo; Tanaka, Hideharu; Uchikawa, Fusaoki; and Ohata, Yasufumi, 4,444,288, Cl. 181-258.000.
- Ueda, Takeo, to Nippon Seiko Kabushiki Kaisha. Latch device for a moving runner member used in an automatic seat belt system. 4,444,417, Cl. 280-804.000.
- Ueda, Yoshihiro; Sasao, Hiroyuki; Hamano, Suenobu; and Okuda, Suichiro, to Mitsubishi Denki Kabushiki Kaisha. Circuit interrupter. 4,445,020, Cl. 200-148.00A.
- Uedaira, Satoru: *See—*
  - Makino, Yoshimi; Ochiai, Yoshitaka; Aso, Koichi; Uedaira, Satoru; Hayakawa, Masatoshi; and Hotai, Kazuhide, 4,444,602, Cl. 148-121.000.
- Uehara, Mitsuru, to Honda Giken Kogyo Kabushiki Kaisha. Battery for vehicle. 4,444,856, Cl. 429-163.000.
- Uemura, Akira: *See—*
  - Akita, Shinji; Hatanaka, Masayuki; and Uemura, Akira, 4,444,035, Cl. 72-100.000.
- Ueno, Masao: *See—*
  - Shimizu, Norio; Yamaguchi, Tetsuo; Saitou, Setsuo; Ueno, Masao; and Odawara, Yooji, 4,444,882, Cl. 435-29.000.

Ueno, Ryuzo; Matsuda, Toshio; Inamine, Shigeo; Kanayama, Tatsuo; and Fujita, Yatsuka, to Kabushiki Kaisha Ueno Seiyaku Oyo Kenkyujo. Method for production of pet foods. 4,444,796, Cl. 426-335.000.
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Ueyama, Akihide, to Tokyo Shibaura Denki Kabushiki Kaisha. Emission computed tomography having radial position control of radiation detector. 4,445,035, Cl. 250-363.00S.
Uffner, William E.: *See*—
Harrington, Edward R.; Uffner, William E.; and Janicki, Richard T., 4,444,947, Cl. 525-545.000.
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Petit, Robert, 4,444,244, Cl. 164-429.000.
UHDE GmbH: *See*—
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Uhlmann, Hans-Jorg: *See*—
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Ulmer, Herbert: *See*—
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Keogh, Michael J., 4,444,957, Cl. 525-370.000.
Union Oil Company of California: *See*—
Croudace, Michael C., 4,444,565, Cl. 44-68.000.
Dvoracek, Louis M., 4,444,649, Cl. 208-48.0AA.
Hass, Robert H.; and Ward, John W., 4,444,741, Cl. 423-542.000.
Hass, Robert H.; and Ward, John W., 4,444,742, Cl. 423-573.00G.
Hass, Robert H.; and Ward, John W., 4,444,908, Cl. 502-247.000.
Uniroyal, Inc.: *See*—
Rowland, Donald G.; and Heck, Rhomie L., III, 4,444,679, Cl. 252-350.000.
Wefer, John M., 4,444,840, Cl. 428-339.000.
Wheeler, Robert D., 4,444,841, Cl. 428-339.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
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Parker, Robert A., 4,444,441, Cl. 305-35.00R.
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Army: *See*—
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Campoli, Ralph F., 4,444,113, Cl. 102-430.000.
Caponi, Elso R., 4,444,119, Cl. 102-530.000.
Huber, William A., 4,445,028, Cl. 235-472.000.
Smith, Bernard; and Freeman, Gerard L., 4,444,718, Cl. 419-37.000.
White, Harold V., 4,444,086, Cl. 89-1.800.
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Schwiesow, Ronald L., 4,444,501, Cl. 356-346.000.
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Anderson, David F., 4,445,037, Cl. 250-380.000.
Fischer, William H., 4,444,993, Cl. 174-14.00R.
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Andrews, Dana G., 4,444,368, Cl. 244-216.000.
Minott, Peter O., 4,444,464, Cl. 350-172.000.
St. Clair, Terry L.; and Burks, Harold D., 4,444,979, Cl. 528-172.000.
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Miller, Donald; and Bowers, Clark A., 4,444,425, Cl. 294-88.000.
Rosenthal, David A., 4,445,120, Cl. 343-462.000.
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U.S. Philips Corporation: *See*—
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Tasto, Manfred; Kuhn, Michael; Piotrowski, Herbert; Tomaschewski, Horst; Geppert, Rudolf; and Ney, Hermann, 4,445,229, Cl. 381-110.000.
van Amstel, Antonius C., 4,445,069, Cl. 313-610.000.
van Heel, Martinus J. M.; and Willemsen, Petrus J. M., 4,445,068, Cl. 313-113.000.
U.S. Steel Corporation: *See*—
Brownell, George L.; Collier, Melba J.; Hall, William E.; Morgan, Howard H., Jr.; and Snyder, A. R., 4,444,987, Cl. 585-850.000.
Martin, Wayne A., 4,444,604, Cl. 148-131.000.
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Rickard, Bruce W.; and Fisher, Bernard, 4,444,521, Cl. 400-120.000.
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Limoncelli, Anthony F., 4,444,366, Cl. 244-135.00R.
Rowley, Robert L., 4,444,544, Cl. 416-221.000.
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University of Georgia Research Foundation, Inc.: *See*—
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Jackson, John, 4,444,205, Cl. 128-782.000.
University of Utah: *See*—
Kim, Wan S.; Jeong, Seo Y.; and McRea, James C., 4,444,683, Cl. 260-112.700.
University Patents, Inc.: *See*—
Fritzberg, Alan R., 4,444,690, Cl. 260-429.00J.
Schwartz, Jeffrey; and Huang, Tai-Nang, 4,444,898, Cl. 502-62.000.
University Testing Service Inc.: *See*—
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Untereker, Darrel F.: *See*—
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Urbas, Branko, to CPC International Inc. Recovery of organic acids from a fermentation broth. 4,444,881, Cl. 435-139.000.
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Valerio, Joseph F., Jr. Rescue apparatus. 4,444,290, Cl. 182-48.000.
"Valico", personenvennootschap met beperkte aansprakelijkheid: *See*—
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Cummings, Ernest W.; and Valk, Nick, 4,444,217, Cl. 137-195.000.
van Amstel, Antonius C., to U.S. Philips Corporation. Low-pressure discharge lamp. 4,445,069, Cl. 313-610.000.
van der Lely, Ary; and Bom, Cornelis J. G., to C. Van der Lely N.V. Soil cultivating implements. 4,444,270, Cl. 172-47.000.
Vanderstukken, Robert; and De Boel, Marcel, to Glaverbel. Fire-screening panel. 4,444,825, Cl. 428-215.000.
Vanderveer, Fred; Knipper, Aloysius J.; Straka, Robert; and Squicciarini, Alex J., to Nabisco, Inc. Method and composition for producing soft edible baked products and an edible firm gel for use therein. 4,444,799, Cl. 426-549.000.
Vanderwerff, William D.: *See*—
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van Dijke, Jan P.: *See*—
Flinsenberg, Harry J.; and van Dijke, Jan P., 4,444,500, Cl. 356-336.000.
van Heel, Martinus J. M.; and Willemsen, Petrus J. M., to U.S. Philips Corporation. Low-pressure mercury vapor discharge lamp with internal glass fibers. 4,445,068, Cl. 313-113.000.
VanMersbergen, Steve. Dunnage plugs. 4,444,535, Cl. 410-121.000.
Van Mullem, Pieter M. E., to "Valico", personenvennootschap met beperkte aansprakelijkheid. Tank-mounted filling device. 4,444,230, Cl. 141-198.000.
van Muyden, Willem G. F. Bee hive. 4,443,904, Cl. 6-1.000.
Vannguard of Hampton, Inc.: *See*—
Cripps, Raymond A., 4,444,751, Cl. 424-94.000.
Van Scoyk, Pershing R.: *See*—
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McKenney, James L., 4,445,023, Cl. 219-326.000.

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Varga, Agnes, to Kozponti Valto Es Hitelbank Rt. Heat transformation process and apparatus for air-conditioning in rooms for a great number of living creatures, particularly building for animal breeding. 4,444,020, Cl. 62-93.000.
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Varon, David; Dorner, Steven C.; and Siegal, Burton L., to Crown Metal Manufacturing Company. Adapter for bracket securement to wall studs and method of manufacture. 4,443,979, Cl. 52-36.000.
Vatter, Waldemar: *See*—
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VDO Adolf Schindling A.G.: *See*—
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Versar Inc.: *See*—
Shaver, Robert G., 4,444,894, Cl. 501-90.000.
Vessichelli, Lucien. Adjustable tensioning and locking device. 4,444,084, Cl. 87-57.000.
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Victor Company of Japan, Limited: *See*—
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Kobari, Harukuni; Yamada, Yasuhiro; Suzuki, Susumu; and Hibino, Chitoshi, 4,445,216, Cl. 371-39.000.
Kobayashi, Toshio; and Hishiki, Hideo, 4,445,101, Cl. 335-210.000.
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Wefer, John M., to Uniroyal, Inc. Calendered AES film. 4,444,840, Cl. 428-339.000.
Wehl, Glenn E., to Portage Electric Products, Inc. Thermostat. 4,445,105, Cl. 337-94.000.
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- Weimann, Gunter: *See—*
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- Weiner, Michael; and Grajeda, Jose. Method of printing lines on pleated fabric. 4,444,101, Cl. 101-35.000.
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- Weisser, Bernard: *See—*
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- Welsch, John H.; and Brancher, Rodney, to Metropolitan Wire Corporation. Knock down work table. 4,444,125, Cl. 108-155.000.
- Welton, Charles L.; and Van Scoyk, Pershing R. Flexible spur holders and spurs. 4,443,996, Cl. 54-83.00R.
- Wendling, Francoise: *See—*
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- Wendt, William P. Weighted golf swing exercise club. 4,444,396, Cl. 273-193.00A.
- Wenskus, Herbert: *See—*
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- Werner, Johannes. Device for receiving and transposing of plates, in particular, glass plates. 4,444,537, Cl. 414-107.000.
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- West, Theodore H., to Exxon Research and Engineering Co. Solvent dewaxing with methyl tertiary butyl ether. 4,444,648, Cl. 208-33.000.
- Western Electric Co., Inc.: *See—*
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- Westinghouse Electric Corp.: *See—*
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  - Fischer, William H., 4,444,995, Cl. 174-28.000.
  - Gordon, John T., 4,445,160, Cl. 361-91.000.
  - Kitzes, Arnold S.; and Tiepel, Erich W., 4,444,680, Cl. 252-632.000.
- Westkamper, Michael J.: *See—*
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- Wetterhorn, Richard H., to Dresser Industries, Inc. Movement construction for condition responsive gauge instrument. 4,444,057, Cl. 73-739.000.
- Wevers, Henk S.; Sorbie, Charles; and Saunders, Gerald A. B., to Queen's University at Kingston. Bone clip. 4,444,181, Cl. 128-92.00D.
- Wey, Robert A.; Roberts, Harold A.; and Dery, Roger, to Augat Inc. Fiber optic connector and method of manufacture. 4,444,461, Cl. 350-96.210.
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- Wheeler, Robert D., to Uniroyal, Inc. Extruded AES film. 4,444,841, Cl. 428-339.000.
- Whitcomb, Eugene C., to Rockwell International Corporation. Reactive ion etching of molybdenum silicide and N+ polysilicon. 4,444,617, Cl. 156-643.000.
- White, Harold V., to United States of America, Army. Missile azimuth aiming apparatus. 4,444,086, Cl. 89-1.800.
- White, Roy H., to Intex Inc. Encoding scheme for articles. 4,445,225, Cl. 378-44.000.
- Whitefield, John T., to Allen Organ Company. Modified transient harmonic interpolator for an electronic musical instrument. 4,444,082, Cl. 84-1.210.
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- Whitehurst, Brooks M.; and Clemens, Donald F. Production of alkali metal glucoheptanate from sweet potatoes. 4,444,794, Cl. 426-52.000.
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  - Keith, Laura E.; Smyth, Marie T.; and Whiteside, George D., 4,444,478, Cl. 354-417.000.
- Whitesides, Robert B.: *See—*
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- Whittaker Corporation: *See—*
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- Whitworth, Keith R.: *See—*
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- Wiancko, Paul R. T.; and Koniuk, Victor D., to Federal Pioneer Limited. Fuse clip for a cartridge fuseholder. 4,444,455, Cl. 339-258.00F.
- Wick, Georg; Bock, Gunther; and Schauenstein, K. Observation of immunofluorescene for distinguishing between specific and nonspecific binding of conjugates. 4,444,317, Cl. 209-3.100.
- Wickman, Arnold W.: *See—*
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- Widen, Sune; Jensen, Borge; and Bjork, Lars. Container and closure having integral sealing means. 4,444,332, Cl. 220-306.000.
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- Wiedemann, Karl. Sewer cleaning vehicle. 4,443,908, Cl. 15-302.000.
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- Wilks, John E.; and Hawley, Jesse E., to Wilks, John E. Windmill. 4,444,543, Cl. 416-170.00R.
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- Willemsen, Petrus J. M.: *See—*
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- Williams, Stephen L.: *See—*
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- Williams, Thomas V. Rotary valve for inherently balanced engine. 4,444,161, Cl. 123-190.00E.
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- Wilson, Gretchen L.: *See—*
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- Wiltgen, Bernard M., Jr., to S&C Electric Company. Arc extinguishing material. 4,444,671, Cl. 252-63.200.
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- Winters, Jonathan K.; and Savell, Fred B., III, to Ashland Oil, Inc. Water-borne soft coating compositions and processes therefor. 4,444,803, Cl. 427-27.000.
- Wipf AG Verpackungen: *See—*
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- Wisconsin Alumni Research Foundation: *See—*
  - Sih, Charles J., 4,444,884, Cl. 435-55.000.
- Wise, Robert J.; and Petermann, James P., to Georgia-Pacific Corporation. Flying saw apparatus. 4,444,077, Cl. 83-319.000.
- Wittse, Arnold C., Jr.; Carley, Don A.; and Coleman, Richard L., deceased (by Moye, Donald B., administrator), to Texaco Inc. Method for continuous manufacture of high dropping point lithium complex soap grease. 4,444,669, Cl. 252-41.000.
- Wojtyna, Vincent J.: *See—*
  - Carlson, John D.; Kifer, Edward W.; Wojtyna, Vincent J.; and Colton, James P., 4,444,912, Cl. 521-121.000.
- Wolff, Siegfried: *See—*
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- Wolfinger, John F., to General Electric Company. Electromagnetic torque measuring instrumentation for a rotating shaft. 4,444,064, Cl. 73-862.340.
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- Wood, William E.; and Rosen, Roy A., to Merck & Co., Inc. Delivery of adjustable quantities of materials. 4,444,335, Cl. 222-43.000.
- Woodwell, Philip E., to Boeing Company, The. Fiber optic slip ring. 4,444,459, Cl. 350-96.150.
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- Works, George A., to Raytheon Company. Distributed beam steering computer. 4,445,119, Cl. 343-377.000.
- Worley, Arthur C., to Exxon Research and Engineering Co. Liquid cooled tube supports. 4,444,157, Cl. 122-510.000.
- Worth, Melvin H., Jr.: *See—*
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- Wright, Windsor D., to GTE Products Corporation. Method for establishing a vertical E-field antenna installation. 4,445,123, Cl. 343-719.000.

- Wroten, John F., Jr.: *See—*
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- Wrucke, Robert T. Tendon stretching device. 4,444,389, Cl. 272-96.000.
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  - Rinehart, Stephen A.; Britt, James E.; Laskowski, Kenneth W.; Sisson, Jeffrey L.; and Buddendeck, Gerald A., 4,444,491, Cl. 355-50.000.
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- Yaeger, Bernard W.: *See—*
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- Yalaz, Nuran: *See—*
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- Yamada, Koichi; Nakazato, Kunio; Shiraishi, Katsuzo; and Hamano, Seiichi, to Sumitomo Aluminum Smelting Company, Limited. Process for the production of low density activated alumina formed product. 4,444,899, Cl. 502-64.000.
- Yamada, Toshikatsu, to K.K. Yamada Kogaku Seisaku. Microscope with projector. 4,444,475, Cl. 350-508.000.
- Yamada, Yasuhiro: *See—*
  - Kobari, Harukuni; Yamada, Yasuhiro; Suzuki, Susumu; and Hibino, Chitoshi, 4,445,216, Cl. 371-39.000.
- Yamada, Yasuyuki; Akashi, Goro; Tsuji, Nobuo; and Mukaida, Yoshito, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,444,838, Cl. 428-336.000.
- Yamagata, Ryutaro: *See—*
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- Yamagiwa, Tamio, to Hi-Sonic Co., Ltd. Automatic liquid-supply stopper plug. 4,444,222, Cl. 137-393.000.
- Yamaguchi, Nobutaka; Tsuji, Nobuo; Okuzawa, Yasutoshi; Nasu, Norio; and Fujiyama, Masaaki, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,444,842, Cl. 428-340.000.
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- Yamaha Parts Distributors, Inc.: *See—*
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- Yamai, Tadamasa; Sagehashi, Risaburo; Kameyama, Yoshio; and Shimomura, Takao, to Eagle Industry Co., Ltd. Mechanical seal and method of forming a sliding surface thereof. 4,444,399, Cl. 277-1.000.
- Yamaki, Kiyoshi; and Suzuki, Hidetaka, to Nissan Motor Company, Limited. Electronic liquid level gauge. 4,444,051, Cl. 73-304.00C.
- Yamamoto, Kazuhiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Recording system of variable length picture information. 4,445,195, Cl. 364-900.000.
- Yamamoto, Kenji, to Yamamoto Kogaku Co., Ltd. Goggles for ski use. 4,443,893, Cl. 2-436.000.
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- Yamamoto, Koichi: *See—*
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- Yamamoto, Yasuo, to Nihon Cambridge Filter Kabushiki Kaisha. Fluid pressure sensing apparatus. 4,444,060, Cl. 73-861.660.
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- Yamato, Akihiro; and Umesaki, Shigeo, to Honda Motor Co., Ltd. Electronic fuel injection control system for use with an internal combustion engine, having an after-start fuel increasing function. 4,444,173, Cl. 123-491.000.
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  - Kawanishi, Shozo, 4,444,282, Cl. 177-25.000.
- Yamato, Shigeru: *See—*
  - Furukawa, Shichiro; Nakagishi, Yutaka; and Yamato, Shigeru, 4,444,628, Cl. 204-29.000.
- Yamatsuta, Kohji; and Nishio, Ken-ichi, to Sumitomo Chemical Company, Limited. Aluminum alloy reinforced with silica alumina fiber. 4,444,603, Cl. 148-127.000.
- Yamauchi, Hiroyuki: *See—*
  - Nakajima, Heitaro; Umeda, Kenkichi; Kodera, Youichi; Naito, Noriaki; Yamauchi, Hiroyuki; Matsumoto, Isao; Nakamura, Shouichi; Takada, Katsuo; Shiga, Ken; and Yamamoto, Yoshihito, 4,445,150, Cl. 360-18.000.
- Yamauchi, Teruo: *See—*
  - Kirisawa, Tadashi; Yamauchi, Teruo; and Oyama, Yoshishige, 4,444,169, Cl. 123-344.000.
- Yamazaki, Kazuo: *See—*
  - Kihara, Nobutoshi; Matsumoto, Yoshiharu; and Yamazaki, Kazuo, 4,445,154, Cl. 360-85.000.
- Yamazawa, Masayuki, to Aisin Seiki Kabushiki Kaisha. Thread controlling mechanism for multiple needle sewing machine. 4,444,138, Cl. 112-241.000.
- Yanada, Sadao: *See—*
  - Wakita, Tadayoshi; Suzuki, Minoru; Yanada, Sadao; and Sibata, Sigeru, 4,445,169, Cl. 364-147.000.
- Yanagi, Toshiaki; and Bessho, Yoshinori, to Brother Kogyo Kabushiki Kaisha. Programming device for an automatic sewing machine. 4,444,135, Cl. 112-121.120.
- Yanagihara, Nobuyuki; Gamo, Takaharu; Moriwaki, Yoshio; and Iwaki, Tsutomu, to Matsushita Electric Industrial Co. Ltd. Hydrogen gas purification apparatus. 4,444,727, Cl. 422-223.000.
- Yanagisawa, Akira: *See—*
  - Iwasaki, Teruo; Saitou, Norio; and Yanagisawa, Akira, 4,445,040, Cl. 250-452.200.
- Yanai, Tokiyoshi, to Nissan Motor Co., Ltd. Variable ratio rack and pinion steering gear. 4,444,070, Cl. 74-422.000.
- Yano, Motoichi: *See—*
  - Sakano, Hajime; Ito, Akitoshi; Yano, Motoichi; and Honda, Yasuhiro, 4,444,950, Cl. 525-67.000.
- Yasuda, Akihiko: *See—*
  - Iwasaki, Yasutaka; Tanaka, Mitsuru; Yasuda, Akihiko; Kinugasa, Munetaka; Kikuchi, Toshihiko; and Maruyama, Masao, 4,444,156, Cl. 122-20.00B.
- Yasuda, Takashi: *See—*
  - Saikawa, Isamu; Yasuda, Takashi; Murakami, Shohachi; Maeda, Toyoo; Yotsuji, Akira; Takahata, Masahiro; Tsuda, Hisatsugu; Mikami, Hidetada; Sakai, Hiroshi; and Ohashi, Toshinori, 4,444,753, Cl. 424-98.000.
- Yasudomi, Norio: *See—*
  - Goto, Takeshi; Takao, Hisashi; Yasudomi, Norio; Osaki, Norio; and Murata, Tadateru, 4,444,786, Cl. 424-298.000.
- Yasujima, Akitaka; Nogami, Sumitaka; Kitahama, Yoshiharu; and Iwami, Isamu, to Asahi Kasei Kogyo Kabushiki Kaisha. Layered persistent photoconductive element comprises pigment layer and polymer layer containing polyvinyl carbazole. 4,444,860, Cl. 430-57.000.
- Yatman, Teoman. Meeting cost calculator and/or timer. 4,445,181, Cl. 364-464.000.
- Yew, Nelson C., to Perkin-Elmer Corp., The. High throughput/high resolution particle beam system. 4,445,039, Cl. 250-492.200.
- Yoho, Clayton W.: *See—*
  - Jacobson, Norman A.; and Yoho, Clayton W., 4,444,745, Cl. 424-45.000.
- Yokono, Hitoshi: *See—*
  - Hira, Yasuo; Tsuzuku, Susumu; Gotoh, Masao; Yokono, Hitoshi; and Naka, Reishi, 4,444,704, Cl. 264-45.500.
- Yokoyama, Akira; Tanaka, Hisashi; Yamada, Akira; and Arano, Yasushi, to Nihon Medi-Physics Co., Ltd. Radioactive diagnostic agent and its preparation. 4,444,743, Cl. 424-1.100.
- Yoon, Heeyoung, to Conoco Inc. Alcohol dissociation process for automobiles. 4,444,158, Cl. 123-1.00A.
- York, Kenneth L., to Burroughs Corporation. Data word handling enhancement in a page oriented named-data hierarchical memory system. 4,445,191, Cl. 364-900.000.
- Yoshida Kogyo K. K.: *See—*
  - Osaki, Tatsuo, 4,443,924, Cl. 29-408.000.
- Yoshida Kogyo K.K.: *See—*
  - Matsuda, Yoshio, 4,444,026, Cl. 66-202.000.
  - Takahashi, Kihei, 4,443,923, Cl. 29-408.000.
- Yoshida, Toshio: *See—*
  - Nagashima, Tsukasa; and Yoshida, Toshio, 4,444,982, Cl. 568-817.000.
- Yoshida, Youki; and Ichikawa, Kenji, to Nissan Motor Co., Ltd.; and Ikeda Bussan Co., Ltd. Seat having pneumatic component. 4,444,430, Cl. 297-284.000.
- Yoshigai Kikai Kinzoku Kabushiki Kaisha: *See—*
  - Yoshigai, Toshiharu, 4,444,294, Cl. 188-24.110.
- Yoshigai, Toshiharu, to Yoshigai Kikai Kinzoku Kabushiki Kaisha. Brake shoe mount for brake apparatus. 4,444,294, Cl. 188-24.110.
- Yoshinaka, Tadaaki; and Takayama, Takashi, to Sony Corporation. Periodic pulse forming circuit. 4,445,092, Cl. 328-139.000.

- Yoshioka, Masahiro: *See—*
  - Murata, Naoaki; Yoshioka, Masahiro; Hayashi, Kiyoshi; and Tohi, Yasusuke, 4,444,386, Cl. 271-127.000.
- Yotsuji, Akira: *See—*
  - Saikawa, Isamu; Yasuda, Takashi; Murakami, Shohachi; Maeda, Toyoo; Yotsuji, Akira; Takahata, Masahiro; Tsuda, Hisatsugu; Mikami, Hidetada; Sakai, Hiroshi; and Ohashi, Toshinori, 4,444,753, Cl. 424-98.000.
- You, Won F. Air valve device for an internal combustion engine. 4,444,167, Cl. 123-327.000.
- Younes, Usama E., to Atlantic Richfield Company. Fire retardant copolymer from bis(hydrocarbyl)vinyl phosphonate. 4,444,969, Cl. 526-262.000.
- Young, Ivan R.: *See—*
  - Reynolds, Alastair S.; and Young, Ivan R., 4,445,221, Cl. 375-10.000.
- Young, James R.; and Schreck, Raymond M., to General Electric Company. Vacuum thermal insulation panel. 4,444,821, Cl. 428-69.000.
- Young, Thomas E.: *See—*
  - Hamm, Sidney R.; and Young, Thomas E., 4,445,162, Cl. 361-334.000.
- Young, Uen-Long: *See—*
  - Liau, Shung-Chung; Cheng, Wei-Min; and Young, Uen-Long, 4,444,627, Cl. 204-26.000.
- Youngbauer, Daniel L.: *See—*
  - Kude, William B.; Pearman, A. Noel J.; and Youngbauer, Daniel L., 4,444,337, Cl. 222-139.000.
- Youngner, Philip G. Distilling apparatus. 4,444,623, Cl. 202-185.00A.
- Yugen Gaisha Itakura Ball: *See—*
  - Itakura, Jinryo, 4,444,706, Cl. 264-71.000.
- Yuyama, Yukihiro: *See—*
  - Maruta, Keiichi; and Yuyama, Yukihiro, 4,444,819, Cl. 346-209.000.
- Zalucha, Denis J.; Sexsmith, Frederick H.; Howard, Dennis D.; and Nulph, Michael L., to Lord Corporation. Thermally-responsive polymeric materials. 4,444,846, Cl. 428-425.600.
- Zamba, Gene; and Foltz, Carl, to Trident Surgical Corporation. Process for making electrosurgical scalpel pencil. 4,443,935, Cl. 29-622.000.
- Zeitler, Carl, Jr.: *See—*
  - Burk, John L.; Cormier, Roger L.; Hartung, Michael H.; Larner, Ray A.; Lucas, Donald J.; Lynch, Kenneth R.; Moore, Brian B.; Page, Howard L.; Wansor, David H.; and Zeitler, Carl, Jr., 4,445,176, Cl. 364-200.000.
- Zeuke, Reinhard: *See—*
  - Preuss, Bernhard; and Zeuke, Reinhard, 4,444,067, Cl. 74-108.000.
- Ziaylek, Theodore, Jr. Boat light, especially for transom mounting. 4,445,163, Cl. 362-287.000.
- Zilog, Inc.: *See—*
  - Hughes, Ronald P.; Swartz, Douglas G.; and Weiner, Bruce E., 4,445,170, Cl. 364-200.000.
- Zimmerman, Jon P., to Sherwood Corporation, The. Convertible seating furniture. 4,443,901, Cl. 5-28.000.
- Zimmerman, Kurt: *See—*
  - Ruhle, Walter; and Zimmerman, Kurt, 4,445,060, Cl. 310-154.000.
- Zimmermann, Kurt: *See—*
  - Corbach, Rainer; and Zimmermann, Kurt, 4,445,059, Cl. 310-154.000.
- Zimmermann, Wolfgang: *See—*
  - Dudzik, Joachim; Dudzik, Winfried; Zimmermann, Wolfgang; and Pospich, Gunther, 4,444,839, Cl. 428-336.000.
- Zinser Textilmaschinen GmbH: *See—*
  - Klein, Konrad; Dinkelmann, Friedrich; and Guttler, Hermann, 4,444,005, Cl. 57-80.000.
- Zison, Stanley W., to Getty Synthetic Fuels, Inc. Method and apparatus for determining the venting rate of landfill gas. 4,444,041, Cl. 73-19.000.
- Zlokarnik, Marko: *See—*
  - Konigshofen, Heinrich; Bruck, Dieter W.; Nierth, Alfred; Zlokarnik, Marko; and Uhlmann, Hans-Jorg, 4,444,739, Cl. 423-371.000.
- Zueckler, Karl, to Siemens AG. Vacuum switching tube with a ring to generate an axial magnetic field. 4,445,015, Cl. 200-144.00B.
- Zukausky, Keith E., to Eaton Corporation. Mixing valve. 4,444,215, Cl. 137-98.000.
- Zumbach Electronic AG: *See—*
  - Studer, Urs-Peter, 4,444,457, Cl. 350-6.800.
- Zwirn, Robert; and Farwell, William D., to Hughes Aircraft Company. Real time dynamic range compression for image enhancement. 4,445,138, Cl. 358-166.000.
- Zysk, Edward D.: *See—*
  - Lanam, Richard D.; Robertson, Allen R.; and Zysk, Edward D., 4,444,728, Cl. 422-249.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 24TH DAY OF APRIL, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Beaulieu, Bryan J., to Rupp Industries, Inc. Portable shelter. Re. 31,565, Cl. 135-102.000.
- Bede Industries, Inc.: *See—*
  - Bede, James D., Re. 31,562, Cl. 34-86.000.
- Bede, James D., to Bede Industries, Inc. Heating vent for electric clothes dryer. Re. 31,562, Cl. 34-86.000.
- Devine, Thomas M., Jr., to General Electric Company. Composite substrate for rotating x-ray anode tube. Re. 31,568, Cl. 378-125.000.
- General Electric Company: *See—*
  - Devine, Thomas M., Jr., Re. 31,568, Cl. 378-125.000.
- Hasegawa, Hiroshi, to Nippon Kogaku K.K. Automatic control indication device in an automatic control type electronic flash unit. Re. 31,567, Cl. 354-413.000.
- Hendricks, David A. Hyperextension back brace. Re. 31,564, Cl. 128-78.000.
- Jansa, Wolfgang: *See—*
  - Langlitz, Karl-Heinz; Jansa, Wolfgang; Mahringer, Karl H., deceased; Mahringer, Christine, heir; and Mahringer, Wolfgang L., heir, Re. 31,566, Cl. 266-192.000.
- Langlitz, Karl-Heinz; Jansa, Wolfgang; Mahringer, Karl H., deceased; by Mahringer, Christine, heir; and by Mahringer, Wolfgang L., heir, to Mannesmann Demag Aktiengesellschaft. Cooling structure for a metallurgical furnace. Re. 31,566, Cl. 266-192.000.
- Lockheed Corporation: *See—*
  - Stout, Ernest G.; and Thornburg, Francis L., Re. 31,563, Cl. 114-283.000.
- Mahringer, Christine, heir: *See—*
  - Langlitz, Karl-Heinz; Jansa, Wolfgang; Mahringer, Karl H., deceased; Mahringer, Christine, heir; and Mahringer, Wolfgang L., heir, Re. 31,566, Cl. 266-192.000.
- Mahringer, Karl H., deceased: *See—*
  - Langlitz, Karl-Heinz; Jansa, Wolfgang; Mahringer, Karl H., deceased; Mahringer, Christine, heir; and Mahringer, Wolfgang L., heir, Re. 31,566, Cl. 266-192.000.
- Mahringer, Wolfgang L., heir: *See—*
  - Langlitz, Karl-Heinz; Jansa, Wolfgang; Mahringer, Karl H., deceased; Mahringer, Christine, heir; and Mahringer, Wolfgang L., heir, Re. 31,566, Cl. 266-192.000.
- Mannesmann Demag Aktiengesellschaft: *See—*
  - Langlitz, Karl-Heinz; Jansa, Wolfgang; Mahringer, Karl H., deceased; Mahringer, Christine, heir; and Mahringer, Wolfgang L., heir, Re. 31,566, Cl. 266-192.000.
- Nippon Kogaku K.K.: *See—*
  - Hasegawa, Hiroshi, Re. 31,567, Cl. 354-413.000.
- Rupp Industries, Inc.: *See—*
  - Beaulieu, Bryan J., Re. 31,565, Cl. 135-102.000.
- Stout, Ernest G.; and Thornburg, Francis L., to Lockheed Corporation. Hydro-ski craft with longitudinal flaps. Re. 31,563, Cl. 114-283.000.
- Thompson, C. Ames. Large capacity drainage receptacle. Re. 31,561, Cl. 4-290.000.
- Thornburg, Francis L.: *See—*
  - Stout, Ernest G.; and Thornburg, Francis L., Re. 31,563, Cl. 114-283.000.

LIST OF DESIGN PATENTEES

- Acrow (Engineers) Limited: *See—*
  - Young, George B. A., 273,619, Cl. D25-73.000.
- Airwick Industries, Inc.: *See—*
  - Joyaux, Yves; and Mandon, Jean-Pierre, 273,607, Cl. D23-3.000.
- Akabane, Moriji, to Hori Glass Co., Ltd. Window pane holder or similar article. 273,560, 4-24-84, Cl. D8-373.000.
- AMBA Marketing Systems: *See—*
  - Schimmel, Otto K., 273,536, Cl. D3-52.000.
- American Hospital Supply Corporation: *See—*
  - Johnson, Theodore D.; and Hudspith, Sydney, 273,613, Cl. D24-55.000.
- Armbruster, John T., to Warner Lambert Technologies, Inc. Microscope. 273,592, 4-24-84, Cl. D16-131.000.
- Aulicino, Michael R., to MRA Central Station Electronic Alarm Company, Inc. Security system console. 273,573, 4-24-84, Cl. D10-106.000.
- Autry, Sandra H. Thread organizer. 273,532, 4-24-84, Cl. D3-23.000.
- Barrett, Marian K. Hand loom or similar article. 273,588, 4-24-84, Cl. D15-66.000.
- Bell Telephone Laboratories, Incorporated: *See—*
  - McGarvey, John N.; Paas, Terrance J.; Prince, Terry B.; and Tilley, Alvina R., 273,584, Cl. D14-106.000.
- Berg, David W.: *See—*
  - Kimzey, Paul W.; Berg, David W.; and Larson, Warren L., 273,620, Cl. D32-16.000.
- Bidegain, Pierre. Shoe sole. 273,531, 4-24-84, Cl. D2-320.000.
- Boeing Company, The: *See—*
  - Martin, Robert D.; and Sepstrup, James L., 273,579, Cl. D12-345.000.
- Bolt, William S. Holding pallet for PC boards. 273,582, 4-24-84, Cl. D13-99.000.
- Bovet, Thomas, to Mike & Kremmel Limited. Culinary press for garlic or similar materials. 273,553, 4-24-84, Cl. D7-101.000.
- Bowman, Angelina: *See—*
  - Bowman, Jack T.; and Bowman, Angelina, 273,545, Cl. D6-128.000.
- Bowman, Jack T.; and Bowman, Angelina. Collapsible table for use primarily on a boat. 273,545, 4-24-84, Cl. D6-128.000.
- Brown, Neil F.; Star, Roger D.; and Johnson, Logan W., to Tennant Company. Floor maintenance machine. 273,622, 4-24-84, Cl. D32-16.000.
- Buras, John W.; Seitz, Adolf; and Gabrius, Algimantis J., to D. Gottlieb & Co. Back cabinet for pinball game. 273,597, 4-24-84, Cl. D21-10.000.
- Burlington Industries, Inc.: *See—*
  - West, Haywood L., 273,542, Cl. D6-80.000.
- Burton, David. Combination book rack and tissue dispenser. 273,543, 3-24-84, Cl. D6-97.000.
- Butler, Bobby D. Reel for an extension cord. 273,559, 4-24-84, Cl. D8-359.000.
- Byrd, Patrick N.; and Reep, Sam C. Level indicator or the like. 273,567, 4-24-84, Cl. D10-69.000.
- Cadbury Schweppes Plc: *See—*
  - Jeans, Robina E.; and Jeans, Edward L., 273,563, Cl. D9-367.000.
- Carlson, Alfred D.: *See—*
  - Haub, Donald J.; and Carlson, Alfred D., 273,621, Cl. D32-16.000.
- Carolina Creations, Inc.: *See—*
  - Segal, Ira, 273,550, Cl. D6-260.000.
- Carroll, John W., III; Gundogan, Can I.; Menkes, Peter K.; and Chin, Arthur W., to Data General Corporation. Video display terminal or similar article. 273,585, 4-24-84, Cl. D14-113.000.
- Chidester, James R.: *See—*
  - Trammell, Wallace E.; Young, James E.; Chidester, James R.; and Walker, Ralph S., 273,612, Cl. D24-1.100.
- Chin, Arthur W.: *See—*
  - Carroll, John W., III; Gundogan, Can I.; Menkes, Peter K.; and Chin, Arthur W., 273,585, Cl. D14-113.000.
- Chino, Kiyozumi: *See—*
  - Wada, Seihei; and Chino, Kiyozumi, 273,572, Cl. D10-106.000.
- Coggin, J. Thayer, to Thayer Coggin Incorporated. Swivel chair. 273,539, 4-24-84, Cl. D6-31.000.
- Commercial Shearing, Inc.: *See—*
  - Hodgson, Robert F., 273,586, Cl. D15-7.000.
  - Hodgson, Robert F., 273,587, Cl. D15-7.000.
- Crawford Products, Inc.: *See—*
  - Sheftel, Steven J., 273,544, Cl. D6-125.000.
- Crew, Robert T. Bracket for attachment of a vacuum gauge or the like. 273,558, 4-24-84, Cl. D8-354.000.
- D. Gottlieb & Co.: *See—*
  - Buras, John W.; Seitz, Adolf; and Gabrius, Algimantis J., 273,597, Cl. D21-10.000.
- Data General Corporation: *See—*
  - Carroll, John W., III; Gundogan, Can I.; Menkes, Peter K.; and Chin, Arthur W., 273,585, Cl. D14-113.000.
- Davis, Jackie L.: *See—*
  - Lewis, Fielding H., Jr.; Davis, Jackie L.; Tucker, Richard B. C.; and Griebe, Robert E., 273,601, Cl. D2-210.000.
- Driskell, Thomas D.; and Metsger, D. Scott. Sterile container. 273,565, 4-24-84, Cl. D9-415.000.
- Durand, Dianne R. Frame for pleating and smocking machine. 273,589, 4-24-84, Cl. D15-78.000.

- Eicher, James P.; and Matsubara, K. Norman. Liquid measuring gauge for cooking utensils. 273,552, 4-24-84, Cl. D7-50.000.
- Elliott, Randall L., to Liberty National Bank & Trust Co. Drive-in banking kiosk. 273,618, 4-24-84, Cl. D25-1.000.
- Emhart Industries, Inc.: *See—*
  - Hattori, Kenneth M., 273,583, Cl. D14-39.000.
- Environmentally Safe Products, Corp.: *See—*
  - Williams, Charles G. D., 273,605, Cl. D22-18.000.
- Farnes, Robin T.; and Howatt, William C. Ornamental toothbrush. 273,538, 4-24-84, Cl. D4-25.000.
- Felske, Seigfried. Shoe shank insert. 273,530, 4-24-84, Cl. D2-314.000.
- Fleishman, Gregg R. Single passenger vehicle. 273,577, 4-24-84, Cl. D12-85.000.
- Fowle, Mark A., to Milton Bradley International, Inc. Game board. 273,598, 4-24-84, Cl. D21-12.000.
- Freeman, Samuel. Multiple slide mount. 273,591, 4-24-84, Cl. D16-38.000.
- Frieberg, Bengt O. Transfer washer. 273,562, 4-24-84, Cl. D8-399.000.
- Gabrius, Algimantis J.: *See—*
  - Buras, John W.; Seitz, Adolf; and Gabrius, Algimantis J., 273,597, Cl. D21-10.000.
- Gannett Co., Inc.: *See—*
  - Gore, Fred M., 273,595, Cl. D20-6.000.
- Gay Sales and Distributing Company, Inc.: *See—*
  - Smith, James R., 273,602, Cl. D21-247.000.
- Gerch, Edward L., to Kingport Ltd. Portable desk. 273,537, 4-24-84, Cl. D3-71.000.
- Gore, Fred M., to Gannett Co., Inc. Newspaper vending rack or similar article. 273,595, 4-24-84; Cl. D20-6.000.
- Griebe, Robert E.: *See—*
  - Lewis, Fielding H., Jr.; Davis, Jackie L.; Tucker, Richard B. C.; and Griebe, Robert E., 273,601, Cl. D2-210.000.
- Gundogan, Can I.: *See—*
  - Carroll, John W., III; Gundogan, Can I.; Menkes, Peter K.; and Chin, Arthur W., 273,585, Cl. D14-113.000.
- Hattori, Kenneth M., to Emhart Industries, Inc. Speaker enclosure. 273,583, 4-24-84, Cl. D14-39.000.
- Haub, Donald J.; and Carlson, Alfred D., to Tennant Company. Combination sweeper-scrubber floor machine. 273,621, 4-24-84, Cl. D32-16.000.
- Hauserman, Inc., Int. Furniture & Textile Division: *See—*
  - Petitt, Donald C., 273,549, Cl. D6-196.000.
- Hazama, Satoshi, to Sharp Corporation. Kerosene heater. 273,610, 4-24-84, Cl. D23-123.000.
- Henry, Carl M. Screw driver shaft. 273,556, 4-24-84, Cl. D8-86.000.
- Hodgson, Robert F., to Commercial Shearing, Inc. Convertable pump and motor. 273,586, 4-24-84, Cl. D15-7.000.
- Hodgson, Robert F., to Commercial Shearing, Inc. Convertable pump and motor. 273,587, 4-24-84, Cl. D15-7.000.
- Hollander, George. Furniture base or similar article. 273,548, 4-24-84, Cl. D6-194.000.
- Hori Glass Co., Ltd.: *See—*
  - Akabane, Moriji, 273,560, Cl. D8-373.000.
- Howatt, William C.: *See—*
  - Farnes, Robin T.; and Howatt, William C., 273,538, Cl. D4-25.000.
- Hsu, Shih-chen. Detachable top luggage case for motorcycle. 273,578, 4-24-84, Cl. D12-158.000.
- Hudspith, Sydney: *See—*
  - Johnson, Theodore D.; and Hudspith, Sydney, 273,613, Cl. D24-55.000.
- Huffington, Troy J., Jr. Shower splash guard. 273,609, 4-24-84, Cl. D23-69.000.
- ICL Scientific, Inc.: *See—*
  - Parker, James E., 273,617, Cl. D24-99.000.
- Jeans, Edward L.: *See—*
  - Jeans, Robina E.; and Jeans, Edward L., 273,563, Cl. D9-367.000.
- Jeans, Robina E.; and Jeans, Edward L., to Cadbury Schweppes Plc. Concentrate container for a liquid dispenser. 273,563, 4-24-84, Cl. D9-367.000.
- Johnson, Logan W.: *See—*
  - Brown, Neil F.; Star, Roger D.; and Johnson, Logan W., 273,622, Cl. D32-16.000.
- Johnson, Theodore D.; and Hudspith, Sydney, to American Hospital Supply Corporation. Liquid transfer device for medicaments and the like. 273,613, 4-24-84, Cl. D24-55.000.
- Joyaux, Yves; and Mandon, Jean-Pierre, to Airwick Industries, Inc. Toilet bowl cleaner and deodorizer. 273,607, 4-24-84, Cl. D23-3.000.
- Kaneko, Yoshimasa: *See—*
  - Ozaki, Nobuo; and Kaneko, Yoshimasa, 273,561, Cl. D8-397.000.
- Kimzey, Paul W.; Berg, David W.; and Larson, Warren L., to Tennant Company. Power sweeper. 273,620, 4-24-84, Cl. D32-16.000.
- Kinder, Leon. Portable spray arm. 273,608, 4-24-84, Cl. D23-34.000.
- Kingport Ltd.: *See—*
  - Gerch, Edward L., 273,537, Cl. D3-71.000.
- Kirby, John M. Lemon squeezer. 273,551, 4-24-84, Cl. D7-48.000.
- Knoedler Manufacturers, Inc.: *See—*
  - Wagner, Ronald C.; and Lochte, William, 273,540, Cl. D6-48.000.
- Landry, George H. Bracket for mounting liquified petroleum gas tanks. 273,606, 4-24-84, Cl. D23-2.000.
- Larson, Warren L.: *See—*
  - Kimzey, Paul W.; Berg, David W.; and Larson, Warren L., 273,620, Cl. D32-16.000.
- Levine, Hyman S. Sprue and runner bars for metal casting. 273,616, 4-24-84, Cl. D24-99.000.
- Leviton Manufacturing Company, Inc.: *See—*
  - Rosenbaum, Saul; and Oster, Gilbert, 273,581, Cl. D13-12.000.
- Lewis, Fielding H., Jr.; Davis, Jackie L.; Tucker, Richard B. C.; and Griebe, Robert E., to Wm. T. Burnett & Co., Inc. Lacrosse stick head. 273,601, 4-24-84, Cl. D2-210.000.
- Liberty National Bank & Trust Co.: *See—*
  - Elliott, Randall L., 273,618, Cl. D25-1.000.
- Lochte, William: *See—*
  - Wagner, Ronald C.; and Lochte, William, 273,540, Cl. D6-48.000.
- Lovejoy, Robert B., to Mattel, Inc. Electronic teaching and entertainment housing or similar article. 273,594, 4-24-84, Cl. D19-60.000.
- Maeda Industries, Ltd.: *See—*
  - Ozaki, Nobuo; and Kaneko, Yoshimasa, 273,561, Cl. D8-397.000.
- Mandon, Jean-Pierre: *See—*
  - Joyaux, Yves; and Mandon, Jean-Pierre, 273,607, Cl. D23-3.000.
- Mars, Incorporated: *See—*
  - Taub, Ronald H., 273,547, Cl. D6-191.000.
- Martin, Robert D.; and Sepstrup, James L., to Boeing Company, The. Airplane engine nacelle. 273,579, 4-24-84, Cl. D12-345.000.
- Maskrey, William B., to Meridian Industries Inc. Disposable surgical needle counter. 273,615, 4-24-84, Cl. D24-99.000.
- Mastro, Louis L.; and Traylor, William C., to Square D. Company. Outdoor electrical receptacle cover. 273,557, 4-24-84, Cl. D8-353.000.
- Matsubara, K. Norman: *See—*
  - Eicher, James P.; and Matsubara, K. Norman, 273,552, Cl. D7-50.000.
- Mattel, Inc.: *See—*
  - Lovejoy, Robert B., 273,594, Cl. D19-60.000.
- McGarvey, John N.; Paas, Terrance J.; Prince, Terry B.; and Tilley, Alvina R., to Bell Telephone Laboratories, Incorporated. Video display. 273,584, 4-24-84, Cl. D14-106.000.
- McMahan, Lawrence E. Concealable holster. 273,604, 4-24-84, Cl. D22-14.000.
- Menkes, Peter K.: *See—*
  - Carroll, John W., III; Gundogan, Can I.; Menkes, Peter K.; and Chin, Arthur W., 273,585, Cl. D14-113.000.
- Meridian Industries Inc.: *See—*
  - Maskrey, William B., 273,615, Cl. D24-99.000.
- Metsger, D. Scott: *See—*
  - Driskell, Thomas D.; and Metsger, D. Scott, 273,565, Cl. D9-415.000.
- Mike & Kremmel Limited: *See—*
  - Bovet, Thomas, 273,553, Cl. D7-101.000.
- Millan-Perichon, Gerard. Flag. 273,576, 4-24-84, Cl. D11-167.000.
- Milton Bradley International, Inc.: *See—*
  - Fowle, Mark A., 273,598, Cl. D21-12.000.
- Morgan, Scottie M. Sandal. 273,529, 4-24-84, Cl. D2-293.000.
- MRA Central Station Electronic Alarm Company, Inc.: *See—*
  - Aulicino, Michael R., 273,573, Cl. D10-106.000.
- Nester, Robert S. Plate lifter or similar article. 273,554, 4-24-84, Cl. D21-102.000.
- Nykvarns Skylt AB: *See—*
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- Ogg, Elmer E., Jr.; and Wells, William E., to Systems Unlimited Inc. Rack for supporting check transfer trays. 273,546, 4-24-84, Cl. D6-188.000.
- Olfman, Jerry A.: *See—*
  - Olfman, Shawn D.; and Olfman, Jerry A., 273,599, Cl. D21-51.000.
- Olfman, Shawn D.; and Olfman, Jerry A. Figurine or statuette game playing piece or the like. 273,599, 4-24-84, Cl. D21-51.000.
- Oster, Gilbert: *See—*
  - Rosenbaum, Saul; and Oster, Gilbert, 273,581, Cl. D13-12.000.
- Overs, Ronald R. Combined marine knotmeter, log and depth sounder. 273,569, 4-24-84, Cl. D10-98.000.
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- Paas, Terrance J.: *See—*
  - McGarvey, John N.; Paas, Terrance J.; Prince, Terry B.; and Tilley, Alvina R., 273,584, Cl. D14-106.000.
- Parker, James E., to ICL Scientific, Inc. Transparent laboratory slide. 273,617, 4-24-84, Cl. D24-99.000.
- Patterson, John E. Eucher score keeper. 273,566, 4-24-84, Cl. D10-46.100.
- Petitt, Donald C., to Hauserman, Inc., Int. Furniture & Textile Division. Furniture pedestal. 273,549, 4-24-84, Cl. D6-196.000.
- Pitney Bowes Inc.: *See—*
  - Woods, George H.; and Stewart, John G., 273,568, Cl. D10-91.000.
- Powell, Alfred J. Combined lounge seat and entertainment module. 273,541, 4-24-84, Cl. D6-64.000.
- Prince, Terry B.: *See—*
  - McGarvey, John N.; Paas, Terrance J.; Prince, Terry B.; and Tilley, Alvina R., 273,584, Cl. D14-106.000.
- Quaker Oats Company, The: *See—*
  - Wilkes, Kenneth R., 273,600, Cl. D21-128.000.
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  - Byrd, Patrick N.; and Reep, Sam C., 273,567, Cl. D10-69.000.
- Riumbau, Conrad L. Combination battery charger and tester. 273,580, 4-24-84, Cl. D13-5.000.
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- Sakamoto, Harumi, to Sharp Corporation. Electronic calculator. 273,593, 4-24-84, Cl. D18-7.000.
- Schimmel, Otto K., to AMBA Marketing Systems. Handbag. 273,536, 4-24-84, Cl. D3-52.000.
- Segal, Ira, to Carolina Creations, Inc. Quilted bedspread. 273,550, 4-24-84, Cl. D6-260.000.
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- Seldeen, Richard. Piston holster. 273,603, 4-24-84, Cl. D22-13.000.
- Sepstrup, James L.: *See—*
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  - Hazama, Satoshi, 273,610, Cl. D23-123.000.
  - Sakamoto, Harumi, 273,593, Cl. D18-7.000.
- Sheftel, Steven J., to Crawford Products, Inc. Tool rack. 273,544, 4-24-84, Cl. D6-125.000.
- Singer Company, The: *See—*
  - Vermillion, Don W., 273,623, Cl. D32-31.000.
- Smith, James R., to Gay Sales and Distributing Company, Inc. Rocking bull. 273,602, 4-24-84, Cl. D21-247.000.
- Spielhoff, Peter, to Teroson G.m.b.H. Plastic bottle. 273,564, 4-24-84, Cl. D9-413.000.
- Square D. Company: *See—*
  - Mastro, Louis L.; and Traylor, William C., 273,557, Cl. D8-353.000.
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- Stewart, John G.: *See—*
  - Woods, George H.; and Stewart, John G., 273,568, Cl. D10-91.000.
- Systems Unlimited Inc.: *See—*
  - Ogg, Elmer E., Jr.; and Wells, William E., 273,546, Cl. D6-188.000.
- Tanner, Robert D. Combined bottle opener and recapper. 273,555, 4-24-84, Cl. D8-40.000.
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- Tennant Company: *See—*
  - Brown, Neil F.; Star, Roger D.; and Johnson, Logan W., 273,622, Cl. D32-16.000.
  - Haub, Donald J.; and Carlson, Alfred D., 273,621, Cl. D32-16.000.
  - Kimzey, Paul W.; Berg, David W.; and Larson, Warren L., 273,620, Cl. D32-16.000.
- Teroson G.m.b.H.: *See—*
  - Spielhoff, Peter, 273,564, Cl. D9-413.000.
- Thayer Coggin Incorporated: *See—*
  - Coggin, J. Thayer, 273,539, Cl. D6-31.000.
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- Tilley, Alvina R.: *See—*
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- Traylor, William C.: *See—*
  - Mastro, Louis L.; and Traylor, William C., 273,557, Cl. D8-353.000.
- Tucker, Richard B. C.: *See—*
  - Lewis, Fielding H., Jr.; Davis, Jackie L.; Tucker, Richard B. C.; and Griebe, Robert E., 273,601, Cl. D2-210.000.
- Uro Denshi Kogyo Kabushiki Kaisha: *See—*
  - Wada, Seihei; and Chino, Kiyozumi, 273,572, Cl. D10-106.000.
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- Wagner, Ronald C.; and Lochte, William, to Knoedler Manufacturers, Inc. Vehicular seat or similar article. 273,540, 4-24-84, Cl. D6-48.000.
- Waldecrantz, Bo, to Nykvarns Skylt AB. Sign. 273,596, 4-24-84, Cl. D20-44.000.
- Walker, Ralph S.: *See—*
  - Trammell, Wallace E.; Young, James E.; Chidester, James R.; and Walker, Ralph S., 273,612, Cl. D24-1.100.
- Warner Lambert Technologies, Inc.: *See—*
  - Armbruster, John T., 273,592, Cl. D16-131.000.
- Weinreb, Robert. Video camera bag. 273,533, 4-24-84, Cl. D3-33.000.
- Weinreb, Robert. Video recorder bag. 273,534, 4-24-84, Cl. D3-33.000.
- Weinreb, Robert. Camera bag. 273,535, 4-24-84, Cl. D3-33.000.
- Wells, William E.: *See—*
  - Ogg, Elmer E., Jr.; and Wells, William E., 273,546, Cl. D6-188.000.
- West, Haywood L., to Burlington Industries, Inc. Headboard. 273,542, 4-24-84, Cl. D6-80.000.
- Wilkes, Kenneth R., to Quaker Oats Company, The. Toy vehicle. 273,600, 4-24-84, Cl. D21-128.000.
- Wm. T. Burnett & Co., Inc.: *See—*
  - Lewis, Fielding H., Jr.; Davis, Jackie L.; Tucker, Richard B. C.; and Griebe, Robert E., 273,601, Cl. D2-210.000.
- Williams, Charles G. D., to Environmentally Safe Products, Corp. Mouse trap. 273,605, 4-24-84, Cl. D22-18.000.
- Woods, George H.; and Stewart, John G., to Pitney Bowes Inc. Postal scale. 273,568, 4-24-84, Cl. D10-91.000.
- Young, George B. A., to Acrow (Engineers) Limited. Beam. 273,619, 4-24-84, Cl. D25-73.000.
- Young, James E.: *See—*
  - Trammell, Wallace E.; Young, James E.; Chidester, James R.; and Walker, Ralph S., 273,612, Cl. D24-1.100.

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  - Williams, J. Benjamin, 5,222, Cl. 23.000.
  - Zebehazy, Alex J., 5,224, Cl. 54.000.
- Friday, James, to Hilltop Orchards & Nurseries, Inc. Peach tree. 5,223, 4-24-84, Cl. 43.000.
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  - Friday, James, 5,223, Cl. 43.000.
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CLASSIFICATION OF PATENTS

ISSUED APRIL 24, 1984

NOTE.—First number, class; second number, subclass; third number, patent number

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436 4,443,893

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191	4,444,253
216	4,444,254
248	4,444,255
259	4,444,256
261	4,444,257
	4,444,258
265	4,444,259
267	4,444,260
272	4,444,261
274	4,444,262
285	4,444,263
294	4,444,264
295	4,444,265
324	4,444,266
330	4,444,267
373	4,444,268

CLASS 168

1	4,444,269

CLASS 172

47	4,444,270
140	4,444,271

CLASS 173

12	4,444,272
	4,444,273
134	4,444,274

CLASS 174

14 R	4,444,993
16 HS	4,444,994
28	4,444,995
74 A	4,444,996

CLASS 175

7	4,444,275
61	4,444,276
66	4,444,277
108	4,444,278
202	4,444,279
206	4,444,280
336	4,444,281

CLASS 177

25	4,444,282
59	4,444,283

CLASS 178

18	4,444,997
19	4,444,998

CLASS 179

2 C	4,444,999
6.03	4,445,000
17 A	4,445,001
81 A	4,445,002
81 R	4,445,003
99 H	4,445,004
156 R	4,445,005
170 NC	4,445,006
175.3 R	4,445,007
179	4,445,008

CLASS 180

19.1	4,444,284
65.4	4,444,285
197	4,444,286
252	4,444,287

CLASS 181

258	4,444,288

CLASS 182

36	4,444,289
48	4,444,290
214	4,444,291

CLASS 184

6	4,444,292

CLASS 187

87	4,444,293

CLASS 188

24.11	4,444,294
67	4,444,295
72.2	4,444,296

CLASS 192

0.055	4,444,299
3.58	4,444,297
21.5	4,444,298
58 B	4,444,300

CLASS 193

35 R	4,444,301

CLASS 198

334	4,444,302
345	4,444,303
735	4,444,304
844	4,444,305

CLASS 200

5 R	4,445,009
11 R	4,445,010
52 R	4,445,011
61.04	4,445,012
77	4,445,013
78	4,445,014
144 A	4,445,017
144 B	4,445,015
	4,445,016
148 A	4,445,018
	4,445,019
	4,445,020

CLASS 202

185 A	4,444,623

CLASS 203

61	4,444,624
95	4,444,625

CLASS 204

2	4,444,626
26	4,444,627
29	4,444,628
43 Z	4,444,629
55 R	4,444,630
95	4,444,631
98	4,444,632
	4,444,633
181 C	4,444,634
192 R	4,444,635
206	4,444,636
212	4,444,637
252	4,444,638
257	4,444,639
283	4,444,640
286	4,444,641
290 F	4,444,642
298	4,444,643
406	4,444,644
409	4,444,645
415	4,444,646

CLASS 206

1.7	4,444,306
5.1	4,444,307
249	4,444,308
329	4,444,309
366	4,444,310
391	4,444,311
394	4,444,312
397	4,444,313
425	4,444,314
449	4,444,315
524.4	4,444,316

CLASS 208

11 LE	4,444,647
33	4,444,648
48 AA	4,444,649
106	4,444,650
120	4,444,651
135	4,444,652
152	4,444,653
188	4,444,654
210	4,444,655

CLASS 209

3.1	4,444,317
347	4,444,656

CLASS 210

95	4,444,657
150	4,444,658
222	4,444,659
386	4,444,660
446	4,444,661
500.2	4,444,662
	4,444,663
605	4,444,664
660	4,444,665
670	4,444,666
735	4,444,667

CLASS 211

41	4,444,318
50	4,444,319
134	4,444,320
186	4,444,321
190	4,444,322
193	4,444,323

CLASS 215

6	4,444,324
31	4,444,325
209	4,444,326
211	4,444,327
230	4,444,328
	4,444,329
247	4,444,330

CLASS 219

121 PM	4,445,021
125.1	4,445,022
326	4,445,023
390	4,445,024
530	4,445,025
553	4,445,026

CLASS 220

85 S	4,444,333
304	4,444,331
306	4,444,332

CLASS 221

75	4,444,334

CLASS 222

43	4,444,335
129.4	4,444,336
139	4,444,337
149	4,444,338
402.22	4,444,339
498	4,444,340
591	4,444,341

CLASS 224

252	4,444,342
276	4,444,343
313	4,444,344

CLASS 225

96.5	4,444,345

CLASS 226

162	4,444,346

CLASS 227

88	4,444,347
149	4,444,348

CLASS 228

102	4,444,349
112	4,444,350
121	4,444,351
193	4,444,352
231	4,444,353

CLASS 229

23 BT	4,444,354
43	4,444,355
71	4,444,356

CLASS 235

430	4,445,027
472	4,445,028

CLASS 236

12.12	4,444,357

CLASS 239

284 R	4,444,358

CLASS 242

55.53	4,444,359
56 R	4,444,360
56.6	4,444,362
65	4,444,361
67.4	4,444,363
68.3	4,444,364

CLASS 244

48	4,444,365
135 R	4,444,366
199	4,444,367
216	4,444,368

CLASS 248

27.1	4,444,369
74.1	4,444,370
225.31	4,444,371
317	4,444,372
544	4,444,373

CLASS 249

14	4,444,374

CLASS 250

201	4,445,029
203 R	4,445,030
214 RC	4,445,031
256	4,445,032
266	4,445,033
338	4,445,034
363 S	4,445,035
370	4,445,036
380	4,445,037
382	4,445,038
452.2	4,445,040
492.2	4,445,039
505.1	4,445,041
506.1	4,445,042
557	4,445,043
561	4,445,044

CLASS 252

8.55 R	4,444,668
41	4,444,669
62.54	4,444,670
63.2	4,444,671
70	4,444,672
90	4,444,673
95	4,444,674
175	4,444,675
182	4,444,676
301.17	4,444,677
312	4,444,678
350	4,444,679
632	4,444,680

CLASS 254

346	4,444,375

CLASS 260

112.5 R	4,444,682
112.5 T	4,444,681
112.7	4,444,683
155	4,444,684
239 A	4,444,685
239.1	4,444,686
	4,444,687
245.6	4,444,688
397.45	4,444,689
429 J	4,444,690
465 D	4,444,691
465.4	4,444,692
502.5 F	4,444,693
513 B	4,444,694

CLASS 261

44 C	4,444,695
97	4,444,696
118	4,444,697
157	4,444,698

CLASS 264

4.7	4,444,699
24	4,444,700
40.1	4,444,701
	4,444,702
45.3	4,444,703
45.5	4,444,704
46.5	4,444,705
71	4,444,706
103	4,444,707
105	4,444,708
174	4,444,709
209.5	4,444,710
243	4,444,711
267	4,444,712
326	4,444,713
328.18	4,444,714
501	4,444,715
561	4,444,716

CLASS 266

117	4,444,376
192	Re.31,566
227	4,444,377
237	4,444,378

CLASS 269

87	4,444,379
	4,444,380
328	4,444,381

CLASS 271

10	4,444,382
14	4,444,383
18.3	4,444,384
22	4,444,385
127	4,444,386
189	4,444,387
293	4,444,388

CLASS 272

96	4,444,389
130	4,444,390

CLASS 273

1 GE	4,444,391
77 A	4,444,392
85 D	4,444,393
144 B	4,444,394
171	4,444,395
193 A	4,444,396
411	4,444,397

CLASS 277

1	4,444,398
	4,444,399
9	4,444,400
30	4,444,401
93 R	4,444,402
228	4,444,403
235 R	4,444,404

CLASS 280

47.3	4,444,405
277	4,444,406
297	4,444,407
438 A	4,444,408
492	4,444,409
512	4,444,410
611	4,444,411
614	4,444,412
632	4,444,413
633	4,444,414
701	4,444,415
763.1	4,444,416
804	4,444,417

CLASS 281

45	4,444,418

CLASS 285

12	4,444,419
47	4,444,420
86	4,444,421

CLASS 290

40 B	4,445,045
52	4,445,046

CLASS 292

169	4,444,422

CLASS 294

81 SF	4,444,426
87 R	4,444,423
	4,444,424
88	4,444,425

CLASS 296

43	4,444,427
154	4,444,428
170	4,444,429

CLASS 297

284	4,444,430
316	4,444,431
476	4,444,432

CLASS 299

2	4,444,433
14	4,444,434

CLASS 301

63 PW	4,444,435

CLASS 303

6 C	4,444,436
	4,444,437
13	4,444,438
22 R	4,444,439
50	4,444,440

CLASS 305

35 R	4,444,441

CLASS 307

31	4,445,047
42	4,445,048
45	4,445,049
145	4,445,050
450	4,445,051
456	4,445,052
490	4,445,053
555	4,445,054
571	4,445,055

CLASS 308

2 A	4,444,442
6 C	4,444,443
10	4,444,444

CLASS 310

54	4,445,056
68 D	4,445,057
103	4,445,058
154	4,445,059
	4,445,060
156	4,445,061
	4,445,062
316	4,445,063
	4,445,064
321	4,445,065
364	4,445,066

CLASS 313

54	4,445,067
113	4,445,068
610	4,445,069

CLASS 315

4	4,445,070
	4,445,071
8	4,445,072
56	4,445,073
205	4,445,074

CLASS 318

434	4,445,075
690	4,445,076
696	4,445,077
729	4,445,078
792	4,445,079
798	4,445,080
832	4,445,081

CLASS 323

206	4,445,082
273	4,445,083

CLASS 324

51	4,445,084
52	4,445,085
66	4,445,086
175	4,445,087
238	4,445,088
	4,445,089
433	4,445,090
438	4,445,091

CLASS 328

139	4,445,092
151	4,445,093

CLASS 329

50	4,445,094

CLASS 330

297	4,445,095

CLASS 331

107 DP	4,445,096
117 D	4,445,097

CLASS 333

1.1	4,445,098
24.1	4,445,099
207	4,445,100

CLASS 335

210	4,445,101
297	4,445,102

CLASS 336

135	4,445,103
217	4,445,104

CLASS 337

94	4,445,105
163	4,445,106
343	4,445,107

CLASS 338

4	4,445,108
22 R	4,445,109

CLASS 339

5 M	4,444,445
50 R	4,444,446
98	4,444,447
	4,444,448
99 R	4,444,449
107	4,444,450
154 A	4,444,451
176 M	4,444,452
177 R	4,444,453
	4,444,454
258 F	4,444,455

CLASS 340

347 CC	4,445,111
347 P	4,445,110
	4,445,112
384 R	4,445,113
726	4,445,114
745	4,445,115
825.05	4,445,116
825.91	4,445,117

CLASS 343

357	4,445,118
377	4,445,119
462	4,445,120
700 MS	4,445,121
	4,445,122
719	4,445,123

CLASS 346

75	4,445,124
108	4,445,125
	4,445,126
140 A	4,445,127
160	4,445,128
204	4,444,833
208	4,444,844
209	4,444,819

CLASS 350

3.7	4,444,456
6.8	4,444,457
96.15	4,444,458
	4,444,459
96.19	4,444,460
96.21	4,444,461
96.25	4,444,462
96.33	4,444,463
172	4,444,464
276 R	4,444,465
289	4,444,466
294	4,444,468
310	4,444,467
347 E	4,444,469
358	4,444,470
423	4,444,471
	4,444,472
467	4,444,473
503	4,444,474
508	4,444,475

CLASS 351

211	4,444,476

CLASS 354

173.1	4,444,482
276	4,444,484
329	4,444,480
401	4,444,481
403	4,444,477
413	Re.31,567
	4,444,479
417	4,444,478

CLASS 355

3 FU	4,444,486
	4,444,487
11	4,444,488
29	4,444,485
35	4,444,489
40	4,444,490
50	4,444,491
55	4,444,492
75	4,444,493
	4,444,494

CLASS 356

138	4,444,495
155	4,444,496
244	4,444,497
246	4,444,498
325	4,444,499
336	4,444,500
346	4,444,501
350	4,444,502
	4,444,503
374	4,444,504
380	4,444,505
404	4,444,506

CLASS 357

16	4,445,129
	4,445,130
31	4,445,131
32	4,445,132
38	4,445,133
71	4,445,134

CLASS 358

19	4,445,135
55	4,445,136
101	4,445,137
166	4,445,138
214	4,445,139
222	4,445,140
294	4,445,141
318	4,445,142
322	4,445,143
342	4,445,144

CLASS 360

10.2	4,445,145
10.3	4,445,146
12	4,445,147
	4,445,148
13	4,445,149
18	4,445,150
27	4,445,151
33.1	4,445,152
77	4,445,153
85	4,445,154
99	4,445,155
	4,445,156
133	4,445,157
137	4,445,158
	4,445,159

CLASS 361

91	4,445,160
218	4,445,161
334	4,445,162

CLASS 362

287	4,445,163
311	4,445,164
376	4,445,165

CLASS 363

48	4,445,166
56	4,445,167

CLASS 364

140	4,445,168
147	4,445,169
200	4,445,170
	4,445,171
	4,445,172
	4,445,173
	4,445,174
	4,445,175
	4,445,176
	4,445,177
400	4,445,178
431.07	4,445,179
464	4,445,181
474	4,445,182
483	4,445,183
494	4,445,180
513	4,445,184
514	4,445,185
521	4,445,186
	4,445,187
550	4,445,188
600	4,445,189
900	4,445,190
	4,445,191
	4,445,192
	4,445,193
	4,445,194
	4,445,195
	4,445,196
	4,445,197
	4,445,198

CLASS 365

1	4,445,199
8	4,445,200
154	4,445,201
182	4,445,202
189	4,445,203
194	4,445,204
227	4,445,205

CLASS 366

81	4,444,507
139	4,444,508
157	4,444,509
169	4,444,510

CLASS 367

13	4,445,206
150	4,445,207

CLASS 368

69	4,444,511
72	4,444,512
223	4,444,513
273	4,444,514
279	4,444,515

CLASS 369

44	4,445,208
45	4,445,209
230	4,445,210

CLASS 370

62	4,445,211
	4,445,212
94	4,445,213
	4,445,214
100	4,445,215

CLASS 371

39	4,445,216

CLASS 372

35	4,445,217
44	4,445,218
50	4,445,219

CLASS 373

74	4,445,220

CLASS 374

131	4,444,516
188	4,444,517

CLASS 375

10	4,445,221
36	4,445,222
96	4,445,223
120	4,445,224

CLASS 376

194	4,444,717

CLASS 378

44	4,445,225
99	4,445,226
125	Re.31,568

CLASS 381

24	4,445,227
	4,445,228
110	4,445,229

CLASS 383

7	4,445,230

CLASS 384

96	4,444,518

CLASS 4.1

128	4,444,483

CLASS 400

82	4,444,519
88	4,444,520
120	4,444,521
146	4,444,522

CLASS 403

173	4,444,523
387	4,444,524
402	4,444,525

CLASS 405

136	4,444,526
170	4,444,527
173	4,444,528
259	4,444,529
303	4,444,530

CLASS 406

88	4,444,531
117	4,444,532

CLASS 409

132	4,444,533
164	4,444,534

CLASS 410

121	4,444,535

CLASS 414

22	4,444,536
107	4,444,537
176	4,444,538
360	4,444,539
589	4,444,540
676	4,444,541
694	4,444,542

CLASS 416

170 R	4,444,543
221	4,444,544

CLASS 417

8	4,444,545
12	4,444,546
46	4,444,547
63	4,444,548
269	4,444,549

CLASS 419

37	4,444,718

CLASS 420

511	4,444,719

CLASS 422

119	4,444,720
144	4,444,722
159	4,444,723
173	4,444,724
179	4,444,721
180	4,444,725
207	4,444,726
223	4,444,727
249	4,444,728
257	4,444,729
264	4,444,730
310	4,444,731
	4,444,732

CLASS 423

24	4,444,733
210	4,444,734
	4,444,735
235	4,444,736
249	4,444,737
329	4,444,738
371	4,444,739
483	4,444,740
542	4,444,741
573 G	4,444,742

CLASS 424

1.1	4,444,743
	4,444,744
45	4,444,745
49	4,444,746
52	4,444,747
70	4,444,749
	4,444,750
94	4,444,751
95	4,444,752
98	4,444,753
114	4,444,754
145	4,444,755
150	4,444,756
177	4,444,757
	4,444,758
	4,444,759
	4,444,760
180	4,444,761
	4,444,762
195	4,444,763
200	4,444,764
	4,444,765
211	4,444,766
238	4,444,767
246	4,444,768
	4,444,769
248.5	4,444,770
250	4,444,771
251	4,444,772
	4,444,773
	4,444,774
256	4,444,775
258	4,444,776
	4,444,777
262	4,444,778
263	4,444,779
267	4,444,780
269	4,444,781
273 R	4,444,782
274	4,444,783
279	4,444,784
291	4,444,785
298	4,444,786
304	4,444,787
305	4,444,788
315	4,444,789
317	4,444,748
329	4,444,790
331	4,444,791

CLASS 425

3	4,444,550

CLASS 426

41	4,444,792
	4,444,793
52	4,444,794
90	4,444,795
335	4,444,796
399	4,444,797
422	4,444,798
549	4,444,799
582	4,444,800

CLASS 427

10	4,444,801
27	4,444,802
	4,444,803
34	4,444,804
38	4,444,805
45.1	4,444,806
129	4,444,807
143	4,444,808
163	4,444,809
212	4,444,810
213	4,444,811
255	4,444,812
284	4,444,813
378	4,444,814

CLASS 428

17	4,444,815
36	4,444,816
	4,444,817
	4,444,818
64	4,444,820
69	4,444,821
109	4,444,822
113	4,444,823
161	4,444,824
215	4,444,825
216	4,444,826
	4,444,827
218	4,444,828
220	4,444,829
246	4,444,830
262	4,444,831
290	4,444,832
323	4,444,834
329	4,444,835
330	4,444,836
332	4,444,837
336	4,444,838
	4,444,839
339	4,444,840
	4,444,841
340	4,444,842
383	4,444,843
422.8	4,444,845
425.6	4,444,846
522	4,444,847
624	4,444,848
626	4,444,849
694	4,444,850

CLASS 429

26	4,444,851
29	4,444,852
54	4,444,853
94	4,444,854
105	4,444,855
163	4,444,856
191	4,444,857

CLASS 430

49	4,444,858
54	4,444,859
57	4,444,860
58	4,444,861
67	4,444,862
83	4,444,863
120	4,444,864
217	4,444,865
220	4,444,866
223	4,444,867
285	4,444,868
325	4,444,869
378	4,444,871
381	4,444,870
384	4,444,872
393	4,444,873
409	4,444,874
445	4,444,875
528	4,444,876
567	4,444,877

CLASS 431

25	4,444,551
359	4,444,552

CLASS 432

15	4,444,553
28	4,444,554
30	4,444,555
85	4,444,556
136	4,444,557
225	4,444,558
226	4,444,559

CLASS 435

7	4,444,878
	4,444,879
	4,444,880
29	4,444,882
34	4,444,883
55	4,444,884
107	4,444,885
139	4,444,881
198	4,444,886
240	4,444,887
243	4,444,888

CLASS 436

2	4,444,891
29	4,444,889
64	4,444,890
528	4,444,892

CLASS 501

72	4,444,893
90	4,444,894

CLASS 502

37	4,444,895
	4,444,896
	4,444,897
62	4,444,898
64	4,444,899
71	4,444,900
80	4,444,901
86	4,444,902
102	4,444,903
208	4,444,904
211	4,444,905
	4,444,906
	4,444,907
247	4,444,908

CLASS 518

716	4,444,909

CLASS 521

51	4,444,910
82	4,444,911
121	4,444,912
128	4,444,913
130	4,444,914
131	4,444,915
	4,444,916
	4,444,917
	4,444,918
172	4,444,919
173	4,444,920

CLASS 523

200	4,444,921
339	4,444,922
406	4,444,923
445	4,444,924

CLASS 524

4	4,444,925
23	4,444,926
56	4,444,927
99	4,444,928
101	4,444,929
125	4,444,930
227	4,444,931
232	4,444,932
292	4,444,933
310	4,444,934
315	4,444,935
393	4,444,936
425	4,444,937
476	4,444,938
494	4,444,939
500	4,444,940
507	4,444,941
596	4,444,942
598	4,444,943
786	4,444,944
843	4,444,945

CLASS 525

29	4,444,946
61	4,444,948
67	4,444,949
	4,444,950
74	4,444,951
93	4,444,952
98	4,444,953
124	4,444,954
	4,444,955
164	4,444,956
370	4,444,957
432	4,444,958
435	4,444,959
534	4,444,960
545	4,444,947

CLASS 526

88	4,444,961
95	4,444,962
100	4,444,963
105	4,444,964
	4,444,965
106	4,444,966
114	4,444,967
129	4,444,968
262	4,444,969
285	4,444,970
292.2	4,444,971

CLASS 528

6	4,444,972
28	4,444,973
33	4,444,974
49	4,444,975
60	4,444,976
109	4,444,977
167	4,444,978
172	4,444,979
193	4,444,980

CLASS 548

427	4,444,981

CLASS 568

817	4,444,982

CLASS 570

209	4,444,983

CLASS 585

415	4,444,988
467	4,444,989
500	4,444,984
520	4,444,985
828	4,444,986
850	4,444,987

CLASS 604

224	4,444,560

CLASSIFICATION OF DESIGNS

D2—	210	273,601
	293	273,529
	314	273,530
	320	273,531
D3—	23	273,532
	33	273,533
		273,534
		273,535
	52	273,536
	71	273,537
D4—	25	273,538
D6—	31	273,539
	48	273,540
	64	273,541
	80	273,542
	97	273,543
	125	273,544
	128	273,545
	188	273,546
	191	273,547
	194	273,548
	196	273,549
	260	273,550
D7—	48	273,551
	50	273,552
	101	273,553
D8—	40	273,555
	86	273,556
	353	273,557
	354	273,558
	359	273,559
	373	273,560
	397	273,561
	399	273,562
D9—	367	273,563
	413	273,564
	415	273,565
D10—	46.1	273,566
	69	273,567
	91	273,568
	98	273,569
		273,570
		273,571
	106	273,572
		273,573
	126	273,574
		273,575
D11—	167	273,576
D12—	85	273,577
	158	273,578
	345	273,579
D13—	5	273,580
	12	273,581
	99	273,582
D14—	39	273,583
	106	273,584
	113	273,585
D15—	7	273,586
		273,587
	66	273,588
	78	273,589
	199	273,590
D16—	38	273,591
	131	273,592
D18—	7	273,593
D19—	60	273,594
D20—	6	273,595
	44	273,596
D21—	10	273,597
	12	273,598
	51	273,599
	102	273,554
	128	273,600
	247	273,602
D22—	13	273,603
	14	273,604
	18	273,605
D23—	2	273,606
	3	273,607
	34	273,608
	69	273,609
	123	273,610
	146	273,611
D24—	1.1	273,612
	55	273,613
	67	273,614
	99	273,615
		273,616
		273,617
D25—	1	273,618
	73	273,619
D32—	16	273,620
		273,621
		273,622
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09 : 273,568
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40 : 273,618
42 : 273,541
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45 : 273,623
47 : 273,589
48 : 273,595
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